

Rare Plant Conservation Planning Workshop Results

PICEANCE BASIN



Dudley Bluffs bladderpod
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Piceance twinpod
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Plants of Focus

Dudley Bluffs Bladderpod (*Physaria congesta*)
Piceance Twinpod (*Physaria obcordata*)

Sponsored by the
Colorado Rare Plant Conservation Initiative

July 18, 2008

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Panjabi, S., B. Neely and M. Kram. 2008. Rare Plant Conservation Planning Workshop: Piceance 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 Unpublished report prepared for the National Fish and Wildlife Foundation.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 Dudley Bluffs bladderpod and Piceance twinpod, based on an assessment of the plants' viability and threats by participants of a July 2008 workshop. The primary audience is intended to be the workshop participants and other stakeholders interested in helping to implement the strategies.

The Dudley Bluffs bladderpod and Piceance twinpod are rare plants endemic to the Piceance 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).

Located in Rio Blanco County, the Piceance Action Area includes all known occurrences of Dudley Bluffs bladderpod (*Physaria congesta*=*Lesquerella congesta*; G1); known from only seven locations in the world) and Piceance twinpod (*Physaria obcordata*; G1G2; known from only ten locations in the world). Both species are listed as threatened by the U.S. Fish and Wildlife Service.

Dudley Bluffs bladderpod is a very small plant in the Mustard family (Brassicaceae). The plants are perennial, have star-shaped hairs, and bright yellow flowers that bloom early in the spring (April-May). Piceance twinpod, is more robust, and is also a yellow flowered perennial in the Mustard family. This species is similarly limited in its distribution and rarity. Both of these species grow on barren white shale outcrops of the Green River and Uintah Formations of Rio Blanco, Colorado, and nowhere else in the world.

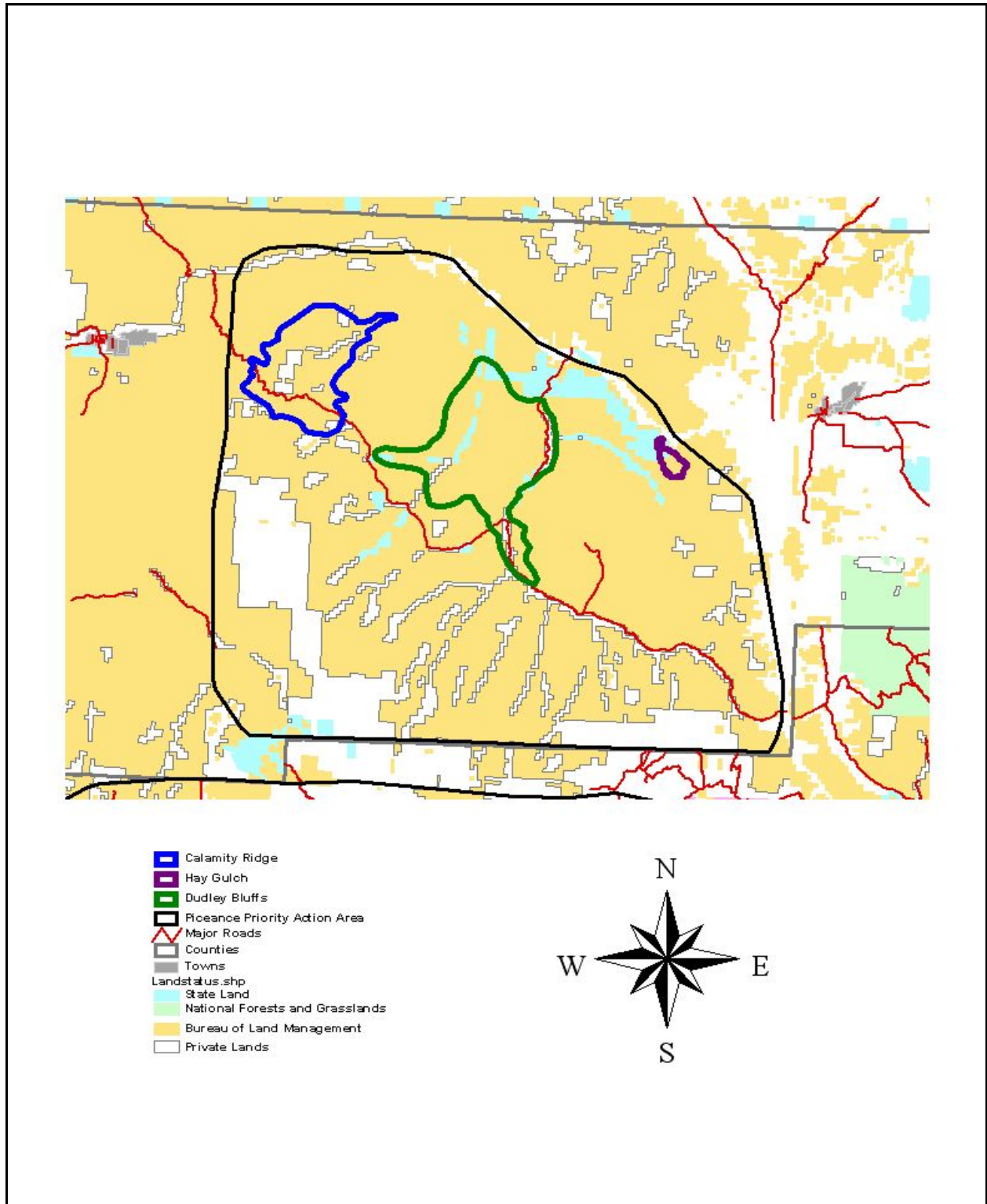
Although most of the known occurrences appear to be in good to excellent condition, the habitat of these two imperiled species is threatened by oil and gas development, oil shale and nahcolite mining, road construction and maintenance, weed infestations, ORV use, wind energy development, overgrazing, and trampling by wild horses.

To abate these and other threats, participants of a July 2008 workshop 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 plan to meet every 6-12 months to assess progress toward the implementation of these strategies.

Table 1. High Priority Strategies for Conserving Piceance Rare plants

Target					
Site	Owner/ manager	Strategy	Priority	Lead	Notes
Strategies across all target occurrences					
All	All	Use USFWS/BLM recommendations for Avoiding Adverse Effects on T and E plants (2007) and Best Management Practices developed by the RPCI (Elliot et al. in prep.).	High	RPCI	CNAP to work with CDOW in particular.
All	All	Conduct surveys targeting the imperiled species using potential habitat models with known negative search data.	High	USFWS?	Hay Gulch, and private lands in the vicinity of the confluence of Ryan and Piceance creeks are especially high priorities.
All	All	Expand monitoring efforts to include how the plants respond to layers of dust deposited as a result of the resource extraction activities.	High	BLM	See RFP from CNAP for potential funding.
All	All	Secure funding from USFWS, CNAP, and others for implementing priority actions in this plan.	High	RPCI	
Strategies for specific target occurrences					
All	Private, BLM	Work with oil and gas companies and other private landowners to protect plants.	High	TNC, Yampa Valley Land Trust	Check mineral rights.
All	Private, BLM	Recognize companies (e.g., Shell) for positive actions.	High	RPCI, USFWS, CONPS	Occidental Oil was recognized by RPCI and CONPS for their exemplary work in protecting rare plants in the Roan Priority Action Area in 2008
All	BLM	Build and install informational signs and kiosks at the ACECs and Natural Areas that support the rare plants.	High	BLM and CNAP	Happening now in some places.
Dudley Bluffs	BLM	Continue monitoring occurrences of Dudley Bluffs bladderpod and Piceance twinpod to detect changes in population size or condition.	High	BLM and CNAP	
Hay Gulch	All	Control weeds in cooperation with BLM, CDOW, and Right of Way owners (O&G companies and county).	High	CDOW	
Hay Gulch	All	Avoid spread of weeds by following BMPs, washing vehicles, and avoiding spread of roots.	High	CDOW	
Calamity Ridge	Private	Work with private landowners to identify specific protection strategies.	High	RPCI and Land Trusts	

II. Map of the Piceance Priority Action Area



III. Piceance Priority Action Area and Associated Rare Plants

This document focuses on rare plants within the Piceance 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. 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).

Located in Rio Blanco County, the Piceance Action Area includes all known occurrences of Dudley Bluffs bladderpod (*Physaria congesta*=*Lesquerella congesta*; G1, listed as threatened by the U.S. Fish and Wildlife Service) and Piceance twinpod (*Physaria obcordata*; G1G2, listed threatened) (Table 2). This Area occurs within the vicinity of the Upper Colorado River Corridor Priority Landscape identified by the Upper White River Basin Priority Landscape by the Colorado Conservation Partnership.

Table 2. Plants of Focus in the Piceance Priority Action Area

Common name	Scientific name	Known occurrences	Global rank*	Status	CNHP Rare Plant Field Guide Link
Focus of the workshop and this document					
Dudley Bluffs bladderpod	<i>Physaria congesta</i> (= <i>Lesquerella congesta</i>)	Seven in the world, all in Rio Blanco County, Colorado	G1	Listed Threatened on the ESA	http://www.cnhp.colostate.edu/rareplants/PDBRA1N1T0.html
Piceance twinpod	<i>Physaria obcordata</i>	Ten in the world, all in Rio Blanco County, Colorado	G1G2	Listed Threatened on the ESA	http://www.cnhp.colostate.edu/rareplants/PDBRA220H0.html
Other important rare plants – focus of future efforts					
Piceance bladderpod	<i>Lesquerella parviflora</i>	Colorado endemic: Rio Blanco, Garfield, and Mesa cos.	G2	none	
Sun-loving meadowrue	<i>Thalictrum heliophilum</i>	Colorado endemic: Rio Blanco, Garfield, Mesa cos.	G2	USFS sensitive	
Narrow-stem gilia	<i>Gilia stenothyrsa</i>	Utah and Colorado: Mesa and Rio Blanco cos.	G3	BLM sensitive	
Rollins' cat's-eye	<i>Oreocarya rollinsii</i>		G3	BLM sensitive	
Many-stem stickleaf	<i>Nuttallia multicaulis</i>		G3	none	Not included in Guide
Utah gentian	<i>Gentianella tortuosa</i>		G3	BLM sensitive	
Fremont's beardtongue	<i>Penstemon fremontii</i> var. <i>glabrescens</i>		G3G4T2	none	Not included in Guide

*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>.

Dudley Bluffs bladderpod is a very small plant in the Mustard family (Brassicaceae). The plants are perennial, have star-shaped hairs, and bright yellow flowers that bloom early in the spring (April-May). Piceance twinpod is more robust, and is also a yellow flowered perennial in the Mustard family. The Piceance twinpod is similarly limited in its distribution and rarity. Both of these species grow on barren white shale outcrops of the Green River and Uintah Formations of Rio Blanco, Colorado, and nowhere else in the world.

The habitat of these two imperiled species is threatened by oil and gas development, oil shale and nahcolite mining, road construction and maintenance, weed infestations, ORV use, wind energy development, overgrazing, and trampling by wild horses.

Although 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 Dudley Bluffs bladderpod and Piceance twinpod based on an assessment of the viability and threats to their 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. RPCI 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 seven priority action areas around the state: Adobe Hills, Arkansas Valley Barrens, Middle Park, North Park, Pagosa Springs, Piceance Basin, and Roan Cliffs. For each of these areas, RCPI led a workshop during the summer of 2008 with local partners to identify priority conservation strategies.

Workshop date: July 18, 2008

Workshop Participants:

Name	Affiliation
Attended	
Susan Panjabi (co-facilitator)	Colorado Natural Heritage Program
Betsy Neely (co-facilitator)	The Nature Conservancy
Ken Holsinger	Bureau of Land Management
Jennifer Wilkening	Colorado Natural Areas Program
Rusty Roberts	Private consultant formerly with the BLM
Peggy Lyon	Colorado Natural Heritage Program
Janis Huggins	Colorado Natural Heritage Program
Unable to Attend	
Brian Kurzel	Colorado Natural Areas Program
Susan Dorsey	Yampa Valley Land Trust

Name	Affiliation
Ellen Mayo	US Fish and Wildlife
Erin Robertson	Center for Native Ecosystems
Paige Lewis	The Nature Conservancy
Carol Dawson	Bureau of Land Management
Denise Culver	Colorado Natural Heritage Program
Other Contacts	
Geoff Blakeslee	The Nature Conservancy
Vince Tedpidino	Utah State University
John Broderick	CDOW Northwest Region Senior Terrestrial
	Biologist
Mike Klish	Westwater Engineering
Tom Knowles	CDOW District Wildlife Manager in Meeker

V. Workshop Results

A. Conservation Targets

Using 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 Piceance Priority Action Area our targets are specific locations of the threatened plants, identified more specifically based on land ownership.

At the Piceance workshop, we organized the occurrences of Dudley Bluffs bladderpod and Piceance twinpod into seven targets based on landownership within three “Potential Conservation Areas” (PCAs) as identified by the Natural Heritage Program (Table 3). A PCA represents CNHP biologists’ best estimate of the primary area required to support the long-term survival of species or communities of interest or concern. Distinguishing between different landowners enabled us to effectively evaluate threats and identify meaningful strategies later in the workshop.

Table 3. Total of seven targets based on landownership and presence of Dudley Bluffs bladderpod and Piceance twinpod. For example, there are three targets identified for the imperiled species at the Dudley Bluffs site: Dudley Bluffs BLM, Dudley Bluffs CDOW, and Dudley Bluffs private.

Target area (each area is a “Potential Conservation Area” (PCA) as identified by CNHP; Biodiversity significance rank follows the PCA name)	Associated landownership	Targets and other significant species and plant communities present in area, followed by highest occurrence rank* (some areas support more than one occurrence of listed element)
Dudley Bluffs-B1	<ul style="list-style-type: none"> ▪ BLM ▪ CDOW ▪ Private 	<ul style="list-style-type: none"> ▪ Dudley Bluffs bladderpod-A-only known occurrences ▪ Piceance twinpod-A-best known occurrences ▪ Fremont beardtongue-E ▪ Many-stem stickleaf-B ▪ Rollins’ cat’s eye-E ▪ Western slope grassland-B ▪ Cold desert shrubland-B
Calamity Ridge-B2	<ul style="list-style-type: none"> ▪ BLM ▪ Private 	<ul style="list-style-type: none"> ▪ Piceance twinpod-B ▪ Many stem stick leaf-B ▪ Piceance bladderpod-H ▪ Western slope grassland-C ▪ Mesic western slope PJ-A
Hay Gulch-B2	<ul style="list-style-type: none"> ▪ BLM ▪ CDOW-Piceance State Wildlife Area 	<ul style="list-style-type: none"> ▪ Piceance twinpod-B ▪ Western slope grassland-B

* CNHP assigns a rank to each occurrence using the following codes: A = Very good; B = good; C = fair; D = poor; E=extant/viability unknown; H = possibly extirpated/ possibly extinct; X presumed extirpated/presumed extinct

**B1= Area of Outstanding Biodiversity Significance; B2=Area of Very High Biodiversity Significance.

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 4 shows the viability for each occurrence as previously identified by the Colorado Natural Heritage Program (CNHP). We do not show viability by *land ownership* because CNHP identifies viability by *occurrence*. Any one occurrence can occur on multiple land ownerships.

Table 4. Viability of all of the Known Occurrences of the two Threatened Plants, organized by area.

Target Area	Viability Rank*	Occurrence ID # (CNHP)
Dudley Bluffs bladderpod		
Dudley Bluffs	A	1
Dudley Bluffs	A	3
Dudley Bluffs	A	5
Dudley Bluffs	A	6
Dudley Bluffs	B	7
Dudley Bluffs	B	14
Dudley Bluffs	A	16
Piceance twinpod		
Dudley Bluffs	AB	5
Dudley Bluffs	C	6
Dudley Bluffs	A	7
Dudley Bluffs	B	8
Dudley Bluffs	C	9
Dudley Bluffs	C	11
Calamity Ridge	B	1
Calamity Ridge	A	3
Hay Gulch	B	14
Not yet assigned	E	13

* CNHP assigns a rank to each occurrence using the following codes: A = Very good; B = good; C = fair; D = poor; E=extant/viability unknown; H = possibly extirpated/ possibly extinct; X presumed extirpated/presumed extinct

The overall viability rankings of A-C for each occurrence were based on a systematic assessment of the components of viability, or indicators and associated indicator ratings as shown in table 5 below. These components of viability are “rolled up” into the overall viability rank.

Table 5. Basis for viability ratings.

		Indicator rating criteria			
Key Attribute	Indicator	D – Poor	C - Fair	B - Good	A - Very Good
Intactness of occurrence and surrounding area	% 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 for Dudley Bluffs bladderpod	# individuals	<50	50-1,000	1,000-10,000	>10,000
Population size & dynamics for Piceance twinpod	# individuals	<20	20-1,000	1,000-5,000	>5,000

C. Threats

With the viability analysis complete, participants then identified the primary threats to each site. They identified and ranked threats based on their expertise, local knowledge, and sense of the key issues facing each target (Table 6). Identifying and ranking threats is an important input, along with understanding viability, to ultimately identifying efficient and effective strategies.

Although most of the known occurrences appear to be in good to excellent condition, the habitat of these two imperiled species is threatened by oil and gas development, oil shale and nahcolite mining, weed infestations, ORV use, overgrazing, and trampling by wild horses.

D. Strategies

Based on an understanding of viability and threats, participants identified strategies (a) across all targets for Dudley Bluffs bladderpod and Piceance twinpod and (b) for specific target occurrences. 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 and level of threat. See p. 2 for a list of high priority strategies and Attachment 2 (p.16) for a list of 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.

VI. Next Steps

Ongoing - The leads for all high- and medium-ranked strategies (Attachment 2) are responsible for ensuring their implementation.

Ongoing - The group proposed to meet annually to gauge progress toward implementing strategies and updating our understanding of the threats. Ideally this meeting would be coordinated by the RPCI lead for the Piceance Priority Action Area. Until such a lead is established, Betsy Neely from TNC/RPCI will coordinate. Preferably this meeting would occur in the summer (June 2009) so a field visit to the plants is also possible.

Winter 2009 - TNC/RPCI will organize a conference call in the winter as a check in.

VII. References

Culver, D., P. Lyon, and J. Huggins. 2008. Survey of Critical Biological Resources of Rio Blanco County, Colorado. Unpublished report prepared by the Colorado Natural Heritage Program for Rio Blanco County. Available on-line at:
http://www.cnhp.colostate.edu/documents/2008/cnhp_rioblanco_final.pdf

Table 6. Primary Threats to each Target. Red = high threat, orange = medium threat; yellow = low threat.

Area	Ownership or Mgmt	Natural gas extraction	Evaporative ponds	Utility and pipeline constr.	Mining (oil shale and nahcolite)	Invasives	Road construction	Road widening	Road maintenance	Excessive grazing and trampling	Wild horses trampling and grazing/ browsing	Wind energy development	Notes
Calamity Ridge	Private-energy cos. And private land owners	M		M	L	L			L			M	
Calamity Ridge	BLM	M		M	L	L			L			M	
Dudley Bluffs	BLM including ACEC	H		H	M	L	H	H	L		L		Large powerline through PCA and crossing occurrence of Piceance twinpod. Details from Ken.
Dudley Bluffs	CDOW	H	L	H	M	L	H	H	L		L		
Dudley Bluffs	Private-energy cos.	H	L	H	M	L	H	H	L		L		
Hay Gulch	BLM	M		H		H	H	H					Main threats are pipeline and invasives
Hay Gulch	CDOW	M		H		H	H	H					Main threats are pipeline and invasives

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

Although the focus of the workshop was on the globally imperiled plants, other key species and plant communities are known from the Piceance 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 Piceance area. These and other biodiversity values should be considered with more detailed planning efforts for this area.

Major group	Scientific name	Common name	Global rank	State rank	Federal status
Birds	<i>Amphispiza belli</i>	Sage Sparrow	G5	S3B	USFS
Birds	<i>Centrocercus urophasianus</i>	Sage Grouse	G4	S4	BLM/USFS
Natural Communities	<i>Acer negundo</i> - <i>Populus angustifolia</i> / <i>Cornus sericea</i> Forest	Narrowleaf Cottonwood Riparian Forests	G2	S2	
Natural Communities	<i>Acer negundo</i> / <i>Prunus virginiana</i> Forest	Montane Riparian Deciduous Forest	G3	S2	
Natural Communities	<i>Alnus incana</i> - <i>Salix (monticola, lucida, ligulifolia)</i> Shrubland	Thinleaf Alder-Mixed Willow Species	G3	S3	
Natural Communities	<i>Amelanchier utahensis</i> / <i>Carex geyeri</i> Shrubland	Mixed Mountain Shrublands	G2G3	S2S3	
Natural Communities	<i>Artemisia tridentata ssp. tridentata</i> / <i>Leymus cinereus</i> Shrubland	Sagebrush Bottomland Shrublands	G2	S1	
Natural Communities	<i>Artemisia tridentata ssp. wyomingensis</i> / <i>Pseudoroegneria spicata</i> Shrub Herbaceous Vegetation	Xeric Sagebrush Shrublands	G4	S3?	
Natural Communities	<i>Atriplex confertifolia</i> / <i>Achnatherum hymenoides</i> Shrubland	Cold Desert Shrublands	G3	S2	
Natural Communities	<i>Atriplex confertifolia</i> / <i>Leymus salinus</i> Shrubland	Cold Desert Shrublands	G3G5	S3	
Natural Communities	<i>Atriplex confertifolia</i> / <i>Pseudoroegneria spicata</i> Shrubland	Cold Desert Shrublands	G3	S2S3	
Natural Communities	<i>Betula occidentalis</i> / <i>Maianthemum stellatum</i> Shrubland	Foothills Riparian Shrubland	G4?	S2	

Major group	Scientific name	Common name	Global rank	State rank	Federal status
Natural Communities	<i>Carex nebrascensis</i> Herbaceous Vegetation	Wet Meadows	G4	S3	
Natural Communities	<i>Catabrosa aquatica</i> - <i>Mimulus</i> ssp. Spring Wetland	Spring Wetland	GU	S3	
Natural Communities	<i>Cornus sericea</i> Shrubland	Foothills Riparian Shrubland	G4Q	S3	
Natural Communities	<i>Distichlis spicata</i> Herbaceous Vegetation	Salt Meadows	G5	S3	
Natural Communities	<i>Eleocharis palustris</i> Herbaceous Vegetation	Emergent Wetland	G5	S4	
Natural Communities	<i>Juniperus osteosperma</i> / <i>Leymus salinus</i> spp. <i>salinus</i> Wooded Herbaceous Vegetation	Mesic Western Slope Pinyon-Juniper Woodlands	G3	S3	
Natural Communities	<i>Leymus cinereus</i> Herbaceous Vegetation	Western Slope Grasslands	G2G3Q	S1S2	
Natural Communities	<i>Populus angustifolia</i> / <i>Betula occidentalis</i> Woodland	Montane Riparian Forest	G3	S3	
Natural Communities	<i>Populus angustifolia</i> / <i>Rhus trilobata</i> Woodland	Narrowleaf Cottonwood/Skunkbrush	G3	S3	
Natural Communities	<i>Pseudoroegneria</i> <i>spicata</i> - <i>Achnatherum</i> <i>hymenoides</i> Herbaceous Vegetation	Western Slope Grasslands	G3G4	SU	
Natural Communities	<i>Pseudoroegneria</i> <i>spicata</i> Herbaceous Vegetation	Western Slope Grasslands	G2	S2?	
Natural Communities	<i>Pseudotsuga menziesii</i> / <i>Acer glabrum</i> Forest	Lower Montane Forests	G4?	S1	
Natural Communities	<i>Pseudotsuga menziesii</i> / <i>Betula occidentalis</i> Woodland	Montane Riparian Forest	G3?	S3	
Natural Communities	<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos</i> <i>oreophilus</i> Forest	Western Slope Douglas Fir Forests	G5	S4	
Natural Communities	<i>Quercus gambelii</i> - <i>Cercocarpus</i> <i>montanus</i> / (<i>Carex</i> <i>geyeri</i>) Shrubland	Mixed Mountain Shrublands	G3	S3	

Major group	Scientific name	Common name	Global rank	State rank	Federal status
Natural Communities	<i>Salix bebbiana</i> Shrubland	Montane Willow Carrs	G3?	S2	
Natural Communities	<i>Salix exigua</i> / Barren Shrubland	Coyote Willow/Bare Ground	G5	S5	
Natural Communities	<i>Schoenoplectus pungens</i> Herbaceous Vegetation	Bulrush	G3G4	S3	
Natural Communities	<i>Typha (latifolia, angustifolia)</i> Western Herbaceous Vegetation	Narrow-leaf Cattail Marsh	G5	S4	
Natural Communities	<i>Typha domingensis</i> Western Herbaceous Vegetation	Western Slope Marsh	G5?	S1	
Reptiles	<i>Coluber constrictor mormon</i>	Western Yellowbelly Racer	G5T5	S3	
Vascular Plants	<i>Argillochloa dasyclada</i>	Utah fescue	G3	S3	
Vascular Plants	<i>Astragalus detritalis</i>	debris milkvetch	G3	S2	BLM
Vascular Plants	<i>Ceanothus martinii</i>	Utah mountain lilac	G4	S1	
Vascular Plants	<i>Gentianella tortuosa</i>	Utah gentian	G3?	S1	BLM
Vascular Plants	<i>Gilia stenothyrsa</i>	narrow-stem gilia	G3	S1	BLM
Vascular Plants	<i>Lesquerella parviflora</i>	Piceance bladderpod	G2	S2	BLM
Vascular Plants	<i>Monardella odoratissima</i>	mountain wild mint	G4G5	S2	
Vascular Plants	<i>Nuttallia multicaulis</i>	many-stem stickleaf	G3	S3	
Vascular Plants	<i>Oreocarya rollinsii</i>	Rollins' cat's-eye	G3	S2	BLM
Vascular Plants	<i>Oxytropis besseyi</i> var. <i>obnapiformis</i>	Bessey locoweed	G5T2	S2	
Vascular Plants	<i>Penstemon fremontii</i> var. <i>glabrescens</i>	Fremont's beardtongue	G3G4T2	S2	
Vascular Plants	<i>Sullivantia hapemanii</i> var. <i>purpusii</i>	Hanging Garden sullivantia	G3T3	S3	
Vascular Plants	<i>Thalictrum heliophilum</i>	sun-loving meadowrue	G2	S2	USFS

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

- 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>
- Southern Rockies Ecosystem Project: <http://www.restoretherockies.org/reports.html>

Attachment 2. Full list of strategies for Dudley Bluffs bladderpod and Piceance twinpod

Site	Owner/ manager	Strategy	Priority w/in the site	Priority across sites	Lead	Notes
All	All	Secure funding from USFWS, CNAP, and others for implementing priority actions in this plan.	NA	high	RPCI	
All	All	Conduct surveys targeting the imperiled species using potential habitat models with known negative search data.	high		USFWS?	Hay Gulch, and private lands in the vicinity of the confluence of Ryan and Piceance creeks are especially high priorities.
All	All	Learn more about the pollinators important to the rare plants and how to protect from dust, etc.	NA		RPCI	work with Vince Tepidino
All	All	Contact county planners regarding road widening locations to help assure there is not a conflict with rare plant habitat.	NA			County road work that is conducted with federal funds would be responsible for the plants under the ESA.
All	All	Weed monitoring. Monitor rare plant locations to detect new weeds or increases in existing infestations.	NA			BLM and CNAP volunteers are monitoring weeds at some locations already.
All	All	Get Ken's rare plant occurrence data to CNHP.	NA		Ken and CNHP	
All	BLM	Build and install informational signs and kiosks at the ACECs and Natural Areas that support the rare plants.	NA	high	Ken and CNAP	Happening now in some places

Site	Owner/ manager	Strategy	Priority w/in the site	Priority across sites	Lead	Notes
All	BLM	Support the White River RMP revision Alternative B (Conservation Emphasis) which designates management emphasis areas outside the ACEC boundaries and has the most stringent NSO stipulations (or Alternative C (Managed Development) as second choice).	NA		All	
All	BLM	Coordinate timing with O&G companies for coming four years	NA		BLM	Timing of what? Ask Ken for clarification.
All	BLM and private	Use USFWS/BLM recommendations for Avoiding Adverse Effects on T and E plants (2007, attached) and Best Management Practices developed by the CRPCI (Elliot et al. in prep., attached).	NA	high	RPCI	
All	BLM, CDOW, and private	Expand monitoring efforts to include how the plants respond to layers of dust deposited as a result of the resource extraction activities.	NA	high	Ken	
All	BLM and private	Work with oil and gas companies to protect plants.	NA	high	TNC, Yampa Valley Land Trust	Use a landscape level approach including other sites such as Duck Creek and Cathedral Bluffs
All	BLM and private	Recognize companies (e.g., Shell) for positive actions.	NA	high	RPCI, USFWS, and CONPS	
All	BLM, CDOW, and private	Assure on-the-ground presence of qualified Botanist during projects, fencing, etc.	NA		BLM, CDOW, RPCI	
All	BLM, CDOW, and private	Consider negotiating land trades that would encourage protection of the rare plants.	NA			Work load is prohibitive
Calamity Ridge	private	Work with private landowners to identify specific protection strategies.	high			<i>Lesquerella parviflora</i> on private at Spring Creek

Site	Owner/ manager	Strategy	Priority w/in the site	Priority across sites	Lead	Notes
Dudley Bluffs	BLM	Continue monitoring occurrences of Dudley Bluffs bladderpod and Piceance twinpod to detect changes in population size or condition.	high	high	Ken and CNAP	
Dudley Bluffs	BLM	Build fencing to close road to avoid impact from vehicles	done		Ken and CNAP	
Dudley Bluffs, Calamity Ridge	BLM	Promote the expansion of existing ACECs and the establishment of new ACECs as part of the White River RMP revision.	low		Ken	
Dudley Bluffs	private	Recognize Shell at annual CONPS meeting for protecting plants in Duck Creek.	medium		Brian	
Hay Gulch and Dudley Bluffs	CDOW	Improve management of CDOW land (apply BMPs; botanist from CNAP or CNHP to assist with management).	high	high	CNAP	Tom Knowles-DWM in Meeker; pipeline location analysis
Hay Gulch	All	Control weeds in cooperation with BLM, CDOW, and ROW owners (O&G companies and county).	high	high	CDOW	
Hay Gulch	All	Avoid spread of weeds by following BMPs, washing vehicles, and avoiding spread of roots.	high		CDOW	