The Uncompahgre River Basin

A Natural Heritage Assessment

Volume I

Prepared for Valley Land Conservancy
Montrose, Colorado
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User's Guide

The Uncompahgre Basin Biological Assessment conducted by the Colorado Natural Heritage Program consists of two essentially distinct projects that are highly integrated with respect to methodology and fieldwork. This report reflects the separate nature of the projects by being organized in a two-volume set.

Volume I presents all potential conservation sites that have been identified in the Uncompahgre Basin that support rare and imperiled plants, animals, and significant plant communities, including wetland and riparian areas. Volume II focuses exclusively on wetland and riparian areas. Volume II also presents "locally significant areas." These are sites that are among the most important wetlands in the Uncompahgre Basin, but they are not unique from a national or statewide perspective, and therefore these sites did not receive a Biodiversity Rank. Additionally, Volume II presents an assessment of the wetland functions performed by each site that was surveyed. These functional assessments are intended to provide the user with a more complete picture of the value wetlands and riparian areas provide to Uncompahgre Basin residents.

Both projects utilized the same Natural Heritage Methodology that is used throughout North America, and both searched for and assessed the plants, animals, and plant communities on the Colorado Natural Heritage Program's List of rare and imperiled elements of biodiversity. Each volume prioritizes potential conservation sites based on the relative significance of the biodiversity they support and the urgency for protection of the site. All information explaining Natural Heritage Methodology and ranks is repeated in each volume, so that each volume can stand alone and be used independently of the other.

ACKNOWLEDGEMENTS

This project would not have been possible without the help of numerous dedicated individuals. We appreciate the support of the Montrose and Ouray County Commissioners and the assistance that both County Assessors' Offices gave us in determining land ownership.

We received much help from the Bureau of Land Management, especially Jim Ferguson and Amanda Clements; Colorado Division of Wildlife, especially Ken Miller, Rick Sherman, and Jim Garner; the U. S. Forest Service, especially Craig Grother; and the National Park Service, especially Nancy Zaenger and Myron Chase.

We are grateful to the U.S. Environmental Protection Agency, Region VIII and the Colorado Department of Natural Resources for providing continual funding and support of wetland inventories and assessment in Colorado

Members of the Colorado Native Plant Society, as well as other individuals, volunteered to help in the field. We thank Joan Schmidt; Peggy Howe, Cindy Carlson, Virginia Taylor, Reda Vilner, Sandy Beranich, and Paula Tyler for accompanying us on sometimes challenging trips. Most of all, we thank Shu Fujisawa, who dedicated his entire summer vacation from CSU to work on the project. He added many insights and asked thoughtful questions.

We appreciate the many landowners that gave us permission to survey their property. In many cases, they imparted to us knowledge that they had gained from many years' experience in caring for the land. Our staff in Fort Collins, including Mary Klein, Jill Handwerk, Susan Spackman, Kim Fayette, Renee Rondeau, Barry Baker, Amy Lavender, and Mike Wunder all worked with us patiently.

Finally, we thank Valley Land Conservancy and its director, Tony Hoag, for sponsoring the project, and Great Outdoors Colorado for providing the funding.

Executive Summary

The Uncompahgre Basin is experiencing a period of rapid growth. Citizens of Montrose and Ouray counties have expressed concerns over the loss of open space, wildlife habitat, and their unique natural surroundings. They have recognized the need to plan for the conservation of plants and animals that are native to the Uncompahgre Basin, especially those that depend on this area for their survival. In 1997, The Valley Land Conservancy (VLC), The Nature Conservancy, and the Colorado Natural Heritage Program (CNHP) proposed to the Montrose and Ouray County Board of County Commissioners that a biological assessment be conducted for the eastern part of Montrose County and all of Ouray County. The goal of the project would be to systematically identify the localities of rare, threatened, or endangered species and the locations of significant natural plant communities. In addition, CNHP and VLC offered to conduct workshops with the county commissioners, county planning departments and interested local groups to present the results of the study and assist in protection efforts.

Funding for the biological assessment was obtained from a Great Outdoors Colorado planning grant to the Valley Land Conservancy, who contracted with Colorado Natural Heritage Program to perform the survey.

At the same time, the U. S. Environmental Protection Agency, through the Colorado Department of Natural Resources, provided CNHP with support to conduct a wetland and riparian survey of the private lands of the Uncompahgre Basin. These two projects were closely coordinated and the results are presented in the two volumes of this report. Volume I represents the Biological Assessment, while Volume II presents the wetland and riparian study.

Colorado Natural Heritage Program began its research by updating its Biological and Conservation Data System with existing information. This was drawn from previous studies by various individuals and organizations, including the Colorado Division of Wildlife (CDOW) database, regional and local herbaria, local experts, federal agencies, and others. Based on these data, we identified over 200 targeted inventory areas (TIAs) for field research (Appendix I). More areas of interest were added to this list during the field season.

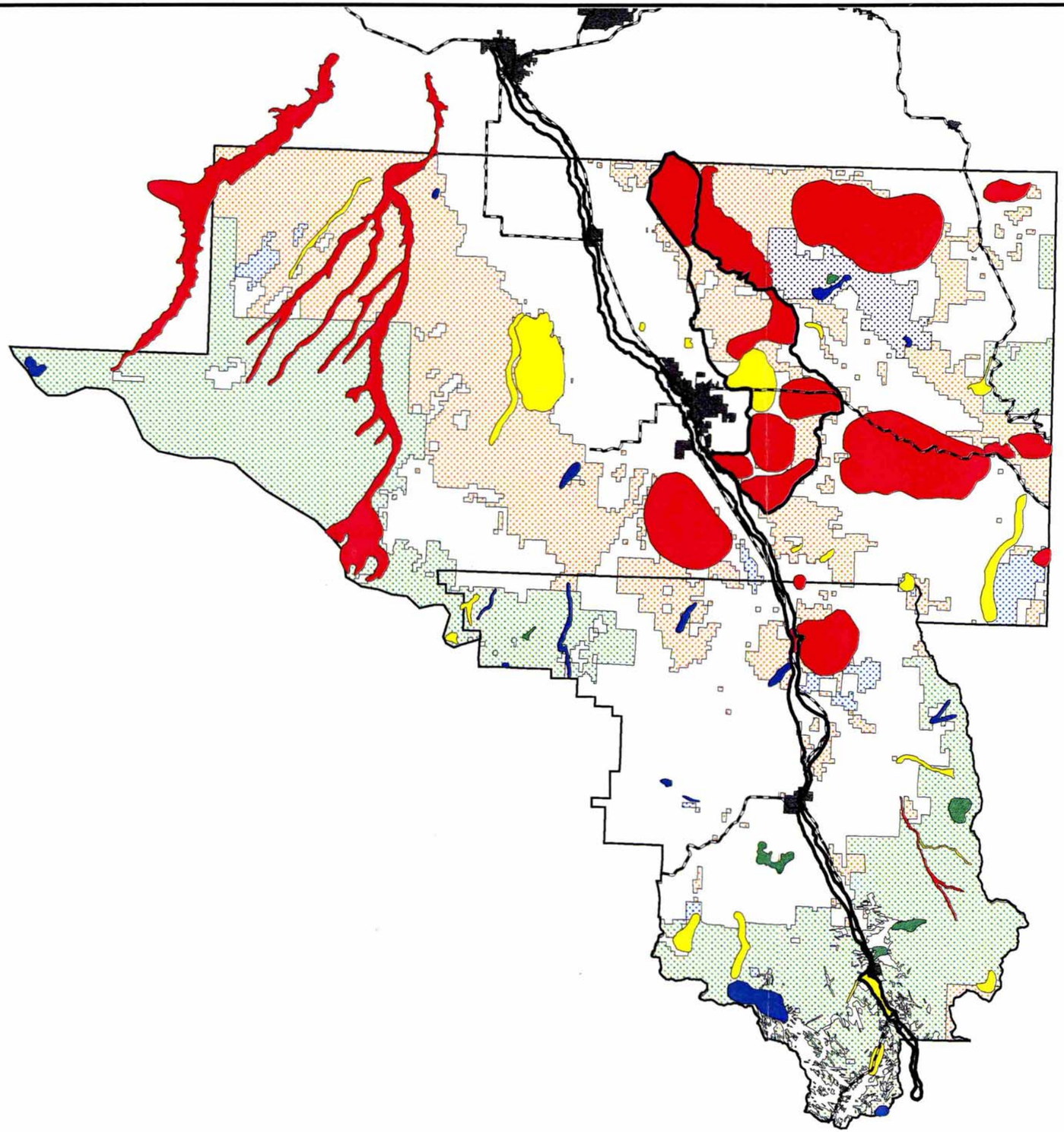
Field surveys began in April 1998 and continued through November 1998. Results of the survey confirm that the Uncompahgre Basin contains a number of plant species endemic to western Colorado, which depend on this area for their existence. Due to unusual geological and soil substrates, the world's population of several species is restricted to a relatively small geographic area, comprising only small parts of two or three counties. We found that riparian zones and salt desert shrublands are the most locally threatened plant communities. Several plants and animals were found to be more common than had been thought, and will no longer be tracked by CNHP. Forty-four species and communities were documented for the first time in the CNHP database for Montrose and Ouray counties.

We have identified sixty-five Proposed Conservation Areas (PCAs), containing 254 occurrences of rare or imperiled plants, animals, and natural communities. Each is ranked according to its relative biodiversity significance. Results of the survey are presented here, with descriptions and recommendations for each Proposed Conservation

Area. The results will also be provided to the counties and VLC in GIS format, and will be available to the public on the CNHP website (http:\\www.colostate.edu/orgs/CNHP).

The delineation of Proposed Conservation Area boundaries in this report does not confer any regulatory protection on recommended areas. They are intended to be used to support wise planning and decision making for the conservation of these significant areas. Additional information may be requested from Colorado Natural Heritage Program, 254 General Services Building, Colorado State University, Fort Collins, CO 80523.

Proposed Conservation Areas of the Uncompahgre Basin in Eastern Montrose and Ouray counties



Legend

Biodiversity significance ranks

- B2 Very high biodiversity significance
- B3 High biodiversity significance
- B4 Moderate biodiversity significance
- B5 General biodiversity significance

Boundaries

- Ouray county line
- Eastern Montrose county line
- Macrosites

Features

- Highways
- Cities

Land Ownership

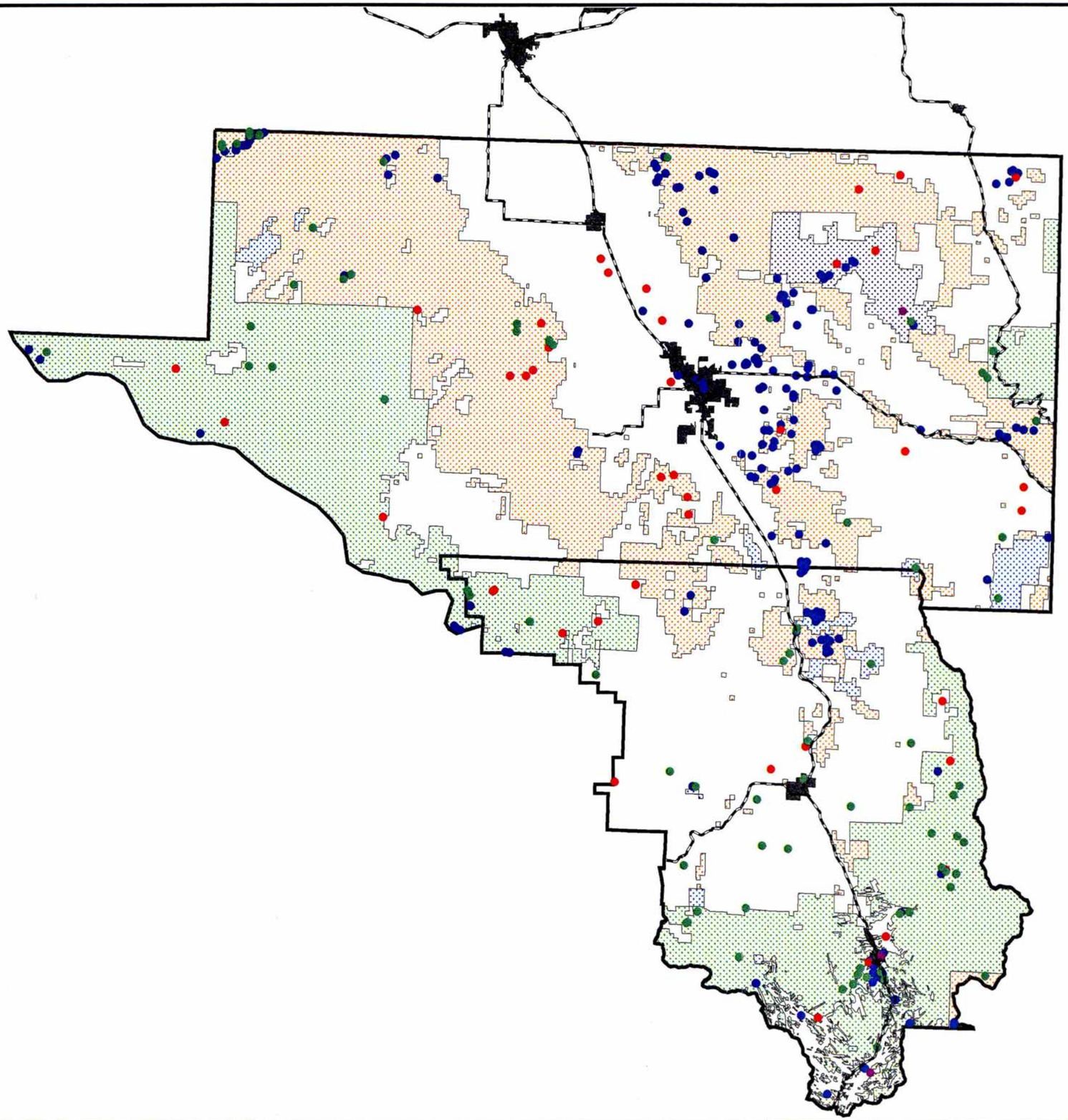
- Bureau of Land Management
- Colorado Division of Wildlife
- US Forest Service
- Private
- State
- National Park Service

N

0 5 10 15 Miles

*Prepared by Southwest Data Center

Rare and Imperiled Plants, Animals, and Plant Communities of the Uncompahgre Basin



Legend

- Plants
- Animals
- Plant communities
- Invertebrates
- Highways
- Cities
- County boundaries
- Bureau of Land Management
- Colorado Division of Wildlife
- US Forest Service
- National Park Service
- Private

N

0 3 6 9 Miles

*Prepared by Southwest Data Center

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Preface

The people of Ouray and Montrose counties have adopted a goal of retaining large natural areas in their present undeveloped state. Values associated with natural areas include viewsheds, open space, recreation, wildlife habitat and biological diversity. This project undertakes to identify local areas of significant biological diversity, so that the information is available to citizens and decision-makers, to assist them in prioritizing sites for conservation.

Biological diversity includes the full range of living things on earth, from human beings to microbes. It can be considered at many levels, from genetic diversity of the DNA to associations of plants and animals. Together with their physical environment, such associations are known as ecosystems. In this survey, we have focused on the species level for plants and animals, and on plant communities, or associations.

Both Montrose and Ouray counties contain a number of plant and animal species that are uncommon, globally or in Colorado, and are imperiled because of their rarity. Only a few of these species have any form of legal protection. It is our belief that as citizens of the counties realize that they possess unique natural resources, they will take voluntary actions to protect enough of their habitat that the species will not become extinct. By taking these species into consideration when making decisions about land use, we will be able to protect our natural heritage without government regulations. Most of us are aware that species are becoming extinct at an alarming rate, globally. This is true, not only in tropical rain forests, but right here at home. The conservation of the biodiversity of the earth depends on local action in all the places where endemic and imperiled species occur.

In addition to rare species, both counties also contain assemblages of plants and animals that are more common individually, but occur together in unique combinations in our area. These, too, are deserving of protection. They make Ouray and Montrose counties different from any other place on the earth. There is much we don't know about the intricate web of plant and animal interactions. For instance, soil microbes and bacteria are little known, but may play a critical role in the ecosystem. By protecting large enough areas of each of our local plant communities, we are employing what is sometimes call the "coarse filter approach", the idea that we will be protecting even those resources that we haven't yet identified and don't understand. In this survey, we have attempted to locate exemplary sites where these plant communities occur. We have recommended several Proposed Conservation Areas in each of the major vegetation types of the basin.

Sometimes, difficult choices must be made between preserving our biological diversity and other competing land uses. Native plants and animals may not always win. But clearly, these choices cannot be made without good information. What are the species that depend on our area for their survival? Which are the most imperiled? Where are they located? Which locations contain the best (largest, healthiest, most viable) examples? What are the specific threats to their survival? What management actions can be undertaken to ensure their survival? What are the key areas that are deserving of our efforts to protect our biological resources? Without the answers to these and other questions, we will be unable to consider the alternatives and make informed choices.

To answer these questions, we have done extensive research and field surveys. CNHP assigns to each species a rank for both global and state rarity, G1 to G5 and S1 to S5 (See Appendix II for more information on ranking). We maintain a large database containing locations and other information on all the species that we track. Common species, like the American robin, would be ranked G5 S5, and not tracked.) We then assign an occurrence rank, A through D, to each location where the species or community is found. This information is then combined, to identify key areas of biological diversity, often containing several different values, and to recommend Proposed Conservation Areas (PCAs).

The identification of Proposed Conservation Areas has no legal implications. It is meant as a planning tool, to be used along with other information such as important wildlife habitat, natural hazards, and other factors that must be considered in making land use decisions. It is to the credit of the county commissioners of Montrose and Ouray counties, and to the many organizations who supported this project, that they recognize the need for this information. It is the hope of CNHP that public education about the species and communities that help make our part of the world unique will lead to an appreciation and the determination to protect them.

Methods

Colorado Natural Heritage Program began its research by updating its Biological and Conservation Data System with existing information. Various individuals and organizations, including the Colorado Division of Wildlife (CDOW) and U. S. Forest Service databases, regional and local herbaria, local scientific experts, federal agencies and others contributed information from previous studies. We used these data, our knowledge of the habitats of targeted species, references such as topographic, vegetation, soils and geology maps, aerial photographs, and consultation with local experts to identify over 200 targeted inventory areas (TIAs) for field research (Appendix I). These represented both previously known locations to be revisited, and our predictions of where we would locate new populations of targeted species. More areas of interest were added to this list during the field season. Ownership of each TIA was determined through the Montrose and Ouray County Assessors offices, and owners of private land were contacted for permission to survey their property. No private land was entered without owner permission.

Field surveys began in April 1998, and continued through November 1998. Plant surveys consisted of hiking through targeted areas, searching for rare species, and identifying any unknown species. At each location where a tracked species or community was found, we recorded the size and extent of the occurrence, its condition, evident threats, and a general description of the area, including associated species. Voucher specimens were taken for rare plants when the occurrence was large enough not to be negatively affected by collecting. These specimens will be deposited at the Colorado State University and the University of Colorado herbaria. Zoological surveys involved both observation and collection of insects and small mammals in live traps or pitfall traps. Specimens were identified and deposited at Colorado State University. Considerable effort was put into mist netting of bats, trapping shrews, and searching waterfalls for black swifts. Invertebrates were captured and released, or if collected for identification, they were deposited at the Gillette Insect Biodiversity Museum at Colorado State University.

Each occurrence of a targeted species or community was assigned an occurrence rank of A to D. These data were entered in the Colorado Natural Heritage Program's data system as element occurrence records. Ranks denoting the global and state rarity of each species were reviewed, and several were revised as a result of new information from this survey.

Results of the survey were analyzed, and Proposed Conservation Areas identified. Each Proposed Conservation Area represents the area that we consider critical for the continued survival of the population. This may include the location of the element itself, and additional area that provides a buffer from direct disturbance, or provides additional potential habitat for movement of the species through time. It may also include land that is important for maintaining natural processes on which the species or community depends. For example, a significant riparian community may be dependent on hydrological processes that originate upstream.

Results

At the beginning of the field season in April 1998, the CNHP database contained 133 records for eastern Montrose County and 42 for Ouray County. One hundred eight of these 175 records, or 62%, were over ten years old, and in need of updating and verification. Many of the existing records were based on herbarium collections or literature that gave no indication of the size or quality of the occurrence. Of the original records, 91 were deemed recent and complete enough to be included in this report without updating. As a result of this survey, 227 new and updated records were entered in the database, bringing the total for the study area to 318. Forty-four of these records represent elements documented for the first time in Montrose and Ouray counties in the CNHP database: eight animals, eight plants, and twenty-eight natural communities. Several plants and animals were found to be more common than had been thought, and will no longer be tracked by CNHP.

Results of the survey confirm that the Uncompahgre Basin contains a number of plant species that are endemic to western Colorado and depend on this area for their continued existence. Due to unusual geological and soil substrates, the world's population of several species is restricted to a relatively small geographic area, comprising only small parts of two or three counties. We found that two types of landscapes are the most imperiled in the basin. Lower elevation riparian communities with good stands of cottonwoods, and an understory of native shrubs, grasses and forbs, are one of the most valuable and most imperiled plant communities in the Uncompahgre Basin. Their extent has been greatly reduced by human activities. The second most imperiled community is the lower elevation semi-desert shrublands, known locally as the "adobes". Both of these areas contain a large amount of private land, and the native habitats have been substantially reduced in area by cultivation and residential growth. These areas are represented in this report by two "macrosites", The Uncompahgre River macrosite and the Uncompahgre Badlands macrosite. These large Proposed Conservation Areas contain within them a number of smaller sites.

We have identified sixty-five Proposed Conservation Areas, containing 254 occurrences of rare or imperiled plants, animals, and natural communities. Results of the survey are included here, with descriptions and recommendations for each Proposed Conservation Area.

Recommendations

Specific protection and management needs are addressed under the descriptions of individual sites. However, some general recommendations for conservation of biological diversity in the Uncompahgre Basin can be given here:

- **Develop and implement a plan for protecting the Proposed Conservation Areas profiled in this report, with most attention directed toward sites with biodiversity rank (B-rank) B2 and B3.** The sites in this report provide a basic framework for implementing a comprehensive conservation program. The B2 and B3 sites, because they have global significance, should receive priority attention. The sum of all the sites in this report represents the area CNHP recommends for protection to ensure that our natural heritage is not lost as the population and associated development increase.
- **Protect large blocks of land in each of the major vegetation types in the basin.** While the specific sites identified here contain the known locations of significant elements of natural diversity, protection of large areas in each vegetation type, especially when these are connected, will help to ensure that we do not lose species that have not yet been identified.
- **Incorporate the information included in this report in the review of proposed activities in or near Proposed Conservation Areas so that the activities do not adversely affect natural heritage elements.** All of the sites presented contain natural heritage elements of state or global significance. Development activities in or near a site may affect the element(s) present. Wetland and riparian sites are particularly susceptible to impacts from off-site activities if the activities affect water quality or hydrologic functioning. In addition, cumulative impacts from many small changes can have effects as profound and far-reaching as one large impact. As proposed activities within the Uncompahgre Basin are considered, they should be compared to the site maps presented here. If a proposed project would potentially impact a site, planning personnel should contact persons, organizations, or agencies with expertise to get detailed comments. The Colorado Natural Heritage Program, Colorado Natural Areas Program, and Colorado Division of Wildlife routinely conduct environmental reviews statewide and should be considered valuable resources. The Colorado Native Plant Society may be able to assist with plant surveys, and give advice about revegetation with native species.
- **Consider the natural heritage values of all sites for which land use decisions are made.** Use this report as a guide for values to be considered. Also, consider the impact developments may have on adjacent natural areas. Insist on careful assessments of potential damages, including weed invasion and fragmentation. It's easier to avoid disturbing an area than to try to control weed invasion later.
- Undertake and support efforts to **improve the condition of the Uncompahgre River** with properly functioning hydrology and healthy riparian ecosystems. Support a

study of the physical dynamics of the river as a starting point. See specific recommendations in Volume II of this report.

- Take a proactive approach to **weed control** in the county. Give adequate support, in funding and manpower, to the counties' Weed Management offices for weed control. Recognize that weeds affect both agriculture and native plant communities.
- Consider **purchasing development rights** or outright purchase from willing owners of land for significant sites that are in need of protection.
- **Do not fragment large natural areas** unnecessarily. Although large migrating animals like deer and elk are not tracked by CNHP as rare species, they are a part of our natural diversity, and their needs for winter range and protected corridors to food and water should be taken into consideration. Fragmentation of the landscape also affects smaller animals and plants, opening more edge habitats and introducing exotic species.
- Locate **trails and roads** to minimize impacts on native plants and animals. See Forman and Alexander (1998) for an excellent review of the literature on the ecological effects of roads. See the booklet published by the State Trails Program (Colorado Department of Natural Resources 1998) for suggestions regarding planning trails with minimum impacts to wildlife.
- **Expand public and staff awareness** of the Uncompahgre Basin's natural heritage and its need for protection. Montrose and Ouray counties can be leaders by providing community education, and forums where protection of our natural heritage is discussed.
- **Recognize the importance of all of our natural communities and lands at all elevations.** Although much effort in the past has been directed at protecting the most scenic, high elevation areas, the lower elevations, such as the desert shrub, sagebrush and the pinyon-juniper zones have received less attention.
- Stay informed and involved in **public land management** decisions. Many of the sites identified here are on public land that may be protected from development, but not from incompatible uses. Even ownership is not always secure, since the federal agencies are becoming more and more involved in land exchanges.
- **Inventory** efforts should be continued, especially in areas where construction or habitat alteration is proposed. Even an extensive inventory such as this one cannot fully explore the biodiversity of the entire basin. However, it is hoped that the information presented here will guide county planners by identifying resources that may be expected in areas similar to those described.
- When disturbance of the land cannot be avoided, it may be necessary to prevent weed invasion by **reseeding**. In these cases, only native plants should be used. Ideally, seed should be locally harvested. This includes any seeding done on county road right-of ways.
- Encourage **cluster developments** that designate large common areas for preservation of natural communities, as an alternative to scattering residences over the landscape with a house on each 35 acres. Work with developers early in the planning process to educate them about the benefits of retaining natural areas.

- **Support local organizations**, such as land conservancies, in purchasing or acquiring conservation easements for open space. Explore opportunities to form partnerships to access federal funding for conservation projects. Continue to promote cooperation among local entities to preserve the counties' biodiversity. Many cooperative undertakings are already underway in Montrose and Ouray counties. Especially noteworthy are the efforts of the Valley Land Conservancy, the Yankee Boy Preservation Committee, the Uncompahgre Riverway trail system, and the City of Ouray's river restoration project.

The Natural Heritage of the Uncompahgre Basin

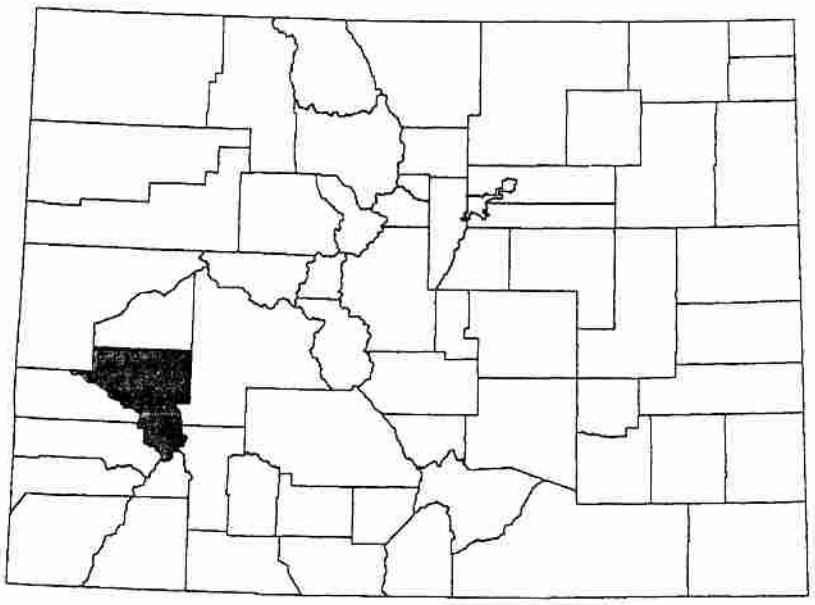
Physical Characteristics

Location:

The Uncompahgre Basin is an intermountain valley that lies along the western flank of the Rocky Mountains, and includes those parts of Montrose and Ouray counties drained by the Uncompahgre and Gunnison rivers and their tributaries (Figure 1.). It is located in the Colorado Plateaus Province, Canyonlands section, of Bailey's Ecoregions, and in the Southern Rocky Mountains Province (Bailey 1994). It encompasses most of the eastern part of Montrose County, and all of Ouray County, in southwestern Colorado. Major population centers of eastern Montrose and Ouray counties are, from north to south, Olathe, Montrose, Colona, Ridgway, and Ouray.

Land ownership in the Uncompahgre Valley follows the general pattern of private lands concentrated in the valleys, mid elevation rangelands predominantly managed by the Bureau of Land Management (BLM), and higher elevation forests and alpine areas managed by the Uncompahgre National Forest.

Figure 1. Eastern Montrose and Ouray counties



Major Landforms:

The Uncompahgre River flows in northwesterly direction, from its source in the San Juan Mountains to its confluence with the Gunnison River at Delta, Colorado. The Uncompahgre Basin rises east and west from the Uncompahgre River and south to the San Juan Mountains. Elevations in the study area extend from approximately 5,200 feet at the Uncompahgre River at the Delta County line, to 14,150 feet at the summit of Mount Sneffels, a range of 8,950 feet.

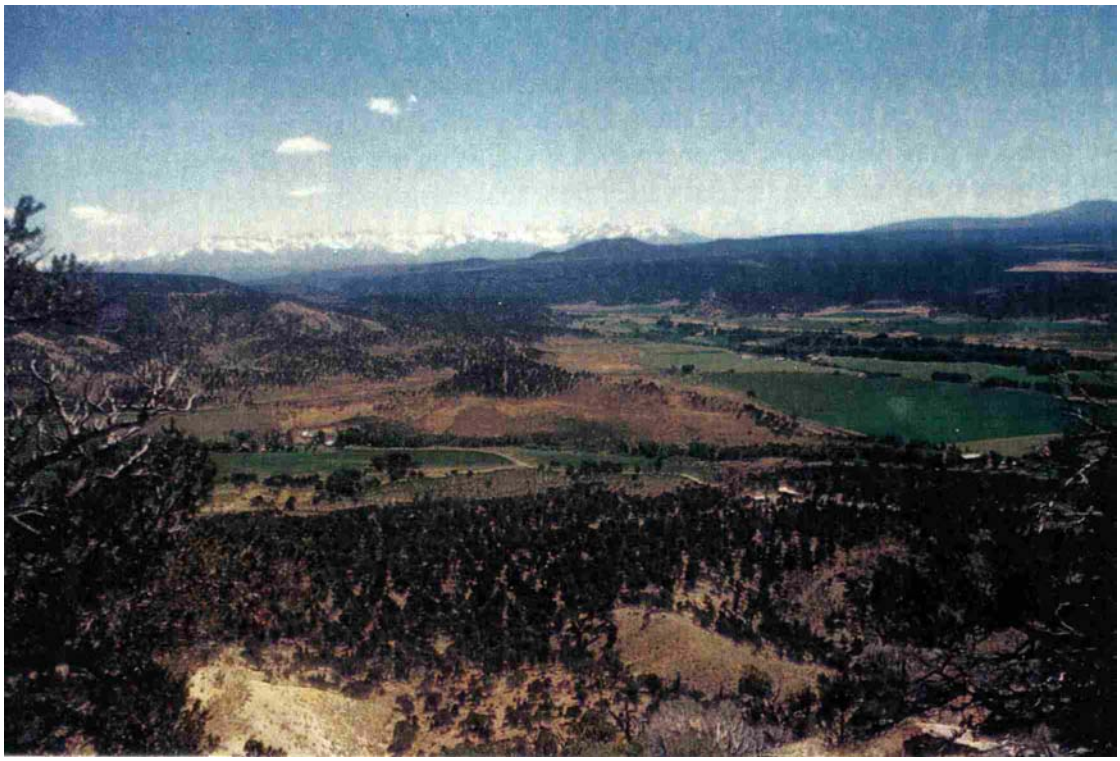


Figure 2. The Uncompahgre Valley at Colona, showing irrigated valley bottom, adobe hills, pinyon and juniper foothills, the Uncompahgre Plateau (top right) and the San Juan Mountains (top left).

Major landforms in the region include the Uncompahgre River Valley, the Uncompahgre Plateau to the west, the San Juan Mountains to the south and southeast, and the Gunnison uplift with its adobe foothills on the east. Although not part of the Uncompahgre Basin, the eastern part of Montrose County, which falls in the Gunnison River drainage, and includes the Black Canyon of the Gunnison, was also included in the study area.

The Uncompahgre River begins in the high San Juan Mountains at Alaska Basin, in San Juan County, and flows northwest to join the Gunnison River at Delta, Colorado. The Ouray-San Juan County boundary reflects the drainage of its first major tributary, Red Mountain Creek, which flows north from Red Mountain Pass and joins the Uncompahgre River at the head of the Uncompahgre Gorge. Other major tributaries join the Uncompahgre River as it flows northward. Canyon Creek drains a large area of the San Juan Mountains west of Red Mountain Creek and meets the Uncompahgre at Box Canyon in Ouray. Dallas Creek contributes water from the area west of Ridgway, while Cow Creek comes in from the east downstream from the Ridgway Reservoir. Dry Creek adds its water just south of the Delta County line. Roubideau Creek and Escalante Creek drain a large part of the Uncompahgre Plateau, and flow into the Gunnison River north of the Uncompahgre confluence. North of Colona, a complex system of water diversions and canals prevents much of the tributary water from flowing directly into the Uncompahgre River.

The Uncompahgre Valley above Ridgway was glaciated during the Pleistocene Period, which ended between 8,000 and 10,000 years ago. This is revealed in the U-shape typical of glacier carved valleys. Terminal moraines of the glacier are visible today north of Ridgway. When the glaciers melted, the river swelled to many times its present size. Sediments of gravel and cobblestones were deposited on the valley floor, filling in the U-shaped bottom and creating the flat valley floor that exists today between Ouray and Ridgway. South of Ridgway, the large volume of water created the wide floodplain that continues the length of the river.

Today, river flows are uncontrolled above Ridgway, and there is a high runoff from melting snow in the spring. Flood control is still a local problem. North of Ridgway, the Ridgway dam was constructed to provide late season irrigation water to the Uncompahgre Valley. Downstream from the dam, in Montrose County, flows are regulated, and the river no longer floods. Most of the valley in Montrose County is irrigated (Figure 2).

Soils of the valley range widely in age from recent alluvial deposits along stream flood plains to the well-weathered soils of higher terraces and benches. Flood plain soils of the lower Uncompahgre River are largely alkaline deposits over a relatively high ground water table. The alluvial deposits contain relatively coarse, unconsolidated and stratified soils of poorly graded, well-sorted sand and gravel derived from igneous and sedimentary rock formations. More developed soils range in texture from silty clay loam to very fine sandy loam (USDA 1967).

The Uncompahgre River has felt the impacts of mining at its headwaters, gravel extraction, water diversions, conversion of flood plain for agriculture, road building, channelization, and other human activities. The natural hydrology of the river has been severely altered, resulting in reduction of riparian vegetation and poor water quality. The river and associated wetlands are discussed further in Volume II of this report (Stephens and Culver1999).

Adobe foothills

On the east side of the valley, unirrigated lands include a large area of adobe foothills, or "badlands", of eroded Mancos shale (Figure 3). This landform extends from Delta County, through Montrose County, and into Ouray County. The shale was formed during the Cretaceous Period, from silt deposits in the shallow inland sea that once covered much of the Intermountain West. Soils in the adobes tend to be highly alkaline, with high levels of carbonate, gypsum, sodium, potassium, magnesium, and calcium, and very low levels of organic matter and plant nutrients. Their fine texture prevents deep infiltration of water, resulting in high surface runoff and erosion. Wetting causes the soils on the surface to swell, and drying to shrink, creating a harsh environment for plants. The combination of high erosion and harsh environment result in very sparse vegetation.

Uncompahgre Plateau

The Uncompahgre Plateau, on the west side of the Uncompahgre Basin, is the remnant of an ancient highland which was first upifted 300 million years ago, along with the ancestral Rockies (Figure 4). Since that time, it has been eroded and uplifted several times, most recently during the Laramide Orogeny, about 70 million years ago.

Figure 3. Adobe foothills of Mancos shale northeast of Montrose, from Bostwick Park.

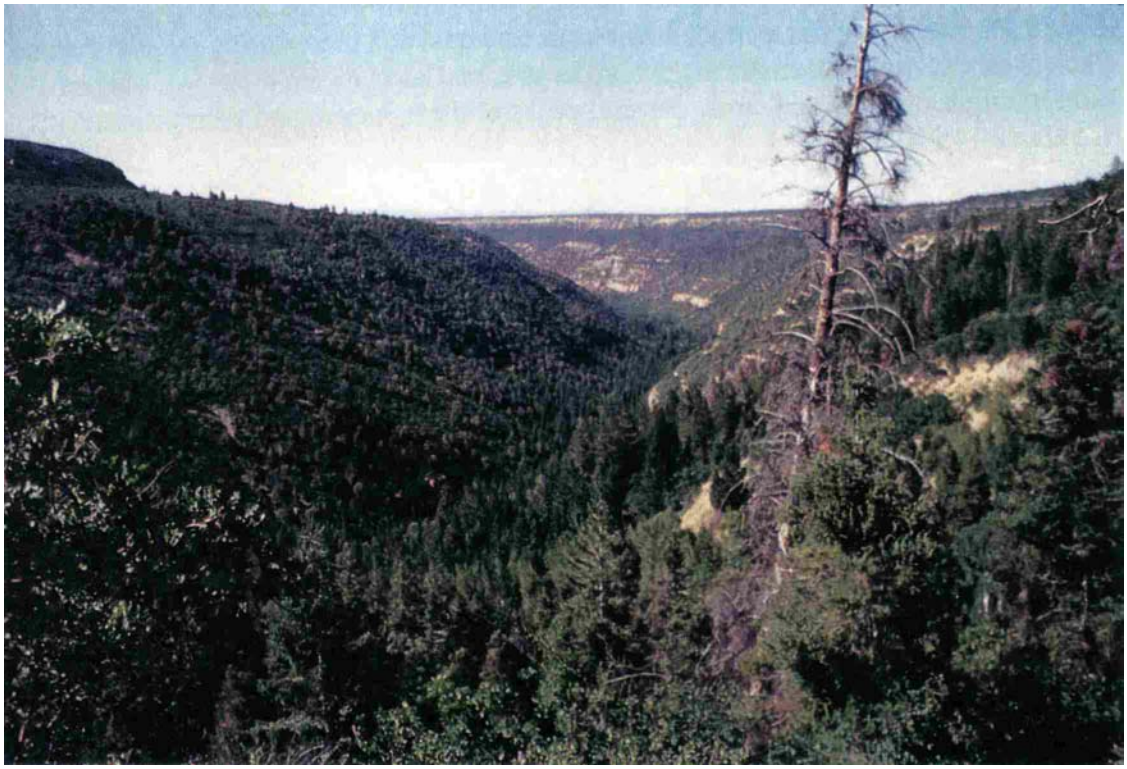


Figure 4. The Uncompahgre Plateau, at the headwaters of Roubideau Creek.

The ninety-mile long plateau consists of colorful Cretaceous, Jurassic and Triassic sandstones overlying Precambrian rock. The uplifting of the plateau created a series of parallel faults that eroded through the sandstone layers and formed northeast trending canyons on east side of the Plateau. Mancos shale, which would normally overlie the Dakota sandstone, was either eroded or never deposited. Formations that can be observed in canyons such as Escalante and Roubideau include the dark red Chinle Formation, the vertical cliffs of the Wingate, the smooth pink Entrada, and the multi-colored Morrison formations. A resistant layer of Dakota sandstone caps the Plateau. Soils on the plateau tend to be shallow and well drained. A special characteristic of the soils of the semi-desert is the presence of cryptobiotic crusts, most evident in undisturbed soils west of the Uncompahgre River. This living soil, containing mosses, lichens, algae and bacteria, is important for stabilizing the soil and adding to the long-term stability of desert grasslands (USDI 1989a).

San Juan Mountains

The San Juan Mountains are the largest group of mountains in Colorado. They are composed of very ancient igneous rocks overlain by volcanic rock formed during the Tertiary Period, beginning about 72 million years ago. Both intrusive and extrusive igneous activity continued, becoming violent about 30 to 35 million years ago. During their explosive period, significant deposits containing gold, silver, lead, and other metals were concentrated in veins of intrusive igneous rock. Oxidized iron bearing deposits exposed at the surface lend the mountains their red, yellow-orange and brown hues (Figure 5). Following this period, erosion cut canyons, and then, during the Pleistocene, glaciers carved the spectacular rugged landscapes that can be seen today—U shaped valleys, cirques, horns, and tarns. Several peaks of these rugged and scenic mountains rise above 14,000 feet.

Gunnison Uplift and Cimarron Ridge Uplands

The eastern part of Montrose County includes land within the Gunnison River drainage, and a section of the Gunnison River itself. Here, we followed the political boundaries and included it in the study area, because many land use decisions are made at the county level. East of the Uncompahgre Valley in Montrose County, the highlands are part of the Gunnison Uplift, which occurred in the late Tertiary Period. The Gunnison River has cut a deep canyon through the uplifted Precambrian rock at the Black Canyon. The dark colored Black Canyon schist forms spectacular vertical cliffs (Figure 6). The study area also includes one of the Gunnison's major tributaries, the Cimarron River.

Uplands to the east of the Uncompahgre Valley in Ouray County are mostly of younger volcanic origin, with loosely consolidated landslide and glacial alluvial deposits, resting precariously upon the Mancos shale (Stephens and Culver 1999). The gently westward dipping Mancos shale is made up of layer upon layer of flat plate-like strata, which are relatively impermeable to the vertical movement of water. These layers form a slippery surface on which the overlying volcanic and alluvial deposits frequently slide and slump, especially when the contact layer is saturated with water.

Figure 5. The San Juan Mountains, Red Mountain Number One.

Figure 6. Black Canyon of the Gunnison.

Climate:

The climate of the Uncompahgre Basin varies with elevation. Below 7000 feet, it is continental and semi-arid. The area enjoys abundant sunshine, with an average of 205 sunny days, and a low relative humidity of 27%, resulting in high evaporation. At an elevation of 5,830 feet, the mean annual precipitation for Montrose is 9 inches, about half of which is in the form of winter snow. At approximately 7,000 feet, there begins a significant increase in precipitation, effective moisture, and the length of time snowfall will remain on the ground before melting. Although accumulation is highly variable from year to year, the San Juan Mountains can accumulate a deep seasonal snowpack. Seasonal temperatures vary greatly from an average low temperature in winter of 22.2 degrees F., to an average high temperature of 94.5 degrees in summer.

Vegetation:

With an elevational gradient of 8,950 feet, there is a great variety of vegetation in the Uncompahgre Basin. Vegetation zones range from desert shrub communities at the lowest elevations, to alpine tundra. Traveling elevationally from Olathe to Red Mountain Pass can be compared to traveling latitudinally from Colorado to northern Canada.

Vegetation in eastern Montrose County and Ouray County can be classified into seven broad types, each containing several plant associations. These types more or less correspond to elevation. From lowest to highest, they are:

- Riparian zone of the Uncompahgre River
- Low elevation shrublands of salt desert shrubs or sagebrush
- Pinyon and juniper woodlands
- Gambel's oak-Mountain shrublands
- Mixed conifer and aspen forests
- Engelmann spruce-subalpine fir forests
- Alpine

The boundary between these vegetation zones is usually not distinct, and represents an ecotonal area. Species characteristic of each zone can often be found in adjacent zones. Within each of the upland zones, the addition of water (streams, rivers, or springs) creates additional vegetation types such as riparian corridors, marshes and hanging gardens.

In order to fully preserve the biological diversity of the basin, representatives of each of these unique assemblages of living things should be protected. Often, rare species are indicators of very specific habitats. It is also important to conserve representatives of the common plant communities.

The Colorado Natural Heritage Program keeps records of native plant communities which represent recurring patterns on the landscape, including those that are common, rare, or about which too little information is known to assess their rarity. These communities are often identified by two-part names, based on the dominant plant species in each of two layers, (i.e., the tree, shrub or grass layer). An example is the cold desert shrublands community consisting of shadscale and Salina wildrye (*Atriplex confertifolia/Leymus salinus*), which names the dominant shrub (shadscale) and dominant grass (Salina wildrye) of the community. A list of the plant communities documented in the Uncompahgre Basin is given in Table 1.

Common names of plants and animals will be used throughout the text of this report. Names used are those known to the authors, or used locally. When no common name is known, we have used the common names given in the USDA PLANTS database, accessible on the internet (http://plants.usda.gov/plantproj/plants/project_databases.html). A list of common names with their corresponding scientific names is given in Appendix III.

Classification of vegetation enables ecologists to study and understand the combination of environmental factors that are associated with a particular community. Using this knowledge, CNHP assigns a global and state rank to each community, based on its degree of imperilment (Appendix II). Inventories such as this one are useful in revising CNHP's assessment of the rarity of particular communities.

Table 1. Plant communities of the Uncompahgre Basin

Common Name	Scientific Name	Global Rank	State Rank
Alkali mat saltbush shrublands	*Atriplex corrugata*/shale barren	G5	S2?
Aspen forests (aspen [ponderosa pine]/Parry's oatgrass)	*Populus tremuloides (Pinus ponderosa)/Danthonia parryi*	GU	S3S4
Aspen forests (aspen/snowbrush)	*Populus tremuloides/Ceanothus velutinus*	G2G3	S2S3
Aspen forests (aspen/Thurber fescue)	*Populus tremuloides/Festuca thurberi*	G4	S4
Aspen wetland forests (aspen/bracken fern)	*Populus tremuloides/Pteridium aquilinum*	G4	S3S4
Beaked sedge montane wet meadows	*Carex utriculata*	G5	S4
Cold desert shrublands (shadscale/galleta)	*Atriplex confertifolia/Hilaria jamesii*	G3	S2
Cold desert shrublands (shadscale/Salina wildrye)	*Atriplex confertifolia/Leymus salinus*	G3G5	S3
Coyote willow/barren soil	*Salix exigua*/bare ground	G5	S5
Coyote willow/mesic graminoid	*Salix exigua*/mesic graminoid	G5	S5
Emergent wetlands (beaked spikerush)	*Eleocharis rostellata*	G2G3	S2S3
Emergent wetlands (common spikerush)	*Eleocharis palustris*	G5	S4
Foothills Ponderosa pine scrub woodlands (ponderosa pine/Gambel's oak)	*Pinus ponderosa/Quercus gambelii*	G5	S4
Foothills riparian shrublands (river birch/mesic forb)	*Betula occidentalis*/mesic forb	G3	S2
Hanging gardens (Mancos columbine/Eastwood's monkeyflower)	*Aquilegia micrantha-Mimulus eastwoodiae*	G2G3	S2S3
Lower montane forests (Douglas fir/elk sedge)	*Pseudotsuga menziesii/Carex geyeri*	G5Q	S3
Lower montane forests (Douglas fir/mountain lover)	*Pseudotsuga menziesii/Paxistima myrsinites*	G2G3	S2S3
Lower montane forests (Douglas fir/Rocky Mountain maple)	*Pseudotsuga menziesii/Acer glabrum*	G4	S1
Lower montane riparian forests (Douglas fir/red osier dogwood)	*Pseudotsuga menziesii/Cornus sericea*	G4	S2
Mesic western slope pinyon-juniper woodlands (pinyon pine/mountain mahogany)	*Pinus edulis/Cercocarpus montanus*	G5	S4
Mixed montane forests (white fir/Oregon grape)	*Abies concolor/Mahonia repens*	G5	S4
Mixed mountain shrublands (Gambel's oak/Agassiz bluegrass)	*Quercus gambelii/Poa agassizensis*	GU	SU
Mixed mountain shrublands (Gambel's oak/elk sedge)	*Quercus gambelii/Cercocarpus montanus/Carex geyeri*	G3	S3
Montane aspen forests (aspen/tall forbs)	*Populus tremuloides/t*all forbs	G5	S5

Common Name	Scientific Name	Global Rank	State Rank
Montane floating/ submergent palustrine wetlands (pondweed)	*Potamogeton foliosus*	G5	S3
Montane riparian forests (narrowleaf cottonwood/Rocky Mountain juniper)	*Populus angustifolia-Juniperus scopulorum*	G2G3	S2
Montane riparian forests (narrowleaf cottonwood-blue spruce/thinleaf alder)	*Populus angustifolia-Picea pungens/Alnus incana*	G3	S3
Montane riparian forests (aspen/Rocky Mountain maple)	*Populus tremuloides/Acer glabrum*	G2	S1S2
Montane riparian forests (blue spruce/red osier dogwood)	*Picea pungens/Cornus sericea*	G4	S2
Montane riparian forests (Engelmann spruce/cow parsnip)	*Picea engelmannii/Heracleum lanatum*	G3?	S2
Montane riparian forests (narrowleaf cottonwood/red osier dogwood)	*Populus angustifolia/Cornus sericea*	G4	S3
Montane riparian forests (narrowleaf cottonwood/river hawthorn)	*Populus angustifolia/Crataegus rivularis*	G2?	S2?
Montane riparian forests (narrowleaf cottonwood/thinleaf alder)	*Populus angustifolia/Alnus incana*	G3?	S3
Montane riparian forests (narrowleaf cottonwood-blue spruce/thinleaf alder)	*Populus angustifolia-Picea pungens/Alnus incana*	G3	S3
Montane riparian forests (subalpine fir-Engelmann spruce/bluebells)	*Abies lasiocarpa-Picea engelmannii/Mertensia ciliata*	G5	S5
Montane riparian forests (subalpine fir-Engelmann spruce/Drummond's willow)	*Abies lasiocarpa-Picea engelmannii/Salix drummondiana*	G5	S4
Montane riparian forests (subalpine fir-Engelmann spruce/thinleaf alder)	*Abies lasiocarpa-Picea engelmannii/Alnus incana*	G5	S5
Montane riparian forests (subalpine fir-Engelmann spruce/twinberry honeysuckle)	*Abies lasiocarpa-Picea engelmannii-Populus angustifolia/Lonicera involucrata*	G4	S3
Montane riparian willow carr (Rocky Mountain willow/mesic forb)	*Salix monticola/mesic forb*	G3	S3
Montane shrublands (manzanita)	*Arctostaphylos patula*	G2	S2
Montane wet meadows (beaked sedge perched wetland)	*Carex utriculata* perched wetland	G3	S3
Montane wet meadows (water sedge-beaked sedge perched wetland)	*Carex aquatilis-Carex utriculata* perched wetland	G3	S3
Montane wet meadows (water smartweed)	*Polygonum amphibium*	G5	S3
Montane willow carr (Drummond's willow/beaked sedge)	*Salix drummondiana/Carex utriculata*	GU	S3
Montane willow carr (Drummond's willow/Canadian reedgrass)	*Salix drummondiana/Calamagrostis canadensis*	G3	S3
Narrow-leaf cattail marsh	*Typha latifolia*	G5	S3
Narrowleaf cottonwood riparian forests (narrowleaf cottonwood/strapleaf willow-silver buffaloberry)	*Populus angustifolia/Salix eriocephala* var. *ligulifolia-Shepherdia argentea*	G1	S1
Narrowleaf cottonwood/coyote willow riparian forests	*Populus angustifolia/Salix exigua*	G4	S4
Narrowleaf cottonwood/Skunkbrush riparian forests	*Populus angustifolia/Rhus trilobata*	G3	S3
Persistent aspen forests (aspen/snowberry/elk sedge)	*Populus tremuloides/ Symphoricarpos oreophilus/Carex geyeri*	G5	S5

Common Name	Scientific Name	Global Rank	State Rank
Sagebrush bottomlands shrublands (mountain big sagebrush/western wheatgrass)	*Artemisia tridentata ssp. vaseyana/Pascopyrum smithii*	G2G3	S2S3
Sagebrush shrublands (silver sagebrush/Thurber fescue)	*Artemisia cana/Festuca thurberi*	G2G3	S2S3
Saline bottomland shrublands (greasewood/seablight)	*Sarcobatus vermiculatus/Suaeda torreyana*	G2G3	S2S3
Salt meadows (inland saltgrass)	*Distichlis spicata*	G5	S3
Subalpine riparian shrubland (bog birch)	*Betula glandulosa*/mesic forb-mesic graminoid	G3G4	S3
Thinleaf alder/mesic forb riparian shrublands	*Alnus incana*/mesic forb	G3G4Q	S3
Western slope marshes (giant reed)	*Phragmites australis*	G4	S3
Western slope sagebrush shrublands (silver sagebrush/Thurber fescue)	*Artemisia cana/Festuca thurberi*	G2G3	S2S3
Western slope salt meadows (alkali cordgrass)	*Spartina gracilis*	G4?	S2
Xeric pinyon-juniper woodlands (Utah juniper/black sagebrush/rock woodland)	*Juniperus osteosperma/Artemisia nova*/Rock woodland	G5	S1?
Xeric pinyon-juniper woodlands (Utah juniper/needle and thread)	*Juniperus osteosperma/Stipa comata*	G2	S2?

Uncompahgre River Riparian Zone

Riparian zones and wetlands of the Uncompahgre River comprise several distinct plant communities. At low elevations in Montrose County, native vegetation of the riparian zone is dominated by narrowleaf cottonwood with an understory of coyote willow or skunkbrush. Riparian plant communities that occur along the Uncompahgre River at lower elevations and are tracked by the Colorado Natural Heritage Program include: Narrowleaf cottonwood/skunkbrush riparian forests, ranked G3S3; narrowleaf cottonwood/coyote willow riparian forests, G4S4; and coyote willow/mesic graminoid, G5S5. Wetlands with standing water or a high water table are characterized by cattails, giant reed, reed canary grass, and a variety of sedges and rushes. Tracked wetland communities are narrowleaf cattail marsh, G5S3; western slope salt meadows, G4?S2, and western slope marshes, G4S3.

Farther upstream, between Colona and Ridgway, narrowleaf cottonwood still dominates, but silver buffaloberry, Rocky Mountain juniper, western river birch, and red-osier dogwood are increasingly common understory species (Figure 7). Tracked communities here include montane riparian forests dominated by narrowleaf cottonwood with understories of: strapleaf willow and/or silver buffaloberry, G1S1; Rocky Mountain juniper, G2G3S2; thinleaf alder, G3S3; and red-osier dogwood, G4S3.

As elevation increases toward Ouray, conifers, including blue spruce, Douglas fir and white fir are added. Deciduous trees and shrubs such as thinleaf alder, aspen, and Rocky Mountain and Drummond willows are common riparian species here. Tracked communities include montane riparian forests with narrowleaf cottonwood, blue spruce

and thinleaf alder, G3?S3; blue spruce and red-osier dogwood, G4S2; lower montane riparian forests with Douglas fir with red-osier dogwood, G4S2; and montane willow carrs with Drummond's willow and beaked sedge, GUS3 or Canadian reedgrass, G3S3.

Higher yet, subalpine fir and Engelmann spruce take over as the dominant species. Tracked communities include montane riparian forests of subalpine fir and Engelmann spruce, with an understory of thinleaf alder, G5S5; bluebells, G5S5; Drummond's willow, G5S4; cow parsnip, G3?S2. Shrubland communities in this area include thinleaf alder/mesic forb, G3G4QS3; and Drummond's willow montane willow carrs, GUS3.

At the headwaters of the river, trees become less frequent, and finally disappear altogether, replaced by low growing willows or bog birch, and then alpine meadows and wetlands. At Ironton Park, along Red Mountain Creek, a major tributary of the Uncompahgre, there is a large colony of bog birch, GUS2S3.

The condition of riparian vegetation is generally poor along the river. In many places, cottonwoods have been cut to provide more cropland or pasture. Many of the remaining cottonwood stands have degraded understories, and are not regenerating enough to sustain the woodlands. Understories commonly have been grazed, and native vegetation replaced by exotic shrubs such as tamarisk and Russian olive, or introduced grasses such as reed canary grass, Kentucky bluegrass, timothy, meadow fescue, red top, and smooth brome. Noxious weeds like Canada thistle, Russian knapweed, and burdock are common.

Channelization of the river and lowering of the water table have prohibited regeneration of cottonwoods along much of the Uncompahgre. Cottonwood regeneration is primarily accomplished by seedlings that germinate on sandbars formed by flooding events. Rather than regenerating in place, the communities move up and down a river reach (Colorado Natural Heritage Program 1998). Gradually, sediments accumulate around the young trees and the sandbar rises, so that mature trees are found on terraces above the flood zone of the river. A healthy riparian zone will contain cottonwood communities in all stages of growth. Although there are stands of mature cottonwoods that appear healthy on terraces above the Uncompahgre, failure to reproduce may mean that within fifty years, there will be few remaining.

Silver buffaloberry (Figure 7) can be viewed as an indicator species on the Uncompahgre River. It is a native, obligate riparian species that has declined substantially in western Colorado due to over-utilization by livestock and alterations in river flow (CNHP 1998). The significance of the plant community containing silver buffaloberry is reflected in the high rank (G1S1) of the narrowleaf cottonwood/silver buffaloberry plant community. It is known only from western Colorado, and no excellent occurrences of the community are known. A closely related, but exotic species, Russian olive, has replaced the buffaloberry, or sometimes grows intermixed with it in Montrose County.

Riparian zones are extremely important areas for wildlife. It has been estimated that 75% to 80% of wildlife species in the area are dependent on riparian zones for at least part of their lives. Mature cottonwoods provide nesting sites for great blue herons, golden eagles, and neotropical migrant birds. They are used as roosting sites by bald eagles during the winter. Dead trees provide nesting cavities for numerous birds. Most of the waterfowl of the area are concentrated in wetlands along the Uncompahgre River.

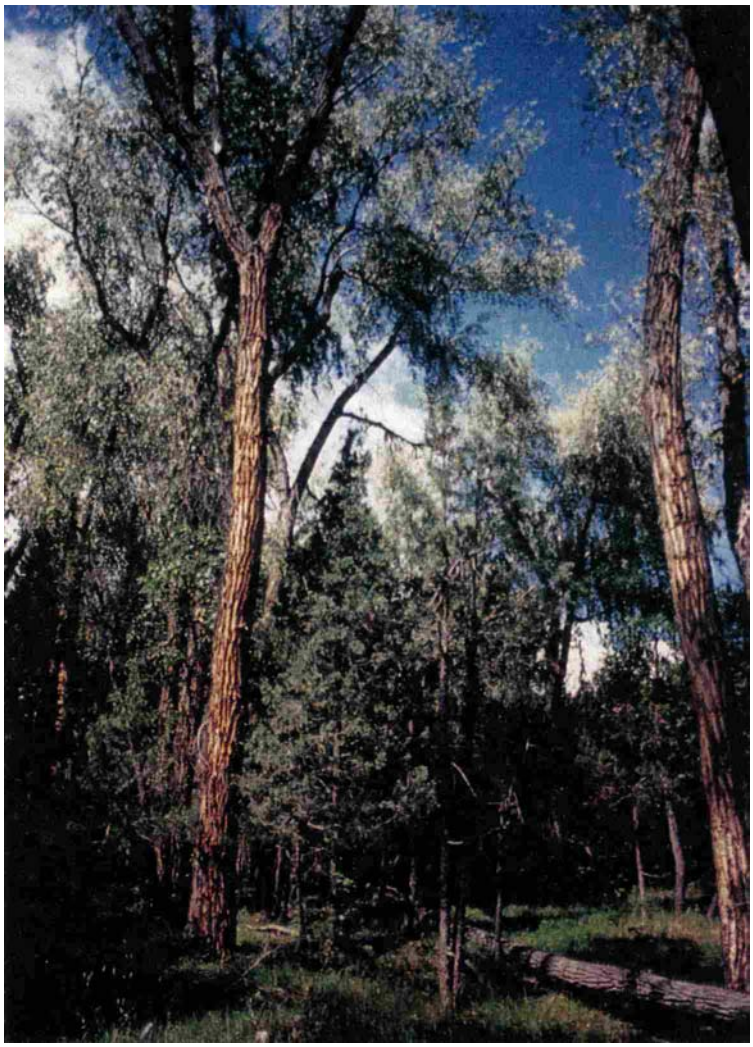


Figure 7. Montane riparian forest with narrowleaf cottonwood and Rocky Mountain juniper.

Figure 8. Silver buffaloberry (*Shepherdia argentea*), a native riparian shrub that has declined in the Uncompahgre River Basin.

The river is home to amphibians, including the northern leopard frog, which has declined throughout most of its range. Deer and elk, as well as smaller animals, use riparian areas daily, and concentrate there during the winter. A multi-layered tree canopy with a well-developed shrub layer and abundant native grasses and forbs provides for the needs of these wildlife. **The riparian zone of the Uncompahgre River should be a top priority for conservation and restoration efforts. In addition, planners should ensure that the riparian zone is well connected to upland areas, to allow for the vertical movement of wildlife between zones.**

Low Elevation Shrublands

Semi-desert shrublands are found at the lowest elevations in the basin, often on saline or alkaline soils derived from Mancos shale (Figure 9). This vegetation type includes a large portion of the private land in the Montrose area. It also represents over 30% of BLM lands. Shrubs of the goosefoot family (Chenopodiaceae) such as shadscale, mat saltbush, and greasewood, are the dominant life form. These plants are indicators of both climatically dry areas and physiologically dry soils. The soils have very low permeability, so that much of the precipitation that falls never reaches the depth necessary for the roots of trees and other plants common to more sandy soils. There is high runoff and erosion, often resulting in deep gullies.

Plants that can live in this harsh environment have adaptations that reduce water loss, such as narrow or inrolled leaves, or the ability to manage salt by extruding it through their leaves. Some of the plants that are able to survive in the adobes of the Uncompahgre basin are restricted to a very small geographic area, found only in this specific habitat, and in only two or three counties. The most imperiled plants of the county are found in this zone: the clay-loving wild buckwheat, Uinta Basin hookless cactus, Colorado desert-parsley, good-neighbor bladderpod, long-flowered cat's eye, and adobe beardtongue.

Within this zone are several characteristic, more or less distinct, plant associations, which can often be correlated with specific differences in soils, slope, aspect, and moisture (Singh and West 1971). Plant associations in the desert shrub area that are tracked by the Colorado Natural Heritage Program include cold desert shrublands with shadscale and galleta, G3S2; cold desert shrublands with shadscale and Salina wildrye, G3G5S3; alkali mat saltbush shrublands, G5S2? Saline bottomland shrublands with greasewood and seablight, G2G3S2S3; and salt meadows with inland saltgrass, G5 S3. Distribution of these associations on the landscape follow the general pattern of greasewood in the flat bottomlands, shadscale and mat saltbush on low hills, and Salina wildrye on steeper north facing slopes.

The shadscale/galleta community forms a matrix, within which patches of the other communities occur in suitable sites. Typical associated species in this community include snakeweed, low rabbitbrush, pricklypear cactus, budsage, spiny horsebrush, and winterfat.

Within the matrix of shadscale/galleta, the most xeric sites are occupied by mat saltbushes with barren soil between the shrubs (mat saltbush/shale barrens). Steep north and east facing slopes often have the plant association shadscale/Salina wildrye. Low-lying swales are characterized by greasewood/sea-blight, greasewood/saltgrass (saline

bottomland shrublands) and salt meadows. With increasing elevation, Indian rice grass and needle and thread grass increase, and continue into the pinyon-juniper zone above.

The natural riparian vegetation in this elevation zone consists of narrowleaf or plains cottonwood with a native shrub layer of skunkbrush or coyote willow. Plains cottonwood is found at lower elevations in Montrose County near the Delta County line. Wetlands are usually dominated by cattails, giant reeds, salt grass, spike rushes and bulrushes.

Threats to the desert shrub zone include fragmentation from agriculture and the development of private lands, and disturbances such as ATVs and grazing on public lands. Much of this habitat has been converted to irrigated cropland and residential development. Some of the most threatened microhabitats, such as the toe slopes of the hills, are also the most desirable routes for irrigation ditches and canals. When the landscape is cut into small isolated patches, the necessary exchange of genetic material to maintain healthy populations of native plants and animals may not occur.

Even in the remaining patches, the condition of this vegetation type is often poor. This is most noticeable in the absence of native perennial grasses. Weedy species such as cheatgrass, halogeton, Russian knapweed, and annual mustards have invaded much of this land, especially along roads and on level bottomlands. Steeper hills tend to be in better condition. Chances for recovery are best when native species are least depleted; the poorer the condition, the slower the recovery (Blaisdell and Holmgren 1984). Whenever good native grass communities are encountered, they should be valued and protected. They can supply the seed source, and the nucleus for the improvement of adjacent areas.

This zone, in our opinion, has historically been the least appreciated landscape in our area. At the same time, it is home to our rarest endemic plants, and deserves our protection. **Public education about its unique natural values may be an important prerequisite for protecting this area.**

The semi-desert shrub zone is represented in the PCAs recommended here by the Uncompahgre Badlands macrosite, and several smaller sites.

Sagebrush shrublands: On coarser and less saline soils of the foothills, the shrub-steppe vegetation is dominated by species of sagebrush.

Several shrubby species of sagebrush are found in the Uncompahgre Basin, each with its own ecological requirements. Big sagebrush occupies deep soils at lower elevations. It is a frequent component of a tall shrub community with greasewood, coyote willow, spearleaf and rubber rabbitbrushes, and fourwing saltbush. Mountain big sage tends to grow at slightly higher elevations with pinyon-juniper and mountain shrub communities. It is frequent on the slopes of the Uncompahgre Plateau. Typical native species associated with sagebrush here include rabbitbrush, snakeweed, winterfat, prickly pear cactus, western wheatgrass and several bunch grasses, including Indian rice grass, needle and thread, and Sandberg bluegrass. The most common exotic species is cheatgrass. Black sage and Bigelow's sage are found on sandy soils at the ecotone between Utah juniper/needle and thread grass and semi-desert shrub communities on the slopes of the Uncompahgre Plateau; and bud sage is a frequent member of the semi-desert shrub community on alkaline soils.

Much of the original sagebrush vegetation in the Uncompahgre Basin has been converted to agricultural and residential use. The remaining areas are therefore very valuable habitat. Heavy grazing pressure has resulted in the replacement of native grasses by cheatgrass and other exotic species in many areas. Undisturbed areas in this zone have intact soil crusts that help prevent invasion by exotic species.

Sagebrush areas have been identified by the CDOW as critical deer and elk winter habitat. Our most rare bird species, the Gunnison sage grouse, makes its home here. Other birds tracked by CNHP that occurred in sagebrush communities are the sage sparrow, gray vireo, black throated sparrow, and northern harrier. The white-tailed antelope squirrel was also found in sagebrush habitat.

Two rare plants, the good-neighbor bladderpod and the Rocky Mountain thistle, occur in this zone. The sagebrush bottomlands plant association, ranked G3 S1S2, is found on the Uncompahgre Plateau, in the Sims Mesa PCA.

Important sagebrush areas of the Uncompahgre Basin are found primarily on the east slope of the Uncompahgre Plateau. The eastern parts of Montrose and Ouray counties in the Gunnison drainage also have substantial sagebrush shrublands. Large expanses are found on Fruitland Mesa, the north rim of the Black Canyon, and the Cimarron State Wildlife Area. Sagebrush areas represented in PCAs include Rim Road, Cerro Summit, Red Canyon South, Cimaron SWA, and Sims Mesa.

Pinyon Juniper Woodlands

Pinyon-juniper woodlands are a major vegetation type in the Uncompahgre Basin, occupying large areas both east and west of the Uncompahgre River (Figure 10). Pinyon-juniper woodlands are found from 4,600 to 8,900 feet, with their highest development between 5,000 and 7,000 feet. At higher elevations they occur on south and west facing slopes.

The trees in this zone are typically short and widely spaced, with an understory ranging from almost barren to a diverse mixture of shrubs, forbs and grass. Soils are usually coarse, sandy, and shallow, with low fertility. With increased moisture the canopy can become more dense, with a resulting decrease in understory vegetation. The pinyon-juniper type is widespread throughout the western United States, with different species of pinyon pine and juniper in different areas. The species found in the Uncompahgre Basin are the edible, or Colorado pinyon (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*), with Rocky Mountain juniper (*Juniperus scopulorum*) occurring mostly in mesic sites. In most of the region pinyon pine and juniper are co-dominant. However, of the two tree species, pinyon is more tolerant of cold, and juniper more tolerant of drought (Mutel and Emerick 1992). Juniper therefore occurs at lower elevations, where it is often mixed with sagebrush and desert shrubs, while pinyon is found at the higher elevations, where it gradually gives way to Gambel's oak. Sites are usually warm and dry, with a mean annual temperature between 45^0 and 55^0 F., annual precipitation between 10 and 20 inches, and at least 80 frost free days (Mutel and Emerick 1992).

The shrub understory of the pinyon-juniper zone depends on site characteristics such as slope, aspect, and disturbance history. Shrubs may include saltbushes and other

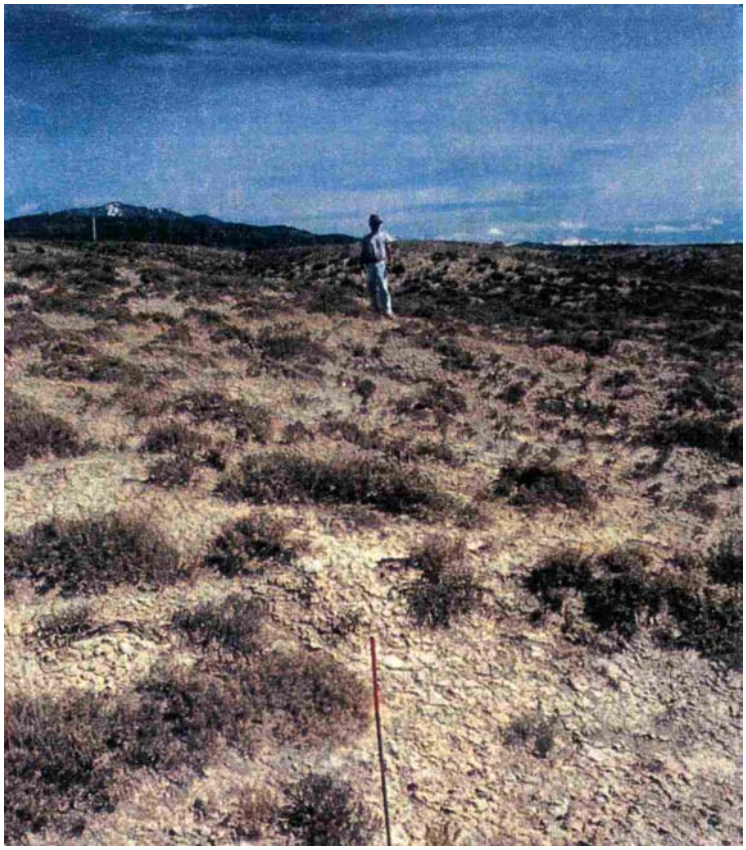


Figure 9. Salt desert shrublands in the Uncompahgre Badlands.

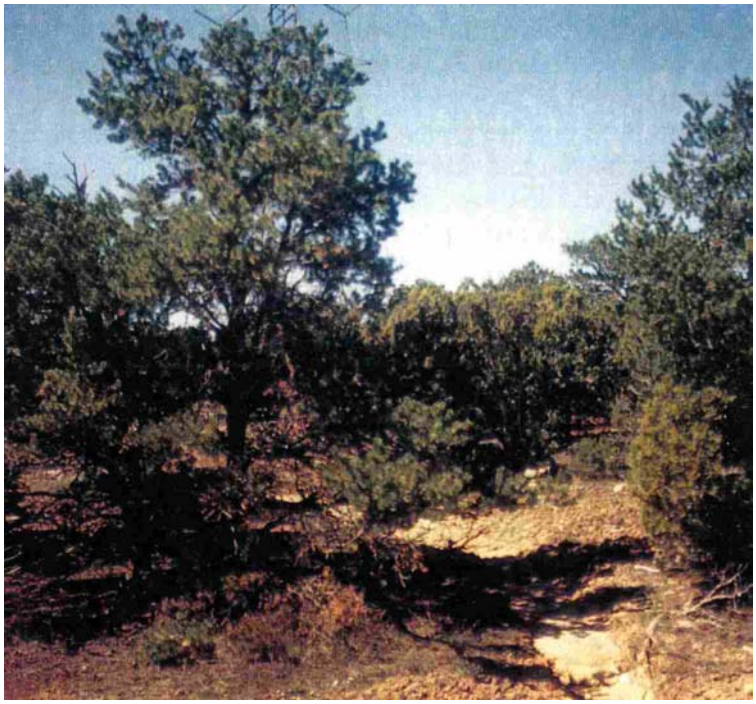


Figure 10. Pinyon pine-Utah juniper woodlands on the Uncompahgre Plateau.

species discussed above under the semi-desert shrub vegetation type at the lower elevations; and mountain mahogany, Gambel's oak, seviceberry, snowberry, and other shrubs discussed below under oak and mountain shrub vegetation types, at the higher elevations. The herbaceous understory is often sparse, especially where grazed by cattle. Typical native grasses are needle and thread, Indian rice grass, galleta, Sandburg bluegrass, and bottlebrush squirreltail. Cheatgrass is the most frequent non-native invader. Common forbs are hairy golden aster, twin bladderpod, roughseed cat's-eye, and scarlet globemallow.

Plant communities tracked by CNHP that we recorded in the pinyon-juniper zone of the Uncompahgre Basin are: xeric pinyon juniper woodlands with black sagebrush, G5S1?; xeric pinyon-juniper woodlands with needle and thread grass, G2S2?; and mesic western slope pinyon-juniper woodlands with mountain mahogany, G5S4. Five of our rare plant species, the long-flowered cats-eye, the good-neighbor bladderpod, Rocky Mountain thistle, Wetherill milkvetch, and the Grand Junction milkvetch, are found in the pinyon-juniper zone.

Pinyon-juniper woodlands are represented in the PCAs in Escalante Canyon, Roubideau Creek, Rim Road, Gunnison Gorge South Rim, Colona Mountain, Cimarron, Government Springs Road South, Temple Park, Bostwick Park, Beaton Creek East, Beaton Creek West, and Billy Creek.

Riparian zones in the pinyon and juniper zone are often dominated by narrowleaf cottonwood with an understory of Coyote willow or skunkbrush. An unusual community occurs within the pinyon-juniper zone in Escalante Canyon, where occasional seeps in sandstone canyon walls support unique hanging garden communities. Species like Eastwood's monkeyflower and Mancos columbine that occur nowhere else in the area can be found here. The giant helleborine orchid is also associated with this community. A year-round supply of water and sandy soil that allows deep root penetration maintain this assemblage of rare plants (CONPS 1997). This community is included in the Escalante Canyon PCA. Two other unusual wetland communities were documented in Escalante Canyon: a western slope salt meadow dominated by alkali cordgrass (G4S2), on soils that are white with leached salts; and an emergent wetland dominated by beaked spikerush (G2G3S2S3).

Gambel's Oak-Mountain Shrublands

Gambel's oak and mountain shrub communities extend into the pinyon-juniper zone below and the mixed conifer/aspen zone above. They occur on hillsides, upland benches, and well-drained lowlands, with fifteen to twenty-seven inches of precipitation per year (Johnston 1987). This type is most common between 7,000 and 9,000 feet elevation.

In the Uncompahgre Basin, lower elevations of this zone tend to contain a highly diverse mixture of shrubs, including mountain mahogany, Utah serviceberry, snowberry, sagebrush, rabbitbrush, squaw apple, Rocky Mountain juniper, and chokecherry. Beneath the shrubs, common grasses (and grasslike plants) are western wheatgrass, Indian rice grass, bottlebrush squirreltail, elk sedge, and cheatgrass. Common herbaceous dicots (forbs) include hairy golden aster, Tracy's thistle, rock goldenrod, goldeneye daisy, and skyrocket gilia.

At upper elevations, Gambel's oak is the dominant species in this zone. Oak is a clonal species, and may live to be very old. Stands in Utah exceed 4000 years of age (Mutel and Emerick 1992). Gambel's oak is an important invader after fire, and can resprout quickly. It has been noted that many of the sites now dominated by Gambel's oak may once have been forested with Ponderosa pine.

Major stands of oak are found on the Uncompahgre Plateau and the west facing slopes of Cimarron Ridge east of Ridgway. They are also common in the Gunnison River drainage around the Black Canyon. Gambel's oak plant associations tracked by CNHP that were identified in the Uncompahgre Basin were mixed mountain shrublands with mountain mahogany and elk sedge (*Quercus gambelii-Cercocarpus montanus/Carex geyeri*), G3S3; and with the bluegrass Poa agassizensis (*Quercus gambelii/Poa agassizensis*), GUSU. The latter is interesting in that it includes a grass that is not universally acknowledged to exist. Agassiz' bluegrass represents the supposed native counterpart of Kentucky bluegrass. If this does, indeed, constitute a distinct native species, then some sites that have been deemed to be of low quality because of the presence of the exotic Kentucky bluegrass may be more pristine than has been thought. The native species is differentiated from the exotic by having narrower leaves, a more bunchy growth, two rather than three florets in most spikelets, and inhabiting drier sites (Weber and Wittman 1996). We found it growing most often under Gambel's oak. Further study of this taxonomic question is warranted.

A different montane shruband community, dominated by manzanita (*Arctostaphylos patula*), G2S2, was found in the western part of the study area, in the Love Mesa PCA. It occurred on a south-facing slope above Bear Pen Gulch. Associated species included aspen, Engelmann spruce, Fendler's ceanothus, parrots beak, New Mexican groundsel, and Rocky Mountain juniper.

The Gambel's oak/mountain shrub zone is represented in the Morrow Point Reservoir, Love Mesa, and Dallas Creek Confluence PCAs.

Mixed Conifer/Aspen Forests

The montane zone, mostly between 8000 and 9500 feet, is forested with a mixture of coniferous trees and aspen. Large areas in this zone occur on the mountains on three sides of the Uncompahgre Basin. Ponderosa pine is most common on drier sites, while Douglas fir occurs in more mesic sites. Large areas dominated by aspen are interspersed with the conifers, and extend upward into the subalpine spruce-fir forests, as well as downslope into mountain shrub and even pinyon juniper communities in mesic draws and riparian zones. The forested areas often have mountain shrubs such as Gambel's oak, serviceberry, snowberry, and chokecherry in their understory. Absence of the trees would result in the mountain shrub communities described above.

Ponderosa pine is most common on the south end of the Uncompahgre Plateau (Log Hill), and in the foothills of the San Juans south of Ridgway, on Miller Mesa. Most of the Ponderosa pine in the area was logged in the 1950's, and existing trees are second growth. Douglas fir was found to be most abundant southeast of Ridgway (Cow Creek, Cutler Creek, and Dexter Creek) and around Ouray.

Near Ouray, we found two additional tree species, white fir and white pine, which are unusual for our area. Both species are more common in Durango and south into New Mexico. The populations in Ouray County represent their northern limits in western Colorado.

Coniferous forest communities documented in the Uncompahgre Basin and tracked by CNHP are: mixed montane forests with white fir and Oregon grape (*Abies concolor/Mahonia repens)*, G5S4; foothills ponderosa pine scrub woodlands with ponderosa pine and Gambel's oak (*Pinus ponderosa/Quercus gambelii)*, G5S4; lower montane forests with Douglas fir and Rocky Mountain maple (*Pseudotsuga menziesii/Acer glabrum)*, G4S1; and Douglas fir with elk sedge (*Pseudotsuga menziesii/Carex geyeri)*, G5QS3.

Rare plants in this zone included wild hollyhock, Pacific monardella, and pictureleaf wintergreen (now watchlisted). Rare animal species in this zone included the black swift, peregrine falcon, and Colorado River cutthroat trout.

PCAs in the mixed conifer forest are Cow Creek, Dexter Creek, Cutler Creek, Ouray Canyons, Nate Creek, Crystal Creek, Canyon Creek at Ouray, Red Creek, Buckhorn Lakes, Lou Creek, Pryor Creek, and upper Roubideau Creek.

Aspen, like Gambel's oak, is clonal. Although individual stems live for about 100 to 150 years, their root systems can live for 1000 or more years (Peet 1988). They are able to thrive in sunny places with poor soils. They are thus adapted for colonizing disturbed or burned sites. Another tree that is a major colonizer after fire in Colorado, lodgepole pine (*Pinus contorta*), is conspicuously absent from the Uncompahgre Basin, except for one stand that was planted on the Uncompahgre Plateau. Aspen is especially plentiful in sites once heavily disturbed by fire or logging. After disturbance, colonization can be completed within five to ten years. Maximum density is reached in 25 to 50 years.

Once established, aspen forests are the most species rich of all the vegetation types. This may be due to the increased fertility and moisture holding capacity of the soil with the addition of the deciduous leaf litter (Peet 1988). Aspen leaves decompose readily, since they are low in the tannins and resins that retard decomposition in conifer

needles (Mutel and Emerick 1992). Common species found in aspen forests include Canada wildrye, Thurber fescue, elk sedge, tall larkspur, aspen daisy, tall fleabane, cow parsnip, meadowrue, little sunflower, nettleleaf giant hyssop, chokecherry, serviceberry, snowberry, wild rose, Richardson's geranium, and tall ragwort.

Several aspen plant associations tracked by CNHP were documented in the Uncompahgre Basin. They include: montane riparian forests with aspen and Rocky Mountain maple (*Populus tremuloides/Acer glabrum)*, G2 S1S2; aspen forests with snowbrush ceanothus (*Populus tremuloides/Ceanothus velutinus)*, G2G3 S2S3; aspen forests with Parry's oatgrass (*Populus tremuloides (Pinus ponderosa)/Danthonia parryi*, GUS3S4; with Thurber fescue (*Populus tremuloides/Festuca thurberi)*, G4S4 (Figure 11); and with bracken fern (*Populus tremuloides/Pteridium aquilinum)*, G4 S3S4. Probably the most common association in relatively dry sites is persistent aspen forests with snowberry and elk sedge (*Populus tremuloides/Symphoricarpos oreophilus/Carex geyeri)*, G5S5, while montane aspen forests (*Populus tremuloides/tall forbs*) G5S5, is frequent in more mesic sites. Only one rare plant species, King's clover, was found in the aspen zone. Northern goshawks and northern leopard frogs were found in the aspen zone on the Uncompahgre Plateau. Aspen communities are represented in the Ouray Canyons, Crystal Creek, Dexter Creek, Beaver Dams Creek, Green Mountain, and Love Mesa PCAs.

Spruce-Fir Forests

Subalpine forests dominated by Engelmann spruce cover the upper elevations of the Uncompahgre Basin (Figure 4). They are most highly developed above 9,000 feet. The forest typically has a closed canopy, with a sparse understory of shade tolerant species. Interspersed with the forests, and becoming more common at higher elevations, are subalpine meadows or "parks." Globally, the combination of various species of spruce and fir is common, and is characteristic of the taiga biome. It occurs in cold, wet areas with a short growing season. Annual precipitation is from 11.8 to 33.5 inches, with most of it falling as snow. This ecosystem is important in Colorado for water supply and recreational values.

Soils in the spruce-fir zone are acidic, and often shallow and infertile, due to their recent origin, leaching and the acidic foliage. There is little bacterial activity at the low temperatures of this zone, and much of the carbon in the ecosystem is locked up in humus. Some compensation for this is achieved through mycorrhizal associations, which increase nutrient uptake.

The shady understory of spruce-fir forests tends to contain few plant species. Typical understory species in the spruce-fir zone in our area are dwarf blueberry, mountain lover, Oregon grape, elk sedge, meadowrue, and sweet cicely. In very deep shade, there are rattlesnake plantain, one-sided wintergreen, and pictureleaf wintergreen.

Mesic forest openings and wet areas have a greater diversity of species, including tall larkspur, Richardson's geranium, Colorado columbine, elderberry, cow parsnip, bluebells, bittercress, triangle leaf groundsel, marsh marigold, planeleaf and barren-ground willows, and smallwing, water and Northwest Territory, or beaked sedges.

Figure 11. Montane forest, aspen/Thurber fescue community. Cutler Creek, Ouray County.

Figure 12. Wet meadow in alpine zone, with marsh marigold. Yankee Boy Basin.

Important animal species found in the spruce-fir zone include the boreal owl, goshawk, and boreal toad. Of these, only the goshawks have been documented in the Uncompahgre Basin. Northern leopard frogs and Colorado cutthroat trout are also found in this zone. PCAs in the spruce-fir zone include Cow Creek-Oben Creek, Red Creek, Green Mountain, Canyon Creek at Ouray, West Dallas Creek, Middle Fork Spring Creek, and Love Mesa.

Alpine

Alpine communities occur at the highest elevations in the San Juans, in the southern end of the Basin. Species are so intermixed that it is often difficult to claim dominance for any one (Cover photo and Figure 12.5). Common alpine species of drier sites in our area include whortleberry, alpine avens, false strawberry, alpine sage, smelowskia, snow willow and arctic willow. Wet, late snowmelt areas are often dominated by marsh marigold (Figure 12), with globeflower, Parry's primrose, willow-herb, and buttercups. Water courses may have a dense cover of barrenground and planeleaf willows.

Several rare species of the genus *Draba* occur in the alpine zone. *Draba crassa,* and *D. streptobrachia* were documented in 1998. Snow lover, (*Chionophila jamesii*), a species that is now "watchlisted" by CNHP, was also documented several times.

Most of the alpine zone is within the Uncompahgre National Forest. However, the forest is interspersed with a hodgepodge of mining claims. Alpine vegetation is represented in the Yankee Boy-Blue Lakes, Wildhorse Basin, and Red Mountain Number One PCAs.

Figure 12.5 Yankee Boy Basin floral display.

Weeds

Exotic weed invasion is an increasingly serious problem in western Colorado. Major weeds in our area include Canada thistle, Russian olive, tamarisk, hounds tongue, Russian (spotted, meadow) knapweed, cheatgrass, burdock, oxeye daisy, musk thistle, yellow toadflax, leafy spurge, and white top. In addition, there are a number of exotic species that are more generally tolerated, but would not be present in pristine natural communities. These include reed canary grass, yellow sweet clover, Kentucky bluegrass, dandelion, and common pasture grasses such as orchard grass and timothy. Weeds tend to take advantage of any disturbance of the soil. Their seeds are dispersed by wind, water, animals, and vehicles. We include here some of our own observations of the locations of weeds in the Uncompahgre Valley.

Canada thistle (Figure 13)is widespread throughout the area. It invades almost anywhere that the existing vegetation is disturbed and there is sufficient moisture. It is difficult to eradicate because it has underground stems, or rhizomes, which will continue to produce new shoots after the above ground parts of the plant are killed or removed. Digging and hand pulling are rarely effective. In addition, its seeds can remain dormant in the soil for many years. The Ouray County weed manager recommends using the herbicide Curtail in the spring when the shoots are six to eight inches tall. Prevention, by avoiding any unnecessary disturbance of the soil, is the best defense.

Musk thistle tends to be found in moist areas in Ouray County. We noted an especially bad patch between the Owl Creek Road and Nate Creek. At its worst, it can form thickets that are impenatrable to livestock and wildlife. Although many people are under the impression that all thistles are bad, it is important to note that there are native thistles that are not aggressive and should not be destroyed. These include one rare thistle in the Uncompahgre Basin, the Rocky Mountain thistle, which is discussed in this report.

Russian olive is found in riparian areas along the Uncompahgre River, mostly downstream from Billy Creek. In Ouray County, it also occurs in Ridgway State Park and Chaffee Gulch. It is much more abundant in Montrose County, where it may be mixed with the similar native shrub, silver buffaloberry. Although it is known to be invasive, it is still sometimes planted in landscaping.

Tamarisk, too, is much more abundant at lower elevations in Montrose County, although it has reached Ouray County at Billy Creek and Ridgway State Park. It is a prime candidate for control in Ouray County, since it is not yet abundant. In Montrose County it is widespread along the Uncompahgre River, its tributaries and irrigation canals. Drainages that would be good candidates for control efforts are Escalante Canyon and Dry Creek.

Hound's tongue is very widespread and abundant at higher elevations, particularly in the montane zone. We found it on the Uncompahgre Plateau, Cutler Creek, Cow Creek, Owl Creek, and generally throughout Ouray County. A particularly bad infestation was noted in the National Forest at Cow Creek, in an area frequently used as a hunting camp.

Cheatgrass is found in the desert shrub, sagebrush, and pinyon juniper zones, wherever there has been heavy grazing or soils are disturbed. An annual grass, it has

seeds that can remain viable in the soil for several years, and germinate when conditions allow. Particularly heavy invasions were found on the Uncompahgre Plateau along Highway 90, at Cerro Summit, and at Peach Valley. Similar sites may also have annual wheat grass.

Russian knapweed is abundant in disturbed areas, particularly in Montrose County, although it also is a problem in Ouray County around Colona and Ridgway. The South Canal area was one of the most affected areas we saw in Montrose County. Another knapweed species, meadow knapweed, has recently been found in Cow Creek and Owl Creek (Mayfield 1999).

Burdock is found throughout the area, again in disturbed sites. We noted it in Billy Creek, Ridgway, Ouray, McKenzie Creek, and many other areas.

Species that are commonly planted for pasture or erosion control are frequent throughout the area. These include yellow and white sweet clover, orchardgrass, smooth brome, timothy, Kentucky bluegrass, crested wheatgrass, and alfalfa. These species are especially evident along roads and trails. They usually are not found in the interior of the forests away from trails.

Dandelions are common in the mountains in disturbed and heavily grazed sites. Although not considered a serious problem by many people, they do replace native grasses and forbs. The largest populations were seen on the Uncompahgre Plateau.

One of the most serious threats to our area comes from leafy spurge (Figure 16), which so far has been found in only a few locations, and is being aggressively combated. However, it spreads rapidly, and it will require constant vigilance to keep it from becoming established. The Ouray County weed manager has treated the populations on Miller Mesa with herbicides and grazed it with goats (Mayfield 1999).

Reed canary grass is abundant in wetlands and along most of the rivers and streams. Although it serves to stabilize banks, it is probably replacing native grasses and sedges.

Oxeye daisy (Figure 14) and yellow toadflax are becoming more of a problem. The daisy is still planted by many people as a "native" wildflower. It originally was established as a garden plant around homesteads, and has escaped to become a rapidly increasing weed. In some areas it has crowded out nearly all vegetation. We noted an especially bad infestation on the Uncompahgre Plateau near the headwaters of Escalante Creek.

White top can be found in Billy Creek, along the Selig Canal, and in many other areas of the Uncompahgre Basin.

Several weedy annual mustard species are common in the adobes. These include purple mustard(Figure 15) and alyssum.

Our observations of the most troublesome weeds by area follows:

- Uncompahgre River: Russian olive, tamarisk, reed canary grass, Canada thistle
- Lower Uncompahgre Valley: Russian knapweed, cheatgrass, Russian olive
- Adobe badlands: Russian knapweed, halogeton, cheatgrass, annual mustards.
- Uncompahgre Plateau: oxeye daisy, dandelion
- San Juan Mountains: hound's tongue, oxeye daisy, leafy spurge, yellow toadflax

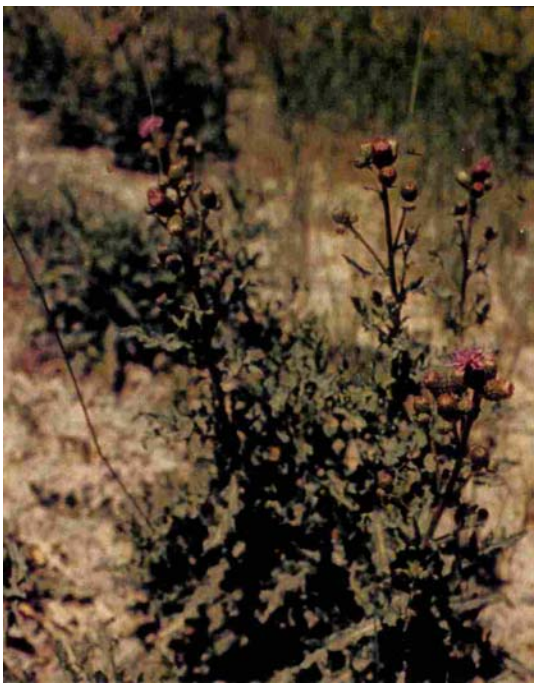


Figure 13. Canada thistle (*Cirsium arvense*)

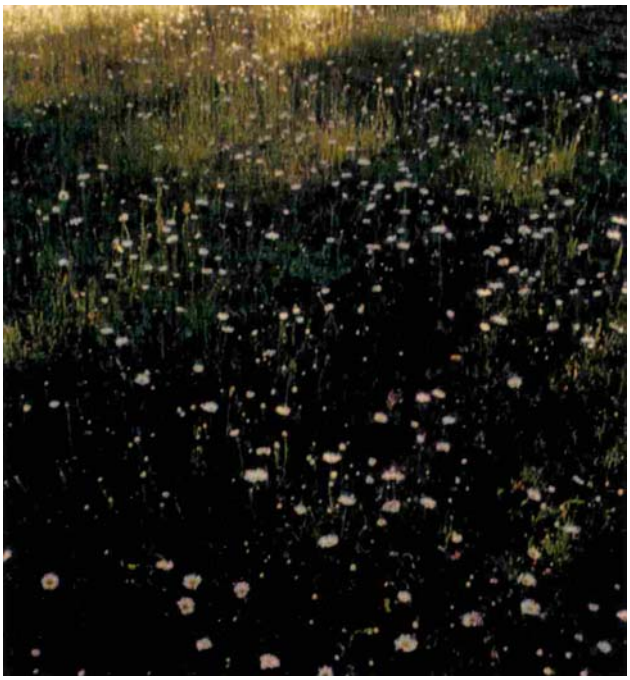


Figure 14. Oxeye daisy (*Leucanthemum vulgare*)

Figure 15. Purple mustard (*Chorispora tenella*)

Figure 16. Leafy spurge) (*Euphorbia esula*

Rare and Imperiled plants of eastern Montrose and Ouray counties

Twenty-four rare plant species, described below, were documented in eastern Montrose and Ouray counties (Table 2). They include ferns, orchids, several members of the pea and mustard families, a cactus, and even one thistle. Two of these plants, the clay-loving wild buckwheat and the Uinta Basin hookless cactus, are listed under the Endangered Species Act, as endangered and threatened, respectively. Seven are on the BLM's list of sensitive plants, and five are on the Forest Service list. One species, the good-neighbor bladderpod, was described for the first time in 1997.

An additional four species (pictureleaf wintergreen, large-flowered breadroot, Rocky Mountain snowlover, and different-leaved groundsel) that were formerly tracked by CNHP were removed from the list of plants of special concern this year, and are now on a "watchlist". Watchlisted species named in this document are followed by asterisks (**).

There are four species that have been reported from the area, but have not been found in recent years, and are therefore not listed below. These include three ferns, the Aleutian maidenhair (*Adiantum aleuticum*), slender rock-brake (*Cryptogramma stelleri*), and the mountain bladder fern (*Cystopteris montana*); and a mustard, the San Juan whitlow-grass (*Draba graminea*).

Several other plants may be looked for in the alpine zone. Although these have not been documented in Ouray County, they do occur in neighboring San Miguel or San Juan counties. They include arctic draba (*Draba fladnizensis*), Colorado tansy-aster (*Machaeranthera coloradoensis*), Altai chickweed (*Stellaria irrigua*), Altai cottongrass (*Eriophorum altaicum* var. *neogaeum*), and several moonworts (*Botrychium* sp.).

Table 2 lists the rare plants of the Uncompahgre Basin, with their global and state ranks, and federal and state status. (For an explanation of ranks, see Appendix II.)

Table 2. Rare and imperiled plants of the Uncompahgre Basin.

Common Name	Scientific Name	Global Rank	State Rank	Federal/ State Status
Adobe beardtongue	*Penstemon retrorsus*	G3	S3	BLM
Black Canyon gilia	*Gilia penstemonoides*	G2G3	S2S3	BLM, FS
Canyon bog-orchid	*Platanthera sparsiflora*	G4G5T3	S2	
Clay-loving wild buckwheat	*Eriogonum pelinophilum*	G3	S3	LE, BLM
Colorado desert-parsley	*Lomatium concinnum*	G2	S2	BLM
Colorado Divide whitlow-grass	*Draba streptobrachia*	G3	S3	
Eastwood's monkeyflower	*Mimulus eastwoodiae*	G3	S1S2	BLM
Giant helleborine	*Epipactis gigantea*	G4	S2	BLM
Good-neighbor bladderpod	*Lesquerella vicina*	G2	S2	
Grand Junction milkvetch	*Astragalus linifolius*	G3	S3	BLM
Hanging garden sullivantia	*Sullivantia hapemannii*	G3T3	S3	FS
King clover	*Trifolium kingii*	G4	S1	
Large-flower globemallow	*Iliamna grandiflora*	G3?Q	S1	
Long-flowered cat's-eye	*Cryptantha longiflora*	G3	S2	
New Mexican cliff fern	*Woodsia neomexicana*	G4?	S2	

Common Name	Scientific Name	Global Rank	State Rank	Federal/ State Status
Pacific monardella	*Monardella odoratissima*	G4G5	S2	
Purple cliffbrake	*Pellaea atropurpurea*	G5	S2S3	
Rocky Mountain thistle	*Cirsium perplexans*	G2	S2	
Showy whitlow-grass	*Draba spectabilis var. oxyloba*	G3T3Q	S3	
Southern maidenhair fern	*Adiantum capillus-veneris*	G5	S2	FS
Thick-leaf whitlow-grass	*Draba crassa*	(?)	S3	
Uinta Basin hookless cactus	*Sclerocactus glaucus*	G3	S3	LT, BLM, FS
Western polypody	*Polypodium hesperium*	G5	S1S2	
Wetherill milkvetch	*Astragalus wetherillii*	G3	S3	BLM, FS

Adobe beardtongue (*Penstemon retrorsus*) G3 S3

The adobe beardtongue is a woody-based subshrub forming low mats with erect flowering stems of small bluish-purple flowers. The hairs of the grayish stems point backward (toward the base), giving it its scientific specific epithet of "retrorsus". The plant is known only from the adobe hills of Montrose and Delta counties, and is thus threatened by virtue of its limited distribution. Direct threats to the continued survival of the species include land subdivision for residences, conversion to cropland, and recreational use by off-road vehicles. Sheep apparently do not eat the plants, and thus may enhance the population by removing competing vegetation. Adobe beardtongue is found in six of the PCAs, all within the Uncompahgre Badlands macrosite.

Black Canyon Gilia (*Gilia penstemonoides*) G2G3 S2S3

The small, blue-flowered Black Canyon gilia is a member of the Polemoniaceae or Phlox family (Figure 19). It has a basal rosette of entire or irregularly pinnatisect leaves. The leaves and its habitat distinguish it from its common relative, *Gilia pinnatifida* (Weber and Wittman 1996). It flowers from June to September. It is endemic to Colorado, found in Gunnison, Hinsdale, Mineral and Montrose counties. It grows in the crevices of vertical cliffs of the Black Canyon. During this survey we checked several of the sites on the south rim of the Black Canyon where the plant was previously found, and located very few or no individuals. However, we expect that there may be more plants on vertical cliffs that are inaccessible without technical climbing. In these protected locations, the plants should be secure from most threats. The most prolific sites that we found were in the lower part of the cliffs above Morrow Point Reservoir, accessible by boat. One unconfirmed individual plant was found late this summer in the cliffs near the Ice Park in Ouray, a first for that area. However, since there was only one, no collection was made. The area should be checked further in June or July.

Canyon Bog Orchid (*Platanthera sparsiflora* var. *ensifolia*) G4G5T3 S2

The canyon bog orchid grows in moist or wet soil in mountain meadows, marshes, swamps, fens, open or dense forests, on stream banks and open seepage, frequently about springs (Figure 18). It has a wide range, from Oregon to Mexico, but good habitat is limited. The genus is also classified by some botanists as *Habenaria* or *Limnorchis*. The orchid's survival depends on a reliable year-round supply of moisture. The combination of grazing and trampling by domestic livestock in the mucky areas where the orchid grows will ordinarily eradicate the plant (CNHP). We found it to be abundant along a small tributary of Escalante Creek below a hanging garden. It also was found along small backwaters and irrigation ditches near the Uncompahgre River at Eldredge, and in a small wetland next to Pleasant Valley Creek.

Clay-loving wild buckwheat (*Eriogonum pelinophilum*) G2 S2 LE

The clay-loving wild buckwheat is a low, rounded subshrub, with woody stems at the base (Figure 17). It has short, linear leaves that are dark green above and densely woolly below, and small white flowers with pink veins. It grows in semi-desert shrub communities, often in shallow swales on the toe slopes of rolling adobe hills. Soils where the plants are found are whitish clay derived from Mancos shale. Within this habitat, it occupies only very specific microhabitats with similar degrees of erosion and distance of transport of soil from receding residual shale hills (USFWS 1988). Associated species include shadscale, mat saltbush, budsage, poison aster, and spiny horsebrush.

The clay-loving wild buckwheat is found only in Delta and Montrose counties, on a total land area of about 500 acres. Urban development and agricultural fields have fragmented much of the natural habitat for the plant. The majority of individuals occur on only a few sites, with the remainder scattered in such small populations that their viability is questionable. Two main clusters of sites occur in the study area. The majority of plants are within an area of about twelve square miles east of Montrose. The second group is in Peach Valley, about ten miles north, closer to the occurrences in Delta County. The largest site in The Uncompahgre Basin is in the South Canal PCA. This is one of the two plant species in the Uncompahgre Basin that are listed under the Endangered Species Act.

Colorado desert-parsley (*Lomatium concinnum*) G2 S2

The Colorado desert-parsley is a low-growing, yellow-flowered plant with shiny green leaves similar to the familiar edible parsley (Figure 20). It grows on adobe soils derived from Mancos shale. It flowers in April, and although it is perennial, the above ground parts virtually disappear later in the summer. It prefers the tops and small gullies of the badland hills. Its response to sheep grazing is not known, but it appears that grazing by sheep may favor the plant by removing competing vegetation. More

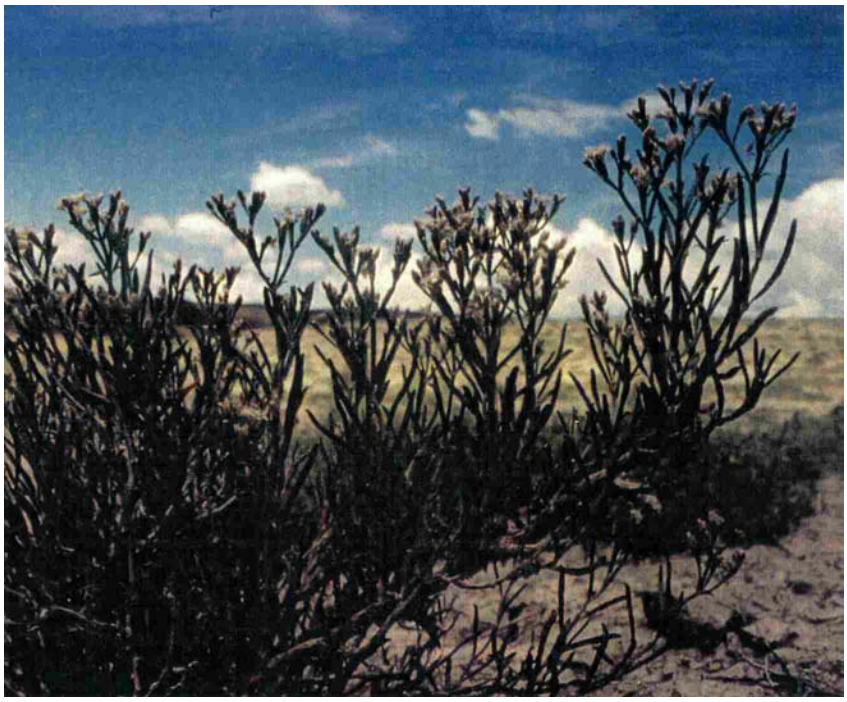


Figure 17 (top). Clay-loving wild buckwheat (*Eriogonum pelinophilum*). Figure 18 (left). Canyon bog orchid (*Platanthera sparsiflora*). Figure 19 (center). Black Canyon gilia (*Gilia penstemonoides*). Figure 20 (bottom right). Colorado desert-parsley (*Lomatium concinnum*).

observations during the early spring may clarify this. The Colorado desert-parsley is known only from Delta, Montrose and Ouray counties. We have records of fifteen occurrences in the Uncompahgre Basin, all in the adobe hills from Bostwick Park to Billy Creek.

Colorado Divide whitlow-grass (*Draba streptobrachia*) G3 S3

Colorado Divide whitlow-grass (Figure 21) is one of several *Draba* species found in the high mountains of Colorado. All are diminutive yellow or white flowered members of the mustard family, or *Brassicaceae*. The Colorado Divide whitlow-grass is a tap-rooted perennial plant with a rosette of stellate-pubescent basal leaves and yellow flowers. The plants grow on weathered rock and loose soil in the alpine tundra, on scree margins and fell-fields, above 11,500 feet in the mountains of Colorado. It is represented in the Yankee Boy Basin-Blue Lakes and Red Mountain Number One PCAs.

Eastwood's monkeyflower (*Mimulus eastwoodiae*) G3 S1S2

Eastwood's monkeyflower (Figure 21)has a bright crimson flower and sharply toothed leaves. It grows in hanging gardens with a year round moisture supply. The plants put down new roots from points where their stems contact the sandy soil, and thus often are found growing in a line in horizontal cracks of sandstone canyon walls. The plants are frequently found growing with the yellow Mancos columbine and the giant helleborine orchid. Its global range includes Utah, Arizona and four counties in southwest Colorado: Mesa, Montrose, San Miguel and Delta (Spackman *et al.* 1997). In Montrose County, Eastwood's monkeyflower is known from hanging gardens in Escalante Canyon.

Giant helleborine orchid (*Epipactis gigantea*) G4 S2

The giant helleborine orchid (Figure 21), like Eastwood's monkeyflower above, is often associated with hanging gardens in sandstone canyons. Escalante Canyon has the only known population in the Uncompahgre Basin. The greenish-purple flowers of the giant helleborine orchid have the familiar orchid shape, but are about an inch across and grow several to a stalk. Flowers appear in June and July, and fruit is produced in August and September. The plant has a wide geographic distribution in western North America, and is found occasionally from Mexico to Canada. There are twenty-six known locations in Colorado, distributed over eight counties (Spackman *et al.* 1997). Threats to the plants include diversion of the water feeding the seeps, and trampling. It is included in the Escalante Canyon PCA.

Figure 21. Opposite page, clockwise from top left: Colorado Divide whitlow-grass (*Draba streptobrachia*); Eastwood's monkeyflower (*Mimulus eastwoodiae*), photo courtesy of Bill Jennings; Good-neighbor bladderpod (*Lesquerell vicina*); Grand Junction milkvetch (*Astragalus linifolius*); Giant helleborine (*Epipactis gigantea*).

Figure 21.

Good Neighbor Bladderpod (*Lesquerella vicina*) G2 S2

Lesquerella vicina (Figure 21), a white-flowered member of the mustard family, was first described as a new species just one year ago (Anderson *et al*. 1997). The species was based on the type specimen collected by James Reveal, at the home of his Montrose neighbors (thus, the specific epithet *vicina*, or neighbor), four miles southeast of Montrose, Colorado. Additional specimens were collected by the authors in the Billy Creek State Wildlife Area in Ouray County, on the Uncompahgre Plateau west of Montrose, and in Bostwick Park northeast of Montrose. These four locations were the only ones known as of March 1998. They constituted a range of 20 miles, north to south.

In 1998, as part of the Uncompahgre Basin Biological Assessment, we visited the four known locations, and also found several new populations, bringing the total to fourteen occurrences in Montrose and Ouray counties. These included sites in Escalante Canyon, and the ridge west of the Gunnison Gorge, which more than doubled the known range of the species. As a result of these investigations, CNHP lowered the global and state rarity rank from G1S1 to G2S2. We expect that with more time spent in the field, concentrating on this one species, additional populations will be found and the range increased still further.

However, a return visit in late March 1999 to three of the locations documented in 1998 indicates that the plants may not appear every year. One site that had several hundred individuals in 1998 had only 9 in 1999, following a very dry winter. It may be that the seeds remain in the soil awaiting favorable conditions. Further inventory and monitoring in subsequent years should help to explain the life history of this species.

Grand Junction milkvetch (*Astragalus linifolius*) G3 S3

The Grand Junction milkvetch (Figure 21) is an attractive, bushy herbaceous perennial of the pea family. It produces pure white flowers, which mature to upright red pods. It grows with pinyon and juniper, on dry clay slopes and gullies of the Morrison Formation, between 4,800 and 6,200 feet. Associated species include Indian rice grass, hairy golden aster, low rabbitbrush, and snakeweed. It is very closely related to the San Rafael milkvetch, *A. rafaelensis* (G3S3), which is found on the west side of the Uncompahgre Plateau, while *A. linifolius* is found on the eastern side, in Mesa, Delta and Montrose counties. The distinctness of the two species has been questioned. However, even if they were combined, their total numbers would still indicate that they are globally imperiled. In the Uncompahgre Basin, the Grand Junction milkvetch occurs in the Escalante Canyon and Roubideau Creek PCAs.

Hanging Garden Sullivantia (*Sullivantia hapemannii* var. *purpusii*) G3T3 S3

This white-flowered member of the saxifrage family hangs out in hanging gardens and seeps on cliffs of various geologic origins including limestone, shale and quartzite (Figure 22). It is endemic to Colorado, found only in Garfield, Gunnison, Montrose, Pitkin and Rio Blanco counties, between 7000 and 10,000 feet. Colorado Natural Heritage Program has one record of this species in Montrose County, located in the cliffs at the bottom of the Black Canyon below Cedar Point. That site was not relocated this year, although we did find a good population of the species at Chipeta Falls on Morrow Point Reservoir, just east of the county line. The plant is probably secure from direct disturbance, due to the inaccessibility of most of its habitat. However, water diversions above the canyon could dry up the seeps and waterfalls on which it depends.

King Clover (*Trifolium kingii* var. *kingii*) G4 S1

This attractive tall pink clover is found in wet meadows and streambanks in the aspen and mixed conifer zone on the Uncompahgre Plateau. It has bright green three-parted toothed leaves and downturned flowers (Figure 22). It is known from Montrose, Mesa and Garfield counties in Colorado and the La Sal Mountains in Utah. It is represented in the Love Mesa PCA.

Large-flower globemallow (*Iliamna grandiflora*) G3?Q S1

The large-flower globemallow, or wild hollyhock, is one of the most striking plants in the Uncompahgre Basin (Figure 22). The bushy plant grows as tall as six feet, with hollyhock-like flowers in shades of pink and white. It is apparently palatable to cattle, and the long-term effects of grazing on the plant are as yet unknown. It grows in the mixed conifer and spruce-fir forests along the Owl Creek Road in Ouray County, in the Nate Creek PCA.

Long-flowered cat's eye (*Cryptantha longiflora*) G3 S3

Long-flowered cat's eye is a short-lived perennial with hairy leaves and long-tubular white flowers (Figure 22). It lives on sandy or clay soils in the desert shrub zone, often associated with the Uinta Basin hookless cactus. It is known from Colorado and Utah, in the Colorado and Gunnison River drainages. In Montrose County, it was found in two of the PCAs, Peach Valley and Gunnison Gorge South Rim.

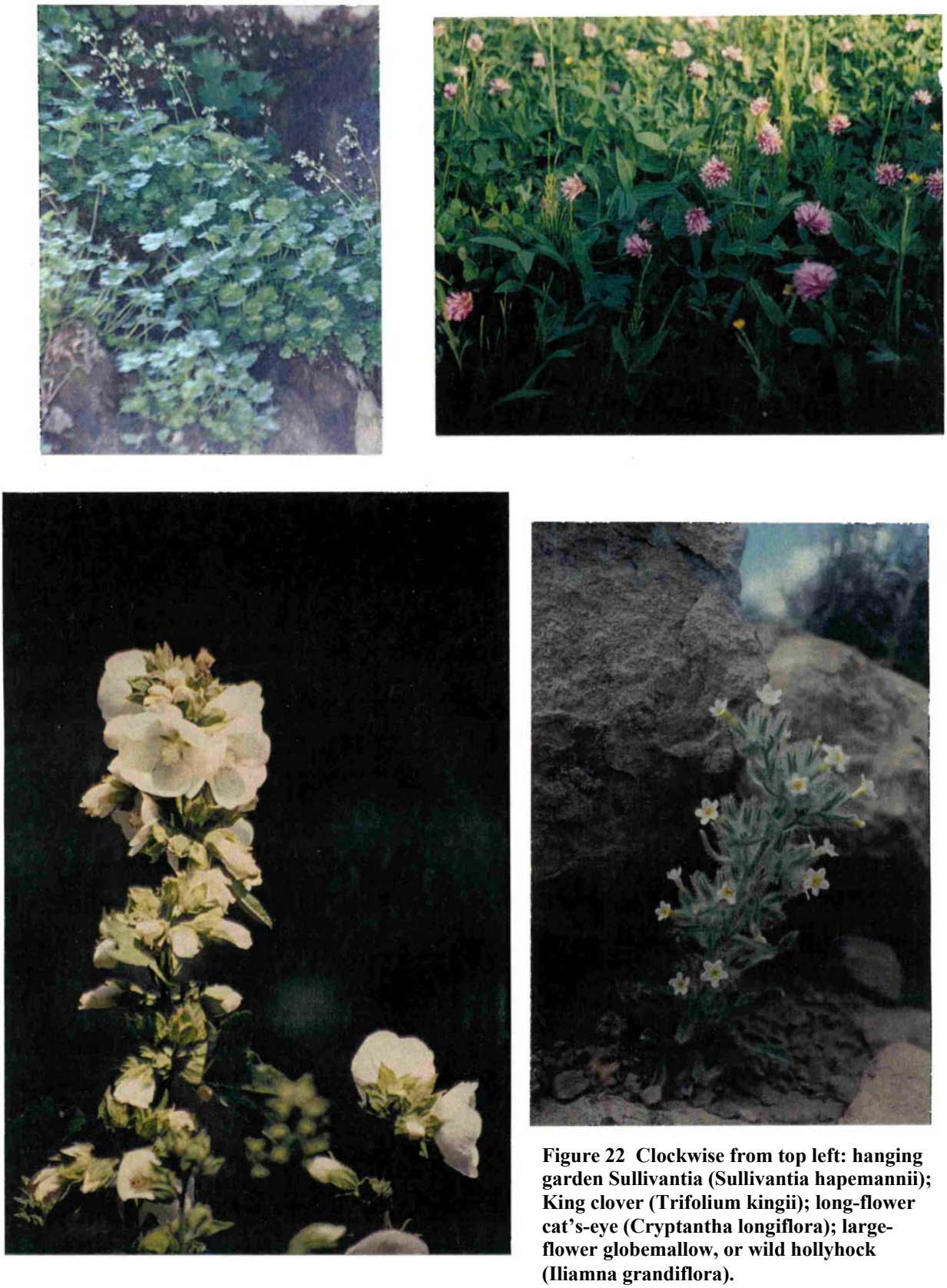
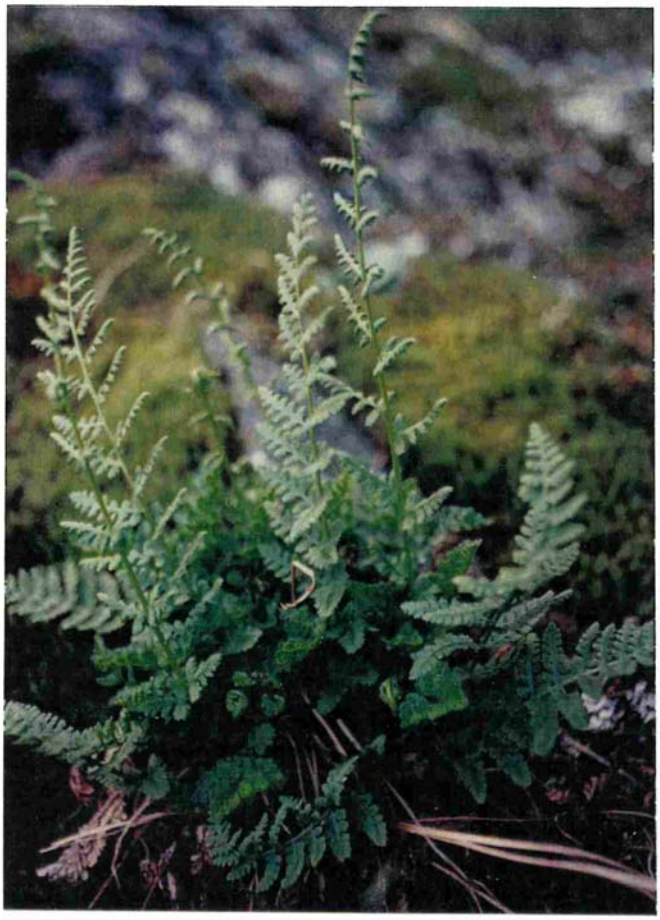


Figure 22 Clockwise from top left: hanging garden Sullivantia (Sullivantia hapemannii); King clover (Trifolium kingii); long-flower cat's-eye (Cryptantha longiflora); large-flower globemallow, or wild hollyhock (Iliamna grandiflora).

Photos Figure 23 Woodsia, cirsium monardella, Draba spect.



New Mexican cliff fern (*Woodsia neomexicana*) G4? S2

The New Mexican cliff fern (Figure 23)is one of several state-rare ferns of the Uncompahgre Gorge-Box Canyon area of Ouray County. It grows in crevices in the cliffs of Precambrian rock and Leadville limestone. It can be distinguished from the more common Oregon cliff fern by its light brown stipes and translucent projections on the margins of the pinnules (Weber and Wittman 1996). It is known in western Colorado only from Ouray and LaPlata counties, although there are twelve occurrences in seven Eastern Slope counties. It is represented in the Ouray Canyons PCA.

Pacific monardella (*Monardella odoratissima*) G4G5 S2

The Pacific monardella (Figure 23)is undoubtedly the strongest scented plant in the Uncompahgre Basin. A member of the mint family, it can be located from some distance by its extremely pungent odor. We found the plants to be abundant in the Bear Creek drainage, nestled in protected sites in vertical rock cliffs. Small populations were also found in the Black Canyon, in similar habitats, and along the Dexter Creek trail in forest clearings. It is included in the Dexter Creek and Morrow Point Reservoir sites.

Purple cliffbrake (*Pellaea atropurpurea*) G5 S2S3

The purple cliffbrake, like many of our ferns, has a broad range covering much of the country, but is relatively uncommon in Colorado. Only one small occurrence of this fern was found in Ouray County, in the Ouray Canyons PCA. It was growing in a shaded crevice of a vertical rock wall.

Rocky Mountain thistle (*Cirsium perplexans*) G2 S2

The Rocky Mountain thistle (Figure 23) is known only from Colorado, in Mesa, Montrose, Ouray and Delta counties. Its scientific name is apt, since it is a perplexing species about which little seems to be known. Most of the occurrences of this plant that were previously known were small, usually with fewer than fifty individuals. New, larger populations were found by CNHP in Delta County in 1997, and in Montrose County in 1998. We relocated the population at the type locality at Cimarron, where it had not been documented since 1901. In each case, the thistle was growing in disturbed areas, along with the noxious weed, Canada thistle, and another native species, Tracy's thistle. One of the major threats to the Rocky Mountain thistle may be herbicide spraying by weed control districts and others trying to control weeds. It can be distinguished from the Canada thistle by its tap root, rather than rhizomes, more slender, reddish stems, and erose (ragged) fringes on some of the bracts below the flower head. It is included in the Billy Creek, Doug Creek, Cimarron, and Cimarron State Wildlife Area PCAs.

Showy whitlow-grass (*Draba spectabilis* var. *oxyloba*) G3T3Q S3

Unlike most of the *Drabas* of the Uncompahgre Basin, the showy whitlow-grass (Figure 23)is found in the montane zone, in clearings in aspen or spruce-fir forests. We found it along the Divide Road and the Beaver Dams Creek Road on the Uncompahgre Plateau. This variety is separated from the more common variety (var. *spectabilis*) by the appressed four-armed hairs, with two long and two short arms, found on the lower stem. It is represented in the Hanks, Beaver Dams Creek, and Clear Creek at Divide Road PCAs.

Southern maidenhair fern (*Adiantum capillus-veneris*) G5 S2

The southern maidenhair fern was last seen at Box Canyon in Ouray in 1937. At that time, only one plant was found, although it reportedly had been abundant there until the flood of 1928 (Wherry 1938). It is included here for historical interest, although it was not found during this survey.

Thick-leaf whitlow-grass (*Draba crassa*) G3 S3

The thick-leaf whitlow grass (Figure 24) grows in talus and other rocky areas above treeline. It has dark green, glabrous leaves, and bright yellow, four petaled flowers. We found it in the talus just west of Blue Lakes Pass. It is included in the Yankee Boy Basin-Blue Lakes PCA.

Uinta Basin hookless cactus (*Sclerocactus glaucus*) G3 S3

The Uinta Basin hookless cactus (Figure 24)is one of the two plants in the Uncompahgre Basin to have federal protection under the Endangered Species Act. Because of this, it has been the subject of more inventory and study than other plant species. More taxonomic research is needed to clarify its relationship to other species in the genus. Dr. Eric Rechel and Dr. Rick Ballard of Mesa State College are conducting research on the ecology of the plant, including identifying its pollinators. They have learned that the major pollinators are ground-dwelling bees, which could make the plants vulnerable to trampling by livestock through loss of their pollinators as well as direct damage to the plants themselves (Rechel 1998). Plants are easily visible when flowering, during April and May. After blooming, the cactus may shrink to the soil surface, and its dull grayish green color makes it difficult to see. It is found on gravelly alluvial soils or in clay, between 4,500 and 6,000 feet. Associated vegetation includes shadscale, sagebrush, greasewood, galleta grass, black sage, Indian ricegrass, prickly pear cactus, saltbush, winterfat, yucca, low rabbitbrush and sand dropseed (Scheck 1994). It is known from Montrose, Delta, Gunnison, Garfield and Mesa counties in Colorado, and from

Uinta and Grand counties in Utah. Although the center of its range is farther north in Delta and Mesa counties, there are a few populations in Montrose County. It is included in the Roubideau Creek, Escalante Canyon, and Ironstone Canal PCAs.

Western polypody (*Polypodium hesperium*) G5 S1S2

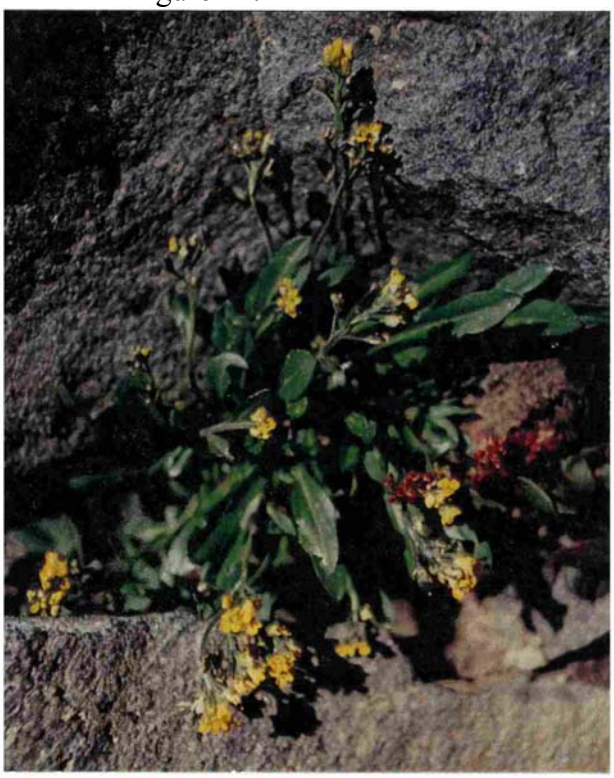
The western polypody (Figure 24) is an attractive small fern that grows in crevices of cliffs and large boulders. It is has a wide range, from British Columbia to California and as far east as South Dakota. However, like most ferns, it is uncommon in Colorado. We found it in the Uncompahgre Gorge. It is included in the Ouray Canyons PCA.

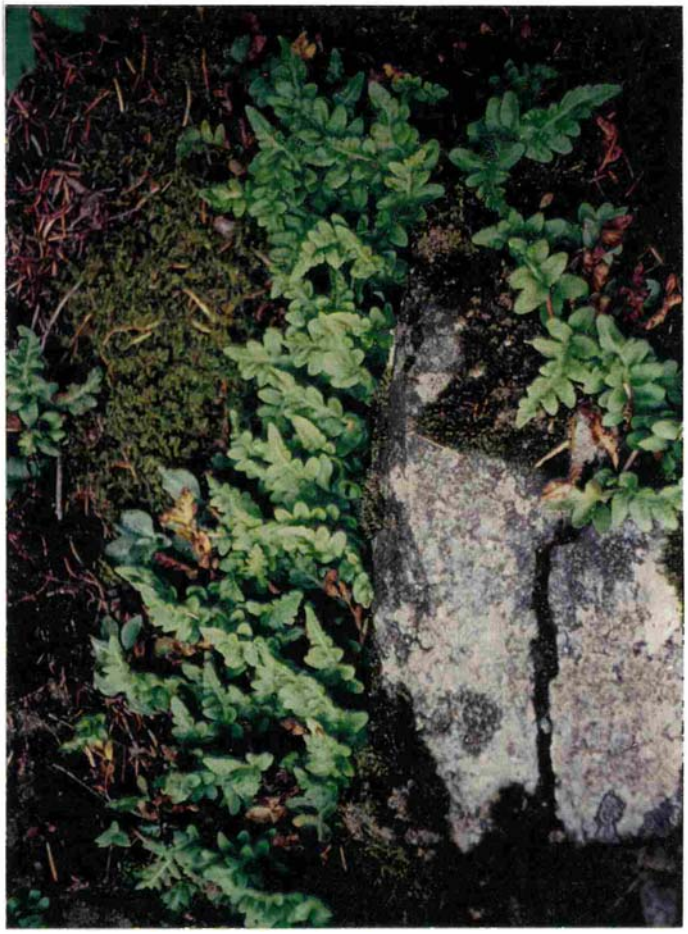
Wetherill milkvetch (*Astragalus wetherillii*) G3 S3

Wetherill milkvetch (Figure 24) has pinkish white pea flowers and rather large, inflated pods. The leaflets of its pinnately compound leaves are almost round. It grows on steep slopes, canyon benches, and talus under cliffs, in sandy clay soils derived from shale or sandstone (Barneby 1964). It is often the only plant growing in small dry washes on rocky clay hillsides, where its very light-weight pods are dispersed downhill by gravity and seasonal surface water. Associated plant species are pinyon pine, Utah juniper, mountain mahogany and sagebrush. Threats to the species include oil and gas development, overgrazing, road construction and other habitat modifications (O'Kane 1988). The species is known from seven western Colorado counties. There are thirty-eight known occurrences, with an estimated total of 9000 individuals. The majority of occurrences are on BLM land. The populations in the Billy Creek and Colona area are some of the largest known. It is included in the Billy Creek, Colona Mountain, Beaton Creek East, Beaton Creek West, Gunnison Gorge South Rim, and Bostwick Park PCAs.

Figure 24, opposite page. Clockwise from upper left: Thick-leaved whitlow-grass (*Draba crassa*); Uinta Basin hookless cactus (*Sclerocactus glaucus*); western polypody (*Polypodium hesperium*); Wetherill's milkvetch (*Astragalus wetherillii*).

Figure 24.





Rare and Imperiled Animals of the Uncompahgre Basin

Several animal species that were historically documented in the Uncompahgre Basin have now disappeared from the area. The black-footed ferret was last seen near the confluence of Dallas Creek in 1979. The wolverine was last seen in our area near Dallas Divide in 1921. Although not documented in the CNHP database, it is likely that lynx and grizzly bears once used the area. The disappearance of these large conspicuous mammals suggests that many smaller mammals, fish, birds, amphibians, and insects that were never documented have also become extinct in the area since its settlement.

We have only begun to understand the diversity of insect life in our area. Our primary invertebrate target for this survey was the Nokomis fritillary butterfly, which has been reported from the Ouray area. We were not successful in locating the species, although one other rare butterfly, the dark blue (*Lycaeides idas sublivens*) was found near Blue Lakes at 10,600 feet.

The rare and imperiled animals of the Uncompahgre Basin, with their state and global ranks and federal and state status, are listed in Table 3.

Table 3. Rare and Imperiled Animals of the Uncompahgre Basin.

Common Name	Scientific Name	Global Rank	State Rank	Federal/ State Status
Amphibians				
Northern leopard frog	*Rana pipiens*	G5	S3	SC,FS
Birds				
American peregrine falcon	*Falco peregrinus anatum*	G4T4	S2BSZN	LT
Black swift	*Cypseloides niger*	G4	S3B	
Black-throated sparrow	*Amphispiza bilineata*	G5	S3BSZN	
Golden eagle**	*Aquila chrysaetos*	G5	S4BSZN	
Gray catbird**	*Dumetella carolinensis*	G5	S3S4	
Gray vireo	*Vireo vicinior*	G4	S2BSZN	
Great blue heron	*Ardea herodias*	G5	S3BSZN	
Gunnison sage grouse	*Centrocercus pop. 1*	G1	S1	E
Loggerhead shrike	*Lanius ludovicianus*	G5	S3S4BSZN	FS
Northern goshawk	*Accipiter gentilis*	G5	S3BSZN	FS
Northern harrier	*Circus cyaneus*	G5	S3BSZN	
Olive-sided flycatcher**	*Contopus borealis*	G5	S3S4B	
Sage sparrow	*Amphispiza belli*	G5	S3BSZN	
Fish				
Colorado River cutthroat	*Oncorhyncus clarki pleuriticus*	G4T3	S3	FS/SC
Mammals				
Spotted bat	*Euderma maculata*	G4	S2	FS
White-tailed antelope squirrel ssp.	*Ammospermophilus leucurus pennipes*	G5T4T5	S3	
Invertebrates				
Dark blue (butterfly)	*Lycaeides idas sublivens*	G5T?	S2S3	

Amphibians

Northern leopard frog (*Rana pipiens*) G5 S3

The decline of frogs throughout the world in recent years has been of great concern to scientists. The northern leopard frog has disappeared in some parts of Colorado. The exact cause of the declines is unknown and needs further investigation (Hammerson 1982). Part of the statewide decline may be due to predation by the increasingly abundant bullfrog (*Rana catesbiana*), which is native to the eastern U. S., but introduced in Colorado.

The leopard frog inhabits springs, slow moving streams, marshes, fens, ponds, canals, flood plains, reservoirs, and lakes, usually in permanent, clear water with rooted aquatic vegetation. In summer, the frog commonly occupies wet meadows and fields. The species appears to be faring better in Montrose County than in other parts of the state. We documented eight populations of northern leopard frogs in Montrose County, in varied habitats, from wetlands along the Uncompahgre River to the banks of small ponds and irrigation ditches in the valleys and on the Uncompahgre Plateau. They inhabited both natural and irrigation-created wetlands. They are included in three PCAs: Uncompahgre River macrosite, Roubideau Creek, and South Canal, in the Uncompahgre Badlands macrosite.

Birds

American peregrine falcon (*Falco peregrinus anatum*) G4T4S2B, SZ LE

The peregrine falcon is listed as endangered by the U. S. fish and Wildlife Service. Since 1947, its eggshell thickness was reduced 15 to 20 percent due to the introduction of chemicals such as DDT into the food chain. In recent years, the species has been recovering, and in 1995 was proposed for removal from the endangered species list. The falcon is known to nest and forage in the cliffs near Ouray. The raptor swoops or flies fast and low after a wide variety of birds. The peregrine falcon is represented in the Blowout and Serpent Point PCAs.

Black swift (*Cypseloides niger*) G4S3B

The Black Swift is an uncommon breeder in the mountainous regions of Colorado (Andrews and Righter 1992). This bird is a colonial nester and has a rather unique nesting biology. It has six nesting characteristics described by Knorr (1993) as: water, high relief (almost invariably), inaccessibility, darkness, unobstructed flyways, and niches in rock for nests. In the Uncompahgre Basin, waterfalls provide these conditions for nesting Black Swifts. One of the most recognized colonies of this bird in Colorado is in Box Canyon Falls in Ouray. We discovered another colony at a waterfall on Oben Creek in Ouray County this year. The Black Swift is represented by PCAs Cow Creek-Oben Creek and Ouray Canyons.

Black throated sparrow (*Amphispiza bilineata*) G5S3B,SZN

The Black-throated Sparrow is an uncommon local summer resident in Colorado. Its breeding habitat is open pinyon-juniper woodlands and semidesert shrublands (Andrews and Righter 1992). This sparrow has physiologically adapted to conserve and utilize water absorbed from its food, which allows it to persist quite well in arid environments. The Black-throated Sparrow is represented in the Rim Road PCA.

Golden eagle (*Aquila chrysaetos*) G5S4B,SZN**

Although the golden eagle has been deemed secure enough to be put on CNHP's "watch list", the presence of this magnificent bird is certainly of local interest. It was observed near Olathe, near Ouray, and on the Uncompahgre Plateau. No PCAs have been created for it, but one location does fall within the Uncompahgre River macrosite.

Gray catbird (*Dumetella carolinensis*) G5S3S4**

Another watch-listed species, the gray catbird was found along the Uncompahgre River south of Montrose in the Chipeta Lakes area. This bird is plain dark gray in appearance with a black cap, black tail and chestnut undertail coverts. Its common name comes from the cat-like mews it produces. It is also a very proficient mimic. This species is an uncommon very local summer resident in Colorado (Andrews and Righter 1992).

Gray vireo (*Vireo vicinior*) G5 S2B

This small, gray-backed bird breeds in arid mountains from southern California to southwestern Colorado. It prefers dry, open pinyon-juniper woodlands at lower elevations (Andrews and Righter 1992). Gray vireos were found near the confluence of Dallas Creek and the Uncompahgre River and at Happy Canyon. They are represented in the Dallas Creek Confluence site, within the Uncompahgre Basin macrosite. The site offered a diverse vertical niche space within a healthy community of pinyon, juniper and sagebrush above the reservoir. Singing males during the breeding season were considered evidence of nesting in the area.

Great blue heron (*Ardea herodias*) G5 S3B,SZN

The wide-ranging great blue heron is found in colonies scattered throughout Colorado. Some winter here, while most others return from more southern habitats to our area in mid-February to March and leave again in October (Andrews and Righter 1992). They prefer freshwater and brackish marshes along lakes, rivers, fields and meadows. They nest high in trees, or less commonly in bushes, on the ground, rock ledges, or cliffs. The birds eat fish, crustaceans, amphibians and reptiles, mice and shrews, and other animals. Most foraging is done while standing in the water. In our area, undisturbed

cottonwood stands are essential for nesting. Colonies are utilized year after year, as long as there is no disturbance; however, the supporting cottonwoods generally die after some years, causing the colonies to relocate. A relatively small rookery was found along the Cimarron River, and is represented in the PCA of that name.

Gunnison sage grouse (*Centrocercus* sp. 1) G1S1

The sage grouse present in the Uncompahgre Basin are a part of the Gunnison Basin population, which represents a distinct unnamed species (AOU 1998). The Gunnison species has a smaller body size and different mating behavior than the sage grouse in the northern part of the state (*Centrocercus urophasianus*). This bird is a lekking species, which means males congregate at an area (lek) and perform elaborate courtship displays. Lek sites usually have good visibility (for predator avoidance) and good acoustics (for carrying display sounds). The males have large white pouches and yellow air sacs that are used to create thumping sounds to attract females. Males also have a yellow patch above their eyes and long tail feathers that are raised during their display. Female sage grouse are smaller in size, with no distinctive markings. The Gunnison sage grouse is represented by the Sim's Mesa, Red Canyon south, and Cerro Summit PCAs.

Loggerhead Shrike (*Lanius ludovicianus*) G5 S3S4B,SZN FS**

The Loggerhead Shrike is a fairly common summer resident in the western valleys of Colorado (Andrews and Righter 1992). Telephone wires and fences provide hunting perches for this raptor to scope out prey. Its diet consists mainly of large invertebrates and small vertebrates. There is some concern that this bird may be declining in North America, although Colorado populations appear to be stable (Andrews and Righter 1992). This species is watchlisted by the CNHP and was documented from Colona and Buckhorn Lakes in the Uncompahgre Basin.

Northern goshawk (*Accipiter gentilis*) G5 S3BSZN

A large, robust hawk with a long tail and rounded wings, the goshawk is found in aspen and spruce-fir forests in Colorado. Its nest is a platform of sticks in a tree. Females may have as many as nine nests, an active one and several alternates. Although it is a widespread species, nesting goshawks are uncommon in Colorado. This is a Forest Service sensitive species, and Uncompahgre National Forest personnel have done much of the survey work for the birds. We have records of eight goshawk nests in the Uncompahgre Basin, all on the Uncompahgre Plateau. Although we have not created special PCAs for them, they should be considered as potential inhabitants of any forested site on the plateau.

Northern harrier (*Circus cyaneus*) G5S3BSZN

The northern harrier, formerly known as the marsh hawk, is a large raptor recognizable by its white rump and low, wavering flight patterns. It builds its nest on the

ground in sparsely shrubby open ground or marshes. It hunts for small mammals and sometimes birds while flying low over the ground, occasionally hovering. Northern harriers were observed in five locations in the Uncompahgre Basin, and are represented in the Rim Road, Doug Creek and Dry Cedar Creek PCAs.

Olive-sided flycatcher (*Contopus borealis*) G5S3S4B**

The olivesided flycatcher is an insect-eating bird that can be found in forests and woodlands, especially those recently burned. It often uses dead snags as a singing or hunting perch. It can be distinguished from other similar species by its distinctive "quick-three-beers" song. This species was found to be quite common throughout the Uncompahgre Basin, although no PCAs were created for it.

Sage sparrow (*Amphispiza belli*) G5S3BSZN

This inconspicuous sparrow is usually observed for a quick instant before it runs behind the cover of a sagebrush shrub. It can be recognized by its gunmetal blue-gray head with white stripes and dark spot on its chest. This species' breeding range extends from the sagebrush expanses west of the Rocky Mountains to the chaparral and sagebrush scrub in Baja California. It feeds mostly upon insects and some small seeds and plant materials. Sage sparrows were observed at two sites in the Uncompahgre Basin and are represented in the Sim's Mesa and Rim Road PCAs.

Fish

Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) G5T3 S3 SC FS

Western Colorado's native trout species is seldom found to be genetically pure, due to hybridization with introduced Rainbow trout (*Oncorhynchus mykiss*). The populations identified in the Uncompahgre Basin have yet to be tested for genetic purity. Competition with introduced Brook trout (*Salmo fontinalis*) has been very detrimental and has lead to local extinctions of native populations of cutthroat trout. The trout are represented in the Pryor Creek, Lou Creek, and Nate Creek PCAs.

Mammals

Spotted bat (*Euderma maculata*) G4 S2

This rarely encountered bat will roost in crevices of rocky cliffs and canyons and will forage over a variety of habitats. The spotted bat is considered uncommon in Colorado and throughout North America, although this may partly be due to the difficulty in capturing it. This species is one of the only bats in Colorado whose echolocation call is audible to human ears, which can aid in detection (Fitzgerald et al. 1994). There is one occurrence of the spotted bat foraging over oak and sagebrush from the north rim of the Black Canyon near Grizzly Ridge.

White tailed antelope squirrel (*Ammospermophilus leucurus pennipes*) G5T4T5 S3

The white tailed antelope squirrel generally occurs below 5500 feet in river valleys, where the predominant vegetation is an association of saltbushes, sagebrush and greasewood, growing on heavy soils (Armstrong 1972). Rock outcrops and river-sorted boulder fields are its preferred habitat. The subspecies is in need of study in Colorado, where its ecology is virtually unknown. Overgrazing, conversion of riparian habitats to more intensive irrigated agriculture, and similar practices may have negatively affected populations of this species (Fitzgerald, et al. 1982). The squirrel is represented in the Rim Road PCA.

Invertebrates

Dark Blue (*Lycaides idas sublivens*) G5T? S2S3

This blue butterfly subspecies occurs only in the high mountains of south and southwestern Colorado from 9,000 feet to 11,000 feet. It can be found in moist coniferous forests, especially along stream courses. The male of this subspecies is dark lilac blue above with a light gray underside. The female is brown above with steel blue scaling and an orange submarginal band on both wings. The preferred food plants of this butterfly are species of lupine (e.g. *Lupinus parviflorus*). The dark blue is represented by the Yankee Boy Basin-Blue Lakes PCA.

Proposed Conservation Areas

Sixty-five Proposed Conservation Areas are described below. These include 22 that are ranked B2--very highly significant; 23 ranked B3--highly significant; 14 that are ranked B4--moderately significant; and six ranked B5--of general biodiversity significance. B2-ranked PCAs are listed first, in alphabetical order, followed by B3, B4 and B5 sites. To assist land managers in finding the sites in their jurisdiction, Table 4 lists PCAs according to county and ownership.

Table 4. PCAs by county and ownership.

Montrose County PCAs

PCA Name	Biodiversity Rank	Page
Beaton Creek East	B3	130
Beaton Creek West	B3	132
Beaver Dams Creek	B3	134
Bostwick Park	B3	137
Buckhorn Lakes	B3	139
Cedar Creek	B2	76
Cerro Summit	B2	79
Cimarron	B2	81
Cimarron River	B3	143
Cimarron State Wildlife Area	B2	83
Colona Mountain	B2	85
Cottonwood Creek	B3	146
Crystal Creek	B3	149
Doug Creek	B2	90
Dry Cedar Creek	B2	92
Dry Creek	B3	152
Escalante Canyon	B2	95
Fairview	B3	158
Government Springs Road South	B4	190
Gunnison Gorge South Rim	B2	99
Gunnison River at East Portal	B4	192
Hanks	B3	161
Ironstone Canal	B4	194
Kinikin Road-Sunshine Road	B2	102
Landfill Road-Bostwick Park Road	B2	105
Love Mesa	B4	198
Menoken School	B3	167
Morrow Point Reservoir	B2	108
North Mesa Community Hall	B3	172
Peach Valley	B2	110
Pryor Creek	B4	208
Red Canyon South	B2	113
Rim Road	B3	179
Roubideau Creek	B2	115
Serpent Point	B5	227
Sims Mesa	B2	119
South Canal	B2	122
Temple Park	B4	212
Uncompahgre Badlands macrosite	B2	
Uncompahgre River macrosite	B3	

Ouray County PCAs

PCA Name	Biodiversity Rank	Page
Beaver Dams Creek	B3	134
Billy Creek	B2	73
Canyon Creek at Ouray	B3	141
Clear Creek at Divide Road	B4	186
Colona Mountain	B2	85
Cow Creek-Oben Creek	B2	87
Dallas Creek Confluence	B5	216
Dexter Creek	B5	219
East Fork Dallas Creek	B3	155
East Fork Spring Creek	B4	188
Green Mountain	B5	222
Ironton Park	B3	163
Lou Creek	B4	196
McKenzie Creek	B5	200
Middle Fork Spring Creek	B5	225
Nate Creek	B3	169
Natural Pond	B4	202
Ouray Canyons	B3	174
Pleasant Valley Creek	B4	205
Red Creek	B3	177
Red Mountain Number One	B4	210
The Blowout	B5	229
Uncompahgre River at Eldredge	B2	125
Uncompahgre River at Ridgway	B2	128
Uncompahgre River macrosite	B3	60
West Dallas Creek	B3	181
Wildhorse Basin	B3	184
Yankee Boy Basin-Blue Lakes	B4	214

Proposed Conservation Areas partly or wholly on private land

PCA Name	Biodiversity Rank	Page
Billy Creek	B2	73
Bostwick Park	B3	137
Buckhorn Lakes	B3	139
Canyon Creek at Ouray	B3	141
Cedar Creek	B2	76
Cerro Summit	B2	79
Cimarron River	B3	143
Colona Mountain	B2	85
Cow Creek-Oben Creek	B2	86
Doug Creek	B2	90
Dry Cedar Creek	B2	92
Dry Creek	B3	152
East Fork Dallas Creek	B3	155
Ironton Park	B3	163
Kinikin Road-Sunshine Road	B2	102
Landfill Road-Bostwick Park Road	B2	105
Lou Creek	B4	196
McKenzie Creek	B4	200
Menoken School	B3	167

Middle Fork Spring Creek	B5	225
Nate Creek	B3	169
Natural Pond	B4	202
North Mesa Community Hall	B3	172
Ouray Canyons	B3	174
Peach Valley	B2	110
Pleasant Valley Creek	B4	205
Red Mountain Number One	B4	210
Rim Road	B3	179
Roubideau Creek	B2	115
South Canal	B2	122
Uncompahgre Badlands macrosite	B2	67
Uncompahgre River at Eldredge	B2	125
Uncompahgre River at Ridgway	B2	128
Uncompahgre River macrosite	B3	60
West Dallas Creek	B3	181

Proposed Conservation Areas partly or wholly on BLM land

PCA Name	Biodiversity Rank	Page
Billy Creek	B2	73
Cedar Creek	B2	76
Cimarron	B2	81
Cottonwood Creek	B3	146
Dry Cedar Creek	B2	92
Dry Creek	B3	152
Escalante Canyon	B2	95
Fairview	B2	158
Gunnison Gorge South Rim	B2	99
Ironstone Canal	B4	194
Kinikin Road-Sunshine Road	B2	102
Landfill Road-Bostwick Park Road	B2	105
McKenzie Creek	B4	200
Peach Valley	B2	110
Roubideau Creek	B2	115
South Canal	B2	122
Temple Park	B3	212
Uncompahgre Badlands macrosite	B2	67
Uncompahgre River macrosite	B3	60
Uncompahgre River at Ridgway	B2	128

Proposed Conservation Areas partly or wholly on National Forest land

PCA Name	Biodiversity Rank	Page
Beaver Dams Creek	B3	134
Canyon Creek at Ouray	B3	141
Clear Creek at Divide Road	B4	186
Cow Creek-Oben Creek	B2	87
Dexter Creek	B5	219
East Fork Dallas Creek	B3	155
East Fork Spring Creek	B3	188
Escalante Canyon	B2	95
Green Mountain	B5	222

Hanks	B3	161
Ironton Park	B3	163
Lou Creek	B4	196
Love Mesa	B4	198
Middle Fork Spring Creek	B5	225
Nate Creek	B3	169
Ouray Canyons	B3	174
Pryor Creek	B4	208
Red Creek	B3	177
Red Mountain Number One	B5	210
Roubideau Creek	B2	115
The Blowout	B5	229
Uncompahgre River macrosite	B3	60
West Dallas Creek	B3	181
Wildhorse Basin	B3	184
Yankee Boy Basin-Blue Lakes	B4	214

Proposed Conservation Areas partly or wholly on Colorado State land

PCA Name	Biodiversity Rank	Page
Billy Creek	B2	73
Cimarron State Wildlife Area	B2	83
Dallas Creek Confluence	B5	216
Escalante Canyon	B2	95
Uncompahgre River at Eldredge	B2	125

Proposed Conservation Areas partly or wholly on National Park Service land

PCA Name	Biodiversity Rank	Page
Cimarron	B2	81
Crystal Creek	B3	149
Morrow Point Reservoir	B2	108

Potential Conservation Area Format

Each potential conservation area is described in a standard site report reflecting data fields in CNHP's Biological and Conservation Data System (BCD). The sections of this report and the contents are outlined and explained below.

Biodiversity Rank (B-rank): The overall significance of the site in terms of rarity of the Natural Heritage resources and the quality (condition, abundance, etc.) of the occurrences. For rank definitions, please see the **Natural Heritage Ranking System** section of this report.

Biodiversity Rank Justification: A synopsis of the significant elements occurring in the site. A table within the site profile lists the element occurrences found within the site, their rarity ranks, the occurrence ranks and federal and state agency special designations. The species or communities that are the primary element of concern are printed in bold type within the table. When several entries are in bold type, any one of the occurrences would be sufficient to justify the site rank. See Table 1, Appendix II, for explanations of ranks, and Table 2, Appendix II, for legal designations.

Protection Urgency Rank (P-rank): An estimate of the time frame in which conservation protection must occur. This rank generally refers to the need for a major change of protective status (i.e., ownership or designation as a natural area). For rank definitions, please see the **Natural Heritage Ranking System** section of this report (Appendix II).

Management Urgency Rank (M-rank): An estimate of the time frame in which conservation management must occur. Using best scientific estimates, this rank refers to the need for management in contrast to protection (legal, political, or administrative measures). For rank definitions, please see the **Natural Heritage Ranking System** section of this report (Appendix II).

Location: County, general location, usually in approximate air miles from the nearest town, and USGS 7.5 minute topographic map name.

Legal Description: Township, range and section(s).

Elevation Range: Lowest and highest elevations in feet within the site boundaries, as drawn on U.S.G.S. topographic maps.

Size: Number of acres within the site boundary, as determined from GIS mapping (ArcView).

General Description: A brief narrative of the topography, vegetation, and current use of the potential conservation area. Common names are used in the text. Scientific names are given in Appendix III.

Boundary Justification: Justification for the location of the potential conservation site planning boundary delineated in this report, including all known occurrences of natural heritage resources and, in some cases, adjacent lands required for their protection.

Macrosites

Uncompahgre River Macrosite

Biodiversity Rank: B3. High significance. The Uncompahgre River Macrosite contains relic stands of a riparian forest community considered critically imperiled throughout its range. Although the general condition of the river is not good, its importance in a regional context contributes to its high biodiversity rank. The site also includes several species and communities that are rare in the state of Colorado, and examples of common riparian communities to represent the range of riparian vegetation within the site.

Protection Urgency Rank: P1. Approximately 90% of the lower Uncompahgre River corridor is privately owned and zoned for agriculture. Protection of as much of the riparian zone as possible, to prevent further damage to the system, is a prerequisite for improving the health of the river corridor. National Forest lands near Ouray have been identified for disposal. These properties may be threatened by development unless they are retained in public ownership.

Management Urgency Rank: M1. Changes in management should include cessation of gravel mining, discontinuing the cutting of cottonwoods to increase agricultural land, and undertaking weed control measures to reduce exotic species such as Russian olive, tamarisk, Russian knapweed and others. The entire river corridor presents an excellent opportunity to improve the river and adjacent riparian zone for biodiversity, aesthetic and open space values.

Location: San Juan, Ouray, Montrose, and Delta counties.

U.S.G.S. 7.5. minute quadrangles: North Delta, Delta, Olathe Northwest, Olathe, Montrose West, Montrose East, Colona, Dallas Creek, Ridgway, Ouray, Ironton Park, Handies Peak

Legal Description: T15S R96W S11, 13, 14, 24, 25, 36; T15S R95W S31, 32; T51N R11W S12, 13; T51N R10W S7, 8, 17, 18, 20, 21, 29, 33; T50N R10W S4, 9, 15, 16, 22, 26, 27, 34, 35; T49N R10W S2, 3, 11-13; T49N R9W S18-20, 28, 29, 33, 34; T48N R9W S4, 5, 9, 10, 14, 15, 23, 25, 26, 36; T48N R8W S31; T47N R8W S6, 7, 17, 18, 20, 29, 32, 33; T46N R8W S4, 5, 8, 9, 16, 17, 20, 21, 22, 27, 28, 33, 34; T45N R8W S4, 9, 16, 21, 22, 27, 28, 34, 35; T44N R8W S 2, 3, 11, 13, 14, 24, 25, 30, 31, 36; T43n R7W S5, 6, 8, 16, 17, 21, 22, 27, 34; T42N R7W S3, 10.

Elevation range: 4900 feet to 14,300 feet

Size: 18,626 acres

General Description: The Uncompahgre River forms the main artery of the Uncompahgre Basin. It flows northwest from its source high in the San Juan Mountains

to join the Gunnison River at Delta. It collects water from a multitude of tributaries as it drops nearly a thousand feet through Ouray and Montrose counties. The Uncompahgre River macrosite includes three standard sites that are discussed separately: Ouray Canyons, Dallas Creek Confluence, and the Uncompahgre River at Eldredge.

Above Ouray, the river joins a major tributary, Red Mountain Creek, which has carved a steep canyon through Precambrian rocks. Red Mountain Creek has been the source of major pollution in the Uncompahgre, bringing to it acids and heavy metals from mining activities. The river meets Canyon Creek at Box Canyon, south of Ouray, where the spectacular waterfall is home to a colony of black swifts. Several rare ferns grow on the vertical cliffs of the canyon.

Just north of Ouray, the City of Ouray Parks Department has undertaken a major river improvement project. The river channel is being reconfigured with meanders to slow the flow of water, control flooding, and reduce erosion. Revegetation will be undertaken over the next few years.

The river continues northward to Ridgway through a broad glacier-carved valley with irrigated pastures. This section of the river has been extensively mined for gravel. Effects of gravel mining can be seen in the braided channel and lowered water table of the river at Ridgway. A few miles south of Ridgway, Dallas Creek, which drains a large area of the San Juans and Uncompahgre Plateau to the west, adds its waters. Here the river is impounded by the Ridgway Dam, and forms a large reservoir managed by the Colorado Division of Natural Resources. Ridgway State Park is one of the most popular state parks in Colorado. Water leaving the reservoir through the bottom of the dam is cold and clear, and supports a well-known fishery. The river in this stretch has been enhanced for fish habitat by the installation of rock structures to slow the river and provide quiet pools.

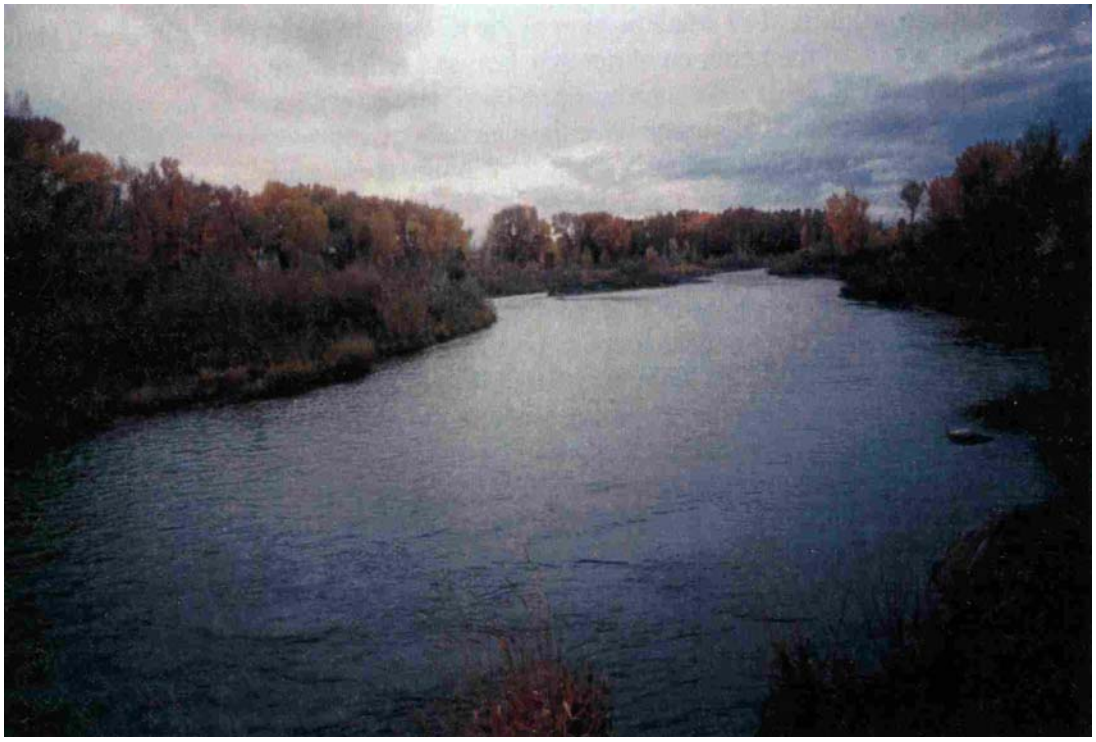


Figure 25. Uncompahgre River at Montrose.

North of the reservoir, Cow Creek enters the river, and some of the best quality riparian vegetation on the river is found in the Billy Creek area (Uncompahgre River at Eldredge standard site). From here north, the river shows the effects of a century of human use for agriculture. In many cases, cultivated lands and pasture have replaced cottonwood communities on the banks of the river, and wetlands have been drained. Irrigation runoff in the Mancos shale of Montrose County is an important source of the high salinity of the Colorado River.

Water quality along the river varies from poor to good (Hoag 1998). It begins with a heavy load of particulates from mining, improves as it is diluted by tributaries and as sediments settle in Ridgway Reservoir, declines again as it picks up runoff from irrigated fields, until it is again diluted by a major tributary.

The Uncompahgre River has been dramatically altered over the past hundred years. It has suffered the effects of hard rock mining, gravel extraction, damming, diversions for irrigation, draining of flood plains and channelization for agriculture and roads, pollution from irrigation runoff, heavy grazing, and invasion of exotic weeds. However, there are signs that conditions may be improving in the future. Mine cleanup at the Idarado Mine has reduced sediments that contain acids and heavy metals. Some gravel operations are closing down. The Ridgway Reservoir, although it has altered the natural flows of the river substantially, does have some beneficial effects on water quality, as sediments collect in its bottom, and clean water is released. There is a new community interest in protecting the riparian vegetation that remains, and restoring the river to a more naturally functioning state. The City of Ouray has begun a restoration and flood control project that will put meanders into the river where its channel was formerly straightened, slowing the flow and reducing erosion. There is interest in Ridgway in acquiring land along the river and restoring its health while providing for open space and recreation. Conservation easements have been obtained on parcels of riverfront land north of Ridgway and north of Billy Creek. Interpretive signs along the Uncompahgre Riverway bicycle path serve to educate its users on the importance of the riparian zone and its benefit to wildlife. The small portion of the river that falls in the Billy Creek State Wildlife Area is one of the better condition reaches, and will remain protected from development, although other uses such as a proposed new powerline may pose a threat. Wetlands have been created along the river through habitat improvement plans by the Colorado Division of Wildlife and projects of the Natural Resources Conservation Service. Valley Land Conservancy, a local land trust, is working to protect land along the river through purchase, purchase of development rights, and conservation easements. Several conservation easements are already in place.

Although the Uncompahgre River can probably never be restored to its original condition and function, there is local support for efforts to improve and enhance the riparian corridor. Above Ridgway dam, it is possible to approximate the natural hydrological functions of the river, including seasonal flooding. Below the dam, the natural functioning of the river cannot be restored without drastic and publicly unacceptable changes like removal of dams and irrigation diversions. However, it may be possible to improve the river's condition and prevent further damage within the existing parameters. Our recommendation is to try to protect the best examples of riparian vegetation that remain. Opportunities to protect any lands along the river by direct purchase, purchase of development rights, or through conservation easements

should be seized. Landowners should be encouraged to discontinue management practices that are damaging to the river, including gravel mining, tree removal, over-grazing, and conversion of the riparian zone for agricultural crops and pasture. Virtually the entire river below Ouray is privately owned. Therefore, private landowners must be convinced that it is to their benefit to improve the health of the river.

In some instances, revegetation may occur naturally, when stresses are removed. We have seen some examples of very rapid recovery of riparian vegetation with the cessation of gravel mining, and of wetland vegetation with the addition of water. The river corridor is a natural location for wetlands that are created as mitigation for those destroyed elsewhere. Revegetation of the floodplain should be attempted only after the hydrology has been studied, and improved where possible, so that any plantings will sustain themselves in the long term. It should then be accomplished using native plant species such as cottonwoods, willows, buffaloberry, Skunkbrush and native sedges and rushes appropriate to each particular site. Existing cottonwood and willow communities should be preserved and enhanced, while non-native species can gradually be eliminated. This will be a long-term commitment, but there is motivation among the people of Montrose and Ouray counties to improve the condition of the river.

Biodiversity Rank Justification: The high biodiversity significance rank of the river rests on the presence of small relic stands of a globally imperiled plant community, narrowleaf cottonwood-strap-leaf willow/silver buffaloberry. However, the importance of the river in the context of the entire landscape of the Uncompahgre Basin is much higher. The importance of any natural waterway in such an arid region cannot be over emphasized. An estimated 80% of vertebrate fauna depend on wetlands and riparian areas for year round habitat or for migratory stopovers (Summers and Floyd-Hanna 1996).

Natural Heritage elements at the Uncompahgre River macrosite.

Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus angustifolia/Salix eriocephala* var. *ligulifolia-Shepherdia argentea	**Narrowleaf cottonwood riparian forests**	**G1**	**S1**		**C**
Populus angustifolia/Salix eriocephala* var. *ligulifolia-Shepherdia argentea	**Narrowleaf cottonwood riparian forests**	**G1**	**S1**		**C**
Populus angustifolia/Salix eriocephala* var. *ligulifolia-Shepherdia argentea	**Narrowleaf cottonwood riparian forests**	**G1**	**S1**		**C**
Populus tremuloides/Acer glabrum	**Montane riparian forests**	**G2**	**S1S2**		**B**
Gilia penstemonoides	Black Canyon gilia	G2G3	S2S3	BLM, FS	D
Populus angustifolia/Rhus trilobata	Narrowleaf cottonwood/ Skunkbrush riparian forests	G3	S3		C
Iliamna grandiflora	Large-flower globemallow	G3?Q	S1		H

Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Pseudotsuga menziesii/Acer glabrum	Lower montane forests	G4	S1		C
Vireo vicinior	Gray vireo	G4	S2BSZN		E
Phragmites australis	Western slope marshes	G4	S3		C
Cypseloides niger	Black swift	G4	S3B		E
Populus angustifolia/Salix exigua	Narrowleaf cottonwood riparian forests	G4	S4		C
Woodsia neomexicana	New Mexican cliff fern	G4?	S2		B
Woodsia neomexicana	New Mexican cliff fern	G4?	S2		B
Woodsia neomexicana	New Mexican cliff fern	G4?	S2		B
Woodsia neomexicana	New Mexican cliff fern	G4?	S2		H
Woodsia neomexicana	New Mexican cliff fern	G4?	S2		C
Woodsia neomexicana	New Mexican cliff fern	G4?	S2		C
Platanthera sparsiflora	Canyon bog-orchid	G4G5T3	S2		C
Draba incerta	Yellowstone whitlow-grass	G5	S1		D
Polypodium hesperium	Western polypody	G5	S1S2		B
Polypodium hesperium	Western polypody	G5	S1S2		B
Polypodium hesperium	Western polypody	G5	S1S2		D
Adiantum capillus-veneris	Southern maidenhair fern	G5	S2	FS	H
Pellaea atropurpurea	Purple cliffbrake	G5	S2S3		D
Pellaea atropurpurea	Purple cliffbrake	G5	S2S3		H
Distichlis spicata	Salt meadows	G5	S3		C
Rana pipiens	Northern leopard frog	G5	S3	SC,FS	C
Rana pipiens	Northern leopard frog	G5	S3	SC,FS	C
Abies concolor/Mahonia repens	Mixed montane forests	G5	S4		B
Abies concolor/Mahonia repens	Mixed montane forests	G5	S4		B
Aquila chrysaetos (watch)	Golden eagle	G5	S4BSZN		E
Salix exigua/Bare ground	Coyote willow/barren soil	G5	S5		C
Typha latifolia	Narrowleaf cattail marsh	G5	S5		C
Adiantum aleuticum	Aleutian maidenhair fern	G5?	S1		H
Pseudotsuga menziesii/Carex geyeri	Lower montane forests	G5Q	S3		B
Quercus gambelii/Poa agassizensis	Mixed mountain shrublands	GU	SU		C

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include the entire Uncompahgre River, from its source to its confluence with the Gunnison River at Delta. The width of the site approximates the natural flood plain of the river, allowing room for increasing its meanders when restoration of a more natural flow pattern is undertaken. All of the plants, animals and natural communities listed above are included within the boundary.

Uncompahgre River Macrosite

East Montrose County

Ouray County

Legend

- Uncompahgre River Macrosite
- Highways
- Rivers
- Cities

Species and Plant communities of Concern

Plant Communities:

Narrowleaf cottonwood riparian forests

- Narrowleaf cottonwood
  Strapleaf willow
  Silver buffaloberry
- Narrowleaf Cottonwood
  Coyote willow

Montane riparian forests

Aspen/ Rocky Mountain maple

Narrowleaf cottonwood/ Skunkbrush riparian forests

Marshes

Giant reed

Lower montane forests

- Douglas fir/ Rocky Montain Maple
- Douglas fir/ Elk sedge

Mixed Montane forests

White fir/ Oregon grape

Coyote willow/ Barren soil

Mixed mountain shrublands

Gambel's oak/ Agassizensis bluegrass

Plants:	**Animals:**
Black Canyon gilia	Gray vireo
Large-flower globemallow	Black swift
New Mexican cliff fern	Golden eagle
Canyon bog-orchid	Northern leopard frog
Yellowstone whitlow-grass	
Western polypody	
Southern maidenhair fern	
Purple cliffbrake	
Aleutian maidenhair fern	

N

0 4 8 12 Miles

* Prepared by Southwest Data Center

Uncompahgre Badlands Macrosite

Biodiversity Rank: B2. Very high significance. The Uncompahgre Badlands macrosite contains the majority of the occurrences of rare and imperiled plants of the Uncompahgre Basin. These include an excellent and several good occurrences of the clay-loving wild buckwheat, which is listed as endangered by the U. S. Fish and Wildlife Service. Colorado desert-parsley and adobe penstemon, considered sensitive by the BLM, and the good-neighbor bladderpod, a plant recently described from the area, also occur within the PCA.

Protection Urgency Rank: P1. The site comprises a combination of BLM and private lands. Much of this area has already been fragmented and altered by agriculture and residential development. Continuance of this trend may bring about the extinction of the rare plants. Only 377 acres of BLM land are represented in the Fairview Research Natural Area and Area of Critical Environmental Concern, managed for the protection of the rare plants.

Management Urgency Rank: M2. Major impacts on the BLM portions of the site include grazing and Off Highway Vehicle use (including ATVs, motorcycles, and four-wheel drive vehicles). Some areas are heavily impacted by OHV use, resulting in a network of trails, and near obliteration of bottomland vegetation. Continued growth in the valley will result in more OHV users using these limited and popular sites. As a result, the plant populations in this area may be eliminated. Salinity and erosion control efforts have occurred here in the past, resulting in numerous checkdams, contour furrows, settling ponds and weed invasions. Cheatgrass, halogeton, and Russian knapweed are the biggest concerns to BLM (Clements 1999).

Location: Montrose County. Thirteen miles north-northeast of Montrose, to 7 miles southeast of Montrose, east of the Uncompahgre River.

U.S.G.S. 7.5. min. quadrangles: Olathe Northwest, Olathe, Montrose East, Red Rock Canyon, Cerro Summit.

Legal Description: T51N R9W S19-21, 28-30, 31-33; T50N R9W S4-6, 8, 9, 15, 16, 21-28, 34-36; T50N R8W S29, 33; T49N R8W S4-9, 16-36; T48N R8W S3-9, 16-20, 30; T48N R9W S1, 10-14, 23, 24.

Elevation range: 5400 to 7200 feet

Size: 46,328 acres

General Description: The Uncompahgre Badlands macrosite extends from Peach Valley, near the Delta County line, to approximately seven miles south of Montrose. It includes six standard sites which are discussed separately below: Peach Valley, Cedar Creek, Landfill Road-Bostwick Park Road, Dry Cedar Creek, South Canal, and Kinikin Road-Sunshine Road. It contains the majority of occurrences of our most imperiled plant species.

The site consists of level to rolling terrain with clay soils derived from Mancos shale (Figure 3). Soils are high in salt content, and are major contributors to the salinity of the Colorado River.

Vegetation of the area is primarily salt desert shrublands dominated by shadscale and mat saltbush. Low bottomlands usually have greasewood, while north and east facing hillsides often have the native bunchgrass Salina wild rye. Adjacent lands to the west are mostly cultivated valley lands, while to the east, higher elevations have pinyon and juniper woodlands.

Ownership of this site is a mixture of BLM and private lands. Private lands are concentrated in the southern and eastern parts of the site, while most of the Peach Valley site at the north end of the macrosite is managed by BLM.

The only protected area within the site is the BLM's Fairview Research Natural Area (RNA) and Area of Critical Environmental Concern (ACEC).

Natural Heritage elements at the Uncompahgre Badlands macrosite.

Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**A**
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**B**
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**B**
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**B**
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**B**
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**B**
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	C
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	C
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	C
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	C
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	D
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	E
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	E
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	E
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	HB
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	HC
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	HC
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	HC
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**B**
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**B**
Lesquerella vicina	Good-neighbor bladderpod	G2	S2		C
Lesquerella vicina	Good-neighbor bladderpod	G2	S2		D
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**A**
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**B**
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**B**
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**B**
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**B**
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	C
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	C
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	D
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	E
Atriplex confertifolia/Hilaria jamesii	Cold desert shrublands	G3	S2		B
Cryptantha longiflora	**Long-flowered cat's-eye**	**G3**	**S2**		**A**

Cryptantha longiflora	Long-flowered cat's-eye	G3	S2		B
Cryptantha longiflora	Long-flowered cat's-eye	G3	S2		C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	C
Penstemon retrorsus	Adobe beardtongue		S3	BLM	C
Penstemon retrorsus	Adobe beardtongue		S3	BLM	C
Penstemon retrorsus	Adobe beardtongue		S3	BLM	C
Penstemon retrorsus	Adobe beardtongue		S3	BLM	E
Penstemon retrorsus	Adobe beardtongue		S3	BLM	E
Penstemon retrorsus	Adobe beardtongue		S3	BLM	E
Penstemon retrorsus	Adobe beardtongue		S3		E
Penstemon retrorsus	Adobe beardtongue		S3	BLM	E
Penstemon retrorsus	Adobe beardtongue		S3	BLM	E
Penstemon retrorsus	Adobe beardtongue		S3	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Penstemon retrorsus	Colorado desert-parsley	G3	S3	BLM	H
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	H
Penstemon retrorsus	Adobe beardtongue		S3	BLM	HB
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	HC
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	HC
Circus cyaneus	Northern harrier	G5	S3BSZN		E
Rana pipiens	Northern leopard frog	G5	S3	SC,FS	C

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass the habitat of the clay loving buckwheat, Colorado desert parsley and adobe beardtongue, including those parts of the Mancos shale foothills between the irrigated valley bottom and the pinyon-juniper zone above, as determined by field survey and interpretation of aerial photos and 1:24,000 USGS topographic maps. All of the occurrences of plants, animals and natural communities listed above are found within the site boundary. Some areas that do not provide suitable habitat for the elements above, for instance irrigated pastures, are included within the boundary.

Uncompahgre Badlands Macrosite

Species and Plant communities of Concern

Plant Communities:

Cold desert shrublands
Mat saltbrush
Galleta

Plants:

Clay-loving wild buckwheat
Good-neighbor bladderpod
Colorado desert-parsley
Long-flowered cat's eye
Adobe beardtongue

Animals:

Northern harrier
Northern leopard frog

N

0 0.7 1.4 2.1 Miles

Montrose & Delta 1:100,000 scale maps
*Prepared by Southwest Data Center

US Highway 50

Macrosite Boundary

Billy Creek

Biodiversity Rank: B2. Very high significance. The Billy Creek site contains two of the best known occurrences of Wetherill milkvetch, a plant that is globally vulnerable, and good quality occurrences of the Colorado desert-parsley, a plant considered to be imperiled throughout its range. A fair population of the Rocky Mountain thistle, also globally imperiled, was found at this location.

Protection Urgency Rank: P2. Although the site is located on BLM and state lands, protection from disturbance is not secure. Threats include new power and pipelines, roads, and ATV use. The high-ranked population of Wetherill milkvetch is one of the best known, and could be protected by ACEC designation.

Management Urgency Rank: M2. The Rocky Mountain thistle population could be destroyed by well-intentioned weed spraying. Further inventory is needed to determine the abundance of the good-neighbor bladderpod. Both CDOW and BLM are treating vegetation in the area, in order to improve habitat for deer and elk. Methods include prescribed burning and roller-chopping or brush-beating to increase herbaceous species and rejuvenate browse species. Areas to be treated should be surveyed for the rare plants, and rare plant populations should be monitored to learn the effects of these treatments. Chaffee Gulch has been identified for channel stabilization and restoration work on CDOW lands, and is being studied for restoration potential on BLM lands. Again, the rare plant populations should be considered before any surface-disturbing projects are undertaken.

Location: Ouray County. About seven miles north of Ridgway.
. U.S.G.S. 7.5. min. quadrangles: Buckhorn Lakes, Colona
Legal Description: T47N R8W S25-28, 33-36; T46N R8W S1-4.

Elevation range: 6,560 to 8,200 feet

Size: 6063 acres

General Description: This site represents the southern end of the desert shrub community on the Mancos shale hills extending south from Montrose. The dominant vegetation at lower elevations is shadscale, with greasewood in bottomlands; higher, mountain big sagebrush, pinyon-juniper woodlands and mixed mountain shrublands with Gambel's oak, mountain mahogany and Utah serviceberry prevail.

The site includes part of the Billy Creek State Wildlife Area, as well as adjacent BLM lands. Billy Creek SWA provides critical habitat for mule deer and elk. CDOW has been working on restoration of wetlands and riparian vegetation by installing small check dams in Billy Creek and planting willows along the banks.

The Wetherill milkvetch was found on lower south facing slopes, in rocky dry washes with scattered Utah junipers, and at the top of the same hills in more dense pinyon and juniper. Few plants were found mid-slope. Associated species on the lower slopes included shadscale, four-wing saltbush, prickly-pear cactus, shaggy fleabane,

longleaf phlox, sand aster, scarlet globemallow, chainpod, western wheatgrass, Indian rice grass, and cheatgrass. On the hilltops, associated species included pinyon pine, Utah juniper, twin bladderpod, actinea, bottlebrush squirreltail, and sharpleaf twinpod.

Rocky Mountain thistle was growing in disturbed areas along the road south to Chaffee Gulch, on small man-made dams. The good-neighbor bladderpod was collected near Chaffee Gulch by J. Anderson and J. Ferguson (Anderson *et al*. 1997). It was not found 1998, perhaps because the search time was wrong, or because the plants failed to flower this year. The abundance is not known. Further survey work is needed during the flowering period in April to determine the quality of this occurrence.

Natural Heritage elements at the Billy Creek PCA.

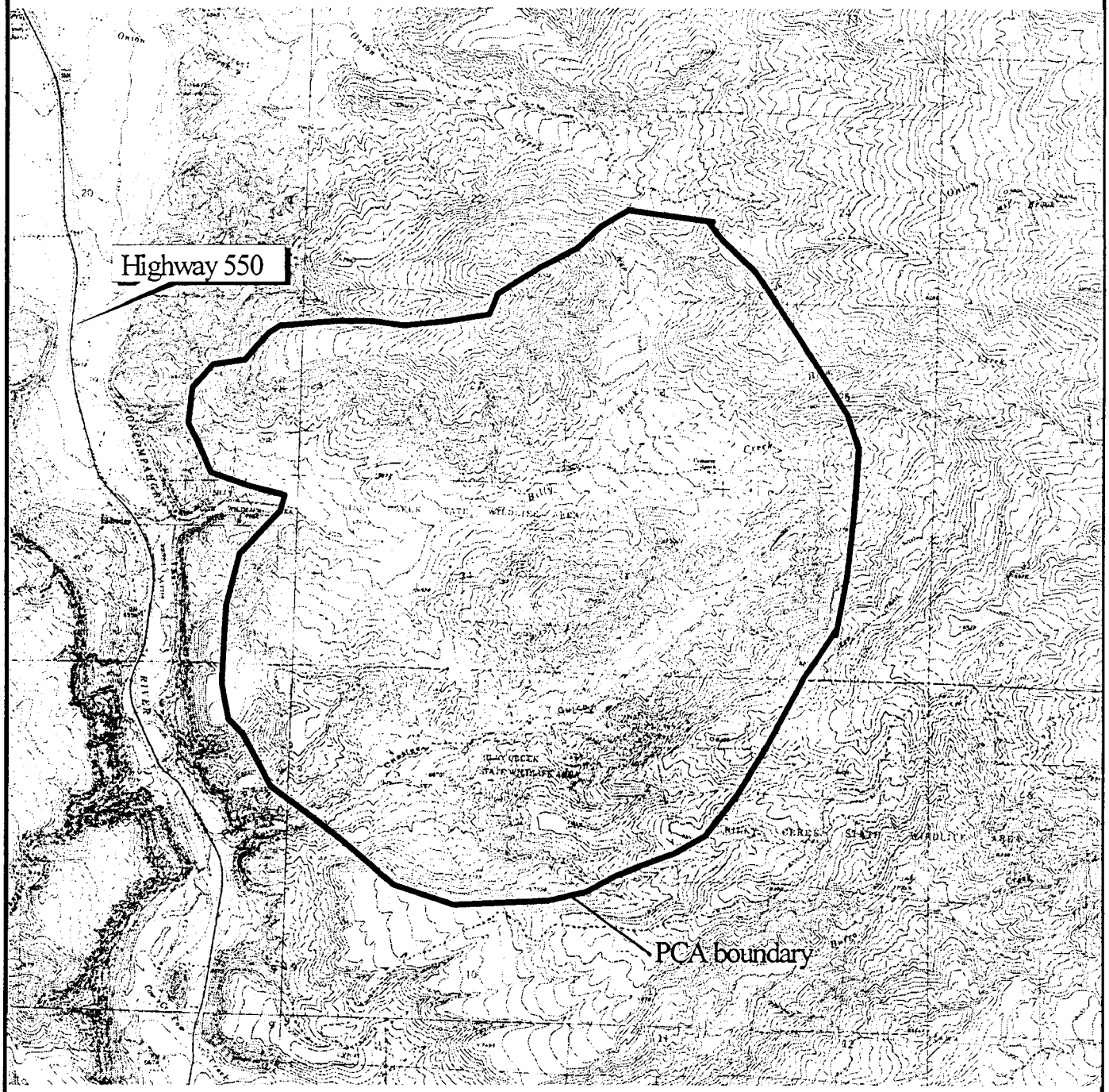
Scientific Name	Common Name	Global Rank	State Rank	Federal/State Status	EO Rank*
Cirsium perplexans	Rocky Mountain thistle	G2	S2		C
Cirsium perplexans	Rocky Mountain thistle	G2	S2		D
Lesquerella vicina	Good-neighbor bladderpod	G2	S2		E
Lesquerella vicina	Good-neighbor bladderpod	G2	S2		E
Lesquerella vicina	Good-neighbor bladderpod	G2	S2		E
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	B
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	B
Lomatium concinnum	Colorado desert-parsley	G2	S2		E
Astragalus wetherillii	**Wetherill's milkvetch**	**G3**	**S3**	**BLM, FS**	**A**
Astragalus wetherillii	**Wetherill's milkvetch**	**G3**	**S3**	**BLM, FS**	**A**
Astragalus wetherillii	Wetherill's milkvetch	G3	S3	BLM, FS	H

*EO = Element Occurrence

Boundary Justification: The boundary includes all of the plant occurrences listed above, and some adjacent potential habitat, as well as upstream portions of the Billy Creek and Chaffee Gulch drainages that may indirectly affect the condition of the site.

Billy Creek

Proposed Conservation Area



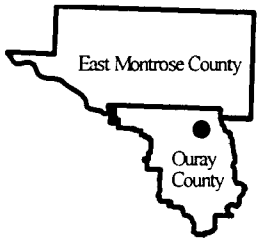
Species of Concern

Plants:

Rocky Mountain thistle
Good-neighbor bladderpod
Colorado desert parsley
Wetherill's milkvetch

Animals:

Loggerhead shrike



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Buckhorn Lakes and Colona U.S.G.S. 7.5 min. Quadrangles

Cedar Creek

Biodiversity Rank: B2. Very high significance. The site has good occurrences of the globally imperiled Colorado desert parsley.

Protection Urgency Rank: P3. Special protection by BLM, such as designating an ACEC, is recommended for at least a few of the best occurrences of the Colorado desert-parsley on BLM land in the Uncompahgre Badlands macrosite. Small BLM parcels in this area are vulnerable to disposal or land trade in the future, and should be surveyed for sensitive and endangered plants before any change in ownership is negotiated.

Management Urgency Rank: M3. BLM lands in Cedar Creek are designated as Unit 1 (managed with emphasis on grazing) and Unit 16 (standard resource management.) Rare plant populations should be monitored periodically to determine effects of grazing.

Location: Montrose County. About five miles east of Montrose, on both sides of Highway 50.

U.S.G.S. 7.5. min. quadrangles: Cerro Summit, Montrose East, Red Rock Canyon
Legal Description: T49N R8W S21-23, 25-29, 32-36.

Elevation range: 6,200 to 6,776 feet

Size: 4,143 acres

General Description: The Cedar Creek site is located on slopes of Mancos shale, at the eastern end of this formation in Montrose County. Vegetation of the area consists primarily of desert shrubs including shadscale, black sagebrush, and spiny horsebrush, with bunch grasses such as bottlebrush squirreltail and Salina wildrye.

The clay-loving buckwheat is often found in shallow swales. Much of the area has been heavily grazed (USFWS 1988). The adobe penstemon was found mostly on northwest to northeast facing slopes. Associated plant species were big sagebrush, Salina wildrye, bottlebrush squirreltail, woody aster, yellow milkvetch and milkweed milkvetch. There are many canals and roads within the site. Vegetation along Cedar Creek and the canals consists of a mixture of native and introduced species, including box elder, greasewood, reed canary grass, tamarisk, coyote willow, skunkbrush, Russian knapweed and wild rose.

Natural Heritage elements at the Cedar Creek PCA.

Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	HB
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	HC
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**B**
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**B**
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	C

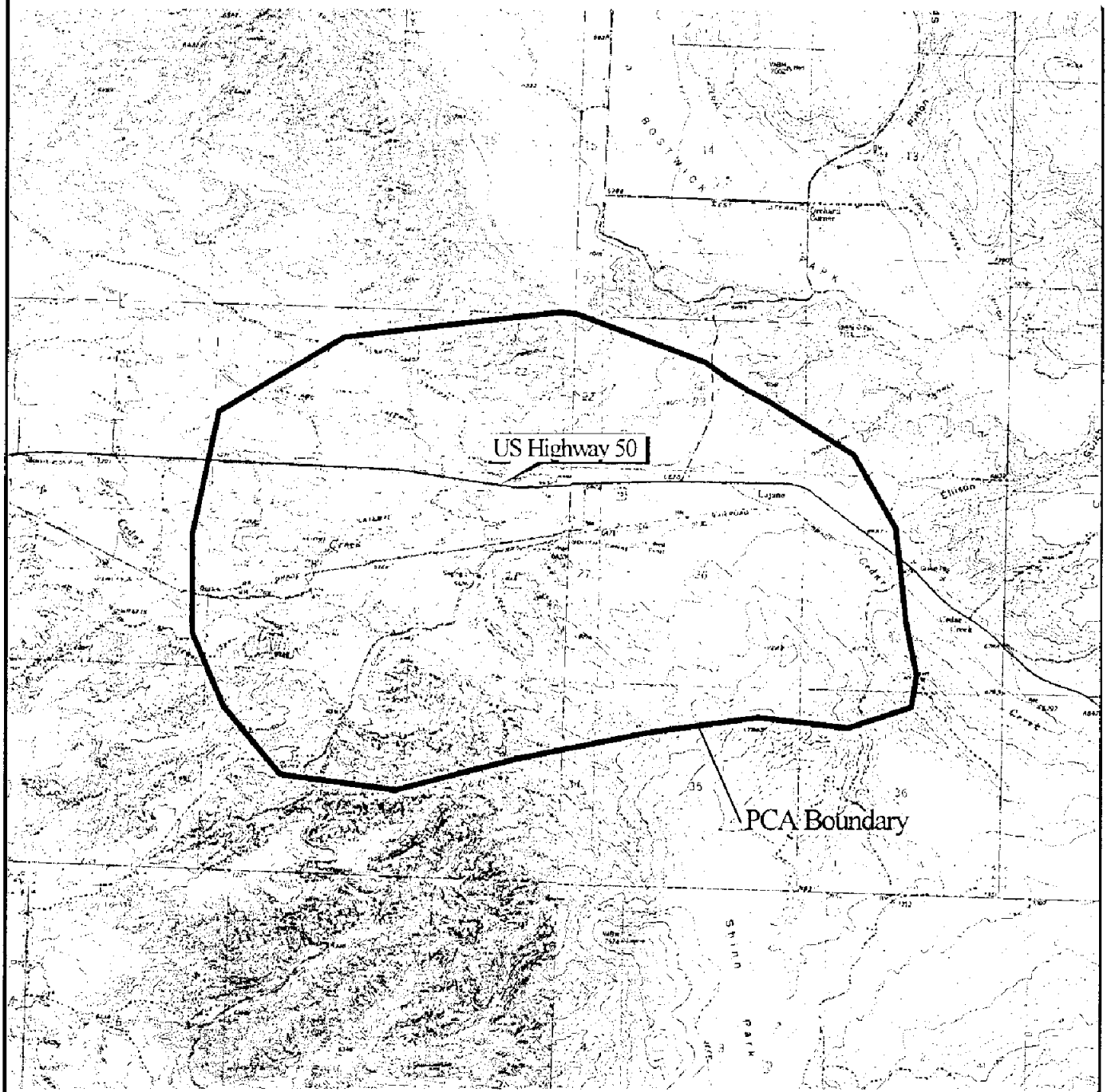
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	H
Penstemon retrorsus	Colorado desert-parsley	G3	S3	BLM	H
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	HB

*EO = Element Occurrence

Boundary Justification: The site contains a cluster of known element occurrences and adjacent potential habitat within the Uncompahgre Badlands macrosite.

Cedar Creek

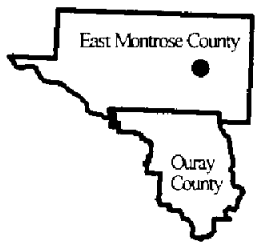
Proposed Conservation Area



Species of Concern

Plants:

Clay-loving wild buckwheat
Colorado desert-parsley
Adobe beardtongue



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Cerro Summit & Surrounding U.S.G.S. 7.5 min. Quadrangles

Cerro Summit

Biodiversity Rank: B2. Very high significance. This site contains a fair occurrence of the Gunnison sage grouse, considered critically imperiled on a global scale.

Protection Urgency Rank: P3. The Cerro Summit PCA is located on private and BLM lands. The private lands have no special protection.

Management Urgency Rank: M4. Management actions to benefit the sage grouse may include maintaining continuous sagebrush, limiting grazing and planting grasses to enhance nest and brood survival.

Location:

U.S.G.S. 7.5. min. quadrangles: Cerro Summit, Cimarron
Legal Description: T48N R6W S6, 7, 18; T48N R7W S1-24; T48N R8W S1, 2, 11, 12, 13, 14; T49N R7W S31-35; T49N R8W S36.

Elevation range: 7,760 feet to 8,854 feet.

Size: 19,651 acres

General Description: This site encompasses a large, level to gently sloping area south and east of Cerro Summit. The area is bisected by a road and irrigation ditch. Vegetation consists of sagebrush and grassland. The Rocky Mountain thistle was collected in this site in 1926, but we were unable to relocate this population in 1998. However, it should be watched for.

Natural Heritage elements at the Cerro Summit PCA.

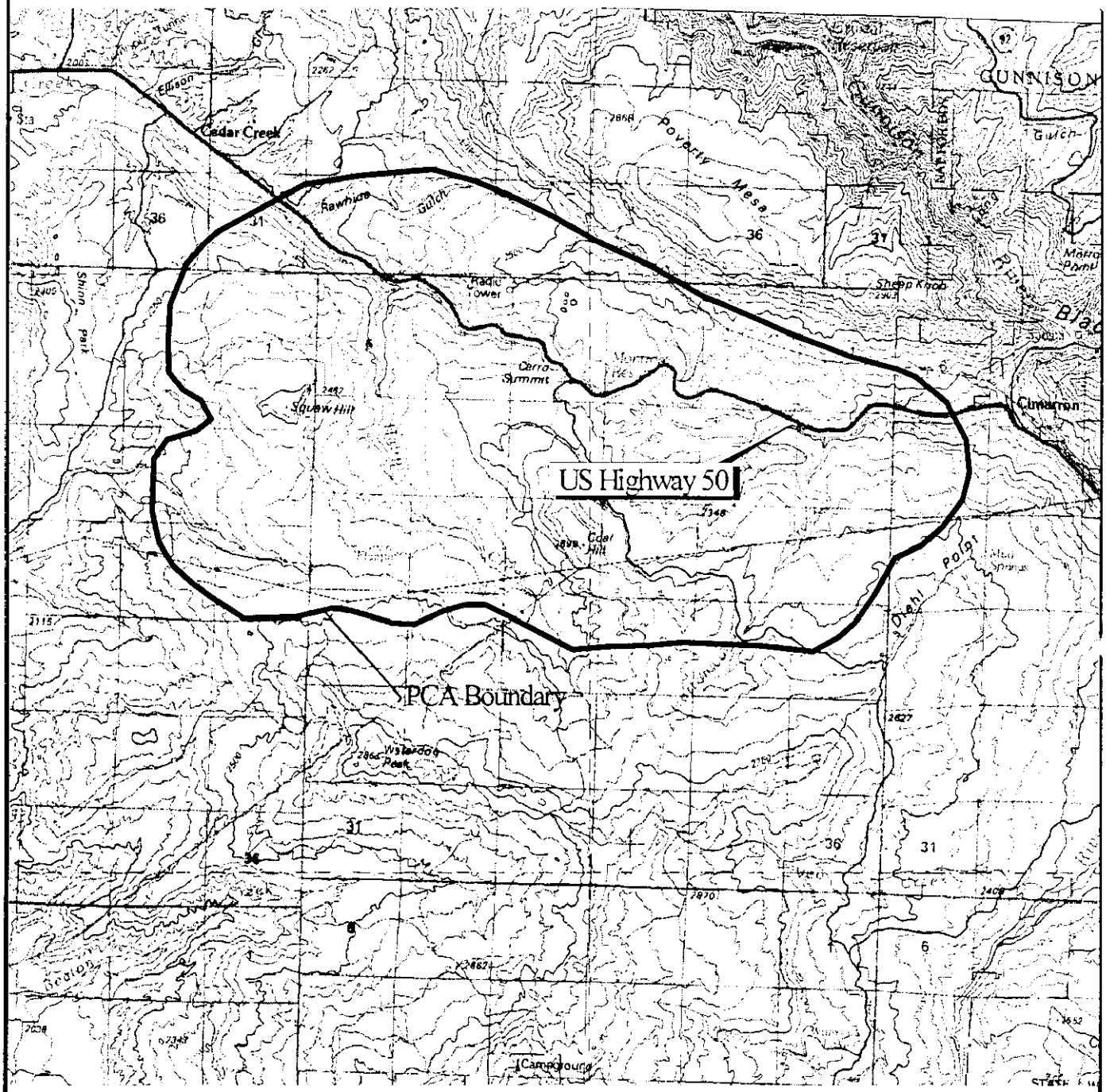
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
***Centrocercus* sp. 1**	**Gunnison sage grouse**	**G1**	**S1**	**SC**	**C**

*EO = Element Occurrence

Boundary Justification: The site boundary was drawn to encompass the entire nesting area, including known leks, of the Gunnison sage grouse and surrounding habitat containing potential or known roost and nesting locations.

Cerro Summit

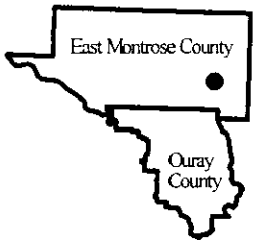
Proposed Conservation Area



Species of Concern

Animals:

Gunnison sage grouse



N

0 1 2 3 Miles

*Prepared by Southwest Data Center

Montrose 1:100,000 scale map

Cimarron

Biodiversity Rank: B2. Very high significance. The Cimarron PCA has a good occurrence of the globally imperiled Rocky Mountain thistle. It is also the type locality for the species.

Protection Urgency Rank: P3. The site is located both on private land and in the Curecanti National Recreation Area. This site should be protected as the type locality of the Rocky Mountain thistle.

Management Urgency Rank: M2. Weed spraying for thistles and road maintenance actions could imperil the population of the Rocky Mountain thistle. The National Park Service and the Montrose County weed commissioner have been advised of its presence.

Location: Montrose County. On the south facing hillside north of Highway 50 at the Cimarron Ranger Station, and above the cemetery.

U.S.G.S. 7.5. min. quadrangles: Cimarron

Legal Description: T48N R6W, S5, 6, 8

Elevation range: 7,000 to 7,850 feet

Size: 659 acres

General Description:
The Cimarron site is on a south-facing hillside of Mancos shale above the Cimarron Ranger Station. The area has been disturbed, and is crossed by power lines and roads. Vegetation consists of scattered pinyon and juniper, big sagebrush, hairy golden aster, actinea, long-leaf phlox, mountain mahogany, snowberry, and arrowleaf balsamroot. This is the type locality of the Rocky Mountain thistle, which was first collected here in 1901.

Natural Heritage elements at the Cimarron PCA.

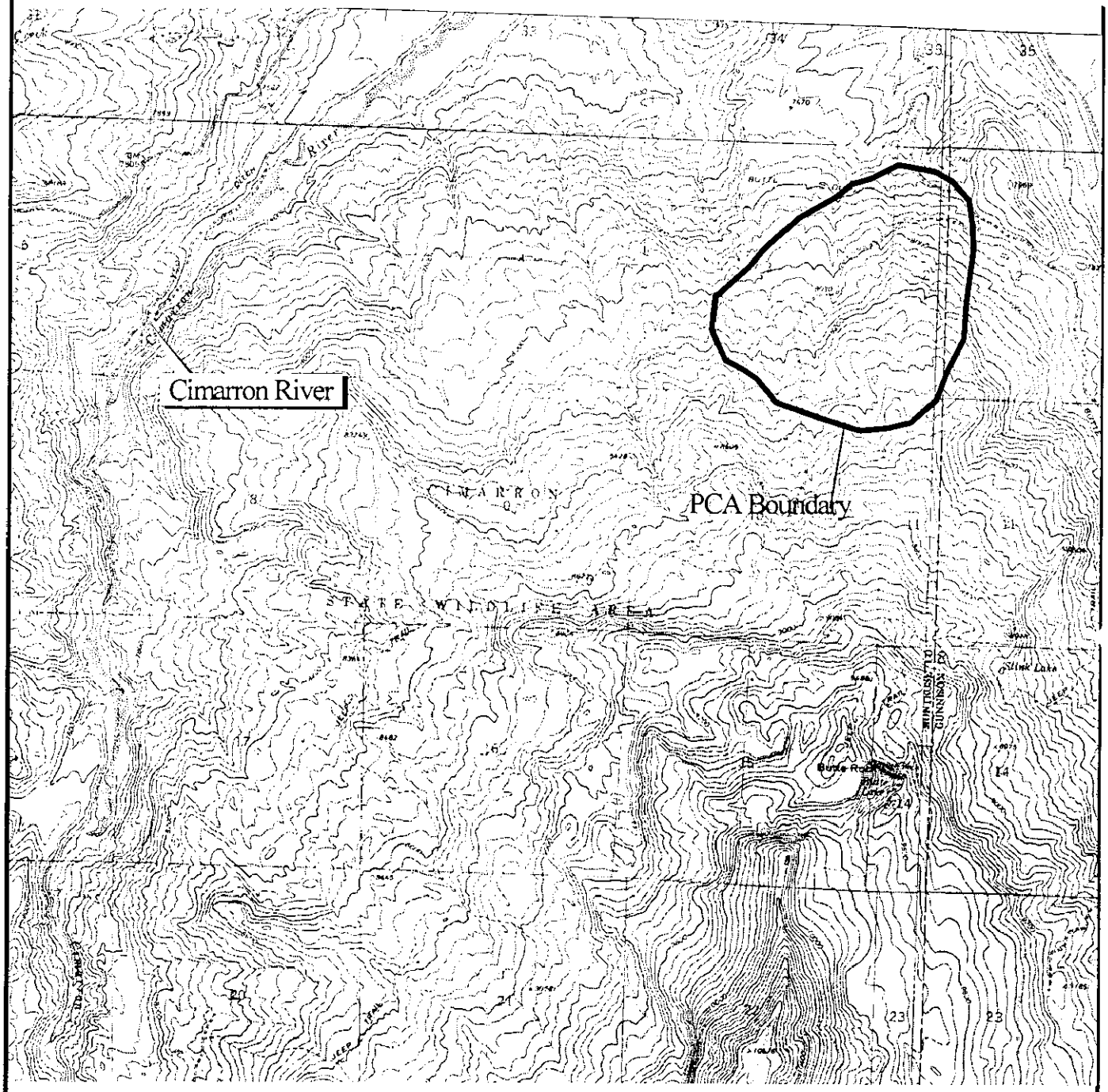
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO Rank*
Cirsium perplexans	**Rocky Mountain thistle**	**G2**	**S2**		**B**
Cirsium perplexans	Rocky Mountain thistle	G2	S2		C
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	H
Gilia penstemonoides	Black Canyon gilia	G2G3	S2S3	BLM, FS	H

*EO = Element Occurrence

Boundary justification: The boundary is drawn to include two occurrences of the Rocky Mountain thistle, and the adjacent potential habitat up to the ridgetop.

Cimarron

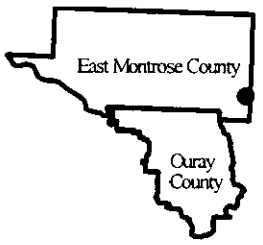
Proposed Conservation Area



Species of Concern

Plants:

Rocky Mountain thistle
Colorado desert-parsley
Black Canyon gilia



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Lost Lake & Washboard Rock U.S.G.S. 7.5 min. Quadrangles

Cimarron State Wildlife Area

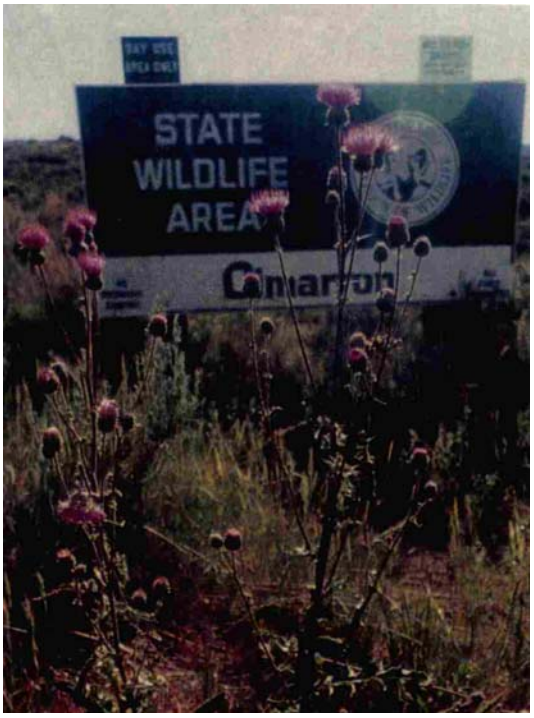
Biodiversity Rank: B2. Very high significance. The Cimarron SWA has a good occurrence of the globally imperiled Rocky Mountain thistle.

Protection Urgency Rank: P4. This site is protected as part of the State Wildlife Area.

Management Urgency Rank: M2. The site should be protected from weed spraying and road maintenance that could damage the Rocky Mountain thistle population. Although the Canada thistle, which is growing next to the Rocky Mountain thistle, should be controlled, controlling one without damaging the other may be problematic.

Location: Montrose County. From Highway 50 east of Cimarron, turn south on the Little Cimarron Road, go two miles, then follow signs to the Cimarron State Wildlife Area.
U.S.G.S. 7.5. min. quadrangles: Washboard Rock
Legal Description: T47N R6W S 2, 3, 10

Figure 26. Rocky Mountain thistle



Elevation range: 7,800 to 8,400 feet

Size: 504 acres

General Description: This site has very gentle, rolling hills dominated by mountain big sagebrush and western wheatgrass. The main population of the Rocky Mountain thistle was found in a disturbed area by the sign at the entrance to the wildlife area (Figure 26). There were a few additional plants along the road to the west. Two other thistles were found growing with the Rocky Mountain thistle: the noxious weed, Canada thistle, and a tap-rooted native species, Tracy's thistle. Although this suggests possible hybridization, the Rocky Mountain thistle is considered to be a distinct species (Keil 1998)

Natural Heritage elements at the Cimarron State Wildlife Area PCA.

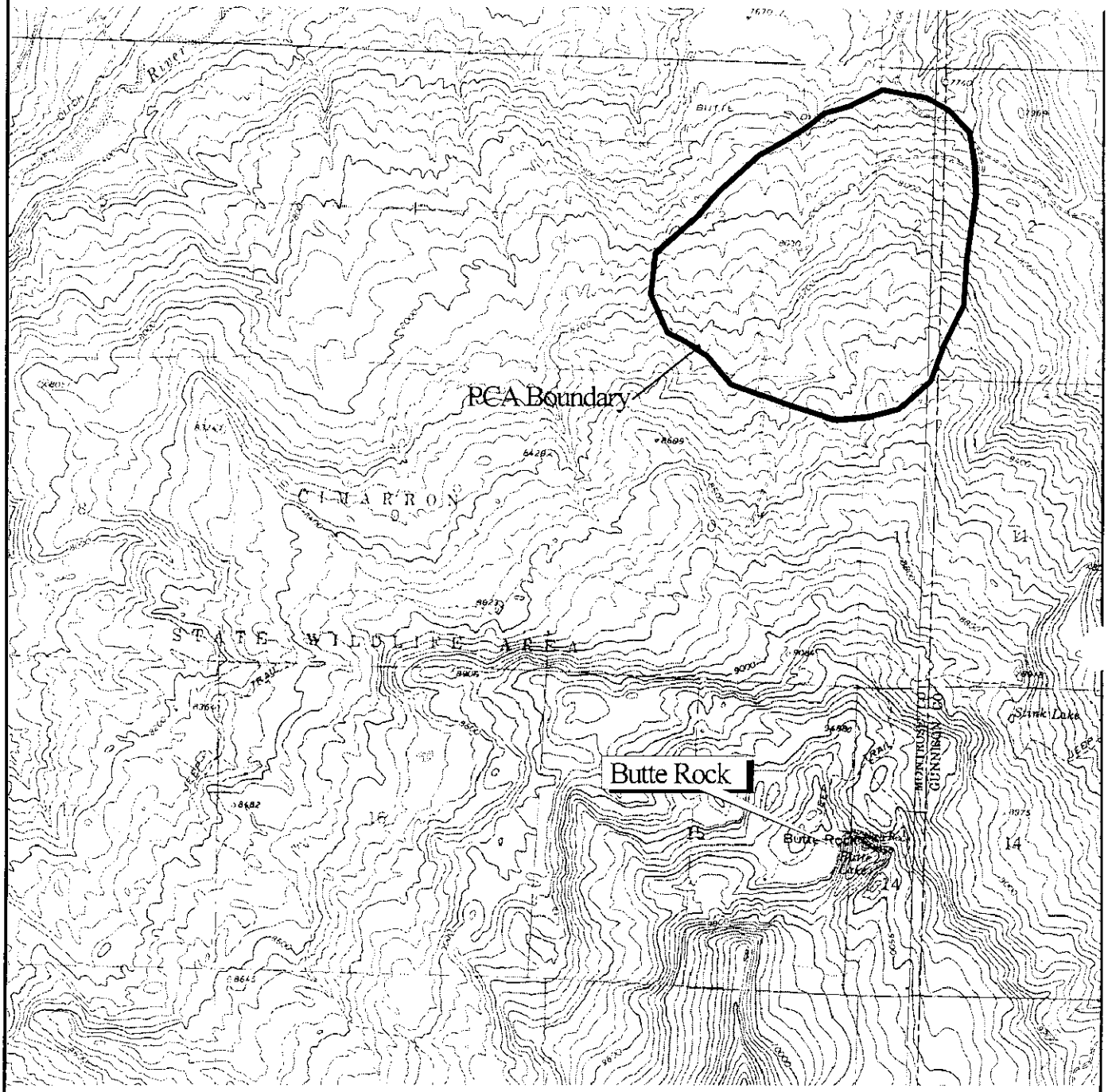
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Cirsium perplexans	Rocky Mountain thistle	G2	S2		B

*EO = Element Occurrence

Boundary justification: The boundary encloses the occurrence and adjacent habitat in the Cimarron State Wildlife Area.

Cimarron SWA

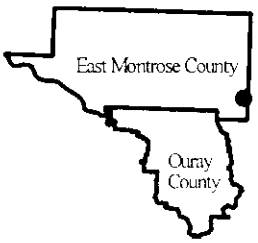
Proposed Conservation Area



Species of Concern

Plants:

Rocky Mountain thistle



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Lost Lake & Washboard Rock U.S.G.S. 7.5 min. Quadrangles

Colona Mountain

Biodiversity Rank: B2. Very high significance. The site has one of the best known occurrences of Wetherill milkvetch, as well as a good population of the good-neighbor bladderpod.

Protection Urgency Rank: P3. The occurrences are on parts of this private land that the present owners do not plan to develop. However, long-term protection such as a conservation easement would ensure the continuance of the plant populations.

Management Urgency Rank: M5. Present management of this property appears to be adequate for the continuance of the species. The area is not presently grazed by livestock, although it has been used for horses in the past, and use by deer and elk is very high.

Location: Montrose and Ouray counties. About one mile east of Highway 550 at Colona.
U.S.G.S. 7.5. min. quadrangles: Colona, Buckhorn Lakes
Legal Description: T47N R8W S 8, 9, 16, 17

Elevation range: 6,500 to 7,150 feet
Size: 300 acres

General Description:
This site consists of an isolated Mancos shale hill surrounded by agricultural lands. The sides of the mountain are eroded clay, with some deep gullies, and sparsely vegetated with shadscale, Indian rice grass, Salina wildrye, and woody aster. Bottomlands with deeper soils have big sagebrush. The top and some valleys support pinyon pine woodlands with mountain big sagebrush in the understory. The Wetherill milkvetch was found in rocky draws on the south facing slopes. Good-neighbor bladderpod was found both at the top of the mountain in pinyon and juniper woodland, and at the base on the north, in sagebrush. The area is heavily used by deer and elk, although it has not been grazed by livestock for ten years.

Natural Heritage elements at the Colona Mountain PCA.

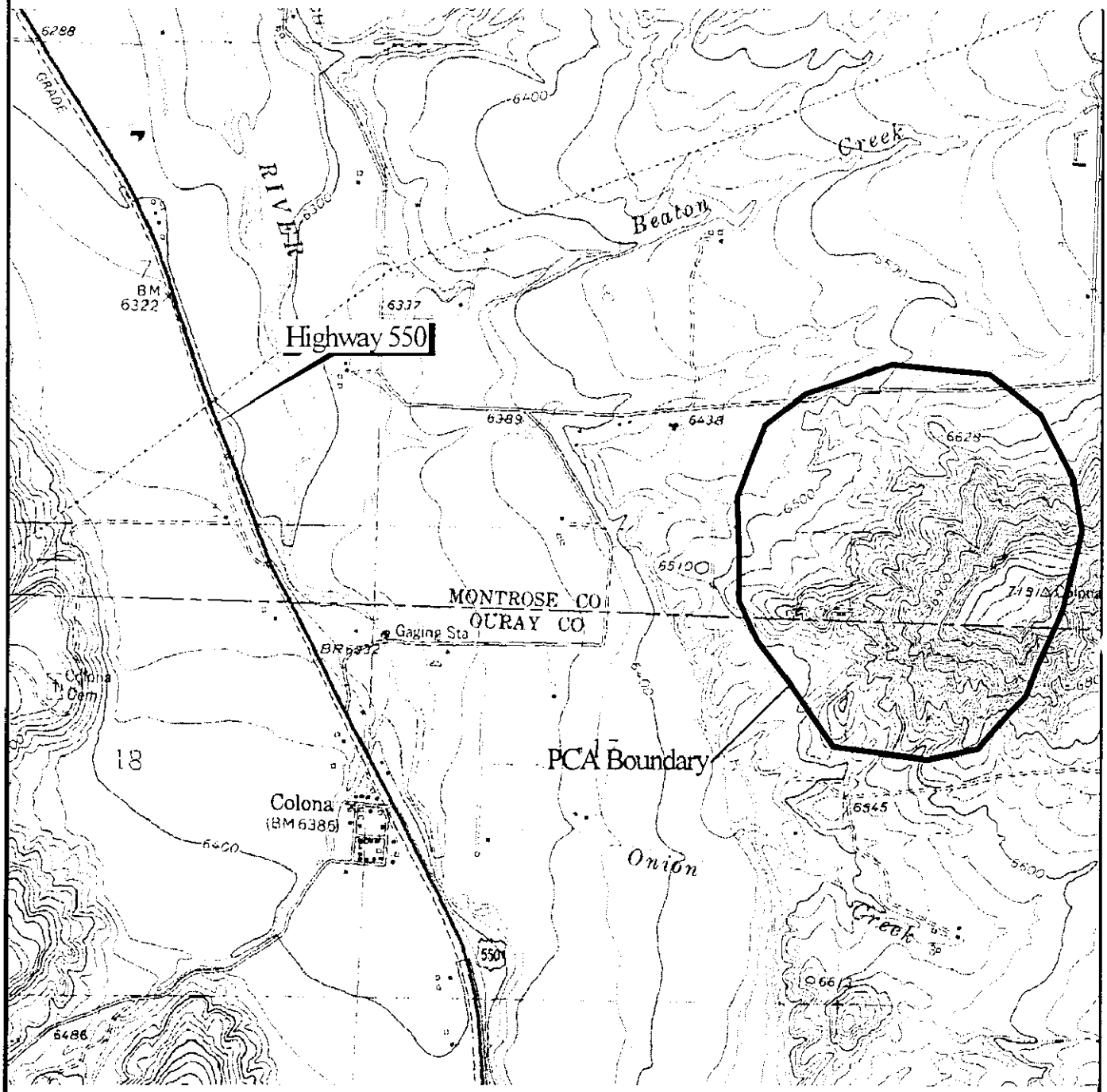
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO Rank*
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**B**
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	D
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	D
Astragalus wetherillii	Wetherill's milkvetch	G3	S3	BLM, FS	A

*EO = Element Occurrence

Boundary justification: The boundary has been drawn to include the entire mountain, and excludes irrigated land at its base. Each element uses a different niche within the site. Adjacent lands in the Onion Creek drainage that were not surveyed appear to have similar habitat.

Colona Mountain

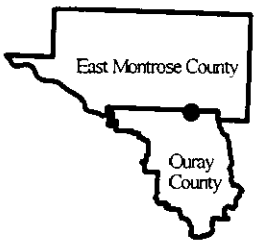
Proposed Conservation Area



Species of Concern

Plants:

Good-neighbor bladderpod
Colorado desert-parsley
Wetherill's milkvetch



N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Colona U.S.G.S. 7.5 min. Quadrangle

Cow Creek-Oben Creek

Biodiversity Rank: B2. Very high significance. The Cow Creek-Oben Creek site has four excellent examples of globally rare riparian plant communities, one of which is considered critically imperiled, one considered globally imperiled, and two that are globally secure. It is also the location of a newly discovered black swift nest.

Protection Urgency Rank: P2. The site includes private, BLM and National Forest land. The upstream portion of the site is well protected as part of the Uncompahgre Wilderness. Private land downstream has no special protection and could be developed in the future. The BLM land is a small parcel, but includes some excellent riparian vegetation, and should be retained as public land.

Management Urgency Rank: M3. Cattle grazing occurs on private, BLM and National Forest land. Present management appears to be good, although there are some severe weed infestations on National Forest land in areas used heavily by hunters. County road maintenance has caused significant disturbance on the "cherry-stemmed" road to the wilderness boundary. Consideration should be given to closing this road. (Grother 1999).

Location: Ouray County. About five miles east of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Wetterhorn Peak, Dallas
Legal Description: T45N R7W S 9, 16, 21, 22, 27, 34; T44N R7W S 1-3, 11, 13, 14.

Elevation range: 7,560 to 10,400 feet

Size: 732 acres

General Description: Cow Creek is a major tributary of the Uncompahgre River, with its headwaters in the Uncompahgre Wilderness, high in the San Juans. From the Wilderness, it passes through the Uncompahgre National Forest, BLM and finally, private land. Oben Creek joins Cow Creek at the beginning of a large roadless area. It has several waterfalls, one of which was the site of a newly discovered black swift nest.

Both Cow Creek and Oben Creek have excellent condition examples of both riparian and upland forest types. The riparian zone is dominated by narrowleaf cottonwood and scattered blue spruce, with thinleaf alder, red osier dogwood and willows in the understory. Douglas fir and white fir are common in the lower, more mesic sites. Higher slopes are forested with Engelmann spruce, subalpine fir and aspen in the upstream section, and Gambel's oak and aspen in the lower section.

In the vicinity of Oben Creek, the hillsides are covered with a moist forest of Douglas fir, white fir, and blue spruce, and occasional white pine. Beneath this canopy is a rich understory of shade-tolerant plants such as sweet cicely, mountain lover, Oregon grape, Canadian violet, elk sedge, Rocky Mountain maple, twinflower, rattlesnake plantain, meadowrue, one-sided wintergreen, whortleberry, russet buffaloberry, and mosses. The pictureleaf wintergreen, with its striking white veins contrasting with its

dark green leaves grows in the shadiest places, in the thick duff of the conifers. This montane forest is an excellent condition example of a plant community that is widespread in Ouray County. There are almost no exotic species present.

The upstream two miles of the Cow Creek site are within the Uncompahgre Wilderness Area. Along the creek are large cottonwoods, with good regeneration, large blue spruces, and thinleaf alder. Dense thickets of red-osier dogwood grow beneath the alders and slightly away from creek. Where the canyon narrows, the cottonwoods drop out, while in wider places Rocky Mountain and Drummond willows dominate the flood plain. Here, too, there are almost no exotic species present. Other common plants in the site include Rocky Mountain maple, currants, and twinberry honeysuckle. One small section has seeping cliffs with seep monkeyflower, and New Mexican cliff ferns.

Most disturbances in the site are from natural causes such as flooding and landslides. There are some impacts from grazing, hunting and mining in the downstream section, mostly in clearings in the forest, away from the riparian area. In general, the condition of the entire site is excellent.

Natural Heritage elements at the Cow Creek-Oben Creek PCA.

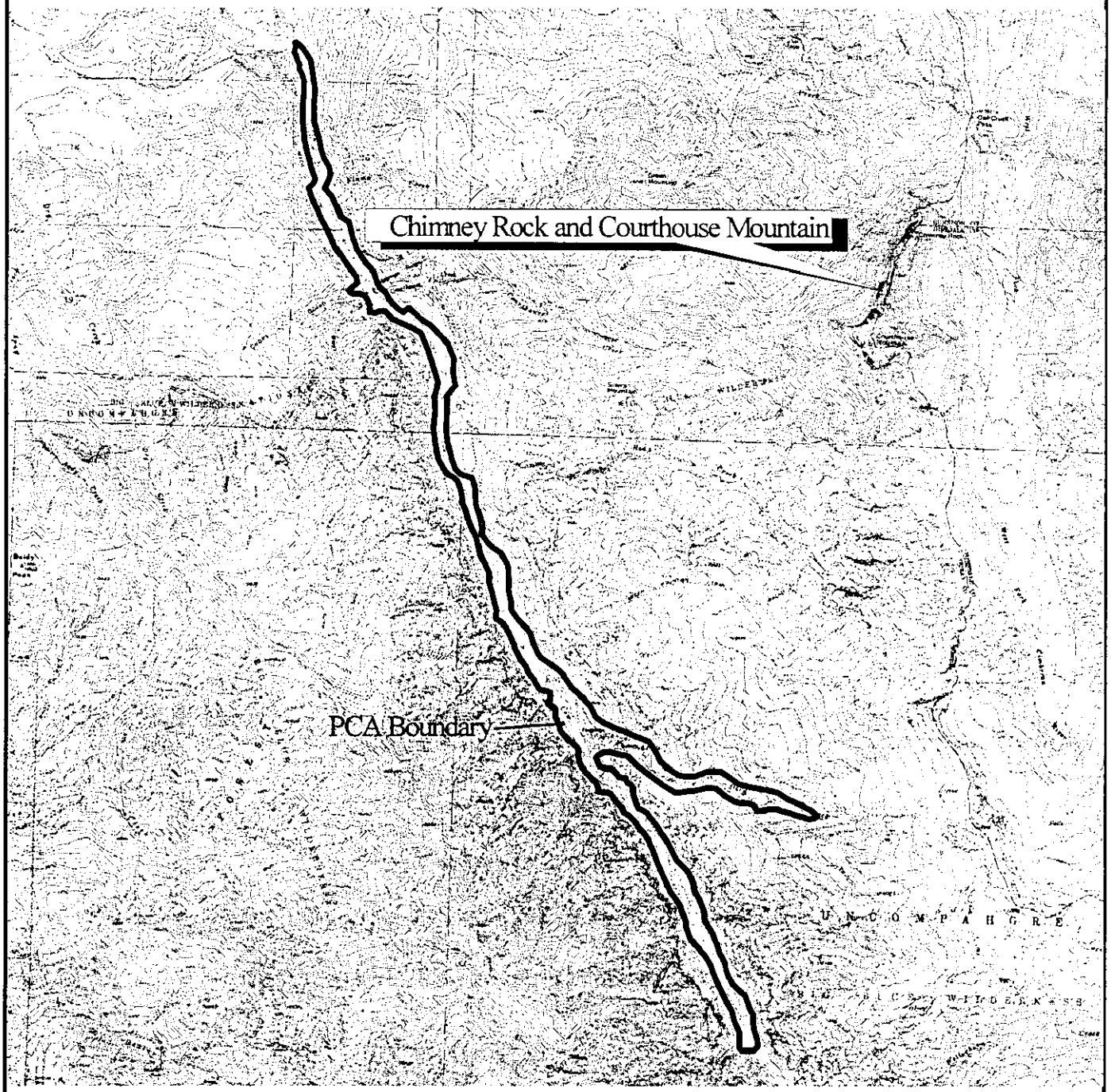
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO Rank
Pseudotsuga menziesii/Paxistima myrsinites	**Lower montane forests**	**G2G3**	**S2S3**		**A**
Populus angustifolia-Picea pungens/Alnus incana	**Montane riparian forests**	**G3**	**S3**		**A**
Populus angustifolia-Picea pungens/Alnus incana	Montane riparian forests	G3	S3		B
Cypseloides niger	Black swift	G4	S3B		C
Woodsia neomexicana	New Mexico Woodsia	G4?	S2		C
*Pyrola picta***	Pictureleaf wintergreen	G4G5	S3		C
*Pyrola picta***	Pictureleaf wintergreen	G4G5	S3		D
Abies lasiocarpa-Picea engelmannii/Mertensia ciliata	**Montane riparian forests**	**G5**	**S5**		**A**
Abies lasiocarpa-Picea engelmannii/Alnus incana	**Montane riparian forests**	**G5**	**S5**		**A**

*EO = Element Occurrence
**watchlist

Boundary justification: The boundary is drawn to include the good condition riparian areas of Cow Creek and Oben Creek, to the confluence of Difficulty Creek. The site could be continued upstream, but was not included, since that part was not visited in 1998, and its condition is unknown.

Cow Creek - Oben Creek

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Montane riparian forests

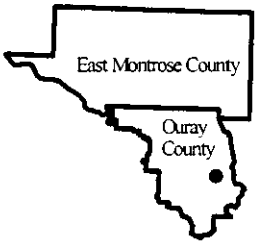
- Narrowleaf cottonwood-blue spruce/ Thinleaf alder
- Subalpine fir- Engelmann spruce/ Bluebells
- Subalpine fir- Engelmann spruce/ Thinleaf alder

Lower montane forests

Douglas fir/ Mountain lover

Plants:

New Mexican cliff fern
Pictureleaf wintergreen



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Wetterhorn Peak and surrounding U.S.G.S. 7.5 min. Quadrangles

Doug Creek

Biodiversity Rank: B2. Very high significance. The Doug Creek site contains a good occurrence of the Rocky Mountain thistle, a plant that is endemic to Mesa, Delta, Montrose and Ouray counties, and is considered globally imperiled.

Protection Urgency Rank: P4. Four of the five sub-populations of the Rocky Mountain thistle are on the county road right-of-way. The BLM portions of this site may be vulnerable to land trade or sale in the future (Clements 1999).

Management Urgency Rank: M1. County road maintenance crews and weed control contractors, as well as the County Weed Board, should be alerted to the presence of the Rocky Mountain thistle.

Location: Montrose County. About two miles southeast of Crawford Reservoir.
U.S.G.S. 7.5. min. quadrangles: Crawford
Legal Description: T51 N R6W S 27-33

Elevation range: 6,720 to 7,400 feet

Size: 1,544 acres

General Description: This site is primarily an agricultural area with cropland, hay fields and shelterbelts. Several roads, including the Clear Fork Road, are within the site. The natural vegetation of the area consists of big sagebrush, greasewood, rabbitbrush and western wheatgrass, with pinyon and juniper on the higher slopes. We found the Rocky Mountain thistle in disturbed areas along roadsides, in four sub-populations. One additional subpopulation was located in a pasture, away from roads. Exotic species present include yellow sweet clover and Canada thistle. The native species, Tracy's thistle, is also present. Nearby slopes of Mancos shale appear to be potential habitat for the Colorado desert-parsley, adobe penstemon, and Wetherill milkvetch, although they have not been surveyed for these species. The northern harrier was observed in the area in 1990, and identified as possibly breeding, based on mating calls, according to the Colorado Breeding Bird Atlas (citation).

Natural Heritage elements at the Doug Creek PCA.

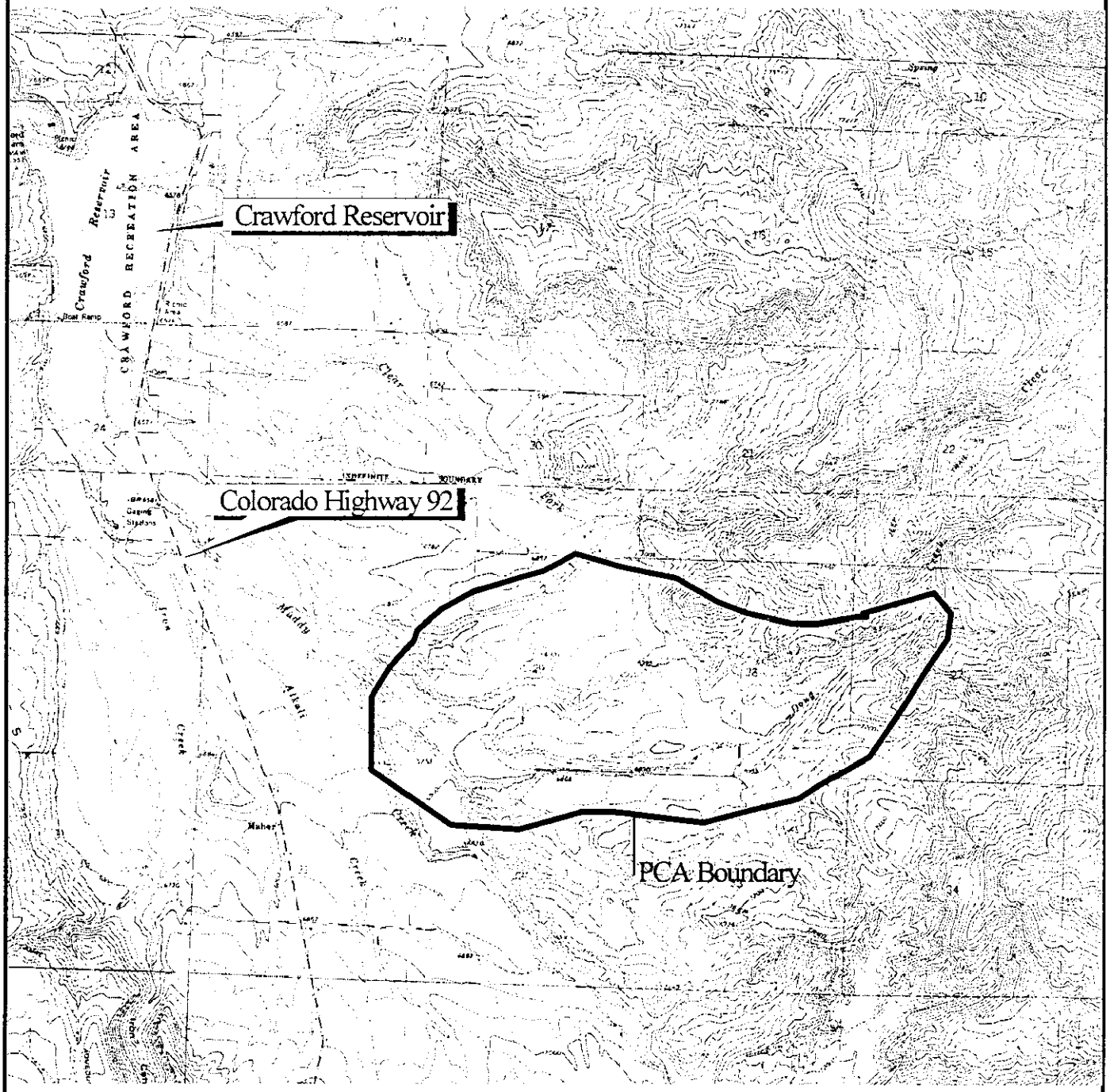
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO Rank*
Cirsium perplexans	**Rocky Mountain thistle**	**G2**	**S2**		**B**
Circus cyaneus	Northern harrier	G5	S3BSZN		E

*EO = Element Occurrence

Boundary justification: The boundary encompasses the known locations of the Rocky Mountain thistle, and adjacent area with similar habitat, as determined by field observation and aerial photo interpretation.

Doug Creek

Proposed Conservation Area



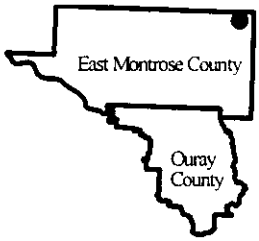
Species of Concern

Plants:

Rocky Mountain thistle

Animals:

Northern harrier



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Crawford U.S.G.S. 7.5 min. Quadrangle

Dry Cedar Creek

Biodiversity Rank: B2. Very high significance. The Dry Cedar Creek site contains an excellent occurrence of the globally imperiled Colorado desert-parsley, as well as three other rare plants.

Protection Urgency Rank: P2. The habitat of the Colorado desert-parsley and the adobe beardtongue is threatened by a proposal for a new powerline. The preferred alternative for the powerline includes situating a 1-3 acre substation in one of the valleys in this unit, and constructing an all weather road into the substation. A one hundred foot wide corridor along the proposed route was surveyed for the clay-loving wild buckwheat, which is federally listed as endangered. The route has apparently not been surveyed for other rare plants.

Management Urgency Rank: M3. OHV use, dumping, and occasional heavy sheep use occur sporadically in the site. The plant populations apparently are surviving under present management, although the long term effects of this use have not been determined.

Location: Montrose County. About seven miles southeast of Montrose.
U.S.G.S. 7.5. min. quadrangles: Montrose East, Cerro Summit
Legal Description: T48N R9W S 13, 24, 25; T48N R8W S 8, 9, 16-20, 30

Elevation range: 6,100 to 7,200 feet

Size: 3,566 acres

General Description: This is the southern part of the Uncompahgre Badlands Macrosite, consisting of adobe hills derived from Mancos shale. The area is mostly BLM land, and is fragmented by roads, canals, and powerlines. The low hills support sparse vegetation of desert shrub species, such as greasewood, shadscale, mat saltbush, Gardner saltbush, and black sagebrush. Other associated species include galleta, Salina wildrye, Indian rice grass, bottlebrush squirreltail, winterfat, prickly pear cactus, yellow milkvetch, and woody aster. There are scattered Utah junipers on the upper slopes. Cheatgrass and Canada thistle are common weeds in the area. Soils are composed of clay with some cobbles. The adobe beardtongue was found on lower slopes with black sage, while the Colorado desert-parsley was usually on ridges and in small drainages. The good-neighbor bladderpod was located in a formerly disturbed area on a small mesa top next to a water storage tank. Its habitat resembled that at the Kinikin Road-Sunshine Road site, in that both are along the western edge of ridges, unprotected from prevailing winds.

Natural Heritage elements at the Dry Cedar Creek PCA.

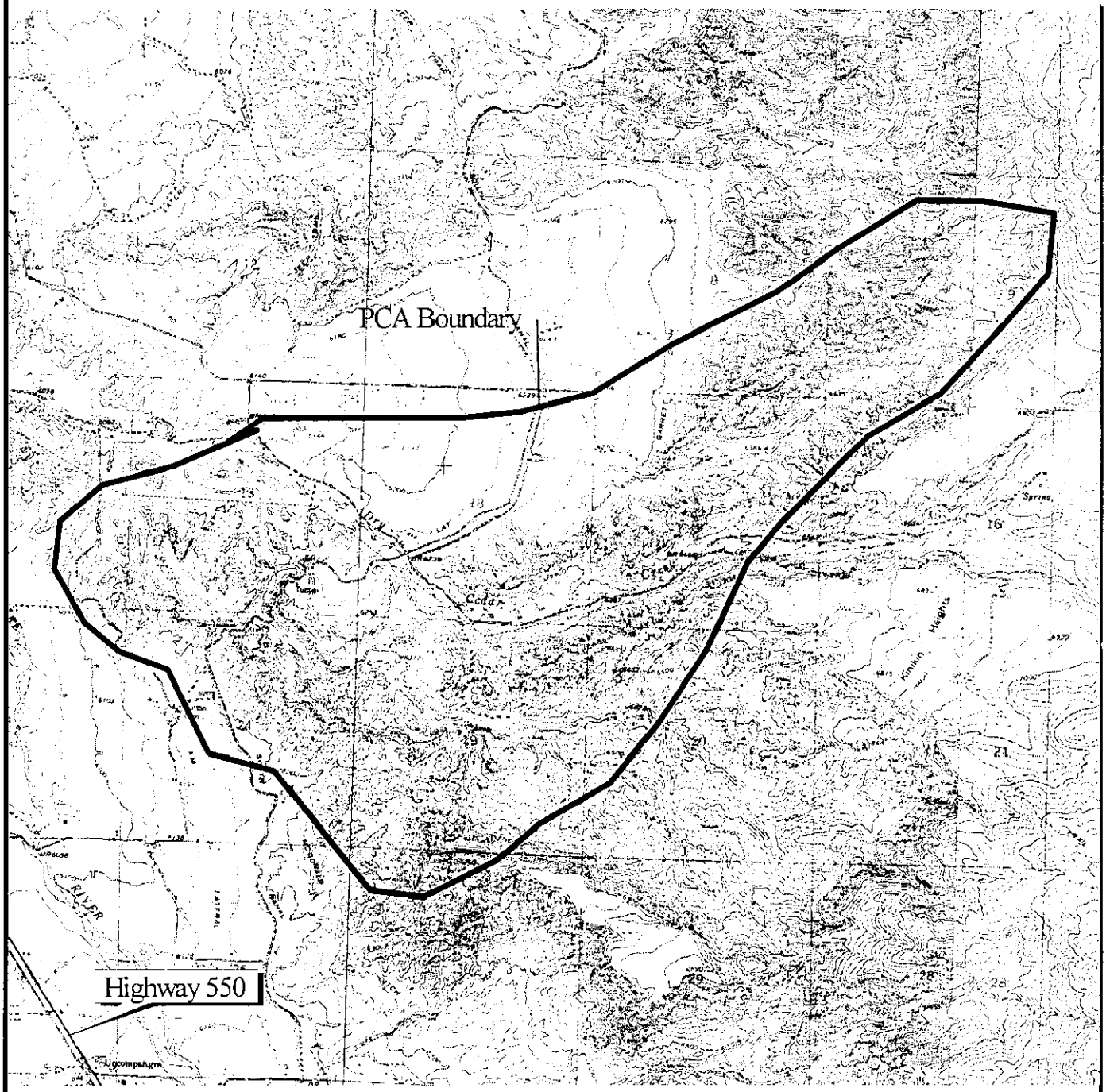
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	C
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**B**
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**A**
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**B**
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	C
Circus cyaneus	Northern harrier	G5	S3BSZN		E

*EO = Element Occurrence

Boundary Justification: The boundary was drawn to encompass a cluster of rare plant locations within the Uncompahgre Badlands macrosite. Included within the boundaries are irrigated and developed lands that are no longer potential habitat for the rare plants.

Dry Cedar Creek

Proposed Conservation Area



Species of Concern

Plants:

Clay-loving wild buckwheat
Good-neighbor bladderpod
Colorado desert parsley
Adobe beardtongue

Animals:

Northern harrier

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Montrose East & Cerro Summit U.S.G.S. 7.5 min. Quadrangles

Escalante Canyon

Biodiversity Rank: B2. Very high significance. The Escalante Canyon site has a multitude of rare plant species, including an excellent occurrence of the globally vulnerable Eastwood's monkeyflower, a good occurrence of the good-neighbor bladderpod, considered globally imperiled. It supports excellent examples of hanging garden communities, and a good example of a riparian forest considered critically imperiled throughout its range.

Protection Urgency Rank: P2. The Escalante Canyon site is situated on private, BLM and National Forest lands. The Montrose County portion is on BLM land, and has been designated an Area of Critical Environmental Concern (ACEC), in recognition of its importance for rare plants and as a recreation area, especially at the potholes section of Escalante Creek. The ACEC area on BLM land has been designated a State Natural Area by the Colorado Natural Areas Program of the Colorado Department of Parks and Recreation. Private land in the site may be threatened by residential development. Ranching has been historically important, and the irrigated pastures in the downstream part of the site seem to be compatible with the natural areas upstream. The continued agricultural use of the valley will probably have fewer negative effects on the natural areas than increased residential development.

Management Urgency Rank: M2. Recommendations by the Colorado Natural Areas Program, including restricting vehicle use to the county road, and excluding grazing in the vicinity of the rare plant populations, are being acted on by the BLM. Several roads have been closed, and a selected few improved. Vehicles are allowed only on designated roads and trails. No wood harvest is allowed. There is no grazing on the BLM land, although cattle do trail through Tatum Gulch and the ACEC. Monitoring studies for the Uinta Basin hookless cactus have been begun, but need to be redesigned and continued. Tamarisk control is recommended before the weed becomes unmanageable. Other weeds that are abundant on private and CDOW properties may spread upstream, and need to be watched.

The salt meadow may be threatened by drainage from gullies caused by road runoff. The water should be dispersed or diverted away from the wetland.

Riparian communities are vulnerable to reduced water flows from additional diversions upstream. No instream flow protection currently exists. BLM may recommend that CDOW file for an instream flow right if it can be established that fish use this stream to spawn, or otherwise exist in the stream.

Location: Mesa, Montrose, and Delta counties. About 28 miles northwest of Montrose. Turn west from Highway 50 at rest area about 8 miles northwest of Delta.

U.S.G.S. 7.5. min. quadrangles: Kelso Point, Starvation Point, Escalante Forks, Good Point, Dominguez.

Legal Description (Montrose County section only): T51N R13W S 20, 21, 28-32; T51N R14W S 35, 36; T50N R14W S1

Elevation range: 4,920 to 8,000 feet
Size: 6,248 acres

General description: Escalante Creek is one of the major drainages from the Uncompahgre Plateau to the Gunnison River. The canyon has scenic, geologic, historical, recreational, and agricultural values as well as being home to several rare plants and plant communities. The north flowing creek has carved a spectacular deep red-rock canyon down to Precambrian rock at its bottom. Above this, dramatic vertical Wingate sandstone cliffs top the dark red Chinle Formation. Small side drainages lead to box canyons with hanging gardens. Fans of the Jurassic Morrison formation running down from above have eroded, forming grotesque pillars called hoodoos.

The canyon has a long history, which can be glimpsed in the remains of old cabins that have been restored and are managed by the BLM. The area is popular with local residents who picnic, camp, and swim in the potholes of the creek near the Delta-Montrose county line. Private land in the canyon bottom with irrigated hay fields alternates with Colorado Division of Wildlife land. The Montrose County section comprises about three miles of Escalante Creek, and consists of BLM land, with a 160 acre parcel of Colorado Division of Wildlife land and 20 acres of private land included within it. Portions of the site are grazed by livestock. An unpaved county road runs along the canyon bottom. The site includes the Escalante Canyon State Designated Natural Area.

Rare plants of the canyon include the Uinta basin hookless cactus, the Grand Junction milkvetch, the giant helleborine orchid, Eastwood's monkeyflower, canyon bog orchid, large flowered breadroot and the good-neighbor bladderpod. The canyon bog orchid, large-flowered breadroot, and good-neighbor bladderpod were documented for the first time in the canyon in 1998. New subpopulations of the Grand Junction milkvetch, Eastwood's monkeyflower, giant helleborine orchid and Uinta Basin hookless cactus were also located in 1998 in Montrose County.

The Uinta Basin hookless cactus is found on dry, level to gently sloping ground, with shadscale and galleta. In undisturbed areas, the soil between plants is covered with a cryptobiotic crust. This living soil, containing mosses, lichens, algae and bacteria is important for stabilizing the sandy soils and adding to the long-term stability of desert grasslands. Other plants associated with the cactus are greasewood, hairy golden aster, broom snakeweed, prickly pear cactus, scarlet globemallow, spiny horsebrush, Fendler's spring-parsley, bulbous desert-parsley, and woolly milkvetch.

The Grand Junction milkvetch usually grows on the Morrison formation, either on the sides of colluvial fans or in the small drainages where the Morrison has washed down over the older sandstones. Other plant species growing in the drainages with the milkvetch are Utah juniper, single leaf ash, Utah serviceberry, cliff fendlerbush, Caineville thistle, rough brickelbush, hairy golden aster, greasewood, broom snakeweed, and needle and thread.

The newly described good-neighbor bladderpod was found on the lower bench above the canyon bottom under pinyon and juniper. This location significantly increases the known range of the species.

The most exceptional ecosystem in the canyon is the hanging garden (photo). Four subpopulations of this plant community are found at the ends of box canyons off the

main canyon. Precipitation falling on the mesa tops works its way through porous rock until it reaches an impermeable layer, and then moves laterally, to emerge as seeps in the alcoves at the heads of small side drainages. The wet, dripping walls support the rare Eastwood's monkeyflower, the yellow columbine, and the giant helleborine orchid, as well as several other more common plants such as smooth aster, basin wildrye, spikerush, and poison ivy. These areas are extremely unstable and fragile, and should not be climbed on. The giant helleborine orchid can also be found in wet areas downstream in these drainages, along with the canyon bog orchid. Here it grows with skunkbrush, sand bar willow, basin wildrye, and reed canary grass.

An unusual stand of almost pure alkali cordgrass occurs near the Montrose-Delta county line. More common on the eastern plains, this species is rare on the western slope (Weber and Wittman 1996). Soils in the stand are white with leached salts. Also documented for the first time in the canyon was an emergent wetland community of beaked spikerush. These wetland communities are discussed in detail in Volume II.

Several other natural communities are represented in the canyon. There are good examples of cottonwood/skunkbrush riparian communities, with both narrowleaf and plains cottonwoods, along Escalante Creek. Unfortunately, there are also stretches where this community is degraded, and introduced species such as tamarisk, sweet clover, cheatgrass, goosefoot, Japanese brome and bindweed dominate the understory.

Natural Heritage elements at the Escalante Canyon PCA. (note: only the elements found in Montrose County are listed here. One entry below may include several sub-populations.)

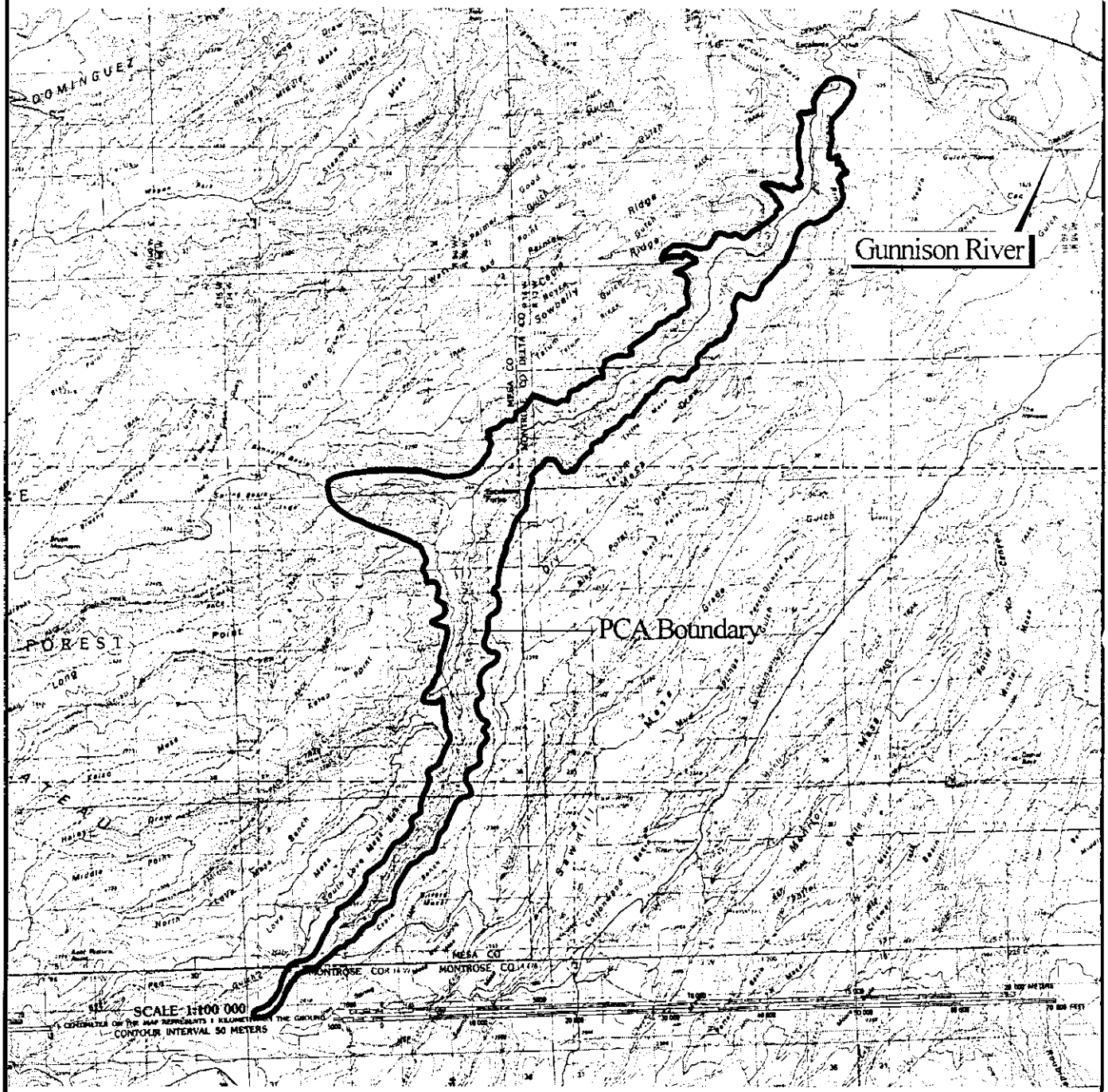
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus angustifolia/Salix eriocephala* var. *ligulifolia-Shepherdia argentea	**Narrowleaf cottonwood riparian forests**	**G1**	**S1**		**C**
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**B**
Aquilegia micrantha-Mimulus eastwoodiae hanging gardens	**Hanging gardens**	**G2G3**	**S2S3**		**A**
Eleocharis rostellata	**Emergent wetland**	**G2G3**	**S2S3**		**B**
Astragalus linifolius	Grand Junction milkvetch	G3	S3	BLM	B
Astragalus linifolius	Grand Junction milkvetch	G3	S3	BLM	B
Mimulus eastwoodiae	**Eastwood's monkeyflower**	**G3**	**S1S2**	**BLM**	**A**
Sclerocactus glaucus	Uinta Basin hookless cactus	G3	S3	LT, BLM, FS	B
Sclerocacus glaucus	Uinta Basin hookless cactus	G3	S3	LT, BLM, FS	C
Epipactis gigantea	Giant helleborine	G4	S2	BLM	A
Epipactis gigantea	Giant helleborine	G4	S2	BLM	B
*Pediomelum megalanthum***	Large-flowered breadroot	G4?	S3S4		D
Spartina gracilis	Salt meadows	G4?	S2		B
Platanthera sparsiflora	Canyon bog-orchid	G4G5T3	S2		A

*EO = Element Occurrence **Watchlist

Boundary justification: The boundary encompasses the canyon area and tributaries to the Uncompahgre Plateau divide. Boundaries were extended in 1998 north to the East Fork to include other element occurrences. The tributaries North Fork, Middle Fork, and Kelso Creek probably resemble this site, but they have not been visited, so are not included within the boundary. They are potentially equally as important.

Escalante Canyon

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Narrowleaf cottonwood riparian forests
- Narrowleaf cottonwood/ Strapleaf willow-Silver buffaloberry

Salt meadows
- Alkali cordgrass

Hanging gardens
- Mancos Columbine-Eastwood's monkeyflower

Emergent Wetlands
- Beaked spikerush

Plants:

Good-neighbor bladderpod
Grand Junction Milkvetch
Eastwood's Monkeyflower
Large-flowered breadroot**
Uinta Basin hookless cactus
Giant helleborine
Canyon bog-orchid

N

0 2 4 6 Miles

** Watchlist

*Prepared by Southwest Data Center

Delta & Nucla 1:100,000 scale maps

Gunnison Gorge South Rim

Biodiversity Rank: B2. Very high significance. The Gunnison Gorge South Rim site has an excellent occurrence of a globally imperiled plant, the good-neighbor bladderpod.

Protection Urgency Rank: P4. This site is located on BLM land. Most of the site is roadless, and little used. It includes the Gunnison Gorge Wilderness Study Area (WSA), which will be managed to preserve its wilderness character until Congress makes a final decision.

Management Urgency Rank: M4. The site falls into two BLM management units: the Wilderness Study Area (Unit 6) and Management Unit 4, which emphasizes recreation, and includes the Gunnison Gorge Special Recreation Management Unit. ATV use is allowed in Unit 4.

Location: Montrose County. About eight miles northeast of Montrose.
U.S.G.S. 7.5. min. quadrangles: Black Ridge, Red Rock Canyon
Legal Description: T51N R9W S 27, 34; T50N R9W S 1-3, 10-15, 23, 24; T50N R8W
S 7, 18, 19, 29, 30

Elevation range: 6,100 to 7,500 feet

Size: 8,092 acres

General Description: The Gunnison Gorge South Rim site encompasses the ridge between Peach Valley on the west and the Gunnison River Gorge on the east. It comprises the western part of the Gunnison uplift that occurred in the late Tertiary Period. The lower clay hillsides on the west give way to sandstone outcrops with shallow soils, and the desert shrubs are replaced by a pinyon and juniper community on the upper slopes and the east side of the ridge. The two trails to the Gunnison Gorge provide the major access points to the site. The area is popular with hikers and fishermen who hike to the Gunnison River. Most of the site is roadless, and has not been thoroughly inventoried. Although small populations of five different rare plant species have been documented in the site, it is most notable for containing the largest population yet found of the newly described good-neighbor bladderpod (Figure 27). Common plants in the area include Utah juniper, pinyon pine, shadscale, mountain mahogany, spiny greasebush, Mormon tea, Salina wildrye, galleta, Indian rice grass, prince's plume, and Hood's phlox. Undisturbed soils have cryptogamic crusts between plants.

Natural Heritage elements at the Gunnison Gorge South Rim PCA.

Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**A**
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**B**
Astragalus wetherillii	Wetherill's milkvetch	G3	S3	BLM, FS	D
Astragalus wetherillii	Wetherill's milkvetch	G3	S3	BLM, FS	D
Cryptantha longiflora	Long-flowered cat's-eye	G3	S2		D
*Pediomelum megalanthum***	Large-flowered breadroot	G4?	S3S4		C

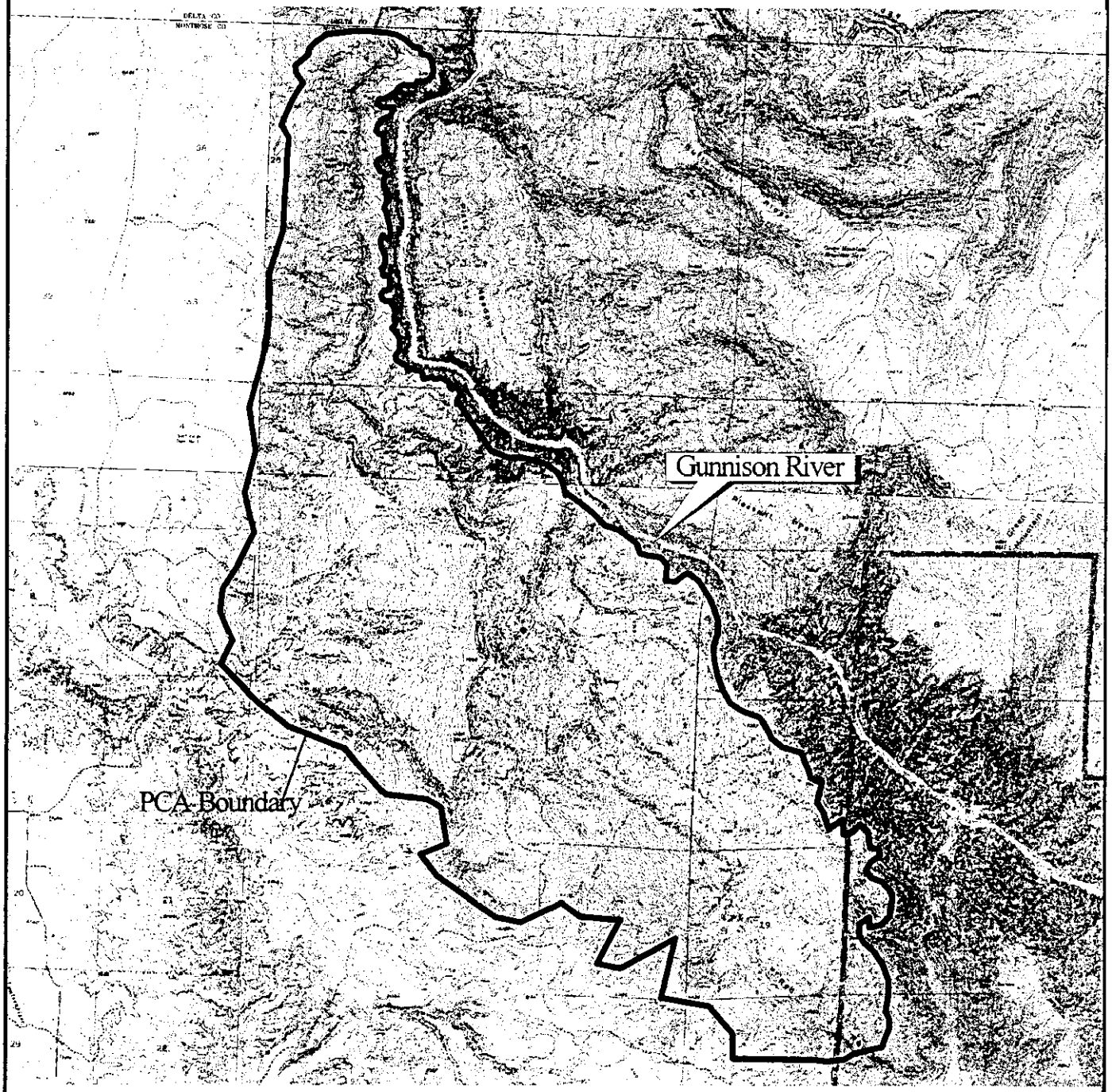
*EO = Element Occurrence
** Watchlist

Boundary justification: The boundary is drawn to include the known occurrences and some adjacent similar habitat that has not been surveyed.

Figure 27. Habitat of the good-neighbor bladderpod.

Gunnison Gorge South Rim

Proposed Conservation Area



Species of Concern

Plants:

Good-neighbor bladderpod
Wetherill's milkvetch
Long-flowered catseye
Large-flowered breadroot**

** watchlist

N

0 1 2 3 Miles

*Prepared by Southwest Data Center

Black Ridge & Surrounding U.S.G.S. 7.5 min. Quadrangles

Kinikin Road-Sunshine Road

Biodiversity Rank: B2. Very high significance. The site has a good occurrence of the globally imperiled clay-loving wild buckwheat, as well as populations of the Colorado desert-parsley and good-neighbor bladderpod.

Protection Urgency Rank: P2. Private land in this area has already been developed for residences. The plants may survive if the undisturbed parts of the property are not altered. Conservation easements, management agreements, or at least landowner education, are essential for the persistence of these populations.

Management Urgency Rank: M2. Present management may be adequate in some areas. Unnecessary disturbance to the plants should be avoided. Further study and monitoring of the good-neighbor bladderpod are needed. The Colorado desert parsley and clay-loving wild buckwheat are occur both on private land and on the small portion of the site managed by BLM. The BLM land is designated Management Unit 1, which emphasizes grazing.

Location: Montrose County. About three miles southeast of Montrose.
U.S.G.S. 7.5. min. quadrangles: Montrose East
Legal Description: T48N R9W S 10-15

Elevation range: 6,000 to 6,200 feet

Size: 1,488 acres

General description: This site, southeast of Montrose, is primarily residential. Pockets of undisturbed land between houses still support native vegetation. The type locality of the good-neighbor bladderpod is a sheep pasture on a mesa overlooking the Uncompahgre River. The effects of grazing on this species are not yet known.

A large population of the clay-loving buckwheat was found on private land that has been developed as a residence, just above a man-made pond. Associated species here included black sage, shadscale, woody aster, Gardner saltbush and mat saltbush. Adjacent property that had been heavily grazed by sheep had no buckwheat. Areas that had been used for motorcycle riding were observed to have fewer and smaller plants. This site suggests that the buckwheat can persist in relatively small spaces even after development, if the property is left in a natural condition. However, the long term effects of this fragmentation are not known.

Natural Heritage elements at the Kinikin Road-Sunshine Road PCA.

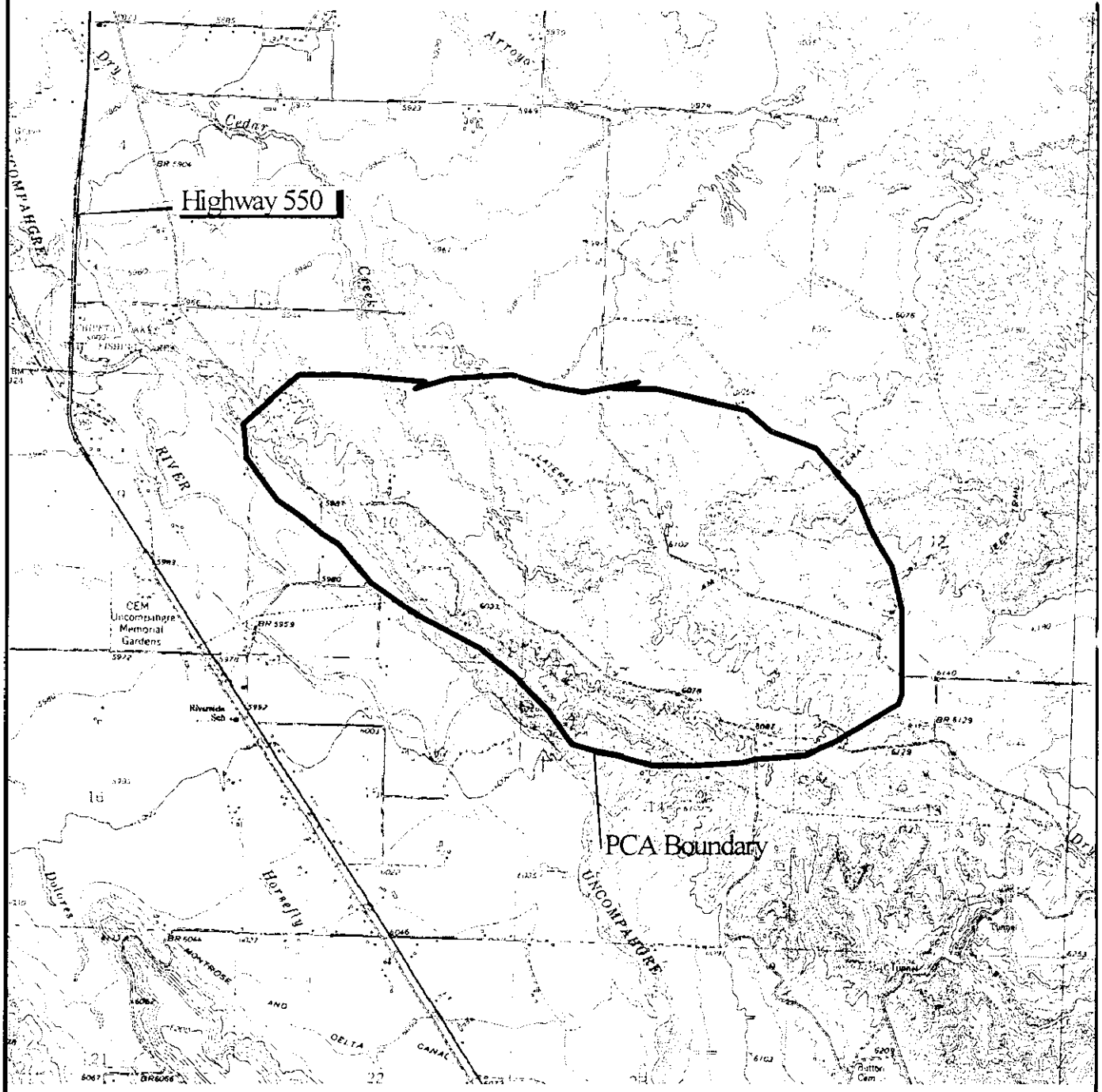
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**B**
Lesquerella vicina	Good-neighbor bladderpod	G2	S2		C
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	D

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass a cluster of occurrences of the clay-loving wild buckwheat, the Colorado desert-parsley and the good-neighbor bladderpod, within the Uncompahgre Badlands macrosite.

Kinikin Road-Sunshine Road

Proposed Conservation Area



Species of Concern

Plants:

Clay-loving wild buckwheat
Good-neighbor bladderpod
Colorado desert-parsley

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Montrose East U.S.G.S. 7.5 min. Quadrangle

Landfill Road-Bostwick Park Road

Biodiversity Rank: B2. Very high significance. The site includes good occurrences of two globally imperiled plants, the Colorado desert-parsley and the good-neighbor bladderpod, as well as several occurrences of the globally vulnerable adobe beardtongue.

Protection Urgency Rank: P2. This site is mostly on BLM land, with a small amount of private land. There is no special protection. The BLM land is used by ATVs. As the population of the valley increases and ATV users look for locations to ride this site may become vulnerable to damage and weed invasions.

Management Urgency Rank: M2. The private land is heavily grazed and in poor condition. The effects of grazing on the bladderpod are not known. The BLM land is managed under the prescription for Management Unit 16, which calls for standard resource program management.

Location: Montrose County. About three miles northeast of Montrose.
U.S.G.S. 7.5. min. quadrangles: Red Rock Canyon
Legal Description: T49N R9W S 1, 11-14; T50N R8W S 29, 32, 33; T49N R8W S 4-6, 7, 8

Elevation range: 5,900 to 6,940 feet

Size: 3,759 acres

General Description: Barren adobe hills become increasingly steep as they rise toward Bostwick Park in this site. Although the soils are heavily eroded, in places they support a diversity of desert shrubs including mat saltbush and shadscale, with woody aster, and milkvetches.

The Colorado desert parsley and adobe beardtongue are found on ridges and in small draws on the hills. The elevation increases to the east, finally reaching the mesa top at Bostwick Park, where there are pinyon and juniper woodlands surrounding the irrigated farmland. The good-neighbor bladderpod was found in pinyon-juniper and mountain sagebrush communities near the top of the site. Associated species here included long-leaf phlox, Indian rice grass, thrift mock goldenweed, Easter daisy, and actinea. The bladderpod occurred both in areas that were ungrazed and in those that were heavily grazed by cattle, deer and elk. Cheatgrass was abundant in the grazed areas.

The site includes several roads, ATV trails, water diversions and a seasonal drainage. A mountain lion and a corn snake were observed in the site.

Natural Heritage elements at the Landfill Road-Bostwick Park Road PCA.

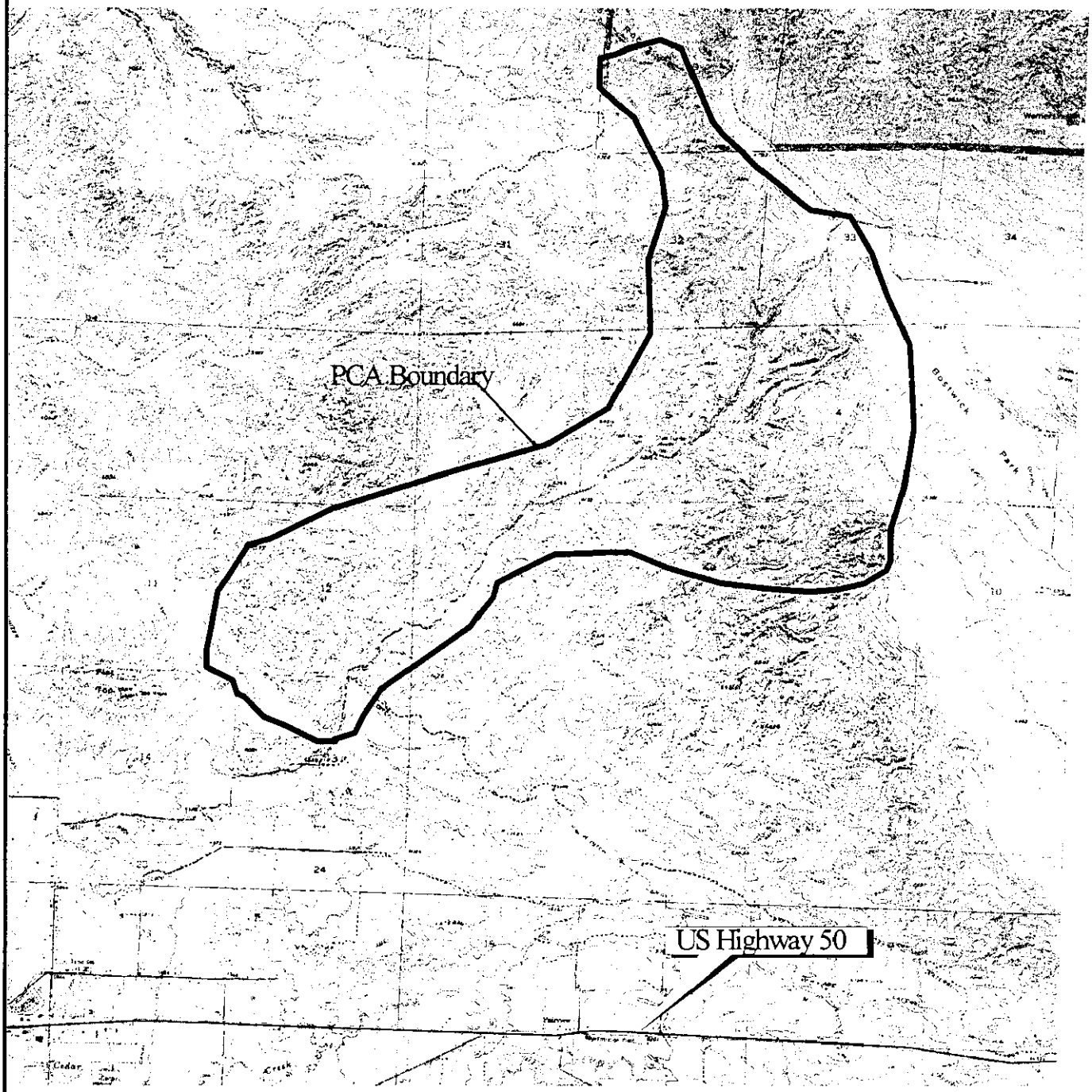
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**B**
Lesquerella vicina	Good-neighbor bladderpod	G2	S2		D
Lomatium concinnum	**Colorado desert-parsley**	**G2**	**S2**	**BLM**	**B**
Lomatium concinnum	Colorado desert-parsley	G2	S2	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3		E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Atriplex confertifolia/Leymus salinus	Cold desert shrublands	G3G5	S3		D

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass a cluster of occurrences of the good-neighbor bladderpod, the Colorado desert-parsley, and the adobe beardtongue, within the Uncompahgre Badlands macrosite.

Landfill Rd.-Bostwick Park Rd.

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Cold desert shrubland
- Shadscale/
- Salina wildrye

Plants:

- Good-neighbor bladderpod
- Colorado desert-parsley
- Adobe beardtongue

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Montrose East & Red Rock Canyon U.S.G.S. 7.5 min. Quadrangles

Morrow Point Reservoir

Biodiversity Rank: B2. Very high significance. The site includes an excellent occurrence of the Black Canyon gilia, a plant considered globally imperiled throughout its range.

Protection Urgency Rank: P5. This site is within the Curecanti National Recreation Area. The inaccessible locations of the Black Canyon gilia provide natural protection.

Management Urgency Rank: M5. No changes in management are necessary to protect the species.

Location: Montrose County. About one mile northeast of Cimarron.
U.S.G.S. 7.5. min. quadrangles: Cimarron
Legal Description: T48N R6W S 2-5, 9, 10; T49N R6W S 33-35

Elevation range: 6,800 to 8,800 feet

Size: 1,608 acres

General description: Morrow Point Reservoir is the large lake created in the portion of the Gunnison River above the Morrow Point Dam. It is within the Curecanti National Recreation Area managed by the National Park Service. Above the lake, spectacular sheer cliffs of pink and black metamorphic rock rise over a thousand feet. A few drainages support plant communities of pinyon, juniper, or Douglas fir. The Black Canyon gilia and Pacific monardella are found in crevices of the darker colored rock. Most of their habitat is inaccessible without technical climbing, and is therefore probably secure.

Natural Heritage elements at the Morrow Point Reservoir PCA.

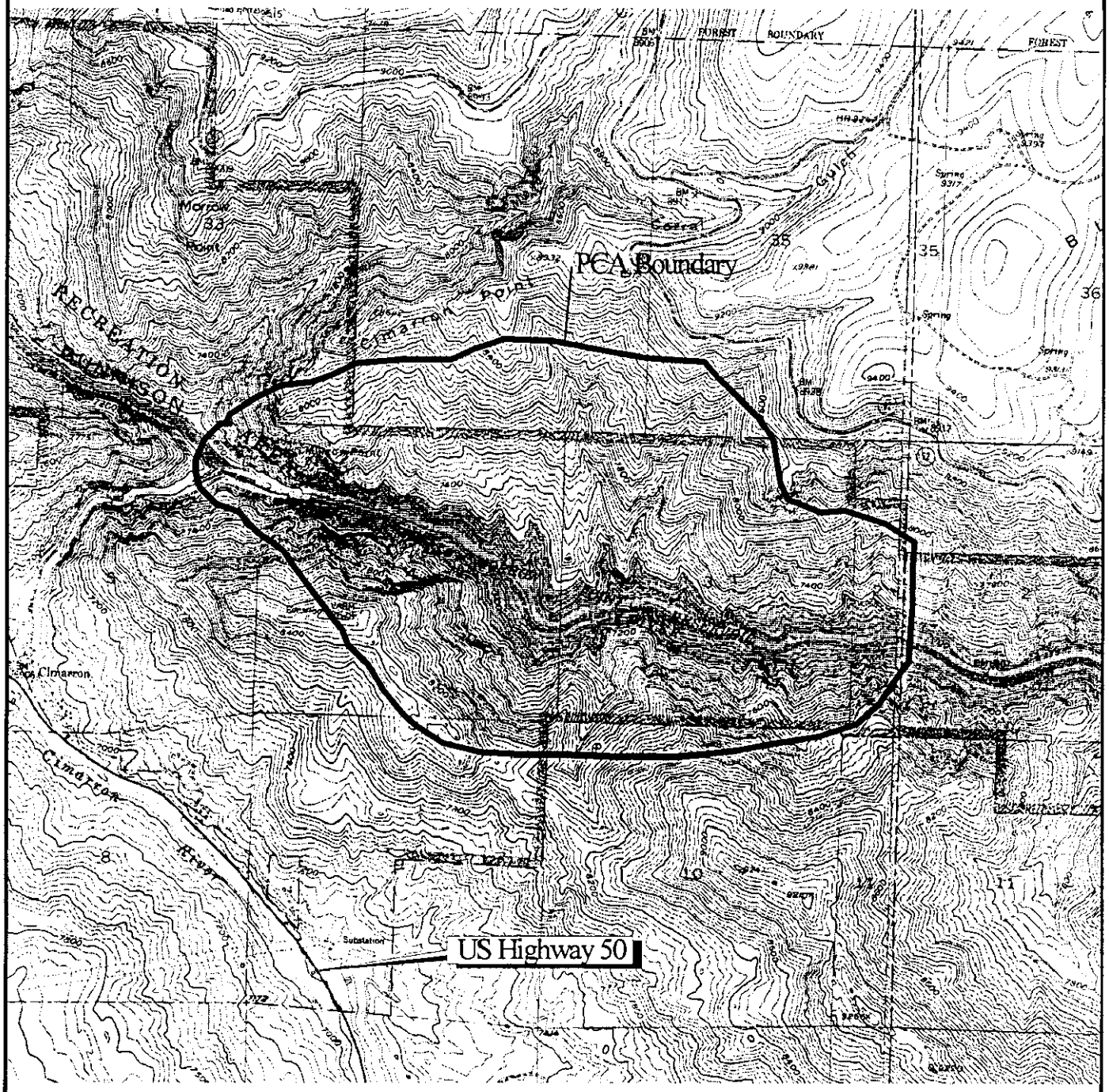
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Gilia penstemonoides	**Black Canyon gilia**	**G2G3**	**S2S3**	**BLM, FS**	**A**
Gilia penstemonoides	**Black Canyon gilia**	**G2G3**	**S2S3**	**BLM, FS**	**B**
Gilia penstemonoides	Black Canyon gilia	G2G3	S2S3	BLM, FS	D
Quercus gambelii-Cercocarpus montanus/Carex geyeri	Mixed mountain shrublands	G3	S3		B
Monardella odoratissima	Pacific monardella	G4G5	S2		D

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass the known occurrences of the Black Canyon gilia, as well as the unexplored cliff habitat above.

Morrow Point Reservoir

Proposed Conservation Area



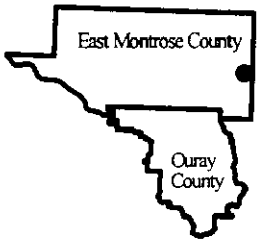
Species and Plant Communities of Concern

Plant communities:

Mixed mountain shrublands
- Gambel's oak-
- Mountain mahogany/
- Elk sedge

Plants:

Black Canyon gilia
Pacific monardella



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Cimarron U.S.G.S. 7.5 min. Quadrangle

Peach Valley

Biodiversity Rank: B2. Very high significance. The Peach Valley site has two of the best known occurrences of the globally imperiled clay-loving wild buckwheat, and an excellent occurrence of the globally vulnerable long-flowered cats-eye.

Protection Urgency Rank: P3. Private land containing a good population of the clay loving buckwheat may be threatened by development. BLM land has no special protective status.

Management Urgency Rank: M4. BLM land is in Management Unit 4, the Gunnison Gorge Special Recreation Area. ATV use is allowed, with few restrictions on surface disturbance in the Peach Valley area. So far, present management of the site does not appear to be impacting the rare plants, although past grazing has altered natural plant communities. Monitoring of rare plant populations should be ongoing, and restrictions placed on off-trail motorized use if warranted.

Location: Montrose County. About ten miles north of Montrose.
U.S.G.S. 7.5. min. quadrangles: Olathe Northwest, Black Ridge
Legal Description: T51N R9W S 19-21, 27-34; T50N R9W S 3-6

Elevation range: 5,400 to 6,200 feet

Size: 6,498 acres

General description: The Peach Valley site consists of a fairly level valley bottom and rolling adobe hills of Mancos shale (Figure 28). It includes the lower slopes of the sandstone uplift to the east. Ownership of this site is a combination of BLM and rural private lands. The area has several roads, irrigation canals, and a water storage tank. The desert shrub vegetation is very sparse, and consists of a mosaic of several plant communities. Greasewood is dominant in the flat bottoms, with an understory consisting primarily of alien weedy species, such as alyssum, purple mustard, and cheat grass. Mat saltbush is often the only species present on convex slopes, with bare adobe soil between plants. Swales in this area have a greater diversity of shrubs, including shadscale, spiny horsebrush, winterfat, budsage and the clay-loving wild buckwheat. Common grasses are galleta and bottlebrush squirreltail. Other frequent members of this community are Gardner saltbush, yucca, low rabbitbrush, broom snakeweed, Paradox cats-eye, scorpionweed, sand verbena, evening primrose, and cheatgrass. Steeper north facing slopes often are dominated by Salina wildrye. A grazing exclosure along the Peach Valley Road on fairly level BLM land shows a notable increase in Salina wildrye within it, compared to adjacent similar areas outside the exclosure.

Natural Heritage elements at the Peach Valley PCA.

Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**B**
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**B**
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	E
Atriplex confertifolia/Hilaria jamesii	Cold desert shrublands	G3	S2		B
Cryptantha longiflora	**Long-flowered cat's-eye**	**G3**	**S2**		**A**
Cryptantha longiflora	Long-flowered cat's-eye	G3	S2		B
Cryptantha longiflora	Long-flowered cat's-eye	G3	S2		C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	HC
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	HC

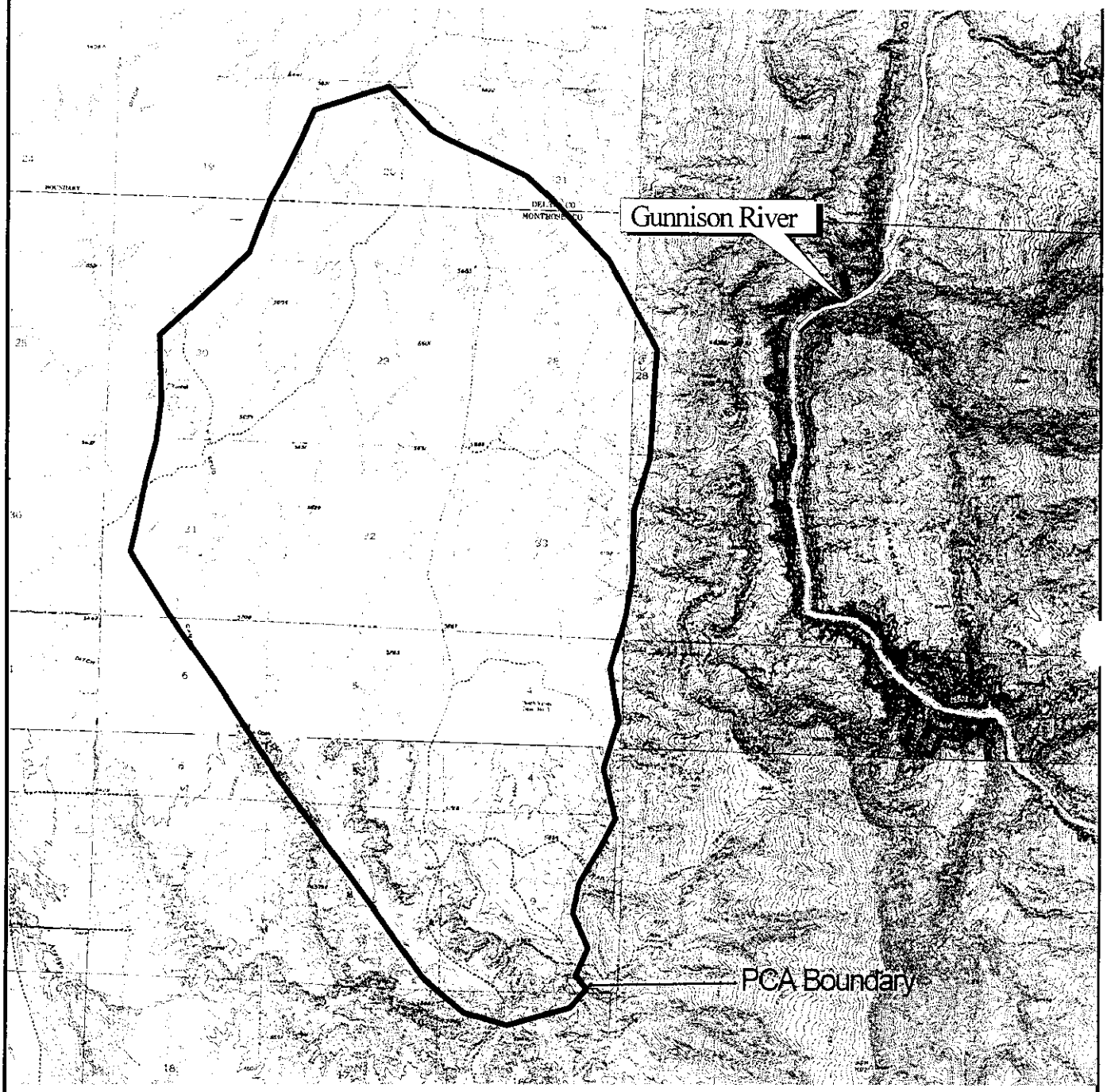
*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass the occurrences of the clay loving buckwheat and long-flowered cat's-eye. This site is included within the Uncompahgre Badlands macrosite.

Figure 28. Desert shrub vegetation at Peach Valley, habitat of clay-loving wild buckwheat.

Peach Valley

Proposed Conservation Area



Species and Plant Communities of Concern

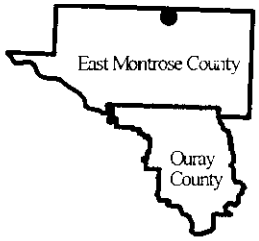
Plant communities:

Cold desert shrublands

Shadscale/
Galleta

Plants:

Clay-loving wild buckwheat
Long-flowered cat's-eye
Adobe beardtongue



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Olathe NW & Surrounding U.S.G.S. 7.5 min. Quadrangles

Red Canyon South

Biodiversity Rank: B2. Very high significance. This site contains a fair occurrence of the Gunnison sage grouse, considered critically imperiled on a global scale.

Protection Urgency Rank: P3. The Red Canyon South PCA is located on private, BLM and National Park Service land.

Management Urgency Rank: M4. Habitat improvement to manage for the sage grouse has already been done by the BLM at this site. Maintenance of herbaceous ground cover, brush beating and restriction of Pinyon-Juniper may benefit the grouse in some areas.

Location:

U.S.G.S. 7.5. min. quadrangles: Black Ridge, Grand View Mesa, Red Rock Canyon, Grizzly Ridge
Legal Description: T48N R6W S6, 7, 18; T48N R7W S1-24; T48N R8W S1, 2, 11, 12, 13, 14; T49N R7W S31-35; T49N R8W S36.

Elevation range: Approximately 7200 feet to 8200 feet.

Size: 20,365 acres

General Description: This large area dominated by sagebrushes occupies mostly gentle north facing slopes south of Red Canyon and north of the Black Canyon of the Gunnison. Sagebrush shrublands are interspersed with patches of Gambel's oak, Utah serviceberry and snowberry. Both mountain big sagebrush and black sagebrush are common. Grasses include Kentucky bluegrass, Sandburg bluegrass, blue gramma and cheatgrass. Pinyon pine and Utah juniper occupy steeper areas in the drainages.

Natural Heritage elements at the Red Canyon South PCA.

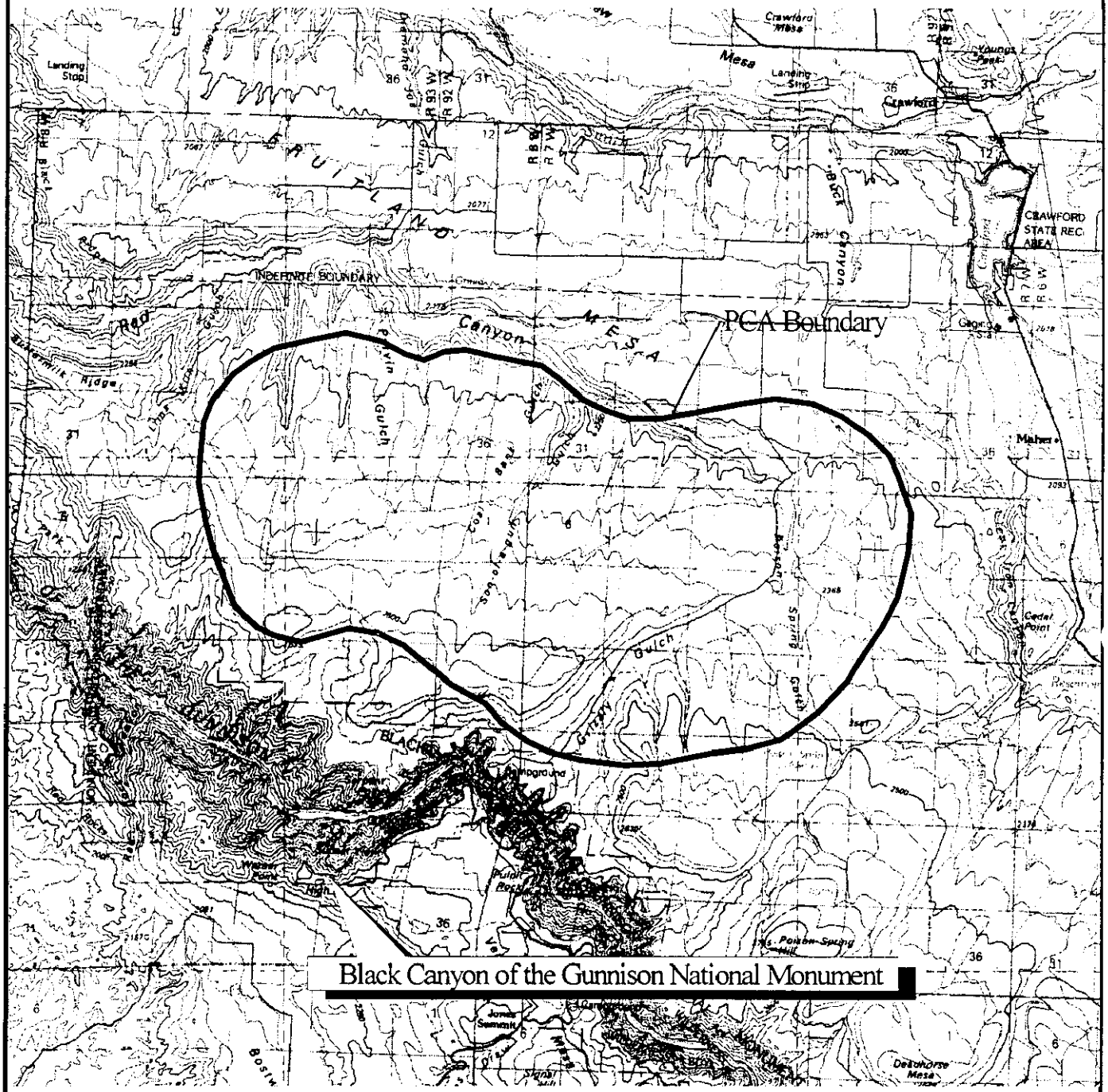
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
***Centrocercus* sp. 1**	**Gunnison sage grouse**	**G1**	**S1**	**SC**	**C**
Euderma maculatum	spotted bat	G4	S2		H

*EO = Element Occurrence

Boundary Justification: The site boundary was drawn to encompass the entire nesting area, including known leks, of the Gunnison sage grouse and surrounding habitat containing potential or known roost and nesting locations. A historical occurrence of the spotted bat also falls within the PCA boundary. The boundary provides foraging habitat for the bats present.

Red Canyon South

Proposed Conservation Area



Species of Concern

Animals:

Gunnison sage grouse

N

0 1 2 3 Miles

*Prepared by Southwest Data Center

Paonia 1:100,000 scale map

Roubideau Creek

Biodiversity Rank: B2. Very high significance. Roubideau Creek has good occurrences of the globally imperiled good-neighbor bladderpod, and fair to excellent examples of three riparian plant communities that are considered to be vulnerable to critically imperiled.

Protection Urgency Rank: P4. The Roubideau Creek site encompasses a small amount of private land, and large areas of BLM and Uncompahgre National Forest land. A roadless portion of the site has been designated a "Special Management Area" under the Wilderness Act. This gives it protection from timber sales and new roads. No motorized vehicles are allowed. However, water diversions and existing grazing rights are continued.

Management Urgency Rank: M2. The lower part of the site in Delta County has been heavily grazed and invaded by exotic weeds, which could spread upstream.

Location: Montrose and Delta counties. About eighteen miles west of Montrose.
U.S.G.S. 7.5. min. quadrangles: Davis Point, Roubideau, Camel Back, Cottonwood Basin, Antone Spring, Moore Mesa
Legal Description: T51N R12W S24-27. 34. 35; T50N R12W S2-4, 8-11, 14-21, 23, 26-35; T50N R13W S25, 35, 36; T49N R13W S2, 3, 9, 10, 15-17, 21-24, 27-29; T40N R12W S2-6, 7-10, 15-22, 27-29, 32-34; T48N R12W S3-5, 9, 10, 15, 16, 20, 21, 28, 29, 31-33; T48N R13W S36; T47N R13W S1; T47N R12W S4-6, 7-10, 15-18.

Elevation range: 4874 feet to 9000 feet

Size: 24,363 acres

General Description: Roubideau Creek drains a large portion of the Uncompahgre Plateau. It is notable because the hydrology is largely unaltered by major water developments or diversions (although there is one diversion ditch from the main stem). This macrosite includes the main stem as well as the major tributaries of Roubideau Creek. Except for the last few miles before its confluence with the Gunnison River, it lies entirely within Montrose County. Except for a few small private parcels, the upper half of the site is within the Uncompahgre National Forest, and the lower half on BLM land. The National Forest special management area is managed with emphasis on back country recreation.

At its upper elevations, Roubideau Creek forms a deep and wide canyon with broken stair-step sandstone cliffs and steep slopes on both sides. The upper slopes are wooded with scattered with pinyon pine and juniper trees. The valley floor is dominated by a mosaic of narrowleaf cottonwood trees with a mixed shrub understory of skunkbrush, river birch, willows, Rocky Mountain maple and red-osier dogwood.

Gambel's oak forms thick stands on the adjacent mesa flats to the west (Traver Mesa, West Basin, Pine Mesa, Davis Mesa, Goddard Bench, and Murray Park). The river itself is sinuous and the floodplain consists of many point bars, low terraces and higher benches. Wetter and more shaded areas are dominated by river birch and dogwood, while higher terraces have older cottonwood stands. Northern leopard frogs were found in small ponds on Roubideau Bench.

Tributaries are very steep and originate on the open mesas to the west. These creeks run parallel to each other in a northeasterly direction, and are separated by long narrow mesas. Tributaries include Monitor Creek, Little Monitor Creek, Potter, Criswell, Moore, Taver, Wright, Terrible, Bull, Goddard, and Pool Creeks.

The headwaters of Potter Creek, a tributary of Roubideau Creek, have a good condition riparian zone of blue spruce and red-osier dogwood. Other species present include thinleaf alder, willows, snowberry and Utah serviceberry. The natural disturbance regime, including flooding and beaver activity, appears to be intact. There is some grazing at the site, and a few exotic species are present. Grassy terraces are dominated by Kentucky bluegrass. With good grazing management, the site could be improved.

Monitor Creek supports a good condition riparian area several miles long, consisting of blue spruce, aspen, and Drummond's willow, with a variety of other riparian shrubs and forbs. The area experiences light grazing. Reproduction of riparian species is good. Other than dandelions, there are few exotic species in the site.

Another tributary, Little Monitor Creek, is just below 25 Mesa Road, and is subject to impacts from the road and grazing. However, the steep side slopes and dense vegetation minimize direct impacts. The riparian zone has a solid cover of trees and shrubs, dominated by narrowleaf cottonwood and blue spruce, with lesser amounts of aspen and Ponderosa pine. Hawthorn grows thick away from the river bank, along with red-osier dogwood, chokecherry and Utah serviceberry. The major forb species is false solomonseal, while the major grass is the exotic Kentucky bluegrass.

At its lower end, near the Delta County line, Roubideau Creek is a low gradient, meandering stream. Drainages on the sides of the valley in the Morrison Formation are the sites of the Grand Junction milkvetch. The good-neighbor bladderpod was found in pinyon and juniper at the rim of the canyon just upstream from The Narrows. During the Montrose County Survey in 1998, the occurrence of Sclerocactus glaucus at The Narrows could not be relocated.

Natural Heritage elements at the Roubideau Creek PCA.

Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus angustifolia/Salix eriocephala* var. *ligulifolia-Shepherdia argentea	**Narrowleaf cottonwood riparian forests**	**G1**	**S1**		**C**
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**B**
Astragalus linifolius	Grand Junction milkvetch	G3	S3	BLM	B
Astragalus linifolius	Grand Junction milkvetch	G3	S3	BLM	B
***Betula occidentalis*/Mesic forb**	**Foothills riparian shrublands**	**G3**	**S2**		**A**
Populus angustifolia/Rhus trilobata	Narrowleaf cottonwood/Skunkbrush riparian forests	G3	S3		B
Populus angustifolia/Rhus trilobata	Narrowleaf cottonwood/Skunkbrush riparian forests	G3	S3		B
Sclerocactus glaucus		G3	S3	LT, BLM, FS	
Picea pungens/Cornus sericea	Montane riparian forests	G4	S2		B
Picea pungens/Cornus sericea	Montane riparian forests	G4	S2		B
Populus angustifolia/Cornus sericea	Montane riparian forests	G4	S3		C
Pseudotsuga menziesii/Cornus sericea	Lower montane riparian forests	G4	S2		B
Juniperus osteosperma/Artemisia nova/Rock woodland	Xeric pinyon-juniper woodlands	G5	S1?		C
Rana pipiens	Northern leopard frog	G5	S3	SC, FS	A
Salix exigua/Mesic graminoid	Coyote willow/Mesic graminoid	G5	S5		A

*EO = Element Occurrence

Boundary Justification: The Roubideau Creek boundary is drawn to encompass the entire riparian zone of Roubideau Creek, including its major tributaries, including Monitor Creek, Little Monitor Creek, Potter, Criswell, Moore, Taver, Wright, Terrible, Bull, Goddard, and Pool Creeks

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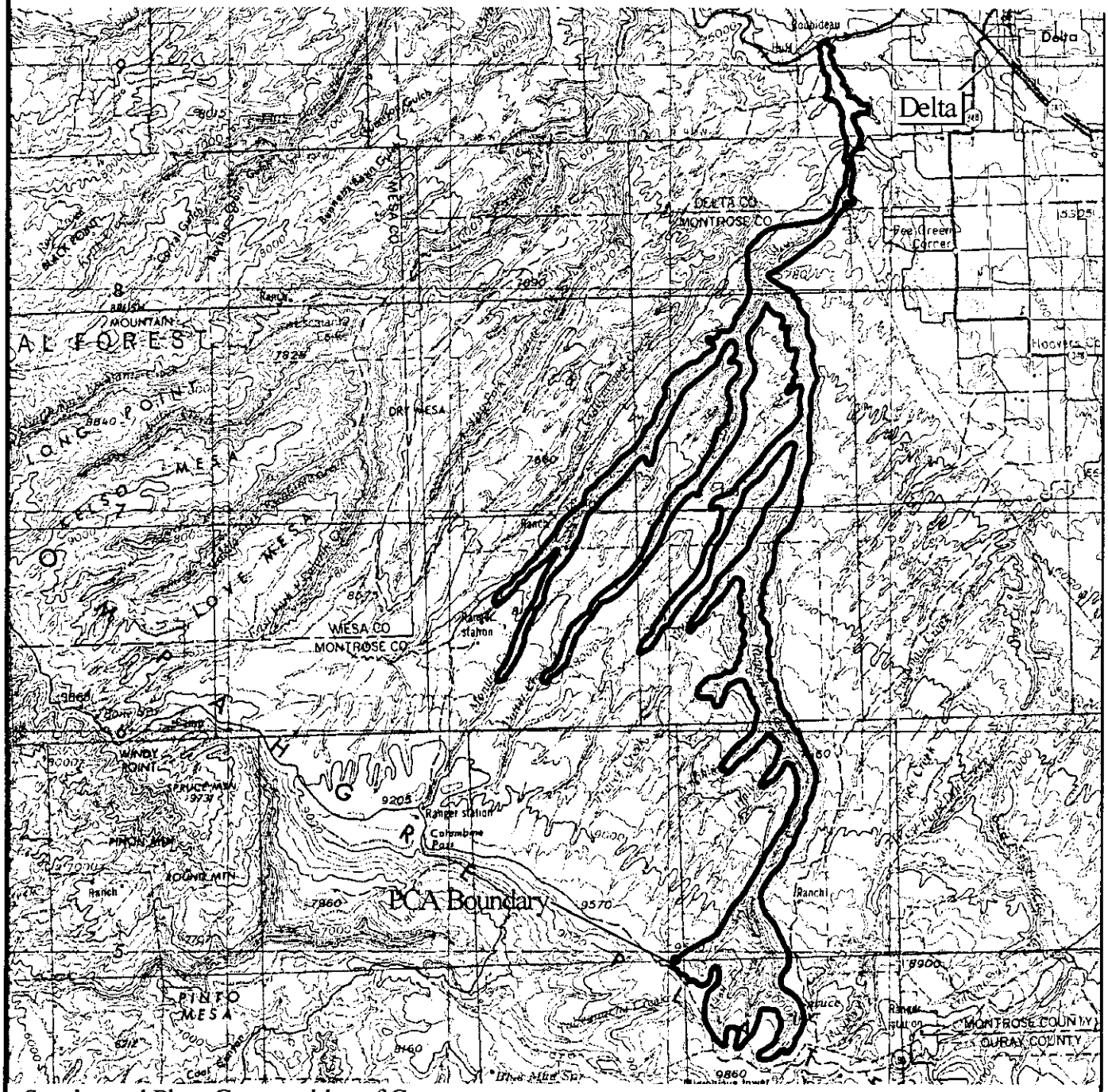
Roubideau Creek

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Narrowleaf cottonwood riparian forests
- Narrowleaf cottonwood/ Strapleaf willow-silver buffaloberry

Foothills riparian shrublands
- River birch/ mesic forb

Narrowleaf cottonwood/ skunkbrush riparian forest

Coyote willow/ mesic graminoid

Lower montane riparian forest
- Douglas fir/ red-osier dogwood

Montane riparian forests
- Blue spruce/red-osier dogwood
- Narrowleaf cottonwood/ red-osier dogwood

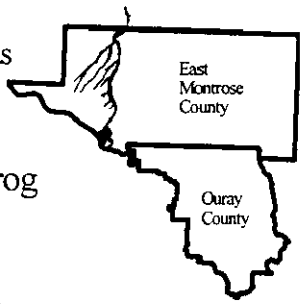
Xeric Pinyon/Juniper Woodland
- Utah juniper/ Black sage/ Rock woodland

Plants:

Good-neighbor bladderpod
Grand Junction Milkvetch
Uinta Basin hookless cactus

Animals:

Northern leopard frog



N

0 5 10 15 Miles

*Prepared by Southwest Data Center

Moab 1:250,000 scale maps

Sims Mesa

Biodiversity Rank: B2. Very high significance. This site contains a small population of the Gunnison sage grouse, considered to be critically imperiled throughout its range.

Protection Urgency Rank: P3. This site is about equally divided between BLM and private land. The private land is subject to development and further fragmentation.

Management Urgency Rank: M3. BLM land in this site is managed with emphasis on improving deer and elk winter range (USDI 1989). Decreasing or limiting the amount of fragmentation in the sagebrush habitat would be beneficial to the Gunnison sage grouse at this site. Herbicide spraying and excessive grazing are detrimental to the grouse.

Location: Montrose County. About eight miles south of Montrose.

U.S.G.S. 7.5. min. quadrangles: Colona, Montrose East, Montrose West, Government Springs

Legal Description: T47N R9W S2-6, 7-10; T47N R10W S1; T48N R9W S16-21, 27-34; T48N R10W S13, 24, 25, 36.

Elevation range: 6,000 feet to 7,000 feet

Size: 11,933 acres

General Description:

This gently flat to gently sloping mesa, divided by creek drainages, is located on the east side of the Uncompahgre Plateau. Vegetation is representative of a widespread community consisting of big sagebrush and western wheatgrass, interspersed with pinyon and juniper. Other common plants are blue gramma, Indian rice grass and prickly pear cactus, galleta, and greasewood. Condition of the sagebrush community is patchy, with some areas having little grass, and others with grass but little sagebrush. Cheatgrass is common. There are several dirt roads in the site. The area is considered to be crucial deer and elk winter range (USDI 1989).

Natural Heritage elements at the Sims Mesa PCA.

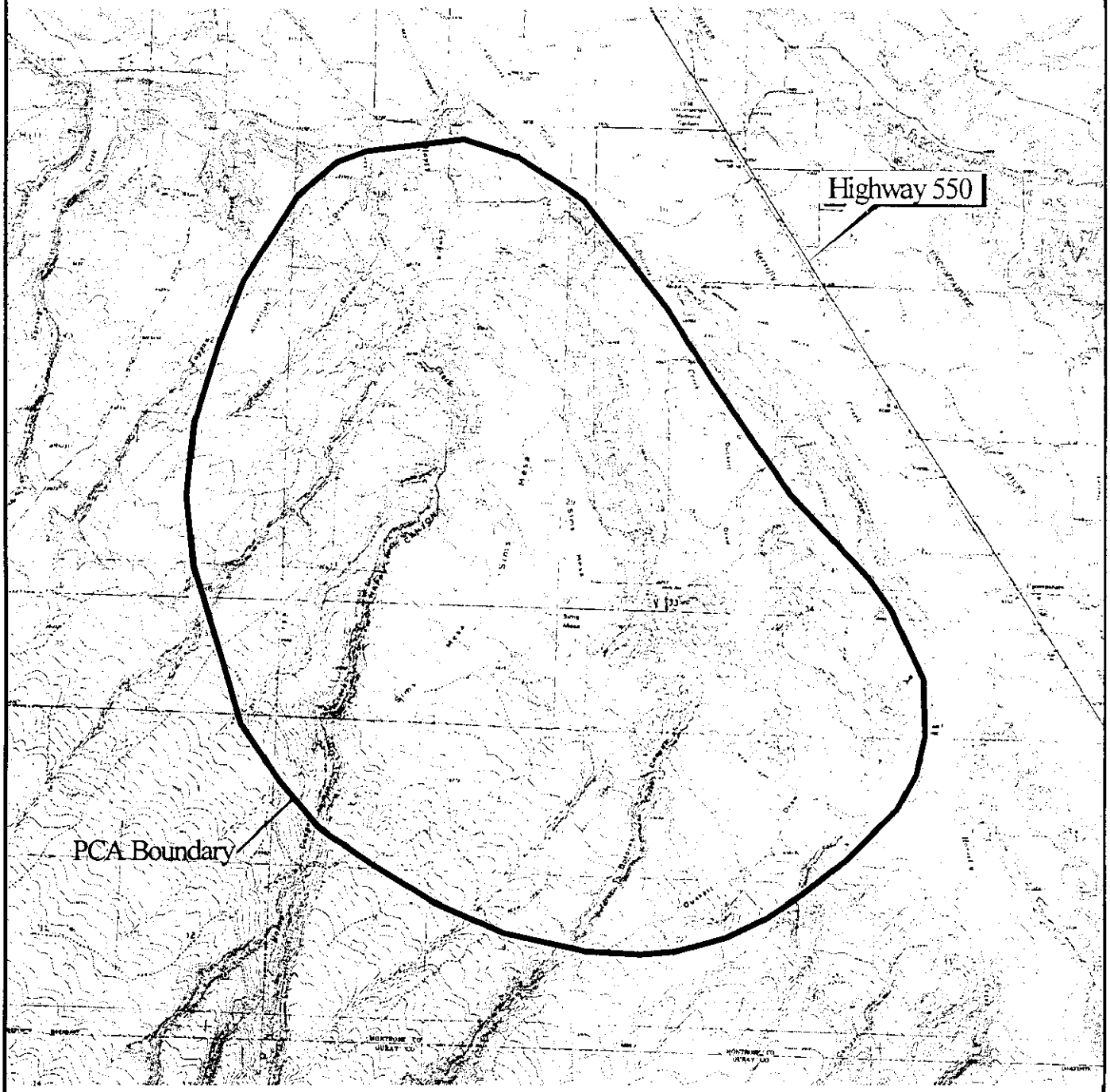
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
***Centrocercus* sp. 1**	**Gunnison sage grouse**	**G1**	**S1**	**SC**	**D**
Artemisia tridentata/ Pascopyrum smithii	Sagebrush bottomlands shrublands	G3	S1S2		C
Vireo vicinior	Gray vireo	G4	S2BSZN		C
Amphispiza belli	Sage sparrow	G5	S3BSZN		A
Amphispiza belli	Sage sparrow	G5	S3BSZN		E

*EO = Element Occurrence

Boundary Justification: The site boundary was drawn to encompass the entire nesting area of the Gunnison sage grouse, including known leks, and surrounding habitat containing potential or known roost and nesting locations. An occurrence of a sagebrush bottomland shrubland natural community is contained within the site boundary. This boundary should also provide ample habitat for the sage sparrow population present within the site.

Sims Mesa

Proposed Conservation Area



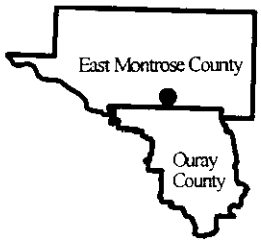
Species and Plant communities of Concern

Plant Communities:

Sagebrush bottomlands shrublands
- Mountain big sagebrush/
- Western wheatgrass

Animals:

Gunnison sage grouse
Sage sparrow
Gray vireo



N

0 1 2 3 Miles

*Prepared by Southwest Data Center

Montrose West & Surrounding U.S.G.S. 7.5 min. Quadrangles

South Canal

Biodiversity Rank: B2. Very high significance. The South Canal site has an excellent (the best known) occurrence of the globally imperiled clay-loving wild buckwheat.

Protection Urgency Rank: P2. Private land in this area is subject to development. The Nature Conservancy and the Colorado Natural Areas Program have monitored the largest occurrence of the clay-loving wild buckwheat, with excellent cooperation from the landowner. However, there is no formal protection for this land. Parts of the BLM land are included in the southern section of the Fairview Research Natural Area and Area of Critical Environmental Concern.

Management Urgency Rank: M3. The owner of the largest population of the clay-loving wild buckwheat has fenced the site from cattle, with assistance from the Colorado Natural Areas Program. The BLM management plan calls for restriction of surface disturbing activities, closure to ORVs, a monitoring program, and actions designed to improve habitat conditions for the clay-loving wild buckwheat. Grazing on the site will continue unless it is shown to degrade the habitat of the rare plants.

Location: Montrose County. About 4.5 miles east of Montrose.
U.S.G.S. 7.5. min. quadrangles: Montrose East
Legal Description: T48N R8W S 5-8; T48N R9W S 1, 12; T49N R8W S 31-33

Elevation range: 6,000 to 6,600 feet

Size: 4,533 acres

General Description: This site has gentle to steep adobe hills, derived from Mancos shale. The South Canal, carrying water from the Gunnison River via the Gunnison tunnel to the Uncompahgre Valley runs through the site. There is a service road along the canal, and several other roads in the site. The site has a mixture of private and BLM ownership. Part of the BLM land has been designated a Research Natural Area. Vegetation consists of desert shrub communities, with greasewood in the bottoms and shadscale and mat saltbush on hillsides. Plants frequently found associated with the clay-loving wild buckwheat and the adobe beardtongue are black sagebrush, woody aster, Gardner saltbush, and bottlebrush squirreltail.

Natural Heritage elements at the South Canal PCA.

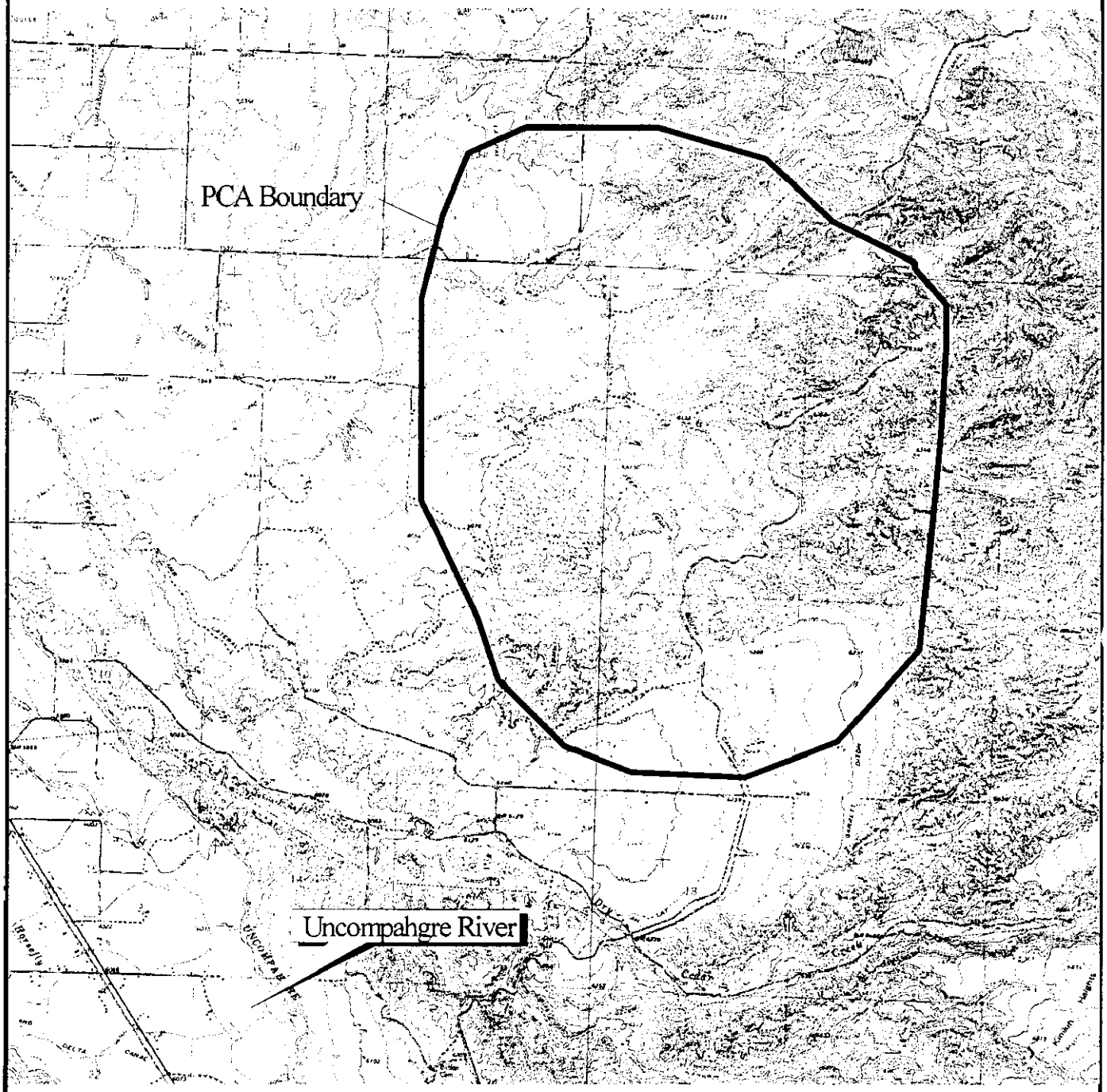
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**A**
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**B**
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	HC
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	HC
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Rana pipiens	Northern leopard frog	G5	S3	SC,FS	C

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass the rare plant occurrences in the South Canal area, within the Uncompahgre Badlands macrosite.

South Canal

Proposed Conservation Area



Species of Concern

Plants:

Clay-loving wild buckwheat
Adobe beardtongue

Animals:

Northern leopard frog

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Montrose East U.S.G.S. 7.5 min. Quadrangle

Uncompahgre River at Eldredge

Biodiversity Rank: B2. Very high significance. This site has fair condition remnant stands of a globally imperiled riparian plant community, and an orchid that is considered rare in the state of Colorado.

Protection Urgency Rank: P2. Both the riparian plant community and the canyon bog orchid are dependent on the continuation of the present hydrologic regime, and are threatened by road alterations. Approximately one third of the PCA is located within the Billy Creek State Wildlife Area, with the remainder on private land.

Management Urgency Rank: M2. Road and irrigation ditch maintenance pose threats to the canyon bog orchid population.

Location: Ouray County
U.S.G.S. 7.5. min. quadrangles: Colona
Legal Description: T47N R8W S 29, 30

Elevation range: 6,500 to 7,000 feet

Size: 290 acres

General Description: This site is located on the Uncompahgre River between Ridgway and Colona, partly in the Billy Creek State Wildlife Area. It contains relict examples of the riparian vegetation that is typical of the Uncompahgre Valley, but has been lost along much of the river. Even here, the condition of the community is only moderately good.

Narrowleaf cottonwood and occasional box elders provide a canopy layer. There are dense thickets of western river birch, coyote willow, and thinleaf alder. Silver buffaloberry, a species that is typical of the Uncompahgre, but has been much reduced, grows in the understory along with red-osier dogwood and skunkbrush. Wet areas along Highway 550 are dominated by reed canary grass, with some beaked sedge, cattails, horsetails, false solomonseal, and Baltic rush. A band of coyote willow grows along the river. The area has many exotic species in the understory, including Canada thistle, burdock, white top, and orchard grass. The hydrology has been altered by the highway, the Ridgway dam, and gravel mining.

The canyon bog orchid was found in three locations: a backwater of the man-made fishing pond, formerly a gravel pit, in boggy areas in the willows adjacent to the river, and along an irrigation ditch on the west side of Highway 550. It prefers to be next to open water, with its roots reaching below the water table, but not inundated.

This area has been identified by the CDOW as one of two principal wildlife concentration areas in Ouray County. It provides important habitat for deer, elk, mountain lion, turkey, and numerous bird species. Along with the adjacent Billy Creek State Wildlife Area, it provides a connecting corridor between the uplands of Cimarron Ridge and the Uncompahgre River.

Natural Heritage elements at the Uncompahgre River at Eldredge PCA.

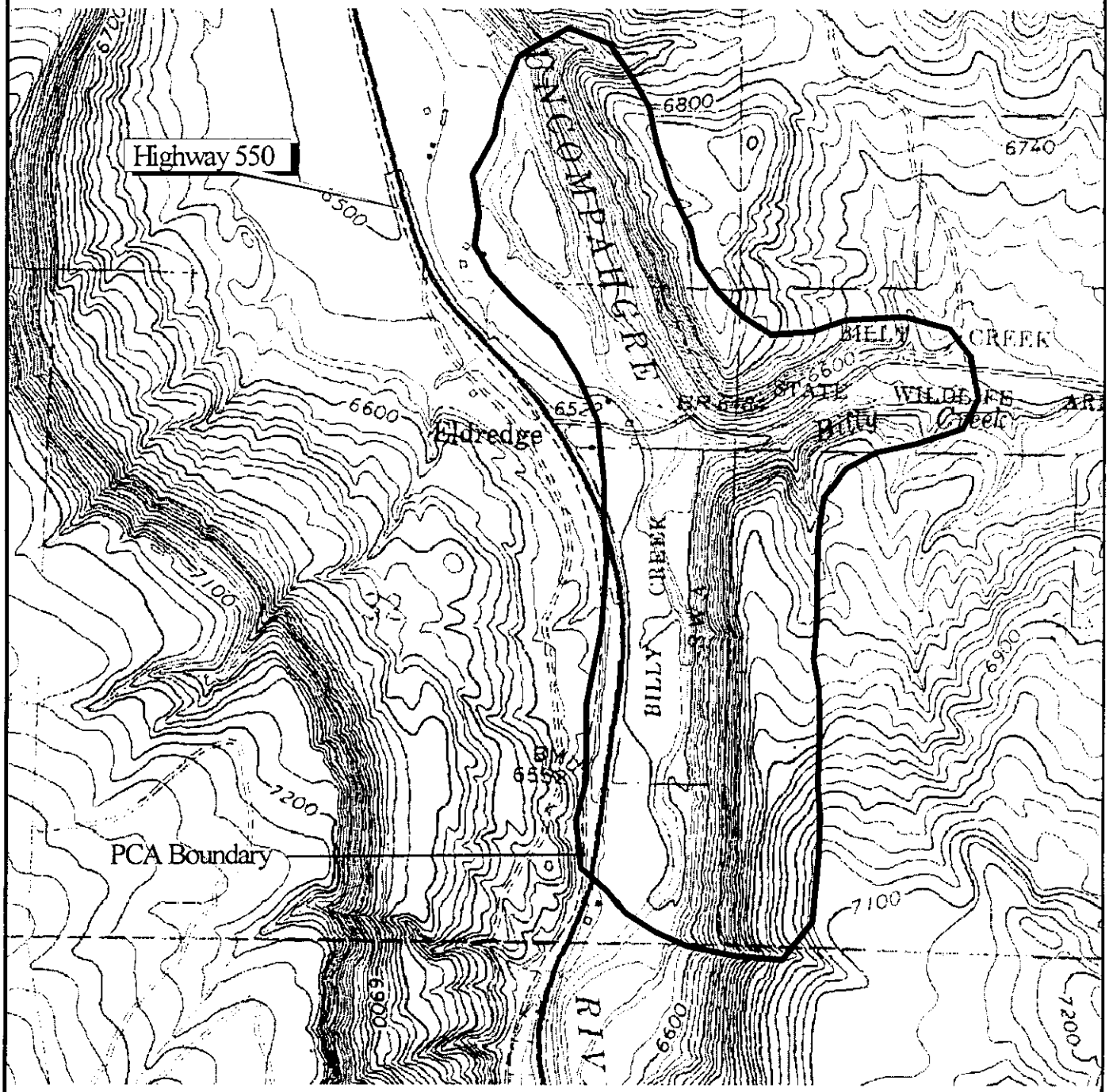
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus angustifolia/Salix eriocephala* var. *ligulifolia-Shepherdia argentea	**Narrowleaf cottonwood riparian forests**	**G1**	**S1**		**C**
Populus angustifolia/Salix eriocephala* var. *ligulifolia-Shepherdia argentea	**Narrowleaf cottonwood riparian forests**	**G1**	**S1**		**C**
Platanthera sparsiflora	Canyon bog-orchid	G4G5T3	S2		C

*EO = Element Occurrence

Boundary Justification: The site includes the known element occurrences and a buffer to protect the site form direct disturbance. The boundary was extended to the west in 1998 to include an additional sub-population of the canyon bog orchid.

Uncompahgre River at Eldredge

Proposed Conservation Area



Species and Plant Communities of Concern

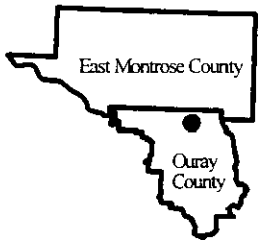
Plant communities:

Narrowleaf cottonwood riparian forests

- Narrowleaf cottonwood/ Strapleaf willow/ Silver buffaloberry

Plants:

Canyon bog-orchid



N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Colona U.S.G.S. 7.5 min. Quadrangle

Uncompahgre River at Ridgway

Biodiversity Rank: B2. Very high significance. This site contains a fair condition example of a critically imperiled riparian plant community.

Protection Urgency Rank: P3. The site is approximately two thirds private and one third BLM land. One small 20 acre parcel within the site is protected by a conservation easement. Adjacent uplands may be developed. Local interest in restoration of the riparian corridor in Ridgway may benefit this site.

Management Urgency Rank: M3. This stretch of the Uncompahgre River has been severely impacted by upstream gravel operations. Cessation of gravel mining in the river will benefit the site.

Location: Ouray County
U.S.G.S. 7.5. min. quadrangles: Ridgway, Dallas
Legal Description: T45N R8W S 9
Elevation range: 6,960 to 7,000 feet
Size: 108 acres

General Description: This small stretch of the Uncompahgre River north of Ridgway contains a fairly good relic stand of the native riparian vegetation typical of the Uncompahgre River. Its mature narrowleaf cottonwoods, and occasionally box elders, provide roosting and hunting areas for wintering bald eagles. A lower tree layer consists of scattered Rocky Mountain junipers. Silver buffaloberry, a species that has been much reduced throughout the area, grows in a fairly continuous band here. Other native species in the understory include wild rose, rubber rabbitbrush, skunkbrush, big sagebrush, and western wheatgrass. Non-native species include Kentucky bluegrass, houndstongue, Canada thistle, and Russian thistle. Mature cottonwoods in the abandoned oxbow are dependent on irrigation runoff. If this source is eliminated, the community may be unsustainable. The Uncompahgre Riverway trail runs through the site. There is a small picnic area with interpretive signs on the BLM portion. Uplands in the area have pinyon and juniper woodlands with mountain big sagebrush.

A committee of interested citizens in Ridgway has expressed interest in acquiring property along the river for the town, and enhancing its natural values.

Natural Heritage elements at the Uncompahgre River at Ridgway PCA.

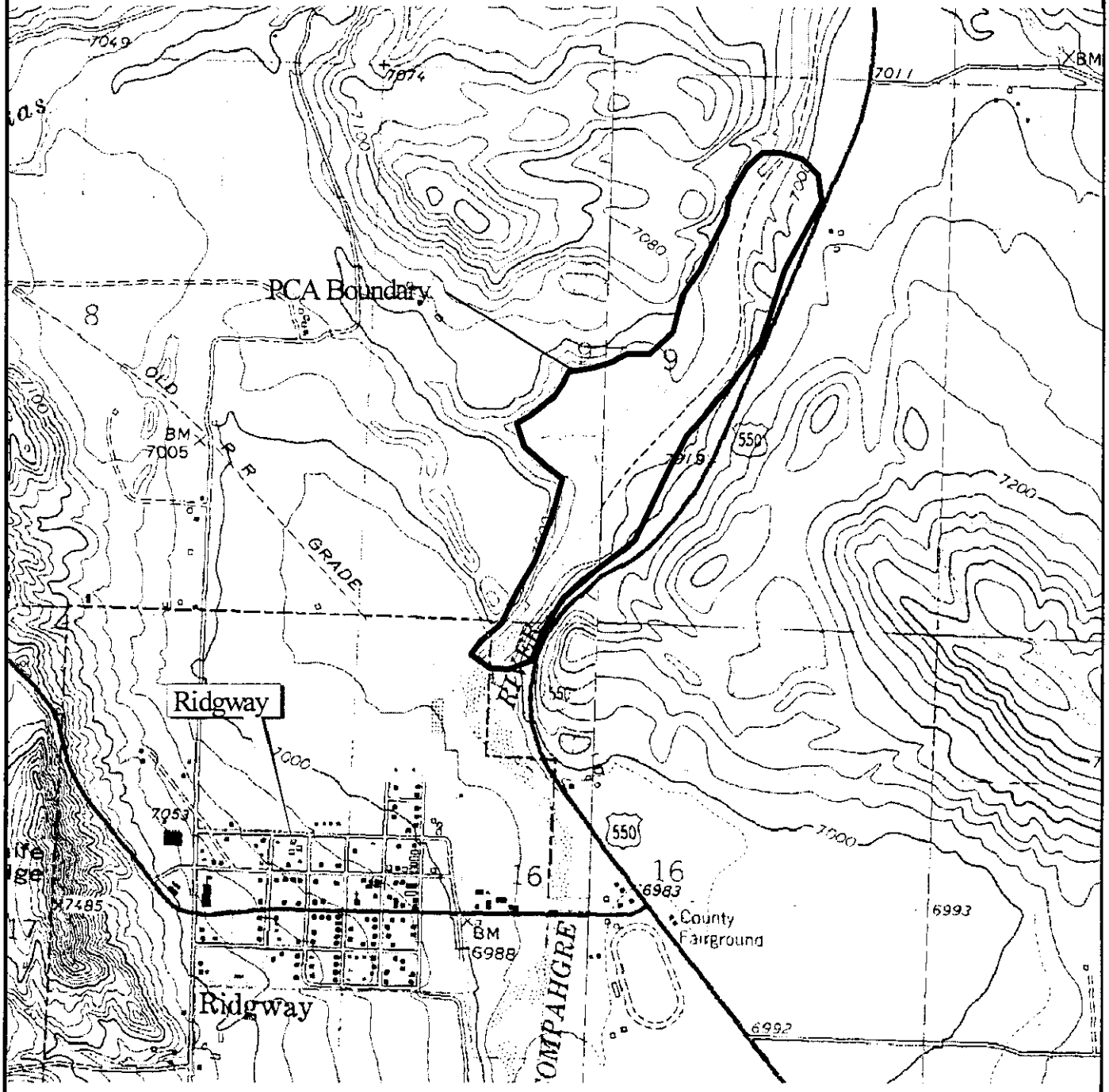
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus angustifolia/Salix eriocephala* var. *ligulifolia-Shepherdia argentea	**Narrowleaf cottonwood riparian forests**	**G1**	**S1**		**C**

*EO = Element Occurrence

Boundary Justification: The boundary includes the occurrence of the riparian community.

Uncompahgre River at Ridgway

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Narrowleaf cottonwood riparian forests

- Narrowleaf cottonwood/
- Strapleaf willow/
- Silver buffaloberry

N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Ridgway and Dallas U.S.G.S. 7.5 min. Quadrangles

Beaton Creek East

Biodiversity Rank: B3. High significance. The site contains a good occurrence of the globally vulnerable Wetherill milkvetch.

Protection Urgency Rank: P2. The site is partly on BLM land, close to a proposed powerline. If the powerline route is approved, it should be surveyed for the Wetherill milkvetch, Rocky Mountain thistle, and Colorado desert-parsley.

Management Urgency Rank: M4. BLM land in the site is managed with emphasis on grazing. Projects designed to increase forage should be examined for their effects on native vegetation, including rare plant populations.

Location: Montrose County. About 1.5 miles northeast of Colona.
U.S.G.S. 7.5. min. quadrangles: Buckhorn Lakes
Legal Description: T47N R8W S 2, 3

Elevation range: 6,760 to 7,440 feet

Size: 196 acres

General Description: The Beaton Creek East site is located on a dry hillside with pinyon juniper woodland and rocky, sandy clay soils derived from Mancos shale. A large, healthy population of the Wetherill milkvetch was found here by Jane Bunin (Bunin 1991).

Natural Heritage elements at the Beaton Creek East PCA.

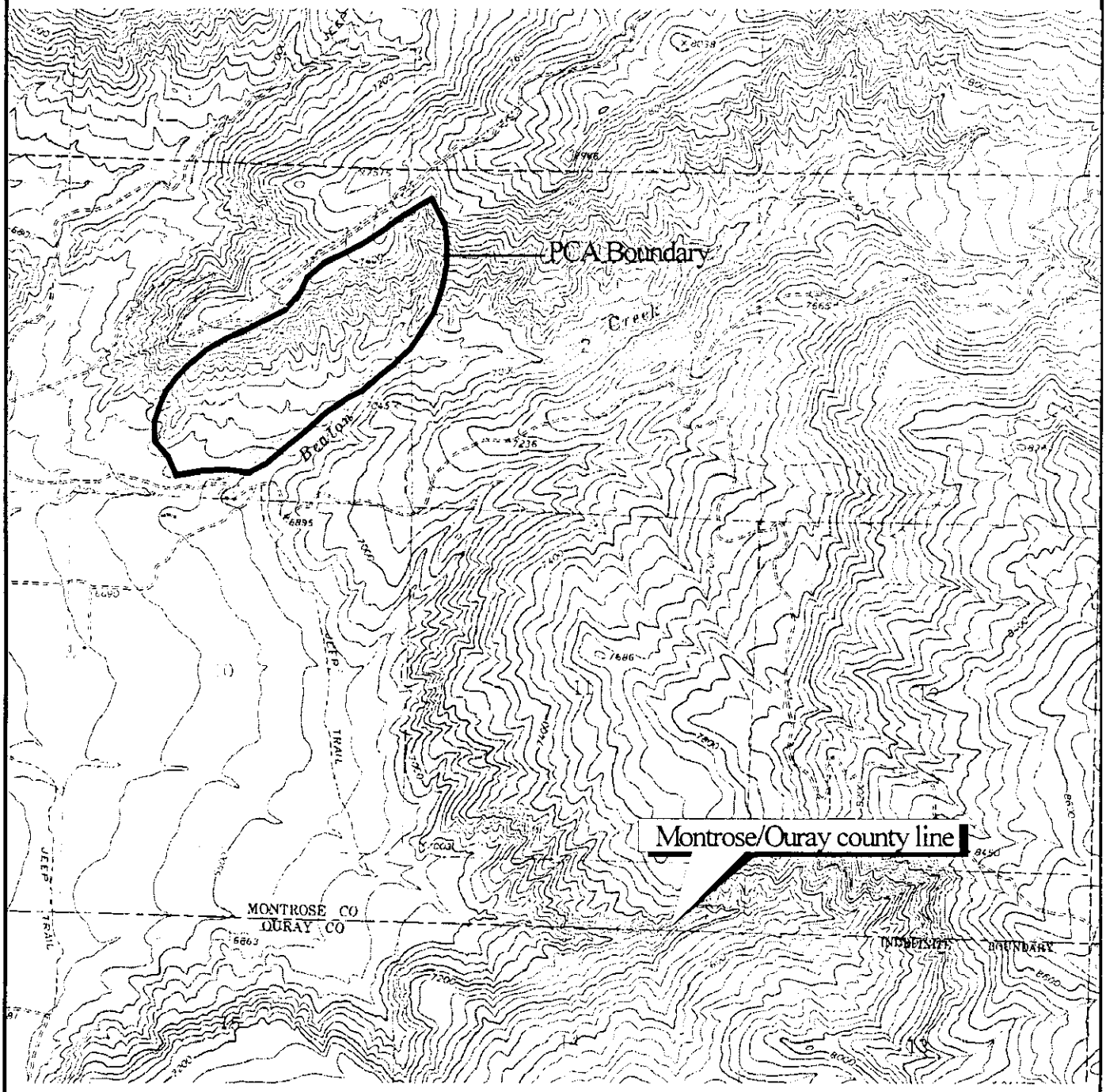
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Astragalus wetherillii	**Wetherill's milkvetch**	**G3**	**S3**	**BLM, FS**	**B**

*EO = Element Occurrence

Boundary Justification: The site includes the known element occurrences and some adjacent habitat, including a buffer to protect the site from direct disturbances. On the north side, a road and a power line are used as the boundary, and on the south, the natural boundary of Beaton Creek. The potential habitat does continue outside of the site.

Beaton Creek East

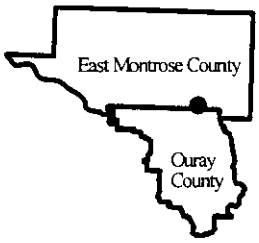
Proposed Conservation Area



Species of Concern

Plants:

Wetherill's milkvetch



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Buckhorn Lakes U.S.G.S. 7.5 min. Quadrangle

Beaton Creek West

Biodiversity Rank: B3. High significance. The site contains a good occurrence of the globally vulnerable Wetherill milkvetch.

Protection Urgency Rank: P3. The site is located on BLM with no special protective status. The rare plant populations should be taken into consideration when new projects are proposed.

Management Urgency Rank: M4. The site is managed by BLM with emphasis on grazing. Projects to improve forage should be examined for their effects on native vegetation.

Location: Montrose County. About two miles north of Colona.
U.S.G.S. 7.5. min. quadrangles: Colona
Legal Description: T47N R8W S 4, 5; T48N R8W S 33

Elevation range: 6,600 to 6,800 feet

Size: 104 acres

General Description: Beaton Creek West site is similar to the Beaton Creek East site above. It is located on south facing hillsides with pinyon pine woodland. The soils are rocky, sandy, clay, derived from Mancos shale. Ownership is primarily BLM, with some private land in the southern part of the site.

Natural Heritage elements at the Beaton Creek West PCA.

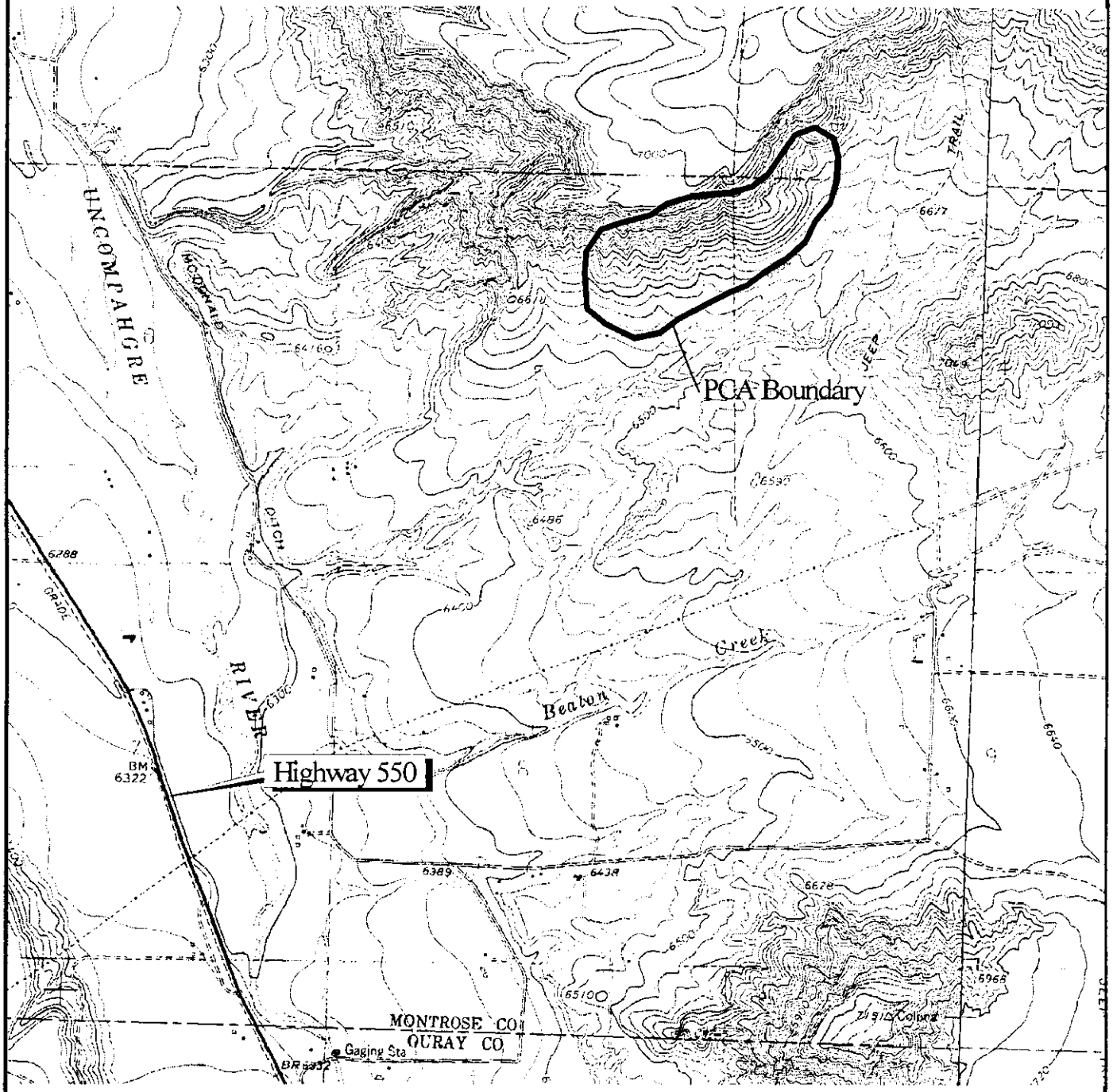
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Astragalus wetherillii	**Wetherill's milkvetch**	**G3**	**S3**	**BLM, FS**	**B**

*EO = Element Occurrence

Boundary Justification: The boundary encompasses the known occurrences and a buffer to protect the site from direct disturbances. The road and the top of the hill are used as boundaries because they probably act as barriers to the population.

Beaton Creek West

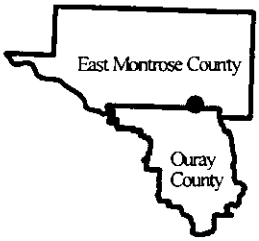
Proposed Conservation Area



Species of Concern

Plants:

Wetherill's milkvetch



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Colona U.S.G.S. 7.5 min. Quadrangle

Beaver Dams Creek

Biodiversity Rank: B3. High significance. The site includes good occurrences of a globally vulnerable plant, the showy whitlow-grass, and a lower montane forest community.

Protection Urgency Rank: P4. This site is located within the Uncompahgre National Forest, which is managed for multiple use. Since the area has already been logged, it is probably secure for the near future. Potential threats are additional road building and grazing of the showy whitlow-grass site.

Management Urgency Rank: M3. Road maintenance or improvements and grazing could threaten the population of showy whitlow-grass.

Location: Montrose and Ouray counties. On the Uncompahgre Plateau, north of the Divide Road, at the Montrose-Ouray county line.

U.S.G.S. 7.5. min. quadrangles: Pryor Creek

Legal Description: T47N R11W S 20, 21, 29, 32

Elevation range: 8,800 to 9,480 feet

Size: 363 acres

General description: Beaver Dams Creek, at the top of the Uncompahgre Plateau, is a small tributary of Dry Creek. The site is forested with a mixture of aspen and sometimes dense Engelmann spruce. Some parts have been logged. Understory species in the uplands include snowberry, orange sneezeweed, elk sedge, and bracken fern. There is a dirt road that follows the east fork of the creek, terminating above the confluence of the two forks. A trail continues from the end of the road, crossing the creek. The riparian zone along Beaver Dams Creek is dominated by Douglas fir, with some aspen and Engelmann spruce. The narrow, shady canyon has a sparse shrub layer, including twinberry honeysuckle, snowberry, and raspberry. The herbaceous vegetation includes bracken fern, tall sedges, rushes and grasses, cow parsnip, bluebells, triangle-leaf groundsel, bittercress, and bog orchids. There are few exotic species in the riparian zone, except for Kentucky bluegrass and red top. However, there is a bad infestation of Canada thistle along the upper trail, and dandelions are common in open disturbed areas. The showy whitlow-grass population was found on both sides of the road, in small clearings, with snowberry, orange sneezeweed and dandelions. The wild hollyhock was growing on a very wet north facing slope at the end of the road, with Engelmann spruce, twinberry honeysuckle, thimbleberry, one-sided wintergreen, and a rich diversity of sedges and mosses. Although not included in the site, there is a goshawk nest within a mile, and this area is probably used by the birds for hunting.

Natural Heritage elements at the Beaver Dams Creek PCA.

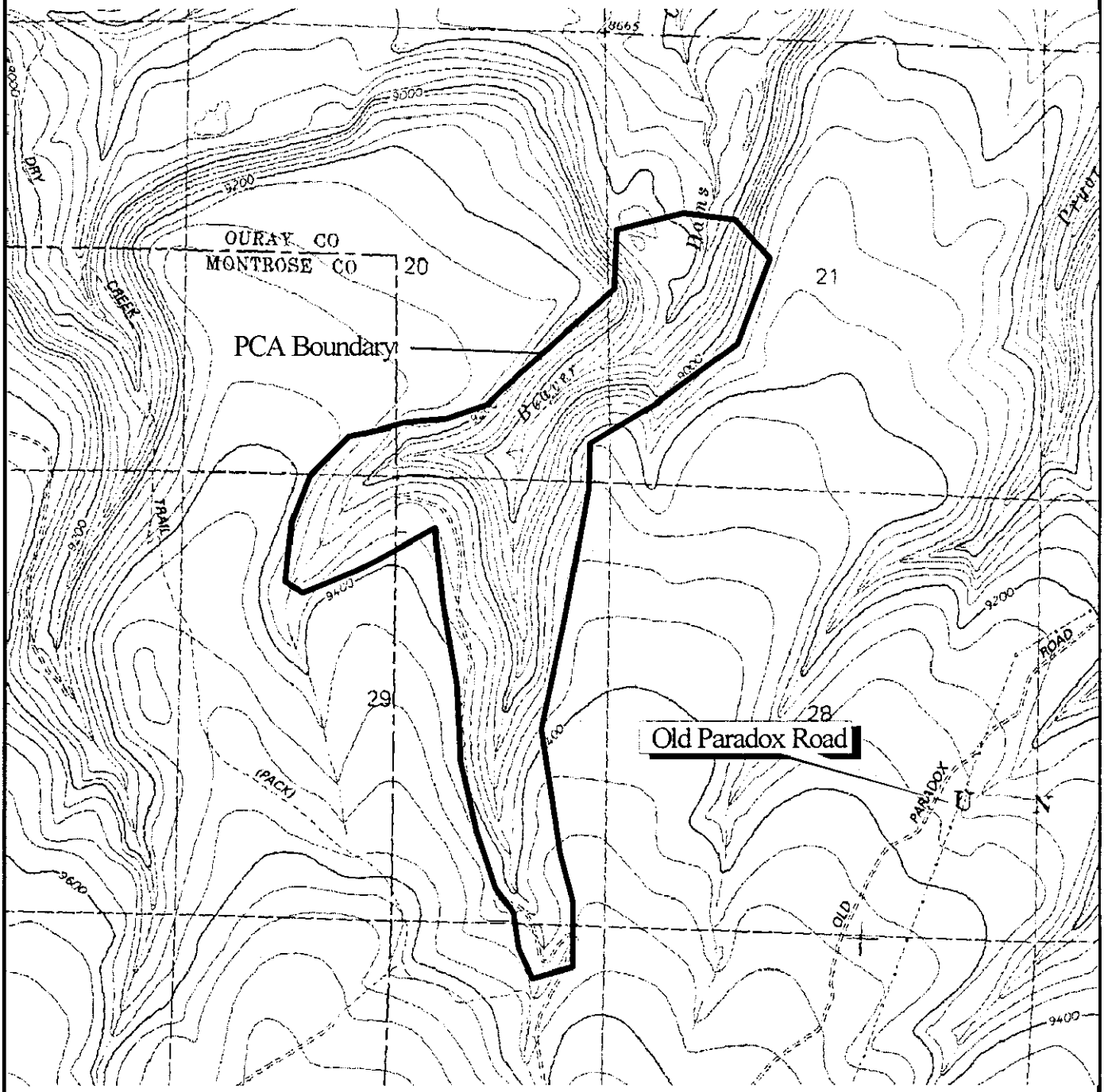
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Pseudotsuga menziesii/Paxistima myrsinites	**Lower montane forests**	**G2G3**	**S2S3**		**B**
Iliamna grandiflora	Large-flower globemallow	G3?Q	S1		D
Draba spectabilis var. oxyloba	Showy whitlow-grass	G3T3Q	S3		B
Populus tremuloides/Pteridium aquilinum	Aspen wetland forests	G4	S3S4		B

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include element occurrences in the riparian zone and adjacent forested areas above the headwaters of Beaver Dams Creek.

Beaver Dams Creek

Proposed Conservation Area



Species and Plant Communities of Concern

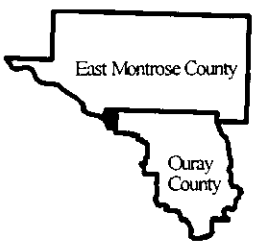
Plant communities:

Lower montane forests
- Douglas fir/
- Mountain lover

Aspen wetland forests
- Aspen/
- Bracken fern

Plants:

Large-flowered globemallow
Showy whitlow-grass



N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Pryor Creek U.S.G.S. 7.5 min. Quadrangle

Bostwick Park

Biodiversity Rank: B3. High significance. The Bostwick Park site contains a fair occurrence of the good-neighbor bladderpod, a plant newly discovered in Montrose County, and until shown otherwise, considered globally imperiled.

Protection Urgency Rank: P2. The population of the Good-neighbor bladderpod is located on private land near a residence. However, the adjacent potential habitat has not been developed.

Management Urgency Rank: M4. The plants are growing in disturbed sites. No special management should be required. Continued monitoring of this site could add to the understanding of the species life history and response to disturbance.

Location: Montrose County. About 7 miles northeast of Montrose.
U.S.G.S. 7.5. min. quadrangles: Red Rock Canyon, Grizzly Ridge
Legal Description: T49N R8W S 2, 3, 11

Elevation range: 6,950 to 7,200 feet

Size: 237 acres

General Description: The Bostwick Park site is located in pinyon-juniper woodland at the base of a west-facing hillside above Bostwick Park. Bostwick Park itself is a broad level bench with irrigated hayfields, situated between the adobe hills to the west and pinyon juniper uplands to the east. The occurrence of the good-neighbor bladderpod was found in disturbed areas along the driveway to a residence. The plants seem to be locally common in open barren areas among the pinyon-juniper and sagebrush in this area. The record of the Wetherill milkvetch is based on an herbarium specimen collected in 1915, and has not been updated. However, the habitat appears to be appropriate for the species. Additional searches should be made for both species in the southeastern part of the site.

Natural Heritage elements at the Bostwick Park PCA.

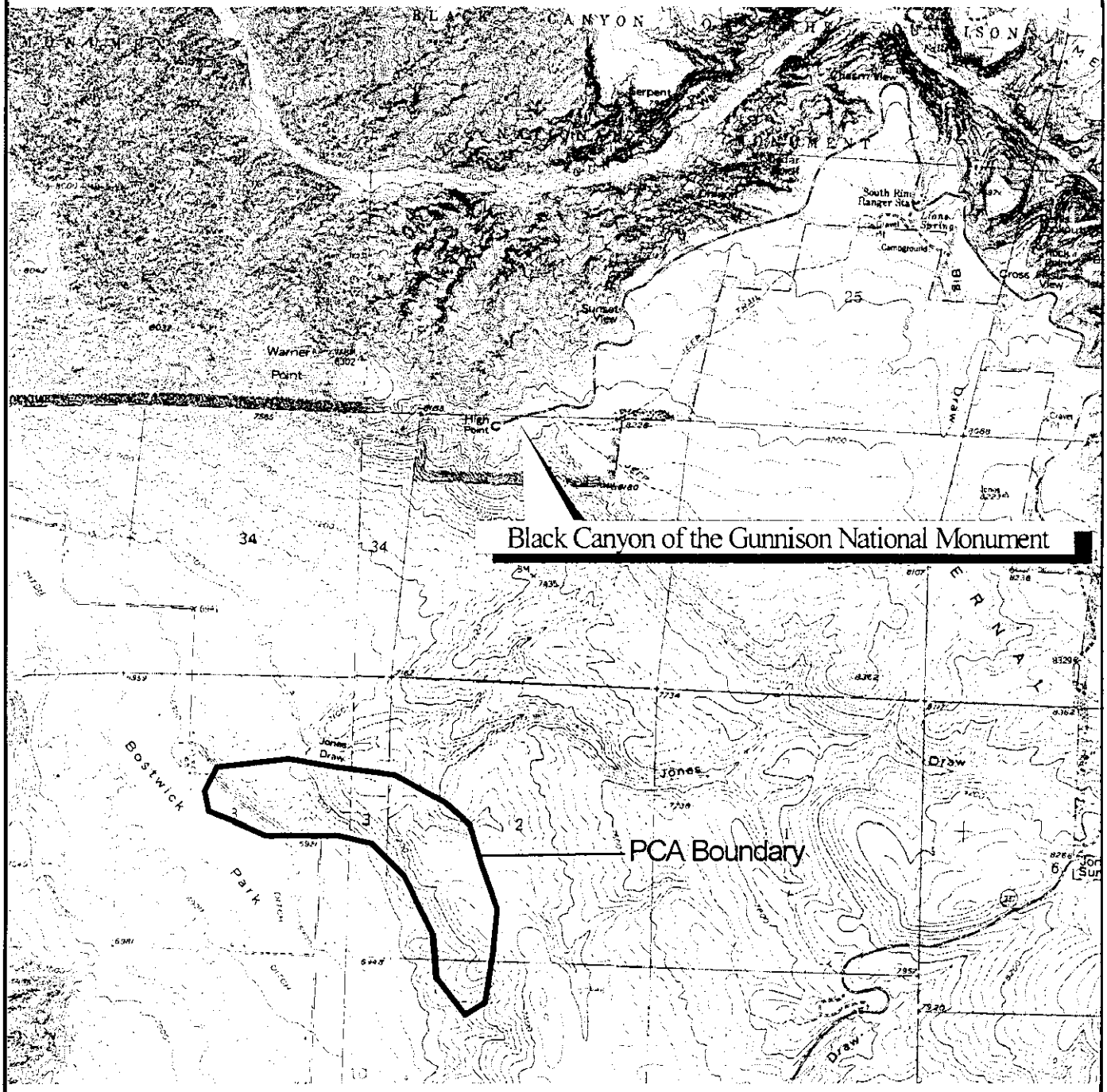
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**C**
Astragalus wetherillii	Wetherill's milkvetch	G3	S3	BLM, FS	H

*EO = Element Occurrence

Boundary Justification: The boundary includes the location of the good-neighbor bladderpod and the adjacent potential habitat above the canal. It includes the lower slopes of the hill with pinyon-juniper woodland to the southeast, which appears to be good potential habitat for both the bladderpod and the Wetherill milkvetch, but has not been surveyed.

Bostwick Park

Proposed Conservation Area



Species of Concern

Plants:

Good-neighbor bladderpod
Wetherill's milkvetch

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Red Rock Canyon & Grizzly Ridge USGS 7.5 min Quadrangles

Buckhorn Lakes

Biodiversity Rank: B3. High significance. The site contains an excellent example of a globally rare montane willow carr.
Protection Urgency Rank: P4. The site is owned by the City of Montrose and BLM, and is well protected.

Management Urgency Rank: M3. The ponds in this site are in good condition now, but if roads to them are improved and recreational use increases, they may be threatened by direct disturbances and weed invasion.

Location: Montrose County. About eight miles east of Colona.
U.S.G.S. 7.5. min. quadrangles: Buckhorn Lakes
Legal Description: T47N R7W S 9, 10, 15, 16

Elevation range: 9,600 to 9,800 feet

Size: 398 acres

General Description: This site includes a natural wetland and several ponds. Although there is a two-track road through part of the site, and the developed fishing lakes along the road have been heavily impacted, there are several ponds in good condition that are only accessible by foot. These ponds have intact hydrology, fed from snow melt, precipitation and groundwater discharge. The adjacent Buckhorn Lakes area is heavily used for recreation, especially fishing in stocked ponds. Vegetation in the wetland includes Rocky Mountain willow, planeleaf willow, and strapleaf willow, with an understory of bluebells, stinging nettles, cow parsnip, Richardson's geranium, horsetails, bebb sedge, and beaked sedge. The ponds support aquatic vegetation including common marestail, common spikerush, Gmelin's buttercup, turion duckweed, and sago pondweed.

Natural Heritage elements at the Buckhorn Lakes PCA.

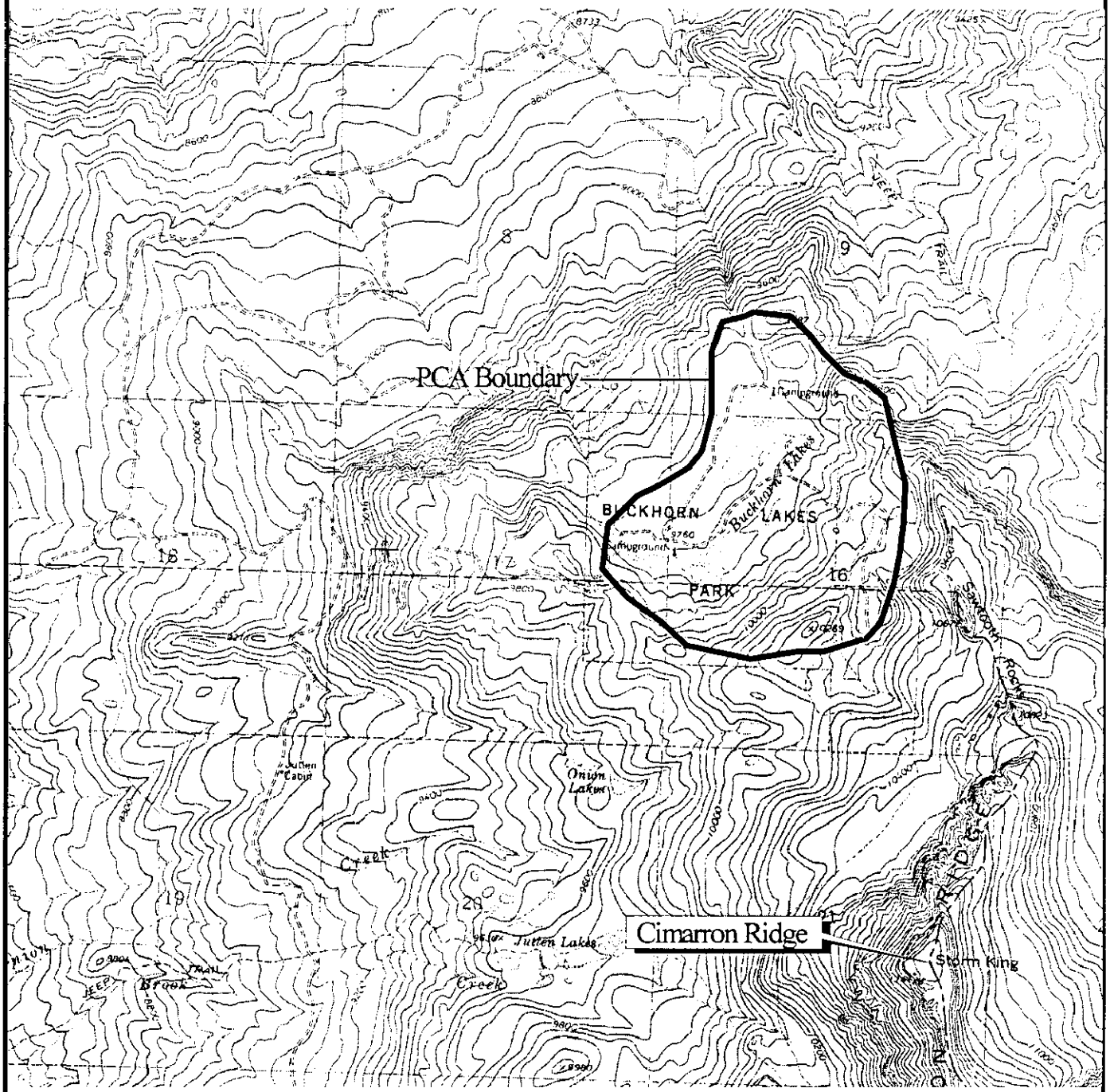
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
***Salix monticola*/Mesic forb**	**Montane riparian willow carr**	**G3**	**S3**		**A**

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include wetlands that are in good condition, and inaccessible by road.

Buckhorn Lakes

Proposed Conservation Area

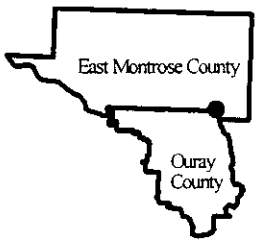


Plant community of Concern

Plant communities:

Montane riparian willow carr

Rock Mountain willow/
mesic forbs



N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Buckhorn Lakes U.S.G.S. 7.5 min. Quadrangle

Canyon Creek at Ouray

Biodiversity Rank: B3. High significance. This site has good condition examples of two globally vulnerable riparian forest communities.

Protection Urgency Rank: P4. Most of the site is in the Uncompahgre National Forest. If the property is put up for sale, it would be an excellent addition to the Box Canyon property owned by the City of Ouray.

Management Urgency Rank: M4. Present appears to be adequate. There is no grazing on the site.

Location: Ouray County. About one mile southwest of Ouray, via Camp Bird Road (Colorado Highway 361).

U.S.G.S. 7.5. min. quadrangles: Ouray, Ironton

Legal Description: T44N R8W S36; T43N R7W S6; T43N R8W S1,12.

Elevation range: 7,960 feet to 9,000 feet

Size: 118 acres

General description: Canyon Creek forms a steep canyon, with good condition riparian vegetation in some areas. Disturbances in the canyon are frequent, but natural. The canyonsides are subject to landslides, while the creek shows evidence of periodic flooding. The stream has a wide channel, with large rounded boulders and cobbles. At the lower end of the site, narrowleaf cottonwood forests and thinleaf alder predominate, while upstream blue spruce and Engelmann spruce become more abundant. North facing rock ledges support a thick cover of mosses and mat saxifrage. Although the mixed montane forest with white fir and Oregon grape is considered to be common both globally and in Colorado, the community is unusual in the Uncompahgre Basin, and is included here as the best example found in the study area. There are numerous homes and trails on the downstream end of the site. Most traffic is by foot or horse. The Camp Bird Road (Colorado Highway 361) parallels the creek at the top of the canyon. Traffic on the road is heavy, but users stay on the road. There is some camping where the road crosses the creek at the upstream end of the site.

Natural Heritage elements at the Canyon Creek PCA.

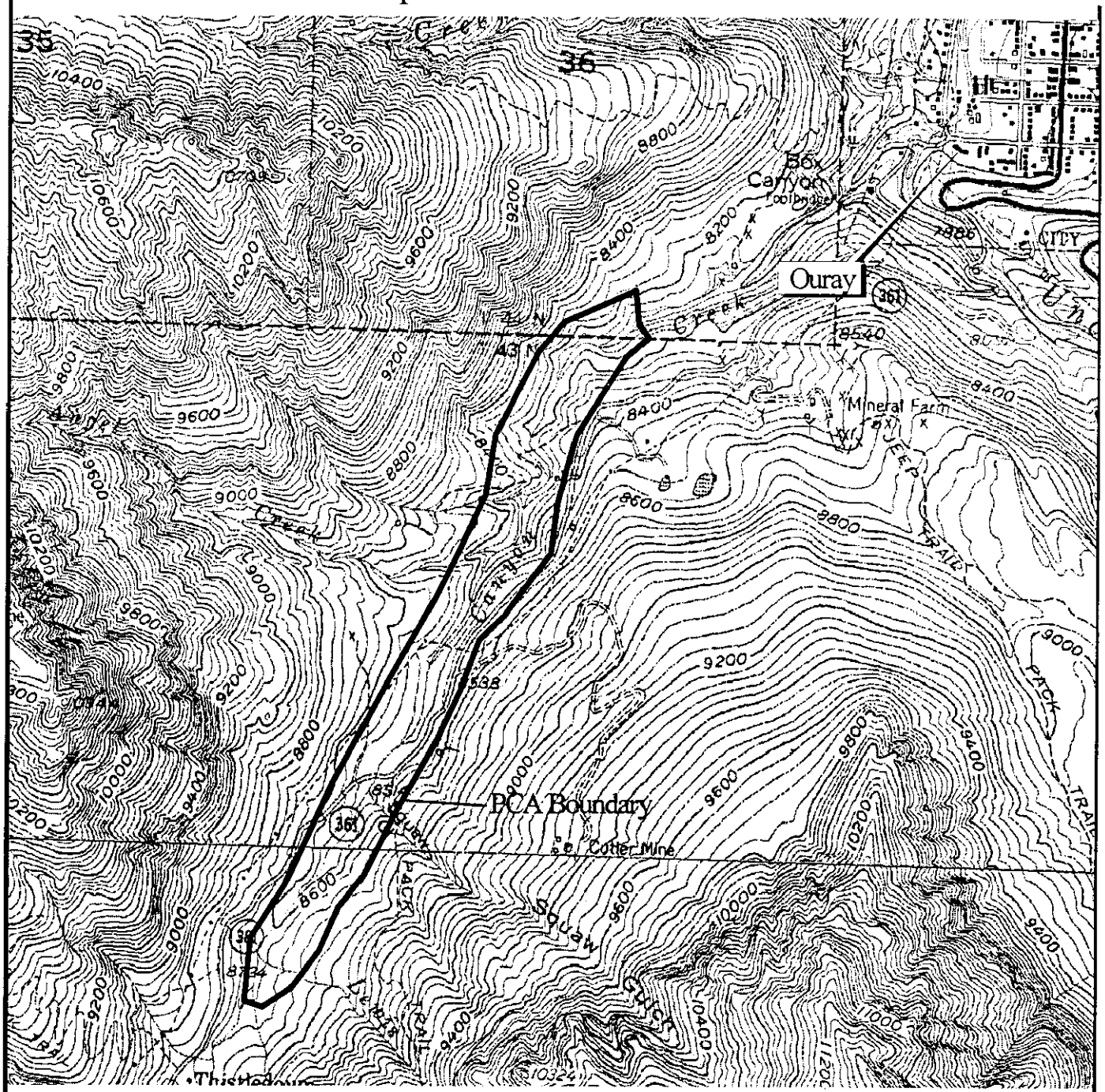
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus angustifolia-Picea pungens/Alnus incana	**Montane riparian forests**	**G3**	**S3**		**B**
Pseudotsuga menziesii/Acer glabrum	Lower montane forests	G4	S1		C
Abies lasiocarpa-Picea engelmannii-Populus angustifolia/Lonicera involucrata	Montane riparian forests	G4	S3		B
Abies concolor/Mahonia repens	Mixed montane forests	G5	S4		B

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include three good condition plant communities in the riparian corridor of Canyon Creek, and the forested canyonsides.

Canyon Creek at Ouray

Proposed Conservation Area



Plant Communities of Concern

Plant communities:

Montane riparian forests

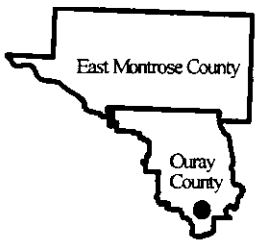
- Subalpine fir-Engelmann spruce-Narrowleaf cottonwood/ Twinberry honeysuckle
- Narrowleaf cottonwood- blue spruce/ Thinleaf alder

Mixed montane forest

White fir/ Oregon grape

Lower montane forest

Douglas fir/ Rocky Mountain maple



N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Ouray & Ironton U.S.G.S. 7.5 min. Quadrangles

Cimarron River

Biodiversity Rank: B3. High significance. The site contains two good examples of a globally vulnerable riparian plant community.

Protection Urgency Rank: P3. Most of this site is within the Cimarron State Wildlife Area, and is probably secure. However, the private land may be subject to development.

Management Urgency Rank: M4. Present management appears to be adequate to maintain the occurrence in its present condition. Exotic and invasive plants may need to be managed.

Location: Montrose County. South of Hwy. 50, 2 miles south of Cimarron.
U.S.G.S. 7.5. min. quadrangles: Washboard Rock
Legal Description: T48N R6W S 21, 28, 32, 33; T47N R6W S 5-8, 17-20, 29, 30

Elevation range: 7,160 to 8,400 feet

Size: 2,265 acres

General description: The Cimarron River flows north from its headwaters in the Uncompahgre National Forest in Gunnison County. It supports a long, narrow corridor of riparian vegetation, dominated by narrowleaf cottonwood and blue spruce. In the southern part of the site, the river runs through the Cimarron State Wildlife area. Here, the trees are widely spaced, and there is a sparse understory of thinleaf alder and red-osier dogwood. This area is probably a transition between communities dominated by blue spruce upstream, and those with narrowleaf cottonwood downstream (Kittel 1994). There are some steep, erosive side slopes, and water quality is questionable. However, there is little direct human disturbance, as there are no roads or trails in the valley bottom. Few exotic species were observed, except for some Canada thistle and red top. The Black Canyon gilia was found in crevices of granite cliffs in 1937, but has not been relocated since. Most of the northern (downstream) part of the site is on private land, with a few small BLM parcels intermixed. Farther downstream, the steep-sided canyon widens to a broad floodplain. A good condition riverine wetland four miles south of highway 50 was documented by CNHP riparian ecologists in 1998. The area is not accessible to the public, and is undisturbed. Vegetation is similar to the upstream site, but with a higher percentage of narrowleaf cottonwood, and the addition of coyote willow in the understory, along with thinleaf alder and red-osier dogwood. The cottonwoods provide a nesting area for great blue herons. Uplands here are dominated by Gambel's oak and big sagebrush. Potential threats to the area include increased demands for irrigation water and development of vacation home properties upstream.

Natural Heritage elements at the Cimarron River PCA.

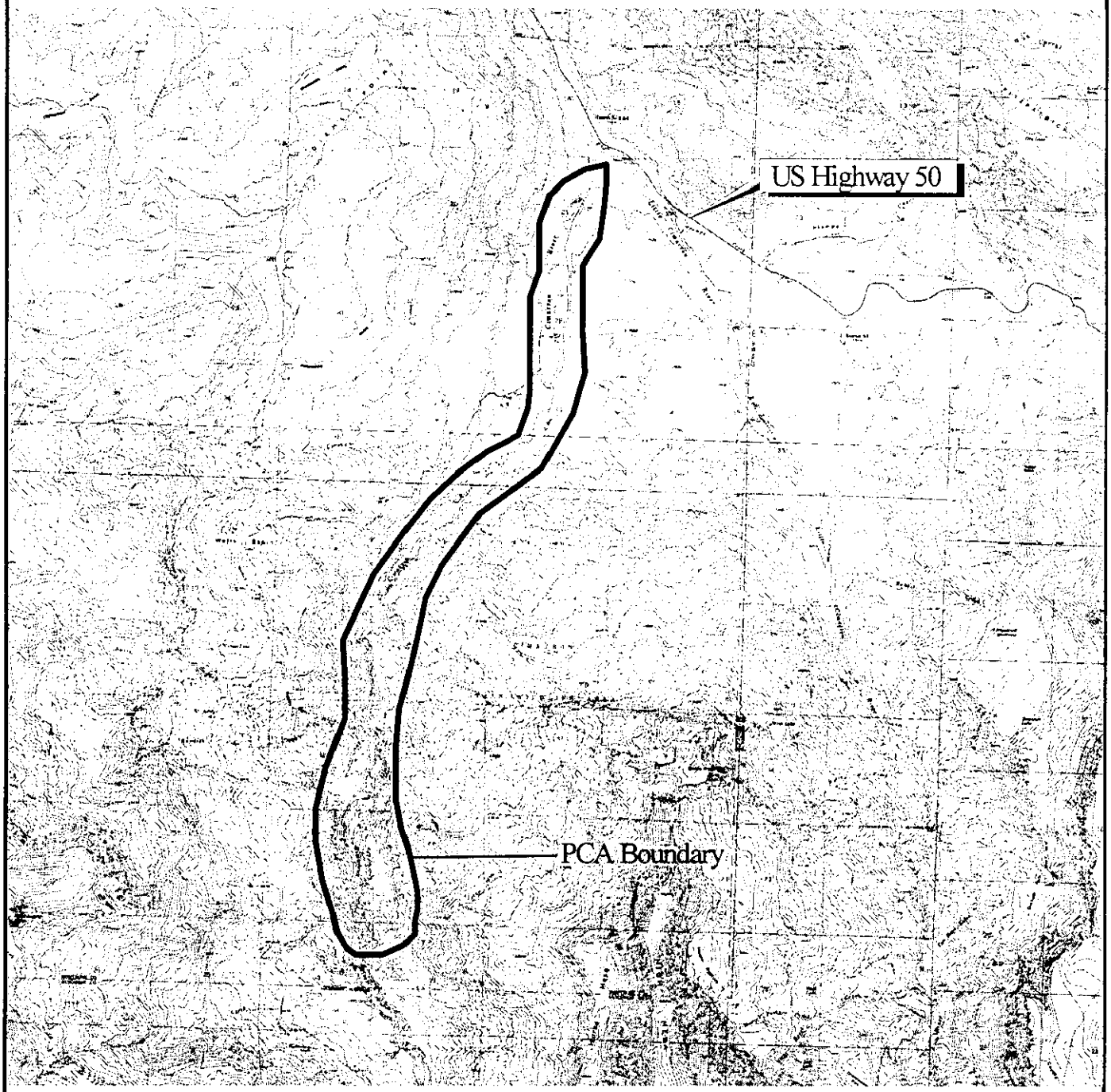
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Gilia penstemonoides	Black Canyon gilia	G2G3	S2S2	BLM, FS	H
Populus angustifolia-Picea pungens/Alnus incana	**Montane riparian forests**	**G3**	**S3**		**B**
Populus angustifolia-Picea pungens/Alnus incana	**Montane riparian forests**	**G3**	**S3**		**B**
Ardea herodias	Great blue heron	G5	S3BSZN		E

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include the riparian corridor of the Cimarron River, and a buffer zone to mitigate impacts from the road.

Cimarron River

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

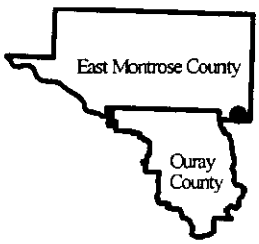
Montane riparian forests
- Narrowleaf cottonwood-
- Blue spruce/
- Thinleaf alder

Plants:

Black Canyon gilia

Animals:

Great blue heron



N

0 1 2 3 Miles

*Prepared by Southwest Data Center

Cimarron & Washboard Rock U.S.G.S. 7.5 min. Quadrangles

Cottonwood Creek

Biodiversity Rank: B3. High significance. The site contains an excellent occurrence of the globally vulnerable narrowleaf cottonwood/skunkbrush plant community.

Protection Urgency Rank: P3. The majority of this PCA is on BLM land. This would be a good candidate for protection as an ACEC or Research Natural Area.

Management Urgency Rank: M4. The area is presently managed by BLM to enhance and restore riparian vegetation. "Projects to accelerate improvement of species diversity, streambank cover and stability, and in-stream structure, and to raise the water table, will be incorporated into existing activity plans or developed in new riparian/aquatic system management plans" Grazing is allowed, except from March 1 to range readiness (USDI 1989). Current management practices do not adversely affect the riparian community. However, any further upstream water diversions could be detrimental to its long term survival.

Location: Montrose County. About 25 miles west northwest of Montrose, west of 25 Mesa Road.

U.S.G.S. 7.5. min. quadrangles: Cottonwood Basin, Camel Back, Roubideau
Legal Description: T50N R13W S 13, 23, 24, 26; T50NR12W S 5-7; T51N R12W S 32, 33.

Elevation range: 5,600 to 6,600 feet

Size: 929 acres

General Description:

Cottonwood creek has a narrow, good condition riparian area at the bottom of a deep canyon. There are no roads or hydrological alterations within the site, and few weeds. Evidence of flooding was observed, and there is good regeneration of cottonwoods and willows. Some schools of small fish were seen in the creek. Difficulty of access contributes to its excellent condition. Major vegetation in the riparian zone consists of narrowleaf cottonwood, skunkbrush, coyote willow, and silver buffaloberry. Yellow sweet clover is one of the few weeds present. Soils are sandy with medium size cobbles. Banks are 60-75% vegetated. Uplands consist of mountain big sagebrush, Gambel's oak and rubber rabbitbrush.

An instream flow recommendation for Cottonwood Creek has been made to the State Division of Water Resources to protect the fishery. This flow may not be adequate to maintain the present channel morphology or provide for riparian community regeneration if significant additional diversions occur on this stream. However, it should help protect the existing riparian vegetation over the short term.

Natural Heritage elements at the Cottonwood Creek PCA.

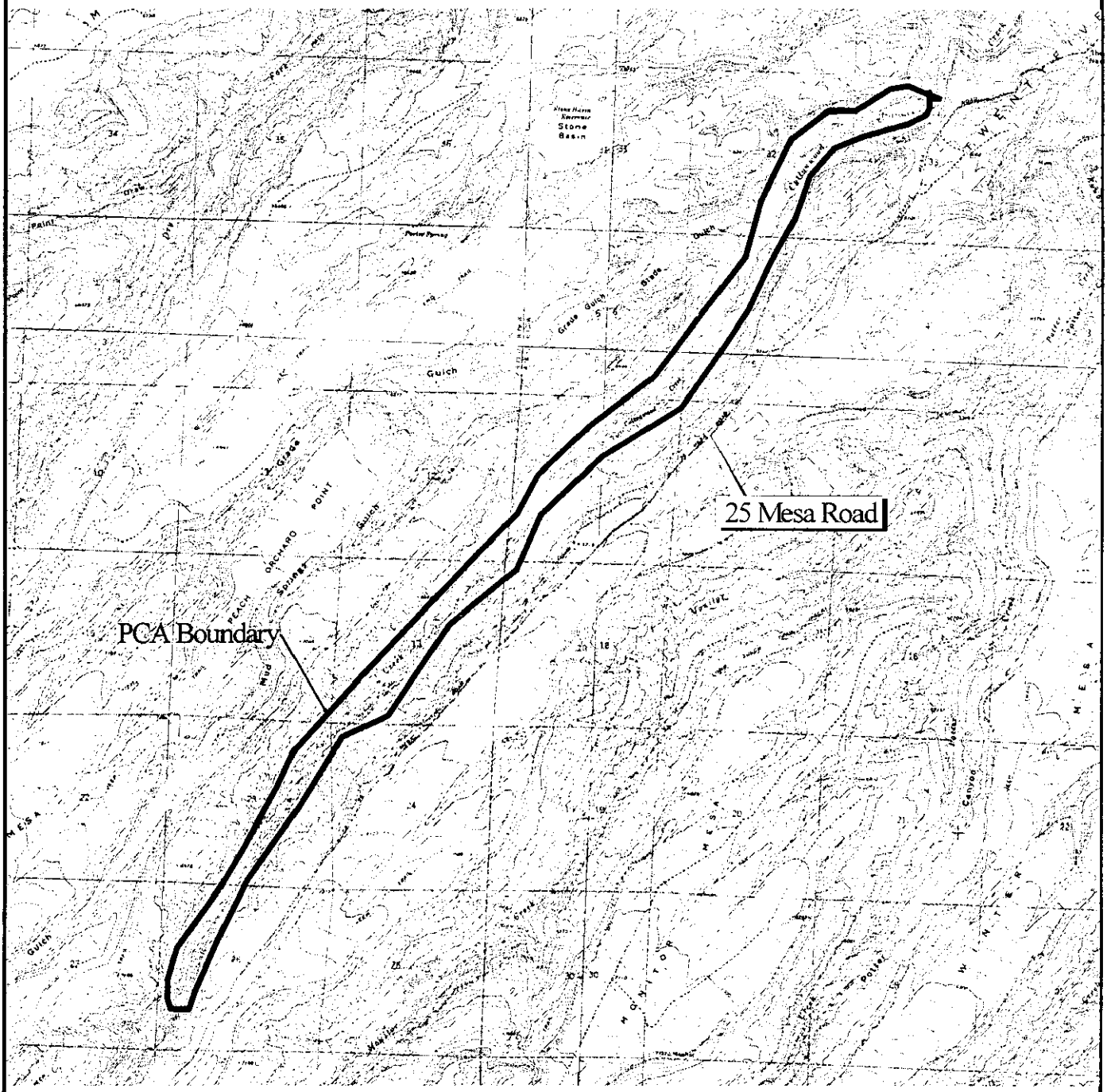
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus angustifolia/Rhus trilobata	**Narrowleaf cottonwood/ Skunkbrush riparian forests**	**G3**	**S3**		**A**

*EO = Element Occurrence

Boundary justification: The boundary includes the riparian zone of Cottonwood Creek from 5,600 to 6,600 feet.

Cottonwood Creek

Proposed Conservation Area



Plant Communities of Concern

Plant communities:

Narrowleaf cottonwood/skunkbrush riparian forest

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Cottonwood Basin & Surrounding U.S.G.S. 7.5 min. Quadrangles

Crystal Creek

Biodiversity Rank: B3. High significance. The site contains two good examples of globally vulnerable plant communities.

Protection Urgency Rank: P5. The site is located in the Gunnison National Forest and Curecanti National Recreation Area.

Management Urgency Rank: M2. There is a threat of weed invasion in the canyon from degraded areas upstream. Private land and the National Forest lands upstream are heavily grazed, and could contribute weed seeds to downstream areas. Present management of the upland forested area within the site appears to be adequate.

Location: Montrose County. About 15 miles east of Montrose, on the north rim of the Black Canyon.

U.S.G.S. 7.5. min. quadrangles: Cimarron, Cathedral Peak
Legal Description: T48N R6W S 8, 17, 19, 20

Elevation range: 6,800 to 8,894 feet

Size: 538 acres

General description: Crystal Creek, a tributary of the Gunnison River, flows from the North Rim of the Black Canyon, through a narrow gorge in its final two miles to its confluence at Crystal Reservoir. The Crystal Creek site includes the canyon, which supports a good occurrence of montane riparian forest (Figure 29), and the adjacent uplands to the south, accessible from the Crystal trail.

The canyon is accessible only by foot. Within the canyon, both hydrology and vegetation dramatically change from the degraded valley above. Cattle do not come into the canyon. However, water quality and flows are probably affected by upstream grazing and irrigation diversions. In the canyon bottom, large boulders create a series of small waterfalls and deep, quiet pools. The tree canopy is dominated by blue spruce, with about 40% cover, and narrowleaf cottonwood, with about 20% cover. There are scattered Rocky Mountain junipers and Ponderosa pine. The shrub layer consists primarily of thinleaf alder, red-osier dogwood and chokecherry. Other shrubs present were wild rose, raspberry, wolf currant, twinberry honeysuckle, and coyote, Rocky Mountain and Drummond's willows. Occasional wet hillsides and cliffs in the canyon support a rich cover of ferns, mosses, baneberry, violets, and false solomonseal. The aspen/snowbrush ceanothus occurrence is in an area formerly burned, on a north-facing slope. Associated species include snowberry and Utah serviceberry. The surrounding forest on north facing slopes and in draws is represented by the Douglas fir/elk sedge community. The trees here are fairly dense second growth, with understory species including heartleaf arnica, Oregon grape, snowberry and some patches of aspen. Gambel's oak woodlands with mountain mahogany and Utah serviceberry dominate the south facing slopes. The site is in the Gunnison National Forest and the Curecanti National Recreation Area, adjacent to

the Black Canyon National Monument. A trail leading to an overlook with a spectacular view of Crystal Lake goes through the site.

Natural Heritage elements at the Crystal Creek PCA.

Scientific Name	Common Name	Global Rank	State Rank	Federal/State Status	EO Rank
Populus tremuloides/Ceanothus velutinus	**Aspen forests**	**G2G3**	**S2S3**		**B**
Populus angustifolia-Picea pungens/Alnus incana	**Montane riparian forests**	**G3**	**S3**		**B**
Pseudotsuga menziesii/Carex geyeri	Lower montane forests	G5Q	S3		B

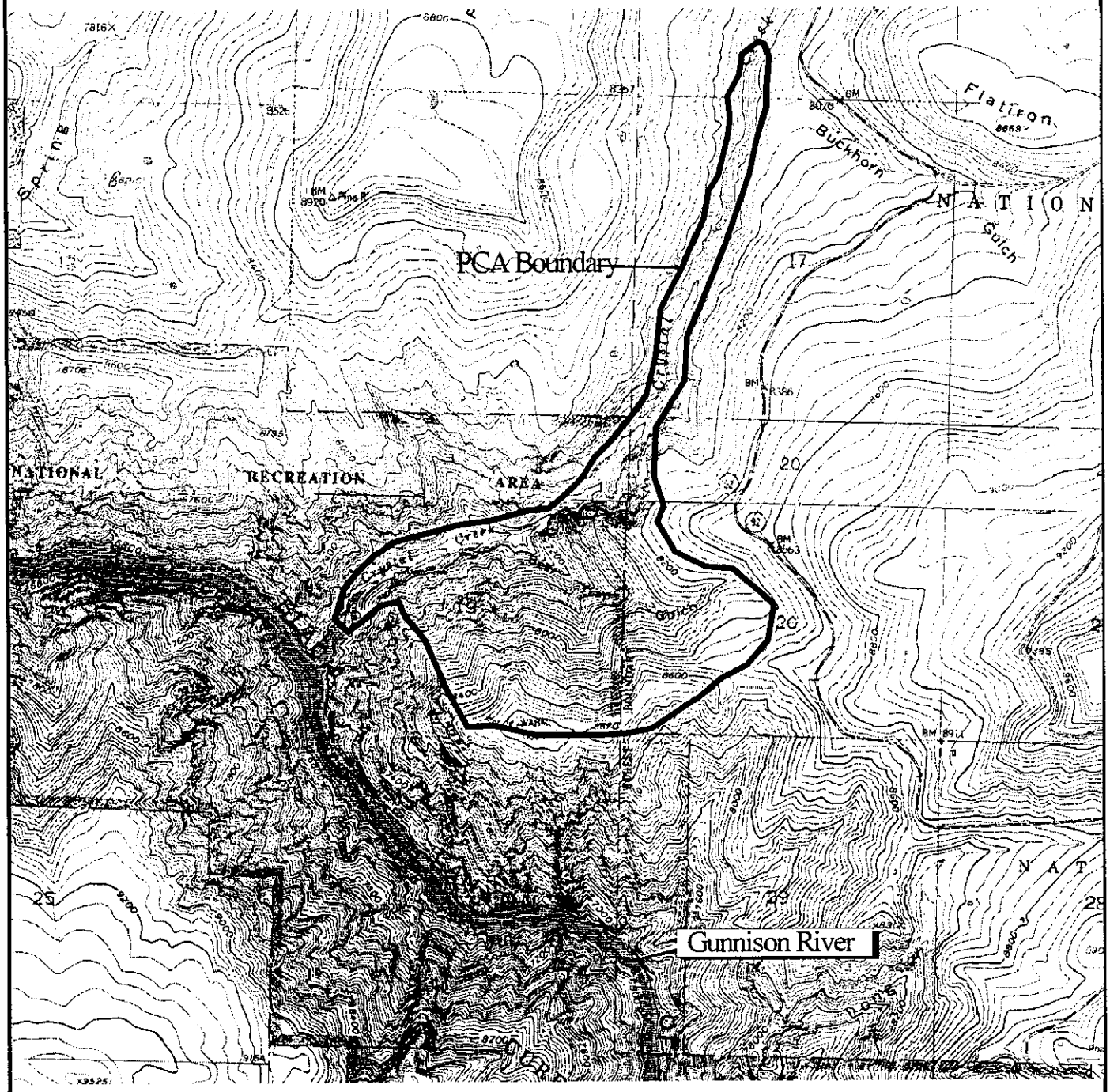
*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include only the good condition part of Crystal Creek, within the narrow canyon, and the adjacent upland forested area.

Figure 29. Montane riparian vegetation at Crystal Creek.

Crystal Creek

Proposed Conservation Area



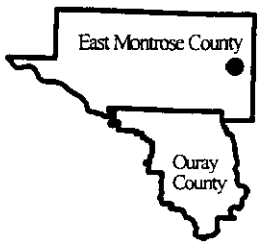
Plant Communities of Concern

Plant communities:

Montane riparian forest
- Narrowleaf cottonwood-Blue spruce/ Thinleaf alder

Aspen forest
- Aspen/ Snowbrush ceanothus

Lower montane forest
- Douglas fir/ Elk sedge



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Cimarron & Cathedral Peak U.S.G.S. 7.5 min. Quadrangles

Dry Creek

Biodiversity Rank: B3. High significance. The site contains a good example of the globally vulnerable narrowleaf cottonwood/skunkbrush plant community.

Protection Urgency Rank: P4. The site is mostly on BLM land, except for a small parcel at the southern end of the site. Protection of instream flows may be necessary to prevent additional diversions upstream that would affect the riparian community.

Management Urgency Rank: M3. Tamarisk should be controlled in the riparian zone. There is a small enough amount present that it is a good candidate for control. There does not appear to be much cattle usage in the creek due to the dense shrub cover. There is a potential for increased recreational use, since a motorcross race occurred in the area last year. Increased ATV use in the greasewood community would probably lead to reduction of the soil crust and invasion of exotic species such as cheatgrass or annual mustards.

Location: Montrose County. About ten miles west of Montrose.
U.S.G.S. 7.5. min. quadrangles: Hoovers Corner, Dry Creek Basin
Legal Description: T49N R11W S 1, 2, 11-14, 23, 26, 35; T48N R11W S 3, 4, 9

Elevation range: 5,600 to 6,600 feet

Size: 1,736 acres

General Description: Dry Creek drains a large portion of the Uncompahgre Plateau, and flows into the Uncompahgre River a few miles north of the Delta-Montrose county line. The slopes of the valley are shrub and grasslands with black sage, Indian rice grass, and Salina wildrye.

The riparian corridor of Dry Creek supports large cottonwoods and dense, almost impenetrable thickets of skunkbrush, in spite of the fact that by the end of the summer, only pools of water remain on the surface. The stream meanders with curves up to 180 degrees, within a broad floodplain up to 300 ft wide. The immediate stream banks have a band of coyote willow. Other native species present are wild rose, silver buffaloberry, Gambel's oak, and Canada goldenrod. The condition of the riparian community is good, with only small patches of tamarisk, Canada thistle, Kentucky bluegrass, and red top, comprising less than 5% of the total cover. There is good regeneration of cottonwoods. The dense vegetation provides excellent cover for wildlife.

Between the riparian corridor and the surrounding hillsides is a large flat area of greasewood, with an understory of Mojave seablight. The soil between shrubs has a good cover of cryptobiotic crust, including mosses and lichens. This is one of the few occurrences of greasewood seen in Montrose County that has not been invaded by cheatgrass or weedy annual mustards. It does have a significant cover, up to 50%, of a native annual composite, smallflower tansyaster. There are a few ATV trails, but the area is largely undisturbed. The transitional zone between the greasewood and the riparian

community has a mix of greasewood, big sagebrush, skunkbrush and rubber rabbitbrush. The few patches of grass consist of inland saltgrass, giant wildrye, and sand dropseed.

Natural Heritage elements at the Dry Creek PCA.

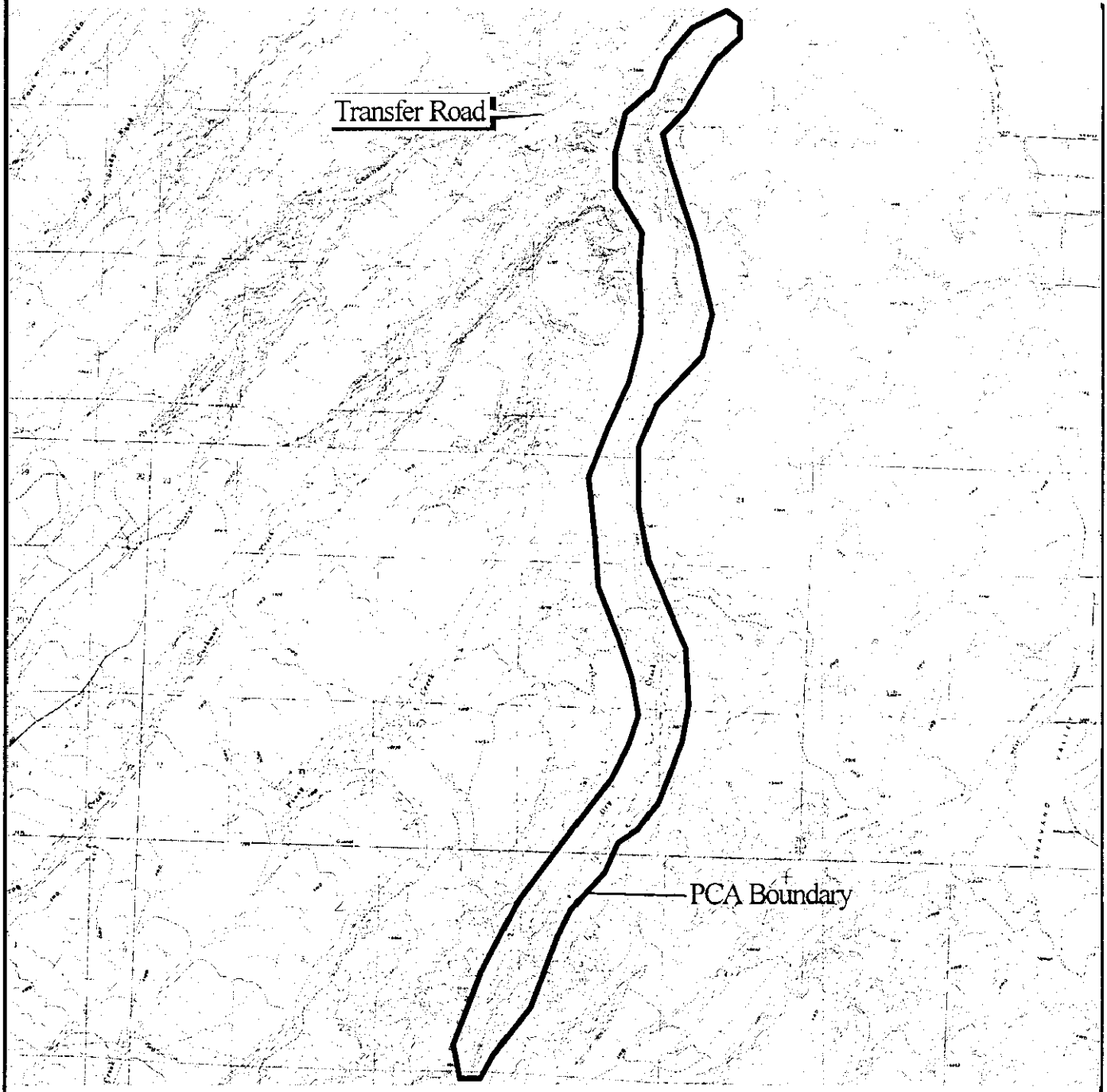
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Sarcobatus vermiculatus/Suaeda torreyana	**Saline bottomland shrublands**	**G2G3**	**S2S3**		**B**
Populus angustifolia/Rhus trilobata	**Narrowleaf cottonwood/ Skunkbrush riparian forests**	**G3**	**S3**		**B**

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include the riparian zone of Dry Creek based on a field survey of the north half of the site, and aerial photo interpretation of south half.

Dry Creek

Proposed Conservation Area



Plant Communities of Concern

Plant communities:

Narrowleaf Cottonwood/ Skunkbrush riparian forest

Saline bottomland shrublands
Greasewood/
Mojave seablight

N

0 1 2 3 Miles

*Prepared by Southwest Data Center

Hoover's Corner & Surrounding U.S.G.S. 7.5 min. Quadrangles

East Fork Dallas Creek

Biodiversity Rank: B3. High significance. The site contains a fair occurrence of a globally imperiled wetland community, as well as an excellent occurrence of a more common sedge-dominated wetland.

Protection Urgency Rank: P3. This site is partly in National Forest, and partly private.

Management Urgency Rank: M2. Heavy grazing has resulted in an abundance of introduced pasture grasses. This area would be an excellent candidate for restoration of the wetlands. Beaver activity should be allowed to continue. Unmanaged recreational use poses a threat to the area, especially along the Dallas Trail. The new National Forest travel plan will address changes in travel management.

Location: Ouray County. About eight miles south southwest of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Mount Sneffels
Legal Description: T44N R9W S 13, 14, 24, 25, 35, 36; T43N R9W S 1, 2

Elevation range: 9,000 to 10,000 feet

Size: 1,074 acres

General Description: The East Fork of Dallas Creek flows north from the Blue Lakes in the high San Juans. As the terrain flattens, it creates large wetlands dominated by tall willows, which are enhanced by beavers. Camping, hiking, hunting, cross country skiing, and fishing are popular in the National Forest. The site is an access point for the Blue Lakes and Dallas trails. The area has been grazed, and contains introduced pasture grasses such as Kentucky bluegrass and smooth brome, as well as native sedges and rushes. Logging and grazing have impacted the surrounding area.

The site includes the smaller Willow Swamp PCA discussed in Volume II of this report. The 12 acre Willow Swamp PCA encompasses a riverine and depressional wetland complex occurring in a 1,000 foot (300 meter) wide valley on the East Fork of Dallas Creek. The site is approximately 80 acres at an elevation of 8360 ft (2548 m). Beaver activity has created many large pools within the wetland site. A National Forest Road used for range management and recreation borders the site. A parking lot at the northern edge of the Willow Swamp site provides access to several hiking trails in the surrounding spruce-fir forest uplands. The 1963 U.S.G.S. 7.5 min quadrangle illustrates the wetland as occupying the entire width of the valley; however, the wetland is now narrow (approximately 160 ft or 50 m), suggesting that the eastern portion of the wetland may have been converted to pasture. The section between the East Fork of Dallas Creek and the National Forest Road has been seeded with hay grasses and is currently grazed.

Natural Heritage elements at the East Fork of Dallas Creek PCA.

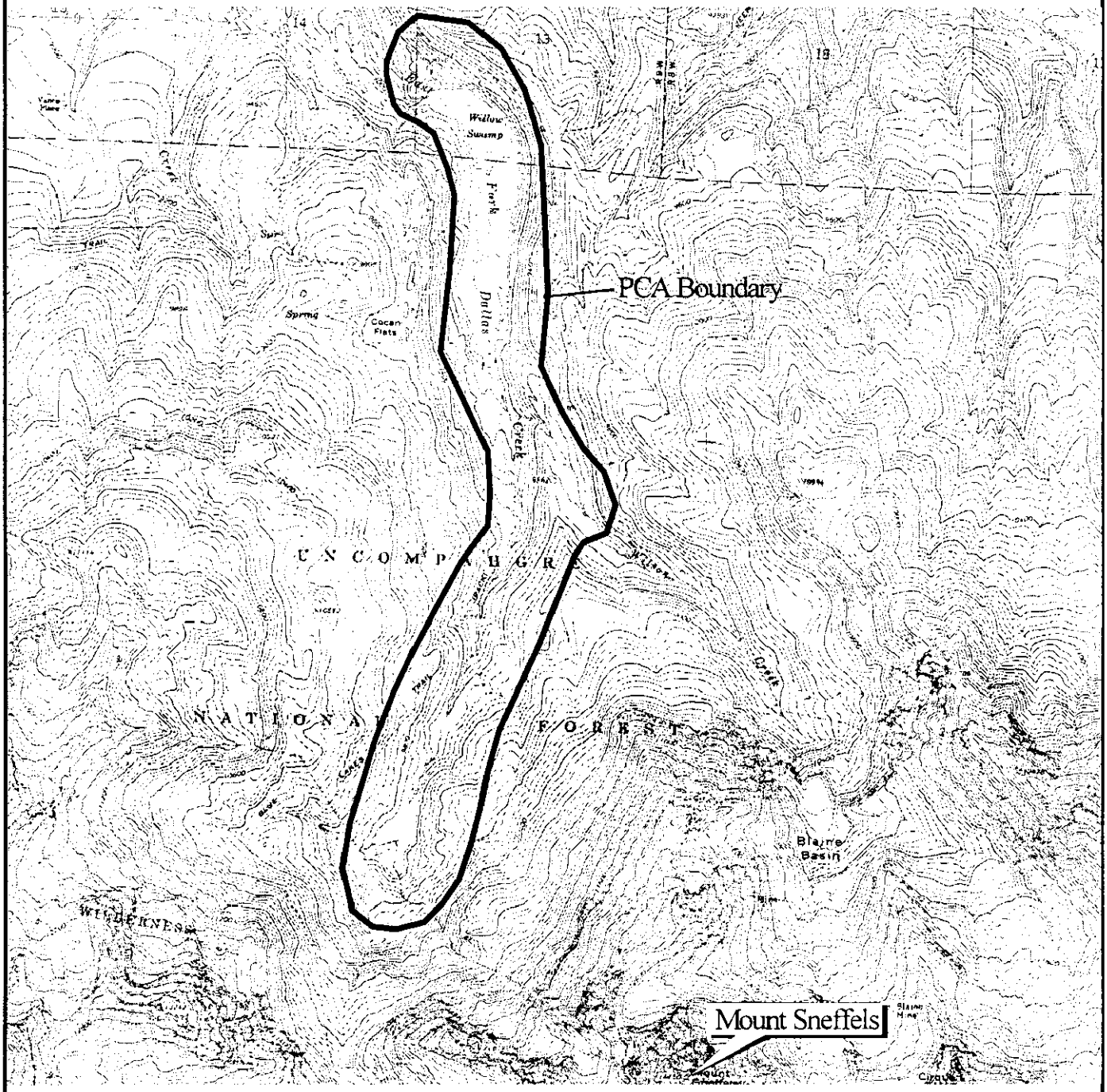
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Salix drummondiana/Calamagrostis canadensis	Montane willow carr	G3	S3		C
Carex utriculata	**Beaked sedge montane wet meadows**	**G5**	**S4**		**A**

*EO = Element Occurrence

Boundary Justification: The boundary follows the 10,000-foot contour line to include the two occurrences and the area between them.

East Fork Dallas Creek

Proposed Conservation Area



Plant Communities of Concern

Plant communities:

Montane wet meadows	Montane willow carr
Beaked sedge	Drummond's willow/ Bluejoint

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Mount Sneffels U.S.G.S. 7.5 min. Quadrangles

Fairview

Biodiversity Rank: B3. High significance. The Fairview site has two fair occurrences of the globally imperiled clay-loving wild buckwheat, and a good occurrence of the globally vulnerable adobe beardtongue.

Protection Urgency Rank: P2. Much of this site is located on private land, and is subject to development and further fragmentation of the rare plant habitat. The northern section of the BLM's Fairview Research Natural Area and Area of Critical Environmental Concern is included within the site. Part of the site has been designated as a Colorado State Natural Area by the DNR.

Management Urgency Rank: M3. The small parcel of BLM land included in the ACEC is managed to conserve the clay-loving wild buckwheat. Grazing is allowed, unless it proves to be detrimental to the plants. The area is closed to ORV use and surface disturbing activities. Site monitoring has been sporadic, probably not sufficient to determine if grazing is damaging plants, or if ORV use is actually occurring. The existing demographic studies established on this site have not been read by the CNAP for several years, and should be done again.

Location: Montrose County. About three miles east of Montrose.
U.S.G.S. 7.5. min. quadrangles: Montrose East, Red Rock Canyon
Legal Description: T49N R9W S 13, 23; T49N R8W S 18-20, 29-31

Elevation range: 6,000 to 6,300 feet

Size: 3,889 acres

General Description: The Fairview site consists of rolling hills with gentle slopes in the adobe badlands east of Montrose, on both sides of Highway 50. Vegetation is a mosaic of two plant communities: mat saltbush with barren clay soil between the shrubs occurs on convex slopes; and a more diverse mixture of shrubs, forbs and grasses grows in mesic swales. The clay-loving wild buckwheat often occurs in the more mesic sites, with woody aster, shadscale, bud sage, spiny horsebrush, and grasses.

Natural Heritage elements at the Fairview PCA.

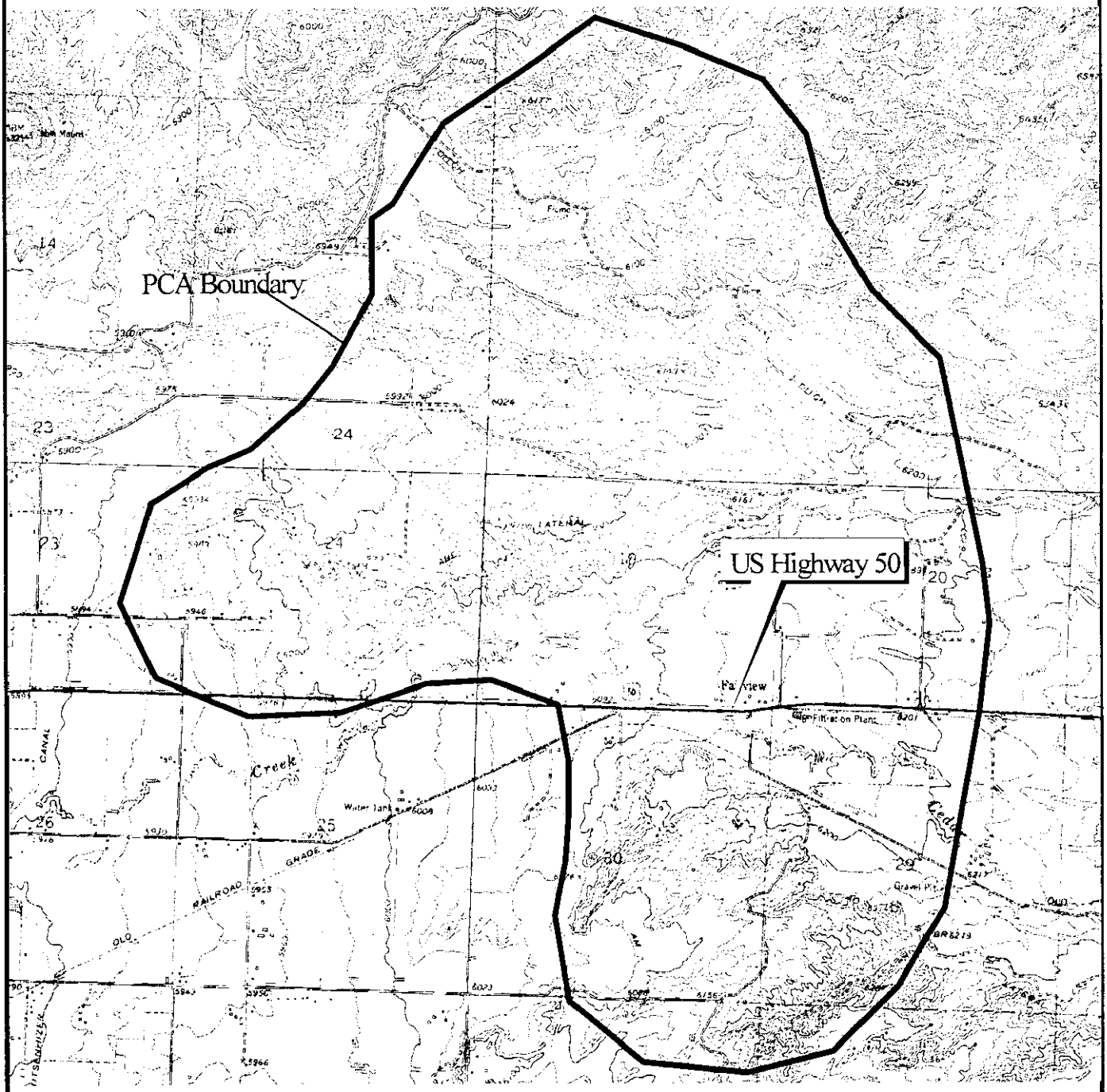
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**C**
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	D
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	E
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	B
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	C
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E
Penstemon retrorsus	Adobe beardtongue	G3	S3	BLM	E

*EO = Element Occurrence

Boundary justification: The boundary is drawn to encompass a cluster of occurrences of the clay-loving wild buckwheat and the adobe beardtongue, within the Uncompahgre Badlands macrosite.

Fairview

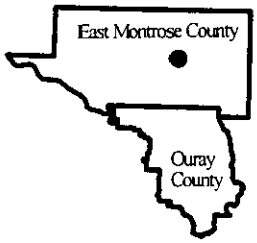
Proposed Conservation Area



Species of concern

Plants:

Adobe beardtongue
Clay-loving wild buckwheat



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Montrose East & Red Rock Canyon U.S.G.S. 7.5 min. Quadrangles

Hanks

Biodiversity Rank: B3. High significance. The site contains a good occurrence of a globally vulnerable plant, the showy whitlow-grass.

Protection Urgency Rank: P4. The site is located in the Uncompahgre National Forest. There is no other special protection.

Management Urgency Rank: M3. The effects of grazing on the showy whitlow-grass are not known.

Location: Montrose County. On the Uncompahgre Plateau, along the Divide Road.
U.S.G.S. 7.5. min. quadrangles: Pryor Creek
Legal Description: T46N R11W S 5, 6; T47N R11W S31, 32

Elevation range: 9,800 to 9,910 feet

Size: 199 acres

General Description: The Hanks site is located along the Divide Road, at the top of the Uncompahgre Plateau. Dry to wet meadows alternate with Engelmann spruce and aspen forests. Showy whitlow-grass occurs in both dry and mesic meadows and at the edges of the forested area. Three sub-populations have several hundred individuals each. Common associated species include hairy golden aster, orange sneezeweed, wild mountain parsley, and golden banner. Many similar meadows along the Divide Road were searched with negative results.

Natural Heritage elements at the Hanks PCA.

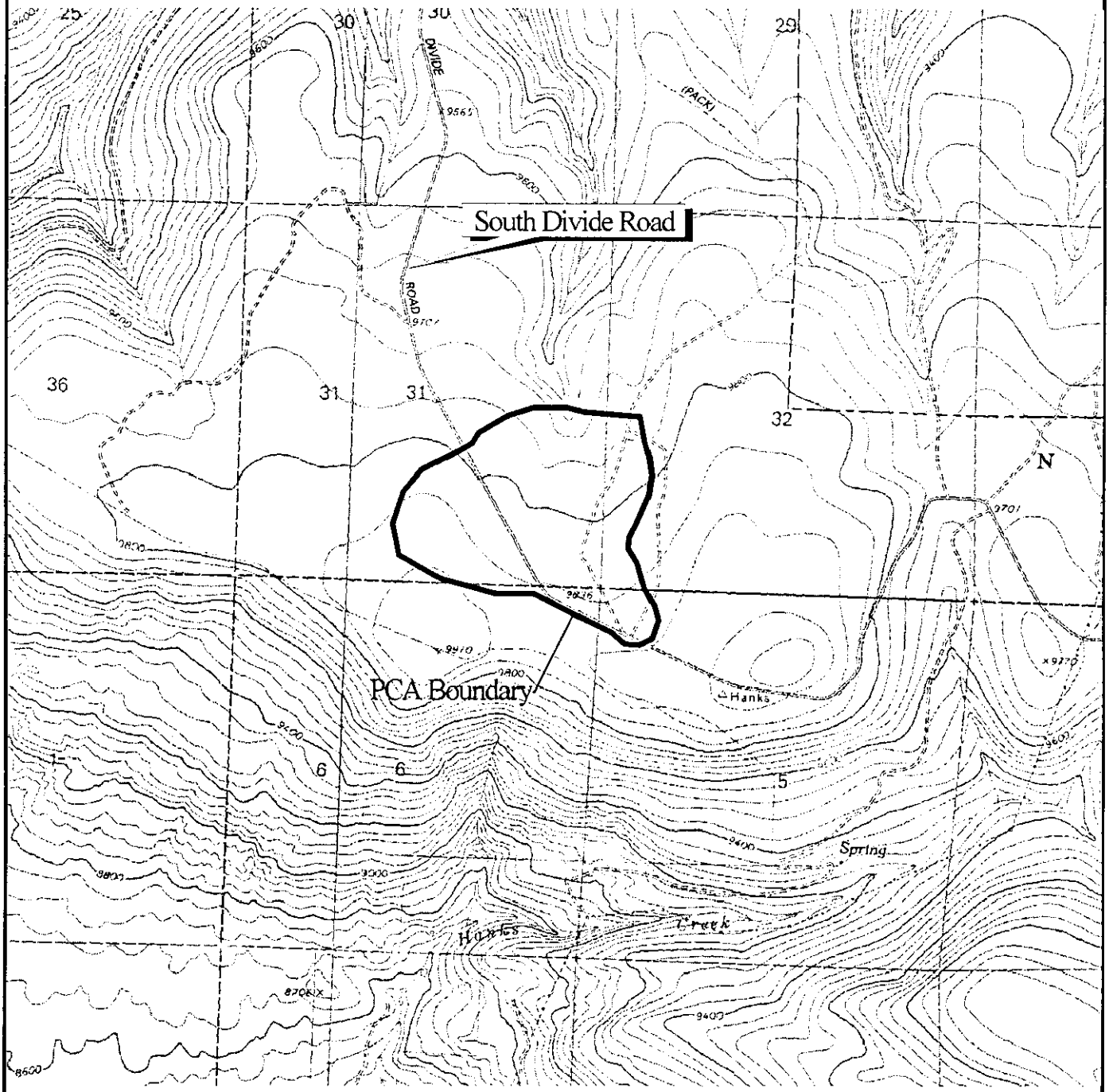
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Draba spectabilis var. *oxyloba*	Showy whitlow-grass	G3T3Q	S3		B

*EO = Element Occurrence

Boundary Justification: The boundary encompasses three sub-populations of the showy whitlow-grass. It could be enlarged if more sub-populations are located with further inventory.

Hanks

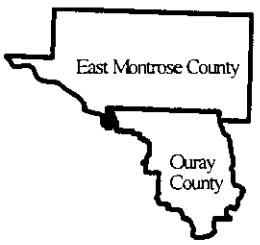
Proposed Conservation Area



Species of Concern

Plants:

Showy Whitlow-grass



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Pryor Creek & Antone Spring U.S.G.S. 7.5 min. Quadrangles

Ironton Park

Biodiversity Rank: B3. High significance. The Ironton Park PCA supports a good occurrence of a subalpine riparian shrubland community considered to be rare throughout its range in the state of Colorado. The wetland complex may be a nutrient rich fen, a type of wetland that comprises only a small percentage of the total acreage of wetlands in Colorado, and is essentially an irreplaceable ecological system.

Protection Urgency Rank: P1. This site is privately owned and threatened by development. There is much local interest in protecting this area, both for its natural and historic values.

quality of Red Mountain Creek affects the entire valley. Acidification from mining activity has eliminated aquatic species from the ecosystem. Sedimentation from highway traffic and maintenance further degrades water quality. Mine tailing cleanup and containment should improve the site in the future. Although no threats to the Ironton Park riparian shrub community are currently known, information on the biology, hydrology, and geochemestry of the wetland is not sufficient to specify what management may be needed in the future to maintain, or to improve the current quality of the element occurrence. If further investigation reveals that the integrity of the wetland has been affected by mining, road construction, or other human induced impacts, the Ironton Park PCA should be a high priority for restoration efforts. The site is bisected by a well-traveled designated Scenic Highway, and there is an accessible 4WD road through public and private sections of the site. A recreation travel plan may be needed to prevent the proliferation of social trails and unofficial campsites.

Location: Ouray County. About five miles south of Ouray.
U.S.G.S. 7.5. min. quadrangles: Ironton
Legal Description: T43N R7W S 29-32

Elevation range: 9,600 to 9,800 feet

Size: 569 acres

General Description: The Ironton Park PCA is located along Highway 550 at an elevation of 9,640 feet, in an alluvium filled north facing glacial valley. The site encompasses approximately 300 acres of wetland, and supports a good example of a subalpine riparian shrubland community (*Betula glandulosa*/mesic forb-mesic graminoid). Wetland vegetation is dominated by bog-birch (55%), with some planeleaf willow present. The understory is dominated by beaked sedge, with water sedge, elephantella, water crowfoot, floating buttercup, mare's tail, hornwort, and water milfoil

in the understory or growing in ponds. Spruce-fir and aspen forests grow on the steep hillsides above the valley floor.

Highway 550 bisects the occurrence, confining the once meandering Red Mountain creek to the eastern portion of the wetland. Full Moon Gulch is the main tributary feeding the west side of the wetland and its five inactive beaver ponds. These ponds eventually drain into Crystal Lake, a constructed lake approximately of 14 acres with weedy berms and a controlled outlet. There is an open test pit and a mine tunnel opening on the west slope above the wetland. Drainage from the mine portal was measured to have an acidic pH of 4. Upstream from the Ironton Park site is the Idarado mine, which is in the process of stabilizing and revegetating its large tailings piles.

One soil core was taken adjacent to one of the abandoned beaver ponds, and soils were found to have a high organic component, consisting of over 100 cm of peat, smelling strongly of sulfur. pH was measured in the center of the wetland and found to be circumneutral (pH 6). Based on the nature of the soils, the groundwater driven hydrology, and the presence of woody vegetation that requires nutrient availability, this wetland may fit the definition of a nutrient rich fen (USFWS 1998). The organic soils that characterize fens are formed by slow accumulation of plant debris in saturated conditions. Fens in the Rocky Mountains have particularly slow rates of decomposition due to the cold climate and limited growing season. The presence of iron pyrite and other iron bearing minerals in the mountains strongly suggest that the Ironton Park wetland may be an iron fen. An iron fen functions under distinctly different biogeochemical conditions than are normally found in fens which are limited by low concentrations of iron minerals. Iron fens are sometimes recognized by the flocculation and deposition of iron hydroxides "limonite", which result from the action on iron pyrite of sulfate reducing microbes in anaerobic soils (Schlesinger 1991).

The rapid assessment methodology used by CNHP did not investigate the site in sufficient depth to determine the extent of peat soils, hydrologic dynamics, and biogeochemical processes to make a complete ecological characterization of this complex system. Further field investigation and research on the Ironton Park PCA is strongly recommended.

Although the Ironton Park site is not currently threatened, management may be needed in the future to maintain or improve the current quality of the element occurrence. Recent research has revealed the important role wetlands play in improving water quality (Webb *et al.* 1997) and the Ironton Park site is in a position to help mitigate negative environmental impacts resulting from the extensive mining in the area. The wetland vegetation of birch and willow is effective in collecting heavy metals resulting from above mine operation (Sarnecki 1983). It is possible that wetland function in this capacity could be enhanced, therefore management plans for the entire upper Red Mountain Creek basin should take into consideration the critical wetland functions of the Ironton Park site.

Natural Heritage elements at the Ironton Park PCA.

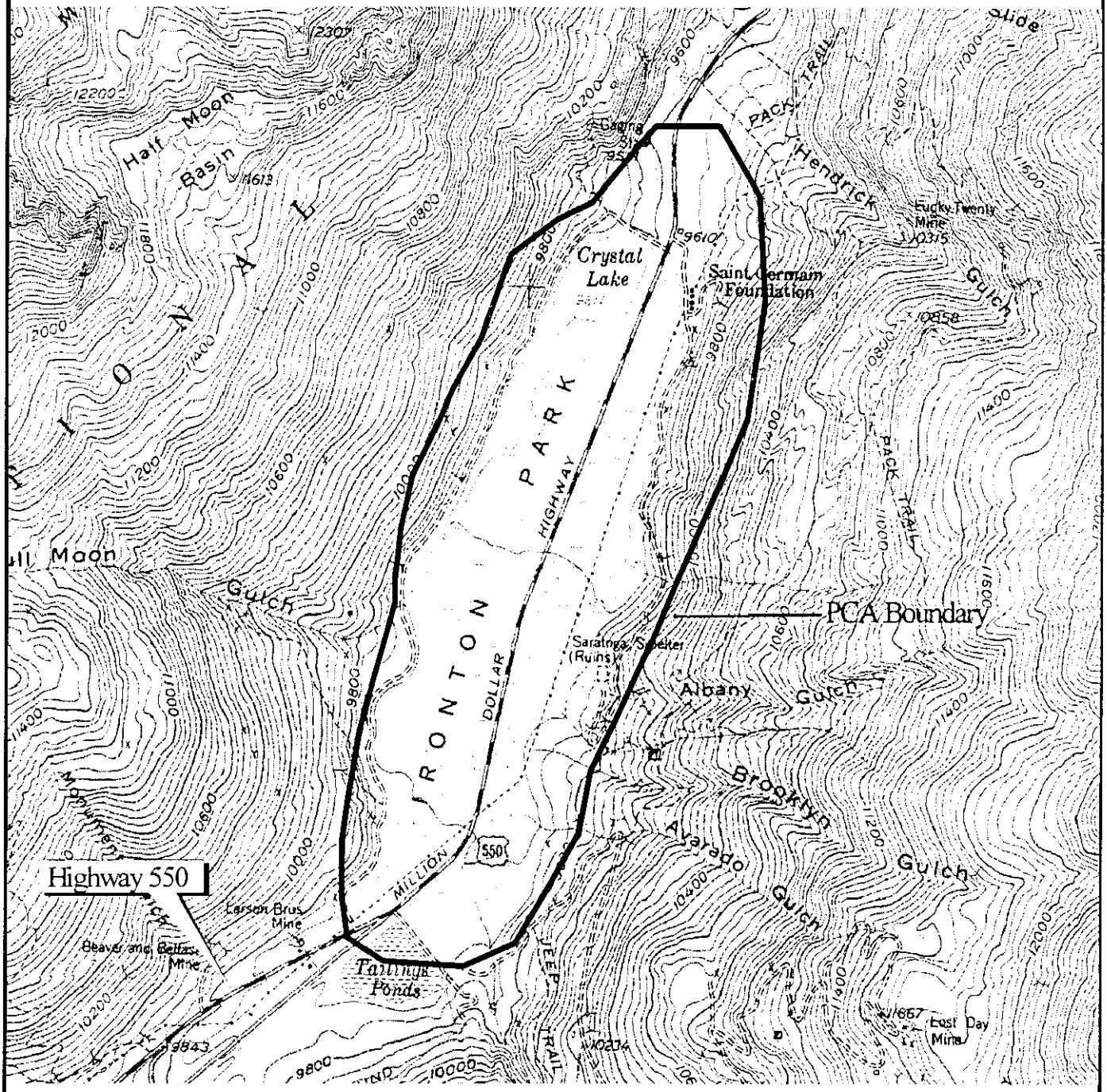
Scientific Name	Common Name	Global Rank	State Rank	Federal/State Status	EO Rank
***Betula glandulosa*/Mesic forb-Mesic graminoid**	**Subalpine riparian shrubland**	**G3G4**	**S3**		**B**

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass the element occurrence and provide a buffer from land use impacts (e.g., road development and recreation) of at least 1,000 ft. The boundary includes some riparian area upstream to preserve hydrologic function. A much larger area should be considered in any long-term management or protection plan because of the extent of past mining activity throughout the upper basin.

Ironton Park

Proposed Conservation Area



Plant Communities of Concern

Plant communities:

Subalpine riparian shrubland

Bog birch/
mesic grasses and forbs

N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Ironton U.S.G.S. 7.5 min. Quadrangle

Menoken School

Biodiversity Rank: B3. High significance. The site contains a fair example of a globally imperiled plant, the clay-loving wild buckwheat.

Protection Urgency Rank: P3. The site is located on a small parcel of undeveloped private land, surrounded by agricultural land. The plant population may not be viable, even if protected.

Management Urgency Rank: M4. At present, the land is not being used, and no management needs are known.

Location: Montrose County. About five miles northwest of Montrose.
U.S.G.S. 7.5. min. quadrangles: Olathe
Legal Description: T49N R9W S 6; T49N R10W S

Elevation range: 5,700 feet

Size: 79 acres

General Description: The Menoken School site is located in a small undeveloped area in the midst of farmland and disturbed areas. Vegetation consists of a desert shrub community dominated by shadscale, which is typical of the adobes. The formerly extensive Mancos shale ecosystem here has been fragmented by agriculture and residential development, and harbors a relict population of the clay-loving wild buckwheat. The population may not be viable or protectable. However, since much of the adobes have suffered the same fate, protecting small relict sites may be the only hope of survival for the species. In 1998, the plants were not flowering, possibly due to drought.

Natural Heritage elements at the Menoken School PCA.

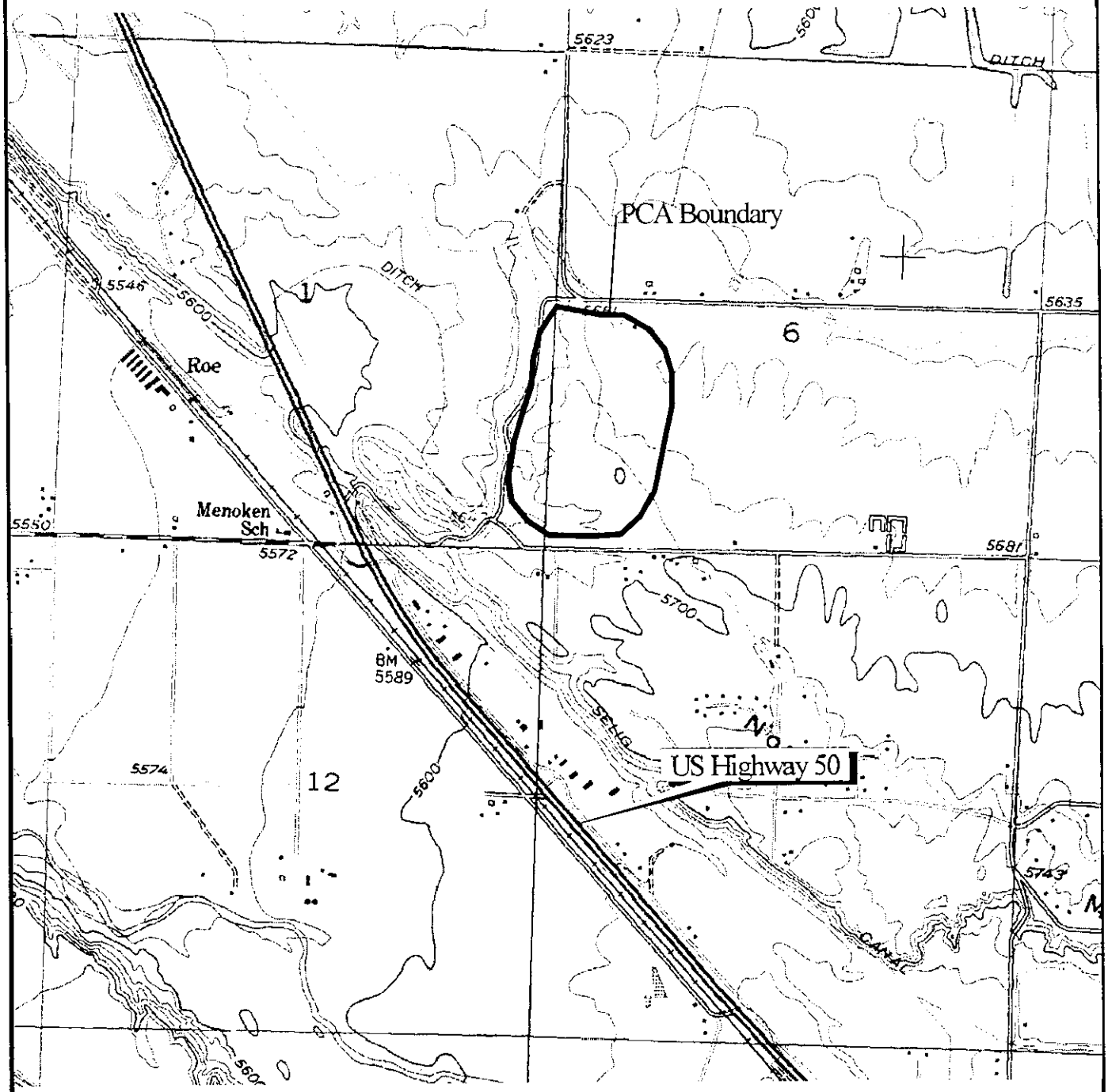
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Eriogonum pelinophilum	Clay-loving wild buckwheat	G2	S2	LE, BLM	C

*EO = Element Occurrence

Boundary Justification: The boundary includes the small area of remaining habitat for the clay-loving wild buckwheat. Surrounding land has been developed, and is not included in the site.

Menoken School

Proposed Conservation Area



Species of Concern

Plants:

Clay-loving wild buckwheat

N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Olathe U.S.G.S. 7.5 min. Quadrangle

Nate Creek

Biodiversity Rank: B3. High significance. The site contains a good example of a globally vulnerable riparian plant community, and a good population of the large-flowered globemallow, considered vulnerable throughout its range, and critically imperiled in Colorado.

Protection Urgency Rank: P3. The upper part of this site is within the Uncompahgre National Forest, and has no other special designation. The lower half is on private land. Any additional water diversions upstream could impact the riparian community.

Management Urgency Rank: M3. Sediments from the road, especially at the creek crossing, may affect the quality of the lower riparian area. Cattle along the Owl Creek Road were observed eating the large-flowered globemallow. The long-term effects of grazing on the population are not known. Roadside weed spraying could damage the rare plant population. Both the National Forest and the county road maintenance department should be aware of this threat.

Location: Ouray County. About six miles east-northeast of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Dallas, Courthouse Mountain
Legal Description: T45N R7W S 1-3, 12; T46N R7W S 32-36

Elevation range: 7,440 to 9,400 feet

Size: 545 acres

General Description: Nate Creek is a tributary of Cow Creek, draining a portion of the west side of Cimarron Ridge. The Owl Creek Road parallels the creek, but does not seem to have much negative impact on the riparian zone below. The narrow canyon supports a diverse riparian community dominated by narrowleaf cottonwood and blue spruce. Regeneration of cottonwoods appears to be good. Thinleaf alder and red-osier dogwood line the stream bank. Other riparian species present include coyote willow, Rocky Mountain willow, box elder, and Rocky Mountain maple. A transitional zone away from the stream includes Gambel's oak, Rocky Mountain juniper, Utah serviceberry, western white clematis, and chokecherry, with an understory of mountain lover and elk sedge. Red top, Canada wild rye, and horsetails grow in wetlands with standing water. Uplands in the lower part of the site are vegetated with pinyon, juniper, serviceberry, big sagebrush, and Gambel's oak. Although there are some cattle trails and clearings that have weedy exotic species, the majority of the area is in good condition. Exotic species noted include yellow sweet clover, timothy, hound's tongue, Kentucky bluegrass, and Canada thistle. Downstream from this site there are several water diversions, and nearly all water is removed from the creek before it reaches Cow Creek.

As one travels upstream along the creek, aspen and snowberry become more abundant. Major understory species here include Oregon grape, elk sedge and common juniper. There was abundant bear sign in the upper canyon. At the higher elevations,

uplands have Engelmann spruce, subalpine fir and aspen.

Although there is some bank erosion and minor grazing impacts, the stream was determined by the Forest Service to be in proper functioning condition. The Forest Service identified by sight native Colorado River cutthroat trout in the upper reaches of Nate Creek during 1998. Research has not yet been completed to ascertain the genetic purity of the population.

Along the Owl Creek Road, above Nate Creek, is the largest population of large-flowered globemallow, or "wild hollyhock", known in the Uncompahgre Basin, and perhaps the largest in Colorado. Over one hundred healthy clumps of these showy plants grow along the roadside, on a steep north-facing slope in moist spruce, fir and aspen forest. Associated species include cow parsnip, thimbleberry, elderberry, Rocky Mountain maple, tall larkspur, wolf currant, and mountain ash. The plants appear to benefit from the increased light and moisture from the road, as few plants were found away from disturbed areas. We noted that cattle had grazed the tops of several plants. The long-term effects of grazing are not known.

Natural Heritage elements at the Nate Creek PCA.

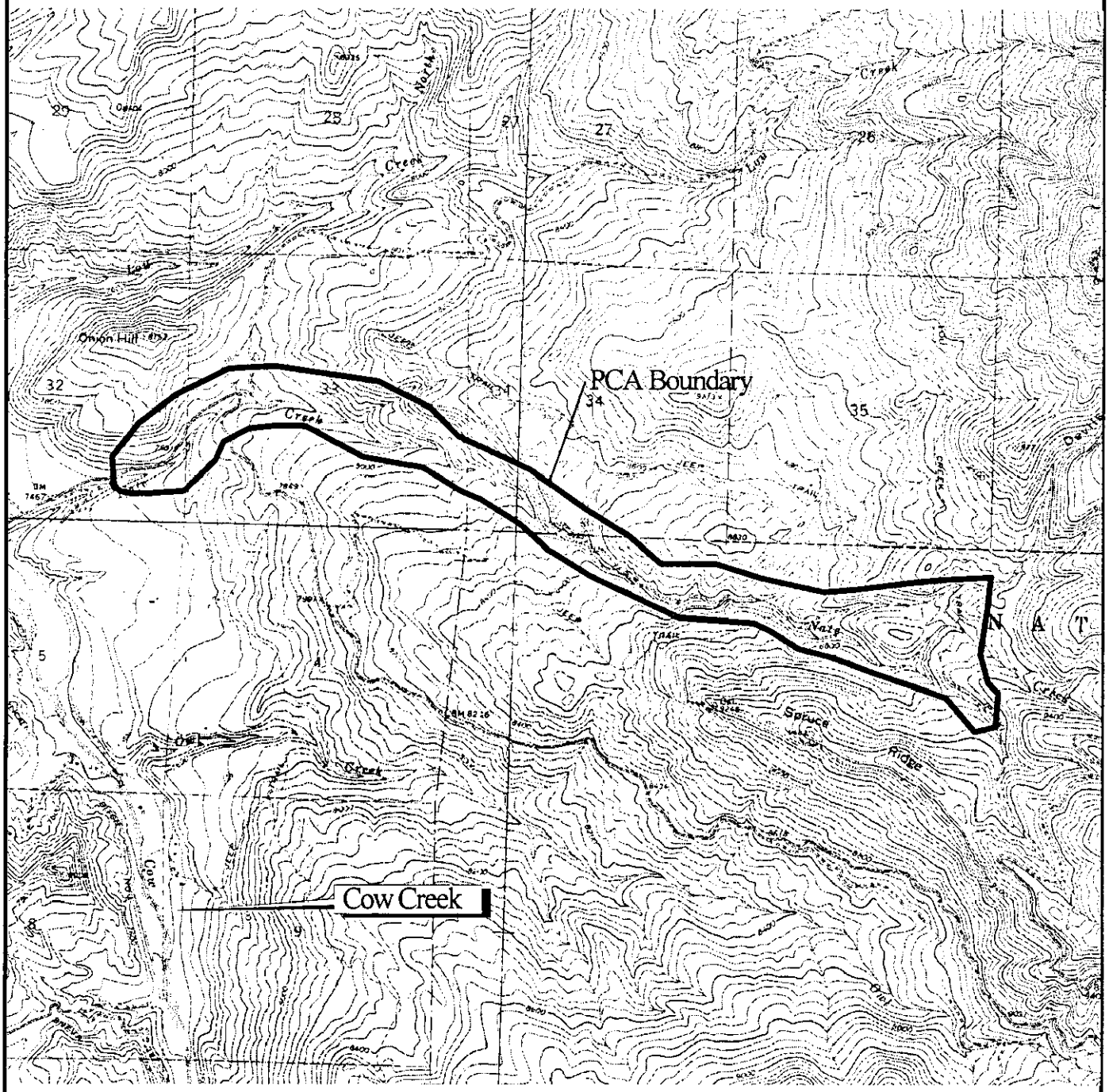
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus angustifolia-Picea pungens/Alnus incana	**Montane riparian forest**	**G3**	**S3**		**B**
Iliamna grandiflora	Large-flower globemallow	G3?Q	S1		B
Oncorhyncus clarki pleuriticus	Colorado River cutthroat	G4T3	S3	FS/SC	E

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include both the riparian vegetation of Nate Creek and the site of the wild hollyhock along the Owl Creek Road.

Nate Creek

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Montane riparian forests
- Narrowleaf cottonwood
- Blue spruce/
- Thinleaf alder

Plants:

Large-flower globemallow

Animals:

Colorado River cutthroat trout

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Courthouse Mountain & Dallas U.S.G.S. 7.5 min. Quadrangles

North Mesa Community Hall

Biodiversity Rank: B3. High significance. The site contains a fair occurrence of the globally imperiled clay-loving wild buckwheat.

Protection Urgency Rank: P2. This site is located on private land in an agricultural and residential area. Some formal protection will probably be necessary if this population of the clay-loving wild buckwheat is to survive. However, it may not be viable in any case, due to the fragmentation of the surrounding area.

Management Urgency Rank: M5. Present management is adequate.

Location: Montrose County. About three miles north of Montrose.
U.S.G.S. 7.5. min. quadrangles: Olathe
Legal Description: T49N R9W S9

Elevation range: 5,700 to 5,780 feet

Size: 128 acres

General Description: This site is located on a private farm in an agricultural and residential area north of Montrose. The site is nearly level, on adobe soil derived from Mancos shale. Surrounding land is cultivated and irrigated or grazed. The site is home to a large population of the clay-loving wild buckwheat, with over 2000 individuals, but still may not be viable due to the fragmentation of its habitat. In June 1998, when we visited the site, the plants were not flowering, and appeared to have been affected by drought. There had been no precipitation for over a month.

Natural Heritage elements at the North Mesa Community Hall PCA.

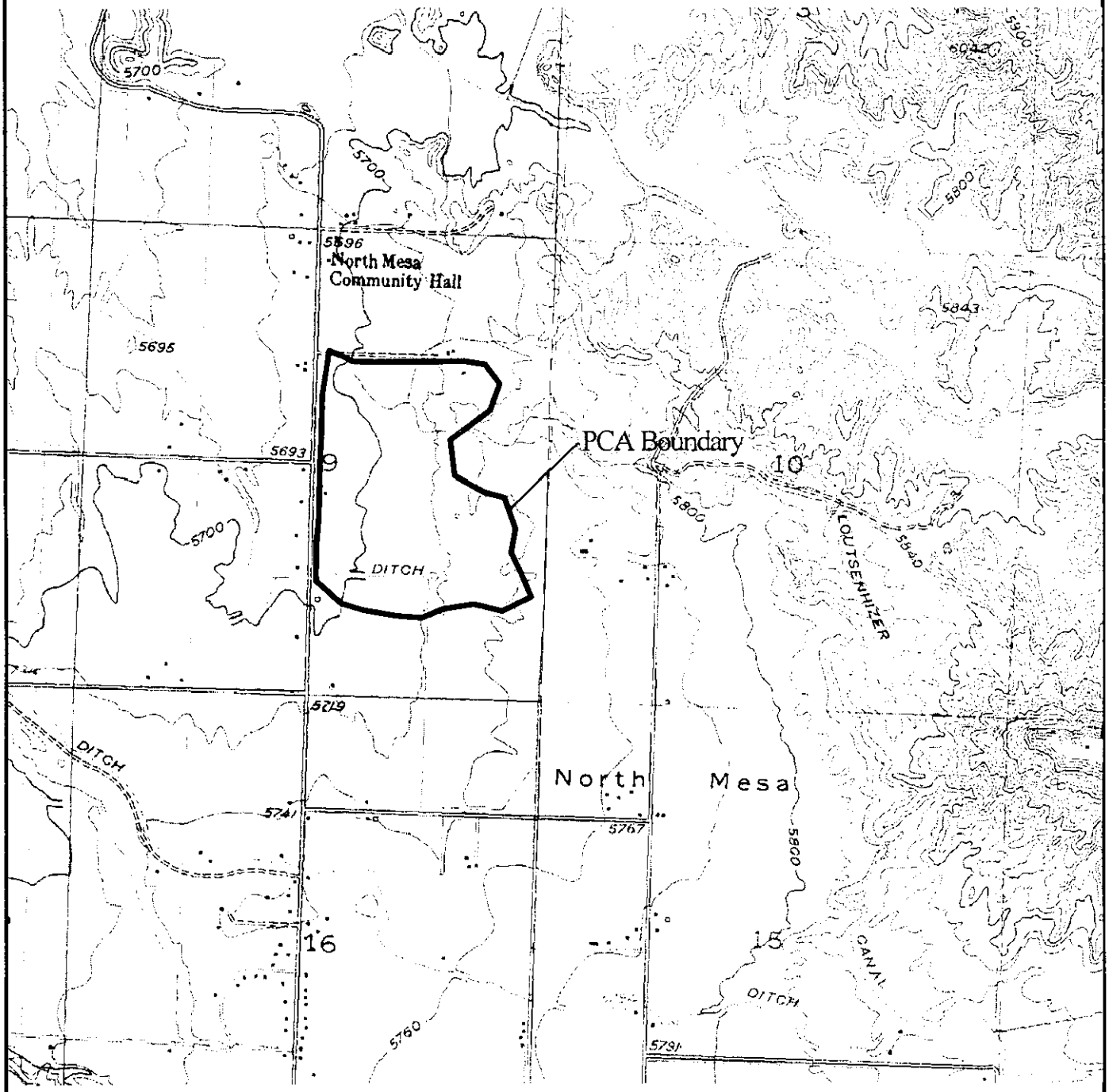
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Eriogonum pelinophilum	**Clay-loving wild buckwheat**	**G2**	**S2**	**LE, BLM**	**C**

*EO = Element Occurrence

Boundary Justification: The site includes the known element occurrences and a 500 foot buffer to protect the site from direct disturbances.

North Mesa Community Hall

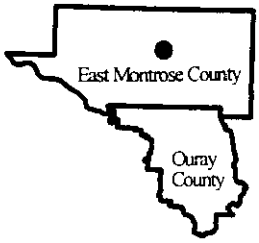
Proposed Conservation Area



Species of Concern

Plants:

Clay-loving wild buckwheat



N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

OLathe & Red Rock Canyon U.S.G.S. 7.5 min. Quadrangles

Ouray Canyons

Biodiversity Rank: B3. High significance. The Ouray Canyons site includes a good example of a globally imperiled plant community, and several ferns that are rare in Colorado.

Protection Urgency Rank: P2. The Uncompahgre National Forest has designated their holdings in this area as slated for disposal in order to consolidate their holdings. The City of Ouray Parks Department is interested in acquiring these lands, and should be given adequate time to raise funds and accomplish the purchase.

Management Urgency Rank: M4. Most of the occurrences are secure, in little traveled areas.

Location: Ouray County. Just south of Ouray.
U.S.G.S. 7.5. min. quadrangles: Ouray, Ironton
Legal Description: T44N R8W S 36; T44N R7W S 31; T43N R8W 1, 12, 13; T43N R7W S 5-8, 16, 17

Elevation range: 7,800 to 10,200 feet

Size: 796 acres

General Description: The canyons of Canyon Creek and the Uncompahgre Gorge meet at Ouray's Box Canyon Park, a popular tourist attraction managed by the City of Ouray Parks Department. Black swifts have been known to nest in crevices in the canyon walls. These were observed again in 1998. There are historic records of a number of rare ferns in Box Canyon, but these seem to have been extirpated. A gravel county road follows Canyon Creek west to Yankee Boy Basin, while Colorado State Highway 550 follows the Uncompahgre River south to Red Mountain Pass. There is a small dam on the Uncompahgre River within the site.

Both canyons support montane and riparian forest communities in good condition. Major tree species on the canyonsides are Douglas fir, white fir, and aspen. A rich diversity of understory species includes Rocky Mountain maple, Utah serviceberry, Oregon grape, meadowrue, blue wildrye, elk sedge, spruce-fir fleabane, rattlesnake plantain, false solomonseal, gray aster, white peavine, russet buffaloberry, and mountain lover. Closer to the canyon bottoms, blue spruce is abundant, with shade tolerant plants such as baneberry, roundleaf wintergreen, and russet buffaloberry. Other riparian species along Canyon Creek and the Uncompahgre River include red-osier dogwood and thinleaf alder. On some mesic north facing hillsides above Canyon Creek, mosses and twinberry form a blanket several inches thick. (photo)

In the triangular shaped uplands between the two canyons are steep cliffs of weathered Leadville limestone. These cliffs are home to several rare ferns. The New Mexican cliff fern was found growing in crevices of cliffs and large boulders, often

growing with the more common brittle fern. Western polypody was found in similar habitats. Other cliff species include matted saxifrage, little-seed ricegrass, giant hyssop, nodding onion, thimbleberry, hairy golden aster, alumroot, Porter's melic, slender lipfern, and Fendler's lipfern.

In the Uncompahgre Gorge just above Ouray, water is piped to create icefalls, which attract ice climbers from the entire country. Ownership of the area is a jumble of National Forest lands and mining claims. The Forest Service has requested comments regarding its desire to consolidate properties and simplify its boundaries. The Ouray City Planning Department has requested that they be given time to acquire the forest lands, along with mining claims in this area.

Natural Heritage elements at the Ouray Canyons PCA.

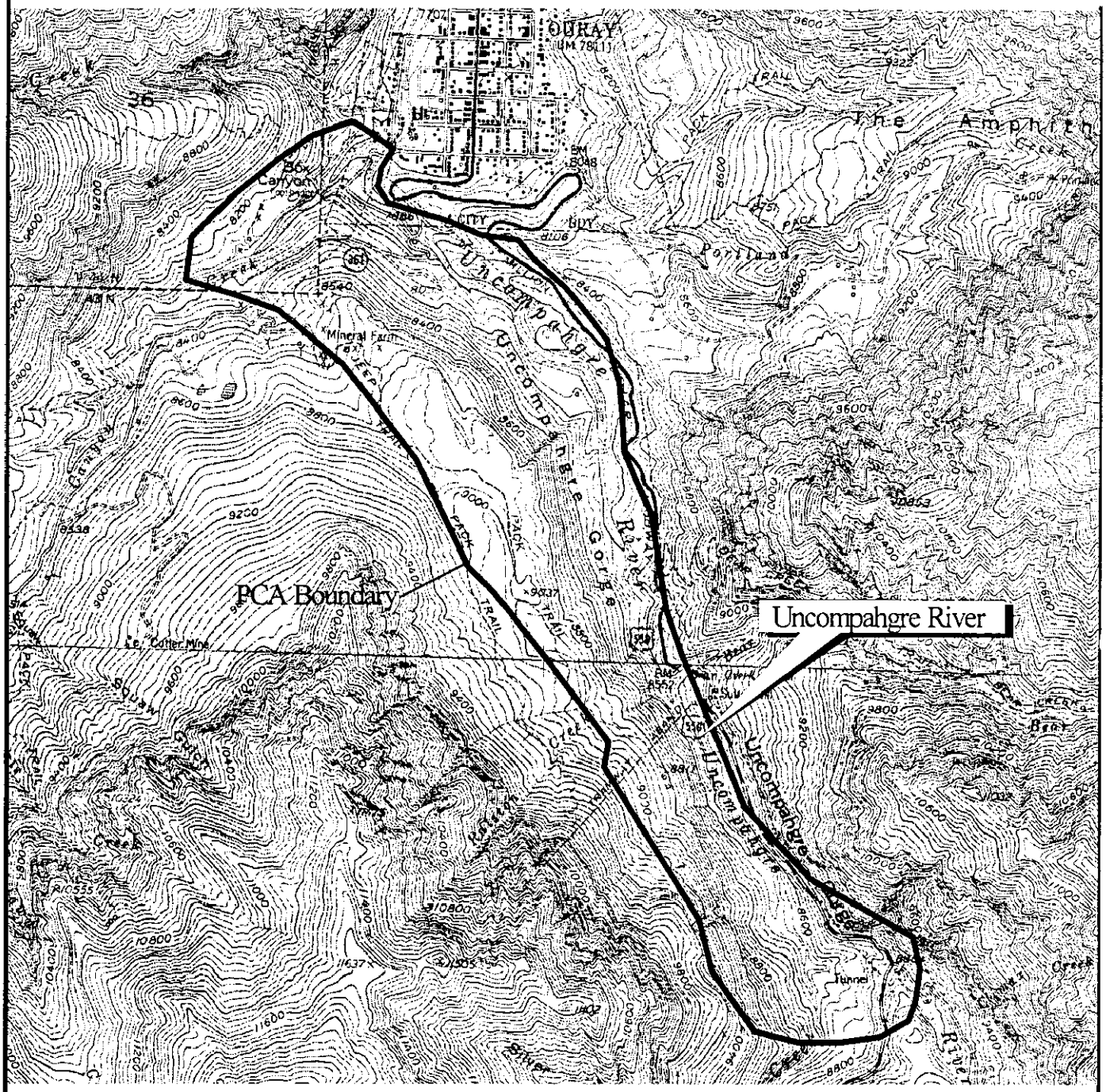
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus tremuloides/Acer glabrum	**Montane riparian forests**	**G2**	**S1S2**		**B**
Gilia penstemonoides	Black Canyon gilia	G2G3	S2S3	BLM, FS	D
Iliamna grandiflora	Large-flower globemallow	G3?Q	S1		H
Cypseloides niger	Black swift	G4	S3B		E
Woodsia neomexicana	New Mexican cliff fern	G4?	S2		C
Woodsia neomexicana	New Mexican cliff fern	G4?	S2		C
Woodsia neomexicana	New Mexican cliff fern	G4?	S2		H
*Pyrola picta***	Pictureleaf wintergreen	G4G5	S3		B
*Pyrola picta***	Pictureleaf wintergreen	G4G5	S3		D
Abies concolor/Mahonia repens	Mixed montane forests	G5	S4		B
Adiantum capillus-veneris	Southern maidenhair fern	G5	S2	FS	H
Pellaea atropurpurea	Purple cliffbrake	G5	S2S3		D
Pellaea atropurpurea	Purple cliffbrake	G5	S2S3		H
Polypodium hesperium	Western polypody	G5	S1S2		B
Polypodium hesperium	Western polypody	G5	S1S2		D
Pseudotsuga menziesii/Carex geyeri	Lower montane forests	G5Q	S3		B

*EO = Element Occurrence
**watchlisted

Boundary Justification: The boundary was drawn to include the Uncompahgre Gorge, Box Canyon Falls, and the lower reaches of Canyon Creek. It also includes the cliff habitat near the confluence of the two streams.

Ouray Canyons

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Lower montane forests
- Douglas fir/
- Elk sedge

Montane riparian forests
- Aspen/
- Rocky Mountain maple

Mixed montane forest
- White fir/
- Oregon grape

Animals:

Black swift

Plants:

Black Canyon gilia
Large-flower globemallow
New Mexican cliff fern
Picture leaf wintergreen
Southern maidenhair fern
Yellowstone whitlowgrass
Purple cliffbrake
Western polypody

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Ouray & Ironton U.S.G.S. 7.5 min. Quadrangles

Red Creek

Biodiversity Rank: B3. High significance. The Red Creek site has an excellent occurrenceof a montane riparian forest considered to be vulnerable throughout its range.

Protection Urgency Rank: P5. This site is protected as part of the Uncompahgre Wilderness, and is remote, with no roads or trails.

Management Urgency Rank: M5. Present management is adequate. Although cattle are not fenced out, they apparently do not get into the canyon.

Location: Ouray County. About eight miles east southeast of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Wetterhorn Peak
Legal Description: T45N R7W S 25-27, 36

Elevation range: 8,200 to 10,000 feet

Size: 203 acres

General description: The Red Creek drainage, tributary to Cow Creek, contains small relict populations of at least three significant riparian plant communities. The canyon is narrow and twisted, with red sandstone cliffs on the south facing walls, and dense forest on the north slopes. The site is within the Uncompahgre Wilderness of the Uncompahgre National Forest. The narrow stream floods frequently in the spring, and carries heavy debris loads. The flood plain is surprisingly wide for the stream width (CNHP 1999). Disturbance in the site is natural, caused by slipping of the adjacent steep cliffs of sandstone, rhyolite and conglomerates. Much of the riparian vegetation is removed during flood events, and consists of small patches, but they are healthy and reproducing. There are no trails in the site, and there is no evident human disturbance. Common trees of the area are narrowleaf cottonwood, blue spruce, white fir and subalpine fir. Thinleaf alder, twinberry honeysuckle and red-osier dogwood grow by the stream. Some areas have a rich cover of mosses and liverworts. There are almost no exotic species

Natural Heritage elements at the Red Creek PCA.

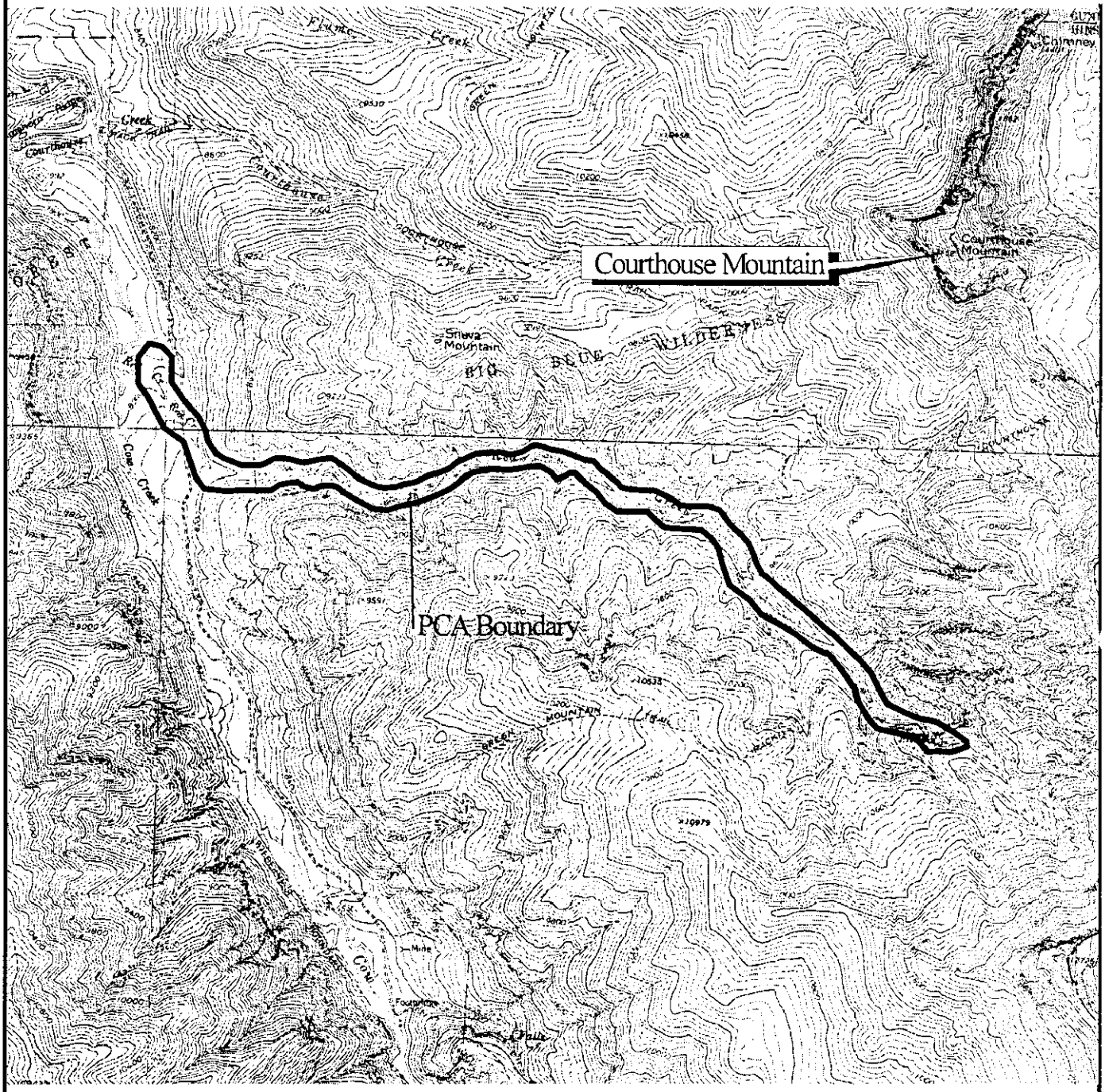
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Populus angustifolia/Alnus incana	**Montane riparian forests**	**G3?**	**S3**		**A**
Alnus incana/Mesic forb	Thinleaf alder/Mesic forb riparian shrublands	G3G4Q	S3		B
Abies lasiocarpa-Picea engelmannii/Alnus incana	Montane riparian forests	G5	S5		A

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include the riparian communities along Red Creek.

Red Creek

Proposed Conservation Area



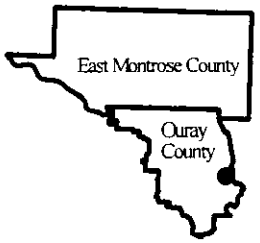
Plant Communities of Concern

Plant communities:

Montane riparian forests

- Narrowleaf cottonwood/ Thinleaf alder
- Subalpine fir- Engelmann spruce/ Thinleaf alder

Thinleaf alder/Mesic forb riparian shrubland



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Wetterhorn Peak & Surrounding U.S.G.S. 7.5 min. Quadrangles

Rim Road

Biodiversity Rank: B3. High significance. This site contains a fair example of a globally vulnerable plant community.

Protection Urgency Rank: P5. The site is located on BLM land with no special designation.

Management Urgency Rank: M3. Grazing has apparently impacted much of the area, changing the plant community by increasing rabbitbrush and cheatgrass.

Location: Montrose County. About eight miles west of Montrose.
U.S.G.S. 7.5. min. quadrangles: Hoovers Corner, Dry Creek Basin
Legal Description: T49N R10W S 5-8, 17-20, 29-32; T49N R11W S 1, 11-14, 24, 25, 36
Elevation range: 5,800 to 6,500 feet
Size: 7,738 acres

General Description: The Rim Road site is a nearly level mesa between Dry Creek on the west and Spring Creek Mesa on the east. Several roads and powerlines run through the site. There are large savanna-like expanses of pinyon, juniper and sagebrush, which are home to black throated sparrows and sage sparrows. White-tailed antelope squirrels were found in the site. The area also provides habitat for a large number of more common small mammals and birds. Lark sparrows, chipping sparrows, broad-tailed hummingbirds, pinyon jays and horned larks were also observed in the site. Utah junipers are scattered over the mesa and in the draws. There are some patches of needle and thread grass and blue gramma in good condition. However, they are surrounded by areas dominated by rabbitbrush, cheatgrass, crested wheatgrass and prickly pear cactus. It is not clear why some patches are in good condition while adjacent areas are in poor condition. Grazing and trampling by cattle has probably altered the plant composition, and confined soil crusts to sheltered spots under shrubs.

Natural Heritage elements at the Rim Road PCA.

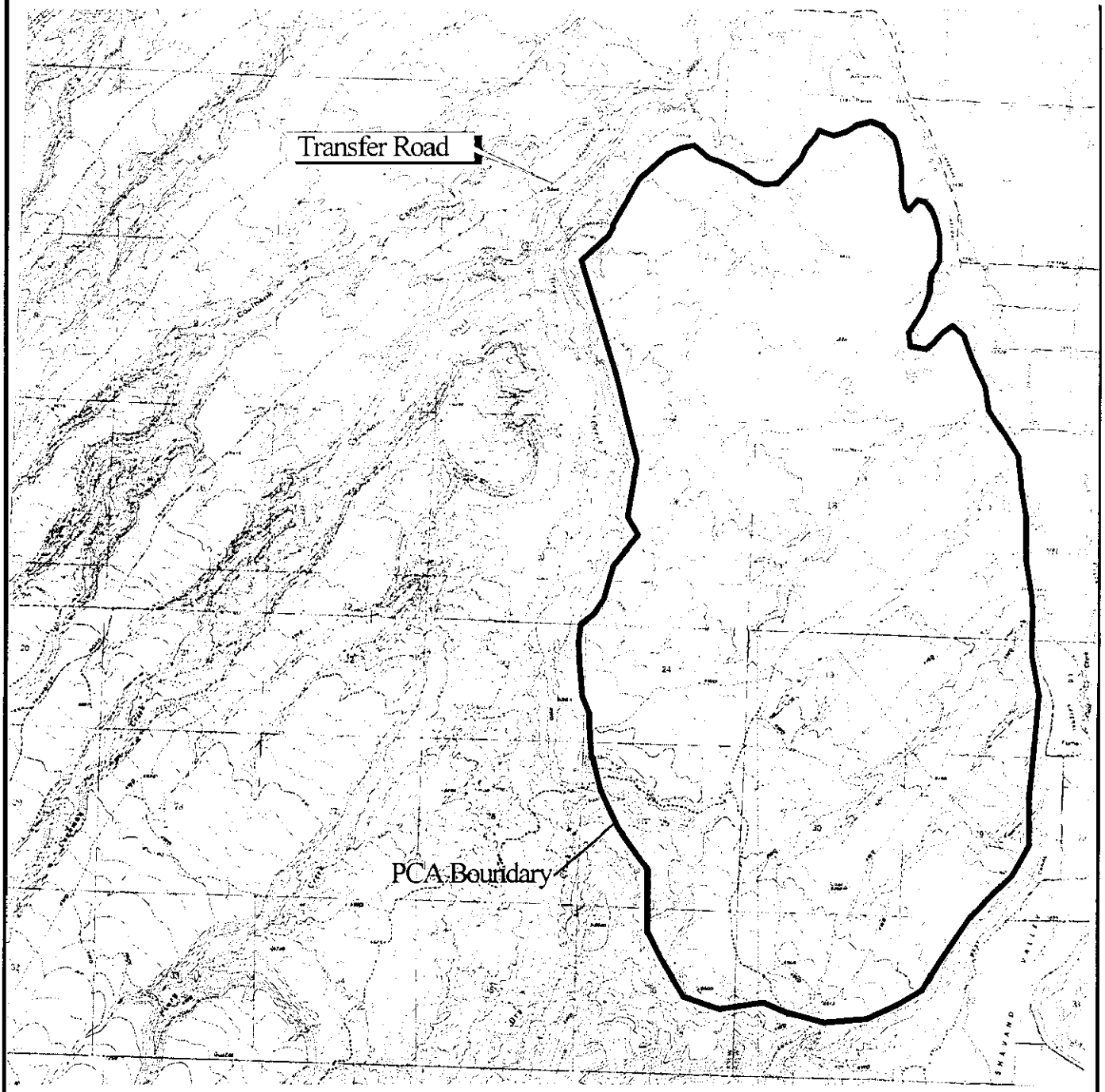
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Juniperus osteosperma/Stipa comata	Xeric pinyon-juniper woodlands	G2	S2?		C
Amphispiza belli	Sage sparrow	G5	S3BSZN		E
Amphispiza bilineata	Black-throated sparrow	G5	S3BSZN		E
Circus cyaneus	Northern harrier	G5	S3BSZN		E
Ammospermophilus leucurus pennipes	White-tailed antelope squirrel ssp.	G5T4T5	S3		E

*EO = Element Occurrence

Boundary Justification: The PCA is bounded on all sides by steep drop-offs that define the mesa. The site boundary follows the rim of the mesa.

Rim Road

Proposed Conservation Area



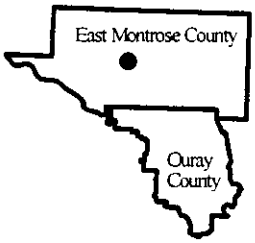
Species and Plant Communities of Concern

Plant communities:

Xeric pinyon-juniper woodlands
- Utah juniper/
- Needle and thread grass

Animals:

Sage sparrow
Black-throated sparrow
Northern harrier
White-tailed antelope squirrel ssp.



N

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*Prepared by Southwest Data Center

Hoover's Corner & Dry Creek Basin U.S.G.S. 7.5 min. Quadrangles

West Dallas Creek

Biodiversity Rank: B3. High Significance. The West Dallas Creek site supports two good examples of communities of concern; a montane riparian willow carr considered to be vulnerable throughout its range in the state of Colorado; and a beaked sedge montane perched wetland considered vulnerable both globally and within its range in the state of Colorado. It also has a good condition example of a more common montane riparian forest community.

Protection Urgency Rank: P4. The site is mostly within the boundaries of the Uncompahgre National Forest, but does include some private land.

Management Urgency Rank: M3. Management actions need to be taken within the next five years in order to maintain the current quality of the element occurrences and hydrologic function. Cattle grazing in the immediate area is having a negative impact on hydrologic function and community viability. Actions could include limiting cattle access to the riparian area.

Location: Ouray County. About seven miles southwest of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Mount Sneffels
Legal Description: T44N R9W S 20, 21, 28, 29

Elevation range: 8,800 to 10,000 feet

Size: 1,044 acres

General Description: West Dallas Creek forms a steep sided valley with a lush growth of subalpine fir and Engelmann spruce in this site.

The western fork of the Creek is the site of a series of beaver ponds, forming the montane willow carr. Here, Rocky Mountain willow provides an almost unbroken layer. In openings, mesic forb species include bluebells, triangle leaf groundsel, angelica, and Bigelow's ragwort. Beaked sedge, fowl mannagrass, and swordleaf rush comprise the graminoid component. The area receives heavy use from hunters, whose horses have introduced exotic species.

Included within the site is the smaller Box Factory Park PCA (Figure 30). This 29 acre PCA encompasses a 20 acre wetland complex found at an elevation of 9,520 ft (2,902 m). The wetland is located in a north facing hillside depression at the convergence of two unnamed tributaries of the West Fork of Dallas Creek. The site encompasses three shallow depressional wetlands created by past beaver activity, a slope wetland (*Carex utriculata*-perched wetland) with several springs, and a montane riparian willow carr (*Salix monticola/*mesic forb). Elk heavily browse the willows. There is little evidence of human activity directly on the site, with the nearest 4WD road and foot path passing ¼ mile from the site. This site is discussed further in Volume II.

The montane riparian forest plant community is a good example of its type, with extensive forb cover and little or no shrubs and graminoids. Major forb species are bittercress, bluebells, triangle-leaf groundsel, willow-herb, and cowbane. There are many logjams in the creek, and rocks and downed wood are covered with mosses. Deeply shaded areas in the spruce and Douglas fir on the hillsides have an understory of mountain lover, one-sided wintergreen, rattlesnake plantain, and picture-leaf winter-green. Parts of the creek have been fenced from livestock.

In less good condition are the parts of the site near the four-wheel drive road that goes through it. Open areas such as Box Factory Park have been heavily grazed by livestock and elk. The Dallas trail goes through the site, and provides access for hiking and hunting. Upland vegetation is a spruce-fir forest.

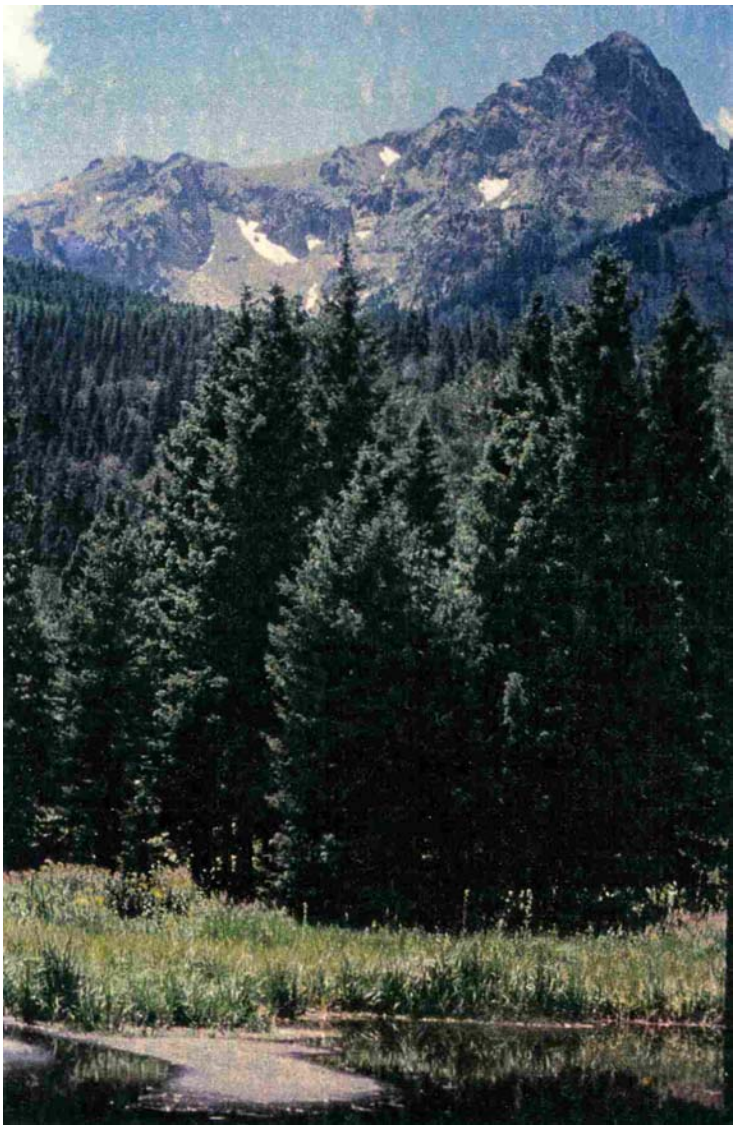


Figure 30. Montane riparian forest and wetlands at West Dallas Creek.

Natural Heritage elements at the West Fork of Dallas Creek PCA.

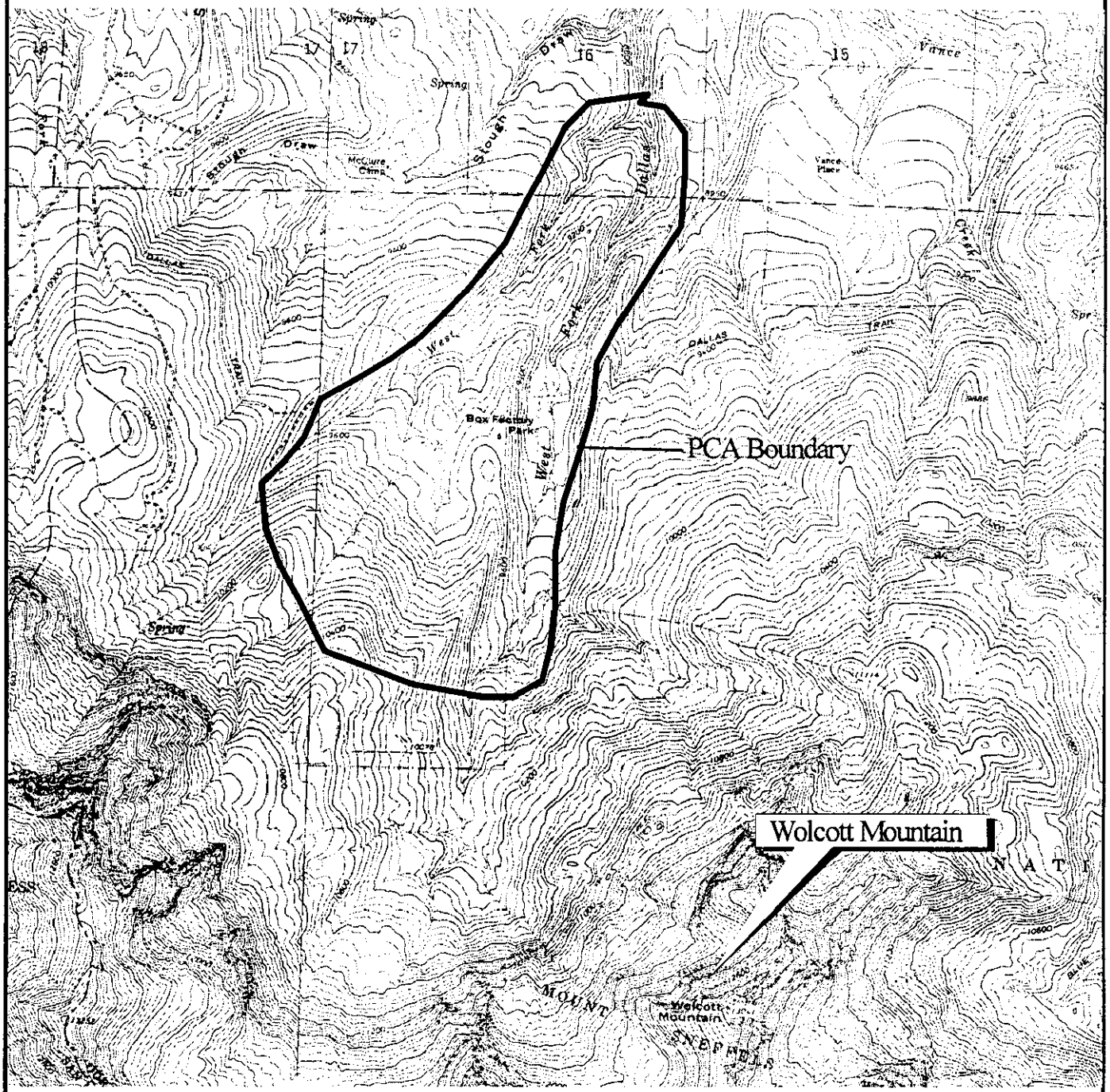
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
***Carex utriculata* perched wetland**	**Beaked sedge perched wetland**	**G3**	**S3**		**B**
***Salix monticola*/Mesic forb**	**Montane riparian willow carr**	**G3**	**S3**		**B**
Abies lasiocarpa-Picea engelmannii/Mertensia ciliata	Montane riparian forests	G5	S5		B

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass the elements and provide a buffer from land use impacts (e.g., trail development, logging and grazing) of at least 1,000 ft. The boundary includes some riparian area upstream to preserve hydrologic function.

West Dallas Creek

Proposed Conservation Area



Plant Communities of Concern

Plant communities:

Montane riparian willow carr
Rocky Mountain willow/
mesic forb

Beaked sedge perched wetland
Beaked sedge

Montane riparian forest
Subalpine fir- engelmann spruce/
bluebells

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Mt Sneffles & Sams U.S.G.S. 7.5 min. Quadrangles

Wildhorse Basin

Biodiversity Rank: B3. High significance. The Wildhorse Basin site contains an excellent occurrence of a state rare montane perched wetland.

Protection Urgency Rank: P4. The site is partly within the Uncompahgre Wilderness of the Uncompahgre National Forest, and partly in the BLM's Gunnison Resource Area.

Management Urgency Rank: M5. No special management needs are known. There is no evidence of human impact at the site. It is located over a mile from the nearest jeep trail, and a quarter mile from the nearest lightly used foot trails. The area is included in an allotment for domestic sheep grazing, but remains in good condition.

Location: Ouray County. About six miles east of Ouray.
U.S.G.S. 7.5. min. quadrangles: Wetterhorn Peak
Legal Description: T43N R6W S 5, 6; T44N R6W S 31, 32
Elevation range: 11,600 to 12,000 feet
Size: 484 acres

General Description: Wildhorse Basin is a high alpine basin at the headwaters of Cow Creek. The area is accessible by hiking from the Engineer Pass Road. There are a number of pristine wet meadows and small, shallow ponds in a basin fed by snowmelt. Soils are saturated, with a deep peat layer. The wetlands occur on a gentle east-facing slope at the foot of Wildhorse Peak. The site includes seven closed ponds ranging in size from 10 feet by 15 feet (3 meters by 5 meters) to 30 feet by 50 feet (9 meters by 15 meters). The ponds are interspersed among patches of upland tundra communities and two large spring fed slope wetlands: a montane wet meadow and an emergent wetland. Of the seven ponds, five are perennial and support a two- foot rim of montane wet meadow vegetation. They average less than 2 feet deep with an unconsolidated bottom. A small stream runs through the site supporting a montane willow carr on its banks. Beaked sedge, Drummond's rush, and small patches of planeleaf and barren-ground willows dominate damp areas. Drier sites support tundra grasses such as spike trisetum, tufted hairgrass, and marsh marigold. Although the plant communities found here are quite common in alpine wetlands, the site was in such exceptionally good condition that it is included here. Historical mining activities have apparently not impacted the quality of the wetlands.

Natural Heritage elements at the Wildhorse Basin PCA.

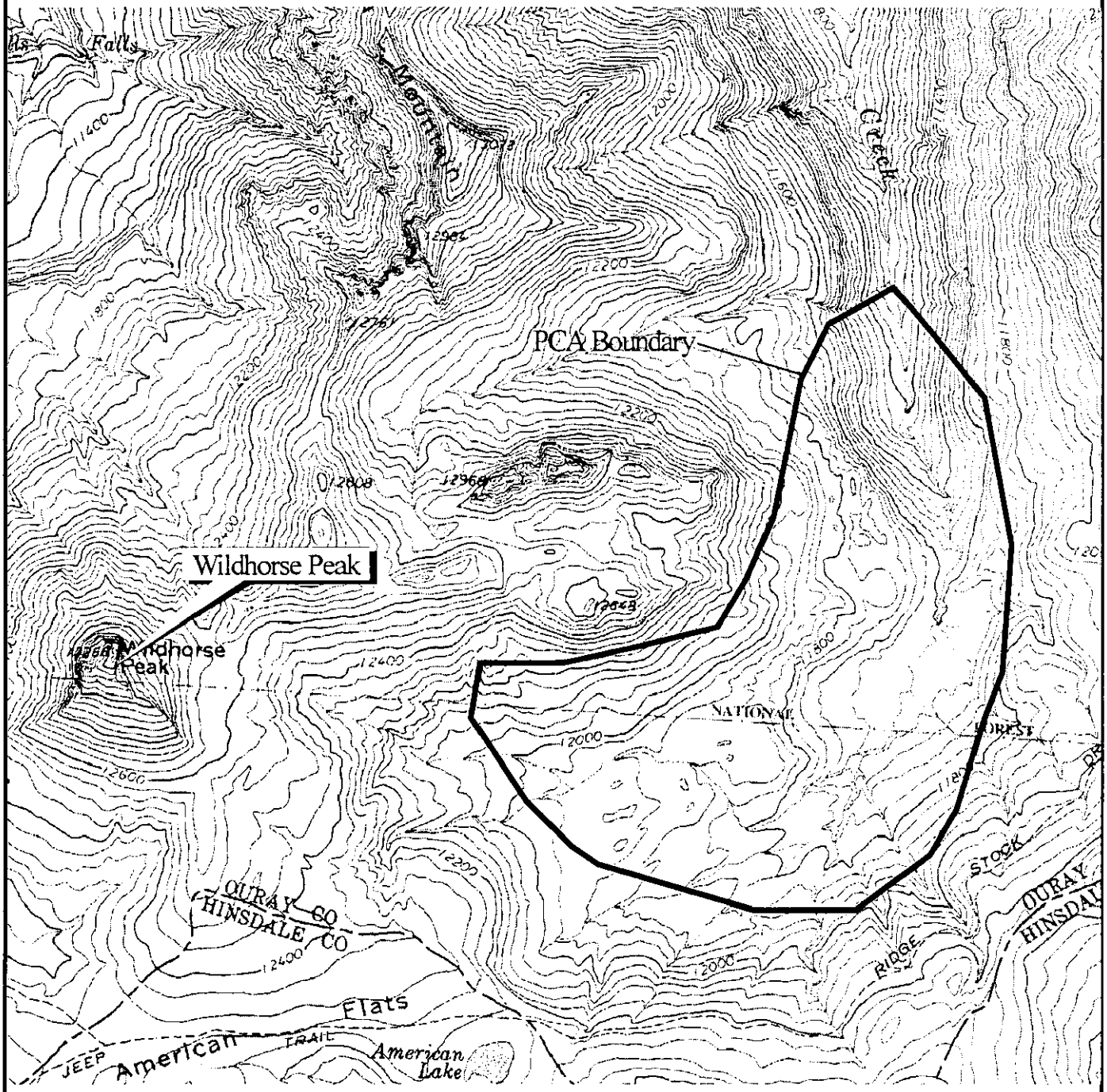
Scientific Name	Common Name	Global Rank	State Rank	Federal/State Status	EO* Rank
***Carex aquatilis/Carex utriculata* perched wetland**	**Montane wet meadows**	**G3**	**S3**		**A**

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass the element occurrences, the seven ponds, the small stream, and the upper basin slopes. The boundary includes a 1000-foot buffer from potential land use impacts (e.g., trail development).

Wildhorse Basin

Proposed Conservation Area

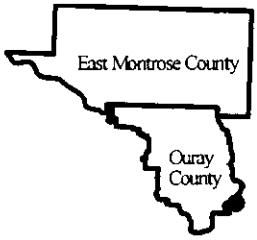


Plant Communities of Concern

Plant communities:

Montane wet meadow

Water sedge-
Beaked sedge perched wetland



N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Wetterhorn Peak U.S.G.S. 7.5 min. Quadrangle

Clear Creek at Divide Road

Biodiversity Rank: B4. Moderate significance. The site includes a fair occurrence of a globally vulnerable plant, the showy whitlow-grass.

Protection Urgency Rank: P4. This site is within the Uncompahgre National Forest.

Management Urgency Rank: M3. Off-road vehicle activities and road maintenance may threaten this small population of the showy whitlow-grass.

Location: Ouray County. On the Uncompahgre Plateau, about nineteen miles west-northwest of Ridgway.

U.S.G.S. 7.5. min. quadrangles: Pryor Creek
Legal Description: T46N R11W S 10, 11

Elevation range: 9,600 feet

Size: 54 acres

General Description: This level site along the Divide Road at the top of the Uncompahgre Plateau is forested with Engelmann spruce and aspen, interspersed with open meadows. The showy whitlow-grass was found in clearings and along the roadside. Associated species include heartleaf arnica, Colorado columbine, golden banner, Indian paintbrush, yarrow, wild mountain parsley, elk sedge, strawberry, American vetch, orange sneezeweed, northern bedstraw, pussytoes, meadowrue, and Richardson's geranium. The site is grazed by cattle and is open for firewood cutting.

Natural Heritage elements at the Clear Creek PCA.

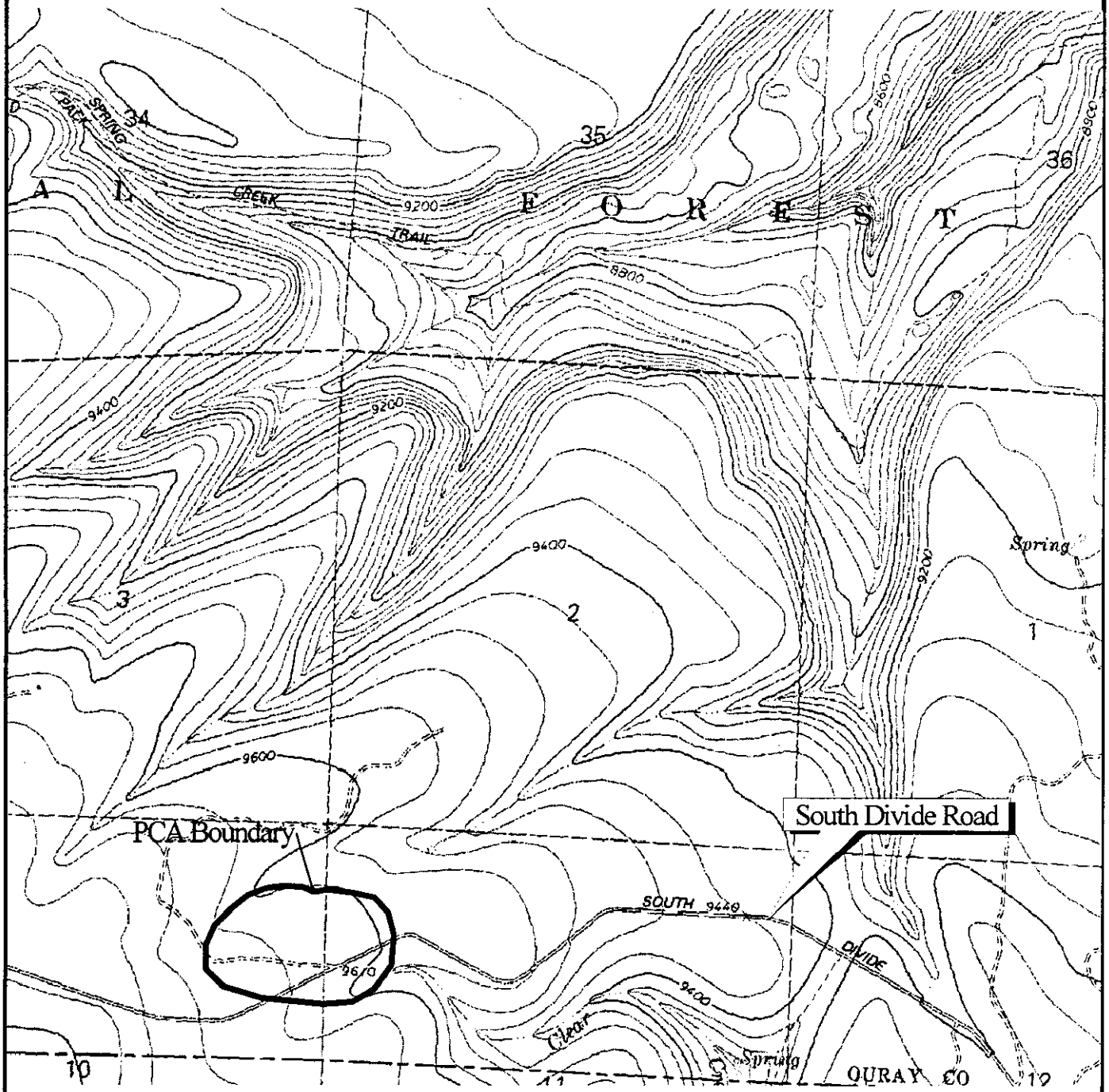
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Draba spectabilis* var. *oxyloba	**Showy whitlow-grass**	**G3T3Q**	**S3**		**C**

*EO = Element Occurrence

Boundary Justification: The boundary includes the occurrences of the showy whitlow-grass, and the immediate surrounding potential habitat.

Clear Creek at Divide Road

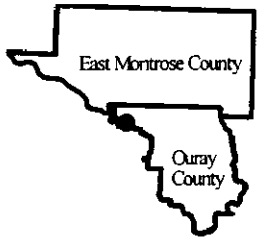
Proposed Conservation Area



Species of Concern

Plants:

Showy whitlow-grass



N

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*Prepared by Southwest Data Center

Pryor Creek U.S.G.S. 7.5 min. Quadrangle

East Fork Spring Creek

Biodiversity Rank: B4. Moderate significance. The site includes an unranked occurrence of Colorado River cutthroat trout, a globally vulnerable species.

Protection Urgency Rank: P4. The site is entirely within the Uncompahgre National Forest. There is no special protection in place at this time.

Management Urgency Rank: M5. No management needs are known. Current management has resulted in the present excellent condition of the stream.

Location: Ouray County. On the Uncompahgre Plateau, about fourteen miles west of Colona.

U.S.G.S. 7.5. min. quadrangles: Pryor Creek, Government Springs
Legal Description: T47N R10W S 17, 20, 29, 31, 32; T46N R10W S 5, 6, 8.

Elevation range: 7,200 to 8,900 feet

Size: 806 acres

General Description: The East Fork of Spring Creek flows northward, from the top of the Uncompahgre Plateau, to join the Middle Fork just south of the Montrose County line. The site encompasses approximately six miles of the stream. A dirt road and a pack trail cross the stream in its upper third; otherwise, the area is roadless. The East Fork of Spring Creek was determined by the Forest Service to be in excellent condition, and has been recommended for designation as a representative reach. Cutthroat trout were identified by sight in the stream in 1997. No genetic work has been done yet to determine the purity of the population.

Natural Heritage elements at the East Fork Spring Creek PCA.

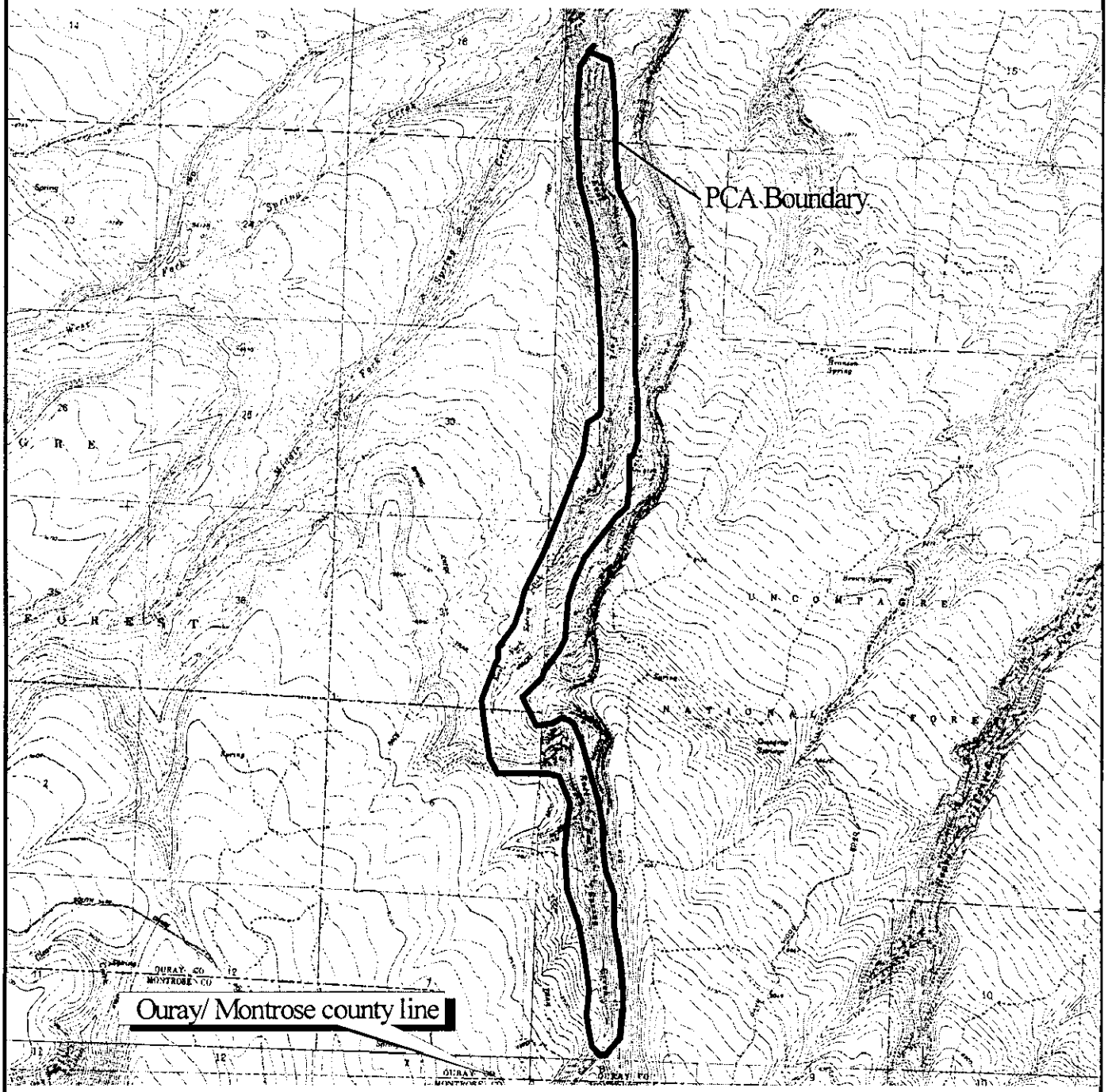
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Oncorhyncus clarki pleuriticus	**Colorado River cutthroat**	**G5T3**	**S3**	**FS/SC**	**E**

*EO = Element Occurrence

Boundary Justification: The boundary encompasses the entire East Fork of Spring Creek, including the known location of Colorado River cutthroat trout, and additional habitat both upstream and downstream.

East Fork Spring Creek

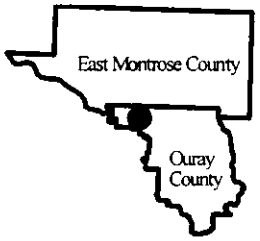
Proposed Conservation Area



Species and Plant Communities of Concern

Animals:

Colorado River cutthroat trout



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Government Springs & Surrounding U.S.G.S. 7.5 min. Quadrangles

Government Springs Road South

Biodiversity Rank: B4. Moderate significance. This site has two small populations of a globally imperiled plant, the good-neighbor bladderpod.

Protection Urgency Rank: P3. The site is located on BLM and private lands with no special protective status.

Management Urgency Rank: M3. Plants are growing along the roadside in disturbed areas, and may be damaged by road maintenance activities. The BLM portion of the site is managed according to the prescription for Management Unit 3, which allows woodcutting. Too little is known about the habitat needs of the good-neighbor bladderpod to recommend management actions.

Location: Ouray County. About twelve miles south of Montrose, west of Hwy. 550.
U.S.G.S. 7.5. min. quadrangles: Colona, Government Springs
Legal Description: T47N R9W S 20, 21, 29

Elevation range: 7,150 to 7,640 feet

Size: 398 acres

General Description: Government Springs Road runs along a mesa between Dolores Canyon and Horsefly Creek Canyon on the east side of the Uncompahgre Plateau. The area is wooded with pinyon and juniper. The good-neighbor bladderpod was found growing in red sandy soil along the roadside and under pinyon and juniper trees. Associated species included black sagebrush, mountain big sagebrush, Sandburg bluegrass, mat penstemon, Indian paintbrush and Drummond's rockcress. The area is popular with hunters, and there are several dirt roads in the area. The site is a combination of BLM and private land, although only the BLM portions were surveyed. It is expected that the bladderpod population may be found to be more extensive with further inventory, in which case the rank of this site may be raised.

Natural Heritage elements at the Government Springs Road South PCA.

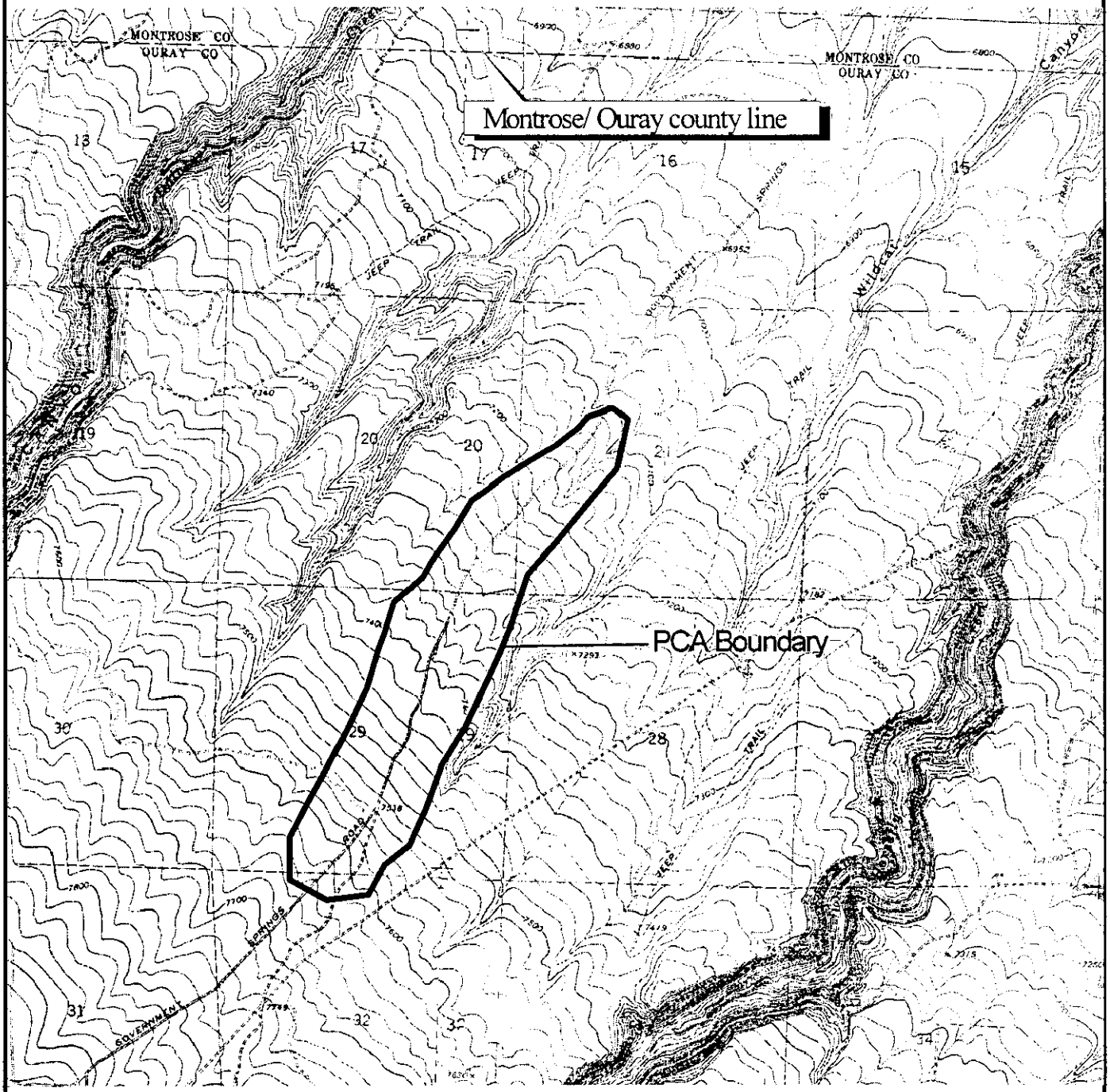
Scientific Name	Common Name	Global Rank	State Rank	Federal/State Status	EO Rank
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**C**
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**	**S2**		**C**

*EO = Element Occurrence

Boundary Justification: The boundary encompasses two occurrences of the good-neighbor bladderpod. The site could be expanded if the plants are found in the adjacent areas.

Government Springs Road South

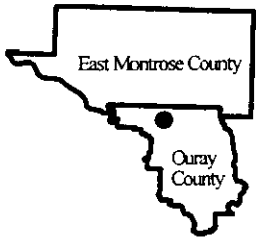
Proposed Conservation Area



Species of Concern

Plants:

Good-neighbor bladderpod



N

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*Prepared by Southwest Data Center

Colona & Government Springs U.S.G.S. 7.5 min. Quadrangles

Gunnison River at East Portal

Biodiversity Rank: B4. Moderate significance. The site includes a fair example of a globally vulnerable riparian plant community.

Protection Urgency Rank: P4. This area is protected as part of the Black Canyon National Monument.

Management Urgency Rank: M3. Effects of stream flows on the riparian vegetation need more study.

Location: Montrose County. About fourteen miles east northeast of Montrose.
U.S.G.S. 7.5. min. quadrangles: Grizzly Ridge
Legal Description: T49N R7W S 3, 4, 9, 10

Elevation range: 6,600 to 7,800 feet

Size: 115 acres

General Description: The Gunnison River, below the dam at the East Portal, supports riparian vegetation, but has been affected by changes in stream flows. There are few good sites for regeneration of cottonwoods. There are areas of dense shrubs, including skunkbrush, red-osier dogwood, oak and poison ivy. Above the high water line is an almost unbroken band of box elder. Exotic grasses have invaded the site, including smooth brome, reed canary grass and red top. In north facing gullies, Douglas firs form a dense cover. The Black Canyon gilia was reported in 1981, but we were unable to relocate the population in 1998.

Natural Heritage elements at the Gunnison River at East Portal PCA.

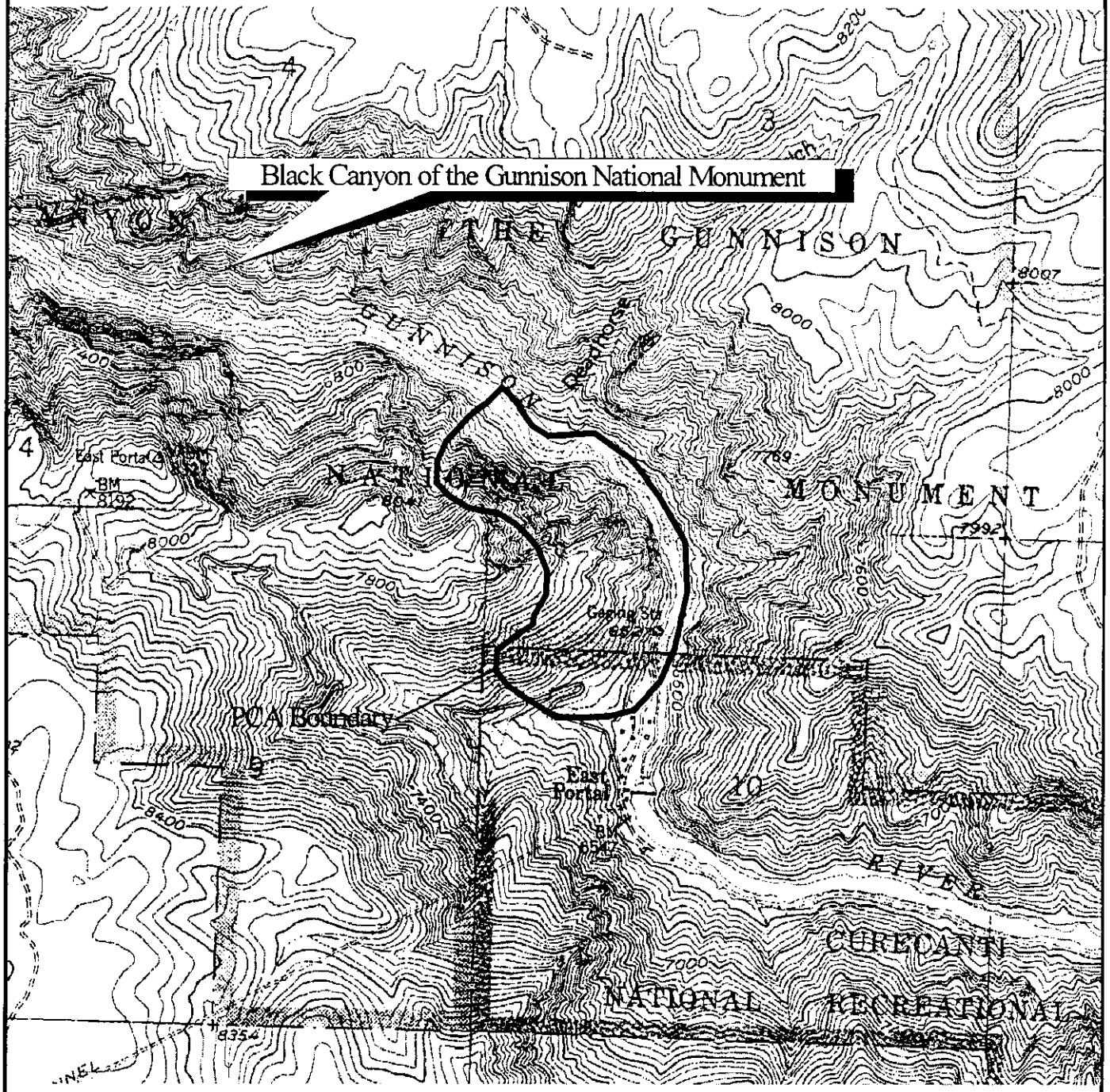
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Gilia penstemonoides	Black Canyon gilia	G2G3	S2S3	BLM, FS	D
Populus angustifolia/Rhus trilobata	**Narrowleaf cottonwood/Skunkbrush riparian forests**	**G3**	**S3**		**C**

*EO = element occurrence

Boundary Justification: The boundary encompasses the reported location of the Black Canyon gilia and a representative section of the riparian community along the Gunnison River.

Gunnison River at East Portal

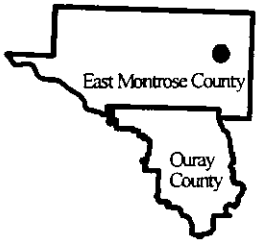
Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:
Narrowleaf cottonwood/Skunkbrush riparian forests

Plants:
Black Canyon gilia



N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Grizzly Ridge U.S.G.S. 7.5 min. Quadrangle

Ironstone Canal

Biodiversity Rank: B4. Moderate significance. The Ironstone Canal site has a fair occurrence of the globally vulnerable Uinta Basin hookless cactus.

Protection Urgency Rank: P4. The site is located on BLM land, with no special protection. Since there are several sites with better populations of the Uinta Basin hookless cactus, no special protective status is recommended.

Management Urgency Rank: M4. The BLM land is managed according to the prescription for Management Unit 1, which emphasizes grazing. Since the cactus is federally listed, any actions to improve forage must consider the effects on the plant.

Location: Montrose County. About twenty miles northwest of Montrose.
U.S.G.S. 7.5. min. quadrangles: Roubideau
Legal Description: T51N R11W S 31; T50N R11W S6

Elevation range: 5,400 to 5,600 feet

Size: 106 acres

General Description: This site is located on gentle, northeast facing slopes of the Uncompahgre Plateau, just south of Roubideau Creek. Vegetation consists of desert shrubs with scattered junipers. The Uinta Basin hookless cactus was located here by BLM personnel in 1984, and was not visited this year.

Natural Heritage elements at the Ironstone Canal PCA.

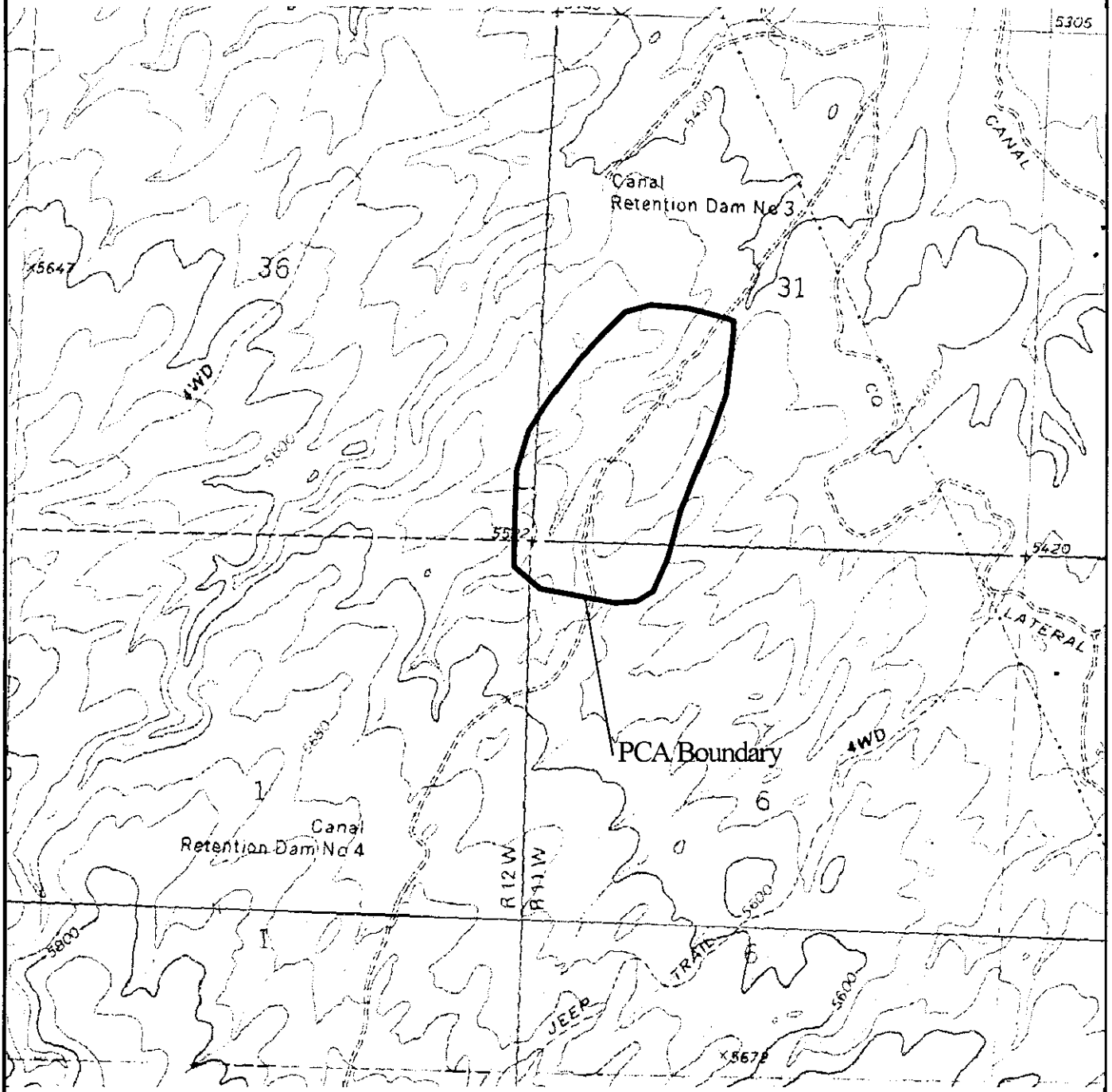
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Sclerocactus glaucus	**Uinta Basin hookless cactus**	**G3**	**S3**	**LT, BLM, FS**	**C**

*EO = element occurrence

Boundary Justification: The site boundary was drawn to include the location of the Uinta Basin hookless cactus and the similar adjacent habitat, as interpreted from aerial photographs.

Ironstone Canal

Proposed Conservation Area



Species of Concern

Plants:

Uinta Basin hookless cactus

N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Roubideau U.S.G.S. 7.5 min. Quadrangle

Lou Creek

Biodiversity Rank: B4. Moderate significance. This site contains an unranked population of Colorado River cutthroat trout.

Protection Urgency Rank: P3. This site is fairly remote, accessible by trail. It is partly within the Uncompahgre National Forest, with no special protection. The downstream half of the site is on private land.

Management Urgency Rank: M3. This site is grazed. However, its condition is not known. The trout population may be compromised by brook trout that were introduced below a dam that has since broken (Hebein 1999).

Location: Ouray County. About ten miles northeast of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Courthouse Mountain
Legal Description: T46N R7W S22, 23, 24

Elevation range: 8,600 to 9,800 feet

Size: 385 acres

General Description: This site encompasses one fork of the headwaters of Lou Creek, a west flowing stream which begins at Bates Lake, below Cimarron Ridge. The site is quite remote, with no road access. The Lou Creek trail runs through the site. In 1996, Forest Service biologists identified Colorado River cutthroat trout by sight in the stream. No research has been done yet to determine the genetic purity of the population.

Natural Heritage elements at the Lou Creek PCA.

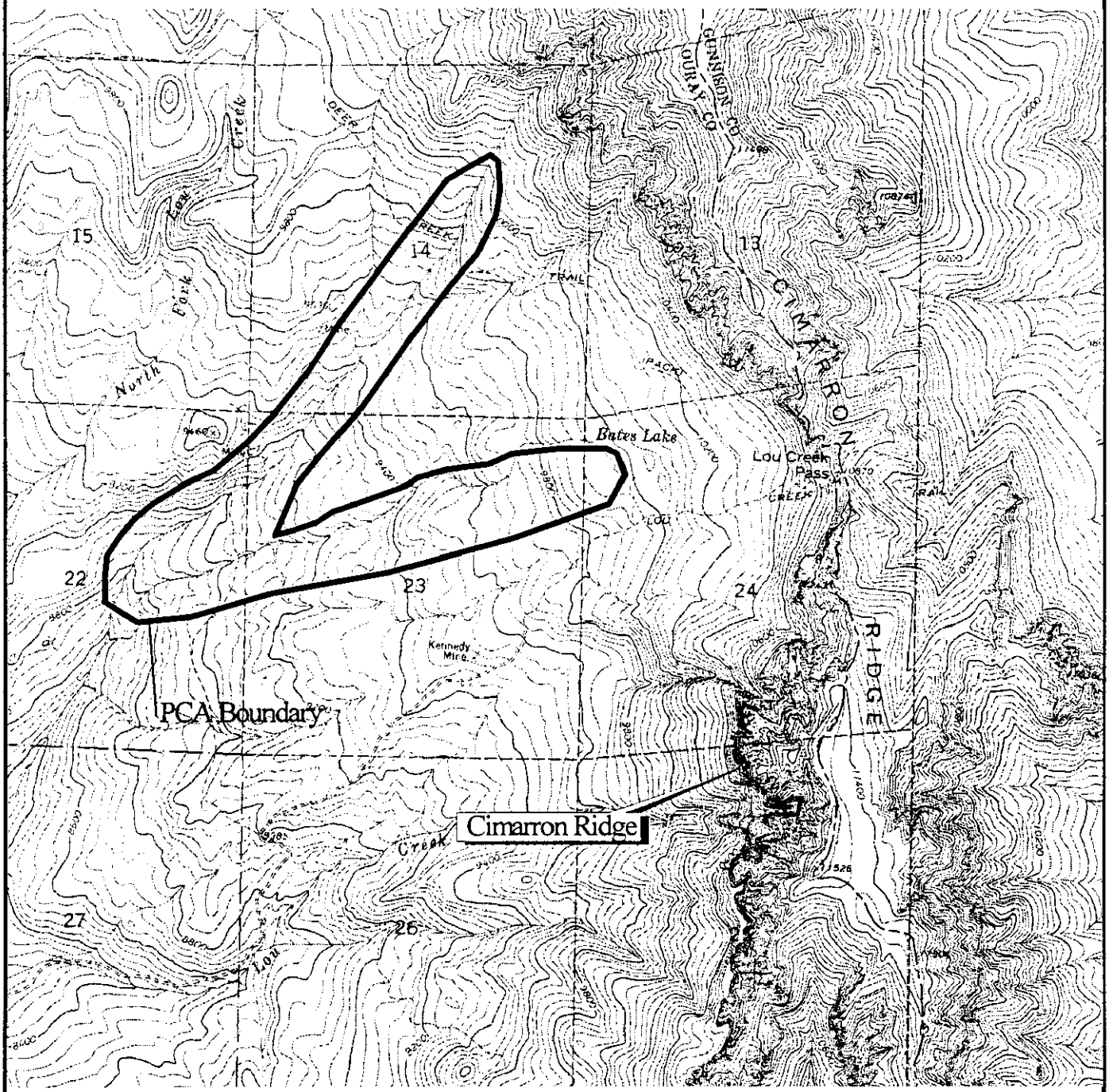
Scientific Name	Common Name	Global Rank	State Rank	State Status	EO* Rank
Oncorhyncus clarki pleuriticus	**Colorado River cutthroat**	**G4T3**	**S3**	**FS/SC**	**E**

*EO = element occurrence

Boundary Justification: The boundary includes one unnamed fork of Lou Creek from its source at Bates Lake to the first major stream confluence, plus a narrow buffer.

Lou Creek

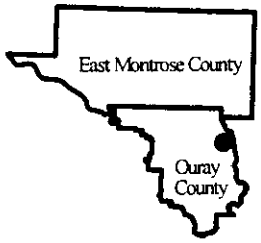
Proposed Conservation Area



Species of Concern

Animals:

Colorado River cutthroat trout



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Courthouse Mountain U.S.G.S. 7.5 min. Quadrangle

Love Mesa

Biodiversity Rank: B4. High significance. This site contains an excellent occurrence of a state rare plant, King clover, and a good example of a montane riparian forest community that is considered vulnerable throughout its range.

Protection Urgency Rank: P4. The site is located within the Uncompahgre National Forest.

Management Urgency Rank: M3. Roadside plants may be damaged by road maintenance.

Location: Montrose County. On the Uncompahgre Plateau, east of the Divide Road, one mile south of the Mesa County line.

U.S.G.S. 7.5. min. quadrangles: Windy Point
Legal Description: T49N R15W S 20, 28, 29

Elevation range: 9,300 to 9,700 feet

Size: 479 acres

General Description: This site is located on the top of the Uncompahgre Plateau at the headwaters of Escalante Creek. Vegetation consists of very wet spruce-fir and aspen forests as well as drier sites with manzanita on south facing slopes above Bear Pen Gulch. The King clover was found on roadsides, along small rivulets, and in seeps in the aspen forests. Associated species include horsetails, bluebells, false hellebore, buttercups, Drummond's willow, triangle-leaf groundsel, osha, false solomonseal, Richardson's geranium and Canadian violets. Some clearings are heavily grazed, but the cattle do not seem to impact the clover. The manzanita community is uncommon in Colorado, coming into our area from the west. This location represents the eastern extent of its known range.

Natural Heritage elements at the Love Mesa PCA.

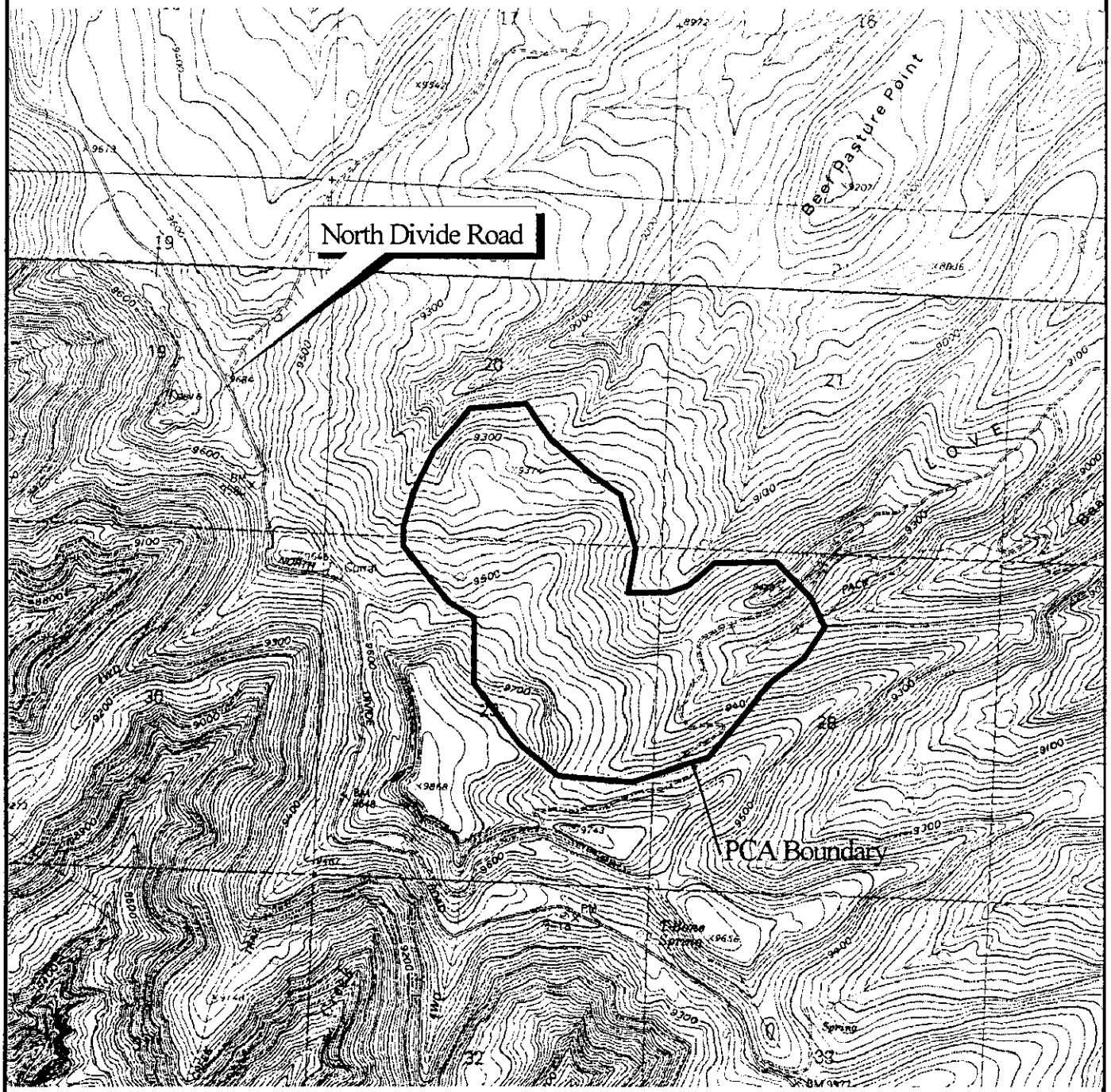
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Arctostaphylos patula	**Montane shrublands**	**G2**	**S2**		**C**
Picea engelmannii/Heracleum lanatum	**Montane riparian forests**	**G3?**	**S2**		**B**
Trifolium kingii	**King clover**	**G4**	**S1**		**A**

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to enclose three element occurrences in close proximity.

Love Mesa

Proposed Conservation Area



Species and Plant Communities of Concern

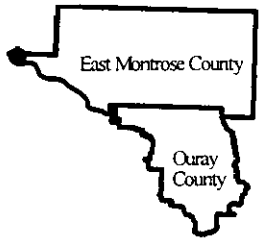
Plant communities:

Montane riparian forests
- Engelmann Spruce/ Cow Parsnip

Montane shrublands
- Manzanita

Plants:

King clover



0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Windy Point & Snipe Mountain U.S.G.S. 7.5 min. Quadrangles

McKenzie Creek

Biodiversity Rank: B4. Moderate significance. The site supports a good occurrence of a montane riparian forest considered vulnerable throughout its range.

Protection Urgency Rank: P4. The lower part of the site is located on BLM land with no special protection.

Management Urgency Rank: M3. There are significant grazing impacts in the upper parts of the canyon. Exotic species should be controlled as part of a county-wide weed control program.

Location: Ouray County. About seven miles north of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Colona
Legal Description: T46N R8W S 5-8
Elevation range: 6,600 to 7,400 feet
Size: 386 acres

General Description: McKenzie Creek forms a narrowing sandstone canyon as it flows east from Log Hill, at the southern end of the Uncompahgre Plateau, to the Uncompahgre River. The upper parts of the creek have a low gradient, and support a riparian community of large, mature cottonwoods and dense thickets of hawthorn. Other native species present are wild rose, Rocky Mountain juniper, blue spruce, red-osier dogwood, skunkbrush, coyote willow, and Oregon grape. This part of the creek is grazed by cattle. Several exotic weeds are present, including burdock, houndstongue, Canada thistle and common plantain. Drier clearings along the valley bottom have rubber rabbitbrush, shrubby cinquefoil and introduced pasture grasses. Uplands are wooded with pinyon, juniper, and oak. Downstream, as the canyon narrows, the cottonwoods are replaced by Douglas fir and red-osier dogwood. Here the creek is inaccessible to cattle, and in better condition. Associated species here include mountain lover, Oregon grape, wild rose, Rocky Mountain juniper, and serviceberry. Uplands in this steeper canyon have oak and elk sedge. The canyon provides an important link between the Uncompahgre River riparian zone and the uplands of Log Hill.

Natural Heritage elements at the McKenzie Creek PCA.

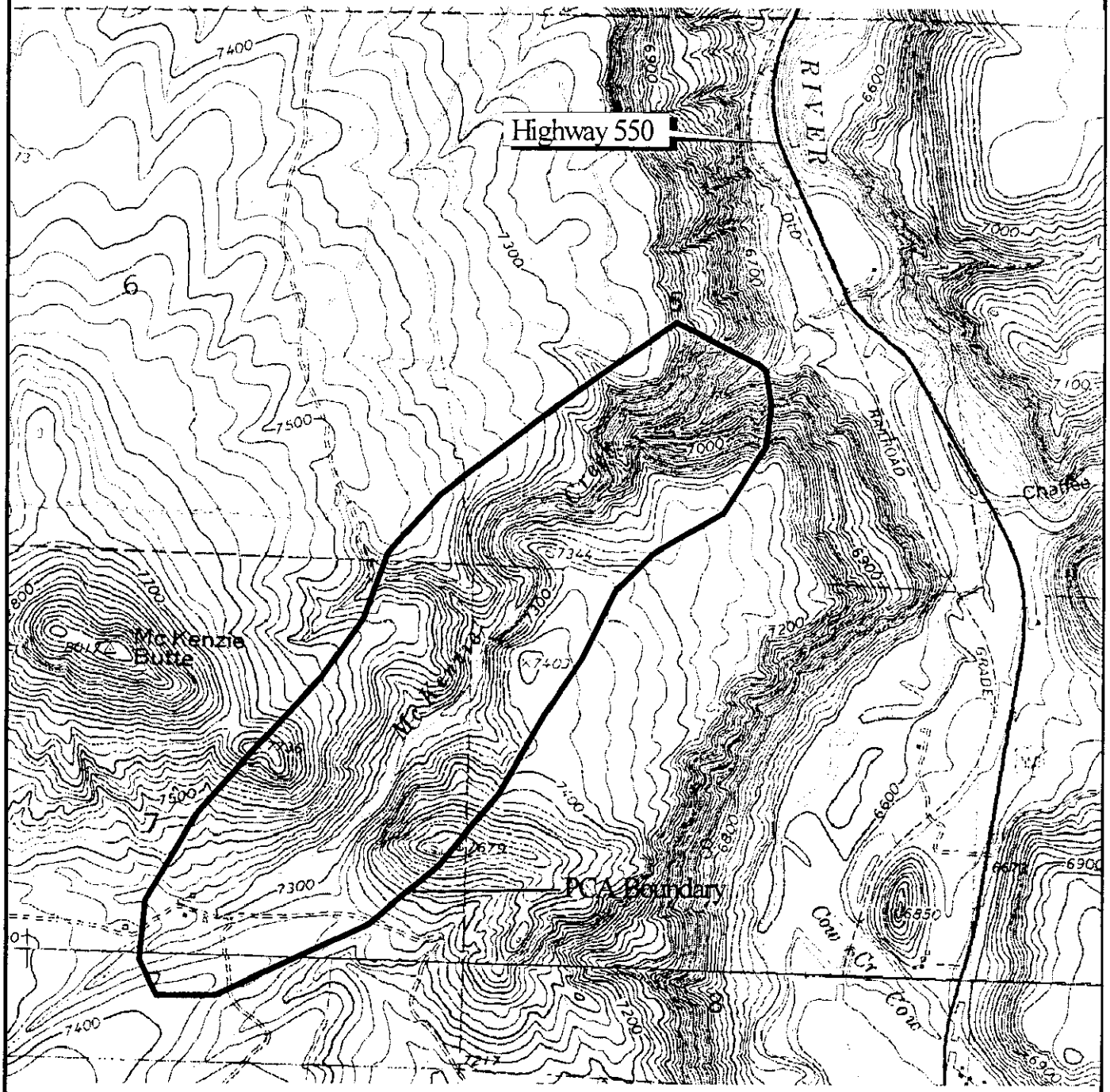
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO*
Populus angustifolia/ Crataegus rivularis	**Montane riparian forests**	**G2?**	**S2?**		**C**
Pseudotsuga menziesii/ Cornus sericea	Lower montane riparian forests	G4	S2		B

*EO = Element occurrence

Boundary Justification: The boundary encloses the two occurrences of riparian communities and the steep canyonsides of McKenzie Creek.

Mc Kenzie Creek

Proposed Conservation Area

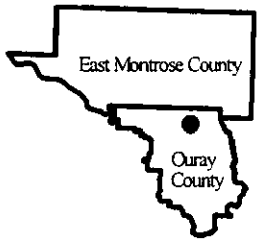


Plant Communities of Concern

Plant communities:

Montane riparian forests
- Narrowleaf cottonwood/ Hawthorn

Lower montane riparian forests
- Douglas fir/ Red-osier dogwood



N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Colona & Ridgway U.S.G.S. 7.5 min. Quadrangles

Natural Pond

Biodiversity Rank: B4. Moderate significance
Natural Pond supports very good examples of water smartweed and pondweed wetland communities, both ranked as vulnerable throughout their range in the state of Colorado by CNHP. The Natural Pond site is the best example of a closed depression palustrine wetland observed on private lands in Ouray County.

Protection Urgency Rank: P3
Definable threat but not in the next 5 years. Development is encroaching upon the privately owned ranch. There are no known plans to develop the property, but with rising land values, the possibility must be considered. A conservation easement is recommended to ensure protection for the wetland. The current grazing management practices of restricting cattle grazing in the Natural Pond pasture to a period of 2 to 3 weeks in June appears to be adequate maintain the site in its current condition. Ecological condition should be monitored and grazing management adapted to any change in wetland health.

Management Urgency Rank: M4
Current management practices appear to be adequate to maintain the site in its current condition; however, ecological condition should be monitored and grazing management adapted to any change in wetland health.

Location: Ouray County. Natural Pond is located approximately 6.5 miles due west of the town of Ridgway.

U.S.G.S. 7.5 min. quadrangle: Horsefly Peak
Legal Description: T45N R9W Section 8
Elevation: 8,560 feet

General Description: Natural Pond sits in a depression on a moderately sloping south facing hillside, below the sandstone cliffs of Spruce Mountain. The wetland is a one acre bottom spring fed shallow pond, with no surface inlet or outlet, supporting an aquatic bed pondweed community *(Potamogeton foliosus*), with water smartweed (*Polygonum amphibium*) growing in the shallow pond margins, encircled by a band of *Eleocharis palustris* (spikerush) at the waters edge. The upland vegetation is a mix of Gambel oak and pinyon-juniper woodlands. The site is part of the privately owned Telluray Ranch. Cattle graze the pasture containing Natural Pond for 2 to 3 weeks in June. A very rough four-wheel drive ranch road passes within 200 yards of the pond. Deer, elk, waterfowl, and other local wildlife frequent the site.

The Natural Pond site is the best example of a closed depression palustrine wetland found in the 1998 CNHP Uncompahgre Basin Wetland Inventory occurring on private land. It is the only wetland observed on private land with its hydrology intact and unaffected by human "improvements". The short duration pasture rotation has minimized the impact of grazing on the aquatic bed and emergent vegetation. The Gambel oak and pinyon-juniper uplands are in relatively good shape in comparison to similar sites

observed in the study area, with only moderate amounts of weedy, alien, and introduced species such as cheatgrass (*Bromus tectorum*), Kentucky bluegrass (*Poa pratensis*) and a few Canada thistle (*Cirsium arvense*) plants. The ranch manager practices aggressive weed control on the property.

The site is privately owned, and the current owner intends to keep the property a working ranch. Ranches adjacent to the Telluray ranch have been subdivided, and are currently being developed into residential home sites and larger mini-ranch parcels. The realities of skyrocketing land values in Montrose and Ouray counties and the uncertain economic future of cattle ranching combine to pose a real threat to open rangelands in Uncompahgre river valley. A conservation easement is recommended to ensure protection for the elements of concern, as well as for general biodiversity and open space values of the ranch.

Natural Heritage elements at the Natural Pond site.

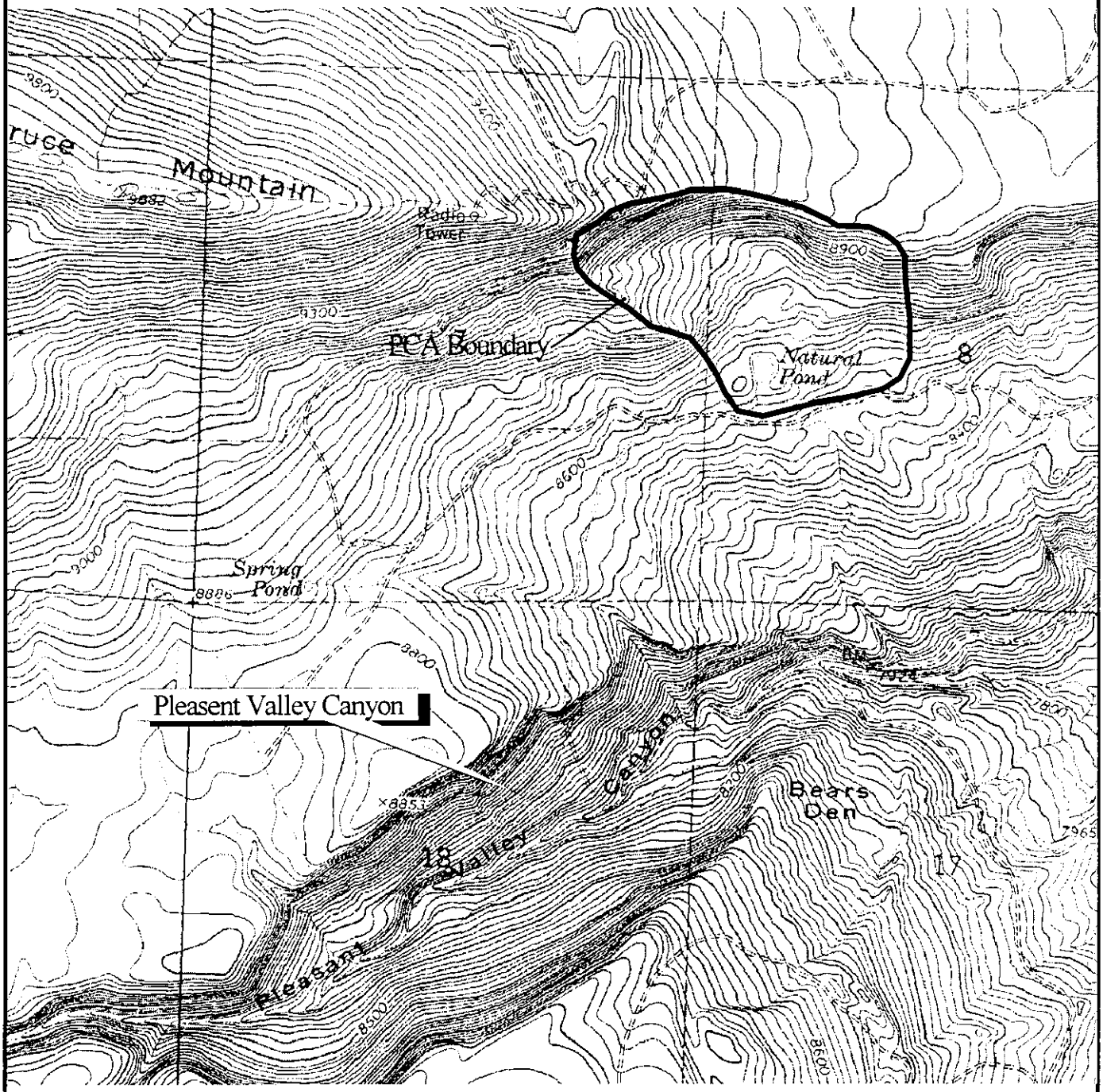
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Polygonum amphibium	**Montane wet meadows**	**G5**	**S3**		**A**
Potamogeton foliosus	**Montane floating/ submergent palustrine wetlands**	**G5**	**S3**		

*EO = Element occurrence

Boundary Justification: The boundary drawn encompasses the wetland, and includes a 1,000 foot buffer encompassing the small basin extending to the cliffs to the north-west, which is thought to be the hydrological source.

Natural Pond

Proposed Conservation Area



Plant Communities of Concern

Plant communities:

Montane wet meadows
Water smartweed

Submergent palustrine wetlands
Pondweed

N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Horsefly Peak U.S.G.S. 7.5 min. Quadrangle

Pleasant Valley Creek

Biodiversity Rank: B4. Moderate significance. The Pleasant Valley Creek PCA supports a montane riparian community and an orchid that is considered vulnerable throughout its range.

Protection Urgency Rank: P3. There is a definable threat, but not in the next five years. Development is encroaching upon the privately owned ranch. There are no known plans to develop the property, but with rising land values, the possibility of development must be considered. A conservation easement is recommended to ensure protection for the riparian area and associated wetland.

Management Urgency Rank: M4. Current management practices appear to be adequate to maintain the site in its current condition; cattle are fenced out of the riparian area for the growing season and are fed while they pasture during the winter. However**,** it is always a good idea to monitor ecological conditions in order to adapt grazing management to any change in riparian health.

Location: Ouray County. About six miles west of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Ridgway
Legal Description: T45N R9W S 16

Elevation range: 7,500 to 7,900 feet

Size: 75 acres

General Description: Pleasant Valley Creek supports a riparian zone with a multi-aged stand of cottonwoods, mixed with Rocky Mountain juniper. The creek is somewhat entrenched at the lower part of the site, but apparently floods periodically over a broad floodplain in the upper section. Narrowleaf cottonwoods form a canopy with up to 90%cover, while Rocky Mountain juniper grows below, with about 20% cover. There are a few scattered Ponderosa pines and Douglas firs. Shrubs in the community include wild rose, Utah serviceberry, snowberry, Gambel's oak, red-osier dogwood and western white clematis. The understory consists of gray aster, elk sedge, and a mixture of native and introduced pasture grasses. A small wetland adjacent to the stream was the site of the canyon bog orchid. Associated species in the wetland included horsetails, beaked sedge, and scouring rushes.

The site is privately owned, and the current owner intends to keep the property a working ranch. Ranches adjacent to the Telluray Ranch have been subdivided, and are currently being developed into residential home sites and larger mini-ranch parcels. The realities of skyrocketing land values in Montrose and Ouray counties and the uncertain economic future of cattle ranching combine to pose a real threat to open rangelands in the Uncompahgre River valley. A conservation easement is recommended to ensure protection for the elements of concern, as well as for general biodiversity and open space

values of the ranch. A conservation easement may also assist in preserving the ranching way of life that is fast disappearing

The current management practices of restricting cattle occupancy of the riparian area to the winter months when plants are dormant, and of supplying them with sufficient feed, minimizes grazing stress on the plant communities and permits the riparian vegetation to regenerate. The ranch manager also practices aggressive noxious weed control. These management practices are an example of how livestock production and natural heritage values can co-exist. As always, ecological monitoring and adaptive range management is recommended to protect the natural systems upon which a sustainable livestock operation depends.

Natural Heritage elements at the Pleasant Valley Creek PCA.

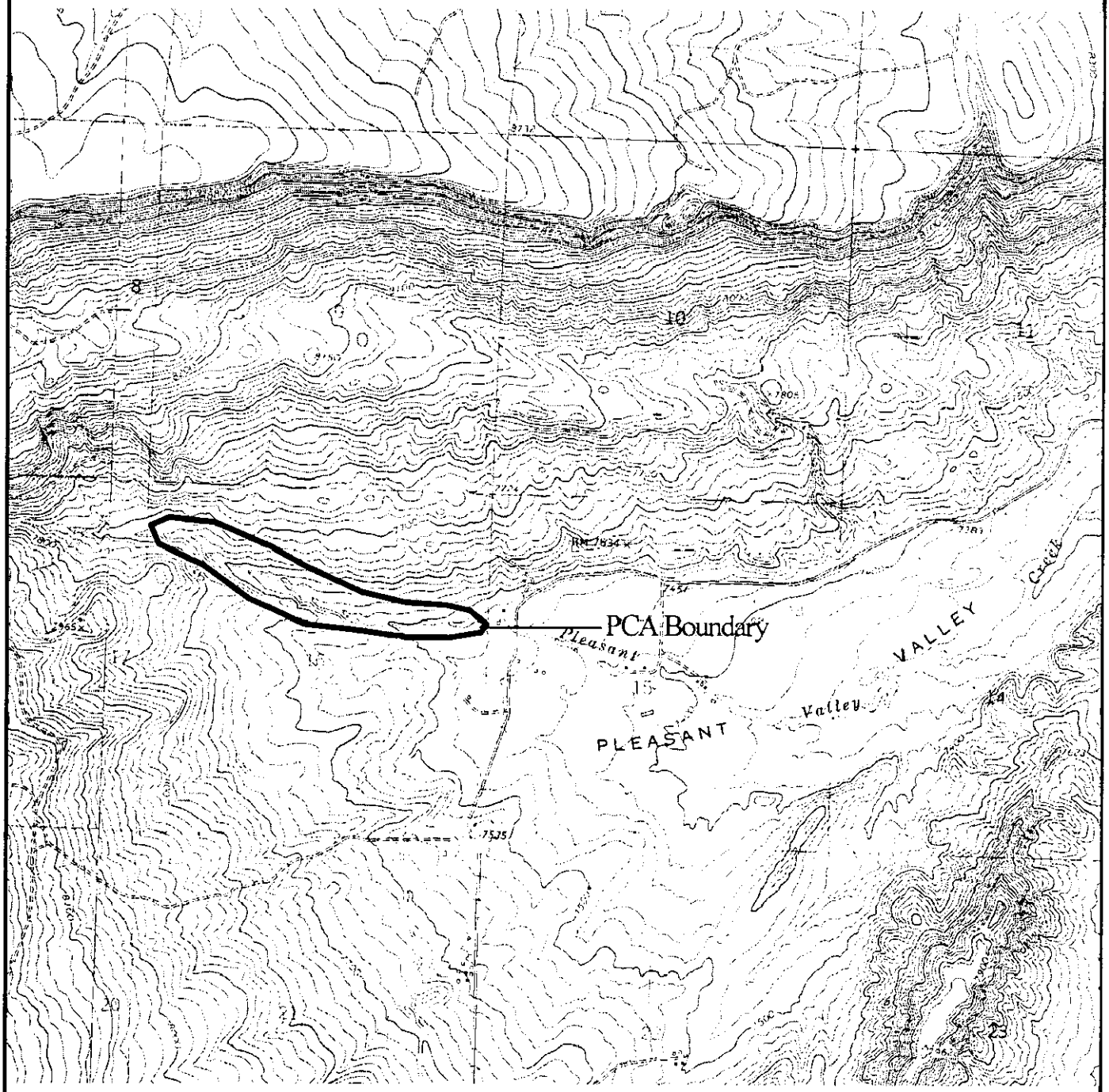
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO*
Platanthera sparsiflora	**Canyon bog orchid**	**G4G5T3**	**S2**		**B**
Populus angustifolia-Juniperus scopulorum	**Montane riparian forests**	**G2G3**	**S2**		**C**

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include the riparian plant community and the occurrence of the canyon bog orchid, with a small buffer. A comprehensive conservation plan for the riparian area should integrate management of the upper watershed.

Pleasant Valley Creek

Proposed Conservation Area



Species and Plant Communities of Concern

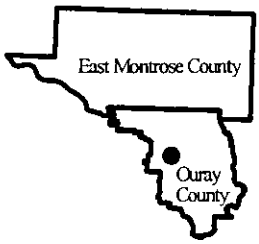
Plant communities:

Montane riparian forests

Narrowleaf cottonwood/
Rocky Mountain juniper

Plants:

Canyon bog-orchid



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Horsefly Peak & Ridgway U.S.G.S. 7.5 min. Quadrangles

Pryor Creek

Biodiversity Rank: B4. Moderate significance. The Pryor Creek site has a reported occurrence of the Colorado River cutthroat trout, considered vulnerable throughout its range.

Protection Urgency Rank: P5. The site is within the Uncompahgre National Forest.

Management Urgency Rank: M2. The riparian area of this site was determined to be in poor condition, functioning at risk. Long term survival of the cutthroat trout population may depend on reducing grazing impacts and ensuring adequate stream flows. A water diversion provides a barrier to fish migration upstream.

Location: Montrose County. On the Uncompahgre Plateau, about sixteen miles west of Colona.

U.S.G.S. 7.5. min. quadrangles: Pryor Creek
Legal Description: T47N R11W S 21, 22, 28

Elevation range: 8,640 to 9,280 feet

Size: 200 acres

General Description: Pryor Creek, a tributary of Dry Creek, flows through gently north sloping forests on the top of the Uncompahgre Plateau at this site. Pryor Creek was determined by the Forest Service to be functioning at risk, due to heavy grazing impacts and water diversions. However, in spite of its poor condition, it presently provides habitat for Colorado River cutthroat trout. This makes the stream a prime candidate for restoration efforts. The trout were identified by sight only, by Forest Service biologists. Research has not been completed to determine the genetic purity of the population. A northern goshawk nest was located in the aspen and spruce forest near the creek, and confirmed to be active in 1998.

Natural Heritage elements at the Pryor Creek PCA.

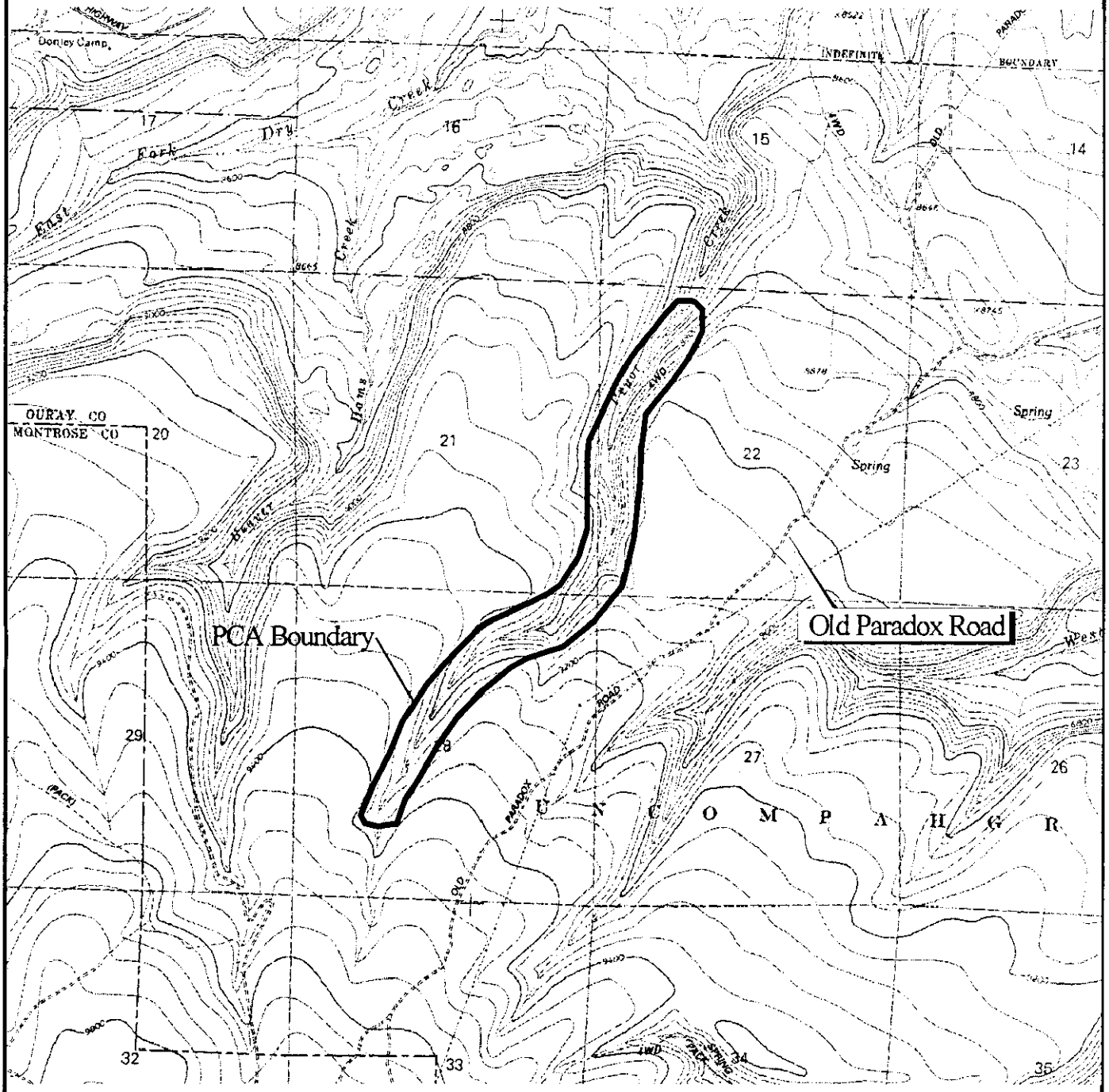
Scientific Name	Common Name	Rank	State Rank	Federal/ State Status	EO* Rank
Accipiter gentilis	Northern goshawk	G5	S3BSZN	FS	
Oncorhyncus clarki pleuriticus	**Colorado River cutthroat**	**G4T3**	**S3**	**FS/SC**	**E**

*EO = Element Occurrence

Boundary Justification: The boundary encompasses approximately two miles of Pryor Creek, plus a buffer of about 200 meters.

Pryor Creek

Proposed Conservation Area



Species of Concern

Animals:

Colorado River cutthroat trout
Northern goshawk

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Pryor Creek U.S.G.S. 7.5 min. Quadrangle

Red Mountain Number One

Biodiversity Rank: B4. Moderate significance. The site supports a fair occurrence of a globally vulnerable plant, the Colorado Divide whitlow-grass.

Protection Urgency Rank: P3. This site consists of a combination of National Forest lands and private mining claims. The forest land has no special protection. There is local interest in acquiring mining claims in this area, to conserve both natural and historic values.

Management Urgency Rank: M3. There are no regulations in place restricting off road vehicles. Nearby areas have been severely damaged.

Location: Ouray and San Juan counties. About eight miles south of Ouray.
U.S.G.S. 7.5. min. quadrangles: Ironton
Legal Description: T42N R7W S8

Elevation range: 11,600 to 12,600 feet

Size: 238 acres

General Description: This site is located along the northeast side of Red Mountain Number One (one of three Red Mountains), in rocky alpine tundra. The site has mixed ownership, with private mining claims interspersed with National Forest lands. Common alpine plants in the area include tufted hairgrass, moss campion, alpine avens, American bistort, alpine sandwort, featherleaf fleabane, black-head daisy, dwarf blueberry, and alpine sagebrush. There are a few islands of stunted spruce krummholz. The areas where the alpine Drabas were found are pristine; however, nearby areas are subject to impacts of four-wheel drive vehicles, roads and foot traffic.

Natural Heritage elements at the Red Mountain Number One PCA.

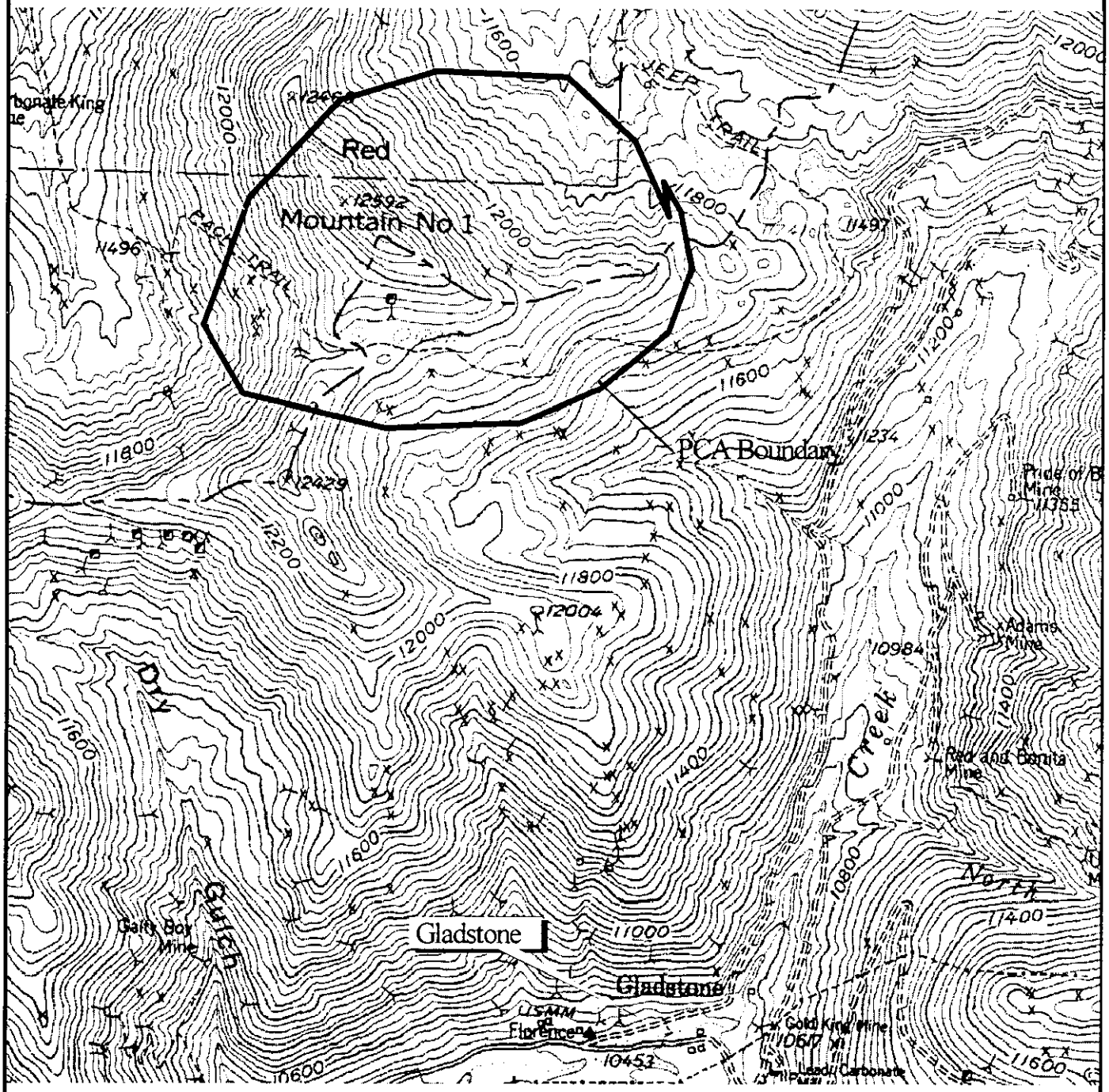
Scientific Name	Common Name	Global Rank	Rank	Federal/	EO* Rank
Draba streptobrachia	**Colorado Divide whitlow-grass**	**G3**	**S3**		**C**

*EO = Element Occurrence

Boundary Justification: The site includes the element occurrences and the surrounding potential habitat.

Red Mountain Number One

Proposed Conservation Area



Species of Concern

Plants:

Colorado Divide whitlow-grass

N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Ironton U.S.G.S. 7.5 min. Quadrangle

Temple Park

Biodiversity Rank: B4. Moderate significance. The site contains two small sub-populations of the good-neighbor bladderpod, a plant newly discovered in Montrose County, and until shown otherwise, considered to be globally imperiled.

Protection Urgency Rank: P4. The site is located primarily on BLM land with no special protective status.

Management Urgency Rank: M3. The BLM land in the Temple Park site is managed according to the prescriptions for Management Units 1 and 3, emphasizing grazing and woodcutting. This and other accessible populations of the good-neighbor bladderpod should be monitored to ascertain annual variation and effects of disturbance.

Location: Montrose County. About five miles southwest of Montrose.
U.S.G.S. 7.5. min. quadrangles: Montrose West, Dry Creek Basin
Legal Description: T48N R10W S 8, 17-19

Elevation range: 6,600 to 7,000 feet

Size: 461 acres

General Description: This site is a fairly level bench on the side of the Uncompahgre Plateau. Soils are sandy, with cryptogamic crust in undisturbed areas. Colorado Highway 90, several dirt roads, and a powerline bisect the site. Vegetation consists of pinyon and juniper woodland with mountain big sagebrush and black sagebrush. Associated species include prickly pear cactus, yucca, Paradox cryptanth, cushion buckwheat, and actinea. The good-neighbor bladderpod was found scattered in previously disturbed areas under a powerline and in a roadbed. There is some evidence of sheep grazing in the area, and the site is popular for deer hunting. Most of the site is on BLM land, with some adjacent private land included. Further inventory for the good-neighbor bladderpod may result in a lower rarity rank, which would in turn lower the biodiversity significance of this site.

Natural Heritage elements at the Temple Park PCA.

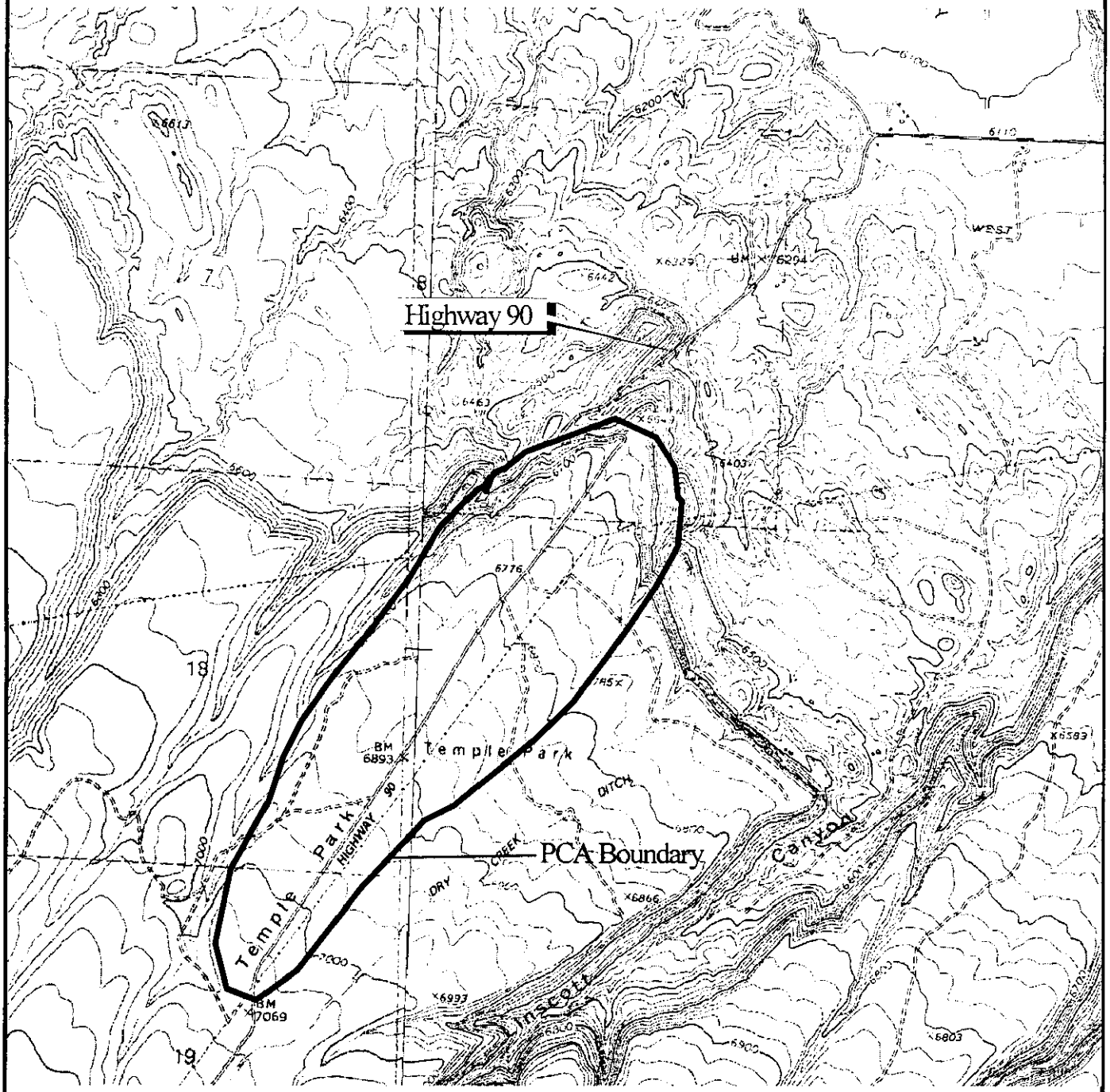
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Lesquerella vicina	**Good-neighbor bladderpod**	**G2**			

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include two occurrences of the good-neighbor bladderpod on the level areas around Temple Park. Further inventory is needed to determine the extent of the population.

Temple Park

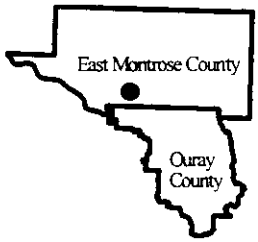
Proposed Conservation Area



Species of Concern

Plants:

Good-neighbor bladderpod



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Montrose west & Dry Creek Basin U.S.G.S. 7.5 min. Quadrangles

Yankee Boy Basin-Blue Lakes Pass

Biodiversity Rank: B4. Moderate significance. The site includes occurrences of two globally vulnerable alpine drabas, and a butterfly that is imperiled in Colorado.

Protection Urgency Rank: P3. A citizens group in Ouray is working to preserve Yankee Boy Basin, by purchasing mining claims, which they will exchange to the Forest Service.

Management Urgency Rank: M3. Heavy recreational use is impacting native plant communities in Yankee Boy Basin.

Location: Ouray County. About five miles west-southwest of Ouray.
U.S.G.S. 7.5. min. quadrangles: Telluride, Mount Sneffels
Legal Description: T43N R9W S 11-13; T43N R8W S 7, 8, 16-18, 20, 21
Elevation range: 11,400 to 13, 100 feet
Size: 2,419 acres

General Description: Yankee Boy Basin is a high subalpine to alpine basin in a former mining area. Today it is a popular attraction for tourists and local residents for its scenery, particularly the spectacular show of wildflowers in the summer, and for the historic mines. It is also the base for climbing Mount Sneffels, a 14,150 foot Peak. A road follows Canyon Creek to the trailhead leading to Mt. Sneffels and Blue Lakes Pass. The rare plants were found on the west side of the pass. The trail continues over the pass to the spectacular Blue Lakes, where the dark blue butterfly was found. Vegetation ranges from spruce-fir forest through subalpine meadows to alpine tundra, with a high species richness. A recent plant survey of Yankee Boy Basin by the Colorado Native Plant Society lists 189 species, of which only 3 were non-native. Threats to the area include vehicles going off-road and trampling by hikers. Heavy use of the area could lead to "loving it to death". A local organization, the Yankee Boy Preservation Committee, is working to purchase private mining claims in the site. These would then be turned over to Forest Service management. With acquisition of private lands, the Forest Service may be able to enforce no camping rules and limit vehicle use to lessen impacts.

Natural Heritage elements at the Yankee Boy Basin-Blue Lakes Pass PCA.

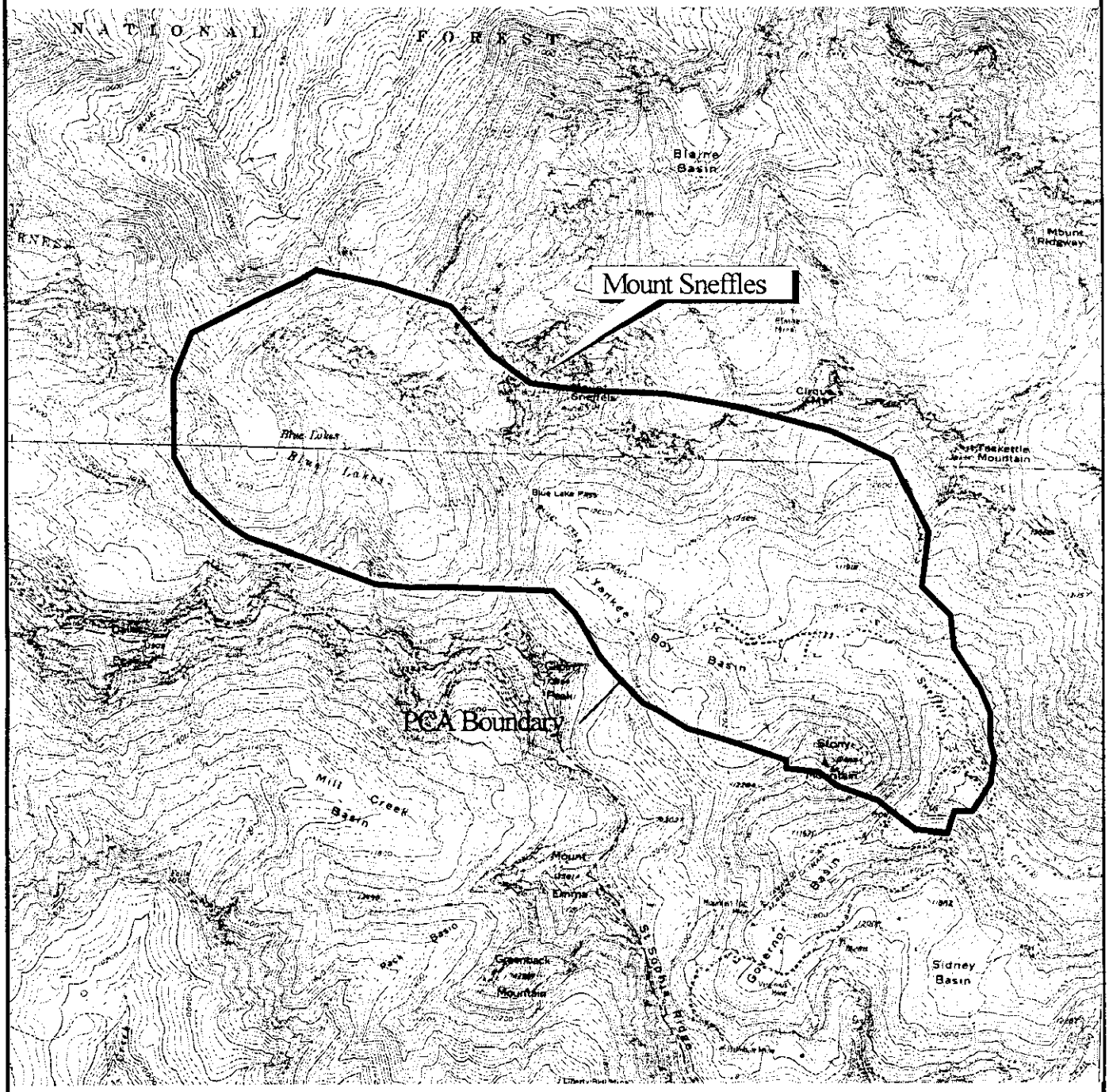
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	EO* Rank
Draba crassa	**Thick-leaf whitlow-grass**	**G3**	**S3**		**B**
Draba streptobrachia	Colorado Divide whitlow-grass	G3	S3		C
Lycaeides idas sublivens	Dark blue (butterfly)	G5T?	S2S3		E

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include element occurrences at the higher elevations of Yankee Boy Basin to Blue Lakes Pass.

Yankee Boy Basin - Blue Lakes Pass

Proposed Conservation Area



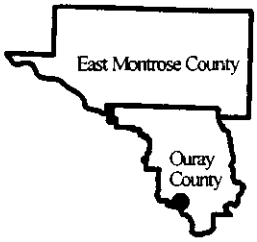
Species of Concern

Plants:

Thick-leaf whitlow-grass
Colorado Divide whitlow-grass

Animals:

Dark blue (butterfly)



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Telluride & Mount Sneffles U.S.G.S. 7.5 min. Quadrangles

Dallas Creek Confluence

Biodiversity Rank: B5. General biodiversity significance.

Protection Urgency Rank: P3. Although this site is within the Ridgway State Park, it would be desirable to acquire or protect adjacent lands as a buffer zone for the park. The small stretch of riparian vegetation on Dallas Creek could be affected by reduced stream flows.

Management Urgency Rank: M3. Refraining from additional park development, and encouraging users to stay on existing trails, may help retain the native plant and animal communities. Exotic species within the park, including Canada thistle, Russian olive and cheatgrass should be controlled.

Location: Ouray County. About two miles north of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Dallas
Legal Description: T46N R8W S 33

Elevation range: 6,840 to 7,000 feet

Size: 22 acres

General description: The Dallas Creek Confluence site is located at the upper end of the Ridgway Reservoir, in the Ridgway State Park. Below the Dallas Creek confluence, the original riparian vegetation on the Uncompahgre River was inundated with the building of Ridgway Dam. Water fluctuations of the reservoir prevent its reestablishment. The shoreline vegetation of the reservoir now is an upland community of pinyon, juniper, sagebrush, and Gambel's oak. Dallas Creek retains a small stretch of good quality riparian vegetation, with narrowleaf cottonwood, silver buffaloberry, red-osier dogwood and chokecherry. However, residential and agricultural development severely limit its extent upstream. Wintering eagles use the grove of cottonwoods at the confluence for roosting and hunting. Between the cottonwoods of Dallas Creek and the steep hillsides above, is a small transitional zone of sagebrush grassland. A gray vireo was sighted at this ecotone. In addition, approximately thirty species of passerines (songbirds) were recorded in the area.

Although taxonomic questions have yet to be resolved, it appears that some oak communities in Ouray County contain a native counterpart of Kentucky bluegrass in their understory. This species, known as *Poa agassizensis* (Agassiz' bluegrass), occupies drier sites than the introduced *Poa pratensis*. On the eastern shore of the Ridgway Reservoir, small patches of oak had a cover of about 30% *Poa agassizensis* and 5% Oregon grape. Nearby pinyon and juniper woodlands had an understory of mountain big sagebrush and blue gramma.

The site is popular for hiking and fishing. There are trails along Dallas Creek and along the base of the hills.

Natural Heritage elements at the Dallas Creek confluence PCA.

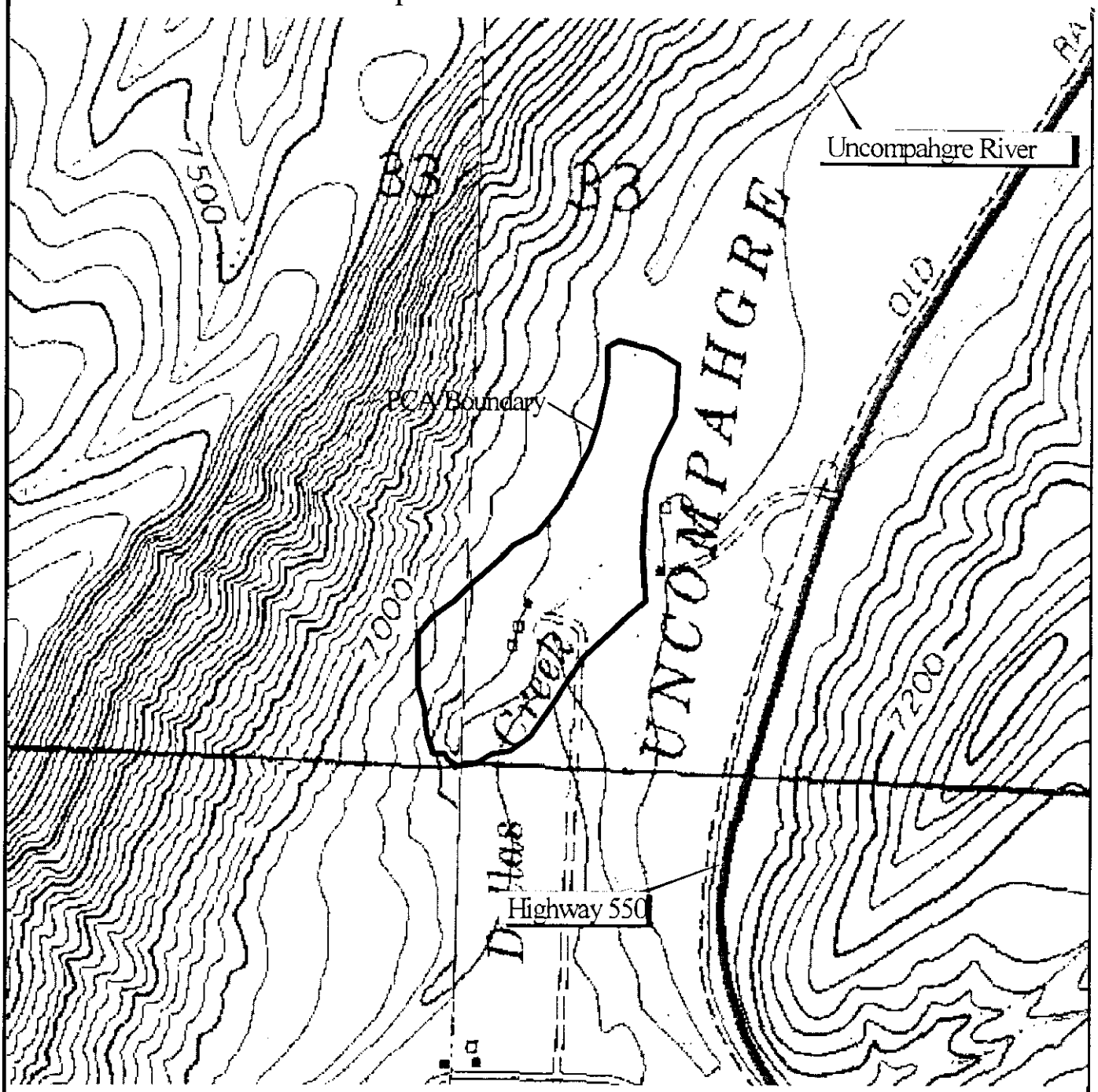
Scientific Name	Common Name	Global Rank	State Rank	State Status	EO* Rank
Quercus gambelii/Poa agassizensis	**Mixed mountain shrublands**	**GU**	**SU**		
Vireo vicinior	Gray vireo	G4	S2BSZN		E

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to encompass the riparian area at the Dallas Creek confluence, the transitional sagebrush area, and the patches of oak along the west shore of the reservoir.

Dallas Creek Confluence

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Mixed mountain shrubland
Gambel's oak/
Agassiz bluegrass

Animals:

Gray vireo

N

0 0.1 0.2 0.3 Miles

*Prepared by Southwest Data Center

Dallas U.S.G.S. 7.5 min. Quadrangle

Dexter Creek

Biodiversity Rank: B5. General biodiversity significance. The site contains a good example of locally common plant communities representative of Ouray County forested areas.

Protection Urgency Rank: P5. The site is protected as part of the Uncompahgre Wilderness.

Management Urgency Rank: M3. There is a significant infestation of spruce budworm in the Douglas fir of this area. Although it may be part of a natural cycle, it is being monitored by the Forest Service. Heavy horse use has resulted in some exotic species along the trail. There is no grazing in this site, although it receives major elk use.

Location: Ouray County. About 3 miles northeast of Ouray.
U.S.G.S. 7.5. min. quadrangles: Ouray
Legal Description: T44N R7W S 15-17, 20, 21

Elevation range: 9,000 to 11,000 feet

Size: 521 acres

General description: The Dexter Creek site is located on the eastern side of the Uncompahgre Basin, on the slopes of the San Juan Mountains. The site is in the Uncompahgre National Forest, and partly in the Uncompahgre Wilderness. Vegetation is a mosaic of forest communities that are typical of the Ouray area. The moist valleys have a canopy dominated by Douglas fir mixed with white fir. Riparian species include narrowleaf cottonwood, Rocky Mountain willow, Drummond willow, and Rocky Mountain juniper. Upslope areas have a combination of Douglas fir, aspen and Gambel's oak, with occasional white pine. The understory in riparian sites consists of a luxurious cover of Rocky Mountain maple, red-osier dogwood and white peavine. Pictureleaf wintergreen, one-sided wintergreen, and mosses grow in deep shade. Aspen forests and clearings on the upper slopes have an understory of Thurber fescue with white peavine, meadowrue, snowberry, Oregon grape, Richardson's geranium, and elk sedge. Clearings have Thurber fescue and Gambel's oak. The very small population of Pacific monardella was found in a clearing along the lower part of the trail. There are a few weeds along the trail, including orchard grass, dandelion and yellow sweet clover, probably carried in by horses. Otherwise, there are few exotic species in the site. Spruce budworm moths and webs were observed on the new growth of Douglas firs throughout the area. There are several abandoned mines in the site. Natural disturbances in the site include landslides and avalanches.

Natural Heritage elements at the Dexter Creek PCA.

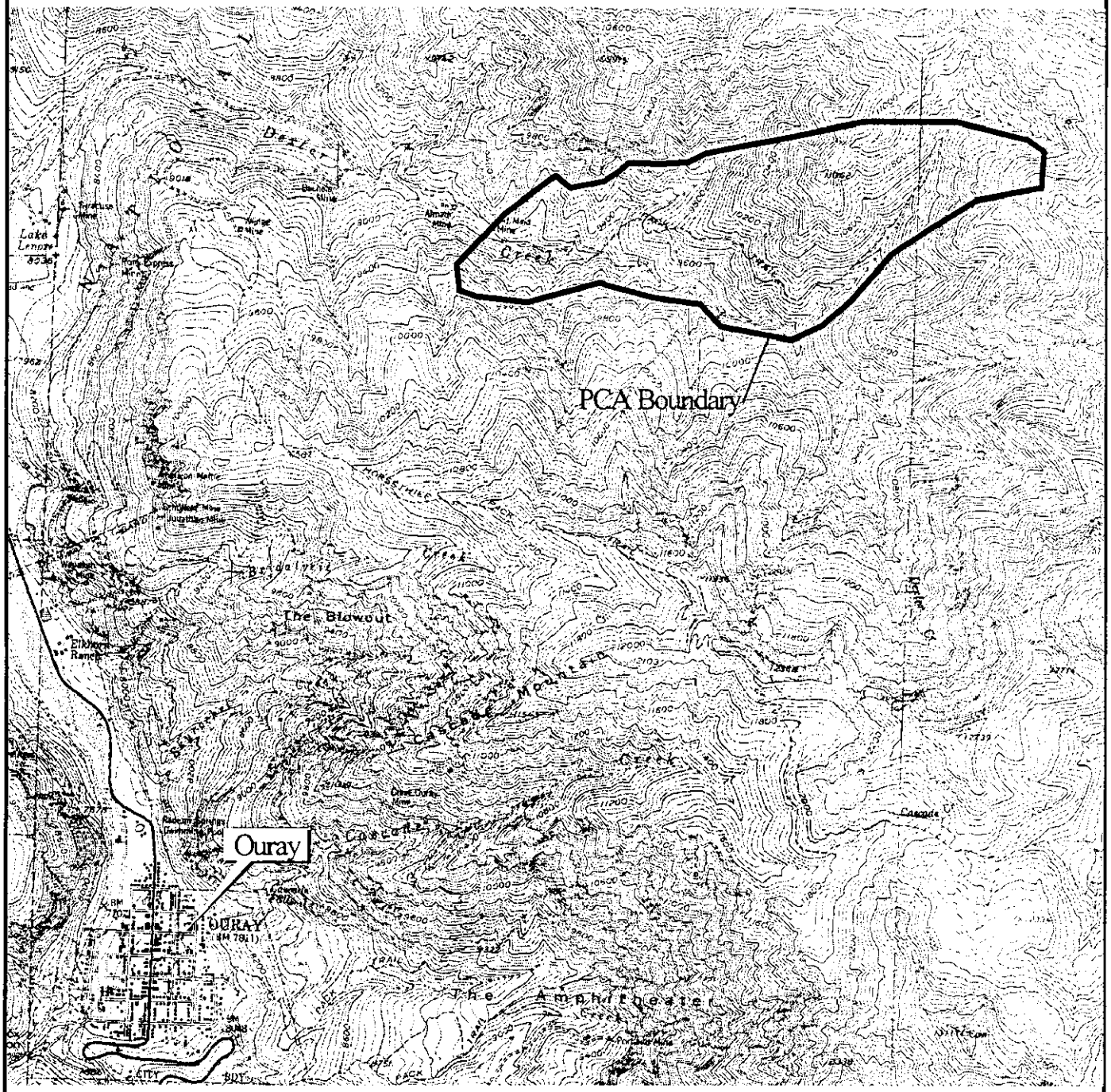
Scientific Name	Common Name	Global Rank	State Rank	Federal/State Status	EO* Rank
thurberi	**Aspen forests**	**G4**	**S4**		**B**
sericea	**Lower montane riparian forests**	**G4**	**S2**		**B**
Monardella odoratissima	Pacific monardella	G4G5	S2		D

*EO = Element Occurrence

Boundary Justification: The boundary encompasses the forested area on the north side of the Dexter Creek drainage. This site is representative of a much larger area of forest in Ouray County. The site boundaries could probably be extended considerably with further investigation.

Dexter Creek

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Lower montane riparian forest
- Douglas fir/
  Red-osier dogwood

Aspen forest
- Aspen/
  Thurber fescue

Plants:

Pacific monardella

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Ouray & Wetterhorn Peak U.S.G.S. 7.5 min. Quadrangles

Green Mountain

Biodiversity significance: B5. General biodiversity significance. The Green Mountain site supports good examples of the globally common montane riparian forests and aspen wetland forests.

Protection Urgency Rank: P4. This area is within the Uncompahgre National Forest.

Management Urgency Rank: M3. Exotic species control along the old roadway is needed. Although the road is closed to vehicle use, it is still sometimes used illegally by ATVs (Grother 1999).

Location: Ouray County. About nine miles east of Ridgway.
U.S.G.S. 7.5. min. quadrangles: Courthouse Mountain
Legal Description: T45N R7W S 11-14

Elevation range: 8,800 to 9,800 feet

Size: 859 acres

General Description: The Green Mountain site encompasses a section of Owl Creek and the eastern slopes of Green Mountain, in the Uncompahgre National Forest.

The riparian zone along the creek is about 50 feet wide in the area surveyed, and has large scattered subalpine fir, Douglas fir, aspen, and blue spruce. There is a dense cover of thinleaf alder, Rocky Mountain willow, Drummond willow, and twinberry honeysuckle along the stream banks. Other plant species present were butterweed groundsel, baneberry, western sweetroot, tall larkspur, and fragrant bedstraw. The vegetation and hydrology appeared to be in good condition, except in the immediate area of a road crossing. The road has been closed to motorized vehicles.

The eastern side of Green Mountain has a thick forest of subalpine fir and aspen. Pictureleaf wintergreen, a species tracked by CNHP until this year, was found in deep shaded areas with other shade tolerant species such as Oregon grape, mountain lover, rattlesnake plantain and one-sided wintergreen.

Patches of aspen are scattered throughout the area, with mesic species such as bracken fern, tall larkspur, meadowrue, and cow parsnip.

There are some disturbed areas along the former road where weeds such as Canada thistle are growing. Farther south, there is heavy impact from cattle grazing and logging. However, most disturbance in the site is natural, from landslides.

Natural Heritage elements at the Green Mountain PCA.

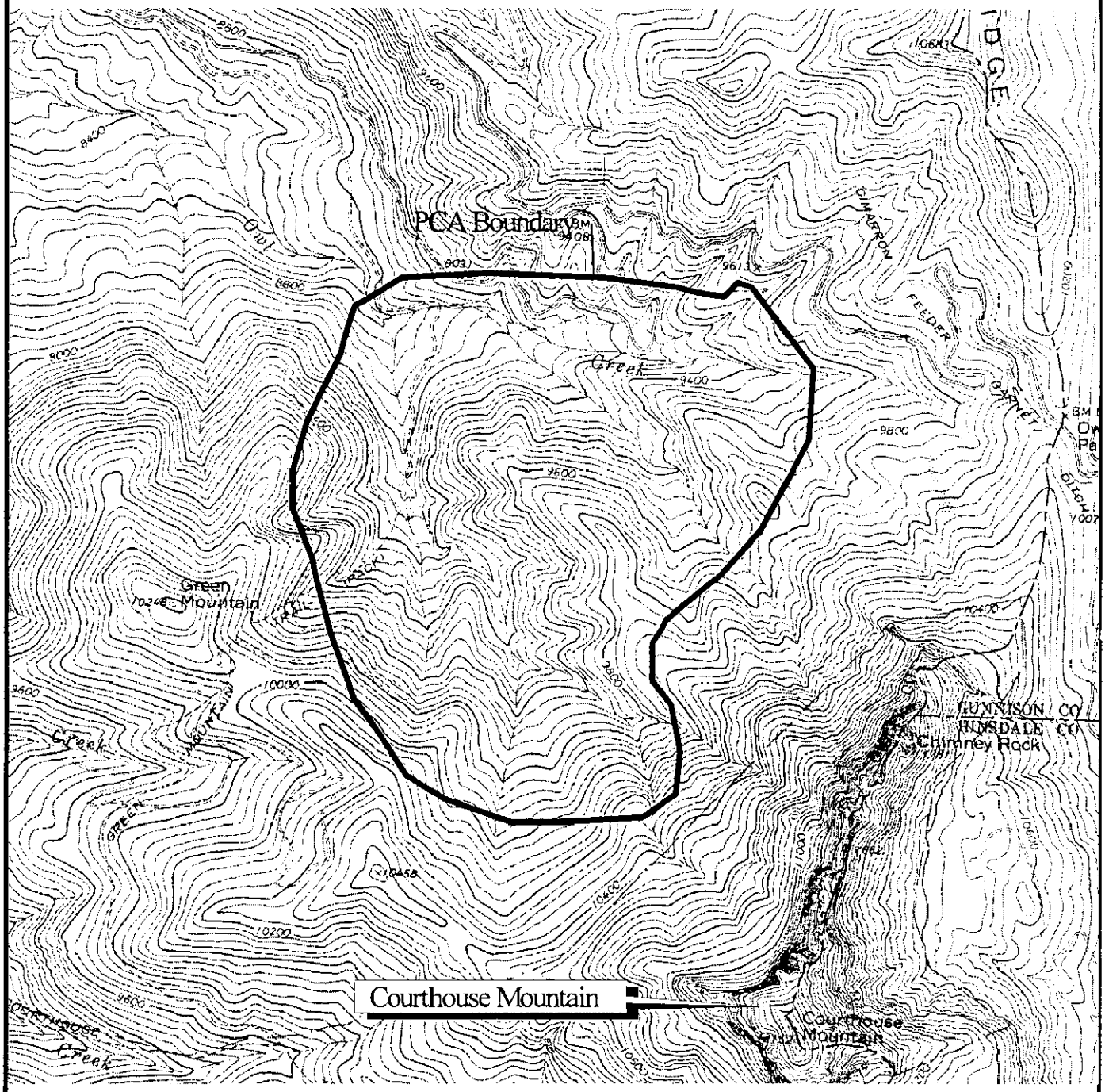
Scientific Name	Common Name	Global Rank	State Rank	Federal/ State Status	Rank
Abies lasiocarpa-Picea engelmannii/Alnus incana	Montane riparian forests	G5	S5		B
Populus tremuloides/Pteridium aquilinum	**Aspen wetland forests**	**G4**	**S3S4**		**B**
*Pyrola picta***	Pictureleaf wintergreen	G4G5	S3		B

*EO = Element Occurrence
**Watchlist

Boundary Justification: The boundary encompasses three element occurrences on the east side of Green Mountain, and includes a network of converging tributaries and their upland watershed.

Green Mountain

Proposed Conservation Area



Species and Plant Communities of Concern

Plant communities:

Montane riparian forest

Subalpine fir- Engelmann spruce/
Thinleaf alder

Aspen wetland forests

Aspen/
Bracken fern

Plants:

Pictureleaf wintergreen

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Courthouse Mountain U.S.G.S. 7.5 min. Quadrangle

Middle Fork Spring Creek

Biodiversity Rank: B5. General biodiversity significance. The montane riparian plant community dominated by Engelmann spruce was documented here, representing a common natural community of the Uncompahgre Basin.

Protection Urgency Rank: P5. The site is within the Uncompahgre National Forest. There is no additional protection.

Management Urgency Rank: M3. Grazing upstream may be contributing to poor water quality and erosion.

Location: Ouray County. On the Uncompahgre Plateau, about twenty miles northwest of Ridgway.

U.S.G.S. 7.5. min. quadrangles: Pryor Creek
Legal Description: T47N R11W S 25, 35, 36

Elevation range: 8,200 to 8,800 feet

Size: 115 acres

General Description: The Middle Fork of Spring Creek forms a narrow valley with a steep gradient at this site. The riparian area is forested with Engelmann spruce, with an understory of thinleaf alder, Rocky Mountain willow, and Drummond's willow. Other species present are cow parsnip and horsetails. The hillsides above the creek have a combination of Engelmann spruce, Douglas fir and aspen. Snowberry occupies the understory of the aspen community. Erosion of banks was higher than expected, possibly due to grazing upstream.

Natural Heritage elements at the Middle Fork of Spring Creek PCA.

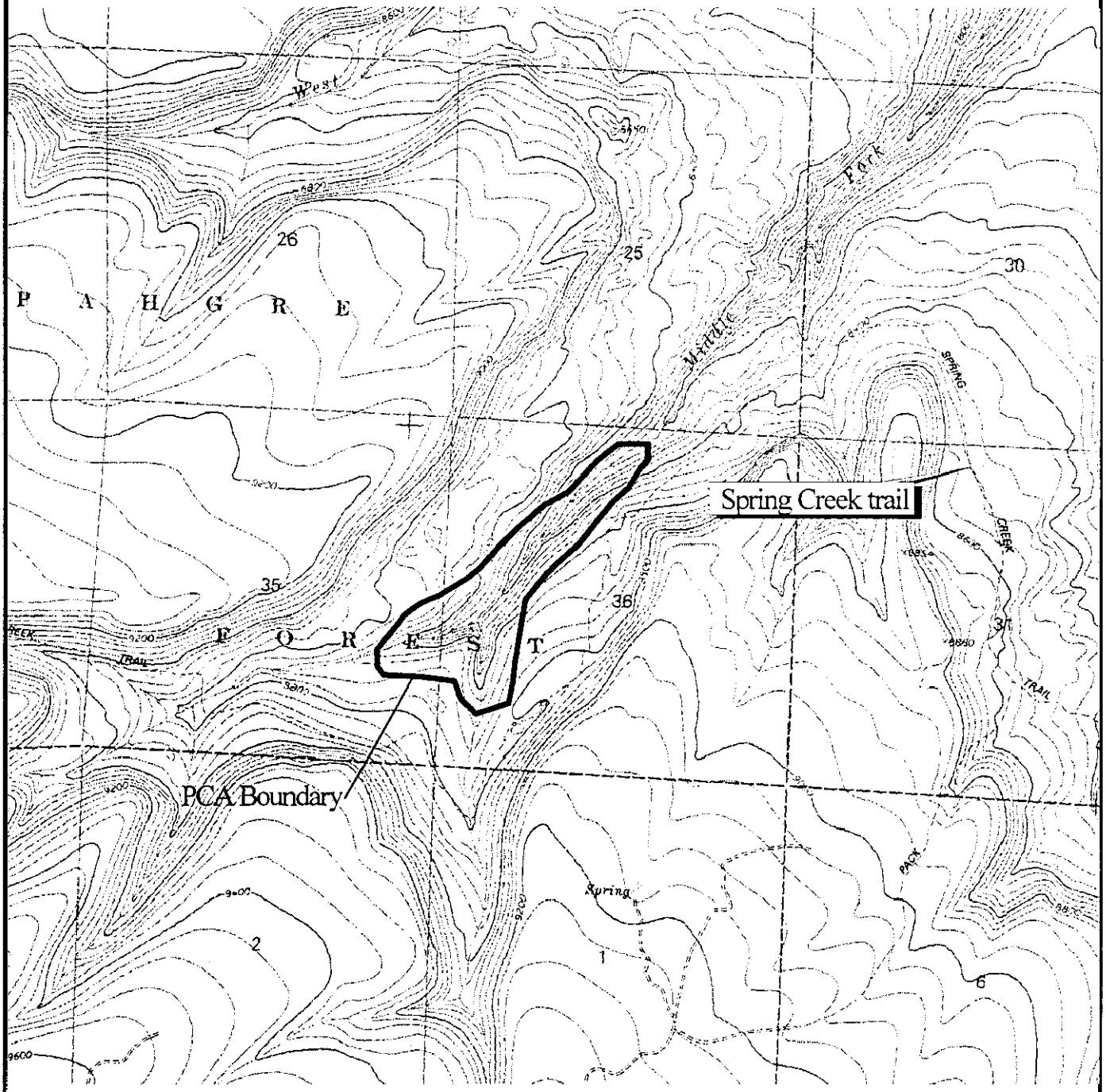
Scientific Name	Name	Rank	State Rank	Federal/ State Status	EO*
Abies lasiocarpa-Picea engelmannii/ Salix drummondiana	**Montane riparian forests**		**S4**		**B**

*EO = Element Occurrence

Boundary Justification: The boundary encloses the occurrence, and additional riparian areas both upstream and downstream.

Middle Fork Spring Creek

Proposed Conservation Area



Plant Communities of Concern

Plant communities:

Montane riparian forests

Subalpine fir- Engelmann Spruce/
Drummond's willow

N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Pryor Creek U.S.G.S. 7.5 min. Quadrangle

Serpent Point

Biodiversity Rank: B5. General biodiversity significance. This site contains an occurrence of the peregrine falcon, considered to be imperiled in Colorado.

Protection Urgency Rank: P5. This site is completely contained within the boundaries of Black Canyon of the Gunnison National Monument.

Management Urgency Rank: M5. No management needs are known.

Location: Montrose County, about seven miles northeast of Montrose. This site is best observed from the south side of the Black Canyon.

U.S.G.S. 7.5. min. quadrangles: Grizzly Ridge
Legal Description: T50N R8W S23, 26

Elevation range: 5600 feet to 7922 feet.

Size: 166 acres

General Description: The Serpent Point site is located in the Black Canyon of the Gunnison National Monument. This site contains more vertical land area than horizontal, providing excellent nesting habitat for Peregrine falcons. The canyon walls are composed of Precambrian gneiss eroded by the Gunnison River. Within the site is the Painted Wall, Colorado's highest cliff, which rises 2,200 feet above the canyon floor.

Natural Heritage elements at the Serpent's Point PCA.

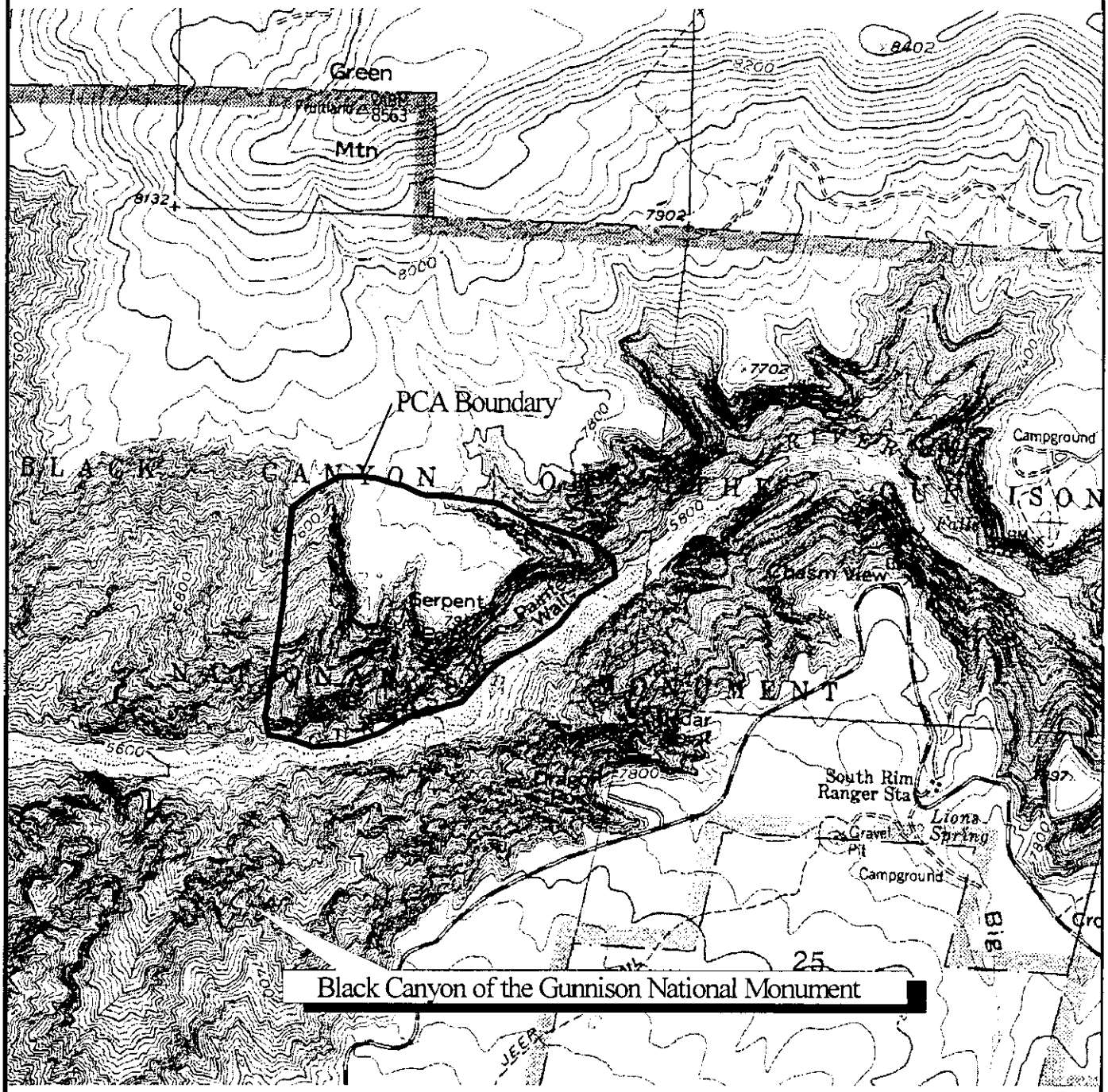
Scientific Name	Common Name	Global Rank	State Rank	State Status	EO* Rank
Falco peregrinus anatum	**American peregrine falcon**	**G4T4**	**S2BSZN**	**LE, T**	**E**

*EO = Element Occurrence

Boundary Justification: This site boundary was drawn to include a known nesting location for Peregrine falcons and the flatlands directly above the eyrie.

Serpent Point

Proposed Conservation Area



Species of Concern

Animals:

American peregrine falcon

N

0 0.25 0.5 0.75 Miles

*Prepared by Southwest Data Center

Grizzly Ridge U.S.G.S. 7.5 min. Quadrangle

The Blowout

Biodiversity Rank: B5. General biodiversity significance. The site supports an eyrie of peregrine falcons, considered imperiled in Colorado.

Protection Urgency Rank: P5. The area is remote and inaccessible enough that it needs no additional protection.

Management Urgency Rank: M5. No management needs are known.

Location: Ouray County. About one mile north of Ouray.
U.S.G.S. 7.5. min. quadrangles: Ouray
Legal Description: T44N R7W S 29, 30

Elevation range: 8,000 feet to 10,200 feet

Size: 251 acres

General Description: This area of steep, barren cliffs above Ouray is quite inaccessible to humans, but provides excellent habitat for the peregrine falcons that nest there. Forest Service researchers confirmed one pair of the raptors engaged in mating behavior in 1998.

Natural Heritage elements at the Blowout PCA.

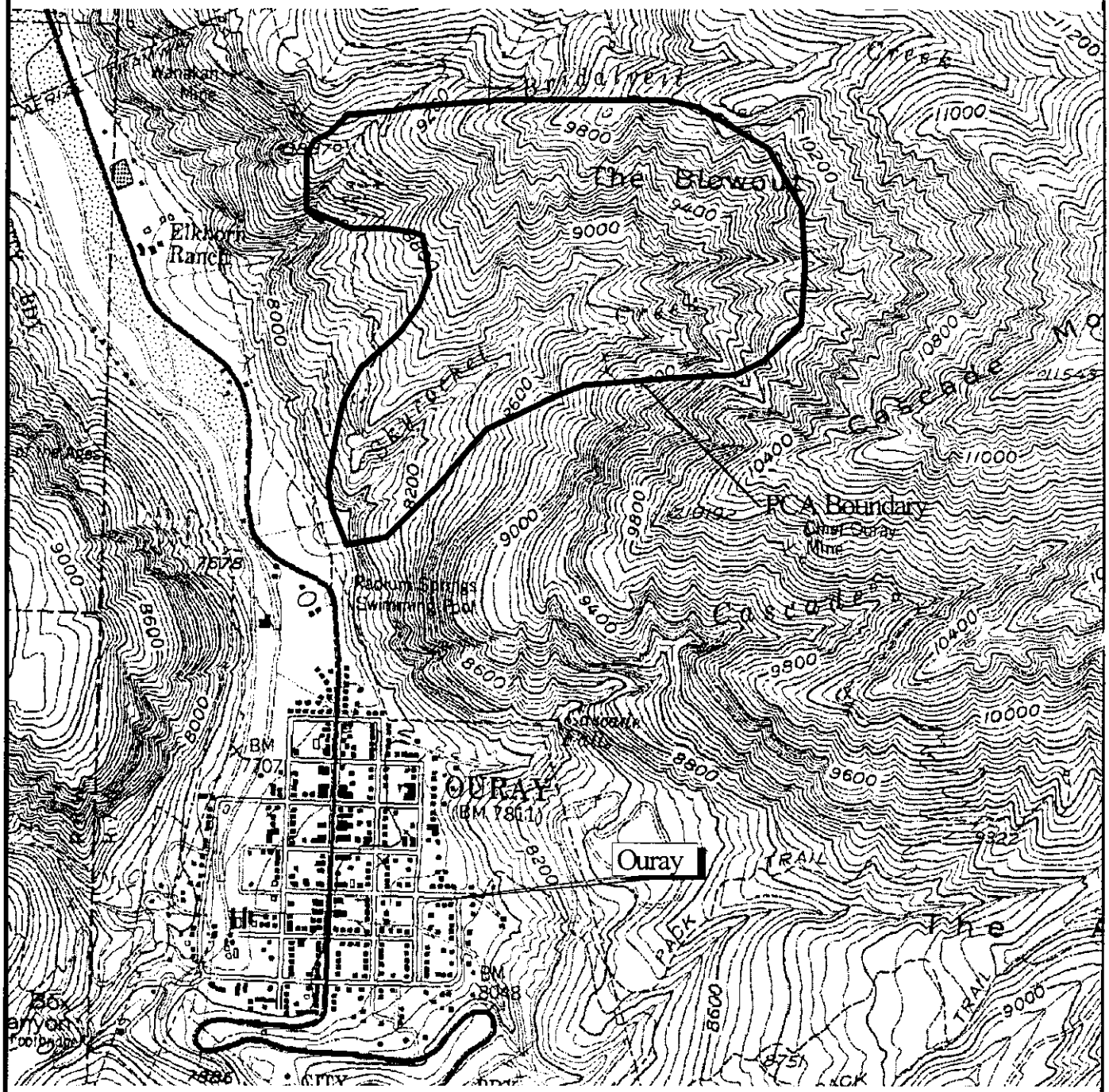
Scientific Name	Common Name	Global Rank	State Rank	Federal/State Status	EO Rank
Falco peregrinus anatum	**American peregrine falcon**	**G4T4**	**S2BSZN**	**LT**	**E**

*EO = Element Occurrence

Boundary Justification: The boundary is drawn to include the cliffs around the peregrine falcon nest, which comprise the actual and potential habitat for the falcon.

The Blowout

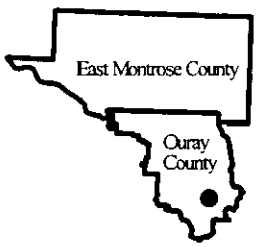
Proposed Conservation Area



Species of Concern

Animals:

American peregrine falcon



N

0 0.5 1 1.5 Miles

*Prepared by Southwest Data Center

Ouray U.S.G.S. 7.5 min. Quadrangle

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Appendix I

Targeted Inventory Areas

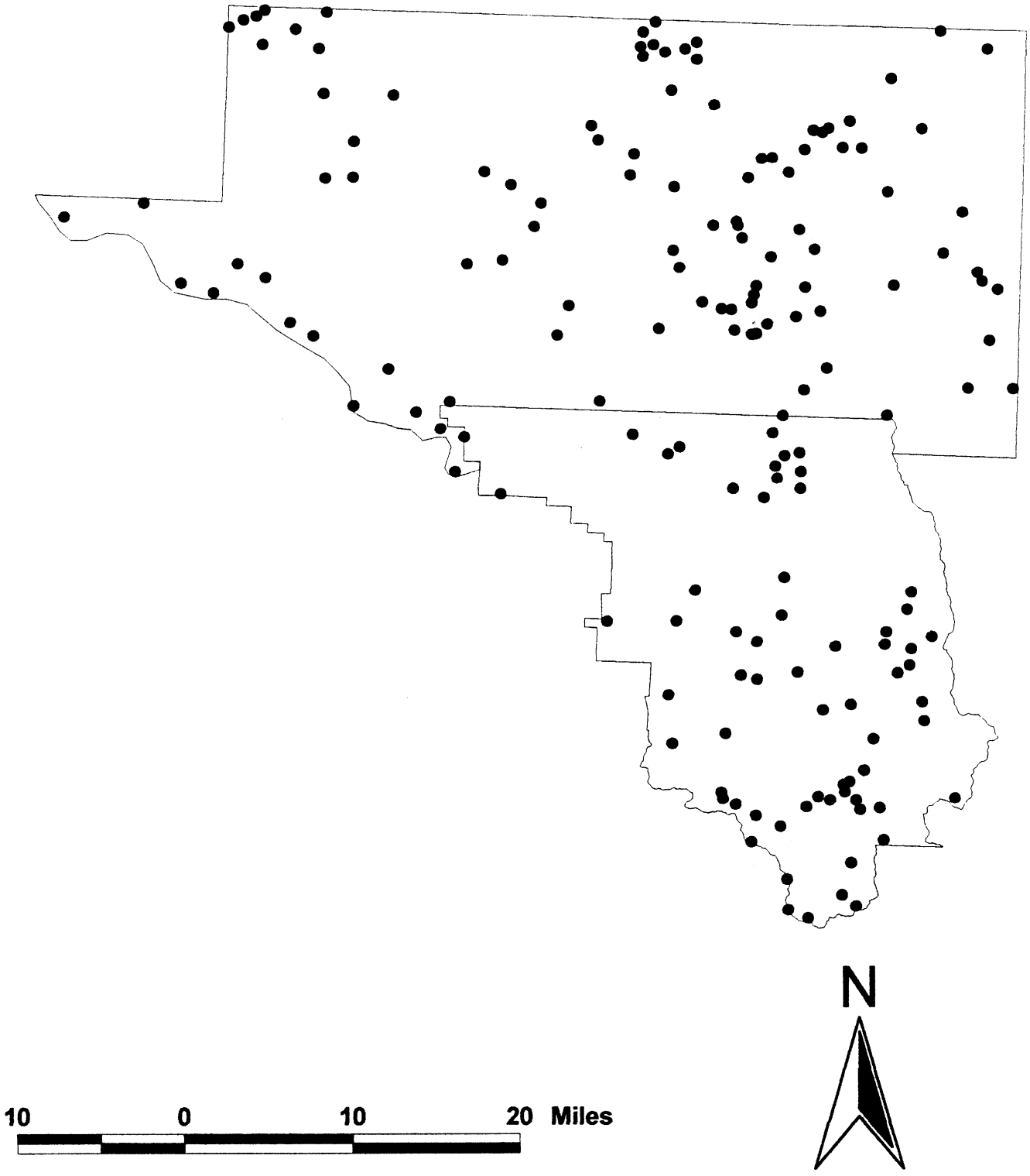

Table 5. Uncompahgre Basin Biological Assessment Targeted Inventory Areas

TIA number	TIA name
001	Kinikin Rd
003	Montrose-Nucla Rd at 6.5 mi.
004	Hanks
005	Bostwick Park Rd.
006	Water tower
007	Billy Creek 1
008	Pinyon Ridge
009	McKenzie Creek
010	Cimarron River
011	Cerro Summit
012	Heinz property and BLM
014	Menoken School
015	Doug Creek
016	North Mesa Comm. Hall
017	South Canal
018	Fairview North
019	LaSalle Road
020	Miguel Road
021	Peach Valley Dam NW
022	Selig Canal 3
023	Uncompahgre bicycle trail
024	Long Creek
025	Wacker Ranch
026	Traver Trail
027	7 N Road
028	Monitor Mesa
029	Willow Swamp
030	Ortman
032	Peach Valley South
033	Blue Lakes
034	Uncompahgre River at Olathe
036	Landfill road
045	Uncompahgre River at Portland
046	Uncompahgre River at railroad
047	South Canal 2
048	Beaver Dams Road
049	Peach Valley Dam NW
051	Selig Canal 3
052	Cottonwood Creek
054	Dry Cedar Creek 2
055	Fisher Ranch
056	Escalante Creek headwaters
057	Governor's Basin
058	Red Creek
059	Cow Creek 1
060	North Rim overlook
060	Wildhorse Basin
061	Chaffee Gulch
063	Double D Ranch
064	Dry Cedar Creek 1
066	Cedar Creek
067	RRL Cottonwood Cr.
068	Smokehouse Campground
069	Clear Creek
070	Darling Lake
071	Little Red Spring

TIA number	TIA name
073	Silesca
074	Winter Mesa
075	Ironstone Canal
076	Roubideau Creek
077	Escalante Canyon
079	Escalante Canyon
079	Escalante Canyon
080	Potter Springs
082	Bostwick Park
083	Serpent Point
085	Duncan Trail
086	Duncan Trail
087	Beaton Creek
088	Beaton Creek West
090	Love Mesa Rd.
092	Jade Road
095	Cimarron
096	Cimarron cemetary
097	Chasm View
098	Cedar Point
099	East Portal
100	High Point
101	Cimarron South
102	Spruce Tree Point
103	North Rim
104	Columbine Guard Station
106	Escalante Canyon
107	Uncompahgre
109	Red Mountain Pass
110	Trico Peak
112	Billy Creek upland
113	DOW gravel pit
114	Chief Ouray mine
115	Box Canyon
116	Engineer Pass Rd.
117	Cascade Falls
118	Cutler Creek
119	Canyon Creek
123	Colona Mt.
125	Kinikin Rd.
126	Chukar Trail
127	Dave Wood Rd.
128	Government Sprgs
129	Olathe pond
130	Hwy 347 and 50
133	Dallas Creek Confluence
134	Walchle Ranch
135	San Miguel Cty line
136	Uncompahgre Gorge
137	Green Mountain
139	Buckhorn powerline
140	Dry Cedar Creek
141	Morrow Point Res.
142	Pleasant Valley Cr.
143	Girl Scout Camp
144	Dry Creek
145	Cow Creek
148	Govt. Springs

TIA number	TIA name
149	Bostwick Park Rd. 2
150	Billy Creek West
153	Sunshine Rd.
154	South Canal-Cedar Creek
155	Cimarron SWA
156	Crawford Reservoir
157	Owl Creek
158	Love Mesa
159	Yankee Boy
160	Dexter Creek
161	Blue Lakes Pass
163	West Dallas Cr.
164	Bear Creek
165	Ice Park
166	Oben Creek
167	Oak Creek
168	Crystal Creek
169	Cottonwood Creek
170	The Narrows
171	Peach Valley N.
172	Duncan Trail
173	Poison Spring Gulch
174	Potter Basin
175	Shinn Park
176	Houston Park
177	Transfer Road
179	Roubideau Bench Trail
180	Buckhorn Lakes
181	7 N Mesa
182	Crystal Creek
183	Poison Spring Ridge
184	Cottonwood Creek
185	Nate Creek
186	Courthouse Creek
187	Flume Creek
188	Uncompahgre River at Ridgway
190	Rim Road
191	Dry Creek
192	Temple Park
193	Big Piney
194	Happy Canyon
195	Grizzly Gulch
196	Rim Road
197	Coalbank
198	Imogene Pass
199	Ironton Park wetlands
200	Uncompahgre Gorge
201	Red Mountain Number One
202	Corkscrew Gulch
203	Sneffels
204	Weehawken Tr.
205	Happy Canyon
206	Baldridge Park

Appendix II. The Natural Heritage Network and Biodiversity

Colorado is well known for its rich diversity of geography, wildlife, plants, and plant communities. However, like many other states, it is experiencing a loss of much of its flora and fauna. This decline in biodiversity is a global trend resulting from human population growth, land development, and subsequent habitat loss. Globally, the loss in species diversity has become so rapid and severe that it has been compared to the great natural catastrophes at the end of the Paleozoic and Mesozoic eras (QUOTE "Wilson 1988" Wilson 1988).

The need to address this loss in biodiversity has been recognized for decades in the scientific community. However, many conservation efforts made in this country have not been based upon preserving biodiversity; instead, they have primarily focused on preserving game animals, striking scenery, and locally favorite open spaces. To address the absence of a methodical, scientifically-based approach to preserving biodiversity, Robert Jenkins, in association with The Nature Conservancy, developed the Natural Heritage Methodology in 1978.

Recognizing that rare and imperiled species are more likely to become extinct than common ones, the Natural Heritage Methodology ranks species according to their rarity or degree of imperilment. The ranking system is scientifically based upon the number of known locations of the species as well as its biology and known threats. By ranking the relative rareness or imperilment of a species, the quality of its populations, and the importance of associated conservation sites, the methodology can facilitate the prioritization of conservation efforts so the most rare and imperiled species may be preserved first. As the scientific community began to realize that plant communities are equally important as individual species, this methodology has also been applied to ranking and preserving rare plant communities as well as the best examples of common communities.

The Natural Heritage Methodology is used by Natural Heritage Programs throughout North, Central, and South America, forming an international database network. Natural Heritage Network data centers are located in each of the 50 U.S. states, five provinces of Canada, and 13 countries in South and Central America and the Caribbean. This network enables scientists to monitor the status of species from a state, national, and global perspective. It also enables conservationists and natural resource managers to make informed, objective decisions in prioritizing and focusing conservation efforts.

What is Biological Diversity?

Protecting biological diversity has become an important management issue for many natural resource professionals. Biological diversity at its most basic level includes the full range of species on earth, from unicellular bacteria and protists, through multicellular plants, animals, and fungi. At finer levels of organization, biological diversity includes the genetic variation within species, both among geographically separated populations and among individuals within a single population. On a wider scale, diversity includes variations in the biological communities in which species live, the ecosystems in which communities exist, and the interactions among these levels. All levels are necessary for the continued survival of species and plant communities, and all are important for the well-being of humans. It stands to reason that biological diversity should be of concern to all people.

The biological diversity of an area can be described at four levels:

1. **Genetic Diversity** -- the genetic variation within a population and among populations of a plant or animal species. The genetic makeup of a species is variable between populations within its geographic range. Loss of a population results in a loss of genetic diversity for that species and a reduction of total biological diversity for the region. This unique genetic information cannot be reclaimed.

2. **Species Diversity** -- the total number and abundance of plant and animal species and subspecies in an area.

3. **Community Diversity** -- the variety of plant communities within an area that represent the range of species relationships and inter-dependence. These communities may be diagnostic or even endemic to an area. It is within communities that all life dwells.

4. **Landscape Diversity** -- the type, condition, pattern, and connectedness of plant communities. A landscape consisting of a mosaic of plant communities may contain one multifaceted ecosystem, such as a wetland ecosystem. A landscape also may contain several distinct ecosystems, such as a riparian corridor meandering through shortgrass prairie. Fragmentation of landscapes, loss of connections and migratory corridors, and loss of natural communities all result in a loss of biological diversity for a region. Humans and the results of their activities are integral parts of most landscapes.

The conservation of biological diversity must include all levels of diversity: genetic, species, community, and landscape. Each level is dependent on the other levels and inextricably linked. In addition, and all too often omitted, humans are also linked to all levels of this hierarchy. We at the Colorado Natural Heritage Program believe that a healthy natural environment and human environment go hand in hand, and that recognition of the most imperiled elements is an important step in comprehensive conservation planning.

Colorado's Natural Heritage Program

To place this document in context, it is useful to understand the history and functions of the Colorado Natural Heritage Program (CNHP).

CNHP is the state's primary comprehensive biological diversity data center, gathering information and field observations to help develop state-wide conservation priorities. After operating in Colorado for 14 years, the Program was relocated from the State Division of Parks and Outdoor Recreation to the University of Colorado Museum in 1992, and more recently to the College of Natural Resources at Colorado State University.

The multi-disciplinary team of scientists and information managers gathers comprehensive information on rare, threatened, and endangered species and significant plant communities of Colorado. Life history, status, and locational data are incorporated into a continually updated data system. Sources include published and unpublished literature, museum and herbaria labels, and field surveys conducted by knowledgeable naturalists, experts, agency personnel, and our own staff of botanists, ecologists, and zoologists. Information management staff carefully plot the Element Occurrence boundaries on 1:24,000 scale U.S.G.S. maps and enter it into the Biological and Conservation Data System (BCD). The data are also stored in a geographic information system (Arc/INFO and ArcView GIS). The Element Occurrence database can be accessed through a variety of attributes, including taxonomic group, global and state rarity rank, federal and state legal status, source, observation date, county, quadrangle map, watershed, management area, township, range, and section, precision, and conservation unit.

CNHP is part of an international network of conservation data centers that use the Biological and Conservation Data System (BCD) developed by The Nature Conservancy. CNHP has effective relationships with several state and federal agencies, including the Colorado Natural Areas Program, Colorado Department of Natural Resources and the Colorado Division of Wildlife, the U.S. Environmental Protection Agency, and the U.S. Forest Service. Numerous local governments and private entities also work closely with CNHP. Use of the data by many different individuals and organizations, including Great Outdoors Colorado, encourages a proactive approach to development and conservation thereby reducing the potential for conflict. Information collected by the Natural Heritage Programs around the globe provides a means to protect species before the need for legal endangerment status arises.

Concentrating on site-specific data for each element of natural diversity enables the evaluation of the significance of each location with respect to the conservation of natural biological diversity in Colorado and the nation. By using species imperilment ranks and quality ratings for each location, priorities can be established for the protection of the most sensitive or imperiled sites. A continually updated locational

database and priority-setting system such as that maintained by CNHP provides an effective, proactive land-planning tool.

The Natural Heritage Ranking System

Each of the plant and animal species and plant communities tracked by CNHP is considered an **element of natural diversity**, or simply an **element**. Each element is assigned a rank that indicates its relative degree of imperilment on a five-point scale (e.g., 1 = extremely rare/imperiled, 5 = abundant/secure). The primary criterion for ranking elements is the number of occurrences, i.e., the number of known distinct localities or populations. This factor is weighted more heavily because an element found in one place is more imperiled than something found in twenty-one places. Also considered in the ranking is the size of the geographic range, the number of individuals, trends in population and distribution, identifiable threats, and the number of already protected occurrences.

Element imperilment ranks are assigned both in terms of the element's degree of imperilment within Colorado (its State or S-rank) and the element's imperilment over its entire range (its Global or G-rank). Taken together, these two ranks give an instant picture of the degree of imperilment of an element. For example, the lynx, which is thought to be secure in northern North America but is known from less than 5 current locations in Colorado, is ranked G5S1. The Rocky Mountain Columbine which is known only from Colorado, from about 30 locations, is ranked a G3S3. Further, a tiger beetle that is only known from one location in the world at the Great Sand Dunes National Monument is ranked G1S1. CNHP actively collects, maps, and electronically processes specific occurrence information for elements considered extremely imperiled to vulnerable (S1 - S3). Those with a ranking of S3S4 are "watchlisted," meaning that specific occurrence data are collected and periodically analyzed to determine whether more active tracking is warranted. A complete description of each of the Natural Heritage ranks is provided in Table 1.

This single rank system works readily for all species except those that are migratory. Those animals that migrate may spend only a portion of their life cycles within the state. In these cases, it is necessary to distinguish between breeding, non-breeding, and resident species. As noted in Table 1, ranks followed by a "B", e.g., S1B, indicate that the rank applies only to the status of breeding occurrences. Similarly, ranks followed by an "N", e.g., S4N, refer to non-breeding status, typically during migration and winter. Elements without this notation are believed to be year-round residents within the state.

Legal Designations

Natural Heritage imperilment ranks are not legal designations and should not be interpreted as such. Although most species protected under state or federal endangered species laws are extremely rare, not all rare species receive legal protection. Legal status is designated by either the U.S. Fish and Wildlife Service under the Endangered Species Act or by the Colorado Division of Wildlife under Colorado Statutes 33-2-105 Article 2. In addition, the U.S. Forest Service recognizes some species as "Sensitive," as does the Bureau of Land Management. Table 2 defines the special status assigned by these agencies and provides a key to the abbreviations used by CNHP.

Please note that the U.S. Fish and Wildlife Service has issued a Notice of Review in the February 28, 1996 Federal Register for plants and animal species that are "candidates" for listing as endangered or threatened under the Endangered Species Act. The revised candidate list replaces an old system that listed many more species under three categories: Category 1 (C1), Category 2 (C2), and Category 3 (including 3A, 3B, 3C). Beginning with the February 28, 1996 notice, the Service will recognize as candidates for listing most species that would have been included in the former Category 1. This includes those species for which the Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act.

Candidate species listed in the February 28, 1996 Federal Register are indicated with a "C". While obsolete legal status codes (Category 2 and 3) are no longer used, CNHP will continue to maintain them in its Biological and Conservation Data system for reference.

Table 1. Definition of Colorado Natural Heritage Imperilment Ranks.

Global imperilment ranks are based on the range-wide status of a species. State imperilment ranks are based on the status of a species in an individual state. State and Global ranks are denoted, respectively, with an "S" or a "G" followed by a character. **These ranks should not be interpreted as legal**

G/S1	Critically imperiled globally/state because of rarity (5 or fewer occurrences in the world/state; or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction.
G/S2	Imperiled globally/state because of rarity (6 to 20 occurrences), or because of other factors demonstrably making it very vulnerable to extinction throughout its range.
G/S3	Vulnerable through its range or found locally in a restricted range (21 to 100 occurrences).
G/S4	Apparently secure globally/state, though it might be quite rare in parts of its range, especially at the periphery.
G/S5	Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
GX	Presumed extinct.
G#?	Indicates uncertainty about an assigned global rank.
G/SU	Unable to assign rank due to lack of available information.
GQ	Indicates uncertainty about taxonomic status.
G/SH	Historically known, but not verified for an extended period, usually.
G#T#	Trinomial rank (T) is used for subspecies or varieties. These species or subspecies are ranked on the same criteria as G1-G5.
S#B	Refers to the breeding season imperilment of elements that are not permanent residents.
S#N	Refers to the non-breeding season imperilment of elements that are not permanent residents. Where no consistent location can be discerned for migrants or non-breeding populations, a rank of SZN is used
SZ	Migrant whose occurrences are too irregular, transitory, and/or dispersed to be reliably identified, mapped, and protected.
SA	Accidental in the state.
SR	Reported to occur in the state, but unverified.
S?	Unranked. Some evidence that species may be imperiled, but awaiting formal rarity ranking.

Notes: Where two numbers appear in a state or global rank (e.g., S2S3), the actual rank of the element falls between the two numbers.
represents rank (1-5)

Table 2. Federal and State Agency Special Designations.

Federal Status:

1. U.S. Fish and Wildlife Service (58 Federal Register 51147, 1993) and (61 Federal Register 7598, 1996)

LE Endangered; species or subspecies formally listed as endangered.

E(S/A) Endangered due to similarity of appearance with listed species.

LT Threatened; species or subspecies formally listed as threatened.

P Proposed Endangered or Threatened; species or suabspecies formally proposed for listing as endangered or threatened.

C Candidate: species or subspecies for which the Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened.

2. U.S. Forest Service (Forest Service Manual 2670.5) (noted by the Forest Service as "S")

FS Sensitive: those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by:

a. Significant current or predicted downward trends in population numbers or density.

b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

3. Bureau of Land Management (BLM Manual 6840.06D) (noted by BLM as "S")

BLM Sensitive: those species found on public lands, designated by a State Director, that could easily become endangered or extinct in a state. The protection provided for sensitive species is the same as that provided for C (candidate) species.

State Status:

1. Colorado Division of Wildlife

E Endangered

T Threatened

SC Special Concern

Element Occurrence Ranking

Actual locations of elements, whether they be single organisms, populations, or plant communities, are referred to as element occurrences. The element occurrence is considered the most fundamental unit of conservation interest and is at the heart of the Natural Heritage Methodology. In order to prioritize element occurrences for a given species, an element occurrence rank (EO-Rank) is assigned according to the estimated viability or probability of persistence (whenever sufficient information is available). This ranking system is designed to indicate which occurrences are the healthiest and ecologically the most viable, thus focusing conservation efforts where they will be most successful. The EO-Rank is based on 3 factors:

Size – a quantitative measure of the area and/or abundance of an occurrence such as area of occupancy, population abundance, population density, or population fluctuation.

Condition – an integrated measure of the quality of biotic and abiotic factors, structures, and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components may include reproduction and health, development/maturity for communities, ecological processes, species composition and structure, and abiotic physical or chemical factors.

Landscape Context – an integrated measure of the quality of biotic and abiotic factors, and processes surrounding the occurrence, and the degree to which they affect the continued existence of the occurrence. Components may include landscape structure and extent, genetic connectivity, and condition of the surrounding landscape.

Each of these factors are rated on a scale of A through D, with A representing an excellent grade and D representing a poor grade. These grades are then averaged to determine an appropriate EO-Rank for the occurrence. If there is insufficient information available to rank an element occurrence, an EO-Rank is not assigned. Possible EO-Ranks and their appropriate definitions are as follows:

A Excellent estimated viability.
B Good estimated viability.
C Fair estimated viability.
D Poor estimated viability.
E **V**iability has not been assessed.
H Historically known, but not verified for an extended period of time.
X Extirpated

Proposed Conservation Areas

In order to successfully protect populations or occurrences, it is necessary to delineate conservation areas. These conservation areas focus on capturing the ecological processes that are necessary to support the continued existence of a particular element occurrence of natural heritage significance. Conservation areas may include a single occurrence of a rare element or a suite of rare element occurrences or significant features.

The goal of the process is to identify a land area that can provide the habitat and ecological processes upon which a particular element occurrence or suite of element occurrences depends for its continued existence. The best available knowledge of each species' life history is used in conjunction with information about topographic, geomorphic, and hydrologic features, vegetative cover, as well as current and potential land uses.

In developing Proposed Conservation Area boundaries, CNHP staff consider a number of factors that include, but are not limited to:

- the extent of current and potential habitat for the elements present, considering the ecological processes necessary to maintain or improve existing conditions;
- species movement and migration corridors;
- maintenance of surface water quality within the site and the surrounding watershed;
- maintenance of the hydrologic integrity of the groundwater, e.g., by protecting recharge zones;
- land intended to buffer the site against future changes in the use of surrounding lands;
- exclusion or control of invasive exotic species;
- land necessary for management or monitoring activities.

The proposed boundary does not automatically exclude all activity. It is hypothesized that some activities will prove degrading to the element or the process on which they depend, while others will not. Consideration of specific activities or land use changes proposed within or adjacent to the preliminary conservation planning boundary should be carefully considered and evaluated for their consequences to the element on which the conservation unit is based.

As the label "conservation planning" indicates, the boundaries presented here are for planning purposes. They delineate ecologically sensitive areas where land-use practices should be carefully planned and managed to ensure that they are compatible with protection goals for natural heritage resources and sensitive species. Please note that these boundaries are based primarily on our understanding of the ecological systems. A thorough analysis of the human context and potential stresses was not conducted. All land within the conservation planning boundary should be considered an integral part of a complex economic, social, and ecological landscape that requires wise land-use planning at all levels.

Off-Site Considerations

Furthermore, it is often the case that all relevant ecological processes cannot be contained within a Proposed Conservation Area of reasonable size. The boundaries illustrated in this report signify the immediate, and therefore most important, area in need of protection. Continued landscape level conservation efforts are needed. This will involve county-wide efforts as well as coordination and cooperation with private landowners, neighboring land planners, and state and federal agencies.

Ranking of Proposed Conservation Areas

Biodiversity Rank

One of the strongest ways that the CNHP uses element and element occurrence ranks is to assess the overall biodiversity significance of a site, which may include one or many element occurrences. If an element occurrence is unranked due to a lack of information the element occurrence rank is considered a C rank. Similarly, if an element is a GU or G? it is treated as a G4. Based on these ranks, each site is assigned a **biodiversity** (or B-) **rank**:

B1 Outstanding Significance: only site known for an element or an excellent occurrence of a G1 species.

B2 Very High Significance: one of the best examples of a community type, good occurrence of a G1 species, or excellent occurrence of a G2 or G3 species.

B3 High Significance: excellent example of any community type, good occurrence of a G3 species, or a large concentration of good occurrences of state rare species.

B4 Moderate or Regional Significance: good example of a community type, excellent or good occurrence of state-rare species.

B5 General or State-wide Biodiversity Significance: good or marginal occurrence of a community type, S1, or S2 species.

Protection Urgency Ranks

Protection urgency ranks (P-ranks) refer to the time frame in which conservation protection must occur. In most cases, this rank refers to the need for a major change of protective status (e.g., agency special area designations or ownership). The urgency for protection rating reflects the need to take legal, political, or other administrative measures to alleviate threats that are related to land ownership or designation. The following codes are used to indicate the rating which best describes the urgency to **protect** the area:

P1 Immediately threatened by severely destructive forces, within 1 year of rank date; protect now or never!
P2 Threat expected within 5 years.
P3 Definable threat but not in the next 5 years.
P4 No threat known for foreseeable future.
P5 Land protection complete or adequate reasons exists not to protect the site; do not act on this site.

A protection action involves increasing the current level of legal protection accorded one or more tracts of a potential conservation area. It may also include activities such as educational or public relations campaigns or collaborative planning efforts with public or private entities to minimize adverse impacts to element occurrences at a site. It does not include management actions, i.e., any action requiring stewardship intervention. Threats that may require a protection action are as follows:

1) Anthropogenic forces that threaten the existence of one or more element occurrences at a site; e.g., development that would destroy, degrade or seriously compromise the long-term viability of an element occurrence and timber, range, recreational, or hydrologic management that is incompatible with an element occurrence's existence;
2) The inability to undertake a management action in the absence of a protection action; e.g., obtaining a management agreement;
3) In extraordinary circumstances, a prospective change in ownership management that will make future protection actions more difficult.

Management Urgency Ranks

Management urgency ranks (M-ranks) indicate the time frame in which a change in management of the element or site must occur. Using best scientific estimates, this rank refers to the need for management in contrast to protection (e.g., increased fire frequency, decreased herbivory, weed control, etc.). The urgency for management rating focuses on land use management or land stewardship action required to maintain element occurrences at the potential conservation area.

A management action may include biological management (prescribed burning, removal of exotics, mowing, etc.) or people and site management (building barriers, rerouting trails, patrolling for collectors, hunters, or trespassers, etc.). Management action does not include legal, political, or administrative measures taken to protect a potential conservation area. The following codes are used to indicate the action needed to be taken at the area:

M1 Management action required immediately or element occurrences could be lost or irretrievably degraded within one year.
M2 New management action will be needed within 5 years to prevent the loss of element occurrences.
M3 New management action will be needed within 5 years to maintain current quality of element occurrences.
M4 Although not currently threatened, management may be needed in the future to maintain the current quality of element occurrences.
M5 No serious management needs known or anticipated at the site.

Methods

The methods for assessing and prioritizing conservation needs over a large area are necessarily diverse. This study follows a general method that the Colorado Natural Heritage Program has and continues to develop specifically for this purpose. The Uncompahgre Basin Biological Assessment was conducted in several steps summarized below.

Collect available information

CNHP databases were updated with information regarding the known locations of species and significant plant communities within the Uncompahgre Basin. A variety of information sources were searched for this information. The Colorado State University museums and herbarium were searched, as were plant and animal collections at the University of Colorado, Western State, Rocky Mountain Herbarium, and local private collections. Both general and specific literature sources were incorporated into CNHP databases as either locational information or as biological data pertaining to a species in general. Such information covers basic species and community biology including range, habitat, phenology (timing), food sources, and substrates. This information was entered into CNHP databases.

Identify rare or imperiled species and significant plant communities with potential to occur in the Uncompahgre Basin.

The information collected in the previous step was used to refine the potential element list and to refine our search areas. In general, species and plant communities that have been recorded from Montrose and Ouray counties, or from adjacent counties, are included in this list. Species or plant communities which prefer habitats that are not included in this study area were removed from the list.

The amount of effort given to the inventory for each of these elements was prioritized according to the element's rank. Globally rare (G1 - G3) elements were given highest priority, state rare elements were secondary.

Identify targeted inventory areas

Survey sites were chosen based on their likelihood of harboring rare or imperiled species or significant plant communities. Known locations were targeted, and additional potential areas were chosen using a variety of information sources, such as aerial photography. Precisely known element locations were always included so that they could be verified and updated. Many locations were not precisely known due to ambiguities in the original data. In such cases, survey sites for that element were chosen in likely areas in the general vicinity. Areas with potentially high natural values were chosen using aerial photographs, geology maps, vegetation surveys, personal recommendations from knowledgeable local residents, and numerous roadside surveys by our field scientists. Aerial photography is perhaps the most useful tool in this step of the process.

Using the biological information stored in the CNHP databases, these information sources were analyzed for sites that have the highest potential for supporting specific elements. General habitat types can be discerned from the aerial photographs, and those chosen for survey sites were those that appeared to be in the most natural condition. In general, this means those sites that are the largest, least fragmented, and relatively free of visible disturbances such as roads, trails, fences, quarries, etc.

The above information was used to delineate over 150 survey areas that were believed to have relatively high probability of harboring natural heritage resources. These areas vary in size from less than 10 to several thousand acres and include all major habitat types in the study area.

Roadside surveys were useful in further resolving the natural condition of these areas. The condition of grasslands is especially difficult to discern from aerial photographs, and a quick survey from the road can reveal such features as weed infestation or overgrazing.

Because of the overwhelming number of potential sites and limited resources, surveys for all elements were prioritized by the degree of imperilment. For example, all species with Natural Heritage ranks of G1-G3 were the primary target of our inventory efforts. Although species with lower Natural Heritage ranks were not the main focus of inventory efforts, many of these species occupy similar habitats as the targeted species, and were searched for and documented as they were encountered.

Contact Landowner

Obtaining permission to conduct surveys on private property was essential to this project. Once survey sites were chosen, land ownership of these areas was determined using records at the Montrose County and Ouray County assessors' offices. Landowners were then either contacted by phone or mail or in person. If landowners could not be contacted, or if permission to access the property was denied, this was recorded and the site was not visited. **Under no circumstances were properties surveyed without landowner permission.**

Conduct Field Surveys

Survey sites where access could be attained were visited at the appropriate time as dictated by the phenology of the individual elements. It is essential that surveys take place during a time when the targeted elements are detectable. For instance, breeding birds cannot be surveyed outside of the breeding season and plants are often not identifiable without flowers or fruit which are only present during certain times of the season.

The methods used in the surveys necessarily vary according to the elements that were being targeted. In most cases, the appropriate habitats were visually searched in a systematic fashion that would attempt to cover the area as thoroughly as possible in the given time. Some types of organisms require special techniques in order to capture and document their presence. These are summarized below:

Amphibians: visual or with aquatic nets
Mammals: Sherman live traps
Birds: visual or by song/call, evidence of breeding sought
Insects: aerial net, pit fall traps, moth lighting
Plant communities: visual, collect qualitative or quantitative composition data
Wetland plant communities: visual, collect qualitative or quantitative composition, soil, hydrological, function, and value data
Fishes: electroshocking, seining, barbless fly fishing, observation

When necessary and permitted, voucher specimens were collected and deposited in local university museums and herbaria.

When a rare species or significant natural community was discovered its precise location and known extent was recorded on 1:24,000 scale topographic maps. Other data recorded at each occurrence included numbers observed, breeding status, habitat description, disturbance features, observable threats, and potential protection and management needs. The overall significance of each occurrence, relative to others of the same element, was estimated by rating the quality (size, vigor, etc.) of the population or community, the condition or naturalness of the habitat, the long-term viability of the population or community, and the defensibility (ease or difficulty of protecting) of the occurrence. These factors are combined into an element occurrence rank, useful in refining conservation priorities. See the section on Natural Heritage Methodology for more about element occurrence ranking.

Delineate Proposed Conservation Site Boundaries

Finally, since the objective for this inventory is to prioritize specific areas for conservation efforts, proposed conservation planning boundaries were delineated. Such a boundary is an estimation of the minimum area needed to assure persistence of the element. Primarily, in order to insure the preservation of an element, the ecological processes that support that occurrence must be preserved. The preliminary conservation planning boundary is meant to include features on the surrounding landscape that provide these functions. Data collected in the field are essential to delineating such a boundary, but other sources of information such as aerial photography are also used. These boundaries are considered preliminary and additional information about the site or the element may call for alterations of the boundaries.

APPENDIX III.

Scientific names of plant and animal species mentioned by common name in the text, and other common species Ouray and eastern Montrose counties. (This list does not constitute a complete species list for the area.)

Actinea	*Hymenoxys acaulis* ssp. *ivesiana*
Adobe beardtongue	*Penstemon retrorsus*
Agassiz bluegrass	*Poa agassizensis*
Alder, thinleaf	*Alnus incana* ssp. *tenuifolia*
Alfalfa	*Medicago officinalis*
Alkali cordgrass	*Spartina gracilis*
Alkali muhly	*Muhlenbergia asperifolia*
Alkali sacaton	*Sporobolus aeroides*
Alpine avens	*Geum (Acomastylis) rossii*
Alpine sagebrush	*Artemisia scopulorum*
Alpine sandwort	*Lidia obtusiloba*
Alumroot, little-flower	*Heuchera parviflora*
Alyssum	*Alyssum* sp.
American bistort	*Bistorta bistortoides*
American mannagrass	*Glyceria grandis*
American peregrine falcon	*Falco peregrinus anatum*
American vetch	*Vicia americana*
Arnica, hairy	*Arnica mollis*
Arnica, heartleaf	*Arnica cordifolia*
Arrowleaf balsamroot	*Balsamorhiza saggitata*
Arrowleaf groundsel	*Senecio triangularis*
Aspen daisy	*Erigeron speciosus*
Aspen	*Populus tremuloides*
Aster, cluster	*Aster falcatus*
Bahia	*Platyschkuhria integrifolia*
Bald eagle	*Haliaeetus leucocephalus*
Baltic rush	*Juncus balticus*
Baneberry	*Actaea rubra*
Barley, meadow	*Hordeum brachyantherum*
Barren ground willow	*Salix brachycarpa*
Basin wildrye	*Elymus cinereus*
Beaked sedge	*Carex utriculata*
Beaked spikerush	*Eleocharis rostellata*
Beardtongue, adobe	*Penstemon retrorsus*
Bebb sedge	*Carex bebbii*
Big sagebrush	*Artemisia tridentata* ssp. *tridentata*
Bigelow's ragwort	*Ligularia bigelovii*
Bigelow's sagebrush	*Artemisia bigelovii*
Bindweed	*Convolvulus arvensis*
Birch, bog	*Betula glandulosa*
Birch, Western river	*Betula occidentalis*
Bitterbrush	*Purshia tridentata*
Bittercress	*Cardamine cordifolia*
Black Canyon gilia	*Gilia penstemonoides*
Black head daisy	*Erigeron melanocephalus*
Black sagebrush	*Artemisia nova*
Black swift	*Cypseloides niger*

Black-eyed susan	*Rudbeckia hirta*
Black-throated sparrow	*Amphispiza bilineata*
Bladderpod, good-neighbor	*Lesquerella vicina*
Blue gramma	*Bouteloua gracilis*
Blue spruce	P*icea pungens*
Blue wildrye	*Elymus glaucus*
Bluebells	*Mertensia ciliata*
Bluegrass, Agassiz	*Poa agassizensis*
Bluegrass, Kentucky	*Poa pratensis*
Bluegrass, Sandburg	*Poa secunda*
Bluejoint	*Calamagrostis canadensis*
Bog birch	*Betula glandulosa*
Boreal owl	*Aegolius funereus*
Boreal toad	*Bufo boreas*
Bottlebrush squirreltail	*Elymus elymoides*
Box elder	*Acer negundo*
Bracken fern	*Pteridium aquilinum*
Breadroot, large flowered	*Pediomelum megalanthum*
Brittle fern	*Cystopteris fragilis*
Broom snakeweed	*Gutierrezia sarothrae*
Bud sage	*Artemisia spinescens*
Buffaloberry, silver	*Shepherdia argentea*
Bulbous desert-parsley	*Cymopterus bulbosus*
Bull thistle	*Cirsium vulgare*
Bullfrog	*Rana catesbiana*
Bulrush, hardstem	*Scirpus acutus*
Bulrush, softstem	*Scirpus validus*
Bulrush, threesquare	*Scirpus pungens*
Burdock	*Arctium minus*
Buttercup	*Ranunculus* sp.
Butterweed groundsel	*Senecio serra*
Cactus, hedgehog	*Echinocereus triglochidiatus*
Cactus, prickly-pear	*Opuntia* sp.
Cactus, Uinta Basin hookless	*Sclerocactus glaucus*
Canada goldenrod	*Solidago canadensis*
Canada thistle	*Cirsium arvense*
Canada wildrye	*Elymus canadensis*
Canadian reedgras	*Calamagrostis canadensis*
Canadian violet	*Viola canadensis*
Canyon bog orchid	*Platanthera sparsiflora*
Cat's eye, long-flowered	*Cryptantha longiflora*
Cat's eye, Paradox	*Cryptantha paradoxa*
Cat's eye, roughseed	*Cryptantha flavoculata*
Cattail, narrowleaf	*Typha latifolia*
Chamaechaenactis scaposa	*Dwarf pincushion*
Cheatgrass	*Bromus tectorum*
Chiming bells	*Mertensia ciliata*
Chokecherry	*Prunus virginiana* var. *melanocarpa*
Cinquefoil, shrubby	*Potentilla fruticosa (Pentaphylloides floribunda)*
Clay-loving wild buckwheat	*Eriogonum pelinophilum*
Clematis, western white	*Clematis ligusticifolia*
Cliff fendlerbush	*Fendlera rupicola*
Clover, King's	*Trifolium kingii*
Clover, sweet	*Melilotus officinalis*

Clover, white	*Trifolium repens*
Cluster aster	*Aster falcatus*
Cockleburr, rough	*Xanthium strumarium*
Colorado bedstraw	*Galium coloradense*
Colorado columbine	*Aquilegia coerulea*
Colorado desert-parsley	*Lomatium concinnum*
Colorado Divide whitlow-grass	*Draba streptobrachia*
Colorado River cutthroat trout	*Oncorhynchus clarki pleuriticus*
Columbine, Colorado	*Aquilegia coerulea*
Columbine, Mancos	*Aquilegia micrantha*
Columbine, yellow	*Aquilegia micrantha*
Common juniper	*Juniperus communis*
Common marestail	*Hippuris vulgaris*
Common milkweed	*Asclepias speciosus*
Common plantain	*Plantago major*
Common reed	*Phragmites australis*
Common spikerush	*Eleocharis palustris*
Coneflower	*Rudbeckia* sp.
Cottonwood, narrowleaf	*Populus angustifolia*
Cottonwood, plains	*Populus deltoides* ssp. *wislizenii*
Cow parsnip	*Heracleum lanatum*
Cowbane	*Oxypolis fendleri*
Coyote willow	*Salix exigua*
Cranesbill	*Erodium cicutarium*
Crested wheatgrass	*Agropyron cristatum*
Cushion buckwheat	*Eriogonum ovalifolium*
Dandelion	*Taraxacum officinale*
Desert-parsley, Colorado	*Lomatium concinnum*
Different leaved groundsel	*Senecio dimorphophyllus*
Dogbane	*Apocynum cannabinum*
Dogwood, red-osier	*Cornus sericea*
Douglas fir	*Pseudotsuga menziesii*
Drummond's rockcress	*Arabis (Boechera) drummondii*
Drummond's willow	*Salix drummondiana*
Dwarf blueberry	*Vaccinium cespitosum*
Eagle, bald	*Haliaeetus leucocephalus*
Eagle, golden	*Aquila crysaetos*
Easter daisy	*Townsendia incana*
Eastwood's monkeyflower	*Mimulus eastwoodiae*
Elderberry	*Sambucus racemosa*
Elephantella	*Pedicularis groenlandica*
Elk sedge	*Carex geyeri*
Engelmann's spruce	*Picea engelmanii*
Evening primrose	*Oenothera caespitosa*
False hellebore	*Veratrum tenuifolium*
False solomonseal	*Maianthemum stellatum*
False strawberry	*Sibbaldia procumbens*
Featherleaf fleabane	*Erigeron pinnatisectus*
Fendler's ceanothus	*Ceanothus fendleri*
Fendler's spring-parsley	*Cymopterus fendleri*
Fendler's waterleaf	*Hydrophyllum fendleri*
Fescue, meadow	*Festuca pratensis*
Fescue, tall	*Festuca arundinacea*
Field mint	*Mentha arvensis*
Fir, Douglas	*Pseudotsuga menziesii*

Fir, subalpine	*Abies lasiocarpa*
Fir, white	*Abies concolor*
Fireweed	*Chamerion angustifolium*
Fleabane, rockslide	*Erigeron leiomeris*
Fleabane, tall	*Erigeron elatior*
Floating buttercup	*Ranunculus hyperboreas*
Foothill sagewort	*Artemisia ludoviciana*
Four-wing saltbush	*Atriplex canescens*
Fowl mannagrass	*Glyceria striata*
Foxtail muhly	*Muhlenbergia andina*
Fragrant bedstraw	*Galium triflorum*
Fremont barberry	*Berberis fremontii*
Fremont's cottonwood	*Populus deltoides* ssp. *wislizenii*
Fringed sage	*Artemisia frigida*
Galleta	*Hilaria jamesii*
Gambel's oak	*Quercus gambelii*
Gardner saltbush	*Atriplex gardneri*
Geranium, Richardson's	*Geranium richardsonii*
Giant angelica	*Angelica ampla*
Giant goldenrod	*Solidago gigantea*
Giant helleborine orchid	*Epipactis gigantea*
Giant reed	*Phragmites australis*
Giant wildrye	*Elymus cinereus*
Gilia, Black Canyon	*Gilia penstemonoides*
Gilia, skyrocket	*Ipomopsis aggregata*
Globemallow, scarlet	*Sphaeralcea coccinea*
Gmelin's buttercup	*Ranunculus gmelinii*
Golden banner	*Thermopsis montana*
Golden eagle	*Aquila crysaetos*
Goldeneye daisy	*Heliomeris multiflora*
Goldenrod, giant	*Solidago gigantea*
Goldenrod, rock	*Petradoria pumila*
Goldentop, western	*Euthamia occidentalis*
Goldenweed, thrift mock	*Stenotus armerioides*
Good-neighbor bladderpod	*Lesquerella vicina*
Goosefoot	*Chenopodium* sp.
Goshawk, northern	*Accipiter gentilis*
Grand Junction milkvetch	*Astragalus linifolius*
Gray aster	*Aster glaucodes*
Gray catbird	*Dumatella carolinensis*
Gray vireo	*Vireo vicinior*
Greasewood	*Sarcobatus vermiculatus*
Great blue heron	*Ardea herodias*
Groundsel	*Senecio* sp.
Groundsel, different leaved	*Senecio dimorphophyllus*
Groundsel, New Mexican	*Senecio neomexicana*
Groundsel, triangle-leaf	*Senecio triangularis*
Gumweed	*Grindelia squarrosa*
Gunnison sage grouse	*Centrocercus* Pop. 1
Hairgrass, tufted	*Deschampsia cespitosa*
Hairspine pricklypear	*Opuntia polyacantha*
Hairy arnica	*Arnica mollis*
Hairy golden aster	*Heterotheca villosa*
Halogeton	*Halogeton glomeratus*
Hanging garden sullivantia	*Sullivantia hapemannii var. purpusii*

Hardstem bulrush	*Scirpus acutus*
Hawthorn	*Crataegus* sp..
Heartleaf arnica	*Arnica cordifolia*
Hedgehog cactus	*Echinocereus triglochidiatus*
Helleborine orchid, giant	*Epipactis gigantea*
Heron, great blue	*Ardea herodias*
Hood's phlox	*Phlox hoodii*
Hooker's evening primrose	*Oenothera hookeri*
Hornwort	*Ceratophyllum demersum*
Horsetails	*Equisetum arvense*
Horseweed, Canadian	*Conyza canadensis*
Hound's tongue	*Cynoglossum officinale*
Hymenoxys, graylocks	*Hymenoxys grandiflora*
Hyssop, mountain giant	*Agastache pallidiflora*
Indian paintbrush	*Castilleja* sp.
Indian rice grass	*Oryzopsis hymenoides*
Inland saltgrass	*Distichlis spicata*
Intermediate wheatgrass	*Agropyron intermedium*
Jacob's ladder	*Polemonium pulcherrimum*
Jim Hill mustard	*Sisymbrium altissimum*
Juniper, common	*Juniperus communis*
Juniper, Rocky Mountain	*Juniperus (Sabina) scopulorum*
Juniper, Utah	*Juniperus (Sabina) osteosperma*
Kentucky bluegrass	*Poa pratensis*
King's clover	*Trifolium repens*
Knapweed, diffuse	*Acosta diffusa*
Knapweed, meadow	*Jacea pratensis*
Knapweed, Russian	*Acroptilon repens*
Knapweed, spotted	*Acosta maculosa*
Large flowered breadroot	*Pediomelum megalanthum*
Large-flowered globemallow	*Iliamna grandiflora*
Larkspur, tall	*Delphinium barbeyi*
Leafy spurge	*Euphorbia (Thithymalus) esula*
Leopard frog, northern	*Rana pipiens*
Licorice, wild	*Glycerrhiza lepidota*
Lipfern, Fendler's	*Cheilanthes fendleri*
Lipfern, slender	*Cheilanthes feei*
Little sunflower	*Helianthella quinquenervis*
Littleleaf mock orange	*Philadelphus microphyllus*
Loggerhead shrike	*Lanius ludovicianus*
Long-flower cat's-eye	*Cryptantha longiflora*
Longleaf phlox	*Phlox longifolia*
Lupine	*Lupinus* sp.
Lupine, silvery	*Lupinus argenteus*
Mahogany, mountain	*Cercocarpus montanus*
Male fern	*Dryopteris felix-mas*
Mancos columbine	*Aquilegia micrantha*
Many-lobed groundsel	*Senecio multilobatus*
Manzanita	*Arctostaphylos patula*
Maple, Rocky Mountain	*Acer glabrum*
Marestail, common	*Hippuris vulgaris*
Marsh marigold	*Caltha leptosepala*
Marsh wren	*Cistothorus palustris*
Mat penstemon	*Penstemon cespitosus*
Mat saltbush	*Atriplex corrugata*

Matted saxifrage	*Cilaria austromontana*
Matted saxifrage	*Cilaria austromontana (Saxifraga bronchialis* ssp. *austromontana)*
Meadowrue	*Thalictrum fendleri*
Milkvetch, Grand Junction	*Astragalus linifolius*
Milkvetch, San Rafael	*Astragalus rafaelensis*
Milkvetch, Wetherill	*Astragalus wetherillii*
Milkweed milkvetch	*Astragalus asclepiadoides*
Milkweed, showy	*Asclepias speciosa*
Milkweed, whorled	*Asclepias subverticillata*
Mock orange, littleleaf	*Philadelphus microphyllus*
Mojave seablight	*Suaeda torreyana (S. moquinii)*
Monkeyflower, Eastwood's	*Mimulus eastwoodiae*
Mormon tea	*Ephedra viridis or E. torreyana*
Moss campion	*Silene acaulis*
Mountain ash	*Sorbus scopulina*
Mountain big sagebrush	*Artemisia tridentata* ssp. *vaseyana*
Mountain lover	*Paxistima myrsinites*
Mountain mahogany	*Cercocarpus montanus*
Mountain thistle	*Cirsium scopulorum*
Mullein, wooly	*Verbascum thapsus*
Musk thistle	*Carduus nutans*
Muttongrass	*Poa fendleriana*
Narrowleaf burreed	*Sparganium emersum (=S. angustifolium)*
Narrowleaf cottonwood	*Populus angustifolia*
Nebraska sedge	*Carex nebraskensis*
Needle and thread	*Stipa comata*
Nettle-leaf giant hyssop	*Agastache urticifolia*
Nettles, stinging	*Urtica dioecia*
New Mexican cliff fern	*Woodsia neomexicana*
Nodding onion	*Allium cernuum*
Nokomis fritillary butterfly	*Speyeria nokomis nokomis*
Northern bedstraw	*Galium boreale*
Northern bog orchid	*Habenaria hyperborea*
Northern goshawk	*Accipiter gentilis*
Northern harrier	*Circus cyaneus*
Northern leopard frog	*Rana pipiens*
Northern sweetvetch	*Hedysarum boreale*
Northwest Territory sedge	*Carex utriculata*
Nuttall's sunflower	*Helianthus nuttallii*
Oak, Gambel's	*Quercus gambelii*
Oatgrass, Parry's	*Danthonia parryi*
Old man of the mountain	*Hymenoxys grandiflora*
Olive, Russian	*Eleagnus angustifolia*
Olive-sided flycatcher	*Contopus borealis*
One-sided wintergreen	*Orthilia secunda*
Oniongrass, Porter's	*Melica porteri*
Orange sneezeweed	*Dugaldia hoopsii*
Orchard grass	*Dactylis glomerata*
Oregon grape	*Mahonia repens*
Osha	*Ligusticum porteri*
Oxeye daisy	*Leucanthemum vulgare*
Pacific monardella	*Monardella odoratissima*
Paperflower	*Psilostrophe bakeri*
Paradox cats-eye	*Cryptantha paradoxa*
Parrot's beak	*Pedicularis racemosa*

Parry's oatgrass	*Danthonia parryi*
Parsley, wild mountain	*Pseudocymopterus montanus*
Penstemon, adobe	*Penstemon retrorsus*
Pepperweed	*Lepidium perfoliatum*
Peregrine falcon	*Falco peregrinus anatum*
Pictureleaf wintergreen	*Pyrola picta*
Pinyon pine	*Pinus edulis*
Plains cottonwood	*Populus deltoides* ssp. *wislizenii*
Planeleaf willow	*Salix planifolia*
Plantain, common	*Plantago major*
Poison aster	*Xylorhiza venusta*
Poison ivy	*Toxicodendron rydbergii*
Polypody, western	*Polypodium hesperium*
Pondweed	*Potamogeton foliosum*
Ponderosa pine	*Pinus ponderosa*
Porter's melica	*Melica porteri*
Prickly lettuce	*Lactuca serriola*
Pricklypear cactus, hairspine	*Opuntia polyacantha*
Prince's plume	*Stanleya pinnata*
Purple cliffbrake	*Pellaea atropurpurea*
Purple mustard	*Chorispora tenella*
Pussytoes	*Antennaria media*
Rabbitbrush	*Chrysothamnus* sp.
Rabbitbrush, low	*Chrysothamnus viscidiflorus*
Rabbitbrush, rubber	*Chrysothamnus nauseosus*
Rabbitbrush, spearleaf	*Chyrsothamnus linifolius*
Rabbitfoot grass	*Polypogon monspeliensis*
Ragwort, tall	*Senecio serra*
Raspberry	*Rubus idaeus*
Rattlesnake plantain	*Goodyera oblongifolia*
Red top	*Agrostis alba*
Red-osier dogwood	*Cornus stolonifera (Swida sericea)*
Reed canary grass	*Phalaris arundinacea*
Richardson's geranium	*Geranium richardsonii*
River birch	*Betula occidentalis*
Rock goldenrod	*Petradoria pumila*
Rock spirea	*Holodiscus dumosus*
Rockbrake, American	*Cryptogramma acrostichoides*
Rockslide fleabane	*Erigeron leiomeris*
Rocky Mountain juniper	*Juniperus scopulorum*
Rocky Mountain maple	*Acer glabrum*
Rocky Mountain thistle	*Cirsium perplexans*
Rocky Mountain willow	*Salix monticola*
Rose, wild	*Rosa woodsii*
Rough brickellbush	*Brickellia microphylla*
Rough cockleburr	*Xanthium strumarium*
Roughseed cat's-eye	*Cryptantha flavoculata*
Roundleaf wintergreen	*Pyrola rotundifolia*
Rubber rabbitbrush	*Chrysothamnus nauseosus*
Russet buffaloberry	*Shepherdia canadensis*
Russian knapweed	*Centaurea repens*
Russian olive	*Eleagnus angustifolia*
Russian thistle	*Salsola australis*
Sage grouse, Gunnison	*Centrocercus* Pop. 1

Sage sparrow	*Amphispiza bellii*
Sagebrush, big	*Artemisia tridentata* ssp. *tridentata*
Sagebrush, Bigelow's	*Artemisia bigelovii*
Sagebrush, black	*Artemisia nova*
Sagebrush, mountain big	*Artemisia tridentata* ssp. *vaseyana*
Sago pondweed	*Potamogeton pectinatus*
Salina wildrye	*Elymus salina*
Salsify	*Tragapogon dubius*
Salt cedar	*Tamarix ramosissima*
Saltbush, four-wing	*Atriplex canescens*
Saltbush, mat	*Atriplex corrugata*
Saltgrass, inland	*Distichlis spicata*
San Rafael milkvetch	*Astragalus rafaelensis*
Sand aster	*Chaetopappa ericoides*
Sand bar willow	*Salix exigua*
Sand dropseed	*Sporobolus cryptandrus*
Sand verbena	*Abronia elliptica*
Sandberg bluegrass	*Poa secunda*
Saxifrage, matted	*Cilaria austromontana (Saxifraga bronchialis* ssp. *austromontana)*
Scarlet globemallow	*Sphaeralcea coccinea*
Scorpionweed	*Phacelia crenulata*
Scouring rush	*Hippochaete hyemalis*
Sea-blight	*Suaeda torreyana*
Sedge, beaked	*Carex utriculata*
Sedge, elk	*Carex geyeri*
Sedge, Nebraska	*Carex nebraskensis*
Sedge, Northwest Territory	*Carex utriculata*
Sedge, smallwing	*Carex microptera*
Sedge, water	*Carex aquatilis*
Sedge, western	*Carex occidentalis*
Sedge, wooly	*Carex lanuginosa*
Seep monkeyflower	*Mimulus guttatus*
Seep willow	*Baccharis salicina*
Serviceberry, Utah	*Amelanchier utahensis*
Shadscale	*Atriplex confertifolia*
Shaggy fleabane	*Erigeron pumilus*
Sharpleaf twinpod	*Physaria acutifolia*
Showy goldeneye	*Heliomeris multiflora*
Showy milkweed	*Asclepias speciosa*
Showy whitlow-grass	*Draba spectabilis* var. *oxyloba*
Shrubby cinquefoil	*Potentilla fruticosa (Pentaphylloides floribunda)*
Siberian elm	*Ulmus pumilus*
Silver buffaloberry	*Shepherdia argentea*
Silvery lupine	*Lupinus argenteus*
Single leaf ash	*Fraxinus anomala*
Skunkbrush	*Rhus trilobata*
Skyrocket gilia	*Ipomopsis aggregata*
Small ricegrass	*Oryzopsis (Piptatherum) micrantha*
Smallflower tansyaster	*Machaeranthera parviflora*
Smallwing sedge	*Carex microptera*
Smooth aster	*Aster laevis*
Smooth brome	*Bromus inermis*
Snakeweed	*Gutierrezia sarothrae*
Sneezeweed, orange	*Dugaldia hoopsii*

Snowberry	*Symphoricarpos oreophilus*
Snowbrush ceanothus	*Ceanothus velutinus*
Softstem bulrush	*Scirpus validus*
Southern maidenhair fern	*Adiantum capillus-veneris*
Spanish bayonet	*Yucca harrimaniae*
Spearleaf buckwheat	*Eriogonum lonchocarpum*
Spearleaf rabbitbrush	*Chrysothamnus linifolius*
Spikerush, common	*Eleocharis palustris*
Spike trisetum	*Trisetum spicatum*
Spiny greasebush	*Forsellesia meionandra*
Spiny horsebrush	*Tetradymia spinosa*
Spirea, rock	*Holodiscus dumosus*
Spotted bat	*Euderma maculata*
Spruce, blue	P*icea pungens*
Spruce, Engelmann's	*Picea engelmanii*
Spruce-fir fleabane	*Erigeron eximius*
Squaw apple	*Peraphyllum ramosissimum*
Stemless townsendia	*Townsendia incana*
Stinging nettles	*Urtica gracilis*
Strapleaf willow	*Salix eriocephala* var. *ligulifolia*
Strawberry	*Fragaria virginiana or F. vesca*
Strawberry, false	*Sibbaldia procumbens*
Subalpine fir	*Abies lasiocarpa*
Sullivantia, hanging garden	*Sullivantia hapemannii* var. *purpusii*
Sunflower, common	*Helianthus annuus*
Sunflower, little	*Helianthella quinquenervis*
Sunflower, nuttall's	*Helianthus nuttallii*
Sweet cicely	*Osmorhiza depauperata*
Sweet clover	*Melilotus officinalis* or *M. alba*
Swordleaf rush	*Juncus ensifolius*
Tall fleabane	*Erigeron elatior*
Tall larkspur	*Delphinium barbeyi*
Tall ragwort	*Solidago canadensis*
Tamarisk	*Tamarix ramosissima*
Tansy mustard	*Descurainia incana*
Thickleaf whitlow-grass	*Draba crassa*
Thimbleberry	*Rubus parviflorus*
Thinleaf alder	*Alnus incana*
Thistle, Canada	*Cirsium arvense*
Thistle, musk	*Carduus nutans*
Thistle, Rocky Mountain	*Cirsium perplexans*
Thistle, Tracy's	*Cirsium tracyi*
Threesquare bulrush	*Scirpus pungens*
Thrift mock goldenweed	*Stenotus armerioides*
Thurber fescue	*Festuca thurberi*
Timothy, meadow	*Phleum arvense*
Toadflax, yellow	*Linaria vulgaris*
Torrey's rush	*Juncus torreyana*
Towering Jacob's ladder	*Polemonium foliosissimum*
Tracy's thistle	*Cirsium tracyi*
Triangle-leaf groundsel	*Senecio triangularis*
Trout, Colorado cutthroat	*Oncorhynchus clarki pleuriticus*
Tufted hairgrass	*Deschampsia cespitosa*
Tumble mustard	*Sisymbrium altissimum*

Tumblemustard, Westwater	*Thelypodiopsis elegans*
Turion duckweed	*Lemna turionifera*
Twin bladderpod	*Physaria acutifolia*
Twinberry honeysuckle	*Distegia (Lonicera) involucrata*
Twinberry honeysuckle	*Distegia (Lonicera) involucrata*
Twinflower	*Linnaea borealis*
Uinta Basin hookless cactus	*Sclerocactus glaucus*
Utah juniper	*Juniperus osteosperma*
Utah serviceberry	*Amelanchier utahensis*
Vireo, gray	*Vireo vicinior*
Water crowfoot	*Batrachium circinatum*
Water milfoil	*Myriophyllum sibericum*
Water parsnip	*Berula erecta*
Water sedge	*Carex aquatilis*
Water smartweed	*Polygonum amphibium*
Western goldentop	*Euthamia occidentalis*
Western polypody	*Polypodium hesperium*
Western river birch	*Betula occidentalis*
Western sedge	*Carex occidentalis*
Western sweetroot	*Osmorhiza occidentalis*
Western wheatgrass	*Pascopyrum smithii*
Western yellowbelly racer	*Coluber constrictor mormon*
Wetherill milkvetch	*Astragalus wetherillii*
Wheatgrass, annual	*Eremopyrum triticeum*
Wheatgrass, crested	*Agropyron cristatum*
Wheatgrass, western	*Pascopyrum smithii*
Whipple penstemon	*Penstemon whippleanus*
White fir	*Abies concolor*
White goosefoot	*Chenopodium album*
White peavine	*Lathyrus leucanthus*
White pine	*Pinus strobiformis*
White sweet clover	*Melilotus alba*
White tailed antelope squirrel	*Ammospermophilus leucurus pennipes*
White top	*Cardaria draba*
Whorled milkweed	*Asclepias subverticillata*
Whortleberry	*Vaccinium* sp.
Widewing spring-parsley	*Cymopterus purpurascens*
Wild hollyhock	*Iliamna grandiflora*
Wild mountain parsley	*Pseudocymopterus montanus*
Wild rose	*Rosa woodsii*
Wildrye, Canada	*Elymus canadensis*
Willow herb	*Epilobium* sp.
Willow, barren ground	*Salix brachycarpa*
Willow, coyote	*Salix exigua*
Willow, Drummond's	*Salix drummondiana*
Willow, planeleaf	*Salix planifolia*
Willow, Rocky Mountain	*Salix monticola*
Willow, strapleaf	*Salix eriocephala* var. *ligulifolia*
Winterfat	*Krascheninnikovia lanata*
Wolf currant	*Ribes wolfii*
Woody aster	*Xylorhiza venusta*
Wooly milkvetch	*Astragalus mollissimus*
Wooly sedge	*Carex lanuginosa*
Wyoming paintbrush	*Castilleja linariifolia*

Yarrow	*Achillea lanulosa*
Yellow columbine	*Aquilegia micrantha*
Yellow milkvetch	*Astragalus flavus*
Yellow sweet clover	*Melilotus officinalis*
Yellow toadflax	*Linaria vulgaris*
Yucca	*Yucca harrimaniae*