



Guidance

Conducting Habitat Assessments and Presence/Absence Surveys

This guidance document will be used by consultants and district environmental staff to standardize general habitat assessments and specific habitat assessments for protected and imperiled species (see below). The purpose of this document is to provide technical experts with a resource to ensure that the potential presence of and impacts to protected and imperiled species and their habitats are appropriately evaluated and documented.

The habitat assessment process may include two primary steps. The first step is to characterize the habitat present in a project area. The project area is where all activities described as part of the action will occur. If potentially suitable habitat for protected and/or imperiled species is identified, the second step is to conduct presence/absence surveys for protected and/or imperiled species.

Data gathered from habitat assessments and presence/absence surveys will be used to complete the required biological forms found in the TxDOT Natural Resources Toolkit (e.g., Species Analysis Form, Species Analysis Spreadsheet, etc.). Consult the appropriate guidance documents in the Natural Resources Toolkit or contact the appropriate TxDOT District Biologist/Natural Resources Management (NRM) SME for additional guidance. This guidance provides general recommendations and should not preclude technical experts from using specific knowledge, data sources, methods, and/or data collection needed for certain species or project types.

For the purposes of this document, protected and imperiled species include:

- All species listed by the US Fish and Wildlife Service/National Marine Fisheries Service (USFWS/NMFS) as threatened or endangered, or proposed for listing as threatened or endangered (50 CFR 17.11-12);
- All species that are candidates for review for listing by USFWS/NMFS as threatened or endangered (7 U.S.C. 136; 16 U.S.C. 460 et seq.);
- Species listed as threatened, endangered, or species of greatest conservation need (SGCN) by Texas Parks and Wildlife Department (TPWD);
- Bald and golden eagles, which are protected by the Bald and Golden Eagle Protection Act (BGEPA);
- Species protected by the Migratory Bird Treaty Act (MBTA); and
- Other species considered rare or of conservation concern that may be of interest on a project by project basis.

Habitat assessments must be conducted by a qualified biologist. A qualified biologist must have, at a minimum, a successful completion of a full 4-year course of study in an accredited college or university leading to a bachelor's or higher degree with a major in biological sciences, natural resource management, wildlife science or management, ecology, zoology, botany, conservation biology, or a closely related field and have experience relevant to the species, habitat, or ecosystems that are being studied or described.

1.0 Conducting Habitat Assessments

Habitat assessments provide information on the natural communities present and help determine which protected and/or imperiled species may potentially occur in a project area. This information is then used to evaluate and document potential impacts of TxDOT projects on these species and communities. The assessments will be used to determine whether additional tasks are necessary to achieve regulatory requirements (e.g., presence-absence surveys, specific documentation such as Biological Assessments or Biological Evaluations).

1.1 Desktop Assessment

Step 1. Identify Protected and Imperiled Species

The first step in conducting any habitat assessment is to identify which protected and imperiled species have the potential to occur in the project area. Useful information about protected and imperiled species and their habitats is available from online databases, which may include, but are not limited to the following:

- TPWD Rare, Threatened, and Endangered Species of Texas by County (<https://tpwd.texas.gov/gis/rtest/>);
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website for threatened and endangered species, designated critical habitat, and other sensitive resources (<https://ecos.fws.gov/ipac/>);
- Ecological Mapping System of Texas (EMST) vegetation types (<https://tpwd.texas.gov/gis/team/>);
- National Land Cover Database (NLCD) mapped land use and land cover types (<https://www.mrlc.gov/data>);
- Texas Natural Diversity Database (TXNDD) data ([TexasNatural.DiversityDatabase@tpwd.texas.gov](https://tpwd.texas.gov/naturaldiversity/)). Collect data within a 10-mile radius around the project area boundary. These data are available upon request from TxDOT or TPWD;
- National Hydrography Dataset (NHD) for mapped streams and other water features (<https://www.usgs.gov/core-science-systems/ngp/national-hydrography/>);
- USFWS' National Wetland Inventory (NWI) for mapped wetlands (<https://www.fws.gov/wetlands/data/mapper.html>);
- Federal Emergency Management Agency (FEMA) floodplain maps (<https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd>);
- U.S. Geological Survey (USGS) topographic maps (<https://apps.nationalmap.gov/downloader/#/>);
- Recent aerial photography (Google Earth, Bing, etc.);
- Natural Resource Conservation Service (NRCS) Soil Surveys (<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>);



Guidance: Conducting Habitat Assessments and Presence/Absence Surveys

- Geological Formations-Geological Atlas of Texas (<https://txpub.usgs.gov/txgeology/>);
- USFWS Designated Critical Habitat (<https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77>) (IPaC will only return Critical Habitat information if a project specific polygon is drawn in or uploaded); and
- Other project-specific pertinent data (e.g. karst zone maps if in Bexar, Travis, and/or Williamson counties [https://www.fws.gov/southwest/es/austintexas/maps_data.html]).

Step 2. Analyze Background Data

Data gathered in Step 1 should be analyzed to determine whether the project area or surrounding areas contain potential suitable habitat for protected and/or imperiled species. Protected and/or imperiled species that could potentially occur in the project area should be identified based on the currently understood geographic range and habitat requirements of those species based on the best available data at the time of the assessment. After comparing published ranges of protected and imperiled species to the project location, biologists conducting field work can then assess the potential habitat suitability for each protected and/or imperiled species with the potential to occur within or adjacent to the project area. Information on the life history and habitat requirements for many species is available from the following resources:

- NatureServe (www.natureserve.org);
- TPWD and USFWS websites (e.g. USFWS Environmental Conservation Online System or TPWD species profiles, USFWS Recovery Plans or 5-Year Reviews, TPWD's Texas Conservation Action Plan [TCAP], etc.);
- Published research and technical papers;
- Guidance from species experts;
- TXNDD data; and
- Informal sources such as www.eBird.org and www.iNaturalist.org.

Step 3. Identify the Study Area

The study area will be determined based on the project type, whether a project will occur within existing right-of-way (ROW) and easements or will require additional ROW or easements, and habitat requirements of any protected and/or imperiled species that could potentially occur in the region. The study area is not necessarily the same as the project area, and may encompass an area larger than the project area to account for potential suitable habitat for protected or imperiled species that may be present adjacent to the project area or within close enough proximity that the species could disperse into the project area and/or be directly or indirectly impacted by the project. For example, if a project includes clearing vegetation and/or adding impervious cover, water quality could be impacted from the increased runoff. This could potentially impact protected and/or imperiled species of amphibians, fish, mussels, or invertebrates downstream from the project area. The appropriate distance from the project area boundary to include in the study area varies depending on which species could potentially occur in the study area or on the type of impact anticipated. Determining the study area should include the input of species experts, TxDOT environmental staff, and/or experienced biologists.



Step 4. Develop Field Maps

Maps showing the study area, project area, and other pertinent data should be developed for use during field visits. These maps may include the project area and study area overlain on various base map layers (e.g., aerial imagery, NHD or NWI data, NRCS soil data, TXNDD Element Occurrence (EO) records, etc.). These maps should also include certain areas of interest, areas of access, and other important sites considered for field investigations.

Step 5. Identify Equipment Needed

Prior to conducting field work, investigators should ensure they have all the appropriate gear necessary to identify sensitive species and their associated habitat (e.g. field notebook, camera, binoculars, field guides, range finders, GPS, etc.) and necessary Personal Protective Equipment (PPE) (e.g. reflective safety vest, hard hat, sunscreen, insect repellent, appropriate footwear, first aid kit, drinking water, etc.).

Step 6. Secure Access to the Study Area

Field investigators should ensure they have secured access to the project and study areas through TxDOT. The District Environmental Coordinator (EC) or other TxDOT approved person should be the point of contact with landowner(s) to arrange access, opening of locked gates, etc. Right-of-entry (ROE) must always be in writing, and private property must not be entered without ROE documentation.

1.2 Field Habitat Assessment

1.2.1 Field Safety

Before initiating any field work, it is important to consider all the necessary safety precautions and procedures to follow in the field. Examples of recommended safety protocols are provided below. Consult the ENV BEST MANAGEMENT PRACTICES FOR FIELDWORK for more information and a comprehensive list of recommended safety protocols.

- Follow all TxDOT/ District guidance for parking and operating in the ROW (see TxDOT Safety Handbook, Section 25).
- Coordinate in advance any field visit with appropriate District staff, always make sure someone knows where you are and when to expect you back, and make sure the District is aware any time you are in the field, as they may be contacted if someone sees you and wants to know why you are there.
- Exercise care crossing barbed wire fences. Go around where possible, but do not enter private property without permission. Work together to spread strands for team members to pass through. Watch for electrified strands (smooth wires insulated at posts).
- Watch for poisonous and thorny plants. The oils from poison oak, ivy, and sumac will get on clothing and skin. Wear disposable gloves if you know you are working in and around these plants.
- Be mindful of mosquitoes, wasps, bees, ants, spiders, centipedes, scorpions, ticks, chiggers, other biting and stinging insects, snakes, alligators, hogs, livestock, dogs, or any other wildlife that could present a potential hazard. Be aware of your surroundings at all times, including the activities of other people.

- Carry plenty of drinking water (recommended minimum is one gallon per person per day), insect repellent, sunscreen, first aid kits, and other essential supplies, such as snacks.

1.2.2 Field Habitat Assessment

Field habitat assessments have been organized into four steps for the purposes of this guidance document; however, they may occur concurrently or in a slightly different order than presented here, depending on the specific project for which the assessments are conducted. As described above in **Section 1.1**, the habitat assessment process always starts with a general habitat characterization, which includes gathering as much information as possible about the habitat, species composition, physiography, topography, soils, and land use of the study area. The purpose of the Field Habitat Assessment is to identify and document the condition of the study area and identify suitable habitat for any protected or imperiled species identified in **Step 1** of the Desktop Assessment **1.1**.

Step 1. Identify and Map Vegetation/Land Cover Types

Vegetation types (e.g., woodland, shrubland, prairie, riparian, floodplain, agriculture, etc.) observed in the study area should be mapped. General land use(s) within and adjacent to the study area should be identified and described. Each vegetation type/land cover identified in the project area should be photographed.

Step 2. Characterize Each Vegetation Type

Each vegetation type should be characterized by describing the landform (e.g., slope, hill, floodplain), dominant plant species in each stratum (e.g., tree, shrub, vine, herbaceous [grass and forb]), estimated percent woody cover, height of the woody vegetation, percent canopy cover, basal area, understory density, ground cover, and the site condition (e.g., recently disturbed, regrowth, old growth, health of the vegetation, etc.). It should be noted that this characterization will vary depending on the habitat type (i.e. forests, marshes, deserts, and prairies are evaluated differently, using different equipment).

Step 3. Identify Unusual Vegetation and Special Habitat Features

Areas of unusual vegetation or special habitat features often correlate with suitable habitat for protected and imperiled species. Unusual vegetation may include, but is not limited to, unmaintained vegetation, trees or shrubs along a fence line adjacent to a field (i.e., fence row vegetation), riparian vegetation (particularly where fields or cropland extend up to or abut the vegetation associated with the riparian corridor), trees that are considered ecologically significant or locally important, or are substantially larger than other trees in the area, and unusual stands or islands of isolated vegetation.

Special habitat features may include but are not limited to bottomland hardwoods, caves, cliffs and bluffs, native prairies (particularly those with climax species of native grasses and forbs), seeps or springs, drainage features, snags (i.e., dead trees or groups of dead branches), hollow trees, trees with cavities, leaf-cutter ant beds, harvester ant mounds, water bodies (e.g., creeks, streams, rivers, wetlands, playa lakes, ponds [temporary and permanent, natural, and man-made] etc.), existing bridges with known or easily-observed bird or bat colonies, rookeries, or prairie dog towns.

If unusual vegetation and/or special habitat features are identified in the study area, additional details should be included in the description to clearly describe the feature(s) present and to explain why the feature(s) should be regarded as special. Areas of unusual vegetation and special habitat features should be documented with photographs. Note that the occurrence of special habitat features in the study area is not necessarily required for suitable habitat for protected or imperiled species to be present.

Step 4. Determination/Confirmation of Habitat Present

Data collected during desktop assessments and field visits are used to determine/confirm whether any habitats or habitat features identified in the study area could be considered suitable habitat for any of the protected or imperiled species of potential occurrence in the study area. If so, the relative value of the habitat should be determined and explained. If designated critical habitat (50 CFR 17.94-95) for a federally protected species was identified in the study area, determine whether the study area contains the physical or biological features (PBF) identified in the species recovery plan or listed in the rule designating critical habitat (50 CFR 424.12). A map depicting the areas identified as suitable habitat for each species should then be created.

1.3 Evaluation of Potential Project Impacts

This section provides general guidance on how to determine whether the project could potentially impact protected and/or imperiled species or their habitats.

Step 1. If suitable habitat for protected or imperiled species was identified through the steps above, review project activities proposed to occur within and adjacent to these habitats to determine the potential for impacts to those species or their habitat.

Step 2. Identify potential direct effects and indirect effects of the proposed project on protected species and/or sensitive habitats.

Step 3. Coordinate with the appropriate TxDOT SME to determine whether additional surveys could be required (e.g. USFWS presence/absence surveys for federally protected species).

Step 4. Complete the standard documentation for the project (e.g., Species Analysis Form, Species Analysis Spreadsheet, etc.), and identify measures that could be implemented to minimize impacts (e.g., TPWD-approved best management practices [BMPs]). Coordinate with TxDOT to determine whether additional documentation is warranted (e.g., Technical Report, Biological Assessment, Biological Evaluation, etc.). If additional documentation is required, utilize data collected in the sections above to prepare a document in accordance with guidelines for the specific type of document. For more information, see the appropriate guidance documents in the TxDOT Natural Resources Toolkit (<https://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/natural-resources.html>).

2.0 Conducting Presence/Absence Surveys for Protected and Imperiled Species

2.1 Presence/Absence Surveys

Step 1. Determine Need for Presence/Absence Surveys

After suitable habitat for a protected or imperiled species is identified in or adjacent to a TxDOT project area, the first step is to coordinate with the appropriate contact(s) at the TxDOT District and/or the TxDOT ENV Division to confirm whether surveys should be conducted and/or whether consultation with the USFWS may be warranted. The results of the survey will inform the appropriate effect/impact determination.

Step 2. Identify Appropriate Survey Protocol(S)

Presence/absence survey protocol will ultimately be determined by the species in question, survey methodology varies between species. Many federally listed species have specific presence-absence

survey protocols required by the USFWS/NMFS (this information is included in IPaC). These protocols are updated periodically, and the biologist should check with applicable regional USFWS/NMFS Ecological Services offices for the most recent protocols and/or to determine whether the agencies have specific protocols for the species. Survey protocols are determined by seasonality/phenology, habitat, life history, species detectability, etc. Surveys for aquatic organisms may require a TPWD Aquatic Resources Relocation Plan and associated reintroduction permit.

Presence/absence surveys should then be conducted according to the appropriate protocol(s), using necessary equipment. If there is any uncertainty on methodology for surveys, discuss and confirm with ENV NRM staff.

Identify any other factors that need to be considered before conducting surveys. For example, does the technical expert possess the necessary USFWS or TPWD permit(s) required to perform presence/absence surveys for the species in question? Additionally, presence/absence surveys must be conducted during the time of the year appropriate for each species, if applicable.

2.2 Documentation

For all presence/absence surveys, the technical expert shall provide a written report to TxDOT that must, at a minimum, include:

- Results of preliminary data collection;
- The name(s) of the person(s) performing the fieldwork and their USFWS/NMFS and/or TPWD permit(s) numbers;
- Dates of fieldwork;
- Weather conditions at the time of the survey(s);
- Species for which survey(s) was/were performed;
- Whether potential habitat for protected or imperiled species (including designated critical habitat) is present in or near the project area;
- Survey protocols or other methods used;
- Whether the protected or imperiled species was detected during surveys;
- The Technical Expert's analysis of the transportation activity's potential to affect protected and imperiled species, their habitat, and critical habitat and recommendations (if any) for species/habitat conservation;
- Figures depicting all areas surveyed for protected or imperiled species, potential habitat for protected or imperiled species, and any other pertinent information such as survey points or transects, location(s) of detections of targeted species, or occurrence of designated critical habitat boundaries, if present;
- Photographs of the area(s) surveyed;
- GIS data for areas surveyed and results of surveys.



Appendix A: Revision History

The following table shows the revision history for this document.

Revision History	
Effective Date Month, Year	Reason for and Description of Change
September 2021	Version 1 was released.