

# U.S. Fish and Wildlife Service (USFWS), Region 6, Recommended Protocol for Conducting Pre-construction Eagle Nest Surveys at Wind Energy Projects

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Version 3.0

**NOTE:** This protocol was developed for conducting pre-construction eagle nesting surveys in USFWS Region 6 states (Colorado, Utah, Wyoming, Montana, North Dakota, South Dakota, Nebraska, and Kansas). This voluntary guidance consists of a general nest survey protocol for eagle nests to complete a survey of the project-area nesting population of eagles for a proposed wind energy facility and it is only intended for this purpose. Further, this protocol should be used to determine eagle productivity parameters and it should be applied for both bald and golden eagles. For the nest survey protocol, the key productivity parameters that should be determined are occupancy/ in-use status, productivity, and nest success. Of these three parameters, determination of nest occupancy/ in-use status is especially important.

A key purpose of this recommended eagle nest survey protocol is to provide a comprehensive assessment of nest occupancy (i.e. in-use nests) over the project area for the full eagle nesting season. Another purpose is to provide useful data on eagle nest productivity and nest success. Both types of data are needed for USFWS Migratory Bird Management Office (MBMO) to provide the wind project proponent with our best recommendations for avoidance and minimization of eagle take for the project.

Also, this recommended protocol is for wind energy projects that are medium or large in size (dozens to hundreds of wind turbines). It is not recommended for small wind energy projects (i.e. those that are about 15 wind turbines or less in size). Instead, for wind project proponents developing small wind projects contact the USFWS, Region 6, MBMO and we will provide an appropriate protocol for the project. Protocol recommendations for small wind energy projects provided by Region 6 MBMO will be less comprehensive and require less effort and cost to implement. This is consistent with the idea that generally these small wind projects are less risky for eagles than other wind projects. Hence a different protocol scaled to this lower level of risk is an appropriate nest survey approach for these smaller wind energy projects.

The protocol recommendations are designed to be generally consistent with, and to complement and supplement, the USFWS recommendations for surveying project-area nesting populations of eagles as detailed in Appendix C of the USFWS Eagle Conservation Plan Guidance (ECPG) (USFWS 2013), as updated by USFWS, Headquarters Office, Division of Migratory Bird Management (DMBM), in a guidance memo signed by Jerome Ford, Assistant Director for Migratory Birds (USFWS, April 2020).

USFWS, Region 6 consists of 8 U.S. states with considerable variation in latitude and elevation. Given this the recommended survey dates for doing the nest survey visits may not be optimal for all latitudes and elevations in Region 6 states. Hence, on a wind project-specific basis USFWS, Region 6,

Migratory Bird Management Office will provide a revised version of this protocol with dates more appropriate for some areas in Region 6 when there is available data that establishes that the eagle nesting phenology differs from the phenology used to develop the protocol below.

### **Recommended Protocol for General Bald and Golden Eagle Nest Surveys:**

**First Visit/First Survey:** Complete this survey from 1 January to the end of the 3<sup>rd</sup> week of February. These should be ground-based nest checks with emphasis on, but not limited to, known/historic eagle nests within the survey area. Use historic nest records and, at a minimum, visit all known historic eagle nests within the survey area. Check to determine whether or not nests are occupied/in-use (see definitions below).

**Second Visit/Second Survey:** Complete this survey during the time period from the beginning of the last week of February through the 3<sup>rd</sup> week of March. This visit/survey should be an aerial survey of the search area for eagle nests. Collect key location data for nests including geographic coordinates for all nest locations. One key objective with this aerial survey is determining the locations of all historical eagle nests structures and checking these to determine if they are occupied/in-use in the current nesting season. The other major objective for this survey effort should be to look for new eagle nests within the survey area. Hence, this survey effort should include a survey of all suitable nesting habitat for both bald and golden eagles in an attempt to locate new nests. An aerial survey is recommended during this time period when occupancy/in-use status of nests by eagle pairs should be at a peak, and it should encompass the mean egg-laying dates for these pairs.

**Third Visit/Third Survey:** Complete this survey from the beginning of the last full week of March through the end of April. These should be ground-based nest checks with emphasis on updating the status of all occupied/in-use nests being tracked for the current nesting season based on the results from the first and second visits.

**Fourth Visit/Fourth Survey:** Complete this survey from the beginning of the 3<sup>rd</sup> week of April to the end of May. This visit/survey also should be an aerial survey of the search area for eagle nests during the peak of eagle nesting activity for the nesting season. This visit should confirm which nests are occupied/in-use and yield information about productivity (see definition below) for these nests. Also, this visit should again include a search of all suitable nesting habitat for bald and golden eagles just like the Second Visit/Second Survey. Using this approach all the suitable eagle nesting habitat within the survey area boundary will have been checked twice during the current nesting season which should greatly reduce the chance that new eagle nests are missed. An aerial survey is recommended for this visit since this time period should encompass the mean hatch dates for eagle pairs and it should be optimal for determining brood size.

**Fifth Visit/Fifth Survey:** Complete this survey from the beginning of June to the end of the first week of July. These should be ground-based nest checks with an emphasis on determining if nests are successful or whether they have failed. Another emphasis should be on determining productivity of occupied/in-use nests. Surveys conducted during this period should overlap with mean dates when

nestlings in this area are about 55 to 70 days old. Hence this period is especially important in determination of fledge rates for the young eagles.

**Sixth Visit/Sixth Survey:** Complete this survey from the beginning of the second week of July through the end of August. Timing of this visit should be carefully tied to outcomes from the fifth visit. If young are at late nestling stage during the fifth visit, the sixth visit should follow more closely (within at least 2 weeks of the fifth visit). These should be ground-based nest checks. Further assess productivity and make a final estimate of nest success for all occupied/in-use eagle nests during the current nesting season. These visits also have increased importance for determining productivity parameters for eagle pairs that either nested late or that failed in their first nesting attempt and then re-nested during this same nesting season.

**Other Visits:** There may be some eagle nest sites that are more challenging to make determinations on for occupancy/in-use status, productivity, and nest success. Therefore, other visits may be necessary in addition to the six visits outlined above to collect these data.

### **Definitions:**

**Alternate Nest-** Means one of potentially several nests within a nesting territory that is not an in-use nest at the current time. When there is no in-use nest, all nests in the territory are alternate nests. Definition from Code of Federal Regulations, Title 50 Wildlife and Fisheries, Part 22, Sub-Part 22.3.

**In-Use Nest-** Means a bald or golden eagle nest characterized by the presence of one or more eggs, dependent young, or adult eagles on the nest in the past 10 days during the breeding season. Definition from Code of Federal Regulations, Title 50 Wildlife and Fisheries, Part 22, Sub-Part 22.3.

**Occupied Nest\*** is a nest used for breeding in the current year by a pair of eagles. Presence of an adult, eggs, or young, freshly molted feathers or plucked down, or a current year's mutes (whitewash) suggest site occupancy. In years when food resources are scarce, it is not uncommon for a pair of eagles to occupy a nest yet never lay eggs; such nests are considered occupied. Definition from the USFWS 2013 Eagle Conservation Plan Guidance.

**Productivity-** The number of juveniles fledged from an occupied nest, often reported as a mean over the sample of nests. Definition from the USFWS 2013 Eagle Conservation Plan Guidance.

\*Note- Additional evidence that can be used to help confirm occupancy/in-use status include the presence of a new stick nest at a location where there was not one previously, evidence of substantial repair to an existing nest/ addition of many sticks to an existing nests, the presence of one or more freshly killed prey items, eggshell fragments below the nest, and the presence of some fresh greenery or other decoration in a nest structure.

**Disturb-** means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering

behavior. Definition from Code of Federal Regulations, Title 50 Wildlife and Fisheries, Part 22, Sub-Part 22.3.

#### **General Guidelines for Eagle Nest Visits/Surveys:**

- Conduct all monitoring in a safe manner. All field work involves some risk; however, human safety is always a priority.
- Per the USFWS Headquarter Office, DMBM guidance memo (USFWS, April 2020) cited above, the recommended minimum boundary for eagle nest survey work in Appendix C of the ECPG (USFWS 2013) has been updated. The new recommended minimum bound for the eagle nesting survey area should be the wind project footprint and all area within 2 miles of this (USFWS, April 2020). The 2 mile survey boundary also should be applied to the second year of the eagle nest survey effort.
- Per the USFWS ECPG locations of occupied nests/ in-use nests of eagles should be determined within the project area for no less than 2 breeding seasons prior to construction (USFWS; Appendix C).
- For eagles, generally no less than 6 visits/surveys per nesting season with visits/surveys scheduled and completed in appropriate time windows relative to the full eagle nesting season. For bald and golden eagles in USFWS Region 6 states, this is generally 1 January through 31 August each year, although these dates can be refined and modified as field data is collected over time on species and site-specific information (ie. latitude, elevation, or both). There are exceptions to this 6 visit/survey recommendation for those cases where either nesting efforts fail, or the nest is not occupied/in-use during the current nesting season. These exceptions are covered in greater detail in bullet items below.
- Visits/surveys should also be spread out appropriately throughout the full eagle nesting season for each year of survey effort. Generally, there should be no less than approximately 3 weeks between visits/surveys nor should there be more than roughly 6 weeks between visits/surveys.
- All nests should be visited multiple times including nests that are determined to have failed. For bald and golden eagle nests that fail, continue monitoring visits at least through April 1. If as of April 1 there is no change in status for a failed nest, then no further monitoring beyond this date is necessary for the current nesting season.
- In addition to visiting any known or suspected eagle nests the project-area nesting population survey should include all potential eagle nesting habitat within the project area (USFWS ECPG; Appendix C).

- Map the full survey area at the beginning of each eagle nesting season and survey the same geographic area for repeated visits within each nesting season. For the second year of nest survey work survey the same search area as during the first year to ensure consistency in the survey effort between consecutive years.
- At least 2 of the visits/surveys should be aerial surveys. Use of helicopter for aerial surveys is recommended over the use of fixed-wing aircraft but the choice of aircraft type is solely at the discretion of the wind company completing the survey. The 2 aerial surveys should occur at least 60 days apart. It may be desirable to conduct the second aerial survey during early May. During this time, eggs or young in occupied/in-use nests should be clearly visible. Alternately, this is when it is possible to confirm that an eagle nest is unoccupied/alternate nest status, if that is the case.
- Report take of eagles, or problems (e.g., rotor wash knocks nestling out of nest) or observations of illegal activities to the USFWS as soon as possible so that appropriate actions can be taken (e.g., contact rehabilitator, additional monitoring, adjustments in methods, law-enforcement investigation, etc.).
- Determining that an eagle nest is not occupied/in-use during the eagle nesting season: At least three surveys are needed to determine that an eagle nest is not occupied or in-use during the current nesting season and these should occur between early February and early May. In making a determination that the nest is not occupied/in-use, the last 2 surveys to confirm that the nest is unoccupied should be at least 4 hours long. Also, these last 2 surveys should be ground-based nest checks. The reason for conducting multiple nest visits, with some individual visits extending over longer time periods and for these visits to be spaced out over a longer portion of the nesting season, is to demonstrate that a sufficient effort was invested for a nest where a determination is made to classify it as unoccupied/ alternate nest. A single nest visit of short duration could easily result in a determination that a nest is unoccupied/alternate nest, yet the adults may simply have been away from the nest during the visit yielding a false conclusion about the occupancy/in-use status of the nest. Sites where nests are missing (not observed, could not be located) or are gone (tree blew down, nest fell off cliff) should be rechecked according to the schedule to look for rebuilding at the same or a nearby location, rather than assuming the nest is not occupied/in-use.
- For nest visits where a determination that the nest is occupied/ in-use by eagles (per the above definitions), ground-based surveys need only last until the confirming evidence is observed and documented.
- Within a nesting season, once a nest has been determined to be occupied/ in-use, continue to monitor that nest following the above protocol until the young have fledged from the nest or the nest fails, whichever happens first.

- Use qualified biologists to conduct the nest survey – this is especially important for aerial surveys.

Create standard data forms for recording data from ground-based surveys and aerial surveys and complete these each time a survey is conducted. The data forms should at least include the following: Date, survey number, time the survey was conducted, names of surveyors, method(s) used, unique nest identifier (number or name), geographic coordinates for nests (ie. Latitude/Longitude or UTM and the projection system), description of the location to help locate the nest (e.g., approximately 30 feet from the top of the cliff), type of nest structure/substrate (e.g., cliff, tree), species, condition of the nest (e.g., new, good, dilapidated, gone, etc.), whether eagles were seen at or near the nest, the number of eagles and eggs and young observed, and other indications that the nest is used by eagles (e.g., greenery, whitewash, eagle feathers, white down tufts, eggshells, and prey remains. Eagle nests should also be documented with digital photography. If an eagle nest being checked during the current year survey effort is being used in the current nesting season by another non-eagle bird species note this.

- Whether doing aerial surveys or ground-based nest monitoring, use appropriate methods and cautions so that the monitoring work itself does not disturb nesting eagles (ie. will not cause disturbance take of eagles per the definition of disturb, above).
- If the above USFWS Region 6 eagle nest survey protocol for wind energy projects cannot be followed, as recommended in this guidance memo, then we recommend that the survey report for the nest survey work completed for the project document how the USFWS, Region 6 protocol was modified. Also, a rationale should be provided to explain why these modifications were made.
- This guidance memo provides a recommended USFWS, Region 6 nest survey protocol for wind energy projects that is specific to eagle nests. However, per the USFWS Land-Based Wind Energy Guidelines (USFWS 2012) we also recommend, for all wind projects completing pre-construction eagle nest surveys, that all other occupied non-eagle raptor nests located during the eagle nest survey also be recorded and documented. This recommendation for non-eagle raptors is for the same 2-mile survey buffer used for eagle nest surveys.