



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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In Reply Refer To:
8-14-2010-TA-3742

Mr. Robert B. Douglas
Forest Science Manager
Mendocino Redwood Company, LLC
PO Box 489
Fort Bragg, CA 95437

Subject: Response to Request for Technical Assistance Regarding the Proposed Mendocino Redwood Company Spotted Owl Resource Plan

Dear Mr. Douglas:

This responds to your request for U.S. Fish and Wildlife Service (Service) technical assistance, received in our office on January 8, 2010, on the proposed Mendocino Redwood Company's (MRC) Spotted Owl Resource Plan. At issue in the request is the potential for incidental take of the federally listed northern spotted owl (*Strix occidentalis caurina*) as a result of operations conducted as proposed under MRC's Spotted Owl Resource Plan (SORP). After review of the information pertaining to this request, the Service provides the following technical assistance.

The proposed SORP covers 228,000 acres of MRC property located in Mendocino and Sonoma Counties (see enclosed map). The SORP describes methodologies employed to locate spotted owls and to assess reproductive status, provides a framework for incidental take avoidance by specifying information to be included in individual timber harvest plans, includes habitat definitions, and measurable standards for protecting activity centers and conserving habitat. MRC intends to utilize the SORP until their Habitat Conservation Plan is approved. The Service has determined that MRC's timber harvest operations conducted as proposed under the enclosed SORP would not be likely to incidentally take northern spotted owls. The Service appreciates the high level of professionalism and integrity that you and your staff consistently demonstrate in assisting our efforts to conserve the northern spotted owl.

All maps and data used to provide this technical assistance are on file at this office. If you have questions regarding this response, please contact Mr. Ken Hoffman of my staff at the Arcata Fish and Wildlife Office at (707) 822-7201.

Sincerely,

Randy A. Brown
Acting Field Supervisor

Enclosure

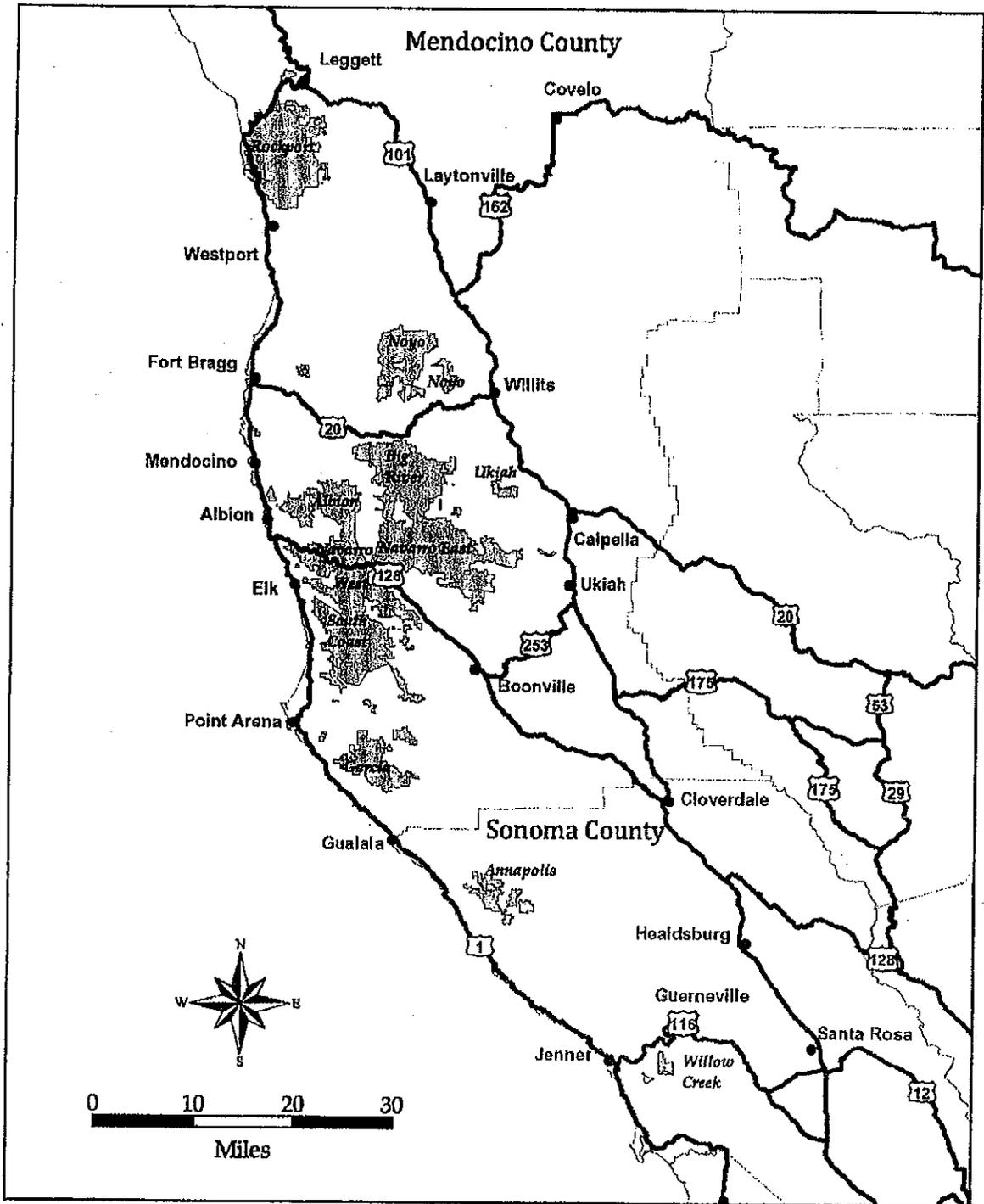


Figure 1: Mendocino Redwood Company forestlands comprising 228,000 acres in Mendocino and Sonoma counties.

Spotted Owl Resource Plan for Mendocino Redwood Company Forestlands



January 15, 2010

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SUMMARY

A Spotted Owl Resource Plan (SORP) is intended to offer landowners submitting timber harvest plans a programmatic approach to take avoidance of northern spotted owls (*Strix occidentalis caurina*; NSO). The California Forest Practices Rules defines a “Spotted Owl Resource Plan” as “...an approach to preventing a taking of the northern spotted owl while conducting timber operations[,]” and “...necessarily involves more than one timber harvest plan.” A Spotted Owl Resource Plan may be submitted to CAL FIRE for preliminary review, and once approved, can be attached to individual timber harvest plans (THPs) submitted by a landowner under Section 14 CCR 919.9(a).

Currently, however, no example of a SORP exists as none have ever been filed with CAL FIRE. Lacking a template to follow, we combined two documents—Mendocino Redwood Company’s (MRC) Spotted Owl Survey Protocol, and a planning agreement signed by MRC and DFG—to function as a SORP covering MRC forestlands in Mendocino and Sonoma counties (Figure 1).

The SORP presented in the following pages describes methodologies employed to locate spotted owls and assess reproductive status, and delineates survey requirements for a range of activities and conditions common to industrial forestlands. In addition to a survey protocol, the SORP also provides a framework for take avoidance by specifying: 1) information to be included in individual timber harvest plans; 2) habitat definitions; and 3) measurable standards for protecting NSO activity centers and conserving NSO habitat.

All documents used in this SORP were generated from discussions with the USFWS and DFG regarding a proposed Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) for MRC forestlands. Mendocino Redwood Company’s Spotted Owl Survey Protocol is based on the USFWS-endorsed Spotted Owl Survey Protocol (1992), which was modified to reflect current regulatory and survey standards used in the coastal redwood region, as well as methods used by MRC biologists. The planning agreement is a formal agreement between MRC and DFG that provides explicit standards for addressing and protecting forest resources in timber harvest plans prior to implementation of a HCP/NCCP. Although the planning agreement was signed only by DFG, the USFWS was directly involved in reviewing the protection measures for federally listed wildlife species, including the NSO, to ensure consistency with federal take-avoidance guidelines. Section II of this SORP corresponds with the NSO section of the planning agreement.

Mendocino Redwood Company intends to follow the approved SORP until the HCP/NCCP is implemented. After this time, MRC will address spotted owls in THPs according to an approved incidental take permit (14 CCR 919.9 (d)) for HCP/NCCP-covered lands, but will continue to follow the SORP for THPs submitted in areas of its ownership not covered by the HCP/NCCP.

Overall, the following SORP demonstrates MRC’s continued commitment to spotted owl conservation on its forestlands. While the primary function of the SORP is take-avoidance, many elements of this document, including MRC’s management practices (e.g., old-growth and wildlife tree protections), go above-and-beyond this basic compliance standard. Mendocino Redwood Company will also continue to monitor spotted owls on its forestlands for both occupancy and



reproductive success. This effort, coupled with a banding program, ensures the collection of high quality data to better assess cumulative effects of timber harvest, barred owl presence, and long-term population trends. With such an investment, MRC hopes that with improved biological knowledge and targeted conservation efforts it can contribute to the eventual recovery of the northern spotted owl.

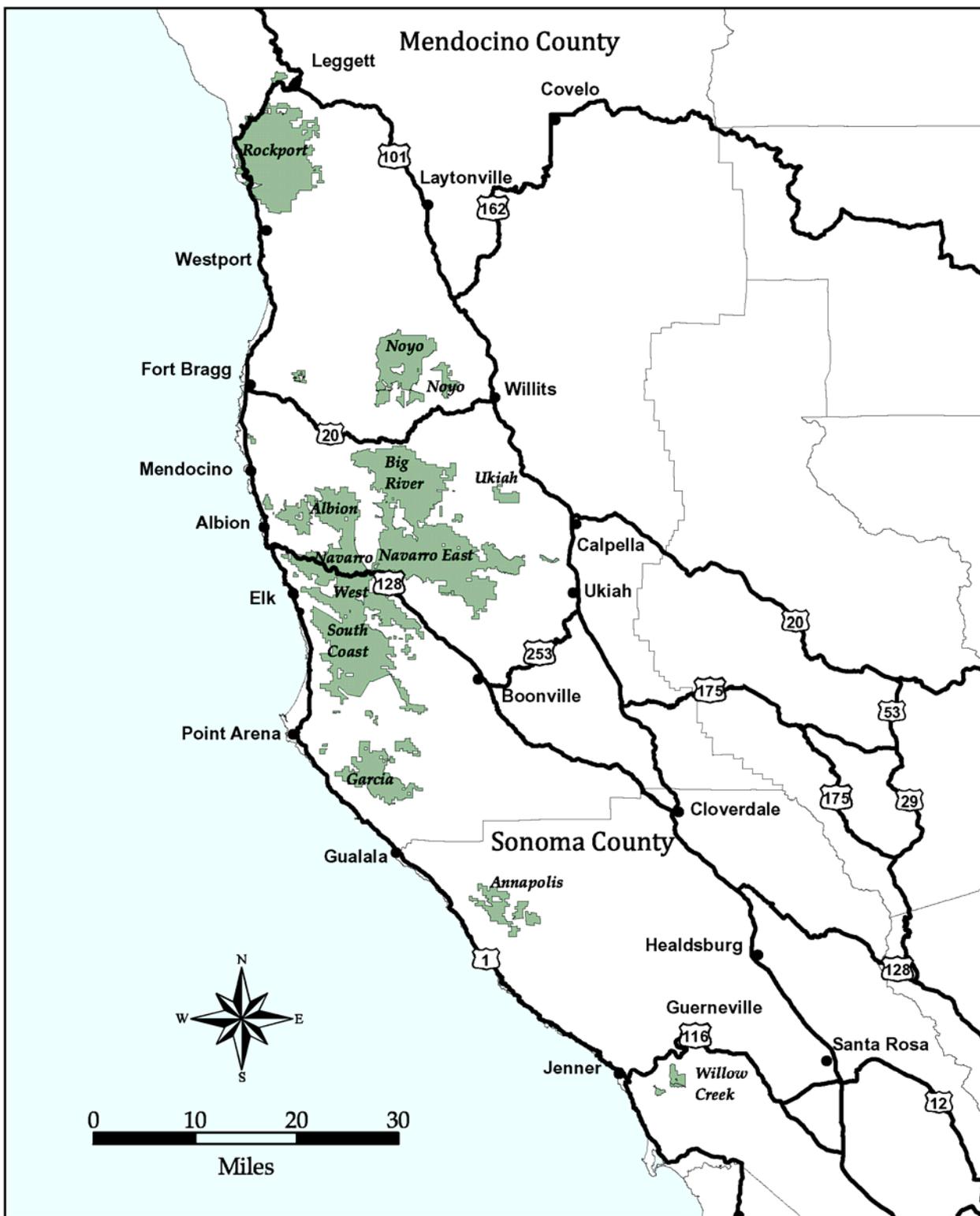


Figure 1: Mendocino Redwood Company forestlands comprising 228,000 acres in Mendocino and Sonoma counties.



I. MENDOCINO REDWOOD COMPANY SPOTTED OWL SURVEY PROTOCOL

1.0 Source and purpose of MRC protocol

MRC developed the following protocol based on the USFWS-endorsed protocol from 1992. Using the latest scientific data on owls and site-specific knowledge, we modified the protocol to better fit our land and harvesting methods. When implemented, the MRC protocol shall:

1. Provide adequate coverage and assessment of an area for the presence of spotted owls.
2. Ensure a high probability of locating resident spotted owls and identifying owl territories that may be affected by a proposed management activity, such as timber harvesting, modification of habitat, or noise disturbance.
3. Identify areas with barred owls and other potential avian predators/competitors.
4. Reduce the likelihood of incidental take.
5. Determine nesting and reproductive success (number of fledged young) of northern spotted owl territories within covered lands.

1.1 Activities requiring surveys

Table 1 indicates all activities that require surveys for spotted owl territories. The subsection immediately following the table clarifies the assessment area for each required survey.

Table 1: Activities Requiring NSO Surveys

Northern Spotted Owl (NSO) Surveys		
Activity	Survey?	Comments
Commercial harvesting operations	Yes	Needs survey unless there is no suitable NSO habitat within 0.7 miles of boundaries, inclusive of the harvesting operation, and no known activity center within ½ mile.
Vegetation management		
<ul style="list-style-type: none"> ▪ Planting ▪ Manual brush removal ▪ Chainsaw work 	<p>No</p> <p>Generally not</p> <p>Generally not</p>	<p>Needs survey only for operations using mechanized equipment; see requirements below.</p> <ul style="list-style-type: none"> • Needs survey only if work will result in reduction of NSO habitat during non-breeding season. • Needs survey during breeding season only if conducted within 0.5 mile of a known activity center and off a mainline road. • No requirement for a survey if simply using a chainsaw to clear roads for access.



Northern Spotted Owl (NSO) Surveys

Activity	Survey?	Comments
<ul style="list-style-type: none"> • Heavy equipment 	Generally not	Needs survey only if completed during breeding season within 0.5 miles of known NSO activity centers and off a mainline road.
<ul style="list-style-type: none"> • Prescribed burning 	Generally not	Needs survey only if work will result in reduction of NSO habitat or burning during breeding season.
<ul style="list-style-type: none"> • Slash pile burning 	No	
Roads and landings	Generally	Needs survey unless roads are mainline haul routes and landings are directly on mainline roads.
Rockpits, quarries, surface mining	Yes	Needs survey unless rockpits, quarries, or surface mining occurs on mainline roads
Data collection for monitoring	No	
Emergency fire suppression	No	
Habitat improvement/creation	Yes	

1.1.1 Extent of survey area

- If **disturbance only**¹ is proposed:
 - The survey will extend to 0.5 miles beyond a project boundary for a THP.
 - The survey will extend to 0.25 miles (1320 ft) beyond a potential disturbance for a non-THP project.
- If **habitat reduction** is proposed, the survey area will extend to 0.7 miles beyond the project area.
- If **blasting** is proposed, the survey will extend 1 mile beyond the blast site.

1.2 Accuracy of 1-year and 2-year surveys

In preparing its 1991 protocol for northern spotted owls, USFWS analyzed survey data to determine the number of visits needed to detect territorial owls or to conclude that a lack of owl response reflected an absence of spotted owls. Their data analysis provided the basis for the minimum number of visits that MRC requires for our 2-year survey (i.e., 3 visits per year) and 1-year survey (i.e., 6 visits per year). A **complete survey** covers a survey area to the required number of visits or documents activity centers of all spotted owl territories that account for all spotted owl habitat in the project impact area. Surveys over 2 years provide more confidence that the results reflect presence or absence in the current and subsequent year because owls sometimes occupy territories intermittently. Thus, the USFWS prefers the use of a 2-year survey over the 1-year survey to locate spotted owl sites. MRC staff may actually complete

¹ A “disturbance-only THP” is one that does not propose any reduction in habitat.



such surveys before the end of a 1-year or 2-year survey program if: 1) they obtain a response and confirm the status of the owl(s); and 2) there is a sufficient density of confirmed occupied owl sites to preclude additional owl sites within or around the project impact area.

1.2.1 Recertification surveys

Recertification surveys are surveys that deviate from the timing requirements of visits under the 1-year and 2-year survey protocols, and are usually conducted for areas where 2-year surveys have already been completed or where sufficient owl monitoring has located all active owl territories within 0.5-mile of a project impact area in the previous years. Recertification surveys must consist of a minimum of three surveys in March with a minimum 5-day separation between subsequent surveys. Typically, the USFWS allows recertification surveys for early start-up operations only after 2-year surveys have been completed. However, given that MRC forestlands have a substantial survey history spanning 20 years, the USFWS is supportive of MRC using recertification surveys for areas where only the 1-year survey protocol was followed.

1.2.2 The 2-year survey

If a 2-year survey is completed and no responses are obtained, the results fall under recertification status in subsequent years where a minimum of three surveys in March must be conducted. This also assumes that all active NSO territories within 0.5-mile of a THP are located in the current year of harvest operations.

EXAMPLE OF 2-YEAR SURVEY	
Year 1 (March - July)	3 visits with no response.
Year 2 (March - July)	3 visits with no response. Operations may commence after 3 rd survey if no response.
Year 3	A minimum of three surveys in March with no responses prior to commencing operations.
Year 4	A minimum of three surveys in March with no responses prior to commencing operations.
Year 5	A minimum of three surveys in March with no responses prior to commencing operations.

1.2.3 The 1-Year survey

If a 1-year survey is completed and no responses are obtained, harvest may occur before the start of the next breeding season. If harvest is not completed within this time period, a minimum of 3 surveys must be conducted prior to harvest in Year 2. If this additional survey produces no responses and harvest will not occur until after Year 2, then recertification surveys will be necessary in subsequent years (at least three surveys in March) prior to early start-up operations. This assumes that all active NSO territories within 0.5-mile of a THP are located in the current year of harvest operations.

EXAMPLE OF 1-YEAR SURVEY	
Year 1 (March - July)	6 visits with no responses.

Year 2	Conduct at minimum 3 surveys in March with no responses prior to commencing operations. If no responses obtained, additional surveys are not needed.
Year 3	A minimum of three surveys in March with no responses prior to commencing operations.
Year 4	A minimum of three surveys in March with no responses prior to commencing operations.
Year 5	A minimum of three surveys in March with no responses prior to commencing operations.

1.2.4 Daytime-only surveys

In cases where the project impact area is either saturated with owl territories or proximal to an owl site (precluding establishment of additional owl territories), daytime-only surveys or site visits to historically occupied sites are acceptable in lieu of nocturnal surveys **ONLY** when **all active NSO** territories are verified as occupied in the season in which operations are proposed. Available wildlife agencies (USFWS, DFG) and/or CAL FIRE may provide the criteria for such determinations.

1.2.5 Locating nest site or activity center

If a nest site or activity center is located during a survey and the project area is large enough to possibly support more than one site (i.e., there is at least a 0.5 mile radius from the located owl to another site), the remaining potential habitat should be surveyed (Figure 1). Half a mile is a commonly accepted distance for owl territories. Though our minimum inter-territory distance varies from this number, we know, on average, territorial owl activity occurs a half mile or more from other owl territories.

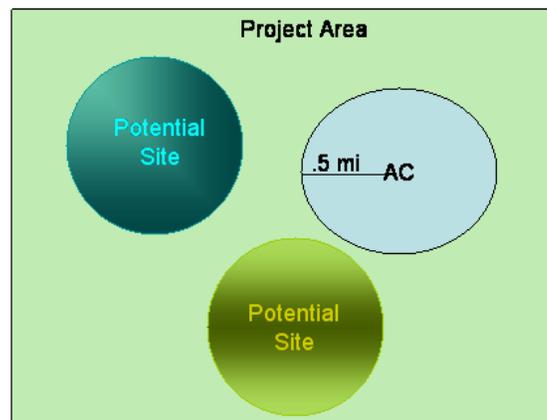


Figure 2 Potential Sites in Project Area

1.3 Area of surveys

MRC will inventory all potential suitable habitat for northern spotted owls in a harvest impact area using current habitat typing. If potentially suitable habitat is located, MRC will conduct surveys. If no potentially suitable habitat is located within the harvest boundary or 0.7 mi. away, no surveys will be required. All areas of suitable habitat within the harvest boundary will be surveyed unless spotted owl territories have been located within 0.5 miles or survey work has adequately covered the area in the current year.

1.3.1 Timing of surveys and operations

MRC will conduct surveys based on the timing of harvest operations. **Ongoing operations** are those in which there is 1 week (i.e. 5 consecutive days) of continuous operations with no breaks prior to February 1st—unless there is a break due to weather or to the requirements of the protection measures.

Ongoing Operations—Option I: Operation may continue from February 1st -March 1st if the following conditions are met:

1. 1-year or 2-year protocol surveys have been completed in the previous year.
2. Operations, other than use of existing roads, are at least a 0.25-mile from a known NSO activity center.

AND

3. Operations are limited to a harvest unit that was started prior to February 1st.

OR

4. All active territories (a) have been located within a 0.5-mile (1 mile if rock-blasting) of the harvest boundary and (b) the operations adhere to breeding disturbance limitations (see Section 2.3.1).

OR

5. Owl territories (a) have been located and either saturate existing habitat or exist in sufficient densities to preclude additional owl sites within 0.5-mile of the harvest boundary and (b) the operations adhere to breeding disturbance limitations (see Section 2.3.1).

Ongoing Operations—Option II: Operations may continue past March 1st if the following conditions are met:

1. 1-year or 2-year protocol surveys have been completed in the previous year.

AND

2. All active territories (a) have been located within a 0.5-mile (1 mile if rock-blasting) of the harvest boundary and (b) the operations adhere to breeding disturbance limitations (see Section 2.3.1).

OR

3. Owl territories (a) have been located and either saturate existing habitat or exist in sufficient densities to preclude additional owl sites within 0.5-mile of the harvest boundary and (b) the operations adhere to breeding disturbance limitations (see Section 2.3.1).



Ongoing Operations—Option III: Felling operations may continue past March 1st if the following conditions are met:

- 1-year or 2-year protocol surveys have been completed in the previous year.
- Felling is limited to completing a harvest unit that was started prior to February 1st and is at least 0.25-miles from a known NSO activity center.

Full Operations—Option I: Full operations can be initiated between March 1st and May 15th if the following conditions are met:

1. 1-year or 2-year protocol surveys have been completed.
2. A minimum of 3 surveys in March have been completed with no NSO detections prior to operation start-up within 0.5 miles of the THP boundary (for projects qualifying for recertification).

AND

3. All active territories (a) have been located within a 0.5-mile (1 mile if rock-blasting) of the harvest boundary and (b) the operations adhere to breeding disturbance limitations (see Section 2.3.1)

OR

4. Owl territories (a) have been located and either saturate existing habitat or exist in sufficient densities to preclude additional owl sites within 0.5-mile of the harvest boundary and (b) the operations adhere to breeding disturbance limitations (see Section 2.3.1).

Full Operations—Option II: Full operations can be initiated between March 1st and May 15th outside of 0.5-mile of any active NSO site if the following conditions are met:

1. 1-year or 2-year protocol surveys have been completed.
2. A minimum of 3 surveys in March have been completed with no NSO detections prior to operation start-up within 0.5 miles of the THP boundary (for projects qualifying for recertification).



Full Operations—Option III: Full operations can be initiated after May 15th if the following conditions are met:

1. 1-year or 2-year protocol surveys have been completed including surveys from the current year.

AND

2. All active territories (a) within a 0.5-mile (1 mile if rock-blasting) of the harvest boundary have been surveyed to protocol and are either located or deemed unoccupied and (b) the operations adhere to disturbance and habitat limitations based on occupancy and reproductive status (see Sections 2.3.1 & 2.3.2).

OR

3. Owl territories (a) have been located and either saturate existing habitat or exist in sufficient densities to preclude additional owl sites within 0.5-mile of the harvest boundary and (b) the operations adhere to breeding disturbance limitations (see Sections 2.3.1 & 2.3.2).

1.4 Protocol for night-calling survey

For survey purposes, northern spotted owl habitat is nesting/roosting or foraging habitat. At a minimum, MRC must survey all nesting/roosting and foraging habitat.

1.4.1 Coordination of information

MRC will avoid common mistakes, such as overlapping visits by more than one survey group, through coordinated planning. When possible, we will also inform adjacent landowners of all surveys near their property. Such surveys could affect their own management and logging operations. Moreover, neighboring landowners may provide information on off-property owls and cooperate in joint surveys.

1.4.2 Survey period

Surveys of proposed management activity areas must take place between March 1st and August 1st, unless proposed operations initiate prior to February 1st. For areas where there is adequate biological information that birds are defending their established territories prior to March 1st, MRC may use earlier dates as a starting time. Positive responses after August 1st are still valid, but negative results after this date do not count as required visits for completing a survey. Positive responses obtained after August 1st also indicate that the area in question should be surveyed the following year.

1.4.3 Establishing the survey area

- Develop transects or calling stations to cover all spotted owl habitat within the delineated survey area, including locations detailed in the Section 1.1.1.
- Establish calling stations and survey routes to achieve complete coverage of the area, preferably from more than 1 calling station. Calling stations should be spaced approximately 0.25 to 0.5 miles apart, depending on topography and background noise levels. Take advantage of prominent points within the survey area when establishing calling stations. If necessary, to ensure complete coverage of the area, supplement the prominent points with intermediate calling

stations. Where known spotted owl activity centers exist within the survey area, survey areas may be adjusted to exclude habitat that would be within earshot of the activity center. However, consider the need to survey the known activity center for current status. The intent is to obtain complete coverage of the area where owls will be able to hear the surveyor and the surveyor will be able to hear the owl.

- Record, for each visit, whether results are positive or negative, and include the following information:
 - County
 - Watershed
 - THP or Inventory Block
 - Survey type (point, cruise, or combination)
 - Surveyor(s) name
 - Survey date
 - Brief description of survey route
 - Survey start and finish time
 - Total time of survey
 - Weather conditions (including estimated precipitation level, wind speed, and percent cloud cover)
 - Survey results, i.e., spotted owl detections, including time of response, sex, and age (if possible); type of response (i.e., audio, visual, or both); azimuth of response; estimated distance of response; behavior or vocalization type; For multiple or moving owls, list information and number each response or observation. This will allow more accurate determinations of management centers.

- Record all sightings of or responses by barred owls, great horned owls, northern goshawks, or any other raptor species. The presence of other raptors may affect spotted owl responses.

- Map the following for each visit:
 - Route surveyed and stations called.

 - Spotted owl response or observation locations. For multiple or moving owls, map all response or observation locations and number to correspond with survey results. Again, this will assist in determining activity centers.

1.4.4 Survey methods

There are four types of acceptable surveys: point calling, cruising or leapfrog calling, daytime calling surveys, and territory monitoring (aka site visits). Point calling is the recommended method for nocturnal surveys, and territory monitoring is the recommended method for daytime surveys at historic site centers or nocturnal detection locations (i.e. daytime follow-up visit).

1. Point calling (nocturnal)

Set up a series of calling stations 0.25 to 0.5 miles apart along the road transects. When possible, pick prominent points which cover large areas. Spend at least 10 minutes at each station. If the topography lends itself to fewer, prominent calling stations, spend more time at each station. Be sure the entire survey area is adequately covered.

2. Cruising or leapfrog surveys (nocturnal)

Walk the designated route calling and pausing at prominent points and at regular intervals throughout the area to conduct informal stations of 10-minute duration. If 2 people are involved, you may use a leapfrog method (Forsman 1983).

3. Daytime calling surveys

Set up a series of calling stations at least 600 feet apart along the road transects. When possible, pick prominent points which cover large areas. Spend at least 20 minutes at each station (see section 1.5).

4. Territory monitoring (site visits)

Walk a route through a historically occupied site during the daytime calling at regular intervals and pausing to search the area for sign of spotted owls (i.e. feathers, whitewash, nest structures, roosting birds, etc.). Once birds are located, note location of birds with GPS unit and assess occupancy status and reproductive status (see sections 1.6 and 1.7). Spend no less than 90 minutes searching a historically occupied site if unable to detect a spotted owl.

1.4.5 Survey instructions

The following instructions apply to either of the methods described above:

- Elicit responses from northern spotted owls with voice calling or the use of a recommended digital wildlife caller. When arriving at a station, the surveyor will record the time and begin voice calling. The surveyor may use a digitally recorded call to elicit a response. Continue this process for at least 10 minutes at each calling station.
- Characterize behavioral observations. Make note of agitated calls, continuous responses, movement (toward you or away from you), or situations where there is only one owl response followed by quiet. Recording this type of information may assist with the identification of activity centers.
- Conduct night surveys between sunset and sunrise. Be sure not to call the same section of a survey route at the same time on each survey effort if possible (i.e., vary the time you start and the section of the route from which you start).
- Do not survey under inclement weather conditions, such as high winds (> 10 mph), heavy rain, heavy fog, or high noise levels (e.g., stream noise, machinery, etc.) which would prevent you from hearing responses. If weather conditions or noise levels are in doubt, be conservative. Survey visits conducted under

marginal conditions will reduce the quality of the overall survey effort. Negative results collected under inclement weather conditions may not be adequate for evaluating spotted owl presence or absence. When using an alternate survey point because of stream noise, note this on the survey sheet and re-locate the point in approximately the same survey area. Stream noise is generally a problem during surveys early in the breeding season from March through April.

- Resort to more than one visit, if necessary, to complete a survey. The objective of a complete visit is to conduct a thorough survey of the entire area in one field outing; however, in some cases this may not be possible. A complete visit may be a combination of a day and a night field outing and, in addition, may include a daytime follow-up visit. If reasonable effort was made to cover the area in one outing, but this was not accomplished, then the remaining area should be surveyed in the following field effort. To reduce the chance of owls moving between portions of the survey area and, as a result, being missed, complete the visit on consecutive days as much as possible. The entire area should be covered within 7 days in order to be considered as one complete visit.
- Divide a large project area that cannot be surveyed in 7 days into smaller areas based on available habitat, topography, drainages, and other important factors. Survey areas need to be small enough to be completely surveyed within the specified time period.
- Count as 1 complete visit a night outing and daytime follow-up. If a surveyor goes out at night and does not get a response, a daytime follow-up would not be necessary. In this case, the night outing alone would be considered 1 complete visit. Whether or not owls are heard, the entire area needs to be surveyed to count as a complete visit.
- Space visits at least 5 days apart. For example, assume a visit ends on the 3rd of May. Using a proper 5-day spacing (May 4-8), the next possible visit date would be May 9th.
- Conduct at least 2 of the night visits per year before June 30th for a 2-year survey and at least 4 of the night visits before June 30th for a 1-year survey. One survey must occur after May 15th and before June 30th for a 2-year survey, and two surveys must occur during this same time period for a 1-year survey. Also, survey effort should be spread out over 5 months to avoid efforts concentrated in a short period of time, particularly at the beginning of the survey season. Exceptions to this survey standard apply to recertification surveys where either the 1-year or 2-year survey protocol has been previously met.
- Adjust the survey period when there are season restrictions due to snow, landslides, mud, and bridge failures, etc., and provide documentation to explain the modifications.

- Conduct surveys during the day when there are no roads or foot trails to traverse at night or when there are other safety concerns. Provide documentation on the specific safety concerns.

1.5 Protocol for daytime calling surveys

Permit daytime calling in areas that are not accessible with nocturnal surveys in order to reduce the chance of worker injury while hiking at night. Follow the point method, if possible, when using daytime surveys. Space call points no further than 600 ft apart, if using daytime surveys when calling from discrete points; owls do not respond from long distances during the day as they do at night. Surveyors must conduct all daytime calling for at least 20 minutes at individual survey points. An alternative survey strategy may increase inter-station distance up to a 0.25-mile when conducting a cruise survey between points, but surveyors must spend at least 20 minutes surveying each station.

1.5.1 Owls located during surveys

- Estimate the owl's original and final location. One method is to triangulate on the owl's call, taking compass bearings from 2-3 locations. Make sure compass bearings are taken in as short a time-frame as possible. Record on the survey form the method used to estimate the location.
- Record the location(s) of the owl, preferably on a map or photo attached to the survey form.
- Attempt to confirm the owl(s) location with a daytime follow-up. The intent of triangulation and mapping is to provide a means for verification of the location. Daytime locations are very important in determining more precise activity centers.
- Record a bird response. If no response is heard, proceed to the next calling station. Continue until the survey area is completely covered.
- Return to the same area during the day if a bird responds at night; return within 72 hours to verify status. If weather precludes a return visit, document this.
- Conduct an intensive search during a daytime follow-up to locate spotted owls (pairs or singles) within the general vicinity of the night response. Surveys may begin from roads closest to the night response area. However, if owls do not respond to road surveys, surveyors should conduct walking routes through the area. Surveyors should spend sufficient time within the stand to cover the area well. This may take several hours, depending on the terrain. Observers should watch for owls flying in without responding and for other evidence of occupancy, such as pellets, whitewash, and feathers. Pellets, whitewash, or feathers alone are not sufficient to document spotted owl presence or residency. Mobbing jays are also a potential indicator of owl presence. The follow-up should be completed within 72 hours after presence was detected, as owls are more apt to be located

near the previous night's location. A daytime follow-up is only the second part of a complete visit.

- Determine status if a response occurs during daylight hours and there is sufficient time to do so. Use conservative judgment and hoot only as much as needed to determine status. Do not hoot any more than is necessary. By stimulating the owls to move around, you increase their risk of predation. Excessive calling near a nest site may cause harassment by bringing the female off the nest. Excessive use of the agitated call in high owl density areas (e.g., California coastal areas) may also confound survey results by eliciting responses from owls representing multiple territories.
- Complete the survey route to determine pair status once a bird responds at night. To avoid *leading* a spotted owl through calling, go to the other end of the survey route and complete the rest of the survey once an owl responds. If that is not practical, survey only the remaining stations that are beyond the earshot of the responding bird. Beyond earshot is generally over a ridge or at least a 1/2 to 3/4 mile straight-line distance from the owl. Completing the route will provide an opportunity to detect any other owls.
- Continue to call for the duration of the station visit even after other species respond unless the surveyor believes that this will increase the potential for predation, for example, by great horned owls or northern goshawks.

1.5.2 Additional visits

Additional visits may be required if resident status cannot be determined during surveys. These visits should be in the general area of the response (i.e., a 0.5-mile radius around the site). If resident status is determined at any point during the additional visits, no more visits to that particular site are required for the year. The same standards (timing, intervals, weather condition limitations, etc.) apply to additional visits.

In a 2-year survey, MRC will conduct additional visits the same year as the response:

- If the last response occurs on the 1st visit, MRC will conduct 1 additional visit.
- If the last response occurs on the 2nd visit, MRC will conduct 2 additional visits.
- If the last response occurs on the 3rd visit, MRC will conduct 3 additional visits

In a 1-year survey, MRC will conduct additional visits the same year as the response:

- If the last response occurs on the 4th visit, MRC will conduct 1 additional visit.
- If the last response occurs on the 5th visit, MRC will conduct 2 additional visits.
- If the last response occurs on the 6th visit, MRC will conduct 3 additional visits.

If MRC cannot obtain 3 responses even after additional visits, we will not classify the owl as a resident single.

1.6 Protocol for assigning occupancy status

MRC will establish **pair status** if:

1. A male and female are heard or observed (either initially or through their movement) in proximity (< 0.25 mile apart) to each other on the same visit.
2. The male takes a mouse to the female.
3. The female is observed on a nest.
4. One or both adults are observed with young. Young alone do not define a pair because young barred owls look like young spotted owls until late in the summer.

When unidentified calls are heard in the vicinity of a known spotted owl, the surveyor should not assume species identification of the unknown owl. Daytime follow-ups should be used to clarify these situations.

MRC will establish **resident single status** if:

1. There is presence or response of a single owl within the same general area on 3 or more occasions within a breeding season, with no response by an owl of the opposite sex after a complete survey.
2. There are multiple responses over several years (e.g., 2 responses in Year-1 and 1 response in Year-2, from the same general area).

A resident single may represent a succession of single owls within the same general area in single or multiple years. Determining if the responses occur within the same general area should be based on topography and the location of any other owls known for the surrounding area. This should be determined by the wildlife biologist for the particular area. Radio-telemetry and banding data can also be used to aid in determining status of singles.

MRC will establish **status unknown** if there is a response of a male and/or female which does not meet any of the above category definitions.

MRC will establish **unoccupied status** if there are no detections of a spotted owl at a historically occupied site after a minimum three surveys during the breeding season following the timing requirements of a 2-year survey protocol. Night surveys and daytime site visits may be used exclusively or in combination to count towards unoccupied status.

1.7 Protocol for determining reproductive status

Determining reproductive success is not required to avoid "take," if breeding season restrictions are applied to all harvest activity in order to protect owl reproduction during any given year. Restrictions may be dropped if, according to the protocol, surveys reveal that owls are non-nesting or that no young were produced.

Following is MRC protocol for determining reproductive status of spotted owls. Reproduction surveys may provide information on nest tree locations and the most accurate activity center locations. There are 2 stages of reproduction surveys: nesting status and reproductive success.

Nesting Status

- Conduct nesting status surveys between March 11th and July 31st. The start date is based on nest initiation dates. Young identified in July should still confirm nesting.
- Spread the surveys throughout the survey period. Do not conduct all nesting status surveys early in the breeding season.
- Use a standard *mousing* procedure as described below to determine nesting status. However, do not *mouse* birds any more than is necessary to determine nesting status. By stimulating them to move around during the day, you may increase their risk of predation. This applies to hooting as well. Excessive calling near a nest site may cause harassment and endanger eggs or young by bringing the female off the nest.

Mousing

- Locate one or both members of a pair during the day and offer mice or other small prey items.
- Record the *fate* of each prey item (e.g., eaten, cached, or given to female or young) once an owl takes prey or is found with natural prey. The fate of the prey is used to classify nesting status.
- A minimum of four prey items shall be available for determining nesting status, with the exception of a refusal of 2 prey items on a single occasion (see section under *Non-nesting* below).
- Continue to offer additional prey items, if the owl eats the prey, until the owl caches the prey, sits on it for an extended period of time (60 minutes), refuses to take additional prey, or carries the prey away. If the bird flies with the prey, follow and try to determine the final fate of the prey. For more details on mousing procedures, see Forsman (1983).
- Make a concerted effort to get the owl(s) to take mice. Be creative in placing a mouse where the owl can easily see and capture it; offer mice to the mate of an owl.

1.7.1 Classifying sites

MRC will classify a site as nesting, non-nesting, or unknown nesting status based on field observations.

1.7.2 Nesting

MRC will classify owls as nesting if any of the following conditions are observed:

- Two observations, at least 7 days apart, if the first observation occurs before May 15th.

NOTE

This is necessary because owls may show signs of initiating nesting early in the season. A surveyor may consider them nesting when, in fact, they are not nesting. For instance, a female observed on a nest early in the season may simply be roosting and not incubating eggs.

- One observation, if after May 15th.

Nesting is confirmed if, on 2 visits before May 15th or 1 visit after May 15th, any of the following observations are made:

- The female is observed on a nest.
- Either member of a pair carries natural or observer-provided prey to the nest.
- A female possesses a brood patch when examined in hand during mid-April to mid-June. Only 1 observation is required. Dates may vary with the particular areas. Be careful not to confuse the normal small area of bare skin (apteria) on the abdomen with the much larger brood patch. A fully developed brood patch covers most of the lower abdomen, extending to the base of the wings. Describe the brood patch on the field form, including length, width, color, and texture of the skin, and any evidence of regenerating feathers around the edge. While a scientific research permit is not required by USFWS for calling spotted owls, any capture or handling of spotted owls does require such a permit.
- One or both adults are observed with young. Because young barred owls look like young spotted owls until late in the summer, young alone are not sufficient.

1.7.3 Non-nesting

Non-nesting can be inferred for a NSO territory if, on two visits between March 11th and May 15th, and with at least 3 weeks separating visits, any of the following observations are made:

- The female is observed roosting for 60 minutes, particularly early in the season. Be aware that nesting females with large nestlings often roost outside the nest during warm weather. If in doubt be sure to schedule 1 or more visits in mid-June to check for fledglings.
- The female does not possess a brood patch when examined in hand between mid-April and mid-June.
- Prey are offered to one or both adults and they cache the prey, sit with the prey for an extended period of time (60 minutes), or refuse to take additional prey beyond the minimum of 2 prey items.
- One or both spotted owls refuse to take prey for 60 minutes. **This can only count for one of the two required visits to infer non-nesting**; the other visit must use the procedure outlined above to infer non-nesting status.

Non-nesting can be inferred for a NSO territory if, on two visits between May 15th and August 1st, with at least 7 days separating the visits, any of the following observations are made:

- A pair is located on at least 2 visits.
- Prey are offered to one or both adults and they cache the prey, sit with the prey for an extended period of time (60 minutes), or refuse to take additional prey beyond the minimum of 2 prey items.

OR

- One or both spotted owls refuse to take prey for 60 minutes. **This can only count for one of the two required visits** to infer non-nesting; the other visit must use the procedure outlined above (see March 11th-May 15th) to infer non-nesting status.

1.7.4 Unknown nesting status

Nesting status is unknown if any of the following apply:

- None of the conditions are met for nesting or non-nesting above

1.8 Reproductive success

Once an owl pair is classified as nesting, MRC will conduct reproductive success surveys when the young leave the nest (fledge)—although surveys are more successful in late May to late June. Surveyors may also assess reproductive success through the month of July and even later with positive results. The following process will be used to assess reproductive success:

- Schedule at least 2 visits to a site to locate and count fledged young if 1 or 0 fledglings have been located; time the visits so that the fledged young are observed as soon as possible after they leave the nest to reduce predation.
- Attempt to locate fledged young. Use visual searches and mousing. If young are present, the adults should take at least some of the prey to the young. The sight of an adult with prey will usually stimulate the young to beg, revealing their number and location.
- Record 0 young if the birds take at least 2 prey items and eventually cache, sit with, or refuse further prey without ever taking prey to fledged young—on at least 2 occasions separated by at least 1 week.
- Count the number of fledged young seen or heard on the first successful reproductive visit. If 2 or 3 fledged young are identified, the reproductive status is complete.
- Conduct a minimum of 1 follow-up visit if only 1 fledged young is seen; the visit should be 3-10 days after the fledged young is seen in case some owlets are missed on a single visit.
- Classify the production of young as unknown, if there is no response after at least 2 visits, separated by at least 1 week during the fledging period.

- Classify the number of young as 1+, 2+, etc., if you count young on 1 visit but do not get back for a second visit, or find no owls on the second visit.

Opportunistic mousing late in the season (July 31st) may be useful for providing supplemental information about site productivity. However, mousing efforts late in the season must be considered inconclusive if they fail to provide positive information, because dispersal or mortality may have occurred.

1.9 Protocol for determining activity center

Figure 3 illustrates the decision process that MRC uses every year to select an activity center for each spotted owl territory. In reviewing the decision process, a few points should be noted: (1) MRC may locate an owl pair from auditory input; (2) MRC will use the most-used roost site (based on observations, presence of whitewash, and presence of pellets) in the event of multiple roost sites; and (3) MRC may consult with USFWS and CDFG and/or CAL FIRE to designate an alternate activity center, if the decision flow does not result in the most biologically suitable location.

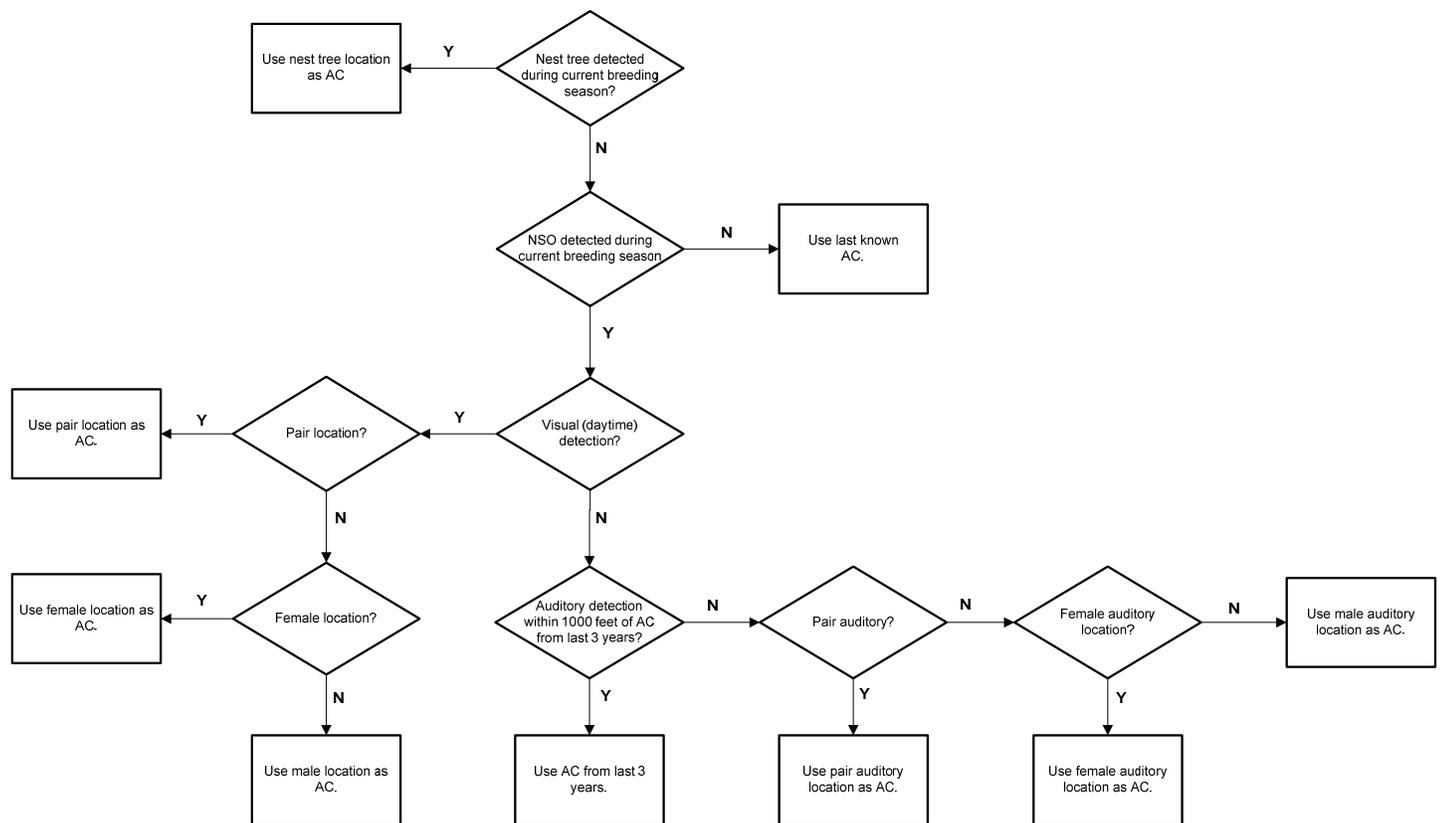


Figure 3: Selecting an Activity Center

II. MENDOCINO REDWOOD COMPANY NORTHERN SPOTTED OWL PROTECTION MEASURES

2. Northern spotted owl habitat definitions

The following guidelines are intended to protect and avoid take of the northern spotted owl. These guidelines prescribe measures that exceed, or are in addition to, the requirements of the FPR and MRC's Option A Report. For purposes of these guidelines, forest structure classes will be categorized as "Foraging" habitat or "Nesting/Roosting" habitat for northern spotted owl, or as "Non-suitable" habitat, as follows:

Structure Class	Tree Type	Dominant Size Class	Min. Canopy	NSO Habitat Type
0	Non-forested	0	0	Non-suitable
1	Mixed Hardwoods	<8"	<40%	Non-suitable
2	Mixed Hardwoods	>16"	<40%	Non-suitable
3	Mixed Hardwoods	8"-16"	>40%	Non-suitable
4	Mixed Hardwoods	>16"	>40%	Foraging
5	Mixed Hardwoods	8"-16"	>60%	Non-suitable
6	Mixed Hardwoods	>16"	>60%	Foraging
7	Mixed Conifer/Hardwoods	8"-16"	<40%	Non-suitable
8	Mixed Conifer/Hardwoods	16-24"	<40%	Non-suitable
9	Mixed Conifer/Hardwoods	8"-16"	>40%	Non-suitable
10	Mixed Conifer/Hardwoods	>16"	>40%	Foraging
11	Mixed Conifer/Hardwoods	<8"	>60%	Non-suitable
12	Mixed Conifer/Hardwoods	16-24"	>60%	Foraging
13	Conifer	8"-16"	<40%	Non-suitable
14	Conifer	16-24"	<40%	Non-suitable
15	Conifer	24-32"	<40%	Non-suitable
16	Conifer	>32"	<40%	Non-suitable
17	Conifer	8"-16"	>40%	Foraging
18	Conifer	16-24"	>40%	Foraging
19	Conifer	24-32"	>40%	Foraging
20	Conifer	>32"	>40%	Foraging
21	Conifer	8"-16"	>60%	Foraging
22	Conifer	16-24"	>60%	Nesting/Roosting
23	Conifer	24-32"	>60%	Nesting/Roosting
24	Conifer	>32"	>60%	Nesting/Roosting

2.1 Take avoidance guidelines.

MRC will continue to follow the procedure prescribed in section 919.9 of the FPR, including providing information to enable CAL FIRE to make no-take determinations and, when applicable, obtaining technical assistance directly from the USFWS or through CAL FIRE prior to implementation of any THP until the NCCP/HCP is finalized and even after the NCCP/HCP is

formalized for lands not included in the NCCP/HCP. MRC will include the information below for each THP. MRC acknowledges that the USFWS' provision of technical assistance is subject to the availability of appropriated funds and available staffing.

The technical assistance reflected in this section will apply for so long as the USFWS continues to provide technical assistance to CAL FIRE or MRC. If the USFWS stops providing technical assistance, MRC may elect to stop using these technical assistance guidelines but would remain obligated to comply with the Endangered Species Act and its prohibition against the take of listed species, such as the northern spotted owl.

2.1.1 Activity center map and other information

In each THP, MRC will include one copy of a map of known northern spotted owl activity centers² in or near (within 0.7 miles) the THP ("Activity Center Map"). The Activity Center Map will include, at a minimum, all activity centers identified in the previous three years. The Activity Center Map will also include activity centers identified prior to the previous three years, unless the activity center is inactive. "Inactive" means that 1) there are 3 years of negative results to surveys (for a mapped 72-acre core area and assuming no interference competition from barred owls) as described in 2.1.2 below, or 2) based on site-specific conditions identified by MRC, the USFWS concurs that an identified activity center is inactive or otherwise does not warrant designation as an activity center. The Activity Center Map will identify any portion of the THP that is within 0.7 miles of a northern spotted owl activity center. If no portion of the THP is within 0.7 miles of an activity center, the THP will include a statement to that effect, explain the basis for the conclusion that the THP is not within 0.7 miles of an activity center, and describe any surveys or other actions taken to determine that no activity center is present. For the THP area and areas within 0.7 of each activity center, MRC will also provide one copy of each item below in the THP.

- A. Pre- and post-harvest habitat maps for the THP.
- B. Description of silvicultural acreage for the THP.
- C. Pre- and post-harvest northern spotted owl habitat acreages by silviculture and harvest unit, including an estimate of the post-harvest basal area minimums. A pre-harvest basal area assessment must also be provided where timber harvest will occur in Nesting/Roosting habitat that is ~ 500' from the Activity Center or contiguous with the 72-acre core area (see 2.4, below).

² "Northern spotted owl activity center" means a geographical point derived from owl survey data that is used to depict the location of an important functional area of an owl territory for the year of the survey and to locate the application of protection measures. An activity center is identified during the daytime by locating within a northern spotted owl's territory the point or center of the area that for that year is most important biologically to the owl. The factors used to map the activity centers are, in order of importance, the location of: nest sites, non-nesting pairs, single females, single unknowns, and single males. While it is best to locate activity centers during the daytime, it is acceptable to identify an activity center at night if: 1) a pair of northern spotted owls is detected at night (i.e. two birds of the opposite sex \leq 0.25 miles of each other); 2) an individual owl is detected at night on three separate surveys within a breeding season and the detections are within 0.25-miles of each other; and 3) an individual owl is detected at night in the same area over successive years.

- D. Map with the last three consecutive years of northern spotted owl activity centers (all locations within the last three years or the most recent location for old sites not abandoned) within 0.7 miles of the THP boundary. This map must also include the location of the biologically most significant location ("BMSL") from DFG's California Natural Diversity Database ("NDDDB") Spotted Owl Viewer and a discussion if it is different from MRC's location of the activity center.
- E. For all activity centers within 0.7 miles of the THP area (including territories with disjunct activity centers that are separated by ≥ 1000 feet), a map depicting northern spotted owl habitat distribution at 1000 feet, 0.5-mile, and 0.7-mile scales and a table that quantifies the habitat distribution.
- F. Map of all appurtenant roads associated with the THP, identifying existing mainline and seasonal roads.
- G. Map identifying any proposed new road construction.
- H. DFG NDDDB Spotted Owl Viewer reports 1, 2, and 3 for area extending 0.7 miles beyond THP boundary.
- I. Color aerial photo coverage of the 0.7 mile area surrounding all activity center(s) associated with THP, including additional color maps with polygons representing stands of differing structure classes and northern spotted owl habitat overlay (i.e., a transparency) using the best available aerial photographs. Any apparent discrepancies between the habitat layer and the aerial photo should be explained. For example, if the aerial photo appears to depict a forest structure class that is categorized in the table above as "Foraging" habitat, and it is identified as non-suitable habitat in the habitat layer, an explanation must be provided.
- J. Maps of all timber operations within 0.7 miles of known activity centers that have occurred since the date the aerial photo or equivalent imagery.
- K. Maps showing all approved THPs within 0.7 miles of known activity centers.
- L. The best available northern spotted owl survey data, which must include: 1) a map of the survey route; 2) a table or spreadsheet that summarizes surveys conducted in the area, including the start and end times of each survey; 3) results of follow-up visits wherever northern spotted owls have been detected; and a map of detection locations for northern spotted owls and barred owls.
- M. Because many of the functional habitat designations in the above described analyses are derived from secondary information, a certification from the RPF that he/she has verified NSO functional habitat assignments within the THP and the adjacent 500 feet.

2.1.2. Surveys results

Using the USFWS Arcata Field Office's modified version (8-14-2009TA-3640) of the USFWS endorsed NSO survey protocol (revised March 17, 1992); MRC will conduct northern spotted owl surveys throughout the THP area and all areas within 0.7 miles of the THP. MRC will provide the results of these surveys and survey station layout to CALFIRE in THPs and, if available, in TA requests to the USFWS. MRC may propose an alternative survey regime to CALFIRE and to the USFWS, identifying an appropriate number and location of survey stations. USFWS may review any alternatives and, approve it as proposed, or approve it subject to specific, appropriate modifications needed to achieve equivalent efficiency for detecting northern spotted owls. MRC will conduct the survey and provide the survey results to CALFIRE and, if available to review them, the USFWS. USFWS may review the survey results and inform MRC if a field assessment of the proposed THP area is warranted. If the USFWS issues new NSO survey protocols, MRC, the USFWS and DFG will confer to decide how best to update MRC's survey protocols based on the new USFWS protocols.

2.1.3. Field assessment

If USFWS informs MRC a field assessment is necessary for any reason, USFWS may conduct a field assessment with MRC personnel prior to issuance of a letter of TA.

2.1.4. THPs receiving USFWS technical assistance

Following receipt of the above information and the proposed protection measures for any THP, the USFWS may identify any measures in addition to the NSO Protection Measures below that are necessary to avoid take. The USFWS will include an explanation of its conclusion that implementation of the THP without the additional measure(s) is likely to cause take of a northern spotted owl. The RPF responsible for the THP will include the necessary take avoidance measures, if any, as an enforceable amendment to the THP before timber harvest is initiated.

2.2. Northern spotted owl protection measures

All THPs that occur within 0.7 miles of an activity center identified on the Activity Center Map (see section 2.1.1) or in the surveys described in Section 2.1.2 will include all applicable Protection Measures described in Sections 2.3 to 2.6, unless alternatives are proposed by MRC and accepted by the USFWS. For all activity centers, MRC will include the habitat protection measures in Sections 2.4 to 2.6, below. For *occupied* activity centers, MRC will also implement the disturbance prevention measures in section 2.3, below.

2.3. Disturbance prevention measures

MRC will include the disturbance prevention measures in this Section in all THPs that are within 0.7 miles of any *occupied* activity centers. MRC will stratify northern spotted owl disturbance prevention measures based on the categorization of habitat, breeding season, and non-breeding season. For purposes of these measures, the breeding season for northern spotted owls is February 1-July 31st. The end-date of July 31st will be used unless additional site-specific biological data show that northern spotted owls are absent, are not nesting, have failed to nest successfully, or have fledged young capable of flight, in which case the breeding season for purposes of that THP area will be shortened accordingly.

2.3.1. Breeding season (February 1st-July 31st).

Each THP will include the following measures for occupied activity centers during the northern spotted owl breeding season:

- Only the following operations will be allowed within 1000 feet (305m) of the occupied activity center:
 - Use of mainline haul roads and maintenance of mainline haul roads as designated by maps in the THP. For purposes of this section, "maintenance" does not include the changing the prism of the road or other actions that are considered reconstruction of roads under the California Forest Practice Rules.
 - Use of public roads.
 - Use and maintenance of existing non-mainline haul roads that (1) are located at least the same distance from the current spotted owl activity center as a public road or mainline haul road; or (2) are existing seasonal roads \geq 500 feet from the activity center and in use throughout the time the spotted owl territory has been active.
 - Use of pickups and ATVs on existing roads.
- Helicopter operations, including service landings, will be prohibited within 2640 feet (805m) of the occupied activity center.
- Falling and yarding within 1000 feet of an activity center may be allowed *only if* the activity center is determined after May 15th to be inactive because owls are absent, non-nesting, or had a nest failure. Falling and yarding shall not occur within a northern spotted owl core area that has fledged young until there is evidence that the fledges have been out of the nest for at least two weeks and are capable of sustained flight.
- Stopping logging vehicles outside of mainline haul roads will be allowed within 1000 feet of an active nest site for safety reasons only.
- Any trees allowed to be felled within a core area for road maintenance will be retained for woody debris.
- Non-habitat disturbing activities, such as road reconstructions and maintenance, and other types of road use, may be allowed after July 9th.
- Stumps at least 425' from an activity center may be used to guy a yarder for yarding ground outside the core area.

2.3.2. Non -breeding season (August 1st-January 31st)

Each THP will include the following measures for occupied activity centers outside of the northern spotted owl breeding season:

- Operations, including use and maintenance of all existing roads and rock pits, may be allowed.

- Only the following operations may be allowed within the nest core area (i.e., within a 500' radius of the occupied activity center):
 - Use of cable corridors and tailholds, provided.
 - Only trees less than 6 inch dbh may be felled for the cable corridor.
 - All trees felled for the cable corridor will be left on the forest floor for woody debris.
 - Exclude nest or screen trees from felling.
 - Use and maintenance of existing roads.
- Helicopter operations—including service landings—that are at least 1000 feet from an activity center may be allowed.

2.4. Activity center protection

All THPs will include a buffer zone around each northern spotted owl activity center—the "core area." A northern spotted owl *core area* is a 72-acre area surrounding an activity center, which includes the 18-acre "nest core" area within a fixed 500' radius of the center and the 54-acre "roost protection zone" outside the 500' radius. A core area will ordinarily have a circular radius of 1000 feet from the activity center. However, MRC may deviate from a circular core area by adjusting the boundaries to 1) include Nesting/Roosting habitat instead of Foraging habitat, 2) include contiguous habitat instead of isolated habitat, 3) exclude habitat cut off from the activity center by a topographic divide, such as a ridge, or 4) conform to local landscape attributes such as draws and streamcourses. Core areas must include a minimum of 72 acres and must maximize the amount of retained Nesting/Roosting habitat. All THPs will include the following measures for northern spotted owl core areas.

- MRC shall mark with a "wildlife tree" tag, any tree confirmed to have a northern spotted owl nest in it to enable its retention. No tree or snag previously identified as containing a northern spotted owl nest structure will be felled regardless of the occupancy status of the activity center. Historic spotted owl nest trees in areas unoccupied or abandoned by owls will be provided with screen trees for additional protection.
- Harvest will be prohibited within the nest core area.
- Functional Nesting/Roosting habitat will be retained within the roost protection zone.
- MRC will only be required to protect that portion of a core area that is on its property.
- 72-acres of Nesting/Roosting will be retained in the core area, if possible. If a core area contains less than 72 acres of Nesting/Roosting habitat, the roost protection zone will be modified to maximize the amount of Nesting/Roosting habitat that is contiguous with and outside the nest core (500 foot radius) while conforming to local landscape attributes. If a core area cannot be redrawn to retain 72 contiguous acres of Nesting/Roosting habitat, all Nesting/Roosting habitat within 1000' of the activity center will be retained, and no harvest will be allowed within the 1000' area. If the core area contains at least 72 acres of

Nesting/Roosting, then harvest may be permitted in the roost protection zone (outside of 500' nest core) as long as:

- At least 2/3 of the pre-harvest basal area is retained, comprising at least 100 square feet of basal area with 60% canopy cover and an average stand diameter of at least 16" inches per acre.
- If the above objective cannot be met, then no harvest in the roost protection zone will be allowed.
- All suitable habitat (Nesting/Roosting and Foraging) subject to harvest that is within the roost protection zone (i.e., 500-1000 feet or topographical area around nest core) will be harvested in a way that retains its pre-harvest functional definition. Immediately post-harvest, these areas will maintain or increase pre-harvest mean stand diameter.

2.5. Habitat retention within 0.7 miles of activity centers

All THPs will include the following measures to retain habitat within 0.7 miles of activity centers.

- At least 500 acres of suitable habitat (Nesting/Roosting and Foraging) will be retained within 0.7 miles of the activity center. If there is less than 500 acres of suitable habitat within 0.7 miles of the activity center, all suitable habitat will be retained. Or no operations within any suitable habitat.
- At least 200 of the 500 acres of suitable habitat will be maintained as Nesting/Roosting.
- At least 100 acres of Nesting/Roosting habitat within 0.7 miles of an activity center will be retained. If a northern spotted owl territory contains ≤ 100 acres of Nesting/Roosting habitat within 0.7 miles of an activity center, then no harvest shall occur in those acres of Nesting/Roosting habitat.
- Harvest may occur in Nesting/Roosting habitat that is between 100 and 200 acres within 0.7 miles of an activity center, provided the Nesting/Roosting habitat is not contiguous with the core area and is maintained with at least a 60% canopy cover of at least 16" dbh trees.
- For northern spotted owl territories³ containing ≤ 200 acres of Nesting/Roosting habitat within 0.7 miles of an activity center, timber harvest in Nesting/Roosting habitat harvest is permitted only if:
 - contiguous Nesting/Roosting habitat within and extending beyond the core area is retained so that at least 2/3 of the pre-harvest basal area in the NR stand to be harvested is maintained post-harvest, comprising at least 100 square feet of basal area with 60% canopy cover and an average stand diameter of at least 16" inches per acre; and

³A "northern spotted owl territory" is a spatial area that is defended by a single resident or pair of northern spotted owls. Specific northern spotted owl territories refer to generally fixed geographic areas. As a working definition, a territory is that area within 0.7 miles of the AC.

- Nesting/Roosting habitat not contiguous with the core area is maintained with at least a 60% canopy cover of at least 16" dbh trees.
- Before harvesting timber within Nesting/Roosting habitat that is within 0.7 miles of an activity center, where the Nesting/Roosting habitat either comprises < 200 acres or the harvest would reduce the Nesting/Roosting habitat to < 200 acres, MRC staff trained in habitat typing will conduct a field review to confirm the actual acreage of suitable Nesting/Roosting habitat.
- Operations will be limited to $\leq 50\%$ of available suitable habitat within 0.7 miles of a northern spotted owl territory in anyone year.

2.6. Relocation of activity centers and emergence of new northern spotted owl territories

Northern spotted owl activity centers may move over time, or new territories may become established within the area of a THP or within the biological assessment area of the THP after a THP is approved, but before operations under the THP are begun. To ensure take of northern spotted owls is avoided in these circumstances, MRC will update and include in the THP the information required in Section 2.1.1 with regard to any new or relocated activity centers, and will include all applicable measures required in Sections 2.2 to 2.5.