SLIDES: Recommended Best Management Practices for Plants of Concern: Practices Developed to Reduce the Impacts of Oil and Gas Development Activities to Plants of Concern

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Colorado Rare Plant Conservation Initiative

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

Number of Imperiled Species in Colorado

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of CNHP tracked species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vascular Plants</td>
<td>113</td>
</tr>
<tr>
<td>Animals</td>
<td>39</td>
</tr>
</tbody>
</table>

G1-G2 Species

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of Federally listed</th>
<th>No. of Unlisted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Mammals</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Plants</td>
<td>12</td>
<td>103</td>
</tr>
</tbody>
</table>

No. of CNHP tracked species

- Federally listed
- Unlisted
RECOMMENDED BEST MANAGEMENT PRACTICES FOR PLANTS OF CONCERN

Oil and Gas Development Activities to Plants of Concern

Practices Developed to Reduce the Impacts of Oil and Gas Development Activities to Plants of Concern

Prepared by the Colorado Rare Plant Conservation Initiative

Brian Kurzel, Colorado Natural Areas Program
<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Rank (CNHP 2008)</th>
<th>Federal Status</th>
<th>Endemic to Colorado</th>
<th>Occupied acres in Colorado</th>
<th>Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astragalus humillimus</td>
<td>G1/S1</td>
<td>LE</td>
<td>No</td>
<td>1,433</td>
<td>Cliff and canyon</td>
</tr>
<tr>
<td>Astragalus debequaeus</td>
<td>G2/S2</td>
<td>BLM</td>
<td>Yes</td>
<td>106</td>
<td>Pinyon-juniper</td>
</tr>
<tr>
<td>Astragalus osterhoutii</td>
<td>G1/S1</td>
<td>LE</td>
<td>Yes</td>
<td>793</td>
<td>Shrubland</td>
</tr>
<tr>
<td>Cryptantha gypsophila</td>
<td>G1G2/S1S2</td>
<td>BLM (proposed)</td>
<td>Yes</td>
<td>525</td>
<td>Pinyon-juniper</td>
</tr>
<tr>
<td>Eriogonum clavellatum</td>
<td>G2/S1</td>
<td>none</td>
<td>No</td>
<td>4</td>
<td>Shrubland</td>
</tr>
<tr>
<td>Eriogonum pelinophilum</td>
<td>G2/S2</td>
<td>LE</td>
<td>Yes</td>
<td>1,178</td>
<td>Shrubland</td>
</tr>
<tr>
<td>Lesquerella congesta</td>
<td>G1/S1</td>
<td>LT</td>
<td>Yes</td>
<td>740</td>
<td>Barrens</td>
</tr>
<tr>
<td>Lesquerella parviflora</td>
<td>G2/S2</td>
<td>BLM</td>
<td>Yes</td>
<td>3,272</td>
<td>Barrens</td>
</tr>
<tr>
<td>Mentzelia rhizomata</td>
<td>G2/S2</td>
<td>BLM</td>
<td>Yes</td>
<td>4,547</td>
<td>Barrens</td>
</tr>
<tr>
<td>Penstemon debilis</td>
<td>G1/S1</td>
<td>C</td>
<td>Yes</td>
<td>60</td>
<td>Barrens</td>
</tr>
<tr>
<td>Penstemon fremontii var. glabrescens</td>
<td>G3T2/S2</td>
<td>none</td>
<td>Yes</td>
<td>3,416</td>
<td>Shrubland</td>
</tr>
<tr>
<td>Penstemon grahamii</td>
<td>G2/S1</td>
<td>BLM</td>
<td>No</td>
<td>639</td>
<td>Barrens</td>
</tr>
<tr>
<td>Penstemon scariosus var. albifluvis</td>
<td>G4T1/S1</td>
<td>C</td>
<td>Yes</td>
<td>124</td>
<td>Barrens</td>
</tr>
<tr>
<td>Phacelia submutica</td>
<td>G2T2/S2</td>
<td>C, FS</td>
<td>Yes</td>
<td>586</td>
<td>Barrens</td>
</tr>
<tr>
<td>Physaria obcordata</td>
<td>G1G2/S1S2</td>
<td>LT</td>
<td>Yes</td>
<td>473</td>
<td>Barrens</td>
</tr>
<tr>
<td>Sclerocactus glaucus</td>
<td>G3/S3</td>
<td>LT</td>
<td>Yes</td>
<td>10,203</td>
<td>Barrens</td>
</tr>
<tr>
<td>Thalictrum heliophilum</td>
<td>G2/S2</td>
<td>BLM (proposed)</td>
<td>Yes</td>
<td>457</td>
<td>Barrens</td>
</tr>
<tr>
<td><strong>Total Acres</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>28,556</strong></td>
<td></td>
</tr>
</tbody>
</table>
Occupied habitat for the seventeen plants of concern. Total occupied acreage is less than 30,000 acres (Colorado Natural Heritage Program 2008). Red dots increased in size for visibility.
Recommended BMPs for Plants of Concern

Goals

• Conserve/protect imperiled plants and their habitat

• *Increase awareness* and prevent unintended harm to imperiled plant species

• Decrease need for listing under ESA; recover listed species
Recommended BMPs for Plants of Concern

Sources

• Formal compilation of the best recommended practices for protection of rare plants from:
  – BLM, USFWS, USFS, Consulting firms, non-profits such as the CA Native Plant Society

• Other sources also exist:
  – BLM’s Record of Decision for the National Vegetation Treatments Final Programmatic
Recommended BMPs for Plants of Concern

Organized By:

- Project Planning
- Pre-Ground Disturbance
- Project Implementation
- Management of Weeds and Revegetation
- Post-Project Monitoring
Recommended BMPs for Plants of Concern

Project Planning:

• Gather mapped rare plant locations
• Consult with USFWS regarding any listed species, and to discuss candidates or proposed species
• Implement avoidance buffer of 200 meters
• Begin planning for:
  – rare plant survey, reveg, weed mgmt and monitoring
Recommend Survey Areas for the Most Imperiled Plants in Oil and Gas Development Areas
Recommended BMPs for Plants of Concern

Project Planning:

• Gather mapped rare plant locations
• Consult with USFWS regarding any listed species, and to discuss candidates or proposed species
• Implement avoidance buffer of 200 meters
• Begin planning for:
  – rare plant survey, reveg, weed mgmt and monitoring
• Plan to reduce the footprint of the project as much as possible
Recommended BMPs for Plants of Concern

**Pre-Ground Disturbance:**

- Conduct rare plant surveys in project area
  - Including a 200 meter buffer
Recommended BMPs for Plants of Concern

Pre-Ground Disturbance:

- Conduct rare plant surveys in project area
  - Including a 200 meter buffer
- Map and treat noxious weed species
- Erect fencing/signage around project footprint
- Communicate rare plant protections to field staff
Recommended BMPs for Plants of Concern

**Project Implementation:**

- Implement all planning to reduce footprint
- Control erosion/runoff
- Stockpile topsoil for use in final reclamation
Recommended BMPs for Plants of Concern

**Project Implementation:**

- Implement all planning to reduce footprint
- Control erosion/runoff
- Stockpile topsoil for use in final reclamation
- Reduce fugitive dust
  - Recommend gravel roads or watering
- Minimize spread of noxious weeds
Recommended BMPs for Plants of Concern

Management of Invasives and Revegetation:

• Treat noxious weeds in project area
  – Keep herbicide >200m from rare plant occurrences unless weeds are threatening plants
  – Hand-spraying

• Reclaim disturbed areas to the smallest area possible
  – Decompacting, recontouring and erosion control
  – Use local, native species
  – Certified weed-free mulch
Recommended BMPs for Plants of Concern

**Post-Project Monitoring:**

- Noxious weeds
- Revegetation
- Monitor *rare plants* to detect potential changes resulting from development
Resources

• www.oilandgasbmmps.org/viewpub.php?id=17
  (Rare Plant BMP Text)

• www.oilandgasbmmps.org/resources/vegetation.php
  (general vegetation information)

• parks.state.co.us/NaturalResources/CNAP/Publications/
  (state partner to provide BMP info)

• www.cnhp.colostate.edu
  (rare plant mapping/surveys)
Contacts

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  Susan.panjabi@colostate.edu