Great Sand Dunes
National Monument and Preserve
Vascular Plant Inventory

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I. Background
As part of its biological inventory program, the National Park Service (NPS) contracted the Colorado Natural Heritage Program (CNHP) in 2001-2002 to conduct a field inventory of vascular plants of Great Sand Dunes National Monument and Preserve (GRSA). In 2001 the Rocky Mountain Network of the NPS developed a study plan for biological inventories for parks in the Network. Although detailed botanical research had been conducted in GRSA by H.N. Dixon (1999) and others, additional research was needed, particularly regarding the distribution of high elevation, rare, and non-native plants. The Network in cooperation with CNHP submitted a Biological Inventory Study Plan to the NPS Inventory and Monitoring Program, which was approved. That Plan provides detailed information and guidance for biological inventories in all Rocky Mountain Network parks.

The checklist of vascular plants of Great Sand Dunes National Monument (Dixon 1999) was developed over a 30-year period from 1969-1999, and documents about 406 taxa that occur in the Monument. This is one of the most thorough botanical inventories in all of Colorado. Given the thoroughness of this inventory, the checklist is considered to be comprehensive for the Monument. Although, many of the species on the checklist are not represented in the GRSA Herbarium, many voucher specimens are housed at the Alamosa State College Herbarium (pers. comm. Dixon 2002).

On November 22, 2000, the boundaries of the Great Sand Dunes National Monument were expanded to include the Great Sand Dunes Preserve. The new boundaries encompass an additional 42,000 acres, a far greater elevation range, including six peaks over 13,000 feet, and additional habitats, including both alpine and sub-alpine areas. Many of the species in the Preserve are not included on the Monument checklist, nor are they represented in the Monument Herbarium.

There are four plant species documented as occurring in GRSA that are considered to be rare in Colorado (Colorado Natural Heritage Program 2002).

II. Objectives
• Compile and review existing botanical data for GRSA.
• Document additional occurrence and distribution information for vascular plants at GRSA.
• Objectively quantify inventory completeness for plants surveyed at GRSA.

III. Methods
CNHP staff worked with GRSA staff, particularly Fred Bunch, beginning in fall 2001, to plan and implement the project. This included scheduling site visits, permitting, compliance, and logistical assistance from park staff.
Our methods can be characterized as a standard floristic survey, following methods employed by Colorado botanists in numerous similar studies (e.g., Maley 1994, Clark 1996, Freeman 2000). The surveys were based on subjective searches of a representation of all habitats, with the intent that as many as possible previously undocumented species within the Monument would be located and identified.

In an effort to determine specific places to target for our research we referred to geology (ArcView coverage provided by Monument staff), soil (ArcView coverage provided by Monument staff), vegetation (ArcView coverage provided by Monument staff), and topographic (USGS 7.5 minute quadrangle) maps to look for areas in the Monument and Preserve that may support unusual habitats and therefore previously undocumented plants. In an effort to determine specific species to target for our research we referred to the master plant list for the Monument Herbarium (provided by Fred Bunch 2002), the University of Colorado Herbarium lists of plant species for Saguache and Alamosa counties (University of Colorado Museum 2002), the Colorado Natural Heritage Program lists of rare plant species for Saguache and Alamosa counties (Colorado Natural Heritage Program 2002), and the Colorado Department of Agriculture list of noxious weeds (Colorado Department of Agriculture 2000).

Field surveys were completed June 25-September 11, 2002. We subjectively searched areas and habitats distributing survey effort across the entire Preserve, with less effort given to the Monument area, as requested by GRSA staff. We carried a vouched plant species list for the Monument, and took voucher specimens when appropriate. A map showing all collection points is presented in Appendix 1.

We recorded hours spent surveying (as an estimate of survey effort) and survey locations and compared these data with survey results and the master species list to estimate survey completeness.

Species that were found to be new to the Monument Herbarium were entered into the National Park Service Standard Collection Spreadsheet and delivered to David Pillmore, NPS Inventory and Monitoring Computer Technician at David_Pillmore@nps.gov. Nomenclature follows that of Kartesz (1999) as modified by the PLANTS Database (USDA, NRCS 2002).

**IV. Results**

We spent a total of 20 person-days (approximately 116 person-hours plus travel time) surveying Great Sands Dunes National Monument and Preserve during June-September of 2002. We were able to identify many species in the field, and collected 196 specimens either because they required further verification, or because we believed that a voucher specimen had not been collected for the GRSA Herbarium.

We identified all of the specimens and verified 111 plant species from GRSA that had not previously been documented with voucher specimens at the GRSA Herbarium (Table 1). Two of the newly vouched taxa are considered to be rare in Colorado (*Draba smithii* (Smith's draba) and *Cryptantha cinerea* var. *pustulosa* (James catseye), Colorado Natural Heritage Program 2002). Although these taxa were previously known from the Monument and documented with specimens
at other herbaria, they were not included in the GRSA collection. Four of the taxa are not native to Colorado (Chenopodium album (lambsquarters), Euphorbia esula var. esula (leafy spurge), Bromus carinatus (mountain brome), and Bromus inermis (smooth brome, Weber and Wittmann 2001), and among these, one is included on the state list of noxious weeds, Euphorbia esula var. esula (leafy spurge, Colorado Department of Agriculture 2000).

Table 1. Plant species collected in Great Sand Dunes National Monument and Preserve (GRSA) by Spackman and Decker in 2002 that had not previously been documented with voucher specimens at the GRSA Herbarium. Species are listed in alphabetical order by family. Species listed in bold are rare in Colorado (Colorado Natural Heritage Program 2002). Species not native to Colorado are indicated under comments. Species that are also listed on the Monument checklist (Dixon 1999) are indicated with an asterisk preceding the Latin name. Nomenclature follows that of Kartesz (1999) as modified by the PLANTS Database (USDA, NRCS 2002). Where nomenclature differs from that of Weber and Wittmann (2001), the synonym is listed under comments.

<table>
<thead>
<tr>
<th>Family</th>
<th>Latin Name</th>
<th>Common Name</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Apiaceae</td>
<td><em>Angelica grayi</em> (Coult. &amp; Rose) Coult. &amp; Rose</td>
<td>Gray's angelica</td>
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<td>Family</td>
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<td>Weber and Wittmann 2001: <em>Oreocarya pustulosa</em> Rydberg</td>
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<td>Common Name</td>
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<td>Common Name</td>
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<td>Ranunculaceae</td>
<td>Aquilegia caerulea James</td>
<td>Colorado blue columbine</td>
<td>Weber and Wittmann 2001: Aquilegia caerulea James</td>
</tr>
<tr>
<td>Family</td>
<td>Latin Name</td>
<td>Common Name</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------</td>
<td>------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ranunculaceae</td>
<td><em>Caltha leptosepala</em> DC.</td>
<td>white marsh marigold</td>
<td>Weber and Wittmann 2001: <em>Psychrophylla leptosepala</em> (DC.) W.A. Weber</td>
</tr>
<tr>
<td>Ranunculaceae</td>
<td><em>Delphinium barbeyi</em> (Huth) Huth</td>
<td>Barbey larkspur, subalpine</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Thalictrum fendleri</em> Engelm. ex Gray</td>
<td>Fendler meadowrue</td>
<td></td>
</tr>
<tr>
<td>Rosaceae</td>
<td><em>Dryas octopetala</em> ssp. hookeriana (Juz.) Hultén</td>
<td>Hooker's mountain-avens</td>
<td></td>
</tr>
<tr>
<td>Rubiaceae</td>
<td><em>Galium triflorum</em> Michx.</td>
<td>fragrant bedstraw, sweet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bedstraw, sweetscented</td>
<td></td>
</tr>
<tr>
<td>Salicaceae</td>
<td><em>Salix brachycarpa</em> Nutt.</td>
<td>barrenground willow,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>shortfruit willow</td>
<td></td>
</tr>
<tr>
<td>Salicaceae</td>
<td><em>Salix nivalis</em> Hook.</td>
<td>snow willow</td>
<td></td>
</tr>
<tr>
<td>Salicaceae</td>
<td><em>Salix petrophila</em> Rydb.</td>
<td>alpine willow</td>
<td></td>
</tr>
<tr>
<td>Salicaceae</td>
<td><em>Salix planifolia</em> Pursh</td>
<td>diamondleaf willow,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>plainleaf willow, tea-leaf</td>
<td></td>
</tr>
<tr>
<td>Saxifragaceae</td>
<td><em>Saxifraga odontoloma</em> Piper</td>
<td>brook saxifrage, streambank</td>
<td>Weber and Wittmann 2001: <em>Micranthes odontoloma</em> (Piper) W.A. Weber</td>
</tr>
<tr>
<td>Scrophulariaceae</td>
<td><em>Castilleja haydenii</em> (Gray) Cockerell</td>
<td>Hayden's Indian paintbrush</td>
<td></td>
</tr>
<tr>
<td>Scrophulariaceae</td>
<td><em>Castilleja occidentalis</em> Torr.</td>
<td>western Indian paintbrush</td>
<td></td>
</tr>
<tr>
<td>Scrophulariaceae</td>
<td><em>Castilleja rhexifolia</em> Rydb.</td>
<td>rhexialaf paintbrush,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>splitleaflet Indian paintbrush</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>Latin Name</td>
<td>Common Name</td>
<td>Comments</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Scrophulariaceae</td>
<td><em>Pedicularis groenlandica</em> Retz.</td>
<td>bull elephant's-head,</td>
<td>bull elephant's-head,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>elephanthead lousewort</td>
<td>elephanthead lousewort</td>
</tr>
<tr>
<td>Scrophulariaceae</td>
<td><em>Pedicularis parryi</em> Gray</td>
<td>Parry cinchweed, Parry's lousewort</td>
<td>Parry cinchweed, Parry's lousewort</td>
</tr>
<tr>
<td>Scrophulariaceae</td>
<td><em>Penstemon hallii</em> Gray</td>
<td>Hall's beardtongue</td>
<td>Hall's beardtongue</td>
</tr>
<tr>
<td>Scrophulariaceae</td>
<td><em>Penstemon whippleanus</em> Gray</td>
<td>dark beardtongue, Whipple's penstemon</td>
<td>dark beardtongue, Whipple's penstemon</td>
</tr>
<tr>
<td>Scrophulariaceae</td>
<td><em>Veronica wormskjoldii</em> Roemer &amp; J.A. Schultes</td>
<td>American alpine speedwell</td>
<td>Weber and Wittmann 2001: <em>Veronica nutans</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bongard</td>
</tr>
</tbody>
</table>

Plant families with the most species new to the GRSA Herbarium included Asteraceae (17 new), Poaceae (16 new), Cyperaceae (10 new), Scrophulariaceae (8 new), and Ranunculaceae (6 new). These families are also some of the largest families for all of Colorado’s plants.

During the approximately 116 hours we spent surveying the vascular flora of GRSA, we attempted to divide our time evenly between different habitat types and elevations found in the Preserve area. However, given the difficulty of accessing the alpine and sub-alpine, we spent less time in these areas. Approximate time spent in each habitat and elevation range, and number of new species found is presented in Table 2. Although we spent less time at higher elevations, more species new to the GRSA Herbarium were found in the alpine and sub-alpine areas than the low elevations. The low elevation habitats have species compositions that are similar to the rest of the Monument that had been more thoroughly inventoried in the past (Dixon 1999).

A total of 128 specimens (including voucher specimens for the 111 species listed in Table 1) will be deposited at the Great Sand Dunes National Monument Herbarium. Copies of all of the specimen labels are presented in Appendix 2. These data are also tabulated in the NPS standard voucher specimen collection spreadsheet which includes the following information: Latin name, date of collection, observer, habitat, elevation, accession number, collection number, specimens location, collection location, and comments regarding taxonomic synonyms.
Table 2. Number of newly vouched plant species and hours spent at different habitats/elevations in Great Sand Dunes National Monument and Preserve.

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Approximate elevation</th>
<th>Time spent (estimate of survey effort)</th>
<th>Number of newly vouched plant species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montane: Pinyon-Juniper woodlands, Aspen groves, Shrublands, Riparian areas, Sand Dunes, Grasslands, Ruderal areas.</td>
<td>8,000-10,000 feet</td>
<td>50 hours</td>
<td>22 species (8 of these are listed on Dixon’s 1999 checklist)</td>
</tr>
<tr>
<td>Subalpine: Spruce-Fir forests, Riparian areas, Grasslands, Ruderal areas.</td>
<td>10,000-11,500 feet</td>
<td>38 hours</td>
<td>42 species (5 of these are listed on Dixon’s 1999 checklist)</td>
</tr>
<tr>
<td>Alpine: Cushion plant communities, Grasslands, Talus, Wetlands, Ruderal areas.</td>
<td>11,500-13,000 feet</td>
<td>28 hours</td>
<td>47 species (2 of these are listed on Dixon’s 1999 checklist)</td>
</tr>
</tbody>
</table>

V. Discussion
The spring and summer of 2002 brought one of the driest years on record for Colorado. The Monument was so dry that many plants were not flowering or sporulating when they usually would be during a non-drought year. It is likely that more species would be found in a non-drought year.

Regardless of the drought, the results of our 2002 inventory suggest that there are many more vascular plant species to document throughout the GRSA. In approximately 116 person hours we documented 111 plant species that were not previously represented at the GRSA Herbarium. Many of the newly documented taxa are extremely common in this part of Colorado such as *Picea engelmannii* (Engelmann spruce), *Arnica cordifolia* (heartleaf arnica), *Senecio triangularis* (arrowleaf groundsel), and *Carex aquatilis* (water sedge). Most of the newly vouched species were found at high elevations in the Preserve. Presumably, the plant species inventory completeness for GRSA decreases with increasing elevation. This is undoubtedly because the Preserve now includes alpine and sub-alpine habitats that were not found within the original Monument boundaries.

VI. Recommendations
An updated checklist for GRSA, including the newly established Preserve area, would benefit GRSA managers and provide visitors with a more complete list of all of the plants species known from the Monument and Preserve.
It is extremely likely that future surveys will find more plant species at GRSA. In particular, an intensive survey for rare species, such as *Astragalus bodinii* (Bodin's milkvetch), *Draba grayana* (Gray's draba), *D. fladnizensis* (arctic draba), and *Platanthera sparsiflora* var. *ensifolia* (canyon bog orchid), during a non-drought year could identify new species for the Monument. More intensive rare species surveys could also identify additional populations of rare plants already known from the Monument such as *Draba smithii* (Smith's draba, listed in Table 1), *Cryptantha cinerea* var. *pustulosa* (James catseye, listed in Table 1), *Cleome multicaulis* (slender spiderflower, included on the Monument checklist (Dixon 1999)) and *Woodsia neomexicana* (New Mexico Cliff Fern, specimen housed at the University of Colorado Herbarium (Colorado Natural Heritage Program 2002)).

In particular, further inventory work is recommended to verify the specific locations of *Woodsia neomexicana* (New Mexico cliff fern). This species was documented in the Monument in the Mosca Creek drainage in 1954 (Colorado Natural Heritage Program 2002, Appendix 3), but has not been observed there or at any other location in the Monument since that time. We observed two other fern species in the Mosca Creek drainage in 2002, but did not locate any of the New Mexico cliff fern. Again, this may be because of the severe drought conditions during 2002. *Potentilla ambiguens* (silkyleaf cinquefoil) is another rare species that warrants further inventory attention. This species was collected and identified by H.N. Dixon in 1984, but Dixon indicates that this record should probably be checked for accuracy (pers. comm. Dixon 2002).

To help assure the long-term protection of the biodiversity of GRSA, specific management for the protection of the locations that are known to support rare plant species would be an effective step. *Draba smithii* (Smith's draba) is a globally imperiled species that is only known from 16 locations in Colorado, and nowhere else in the world, which points of the significance of the two locations of this species at GRSA (Colorado Natural Heritage Program 2002, Appendix 3). *Cleome multicaulis* (slender spiderflower) is also globally rare, and is known from one location in GRSA (Colorado Natural Heritage Program 2002, Appendix 3). Although the slender spiderflower is also known from a fairly wide range continuing south into Mexico, the most vigorous populations known are found in the San Luis Valley of Colorado (Colorado Natural Heritage Program 2002). *Cryptantha cinerea* var. *pustulosa* (James catseye) is another rare species that is known from three locations at GRSA (Colorado Natural Heritage Program 2002, Appendix 3). This species is also known from New Mexico, Arizona, and Utah, but its status in the other states is not known. In Colorado, the James catseye is known from a total of four locations, and three of these are in the Great Sand Dunes National Monument. Monitoring the known populations of these species for any changes to the overall size, quality, and condition would help assure their long-term protection at GRSA.

Annual surveys targeting non-native invasive species would also be an important step toward protecting the natural resources of GRSA. Early detection of non-natives is one of the most cost effective and ecologically sensible defensive actions that land managers can take to manage and control weedy invaders (Colorado Department of Agriculture 2001). Numerous species that are not native to Colorado have been documented in GRSA (Dixon 1999, current study). Although all of these non-native species could present challenges, the following are of particular concern because they are known to be quite invasive and difficult to control: *Cirsium arvense* (Canada
thistle), *Convolvulus arvensis* (field bindweed), *Euphorbia esula* var. *esula* (leafy spurge), *Melilotus officinalis* (yellow sweetclover), and *Bromus tectorum* (cheatgrass) (Whitson et al. 2000, Colorado Department of Agriculture 2000). These and other potentially troublesome weeds would likely arrive via roadways into the Monument and Preserve, and would likely be carried by cars, horses, and human foot traffic. Several non-natives were noted just outside of GRSA on the east side of Medano Pass.

Finally, although the vascular flora of GRSA has now been fairly well documented, the nonvascular flora remains poorly understood. Nonvascular species, particularly lichens, are highly sensitive biological indicators of environmental change and quality (McCune et al. 1998, St. Clair 1999). Thus, an assessment of the species richness and distribution of lichens, mosses and liverworts would provide GRSA with a powerful tool for monitoring the biological integrity of the area by establishing a baseline for future assessment.

**CNHP Personnel**

Botany Team Leader, Susan Spackman Panjabi: principal investigator and coordination of vascular plant inventory

Ecologist, Karin Decker: assist with field research, plant identification, GIS analyses, and map production

Science Information Manager, Jill Handwerk: responsible for input of data, and data queries from CNHP databases

Database Manager, Alison Loar: maintenance of databases, quality assurance of data entered in from the project, technical assistance to the botanists

GIS Specialist, Amy Lavender: quality assurance of data entered in from the project, GIS analyses

Botany Volunteer, Marisa Bunning: responsible for data entry and herbarium label production.

**References**


Colorado Natural Heritage Program. 2002. Biological Conservation Database. Colorado State University, Fort Collins, CO.

Colorado Department of Agriculture. 2000. The State Noxious Weed List. The Colorado Noxious Weed Act, Title 35, Article 5.5, C.R.S.


Freeman, C.C. 2000. Floristic surveys of Cheyenne, Kiowa, Kit Carson, and Lincoln counties, Colorado. Natural History Museum and Biodiversity Research Center, University of Kansas, Lawrence, KS.


Appendix 1

Map showing collection locations of voucher specimens collected by Spackman and Decker in 2002.
Appendix 2

Specimen labels for voucher specimens deposited at the Great Sand Dunes National Monument Herbarium by Spackman and Decker 2002. Four species were not new to the GRSA Herbarium; therefore, they are not listed in Table 1.
Cryptantha cinerea

var. pustulosa (Rydb) Higgins

Great Sand Dunes National Park, Medano Pass Road, just south of where road drops into Medano Creek drainage. Growing in sand.

With: Chrysothamnus, Achnatherum hymenoides, Artemisia frigida, Opuntia, Yucca

Flower color: white

Elevation: 8368 ft.

USGS Quadrangle: Liberty

UTM: Zone 13, E0455904, N4179228, NAD 27

S. Spackman & K. Decker SS02-01 06/25/2002

Plants of Colorado
Saguache County

Pteridaceae
Det. by: S. Spackman

Argyrochosma fendleri (Kunze) Windham

Great Sand Dunes Preserve, Mosca Pass Trail, at upper junction of Mosca Pass Trail and Nature Trail - plants continue up trail for one mile or more. Growing on cliffs of metamorphic rocks, south facing.

With: Pinus edulis, Juniperus communis, Rosa woodsii, Chondrosum gracile, Populus tremuloides

Elevation: 8383 ft.

USGS Quadrangle: Zapata Ranch

UTM: Zone 13, E457504, N4176132, NAD 27

S. Spackman & K. Decker SS02-02 06/25/2002

Plants of Colorado
Saguache County

Asteraceae
Det. by: S. Spackman

Heliomeris multiflora Nuttall

Great Sand Dunes Preserve, Mosca Pass Trail.

USGS Quadrangle: Mosca Pass

S. Spackman & K. Decker SS02-03 06/25/2002

Plants of Colorado
Saguache County

Brassicaceae
Det. by: S. Spackman

Draba smithii Gilg ex O. E. Schulz

Great Sand Dunes Preserve, Mosca Pass Trail. About 60 clumps in late flower, early fruit, growing in rock cracks.

With: Jamesia americana, Rosa woodsii, Holodiscus dumosus.

USGS Quadrangle: Mosca Pass

UTM: Zone 13, E457090, N4175833, NAD 27

S. Spackman & K. Decker SS02-07 06/25/2002

Plants of Colorado
Saguache County

Pteridaceae
Det. by: S. Spackman

Gaillardia aristata Pursh

Great Sand Dune Preserve, Medano Pass Road, 3.9 road miles from preserve/park boundary. Growing along road, uncommon.

With: Populus tremuloides, Oxytropis, Penstemon, Gilia

Elevation: 9413 ft.

USGS Quadrangle: Medano Pass

UTM: Zone 13, E461083, N4187193, NAD 27

S. Spackman & K. Decker SS02-09 06/26/2002

Plants of Colorado
Saguache County

Asteraceae
Det. by: S. Spackman

Tetrapanax papyrifer (Siebold) Rehder

Great Sand Dunes Preserve. Growing in desert shrubland.

With: Abies lasiocarpa, Juniperus communis, Salix lasiolepis

Elevation: 7833 ft.

USGS Quadrangle: Medano Pass

UTM: Zone 13, E456104, N4175785, NAD 27

S. Spackman & K. Decker SS02-04 06/25/2002
Plants of Colorado
Saguache County
Asteraceae
Hymenoxys hoopesii (Gray) Bierner
Great Sand Dunes Preserve, Medano Pass Road, 4.6 miles from
With: Rosa, Geranium, Ribes.
Elevation: 9416
USGS Quadrangle: Medano Pass
UTM: Zone 13, E462082, N4187795, NAD 27
S. Spackman & K. Decker  SS02-11  06/26/2002
Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Ranunculacea
Aquilegia caerulea James
Great Sand Dunes Preserve, Medano Lake Trail, about 1 mile below Medano
With: Angelica grayi, Osmorhiza, Bistorta bistortoides, Delphinium barbeyi.
Elevation: 11051 ft.
USGS Quadrangle: Medano Pass
UTM: Zone 13, E458264, N4190432, NAD 27
S. Spackman & K. Decker  SS02-12.a  06/26/2002
Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Apiaceae
Angelica grayi Coulter & Rose
Great Sand Dunes Preserve, Medano Lake Trail, about 1 mile below Medano
Lake. Upper subalpine spruce-fir forest, common.
With: Aquilegia coerulea, Osmorhiza, Bistorta bistortoides, Delphinium barbeyi.
Elevation: 11051 ft.
USGS Quadrangle: Medano Pass
UTM: Zone 13, E458264, N4190432, NAD 27
S. Spackman & K. Decker  SS02-12.b  06/25/2002
Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Polygonaceae
Polygonum bistortoides Pursh
Great Sand Dunes Preserve, Medano Lake Trail, about 1 mile below Medano
With: Aquilegia coerulea, Angelica grayi, Delphinium barbeyi.
Elevation: 11051 ft.
USGS Quadrangle: Medano Pass
UTM: Zone 13, E458264, N4190432, NAD 27
S. Spackman & K. Decker  SS02-12.d  06/26/2002
Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Ranunculacea
Delphinium barbeyi (Huth) Huth
Great Sand Dunes Preserve, Medano Lake Trail, about 1 mile below Medano
Lake. Upper subalpine spruce-fir forest. Locally common.
With: Bistorta bistortoides, Angelica grayi, Aquilegia coerulea.
Elevation: 11051 ft.
USGS Quadrangle: Medano Pass
UTM: Zone 13, E458264, N4190432, NAD 27
S. Spackman & K. Decker  SS02-12.e  06/26/2002
Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Ranunculacea
Delphinium barbeyi (Huth) Huth
Great Sand Dunes Preserve, Medano Lake Trail, about 1 mile below Medano
Lake. Upper subalpine spruce-fir forest.
With: Bistorta bistortoides, Angelica grayi, Aquilegia coerulea.
Elevation: 11051 ft.
USGS Quadrangle: Medano Pass
UTM: Zone 13, E458264, N4190432, NAD 27
S. Spackman & K. Decker  SS02-12.e  06/26/2002
Colorado Natural Heritage Program
Plants of Colorado
Saguache County

**Juncaceae**
Det. by: S. Spackman

*Luzula parviflora* (Ehrhart) Desvaux
Great Sand Dunes Preserve, Medano Lake Trail. Riparian area within spruce-fir forest.
*With: Carex, Streptopus fasseltii, Cardamine cordifolia.*

Elevation: 11033 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458315, N4190583, NAD 27
S. Spackman & K. Decker SS02-13.b 06/26/2002

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Plants of Colorado
Saguache County

**Scrophulariaceae**
Det. by: S. Spackman

*Penstemon whippleanus* A. Gray
*With: Arnica, Stellaria, Juniperus communis, Fragaria, Vaccinium, Epilobium.*

Elevation: 10914 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458395, N4190789, NAD 27
S. Spackman & K. Decker SS02-14.a 06/26/2002

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Plants of Colorado
Saguache County

**Saxifragaceae**
Det. by: S. Spackman

*Saxifraga odontoloma* Piper
Great Sand Dunes Preserve, Medano Lake Trail. In spruce-fir forest along rivulet.
*With: Mimulus guttatus, Arnica cordifolia, Epilobium, Carex, Mertensia.*

Elevation: 10862 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458500, N4190843, NAD 27

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Plants of Colorado
Saguache County

**Apiaceae**
Det. by: S. Spackman

*Osmorhiza depauperata* Philippi
Great Sand Dunes Preserve, Medano Lake Trail, about 1 mile below Medano Lake. Upper supralpine spruce-fir forest. Common.
*With: Aquilegia coerula, Angelica grayi, Bistorta bistortoides.*

Elevation: 11051 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458264, N4190432, NAD 27
S. Spackman & K. Decker SS02-12.c 06/26/2002

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Plants of Colorado
Saguache County

**Asteraceae**
Det. by: S. Spackman

*Arnica mollis* Hooker
Great Sand Dunes Preserve, Medano Lake Trail. Spruce-fir forest.
*With: Juniperus communis, Epilobium, Erysimum, Fragaria, Vaccinium.*

Elevation: 10914 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458395, N4190789, NAD 27
S. Spackman & K. Decker SS02-14.b 06/26/2002

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Plants of Colorado
Saguache County

**Onagraceae**
Det. by: S. Spackman

*Epilobium hornemannii* Reichenbach
Great Sand Dunes Preserve, Medano Lake Trail. In spruce-fir forest along rivulet.
*With: Micranthes odontoloma, Arnica cordifolia, Mertensia.*

Elevation: 10862 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458500, N4190843, NAD 27
S. Spackman & K. Decker SS02-15.c 06/26/2002

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Colorado Natural Heritage Program
Plants of Colorado  
Saguache County  
**Asteraceae**  
*Arnica cordifolia* Hooker  
Great Sand Dunes Preserve, Medano Lake Trail. In spruce-fir forest.  
*With: Valeriana capitata*

Elevation: 10862  
USGS Quadrangle: Medano Pass  
UTM: Zone 13, E458900, N4190843, NAD 27  
S. Spackman SS02-15.e  
06/26/2002  

Colorado Natural Heritage Program

Plants of Colorado  
Saguache County  
**Gentianaceae**  
*Fraseria speciosa* Douglas ex Grisebach  
Great Sand Dune Preserve, Medano Lake Trail. Growing in open meadow on edge of spruce-fir forest.  
*With: Populus tremuloides, Geranium, Fragaria.*

Elevation: 10642 ft.  
USGS Quadrangle: Medano Pass  
UTM: Zone 13, E458990, N4190806, NAD 27  
S. Spackman & K. Decker SS02-16.d  
06/26/02

Colorado Natural Heritage Program

Plants of Colorado  
Saguache County  
**Asteraceae**  
*Antennaria umbrinella* Rydberg  
*With: Potentilla, Erysimum capitatum, Tetranurus brevifolia.*

Elevation: 11424 ft.  
USGS Quadrangle: Crestone Peak  
UTM: Zone 13, E455554, N4197925, NAD 27  
S. Spackman & K. Decker SS02-17.a  
06/27/2002

Colorado Natural Heritage Program

Plants of Colorado  
Saguache County  
**Brassicaceae**  
*Erysimum capitatum* (Douglas) Greene  
*With: Antennaria umbrinella, Potentilla, Erysimum brevifolia*.

Elevation: 11424 ft.  
USGS Quadrangle: Crestone Peak  
UTM: Zone 13, E455554, N4197925, NAD 27  
S. Spackman & K. Decker SS20-17.c  
06/27/2002

Colorado Natural Heritage Program

Plants of Colorado  
Saguache County  
**Poaceae**  
*Elymus scribneri* (Vasey) Jones  
*With: Antennaria umbrinella, Potentilla, Erysimum capitatum*.

Elevation: 11424 ft.  
USGS Quadrangle: Crestone Peak  
UTM: Zone 13, E455554, N4197925, NAD 27  
S. Spackman & K. Decker SS20-17.g  
06/27/2002

Colorado Natural Heritage Program
Plants of Colorado

Saguache County

Poaceae

*Poa glauca* M. Vahl

ssp. *rupicola* (Nash) W. A. Weber


With: *Antennaria umbrinella*, *Potentilla*, *Erysimum capitatum*.

Elevation: 11424 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E455554, N4197925, NAD 27
S. Spackman & K. Decker SS20-17.1 06/27/2002

Colorado Natural Heritage Program

Plants of Colorado

Saguache County

Asteraceae

*Erigeron pinnatisectus* (A. Gray) A. Nelson


With: *Poa glauca*, *Elymus scribneri*, *Erysimum capitatum*.

Elevation: 11424 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E455554, N4197925, NAD 27
S. Spackman & K. Decker SS20-17.1 06/27/2002

Colorado Natural Heritage Program

Plants of Colorado

Saguache County

Scrophulariaceae

*Pensetum hallii* A. Gray


With: *Poa glauca*, *Elymus scribneri*, *Erigeron pinnatisectus*.

Elevation: 11424 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E455554, N4197925, NAD 27
S. Spackman & K. Decker SS20-17.m 06/27/2002

Colorado Natural Heritage Program

Plants of Colorado

Saguache County

Hydrophyllaceae

*Phacelia sericea* (R. Graham) A. Gray


With: *Elymus scribneri*, *Erigeron pinnatisectus*, *Pensetum hallii*.

Elevation: 11424 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E455554, N4197925, NAD 27
S. Spackman & K. Decker SS20-17.n 06/27/2002

Colorado Natural Heritage Program

Plants of Colorado

Saguache County

Grossulariaceae

*Ribes montigenum* McClatchie


With: *Eriogonum flavum*.

Elevation: 11461 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E455535, N4198004, NAD 27
S. Spackman & K. Decker SS20-18.a 06/27/2002

Colorado Natural Heritage Program

Plants of Colorado

Saguache County

Polygonaceae

*Eriogonum flavum* Nutt.


With: *Ribes montigenum*.

Elevation: 11461 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E455535, N4198004, NAD 27
S. Spackman & K. Decker SS02-18.b 06/27/2002

Colorado Natural Heritage Program
**Plants of Colorado**

**Saguache County**

Saxifragaceae

*Saxifraga bronchialis*

ssp. austromontana (Wieg.) Piper


*With: Eriogonum jamesii, Ribes montigenum.*

Elevation: 11461 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E45535, N4198004, NAD 27

**Colorado Natural Heritage Program**

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**Plants of Colorado**

**Saguache County**

Scrophulariaceae

*Pedicularis parryi* A. Gray


*With: Castilleja occidentalis.*

Elevation: 11423 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E455598, N4197862, NAD 27

**Colorado Natural Heritage Program**

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**Plants of Colorado**

**Saguache County**

Ranunculaceae

*Aconitum columbianum* Nuttall ex Torrey & Gray

Great Sand Dunes Preserve, above Lower Sand Creek Lake, NW of Lake on SE facing slope. In upper subalpine forest of Engelmann Spruce. Common where wet.

*With: Veronica nutans, Bistort bistortoides, Luzula parviflora, Potentilla, Arnica.*

Flower color: purple

Elevation: 11605 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453064, N4198217, NAD 27
S. Spackman & K. Decker SS02-20.c 07/09/2002

**Colorado Natural Heritage Program**

---

**Plants of Colorado**

**Saguache County**

Scrophulariaceae

*Veronica wormskjoldii* Roemer & J. A. Schultes

Great Sand Dunes Preserve, above Lower Sand Creek Lake, NW of Lake on SE facing slope. In upper subalpine forest of Engelmann Spruce. Very common.

*With: Aconitum columbianum, Bistort bistortoides, Luzula parviflora, Potentilla, Arnica, Erigeron, Veratrum.*

Flower color: purple

Elevation: 11605 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453064, N4198217, NAD 27

**Colorado Natural Heritage Program**
Plants of Colorado
Saguache County

Pteridaceae
Cryptogramma acrostichoides R. Brown

*With: Senecio atratus, Vaccinium, Arnica, Campanula.*

Elevation: 11716 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453138, N4198379, NAD 27
S. Spackman & K. Decker SS02-21.a 07/09/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Asteraceae
Senecio atratus Greene

*With: Vaccinium, Arnica, Campanula.*
Flower color: Yellow
Elevation: 11716 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453138, N4198379, NAD 27

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Liliaceae
Zigadenus elegans
*ssp. elegans* Pursh

Great Sand Dunes Preserve, steep slope northwest of Lower Sand Creek Lake, SE facing slope. Common.
*With: Sambucus, Ribes, Frasera speciosa, Pentaphylloides floribunda.*
Flower color: White
Elevation: 11813 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453206, N4198437, NAD 27
S. Spackman & K. Decker SS02-22 07/09/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Liliaceae
Allium geyeri S. Watson

Great Sand Dunes Preserve, on ridge between Upper and Lower Sand Creek Lakes. Growing in dry alpine meadow with native graminoids. Common.
*With: Erigeron pinnatisectus, Pedicularis.*
Flower color: Pink
Elevation: 12144 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453162, N4198595, NAD 27
S. Spackman & K. Decker SS02-23.a 07/09/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Scrophulariaceae
Castilleja haydenii (A. Gray) Cockerell

Great Sand Dunes Preserve, on ridge between Upper and Lower Sand Creek Lakes. Growing in dry alpine meadow with native graminoids. Common.
*With: Allium geyeri, Erigeron pinnatisectus, Pedicularis.*
Flower color: Magenta
Elevation: 12144 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453162, N4198595
S. Spackman & K. Decker SS02-23.b 07/09/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Fabaceae
Trifolium dasyphyllum Torrey & Gray

Great Sand Dunes Preserve, on ridge between Upper and Lower Sand Creek Lakes. Growing in dry alpine meadow with native graminoids. Common.
*With: Allium geyeri, Castilleja haydenii, Hymenoxis grandiflora, Erigeron pinnatisectus, Pedicularis.*
Elevation: 12144 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453162, N4198595, NAD 27
S. Spackman & K. Decker SS02-23.e 07/09/2002

Colorado Natural Heritage Program
Plants of Colorado
Saguache County
Scrophulariaceae
*Pedicularis groenlandica* Retzius

Great Sand Dunes Preserve, Sangre de Cristo Mountains, northwest of Lower Sand Creek Lake. Wetland shelf in subalpine Engelmann Spruce forest.
*With: Clementzia rhodantha, Psychrophila leptosepala, Senecio triangularis.*

Elevation: 11500 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452708, N4198650, NAD 27
S. Spackman & K. Decker  SS02-25.a  07/09/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Crassulaceae
*Rhodiola rhodantha* (A. Gray) Rose

Great Sand Dunes Preserve, Sangre de Cristo Mountains, northwest of Lower Sand Creek Lake. Wetland shelf in subalpine Engelmann Spruce forest.
*With: Psychrophila leptosepala, Senecio triangularis.*
Flower color: Pink

Elevation: 11500 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452708, N4198650, NAD 27
S. Spackman & K. Decker  SS02-25.b  07/09/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Ranunculaceae
*Caltha leptosepala* DC.

Great Sand Dunes Preserve, Sangre de Cristo Mountains, northwest of Lower Sand Creek Lake. Wetland shelf in subalpine Engelmann Spruce forest.
*With: Clementzia rhodantha, Senecio triangularis, Pedicularis groenlandica.*

Elevation: 11500 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452708, N4198650, NAD 27
S. Spackman & K. Decker  SS02-25.c  07/09/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Asteraceae
*Senecio triangularis* Hooker

Great Sand Dunes Preserve, Sangre de Cristo Mountains, northwest of Lower Sand Creek Lake. Wetland shelf in subalpine Engelmann Spruce forest.
*With: Clementzia rhodantha, Caltha leptosepala, Pedicularis groenlandica.*
Flower color: Pink

Elevation: 11500 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452708, N4198650, NAD 27

Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Polygonaceae
*Polemonium pulcherrimum* Hooker

ssp. delicatum (Rydberg) Brand
Great Sand Dunes Preserve, Sangre de Cristo Mountains, along trail to Lower Sand Creek Lake. Subalpine spruce-fir forest.
*With: Ligularia, Moneses uniflora.*

Elevation: 11400 ft.
USGS Quadrangle: Crestone Peak


Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Pyrolaceae
*Moneses uniflora* (L.) A. Gray

Great Sand Dunes Preserve, Sangre de Cristo Mountains, along trail to Lower Sand Creek Lake. Subalpine spruce-fir forest.
*With: Ligularia, Polemonium pulcherrimum.*

Elevation: 11400 ft.
USGS Quadrangle: Crestone Peak

S. Spackman & K. Decker  SS02-26.c  07/09/2002

Colorado Natural Heritage Program
Plants of Colorado  
Saguache County  
Scrophulariaceae  
Det. by: S. Spackman  
Veronica wormskjoldii Roemer & J. A. Schultes  
Great Sand Dunes Preserve, Medano lake Trail, about 1 mile below Medano Lake. Upper subalpine spruce-fir forest. Uncommon  
With: Delphinium barbeyi, Hydrophyllum fendleri, Castilleja rhexifolia.  
Flower color: purple  
Elevation: 11051  
USGS Quadrangle: Medano Pass  
UTM: Zone 13, E458264, N4190432, NAD 27  
S. Spackman & K. Decker  
06/26/02

Plants of Colorado  
Saguache County  
Cyperaceae  
Carex bella L. H. Bailey  
Great Sand Dunes Preserve, Medano Lake Trail. Riparian area within spruce-fir forest.  
With: Luzula parviflora, Streptopus fassettii, Cardamine cordifolia  
Elevation: 11033 ft.  
USGS Quadrangle: Medano Pass  
UTM: Zone 13, E458315, N4190583, NAD 27  
S. Spackman & K. Decker  
06/26/02

Plants of Colorado  
Saguache County  
Liaceae  
Streptopus amplexifolius  
var. chalazatus Fassett  
Great Sand Dunes Preserve, Medano Lake Trail. Riparian area within spruce-fir forest.  
With: Luzula parviflora, Cardamine cordifolia, Carex bella.  
Elevation: 11033 ft.  
USGS Quadrangle: Medano Pass  
UTM: Zone 13, E458315, N4190583, NAD 27  
S. Spackman & K. Decker  
06/26/2002

Plants of Colorado  
Saguache County  
Juncaceae  
Juncus mertensianus Bongard  
Great Sand Dunes Preserve, Medano Lake Trail. Growing in spruce-fir forest along rivulet.  
With: Micranthes odontoloma, Epilobium homemnii, Amica cordifolia, Mertensia.  
Elevation: 10862  
USGS Quadrangle: Medano Pass  
UTM: Zone 13, E458500, N4190843, NAD 27  
S. Spackman  
06/26/02

Plants of Colorado  
Saguache County  
Poaceae  
Bromus inermis  
var. pumellianus (Scribn.) C. L. Hitchc.  
Great Sand Dune Preserve, Medano Lake Trail. Growing in open meadow on edge of spruce-fir forest.  
With: Frasera speciosa, Potentilla, Populus tremuloides, Geranium, Fragaria.  
Elevation: 10642 ft.  
USGS Quadrangle: Medano Pass  
UTM: Zone 13, E458990, N4190806, NAD 27  
S. Spackman & K. Decker  
06/26/02

Plants of Colorado  
Saguache County  
Fabaceae  
Astragalus alpinus L.  
Great Sand Dune Preserve, Medano Lake Trail. Growing in open meadow on edge of spruce-fir forest.  
With: Frasera speciosa, Potentilla, Populus tremuloides, Geranium, Fragaria.  
Elevation: 10642 ft.  
USGS Quadrangle: Medano Pass  
UTM: Zone 13, E458990, N4190806, NAD 27  
S. Spackman & K. Decker  
06/26/02
Plants of Colorado
Saguache County

Poaceae
Det. by: S. Spackman

*Trisetum spicatum* (L.) Richter
*With: Antennaria umbrinella, Potentilla, Erysimum capitatum.*

Elevation: 11424 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E455554, N4197925, NAD 27
S. Spackman & K. Decker SS20-17.e 06/27/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Rosaceae
Det. by: S. Spackman

*Dryas octopetala*

Elevation: 12273 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E456707, N4189788
S. Spackman & K. Decker SS02-27.a 07/11/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Rosaceae
Det. by: S. Spackman

*Deschampsia cespitosa* (L.) P. Beauvois
Great Sand Dunes Preserve, Sangre de Cristo Mountains, flat area just below (to east) of saddle (elev. 12,500) due west of Medano Lake. Dry, rocky alpine meadow. Local in drainage area.
*With: Poa arctica, Dryas octopetala, Acomastylis rossii.*

Elevation: 12273 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E456707, N4189788

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Cyperaceae
Det. by: S. Spackman

*Carex nova* Bailey
Great Sand Dunes Preserve, Sangre de Cristo Mountains, flat area just below (to east) of saddle (elev. 12,500) due west of Medano Lake. Dry, rocky alpine meadow. Local in drainage area.
*With: Poa arctica, Dryas octopetala, Deschampsia cespitosa.*

Elevation: 12273 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E456707, N4189788
S. Spackman & K. Decker SS02-27.e 07/11/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Gentianaceae
Det. by: S. Spackman

*Sweeia perennis* L.
Great Sand Dunes Preserve, Sangre de Cristo Mountains, west shore of Medano Lake. Common.
*With: Salix planifolia, Juncus mertensianus, Dodecatheon, Pedicularis groenlandica, Clementsia.*
Flower color: purple
Elevation: 11520 ft.
USGS Quadrangle: Medano Pass

S. Spackman & K. Decker SS02-29.a 07/11/2002

Colorado Natural Heritage Program
Plants of Colorado
Saguache County

Salicaceae

Salix planifolia Pursh
Great Sand Dunes Preserve, Sangre de Cristo Mountains, west shore of Medano Lake. Common.  
With: Salix brachycarpa, Swertia perennis, Juncus mertensianus, Dodecatheon, Pedicularis groenlandica, Clematis.

Elevation: 11520 ft.  
USGS Quadrangle: Medano Pass

S. Spackman & K. Decker SS02-29.b 07/11/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Juncaceae

Juncus mertensianus Bongard
Great Sand Dunes Preserve, Sangre de Cristo Mountains, west shore of Medano Lake. Common.  
With: Salix brachycarpa, Salix planifolia, Swertia perennis, Dodecatheon, Pedicularis groenlandica, Clematis.

Elevation: 11520 ft.  
USGS Quadrangle: Medano Pass

S. Spackman & K. Decker SS02-29.c 07/11/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Salicaceae

Salix brachycarpa Nuttall
Great Sand Dunes Preserve, Sangre de Cristo Mountains, west shore of Medano Lake. Common.  
With: Juncus mertensianus, Salix planifolia, Swertia perennis, Dodecatheon, Pedicularis groenlandica, Clematis.

Elevation: 11520 ft.  
USGS Quadrangle: Medano Pass

S. Spackman & K. Decker SS02-29.d 07/11/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Poaceae

Phleum alpinum L.
Great Sand Dunes Preserve, Sangre de Cristo Mountains, on ridge between upper and lower Sand Creek Lakes, between 12,200 and 12,579 ft.. Alpine meadow with native graminoids.
With: Penstemon, Solidago, Poa.

USGS Quadrangle: Crestone Peak


Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Poaceae

Trisetum spicatum (L.) Richter
Great Sand Dunes Preserve, Sangre de Cristo Mountains, on ridge between upper and lower Sand Creek Lakes, between 12,200 and 12,579 ft.. Alpine meadow with native graminoids.
With: Penstemon, Solidago, Poa.

USGS Quadrangle: Crestone Peak


Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Polemoniaceae

Phlox condensata (A. Gray) E. Nelson
Great Sand Dunes Preserve, Sangre de Cristo Mountains, on ridge between upper and lower Sand Creek Lakes, between 12,200 and 12,579 ft.. Alpine meadow with native graminoids.
With: Penstemon, Solidago, Poa.

USGS Quadrangle: Crestone Peak


Colorado Natural Heritage Program
**Plants of Colorado**

**Saguache County**

**Caryophyllaceae**

*Silene acaulis* var. *subacaulescens* (F. N. Williams) Fern & St. John

Great Sand Dunes Preserve, Sangre de Cristo Mountains, on ridge between upper and lower Sand Creek Lakes, between 12,200 and 12,579 ft. Alpine meadow with native graminoids, mat-forming growth form.

*With:* Penstemon, Solidago, Poa.

Flower color: purple

USGS Quadrangle: Crestone Peak


**Colorado Natural Heritage Program**

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**Plants of Colorado**

**Saguache County**

**Poaceae**

*Polemoniaceae*

*Polemonium viscosum* Nuttall

Great Sand Dunes Preserve, Sangre de Cristo Mountains, on ridge between upper and lower Sand Creek Lakes, between 12,200 and 12,579 ft. Alpine meadow with native graminoids. Common.

*With:* Mertensia, Penstemon, Solidago.

Elevation: 11925 ft.

USGS Quadrangle: Crestone Peak


**Colorado Natural Heritage Program**

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**Plants of Colorado**

**Saguache County**

**Cyperaceae**

*Carex albo-nigra* MacKenzie in Rydberg

Great Sand Dunes Preserve, Sangre de Cristo Mountains, on ridge between upper and lower Sand Creek Lakes, between 12,200 and 12,579 ft. Alpine meadow with native graminoids.

*With:* Polemonium viscosum, Mertensia, Penstemon.

USGS Quadrangle: Crestone Peak


**Colorado Natural Heritage Program**

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**Plants of Colorado**

**Saguache County**

**Poaceae**

*Danthonia parryi* Scribner

Great Sand Dunes Preserve, Sangre de Cristo Mountains, steep rocky southeast facing slope above Medano Lake. Dominant grass on slope.

*With:* Campanula rotundifolia, Achillea, Vaccinium, Juniperus communis, Pentaphylloides floribunda.

Elevation: 11925 ft.

USGS Quadrangle: Medano Pass

UTM: Zone 13, E457122, N4189855, NAD 27

S. Spackman & K. Decker SS02-28 07/11/2002

**Colorado Natural Heritage Program**

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**Plants of Colorado**

**Saguache County**

**Poaceae**

*Poa nemoralis* ssp. *interior* (Rydberg) W. A. Weber

Great Sand Dunes Preserve, Sangre de Cristo Mountains, on ridge between upper and lower Sand Creek Lakes, between 12,200 and 12,579 ft. Alpine meadow with native graminoids. Common.

*With:* Penstemon, Phleum commutatum, Solidago.

Elevation: 11925 ft.

USGS Quadrangle: Crestone Peak


**Colorado Natural Heritage Program**
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<td><em>Carex aquatilis</em> Wahlenberg</td>
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<td><em>Pseudocymopterus montanus</em> (A. Gray) Coulter &amp; Rose</td>
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Plants of Colorado
Saguache County

Asteraceae

**Erigeron melanoccephalus A. Nelson**
Great Sand Dunes Preserve, Sangre de Cristo Mountains, along Medano Lake Trail. Mesic subalpine meadow. Rare, only local. 
*With: Pseudocymopteris montanus, Bistort bistortoides, Pedicularis groenlandica, Carex.*

Elevation: 11940 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E457675, N4190051, NAD 27
S. Spackman & K. Decker  SS02-32.c  07/11/2002

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

**Salicaceae**

**Salix nivalis Hook.**
Great Sand Dunes Preserve, Sangre de Cristo Mountains. Growing on dry, rocky north-facing slope with native graminoids.
*With: Artemisia scopulorum, Solidago, Pedicularis.*

Elevation: 11331 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E457902, N4190112, NAD 27
S. Spackman & K. Decker  SS02-33.a  07/11/2002

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

Asteraceae

**Artemisia scopulorum A. Gray**
Great Sand Dunes Preserve, Sangre de Cristo Mountains. Growing on dry, rocky north-facing slope with native graminoids.
*With: Salix reticulata ssp. nivalis, Solidago, Pedicularis.*

Elevation: 11331 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E457902, N4190112, NAD 27
S. Spackman & K. Decker  SS02-33.b  07/11/2002

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

Polygonaceae

**Polygonum viviparum L.**
Great Sand Dunes Preserve, Sangre de Cristo Mountains, along Medano Lake Trail. Steep, rocky north-facing slope, upper sub alpine. Growing with mosses.
*With: Salix arctica, Artemisia, Geum rossii.*

Elevation: 11304 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E457902, N4190172, NAD 27
S. Spackman & K. Decker  SS02-34.c  07/11/2002

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

Poaceae

**Bromus carinatus Hook. & Arn.**
Great Sand Dunes Preserve, Sangre de Cristo Mountains, along a short section of the Medano Lake Trail. Upper subalpine at approximately 11,200 ft.
*With: Aconitum barbeyi, Epilobium, Luzula parviflora, Ribes montigenum.*

Elevation: 11200 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E457902, N4190172, NAD 27
S. Spackman & K. Decker  SS02-35  07/11/2002

Colorado Natural Heritage Program
Plants of Colorado
Saguache County

Ranunculaceae

**Thalictrum fendleri** Engelmann ex A. Gray

Great Sand Dunes Preserve, Sangre de Cristo Mountains, Medano Lake Trail. Riparian area within spruce-fir forest. Male plant.
*With: Cardamine cordifolia.*

Elevation: 11033 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458315, N4190583, NAD 27
S. Spackman & K. Decker SS02-36 07/11/2002

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Plants of Colorado
Saguache County

**Onagraceae**

**Oenothera elata**

*ssp. hirsutissima* (Gray ex S. Wats.) W. Dietr.

Great Sand Dunes Preserve, Sangre de Cristo Mountains, Streamside near Medano Pass Road, behind camping site # 1.8. Rare.
*With: Salix exigua, Alnus incana, Calamagrostis canadensis.*

Flower color: Yellow
Elevation: 8800 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458514, N4184881, NAD 27
S. Spackman & K. Decker SS02-38.a 07/12/2002

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Plants of Colorado
Saguache County

**Lamiaceae**

**Prunella vulgaris** L.

Great Sand Dunes Preserve, Sangre de Cristo Mountains, Streamside near Medano Pass Road, behind camping site # 1.8. With: *Oenothera elata, Epilobium, Agrostis scabra, Juncus longistylis.*

Elevation: 8800 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458514, N4184881, NAD 27
S. Spackman & K. Decker SS02-38.f 07/12/2002

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Plants of Colorado
Saguache County

**Euphorbiaceae**

**Euphorbia esula** var. *esula* L.

*With: Bromus inermis, Poa, Cryptantha.*

Elevation: 9930 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E460782, N4186957, NAD 27
S. Spackman & K. Decker SS02-39.a 07/12/2002
Plants of Colorado
Saguache County

Poaceae
Det. by: S. Spackman

*Bromus inermis* (Leysser) Holub
Great Sand Dunes Preserve, Sangre de Cristo Mountains. Historic cabin site along Medano Pass Road. In Aspen grove
*With: Tithymalus asula, Cryptantha, Poa.*

Elevation: 9930 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E460782, N4186957, NAD 27

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Caryophyllaceae
Det. by: S. Spackman

*Cerastium fontanum* Baumgartner
Great Sand Dunes Preserve, Sangre de Cristo Mountains, next to historic cabin site along Medano Pass Road. Streamside, rare.
*With: Alnus incana, Salix bebbiana, Salix drummondiana, Carex.*

Elevation: 9930 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E460782, N4186957, NAD 27
S. Spackman & K. Decker SS02-40.a 07/12/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Rosaceae
Det. by: S. Spackman

*Dasiphora floribunda* (Pursh) Kartesz, comb. nov. ined.
Great Sand Dunes Preserve, Sangre de Cristo Mountains, next to historic cabin site along Medano Pass Road. Streamside, common.
*With: Alnus incana, Salix bebbiana, Salix drummondiana, Carex.*

Elevation: 9930 ft.
USGS Quadrangle: Medano Pass

S. Spackman & K. Decker SS02-40.b 07/12/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Elaeagnaceae
Det. by: S. Spackman

*Shepherdia canadensis* (L.) Nuttall
Great Sand Dunes Preserve, Sangre de Cristo Mountains, Medano Pass Road. White fir forest with Aspen. Rare, in deeply shaded forest.
*With: Actea rubra, Packera.*

Elevation: 9648 ft.

UTM: Zone 13, E459228, N4185537, NAD 27
S. Spackman & K. Decker SS02-42.a 07/12/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Ranunculacea
Det. by: S. Spackman

*Actaea rubra*
ssp. arguta (Nuttall in Torrey & Gray)
Hulten
Great Sand Dunes Preserve, Sangre de Cristo Mountains, Medano Pass Road. White fir forest with Aspen. Rare in mesic area along stream.
*With: Shepherdia canadensis, Packera.*

Elevation: 9648 ft.

UTM: Zone 13, E459228, N4185537, NAD 27
S. Spackman & K. Decker SS02-42.b 07/12/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Rubiaceae
Det. by: S. Spackman

*Galium triflorum* Michaux
Great Sand Dunes Preserve, Sangre de Cristo Mountains, behind campsite 1.8 on Medano Pass Road. Along stream, rare.
*With: Populus angustifolia, Alnus incana, Heracleum, Geranium.*
Flower color: White
Elevation: 8879 ft.

UTM: Zone 13, E458514, N4184881, NAD 27
S. Spackman & K. Decker SS02-43.a 07/12/2002

Colorado Natural Heritage Program
Plants of Colorado
Saguache County
Cyperaceae
*Carex pellita* Muhl ex Willd.
Great Sand Dunes Preserve, Sangre de Cristo Mountains, behind campsite 1.8 on Medano Pass Road. Along stream. With: *Populus angustifolia, Alnus incana, Heracleum, Geranium.*
Elevation: 8879 ft.
UTM: Zone 13, E458514, N4184881, NAD 27
S. Spackman & K. Decker SS02-43.b 07/12/2002

Plants of Colorado
Saguache County
Cyperaceae
*Scirpus microcarpus* J. & K. Presl
Great Sand Dunes Preserve, Sangre de Cristo Mountains, behind campsite 1.8 on Medano Pass Road. Along stream. With: *Populus angustifolia, Alnus incana, Heracleum, Geranium.*
Elevation: 8879 ft.
UTM: Zone 13, E458514, N4184881, NAD 27
S. Spackman & K. Decker SS02-43.c 07/12/2002

Plants of Colorado
Saguache County
Cyperaceae
*Carex utriculata* F. Boott
Great Sand Dunes Preserve, Sangre de Cristo Mountains, behind campsite 1.8 on Medano Pass Road. Along stream. With: *Populus angustifolia, Alnus incana, Heracleum, Geranium.*
Elevation: 8879 ft.
UTM: Zone 13, E458514, N4184881, NAD 27
S. Spackman & K. Decker SS02-43.d 07/12/2002

Plants of Colorado
Saguache County
Asteraceae
*Cirsium canescens* Nuttall
Great Sand Dunes Preserve, Sangre de Cristo Mountains, Medano Pass Road at about 9600 ft. Common. With: *Stipa comata, Campanula rotundifolia, Bromus inermis.* Flower color: Ochreleucous
Elevation: 9600 ft.
UTM: Zone 13, E461858, N4188280, NAD 27
S. Spackman & K. Decker SS02-45.a 07/13/2002

Plants of Colorado
Saguache County
Cyperaceae
*Carex scopulorum* Holm
Elevation: 11796 ft.
USGS Quadrangle: Crestone Peak
UTM: Zone 13, E452707, N4199313, NAD 27
S. Spackman & K. Decker SS02-55.a 8/20/2002

Plants of Colorado
Saguache County
Gentianaceae
*Gentiana algida* Pallas
Elevation: 11786 ft.
USGS Quadrangle: Crestone Peak
UTM: Zone 13, E452628, N4199347, NAD 27
S. Spackman & K. Decker SS02-56.a 8/20/2002
Plants of Colorado
Saguache County

Poaceae  Det. by: S. Spackman

**Danthonia intermedia** Vasey

Elevation: 11786 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452628, N4199347, NAD 27
S. Spackman & K. Decker  SS02-56.c  8/20/2002

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

Orchidaceae  Det. by: S. Spackman

**Spiranthes romanzooffiana** Chamisso
Great Sand Dunes Preserve, Upper Sand Creek Lake. In wet meadow. Rare. 
*With: Clementsia rhodantha, Pedicularis groenlandica, Carex.*

Elevation: 11753 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452468, N4199396, NAD 27
S. Spackman & K. Decker  SS02-57.a  8/20/2002

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

Cyperaceae  Det. by: S. Spackman

**Eriophorum angustifolium** Honokeny
Great Sand Dunes Preserve, Upper Sand Creek Lake. In wet meadow. Rare. 
*With: Clementsia rhodantha, Pedicularis groenlandica, Carex.*

Elevation: 11753 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452468, N4199396, NAD 27
S. Spackman & K. Decker  SS02-57.b  8/20/2002

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

Poaceae  Det. by: S. Spackman

**Bromus ciliatus** var. *ciliatus* L.
*With: Salix brachycarpa, Potentilla.*

Elevation: 11834 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452311, N4199459, NAD 27
S. Spackman & K. Decker  SS02-58.a  8/20/2002

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

Poaceae  Det. by: S. Spackman

**Festuca thurberi** Vasey in Rothrock
*With: Bromopsis pumpelliana, Potentilla, Campanula.*

Elevation: 11084 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E454251, N4198474, NAD 27
S. Spackman & K. Decker  SS02-60.a  8/20/2002

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

Poaceae  Det. by: S. Spackman

**Bromus inermis** var. *pumpellianus* (Scribn.) C.L. Hitchc.
Great Sand Dunes Preserve. Along trail between Upper and Lower Sand Creek Lakes. 
*With: Festuca thurberi, Potentilla, Campanula.*

Elevation: 11084 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E454251, N4198474, NAD 27
S. Spackman & K. Decker  SS02-60.b  8/20/2002

Colorado Natural Heritage Program
Plants of Colorado
Saguache County
Poaceae
Det. by: S. Spackman

_Elymus trachycaulus_ (Link) Gould ex Shinnrs
Great Sand Dunes Preserve. Along trail between Upper and Lower Sand Creek Lakes.

With: _Erigeron elatior._

USGS Quadrangle: Crestone Peak

S. Spackman & K. Decker SS02-61.b 8/20/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Scrophulariaceae
Det. by: S. Spackman

_Castilleja rhexifolia_ Rydberg
Great Sand Dunes Preserve, Medano Lake Trail, about 1 mile before Medano Lake. Upper subalpine spruce-fir forest. Common.

With: _Stellaria crus-folii, Veronica nutans, Delphinium barbeyi._

Elevation: 11051 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E458264, N4190432
S. Spackman & K. Decker SS02-12.I 6/26/02

Plants of Colorado
Saguache County
Asteraceae
Det. by: S. Spackman

_Artemisia campestris_ var. _borealis_ (Pallas) M. E. Peck

With: _Poa glauca, Elymus scribneri, Erysimum capitatum._

Elevation: 11424 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E455554, N4197925, NAD 27
S. Spackman & K. Decker SS20-17.j 06/27/2002

Plants of Colorado
Saguache County
Brassicaceae
Det. by: S. Spackman

_Draba smithii_ Gilg ex O. E. Schulz
Great Sand Dune Preserve, Upper Sand Creek Lake Trail. East-facing rock outcrop within Engelmann Spruce forest, about 11 plants in fruit.

With: _Epilobium, Polemonium._

Elevation: 11344 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453769, N4198955
S. Spackman and K. Decker SS02-53.a 08/20/02

Colorado Natural Heritage Program
Plants of Colorado
Saguache County

Cyperaceae

Carex ebenea Rydberg
Great Sand Dune Preserve, Upper Sand Creek Lake Trail. Within Engelmann Spruce forest.
With: Epilobium, Polemonium.

Elevation: 11344 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E453769, N4198955
S. Spackman and K. Decker SS02-53.b 08/20/02

Plants of Colorado
Saguache County

Poaceae

Calamagrostis canadensis (Michaux) P. Beauvois
Great Sand Dune Preserve, Upper Sand Creek Lake. Common along lake shore.
With: Picea engelmannii, Salix brachycarpa, Clementsia rhodantha, Juncus.

Elevation: 11313 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452845, N4198967
S. Spackman and K. Decker SS02-54 08/20/02

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Poaceae

Deschampsia cespitosa (L.) P. Beauvois
Great Sand Dunes Preserve, Upper Sand Creek Lake. Along outflow of lake.
With: Pedicularis groenlandica, Clementsia rhodantha, Salix planifolia, Picea engelmannii.

Elevation: 11796 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452707, N4199313, NAD 27
S. Spackman & K. Decker SS02-55.c 8/20/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Asteraceae

Oreochrysum parryi (A. Gray) Rydberg
Along outflow drainage of Upper Sand Creek Lake.
With: Erigeron elatior.

Elevation: 11800 ft.
USGS Quadrangle: Crestone Peak

UTM: Zone 13, E452739, N4199362, NAD 27
S. Spackman & K. Decker SS02-59.a 8/20/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Asteraceae

Erigeron elatior (A. Gray) Greene
Along trail between Upper and Lower Sand Creek Lakes.
With: Elymus trachycaulus.
Flower color: White

USGS Quadrangle: Crestone Peak

S. Spackman & K. Decker SS02-61.a 8/20/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County

Fabaceae

Lupinus argenteus Pursh

Elevation: 11000 ft.
USGS Quadrangle: Crestone Peak

S. Spackman & K. Decker SS02-62.b 8/20/2002

Colorado Natural Heritage Program
Plants of Colorado
Saguache County
Fabaceae

*Lupinus argenteus* Pursh


Elevation: 11000 ft.
USGS Quadrangle: Crestone Peak

S. Spackman & K. Decker SS02-62.b 8/20/2002

Colorado Natural Heritage Program

Plants of Colorado
Alamosa County
Asteraceae

*Heterotheca canescens* (De Candolle) Shinners

Great Sand Dunes National Monument. Trail between visitor center and picnic area. In sandy soil.
*With: Erigeron, Tetradyinia canescens.*

USGS Quadrangle: Zapata Ranch

S. Spackman & K. Decker SS02-63d 8/21/2002

Colorado Natural Heritage Program

Plants of Colorado
Alamosa County
Asteraceae

*Senecio spartioides* var. *multicapitatus* (Greenm. Ex Rydb.) Welsh

Great Sand Dunes NM, along Dunes Trail. One meter tall, in sandy soil.
*With: Redfieldia flexuosa, Euphorbia, Chrysothamnus greeneei.*

Flower color: Yellow
Elevation: 8120 ft.
USGS Quadrangle: Zapata Ranch

S. Spackman & K. Decker SS02-65d 8/21/2002

Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Asteraceae

*Heliomeris multiflora* Nuttall

Great Sand Dunes Preserve, Buck Creek.
*With: Juncus longistyliis, Pharalis, Erigeron.*

Flower color: Yellow
Elevation: 8405 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E455985, N4178215, NAD 27
K. Decker & S. Anderson KD02-02.c 09/10/02

Colorado Natural Heritage Program

Plants of Colorado
Saguache County
Juncaceae

*Juncus longistyliis Torrey*

Great Sand Dunes Preserve, Buck Creek.
*With: Heliomeris multiflora, Pharalis, Erigeron.*

Elevation: 8405 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E455985, N4178215, NAD 27
K. Decker & S. Anderson KD02-02.d 09/10/02

Colorado Natural Heritage Program
Plants of Colorado
Saguache County

Chenopodiaceae
Det. by: K. Decker

*Chenopodium album* L.


Elevation: 8536 ft.
USGS Quadrangle: Medano Pass

UTM: Zone 13, E456297, N4178224, NAD 27
K. Decker & S. Anderson KD02-03.c 09/10/02

Colorado Natural Heritage Program

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Plants of Colorado
Saguache County

Pinaceae
Det. by: S. Spackman

*Pinus aristata* Engelmann


Elevation: 11000 ft.

S. Spackman & K. Decker SS02-62.c 8/20/2002

Colorado Natural Heritage Program
Appendix 3

Element occurrence records for *Draba smithii, Cleome multicaulis, Cryptantha pustulosa* and *Woodsia neomexicana* at GRSA (Colorado Natural Heritage Program 2002).
Element Occurrence Record

DRABA SMITHII
SMITH WHITLOW-GRASS

LOCATORS

PLACE NAME: UPPER SAND CREEK LAKE TRAIL
LAT: 375620N
POTENTIAL CONSERVATION AREA:
LONG: 1053134W

MAPPING PRECISION:
SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY:
Saguache
QUADNAME:
CRESTONE PEAK
TOWNSHIP/RANGE: 0248073W
SECTION: 26


MINIMUM ELEVATION

MAXIMUM ELEVATION:

HABITAT: [SPACKMAN AND DECKER 2002:] EAST-FACING ROCK OUTCROP WITHIN ENGELMANN SPRUCE FOREST. GROWING WITH SPILOBIAUM AND POLEMONIUM. ELEVATION: 11,344 FT.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G2
STATE RANK: S2
FED. LEGAL:
STATE LEGAL:

OCURRENCE RANK: C
RANK DATE: 2002-08-20

OCURRENCE RANK COMMENTS:
[SPACKMAN AND DECKER 2002:] SIZE: C, SMALL OCCURRENCE. CONDITION: B, GOOD CONDITION. LANDSCAPE CONTEXT: B, WITHIN NATIONAL PARK PRESERVE.

SURVEY DATE: 2002-08-20
LAST OBSERVED: 2002-08-20
FIRST OBSERVED: 2002-08-20

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
[SPACKMAN AND DECKER 2002:] ABOUT 11 PLANTS IN FRUIT.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:

OCCURRENCE WHOLLY CONTAINED:

MANAGEMENT COMMENTS:
[SPACKMAN AND DECKER 2002:] CURRENT MANAGEMENT APPEARS TO BE FINE. PREDOMINANT LAND USES: HIKING. EXOTIC SPECIES: NONE NOTED IN THIS AREA.

PROTECTION COMMENTS:
[SPACKMAN AND DECKER 2002:] REPORT OCCURRENCE TO NATIONAL PARKS SERVICE STAFF.

OWNER:
NATIONAL PARK SERVICE PRESERVE
OWNER COMMENTS:
INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:
SPACKMAN, S. 2002. SPECIMEN (COLLECTION #SS-02-53.A) TO BE DEPOSITED AT COLORADO STATE UNIVERSITY HERBARIUM.


COMMENTS:

BOUNDARIES: N
PHOTOS: N

UPDATE:
PDBRA11280-020-CO

PRINTOUT DATE: 11 JAN 2003
Element Occurrence Record

DRABA SMITHII
SMITH WHITLOW-GRASS

LOCATORS

PLACE NAME: MOSCA CREEK
LAT: 374351N
LONG: 1052913W

POTENTIAL CONSERVATION AREA:

MAPPING PRECISION: SRCNDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: Alamosa
QUADNAME:

TOWNSHIP/RANGE: SECTION:
02780703W 01


MINIMUM ELEVATION: 8410
MAXIMUM ELEVATION: 9100

HABITAT: [SPACKMAN AND DECKER 2002:] GROWING WITH JAMESIA AMERICANA, HOLODISCUS DUMOSUS, AND LICHENS ROSA WOODSII ON ROCKY CLIFF. ELEVATION: 9110 FT. [BURT 1999:] PLANTS GROWING IN ROCK CRACKS ON STEEP, SHADEN SOUTH SLOPE. ROCK VOLCANIC. LITTLE OTHER COMPETING VEGETATION. [ANDERSON 1973:] ON ROCKY HILLSIDE. ELEVATION: 7500 FT.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G2
STATE RANK: S2
FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: C
RANK DATE: 2000-01-24

OCCURRENCE RANK COMMENTS:
[BURT 1999:] RELATIVELY SMALL POPULATION, VERY VULNERABLE TO IMPACTS FROM RECREATIONAL USERS.

SURVEY DATE: 2002-06-25
LAST OBSERVED: 2002-06-25
FIRST OBSERVED: 1973-06-05

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
[SPACKMAN AND DECKER 2002:] ABOUT 40 CLUMPS OBSERVED IN LATE FLOWER AND FRUIT. [BURT 1999:] AT LEAST 100 PLANTS OBSERVED ON TRAIL IN FRUIT IN SEPTEMBER. PLANTS GROWING IN ROCK CRACKS ON CLIFFY, ROCKY SOUTH SLOPE WITH LITTLE OTHER COMPETING VEGETATION. [ANDERSON 1973:] ORIGINAL IDENTIFICATION THLASPI ALPESTRE, CHANGED TO DRABA AUREA, THEN TO DRABA SMITHII.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:
ESCALANTE CREEK BLUE SPRUCE FOREST NATURAL ARE
RIO GRANDE NATIONAL FOREST

OCCURRENCE WHOLLY CONTAINED?: Y

MANAGEMENT AREA NAME:

MANAGEMENT COMMENTS:
[BURT 1999:] AREA HEAVILY USED BY HIKERS FROM THE GREAT SAND DUNES NATIONAL MONUMENT. PLANTS ARE GROWING RIGHT NEXT TO THE TRAIL AT EYE LEVEL AND ARE VULNERABLE TO HUMAN IMPACTS. PERHAPS EDUCATION OF HIKERS WOULD MINIMIZE IMPACTS.
INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:
ANDERSON, BERTA. 1973. SPECIMEN (COLLECTION #1666) AT DENVER BOTANIC GARDENS, KATHRYN KALMBACH HERBARIUM.


COMMENTS: [SPACKMAN AND DECKER 2002:] 7500 FT ELEVATION REPORTED BY ANDERSON DOES NOT MAKE SENSE BECAUSE THE TRAIL DOES NOT GO THAT LOW. [BURT 1999:] I SAW THIS POPULATION FROM A HORSE AND I DID NOT HAVE MY NOTEBOOK TO TAKE DETAILED INFORMATION. THIS IS WRITTEN FROM MEMORY. MORE EXTENSIVE SURVEY IS DEFINITELY NEEDED. COULD POSSIBLY UPGRADE TO RANK WITH MORE INFORMATION. LOTS OF POTENTIAL HABITAT IN THE AREA.

BOUNDARIES: N PHOTOS: N

UPDATE: PDBRA112B0*016*CO PRINTOUT DATE: 11 JAN 2003
Element Occurrence Record

CLEOME MULTICAULIS
SLENDER SPIDERFLOWER

LOCATORS

PLACE NAME: GREAT SAND DUNES WEST
POTENTIAL CONSERVATION AREA: GREAT SAND DUNES
LAT: 374649N
LONG: 1053752W
MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED
COUNTY: Saguache
QUADNAME: SAND CAMP
TOWNSHIP/RANGE: SECTION: 041N012E 26

MINIMUM ELEVATION 7670 MAXIMUM ELEVATION 7670


SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: Q2G3 STATE RANK: S2G3 FED. LEGAL: STATE LEGAL:

OCURRENCE RANK: C RANK DATE: 1997-06-10

OCURRENCE RANK COMMENTS: [RONDEAU ET AL. 1997:] A SMALL POPULATION IN A SMALL WETLAND COMPLEX. VIABILITY: C, WETLAND HAS BEEN HERE SINCE AT LEAST 1930'S, ALTHOUGH ALWAYS SMALL, RECENT STUDIES SHOW THAT THESE INTERDUNAL WETLANDS HAVE BEEN DISAPPEARING. QUALITY: B, SMALL POPULATION BUT NEAR ANOTHER LARGER POPULATION (INDIAN SPRING/BIG SPRING) IS LESS THAN 2 MILES AWAY. CONDITION: B, A FEW NON-NATIVES WITHIN OCCURRENCE.


MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:

OCURRENCE WHOLLY CONTAINED?: 

Protection Comments:

Owner: Private: Zapata Ranch (Hisa Ota)

Owner Comments: [Rondeau et al. 1997:] Owner operates this part of the ranch as a bison ranch.

Information Sources and Record Maintenance

Specimen Citations:


Boundaries: Y

Photos: Y

Update: PDCPP03080*043*040

Printout Date: 11 Jan 2003
Element Occurrence Record

CRYPTANTHA PUSTULOSA
CATSEYE

LOCATORS

PLACE NAME: GREAT SAND DUNES NATIONAL MONUMENT
LAT: 374446N
LONG: 1053032W
MONUMENT
POTENTIAL CONSERVATION AREA: GREAT SAND DUNES
MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED
COUNTY: QUADNAME:
Alamosa ZAPATA RANCH
TOWNSHIP/RANGE: SECTION:
0268073W 35


MINIMUM ELEVATION 8120 MAXIMUM ELEVATION: 8200

HABITAT: [RONDEAU AND BRYANT 1997:] OPEN RABBITBRUSH WITH INDIAN RICE GRASS AND NEEDLE AND THREAD GRASS. OPUNTIA POLYANTHANA, BOUETELLOUA GRACILIS, RHUS TRIGOBATA, HETEROTHECA VILLOSA, ASTER SP., ARTEMISIA FRIGIDA, AND SPOROBOLUS CRYPTANDRUS ARE PRESENT WITH A 1 TO 3% COVER. THESE SMALL SAND DUNES ARE PRIMARILY WEST FACING AND DRY. ASPECT: WEST FACING. MOISTURE: XERIC. PARENT MATERIAL: SAND. LANDFORM: VEGETATED SAND DUNES. ELEVATION: 8200 FEET. [RAMALEY 1931:] NEAR SAND DUNES IN PINYON CEDAR WOODLAND IN SANDY LOAM.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: 0ST? STATE RANK: 81 FED. LEGAL: STATE LEGAL:

OCURRENCE RANK: A RANK DATE: 1997-08-10

OCURRENCE RANK COMMENTS:
[RONDEAU AND BRYANT 1997:] QUALITY: A, LARGE HEALTHY POPULATION WITH MULTIPLE AGE CLASSES. CONDITION: A, HABITAT COMPRISED PRIMARILY OF NATIVES WITH A FEW NON-NATIVES, E.G. BROMUS TECTORUM, FOUND ONLY ALONG ROADSIDE AND EDGE OF TRAIL. VIABILITY: A, POTENTIAL HABITAT IS NUMEROUS. MAY NEED AN OCCASIONAL FIRE TO KERP PERCENT COVER OF RABBITBRUSH LOW TO MODERATE.

SURVEY DATE: 1997-08-10 LAST OBSERVED: 1997-08-10 FIRST OBSERVED: 1928-06-13

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
[RONDEAU AND BRYANT 1997:] NUMBER OF INDIVIDUALS: ESTIMATED SEVERAL THOUSAND (A LOT MORE POTENTIAL HABITAT IS IN THE AREA AND A MORE THOROUGH SEARCH MAY REVEAL A LARGER POPULATION). FLOWER COLOR: FLOWERS WHITE. APPROX. 100% IN FLOWER AND FRUIT. REPRODUCTIVE SUCCESS APPEARS GOOD. NO EVIDENCE OF DISEASE, PREDATION OR INJURY. THIS PLANT APPEARS TO DO WELL ALONG VEGETATED SAND DUNES AND BECOMES VERY ROBUST IN THE SMALL DRAINAGES, ROAD AND TRAILSIDE THAT RECEIVE EXTRA WATER.

MANAGEMENT, OWNERSHIP AND PROTECTION
MANAGEMENT AREA NAME:  GREAT SAND DUNES NATIONAL MONUMENT

OCCURRENCE WHOLLY CONTAINED?:  Y

MANAGEMENT COMMENTS:
[RONDEAU AND BRYANT 1997:] CURRENT MANAGEMENT PRACTICES ADEQUATE. MAY BE WORTH A LOOK AT THE FIRE HISTORY AND HOW THE PLANT DOES WITH A DENSE COVER OF RABBITBRUSH. PREDOMINANT LAND USES: TRAILS TO SAND DUNES. EXOTIC SPECIES: ONLY ALONG ROAD CUTS, BROMUS TECTORUM, HORDEUM JUBATUM, DESCARIA. PROTECTION COMMENT: CURRENT PROTECTION ADEQUATE.

PROTECTION COMMENTS:

OWNER:

OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:


BOUNDARIES:  Y  PHOTOS:  Y

UPDATE:
PD&BORGAKT7*001*CO  PRINTOUT DATE:  11 JAN 2003
ELEMENT OCCURRENCE RECORD

CRYPTANTHA PUSTULOSA
CATSEYE

LOCATORS

PLACE NAME: MEDANO PASS ROAD
LAT: 374540N
LONG: 1063004W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: Saguache

QUADNAME: LIBERTY

TOWNSHIP/RANGE: SECTION: 0268073W 26


MINIMUM ELEVATION 8368 MAXIMUM ELEVATION: 8368

HABITAT: [SPACKMAN 2002:] GROWING IN SAND MOUNTAIN WITH CHRYSOTHAMNUS, ORYZOPSIS HYMENOIDES, ARTEMESIA FRIGIDA, OPUNTIA, AND YUCCA. ELEVATION: 8368 FT.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: GSY? STATE RANK: SL FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: RANK DATE:

OCCURRENCE RANK COMMENTS:


SPECIFIC OCCURRENCE BIOLOGICAL DATA:
[SPACKMAN 2002:] DIFFICULT TO ESTIMATE POPULATION SIZE IN THIS DROUGHT YEAR.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?

MANAGEMENT COMMENTS:

PROTECTION COMMENTS:

OWNER: GREAT SAND DUNES NATIONAL PARK
OWNER COMMENTS:
INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:
Spackman, S. 2002. Specimen (Collection #SS-02-01) to be deposited at Colorado State University Herbarium.


COMMENTS:

BOUNDARIES: N  PHOTOS: N

UPDATE:
PDB00A3E7*001*CO  PRINTOUT DATE:  11 JAN 2003
ELEMENT OCCURRENCE RECORD

CRYPTANTHA PUSTULOSA
CATSEYE

LOCATORS

PLACE NAME: GREAT SAND DUNES

LAT: 3744.04N

LONG: 10530.59W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: ALAMOSA

QUADMILE: ZAPATA RANCH

TOWNSHIP/RANGE: SECTION:

02T8073W 02

DIRECTIONS: [SPACKMAN 2002:] T27S R73W S2 NW NW GREAT SAND DUNES NATIONAL MONUMENT. ALONG TRAIL BETWEEN VISITOR CENTER AND MOSCA CREEK PICNIC AREA. ELEVATION: 8100 FT.

MINIMUM ELEVATION 8100 MAXIMUM ELEVATION 8100

HABITAT: [SPACKMAN 2002:] GROWING IN SPARSE VEGETATED SANDY SOIL. ASSOCIATED SPECIES: HEDRONEE CANESCENS, TETRAPHILA CANESCENS, CHYSOTHAMNUS GREEFEEI, AND ERIERON SPECIES. ELEVATION: 8100 FT.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: GST?

STATE RANK: S1

FED. LEGAL:

STATE LEGAL:

OCCURRENCE RANK: E

RANK DATE: 2002-08-21

OCCURRENCE RANK COMMENTS:

[SPACKMAN 2002:] INNSUFFICIENT INFORMATION TO ASSIGN AN ELEMENT OCCURRENCE RANK.

SURVEY DATE: 2002-08-21

LAST OBSERVED: 2002-08-21

FIRST OBSERVED: 2002-08-21

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

[SPACKMAN 2002:] UNABLE TO ESTIMATE POPULATION SIZE BECAUSE OF DROUGHT.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:

OCCURRENCE WHOLLY CONTAINED?

MANAGEMENT COMMENTS:

[SPACKMAN 2002:] WORK WITH STAFF AT GREAT SAND DUNES TO ASSURE PROTECTION. FURTHER INVENTORY IS WARRNETED DURING NON-DROUGHT YEAR. PREDOMINANT LAND USE: HIKING.

PROTECTION COMMENTS:

[SPACKMAN 2002:] WORK WITH STAFF AT GREAT SAND DUNES TO ASSURE PROTECTION.

OWNER: NPS

OWNER COMMENTS:
INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:
SPACKMAN, S. 2002. SPECIMEN [COLLECTION #SS-02-63] TO BE DEPOSITED AT GREAT SAND DUNES HERBARIUM.


COMMENTS: [CNHP:] MAP PROVIDED BY SPACKMAN 2002.

BOUNDARIES: Y PHOTOS: N

UPDATE:
PBOR0A3K7*004*CO

PRINTOUT DATE: 11 JAN 2003
Element Occurrence Record

WOODSIA NEOMEXICANA
NEW MEXICO CLIFF FERN

LOCATORS

PLACE NAME: MOSCA PASS

LAT: 374357N
LONG: 1052956W

MAPPING PRECISION: MINUTES: MAPPED WITHIN CA. 1 MINUTE

COUNTY: QUADNAME:
Alamosa
MOSCA PASS

TOWNSHIP/RANGE: SECTION:
0278073W
02

DIRECTIONS: 0.5 MILES EAST OF START OF MOSCA PASS TRAIL. GREAT SAND DUNES NATIONAL MONUMENT; ROCK CREVICES; 8300 FT. ELEV.

MINIMUM ELEVATION 8300 MAXIMUM ELEVATION: 8300

HABITAT: ROCK CREVICES, 8300 FT. ELEV.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G4? STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: H RANK DATE: 2000-03-07

OCCURRENCE RANK COMMENTS:
[CNSH:] LAST OBSERVATION IS GREATER THAN 20 YEARS.


SPECIFIC OCCURRENCE BIOLOGICAL DATA:

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?

GREAT SAND DUNES NATIONAL MONUMENT ?
RIO GRANDE NATIONAL FOREST ?
CONEJOS PEAK RANGER DISTRICT ?

MANAGEMENT COMMENTS:

PROTECTION COMMENTS:

OWNER:

OWNER COMMENTS:
INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:
WEBER. 1954. SPECIMEN (ACCESSION #83427) AT UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: WEBER. 1954. SPECIMEN (ACCESSION #83427) AT UNIVERSITY OF COLORADO HERBARIUM.

COMMENTS:

BOUNDARIES: PHOTOS:

UPDATE: PRINTOUT DATE: 11 JAN 2003
PPDRYO0060*009*CO