



Rare Plant Conservation Initiative: *Saving Colorado's Wildflowers*

Funded by:

National Fish & Wildlife Foundation, The Nature Conservancy,
CO Native Plant Society, & CO Dept. of Agriculture

Jennifer Ramp Neale
Denver Botanic Gardens

Rocky Mountain National Park Science Behind the Scenery series

7/31/2012

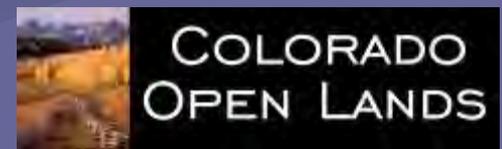
Overview of Today's Presentation



Penstemon penlandii

- Introduce RPCI
- Plant Conservation Strategy
 - Review 6 Objectives
 - Denver Botanic Gardens research
- Accomplishments
- Opportunities for Involvement

Rare Plant Conservation Initiative



Rare Plant Conservation Initiative

Goal

To conserve Colorado's most imperiled native plants & their habitats...

through collaborative partnerships for the preservation of our natural heritage & the benefit of future generations.



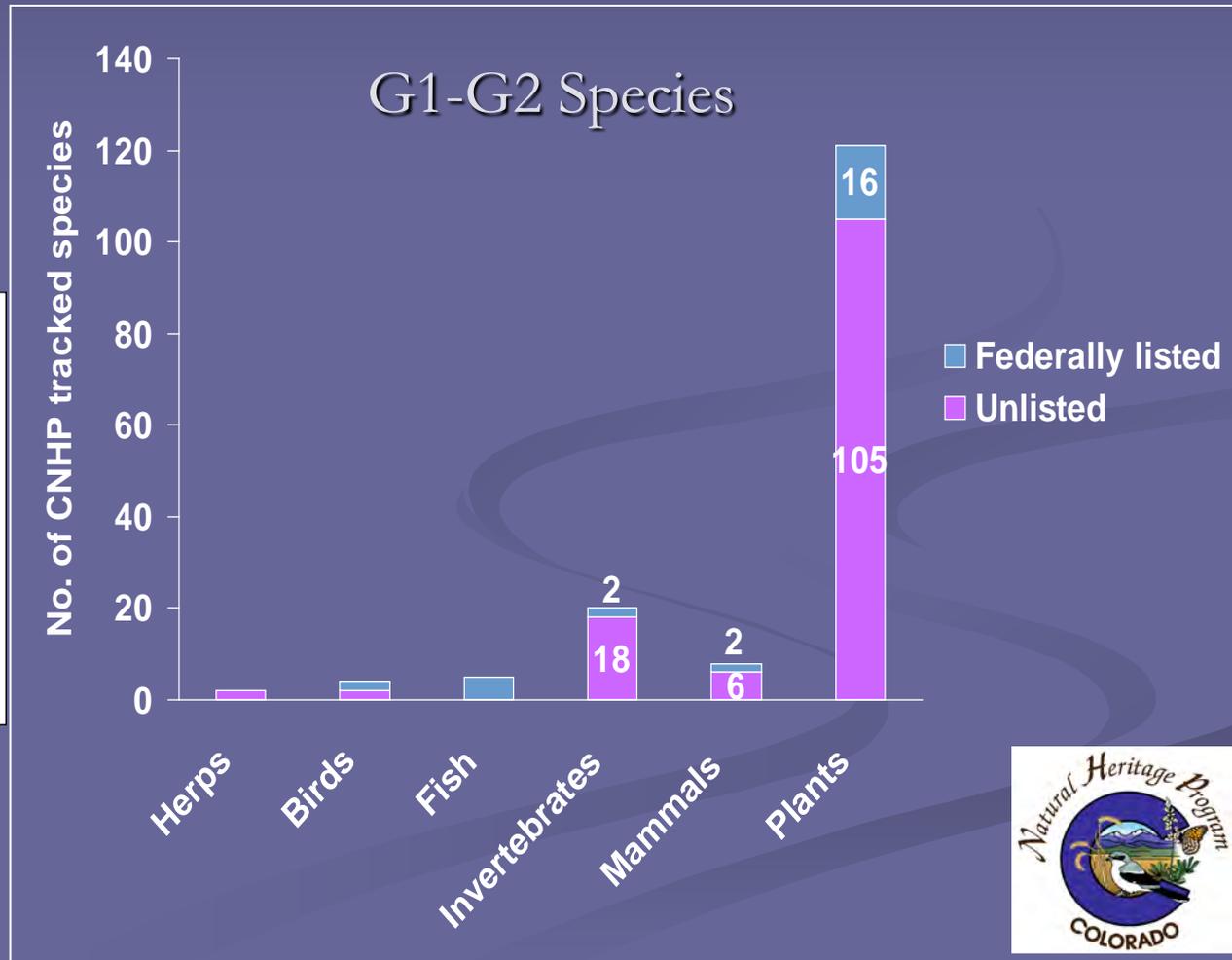
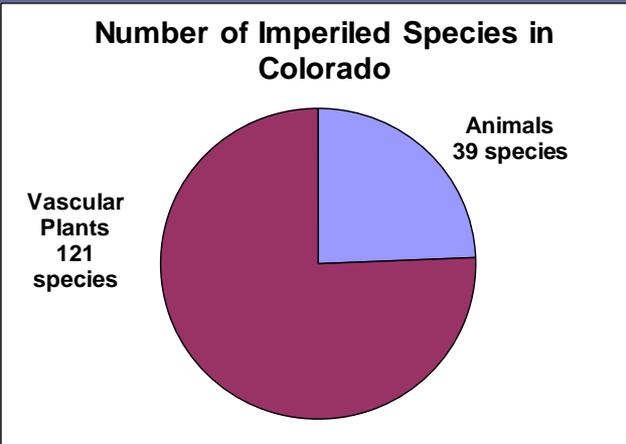
Phacelia formosula

Global Ranks

- **G1: Critically Imperiled** - Typically 5 or fewer occurrences or less than 1,000 remaining individuals.
- **G2: Imperiled** - Typically 6 to 20 occurrences or between 1,000 and 3,000 remaining individuals.
- **G3: Vulnerable** - Vulnerable either because rare and uncommon, or found only in a restricted range (even if abundant at some locations). Typically 21 to 100 occurrences or between 3,000 and 10,000 remaining individuals.



The Forgotten Majority: 75% of CO's Imperiled Species are Plants



Colorado's Imperiled Plants



The Numbers

2596 native plants (492 non-native)

520 tracked by CNHP

121 imperiled (G1-G2)

125 endemic



Over 30 years of gathering data

CONPS

Herbaria

CNHP

DBG

USFWS

NPS

CNAP

TNC

BLM

Consultants

USFS

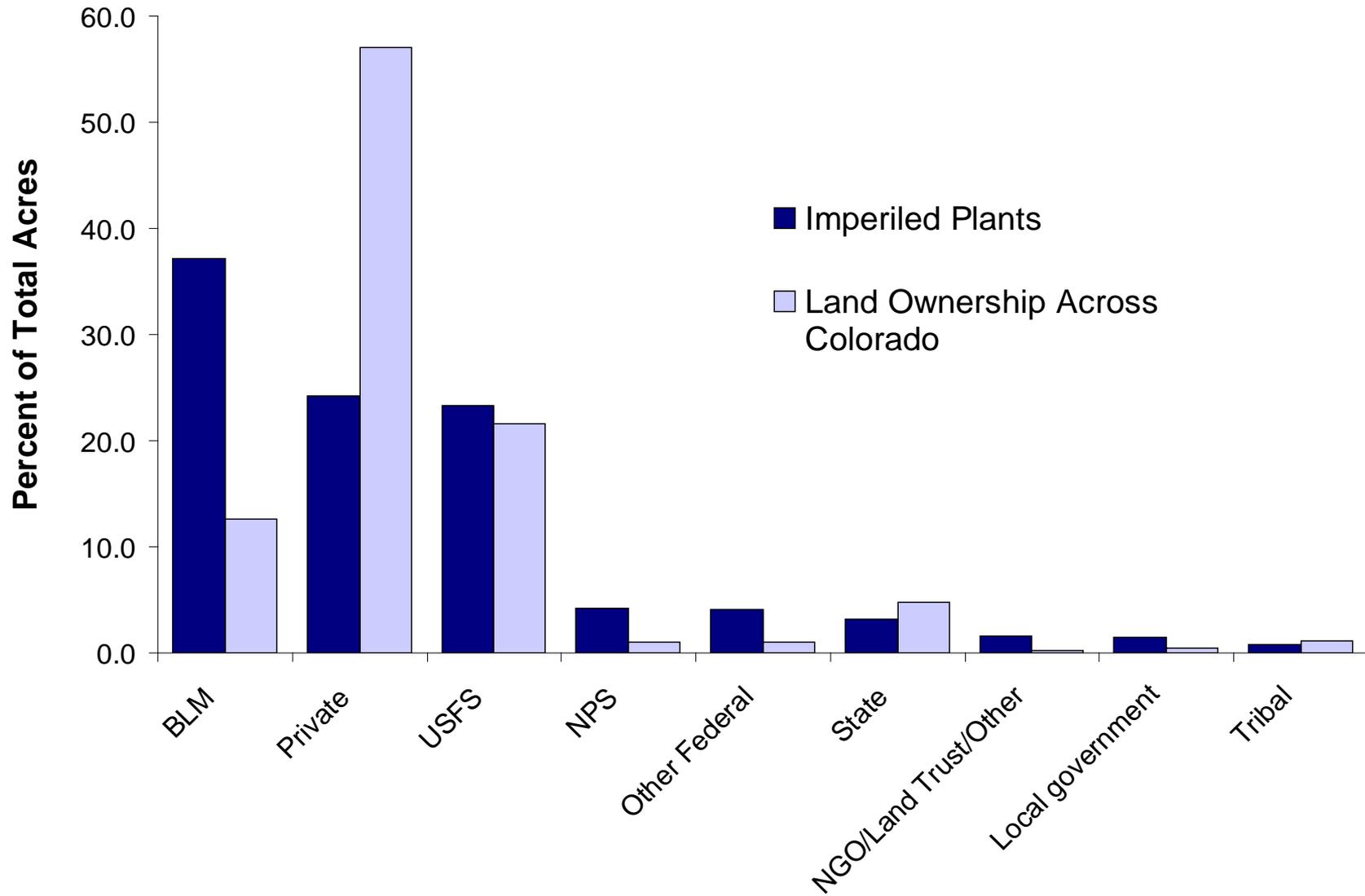
DOD

SLB

Volunteers



Most imperiled plants occur on BLM, Private & US Forest Service lands



16 plants are Federally listed

Eriogonum pelinophilum



Penstemon penlandii



Sclerocactus mesae-verde

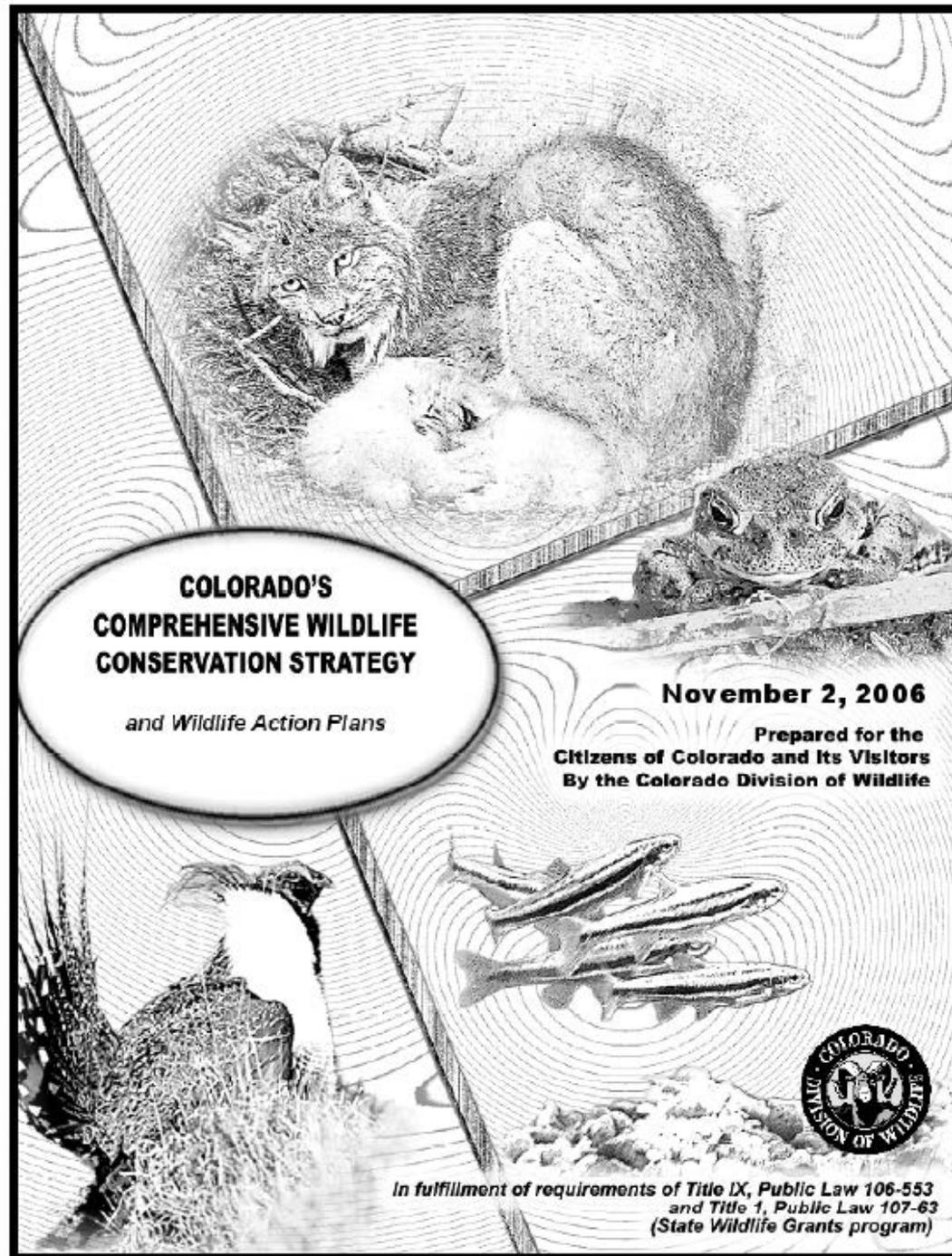


2 candidates for listing

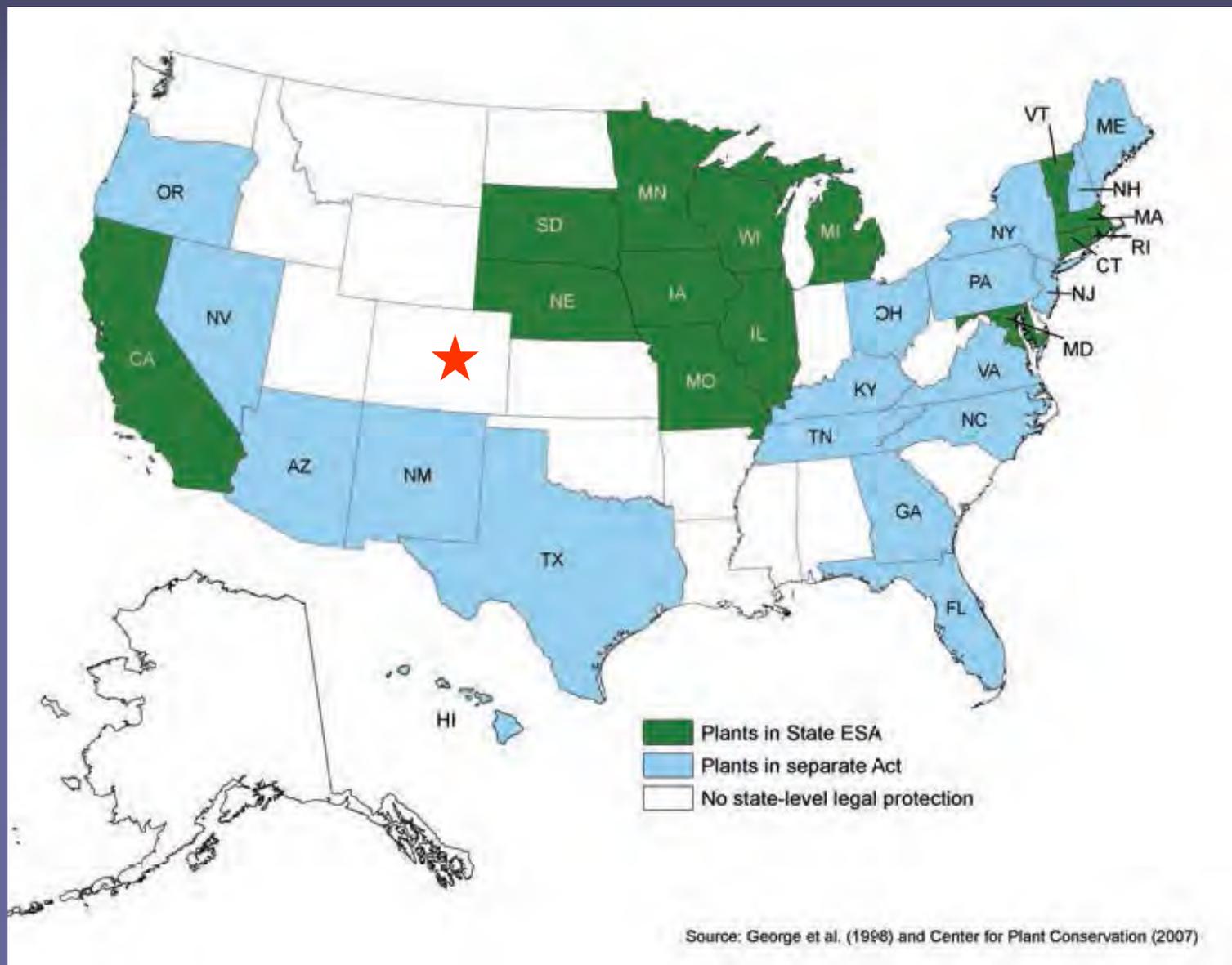
Colorado

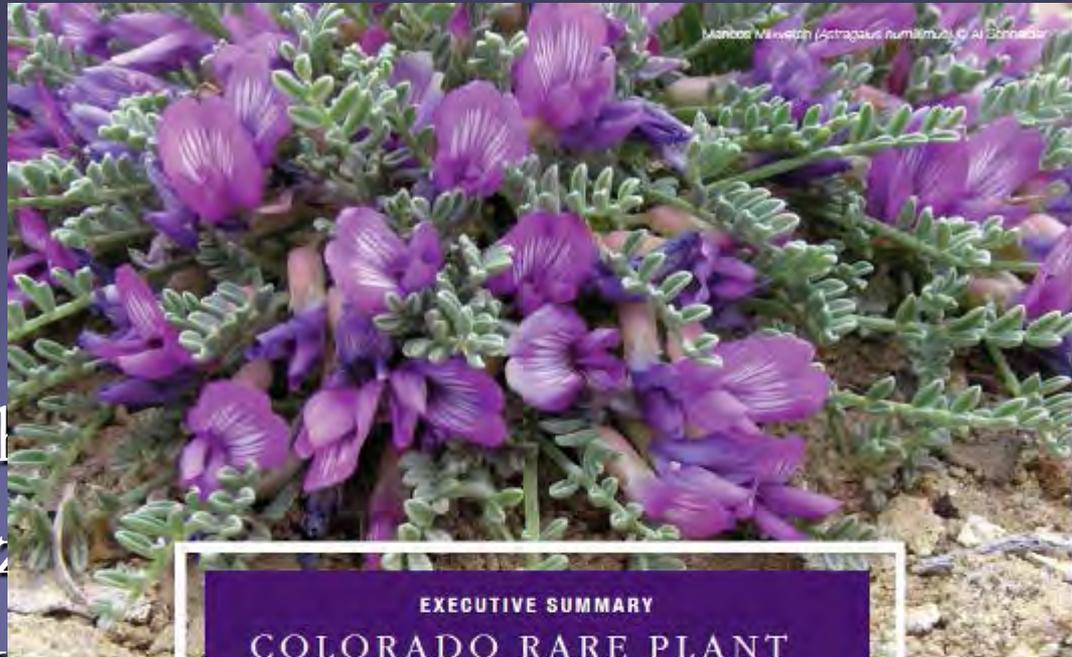
Rare plants not
considered in CO
State Wildlife Action
Plan

Amendment awaiting
approval



No Plant State Statute in CO





Manzanillo (Astragalus nummularia) © AJ Schneider

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- 1. Secure l
- 2. Minimiz
- 3. Improv
- 4. Adopt r
- 5. Develop
- 6. Facilitat

EXECUTIVE SUMMARY
 COLORADO RARE PLANT
 CONSERVATION STRATEGY

“Plants have too long been hidden in plain sight. The prospect of continued threats to the nation’s plant life, coupled with the large proportion of the flora already at risk, argues that now is the time to bring plants out from the background, and to put the conservation needs of our nation’s flora squarely into view.” - Stein and Gravuer, 2008



Oenothera harringtonii



1. Secure on-the-ground habitat protection for CO's imperiled plants

Oxybaphus rotundifolius



- Identify priority species
- Develop important plant areas
- Identify priority areas & develop action plans
- Work w/ land trusts & managers to secure protection
- Integrate plants into CO SWAP & other efforts

Conservation Priorities

Priority Species

- CNHP/NatureServe G1-G2 species
- Rare Plant Technical Committee
- Rare Plant Symposia
- Biodiversity Scorecard results

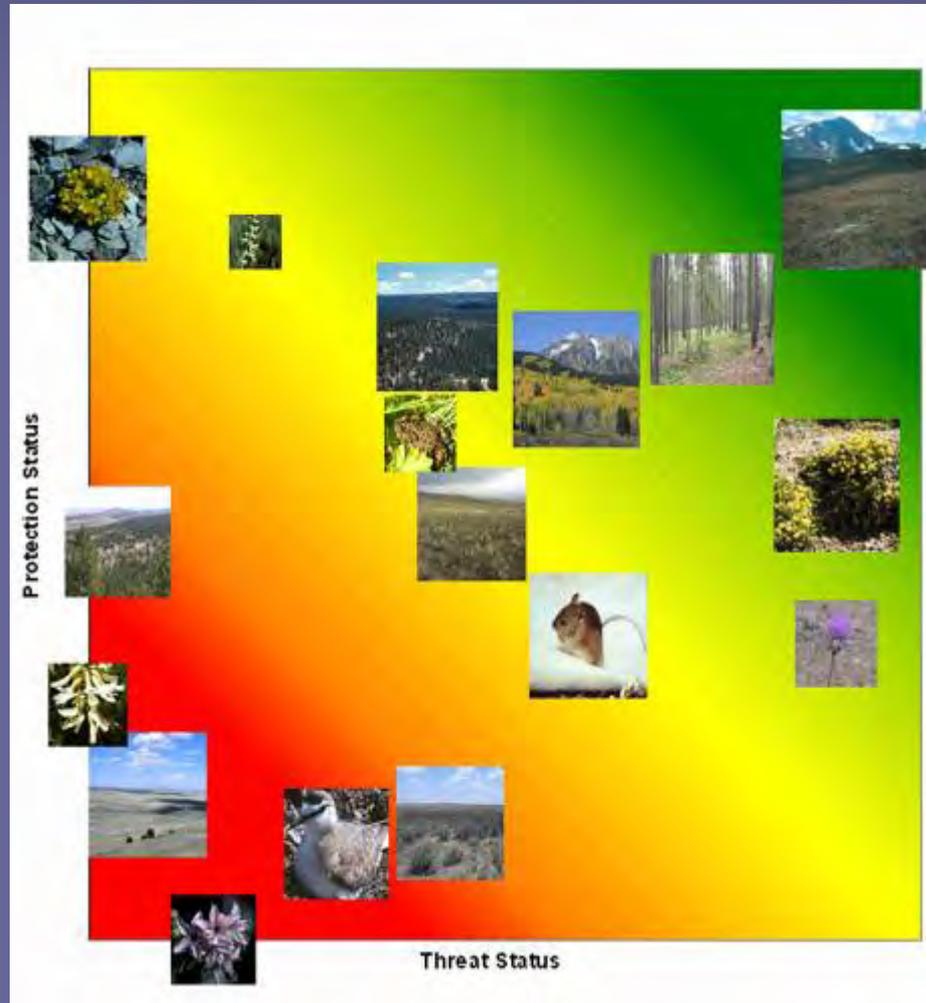
Priority Actions

- Conservation Action Plans
- Private parcel prioritization
- Best Management Practices



Ipomopsis polyantha

A Biodiversity Scorecard for Colorado

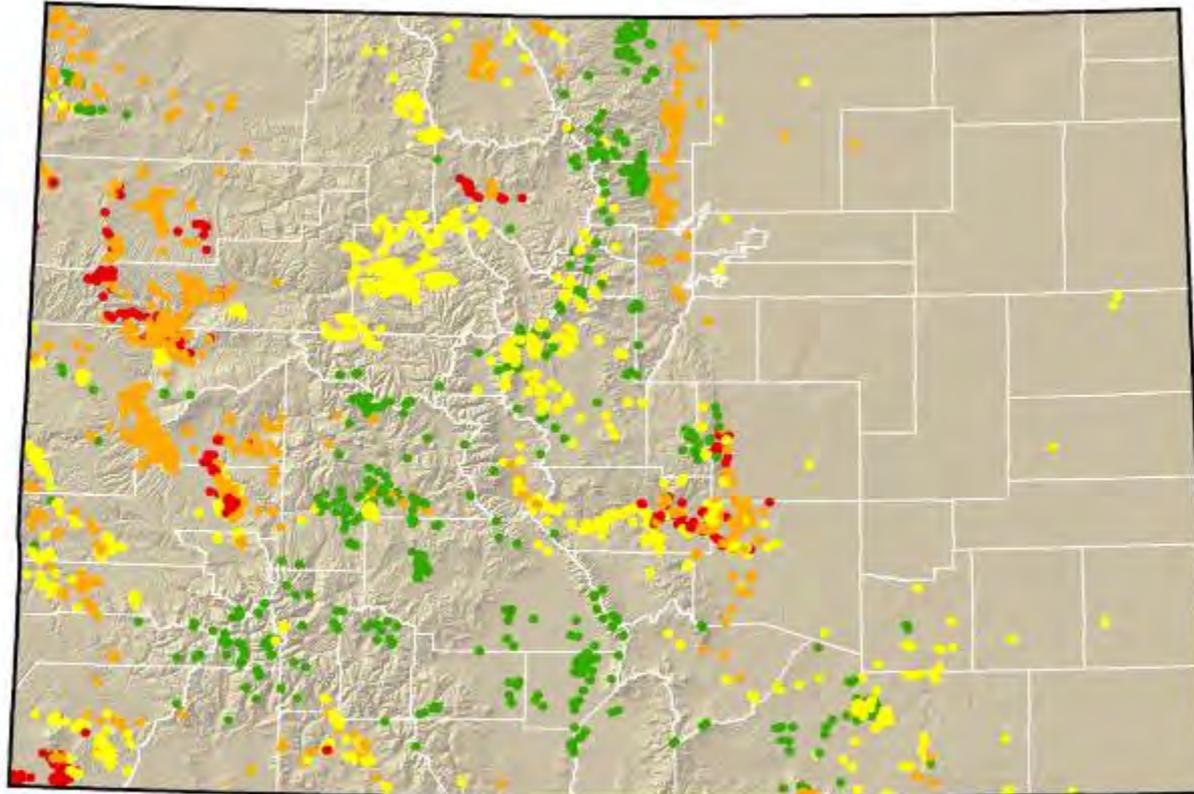


Based on:

- Biodiversity Status
- Threat Status
- Protection Status



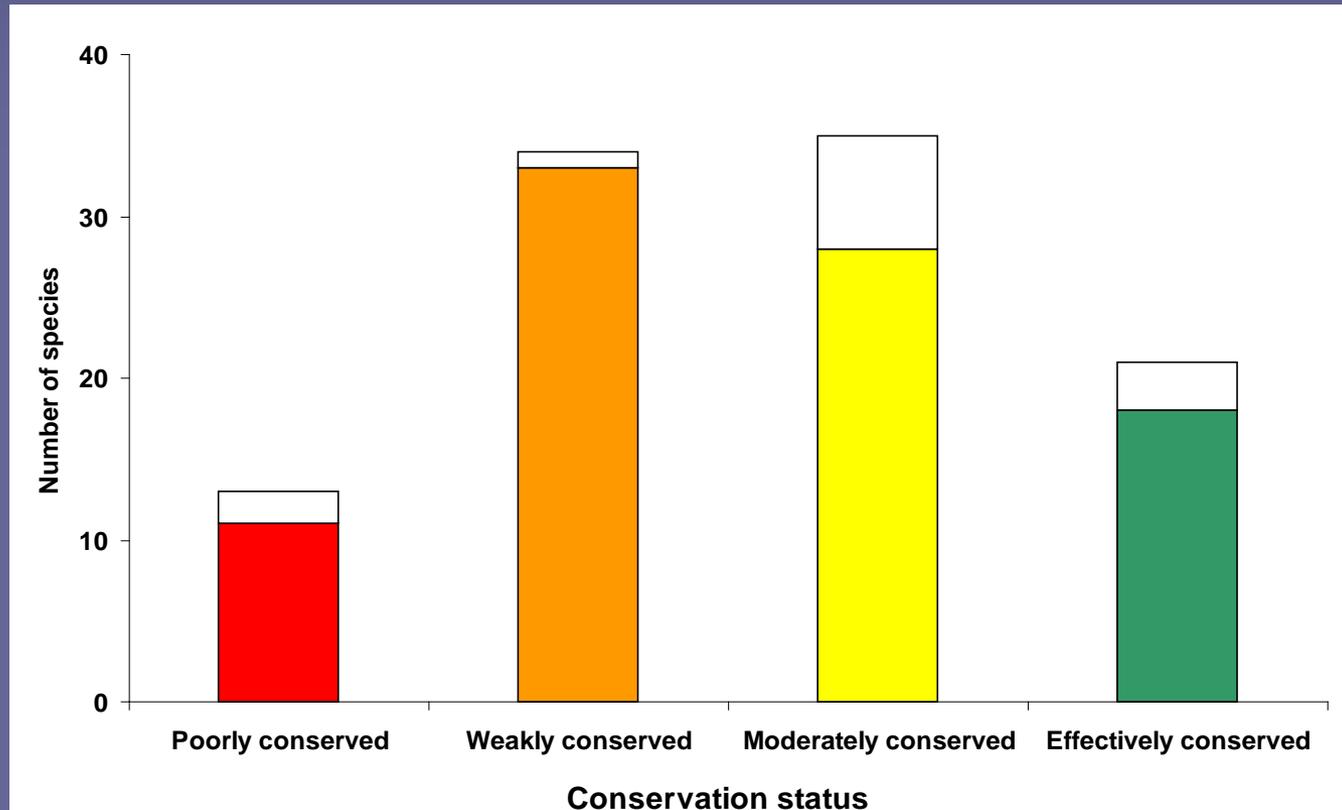
Rare plant occurrences by overall conservation status



Plant Element Occurrences by Overall Conservation Status



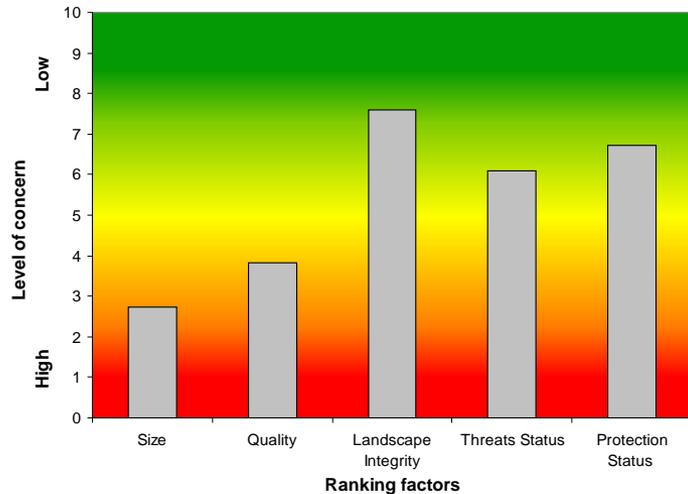
50% of Colorado's imperiled plants are poorly or weakly conserved



Alpine

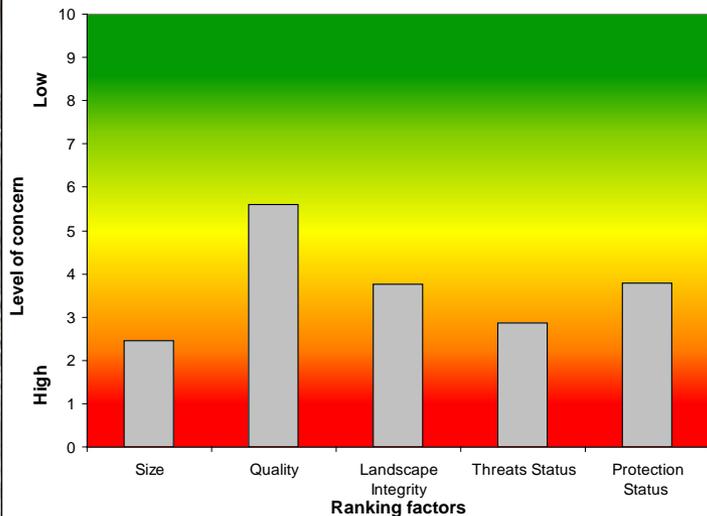
Alpine habitats account for about 3% of Colorado's landscape. Alpine habitats are effectively conserved; the primary threat to Colorado's alpine plants is global climate change.

Average Scores for Rare Plants Occurring in Alpine Habitat (n=12)



Barrens

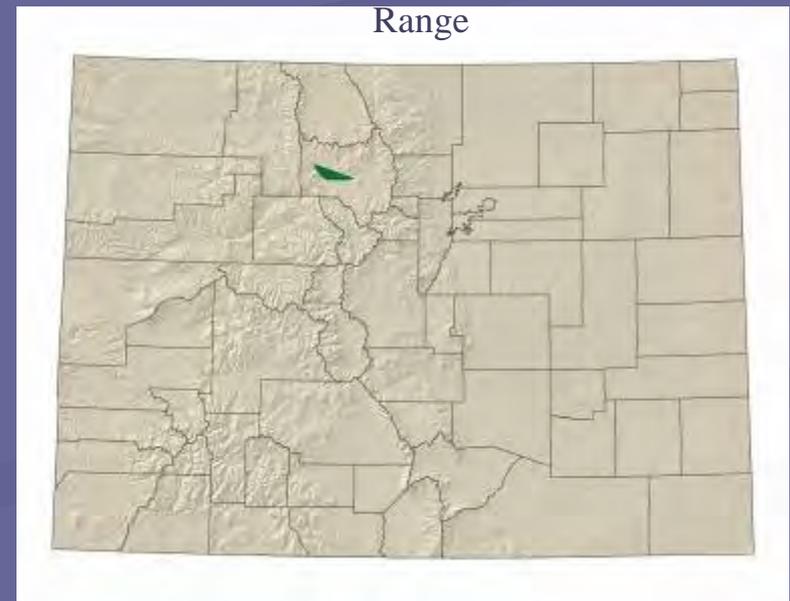
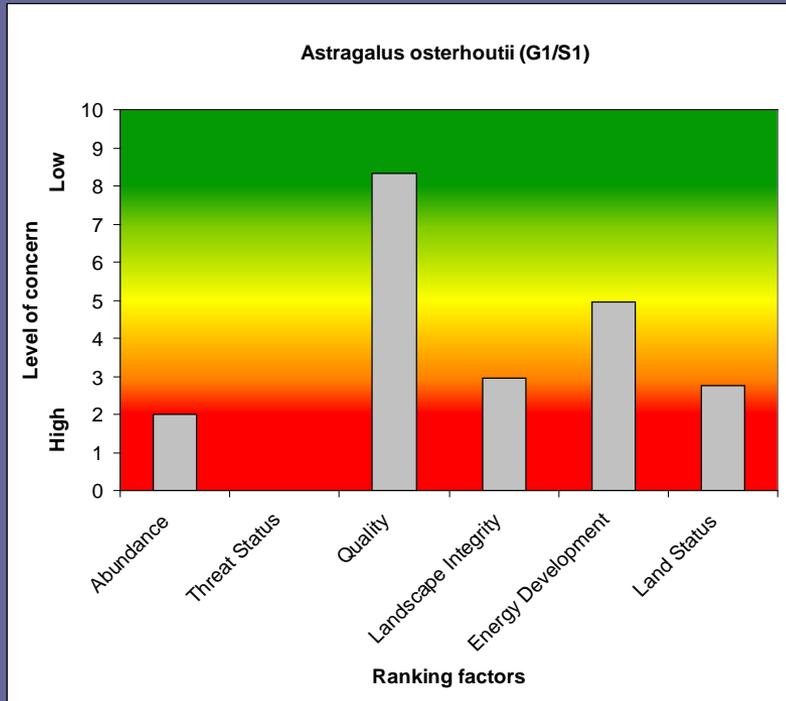
Average Scores for Rare Plants Occurring in Barrens Habitat (n=24)



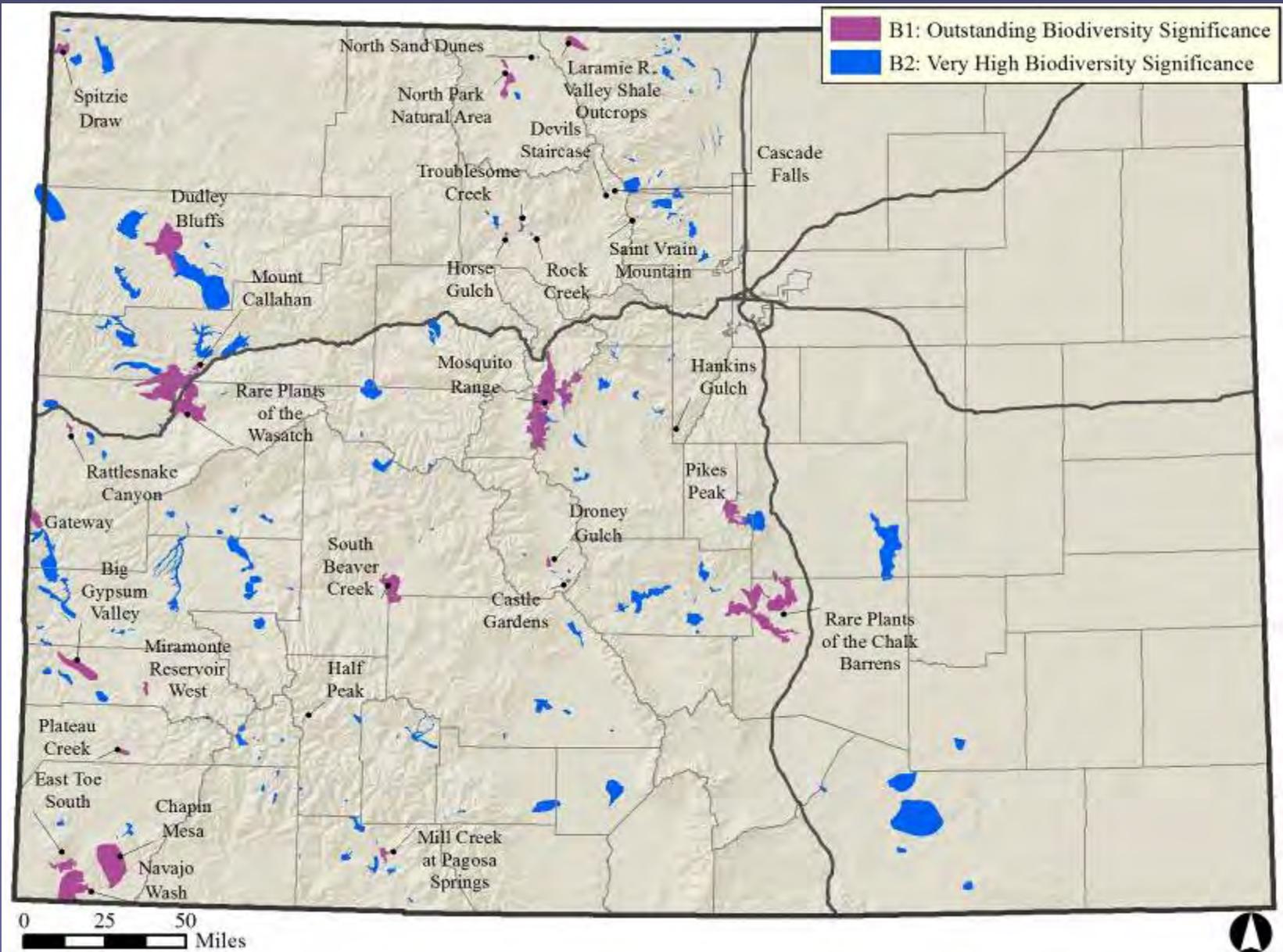
Barrens occupy <1% of Colorado, but nearly 1 in 4 of our rarest plant species are associated with barrens.

Astragalus osterhoutii (Osterhout's Milk-vetch) - G1 S1

This species is
“poorly conserved”



230 Important Plant Areas



Initial Priority Action Areas



Lesquerella congesta



Phacelia formosula



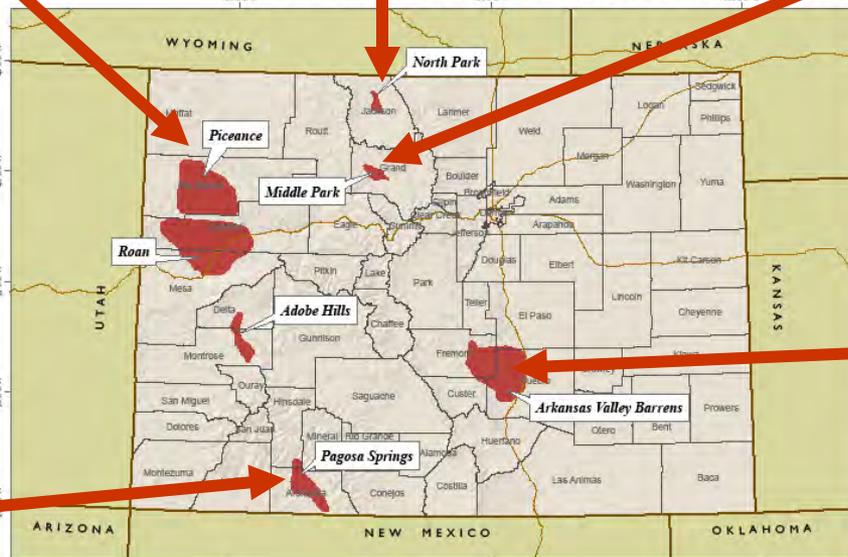
Penstemon penlandii



Ipomopsis polyantha



Mirabilis rotundifolia



Plant Conservation Initiative
ACTION IN 2008-2009



Conservation Priorities

Priority Species and Areas

- CNHP/NatureServe G1-G2 species
- Biodiversity Scorecard results
- Rare Plant Technical Committee
- Rare Plant Symposia

Priority Actions

- Conservation Action Plans
- Private parcel prioritization
- Best Management Practices



Ipomopsis polyantha

Conservation Action Plan workshops



Piceance Basin



Middle Park



Arkansas Valley



2. Minimize the impacts of land uses that threaten CO's imperiled plants

- Energy development
- Motorized recreation
- Housing/urban development
- Roads
- Other (e.g, invasives, hiking)



Best management practices to reduce energy development impacts



Phacelia submutica



200 m buffer to reduce dust, weeds, disturbance to pollinators

3. Improve our understanding of the distribution, natural history, & status of CO's imperiled plants

- Inventory
- Research
- Monitoring
- Assessments/status reports



Research & Conservation at Denver Botanic Gardens

- *In-situ* protection
 - Demographic monitoring
 - Surveying
 - Updating records
 - Scouting potential habitat
 - Documentation
 - Genetic studies
- *Ex-situ* protection
 - Seed collection
 - Growing individuals at the Gardens
 - Public education

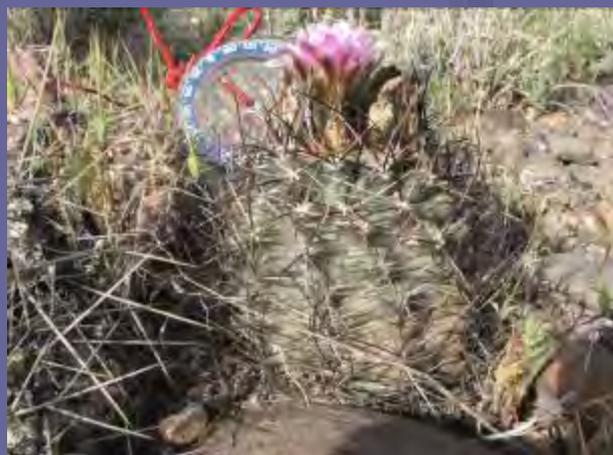


Demographic Monitoring

- The practice of tracking the fate of individuals through time to learn about life-history traits
- We are one of three organizations in Colorado that conducts demographic monitoring
- Focus on species for which demographic data is needed management





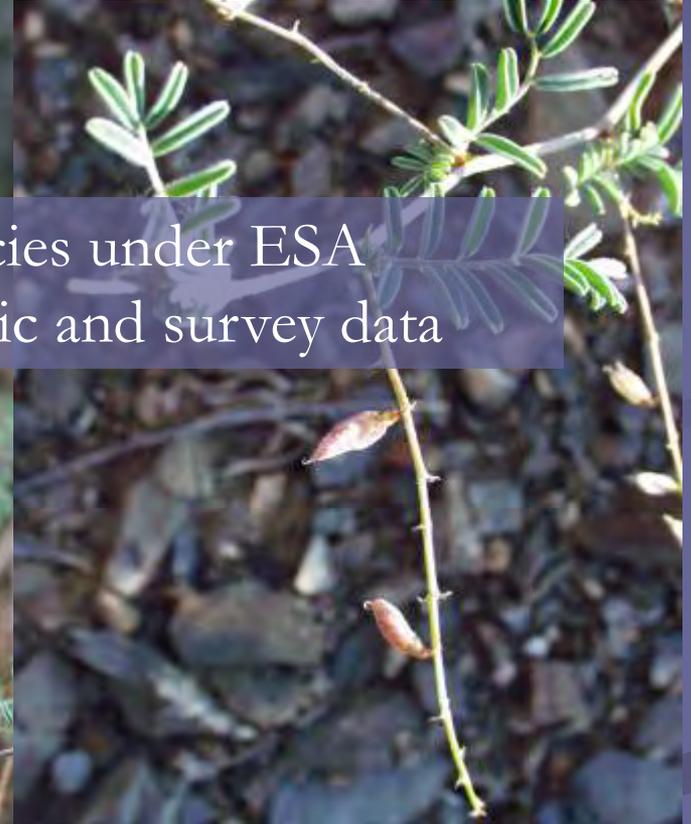






Astragalus microcymbus Barneby skiff milkvetch (Fabaceae)

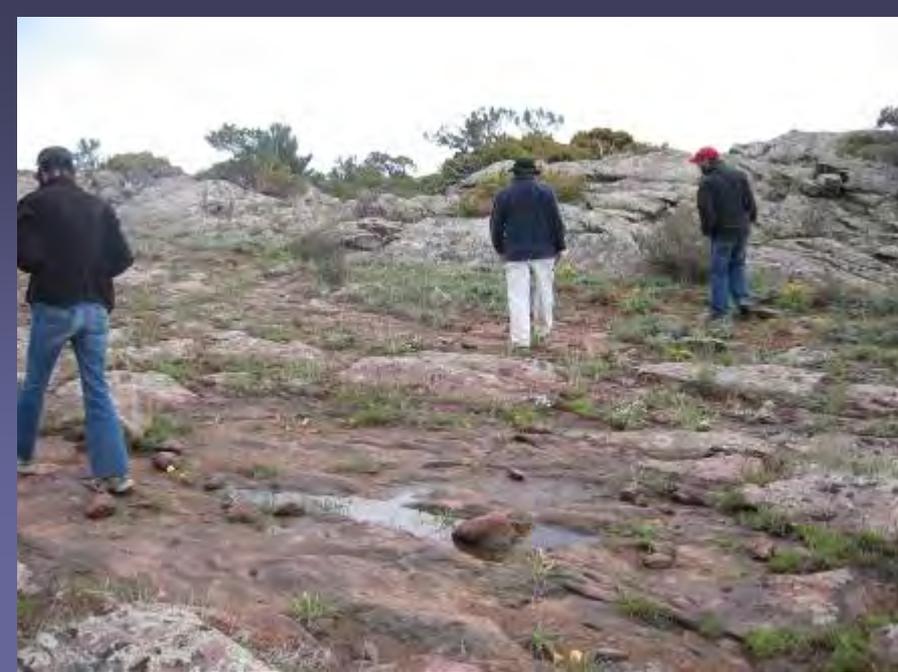
Now listed as a candidate species under ESA
Largely based on our demographic and survey data



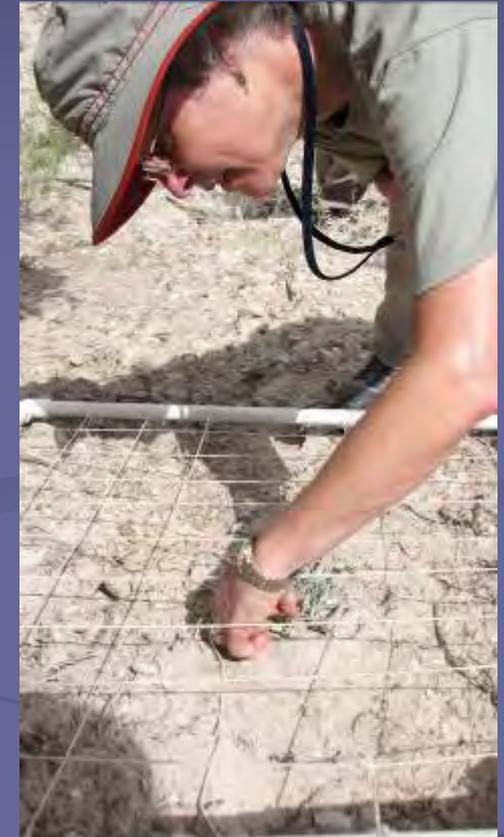
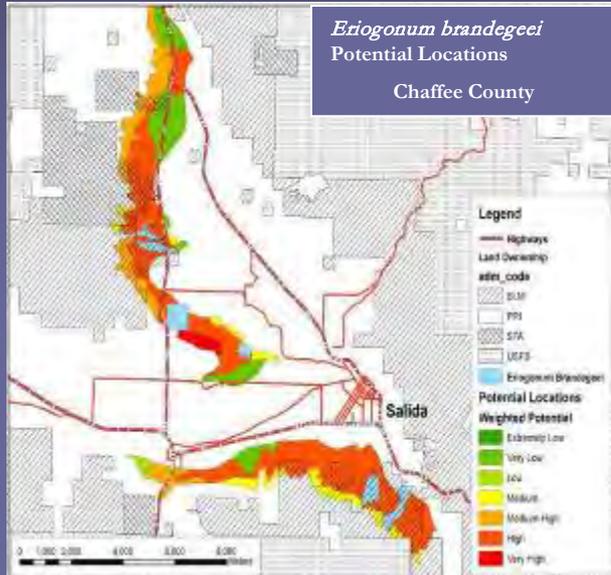
Surveying

- Revisit rare plant populations to update location records in state database
- Conduct statistically robust counts of population size to inform management
- Focus on species for which basic population size data is needed to make management decisions
- Conduct ecological niche modeling to look for new locations





Ecological Niche Modeling



Rare Plant Monitoring Steward Program

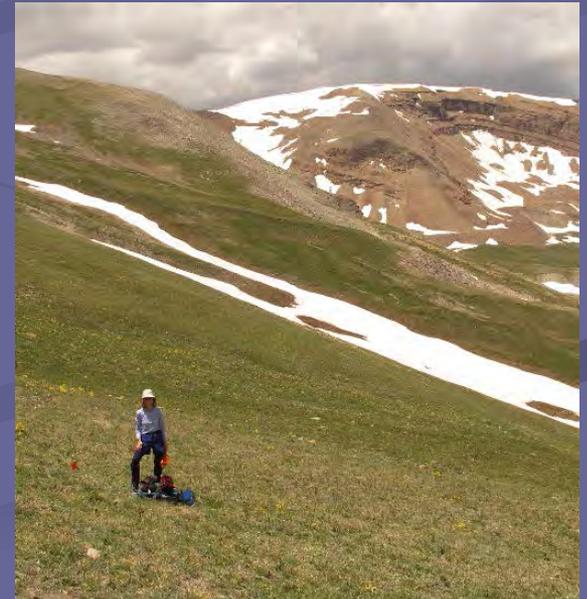
- Collaborative effort with Colorado Natural Areas Program
 - Train volunteers to assist with rare plant conservation
 - Have trained >70 volunteers 2007 - 2012
 - 2011: 10 species monitored, seed from 11 species, over 1100 hours (field, office)





Adopt-a-Rare Plant Stewards

- Goal is to relocate historical occurrences of globally imperiled plant species
- 2011-2012 Trained 60+ volunteers
 - 2011: visited > 25 historical sites, relocated plants at 15, Over 275 hours volunteered
- Collaboration with CNHP



Orchid Surveying

- Volunteer led surveys
 - Along Front Range
- Yellow lady's slipper
 - 4-9 yrs of data per site
- Clustered lady's slipper
 - 7 sites from RMNP



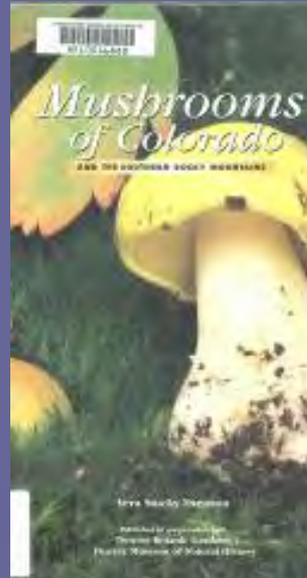
Documentation

- Kathryn Kalmbach Vascular Plant Herbarium
 - 50,000 specimens
 - Regional focus
 - ~1,000 specimens from RMNP
 - Conduct floristic inventories



Documentation

- Sam Mitchel Herbarium of Fungi
 - 17,000 specimens
 - Regional focus
 - More than 40 type specimens
 - Collaborated on RMNP Mycoblitzes



Conservation Genetics

- Working with four endangered species
 - Population diversity across species
 - Prioritization
 - Conservation
 - Restoration or Reintroduction
 - Hybridization



Ex-Situ Conservation

- In collaboration with the Center for Plant Conservation
- Collect seeds from rarest species
- Store seeds in seed bank
- Cultivate & grow-out of collections for display





5. Develop & implement state program and policies that enhance conservation

Develop a state statute that establishes:

- A state plant list
- Acknowledges CO's interest in protecting plants
- Provides funding mechanisms



6. Facilitate stewardship of CO's imperiled plants through education & outreach

- Expand RPCI partnership
- Develop outreach materials
- Expand volunteer projects
- Develop native plant gardens & promote local pride
- Incentives for landowners

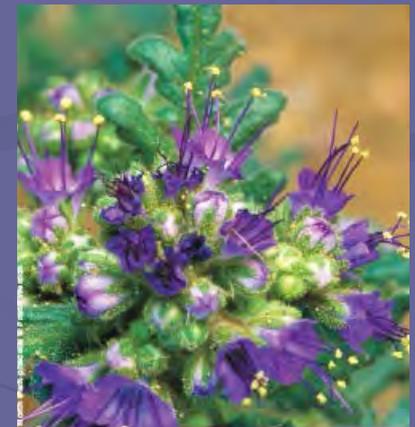


RPCI Accomplishments

- Formalized partnership
- State plant conservation strategy
- Action plans for 8 priority areas
- BMPs to reduce energy impacts
- Seed collection of 7 listed species
- Increased coordination
- RARE exhibit
- SWAP amendment



Sclerocactus glaucus by Susan Olson



**Colorado Rare Plant
Conservation Initiative**
Saving Colorado's Wildflowers

We should **preserve**

every scrap of biodiversity as priceless while
we learn to use it and come to understand
what it means to **humanity**.

— F. O. Williams

2011 Recovery Champion award



- US Fish & Wildlife award
- Recognizes efforts to protect listed species
- Awarded to RPCI
 - Brian Kurzel (CNAP)
 - Jennifer Neale (DBG)
 - Betsy Neely (TNC)
 - Susan Spackman Panjabi (CNHP)



Opportunities for Involvement

■ Learn your natives and rare natives:

- Join the Colorado Native Plant Society
 - Field trips, workshops, lectures, meetings
 - Annual meeting Sept 28-30 Canon City, CO.
- Become a Native Plant Master
- Take classes on natives at DBG, or other similar organization
- Spread the word about natives

■ Get Involved:

- Become a Rare Plant Monitoring Steward
 - Adopt a Rare Plant
- Volunteer with a RPCI Partner (DBG, TNC, CNAP, CONPS)
- Become a partner in the RPCI



Resources

- Jennifer Neale: nealejr@botanicgardens.org
- Web resources:
 - Colorado Native Plant Society: www.conps.org
 - Colorado Natural Heritage Program: www.cnhp.colostate.edu/
 - Colorado Rare Plant Field Guide: www.cnhp.colostate.edu/download/projects/rareplants/cover.html
 - Colorado Native Plant Masters: conpm.wordpress.com/
 - Denver Botanic Gardens: www.botanicgardens.org
 - Rocky Mountain Society of Botanical Artists: www.botanicalartists.org/