5-YEAR REVIEW
Dudley Bluffs bladderpod (*Physaria (Lesquerella) congesta*) and Dudley Bluffs twinpod (*Physaria obcordata*)

GENERAL INFORMATION

Species: Dudley Bluffs bladderpod (bladderpod) (*Physaria (Lesquerella) congesta*) and Dudley Bluffs twinpod (twinpod) (*Physaria obcordata*)

All information in this review pertains to both species unless otherwise specified.

Date listed: February 6, 1990
FR citation(s): 55 FR 4152
Classification: Threatened
Critical habitat: Critical habitat was not designated for either species due to concerns for the plants' vulnerability to vandalism or collection if detailed maps were to be published.

Methodology used to complete the review:
The U.S. Fish and Wildlife Service (Service) initiated a 5-year review of bladderpod and twinpod on May 27, 2016. In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (ESA), the purpose of a 5-year review is to assess each threatened species and endangered species to determine whether its status has changed and it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants.

In 2020, the Service completed a revised final recovery plan and implementation schedule for bladderpod and twinpod (USFWS 2020a-b). During this process, the biology and status of the species were evaluated as part of a Species Biological Report (Report) to inform the recovery plan. The Report is a compilation of the best available data about bladderpod and twinpod from State and Federal agencies, such as the Bureau of Land Management (BLM) and Colorado Natural Heritage Program (CNHP), and other interested parties who actively work with bladderpod and twinpod across their occupied ranges. Independent peer reviewers and partner representatives reviewed the Report before this 5-year review was published.

FR Notice citation announcing the species is under active review:
81 FR 33698, May 27, 2016

REVIEW ANALYSIS

Current Recovery Plan: Final Recovery Plan for the Dudley Bluffs Bladderpod (*Physaria (Lesquerella) congesta*) and Dudley Bluffs Twinpod (*Physaria obcordata*)
Year Issued: 2020
Recovery Criteria: Recovery criteria for bladderpod and twinpod were updated in the 2020 final recovery plan. Delisting of bladderpod and twinpod may be considered when all of the following conditions have been met to address the threats to the species:

1. At least seven key conservation areas for bladderpod and eleven key conservation areas for twinpod are protected (Factors A, C, D, and E). A key conservation area includes all occupied habitat within an occurrence and the surrounding area of potential impact. The area of potential impact is the area where indirect effects may impact plants. For bladderpod and twinpod, we consider this to be the area within 1,970 ft (600 m) of occupied habitat.
    i. Protection of these sites means that the sites are owned or managed by an individual, agency, or organization that identifies conservation of bladderpod or twinpod as a management objective of the site, and that regulatory mechanisms or other conservation plans or programs reduce or ameliorate threats associated with habitat loss and degradation.
    ii. Long-term habitat protections are in place to protect key conservation areas from identified threats to the species and manage for surface disturbing activities. Habitat protection can be achieved via long-term management agreements, conservation agreements, or memoranda of understanding in accordance with landowner and agency authorities (Factor D).

Status of criterion 1: key conservation areas have not been established, although areas that may be considered have been identified.

Approximately 10 percent of bladderpod and twinpod occupied habitat occurs on private lands owned by ranches and energy companies. Removal, damage, or destruction of plants on private lands is not prohibited under the ESA. If a project does not have Federal involvement, private landowners are not required to survey for or avoid plants or their habitat. We are not aware of any city or county ordinances or zoning that protects the species or their habitats.

Approximately 1.6 percent of bladderpod and twinpod occupied habitat occurs on State lands managed by Colorado Parks and Wildlife (CPW). While there is no legal mandate to protect these species on State lands, CPW often coordinates with the Service and the BLM on major activities to avoid and minimize impacts to sensitive species and habitats. Many of the CPW parcels in the area were purchased, in part, with Federal funds and require Federal involvement for major projects on these parcels (Colorado Division of Wildlife and USFWS 2007).

In 1988, CNAP designated the Yanks Gulch/Upper Greasewood and Dudley Bluffs ACECs on BLM lands as State of Colorado Natural Areas (CNAs). In a 2007 property exchange, Shell conveyed 1,780 ac (720 ha) of private property to Colorado Division of Wildlife (now CPW) near the Oak Ridge State Wildlife Area in exchange for 3,023 acres (1 ,223 ha) of CPW-owned property in the vicinity of the Duck Creek ACEC. In the exchange, approximately 504 ac (204 ha), including 82 acres [33 ha]) of occupied bladderpod habitat, were recommended for protection (Colorado Division of Wildlife and US Fish and Wildlife Service (USFWS) 2007). As a result, the land was conveyed to Shell under a conservation easement which included a commitment by Shell to provide long term protection for known bladderpod populations and suitable habitat in perpetuity. Shell agreed not to develop the area, allow surface occupancy, create ground disturbance,

or engage in activities where bladderpod or suitable habitat occurs. Other provisions included installing signs and developing a conservation management and monitoring plan for protection of the plant. Pursuant to those terms, Shell installed fencing and "no trespassing" signs in 2007 on the property to prevent use of an abandoned two-track road occupied by bladderpod plants. In 2009, the Shell-Duck Creek CNA was designated on the 504 ac (204 ha) that had been recommended for protection.

Combined, the Yanks Gulch/Upper Greasewood, Dudley Bluffs, and Shell-Duck Creek CNAs include approximately 9,581 acres of land (3 ,877 ha) (CNAP 2009). CNAs are designated through a voluntary land management agreement between CNAP and a willing landowner. The designation of a CNA officially recognizes the features of statewide significance that occur on a property and creates a formal relationship between the landowner and the State to monitor and protect those features. CNA designation allows CNAP to participate in management discussions and to provide resources such as funding, labor, and expertise to support stewardship, research, inventory, and monitoring of significant features. CNA agreements are voluntary and can be terminated at any time by either party with a 90-day written notice. However, in the 30-year history of CNAP, only one out of 85 designations has been terminated (Kurzel, in litt 2009).

The BLM's 1997 Resource Management Plan (RMP) designated four ACECs and implemented NSO stipulations to protect bladderpod and twinpod on BLM land. However, these stipulations allow for exceptions, and leases predating the RMP are exempt from these requirements.

If the species were delisted, the existing protections under the ESA would be removed. Per BLM policy, the species would be managed as a BLM sensitive species for at least 5 years, although this designation does not afford the same level of protection as for listed species.

2. Habitat within key conservation areas possesses all of the following qualities (Factors A, C, and E):
    i. Habitat is of the quality and quantity necessary to support a stable and self-supporting occurrence of bladderpod or twinpod. In key conservation areas where both species are present, the area may be considered a key conservation area for both species, given that the habitat of the area is of the quality and quantity necessary to support stable and self-supporting occurrences of both bladderpod and twinpod. Unless a PVA or other science provides a more detailed definition of habitat quality, necessary habitat quality will be assumed if the occurrence has been stable in that habitat for ten years, as per criterion 3.
    ii. Adjacent habitat is available with conditions sufficient to support pollinating insects.
    iii. Habitat conditions at each key conservation area are stable or improving after 10 years of monitoring.

Status of criterion 2: this criterion will be fulfilled when monitoring efforts show that criterion 3 has been fulfilled or when a PVA or other science provides evidence that

habitat is of the quality and quantity necessary to support stable and self-supporting occurrences of bladderpod or twinpod in each key conservation area.

3. At least seven occurrences of bladderpod and eleven occurrences of twinpod within key conservation areas are stable and self-sustaining. To be deemed stable and self-sustaining, an occurrence must demonstrate a stable or increasing growth rate (lambda equal to or greater than 1) over a consecutive 10-year period and contain at least 4,824 plants at the end of the 10-year period. Plant abundance may fluctuate within individual sites and from year to year, but the defined occurrences should have a stable or increasing growth rate from year one to year ten. The ten-year period may start retroactively (Factors A, C, D, and E).

   Status of criterion 3: the BLM has conducted annual monitoring for bladderpod at Duck Creek and 1145 Road since 2012 and at two Yellow Creek compressor sites since 2015. Despite changes in plant density at some monitoring sites, landscape level analysis indicates a stable trend across the range of the species with no significant change between 2015 and 2017 (Krening 2017).

   Since the initiation of monitoring, plant density at Duck Creek has been stable with no significant change observed. At compressor station #1, a significant decrease in plant density in 2016 was followed by a rebound in 2017. Despite these annual fluctuations, no significant change was observed from 2015-2017 at this site. The 1145 Road and compressor station #2 sites have both shown a significant decrease in mean plant density since data collection began. At the 1145 Road site, an increase in plant density was observed in 2017 after a monsoon rain event in 2016 had caused plant loss due to heavy erosion and down-cutting. Despite the increase, mean plant density remains well below historic levels for the site. Like compressor station # 1, compressor station #2 showed a significant decrease in plant density in 2016. However, plant density at compressor station #2 continued to decline for a second straight year between 2016 and 2017.

   The BLM has conducted annual monitoring for twinpod at the Yellow Fence site since 2011 and at County Road 24 since 2015. At the Yellow Fence site, there has been a significant increase in plant density since data collection began. At the County Road 24 site, a significant decrease in plant density has been documented. Two additional study sites were established in 2017.

4. All populations of bladderpod and twinpod are represented in an *ex-situ* seed collection that is managed according to the Center for Plant Conservation guidelines (Guerrant et al. 2004). The *ex-situ* seed collection should contain existing levels of genetic diversity (representation) of bladderpod and twinpod across the ranges of the species and should take place over a 10-year period (Factor E).

   Status of criterion 4: seeds were collected from bladderpod and twinpod plants in 1987 and 2010. Since then, three new occurrences of twinpod (Piceance Creek, Barcus Creek, and unnamed occurrence) have been found. It is unknown how long seeds remain viable in storage.

5. Criteria 1 through 4 have been realized and demonstrated effective via monitoring efforts (Factors A, C, D, and E).

   Status of criterion 5: this criterion will be fulfilled when monitoring efforts show that criteria 1 through 4 have been fulfilled. Ten-year datasets for key conservation areas are not available at this time.

Factor B (overutilization for commercial, scientific, or educational purposes) was not identified as a threat to bladderpod or twinpod and is, therefore, not addressed in the recovery criteria.

Updated Information and Current Species Status:

A few key studies, analyses, and their results are highlighted here. For a more detailed analysis of bladderpod and twinpod information, see the 2019 Report we completed for both species.

Biology and Habitat

- Habitat Model
  In 2006, CNHP used the Element Distribution Modeling process to map suitable habitat for bladderpod and twinpod. This map was further refined in 2013 using new occurrence data obtained after 2006.

- Alkaloid Analysis
  The CNAP provided funds to the DBG to perform alkaloid testing on the rarest plant species in the State, including the bladderpod and twinpod. Both species tested negative for alkaloid compounds.

- Transplant and seed Propagation
  A study was conducted by researchers from Colorado State University to determine the best approach for establishing new populations of bladderpod and twinpod in suitable unoccupied habitat. The research included laboratory, greenhouse, and field studies, including transplanting and seeding 12 areas of suitable habitat and measuring plant establishment rates (Paschke and Jonas 2016).

- Soil Characteristics
  ExxonMobil Production Company provided funds to Hayden-Wing Associates, LLC to analyze soil samples collected from occupied and unoccupied bladderpod and twinpod habitat. Preliminary analysis suggested that occupied habitat can be distinguished from unoccupied habitat that otherwise appears to be suitable based on phosphorus and sodium levels in the soil (Hayden-Wing Associates LLC 2010).

Threats Analysis

Current or potential future threats to bladderpod and twinpod include mineral extraction and energy development (natural gas, oil shale, energy and utility corridors, and sodium mineral

development) (Factor A), livestock and wild horse grazing (Factors A and C), wildfire (Factor A), invasive species (Factor A), off-highway vehicle use (Factor A), and climate change (Factor E). In addition, the small populations and small geographic ranges of the species may exacerbate the effects of these threats. Factor B (overutilization for commercial, scientific, or educational purposes) was not identified as a threat to bladderpod or twinpod.

A field study was conducted by BIO-Logic, Inc. to determine the indirect effects of oil and gas development on bladderpod and twinpod. The study focused primarily on the effects of unpaved roads. Results identified a correlation between proximity to development and bladderpod abundance and fecundity. This trend was not observed for twinpod (Graff and Alward 2012).

A study was conducted by a student of Utah State University to determine the effects of oil and gas development on pollinators and the importance of pollination for bladderpod and twinpod reproduction. Results suggested little to no impact on the abundance of pollinators, nesting, or community composition due to oil and gas development within rare plant habitat. The small sample size may have inhibited the ability to detect differences in these attributes. The study also identified pollinator species that were most efficient in carrying bladderpod and twinpod pollen (Clark 2013).

Synthesis

Bladderpod plant density at individual sites has fluctuated, but landscape level analysis indicates a stable trend across the range of the species. Similarly, twinpod plant density has increased at some sites and decreased at others.

Although progress has been made to provide protections for these species and understand the impacts of their threats, threats from mineral extraction and energy development, livestock and wild horse grazing, wildfire, invasive species, off-highway vehicle use, and climate change still exist. In addition, the small populations and small geographic ranges of the species may further exacerbate the effects of these threats. We believe that if the species were delisted, other Federal, state, and local laws and regulations would not be sufficient to protect the species from these threats. Therefore, we recommend no change in the classification of bladderpod and twinpod.

RESULTS

Recommended Classification:

____ Downlist to Threatened
____ Uplist to Endangered
____ Delist
_X__ No change is needed

New Recovery Priority Number: 8C

Rationale: Both species have a recovery priority number of 8C, which indicates a moderate degree of threat, high recovery potential, species-level taxonomy, and conflict with construction, development projects, or other forms of economic activity, especially oil and gas development. While there is a continual threat to the habitats of the species, the species do not face immediate extinction, and because threats to the species are understood, threats could potentially be alleviated by the implementation of regulatory mechanisms.

RECOMMENDATIONS FOR FUTURE ACTIONS

- Publish a technical correction in the *Federal Register* noting the change in taxonomy from *Lesquerella congesta* to *Physaria congesta*, and correcting 50 CFR 17.12.
- Inventory remaining potential habitat on public and private lands. Report results to CNHP, BLM, and the Service.
- Identify key conservation areas for both species.
- Develop and implement permanent conservation agreements for occurrences on private lands.
- Conduct annual status evaluations including estimates of mean density and population sizes at all key conservation areas.

For more information about recommended future actions, refer to the 2019 recovery plan and implementation schedule (USFWS 2019a-b).

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U.S. FISH AND WILDLIFE SERVICE

5-YEAR REVIEW OF
DUDLEY BLUFFS BLADDERPOD (*PHYSARIA (LESQUERELLA) CONGESTA*) AND
DUDLEY BLUFFS TWINPOD (PHYSARIA OBCORDATA)

Current Classification: Threatened

Recommendation resulting from the 5-Year Review:

____ Downlist to Threatened
____ Uplist to Endangered
____ Delist
_X__ No change needed

FIELD OFFICE APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve ANN TIMBERMAN Digitally signed by ANN TIMBERMAN Date: 2020.06.15 07:52:27 -06'00' Date _____