

Region 3 Mexican Spotted Owl Habitat Environmental Analysis Project Checklist

“MSO NEPA Checklist”

The purpose of this document is to assist and guide Interdisciplinary Teams (IDT) on how to conduct environmental analysis for vegetation management projects that would implement mechanical and prescribed fire treatments within Mexican spotted owl habitat. Include this document as an appendix to the NEPA or supporting documentation, and post with public project files.

All vegetation management project documentation/analyses are required to address the following list of items to ensure consistency with forest plans and the Recovery Plan (RP) for the Mexican spotted owl (MSO), First Revision (USFWS 2012). As the analysis addresses each item, check that it has been done, and indicate the document and page numbers where the information can be located.

*As the IDT conducts the analysis it should consider the caution on pages 74-75 in the 2012 Recovery Plan that much of the work needed to reduce the fire risk to Mexican spotted owl habitat can be achieved by treating areas outside of PACs and Recovery nest/roost habitat to develop forest structure and density conditions that facilitate low severity surface fires in the surrounding project landscape. Often, these forest restoration treatments outside the PACs can be combined with minimal treatments inside the PACs such as low thinning, selection cutting, and prescribed burning to also facilitate lower severity fire behavior potential within the PACs. Management approaches to protecting and enhancing PAC habitats should be based on local existing and projected vegetation conditions, and management alternatives focused on the minimal treatments necessary to protect or enhance PAC habitats.

Analysis should include information on current, existing conditions in MSO habitats, proposed treatments, and the planned post-treatment conditions in MSO habitats (e.g., what is it supposed to look like immediately following treatment). If stand exam data exists for MSO habitat (PACs, Recovery Nest/Roost, Recovery Foraging/Dispersal) at the time of the analysis, then follow the Region 3 Step-by-Step MSO Habitat Treatment and Implementation Guidance to conduct the analysis and develop the proposed action. For conditions-based management projects, or those that do not have stand data at the time of NEPA planning, ensure that the analysis includes the range(s) of desired conditions (and indicate where this is located in the documents). Include the Step-by-Step Guidance as a design feature in the NEPA.

Project:

District, Forest:

Date:

Task	Done?	Document and page numbers (EA/EIS, specialist report, BA, etc.)
Project and Analysis Area:		
1. Clearly delineate and display the project area .		
2. Clearly delineate and display or describe the analysis (action) area .		
3. Identify Forest Cover Type (e.g., mixed-conifer, pine-oak, other forest and woodland; see Appendix C, pp. 250-256 of the MSO Recovery Plan, First Revision; USFWS 2012).		
Mexican spotted owl habitat delineated in the project area (locations mapped, and total acres displayed):		
1. Protected Activity Centers identified in the project/action area. These are mapped and total acres are displayed.		
2. Recovery Habitat includes all mixed-conifer, riparian forests, and pine-oak for some Ecological Management Units (EMUs). Refer to the MSO Recovery Plan, First Revision; USFWS 2012, Figure II.1 on pg. 9, pp. 10-14, and Table C.3.		

3.	Recovery Nest/Roost Habitat identified and delineated in the project/action area. At least the minimum percentages as indicated by Table C.3 are designated for the project area and/or the unit. Where available, contemporary stand exam data should be used. Absent stand exam data, other sources of information may be used, such as: imputed nearest neighbor, LiDAR, Landsat remote sensing, geophysical modeling, slope, aspect, regional recovery habitat map, living map, field examination, etc. This should be accomplished in coordination with the U.S. Fish and Wildlife Service (FWS), a certified silviculturist, and a qualified biologist.		
a)	Describe the methodology used to identify and delineate recovery nest/roost habitat for project/unit.		
b)	Identify the areas that currently meet or are above the minimum desired conditions listed in Table C.3 of the Recovery Plan (p. 278), or areas that have the greatest potential to attain these conditions in the appropriate locations on the landscape (e.g., cooler, north/northeast-facing aspects).		
4.	Recovery Foraging/Dispersal Habitat (also known as foraging/non-breeding) identified and delineated in the project/action area. This includes all recovery habitat not identified as nest/roost.		
5.	Critical Habitat Unit(s) identified and delineated in the project/action area.		
a)	Quantify area of critical habitat in the critical habitat unit and within the project area.		
6.	Plan pre-project surveys within MSO habitat in the project area as well as ½ mile beyond in MSO habitat.		
Protected Activity Centers (PACs):			
1.	Describe existing pre-treatment conditions <i>inside of nest/roost core</i> .		
a)	Provide existing condition information as related to Table C.3.		
b)	<i>Core areas will be deferred from mechanical treatment</i> (Appendix D of the Recovery Plan p. 316).		
c)	Provide information regarding any proposed broadcast burning (outside of the breeding season or during if non-breeding is inferred or confirmed for that year). Provide information that describes the plan and conditions that help to ensure the burn can be conducted at a low intensity with low severity effects.		
2.	Describe planned post-treatment conditions <i>inside of nest/roost core</i> immediately following prescribed burning.		
3.	Describe existing pre-treatment conditions in PACs, <i>outside of nest/roost core</i> . May include information regarding the following:		
a)	Diversity of patch size outside nest/roost core		
b)	Horizontal and vertical vegetative heterogeneity within patches, including tree species composition		
c)	Tree species diversity, especially with a mix of hardwoods and shade-tolerant species		
d)	Diverse composition of vigorous native herbaceous and shrub species		
e)	Opening sizes between 0.04 – 1 hectare (0.1 – 2.5 acres)		
f)	Minimum canopy cover of 40% in pine-oak and 60% in mixed-conifer within stands (openings or canopy gaps between patches are not included in canopy cover measurements)		
g)	Structural diversity of trees		
4.	Describe proposed treatments in PACs, <i>outside of nest/roost core</i> .		
a)	Conduct fire risk assessment within the project area and in the planning area.		
b)	Provide information regarding how the proposed treatments in the PAC, outside nest/roost core, may reduce fire hazard while striving to maintain or improve habitat conditions for the owl and its prey.		
c)	Assess the percentage of proposed mechanical treatments in non-core PAC area for the EMU. Should not exceed 20%. However, treatments can exceed 20% of the non-core area within a single PAC if justified to affect fire behavior to reduce the risk to nest/roost cores.		
d)	No prescribed fire or mechanical treatments should occur within PACs during the breeding season unless non-breeding is inferred or confirmed the year of treatment per the accepted protocol (Appendix D, Recovery Plan).		
e)	Removal of hardwoods, downed woody debris, snags, and other key habitat variables should occur only when compatible with owl habitat management objectives as documented through reasoned analysis.		

f)	All treatments in PACs should be coordinated with the appropriate FWS Office.		
5.	Describe planned post-treatment conditions in PACs, outside of nest/roost core . May include information regarding the following:		
a)	Diversity of patch size outside nest/roost core		
b)	Horizontal and vertical vegetative heterogeneity within patches, including tree species composition		
c)	Tree species diversity, especially with a mix of hardwoods and shade-tolerant species		
d)	Diverse composition of vigorous native herbaceous and shrub species		
e)	Opening sizes between 0.04 – 1 hectare (0.1 – 2.5 acres)		
f)	Minimum canopy cover of 40% in pine-oak and 60% in mixed conifer within stands (openings or canopy gaps between patches are not included in canopy cover measurements)		
g)	Structural diversity of trees		
h)	Diversity of tree sizes with goal of having trees $\geq 16''$ DBH contributing $\geq 50\%$ of the stand basal area		
Recovery Nest/Roost Habitat:			
1.	Describe existing, pre-treatment conditions in recovery nest/roost habitat , as related to Table C3.		
2.	Describe proposed treatments in recovery nest/roost habitat . Mechanical treatments are not recommended in recovery nest/roost habitat and should be deferred. Though avoidance should be the first choice, there may be very limited circumstances, if warranted for the benefit of the owl, when minimal mechanical treatment may be needed as described in the MSO Recovery Plan. Provide justification with specific information for why treatments are necessary and why deferment isn't an option or if conditions are not suitable as recovery habitat and how the treatment will directly improve owl habitat.		
a)	Provide justification for any mechanical treatment or thinning.		
b)	Provide information regarding broadcast burning.		
3.	Describe planned post-treatment conditions in recovery nest/roost habitat. Provide post-treatment condition information as related to Table C.3 in the Recovery Plan, First Revision (USFWS 2012), or Table III.B.1 in the original MSO Recovery Plan (USFWS 1995) if working under the 1996 amendment to your forest plan. Describe how it meets Forest Plan requirements. <i>Do not treat the minimums in Table C.3 as targets, rather treat only what is minimally needed.</i> May include the following:		
a)	% of recovery habitat in the project area/planning area		
b)	Canopy cover		
c)	Basal area		
d)	% Basal Area 30-46 cm (12-18 in) diameter at breast height (dbh)		
e)	% Basal Area >46 cm (>18 in) dbh		
f)	Large trees >46 cm (>18 in) dbh per acre		
Recovery Foraging/Dispersal Habitat:			
1.	Describe existing, pre-treatment conditions in recovery foraging/dispersal habitat (recovery habitat outside of nest/roost). May include the following information:		
a)	Diversity of patch size outside nest/roost core		
b)	Horizontal and vertical vegetative heterogeneity within patches, including tree species composition		
c)	Tree species diversity, especially with a mix of hardwoods and shade-tolerant species		
d)	Diverse composition of vigorous native herbaceous and shrub species		
e)	Opening sizes between 0.04 – 1 hectare (0.1 – 2.5 acres)		
f)	Minimum canopy cover of 40% in pine-oak and 60% in mixed conifer within stands (openings or canopy gaps between patches are not included in canopy cover measurements)		
g)	Structural diversity of trees		
2.	Describe proposed treatments in recovery foraging/dispersal habitat . Refer to the Recovery Plan and the Step-by-Step Guidance for additional description and the relevance of these desired conditions to the Mexican spotted owl along with potential variables to measure.		
3.	Describe planned post-treatment conditions in recovery foraging/dispersal habitat . May include the following information:		

a)	Diversity of patch size outside nest/roost core		
b)	Horizontal and vertical vegetative heterogeneity within patches, including tree species composition		
c)	Tree species diversity, especially with a mix of hardwoods and shade-tolerant species		
d)	Diverse composition of vigorous native herbaceous and shrub species		
e)	Opening sizes between 0.04 – 1 hectare (0.1 – 2.5 acres)		
f)	Minimum canopy cover of 40% in pine-oak and 60% in mixed conifer within stands (openings or canopy gaps between patches are not included in canopy cover measurements)		
g)	Structural diversity of trees		
Critical Habitat - Describe the existing, pre-treatment conditions and planned post-treatment conditions in critical habitat, in terms of the primary constituent elements (PCEs) found within the geographical areas.			
1. PCEs related to forest structure :			
a)	A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 percent to 45 percent of which are large trees with a trunk diameter of 12 inches (0.3 meters) or more when measured at 4.5 feet (1.4 meters) from the ground		
b)	A shade canopy created by the tree branches covering 40 percent or more of the ground		
c)	Large dead trees (snags) with a trunk diameter of at least 12 inches (0.3 meters) when measured at 4.5 feet (1.4 meters) from the ground		
2. PCEs related to maintenance of adequate prey :			
a)	High volumes of fallen trees and other woody debris		
b)	A wide range of tree and plant species, including hardwoods		
c)	Adequate levels of residual plant cover to maintain fruits, seeds, and allow plant regeneration		
3. PCEs related to canyon habitat include one or more of the following:			
a)	Presence of water (often providing cooler and often higher humidity than the surrounding areas)		
b)	Clumps or stringers of mixed conifer, pine-oak, pinyon-juniper, and/or riparian vegetation		
c)	Canyon wall containing crevices, ledges, or caves		
d)	High percent of ground litter and woody debris		
Monitoring Plan:			
1. Develop monitoring plan with the FWS, may include one or more of the following:			
a)	Monitor occupancy and reproduction in treated Mexican spotted owl PACs .		
b)	Monitor vegetation plots pre- and post-treatment.		
c)	Management Experiments or similar (e.g., Box C.5, pp. 281-283, 2012 MSO RP).		
d)	Other		

Plan to report implementation of the action and compliance with the terms and conditions as required by the reasonable and prudent measures in the incidental take statement of the biological opinion, or other consultation document (e.g., measures included in concurrence letter for NLAA determinations), and associated NEPA documentation and analysis. Make available to the public, as appropriate.

Please also refer to Appendix C in the 2012 Mexican Spotted Owl Recovery Plan, First Revision, for recommended management actions, monitoring treatment effects, and information on desired conditions for nest/roost core areas, PACs, and recovery habitat.

Table C.2 and C.3 in Appendix C of the Mexican Spotted Owl Recovery Plan, First Revision (USFWS 2012) referenced above in the checklist.

Table C.2. (Below) Generalized description of key habitat variables comprising Desired Conditions in forest, riparian, canyon, and woodland cover types typically used by Mexican spotted owls for nesting and roosting. **Desired conditions should guide management within PACs and recovery nest/roost habitats.** The ecological relevance of each desired condition to this owl subspecies and examples of variables that may be useful to quantify desired conditions are also shown. Where possible numbers are derived from past research, where information was unavailable, we used the collective best professional knowledge of the Recovery Team.

Desired Condition	Relevance to Owl	Potential Variables (Examples)
Strive for a diversity of patch sizes with minimum contiguous patch size of 1 ha (2.5 ac) with larger patches near activity center; mix of sizes towards periphery (Peery et al 1999; Grubb et al 1997; May and Gutiérrez 2002). Forest type may dictate patch size (i.e., mixed conifer forests have larger and fewer patches than pine-oak forest). Strive for between patch heterogeneity.	Nest/roost habitat patches are the most limiting habitat for the owl. Patches should enhance spatial heterogeneity, provide nest/roost options, provide varied microclimates (thermoregulation) options, and create edges for prey species (e.g., <i>Neotoma</i>).	Size, cumulative acreage, density of patches, % of landscape, amount of edge habitat, average patch canopy cover, average age of dominant overstory component of patch. Frequency distribution of patches by size class, total edge, core to edge distance, fractal index of patch (area to edge ratios).
Horizontal and vertical habitat heterogeneity within patches, including tree species composition.* Patches are contiguous and consist of trees of all sizes, unevenly spaced, with interlocking crowns and high canopy cover (Ganey et al. 2003).*	Provides roosting options, thermal and hiding cover for the owl, and habitat for a variety of prey species.	Patch size and configuration (shape), juxtaposition (topology of patches), interspersions, edge length; canopy cover by height strata; number of vegetation strata present (herbaceous, shrub, sapling, pole, mature trees); uneven tree spacing.
Tree species diversity, especially with a mixture of hardwoods and shade-tolerant species (Willey 1998).* For example, Gambel oak provides important habitat for woodrats and brush mice (Block et al. 2005, Ward 2001)	Provides habitat and food sources for a diversity of prey, roosting options, and perches and hiding cover for young owls during early flight development. Large tree-form Gambel oaks are an important nesting substrate for owls (Ganey et al 1992; SWCA 1992; May and Gutiérrez 2002). Diversity increases probability of some tree species setting seed in a given year. Owls use hardwoods (e.g., big-toothed maple, western hop hornbeam and chinkapin oak) for roosting (Mullet and Ward 2010)	Species occurrence (presence), diversity indices (including richness and equitability), BA by species, density/species.
Diverse composition of vigorous native herbaceous and shrub species (Ward 2001).*	Provides sustainable habitat for a variety of prey; fine fuels to carry surface fire.	Cover/plant group; plant height; vertical density profile; diversity measure (e.g., richness and equitability); vertical distribution; maximum height.
Opening sizes between 0.04 - 1 ha (0.1 - 2.5 ac).* Openings within a forest are different than natural meadows. Small canopy gaps within forested patches provide for prey habitat diversity. Openings should be small in nest/roost patches, may be larger in rest of PAC.	Openings provide habitat for a variety of prey and can slow or reduce fire severity by breaking the continuity of dense tree canopies and ladder fuels.	Frequency distribution of openings by size class, % of landscape in openings. Grass and herbaceous cover in openings (Daubenmire plots for coverage percent).
Minimum canopy cover of 40% in pine-oak and 60% in mixed conifer (Ganey et al. 2003).* Measure canopy cover within stands.	Provides thermal environment needed for nesting/roosting and prey habitat.	Canopy cover line or point intercept method).

Diversity of tree sizes with goal of having trees $\geq 16''$ DBH contributing $\geq 50\%$ of the stand BA (Willey 1998, May and Gutiérrez 2002, Ganey et al. 2003, May et al. 2004).	All life history needs (nesting, roosting, foraging). By emphasizing large trees, should provide for large snags and logs (Ganey et al. 2003).	Patch size/tree stage; vegetation strata; tree size distribution.
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*Rocky Canyon Recovery Habitat: results from habitat studies suggest these desired conditions are important in canyon environments where forest, woodland, and riparian habitats are present (e.g., Zion National Park).

Table C.3. Minimum desired conditions for mixed-conifer and pine-oak forest areas managed for Recovery nesting/roosting habitat. Forest types are defined in Appendix C, above. Parameter values are based on averages among plots sampled within forest stands. Numbers of stands included in analysis: 74 for Basin and Range-East (BRE), 27 for mixed-conifer forest in other EMUs, and 47 for pine-oak forest.

EMU(s) Forest Type	% of area ¹	% BA by size class		Minimum tree BA ²	Minimum density of large trees ³
		30-46 cm dbh (12-18 in)	>46 cm dbh (>18 in)		
BRE Mixed-conifer	20	>30	>30	33.3 (145)	37 (15)
CP, UGM, SRM, BRW Mixed-conifer	25	>30	>30	27.5 (120)	30 (12)
CP ⁴ , UGM, BRW Pine-oak ⁵	10	>30	>30	25.3 (110)	30 (12)

¹ % of area pertains to the percent of the planning area, subregion, and/or region in the specified forest type that should be managed for threshold conditions.

² BAs in m²/ha (ft²/acre), and include all trees >1-in dbh (i.e., any species). We emphasize that values shown are **minimums**, not targets.

³ Trees > 46 cm (18 in) dbh. Density is trees/ha (trees/acre). Again, values shown are minimums rather than targets. We encourage retention of large trees.

⁴ Pine-oak forest type: $\geq 10\%$ of the stand BA or 4.6 m²/ha (20 ft²/ac) of BA consist of Gambel oak ≥ 13 cm (5 in) drc.

⁵ Pine-oak recommendations apply only to the Mount Taylor and/or Zuni Mountains regions within the CP EMU.

U.S. Fish and Wildlife Service (USFWS). 2012. Final Recovery Plan for the Mexican Spotted Owl (*Strix occidentalis lucida*), First Revision. U.S. Fish and Wildlife Service. Albuquerque, New Mexico, USA. 413 pp.