Biological Survey and Reporting Guidelines

Dakota Prairie Grasslands

U.S. Forest Service

Updated April 2026

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Introduction

These biological survey and reporting guidelines are relevant to the Dakota Prairie Grasslands (DPG) of the U.S. Forest Service (FS), which includes the McKenzie, Medora, Grand River, and Sheyenne Ranger Districts. Please refer to the excel field forms associated with this document on the DPG website: "2026 Wildlife Data Sheet" and "2026 Plant Data Sheet".

Updated GIS shapefiles of known sensitive species locations (updated annually) and other data are available on the DPG website. To access the GIS files, save the zip file to computer, rename the .tzip files to .zip and unzip the files.

Contact appropriate District Staff (Dakota Prairie Grasslands Contact List):

1. prior to conducting surveys on National Forest System lands;
2. when you have sighted any ESA-listed species, or sensitive plant species;
3. to obtain a permit for collections of sensitive or watch plant species;
4. to obtain a permit for off-road motorized travel;
5. to learn of any special orders currently on NFS lands;
6. to assess Dakota skipper or other TES survey needs and clarify survey requirements before conducting specialized surveys on NFS lands.

Botany

See Appendix A for a list of sensitive plant species that occur on the Little Missouri National Grassland. Habitat descriptions and flowering periods are also included. If conducting work on the Cedar/Grand River National Grassland or Sheyenne National Grassland, contact district staff or program manager for appropriate species lists. Sensitive plant surveys should be completed at the appropriate period(s) when plants will be both evident and identifiable, most notably during the flowering or fruiting period. The sensitive plant survey season begins on ***April 15th and extends through September 15th***, weather and growth conditions permitting. Due to the varying phenological development of the sensitive plants on the DPG, two surveys may need to be conducted during this period to ensure that adequate efforts have been made to identify any sensitive species within a project area as well as to accurately describe the vegetation community. Contact the district botanist for further guidance on timing of surveys on projects.

Botany Surveyor or Contractor Qualifications

Surveys shall be conducted by qualified individuals with a combination of education, training, and/or experience in conducting surveys of plants and habitats. The individual should be educated in botany; this can be accomplished by a degree in Botany or Plant Ecology and/or thoroughly demonstrated botanical experience and knowledge to accurately inventory and document plant species and vegetation conditions.

Botany Survey Protocol

Conduct botanical surveys in a manner that provides the highest probability of locating any sensitive plants that may be present. The survey botanist must obtain an accurate map of the site and proposed

areas of disturbance from the permit applicant. All habitats likely to be disturbed by the proposed project must be surveyed.

The following guidelines must be followed when conducting plant surveys:

a) If potential occurrences of a sensitive species are noted but cannot be confirmed due to growth stage, the contractor may need to revisit the site again or the following year. This may be unnecessary if the project is relocated to avoid the suspected population, in which case, the district botanist must be notified of the suspected occurrence and avoidance actions.

   If a sensitive plant species is discovered in an area that would be adversely affected by the project, surveyors should contact the appropriate district botanist **within seven days** (preferably via email with photographs). Timely reporting allows DPG botanists to verify occurrence and prevents delays in survey concurrence and biological evaluations. Prompt notification also supports timely integration of mitigation measures.

   When a sensitive plant population is found within the area that would be directly disturbed by the proposed project, the contractor is responsible for working with FS staff and company representatives to identify acceptable project alternatives.

b) Developments, such as roadways, pipelines, and utility lines will be surveyed at a minimum distance of 125 ft. on each side of the centerline of disturbance. Survey widths can be decreased to 50 ft. on either side of electric lines, fiber optic cables, or other utilities that are plowed into place with low degrees of disturbance if the entire route is accurately and clearly flagged beforehand; otherwise, the 250 ft. corridor applies. A minimum of 10 acres will be surveyed around well sites with a single anticipated bore hole, with larger areas required for sites expecting multiple bore holes or larger well pads.

c) Two forms, a “SurveyDataEntrySheet” and a “EO_SensitivePlantEntrySheet” (within the “2026 Plant Data Sheet” excel spreadsheet) will be completed for every proposed project where a field survey is conducted, and sensitive species are known or newly identified. For each site, record latitude and longitude in degrees, minutes, and seconds, in NAD83 datum. For negative surveys, only the “SurveyDataEntrySheet” needs to be completed. See Appendix B for a list of codes for completing the “EO_SensitivePlantEntrySheet”.

d) Provide maps of plant communities (Ecological Sites), sensitive plant occurrences and suitable habitat, and noxious weed locations within the surveyed area. Graphically delineate exotic and native plant communities on the maps. See the Survey GIS and GPS Protocols section below for more details.

Wildlife

See Appendix C for the most current sensitive species list for wildlife. As a guide to species occurrences, GIS layers of golden eagle nest sites, grouse leks, known or historical locations for other raptors (e.g. prairie falcons and ferruginous hawks), and black-tailed prairie dog colonies can be obtained from the DPG website or from the GIS coordinator. The DPG GIS layers are updated annually. Bighorn sheep

lambing areas GIS information can be obtained from the North Dakota GIS hub: https://gishubdata-ndgov.hub.arcgis.com/

Wildlife Surveyor or Contractor Qualifications

Surveys should be conducted by qualified individuals with a combination of education, training, and/or experience in conducting surveys of wildlife and habitats. The individual should be educated in wildlife biology or related field; this can be accomplished through college coursework and/or thoroughly demonstrated experience and knowledge to accurately inventory and document wildlife species and associated habitats. The surveyor must have knowledge of wildlife and habitats of the Northern Great Plains, demonstrated skills in wildlife surveys, the ability to analyze effects of a proposed project on wildlife resources, and the ability to prepare technical reports and apply FS procedures and directives in preparation of biological evaluations. Further, the surveyor must have the ability to apply Standards and Guidelines identified in the DPG Land and Resource Management Plan (2001) to proposed projects.

More specialized experience is needed for Northern long-eared bat and Dakota skipper surveyors; please see **Error! Reference source not found.** and **Error! Reference source not found.** sections for more information.

Wildlife Survey Protocol

Surveys should evaluate habitat potential for Forest Service designated sensitive species, raptor species (see Raptors section below), threatened/endangered species, and migratory birds. The scale of potential project impacts, as well as the ecology of various wildlife species must be considered when determining buffer distances for wildlife surveys. Assessments of species occurrence should also consider survey timing in relation to migratory species as well as survey effort in relation to occurrence of more cryptic wildlife species. The DPG encourages use of the "2026 Wildlife Data Sheet".

Observations of Forest Service designated sensitive species, raptor species (including GPS locations of any previously unknown active or unoccupied nests), threatened/endangered species, and migratory birds must be recorded and submitted in a survey report to the DPG by December 15th of the survey year.

Use the Information for Planning and Consultation (IPaC) project planning tool to retrieve a list of endangered, threatened, and proposed species that could be present in the project and analysis area: https://ecos.fws.gov/ipac. Submit the IPaC report in the BE/BA or BA.

For permit and authorization requirements related to listed species, see: http://www.fws.gov/Midwest/endangered/permits/index.html

Dakota Skipper (*Hesperia dacotae*)

Dakota Skipper Critical Habitat occurs on the McKenzie Ranger District and the Sheyenne National Grasslands. For information about Dakota skipper critical habitat, please see: https://www.federalregister.gov/articles/2015/10/01/2015-24184/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-the-dakota-skipper

https://fws.maps.arcgis.com/home/item.html?id=9d8de5e265ad4fe09893cf75b8dbfb77#!

Dakota Skipper Habitat Assessment

See Appendix D for a description of Dakota skipper habitat, key habitat characteristics, and lists of requisite plant species. Also please refer to the latest Dakota Skipper Survey Protocol from USFWS

(https://www.fws.gov/sites/default/files/documents/2024-05/2024-usfws-dakota-skipper-survey-protocol.pdf).

Reconnaissance of an action area before the flight season should be conducted to identify locations of potential Dakota skipper habitat. Reconnaissance should consist of a combination of desktop GIS analysis, including use of the habitat modeling tool developed by the USFWS (https://iris.fws.gov/APPS/ServCat/Reference/Profile/159874), and should be verified by on-the-ground observation. Results of subsequent vegetation surveys conducted onsite need to be submitted in report form to the DPG upon survey completion and should also be included in any subsequent biological assessments. Please include shapefiles with polygons of suitable mapped habitat within 1km dispersal distance of a project area when submitting reports.

When assessing potential Dakota skipper habitat, it is also important to look at the landscape context and how the native prairie habitats may be connected by "dispersal habitat." According to the Federal Register, dispersal habitat consists of "undeveloped open areas dominated by perennial grassland with limited or no barriers to dispersal including tree or shrub cover less than 25 percent of the area and no row crops such as corn, beans, potatoes, or sunflowers."

A combination of desktop and field habitat surveys should be conducted to the full extent of the known dispersal distance of Dakota skipper (1 km) from the center point or centerline of the proposed project. Field surveys must be conducted within the identified survey area(s) and desktop evaluations can be used to determine potential dispersal or suitable habitat outside of the survey area(s) as well as to determine apparent barriers to dispersal such as agricultural fields, structures or developments, or large woody vegetation or draws prior to field confirmation.

Habitat Assessment Contractor Qualifications

Refer to "Botany Surveyor Contractor Qualifications" section in this document.

Dakota Skipper Habitat Field Survey

- Surveys should be completed May 15th through July 19th (ideally in late June based on forb abundance), but preferably prior to the adult flight period if occupancy survey efforts will occur in the same calendar year. Please consult with FS biologists if timeline cannot be met; some exceptions could be made if snow cover is absent, the majority of vegetation in the area is woody vegetation or there are high occurrences of non-native invasive species that can be confidently identified when senesced. This will be addressed on a case-by-case basis and exceptions are not guaranteed. Please contact FS biologists prior to attempting surveys if surveyors meet basic qualifications to conduct surveys but have no or limited experience completing habitat surveys specific to the Dakota skipper. Habitat surveys should consist of the following: Record a general site and habitat description based on ocular field observations collected by walking meandering transects through the entire project site. Focus on documenting the presence of Type B habitat plant species, general observations about non-native plants (percentage of invasive plant cover), negative habitat features, site condition, other disturbances (including grazing) seen in the survey area, and disqualifying characteristics anywhere within and adjacent to the project site.
- Document slope of project site and aspect of project site (utilizing 0-360 degrees).
- Document distance from water sources that may be utilized by cattle or other ungulates (stock tanks, stock dams, streams, etc.).

- Include photographic documentation of the analysis area and representative vegetation cover. GPS points should be listed with each photo.
- Ocular estimates of percent plant cover and percent cover of each requisite plant species (Appendix D).
    - Report ocular estimates of dominance for native species, woody plants, invasive species and requisite species along with a species list of all requisite grass and forb species.
        - Periodic quantitative measurements of percent cover of representative areas for calibration purposes.
        - A minimum of three 30 meter transects (or equivalent quantitative effort) is recommended for calibration purposes per survey.
        - Include species lists and quantitative percentages from these calibration efforts, as well GPS locations and photographic evidence of these measurements, in the survey report.
    - Site contains potential Dakota skipper habitat if both bullets below are met:
        - If the % Type B Habitat dominant requisite species >50%
        - Habitat contains > one of the requisite grass species and > one of the requisite forb species both marked by a "*" in Appendix D.
- Provide maps and GIS data (polygons) depicting the location and extent of Dakota skipper potential habitat along with the submitted survey report and biological assessment.

Dakota Skipper Occupancy Surveys

If occupancy surveys of a proposed project location are deemed necessary, occupancy surveys will be completed by a 10(a)(1)(A) permitted surveyor. To ensure the results are robust to support reliable conclusions of the Dakota skipper's presence or absence at a site, close coordination with the FS is expected.

Occupancy Survey Methods

The most current survey protocol is the "2024 Dakota Skipper (*Hesperia dacotae*) North Dakota Survey Protocol". At this time, the FS is using these survey recommendations as firm guidelines for surveys completed on NFS lands. Please provide GPS locations for "Dakota Skipper Flowering Plant Line Count Data" (Appendix B of Dakota skipper protocol above) sheets and include this data in survey reports.

Occupancy Survey Reporting

If a Dakota skipper is observed, the appropriate district's wildlife biologist(s) and botanist and the DPG biology program manager must be contacted within one day of the observation through phone or e-mail with location information.

Submit completed survey reports in electronic format (Microsoft Word and/or searchable .pdf, electronic format via email/flash drive) and include a summary of the survey in the appendices of any biological assessment.

Northern Long-eared Bat (*Myotis septentrionalis*)

The northern long-eared bat (NLEB) is federally listed as endangered species under ESA due to population decline from white-nose syndrome (WNS). More information can be found at: http://www.fws.gov/midwest/endangered/mammals/nleb/. The entire state of North Dakota is in the "White-Nose Syndrome Zone". The FWS published updated survey guidelines for the NLEB, available here: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

Currently, there are no known hibernacula on the DPG for NLEB. However, due to the inaccessibility and obscurity of potential hibernacula in the badlands, hibernacula are not easily identifiable. The NLEB are not known to migrate long-distances, typically less than 100 miles. Therefore, occurrences of NLEB suggest the possibility of hibernacula on the DPG.

There are no *recorded* maternity roosts on the DPG. However, occurrence records, including captures of three post-lactating females on the LMNG, indicates that maternity colonies are present during the summer months. For more information on the locations of this capture data, or if you are interested in doing bat surveys, please contact the District Biologists.

If any activities that potentially effect NLEB or NLEB habitat are scheduled between April 15 and October 31, please contact DPG wildlife biologists to determine if the activity might affect the bat. Any tree removal on NFS lands must have DPG approval, regardless of time of year. In areas with suitable habitat characteristics, the FS may need to discuss the activity with USFWS and Section 7 consultation may be needed.

Migratory Birds

Use the Information for Planning and Consultation (IPaC) project planning tool to get a list of migratory bird species of concern that could be present in the project area.

Additional information can be found within Birds of Conservation Concern: Birds of Conservation Concern 2021 | FWS.gov

The effects of FS actions on migratory birds must be evaluated by focusing first on species of management concern along with their priority habitats and key risk factors. Approaches to identify and minimize take that is incidental to otherwise lawful activities must be considered (e.g. timing of activity to minimize disturbance during breeding season, buffers to avoid direct disturbance, etc.).

Raptors

Raptors are protected under the Migratory Bird Treaty Act (16 U.S.C. 702-712) and are often sensitive to human disturbance. Presence of nests or individuals of any raptor species encountered during surveys should be reported and impacts to nesting sites from project activities must be addressed. Bald and Golden eagles are also given further protections under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). Additionally, nests and winter roosts for select raptor species are afforded special protections (not comprehensive) in the DPG Land and Resource Management Plan. To assess potential impacts to raptors for biological evaluations, it is required to determine if nests or potential nesting habitat occurs within a minimum distance of the project area.

Activities should be restricted (i.e. seismic, prescribed burning, large recreation events, construction, and reclamation activities) within the minimum distances of active raptor nests and winter roost sites during the periods specified in the following table, if such activities are likely to adversely affect raptor reproductive success or degrade winter roost quality. The buffers may be modified or determined unnecessary during project level analysis. Project-level analysis should consider the type, source,

frequency, and duration of the potential disruption, as well as the affected species, and presence of screening vegetation or topography when evaluating the disturbance. Where nests of raptors are identified, other than those listed in the table above, flexibility offered under standard lease terms is used to minimize impacts to raptors and other resources.

If a historic nest is located within the minimum distance or an undocumented nest is discovered during an initial survey, subsequent nest surveys may be required to determine the status of the nest if project activities are expected to occur during the nesting season and during the same year as project activities.

Raptor Species and Distance and Timing Limitations

Species	Minimum Distance from Oil and Gas Structural Developments	Minimum Distance and Timing Limitation for Noise or Activities
Bald Eagle Nest	1.0	1.0 from 2/1 to7/31
Bald Eagle Winter Roost	1.0	1.0 from 11/15-3/1
Golden Eagle Nest	0.5	0.5 from 2/1 to7/31
Peregrine Falcon Nest	1.0	1.0 from 2/1 to7/31
Prairie falcon nest	0.25	0.25 from 4/1 to 7/31
Merlin nest	0.5	0.5 from 4/1 to 8/15
Ferruginous hawk nest	0.5	0.5 from 3/1 to7/31
Burrowing owl nest	0.25	0.25 from 4/15 to 8/31

Land and Resource Management Plan for the Dakota Prairie Grasslands: https://www.fs.usda.gov/r01/dpg/natural-resources

CAUTION: Several raptor species are sensitive to human disturbance. Care must be taken to not disturb nesting raptors to prevent site abandonment and nest failure. Disturbance of Bald or Golden Eagles that results in nest failure or site abandonment constitutes take and is prohibited under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c).

Below is the general raptor survey methodology to be used for DPG projects:

- Conduct a desktop review of historical/known nest locations by reviewing the DPG GIS dataset and other sources of data such as North Dakota Game and Fish Department. Suitable habitat for the various raptor species should also be identified prior to conducting any surveys.

- When existing raptor information is unavailable or determined to be insufficient, raptor surveys will be required to determine species and locate nests, winter roosts, and other important habitats (e.g., foraging). This will assist in a determination of potential impacts from the proposed action. Project type, terrain and habitat types should be evaluated when selecting an appropriate method for conducting raptor surveys (e.g., aerial surveys vs. ground surveys, walking transects vs. driving transects). District biologists are available to assist with the selection of appropriate and site-specific survey techniques. In most cases, ground surveys will be sufficient; however, for larger and more complex projects, an aerial survey may be warranted.

- The ideal survey window for raptors is in the spring, between April 1st – May 15th, prior to tree leaf-out, and while most raptor species would be actively tending to a nest or incubating eggs. If surveys are conducted prior to this date, additional surveys may be required to identify new nests as well as to account for migratory species that arrive later than resident species such as bald and golden eagles and certain owl species.

- Avoid searching potential and known nesting locations during periods of heavy rain, snow, high winds, or severe cold or warm weather. Raptors should not be induced to flush at any time during the survey period.

- Ground surveys should be initiated, where possible, in morning hours. Prime observation periods are around dawn, or shortly thereafter. The entire survey area should be evaluated by vehicle using public roads and trails where applicable and on foot where road access is not available and for areas that are not visible from roads or trails.

- Contact District biologists or program manager for any proposed aerial surveys.

- Results of the survey should be documented in a memo which includes at a minimum, the following information: names and qualifications of surveyors, dates of survey, duration of survey, methodology, general weather information (temperature, wind, precipitation, etc.), location of any observations, description of any observations (nesting behavior, foraging behavior, distance, etc.), maps showing location of historical or newly discovered nests, and a summary of results and species observed. Summarize raptor survey into biological evaluation and attach as an appendix.

- If a nest is determined to be active, please notify DPG district biologists within 7 days. All survey data should be included in a survey report and submitted to the DPG by December 15th of the survey year.

Survey GIS and GPS Protocols

1) Data from biological surveys conducted on FS lands must be shared with the FS. Contractors must submit spatial data (GIS shapefiles/feature layers; GPS point data) for all areas surveyed during the field season by December 15 of that year, including for alternatives/projects not brought forward.

2) Shapefiles/feature layers and any GPS point data needs to be submitted (in NAD83 datum) with the biological evaluation for the biological evaluation to be accepted. Attribute tables should be completed and included with any data submitted.

3) Ensure files names easily reference back to the project surveyed

4) Submit files via email or flash drive with the biological evaluation.

Sensitive Plant Location Data

Where more than one or plants occur within a population, please use a polygon to GPS the extent of the population, noting the estimated number of individuals within the area. As field GPS units are not adequate to consistently relocate or differentiate a specific plant from an adjacent plant located 10 or even 30 ft. away, note that it is not necessary to GPS each sensitive plant in a small area and record the lat/long

for each. If DPG staff monitor any of the populations, we will use polygons with estimates of population size. Individual plants or new polygons should be delineated only when they are appreciably distant from other plants or subpopulations. Examples on the ground that merit separate spatial data include: excessive distance, crossing prominent landforms, or changes in aspect, slope, or topographic position.

To facilitate annual updating of FS sensitive plant GIS shapefiles, please ensure that each sensitive plant population described on a sensitive plant form can be easily matched to its location on associated maps and shapefiles. Use the "Local ID" field on the sensitive plant form to provide a unique ID for each population in the survey (for example, TOHO A, TOHO B, etc.), and use the same ID on maps and shapefiles. If no sensitive species are found, ensure that data sheets do not have information from previous survey(s).

Wildlife Location Data

Locations for all ESA listed, Forest Service Sensitive, and Raptors seen during the survey need to be recorded using GPS. Please ensure that every survey can be easily matched to its associated maps and shapefiles.

Survey Report Requirements

Survey reports are required for all surveys conducted on the DPG by December 15th of the survey year. Survey reports are still required if a project is paused or cancelled. Submit these reports electronically and include the following information:

1. Survey dates
2. Locations (latitude and longitude; legal designations) and GPS/GIS files
3. Project description
4. Survey area descriptions (ecological sites, plant communities, terrain, etc.)
5. Species inventoried
6. Photographs of the survey area, notable plant species, and wildlife (if feasible)
7. Copies of field data sheets
8. Project maps with locations of any federally (ESA) listed, sensitive species, and noxious weed occurrences.
9. IPaC Report

Biological Assessments and Biological Evaluations

A combined Biological Evaluation/Biological Assessment is prepared for a proposed action where there is no effect for all ESA-listed species

A separate Biological Assessment is prepared for a proposed action where there is a may affect for one or more ESA-listed species.

Please include a separate section in the document(s) to describe design features/conservation measures for the entirety of a project.

Biological Assessments

The biological assessment is used in Section 7 consultation with the USFWS and should only include information about ESA listed and candidate/proposed species. For more information on ESA consultation and about writing a Biological Assessment, please see: Endangered Species Consultation Handbook (fws.gov).

Please defer from any direct communications with USFWS in reference to projects involving FS and NFS lands. The Forest Service District Biologist is the point of contact for any company with TES survey concerns or questions. The Forest Service biologists will coordinate consultation with the USFWS.

Proposed Species

Several invertebrate species have been proposed for listing under the Endangered Species Act in 2024, including the western regal fritillary (August 6th, 2024 - proposed threatened), the monarch (December 12th, 2024 proposed threatened), and the Suckley's Cuckoo bumblebee (December 14th, 2024 - proposed endangered). Upon final listing (if that is the finding), consultation requirements will apply. Conferencing provisions of ESA regulations are different than provisions for consultation. Conferencing on proposed species is only required where a Federal agency concludes a proposed action is likely to jeopardize the species. This determination is made at the population level, not the species level. Based on the science presented in the proposed rules, we do not expect Forest Service actions to rise to a level which would constitute a jeopardy finding for any of the three proposed species. Survey information for the monarch is in Appendix F and survey information for the regal fritillary is in Appendix G.

- The appropriate determination for project proposals that may result in some level of short- or long-term impacts to individuals is "not likely to jeopardize the continued existence". Maintaining or enhancing habitat while incurring some level of impact to the species should also be deemed "not likely to jeopardize the continued existence".
- Proposed actions which result in "no effect" to any of the three proposed species should include an appropriate rationale and be retained in the project record.
- If a Biological Assessment is prepared for a proposed action (e.g. may affect for one or more ESA listed species), there should be an analysis included in the BA for each of the proposed species if the IPaC generated list includes them within the analysis or action area. A determination of "no effect" or "not likely to jeopardize" determination should be made; however, the Forest Service will not be requesting a response from USFWS for these determinations.
- If a combined Biological Evaluation/Biological Assessment is prepared for a proposed action (e.g. no effect for all ESA listed species), there should be an analysis included in the BA for each of the proposed species if the IPaC generated list includes them within the analysis or action area. A determination of "no effect" or "not likely to jeopardize" determination should be made

Biological Evaluations

All FS planned, funded, executed, or permitted programs and activities must be reviewed for possible effects/impacts to endangered, threatened, proposed, sensitive species, or critical habitats. The biological evaluation is the means of conducting the review and of documenting the findings.

Biological evaluations are needed for new projects, or project additions but are not needed for existing developments, infrastructure, and/or maintenance activities. Surveys may also be exempted for proposed projects that have been covered by previous surveys within the last 3-5 years. Any waivers of surveys must be approved by the appropriate FS district ranger in coordination with DPG biologists and botanists.

When a separate biological assessment is prepared, a reference of any formal or informal consultation with short summary or table of determinations should be included in the biological evaluation.

Often language is used to describe that incidental observations for RFSS species did not occur during project surveys. While that may be the case it is important to include amount of effort to aid in that statement. Repeated visits to a project site are often needed to conclude that a species is not present in the analysis or action areas of specific projects, particularly for certain species. Historical and current occurrence data as well as presence of suitable habitat can provide information on whether one of the RFSS species is likely to occur within or near a given project area; however, occurrence data may not always be available for a variety of reasons including the lack of systematic surveys across all potential habitat and recent species declines. Absence of occurrence records or lack of observations during surveys should not be interpreted as absence of the species at or near a given site.

Appendix A. Little Missouri National Grassland Sensitive Plant Species List and Survey Codes

NRCS Code	Scientific Name	Common Name	Ranking	Documented Habitat on the DPG	Flowering Period
CHSU2	*Chenopodium subglabrum*	Smooth goosefoot	G2G4/S1	Sandbars, terraces, & dune complexes along rivers & creeks. Exposed sandy substrates in uplands, blowouts, outcrops, colluvium, etc.	Fruiting mid summer–fall
COPA3	*Collinsia parviflora*	Blue lips	G5/S2	Woody understories, including green ash/elm draws, Rocky Mountain juniper, mesic shrub communities, & occasional xeric shrub communities.	April-May
CRTO4	*Cryptantha torreyana*	Torrey's cryptantha	G5/S1	Two population sites discovered during 2013 were located along scoria ridgelines, also reported from dry plains, rock outcrops, escarpments, pine slopes.	June-July
EQVA*	*Equisetum variegatum*	Variegated scouringrush	G5/S1	Wet, gravelly, often calcareous soils, wet meadows, alluvial thickets, ditches, seeps, streams, and lakeshores	Cones maturing in late summer
ERCE2	*Eriogonum cernuum*	Nodding buckwheat	G5/S1	Exposed sand substrates w/ low plant cover in grasslands, hillsides, sandstone outcrops.	July-September
ERVI14	*Eriogonum visheri*	Dakota buckwheat	G3/S2S3	Relatively exposed clay/silt substrates with low plant cover such as outwash zones around eroding buttes, saddles, steep convex slopes, erosional breaks on prairie slopes. Occasional populations among dense saltgrass communities.	July-September
LEMO4	*Leucocrinum montanum*	Sand lily	G5/S2	Generally shortgrass communities w/ fine textured substrates but also found in crested wheatgrass communities. Reported from open coniferous woodlands & hillsides, sagebrush scrub, & sandy flats, but common name seems to be a misnomer.	spring - Mar–Jun
MEPU3	*Mentzelia pumila*	Dwarf mentzelia	G4/S1	Scoria exposures & colluvium w/low plant cover. Also reported on slopes & sandy plains; occasionally on hard clays & rocky soils.	May–Aug
PHAL3	*Phlox alyssifolia*	Alyssum-leaved phlox	G5/S1S2	Sandy or gravelly soil on & around Bullion Butte. Also reported on clay banks & limestone ridges of open prairie.	May-June
PIFL2	*Pinus flexillis*	Limber pine	G5/S1	Semi-arid exposed rocky ridges & foothills in the Limber Pines RNA, likely of native-American origin.	
POAC5	*Populus x acuminata*	Lanceleaf cottonwood	HYB/S2	Mesic woody draws, often w/springs/seeps, occasional near springs on open hillsides. Floodplains & stream banks.	
TOHO	*Townsendia hookeri*	Hooker's Townsendia	G5/S1	Low to moderate plant cover on dry plains, hillsides, gravelly benches & weathered scoria, but often clay matrix subsoil.	Flowering Mar–Jun
TOEX2	*Townsendia exscapa*	Easter daisy	G5/SNR	Dry plains & hillsides, often w/ loamy or increased soil development & increased plant cover relative to *T. hookeri*.	Flowering Mar–Jun

Note – If conducting surveys on the Grand River National Grassland or Sheyenne National Grassland, please contact appropriate District Staff to obtain a species list as it varies from the list provided above.

Appendix B. Codes for Sensitive/Watch Plant Population Survey Form

Light Exposure Code	Name	Description
SUN	Full Sun	Full Sun characterizes the predominant light exposure condition across the EO (element occurrence).
PSH	Partial Shade	Partial Shade characterizes the predominant light exposure condition across the EO.
FSH	Full Shade	Full Shade characterizes the predominant light exposure condition across the EO.
Slope Position Code	**Name**	**Description**
BS	Backslope	The steepest portion of the slope where material is generally in transit.
FS	Footslope	The lower portion of the slope where material is generally re-deposited.
SH	Shoulder	The upper slope where material generally moves through creep processes.
SU	Summit	The uppermost slope.
TS	Toeslope	The lowermost slope position where material moves generally through alluvial processes.
Soil Moisture Code	**Name**	**Meaning**
D	Dry	No moisture observed, at the wilting point (>15 bars of tension, realizing that various perennials, shrubs, trees & other native vegetation have wilting points up to 66 bars of tension).
M	Moist	Moisture state is between the wilting point & field capacity.
W	Wet	The moisture state is at field capacity or wetter.
Soil Texture Code	**Name**	**Description**
C	Clay	A term used in the U.S. & by the International Society of Soil Science for a rock or mineral particle in the soil, having a diameter less than 0.002 mm (2 microns)
CL	Clay Loam	A soil containing 27-40% clay, 20-45% sand, & the remainder silt.
L	Loam	A rich, permeable soil composed of a friable mixture of relatively equal & moderate proportions of clay, silt, & sand particles, & usually containing organic matter
S	Sand	A term used in the U.S. for a rock or mineral particle in the soil, having a diameter in the range of 0.05-2 mm.
SI	Silt	A rock or mineral particle in the soil, having a diameter in the range of 0.002-0.05 mm.
SIL	Silt Loam	A soil containing 50-88% silt, 0-27% clay, & 0-50% sand; e.g. one with at least 50% silt & 12-27% clay, or one with 50-88% silt & less than 12% clay.
SL	Sandy Loam	A soil containing 43-85% sand, 0-50% silt, & 0-20% clay, or containing at least 52% sand & no more than 20% clay & having the percentage of silt plus twice the percentage of clay exceeding 30, or containing 43-52% sand, less than 50% silt, & less than 7% clay.
GR	Gravel	Rock fragments between 2 & 75 mm in diameter.

Appendix C. Forest Service Sensitive Species

Birds	**Scientific Name**
Baird's sparrow	*Ammodramus bairdii*
Burrowing owl	*Athene cunicularia*
Greater prairie chicken	*Tympanuchus cupido (only present on Sheyenne National Grasslands)*
Greater sage-grouse	*Centrocercus urophasianus*
Interior least tern	*Sterna antillarum*
Long-billed curlew	*Numenius americanus*
Sprague's pipit	*Anthus spragueii*
Mammals	
Bighorn sheep	*Ovis canadensis*
Black-tailed prairie dog	*Cynomys ludovicianus*
Little brown myotis	*Myotis lucifigus*
Long-eared myotis	*Myotis evotis*
Swift fox	*Vulpes velox*
Townsend’s big-eared bat	*Corynorhinus townsendii*
Insects	
Dion skipper*	*Euphyes dion*
Ottoe skipper	*Hesperia ottoe*
Tawny crescent	*Phyciodes batessi*

Appendix D. Dakota skipper[1]

Habitat Description

In western North Dakota, Dakota skippers inhabit a variant of 'Type B' habitats on rolling terrain over gravelly glacial moraine dominated by most commonly by little bluestem (*Schizachyrium scoparium*), as well as big bluestem, needlegrasses, or porcupine grasses (*Hesperostipa spp.*) (Royer et al. 2008). Western wheatgrass (*Pascopyrum smithii*) is also typical of a variant of 'Type B' habitat in western North Dakota (Royer et al. 2014).These habitats are often invaded by Kentucky bluegrass (*Poa pratensis*) (Royer and Marrone 1992).

Requisite Plant Species

Native grasses and native flowering forbs for larval and adult food and shelter, specifically:

1) One or more of the following native grasses to provide larval food and shelter: little bluestem (*Schizachyrium scoparium*), Prairie dropseed (*Sporobolus heterolepis*)

2) One or more of the following forbs in bloom to provide nectar and water sources during the flight period: Purple coneflower *(Echinacea angustifolia),* bluebell bellflower (aka harebell, *Campanula rotundifolia),* white prairie clover (*Dalea candida),* upright prairie coneflower (aka yellow coneflower, *Ratibida columnifera),*fleabane *(Erigeron* spp.), blanket flower *(Gaillardia* spp., including common gaillardia *G. aristata*), black-eyed Susan *(Rudbeckia hirta),* yellow sun drops *(Calylophus serrulatus),* prairie milkvetch *(Astragalus adsurgens).*

References Cited

Royer, R. A., and G. M. Marrone 1992. Conservation status of the Dakota skipper (Hesperia dacotae) in North and South Dakota. Unpublished report, US Fish and Wildlife Service, Denver, CO. 15.

Royer, R. A., R. A. McKenney, and W. E. Newton. 2008. A characterization of non-biotic environmental features of prairies hosting the Dakota skipper (Hesperia dacotae, Hesperiidae) across its remaining U.S. range. Journal of the Lepidopterists Society 62:1-17.

Royer, R. A., M. R. Royer, and E. A. Royer. 2014. Dakota skipper field survey and habitat assessment at twelve North Dakota sites during the 2014 season. A final report submitted to Twin Cities Field Office, U.S. Fish and Wildlife Service, Bloomington, MN. Minot State University, Minot, ND. 53 p.

Plant Requisite Plant Species for Type B Dakota Skipper Habitat.

Key Plant Species	Common Name	Forb or Grass
Amorpha canescens	Leadplant	Forb
Andropogon gerardii	Big bluestem	Grass
Artemisia frigida	Prairie sagewort	Forb
*Astragalus adsurgens**	Prairie milkvetch	Forb
Astragalus crassicarpus	Groundplum milkvetch	Forb
Bouteloua curtipendula	Sideoats grama	Grass
*Calylophus serrulatus**	Yellow sundrops	Forb
*Campanula rotundifolia**	Bluebell bellflower (Harebell)	Forb

[1] The following was adapted from information found in the USFWS Guidance for Interagency Cooperation under Section 7(a)(2) of the Endangered Species Act for the Dakota skipper, Dakota skipper Critical Habitat, and Poweshiek Skipperling Critical Habitat.

Key Plant Species	Common Name	Forb or Grass
*Dalea candida**	White prairie clover	Forb
Dalea purpurea	Purple prairie clover	Forb
*Echinacea angustifolia**	Purple coneflower	Forb
*Erigeron spp.**	Fleabane	Forb
*Gaillardia aristata**	Common gaillardia/Blanketflower	Forb
Geum triflorum	Old man's whiskers/Prairie smoke	Forb
Hesperostipa comata	Needle-and-thread grass	Grass
Hesperostipa spartea	Porcupine grasses	Grass
Liatris aspera	Tall blazing star	Forb
Liatris punctata	Dotted blazing star	Forb
*Lilium philadelphicum**	Prairie Lily/Wood Lily	Forb
Packera plattensis	Prairie groundsel	Forb
Pascopyrum smithii	Western wheatgrass	Grass
Pulsatilla patens	Eastern pasqueflower	Forb
*Ratibida columnifera**	Upright prairie coneflower (Yellow coneflower)	Forb
*Rudbeckia hirta**	Black-eyed Susan	Forb
*Schizachyrium scoparium**	Little bluestem	Grass
Sorghastrum nutans	Indiangrass	Grass
*Sporobolus heterolepis**	Prairie dropseed	Grass
Symphyotrichum sericeum	Western silver aster	Forb
Zigadenus elegans	Mountain deathcamas (smooth camas)	Forb
Zizia aptera	Meadow zizia/Heartleaf golden alexanders	Forb
Requisite plant species (*) must include at least one grass species (Little bluestem and/or Prairie dropseed) in addition to one or more forb species with a "* " meet Dakota skipper habitat requirements.		

Appendix E. Timing Stipulations

		Timing		
Feature	**Distance (Miles)**	**Start Date**	**End Date**	**Stipulation**
Bald Eagle Nest or Winter Roost	1	1-Feb	31-Jul	Minimum distance from oil and gas developments. Minimum distance and timing limitation for noise or activities.
Bald Eagle Winter Roost	1	15-Nov	1-Mar	
Golden Eagle Nest	0.5	1-Feb	31-Jul	
Peregrine Falcon	1	1-Feb	31-Jul	
Ferruginous Hawk Nest	0.5	1-Mar	31-Jul	
Prairie Falcon Nest	0.25	1-Apr	31-Jul	
Merlin Nest	0.5	1-Apr	15-Aug	
Burrowing Owl Nest	0.25	15-Apr	31-Aug	
Bighorn Sheep Lambing Habitat	1 (Line of Sight)	1-Apr	15-Jun	Surface use is prohibited within the minimum distance (line-of-sight).
Sharp-tailed Grouse Lek	1 (Line of Sight)	1-Mar	15-Jun	
Sage Grouse Lek	2 (Line of Sight)	1-Mar	15-Jun	

Appendix F. Monarch Habitat Description/Mapping and Requisite Plants for Reproductive Habitat

Habitat Description In North Dakota, monarchs (*Danaus plexippus*) inhabit mesic and riparian habitats where milkweed (*Asclepias*) species are present that can provide the necessary brood habitat for their larval life stages. Monarch butterflies also rely on nectar-rich forbs for forage for adult butterflies. Milkweed dominance was correlated with mollisol soil, non-saline sites, neutral pH, well-drained soils, loam and sandy loam soil textures, and soil organic matter at 1.5-3 percent (Spaeth Jr et al. 2022). Milkweeds and other plant species that may potentially host monarch caterpillars are discussed in Greenstein et al. 2022 as high performance, (H) low performance (L) and unsubstantiated hosts for caterpillar presence and survival rates. A North Dakota specific plant list for milkweed species is available in Table 7 and comprises species found on the Dakota Prairie Grasslands.

Based on the best available science (Brower et al. 2011; Pleasants and Oberhauser 2012) the most limiting factors for monarchs are the availability of reproductive habitats (i.e., the abundance and distribution of the monarch caterpillar's hostplants: milkweed) and availability of nectar plants to fuel adult flight (Inamine et al. 2016). Search time (rate at which species encounter suitable habitat) can be a key factor limiting individual fitness and subsequent population growth rates due to individuals spending too much time looking for resources to meet its physiological reproductive capacity. The process of animals searching for habitat patches in fragmented landscapes is directly analogous to ungulates searching for browse plants or predators searching for prey (Crone & Schultz, 2022). This analogy is particularly appropriate for specialist insect herbivores, including the monarch, for whom habitat patches are defined by the presence of host plants.

A milkweed density of 15 plants/hectare (2.47 acres) has been suggested to avoid monarch search time limitation and it is estimated that many North American locations have milkweed densities below this threshold (Crone & Schultz, 2022). These habitats are often invaded by Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*) and Canada thistle (*Cirsium arvense*) on the Dakota Prairie Grasslands. For the purposes of habitat surveys for the monarch on the Dakota Prairie Grasslands, areas containing approximately 15 milkweed stems/hectare are considered high value habitat.

Methodologies For project-level surveys, areas containing a density of milkweed as described above should be delineated and described as high value monarch habitat. Dominant forb composition (including estimated milkweed stem count) should also be noted, please refer to Table 8 for list of high value forbs for monarchs. Densities below this threshold can be noted/recorded; however, there is no need to map or describe every milkweed stem found during a survey. Objective is to begin to identify high value monarch habitat with milkweed and forb abundance on the Little Missouri National Grassland and to aid in effects analysis for Biological Evaluations. If the survey area(s) contain intensely grazed pasture or is dominated by invasive species or brush, then it is of lower value to monarchs; however, data on estimated milkweed stems and nectar plants should be collected in these instances, as these areas may still be of importance for monarchs. Results of monarch habitat assessment should be summarized in the Biological Evaluation.

Known Milkweed Species on the Dakota Prairie Grasslands

Known DPG Range and Species	**Host ranking for caterpillar observations and survival**	
DPG wide Asclepias speciosa	H3	Survival over 50%
DPG wide Asclepias pumila	L3	Lack of data/observations

SNG Asclepias syriaca	H3	Survival over 50%
SNG Asclepias incarnata	H3	Survival over 50%
DPG wide Asclepias verticillata	H1	Survival over 50%
DPG wide Asclepias viridiflora	H1	Many different observations of larvae
DPG wide Asclepias ovalifolia	L3	<50% survival in caterpillars

Monarch Habitat Inventory List (High Value Forbs)

Monarch WHEG Habitat Inventory List

					Bloom Period		
Species name	Plant symbol	Common name	Growth habit	Monarch Value	Early	Mid	Late
Amorpha canescens	AMCA6	leadplant	shrub, subshrub	High		x	
Asclepias spp.	ASCLE	milkweed	forb/herb	Very High		x	x
Brickellia eupatorioides	BREU	false boneset	forb/herb, subshrub	High		x	x
Cirsium altissimum	CIAL2	tall thistle	forb/herb	High		x	
Dalea candida	DACA7	white prairie clover	forb/herb, subshrub	High	x	x	
Euthamia graminifolia	EUGR5	grass-leaved goldentop	forb/herb	Very High		x	x
Eutrochium maculatum	EUMA9	spotted joe pye weed	forb/herb	Very High		x	x
Helianthus spp.	HELIA	sunflower	forb/herb	Very High		x	x
Heliopsis helianthoides	HEHE5	smooth oxeye	forb/herb	High		x	
Liatris spp.	LIATR	blazing star	forb/herb	Very High		x	
Monarda fistulosa	MOFI	wild bergamot	forb/herb, subshrub	High		x	x
Oligoneuron rigidum	OLRI	stiff goldenrod	forb/herb	High		x	x
Silphium integrifolium	SIIN2	wholeleaf rosinweed	forb/herb	High		x	
Solidago spp.	SOLID	goldenrod	forb/herb	High		x	x
Symphyotrichum spp.	SYMPH4	aster	forb/herb	High		x	x
Verbena stricta	VEST	hoary verbena	forb/herb	High		x	
Vernonia spp.	VERNO	ironweed	forb/herb	High		x	x

USDA, NRCS. 2017. PLANTS Database (http://plants.usda.gov). National Plant Data Team, Greensboro, NC 27401-4901 USA.

*https://www.nrcs.usda.gov/sites/default/files/2022-10/FINAL_NorthernGreatPlains_web_0.pdf

References

Brower, L.P., O.R. Taylor, E.H. Williams, D.A. Slayback, Raul R. Zubieta and Mi. I. Ramirez. 2011. Decline of monarch butterflies overwintering in Mexico: Is the migratory phenomenon at risk? Insect Conservation and Diversity Vol. 5(2), pp. 95-100.

Crone, E., and C.B. Schultz. 2022. Host Plant Limitation of Butterflies in Highly Fragmented Landscapes.

Greenstein, Lewis & Steele, Christen & Taylor, Caz. (2022). Host plant specificity of the monarch butterfly Danaus plexippus: A systematic review and meta-analysis. PLoS ONE. 17. 10.1371/journal.pone.0269701.

Inamine, H., S.P. Ellner, J.P. Springer, and A.A. Agrawal. 2016. Linking the continental migratory cycle of the monarch butterfly to understand its population decline. Oikos: 125(8). 1081-1091.

Pleasants, J.M., and K.S. Oberhauser. 2012. Milkweed loss in agricultural fields because of herbicide use: effect on the monarch butterfly population

Spaeth, K. E. Jr, P. J. Barbour, R. Moranz, S. J. Dinsmore, and C. J. Williams. 2022.Asclepiasdynamics on USrangelands: implications for conservation of monarch butterflies and other insects. Ecosphere 13(1):e03816. 10.1002/ecs2.3816

Appendix G. Regal Fritillary Habitat Description/Mapping and Requisite Plants for Reproductive and Foraging Habitat

Habitat Description/Individual Needs: Regal fritillary habitat is composed of grasslands with necessary components of native violets for larvae to eat and various nectar sources for adults. Warm season native bunch grasses are also important for providing shelter for individuals in all life stages. Moisture levels for the western side of the species range is generally xeric; however, the species has been documented in both wet and dry sites in the same geographical area. The species may be sensitive to moisture at both extremes; flooding of wet sites may drown larvae, while spring weather may result in starved larvae if violets senesce early due to lack of moisture. Suitable habitat must be relatively non-degraded, the species cannot survive in altered landscapes such as row crops, non-native pastures, or developed areas that surround prairie remnants; however, the species can occur in degraded prairie including those prairies largely dominated by exotic grasses. Forested habitats are non-suitable; however, individuals may occupy areas such as wooded areas with low, weedy growth. At most habitats in the Great Plains, the regal fritillary is most often found in open native prairies associated with block habitats as opposed to linear habitats such as road ditches except for linear riparian areas that may serve as dispersal corridors. Individual needs for the regal fritillary are summarized below.

- **Native grasses,** either tallgrasses or mixed grasses,
- **Violets,** as larval food;
- **Diverse floral resources,** as nectar and shelter sources for adults;
- **Shrubs and tall vegetation,** to provide shelter for adults;
- **Vegetative litter and grass tussocks**, as shelter for all life stages;
- **Ambient temperatures,** needed for larval and pupae development.
- **Moisture,** needed to prevent desiccation and support violets and nectar sources

Violet species (*Viola spp.)* are the only host plants consumed by regal fritillary larvae. Violets must be present at an adequate level of abundance and distribution to ensure that at least some of the first instar larvae that survive winter diapause ultimately find violets on which to feed, allowing them to continue development through their remaining five instars, pupate, and emerge as adult butterflies that will establish the next annual population. Regal fritillary populations cannot exist without violets, but the presence or high density of violets does not always equate to presence or greater abundance of regal fritillary populations. However, if regal fritillaries are present in an area, relatively more violets and violet patches within habitat would serve to increase the likelihood of larval survival. The density of violets necessary to establish and maintain regal fritillary populations has been suggested to be 2-3 plants per square meter.

Known Violet Species on the Dakota Prairie Grasslands

District	Scientific Name	Common Name	Habitat
LMNG/CRNG/GRNG/SNG	*Viola pedatifida*	Prairie violet, larkspur violet	Prairies, savannahs and open woods
LMNG/CRNG/GRNG	*Viola canadensis / Viola canadensis L. var. rugulosa*	Tall white violet	Moist to wet forest, thickets, often with deciduous trees along streams, wetlands, plains, valleys
LMNG/CRNG/GRNG	*Viola nuttallii*	Yellow prairie violet	Dry prairie, open grasslands, bluffs, and woodlands

LMNG	*Viola adunca*	Hooked spur violet	Moist forest, riparian thickets, meadows, margins of wetlands
LMNG/CRNG/GRNG/SNG	*Viola nephrophylla*	Northern bog violet	Wet organic soil of meadows, marshes, fens; plains, valleys
GRNG	*Viola pratincola*	Blue prairie violet	Draws and drainages
SNG	Viola papilonacea/ *Viola sororia*	Common blue violet, Meadow violet, hooded blue violet	Meadows, woods, and roadsides
SNG	*Viola conspersa*	American dog violet	Moist rich woodlands, swampy woodlands, and moist meadows in wooded areas. Sometimes found in slightly sandy habitats

Known Adult Nectar Sources

Abundant nectar sources that provide protein and amino acids are critical to support adults, particularly females, as nutrition significantly affects reproduction into the late summer and early fall. The following species have been documented as preference for nectar sources by adult regal fritillaries:

Milkweeds (*Asclepias*), bergamots (*Monarda*), thistles (*Cirsium)*, coneflowers (*Echinacea*), blazing-stars (*Liatris*), goldenrods (*Solidago*), clovers (*Trifolium*), and ironweeds (*Veronia*). Many of these plants exhibit pink or purple flowers, preference for which has been documented. Shrubby components within western prairie grasslands, particularly those with nectar sources, such as leadplant (*Amorpha canescens*) and western snowberry (*Symphoricarpos occidentalis*), may be important areas used by adult regal fritillaries.

Methodologies

For project-level surveys, areas containing a density of Violet species of 2-3 stems per square meter should be delineated and described as regal fritillary larval habitat. Densities below this threshold can be noted/recorded; however, there is no need to map or describe every violet stem found during a survey. Objective is to begin to identify quality regal fritillary habitat with violet and forb abundance on the Dakota Prairie Grasslands and to aid in effects analysis for Biological Evaluations. Dominant forb composition (including estimated milkweed stem count – see appendix E) should also be noted, please refer to section above for high value forbs for regals. If the survey area(s) contain intensely grazed pasture or is dominated by brush then it is of lower value to regals; however, data on estimated violet stems and nectar plants should be collected in these instances, as these areas may still be of importance for regals. Please note that areas dominated by invasive species, including non-native cool season grasses can still support *Viola* populations. Results of regal fritillary habitat assessment should be summarized in the Biological Evaluation.

References

U.S. Fish and Wildlife Service (Service). 2023. Species Status Assessment Report for the Regal Fritillary: Eastern Subspecies (Argynnis idalia idalia) and Western Subspecies (A. i. occidentalis). Version 1.0. 288 pp.

Habitat Ratings for Determining Quality of Regal Fritillary Habitat on the Dakota Prairie Grasslands*

Habitat Rating*	**Native Grasslands**
Unsuitable	No good quality grasslands present within survey area.
Low	1-5% of survey area is native, diverse and high quality. Analysis area dominated by homogenous nonnative or low-quality habitats. Vegetative litter/tussocks are limited. Violet densities are limited (1 plants/m2) or less. Floral resources are a limiting factor. Shrubs/tall vegetation are either not available or woody encroachment dominates in man/most areas.
Medium	5-24% of survey area is native, diverse, and high quality. Analysis area is dominated by homogenous nonnative, shortgrass dominant, or low-quality habitat. Vegetative litter/tussocks not adequate or available in most of the analysis area. Violet density is low (1-2plants/m2) in most areas. Floral resources are not diverse and are a limiting factor. Shrubs/tall vegetation are either not available or woody encroachment may become dominant over grasslands in some areas.
High	25-50+% of grasslands in the survey area is native, diverse, and high-quality mixed grass. On average grasslands within analysis area are of moderate quality, generally a mix of heterogenous native grasslands and homogenous nonnative grasslands or with woody encroachment. Vegetative litter/tussocks may or may not be available in most patches - about as likely to be present as not (buildup may be limited in many habitats with less than 2 years buildup or excessive with a decade or more of no disturbance). Violets are available at densities (2+ plants/m2) in most areas. Diverse floral resources may be widely available some years but limited in others. Shrubs/tall vegetation may/may not be available or woody encroachment (succession) may be occurring in a few areas to the detriment of native grasses and floral resources.

*Note- This table is to be used to help aid in the analysis of regal fritillary habitat within the action area of a proposed project. In some instances, habitat within an action area may not exactly fit the criteria outlined above or may be better described as a combination of habitat quality (e.g. low to medium, medium to high). Professional judgement is to be used.