

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

California Endangered Species Act



Petition Evaluation for Slough Thistle (*Cirsium crassicaule*)

Report to the Fish and Game Commission
June 2026

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LIST OF ABBREVIATIONS, ACRONYMS, AND TERMS

CESA – California Endangered Species Act
 CNDDB – California Natural Diversity Database
 CNPS – California Native Plant Society
 Commission – California Fish and Game Commission
 CRPR – California Rare Plant Rank
 Department – California Department of Fish and Wildlife
 HCP – Habitat Conservation Plan
 NCCP – Natural Community Conservation Plan

EXECUTIVE SUMMARY

This petition evaluation for slough thistle (*Cirsium crassicaule*) has been prepared by the California Department of Fish and Wildlife (Department) in response to the petition to list slough thistle as endangered under the California Endangered Species Act (CESA). The purpose of this petition evaluation is to provide a recommendation to the Fish and Game Commission (Commission) on whether the petition provides sufficient information to indicate the petitioned action may be warranted.

Slough thistle is an annual or biennial plant in the sunflower family (Asteraceae) that blooms May through August. The petition describes slough thistle as being known from 18 occurrences in the San Joaquin Valley and occurring in chenopod scrub, marshes along sloughs, riparian scrub, and along the banks of irrigation and drainage canals. The petition provides an abundance estimate for eight occurrences with population sizes ranging from one plant to thousands of plants and provides information to suggest a declining population trend. The petition lists several threats to slough thistle including agricultural and developed land uses, climate change, and invasive species. The petition mentions that extirpation from much of its range or extinction of the species may occur because: most occurrences are threatened and the severity of some threats is increasing, the species has been documented at only a small number of sites that are also small in area, and many sites occupied by the species are unprotected and not managed for the conservation of the species. Existing management efforts were reviewed and suggestions for future management actions were discussed in the petition. Information sources and a distribution map were also provided in the petition.

The Department has determined that the petition does not sufficiently address each of the required petition components listed in Fish and Game Code section 2072.3 and California Code of Regulations, title 14, section 670.1, subdivision (d)(1):

- Life history
- Range
- Distribution
- Detailed distribution map
- Kind of habitat necessary for survival
- Abundance
- Population trend
- Factors affecting the ability to survive and reproduce
- Degree and immediacy of threat
- Impact of existing management efforts
- Suggestions for future management
- Availability and sources of information

In completing its petition evaluation, the Department considered the information in the petition and other relevant information the Department possesses. The Department has determined that there is not sufficient scientific information to indicate that the petitioned action to list slough thistle as endangered under CESA may be warranted. Therefore, the Department recommends that the Commission reject the petition for further consideration pursuant to CESA.

1 INTRODUCTION

1.1 Petition Evaluation Overview

This petition evaluation serves as the basis for the California Department of Fish and Wildlife's (Department) recommendation to the California Fish and Game Commission (Commission) on whether the petition to list slough thistle (*Cirsium crassicaule*) as endangered under the California Endangered Species Act (CESA) should be accepted and considered. The recommendation is based on the sufficiency of scientific information in the petition, as well as other relevant information that was reviewed by the Department during the evaluation period.

A petition to list a species under CESA must include "information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The petition shall also include information regarding the kind of habitat necessary for species survival, a detailed distribution map, and any other factors that the petitioner deems relevant" (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)).

Once a petition is submitted to the Commission, the Department has 90 days (120 days with extension) to prepare a petition evaluation that assesses each of the petition components and makes a recommendation to the Commission as to whether there is sufficient scientific information to indicate that the petitioned action to list the species under CESA may be warranted (Fish & G. Code, § 2073.5, subds. (a)-(b)). Once completed by the Department, the petition evaluation is delivered to the Commission and placed on the agenda for receipt at the next available meeting of the Commission. At that time, the petition evaluation will be made available to the public for a 30-day public comment period prior to the Commission taking any action on the petition. The Commission then considers the petition, the Department's petition evaluation and recommendation, written comments received, and oral testimony, and will then make a finding at the next available meeting of the Commission as to whether the petition provides "sufficient information to indicate that the petitioned action may be warranted" (Fish & G. Code, § 2074.2, subd. (e)(2)). The standard for accepting a petition for consideration and assessing sufficiency of information is addressed in *Center for Biological Diversity v. California Fish and Game Commission* (2008) 166 Cal.App.4th 597.

If the Commission determines that the petitioned action may be warranted, the species becomes a candidate for CESA listing and proceeds to the status review stage of the CESA listing process. The Department then prepares a peer-reviewed report that advises

the Commission on whether the petitioned action is warranted, based upon the best scientific information available (Fish & G. Code, § 2074.6). Finally, the Commission determines whether the petitioned action to list the species as threatened or endangered is warranted, based on the Department's status review and other information in the administrative record (Fish & G. Code, § 2075.5).

1.2 CESA Petition History

On August 29, 2025, Dr. John C. Hunter submitted a petition to the Commission to list slough thistle as endangered under CESA. On September 8, 2025, the Commission referred the petition to the Department for evaluation. At its meeting on October 8, 2025, the Commission officially acknowledged receipt of the petition. At its meeting on December 10, 2025, the Commission granted the Department's request for a 30-day extension of the period to review the petition and prepare this petition evaluation.

1.3 Federal Status

Slough thistle has no status under the Federal Endangered Species Act (16 U.S.C. § 1531 et seq.). In 1993, the U.S. Fish and Wildlife Service provided notice that it was possibly appropriate to propose listing slough thistle as endangered or threatened, but sufficient data was not then available to support a listing proposal (58 Fed.Reg. 51144 (Sep. 30, 1993)).

1.4 Additional Species Status Designations

1.4.1 NatureServe Conservation Status Ranks

NatureServe's conservation status ranks consist of a global conservation status rank (global rank, G rank) describing the status of a given species over its entire distribution, and a subnational conservation status rank (subnational rank, S rank) describing the status of a given subspecies or variety over its state distribution (Master et al. 2012). NatureServe has assigned slough thistle a global rank of G1 and a subnational rank of S1, indicating that the species is critically imperiled both globally and within California with a very high risk of extinction due to one or more of the following: very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors (CNDDDB 2020, 2025).

1.4.2 California Rare Plant Rank

The California Native Plant Society (CNPS) works in collaboration with botanical experts throughout the state, including Department biologists, to assign rare plants a California Rare Plant Rank (CRPR) reflective of their rarity status (CNDDDB and CNPS

2020). CNPS has assigned slough thistle a CRPR of 1B.1 (CNPS 2025). Plants with a CRPR of 1B are considered rare, threatened, or endangered throughout their range with the majority endemic to California (CNDDB and CNPS 2020). The threat code extension of “.1” indicates that the species is seriously threatened in California with over 80% of occurrences threatened and a high degree and immediacy of threat (CNDDB and CNPS 2020).

2 SPECIES DESCRIPTION AND TAXONOMY

Slough thistle is a member of the sunflower family (Asteraceae). It is an annual or biennial plant that is 0.6 to 3 m (2 to 9.8 ft) tall (Keil 2012). Slough thistle is a stout plant with generally one hollow stem that is 2 to 10 cm (0.8 to 3.9 in) in diameter near the base (Keil 2012). Stems are thinly cobwebby and generally openly branched distally (Keil 2012). Leaves are covered in gray, densely matted hairs on the lower surface and thinly cobwebby, densely matted hairs on the upper surface (Keil 2012). Slough thistle, like most members of the sunflower family, has numerous flowers clustered into an inflorescence (a grouping of flowers) to give the appearance of a single flower (Jepson Flora Project 2026). Slough thistle has one to several inflorescences clustered at the ends of the branches (Keil 2012). Each inflorescence is held together by a structure called an involucre that is composed of leaf-like structures called phyllaries (Jepson Flora Project 2026). Slough thistle has an involucre that is 1.5 to 3 cm (0.6 to 1.2 in) long (Keil 2012). Outer and middle phyllaries are ascending to spreading, have an inner surface without a sticky-resinous ridge (Keil 2012). The outer phyllaries have margins that are irregularly toothed to spiny-ciliate while the middle and inner phyllaries have entire margins (Keil 2012). Flowers are bisexual with a corolla that is 19 to 26 mm (0.75 to 1 in) long and pale rose-purple to white in color (Keil 2012). Slough thistle has a dry, one-seeded fruit called an achene that is 5 to 5.5 mm (0.2 to 0.22 in) long (Keil 2012; Jepson Flora Project 2026). The fruits also contain a 1.5 to 2 cm (0.6 to 0.8 in) long pappus, which is a group of structures such as awns, bristles, or scales that are attached to achenes and often aid in seed dispersal, especially by wind (Keil 2012; Jepson Flora Project 2026).

Slough thistle was first collected “near Lathrop” by Alice Eastwood in 1893 and formally described as *Carduus crassicaulis* in the same year by E. L. Greene (Keil 2006; CCH 2025). Slough thistle was moved to the genus *Cirsium* by W. L. Jepson in 1901 and has been known as *Cirsium crassicaule* since that time (Jepson 1901). The currently accepted name for slough thistle is *Cirsium crassicaule* (Keil 2012).

3 SUMMARY OF PETITION COMPONENTS

Pursuant to Fish and Game Code section 2072.3 and California Code of Regulations, title 14, section 670.1, subdivision (d)(1), the Department evaluated whether the petition contained information on each of the following petition components:

- Life history
- Range
- Distribution
- Detailed distribution map
- Kind of habitat necessary for survival
- Abundance
- Population trend
- Factors affecting the ability to survive and reproduce
- Degree and immediacy of threat
- Impact of existing management efforts
- Suggestions for future management
- Availability and sources of information

The Department did not receive new information from the public during the petition evaluation period (Fish & G. Code, § 2073.4). Pursuant to Fish and Game Code section 2073.5, the Department evaluated the petition to determine whether there is, or is not, sufficient information to indicate that the petitioned action may be warranted. A summary of the relevant information from the petition for each of the petition components is presented below. For each petition component, the Department has also presented an assessment of the information provided in the petition and a summary of any relevant information in the Department's possession. Overall sufficiency of the petition is determined by looking at the information in the petition as a whole and is further discussed in the "Sufficiency of Scientific Information and Recommendation to the Commission" section of this petition evaluation. In this petition evaluation, the Department has grouped similar petition components together and renamed components to create a more cohesive and readable document.

3.1 Life History

This section summarizes the information in the petition regarding the species' life history (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section E on pages 6 and 7 of the petition provides information on the life history of slough thistle.

The petition provides a physical description of slough thistle, with descriptions of its habit, stems, leaves, flowers, and fruits. The petition describes slough thistle as an annual or biennial herbaceous plant that blooms May through August and is insect pollinated and wind dispersed. The petition also states that seed dormancy and germination requirements have not been documented for slough thistle.

3.1.1 Department Assessment

The Department considers the information provided in the petition on the life history of slough thistle to be adequate for assessing this petition component.

3.2 Range and Distribution

This section summarizes the information in the petition regarding the species' range and distribution and provides a detailed distribution map (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). A species' range for the purposes of CESA and this petition evaluation is the species' range within California (Cal. Forestry Assn. v. Cal. Fish and Game Com. (2007) 156 Cal.App.4th 1535, 1551). Range describes the general geographical area in which a species occurs. Distribution describes the actual sites where individuals and populations of the species occur within the species' range. Section B on page 4 of the petition provides information on the range of slough thistle. Section C on page 4 of the petition provides information on its distribution. Section L, Figure 2 on page 22 of the petition provides a distribution map, which has been provided as Figure 1 of this petition evaluation.

The petition describes slough thistle as a California endemic of the San Joaquin Valley. The petition states that slough thistle's range comprises approximately 2,760 square kilometers (1,066 square miles), and that it occurs in Kern, Kings, and San Joaquin counties at elevations of 3 to 100 meters (10 to 330 feet). The petition states that slough thistle is known from 18 sites that were documented between 1893 and 1997, with one of those occurrences likely extirpated. Nine occurrences are noted in the petition as being nonspecific occurrences in which the precise location and boundaries of the species have not been documented. Two occurrences are noted in the petition as being from the northern San Joaquin Valley with the remaining occurrences from the southern end of the San Joaquin Valley in the Tulare Lake Basin. The petition also mentions that slough thistle may occupy additional, undocumented sites.

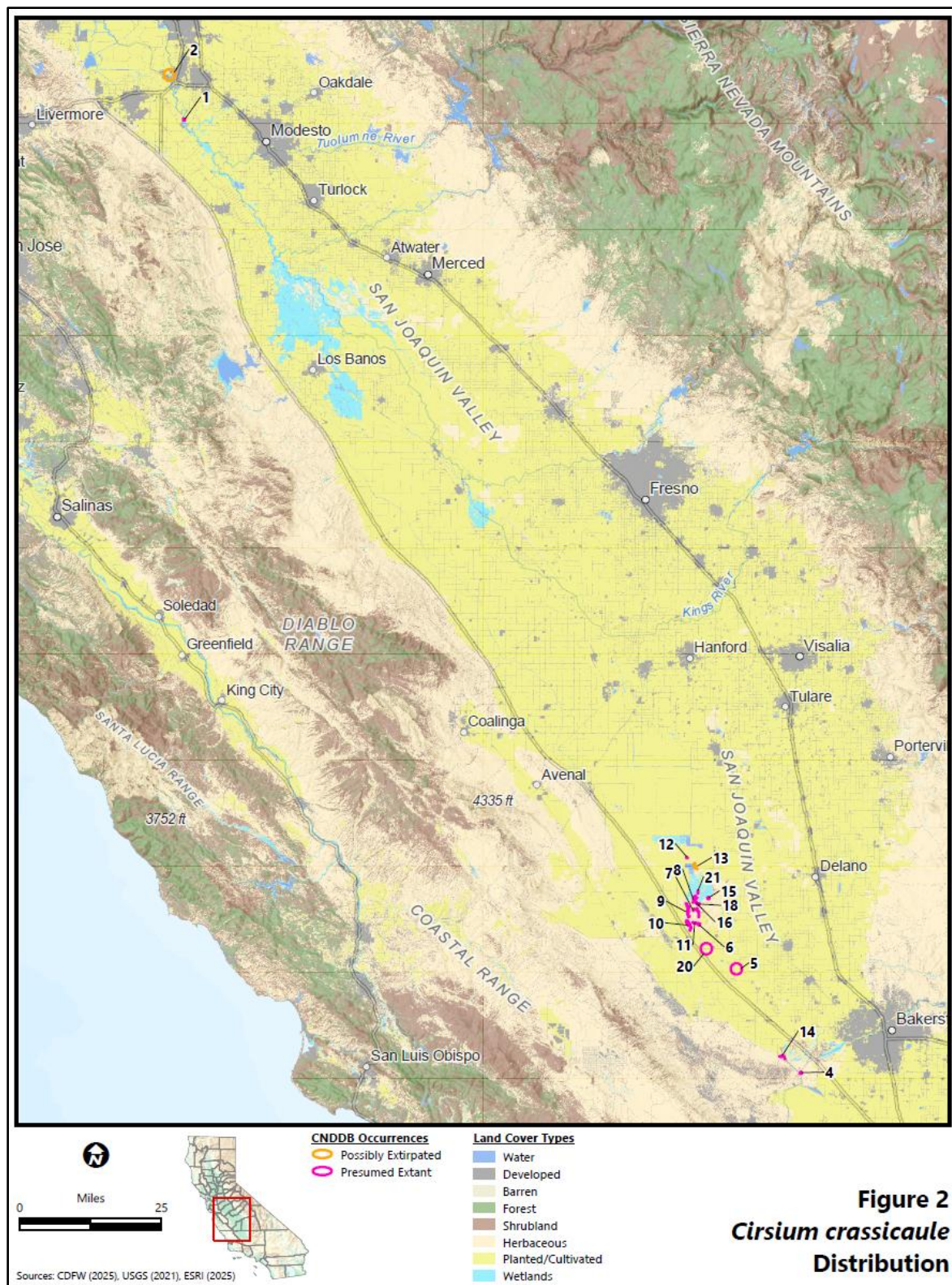


Figure 1. Map of the range and distribution of slough thistle as provided in Figure 2 of the petition. Occurrences from the California Natural Diversity Database (CNDDDB) are labeled with CNDDDB occurrence numbers. Some occurrences consist of multiple polygons.

3.2.1 Department Assessment

Range and distribution of slough thistle are presented in the petition based primarily on data from the California Natural Diversity Database (CNDDDB); however, no discussion is provided on the completeness of the information presented including whether the CNDDDB data represents the complete range and distribution of the species, whether additional information on range and distribution is available for the species that is not reflected in the CNDDDB data, or whether any survey efforts have been made to confirm or ascertain the full range and distribution of the species. Without further discussion explaining why the information provided in the petition is a scientifically defensible assessment of the range and distribution of the species, the Department is unable to properly determine whether the petition provides a reasonable explanation of the range and distribution of the species, or whether other petition components that rely on knowing the range and distribution of the species have been properly assessed.

The Department does not have additional, readily available information in its possession that compensates for deficiencies in data for these topics. The information presented in the petition is not adequate for assessing the range and distribution of slough thistle.

3.3 Habitat

This section summarizes the information in the petition regarding the kind of habitat necessary for species survival (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section F on page 7 of the petition provides information on the kind of habitat necessary for slough thistle survival.

The petition states that slough thistle occurs in chenopod scrub, marshes along sloughs, riparian scrub, and along the banks of irrigation and drainage canals. The petition also includes a list of several plant species that grow with slough thistle.

3.3.1 Department Assessment

The Department considers the information provided in the petition on the kind of habitat necessary for slough thistle survival to be adequate for assessing this petition component.

3.4 Abundance and Population Trend

This section summarizes the information in the petition regarding the species' abundance and population trend (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section D on pages 5 and 6 of the petition provides information on

the abundance of slough thistle. Section A on page 3 and 4 of the petition provides information on the population trend of slough thistle.

The petition summarizes information on the abundance of slough thistle at eight CNDDDB occurrences with population sizes ranging from one plant to thousands of plants at each occurrence. The petition mentions that three CNDDDB occurrences have been surveyed for more than one year with population sizes varying from six to more than 10-fold over those years. The petition states that range-wide, multi-year monitoring of slough thistle has not been conducted and, thus, a rigorous estimate of the total number of plants cannot be made. The petition estimates the area of occupied habitat to be less than 517 hectares (1,278 acres) based on CNDDDB polygon data.

The petition states that, based on information from the CNDDDB and land cover mapping from the U.S. Geological Survey, slough thistle has had a decreasing population trend because of loss and degradation of occupied habitat at 15 or more of the 18 sites where the species has been observed. The petition lists five occurrences that are either possibly extirpated, have not been observed during recent site visits, or have a fair population viability in the CNDDDB and reports 11 occurrences that are either likely extirpated or likely experiencing degradation or loss of habitat based on land cover mapping. The petition states that the species may have had additional, undocumented habitat losses, population reductions, or both that occurred before the distribution of slough thistle was well documented.

3.4.1 Department Assessment

Abundance of slough thistle is provided in the petition based on population estimates reported in the CNDDDB; however, no discussion is provided on the completeness of the information including whether there have been efforts to estimate population sizes at all occurrences, whether the population estimates are historical or recent, and whether the population estimates are based on complete or partial surveys of the occurrences. Area of occupied habitat is estimated in the petition as an indicator of abundance using CNDDDB polygon data which the Department considers to be an inappropriate use of CNDDDB data. CNDDDB polygons are typically mapped to include a buffer that represents the locational accuracy of the data and therefore should not be used to determine area occupied by the species.

Population trend of slough thistle is determined in the petition to be declining based on: 1) the number of CNDDDB occurrences that are designated as possibly extirpated, not observed during recent site visits, or with a fair population viability, 2) the use of CNDDDB polygon data overlaid on land cover mapping to report the extent of any overlap between the CNDDDB polygon data with development or agriculture, and 3) the historical and ongoing changes to chenopod scrub, wetlands, and riparian areas. No

discussion is provided in the petition on the completeness of the information, including whether any recent efforts have been made to update information on the presence and condition of slough thistle occurrences or whether population declines at some occurrences have resulted in a population decline throughout the species range. The petition uses CNDDDB polygon data overlaid on land cover mapping to report on the extent of overlap between CNDDDB polygons with development or agriculture to determine additional occurrences that may be experiencing a declining population trend. CNDDDB polygons are typically mapped to include a buffer that represents the locational accuracy of the data, and the petition does not indicate if development or agriculture shown on aerial imagery overlapped with the portion of the CNDDDB polygon that was previously occupied by the species or within areas that were once appropriate habitat for the species. In addition, the statements in the petition about changes to chenopod scrub, wetlands, and riparian areas likely causing additional, undocumented habitat losses, population reductions, or both to slough thistle are too general and do not specifically identify impacts to habitat likely to have contained slough thistle.

The Department does not have additional, readily available information in its possession that compensates for deficiencies in data for these topics. The information presented in the petition is not adequate for assessing the abundance and population trend of slough thistle.

3.5 Threats

This section summarizes the information in the petition regarding the factors affecting the ability of the species to survive and reproduce, and the degree and immediacy of threats (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section G on pages 7 through 11 of the petition provides information on factors affecting the ability of slough thistle to survive and reproduce (threats). Section H on pages 11 through 14 of the petition provides information on the degree and immediacy of threats to slough thistle.

The petition lists several prominent range-wide threats to slough thistle: agricultural and developed land uses, climate change, and invasive species. The petition also mentions that altered flood/tidal/hydrological regime, biocides, grazing, improper burning regime, road/trail construction/maintenance, and surface water diversion have been observed by botanists as additional threats affecting occurrences based on CNDDDB data.

The petition describes agricultural and developed land uses as major threats to slough thistle because these land uses have been directly eliminating, fragmenting, and increasing threats to the remaining habitat, especially through alterations to hydrology which have eliminated and degraded wetlands and riparian areas in the San Joaquin

Valley. The petition notes that according to the CNDDDB and the interpretation of land cover mapping in the petition showing agriculture and development in relation to CNDDDB occurrences of slough thistle, all specifically mapped occurrences have experienced loss or degradation of habitat due to agriculture and development.

The petition states that climate change directly and indirectly threatens slough thistle by altering growing conditions, water availability, and frequency and intensity of disturbances. The petition also notes that climate change can alter interactions of the plant with pollinators, dispersers, fungal symbionts, seed predators, herbivores, and competitors. The petition states that the magnitude of climate change impacts on slough thistle is uncertain but may be substantial, particularly because of the species' rarity, habitat specificity, and distribution in relatively small areas that will be exposed to dramatic changes.

The petition states that invasive species are likely a significant, range-wide threat to slough thistle. The petition lists one highly invasive plant species that co-occurs with slough thistle and states that several dozen other invasive species are spreading in the species range. The petition states that infestations of invasive species can directly affect the conditions or resources slough thistle relies on, thereby reducing abundance and making the species more vulnerable to extirpation from other causes.

The petition states that without additional management actions, there is a moderate to high likelihood that slough thistle will be extirpated from much of its range or become extinct. The petition mentions that this may occur because: most occurrences are threatened and the severity of some threats is increasing, the species has been documented at only a small number of sites that are also small in area, and many sites occupied by the species are unprotected and not managed for the conservation of the species.

3.5.1 Department Assessment

Factors affecting the ability of slough thistle to survive and reproduce, and the degree and immediacy of threats, are presented in the petition based mainly on threat data reported in the CNDDDB. Threats listed in the CNDDDB can be representative of various types of threat data, including current threats, future threats, past threats, threats affecting a small portion of the site, threats in one year but not another, etc. The petition also presents climate change as a threat to slough thistle that is not listed in the CNDDDB. None of these threats are described in adequate detail in relation to slough thistle and the petition does not provide information on the degree and immediacy of these threats for the species.

The petition uses CNDDDB polygon data overlaid on land cover mapping to see if there is any overlap between the CNDDDB polygon data with development or agriculture to

determine additional occurrences that may be experiencing threats. CNDDDB polygons are typically mapped to include a buffer that represents the locational accuracy of the data, and the petition does not indicate if development or agriculture shown on aerial imagery overlapped with the portion of the CNDDDB polygon that was previously occupied by the species or within areas that were once appropriate habitat for the species. Further discussion is needed on the use of aerial imagery to provide an accurate reflection of the degree of threat that development and agriculture are currently having on slough thistle.

The petition also mentions small number and size of occupied sites, and lack of protection and management, as additional reasons why slough thistle is likely to be extirpated from much of its range or become extinct. The petition has not shown that slough thistle's distribution and number of sites have been fully assessed and has not accurately represented the size of the occupied sites. The petition also does not discuss what the unprotected lands with slough thistle are being used for and how that land use is threatening, or potentially threatening, the species.

The Department does not have additional, readily available information in its possession that compensates for deficiencies in data for these topics. The information presented in the petition is not adequate for evaluating the factors affecting the ability of slough thistle to survive and reproduce, or the degree and immediacy of threats to slough thistle.

3.6 Existing Management

This section summarizes the information in the petition regarding the impact of existing management efforts on the species (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section I on pages 14 through 16 of the petition provides information on the impact of existing management efforts on slough thistle.

The petition states that management of slough thistle has been very limited, has not sufficiently addressed threats to the species, and consequently has not resulted in significant conservation of the species. The petition describes the impact of several management categories including legal protection, preservation and seed banking, management and monitoring, restoration, and surveys and research.

The petition describes slough thistle as having no legal protections but notes that the species is covered by the Kern Water Bank Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) and by Pacific Gas & Electric Company's San Joaquin Valley Operations and Maintenance HCP. The Kern Water Bank HCP/NCCP requires management of preserved land to provide habitat suitable for covered species, including slough thistle. The San Joaquin Valley Operations and Maintenance HCP includes measures to avoid and minimize impacts to slough thistle if operations and

maintenance activities disturb occupied habitat. The petition also notes that slough thistle has a CRPR of 1B.1 and should be treated as a special-status species during environmental review under the California Environmental Quality Act.

The petition states that 39% of slough thistle occurrences are on land managed for biodiversity. The petition mentions that seeds of slough thistle have not been collected and placed in long-term storage at a seed banking facility.

The petition notes that up to ten occurrences of slough thistle are at least partially on land that is managed to maintain habitats, and that land managers routinely implement avoidance and minimization measures for the habitats. The petition mentions that none of the slough thistle sites are the subject of systematic, formal monitoring.

The petition states that no efforts have been made to restore or create habitat occupied by slough thistle. The petition discusses how surveys have not been conducted to confirm the continued existence of slough thistle at all occurrences, surveys have not been conducted to more precisely map nonspecific occurrences of slough thistle, and range-wide surveys of potential habitat have not been conducted to search for additional, undocumented populations. The petition states that research has not been conducted on the species' genetic diversity, pollination, dispersal, establishment, growth, mortality, interactions with other species, population dynamics, habitat requirements, or other aspects of its ecology, and therefore understanding of the species' ecology is based primarily on observations by botanists and understanding of the ecology of related and similar species.

3.6.1 Department Assessment

The Department considers the information provided in the petition on impact of existing management efforts on slough thistle to be adequate for assessing this petition component.

3.7 Future Management

This section summarizes the information in the petition regarding suggestions for future management (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section J on pages 16 and 17 of the petition provides suggestions for future management of slough thistle.

The petition provides a list of suggestions for future management including:

- list the species under CESA and prepare a recovery plan for it,
- include the species as a focal species in regional conservation investment strategies and as a covered species in NCCPs,

- preserve occupied sites in perpetuity,
- collect seed and place it in long-term storage at a seed-banking facility,
- develop and implement site-specific monitoring and management plans,
- manage extant populations to prevent the spread of invasive species and eradicate existing infestations,
- implement compatible grazing practices,
- establish a memorandum of understanding with Kern County water districts regarding maintenance activities that have the potential to affect occupied habitat,
- coordinate and share information among organizations working to conserve the species,
- coordinate with and support private landowners implementing conservation practices in occupied habitat,
- restore degraded, occupied habitat,
- establish additional populations,
- conduct surveys to improve data on distribution and abundance, and
- investigate the species' reproductive biology, population ecology, and habitat requirements to inform conservation and management.

3.7.1 Department Assessment

The Department considers the information provided in the petition on suggestions for future management of slough thistle to be adequate for assessing this petition component.

3.8 Availability and Sources of Information

This section summarizes the information in the petition regarding availability and sources of information (Fish & G. Code, § 2072.3; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1)). Section K on pages 17 through 21 of the petition provides the sources of information used in the slough thistle petition. Digital copies of references cited were also provided to the Commission and Department.

3.8.1 Department Assessment

The Department received digital copies of references cited in the petition and considers this to be adequate to address the availability and sources of information mentioned in the petition for slough thistle.

4 OTHER RELEVANT INFORMATION AVAILABLE TO THE DEPARTMENT

Pursuant to Fish and Game Code section 2073.5, the Department also evaluates petitions in relation to other relevant information the Department possesses or receives. The Department evaluated readily available information relating to slough thistle that is available from the Department's document library and the CNDDDB, including data housed in the CNDDDB's unprocessed data layer. Regional Department staff were contacted to determine if additional information on the species was readily available and in the possession of Department staff. Any relevant information from these sources is mentioned within the "Department Assessment" section for each petition component.

To the extent the Department was able to review other relevant information in its possession as it relates to the petition, the Department concluded that none of the additional information compensates for data deficiencies in the petition. If the Commission accepts the petition for consideration, regardless of the Department's recommendation, all reasonable attempts will be made by the Department to notify affected and interested parties and to solicit data and comments on the petitioned action (Fish & G. Code, § 2074.4). At that time, the Department will commence a review of the status of the species and produce a written peer-reviewed report, based upon the best scientific information available to the Department, which indicates whether the petitioned action is warranted (Fish & G. Code, § 2074.6).

5 SUFFICIENCY OF SCIENTIFIC INFORMATION AND RECOMMENDATION TO THE COMMISSION

The Department evaluated the petition components set forth in Fish and Game Code section 2072.3 and California Code of Regulations, title 14, section 670.1, subdivision (d)(1) for sufficiency of information pursuant to Fish and Game Code section 2073.5. Based upon the information contained in the petition and other relevant information, the Department determined there is not sufficient information to indicate that the petitioned action may be warranted (Fish & G. Code § 2073.5).

In this petition evaluation, the Department has assessed the information in the petition for each petition component individually; however, sufficiency of the petition as a whole is ultimately determined by looking at all petition components taken together. The Department considers scientifically defensible information on range and distribution to be critical for determining sufficiency of the petition. For slough thistle, the Department has determined that information is lacking for the following petition components: range, distribution, abundance, population trend, factors affecting the ability of the species to survive and reproduce (threats), and the degree and immediacy of threats. Due to the lack of adequate information on these petition components, the Department

does not consider the information in the petition to be sufficient as a whole for assessing whether listing slough thistle under CESA may be warranted and recommends the Commission reject the petition and not consider it further under CESA.

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