

Rare Plant Conservation Planning Workshop Results

NORTH PARK



North Park phacelia
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Focal Plant:

North Park phacelia (*Phacelia formosula*)

**Sponsored by the
Colorado Rare Plant Conservation Initiative**

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Kram, M., B. Neely and S. Panjabi. 2008. Rare Plant Conservation Planning Workshop: North Park Priority Action Area. Prepared by The Nature Conservancy and the Colorado Natural Heritage Program. Unpublished report prepared for the National Fish and Wildlife Foundation.

I. Summary

This document identifies conservation strategies for the North Park phacelia, based on an assessment of the plants' viability and threats by participants of workshops in Summer 2008. The primary audience is intended to be the workshop participants and other stakeholders interested in helping to implement the strategies.

Located in Jackson County, Colorado, the North Park Priority Action Area contains all five of the current confirmed and viable occurrences of the North Park phacelia (G1; listed Endangered). There are three occurrences that fall outside of the Action Area: two of these are only known from imprecisely documented, historical records (H ranked minutes records), and one is an occurrence that is considered to have very poor viability (D ranked). It should also be mentioned that there are an additional three occurrences of a species that closely resembles North Park phacelia that have been documented in Larimer County, Colorado. The species identification of these records has not been confirmed; they are therefore beyond the scope of this report.

The North Park phacelia is currently thought to be endemic to the vicinity of the North Park Priority Action Area as identified by the Colorado Rare Plant Conservation Initiative (RPCI). A Priority Action Area is an area needing immediate conservation action to prevent the need for listing, extinction, or further losses of imperiled plant species. Selection was based on the level of imperilment of rare plant species, quality of the occurrences, urgency of the management and protection actions, and other opportunities such as funding and land ownership patterns. These areas are based on the Potential Conservation Areas identified by the Colorado Natural Heritage Program, at Colorado State University, with input by the RPCI and the Rare Plant Technical Committee (RPTC).

The North Park phacelia is a member of the waterleaf family (Hydrophyllaceae) with deep purple flowers and striking golden yellow, exserted stamens. This species is known from only 8 occurrences in the world, all of which lie within the Coalmont Formation in Jackson County, Colorado.

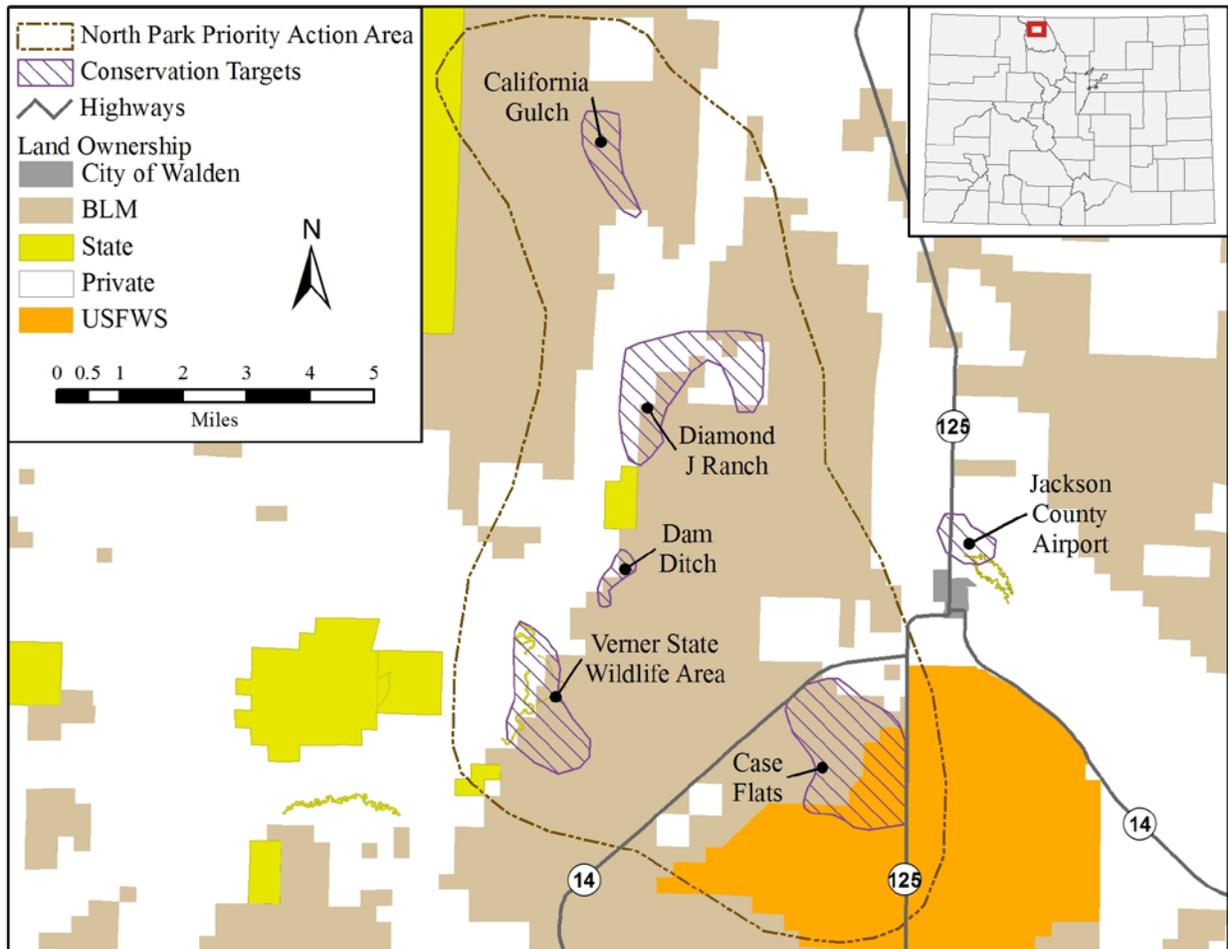
Although all but one of the known extant occurrences appear to be in good condition, the habitat for North Park phacelia is primarily threatened by motorized recreation. Secondary threats based on recent analyses include residential development, roads, noxious weed invasions, and potentially by future oil and gas development.

To abate these and other threats, participants of the Summer 2008 workshops identified and prioritized a variety of strategies; the high priority strategies are listed in the following pages. See Attachment 2 for a full list of strategies. Workshop participants anticipate meeting every 6-12 months to assess progress toward the implementation of these strategies.

High priority strategies for conserving North Park rare plants

Occurrence	Owner/ manager	Strategy	Priority	Lead	Notes
Strategies across all landowners/managers					
All	All	Identify a coordinator for the North Park Action Area.	High	B.Neely	B.Neely and S.Panjabi to serve in this role in the interim.
All	All	Conduct research on impacts of cattle grazing; natural history; and how to best monitor the phacelia.	High	RPI/Grad student TBD.	Re natural history: See report from Kathy Darrow - 1990 study. Need to prioritize what is most important.
All	All	Synthesize research on the phacelia to help identify management needs.	High	A.Timberman	FWS term position may be able to do this in Jan/Feb/March
All	All	Support a graduate-level research study to provide recommendations for mgmt. of the population.	High	RPCI	
All	All	Obtain funding for research and on-the-ground projects.	High	RPCI	Fencing, grazing systems, fencing systems, management plans, research how to help expand the plant.
All	All	Investigate plans for oil and gas development and work with energy companies to avoid all occurrences of the phacelia.	High	RPCI	This strategy was added post-workshop. Need GIS analysis of oil and gas development with phacelia occurrences and habitat.
Strategies for particular landowners/managers					
All	BLM	Expand current Area of Critical Environmental Concern (ACEC) through the Resource Management Planning (RMP) process	High	BLM (M.McGuire)	No surface occupancy for O&G or closed to leasing; OHV on designated routes only; ROWs allowed (includes pipelines?), other land use allocations?
All	BLM	Through the RMP process, add ACEC in Larimer County and limit all OHV travel to designated routes field office-wide.	High	BLM (M.McGuire)	
All	BLM, FWS	Work together to ensure consistent monitoring	High	BLM (M.McGuire)	Consider outreaching to CNAP - Brian Kurzel - and Denver Botanic Garden too.
All	Private	Pursue conservation easements to limit residential development and other potential impacts.	High	TNC (M.Garvey)	Work with Colorado Cattleman's too.
All	Private	Educate private landowners about the plant and how they can help protect it.	High	A.Timberman	NRCS - Deb Heeney in Walden. Deb Alpe is another good contact.
All	Private	Assist landowners with on-the-ground protections.	Med.	A.Timberman	B.Neely and S.Panjabi to help too.

II. Map



III. North Park Priority Action Area and Associated Rare Plants

This document focuses on the endemic rare plant, North Park phacelia (*Phacelia formosula*) within the North Park Priority Action Area as identified by the Colorado Rare Plant Conservation Initiative (RPCI). To date, RPCI has identified seven such areas across Colorado. A Priority Action Area is an area needing immediate conservation action to prevent the need for listing, extinction, or further losses of imperiled plant species. The RPCI selected these areas based on the level of imperilment of rare plant species, quality of the occurrences, urgency of the management and protection actions, and other opportunities such as funding and land ownership patterns. These areas are based on the Potential Conservation Areas (PCAs) identified by the Colorado Natural Heritage Program, at Colorado State University, with input by the RPCI and the Rare Plant Technical Committee (RPTC).

Located in Jackson County, Colorado, the North Park Priority Action Area contains all five of the confirmed, current, and viable occurrences of the globally imperiled North Park phacelia

(G1¹, listed Endangered; CNHP rare plant field guide link <http://www.cnhp.colostate.edu/rareplants/PDHYD0C1H0.html>). Three occurrences of North Park phacelia fall outside of the Action Area boundary. These were not included because of their poor estimated viability, imprecise documentation, and/or historical nature of the best available data. An additional three *potential* occurrences lie outside of the Priority Action Area in Larimer County, and may be confirmed at a later date. The North Park Priority Action Area occurs within the vicinity of the Upper Colorado River Corridor Priority Landscape identified by the Colorado Conservation Partnership (www.keepitcolorado.org).

As mentioned above, the Priority Action Areas are based in part on the locations of PCAs as identified by CNHP. The North Park Action Area contains a PCA called the North Park Natural Area. Ranked by CNHP as B1 (outstanding biodiversity significance), the North Park Natural Area includes nearly all of the best known occurrences of the North Park phacelia (Table 3).

The North Park phacelia is a member of the waterleaf family (Hydrophyllaceae) with deep purple flowers and striking golden yellow, exserted stamens. This species is known from only 8 occurrences in the world, all of which lie within the Coalmont Formation in Jackson County, Colorado.

Although all but one of the known extant occurrences appear to be in good condition, the habitat for North Park phacelia is primarily threatened by motorized recreation. Secondary threats based on recent analyses include residential development, roads, noxious weed invasions, and potentially by future oil and gas development.

The focus of the workshop was on the globally imperiled plants. Attachment 1 describes other significant species and plant communities in this area. A full suite of biodiversity values should be considered during more expansive conservation planning efforts for this area.

IV. About the Workshop

Purpose: To identify strategies for conserving the North Park phacelia, based on an assessment of the viability and threats to its occurrences.

Origin: The Rare Plant Conservation Initiative (RCPI) is a diverse partnership of public and private organizations dedicated to conserving Colorado's natural heritage by improving the protection and stewardship of the state's most important plants. RCPI is developing a strategy for the conservation of Colorado's most imperiled plant species. As part of this effort, the group is working with partners to identify statewide and site-specific strategies in areas with (a) the most imperiled species, and (b) a reasonable likelihood of conservation success. For site-specific strategies, RCPI partners identified five priority action areas around the state: Arkansas Valley Barrens, Middle Park, North Park, Pagosa Springs, and the Piceance Basin. For each of these

¹ The "G rank" is an abbreviation for "Global Rank" as identified by the Colorado Natural Heritage Program. G1 = critically imperiled. G2 = imperiled. For more detail on global ranks please visit the Colorado Natural Heritage Program's website at <http://www.cnhp.colostate.edu/heritage.html>.

areas, RCPI led a workshop during the summer of 2008 with local partners to identify priority conservation strategies.

Workshop dates: We completed two workshops for the North Park area. During the first, held in May 2008, CNHP and TNC worked together to identify the viability of and threats to the phacelia. Then in August, CNHP and TNC worked with partners to identify conservation strategies and actions.

Participants:

Workshop #1. Viability and threats assessment in May 2008 (internal CNHP/TNC effort)

Name	Affiliation
Attended	
Susan Spackman Panjabi	Colorado Natural Heritage Program
Megan Kram	The Nature Conservancy
Betsy Neely	The Nature Conservancy
Terri Schulz (facilitator)	The Nature Conservancy

Workshop #2. Strategy identification in August 2008 (partner effort)

Name	Affiliation
Attended	
Megan McGuire	Bureau of Land Management
Teri Parvin	Bureau of Land Management
Susan Spackman Panjabi (co-facilitator)	Colorado Natural Heritage Program
Megan Kram (co-facilitator)	The Nature Conservancy
Betsy Neely	The Nature Conservancy
Ellen Mayo	U.S. Fish & Wildlife Service
Ann Timberman	U.S. Fish & Wildlife Service
Unable to attend	
Brian Kurzel	Colorado Natural Areas Program
Other contacts	
Owl Mountain Partnership	
Mike Higuera	The Nature Conservancy

V. Workshop Results

A. Conservation Targets

Using the The Nature Conservancy’s (TNC) site conservation planning workshop methodology, “conservation targets” are a limited suite of species, communities, and/or ecological systems, or specific locations of these elements of biodiversity (e.g., occurrences, sub-occurrences, or other areas) that are the basis for setting goals, identifying conservation strategies, and measuring

conservation effectiveness. At the North Park Priority Action Area our targets are based on specific areas and associated land ownerships.

For Workshop #1 (identifying viability and threats), we identified six occurrences as conservation targets, as shown in Table 2. The six occurrences are the only occurrences thought to be extant; five are included in the Priority Action Area, and one (EO#1) is not included because of its poor estimated viability. Two other occurrences, for a total of eight known, are only known from historical, imprecise documentation. Then at Workshop #2 (strategies), we organized strategies by primary landowner, e.g., BLM, FWS, Jackson County, and private landowners.

Table 2. Total of thirteen targets based on landownership and presence of North Park phacelia. For example, there are two targets identified at the Verner State Wildlife area – BLM and Private.

Target occurrence	Associated land ownership	CNHP Potential Conservation Area in which the targets lie
Jackson County Airport (Element Occurrence or EO #1*)	<ul style="list-style-type: none"> ▪ County(?) ▪ Private (Silver Spur) 	<ul style="list-style-type: none"> ▪ Not included in a PCA because of the poor estimated viability of this occurrence.
Verner State Wildlife area (EO #4)	<ul style="list-style-type: none"> ▪ BLM ▪ Private (Tointon) 	<ul style="list-style-type: none"> ▪ North Park Natural Area
Dam Ditch (EO #6)	<ul style="list-style-type: none"> ▪ BLM – existing Area of Critical Environmental Concern (ACEC) ▪ Private (Swift) 	<ul style="list-style-type: none"> ▪ North Park Natural Area
Diamond J Ranch (EO #7)	<ul style="list-style-type: none"> ▪ BLM ▪ Private (Silver Spur) 	<ul style="list-style-type: none"> ▪ North Park Natural Area
California Gulch (EO #9)	<ul style="list-style-type: none"> ▪ BLM 	<ul style="list-style-type: none"> ▪ North Park Natural Area
Case Flats/Potter Creek (EO #14)	<ul style="list-style-type: none"> ▪ BLM ▪ FWS – existing National Wildlife Refuge 	<ul style="list-style-type: none"> ▪ Case Reservoir Bluffs
Larimer County (EO #17, 18, 19)**	<ul style="list-style-type: none"> ▪ BLM ▪ Private 	<ul style="list-style-type: none"> ▪ Laramie River Valley Shale Outcrops

* EO = Element Occurrence defined by CNHP.

** We added the Larimer County occurrence to the list of targets at the second workshop but there are taxonomic questions about this population that are being addressed.

CNHP assigns each occurrence a unique number, an element occurrence number. These numbers are not necessarily in consecutive order because as new locations of plants are found, some occurrences are lumped together, and locations previously documented as two or more occurrences may become one (e.g., if plants are found between two occurrences, they may all together be considered one occurrence because of the proximity and connectedness of the individual plants).

B. Viability

“Viability” per TNC terminology is the “health” or “functionality” of the conservation targets. During the Workshop we attempted to answer two key questions through the viability assessment: *How do we define ‘health’ (viability) for each of our targets?* and *What is the*

current status of each of our targets? Table 3 shows the viability for each occurrence as identified during Workshop #1.

Table 3. Viability for known occurrences of North Park phacelia. Overall viability is based on an assessment landscape context (i.e., setting), condition, and size. In the conservation target column, the name of the Element Occurrence is listed first, followed by the EO number (an ID number for CNHP) and, where applicable, the corresponding PCA in parentheses. The Jackson County Airport target was not included in the Priority Action Area, nor was it included in a CNHP Potential Conservation Area, because of its’ poor estimated viability.

	Conservation Targets*	Landscape Context	Condition	Size	Overall
1	Jackson County Airport (#1) **	Poor	Poor	Poor	Poor
2	Verner SWA (#4; North Park Natural Area)	Good	Fair	Good	Good
3	Dam Ditch (#6; North Park Natural Area)	Good	Good	Good	Good
4	Diamond J Ranch (#7; North Park Natural Area)	Very Good	Good	Very Good	Very Good
5	California Gulch (#9; North Park Natural Area)	Good	Very Good	Good	Good
6	Case Flats - Potter Creek (#14; Case Reservoir Bluffs)	Good	Good	Fair	Good
Phacelia Overall Health Rank					Good

*The Larimer County Element Occurrence is not included as a target in this table because there are taxonomic questions that are being addressed.

** Betsy and Susan visited this site after the August workshop and observed 3 plants in a small area of potential habitat. CNHP records indicate that this occurrence had not been observed since 1981.

The overall viability rankings of very good, good, fair, and poor for each occurrence were based on a systematic assessment of the components of viability, or indicators and associated indicator ratings as shown in the table below. These components of viability are “rolled up” into the overall viability rank.

Table 4. Basis for viability ratings for North Park phacelia.

		Indicator rating criteria			
Key Attribute	Indicator	D - Poor	C - Fair	B - Good	A - Very Good
Intactness of occurrence and surrounding area	Percent fragmentation	Highly fragmented	Moderately fragmented	Limited fragmentation	Unfragmented
Population structure & recruitment	Evidence of reproduction	Little or no evidence of successful repro. (few seedlings and/or no flowering or fruiting)	Less productive, but still viable with evidence of flowering and/or fruiting and mixed age classes	Good likelihood of long-term viability as evidenced by flowering, fruiting, and mixed age classes.	Excellent viability as evidenced by high % flowering and fruiting, and mixed age classes
Species composition / dominance	Percent ground cover of invasive species	>50% cover	11-50% cover	1-10% cover	<1% cover
Population size & dynamics	Number of individuals	less than 50	50-199	200 - 1000	more than 1000

C. Threats

With the viability analysis complete, participants then identified the primary threats to each target site. They identified and ranked threats based on their expertise, local knowledge, and sense of the key issues facing each target (Table 5). Identifying and ranking threats is an important input, along with understanding viability, to ultimately identifying efficient and effective strategies.

As the table indicates, threats are considered to be high across all target sites. Jackson County Airport and the Verner State Wildlife Area are the most threatened target areas. Off highway vehicle (OHV) use is the highest-ranked threat across all target areas.

Table 5. Threats to each occurrence

Threats Across Targets		EO# 1 - Jackson County Airport	EO# 4 - Verner SWA3 (North Park Natural Area)	EO# 6 - Dam Ditch (North Park Natural Area)	EO# 7 - Diamond J Ranch (North Park Natural Area)	EO# 9 - California Gulch (North Park Natural Area)	EO# 14 - Case Flats - Potter Creek (Case Reservoir Bluffs)	Overall Threat Rank
Project-specific threats		1	2	3	4	5	6	
1	OHV use	Very High	Medium	Medium		-	Low	High
2	Road maintenance		High			Low	Medium	Medium
3	Industrial development - airport	High						Medium
4	Powerlines		High					Medium
5	Incompatible livestock grazing	Medium	Medium	Low	Medium	Low	Low	Medium
6	Oil and gas development*	Medium	Medium	Low	Low	Low	Low	Medium
7	Residential development	Medium	-	Medium	Low	-	-	Medium
8	New roads				Low			Low
Threat Status for Targets and Project		High	High	Medium	Low	Low	Low	High

* The oil and gas threat rankings are conservative in the rankings may be high relative to the actual potential threat. Although oil and gas development in North Park as a whole continues to gain increased attention, BLM-managed lands covered by Areas of Critical Environmental Concern (ACEC) are not threatened by oil and gas development because they are covered by “no surface occupancy” stipulations. But, the participants in this threat analysis were not sure which occurrences specifically are currently covered by BLM ACECs.

D. Strategies

Based on an understanding of viability and threats, participants identified strategies (a) across all targets for North Park phacelia and (b) for specific targets. Regarding the latter, participants identified at least one strategy for all occurrences and generally focused on strategies needed to mitigate key threats. After brainstorming strategies, participants prioritized them as high, medium, or low based on their anticipated effectiveness. See the Summary for high priority strategies and Attachment 2 for all strategies. Specific to private land protection efforts, the RPCI is also evaluating opportunities to work with willing private landowners and local land trusts to conserve these species and their habitats using voluntary tools such as conservation easements. Owl Mountain Partnership may be especially key to strategy implementation.

VI. Next Steps

Ongoing - The leads for all High and Medium priority strategies (Attachment 2) are responsible for their implementation.

2008/2009 – Ellen Mayo (USFWS) is working to confirm the species identification of Larimer County population with the assistance of Dr. Dwayne Atwood in Utah.

Late 2008 – RPCI to identify ongoing coordinator for the North Park Action Area.

Early 2009 – Coordinator (or RPCI as backup) will organize a conference call to check in with team members about progress.

Summer 2009 – Coordinator (or RPCI as backup) will reconvene team to assess progress on implementing strategies, update the plan, and review status of plan.

Attachment 1. Additional key species and plant communities in the North Park area

Although the focus of the workshop was on the globally imperiled plants, other key species and plant communities are known from the North Park area as shown in the table below (Colorado Natural Heritage Program 2008, <http://www.cnhp.colostate.edu/>). Specifically, the table identifies rare species and rare and/or high quality examples of plant communities in the North Park area. These and other biodiversity values should be considered with more detailed planning efforts for this area.

Scientific name	Common name	G rank	S rank	Major group
<i>Bufo boreas</i>	Boreal Toad (Southern Rocky Mountain Population)	G4T1Q	S1	Amphibians
<i>Rana sylvatica</i>	Wood Frog	G5	S3	Amphibians
<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S1B,S3N	Birds
<i>Numenius americanus</i>	Long-billed Curlew	G5	S2B	Birds
<i>Pelecanus erythrorhynchos</i>	American White Pelican	G3	S1B	Birds
<i>Plegadis chihi</i>	White-faced Ibis	G5	S2B	Birds
<i>Sterna forsteri</i>	Forster's Tern	G5	S2B,S4N	Birds
<i>Oncorhynchus clarkii stomias</i>	Greenback Cutthroat Trout	G4T2T3	S2	Fish
<i>Hyles gallii</i>	Galium Sphinx Moth	G5	S3?	Insects
<i>Alnus incana</i> / Mesic Forbs Shrubland	Thinleaf Alder/Mesic Forb Riparian Shrubland	G3	S3	Natural Communities
<i>Artemisia nova</i> / <i>Hesperostipa comata</i> Shrubland	Western Slope Sagebrush Shrublands	G3?	S2?	Natural Communities
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i> / <i>Festuca idahoensis</i> Shrub Herbaceous Vegetation	Western Slope Sagebrush Shrublands	G5	S3S4	Natural Communities
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i> / <i>Pascopyrum smithii</i> Shrubland	Sagebrush Bottomland Shrublands	G3?	S1S2	Natural Communities
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i> / <i>Pseudoroegneria spicata</i> Shrubland	Western Slope Sagebrush Shrublands	G5	S2	Natural Communities
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> / <i>Pseudoroegneria spicata</i> Shrub Herbaceous Vegetation	Xeric Sagebrush Shrublands	G4	S3?	Natural Communities
<i>Eleocharis quinqueflora</i> - <i>Triglochin</i> ssp. Herbaceous vegetation	Alkaline Spring Wetland	GU	S2	Natural Communities

<i>Pinus contorta</i> / <i>Vaccinium scoparium</i> Forest	Seral Lodgepole Pine Forests	G5	S4	Natural Communities
<i>Populus tremuloides</i> / <i>Alnus incana</i> Forest	Montane Riparian Forests	G3	S3	Natural Communities
<i>Pseudoroegneria spicata</i> - <i>Poa secunda</i> Herbaceous Vegetation	Montane Grasslands	G4?	S1	Natural Communities
<i>Salix drummondiana</i> / <i>Carex aquatilis</i> Shrubland	Drummond Willow/Aquatic Sedge	G2G3	S2	Natural Communities
<i>Salix geeyeriana</i> - <i>Salix monticola</i> / <i>Calamagrostis canadensis</i> Shrubland	Montane Willow Carrs	G3	S3	Natural Communities
<i>Salix geeyeriana</i> - <i>Salix monticola</i> / Mesic Forbs Shrubland	Geyer's Willow-Rocky Mountain Willow/Mesic Forb	G3	S3	Natural Communities
<i>Salix monticola</i> / <i>Calamagrostis canadensis</i> Shrubland	Montane Willow Carr	G3	S3	Natural Communities
<i>Salix monticola</i> / Mesic Forbs Shrubland	Montane Riparian Willow Carr	G4	S3	Natural Communities
<i>Schoenoplectus acutus</i> - <i>Typha latifolia</i> - (<i>Schoenoplectus tabernaemontani</i>) Sandhills Herbaceous Vegetation	Great Plains Marsh	G4	S2S3	Natural Communities
<i>Schoenoplectus maritimus</i> Herbaceous Vegetation	Emergent Wetland (Marsh)	G4	S2	Natural Communities
<i>Allium schoenoprasum</i> var. <i>sibiricum</i>	wild chives	G5T5	S1	Vascular Plants
<i>Corispermum navicula</i>	a bugseed	G1?	S1	Vascular Plants
<i>Eriogonum exilifolium</i>	dropleaf buckwheat	G3	S2	Vascular Plants
<i>Ipomopsis aggregata</i> ssp. <i>weberi</i>	rabbit ears gilia	G5T2	S2	Vascular Plants
<i>Lewisia rediviva</i>	bitterroot	G5	S2	Vascular Plants
<i>Oenopsis wardii</i>	Ward's golden-weed	G3	S1	Vascular Plants
<i>Packera debilis</i>	Rocky Mountain ragwort	G4	S1	Vascular Plants
<i>Penstemon laricifolius</i> ssp. <i>exilifolius</i>	larch-leaf beardtongue	G4T3Q	S2	Vascular Plants
<i>Penstemon radicosus</i>	matroot penstemon	G5	S1	Vascular Plants
<i>Sisyrinchium pallidum</i>	pale blue-eyed grass	G2G3	S2	Vascular Plants

For more information about these and other biodiversity values, see reports including but not limited to the following:

- o Colorado Wildlife Action Plan
<http://wildlife.state.co.us/WildlifeSpecies/ColoradoWildlifeActionPlan/>

- The Nature Conservancy Ecoregional Assessments.
<http://conserveonline.org/workspaces/cbdgateway/era/reports/index.html> The Southern Rocky Mountains Ecoregional Assessment pertains to the North Park Priority Action Area.
- Southern Rockies Ecosystem Project: <http://www.restoretherockies.org/reports.html>

Attachment 2. Full list of strategies for North Park phacelia

The strategies below are organized in by target occurrence → owner/manager → priority.

Occurrence	Owner/manager	Strategy	Priority	Lead	Notes
Strategies across all landowners/managers					
All	All	Identify a coordinator for the North Park Action Area.	High	B.Neely	B.Neely and S.Spackman to serve in this role in the interim.
All	All	Conduct research on impacts of cattle grazing; natural history; and how to best monitor the phacelia	High	RPI/Grad student TBD.	Re natural history: See report from Kathy Darrow - 1990 study. Need to prioritize what is most important.
All	All	Synthesize research on the phacelia to help identify management needs.	High	A.Timberman	FWS term position may be able to do this in Jan/Feb/March
All	All	Support a graduate-level research study to provide recommendations for management of the population.	High	RPCI	
All	All	Obtain funding for research and on-the-ground projects.	High	RPCI	Fencing, grazing systems, fencing systems, management plans, research how to help expand the plant.
All	All	Investigate plans for oil and gas development and work with energy companies to avoid all occurrences of the phacelia.	High	RPCI	This strategy was added post-workshop. Need GIS analysis of oil and gas development with Phacelia occurrences and habitat.
All	All	Conduct inventory to find more plants	Med.	CNHP, BLM (M.McGuire)	CNHP completed an inventory on BLM lands in N.Park in 1995.
All	All	Develop BMPs and conservation measures for use by land managers and owners.	Med.	RPCI	Natural history research will drive the BMPs. CNHP to be involved.
All	All	Develop potential habitat maps.	Med.	RPCI/ CNHP	
All	All	Monitor for weeds when inventorying and monitoring rare plants, and report to County	Med.		
Strategies for particular landowners/managers					
All	BLM	Expand current Area of Critical Environmental Concern (ACEC) through the Management Planning (RMP) process	High	BLM (M.McGuire)	No surface occupancy for O&G or closed to leasing; OHV on designated routes only; ROWs allowed (includes pipelines?), other land use allocations?

Occurrence	Owner/ manager	Strategy	Priority	Lead	Notes
All	BLM	Through the RMP process, add ACEC in Larimer County and limit all off-highway vehicle travel to designated routes field office-wide.	High	BLM (M.McGuire)	
All	BLM	Close roads or make administrative as needed	Med.	FWS (A.Timberman), BLM (M.McGuire)	
All	BLM	Develop management plan for the State Natural Area	Med.	CNAP (B.Kurzel?) with BLM	
All	BLM	Evaluate and refine grazing management plans, as needed, to reduce or eliminate negative impacts to rare plants.	Low		
All	BLM, FWS	Work together to ensure consistent monitoring	High	BLM (M.McGuire)	Consider outreaching to CNAP - Brian Kurzel - and Denver Botanic Garden too.
All	BLM, FWS	Recommend to FWS that the agency review the need for critical habitat.	Med	CNHP (S.Spackman)	Would help with pressures from other user groups. May result in more work for potential projects in critical habitat.
All	County	Coordinate with County Planners, Road & Bridge, Weed and Pest, etc. to ensure they know about and avoid the plants.	Low		Janie Brands - County weed and pests. Few plants along roads. Talking to weed and pest coord. Is highest priority.
All	Private	Pursue conservation easements to limit residential development and other potential impacts.	High	TNC (M.Garvey)	Work with Colorado Cattleman's too.
All	Private	Educate private landowners about the plant and how they can help protect it.	High	A.Timberman	NRCS - Deb Heeney in Walden. Deb Alpe is another good contact, does lots of education.
All	Private	Assist landowners with on-the-ground protections.	Med.	A.Timberman	B.Neely and S.Spackman to help too.
Jackson Cty Airport	County/ state/ SWA	Verify land ownership.	low		
Jackson Cty Airport	County/ state/ SWA	Consider fencing the top and bottom of the slope.	low		Funding may be an issue. Owl Mtn Partnership may be able to help.