Section 2

Section II: Species Selection

A. Species Identification – Discussions of Preliminary Surveys, Community Status and Ecology, Habitat Requirements, and Resources
Section II: Species Selection

Project Location: Colorado, Utah

Principal Investigators/Cooperators:
Stephen B. Monsen, Ecologist, 1097 North Main, Mapleton, UT, 84664
Tel: 801-489-5059; Email: sbmonsen@comcast.net

UP Project
P.O. Box 2014, Montrose, CO 81402
Email: UPProject@UPProject.org

Kelly Memmott, Ecologist
935 North 100 East, Pleasant Grove, UT 84062
Tel: 801-785-2567
Email: klmemmott@yahoo.com

A. Species Identification – Discussions of Preliminary Surveys, Community Status and Ecology, Habitat Requirements, and Resources

Project Description:
Beginning in 2002, the primary species considered important for community restoration were identified through a series of studies and discussion with agency personnel. The primary plant communities where most active restoration is currently underway were identified. Most disturbances requiring remedial treatments in which seeding would be included were the pinyon-juniper and big sagebrush types. Most large fires and fuel reduction projects were targeted for the pinyon-juniper woodlands. In addition, most wildlife habitat problems were directly tied to these communities. The native species that occur in these two plant types consist of a relatively manageable number of perennial grasses and shrubs, but an extensively large number of broadleaf herbs. Based on vegetative studies completed by the University of Wyoming, the primary broadleaf herbs existing throughout these two shrubs and woodland communities were selected for initial collection and development. Currently, seeds from only a limited number of native plants, originating from the Colorado Plateau, have been developed and made available for restoration. Consequently, species that appeared to dominate most plant associations and could be propagated and commercially produced in a reasonable short period were given particular attention. Species that were recognized as plants that could be successfully propagated without extensive studies were also selected for immediate examination. In addition, plants that are known to establish with reasonable success as pioneer or early serial species were also identified as principal candidates for development. A list of the primary species identified for initial examination and development is presented in (Table 1).
Table 1. - Species proposed for development for the Colorado Plateau

<table>
<thead>
<tr>
<th>GRASSES</th>
<th>FORBS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Achnatherum hymenoides</strong></td>
<td><strong>Achillea millefolium lanulosa</strong></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>Western yarrow</td>
</tr>
<tr>
<td><strong>Bouteloua gracilis</strong></td>
<td><strong>Aster glaucodes</strong></td>
</tr>
<tr>
<td>Blue grama</td>
<td>Blueleaf aster</td>
</tr>
<tr>
<td><strong>Bromus marginatus</strong></td>
<td><strong>Astragalus eastwoodae</strong></td>
</tr>
<tr>
<td>Mountain brome</td>
<td>Eastwood' milkvetch</td>
</tr>
<tr>
<td><strong>Bromus anomalus</strong></td>
<td><strong>Astragalus mollissimus</strong></td>
</tr>
<tr>
<td>Nodding brome</td>
<td>Woolly milkvetch</td>
</tr>
<tr>
<td><strong>Elymus elymoides</strong></td>
<td><strong>Chaetopappus ericoide</strong></td>
</tr>
<tr>
<td>Squirreltail</td>
<td>Sand aster</td>
</tr>
<tr>
<td><strong>Elymus trachycaulus</strong></td>
<td><strong>Cryptantha flavoculata</strong></td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>Rough seed Cryptantha</td>
</tr>
<tr>
<td><strong>Hesperostipa comata</strong></td>
<td><strong>Erigeron pumilis</strong></td>
</tr>
<tr>
<td>Needle-and-threadgrass</td>
<td>Low fleabane</td>
</tr>
<tr>
<td><strong>Hilaria jamesii</strong></td>
<td><strong>Erigeron speciosus</strong></td>
</tr>
<tr>
<td>Galleta</td>
<td>Oregon fleabane</td>
</tr>
<tr>
<td><strong>Leymus cinereus</strong></td>
<td><strong>Eriogonum, flavum</strong></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>Yellow Eriogonum</td>
</tr>
<tr>
<td><strong>Leymus salinus</strong></td>
<td><strong>Eriogonum ovalifolium</strong></td>
</tr>
<tr>
<td>Salina wildrye</td>
<td>Cushion buckwheat</td>
</tr>
<tr>
<td><strong>Koeleria macrantha</strong></td>
<td><strong>Eriogonum umbellatum</strong></td>
</tr>
<tr>
<td>Prairie junegrass</td>
<td>Sulfur buckwheat</td>
</tr>
<tr>
<td><strong>Pascopyrum smithii</strong></td>
<td><strong>Eriogonum racemosum</strong></td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>Redroot eriogonum</td>
</tr>
<tr>
<td><strong>Pseudoroegneria spicata</strong></td>
<td><strong>Hedysarum boreale germiale</strong></td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>Utah sweetvetch</td>
</tr>
<tr>
<td><strong>Poa fendleriiana</strong></td>
<td><strong>Heterotheca villosa</strong></td>
</tr>
<tr>
<td>Muttongrass</td>
<td>Hairy goldenaster</td>
</tr>
<tr>
<td><strong>Poa secunda</strong></td>
<td><strong>Lesquerella rectipes</strong></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>Bladderpod</td>
</tr>
<tr>
<td><strong>Sporobolus cryptandrus</strong></td>
<td><strong>Linum lewisii</strong></td>
</tr>
<tr>
<td>Sand dropseed</td>
<td>Lewis flax</td>
</tr>
<tr>
<td></td>
<td><strong>Lupinus sericeus</strong></td>
</tr>
<tr>
<td></td>
<td>Silky lupine</td>
</tr>
<tr>
<td></td>
<td><strong>Packera multilobatus (Senecio)</strong></td>
</tr>
<tr>
<td></td>
<td>Lobe leaf groundsel</td>
</tr>
<tr>
<td></td>
<td><strong>Penstemon cyanocaulis</strong></td>
</tr>
<tr>
<td></td>
<td>Bluestem penstemon</td>
</tr>
<tr>
<td></td>
<td><strong>Penstemon comarrhenus</strong></td>
</tr>
<tr>
<td></td>
<td>Dusty penstemon</td>
</tr>
<tr>
<td></td>
<td><strong>Petradoria pumila</strong></td>
</tr>
<tr>
<td></td>
<td>Rock goldenrod</td>
</tr>
<tr>
<td></td>
<td><strong>Sphaeralcea coccinea</strong></td>
</tr>
<tr>
<td></td>
<td>Scarlet globemallow</td>
</tr>
<tr>
<td></td>
<td><strong>Stenotus armerioides</strong></td>
</tr>
<tr>
<td></td>
<td>Thrifty goldenweed</td>
</tr>
</tbody>
</table>
Table 1 cont’d

**SHRUBS**

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amelanchier alnifolia</td>
<td>Saskatoon serviceberry</td>
</tr>
<tr>
<td>Artemisia bigelovii</td>
<td>Bigelow sagebrush</td>
</tr>
<tr>
<td>Artemisia nova</td>
<td>Black sagebrush</td>
</tr>
<tr>
<td>Artemisia tridentata ssp. tridentata</td>
<td>Basin big sagebrush</td>
</tr>
<tr>
<td>Artemisia tridentata spp. vaseyana</td>
<td>Mountain big sagebrush</td>
</tr>
<tr>
<td>Artemisia tridentata spp. Wyomingensis</td>
<td>Wyoming big sagebrush</td>
</tr>
<tr>
<td>Artemisia tridentata spp. Wyomingensis</td>
<td>Wyoming big sagebrush</td>
</tr>
<tr>
<td>Atriplex canescens</td>
<td>Fourwing saltbush</td>
</tr>
<tr>
<td>Cercocarpus montanus</td>
<td>Mountain mahogany</td>
</tr>
<tr>
<td>Chrysothamnus depressus</td>
<td>Dwarf rabbitbrush</td>
</tr>
<tr>
<td>Chrysothamnus nauseosus</td>
<td>Rubber rabbitbrush</td>
</tr>
<tr>
<td>Chrysothamnus viscidiflorus</td>
<td>Low rabbitbrush</td>
</tr>
<tr>
<td>Cowania stansburiana</td>
<td>Stansbury cliffrose</td>
</tr>
<tr>
<td>Ephedra viridis</td>
<td>Green Ephedra</td>
</tr>
<tr>
<td>Ceratoides lanata</td>
<td>Winterfat</td>
</tr>
<tr>
<td>Purshia tridentata</td>
<td>Antelope bitterbrush</td>
</tr>
<tr>
<td>Rhus trilobata</td>
<td>Skunkbush sumac</td>
</tr>
<tr>
<td>Rosa woodsii</td>
<td>Woods raised</td>
</tr>
</tbody>
</table>
Proposed Studies and Future Activities

Seed collections were initiated in 2002 and have continued each year to assemble a representative number of populations or regional ecotypes for study. In addition, the distribution of each species has been closely identified through field surveys and examinations. Seed collection sites have been mapped to prepare an initial survey and distribution map of each species. In addition, the occurrence and distribution of each species is currently being developed through examination of herbarium collections on file at different herbariums. Plant community and vegetative maps and site descriptions on file at different FS and BLM office are now being used to assist in locating and mapping plant distribution and populations throughout the Upper Colorado River Drainage. As possible, the distribution maps will be overlaid on topographic and climatic maps to define the physical factors that would be important in the evolution of different populations or ecotypes. As possible, plant distribution patterns will be overlaid with the Ecological Site descriptions utilized by the NRCS. More detailed mapping will continue in 2007 to define areas for additional seed collections. Based on the availability of funds, the distribution and field collection of seeds from five primary perennial grasses will be emphasized in 2007. This includes Sandburg bluegrass *Poa secunda*, muttongrass *Poa fendleriana*, Junegrass *Koeleria macrantha*, needle-and-threadgrass *Hesperostipa comata*, and Indian ricegrass *Achnatherum hymenoides* (Fig. 12).

Figure 12: Five Primary Perennial Grasses
Continued attention will be given to the expansion and collection of all broadleaf forbs. If additional funding is received from the Region 4 FS Native Plant Proposal, a few additional forbs will be added to the seed collection list. Scientists from other regions are currently working with a few perennial grasses that are included in our studies. As possible, we expect to cooperate with scientists in the northwest region and the Great Basin to collectively examine germplasm from a variety of populations of muttongrass, and needle-and-thread grass. DNA studies will be conducted to determine the genetic relationship and ecological distribution of different populations of both grasses that occur throughout the west. This information will assist in determining if regional populations exist and should be separately produced for restoration of specific areas.

In 2006, nine species were collected in Colorado (Table 2). The location and site characteristics for each collection were noted and these collections will be added to the previous program collections.

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
<th>Collectors</th>
<th>State</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astragulus</td>
<td>Astragulus</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>.5 lb</td>
</tr>
<tr>
<td>Elymus elymoides</td>
<td>Squirreltail</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>.2 lb</td>
</tr>
<tr>
<td>Festuca arizonicus</td>
<td>Arizona fescue</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>NA</td>
</tr>
<tr>
<td>Koeleria macrantha</td>
<td>Prairie junegrass</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>NA</td>
</tr>
<tr>
<td>Oryzopsis hymenoides</td>
<td>Indian ricegrass</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>1.1 lb</td>
</tr>
<tr>
<td>Oryzopsis hymenoides</td>
<td>Indian ricegrass</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>4.1 lb</td>
</tr>
<tr>
<td>Oryzopsis hymenoides</td>
<td>Indian ricegrass</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>4.3 lb</td>
</tr>
<tr>
<td>Oryzopsis hymenoides</td>
<td>Indian ricegrass</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>5.0 lb</td>
</tr>
<tr>
<td>Oryzopsis hymenoides</td>
<td>Indian ricegrass</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>3.8 lb</td>
</tr>
<tr>
<td>Poa fendleriana</td>
<td>Muttongrass</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>.2 lb</td>
</tr>
<tr>
<td>Senecio multilobata</td>
<td>Lobe leaf groundsel</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>3.0 lb</td>
</tr>
<tr>
<td>Sphaeralcea coccinea</td>
<td>Scarlet globenmallow</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>231 g</td>
</tr>
<tr>
<td>Sphaeralcea coccinea</td>
<td>Scarlet globenmallow</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>311 g</td>
</tr>
<tr>
<td>Sphaeralcea coccinea</td>
<td>Scarlet globenmallow</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>1.2 lb</td>
</tr>
<tr>
<td>Sphaeralcea coccinea</td>
<td>Scarlet globenmallow</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>271 g</td>
</tr>
<tr>
<td>Stipa comata</td>
<td>Needle and thread</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>.4 lb</td>
</tr>
<tr>
<td>Stipa comata</td>
<td>Needle and thread</td>
<td>Stevens and Anderson</td>
<td>CO</td>
<td>.9 lb</td>
</tr>
</tbody>
</table>

Table 2: 2006 Wildland Seed Collection