



CPW Invertebrate and Rare Plant Program

Hayley Schroeder, Invertebrate and Rare Plant Program Supervisor
Savanna Smith, Rare Plant Program Manager

Outline

- Program Overview
 - Origin & Structure
 - Initial Priorities & Projects
- Rare Plants in the 2025 SWAP
 - History & Purpose
 - Required elements: process & results
 - Data hub demonstration



HB24-1117

Gave CPW statutory authority to study and conserve invertebrates and rare plants. No regulatory authority, but CPW can undertake all other conservation actions for their benefit.



HOUSE BILL 24-1117

BY REPRESENTATIVE(S) McCormick and Soper, Amabile, Bird, Boesenecker, Brown, Clifford, Jodeh, Kipp, Lindsay, Lindstedt, Marvin, Mauro, Parenti, Rutinel, Sirota, Titone, Velasco; also SENATOR(S) Marchman and Bridges, Buckner, Cutter, Danielson, Jaquez Lewis, Priola, Winter F., Zenzinger, Fenberg.

CONCERNING INCLUDING CERTAIN SPECIES UNDER THE AUTHORITY OF THE STATE AGENCIES THAT REGULATE PARKS AND WILDLIFE, AND, IN CONNECTION THEREWITH, MAKING AN APPROPRIATION.

Colorado Native Pollinating
Insects Health Study



Steve Armstead, Adrian Carper, Deryn Davidson, Megan Blanchard, Jennifer Hopwood, Raven Larcom, Scott Black, Christy Briles, Rebecca Irwin, Garret Jolma, Julian Resasco, Seth Davis, John Mola, and David Inouye.

Rare Plant History at CPW

- The Natural Areas Program at CPW has been leading this work for decades in coordination with CNHP
- Raquel Wertsbaugh has been managing this program for the last 10 years
- SCIP, CNHP and CNAP will continue to work together going forward!



Program Structure



Invertebrate and
Rare Plant Program
Supervisor:
**Dr. Hayley
Schroeder**



Rare Plant Species
Conservation
Program Manager:
Savanna Smith



Pollinator
Conservation
Program Manager:
Dr. Adrian Carper



Western Invertebrate
and Rare Plant Field
Biologist:
Jake Gottschalk



Eastern Invertebrate
and Rare Plant Field
Biologist:
Dr. Megan Blanchard

Program Priorities



Conservation
Planning &
Partnerships

Education/
Outreach

Inventory &
Monitoring

Conservation
Action

Conservation Planning & Partnerships

Goal: Plug into and enhance collaborative efforts to advance rare plant conservation

- State Wildlife Action Plan
- Threatened & endangered species recovery teams
- Rare plant technical committee



Photo by Jessica Smith

Education & Outreach

Goal: Improve awareness about rare plants among conservation partners and the public

- Resources/trainings for CPW staff
- CPW media team- podcast, social media, blog



Research & Monitoring

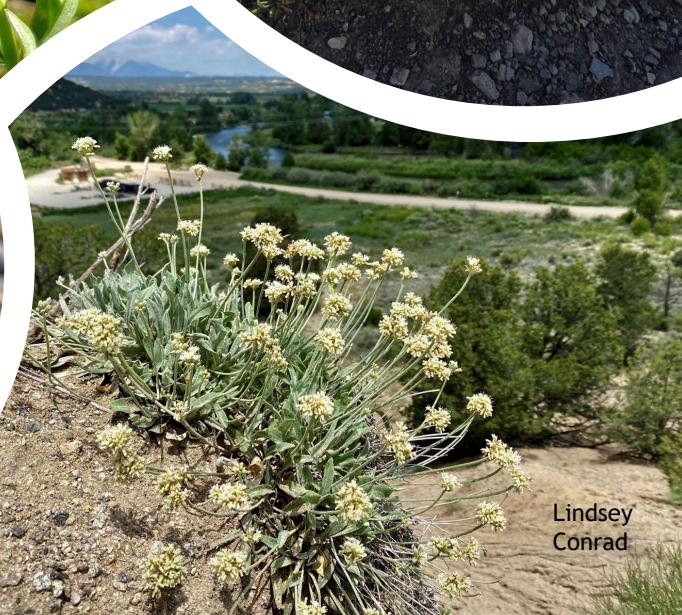
Goal: Improve knowledge about where plants are and how they're doing across the state

- Initiate and continue trend monitoring for high-priority species
- Revisit historical locations
- Survey suitable habitat
- Chip away at information gaps for “Species of Greatest Information Need”





Raquel
Wertsbaugh



Lindsey
Conrad



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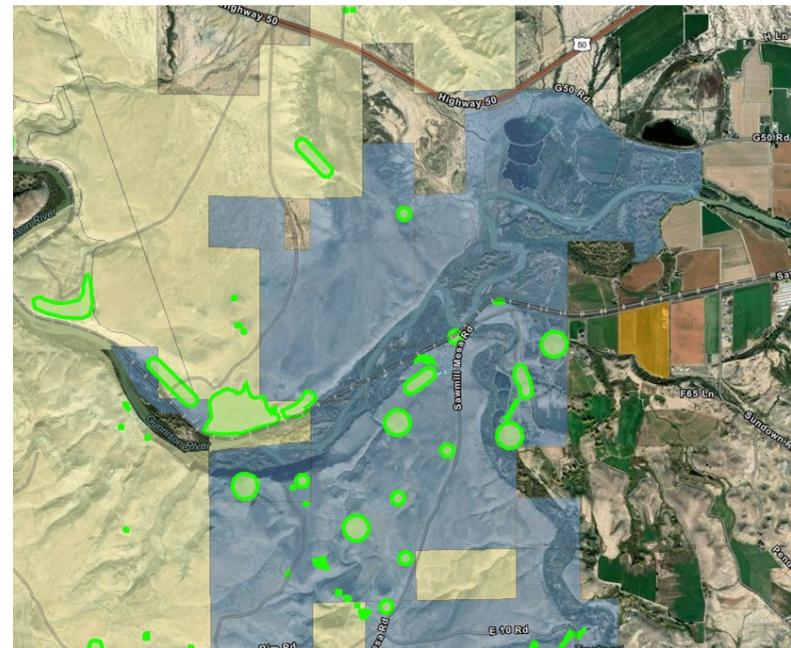
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Conservation Action- Land Use Planning

Goal: Integrate rare plants into statewide environmental planning efforts

- Energy developments
- Habitat improvements
- Recreation infrastructure
- Land protection



Conservation Action- Habitat Management

Goal: Encourage thoughtful management of existing rare plant occurrences

- Noxious weeds and herbicides
- Promote pollinators
- Fencing and signage



Conservation Action- Climate Resiliency

Goal: Evaluate and implement strategies to address the threat posed by climate change

- Ex-situ (off-site) collections, aka seed banking
- Strategy for reintroductions



Colorado 2025 State Wildlife Action Plan



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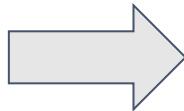
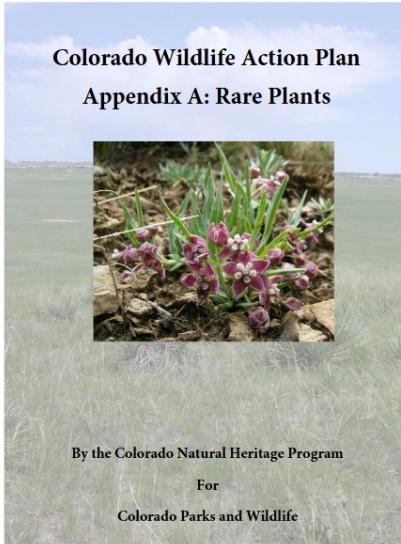
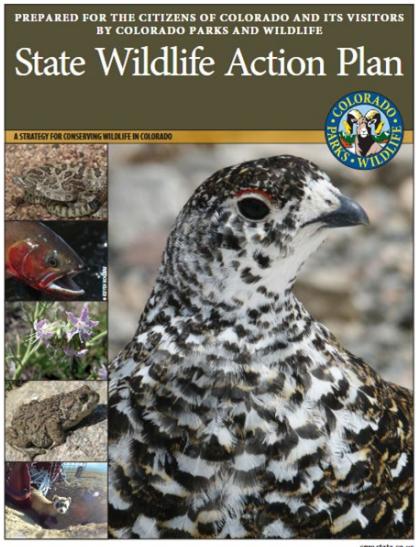
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What is the SWAP?

- Guides Colorado's approach to conservation of vulnerable species and the habitats they depend on
- Required every 10 years for federal State & Tribal Wildlife Grants (SWG)
- Identifies Species of Greatest Conservation Need (SGCN) and much more
- Tool for collective action for SGCN



History



SWAP Required Elements

1. Species of Greatest Conservation Need (SGCN)
2. Habitats location and condition
3. Threats affecting SGCN and their habitats
4. Actions to conserve SGCN and their habitats
5. Monitoring of SGCN & habitats and evaluation of actions
6. Review and update SWAP every 10 years
7. Agencies and Tribes coordination
8. Public participation in planning AND implementation

Element 1: Species

SGCN Scoring Criteria



Tier 1

Mostly G1 & G2 species

- Most G1
- Most G2, except species with low % range in CO
- ESA listed or petitioned

Tier 2

Subset of G3 species + some G2

- G2 with low % range in CO
- G3 IF endemic or regional endemic or high % in CO
- All BLM/USFS sensitive G3

SGIN

Species lacking scientific info/low confidence in data

- Taxonomic uncertainty
- Other critical factors unknown (distribution, population status, threats)
- Many species with a large % of historical locations

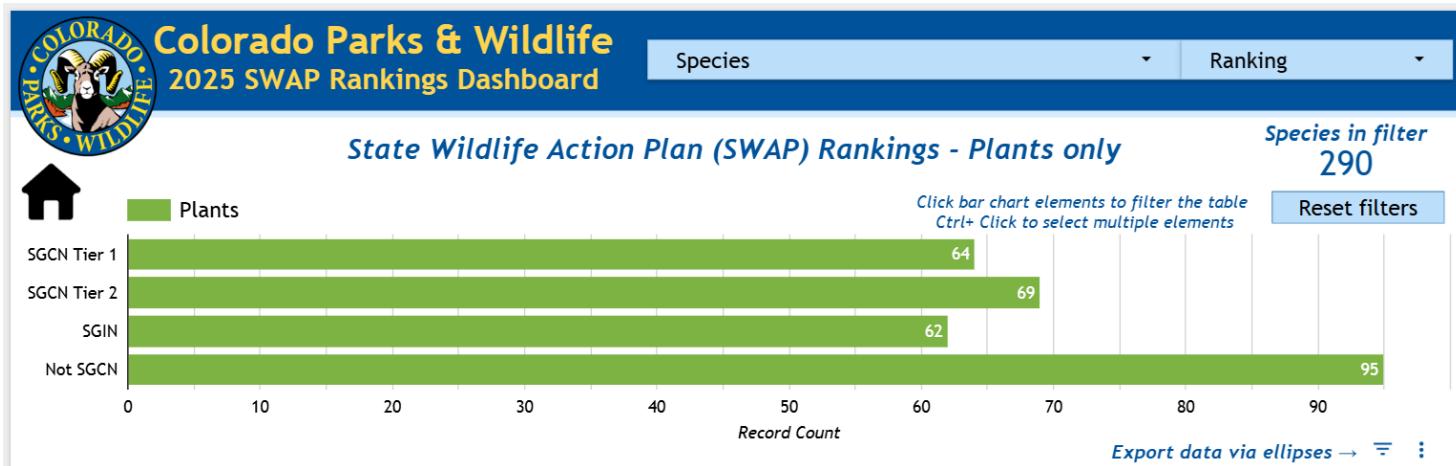


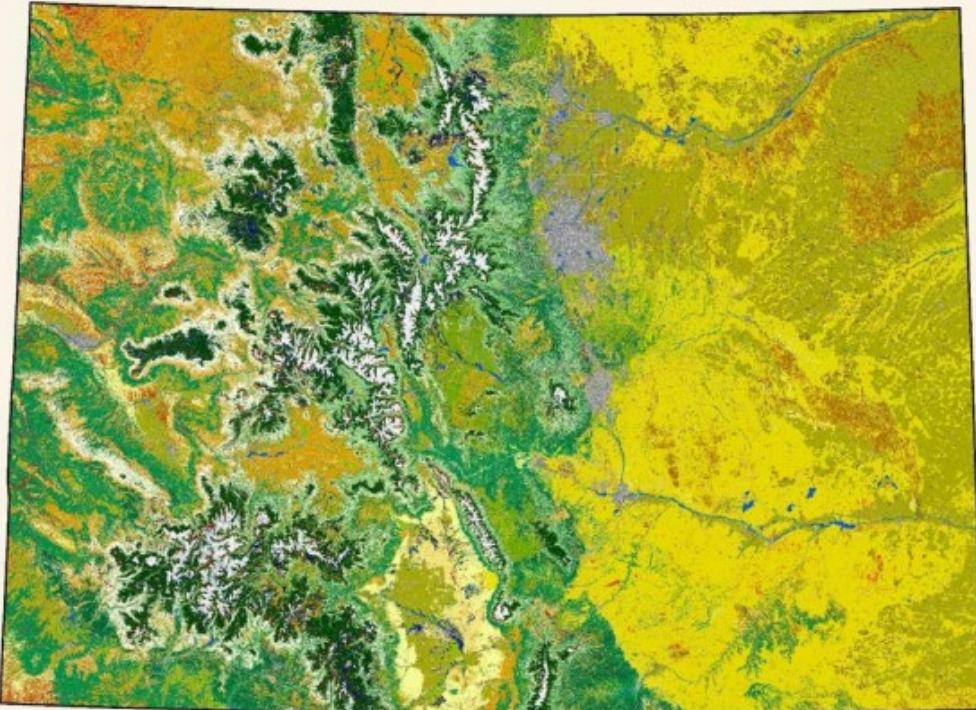
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Rare Plants in the 2025 SWAP

290 Species Evaluated
64 Tier 1, 69 Tier 2, 62 SGIN (195 total)





Habitat Classes

Habitat Classes		Crop Agriculture		Mesic Mixed Conifer		Hay Meadows		Lower Montane-Foothill Shrublands		Alpine		Urban Areas	
		Aspen		Pinyon-Juniper		Mixed & Tallgrass Prairies		Oak & Mixed Mountain Shrub		Barrens		Riparian	
		Bristlecone		Ponderosa Pine		Shortgrass Prairie		Sagebrush		Cliffs, Canyons, & Badlands		Woodlands & Shrublands	
		Dry-Mesic Mixed Conifer		Spruce-Fir		Desert Shrub		Saltbush		Sand Dunes		Wetlands	
		Lodgepole		Foothill & Mountain Grasslands		Greasewood		Sand sage		Exotic & Ruderal		Open Water	

0 25 50 Miles

Element 2: Habitats

Habitat Process

Habitat List

- Think of as “land cover”
- Based on LANDFIRE data
- New for 2025- Barrens layer (tailored to plants)

Assigning Habitats to Species

- Informed by land cover of known occurrences + primary literature + expert opinion
- Allows for multiple primary and secondary habitat types per species



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Important habitat types for rare plants



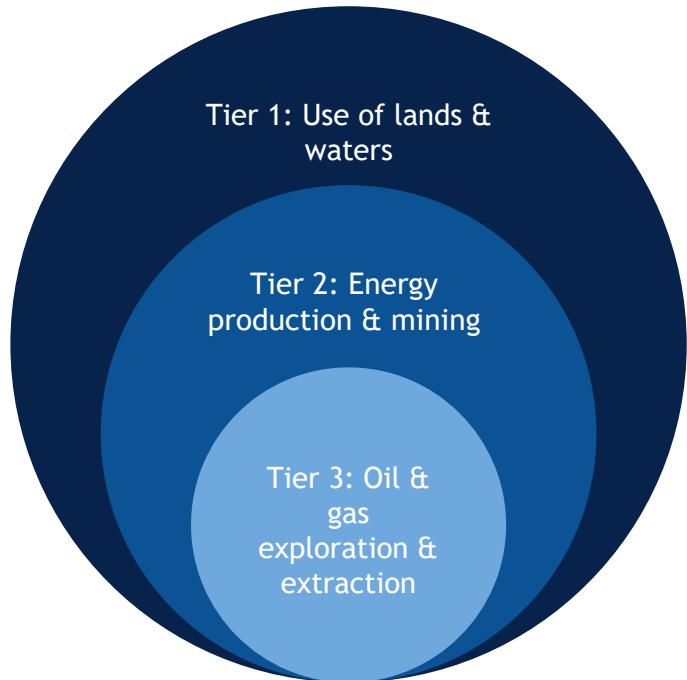
- Barrens, pinyon-juniper, desert shrub & sagebrush are the top 4 most important types
- Cliffs, canyons & alpine are close runner-ups



Element 3: Threats

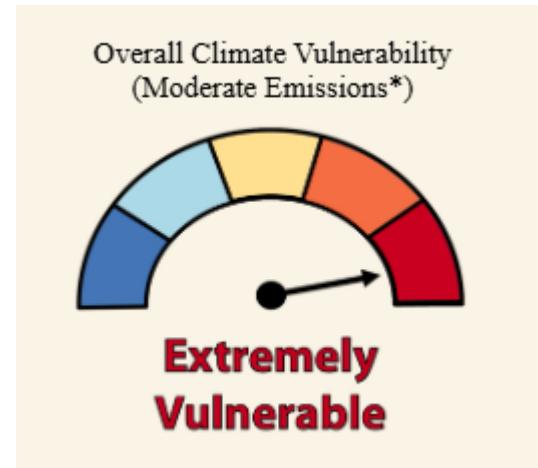
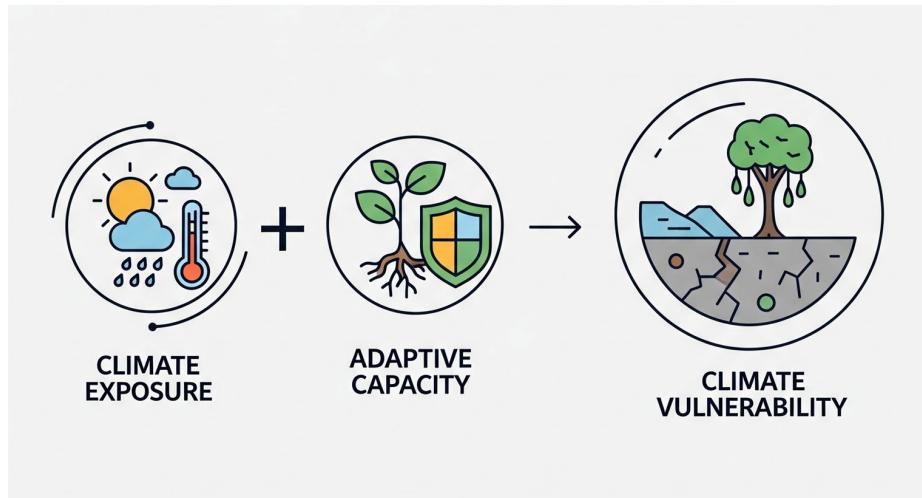
Threats Process: Non-climate threats

- Pulled from CNHP element occurrence data
- Classified based on NatureServe lexicon
- Scope and severity of threats evaluated



Threat Process: Climate Threats

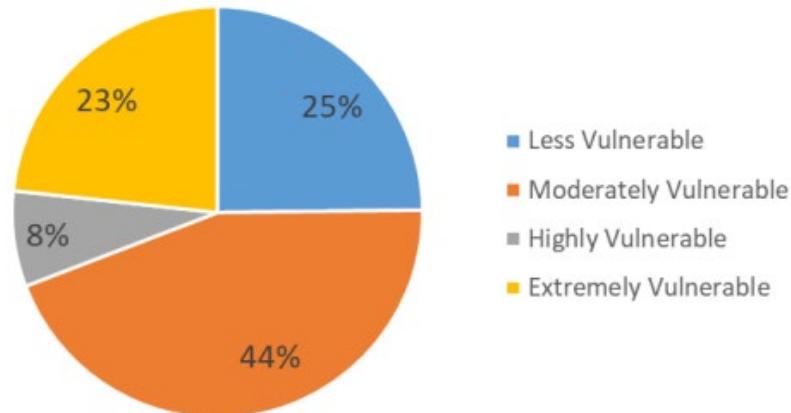
Utilized NatureServe Climate Change Vulnerability Index (CCVI)
4.0



Threats: Results

- Recreation, invasive species, and improper grazing are some of the most ubiquitous (but not necessarily most severe) threats
- Climate vulnerability higher for plants than wildlife

Climate Vulnerability of Tier 1 and 2 SGCN Plants
Under Moderate (RCP 4.5) Emissions Scenario



Elements 4 & 5: Actions & Monitoring

Actions & Monitoring Process

- Feedback requested:
 - Existing conservation plans
 - Existing monitoring
 - Existing actions
 - Potential short-term actions
 - Potential long-term actions
- Responses coded into standard lexicon
(CMP Actions Classification 2.0)



Action & Monitoring: Takeaways

- Prioritize broad-scale actions that benefit many species at once
- Conduct basic research and monitoring to understand species needs
- Develop site-specific actions by assessing on-the-ground conditions
- Build strong partnerships across agencies for success



Next Steps

- Develop digital tools to track implementation
- Build SWAP related requirements into funding opportunities and other planning efforts
- Use SWAP to guide monitoring and conservation actions
 - Which species would benefit most from trend monitoring?
 - Which species need seed banking?
 - Which species are most impacted by energy development?



Acknowledgements

- Colorado Parks & Wildlife (CPW) Core: Kacie Miller, Catherine Adams, Angela Boag, Jenn Logan, David Klute, Kacie Miller, Dan Neubaum, Liza Rossi, Hayley Schroeder, Amy Seglund, Ben Wasserstein, Boyd Wright
- Colorado Natural Heritage Program (CNHP): Lee Grunau, Jessica Smith, Jill Handwerk
- Plants- SGCN scoring, threats assessment & action planning
Mark Beardsley (EcoMetrics, LLC), Georgia Boyle (CNHP), Carol Dawson (Bureau of Land Management), Michelle DePrenger-Levin (Denver Botanic Gardens), Jake Gottschalk (U.S. Fish & Wildlife Service), Jill Handwerk (CNHP), David Hirt (Boulder County Parks & Open Space), Mike Kirkpatrick (U.S. Forest Service), Phil Krening (Bureau of Land Management), My-Lan Le (Denver Botanic Gardens), Ross McCauley (Fort Lewis College), Susan Panjabi (CNHP), Lynn Riedel (City of Boulder Open Space and Mountain Parks), Alex Seglias (Denver Botanic Gardens), Jessica Smith (CNHP), Savanna Smith (CNHP/CPW), Crystal Strouse (City of Fort Collins Natural Areas), Raquel Wertsbaugh

Data Hub Walkthrough



Colorado's 2025 State Wildlife Action Plan

Species of Greatest Conservation Need (SGCN) & Habitats Data Hub



Welcome to Colorado's 2025 State Wildlife Action Plan (SWAP) Data Hub!

To learn how to effectively navigate and utilize this dashboard, please review our [Data Hub Walk-through Video](#).

As the central part of our "digital SWAP", the Data Hub contains information about Species of Greatest Conservation Need (SGCN) and their habitats.

You can explore species and habitat profiles, threats affecting these resources, and existing plans and monitoring efforts. You will also find prospective short and long-term conservation actions that may be implemented during the 10-year timeframe of the SWAP.

Please note that invertebrate SGCN species are not yet incorporated into Colorado's 2025 SWAP Data Hub. These species as well as the vertebrate and plant Species of Greatest Information Need (SGIN) subset of SGCN are listed in the "All Species Ranking Dashboard".

This Hub was created through a collaborative planning process. Visit [EngageCPW](#) to learn more about the process as well as find additional information on broader threats and actions not specific to an individual SGCN or habitat.

This site is for anyone - biologists, researchers, educators, conservation planners, organizations, individuals - who want to better understand and support the conservation of SGCN and their habitats.

[Explore SGCN Species](#)

[Explore Habitats](#)

[Investigate Threats/Actions](#)

[Threats/Actions Quick Summary](#)

[All Species SWAP Rankings](#)



[Full screen mode](#)

Last dashboard update: September 12th, 2025

[View Photo Credits](#)



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<https://engagecpw.org/state-wildlife-action-plan>

Explore Species

Taxonomic Group Species

Plants **Fiddleleaf Twinpod (Physaria vitulifera)**

i

Fiddleleaf Twinpod
Physaria vitulifera

SGCN Tier 2
Not Listed

Species Summary Threats Climate Change Vulnerability Actions & Monitoring



[+ Enlarge photo](#)

Photo credit/org.: Raquel Wertzbaugh / CPW

All Habitat **Habitat Usage Type:**
Usage Type(s) **(All)** [Click a habitat to open its summary page in a new window](#)

Primary

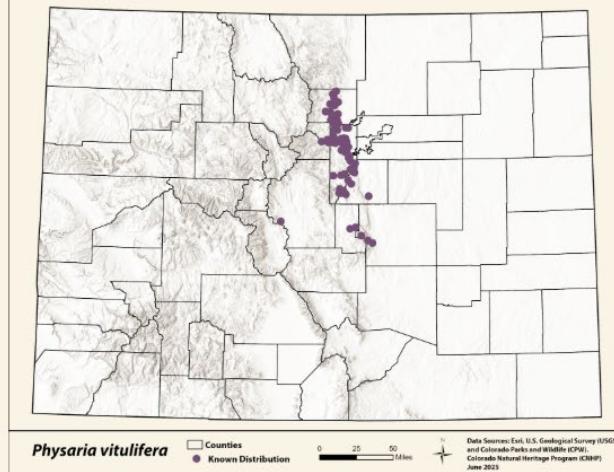
- Foothill & Mountain Grasslands
- Lower Montane-Foothill Shrublands
- Ponderosa Pine

Other

- Dry-Mesic Mixed Conifer

[+ Enlarge Associated Habitats](#)

Maps depict where the species could occur.
Interactive maps with metadata will be available via [CODEX](#) in September 2025.



Physaria vitulifera

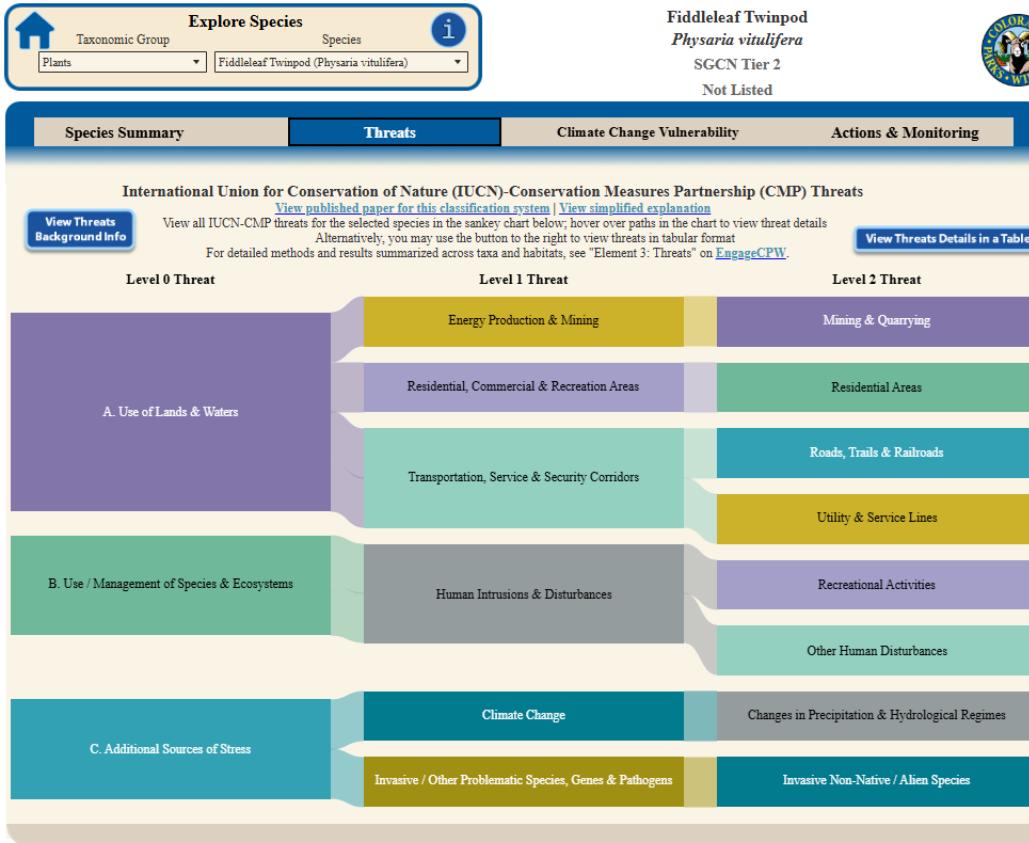
Counties
Known Distribution

0 25 50 Miles

Data Sources: Esri, U.S. Geological Survey (USGS), and Colorado Parks and Wildlife (CPW). Colorado Natural Heritage Program (CNHP) June 2023

[+ Enlarge species range map](#)

[View in the Colorado Rare Plant Guide](#)



Explore Species

Taxonomic Group Species

Plants Fiddleleaf Twinpod (*Physozia vitulifera*)

Fiddleleaf Twinpod
Physozia vitulifera
SGCN Tier 2
Not Listed



Species Summary

Threats

Climate Change Vulnerability

Actions & Monitoring

NatureServe Climate Change Vulnerability Index (CCVI) (?)

CCVI is a tool for evaluating the relative climate change vulnerability of a species by assessing climate exposure and adaptive capacity.

Overall Climate Vulnerability
(Moderate Emissions*)

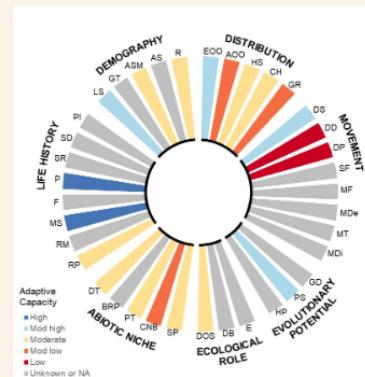


Overall Climate Vulnerability
(High Emissions*)



Adaptive Capacity Wheel (?)

Adaptive Capacity: Moderately Low



CCVI Assessment Notes:

Physozia vitulifera is expected to experience moderate to high exposure to climate change under moderate and high emissions scenarios, respectively; it has moderately low adaptive capacity and is Moderately Vulnerable under both scenarios. Limited dispersal ability reduces adaptive capacity. Anthropogenic and topographic barriers to movement may influence vulnerability. Reproduction through cross pollination and multiple reproductive cycles per lifetime provide opportunities for adaptation.

Climate Exposure (?)

Moderate Emissions*:

Moderate

High Emissions*:

High

To view detailed input and output data related to the Climate Change Vulnerability Index (CCVI) assessment for this and other species, see [CCVI Results T1 and T2 SGCN](#).
For detailed CCVI methods and results summarized across taxa, see "Element 3: Threats" on [EngageCPW](#).



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Explore Species

Taxonomic Group: **Species**

Plants  Fiddleleaf Twinpod (*Physaria vitulifera*) 

Fiddleleaf Twinpod
Physaria vitulifera
SGCN Tier 2
Not Listed



Species Summary

Threats

Climate Change Vulnerability

Actions & Monitoring

Actions and Monitoring

The planning teams collected a wealth of information regarding monitoring and actions through meetings and targeted questions to elicit salient responses from experts about their knowledge of current efforts and vision for future actions.

The [CMP Actions Classification 2.0](#) lexicon was used to code responses about prospective actions, as summarized along with any meaningful details in the tables below.

If codes 6.4, 8.1, and 10.3 are selected with no details provided assume this is an indication of support for continuing to implement the plans, monitoring and other actions identified under "Existing Actions".

For detailed methods and results summarized across taxa and habitats, additional proposed actions not specific to a species or habitats, and more on SWAP implementation and monitoring, see "Elements 4 & 5" on EngageCPW.

Prospective Short and Long Term Actions

Time Frame:  Short Term

 Actions

6. Conservation Designation & Planning	6.4. Conservation Planning
--	----------------------------

10. Institutional Development	10.3. Alliance & Partnership Development
-------------------------------	--

 Action Details

Evaluate the adequacy of existing conservation measures within local government management plans.

Conduct field surveys to confirm species presence, assess current conditions and threats, and identify management concerns, especially at historical locations.

Ensure existing Best Management Practices for invasive plant species management in natural areas are up to date and utilized by land managers

Existing Actions

 Recovery and Management Plans

None

 Monitoring and Actions

The species receives periodic updates to statewide element occurrence data from CNHP or other partners. Opportunistic sightings are recorded in iNaturalist and herbarium databases. No consistent trend monitoring occurs.



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You've navigated to this dashboard through a habitat-specific link.

[Click here to explore other habitats](#)



Lower Montane-Foothill Shrublands

Shrubland Habitats



Habitat Summary

Threats

Actions & Monitoring



+ [Enlarge photo](#)

Photo credit/ org.: Raquel Wertzbaugh / CPW

Habitat Usage Type:
Supported SGCN Species (as primary habitat)
Click a species to open its summary page in a new window

Species count:
12

Bell's Twinpod (*Physaria bellii*) SGCN Tier 1

Big Brown Bat (*Eptesicus fuscus*) SGCN Tier 2

Fiddleleaf Twinpod (*Physaria vitulifera*) SGCN Tier 2

Gray Wolf (*Canis lupus*) SGCN Tier 1

Gunnison's Prairie Dog (*Cynomys gunnisoni*) SGCN Tier 1

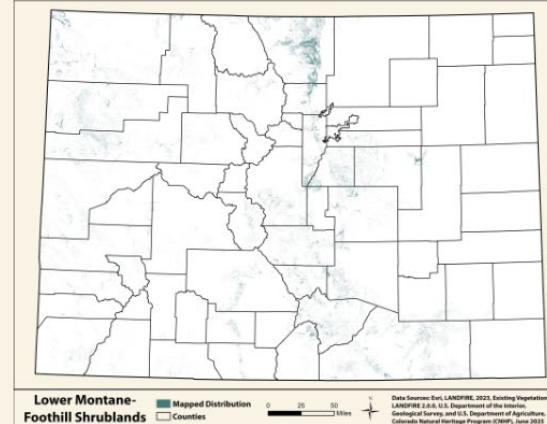
+ [Enlarge SGCN Supported Species](#)

Interactive maps with metadata will be available via [CODEX](#) in September 2025.

[LANDFIRE](#) was used to categorize and map terrestrial habitats.

This [crosswalk](#) depicts which LANDFIRE vegetation cover categories were rolled up into SWAP Habitats and other sources of mapping data.

Vegetation cover types are [described](#) by NatureServe.

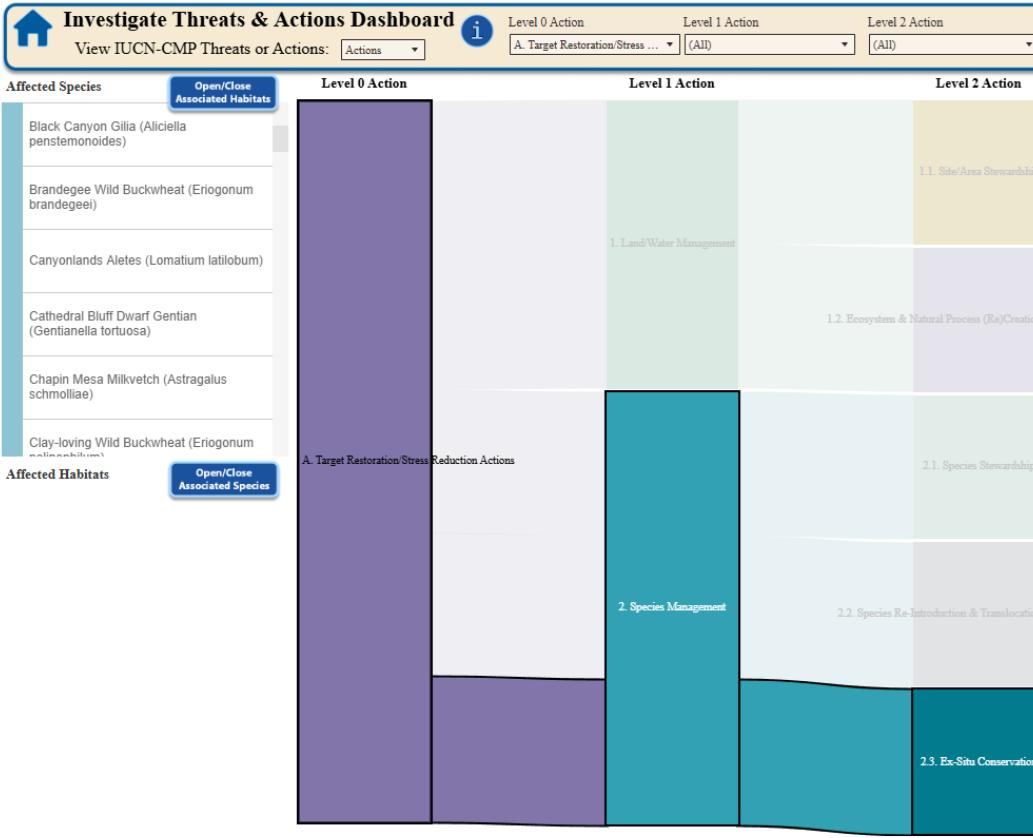


+ [Enlarge range map](#)



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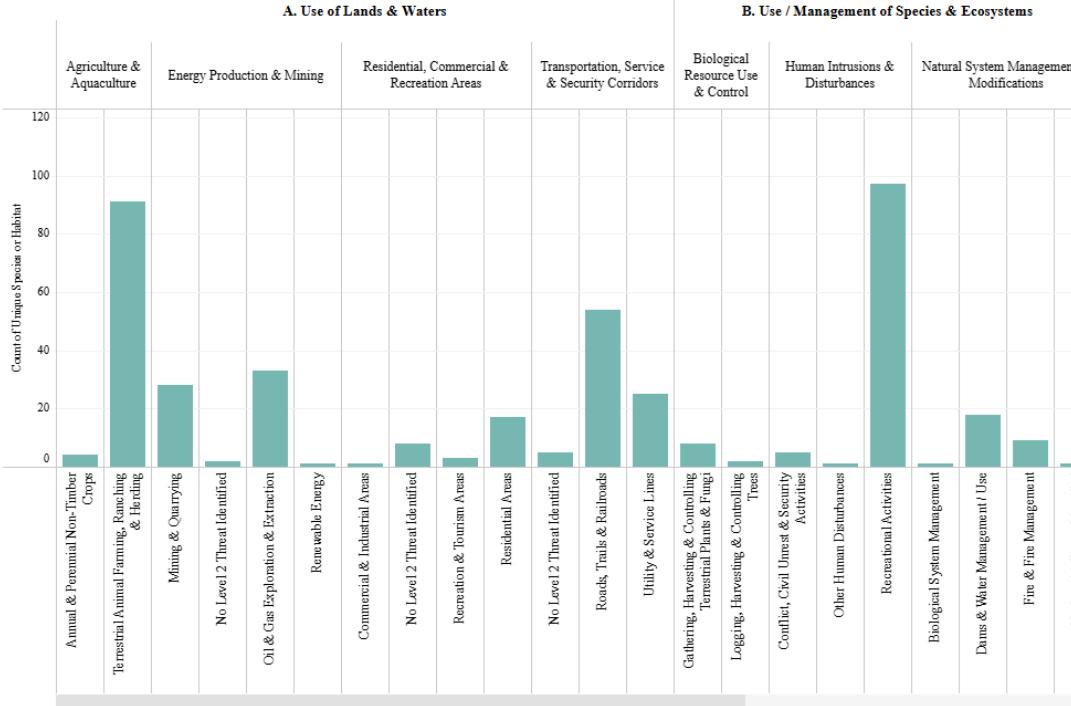


Threats/Actions Quick Summary

Threats
 Actions



Unique Species: 133
 Unique Habitats: 0
 Taxonomic Group or Major Habitat:
 Unique Species or Habitat:

Level 0 Threat / Level 1 Threat / Level 2 Threat**Species**

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Thank you!

Learn more at:

<https://engagecpw.org/state-wildlife-action-plan>

Contact me at:
savanna.smith@state.co.us



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