





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

Brian Kurzel, Colorado Natural Areas Program

Betsy Neely, TNC

Susan Spackman-Panjabi, CO Natural Heritage Program

Southwest Rare Plant Conference

3/18/09



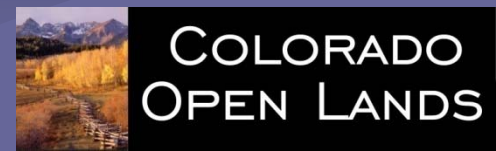
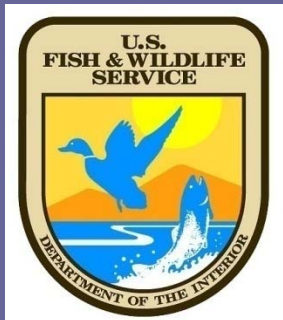
Overview of Today's Presentation



Penstemon penlandii

- Introduce RPCI
- Plant Conservation Strategy
 - Review 6 Objectives and Recommended Actions
- Future Direction

Rare Plant Conservation Initiative





Rare Plant Conservation Initiative

Goal

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

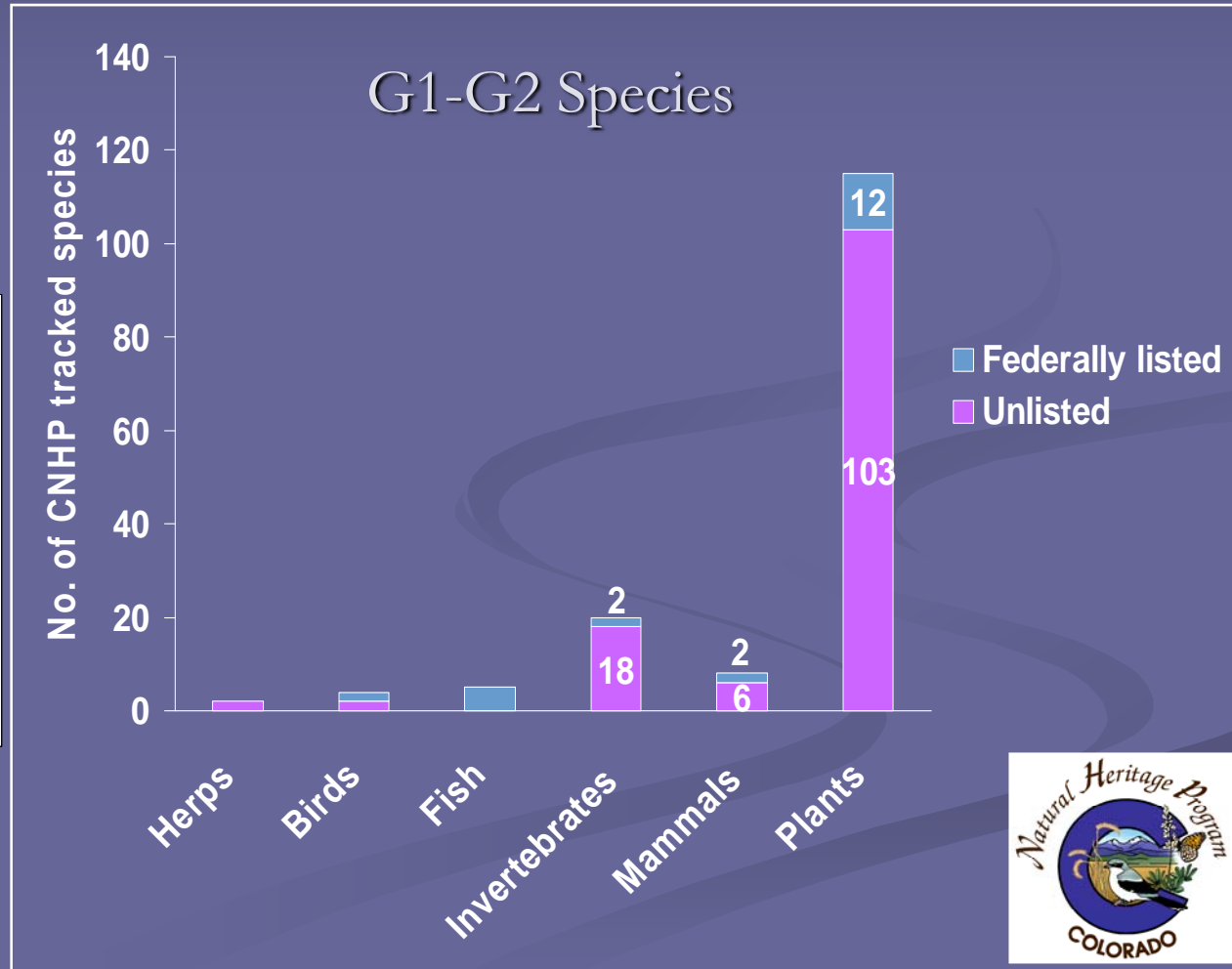
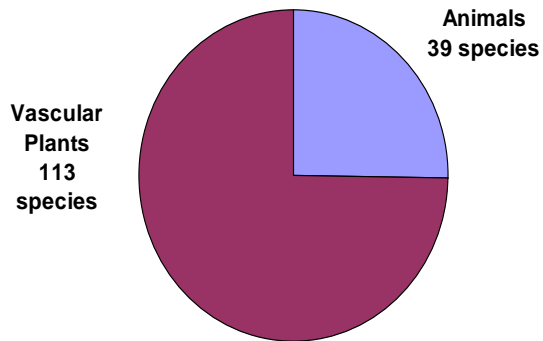
through collaborative partnerships for the preservation of our natural heritage & the benefit of future generations.



Phacelia formosula

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

Number of Imperiled Species in Colorado



Colorado's Imperiled Plants



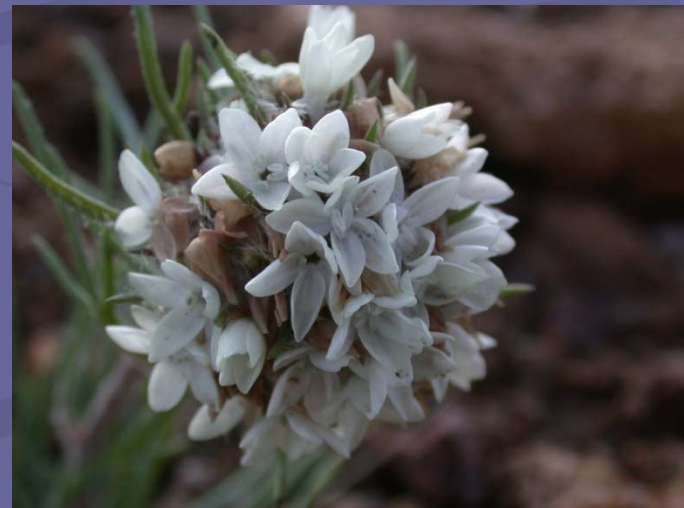
The Numbers

2596 native plants (492 non-native)

520 tracked by CNHP

119 imperiled (G1-G2)

125 endemic



Over 30 years of gathering data

CONPS

Herbaria

CNHP

DBG

USFWS

CNAP

TNC

BLM

Consultants

USFS

SLB

Volunteers

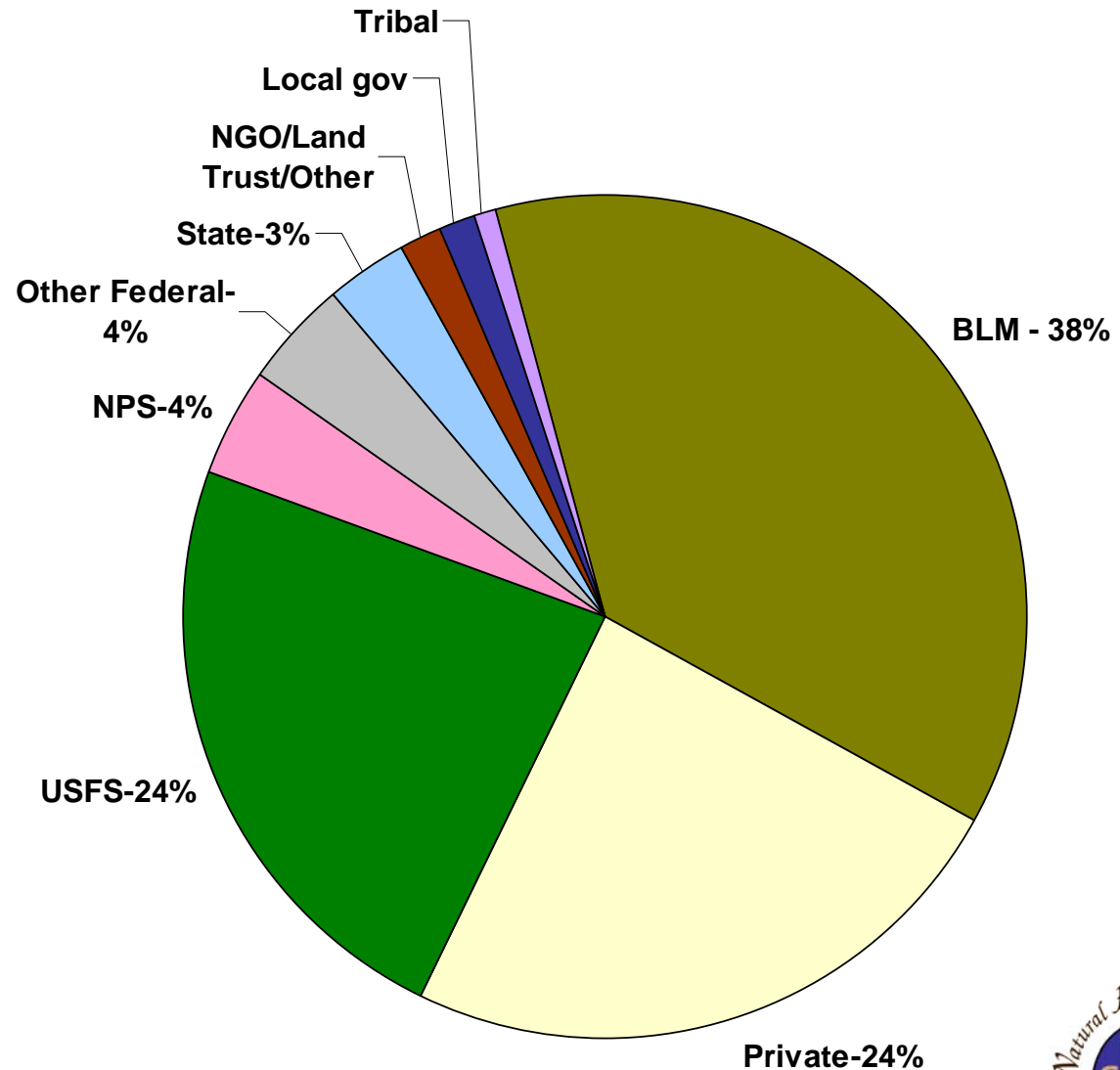
DOD



Landownership

- 70% occur on federal lands

- Area occupied is only about 62,000 acres (<.001% of total area)



13 plants are Federally listed

Eriogonum pelinophilum



Penstemon penlandii



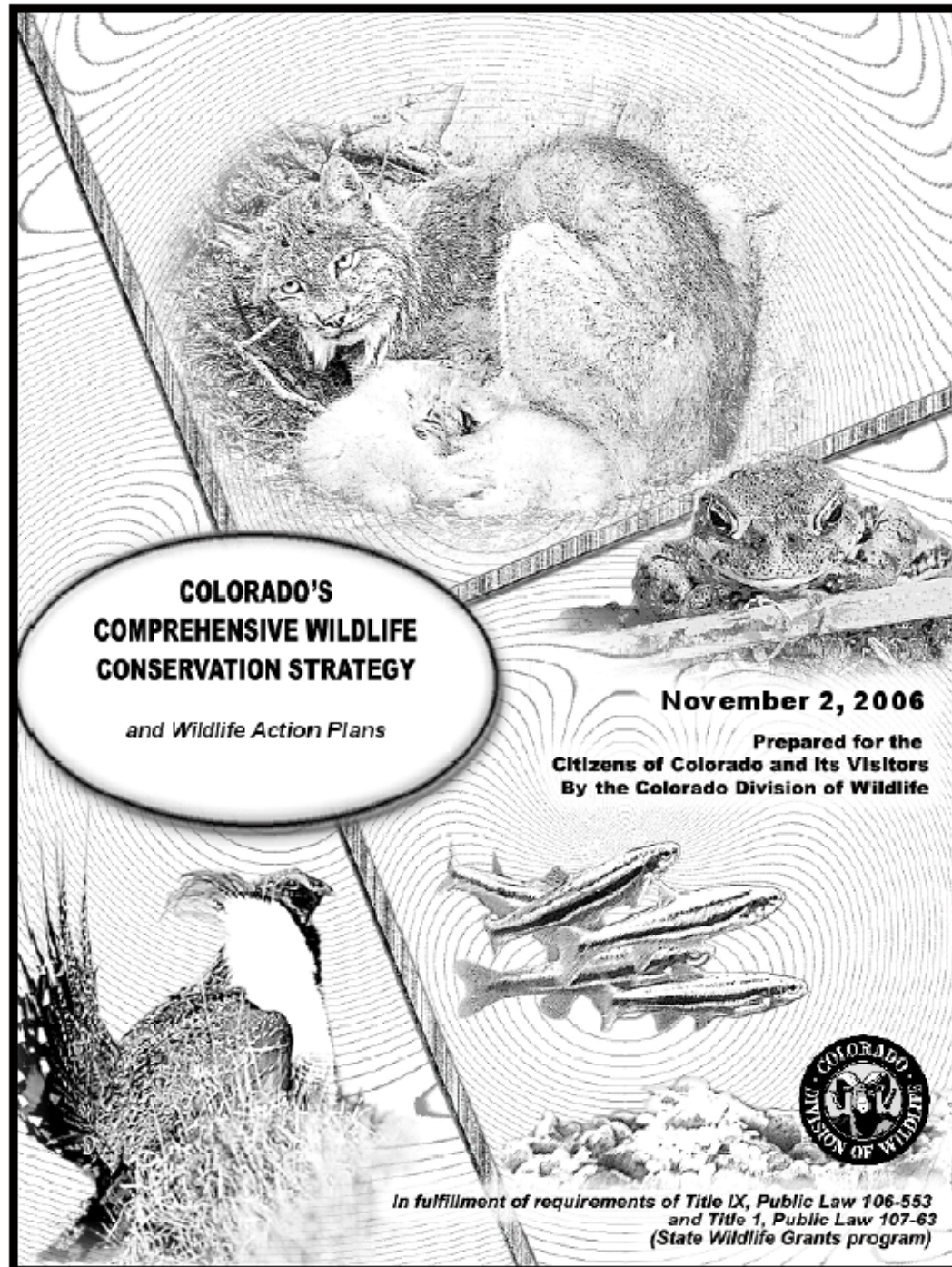
Sclerocactus mesae-verde



5 candidates for listing

Colorado

Rare plants not considered in CO State Wildlife Action Plan



**COLORADO'S
COMPREHENSIVE WILDLIFE
CONSERVATION STRATEGY**

and Wildlife Action Plans

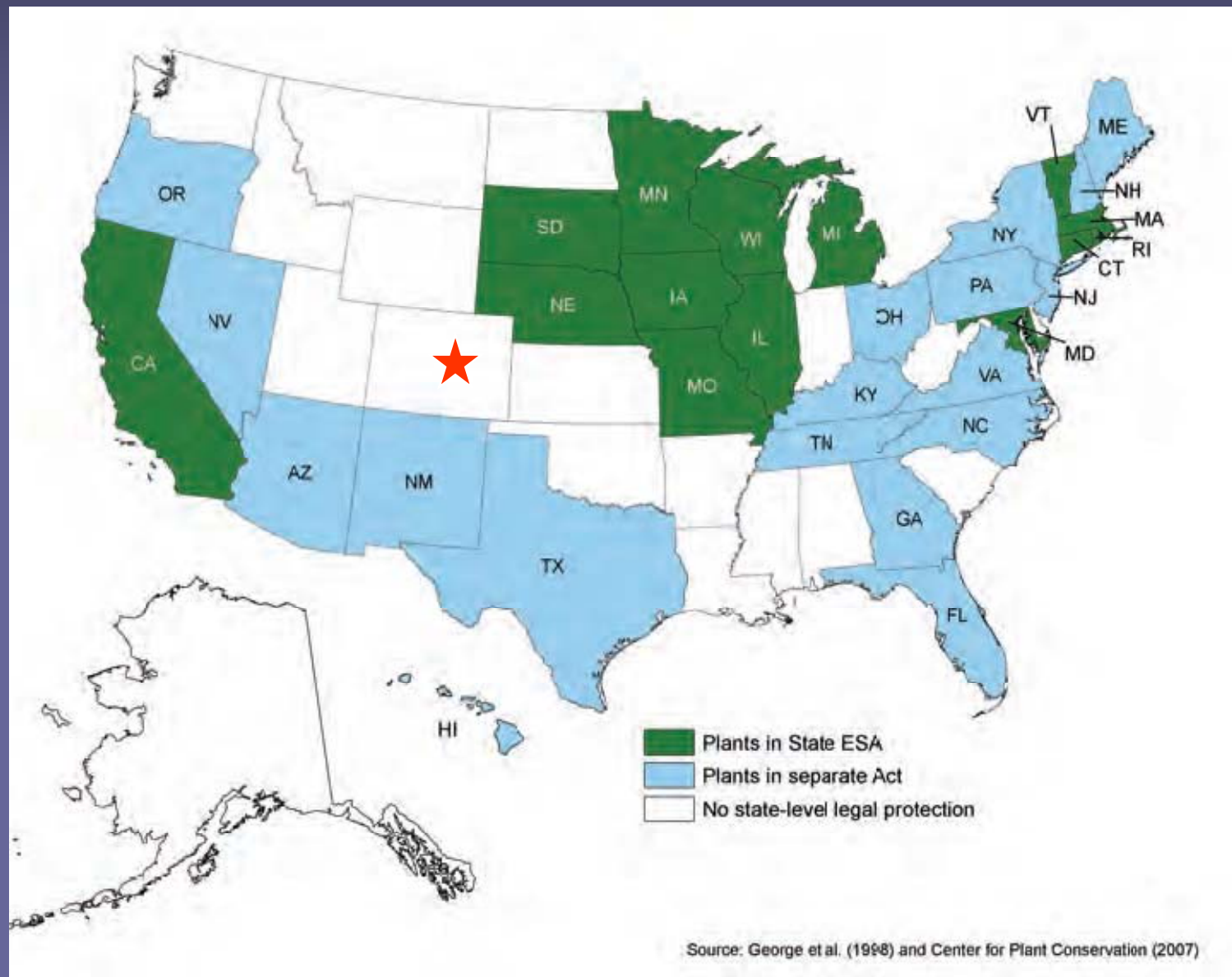
November 2, 2006

Prepared for the
Citizens of Colorado and Its Visitors
By the Colorado Division of Wildlife



*In fulfillment of requirements of Title IX, Public Law 106-553
and Title 1, Public Law 107-63
(State Wildlife Grants program)*

No Plant State Statute in CO



Conservation Strategy Objectives

1. Secure habitat protection
2. Minimize impacts
3. Improve understanding of distribution & status
4. Develop state recognition & funding
5. Facilitate stewardship
6. Adopt measures for *ex situ* conservation



Oenothera harringtonii



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

Oxybaphus rotundifolius



- Identify priority species
- Develop maps & 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

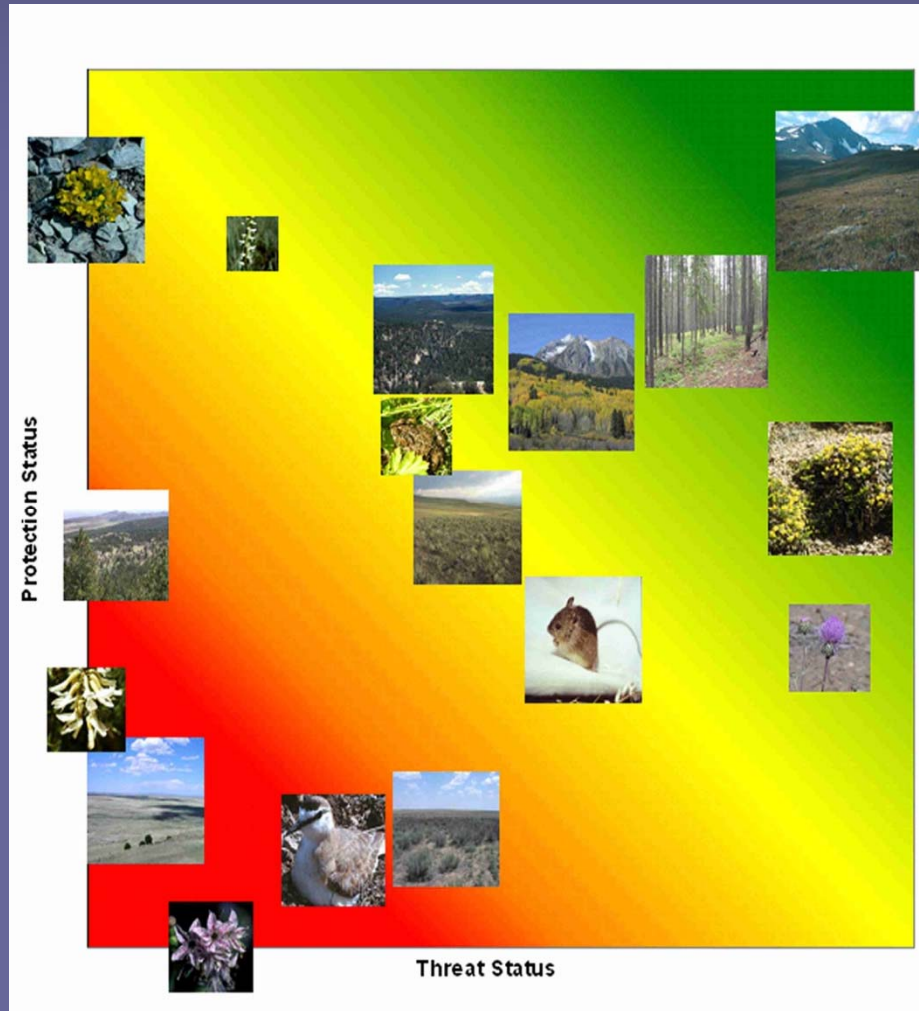
Priority Actions

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



Ipomopsis polyantha

A Biodiversity Scorecard for Colorado

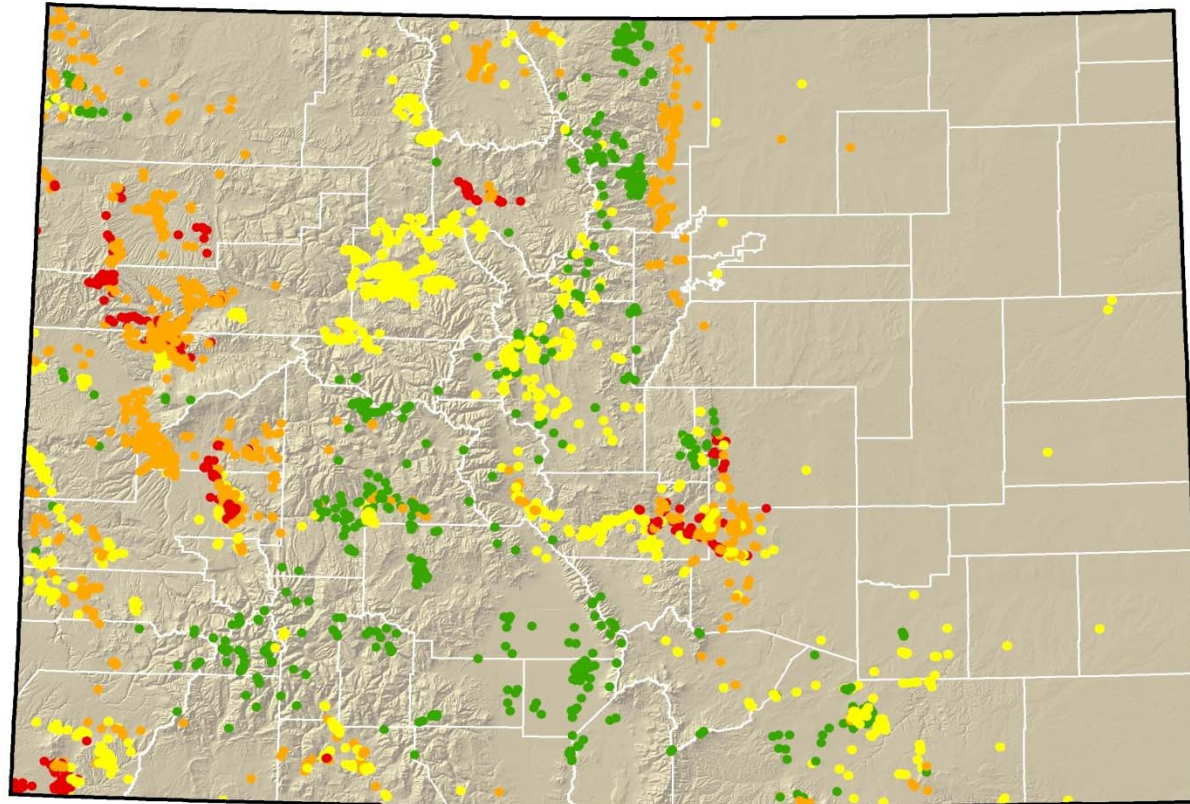


Based on:

- Biodiversity Status
- Threat Status
- Protection Status



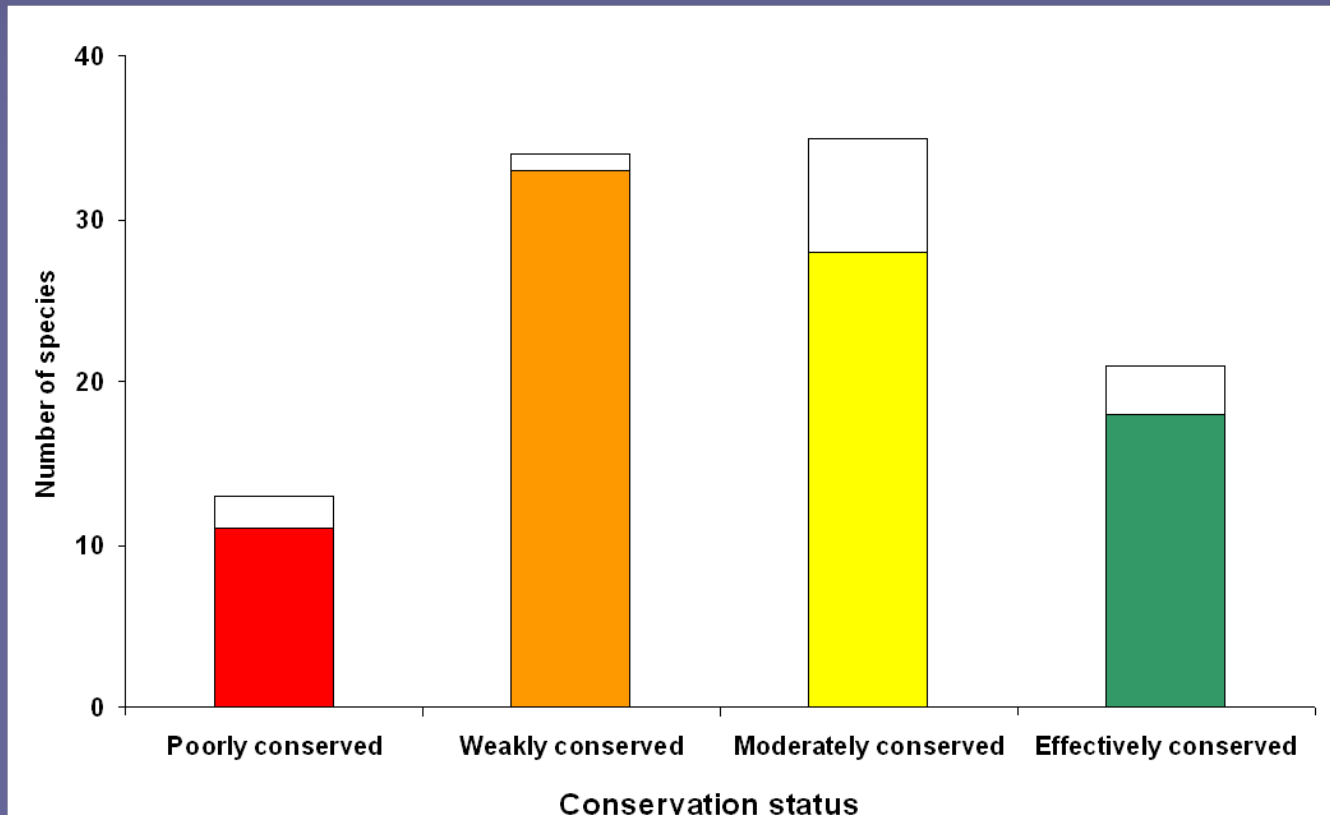
Rare plant occurrences by overall conservation status



Plant Element Occurrences by Overall Conservation Status

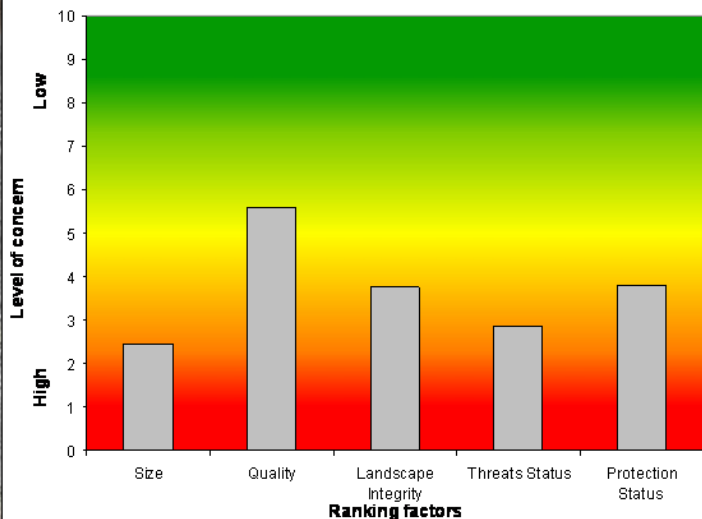


50% of Colorado's imperiled plants are poorly or weakly conserved



Barrens

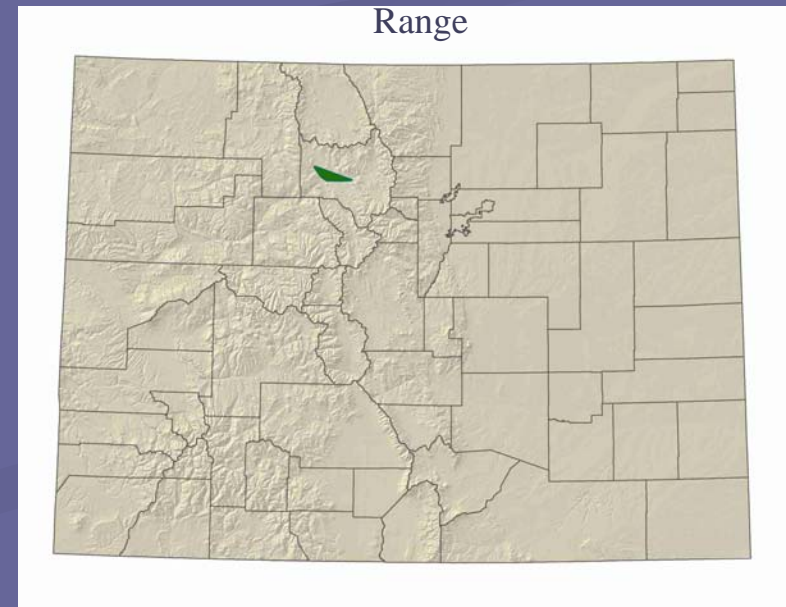
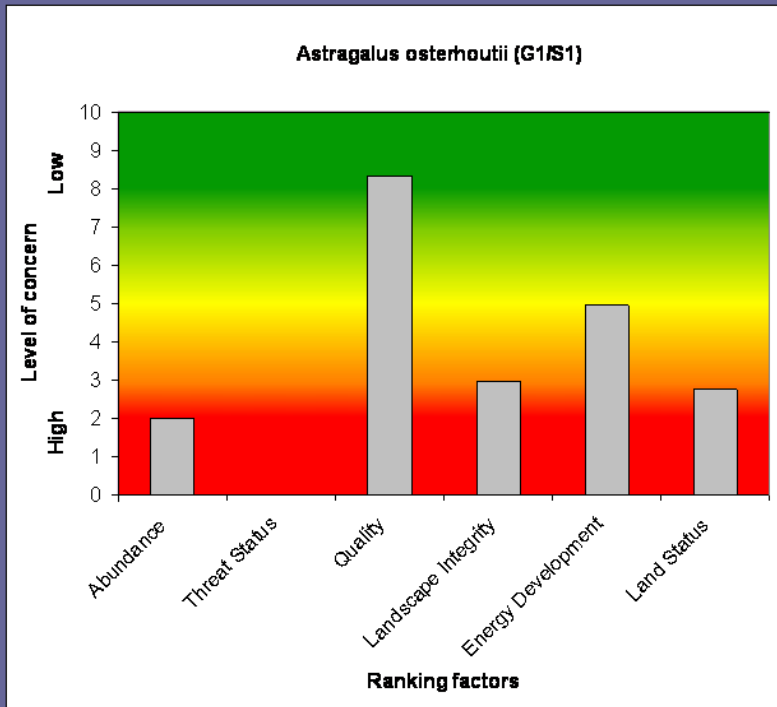
Average Scores for Rare Plants Occurring in Barrens Habitat (n=24)



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

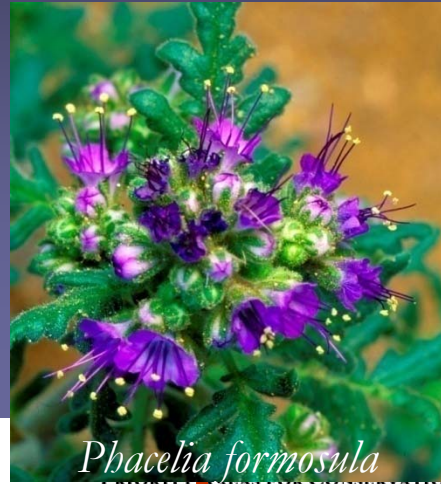
This species is
“poorly conserved”



Priority Action Areas 2008-2010



Physaria congesta



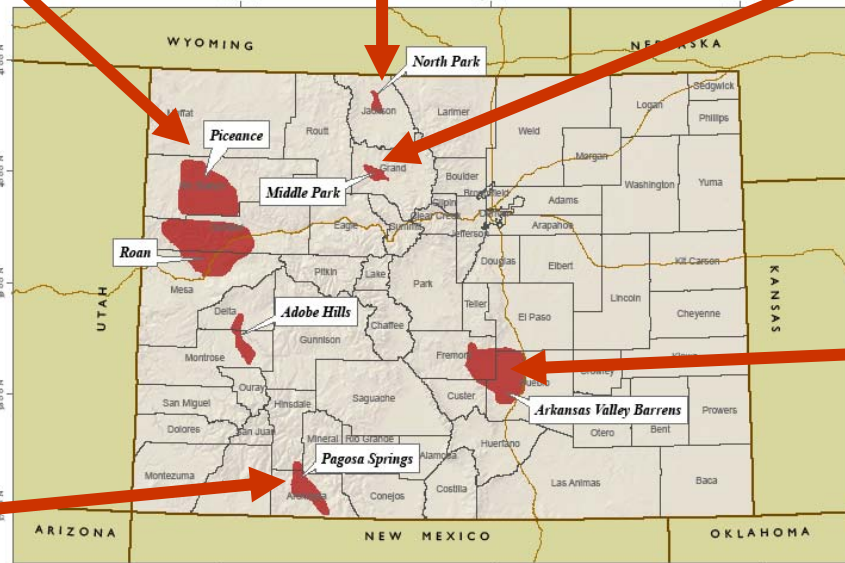
Phacelia formosula



Penstemon penlandii



Ipomopsis polyantha



Plant Conservation Initiative
PRIORITY AREAS FOR CONSERVATION ACTION IN 2008-2009



Mirabilis rotundifolia



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)



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
- Build capacity



Rare Plant Monitoring (RPM) Stewards

*“Putting the petal to the metal for rare plant
monitoring in Colorado”*



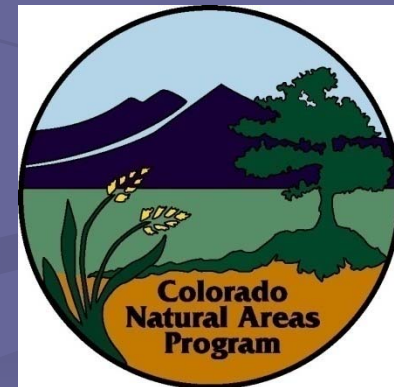
DENVER BOTANIC
GARDENS



4. 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



5. 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
- Present annual conservation awards
- Incentives for landowners



RARE Imperiled Plants of Colorado

2009 Traveling Art Exhibit



Sclerocactus glaucus by Susan Olson

Rocky Mountain
Society of Botanical
Artists

Denver Botanic
Gardens

6. Adopt measures for *ex situ* conservation of CO's imperiled plants

- Collect seeds & other plant materials
- Store seeds in seed bank
- Cultivate & grow-out of collections for display & reference



RPCI Accomplishments

- Strong partnership
- State plant conservation strategy
- Map of Important Plant Areas
- Action plans for 5 priority areas
- BMPs to reduce energy impacts
- Conservation Awards
- Brochure



**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**.

- R. O. Wilcox



Future Direction

- Implement strategy!*
- Publish strategy & executive summary *
- Amend SWAP to include plants *
- Continue to develop IPAs *
- Develop a state plant program & funding
- Complete CAPs for all IPAs
- Submit multi-species proposals
- Update the strategy & scorecard in 5 years
- Measure progress



Feedback/Questions

- Comments?
- Other ideas for public land protection?
- Recommendations for improvement?
- Ideas for future funding?

Betsy Neely: bneely@tnc.org

Brian.kurzel@state.co.us





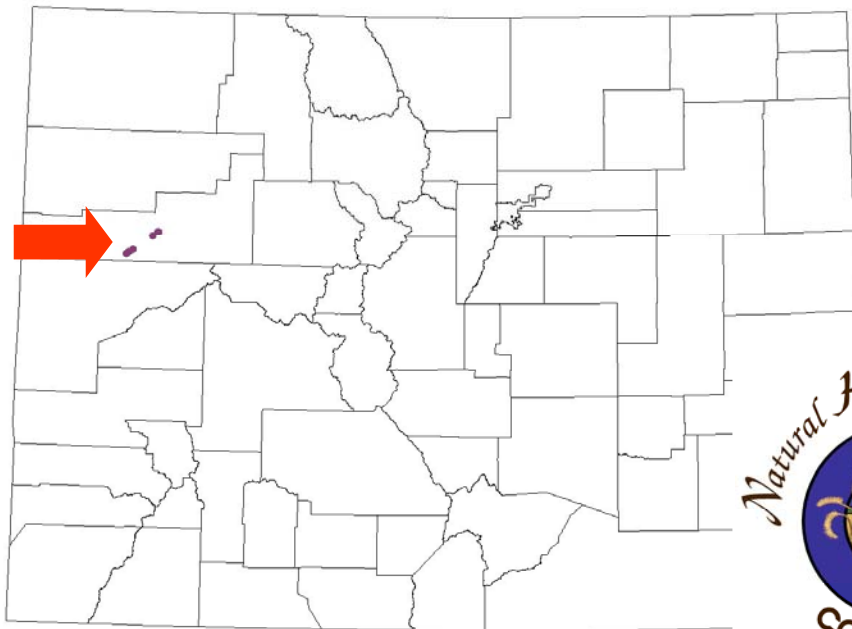
NFWF Project Objectives

1. Develop state conservation strategy
2. Prioritize species & areas
3. Identify area-level actions
4. Initiate on-the-ground protection
5. Develop BMPs to reduce impacts
6. Develop outreach plan/materials



63 Imperiled Plants are Endemic to Colorado

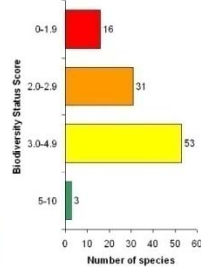
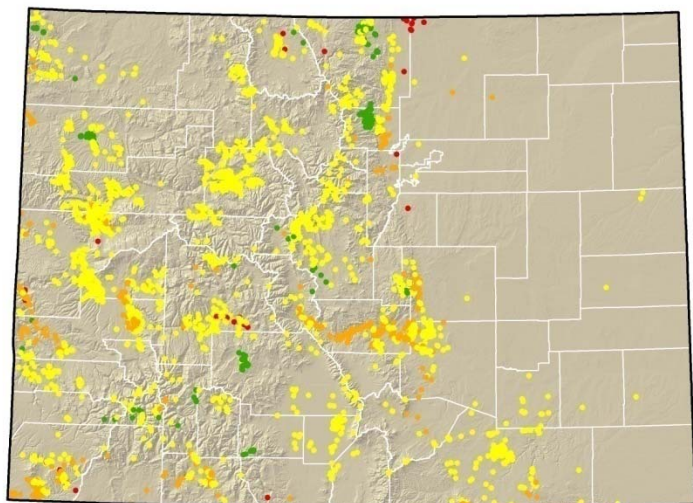
Worldwide distribution of Parachute Penstemon
(Restricted to Garfield County in Colorado)



Parachute penstemon

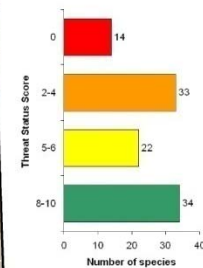
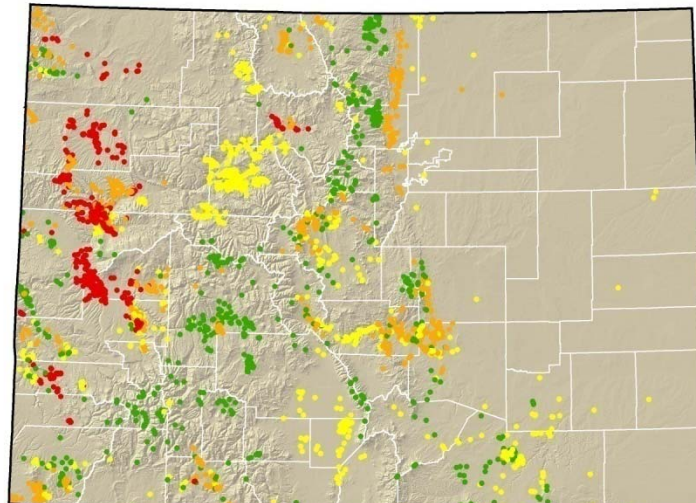


Biodiversity status



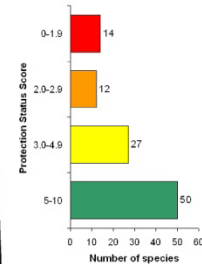
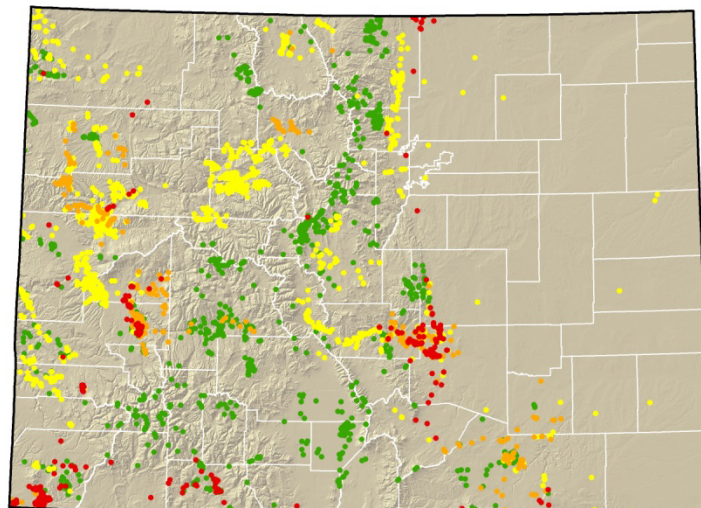
Plant Element Occurrences by Size Score
Most at Risk ← → Least at Risk

Threat status



Plant Element Occurrences by Threat Status Score
Most at Risk ← → Least at Risk

Protection status



Plant Element Occurrences by Protection Status Score
Most at Risk ← → Least at Risk

G1 & G2
plant species



Biodiversity Status

- **Size** - incorporates the number of occurrences, occupied area, & estimated range
- **Quality** - evaluated as the % of occurrences with good viability
- **Landscape context** – using landscape integrity layer developed for ecological systems

Threat Status

- Evaluated for the primary threat to each species
 - Scope
 - Severity
 - Immediacy
- Categorical scores – degree of threat to species from most important threat



Threats



Invasive plants



Residential development



Energy development



Motorized recreation



Mining



Roads



Climate change

Protection Status

- Current land management status
 - Colorado Ownership, Management and Protection
 - Conservation Management Status Measures (TNC)
 - Conservation tenure
 - Management intent
 - Potential management effectiveness
- Represents overall protection level for the species

Viability Assessments

Category	Key Ecological Attribute	Indicator
Landscape Context	Intactness of occurrence and surrounding area	% fragmentation
Condition	Population structure & recruitment	Evidence of reproduction
Condition	Species composition / dominance	% ground cover of invasive plants
Size	Population size & dynamics	Number of individuals

Identify and Rank Threats

	Construct. urban areas	Maint. urban areas	Road const.	Invasive non- natives	Utility const.	Utility maint.
Road 1 - 84						
Road 2 - TDO						
Road 3 - 119						
Fairgrounds						
County Garage						
3 large parcels						
Holiday Acres						

Strategies

Occurrences	Strategy	Priority	Priority across all sites	Lead
ALL	Develop materials to show status and trends of populations and share with major landowners, land trusts, counties, cities etc.	1	1	Neid
Ft. Carson	Work with DoD to ensure that activities (i.e., mechanized training, spraying) do not impact the rare plants (e.g., special botanical areas)	1	2	Kettler

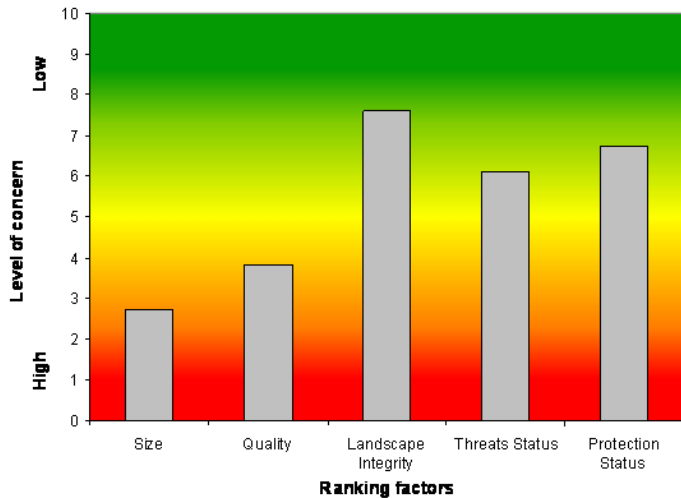
Prioritization methods for plant species

IF	AND		AND		THEN	Number of species	
Threat Status	Biodiversity		Protection		Overall Conservation Status	Endemic or high-med % in Colo.	Low % range in Colo.
R	R	O	R	O	Poorly Conserved	2	
R	Y	G	R	O		4	
R	R		Y	G		0	
O	R		R	O		2	1
O	R		Y	G		2	1
O	O		R	O		1	
O	O		Y	G		6	1
R	O		Y	G	Weakly Conserved	3	
R	Y	G	Y	G		5	
O	Y	G	R	O		3	
Y	R	O	R	O		3	
G	R	O	R	O		6	
G	Y		R	O		1	
O	Y		Y			6	
O	G		Y		Moderately Conserved	0	
O	Y		G			8	1
O	G		G			1	
Y	R	O	Y	G		6 *	2
Y	Y	G	R	O		1	2
G	R	O	Y	G		10 *	2
G	G		R	O		0	
Y	Y		Y		2		
Y	G		Y		Effectively Conserved	0	
Y	Y		G			4	1
Y	G		G			0	1
G	Y	G	Y	G		14	1

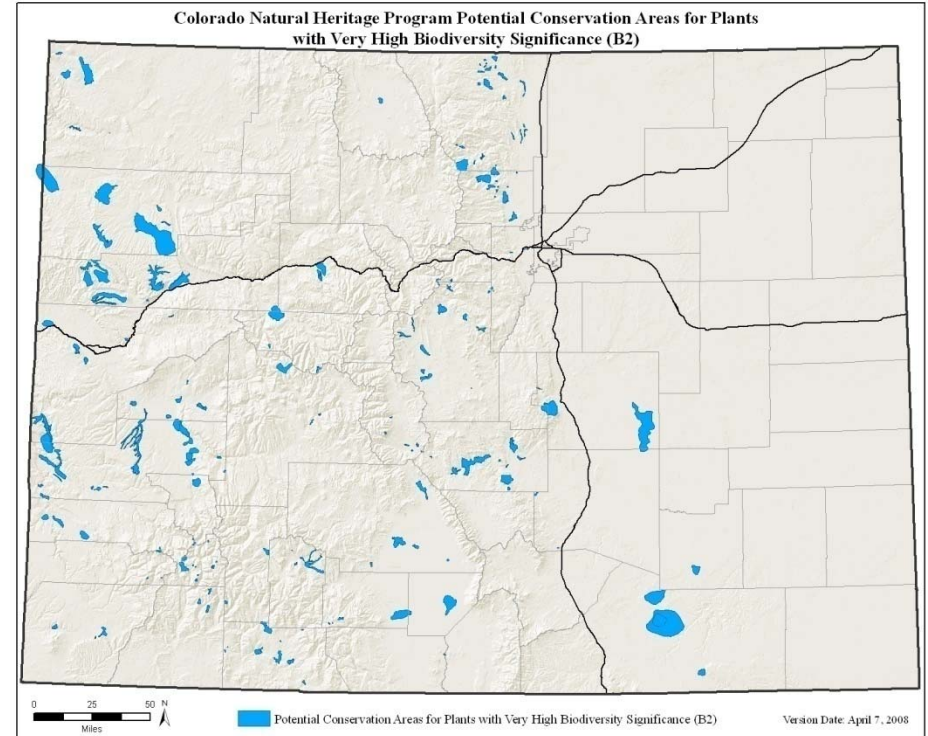
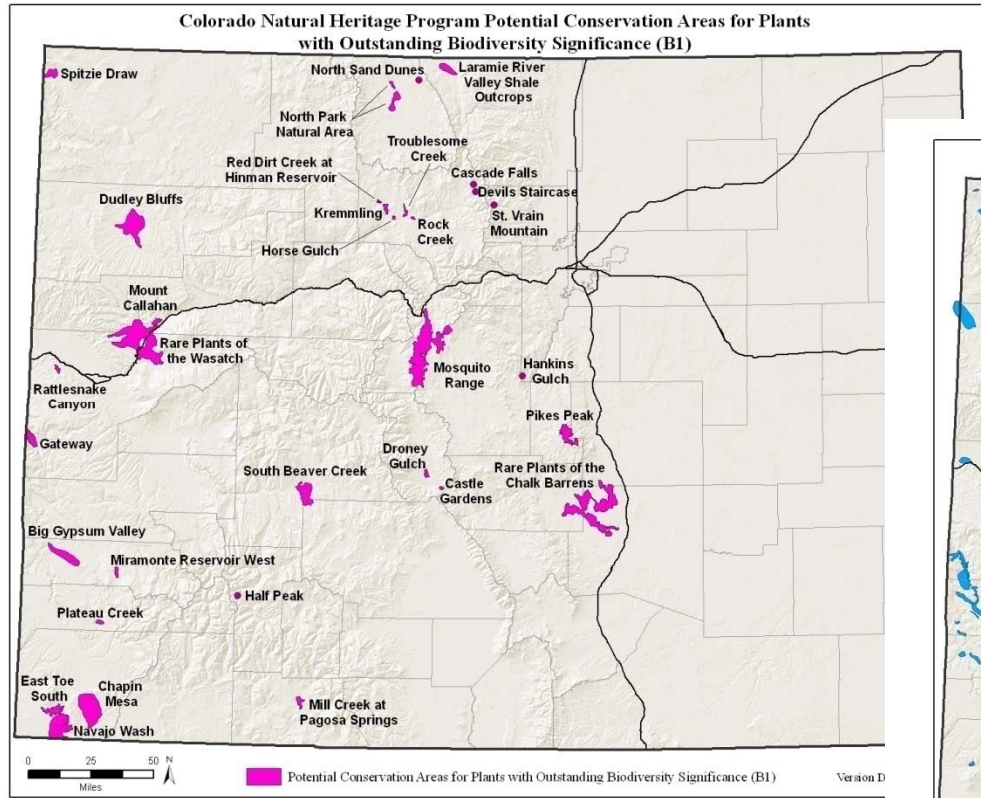
Alpine

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)



230 Important Plant Areas



37 Areas of Outstanding Biodiversity Significance

193 Areas of Very High Biodiversity Significance

Conservation Action Plan

Participants

- Local land trusts
- USFWS
- BLM, USFS
- CNAP
- CDOT
- Counties, towns
- Denver Botanic Gardens
- Colorado Native Plant Society
- TNC
- CNHP
- Others (Audubon, private consultants)

Private Parcel Prioritization

- Confidential
- Largest private parcels with greatest acreage of plants
- Other biodiversity values
- Willing private landowners
- Working with many land trusts across CO

