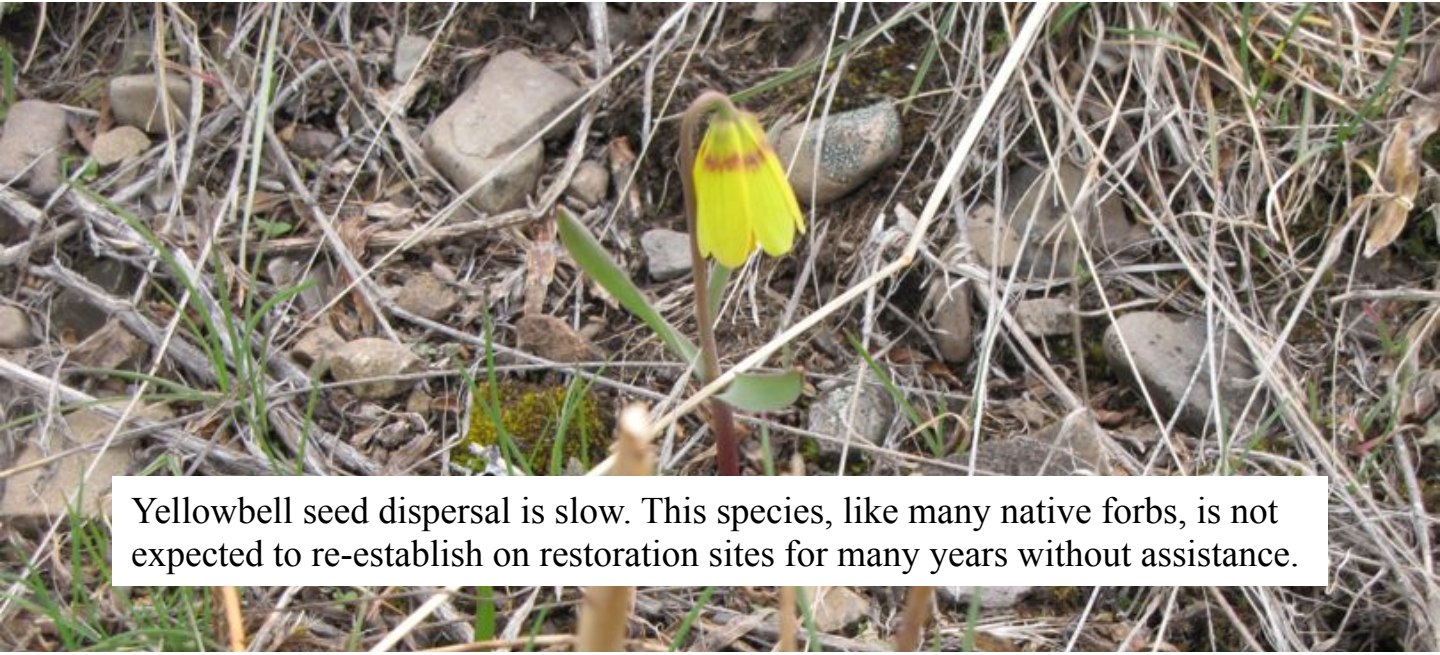


Shrub and Forb Diversity “Islands”

Work crews collected seeds of native species this year. Amounts collected are not sufficient to drill or broadcast over large areas. This high-value seed will be sown in patches to establish a seedbank for local genotypes in areas disconnected from potential seed sources.

Connectivity is important to ecosystem function. Patches of plant species facilitate connectivity in insect, bird, and mammal communities.



Yellowbell seed dispersal is slow. This species, like many native forbs, is not expected to re-establish on restoration sites for many years without assistance.



Shrub patches provide cover and protection for birds and small mammals.

Seeds used for shrub and forb diversity islands

Shrubs

Bitterbrush (*Purshia tridentata*)

Rabbitbrush (*Chrysothamnus nauseosus*)

Curl Leaf Mountain Mahogany (*Cercocarpus ledifolius*)*

Winterfat (*Krascheninnikovia lanata*)*

Forbs

Arrowleaf Balsamroot (*Balsamorhiza sagittata*)

Prairie Smoke (*Geum triflorum*)

Rocky Mountain Bee Plant (*Cleome serrulata*)*

Hairy Golden Aster (*Heterotheca villosa*)

Oregon Sunshine (*Eriophyllum lanatum*)

Larkspur (*Delphinium bicolor*)

Penstemon spp. (three collections)

Puccoon (*Lithospermum ruderale*)

Silver-leaf phacelia (*Phacelia hastata*)

Yellowbell (*Fritillaria pudica*)

Shooting Star (*Dodecathean pulchellum*)

Pussytoes (*Antennaria* sp.)

Silky lupine (*Lupinus sericeus*)

Upright Prairie Coneflower (*Ratibida columnifera*)

Death Camas (*Zigadenus venenosus*)

*Seeds collected away from ranch

Antennaria seeds are wind dispersed but unlikely to travel to isolated restoration sites.



Sowing lupine in patches will “jump start” establishment of this ecologically important genus.

Rabbitbrush provides an important food source for late-season pollinators.



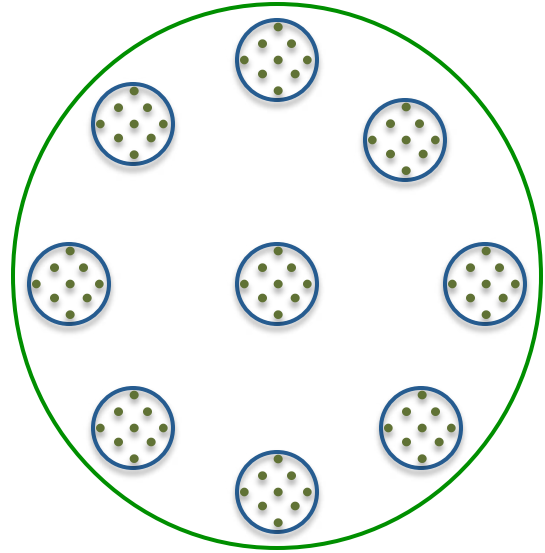
Sagebrush is best planted in patches so its abundance and location can be controlled.



Patch Design

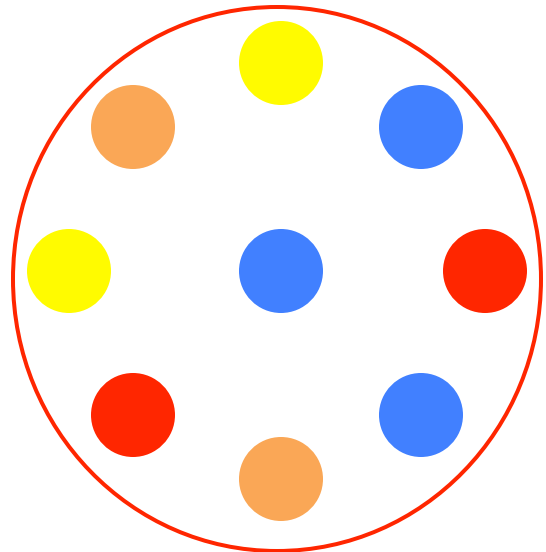
Shrub Patches

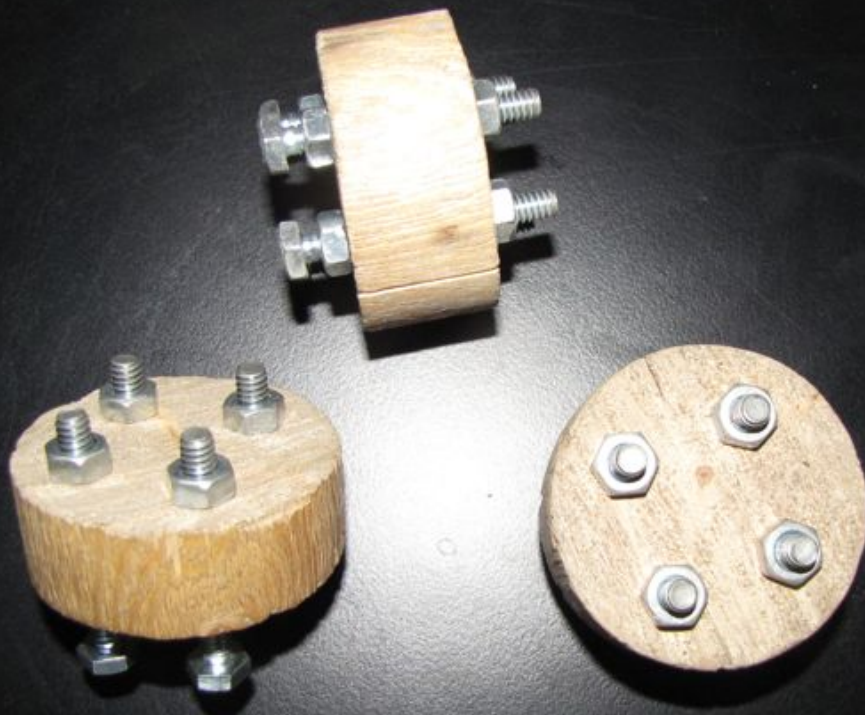
On the following maps the green dots represent the 20 ft² areas where diversity islands are planned. The figure to the right shows the shrub seeding strategy. Each shrub island encompasses nine sub-patches.



Forb Diversity Islands

Forb diversity islands are represented on the following maps with multi-colored dots. Broadcast seeds of individual species will be raked into areas represented by small circles, with color variation representing forb species variation. Symbol scales are the same as in the shrub island figure above.





Imprinters are used to make holes for seeds. Imprinter depth can be adjusted to accommodate the placement depth requirements of different seeds. Planting crews won't have to think about proper seed placement depth.



Bitterbrush seeds will be cold stratified in a refrigerator before planting in the spring.

Entrance Area

Shrub patches are distributed to increase connectivity between the south center-pivot, Lower Woodchuck, and future restoration areas above the upper house and Partridge Alley. Mechanized seeding is planned for next spring. Fringed sage and rabbitbrush are included in seed mixes.



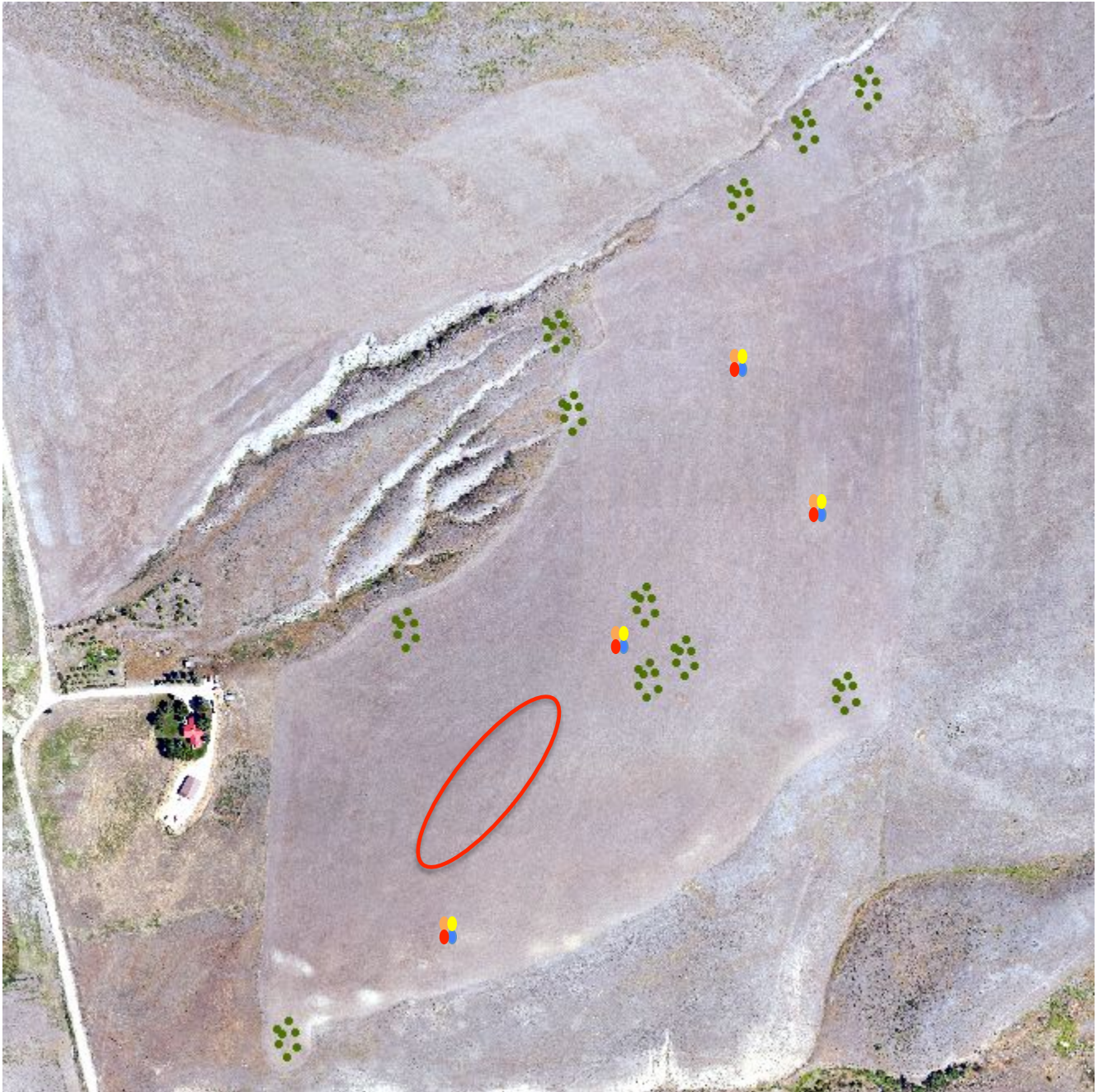
South Crested

Bitterbrush, mountain mahogany and winterfat will be seeded. Fine soils and abundant nearby seed sources make this area susceptible to sagebrush invasion. Sagebrush will establish in this area without assistance.



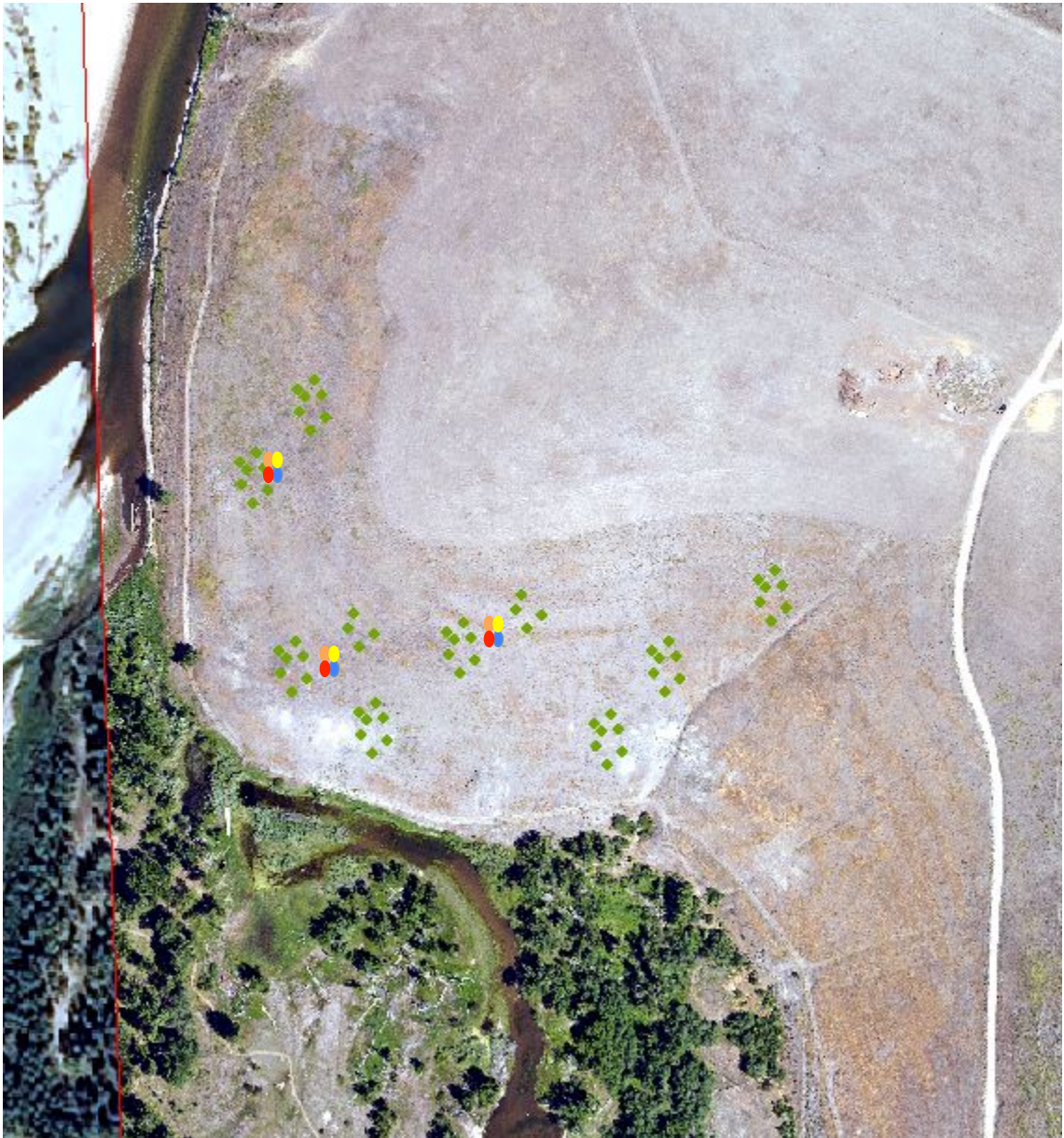
Orchard House Hill

We drill-seeded bitterbrush and rabbitbrush across this area. Shrub island species include mountain mahogany, winterfat, sagebrush and junipers. Containerized rough fescue plantings are planned for the area enclosed by the red ellipse.



South Flood Plain Hill

We will drill grass, forb, and shrub seeds on this steep slope if it can be done safely. Otherwise, crews will broadcast and rake in seed manually. Bitterbrush is included in shrub islands.



North Sainfoin and Cheatgrass

Bitterbrush is established on similar nearby sites on the Sapphire Ranch. and is expected to do well in these fields.



