

Recommended Protocol for Evaluating Wildlife Habitat for Washington State Department of Transportation Projects

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Recommended Protocol for Evaluating Wildlife Habitat for Washington State Department of Transportation Projects

This document describes the protocol for evaluating wildlife habitat and determining the wildlife species that would likely inhabit a project area. The protocol was developed to provide a standard framework for evaluating wildlife habitat during the preparation of environmental review documentation required by the National Environmental Policy Act for Washington State Department of Transportation (WSDOT) projects. The following protocol consists of guidelines for compiling the necessary information, mapping wildlife habitat, and evaluating the units for the actual presence of wildlife. It also provides information on the analyses that should result from the research, mapping, and habitat assessments. The protocol includes an office-based research phase and a field verification phase.

1 Preliminary Research and In-Office Analysis

Review of Project Description and Determination of Study Area

The project description should discuss the purpose of the project and need the for the project, the project footprint, and the project study area. Typically the study area includes both the existing right-of-way and any new right-of-way and should extend a minimum of 300 feet outside the boundaries of the project footprint. The study area should also include the extent of any expected impacts beyond the project footprint, such as noise disturbance areas or downstream sedimentation areas. Additionally, the study area should include the regulated management zones for species that may potentially occur in the project vicinity. These management zones would include such features as spotted owl management circles and buffers around bald eagle nests, roosts, and shoreline foraging areas that are required by the U.S. Fish and Wildlife Service.

Review of Available Information

Potential wildlife species likely to occur in the study area should be identified by reviewing information from applicable federal, state, and local natural resources agencies. Lists of endangered, threatened, sensitive, or candidate wildlife species at either the federal or state level can be obtained from the following:

- U.S. Fish and Wildlife Service
- Washington Department of Fish and Wildlife
- Washington Department of Natural Resources
- Other relevant jurisdictions (e.g., local tribes, U.S. Forest Service, National Park Service, and local agencies).

Fish species and habitat should be addressed in a separate technical report (see *Recommended Protocol for Evaluating Fisheries Resources for Washington State Department of Transportation Projects* [WSDOT 2007]). The U.S. Fish and Wildlife Service provides a list of species by

county, and the Washington Department of Fish and Wildlife provides a statewide map (Priority Habitat and Species maps) that identifies endangered, threatened, sensitive, and candidate species. Based on general habitat conditions in the study area, migratory birds protected under the Migratory Bird Treaty Act should also be identified. A complete list of protected birds is available from the U.S. Fish and Wildlife Service. Species of local importance that may not be listed at the federal or state level should be requested from the appropriate jurisdictional agency in the project vicinity.

After the potential species in the study area have been identified, local wildlife biologists should be contacted to discuss any specific sightings of endangered, threatened, sensitive, or candidate species in or adjacent to the study area, as well as other species that are considered locally unique, rare, or of local importance.

From this species research, a list of species that are likely to occur in the study area should be developed. Although this list will provide a starting point for identifying species that may be present, the actual habitat types identified in the study area will dictate the species that need to be addressed in the report. The habitat and life-cycle requirements of each species on the list should be compared to the potential project impacts (such as vegetation clearing, noise, or removal of snags) and documented in a matrix showing the species, their habitat needs, and potential risks to the species resulting from the project. These risks could include the elimination of habitat corridors, disruption of breeding periods, permanent habitat loss, or other factors. As indicated, the matrix should address spatial impacts (loss of desirable habitat or loss of proximity to connecting habitats) as well as temporal impacts (such as disturbances during sensitive life-cycle periods). This matrix will provide guidance for assessing the need for and scope of followup field-based wildlife surveys. Most projects are not expected to require specific wildlife surveys.

Useful websites with additional information for the wildlife habitat discipline report are indicated at the end of this document.

Preparation of Wildlife Habitat Base Map

A map of the study area based on geographic information system (GIS) data (including the existing right-of-way, the new right-of-way, and 300 feet on either side of the project footprint boundary) should be created. The map should also show the project impact areas as defined by the project description. The map should show roads and natural features, such as lakes, streams, and wetlands. Local jurisdictional boundaries and property boundaries may also be included. As relevant, the GIS information discussed below should be included.

The use of GIS data to evaluate potential wildlife habitat data requires an assessment of the most current and accurate data available. These data can be obtained from a variety of sources and can vary in terms of level of completeness, spatial scale, and temporal scale. The following list includes a number of sources for GIS-based wildlife habitat information. These data sources should be reviewed and the most detailed sources for the particular area should be used to develop a habitat map for the study area that will subsequently be field verified.

Aerial Photography – Aerial photographs should be used as the basis for delineating vegetation and/or land-use-type polygons. Each vegetation type should be delineated and digitized into

polygons that will ultimately be identified and field verified. Each digitized polygon should be specific to a particular habitat type.

Black and white aerial photographs are available in different formats and spatial resolutions. U.S. Geological Survey (USGS) digital orthophoto quarter quadrangles have an approximate spatial resolution of 1 meter, and coverage includes the entire state of Washington. The dates of these photographs range from 1990 to 1994.

The USGS also has geo-referenced color aerial photographs available for most urban areas covering the central Puget Sound. Photographs were taken in June 2002 with a pixel resolution of 1 foot. Often aerial photographs are also available from various local sources. For example, aerial photographs are available from the City of Seattle, Bainbridge Island, Snohomish County, and Yakima County. Other resources are the WSDOT GIS library, university digital maps and data, and historical archives.

USGS Topographic Quadrangles – USGS topographic quadrangles should be used as a base map to check aerial imagery features, vegetation extents, and in some cases landscape changes. USGS has digital topographic quadrangles available as a digital raster graphic (DRG) files. The DRG maintains the horizontal precision of the 7.5-minute source map that meets National Map Accuracy Standards (NMAS), and the scanned raster image is available in GeoTIFF format.

Land Use and Land Cover – If available, land use and land cover data can be used to identify different vegetation and land use zones as a basis for delineating the habitat unit areas. Zoning or comprehensive plan layers are available from certain counties and may also be used; of particular relevance are sensitive or critical areas maps. Land cover data compiled from Landsat satellite flights in 1998 are available for the Puget Sound region from the University of Washington Libraries aerial photograph collection. Outside the Puget Sound area, individual counties need to be contacted to determine the availability of land use and land cover data.

National Wetlands Inventory – The U.S. Fish and Wildlife Service has mapped wetland features and stored them as GIS shapefiles corresponding to a single 1:24,000-scale USGS quadrangle. Data were mapped from 1977 to the present. National Wetlands Inventory data are to be used to identify and map wetland habitat types and provide information about watershed processes. Many jurisdictions also have wetland inventories that may provide more detailed and accurate wetland information.

StreamNet – The StreamNet database is a cooperative information management and dissemination project focused on fisheries and aquatic-related data in the Columbia River basin and the Pacific Northwest. The project provides various types of data related to fish resources and maintains the 1:100,000-scale hydrography layer for the Pacific Northwest. Information is available through the online database query or by custom request. The database is continually updated as new data are received.

Soils – The Natural Resources Conservation Service has produced the comprehensive Soil Survey Geographic (SSURGO) database that should be used to assess the types of soils in the study area. Soil type is a critical variable that may determine the category and amount of vegetation that is available to wildlife as food and cover. SSURGO is a digital soil survey that

was prepared by digitizing detailed soil maps. It generally includes the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. If the project is in a forested area, forest soils in Washington are available through the Private Forest Land Grading system.

Priority Habitat and Species – Digital fish, wildlife, and habitat data are available through the Washington Department of Fish and Wildlife. Priority Habitat and Species data were compiled on 1:24,000-scale USGS 7.5-minute topographic maps and contain shapefile polygons of fish and wildlife resources based on research and field surveys conducted over the past 30 years. Any priority habitats and species included in the data for the study area should be added to the compiled GIS data.

Washington Gap Analysis – Washington Gap Analysis GIS range maps represent a detailed analysis of the conservation status of land cover and vertebrate species (excluding fish) in the state. The gap analysis should be used for location data and predicted distributions of Washington wildlife. Vegetation was mapped from 1991 satellite Thematic Mapper imagery and other records using the National Vegetation Classification System (FGDC 1997). Native animal species ranges are mapped by using museum and agency records of specimen collections in conjunction with known general ranges and the animals' affiliation with the previously mapped vegetation types and other physical characteristics. These data are combined and displayed at a cartographic scale of 1:100,000.

Washington Natural Heritage Program – The Washington Natural Heritage Program is a GIS data set available through the Washington Department of Natural Resources. It contains the most authoritative information available for rare plant species populations and endangered ecosystems in Washington and should be used to identify sensitive habitat types in the study area. Data were digitized at the 1:24,000 scale from field reports of scientists who have hand-mapped the inventory locations.

Northwest Habitat Institute – Current Washington habitat types were identified and created by the Northwest Habitat Institute and the Washington Department of Fish and Wildlife Habitat Program. Wildlife-habitat types were mapped for all land and coastal areas of the state using Landsat Thematic Mapper data with ancillary data and extensive field mapping to create a 1:100,000-scale grid. These habitat types should be used in the creation of new habitat types or to verify habitat types previously identified in the study area.

Local Habitat Inventories – Local data from sources such as the city; the county; the U.S. Forest Service; local, state and federal park services; the Washington Department of Natural Resources; or other local surveys would add a finer level of detail to habitat types and features that may be found in the study area. Local habitat inventories may provide information on important habitats within a jurisdiction and allow an assessment of the relative rarity or importance of a particular habitat type.

Identification of Habitat Unit Polygons

Habitat units should be identified by classifying the vegetation types within the study area that are apparent in the aerial photographs. Classifications of vegetation community types are

described in the following section. Polygons should be drawn around each vegetation community type (e.g., mature conifer forest, shrub habitat, and grassland) corresponding with identifiable vegetation breaks. Each polygon represents a separate habitat unit classification with attributes indicating the vegetation type.

Additional base data layers identified in the previous section will be added as these data are available. Priority Habitats and Species and Washington Natural Heritage Program data that fall within the study area indicate high-quality or rare habitat types, and they need to be mapped because they directly increase the value of the habitat unit with which they intersect.

Classification of Habitats

Habitat units should be classified according to structural categories defined in *Natural Vegetation of Oregon and Washington* (Franklin and Dyrness 1988) and *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil 2001). The former provides categories based on the dominant plant species present. The latter provides information on overall structural features and general plant types, as well as some information on potential wildlife usage. In combination, both structural and plant association information is included in habitat evaluations. If appropriate, habitat types can be refined based on local inventories or other organized mapping projects.

Development of Wildlife Species List

A wildlife species list should be developed using the lists assembled during the preliminary research phase, coupled with information generated during the classification of habitats.

2 Field Verification of Habitat Types

After the preliminary research and delineation of habitat units and the characterization and mapping of habitat units, the habitat units should be field verified to confirm or revise the habitat unit categories, document the presence of habitat structural features, and check the spatial accuracy.

Habitat Assessment

The results of the habitat assessment are intended to provide a qualitative value for the habitat potential of each habitat unit. The habitat assessment should include information related to the rarity and importance of the habitat type, structural features, special habitat features, and connectivity with other habitats. This information should be used to document the potential effects of proposed actions on wildlife species and habitats.

Particular habitat features often are critical in supporting wildlife species at particular stages of their life history. A list of habitat features specific to the project vicinity should be consulted and the presence of any of these features should be tallied during the field assessments. This list should be generated by a review and analysis of the species list and matrix of species requirements and potential project-related risks that was developed for the project. Typical special habitat features in Puget Sound lowlands include snags, large downed wood, cliffs, caves, and ground water springs. The occurrence of any special habitat features would suggest the

potential to provide a more diverse habitat for wildlife. The presence of particular habitat features also indicates the potential for supporting a particular wildlife species. This synthesis requires knowledge of habitat features important for various wildlife species and should be included in the matrix of species requirements and potential project-related risks.

Wildlife use and habitat quality is also dependent on the connectivity between wildlife habitat units. These connections provide movement corridors, migration routes, access to varied habitats for various life-history stages, dispersal areas for offspring, and access to foraging areas or prey sources. Elements to be evaluated include the types of connected habitats, degree of connectivity, barriers to connectivity, and types of habitats for which connectivity has been demonstrated to benefit wildlife habitat. This evaluation should be conducted using a combination of preliminary research (e.g., GIS, aerial photographs, and contact with agency biologists) and field verification of connectivity.

The mapped habitat units should be overlain by the project impact areas to establish the effects of the project on wildlife habitat. The overlay should include the calculated area of noise disturbances, permanent and temporary construction disturbance, and any detrimental effects on the quality of surface water and aquatic habitats in specific habitat units. Evaluations of potential effects on wildlife corridors, disruption or isolation of a portion of a habitat area, or other factors, should be conducted, based on the project setting and the wildlife species that are associated with that setting or potentially adversely affected by the proposed project.

Photographic Documentation

Digital photographs of representative habitat units should be taken. In addition, photographs should be taken of signs of wildlife and significant habitat features indicating wildlife use or presence, such as (but not limited to) woodpecker workings, nests, suitable nest trees, wildlife sightings, and dens.

3 Detailed Wildlife Surveys

The risk matrix and habitat assessment will provide a general idea of the species groups that are likely to use the habitats in the study area. If documented protected species are present, a species-specific wildlife survey may be necessary to confirm their presence or absence. The need for and scope of these surveys would be determined by the analysis of the potential species list and matrix, the habitat unit mapping, and the potential project effects.

4 Website Information Sources

The following online sources may provide useful information:

- Guide to the laws and treaties of the United States for protecting migratory birds
<http://www.fws.gov/migratorybirds/intrnltr/treatlaw.html>
- Landsat land cover analysis
<http://depts.washington.edu/cwws/Research/Projects/landsat.html>
- National Marine Fisheries Service listed species
<http://www.nwr.noaa.gov/Species-Lists.cfm>

- Natural Resources Conservation Service soils maps
http://www.or.nrcs.usda.gov/pnw_soil/mo1_templates.html.
- Northwest Habitat Institute
<http://www.nwhi.org/>
- Soil Survey Geographic (SSURGO) database
<http://www.soils.usda.gov/survey/geography/ssurgo/>
- University of Washington Libraries aerial photograph collection
<http://geo.lib.washington.edu/website/aerials/viewer.htm>
- U.S. Fish and Wildlife Service listed species
<http://www.fws.gov/westwafwo/speciesmap.html>
- U.S. Fish and Wildlife Service migratory birds list
<http://www.fws.gov/migratorybirds/>
- Washington Department of Fish and Wildlife Priority Habitats and Species
<http://wdfw.wa.gov/hab/phspage.htm>
- Washington Department of Natural Resources Natural Heritage Program
<http://www.dnr.wa.gov/nhp/refdesk/index.html>
- Washington Gap Analysis
<http://198.238.33.67/wlm/gap/dataprod.htm>

References

Franklin, J.F. and C.T. Dyrness. 1988. Natural Vegetation of Oregon and Washington. Oregon State University Press, Corvallis, Oregon.

Johnson, D.H. and T. A. O'Neil. 2001. Wildlife-Habitat Relationships in Oregon and Washington. Oregon State University Press, Corvallis, Oregon.

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