Mexican Spotted Owl Survey Protocol 2012

Introduction

- The Protocol is designed for detecting MSO's and for surveying areas where human activities may remove or modify Mexican spotted owl habitat or otherwise adversely affect the species.
- Circumstances may dictate that owl surveys be conducted differently on a case by case basis.
  - contact your state's USFWS Ecological Services Field Office before proceeding.

Introduction

- The Primary objective of surveys using this protocol is to locate and observe the nest of MSO or young
- This protocol provides owl surveyors with a method to:
- (1) make inferences regarding the presence or absence of owls in a defined area
- (2) assess occupancy and nesting status, and locate nests, in areas where habitat alterations or disturbances to owls are likely to occur
- (3) provide information to allow designation of PACs.

Introduction

- **Individuals surveying for owls should meet training standards…**
  - **Knowledge of this protocol**
  - **Ability to identify owls visually and vocally**
  - **Determine sex and age of owls**
  - **Imitate vocal calls of the owls or use a tape recording**
  - **Identify other raptor species**
  - **Orienteering skills, including use of map and compass, are essential.**
  - **Surveyor safety should be of primary importance.**
  - **Not meeting these standards could result in "take"**

MSO SURVEY PROTOCOL

- The most efficient way to locate owls is to imitate their calls
- MSOs are territorial and respond to imitations of vocalizations.
- Night calling is used to elicit responses from owls and locate the general areas occupied by them.
- Daytime follow-up visits are used to locate roosting and/or nesting owls and to further pinpoint the activity centers of individual owls.

1. Survey Design

- The survey design uses designated *calling routes* and *calling stations* to locate owls.
- The intent is to obtain complete coverage of the survey area
  - owls will be able to hear a surveyor calling
  - surveyor will be able to hear the owl(s) responding.

1. Survey Design

- **A. The survey area should include all areas where**
  - **owls or their habitat may be affected by management actions (project area)**
  - **plus a 0.5 mile buffer.**
  - **can subdivide large area into units to achieve the best survey results.**
- **Within the project area survey all areas that contain**
- protected habitat
- **and** restricted habitat
- **or canyon habitat.**
- **Where** protected activity centers (PACs) **exist**
  - **calling routes may be adjusted to lessen disturbance.**
  - **consider need to monitor PACs.**
  - **Coordinate with USFWS and contract agency**

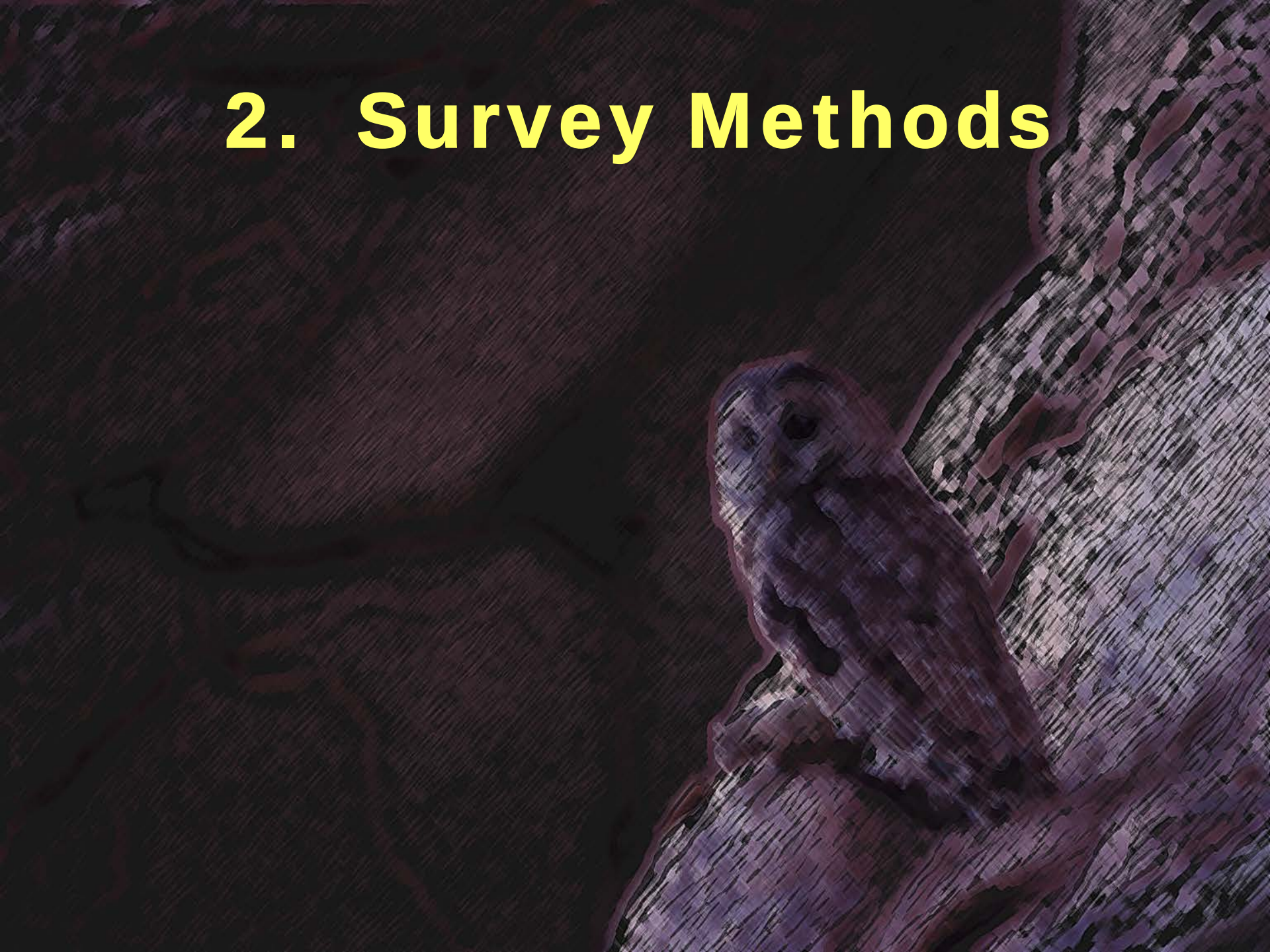
1. Survey Design

- B. Establish calling routes and calling stations to ensure complete coverage of the survey area.
- The number of calling routes and calling stations will depend on
  - size of the area,
  - topography,
  - vegetation,
  - and access.

1. Survey Design

- Calling stations should be spaced
- 0.25 to no more than 0.5 miles apart
  - depending upon topography and background noise levels.
- Nighttime calling routes and calling stations should be delineated on a map and then reviewed in the field and then relocated as necessary to improve survey effectiveness.
- Corrections can be made in the field to improve effectiveness.

2. Survey Methods



A. CALLING

- 1. Optimal times include two hours following sunset and two hours prior to sunrise.
  - Owls do call all night
- 2. Use nighttime surveys for all continuous calling routes in the survey area unless safety concerns dictate that a daytime survey is necessary.
- 3. Calls can be imitated by the surveyor or by playing recordings of owl vocalizations.
  - CD must be high quality
  - CD requires minimum output of 5 watts.

A. CALLING

- **4. Three main call types:**
  - **four-note location call (most frequent territory defense)**
  - **contact call (whistle)**
  - **Series location**
  - **Surveyors should use all three with four-note as primary.**
- **5. Discontinue calling when a potential owl** predator **is detected.**
  - **Surveyors should move on to another calling station out of earshot of the predator and resume calling.**
  - **Surveyors should return to the station(s) skipped to complete the calling route.**

A. CALLING

- **6. Avoid calling for owls during periods of rain or snow.**
  - **It may prevent a surveyor from hearing owls**
  - **Prevent owls from responding.**
  - **Negative results collected under inclement weather conditions are not adequate for evaluating owl presence/**absence**.**
- **7. Calling should not be conducted when it's too windy**
  - **wind is stronger than 15 miles per hour (or Beaufort Level 4)**
  - **when the observer feels that the wind is limiting their ability to hear an owl.**

B. SURVEYS

- In order to ensure complete coverage of the survey area, select the best nighttime survey method for the situation and/or terrain.
- One or a combination of methods
  - (1) calling stations;
  - (2) continuous calling routes
  - (3) leapfrog techniques.
- Each involves calling for owls and listening for their responses.
- All surveys where occupancy status is unknown should include nighttime calling.
- In addition to active listening, surveyors should watch for owls that may be drawn in but do not respond vocally.

1. CALLING STATIONS

- a. Space 0.25 - 0.5 miles apart
  - depending on topography and background noise.
- In some situations, more & closer spaced calling stations may increase the likelihood of detecting owls.
- In canyon habitat, if surveying from the canyon bottom, stations should be placed at canyon intersections.
- If surveying canyons from the rims, include calling stations at points and canyon heads.
- b. At least 15 minutes at each calling station
  - 10 minutes alternating calling and listening; last 5 minutes listening.
- In canyon habitat, a minimum of 20 minutes (30 minutes, if possible) at each station.

1. CALLING STATIONS

- c. If possible alter sequence of calling stations among visits.
  - Varying the order of calling stations avoids potential bias related to time of night, predator location, or other factors.
- d. Intermediate calling stations:
  - use when weather or other factors (noise, topography) decrease the probability of achieving complete coverage
  - or as triangulation points for determining owl locations.

2. CONTINUOUS CALLING METHOD

- Continuous calling -- imitating owl calls at irregular intervals while walking slowly along a route and stopping regularly to listen for owl responses.
- Because of the sounds produced by walking surveyors utilizing this calling method must concentrate on actively listening.
- In canyon habitat, the continuous calling method is only recommended when combined with calling stations.

2. CONTINUOUS CALLING METHOD

- a. Walk slowly so to minimize the possibility that an owl responds after surveyors are out of hearing range
  - i.e., allow time for owls to respond
- b. Stop regularly along the route to listen for owl responses.

3. LEAPFROG METHOD

- Useful when there are driveable roads.
- This method requires two people and a vehicle.
  - a. Surveyor One is dropped off and begins calling;
  - Surveyor Two drives the vehicle ahead at least 0.5 mile;
  - Surveyor Two leaves the vehicle for Surveyor One;
  - Surveyor Two proceeds ahead while calling.
  - b. Surveyor One continuously calls as he/she walks towards the vehicle;
  - Surveyor One drives the truck past Surveyor Two (i.e. “leapfrogs”);
  - Surveyor One leaves the vehicle;
  - Surveyor One resumes calling along the survey route.
  - Both surveyors follow the continuous calling method.
- c. Repeat this procedure until complete coverage of the survey area is accomplished.

3. Number and Timing of Surveys

- Owl detection rates change with season and activity and habitat.
  - Calling activity was highest during the nesting season (March-June).
  - Generally, late March through late June is the optimal time period to detect owls.

3. Number and Timing of Surveys

- Two years of surveys are required
- Additional years strengthen inferences made in cases where owls are not detected.
- If habitat modifying or potentially disruptive activities are scheduled for a particular year
  - the second year of surveys should be conducted either the year before or the year of (but prior to) project implementation.
  - In other words, no more than one year should intervene between the surveys and project implementation.
- If more than one breeding season has elapsed
  - Additional year of surveys is recommended.
- If more than 5 years have elapsed
  - then another complete inventory (2 more years) is recommended.

3. Number and Timing of Surveys

- A. Complete coverage of a survey area is achieved when four complete surveys have been conducted.
- Complete survey
  - pre-call (daytime cruise of habitat to be night called)
  - and a night field outing
  - and, if owls are detected, a daytime follow-up visit.
- All field outings where no day location of owls is known must include night calling.
- If owls are located during a pre-call, no night calling of the survey area is required.
- Surveyors may want to conduct additional surveys in an area if there is reason to believe owls may be present.

3. Number and Timing of Surveys

- B. Spread four complete surveys out over the breeding season (1 March - 31 August):
- 1. 1 March - 30 June
  - Minimum of two surveys
  - All four surveys may be completed
  - no more than one survey in March
- 2. By 31 August
  - Complete all surveys
  - no more than one completed in July or August.
  - Vocal activity low in July and August and young disperse in September
  - If additional surveys (>4) are added, more than one may be completed in August.
- 3. Wait at least 5 full days between complete surveys.

3. Number and Timing of Surveys

- C. A given complete survey of the area to be inventoried should be conducted within a period of 7 consecutive days.
- If the area is too large to be surveyed in 7 days, it should be divided into smaller areas based on available habitat, topography, and other important factors.

3. Number and Timing of Surveys

- D. In remote areas
  - Two complete surveys can be a minimum of two days apart.
  - Wait a minimum of 10 days before starting the next two surveys.
  - Areas defined as remote should be cleared with a Service biologist prior to proceeding with this deviation from the survey protocol.

3. Number and Timing of Surveys

- E. Best times to survey
- 2 - 3 hours following sunset and
- 2 – 3 hours preceding sunrise
  - peak owl calling periods and
  - best times to locate owls in or near day roosts or nests.

3. Number and Timing of Surveys

- F. If entire area is PAC, surveys may be discontinued.
- G. Vocal or visual locations outside the breeding season may help to locate nesting owls in the upcoming breeding season.

4. After Detecting a Mexican Spotted Owl

- Once an owl has been detected, the following information should be recorded:
- A.
  - Time the owl was first detected
  - the type (s) of call (s) detected,
  - the owl's sex, and
  - whether juveniles were detected.

4. After Hearing a Mexican Spotted Owl

- **B.**
  - Record location where owl responded from and the surveyor's calling location
    - The surveyor should know her / his location at all times.
  - A compass bearing from the surveyor's location to the location where the owl was heard.
  - A triangulation if possible
    - Take compass bearings from 3 or more locations and estimate the distance to the owl.
    - Triangulating provides an accurate means to map the owl's location.
      - But only if the owl doesn't move
    - Record triangulation locations on a map or photo attached to the survey form.
  - Attempt to confirm the presence of the owl(s) with a daytime follow-up visit (see section 5 below).
    - Daytime owl locations are very important in determining activity centers.

4. After Hearing a Mexican Spotted Owl

- C.
  - Minimum of 1 hour searching (regardless of number of people searching)
  - If the owl is heard clearly, and the call type and direction are confirmed, there is no need to continue calling.
  - If there is some doubt (response or direction) listen carefully for a few minutes, as an owl may call again.
  - If the owl does not respond after a 2-5 minutes, the surveyor should continue calling.
  - Do not call any more than is necessary.
    - By stimulating the owl(s) to move you may harass a female owl off a nest or increase an owl's risk of predation.

4. After Hearing a Mexican Spotted Owl

- D.
  - Owls may move before or after they begin calling.
  - Estimate the location of the owl when the first response was heard.
  - After determining the owl's location, move ~ 0.5 - 0.75 miles away before continuing surveys
    - to avoid response by the same owl.
  - If the owl responds from the original detection area, then move farther away before continuing to call.
- E. Record the approximate location (bearing and distance), sex, age, and species of all other raptors heard in the survey area.
- F. Conduct a daytime follow-up visit as soon as possible.

5. Conducting Daytime Follow-up Visits

- A Daytime follow-up helps locate owl roosts or nest sites.
- It is an intensive search within the general vicinity of the night response location.
- The surveyor(s)
  - walk throughout the area,
  - Call
  - Listen and
  - Watch for owl sign (whitewash, pellets, etc.).
- Surveyors should cover all habitat within at least a 0.5 mile radius of the response location.
  - A minimum of 1 hour should be spent searching for owls regardless of the number of people searching.
- During the day, owls are sleepy and do not always readily respond to calling.

5. Conducting Daytime Follow-up Visits

- A.
  - Complete a daytime follow-up visit asap but < 48 hours after nighttime detection.
  - The optimum is the morning following the nighttime detection.
- B.
  - Conduct daytime follow-up visits in the early morning or late afternoon/early evening.
    - The optimal dawn period is 0.5 hour before to 2 hours after sunrise
    - The optimal dusk period is 2 hours prior to sunset

5. Conducting Daytime Follow-up Visits

- C. Search Area
  - 1. Minimum area is all protected, restricted, and canyon habitat within at least a 0.5-mile radius of a nighttime owl response.
  - 2. Center on the location of the owl or owls that were heard during the nighttime survey.
    - If there is uncertainty, search the best habitat.
  - 3. Prioritize daytime survey locations by studying aerial photos and maps.

5. Conducting Daytime Follow-up Visits

- D.
  - Systematically walk and call all protected, restricted, and canyon habitat within the search area.
  - Attentively watch for owls.
    - Mobbing jays or other birds can also be a sign that an owl is present.
  - Search for signs of owls such as pellets, white wash, or molted feathers.
    - Pellets and whitewash alone are not sufficient to document owls.

5. Conducting Daytime Follow-up Visits

- E.
  - If you are not able to complete a daytime follow-up visit for any reason, or feel the search effort was not satisfactory because of the presence of predators or weather, conduct a second follow-up visit as soon as possible.

5. Conducting Daytime Follow-up Visits

- F.
  - If no owl(s) are located during complete daytime follow-up visits:
    - Surveyors may wish to consider adding additional (>4) surveys to more accurately determine the location of the responding owl.
    - Surveyors may need to assess the confidence of the nighttime response.

5. Conducting Daytime Follow-up Visits

- G.
  - daytime follow-up surveys should not be conducted in inclement weather or when predators are present
- H.
  - Surveyors should minimize the amount of incidental disturbance to owls.
    - Do not linger in nest sites or over-call an area.

6. If Mexican Spotted Owls are located on a Daytime Follow-up Visit

- Mousing – most of you will not mouse

7. Determining Status from Nighttime Surveys and Daytime Follow-up Visits

- A. “Pair status” is established by any of the following:
  - 1. A male and female owl are heard and/or observed in proximity (<0.25 mile apart) to each other on the same visit.
  - 2. A male takes a mouse to a female (see Section 6 mousing guidelines).
  - 3. A female is observed on a nest.
  - 4. One or both adults are observed with young
  - At least one young of the year is observed

7. Determining Status

- **B. “Single status” is inferred from:**
  - **1. A daytime observation on a single occasion or nighttime response of a single owl within the same general area (within 500 meters or .31 miles) on two or more occasions, with no response by an owl of the opposite sex after two complete inventories (two years of survey); or**
  - **2. Multiple responses over several years from a bird of the same sex (i.e., two responses in first year of surveys and one response in the second year of surveys, from the same general area).**
  - **Determining if the responses occur within the same general area should be based on topography and the location of any other known owls in the surrounding area.**

7. Determining Status

- C.“Two birds, pair status unknown” is inferred from:
  - The presence or response of two owls of the opposite sex where pair status cannot be determined.
- D. “Status unknown” is inferred by:
  - The response of a male and/or female owl which does not meet any of the above criteria.
    - Additional years of survey are recommended.

7. Determining Status

- E.“Absence” is inferred by:
  - If surveys are conducted according to this protocol and no owls are heard
    - absence is inferred during the survey
    - this does not necessarily indicate that owls never occupy the area.

7. Determining Status

- F. Separate territories are inferred by:
  - Any two owl responses more than 0.5 miles apart
    - unless daytime follow-up visits indicate otherwise.
  - To rule out the existence of multiple territories, surveyors can call both response areas simultaneously.

8. Determining Nesting Status and Reproductive Success

- Nesting status surveys should be conducted between 1 April and 1 June. Young identified after 1 June would still confirm that nesting occurred but would not allow identification of the exact location of the nest. However, young observed prior to August are usually within 400 meters (0.2 miles) of the nest of that year and this information can be useful in delineating a 100-acre nest buffer
- Most of you will not be doing this!

9. Annual Reporting

- All of you will be doing this!
- Annual report
  - Submit to USFWS – Ecological Services in SLC or your state
  - Include data forms and map with each form

10. Disposition of Dead, Injured, or Sick MSO

- Upon locating a dead, injured, or sick owl
- Notify
  - U.S. Fish and Wildlife Service's Law Enforcement Office in Utah (telephone: 801-625-5570),
  - Utah Division of Wildlife Resources (801-538-4764) within two working days of its finding.
  - For an injured owl, contact your nearest local UDWR office immediately.
  - Written notification should be made within five calendar days
- Notification should include the date, time, and location of the animal, a photograph, if possible, and any other pertinent information.

Table 1. Generalized reproductive chronology of Mexican spotted owls. The area between the arrows at the bottom of the table indicate periods of high probability of detecting owls. Chronology may vary slightly with area, elevation, and/or in response to weather.

March	April	May	June	July	August	September
1 10 20 31	1 10 20 30	1 10 20 31	1 10 20 30	1 10 20 31	1 10 20 31	1 10 20 30
Courtship						
	Nesting					
		Juveniles seen at or proximal to nest tree				
			Juveniles moving from nest tree but still usually within 100 m. Parents feeding juveniles			
					Adults begin to ignore juveniles. Juveniles wander more widely	
						Juveniles disperse, adults wander more widely

GLOSSARY

Absence

- **Absence of Mexican spotted owls can be inferred when no response is recorded after a complete inventory has been completed in a defined area. Absence does not necessarily indicate that Mexican spotted owls never occupy the area.**

Breeding Season

- 1 March through 31 August
- includes courtship, nesting, nestling- and fledgling-dependency periods.
- This is the period of time in which surveys should be conducted.
- This time period may vary by geographic locale.

Calling Routes & Stations

- **Calling Route--An established route within a survey area where vocal imitations or recorded calls of Mexican spotted owls are used to elicit a response.**
- **Calling Stations--Point locations used to conduct surveys, distributed throughout an area so as to attain complete coverage of the survey area.**

Complete Coverage & Inventory

- **Complete Coverage--Complete coverage is obtained when the calling stations have been located within a survey area so that a Mexican spotted owl anywhere in the survey area would be able to hear surveyors and vice-versa.**
- **Complete Inventory--When the following are met: (1) four complete surveys have been conducted in one year; (2) minimum of five days between surveys; (3) no more than one survey in March; (4) minimum of two surveys by 30 June; (5) all surveys completed by 31 August, with no more than 1 survey in each of July and August; and (6) two years of survey.**

Complete Survey

- A survey is complete when all calling stations or calling routes within a survey area have been called within a seven day period, including daytime follow-up visits for all Mexican spotted owl responses.
- If the survey area is too large to be completely surveyed in seven days, it may be divided into smaller areas based on available habitat, topography, drainages, etc.

Daytime Follow-up Visit

- A daytime follow-up visit is conducted around Mexican spotted owl responses. The objective of a daytime follow-up visit is to locate Mexican spotted owl(s) by conducting an intensive search within a 0.5 mile radius of the original nighttime or last known response location. The follow-up visit is conducted during daylight hours and should be completed as soon as possible following the initial detection. If Mexican spotted owls are located during the daytime follow-up visit, the surveyors use the mousing technique to determine nesting and reproductive status.

Intermediate Calling Stations

- Calling locations between identified calling stations or routes used to triangulate an Mexican spotted owl's location or used to improve calling coverage of an area when weather or other conditions require. Not required to be established prior to the field outing in which they are used.

Protected & Restricted

- Protected habitat includes all Mexican spotted owl protected activity centers, all areas in mixed-conifer and pine-oak types with slope greater then 40 percent where timber harvest has not occurred in the past 20 years. Specific guidelines and the rationale for these guidelines are provided in the Recovery Plan (USDI 1995).
- Mixed-conifer and pine-oak forest types found on steep slopes that have been treated within the past 20 years and riparian forests. Restricted habitat is also mixed conifer and pine-oak NOT found on steep slopes. These areas are not protected as strictly as Protected Habitat/Areas, but specific guidelines for management activities and target/threshold conditions exist (USDI 1995).

Protected Activity Center (PAC)

- Minimum of 600 acres surrounding the “activity center,”
  - nest site, a roost grove, or the best roosting/nesting habitat if both nesting and roosting information are lacking.
  - This includes the best possible Mexican spotted owl habitat in as compact a unit as possible.
  - This should include as much roost/nest habitat as is reasonable, supplemented by foraging habitat where appropriate.

Nest

- Mexican spotted owls use broken-topped trees, old raptor nests, witches brooms, caves, cliff ledges, and tree cavities for nests. A Mexican spotted owl must be observed using the structure in order to designate a nest site.

Remote Area

- Generally, any survey area that requires more than 4 hours of travel time by vehicle and/or foot during good road, trail, and weather conditions (good for the road or trail in question) to reach from the District Office or main departure point. All remote areas should be agreed to by the Service on a case-by-case basis prior to using the survey protocol to clear a project.

Roost

- Tree, cliff ledge, rock, or log used by a Mexican spotted owl for extended daytime rest periods. A roost site consists of the roost itself and the immediate vicinity. Roost areas are identified by observations of the Mexican spotted owls and/or the presence of pellets, white-wash, and other evidence.

Adult

- A MSO ≥ 3 years old. Tips of retrices (tail feathers) will be rounded with white and molted color. Subadults will have triangular all white tips on tail feathers.

Core Area

- A 40-ha (100 ac) area within designated protected activity centers (PACs) circumscribed around the nest. The nest area should include habitat that resembles the structural and floristic characteristics of thenest site. These 100-acre areas will be deferred from mechanical treatment.