

## ***Enclosure 1***

### ***Safety Considerations When Conducting Bat Surveys***

Before conducting surveys, evaluate the structural condition of the building. Some buildings may be unsafe to enter or to lean a ladder against. If the building appears to be unsafe, do not enter the facility. If you are unsure of the structural integrity of the building, consult with your safety officer or facilities personnel to determine the best course of action.

When entering a building, be aware of protruding nails, broken glass, rotten boards, aerosol particulates, and insulation. Use extreme caution when traversing precarious routes, such as crawling along rafters or in areas with extensive wiring. Ladders may be needed to safely access or view certain parts of the structure. Two or more people should be present if there are safety concerns, such as walking on rafters or climbing ladders.

BLM and Forest Service employees are not allowed to perform hazardous work that requires the use of a respirator without special training and clearance. Voluntary use of a face mask in non-hazardous environments is, however, allowed. In most situations, bat surveys of buildings fall under the category of voluntary use of a filtering face piece (dust mask) in a non-hazardous situation. A P-100 (hanta virus resistant) rated disposable dust mask is recommended when conducting bat surveys in attics, crawl ways, or other dusty situations to reduce the discomfort associated with breathing dusty air and in the unlikely event of incidental exposure to other irritants. Before voluntarily using a dust mask, employees must read the Forest Service Region 6 Safety Guide, Appendix D to 1910.134, follow the instructions, and sign a document certifying these steps have been taken. Appendix D and the document to sign are included in this enclosure, below. If at any point prior to or during a survey, you suspect or are concerned that hazardous materials are present, forgo the surveys and contact your safety officer for additional advice.

Gloves are recommended to protect hands and knee pads can protect knees when crawling. Consult with your safety officer for an assessment of appropriate gear, respirator fit, and surveyor fitness for conducting internal surveys.

Although rabies is present in bat colonies at low levels, it can be transmitted from a rabid bat to a human through a bite and potentially from direct contact of infected bat saliva into the eyes, mouth, or nose of a human. Do not touch or pick up live, injured or sick bats unless you are immunized against rabies and have a current protective titer. Dead bats can be handled or placed in a collection bag by someone wearing gloves.

Establish a check-in plan with your office and/or someone who is not entering the building with you.

Review the Forest Service, Region 6 Bat Safety Program and Conduct a Job Hazard Analysis (JHA) for each site (see example below).



**U.S.D.A. FOREST SERVICE  
REGION 6  
SAFETY GUIDE**



**Appendix D to 1910.134  
Information for employees using respirators  
on a voluntary basis**

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.



Contact your local safety manager with questions.

Reference: 29 CFR 1910.134, Appendix D

# Helping You Wear it Right

## Wearing Your Filtering Facepiece Respirator

1



Place the respirator over your nose and mouth. Be sure the metal nose clip is on top. With models 8210 or 07048, pre-stretch the straps before wearing.

2



Pull the top strap over your head until it rests on the crown of your head above your ears.

3



Pull the bottom strap over your head until it rests just below your ears.

4



Using both hands starting at the top, mold the metal nose clip around your nose to achieve a secure seal.



Filtering Facepiece  
Valved Respirator

Filtering Facepiece  
Non-Valved Respirator

## Check the Seal of Your Filtering Facepiece Respirator Each Time You Don the Respirator.



### Positive Pressure User Seal Check

#### For Non-Valved Respirators

Place both hands completely over the respirator and *exhale*. The respirator should bulge slightly. If air leaks between the face and faceseal of the respirator, reposition it and readjust the nose clip for a more secure seal. If you cannot achieve a proper seal, **do not** enter the contaminated area. See your supervisor.



### Negative Pressure User Seal Check

#### For Valved Respirators

Place both hands over the respirator and *inhale* sharply. The respirator should collapse slightly. If air leaks between the face and faceseal of the respirator, reposition it and readjust the nose clip for a more secure seal. If you cannot achieve a proper seal, **do not** enter the contaminated area. See your supervisor.



### WARNING

#### Respiratory Products

These respirators help protect against certain airborne contaminants. Before use, the wearer must read and understand the *User Instructions* provided as a part of the product packaging. A written respiratory protection program must be implemented meeting all the requirements of OSHA 1910.134 including training, fit testing and medical evaluation. In Canada, CSA standards Z94.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate. **Misuse may result in sickness or death.** For proper use, see packaging instructions, supervisor, or call 3M OH&ESD Technical Service in USA at 1-800-243-4630 and in Canada at 1-800-267-4414.

General Offices  
3M Center  
St. Paul, MN 55144-1000

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# 3M

FOREST SERVICE, REGION 6  
333 SW FIRST AVE  
PORTLAND, OR

FILTERING FACEPIECE RESPIRATOR TRAINING

By signing below you are certifying that you have read the training instructions for voluntarily wearing a Filtering Face-piece Respirator and the OSHA 1910.134 Appendix D.

NAME (Print Clearly)	SIGNATURE	PHONE NUMBER
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## Example: Job Hazard Analysis

United States  
Department of  
Agriculture  
Forest Service  
Job Hazard  
Analysis (JHA)

**1. Work Project Activity**  
Bat Surveys at  
Buildings

**4. Name of Analyst**  
Pat Ormsbee

**2. Location**  
Public and Private lands in OR and WA

**5. Job Title**  
USFS/BLM Bat Specialist

**3. Unit**  
Region 6

**6. Date Prepared**  
8/31/09

Task	Hazard(s)	Abatement(s)
Day and night external inspection/survey of a building to assess bat use	Loose/falling material or unstable surface, especially at older, abandoned buildings Use of ladder Sharp protrusions Hazardous footing Hazardous materials Toxic insects/hives, plants, or snakes Data collection Bat exposure Roof assessment Limited vision at night	Assess and avoid areas of falling debris, instability, or sharp protrusions. Wear protective clothing, footwear, and headgear as needed to protect against falling material, insect bites, and sharp protrusions. Place ladder evenly against stable material at a safe angle. Have a second person hold the base of the ladder. Watch where you are walking when traveling around the building and be aware of poisonous plants and snakes when appropriate. Leave the area and call your hazmat contact if any suspicious containers (e.g. barrels, plastic buckets, drums) that could contain hazardous materials are found. Constantly assess your route and approach for safety and consider alternatives. Collect data and photos from a location where you are stable, safe, out of harm's way and not disturbing roosting bats. Pre-exposure rabies vaccines and handling training are required prior to handling bats. Roofs, especially of older buildings can be unstable, use a cherry picker or conduct bat emergence surveys if roof access to assess roof shingles is unsafe. During night surveys, use white light to negotiate landscape and red light to spot bats. At night, limit surveys to ground travel and avoid using ladders and surveying roofs or other difficult access points.
Day and night internal inspection/survey of a building	Diminished light Unstable or slippery surface Collapsing or rotten material Uneven, or challenging travel/access Air quality/hanta virus exposure Electric wires Human presence Poisonous insects/snakes	Read recommendations from external surveys above and apply to internal surveys as well. Use a headlamp and high power light to negotiate low light areas. Assess entries, floors, all walking surfaces for stability. Do not travel on or under rotten material; test areas with a walking stick if needed. When investigating attics or ceiling crawl spaces, travel along rafters, do not step on unsupported ceiling material. Avoid areas where there are dust, insulation, and especially mouse droppings unless voluntary use of a dust mask with a p-100 rating occurs. Watch for low clearance and crawling/walking routes with nails and other protrusions. Wear knee pads. Do not touch electrical wiring. Be aware of potential human occupancy of the building and leave the building if other unknown people are occupying an abandoned building.
Emergence Survey	Limited visibility in the dark Limited hearing if using acoustic detector	See external surveys above. When using a detector with head phones, watch where you are walking. If relevant to the area, avoid walking in to brushy or other areas that might provide cover for poisonous snakes without first listening and looking for them.

## R-6 Bat Program Safety Plan

Updated 6/09/08

P. Ormsbee, A. Hart, L. Templeman

**Safety Issue:** Driving at night and or under conditions of sleep deprivation. This includes managing caravan situations when there is more than 1 vehicle.

### Strategies

- When driving to survey sites during the day, note potential hazards to be aware of on the way out, such as poor sections of road, and poorly marked intersections.
- Drive slowly and extra cautiously at night to avoid hitting wildlife, cows and to safely negotiate sections of poor road.
- Each vehicle should have at least two occupants when driving at night. Passengers have the responsibility to stay awake and help scout for driving hazards such as wildlife on the road and to monitor the driver's alertness and safety. Engage the driver in conversation to assist alertness, but not to the point of distraction. If the passenger observes signs of driver fatigue and unsafe driving, the passenger should offer to drive or if too tired, insist on pulling over and napping before driving further.
- All vehicles will have camping gear as standard equipment so that if driving is not safe, camping is always an option.
- Drivers must stop and exchange driving or get some sleep if they get too tired to drive, even if this means stopping and checking into a motel mid-day.
- Leave to set-up for night surveys early enough to allow for safe driving without feeling rushed.
- Make sure windshields are clean inside and out, and the driver has good visibility in all directions.
- Make sure vehicle lights are set at the appropriate level and angle for effective illumination. Always use high beams for night driving, unless traffic, weather conditions or other factors warrant the use of low beams to be safer.
- Make sure the vehicle is in good working condition with appropriate tires for rough road driving.
- When caravanning have radios, walkie-talkies and/or cell phones to communicate between vehicles. Make sure channel and number information is exchanged and each vehicle has a map of the travel route. Each vehicle is responsible for tracking the vehicle behind them in a caravan. If they lose sight of the vehicle behind them for more than a couple of minutes, they should pull over in a safe place and wait. If the vehicle does not catch up after 5 minutes, contact them to see what the delay is and let others in the caravan know. If contact is not possible, go back and look for them. If all vehicles follow this protocol the caravan will remain united.

**Safety Issue:** Negotiating rocky, rough terrain such as creek beds, bushwhacking, and climbing under bridges to conduct night time surveys.

### Strategies

- Always scout survey sites during the daytime to identify hazards and the safest routes. Place flagging where needed to insure safe efficient foot travel.
- Make sure you wear appropriate footwear and clothing for the task at hand:
  - waders and wading boots for water work
  - sturdy hiking boots for overland travel and bridge surveys
  - long sleeved shirts and long pants when bushwhacking

- Go slowly, and travel together, do not outpace the slowest person; go their speed.
- Have strong white-light headlamps to negotiate terrain, carry extra batteries.
- Make sure to have snack food and water to avoid clumsiness from dehydration or hunger.

**Safety Issue:** Encountering other people at night that may be confrontational or generate other feelings of being unsafe.

### Strategies

- Always work on public land unless prior explicit approval has been given to be conducting surveys on private land, preferably in writing.
- If you will be surveying populated sites, such as occupied campsites, contact the people associated with the site during daytime prior to surveys and make sure they are comfortable with the survey.
- Always let local state and federal personnel know when you are working in the area. In some cases, contacting the local sheriff's office in small rural communities prior to surveys is warranted; especially if there are no other contacts available or if there is a good deal of private land in the area.
- Do not work alone. Use communication devices to stay in touch when the survey site requires separation.
- If encounters are uncomfortable or confrontational, leave the area and contact local law enforcement personnel.

**Safety Issue:** Potential rabies and tetanus exposure from working with mammals.

### Strategies

- Follow the advice of CDC and State health officials on rabies:
  - Pre-exposure rabies shots and a current protective titer are required to handle bats.
  - Titer is checked annually just prior to field season, reduced titer requires a booster prior to handling bats.
  - Avoid getting bitten by using gloves and good handling techniques.
  - If bitten by a bat that is acting abnormal, collect the bat for immediate rabies testing, followed by recommended treatment if the bat tests positive.
  - Bat bites should be cleaned with soap and water.
  - Prevent handling of bats by non-vaccinated observers, including handling bags with bats in them. If an observer is inadvertently bitten by a bat, even if the skin is not broken, collect the bat for immediate rabies testing, followed by post-exposure shots in the event the test is positive. If the bat is not collected for some reason, begin post-exposure rabies series without the bat.
- Tetanus shots must be current to handle bats.

***Safety Issue:*** Vehicle reliability

**Strategies**

- Conduct routine inspections of vehicles for hazards. Report all vehicle problems to your fleet manager.
- If routine maintenance such as an oil change is required when away from the home duty station, have the work done unless it can be done in a timely manner at the home duty station.
- If you have vehicle problems away from your station, get them inspected and consult your fleet manager on how to proceed.
- If you have a flat tire in the field, immediately go for repair; do not operate the vehicle without a good spare tire.

***Safety Issue:*** Other things that might hurt you.

- Sun protection, heat stroke and exhaustion.
- Hypothermia.
- Poison oak.
- Snakes and insects.



## ***Enclosure 2***

### ***Survey Protocol for Determining Bat Use of Buildings***

The objective of this survey protocol is to determine whether bats use a particular building during some part of their life cycle. The decision to halt surveys and to manage a building as bat habitat can be made at any point during the survey process. If bats or signs of bat use are detected at any time during the survey process, the building is assumed to be occupied by bats and should be managed in accordance with the NWFP S&Gs and/or SSSS policies.

If after conducting adequate surveys it is determined that bats are not using the building, then proposed actions to convey, remove, or maintain the building can continue without the need for management or mitigation for bat habitats.

#### **Surveyor Qualifications**

Surveyors must know how to identify potential bat roosting locations and locate and recognize bat urine stains and guano. Observers, needed for external surveys, may be trained on site. For night time surveys, surveyors and observers should be able to move about at night, and should be able to see bats emerging against a backdrop of the sky at dusk. If the optional equipment listed below is to be utilized, adequate training to use that equipment (bat detectors, night vision equipment, etc.) is needed. If you need training on the proper use of the equipment or how to identify potential roosting locations and recognize bat urine stains and guano, contact your Forest or BLM District Biologist or other Forest or District personnel with these training and skills; otherwise contact the interagency bat specialist.

#### **Equipment**

The following safety equipment is required when surveying a building:

- Long sleeves and long pants made of soft fleece or cotton (nylon and waterproofed fabrics make high frequency sounds detectable by bats).
- Heavy gloves.
- Eye protection.
- Hard hat.
- Boots with heavy soles (to prevent nail puncture to feet).
- Headlamps (with attachable red filter).
- Spotlight (attachable red filter can be useful).

The following safety equipment may be used when surveying a building, depending upon the situation:

- Dust mask with a P100 rating that seals snugly against your face (voluntary use only).
- Knee pads (if crawling is involved).

Besides the required safety equipment, NRIS/GeoBOB data forms and pencils will be needed. A ladder, field vest or small backpack, binoculars and digital camera could also be needed.

The following additional equipment may increase the efficiency and efficacy of the surveys; however, none are required to conduct adequate surveys:

- Night-vision equipment.
- “Night-shot” video camera.
- Bat detector with digital recorder and head phones.
- Collection bags (plastic bags) for guano and/or dead bats.

### **Survey Methodology: Timing**

Bats may use buildings during any season of the year; the use of a particular building may change by season. Bats may use buildings as day- or night-roosts in spring through fall when they are most active. Additionally, in spring and summer, some species of bats will use buildings for maternity sites where they birth and raise young. Although bats are less active in winter, buildings may be used intermittently or consistently by bats as winter roosts at lower elevations and in temperate regions associated with or adjacent to the Pacific coast, the lower Columbia Gorge, southwest Oregon, and the Willamette Valley, where internal temperatures of unheated buildings or portions of buildings rarely dip below freezing. In other regions where winter temperatures are consistently at or below freezing, most buildings are assumed to be too cold to support wintering bats. Exceptions to this assumption may occur when there are features accessible to bats such as basements, chimneys, or root cellars that provide roost habitat with temperatures consistently above freezing. Because bats use buildings differently across seasons, surveys that span multiple seasons may be necessary before determining if bats are using a specific building.

The following survey efforts represent minimum requirements. Upon site evaluation, you may determine that additional surveys are needed within a season or across seasons to fully evaluate bat use. For abandoned buildings, once bat use is detected, survey efforts may cease. If buildings are occupied by humans, species identification is required in order to determine if any Sensitive and Special Status Species are present.

### *Spring/Summer/Fall Surveys*

These are the times of the year when bats are active. Surveys should be concentrated in the summer season because this is when bats are most active and visible. Spring/summer/fall surveys require a combination of 1) daytime internal and external examination of a building 2) an emergence survey at dusk, and 3) nighttime internal and external surveys to determine if bats are using a building. The intent of conducting a daytime survey is to detect bats (live or dead) or indicators of bat use such as bat urine, guano, or insect parts. If bats or signs of bat use are not detected during the day, an evening survey is used to detect emerging bats that may be hidden in crawl spaces or crevices that cannot be searched. Bats may also be entering a building in the evening. Because it can be difficult to confirm that bats are entering a building at night, a nighttime internal survey to verify if bats are using a building for night roosting should also be conducted. These surveys should be conducted consecutively in the same 24 hour period. Conduct the survey in summer (June, July or August) during warm clear weather (daytime temperatures above 20° C, 68 °F). Exit surveys should be conducted during good weather (i.e., not raining, not windy).

For buildings that can be easily and thoroughly searched, completing the full complement of surveys outlined above one time is sufficient, unless there is a potential for winter use (see below). For buildings that can only be partially searched, due to safety, complexity or inaccessibly, multiple visits to the site may be needed. In these cases, complete as full a complement of surveys described above as possible; then conduct one additional complement of surveys at least 2 weeks following the first survey effort.

Buildings that are unsafe to enter should be surveyed externally only, primarily for bats coming and going from the building. Mid-June through July are the most likely times to detect bats. These external surveys should be conducted two times for simple structures, one week apart; four times for more complex structures, again one week apart. If there is no potential for winter use the survey of the building is complete. If winter use is possible, see “Winter Use and Surveys” below.

### *Winter Use and Surveys*

In climatic zones where winter temperatures are at or below freezing most of the winter, bats are less likely to use buildings for winter roosting. Winter surveys are only necessary when bat use during spring/summer surveys has not been noted and the building has places where temperatures remain above freezing and could sustain stable temperatures for hibernating bats. Such places include basements, large fireplaces, root cellars, and concrete bunkers that are accessible to bats.

If there is a potential for winter use of a building and spring/summer surveys did not detect bats, conduct an internal daytime survey in January and if no bats or sign of bats are found, conduct an additional internal daytime survey in February. Conduct surveys at least two weeks apart. In temperate zones (the Pacific coast, the lower Columbia Gorge, southwest Oregon, and the Willamette Valley) if feasible, augment internal daytime surveys with emergence surveys at dusk during warm winter weather when bats may be active. In situations where it is still unclear if the building is occupied by bats, managers may want to assume occupancy and manage the building accordingly as evidence of recent bat use may be difficult to detect at this time of year.

### **Survey Methodology: Internal**

Before entering the building:

- Review safety concerns.
- Identify potential survey routes and responsibilities of each surveyor. Consider whether leaving one person outside the building as a safety spotter is needed.
- Establish a communication process among surveyors to reduce unnecessary conversation and disturbance at the site. (Hand signals, notes, etc. can be useful).
- Put needed accessories (headlamps, spotlight, notepad, plastic bags and pencil) in easily accessible vest pockets/packs.
- Put on all required safety gear.
- To date, there is no documented occurrence of White Nose Syndrome (WNS) in Oregon and Washington. The fungus associated with WNS, *Geomyces destructans*, has been documented growing on wintering bats in caves and mines in the eastern and Midwestern US. Although it has not been detected in other types of roosts, being aware of the signs of WNS and staying alert for it, regardless of roost type, is a prudent contribution to disease surveillance. Information on the WNS and its signs can be found at:  
<http://www.fws.gov/WhiteNoseSyndrome/index.html>.

Once inside, survey all parts of the building that can be viewed safely including attics, rafters, interior walls accessible to bats and any other areas where construction has created crevices or caverns that could be used by roosting bats. Be aware that some bat species seek out remote tight crevices and can enter small (1/4 inch) vertical or horizontal crevices. Look for any sign of bat use: bat body-oil/ urine stains on walls and near ceilings (darkened areas with white urea edges), bat guano and roosting, flying or dead bats and/or insect parts.

- Avoid conversation or unnecessary noise while inside the building. Talking quietly is preferable to whispering, which may produce more ultrasonic noise than low volume talking.

- Use a deep red filter placed over a headlamp or auxiliary light to search for bats and urine and body oil stains. Look on the ceiling, along beams and against or in walls. Use white light (when necessary) to negotiate the building or to augment detections of bats, guano deposits, insect remains (e.g., moth wings), and bat carcasses.
- Depending on the building temperature, bats may be found roosting low, high, clustered, spread out, or solitarily. Night vision equipment and/or auxiliary infrared lighting can be used to locate bats.
- Listen for audible sounds emitted by bats. Bat detectors can assist by picking up bat sounds, although recorded calls in a closed space cannot be reliably used to detect species because of overwhelming echoes.

If bats are present, avoid disturbing them. Keep as far away as possible and stay quiet.

- If bats are found during June-August and begin moving, crawling or flying; *leave the site immediately*. Disturbance triggers stress in bats that can cause bats to waste energy reserves, abort fetuses, abandon pups or abandon a roost for less adequate habitat.
- During cool weather when bats are torpid (November through mid-April), be especially careful and quiet. Maintain distance to avoid triggering arousal of bats from hibernation. If bats are detected, leave the building immediately.
- Only if you can do so without disturbing bats, obtain a quick visual estimate of their number and location. If the number of bats is large, make a partial count of a small area in the cluster and use that number to extrapolate a size for the entire cluster.
- Look for solitary roosters or small clusters as bats do not always roost in large clusters. The number of bats in a cluster can vary greatly depending on the season, presence of young and size of colony.
- Do not attempt to handle bats. Identify bats by obvious features (e.g., fur color, ear size) from a distance. If bats are not flighty, you may want to take a photo or infrared video of bats for identification and counting. Do this only in late spring and summer during periods of warm weather and only if it can be done without disturbing bats.
- Note if there are any noticeable anomalies such as “white nose” on any of the bats or if they display abnormal behaviors. Alert the interagency regional bat specialist if any anomalies are observed.
- To reduce further disturbance to bats, leave the building or at least the area where any bats are located, before documenting your findings.

Surveys may be stopped anytime bats, bat guano, or bat body oil/urine stains are discovered.

### **Survey Methodology: External**

External surveys focus on discovering bats that are roosting on the exterior of the building or as an additional check for occupancy by searching for bats emerging from a building at dusk. External surveys are typically less effective than internal surveys for detecting bats. When there are a large number of bats emerging from a distinct and an obvious portal, this survey method works well. However, bats can emerge in small numbers from dispersed locations such as from under multiple shakes on a roof, and careful observation is needed to make this survey method effective. Surveys may be stopped anytime bats, bat guano, or bat body-oil/ urine stains are discovered.

#### *Daytime and Nighttime Surveys*

Use a light, binoculars, bat detector, ladder, etc., to investigate potential exterior roost locations (e.g., behind shutters) or emergence portals (e.g., attic vents) for bats or signs of bats. Look for guano deposits or insect parts under eaves, on porches or other sheltered locations where bats might night roost.

### *Emergence Survey*

Ideally, emergence surveys should be conducted on a clear, calm and dry evening when bats are active and there is good visibility. Overcast conditions are acceptable; as long as there is good visibility. Windy conditions should be avoided.

- Before conducting emergence surveys, become acquainted with the building and develop a plan of action for conducting the surveys. Evaluate the structure for potential bat egress and congregation points where bats may roost. Determine the number of people needed to adequately cover all of the bat egress and congregation points simultaneously. Be attentive to obscure or challenging features such as cedar shake shingles. If an adequate number of people cannot be assembled to cover the building simultaneously, additional surveys may be needed.
- Identify observation points where surveyors can view the majority of the building and the most likely points of egress. If possible, use the sky to backlight emerging bats. Observer vantage points should be in locations that do not obstruct or hinder emerging bats but where emerging bats can be easily observed.
- Conducting emergence counts of individuals is not required, however if counts are conducted, coordinate count effort among observers so that the majority of portals are covered and double counting is minimized or eliminated.
- Establish a communication process among surveyors to reduce unnecessary conversation and disturbance at the site. (Hand signals, notes, low volume radios and walkie-talkies etc., can be useful.).

Thirty minutes prior to sundown, review plans and get to observation points and begin your emergence survey.

- Put needed accessories (binoculars, spotlight, counter, etc.) in easily accessible vest pockets/packs.
- Confirm observation points and the responsibilities of each surveyor.
- Revisit safety concerns and review the communication plan.

During the survey:

- Record start/ stop survey times.
- Remain quiet and still. Avoid conversation or unnecessary noise. If conversation is necessary, talking quietly is preferable to whispering which may produce more ultrasonic noise than low volume talking.
- Listen for audible sounds emitted by bats. If you have a bat detector, use it in conjunction with visual surveys, but only if you are absolutely certain you are picking up emerging bats as opposed to bats flying through the area. If desired, record bat calls to assist with species identification.
- Do not attempt to capture any bats. Identify bats by obvious features (e.g., fur color, ear size).
- Night vision equipment and cameras can be used if visibility is low, the area of potential emergence is small or if late emergence or night roosting is suspected.
- Avoid diverting bats from their established flight path.
- Record numbers of bats and map locations where bats emerge. Observing where and how bats are using the building may help with deciding how to manage the facility at a later time.
- Even if no bats are seen, continue observations until it is too dark to see emerging bats, about 1-2 hours. Survey duration is dependent on several factors such as the complexity of the building, the ability to conduct internal surveys and availability of surveyors. A

sufficient number of people to cover all possible bat exit points and sufficient survey time are critical when the building cannot be entered.

- If night vision equipment is available, stay as long as you can see bats after dark or 3.5 hours after sunset.

If bats are observed emerging from the building or bat body-oil/ urine stains or bat guano are found, use of the building by bats has been established. See Enclosure 3 for guidance on the how to manage the site.

### **Survey Methodology: Additional Documentation**

If there are signs of bat use (e.g., urine and body oil stains, guano piles), but no bats are found, consider photographing the roost area for documentation. Signs of bat use are sufficient to establish bat occupancy in the building, but if information about which species are present is needed or desired, collect guano from as many piles as possible. Lab analysis of guano (or dead bats) can be used to help identify which species are present.

Once you leave the building or the area where bats are located, record all observations of bats or bat use on a map of the building and document your findings on the data form. Observing where and how bats are using the building may help later when deciding how to manage the facility. If bats, bat body-oil/ urine stains or bat guano are found, bat use of the building has been established. See Enclosure for guidance on the how to manage the site.

### **Data Management**

For the BLM, use the generic GeoBOB form and for the FS, the generic NRIS Wildlife form to record survey information. Forms are available on the ISSSSP website at: <http://www.fs.fed.us/r6/sfpnw/issssp/inventories/monitoring.shtml>. Maintain reports, forms, pictures and other related documents in Forest and District files.

## ***Enclosure 3***

### ***Management Recommendations for Buildings Containing or Assumed to Contain Bats***

#### **Overview**

The following provides additional direction and interpretation of the NWFP S&Gs for bats, and can be used for management or when considering conveyance of abandoned buildings assumed or determined to be occupied by bats. This enclosure also provides guidance as to how to manage or convey human-occupied buildings that contain bats under Agency Sensitive or Special Status Species (SSSS) policies.

When deciding how to manage or convey a building used by bats, it is important to consider how bats currently use the building (e.g., maternity, night-roosting, etc.) and the level of use by bats (e.g., one or two animals or an entire colony).

Retention of facilities used as roost sites is the best way to protect and conserve bats that use buildings. Creation of a new roost site or moving bats to an alternate roost site is not always successful and has not been well tested in the Pacific Northwest.

#### **Site Management Plans for Buildings**

A site management plan should be developed for each building occupied or assumed to be occupied by bats to provide a long term management strategy for the maintenance of the site. For abandoned buildings occupied or assumed to be occupied by bats, the development of such a plan is required by the NWFP S&Gs. For buildings that are occupied by people and also used by bats, the development of a site management plan is not required, but may be a useful tool in order to meet conservation needs of the bats under SSSS policies. Management plans should be updated and revised when and if building conditions change. There is no set time table for management plan revisions.

Buildings are generally not subterranean and temperatures can fluctuate greatly throughout the day or season, and may vary widely within the building. Management of a radius around a building is recommended to help reduce temperature fluctuations, minimize disturbances, and maintain the structure. In general, the management plans for a building should consider maintenance of the current solar exposure, roost access and privacy and address human and fire safety. The use of seasonal restrictions, when bats are present, can provide flexibility for building maintenance and use, as well as for activities in the area around the building.

#### **Abandoned Buildings**

NWFP Standards and Guidelines state that abandoned buildings or portions of abandoned buildings where bats are roosting or assumed to be roosting should be maintained unless safety or legal requirements prohibit the retention and protection of these facilities. It is expected that there will be some level of inherent risk to people anytime an abandoned building is retained instead of demolished or sold; managing the building to keep such risks to a minimum in order to maintain bat habitat is the objective. Please contact the Regional Office if you have conflicts or questions about consistency with the NWFP.

To encourage continued bat use, address the following goals and restrictions in the site management plan:

- Protect or maintain the building to preserve roost sites and maintain roost microclimatic conditions. Maintain buildings for bat use as long as possible without compromising safety, economic, and legal requirements.
- Schedule construction or maintenance activities for periods or seasons when bats are not present. If bats are detected during construction or maintenance, halt work until bats vacate the site. Note: In winter, it can be difficult to tell if bats are present under shingles, loose siding, etc.
- For buildings that are in imminent danger of collapsing, consider mitigating the loss of the building as bat habitat (see below).
- Don't cover or impede access points used by bats to enter the building.
- Insure that the building is protected from livestock damage. For example, don't place salt blocks in or adjacent to the building, such that placement would encourage livestock congregation that could result in erosion and compromise the building foundation or structure.
- Do not use chemical treatments or biological agents to eliminate botanical or animal pests from the building.
- If humans pose a disturbance or vandalism problem, close the structure or surrounding area to people while maintaining access for bats. Closures could include building a fence around the building, boarding up the building or in cases of extreme disturbance to sensitive and important sites, access closures.
- If possible, develop and utilize a public relations and education plan to encourage protection of bats and the associated facility (See Enclosure 4 for public education resources).
- When staffing allows, continue to check the site at regular intervals to monitor the level of human disturbance at the site and on bats. Avoid disturbing bats when monitoring their use of the facility. Use remote methods when possible.
- Maintain existing amounts and types of vegetation around the building unless the vegetation management actions are designed to reduce the risk of catastrophic wildfire. Maintain vegetation that provides wind or sun blocks. Retain flight paths used by bats to enter and exit the building.
- Develop a fire safety plan to protect the building and adjacent vegetation from fire.
- Maintain nearby water sources to encourage drinking and foraging by bats. Artificial water sources should be "bat friendly" and include exit ramps.
- Within up to a one mile radius, do not blast, or create other vibration or noise-producing disturbances when the site is being used by bats for roosting. The radius of protection should be commensurate with the potential noise impact (1 mile for blasting, significantly less for other noise creating actions). Schedule the activity during periods when bats are absent.

### Occupied Buildings

Buildings occupied by people and used as roost sites by bats are not addressed in the Northwest Forest Plan Standards and Guidelines. However, some buildings occupied by people may provide valuable regional or locally significant bat roost sites. Potential management actions that may impact bat use of these facilities should be evaluated according to Sensitive and Special Status Species policies and human safety needs.

If bats are present in human-occupied buildings, consider the following and develop specific actions to address these in a site management plan:

- Try to exclude bats from areas of the building used by humans. If possible, use seasonal restrictions on human activity to reduce impacts to bats or isolate the roost site from human activity without changing the conditions of the roost habitat.



Screening and/or boarding may be sufficient to separate bat use areas from areas occupied by humans.

- If the measures described above cannot be implemented, exclusion of bats from the building may be necessary. Close bat entrance points during seasons (or times) when bats are absent. Bats should be allowed to leave the roost, but prevented from re-entering. Otherwise, physically remove the colony from the roost before completing the exclusion.
- If exclusion of bats is necessary, species identification may be needed in order to prepare an adequate biological evaluation or environmental analysis. When evaluating the effects of a proposed action on bats, determine how the building or structure is being used by the bats.
- Attempt to mitigate roost habitat when excluding bats from buildings (see below).

### **Considerations for mitigating building loss**

Where retention of a building is not possible because human health and safety outweigh the importance of managing the building for bat habitat or there are other extenuating legal considerations (such as conveyance), field units should document their rationale and mitigate for the loss of the building. The type of mitigation needed is dictated by how bats are currently using the building (maternity site, hibernacula, etc.). Consider the following:

- Assess the surrounding area to determine if potential alternative roosting or maternity sites are already available (snags, bridges, other buildings, etc.). If there are alternative roosts or maternity sites, then maintain and protect these alternative sites as mitigation for the lost building.
- If alternative sites are not available, modify nearby structures (bridge, building, trees, snags, etc.) to accommodate bat use or install alternative bat structures (e.g., bat boxes).

Bat structures could include snag and green tree manipulation (slots, cavity creation, etc.) or Oregon wedge and rocket style boxes or other alternate habitats. Refer to Enclosures 5 and 6 for additional information on structures and bat boxes.

- Experiment with different artificial roost structures and placements that imitate the microclimatic conditions of the original roost.
- Develop alternate shelters for bats a year or more in advance of structure removal to allow bats time to move to another location.

## *Enclosure 4*

### *Bat Educational/Informational Sources*

The following are resources for dealing with bats in buildings, including effective exclusion of bats from buildings. The sites also include information and designs for bat boxes.

Bat World Sanctuary

[http://www.batworld.org/bat\\_problems](http://www.batworld.org/bat_problems)

Bat Conservation International

<http://www.batcon.org/>

Bats Northwest

<http://www.batsnorthwest.org/>

Bat Conservation and Management

<http://www.batmanagement.com>

Additionally, Oregon Department of Fish and Wildlife maintains a list of Wildlife Control Specialists, including those who specialize in bats.

[http://www.dfw.state.or.us/wildlife/license\\_permits\\_apps/wildlife\\_control\\_operator\\_contacts.asp](http://www.dfw.state.or.us/wildlife/license_permits_apps/wildlife_control_operator_contacts.asp)

## Enclosure 5

### Oregon Wedge Bat Box design

(Steve Cross)

## Building a Better Bat Box

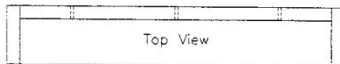
Having no light leaks appears to be important to bats selecting a roost. This style of construction makes light-tightness easier to achieve and maintain, even if the boards warp after installation, and increases the potential usefulness of the box. Also, this design is easy to mount on buildings or trees, using the backboard that extends at the top and bottom. The box should be assembled using wood screws, and seams should be caulked. Dimensions may be modified depending on lumber, but the inside gap should be  $1/2"$  at the top and  $1-1/4"$  at the bottom of the box.

(Field-tested and designed by Dr. Steve Cross, S.O.U.)

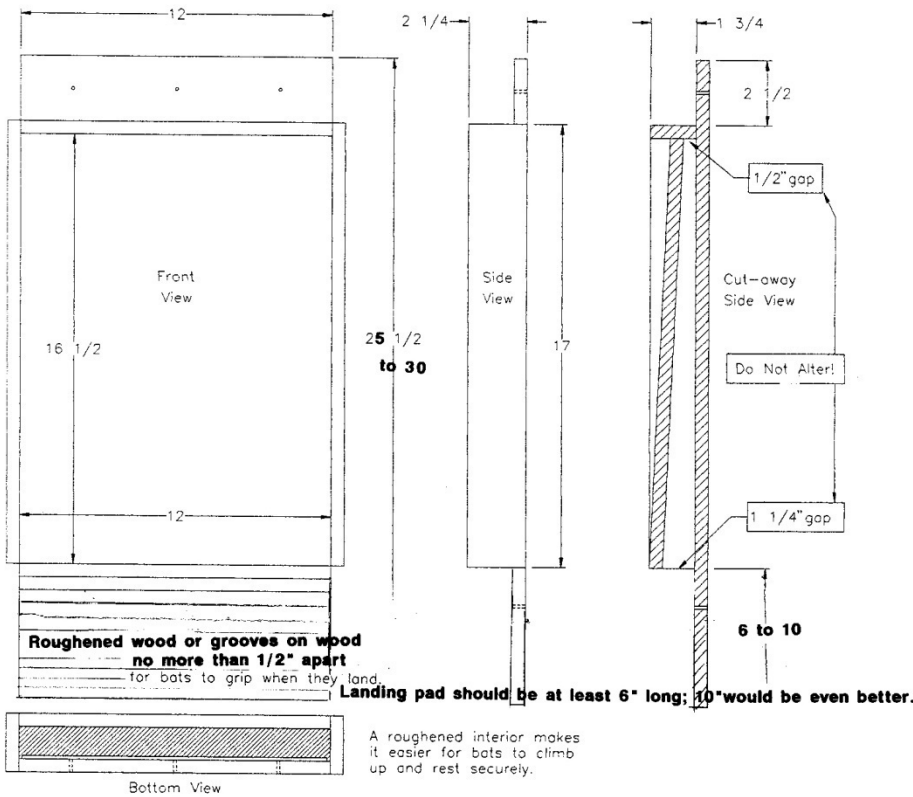
**Mount box where cats cannot easily access it. Bats love heat, so maximize solar exposure.**

**A dark or black finish is best. Three coats of exterior latex & a shingled roof will increase durability.**

Note: All dimensions are in inches.



Note:  $1/2"$  plywood for drawing purposes.  
Material sizes & dimensions are optional,  
except where noted.



*Enclosure 6*



U.S. Department of Agriculture  
Forest Service  
333 SW 1st Avenue, P.O. Box 3623  
Portland, OR 97208



U.S. Department of the Interior  
Bureau of Land Management  
1515 SW 5th Avenue, P.O. Box 2965  
Portland, OR 97208

January 2001

**Record of Decision  
and  
Standards and Guidelines**  
  
**for**  
**Amendments to the Survey and Manage,  
Protection Buffer, and other Mitigation Measures  
Standards and Guidelines**



*Forest Service National Forests in Regions 5 and 6 and the Bureau of Land Management  
Districts in California, Oregon, and Washington Within the Range of the Northern Spotted Owl*

## **XI. Provide Additional Protection for Caves, Mines, and Abandoned Wooden Bridges and Buildings that are Used as Roost Sites for Bats**

### **Standard and Guideline**

Most bat species occurring in the Pacific Northwest roost and hibernate in crevices or caverns in protected sites. Suitable roost sites and hibernacula fall within a specific range of temperature and moisture conditions. Sites commonly used by bats include caves, mines, snags and decadent trees, wooden bridges, and old buildings. Provisions for retention of large snags and decadent trees are included in the standard and guideline for green tree patches in the Matrix. Caves and abandoned mines, wooden bridges and buildings, however, are extremely important roost and hibernation sites for which additional feasible protection measures are required to ensure their value as habitat is maintained.

This standard and guideline applies to all bat species that would benefit and that the reserves and other standards and guidelines of the Northwest Forest Plan may not provide a reasonable assurance of persistence. In all land allocations, protect caves, and abandoned mines, wooden bridges and buildings used by bats from destruction, vandalism, and disturbance from road construction or blasting, or other activities that could change microclimate conditions or drainage patterns affecting use by bats. Protection of these structures must be contingent on safety concerns and legal requirements. Management of occupied sites will be consistent with the bats Management Recommendation. Site-specific roost plans based on inventory and mapping of resources will be completed when such plans are a needed tool to protect or mitigate roost habitat for bats.

The Management Recommendation provides specific instructions for meeting the objectives and requirements of this standard and guideline. Management Recommendations for these species may be revised using the same process described in these standards and guidelines for preparing or revising Management Recommendations for Survey and Manage species. The Management Recommendations may include guidelines for: (1) conducting searches; (2) identifying likely bat use; (3) identifying appropriate circumstances for species identification; (4) establishing conditions under which specific mitigation measures will be applied to project activity plans; (5) describing various no-harvest buffer widths to fit specific habitat conditions; or, (6) other guidelines to help determine site-specific management needs.

For the purposes of this standard and guideline, caves are defined as in the Federal Cave Resources Protection Act of 1988 as:

*“Any naturally occurring void, cavity, recess, or system of interconnected passages which occur beneath the surface of the earth or within a cliff or ledge (...but not including any ... man-made excavation) and which is large enough to*

*permit an individual to enter, whether or not the entrance is naturally formed or man-made.”*

## **Management Recommendation**

This Management Recommendation is intended to provide additional feasible protection for roost sites for bats including the fringed myotis, silver-haired bat, long-eared myotis, long-legged myotis, pallid bat, and Townsend's big-eared bat. This species list should be revised as necessary to include other bat species that: (1) would benefit from inclusion in this standard and guideline, and (2) the reserves and other standards and guidelines of the Northwest Forest Plan may not provide a reasonable assurance of persistence.

The Agencies will determine if each cave, abandoned mine, abandoned wooden bridge, and abandoned building that may be affected by the Agencies' management activities warrants management as an occupied bat site. To make this determination, the Agencies may either conduct non-intrusive surveys to determine presence of bats, or may presume presence where conclusive surveys are not conducted. Criteria for defining non-intrusive surveys, survey conclusiveness and occupancy are to be described in the Survey Protocols and Management Recommendations, as appropriate. Individual species identification is not required in order to presume occupancy by target species. For sites occupied by bats, the Agencies will prohibit timber harvest within 250 feet of the site, and develop management direction for the site, as necessary, that includes an inventory and mapping of resources, and plans for protection of the site from vandalism, disturbance from road construction or blasting, and any activity that could change cave temperatures or drainage patterns. The size of the buffer, and types of activities allowed within the buffer, may be modified through the management direction developed for the specific site.

Townsend's big-eared bats are of concern to state wildlife agencies in both Washington and Oregon. These bats are strongly associated with caves, and are extremely sensitive to disturbance, especially from recreational cavers. When Townsend's big-eared bats are found occupying caves or mines on federal land, the appropriate state agency should be notified, and management prescriptions for that site should include special consideration for potential impacts on this species.

## **XII. Former Protection Buffer Species Without Management Recommendations**

For former Protection Buffer species included in Survey and Manage but without approved Management Recommendations, management of known sites will follow the former Northwest Forest Plan Protection Buffer direction (except no LSRs or MLSAs are created), latest information (including that displayed in the November 2000 Survey and Manage FSEIS), and best professional judgement until a Management Recommendation is approved. Listed below is the former Protection Buffer direction for the five affected species: great gray owl and Del Norte, Siskiyou Mountains, Larch Mountain, and Shasta salamanders. This direction will be replaced with