

WYOMING WILDSCAPE

HOW TO DESIGN, PLANT, AND MAINTAIN LANDSCAPING TO BENEFIT PEOPLE AND WILDLIFE



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INTRODUCTION



Wyoming is home to 325 species of birds – some are here year-round, while others only spend the summer or winter months in Wyoming, or are found here only during spring and autumn migration. Nearly half of the 325 species are classified as Neotropical migratory birds. These are simply the species of birds that migrate between breeding grounds in Canada and the United States, and wintering grounds in Latin America south of the U.S. border with Mexico.

Long-term Breeding Bird Survey data in North America show that populations of many species of Neotropical migrants have declined, as well as some resident species (those that don't migrate or that migrate within the U.S.). These declines are due to a number of problems, especially habitat loss and degradation on breeding and wintering grounds and along migration routes. In response to these population declines, the international Partners In Flight (PIF) program began in 1990, and Wyoming Partners In Flight, our state working group, began in 1991. The goal of PIF is to conserve, restore, or enhance populations of landbirds and the habitats upon which they depend for survival, while including the needs of humans in all programs and endeavors.

With that goal in mind, something we can do to help populations of both resident and Neotropical migratory birds is to plant native wildscapes – landscaping that benefits both people and wildlife. Wildscaping can be done on virtually any piece of land of any size if a wildscaping plan is developed and followed. Use this guide to design, plant, and maintain *your* wildscape. In the back of the guide are some additional resources to help you find out more about wildscaping. While this list is by no means exhaustive, it does give you a place to start. Contact your local Conservation District, greenhouse, or landscaping center to order native plants, or obtain a permit to collect plants on state or federal lands.

For more information about Partners In Flight, contact the Nongame Bird Biologist, Wyoming Game and Fish Department, 260 Buena Vista, Lander, WY 82520 (307-332-2688 or in-state 1-800-654-7862), or visit the Partners In Flight website at www.partnersinflight.org.

Enjoy your Wyoming Wildscape!

BENEFITS OF WILDSCAPING

- ◆ Wildscaping is attractive to people *and* it provides habitat for wildlife. Native plants support up to 50 times as many species of native wildlife as do non-native, or exotic, plants.
- ◆ Wildscaping increases the value of your property.
- ◆ Plantings can be used to provide privacy and reduce noise.
- ◆ Proper placement of shade trees and shrubs reduces heating costs for homes and other buildings by 25 to 40%, and reduces cooling costs by 15 to 50%.
- ◆ Wildscaping can reduce water costs by up to 60% and water use by up to 70% because it saves water used in maintaining a non-native lawn, which needs 36 inches or more of supplemental water per year.
- ◆ Wildscaping increases water infiltration into the soil, which reduces soil erosion, runoff of urban pollutants, and flood damage.
- ◆ Wildscaping with a diversity of plants will help guard against pests and disease, which have greater impacts on areas with only a few types of plants.
- ◆ Wildscaping protects human health, pets, and the environment by minimizing or eliminating pesticide use and reducing fossil fuel use.
- ◆ Lawn maintenance is labor-intensive and has hidden costs such as equipment, fuel, lubricants, blade sharpening, repair, and storage. Wildscaping can reduce the costs and labor associated with lawn maintenance by up to 60% because it requires less mowing, fertilizing, and pesticide use.
- ◆ Wildscaping saves landfill space by composting food wastes and by recycling or composting yard wastes.
- ◆ Trees help clean the air we breathe and replenish it with fresh oxygen.
- ◆ Wildscaping creates living classrooms for nature study and enjoyment, and promotes awareness of ecology, biological diversity, and the integration of natural and human communities.
- ◆ With proper planning in appropriate areas, wildscaping can mimic natural ecosystems, providing a home for wildlife and a haven for you.



DESIGNING YOUR WILDSCAPE

- ◆ With a little planning and foresight, you can plant and enjoy a wildscape in your backyard; on school grounds; at businesses, churches, and golf courses; or in parks, greenbelts, and open areas.
- ◆ Plan to practice water-wise wildscaping, or xeriscaping (this uses less water, reduces the time and cost spent on lawn maintenance, and provides the best growing conditions for your plants).
 - Use water efficiently - water only when soil moisture is low.
 - Avoid watering during the hottest part of the day (10 am – 3 pm) or in windy conditions to reduce water loss from evaporation.
 - Water thoroughly and completely, but not too often.
 - Use native organic mulch (wood chips or shredded bark) to help retain moisture. Mulch also reduces weed growth, prevents soil compaction, adds nutrients to the soil, encourages extensive rooting, regulates soil temperature, and reduces plant damage.
 - Choose plants that are well adapted to your region, especially drought tolerant plants.
- ◆ Plan to use minimal or no pesticides.
 - Many insects and microorganisms are beneficial and can be controlled biologically by the birds using your wildscape.
 - If insect control is needed, practice Integrated Pest Management (see the “Wildscape Maintenance” section).
- ◆ Plan to create habitat diversity in your wildscape.
 - All creatures need food; water; and cover in which to rest, escape from predators and weather, and raise their young.
 - To provide and improve habitat for wildlife and attract the most species, include vertical, horizontal, and structural diversity.
 - * Vertical diversity - multi-layered vegetation including the canopy of tall trees; the understory of smaller trees, shrubs, and vines; and the layer of ground vegetation comprised of low-growing shrubs, flowers, grasses, and ground-hugging plants. Vertical diversity increases the surface area for birds and other wildlife to nest, feed, and rest upon.

- * Horizontal diversity - create clumps of different plant types and open space throughout your wildscape to produce “edge effects” (the interface between distinct vegetation types).
- * Structural diversity - include a large variety of plant species in your wildscape plan to create different sizes, shapes, and densities of vegetation.
- While waiting for plants to mature and provide food and nesting sites, place feeding stations and nest boxes in your wildscape.
 - * Place bird feeders close enough to cover to allow easy escape, but not so close that predators, including domestic and feral cats, can hide and ambush unsuspecting birds.
 - * Erect nest boxes and bat houses for specific species you wish to attract (first determine what should occur in your area) and place them at the appropriate height and aspect (direction).
- The number of species you attract will increase if you provide a source of water, especially a moving source of water (see the “Planting and Wildscaping Guidelines” section).
- ◆ Plan to use adapted plants, and choose native plants whenever possible.
 - Adapted plants are those suited to specific soil, moisture, and sun environments, or “micro-climates”.
 - Adapted plants are more disease resistant and are naturally attractive to wildlife.
 - Adapted plants require less maintenance, as well as less fertilizer, pesticides, and water (this reduces urban runoff and pollution).
- ◆ Plan for the long term.
 - Create a “blueprint” (to scale) of the area to be wildscaped, and include the following (see Figure 1).
 - * Existing buildings, fences, sidewalks, driveways, and property lines.
 - * Existing plants, feeding stations, nest boxes, and water sources.
 - * Overhead wires and powerlines.
 - * Underground pipes and cables.

- * Typical wind direction.
- * Path of the sun, and daily sun and shade patterns.
- * Moist and dry areas, water movement, drainage patterns, and slope of the land.
- * Soil type – clay, silt, sand, or loam (an equal mix of all three).
- * Problem spots (areas that are difficult to water, areas with poor soil, areas with extreme snow or ice build up, etc.).

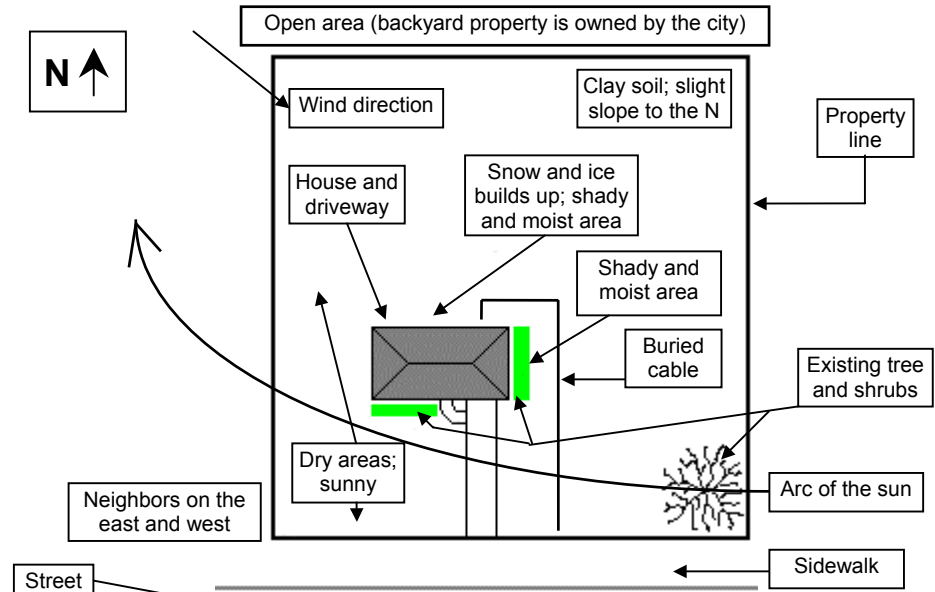


Figure 1. A pre-wildscaping blueprint.

- Determine how much lawn area is needed for recreation and other uses (some open space is also good for wildlife). Wildscape the rest, keeping in mind variety, density, and edge.
- Develop a budget and timeline for your wildscape. Don't expect to plant everything during the first year. Decide how you want your wildscape to look in 2, 5, 10, 20, 50 years. (If needed, you can update your plan.)
- Prepare a final wildscape plan using a transparent overlay that shows the arrangement of new plants in relation to existing features (see Figure 2 and the “Deciding What to Plant” section).

• Remember to:

- * Place plants in the soil, moisture, and sun environments for which they're adapted (see Table 1).
- * Have your soil tested if in doubt about your soil type (contact your local County Extension office for assistance).
- * Place clusters of plants with similar water requirements together in "water zones" to increase diversity and save water.
- * Place the tallest plants in back, descending to the shortest closest to the house, school, business, or church.
- * Allow for the maximum growth of each plant in your plan including height, width, and overall shape (see Table 1).
- * Decide how you're going to water your wildscape.
- * Ask questions and complete any additional research before you plant so changes can be made to your plan, if needed.
- * Contact your local utilities company *before* you dig!

Expand your wildscape – ask neighbors to join you in wildscaping adjoining property!

Leave snags (standing dead trees), fallen trees, and fallen branches whenever possible. They provide cover, nesting sites, and a source of food for woodpeckers, nuthatches, and small mammals.

Mature coniferous trees attract nuthatches, siskins, chickadees, kinglets, and squirrels.

Brush and rock piles attract house rabbits, chipmunks, lizards, and rodent-eating snakes, while decaying logs create a food source for thrushes, warblers, and towhees.

Plant flowers along the inside edge of your shrubs to attract butterflies and hummingbirds.

Shrubs and shorter trees provide nesting sites for robins, buntings, and grosbeaks.

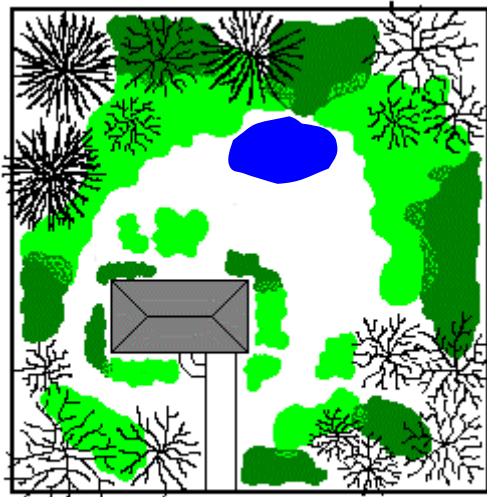


Figure 2. A final wildscape plan.

Mature deciduous trees attract orioles, kingbirds, vireos, owls, and squirrels.

Tall native grasses provide food, cover, and nesting sites for meadowlarks, ground-dwelling sparrows, rabbits, toads, lizards, and insects that birds feed on.

Plant a section of sunflowers and leave them standing for a winter food source for siskins and goldfinches.

Shrubs and vines provide cover and nesting sites for wrens, sparrows, towhees, catbirds, and warblers.

DECIDING WHAT TO PLANT

Go for the Natives

- ◆ Plant native vegetation whenever possible! Choose plants that seasonally produce fruit, berries, nuts, seeds, or nectar for wildlife, and provide cover and nesting places (exotics don't provide these).
- ◆ Native plants are acclimated to the soil, climate, altitude, and moisture in Wyoming; they naturally attract and provide habitat for wildlife; they're generally easy to maintain; and they live longer than exotics.
- ◆ Exotic plants can become invasive and take over native habitats.
- ◆ Native trees, shrubs, and vines provide shade, make ideal hedgerows and windbreaks, provide privacy, and are beneficial to wildlife for nesting and cover, and as a food source.
- ◆ Native grasses and wildflowers will provide self-seeding food patches for wildlife and can be incorporated into lawn areas or used in large, open spaces bounded by lawn borders.
- ◆ Ask your local greenhouse or landscaping center to stock native plants (if they don't already), buy native plants from the Natural Resources Conservation Service, or obtain a state or federal collection permit and collect your own seeds or transplants.

Purchasing Trees and Shrubs

- ◆ Bare Root – small, no soil around the roots (root mass should be fibrous), plants are still dormant (inactive, leafless), store at 37° F or in the shade, keep roots moist, plant within 72 hours. Easy to plant and are the least expensive of the three, but have a poorer survival rate.
- ◆ Potted – mid-sized, in 1 to 15-gallon containers, normally leafed out. They allow more flexibility in planting time; plant when either dormant or growing. May require daily watering; add water until it drains from the container. Can become root-bound if left in the container too long.
- ◆ Balled and Burlapped (B&B) – larger, normally leafed out. Size adds instant effect, but plants can be expensive and difficult to handle (use hay hooks or several people to lift heavier plants).

Other Planting Considerations



- ◆ If in doubt about what to plant, see what grows naturally around your county, and check the associated species on the U.S. Forest Service's website (see the "References and Resources Guides" section).
- ◆ Match the plant's purpose (food or cover for wildlife, shade, wind protection, privacy, color, etc.) to its characteristics.
- ◆ Borders and edges that curve look more natural than straight ones. Arrange borders and edges to fit the size and curve of mature plants.
- ◆ Buy or collect plants and seeds that are produced no farther away than 200 miles north, 100 miles south, or 250 miles east or west of where you live to ensure plants will be well adapted to your climate. A change of 1,000 feet in elevation is equivalent to 175 miles.
- ◆ Collect plants from areas with growing conditions similar to your wildscape. Consider shade, slope, aspect, soil type, and wind exposure when choosing plants to collect and transplant.
- ◆ When collecting seeds and transplants, gather only a few seed heads or plants from any one area, and only if there are plenty to begin with.
- ◆ Plants with underground stems transplant easily. Only young or small bunchgrasses and plants with a taproot transplant successfully, and only when they are dormant (not actively growing).
- ◆ Choose plants with an adequate sized container or root ball to ensure that plants aren't root-bound. Healthy root tips are clean and white.
- ◆ Trunks of balled and burlapped plants should not be loose in the soil ball. Burlap should be tightly wrapped, and not loose or broken.
- ◆ Select trees and shrubs with a straight, strong form and well-spaced, firmly attached branches. Trunks and branches should be free of mechanical wounds, scars, insects, disease, and signs of stress.
- ◆ Store all plants in a cool, shady, windless spot, and keep roots moist.
- ◆ Deciduous trees, shrubs, and vines drop their leaves in autumn, and are best placed to the east, west, and south to provide shade to decks, driveways, sidewalks, and buildings in the summer, while allowing the sun to penetrate during the winter.
- ◆ Evergreen trees and shrubs keep their leaves or needles; plant these to the north and west of buildings to block the wind.

- ◆ Low-growing evergreens planted near building foundations, especially on the windy or sunless side, can help insulate during the winter.
- ◆ Plant shade tolerant shrubs and vines, like dogwood, buffaloberry, and Virginia creeper, near large trees to create diversity and provide food sources, nesting sites, and cover for birds.
- ◆ Plant shrubby thickets next to fruiting shrubs to provide food, cover and nesting sites for birds. Plants like rose, juniper, hawthorn, and buffaloberry will attract birds but deter browsing by rabbits and deer.
- ◆ Plant shrubby hedgerows to create privacy screens or a small windbreak, and provide cover and nesting sites for birds.
- ◆ Plant windbreaks 2 to 3 rows deep for a backyard, and 3 to 7 rows deep for larger areas (windbreak length is more important than depth). Once established, windbreaks reduce wind for a distance of up to 10 times the height of the tallest plants, and improve air quality by capturing dust. Use a variety of fast and slow growing trees and shrubs to provide cover for a longer period of time and help prevent total losses to disease and severe weather. Include native wildflowers and grasses along the edge to provide food for hummingbirds, bees, butterflies, ground-feeding birds, and small mammals.
- ◆ Plant nectar-producing, tubular flowers to attract hummingbirds. Their favorite colors are (in order) red, orange, pink, purple, blue, and yellow.
- ◆ Plant nectar-producing blue and yellow flowers to attract bees. (Most of the 5,000 species of native bees in the U.S. are solitary, non-aggressive, nest in holes in the ground or burrows in twigs and dead tree limbs, and pollinate plants – including 30% of the plants we eat.)
- ◆ Plant nectar-producing red, orange, yellow, pink, and purple flowers to attract adult butterflies. Flowers should be flat-topped or clustered, have short flower tubes so butterflies can reach the nectar, and be planted in sunny areas protected from the wind.
- ◆ To keep butterflies in your wildscape, plant butterfly caterpillar "host" plants to provide them with food. Remember, very few of the 700+ species of native butterflies in the U.S. are pests.
- ◆ Use low-growing or ground-hugging plants as a lawn substitute in shady or hard-to-mow sites for additional color, texture, variety, and areas of low maintenance.

- ◆ Plant native bunchgrasses to create low maintenance accent areas.
- ◆ Red, orange, and yellow are warm colors that attract attention; blue, green, and purple are cool colors that recede from view. Choose color combinations that are complimentary – like red and orange, or blue and purple – or contrasting – like yellow and blue, or purple and red.
- ◆ Use compost from homemade or ready-made bins in wildscape plantings, garden beds, and lawn areas. Spread a 2- to 3-inch layer of well-aged compost (it should look like soil) over the planting area and till to a depth of 6 to 8 inches.
- ◆ Join the campaign against invasive plants! Learn which plants in your area are invasive (see the “Need More Information?” section). Never choose invasive plants for your wildscape, and remove existing invasive plants. Volunteer for “weed-pulls” in your community.
- ◆ While food plants are maturing, use different types of bird feeders (tube, platform, suet, fruit) to appeal to birds with different feeding habits. Avoid feeding generic seed mixes; black oil sunflower seeds are a good overall choice. Make your own suet cakes – melt 1 cup of crunchy peanut butter with 1 cup of lard; add 2 cups of oats, 2 cups of cornmeal, 1 cup of flour, and 1/3 cup of sugar; form suet to fit inside feeder; cool completely. Clean all bird feeders weekly with a solution of 1 part chlorine bleach to 10 parts hot water. Remove feeders if disease is suspected or to discourage use by undesirable species.
- ◆ While nesting plants are maturing, buy or build nest boxes for the exact species you want to attract. House Sparrows and European Starlings are aggressive non-natives that will overtake nest boxes if they can get inside, so proper entrance hole diameter is critical. Nest box style and size are also important. Ventilation holes near the top, drainage holes in the floor, and a roof overhang are essential. Nest box wood should not be painted or chemically treated. Proper nest box placement – height above ground and direction the box faces – can mean the difference between a nest box that’s used and one that isn’t. Clean out old nesting material in the autumn; hinges on one side of the nest box allow for easy entry and cleaning.
- ◆ If soil is compacted, of poor quality, or extremely alkaline or acidic, use raised planting beds and walking paths to create your wildscape.

PLANTING AND WILDSCAPING GUIDELINES

How to Plant Trees and Shrubs

- ◆ From: *The Best Way to Plant Trees, USDA Forest Service Technical Update* (see the “References and Resource Guides” section).

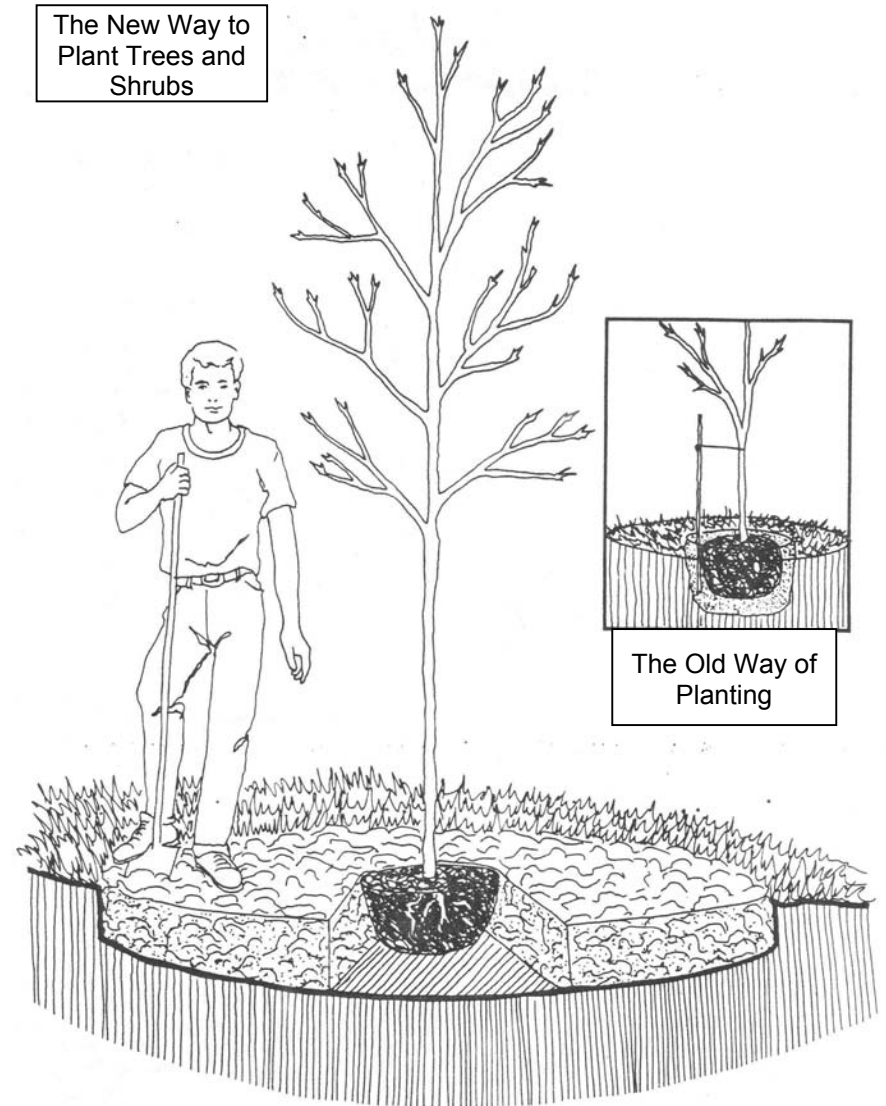


Figure 3. The best way to plant trees and shrubs.

- 1) Plant trees and shrubs in spring for best results, or in late summer, autumn, or late winter. Never plant trees or shrubs in mid-summer!
- 2) Mark out an area that is 5 times the diameter of the planting ball around the roots of potted or balled and burlapped plants, or at least twice as wide as the spread-out roots on bare root plants.
- 3) Loosen and mix the soil in this entire area to a 12-inch depth and, if needed, add organic matter evenly throughout.
- 4) In the center of the planting area, dig a shallow hole that will allow the root ball to sit on solid ground (not on loose soil) with its upper surface level with the existing soil.
- 5) For bare root plants, prune out damaged roots. For potted plants, slide the plant out of the pot while carefully keeping the roots and soil together. For B&B plants, cut and remove the bottom half of the twine or wire around the root ball, leaving the top intact.
- 6) Position the tree or shrub so it's perpendicular to the ground and the trunk or main stem is growing straight up. For bare root trees and shrubs, set the plant in the soil at the depth of the soil-stained area on the trunk. For potted plants, set the root ball in the hole at the same level it originally occupied in the pot. For B&B plants, set the root ball in the hole so the top of the ball is level with the soil surface, and remove the remaining twine or wire and as much of the burlap as possible (some burlap is okay; just make several slits in it and keep it below the soil surface).
- 7) Backfill around the root area, and *gently* tamp the soil to eliminate large air pockets (they allow disease to grow on the roots). Water slowly and thoroughly to settle the soil and prevent over-packing.
- 8) Rake the soil evenly over the entire area, and cover it with a 2- to 4-inch layer of organic mulch. Or, to further discourage grass and weed growth, place landscape cloth or black plastic (with holes cut in it to allow plants to grow) over the soil after planting, and place the organic mulch layer over the cloth or plastic. Keep the cloth or plastic in place until plants are well established; then remove it.
- 9) Water-holding berms and depressions are *not* recommended. They encourage roots to remain close to the tree rather than spread out away from the trunk. Organic mulch will hold water adequately.

- 10) Staking, bracing, or tying trees is *not* recommended. If wind is a problem or the tree starts to lean, use 1 or 2 flexible ties or stakes, make sure the trunk can still sway in the wind (this builds strength), and remove the supports after a few years to avoid killing the tree.
 - 11) Wrapping the tree with protective tape is *not* recommended. This will slow the tree's ability to adapt to the site and will provide a refuge for insects. Remember, tree bark needs air and sunlight to build a healthy, protective sheath. If needed, use a tree shelter made of a translucent material that allows oxygen and sunlight to enter.
 - 12) Keep young tree and shrub roots moist during the growing season. Water during the winter, too, if there's been little or no precipitation during the season, there's no snow cover, and the soil isn't frozen.
- ◆ Questions? Contact the Natural Resources Conservation Service or one of the other resources in the "Need More Information?" section.



How to Plant Wildflowers

- ◆ From: *Wildscapes: Growing Wildflowers, Trees, and Shrubs in Wyoming, and Landscaping with Wildflowers and Other Native Plants* (see the "References and Resource Guides" section).
- 1) Purchase or collect wildflower seeds when they are dry and fully mature. Sow seeds in the autumn, 1 month after the first frost or when the soil has cooled. (Seeds can also be planted in the spring if erosion is a problem on your site.) All wildflowers will start readily from seed in proper conditions; many will also reseed readily or spread through underground shoots if turfgrass is not nearby.
 - 2) Control weeds in the summer, prior to autumn planting. Till the soil and water the area to encourage weed germination. Smother weeds using a thick layer of organic mulch on top of black plastic, or spray Roundup® as directed on the label (do not spray within 2 weeks of planting). If needed, repeat this step until all weeds are killed.
 - 3) Break up the soil to a depth of 1 to 2 inches in moist locations or 3 inches in dry areas. Use a rototiller, harrow, disk, or plow depending on the size of your area.

- 4) If needed, add compost, weed-free straw, grass clippings, or sphagnum peat moss (do not use mountain peat; it's too heavy for many plants, doesn't drain well, and may have high levels of soluble salts). Do not add manure; it's too hot for wildflowers and may contain weed seeds that will compete with flowers.
 - 5) Fertilize only if needed! Test your soil first. Do not over fertilize, especially with high nitrogen fertilizers; this encourages weed growth. Try improving the soil by adding organic materials first.
 - 6) Rake the planting area to smooth the soil.
 - 7) Select a wildflower mix for your specific area, or make your own from native species (see Table 1, and the "Need More Information?" and "References and Resource Guides" sections). Include a few annual species along with the perennial species in your mix.
 - 8) For 1 acre or more, sow 4 to 11 pounds of seed per acre. For ½ acre or less, sow 4 to 5 ounces of seed per 1,000 square feet.
 - 9) Broadcast seed by hand or use a seed spreader. Mix in seed carrier, clean sand, or rice hulls to help distribute seed (use 1 to 2 parts seed carrier to 1 part seed).
 - 10) Gently rake the area to cover the seeds slightly (¼ to ½ inch) and give them good contact with the soil.
 - 11) Mulch with weed-free straw, commercial mulch fabric, or pine needles in windy areas. Spread mulch lightly but evenly over seeds.
 - 12) Soak the planted area thoroughly after sowing. Keep it moist for 4 to 6 weeks. Reduce watering once seedlings are up. Use up to ½ inch of water per week for optimal blooming. Be careful not to wash the seeds away. Reseed thin areas, using top sowing, in late autumn or early spring after frost cracks appear in the soil and when the existing wildflowers are dormant (not growing). Rake seeds into the wildflower bed so they are lightly covered and have good soil contact.
- ◆ Questions? Contact the Natural Resources Conservation Service, your local County Extension office, the Wyoming Native Plant Society, or one of the other resources in the "Need More Information?" section.



How to Plant Grasses

- ◆ From: *Sharp Brothers Seed Company* (see the "References and Resource Guides" section).
- 1) When choosing grasses, remember that warm season grasses grow best in summer and are dormant (inactive) in autumn, winter, and spring, while cool season grasses grow best in spring and autumn, may remain green in winter, and are dormant in summer.
 - 2) Plant warm season grasses in late spring when the air temperature is 70 to 90°F. Plant cool season grasses in early spring or early autumn. Larger areas may need to be burned, hayed, mowed, or grazed to remove old growth and prepare the site for planting.
 - 3) For warm season grasses, control weeds in your planting area in the spring or previous autumn, prior to spring planting. Smother weeds with black plastic and a thick layer of organic mulch, or use Roundup® as directed on the label (don't spray within 2 to 4 weeks of planting). For cool season grasses, control weeds in the summer, prior to autumn planting. Smother weeds, or use Roundup® as directed on the label (don't spray within 1 to 2 weeks of planting).
 - 4) Till the soil to a depth of 4 to 6 inches, then prepare the seedbed so the soil is smooth and firm (soil should not be fluffy or too hard). Or, for large areas, no-till the seed into the stubble of a previous crop or where the previous plants have been eliminated.
 - 5) Select a grass mix for your specific area, or make your own from native species (see Table 1, and the "Need More Information?" and "References and Resource Guides" sections). Include several different grasses in your mix to create diversity, but make sure all have similar requirements for sunlight, moisture, and soil type.
 - 6) Plant seeds ¼ to ½ inch deep for proper seed-soil contact.
 - 7) Use a grass drill for planting, or broadcast the seed in perpendicular directions onto the prepared seedbed (a seed carrier may be needed) and roll lightly to ensure good contact with the soil.
 - 8) Keep your planting area moist until the new grass is 2 inches tall.
- ◆ Questions? Contact your local County Extension office or one of the other resources in the "Need More Information?" section.

How to Create a Water Source

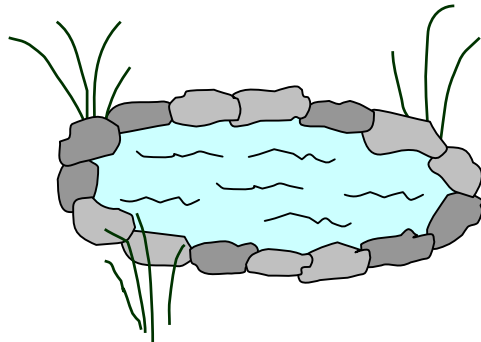
- ◆ Water sources can range from a simple birdbath to an elaborate pond, depending on the size of your wildscape, your budget, and your imagination (see Figures 4 through 8).
- ◆ No matter what type you choose, always keep your water source clean, and replenish it with fresh water.
- ◆ Check local safety and building ordinances before building a pond.



Figure 4. Birdbath.

A birdbath, whether purchased or homemade, should be elevated above the ground and placed in an open area to reduce predation on the birds and other wildlife using the water source. The most simple birdbath design is a shallow dish placed on a flat log or rock. Birdbath water should only be a few inches deep to prevent drowning. Place a rock in the water as a perching site for the birds using the water source.

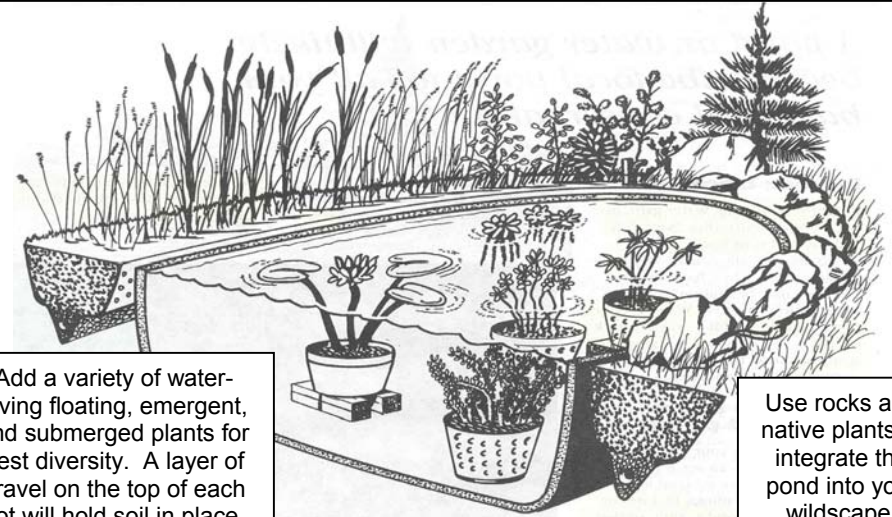
Dig a hole 6 inches deep, line it with 1 to 2 inches of sand to smooth out the rough spots, and cover the sand with a 1- to 2-inch layer of cement or a heavy-duty plastic liner. Smooth the cement or plastic liner into place by hand. Encircle the pool with flat rocks, and landscape around the pool using native plants. When filled with water, the pool should be shallow – only 2 to 4 inches deep. Two pools can be created side-by-side, with one slightly lower than the other into which water is allowed to drip by placing a trickling hose or small water pump in the higher pool.



Another way is to purchase a pre-formed plastic tub. Dig a hole as deep as and slightly wider than the tub, line the hole with sand, set the tub in place, and backfill with dirt. Use rocks and native plants to integrate the pool into your wildscape.

Figure 5. Shallow pool.

Allow water to drain away from buildings, through a wetland, and into your pond.



Add a variety of water-loving floating, emergent, and submerged plants for best diversity. A layer of gravel on the top of each pot will hold soil in place.

Use rocks and native plants to integrate the pond into your wildscape.

Make a simple pond that's at least 1 foot deep, but preferably 2 to 3 feet deep. Mark out your pond shape on the ground using a hose or rope, and excavate the pond area slightly smaller than your heavy-duty plastic liner or rubber fabric liner. Use sand or an old carpet to smooth the rough spots, and place the liner on top. Contour the pond and cover the edges of the liner with excavated soil. Slowly fill the pond with water, gently smoothing the liner as the pond fills up.

Figure 6. Simple pond.

This more complex design includes a water entry pipe, waterfall, and liner. See the "References and Resource Guides" and "Need More Information?" sections for literature on design details.

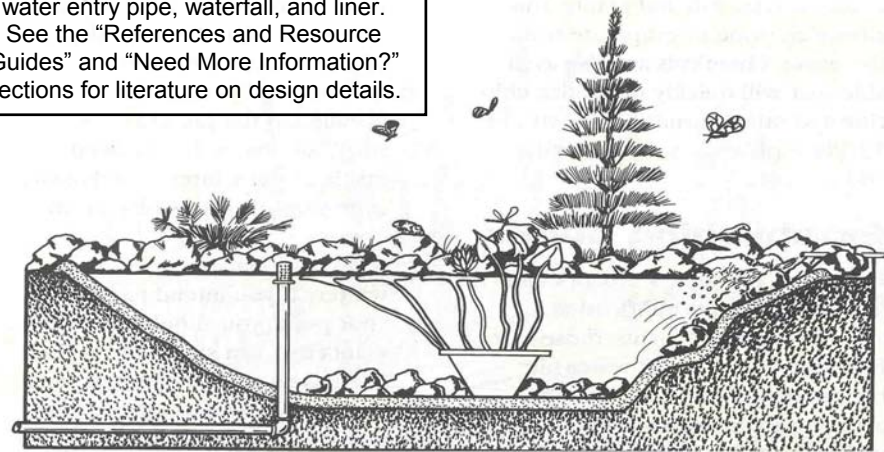


Figure 7. Complex pond.

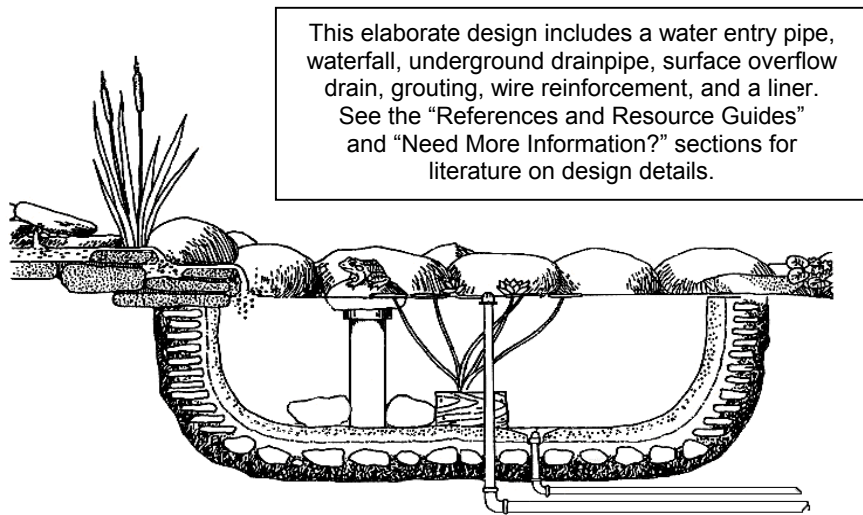


Figure 8. Elaborate pond.

- ◆ Locate your water source away from feeding stations to reduce confusion for the birds and other wildlife using your wildscape.
- ◆ For cleaner water and less maintenance, avoid placing your water source directly under trees.
- ◆ A small immersion heater will keep your birdbath, pool, or pond from freezing during the winter. Or, for a simple winter water source, fill a birdbath or shallow dish with warm water in the morning and empty it at night so it doesn't freeze.
- ◆ Minimum pond depth for fish is 18 inches, but a 2- to 3-foot or greater "deep end" is recommended.
- ◆ Plants should cover 50 to 70% of the pond's surface. Add duckweed and other free-floating plants to help keep the water clear. Include submerged pots of native wetland plants to provide cover for fish and wildlife (see Table 1).
- ◆ Use sand or gravel to create a small, shallow area in your pool or pond where birds, butterflies, and bees can drink.
- ◆ Questions? Contact the National Wildlife Federation or Natural Resources Conservation Service (see the "Need More Information?" and "References and Resource Guides" sections) or your local landscaping center.

How to Create a Terrace

- ◆ From: *Backyard Conservation* (see the "Need More Information?" and "References and Resource Guides" sections).
- ◆ Terraces create several small planting areas in your wildscape, and allow moisture to soak into the soil, which prevents soil erosion on steep or long slopes.
- ◆ Treated wood, rocks, bricks, and concrete blocks are good choices for terrace walls. Regardless of the material chosen, make sure it's properly anchored into the soil.
- ◆ Slope steepness dictates the height of terrace walls. Walls should be high enough so the land between them is level. If terrace walls need to be more than 2 feet high, it's best to consult a professional builder to ensure walls will be safe and sturdy enough to withstand freezing, thawing, and heavy rain storms.
- ◆ The safest way to create a terrace is the cut and fill method (see Figure 9). This also requires very little or no additional soil.

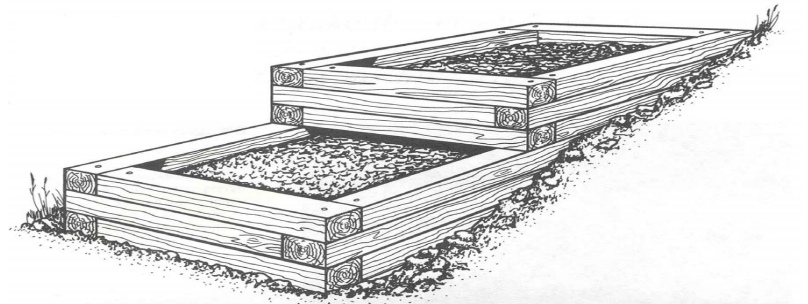


Figure 9. Creating a terrace using the cut and fill method.

- ◆ Another option for steep slopes that are hard to mow is to plant the entire area with a ground cover of low-growing plants (see Table 1).
- ◆ For long slopes, "strip cropping" can be used. Plant beds of perennial bunchgrasses and wildflowers alternating with strips of turfgrass (preferably native) across the slope. Once established, many perennial plants can effectively control soil erosion. Adding organic mulch will also help retain moisture and reduce runoff.
- ◆ Questions? Contact the Natural Resources Conservation Service (see the "Need More Information?" section) or a professional builder.

How to Create a Wetland

- ◆ From: *Backyard Conservation* (see the “Need More Information?” and “References and Resource Guides” sections).
- ◆ Wetlands filter excess nutrients, chemicals, and sediment from runoff. This helps keep groundwater, streams, and rivers clean; holds flood waters; provides wildlife habitat; and is aesthetically pleasing.
- ◆ Wetlands attract birds, bats, frogs, toads, and salamanders, and the aquatic insects they feed on.
- ◆ Wetlands that dry out in summer can support a variety of plants and wildlife and won't produce mosquitoes. There are 150 species of mosquitoes in the U.S. (14 of them carry West Nile Virus). Keep in mind that mosquitoes cannot survive in wetlands that dry out in less than 1 week after a summer rain, or in wetlands connected to a pond with small fish and predatory aquatic insects like dragonflies.
- ◆ If a wetland already exists, check wetland regulations before making any changes to it.
- ◆ Check local safety and building ordinances before creating a wetland.
- ◆ Plant wetland plants in a depression in your wildscape that collects rainwater for a low maintenance area that will help filter urban runoff before it enters the river. Or, if the area is naturally wet, simply don't mow to allow naturally occurring wetland species to grow.
- ◆ To create a wetland, follow the steps below.
 - 1) Lay out the shape of the wetland on the ground using a hose or rope. Keep in mind that an irregular shape will be the most natural looking.
 - 2) Excavate the wetland area to a depth of 1½ to 2 feet, making sure the sides slope gently toward the deepest area.
 - 3) In clay soil, a liner may not be needed. In better-drained soils, use a heavy-duty plastic liner with a few small drainage holes in it. Line the excavated area with 1 to 2 inches of sand to smooth out the rough spots, place the liner over the sand, and hold it in place with rocks.
 - 4) Fill the depression with a mixture of soil and sphagnum peat moss to help hold moisture in the wetland while allowing air to flow through the soil for proper plant growth.
 - 5) Cover the edges of the liner with soil to hide it and hold it in place.

- 6) Plant cattails, reeds, and sedges in the wettest soil, and moisture-loving plants like cardinal flower, red osier dogwood, and cottonwoods along the edges (see Table 1).
- ◆ Incorporate a wetland area into your pond design. Follow the steps above, with the water level of the wetland slightly above that of the pond so excess water is filtered through the wetland before it enters the pond. Make sure the wetland drains away from nearby buildings.
 - ◆ The plants you choose for your wetland should depend on the length of time the soil will be saturated, wetland water depth, amount of sunlight, climate, soil pH, and the size of the wetland (see Table 1).



How to Create Compost

- ◆ From: *Backyard Composting* (see the “Need More Information?” and “References and Resource Guides” sections).
- ◆ Composting saves landfill space by recycling food and yard wastes.
- ◆ Mixing compost into the soil adds vital nutrients, reduces or eliminates the need for fertilizers, improves soil structure, and moderates soil pH.
- ◆ To decompose, a compost pile needs about half carbon or “browns” (dry grass, dry leaves, branches, wood shavings, hay, straw) and half nitrogen or “greens” (fresh grass, green leaves, garden leftovers, kitchen scraps – vegetables, fruits, coffee grounds, egg shells).
- ◆ The ideal compost pile size is 3 x 3 x 3 feet for best results. Or, buy a ready-made compost container with a lid or cover to help retain heat.
- ◆ Locate uncovered compost out of the wind and sun so it won't dry out.
- ◆ Keep your compost moist, but not saturated. Add water if it's too dry, or dry leaves if it's too wet. Cover your compost if rain is a problem.
- ◆ Aerate your compost by turning the pile with a pitchfork once a week. Some ready-made containers have rollers that easily turn compost.
- ◆ Occasionally add some good garden soil to boost the microorganisms in your compost for better decomposition.

How to Create Additional Diversity

- ◆ Other materials can be used to create nooks, crannies, and crevices that will provide food sources, nesting sites, and cover for wildlife while reducing the area that needs to be watered and maintained.
- ◆ Rock piles, brush piles, or sections of decaying logs can be placed in corners, spots that are hard to maintain, or areas with poor soil, and will be attractive to small mammals, reptiles, amphibians, and birds. A base of logs, stumps, or culvert pipe under the pile will create openings for wildlife movement. If aesthetics is a concern, plant shrub or vine thickets to conceal rock and brush piles.
- ◆ Logs and rocks that have water-holding depressions will provide drinking or basking areas for birds, butterflies, bats, frogs, and turtles.
- ◆ Create variety in the terrain by using fill dirt to make small hills or berms. These can be covered with rocks or low-growing plants.
- ◆ Standing dead trees, called snags, can be securely placed among live trees to create nesting, feeding, and perching sites for wildlife.
- ◆ Use a combination of evergreen and deciduous plants and plants that produce flowers, fruits, and nuts at different times to provide year-round features and wildlife foods in your wildscape.
- ◆ Build or buy nest boxes with the proper sized entrance hole for the birds in your area (this is critical for excluding non-native and very aggressive European Starlings and House Sparrows). Also consider the nest box size, height above the ground, direction the entrance hole faces, and amount of sun the nest box will get.
- ◆ Place a bat house in your wildscape to provide a roosting place for bats and natural insect control (one bat can catch up to 600 mosquitoes in 1 hour). Place the bat house on a pole at least 15 feet high in a spot that is sunny for at least 4 to 6 hours per day.
- ◆ Leave bare spots in your wildscape to provide dust-bathing areas for birds.



Other Wildscaping Considerations

- ◆ Over 99% of the 500,000 species of plants, animals, insects, and microorganisms in the U.S. are beneficial (they decompose organic wastes, break down pollutants in the environment, recycle nutrients, provide soil structure, preserve diversity, and are part of the food chain). Wildscaping gives a boost to these beneficial functions.
- ◆ Collect rainwater and snow melt from your roof for later use (choose a container that can be covered to reduce evaporation and eliminate mosquitoes). Or, design your wildscape so rainwater and snowmelt drains at least 10' away from buildings to where moisture is needed most (a minimum slope of 1%, but less than 12%, is required). This takes advantage of natural precipitation rather than allowing it to run off into a storm drain. Keep gutters and downspouts clear of debris.
- ◆ By replacing your non-native lawn with native turfgrass, you will:
 - Add diversity – non-native lawns provide little wildlife habitat.
 - Save time and money – the average U.S. homeowner spends 40 hours per year mowing; a ½ acre non-native lawn costs \$300 per year to maintain; U.S. homeowners spend \$25 billion per year on non-native lawn care.
 - Reduce fossil fuel use – U.S. homeowners use 580 million gallons of gas in their lawnmowers per year; fertilizer production and delivery consumes oil and natural gas.
 - Save water – non-native lawn grasses need over 36 inches of additional moisture per year, and are less efficient at absorbing moisture than native plants.
 - Reduce pesticide use – U.S. homeowners use 78 million pounds of pesticides on their lawns per year (more than U.S. farmers use!).
 - Reduce urban pollution – less fertilizer use means less runoff of nitrogen, phosphorous, and potassium into our waterways; less mowing means less air and noise pollution from lawnmowers (1 hour of lawn mowing releases emissions into the air equivalent to driving 350 miles in a vehicle; lawn mowers and other lawn maintenance equipment produce between 85 and 110 decibels of sound, well above the level that causes permanent hearing loss).

WILDSCAPE MAINTENANCE

Watering

- ◆ After 2 to 3 growing seasons, your plants should be well established and will require less water and maintenance. Until they're established, however, even drought tolerant plants need sufficient water all year.
- ◆ To promote deeper, more drought tolerant root systems, water thoroughly and completely, but not too often. Only germinating seeds need light, frequent watering for the first 4 to 6 weeks; otherwise, light or daily sprinkling can harm plants by promoting shallow, weak root systems that depend on near-surface water, and are more vulnerable to wind stress and the extremes of winter. Irrigate slowly to allow water to penetrate the soil rather than run off. Check soil moisture when the temperature is above 80°F and when it's dry or windy.
 - Water trees and shrubs thoroughly once every 4 to 7 days for 1 month, working up to once every 2 weeks throughout the summer. Trees need about 10 gallons of water for each 1 inch of trunk diameter; a 5-gallon potted shrub needs up to 5 gallons of water.
 - Perennial wildflowers and grasses need 1 to 2 gallons of water twice per week during the growing season. Dig down 6 to 8 inches; if this soil layer is dry, then water thoroughly.
 - Lawns look dull-colored when moisture is out of reach of roots. Dig down 1 foot; if soil in this layer is dry, then water thoroughly. Remember, native turfgrasses need less water than non-natives.
- ◆ Drip irrigation reduces evaporation loss and plant disease. Over the years, savings of water, labor, and time will offset the initial cost. This system can be set on an automatic timer, and can also be moved to new plantings as older plantings mature and require less water.
- ◆ Soaker hoses are effective, inexpensive, easy to use, and ideal for zone watering. They're a good alternative to a drip irrigation system. Cover soaker hoses with organic mulch to prevent sun damage.
- ◆ Automatic watering systems are convenient, but can waste water if not properly set. Set sprinklers to deliver the right amount of water to your wildscape, and adjust the timing according to season.

Disease

- ◆ Include a variety of plants in your wildscape to minimize disease; an area with only a few types of plants can be devastated by disease.
- ◆ To help prevent disease, space plants properly, water early in the morning so foliage is dry by evening, and remove dead plant parts.
- ◆ Look for warning signs – large dead or dying branches; root and base rot; and large, vertical, deep cracks on opposite sides of a tree's trunk.
- ◆ If disease is suspected, contact the Wyoming State Forestry Division (see the "Need More Information?" section) or a tree care professional (also called an arborist).

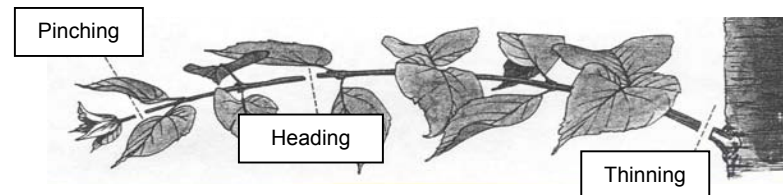
Nutrients and Fertilizers

- ◆ Plants require 20 nutrients for proper growth. Six are needed in large amounts (macronutrients) – nitrogen (for lushness), phosphorous (for flowering, fruiting, and root strength), potassium (for durability and disease resistance), calcium, sulfur, and magnesium. The other 14 nutrients are needed in very small amounts (micronutrients).
- ◆ Applying too many nutrients can be as harmful to plants as a nutrient deficiency. Test your soil (preferably before you plant) for nutrients and pH levels (neutral soil pH=7, acidic soil pH<7, alkaline soil pH>7). Correcting a problem before planting is easier and cheaper. If pH is too low, micronutrients become too available and can poison plants intolerant of acidic soils. If pH is too high, micronutrients become less available for plants intolerant of alkaline soils.
- ◆ Take periodic soil samples once your wildscape is established, especially if you add amendments to the soil (compost, manure, sphagnum peat moss, fertilizers).
- ◆ For low maintenance and reduced cost, limit or eliminate fertilizer use.
- ◆ If a nutrient deficiency is detected and fertilizing is needed, use effective fertilizer practices and follow label instructions carefully.
- ◆ When applying fertilizer, avoid digging too deeply or roughly around plants so roots are not damaged.



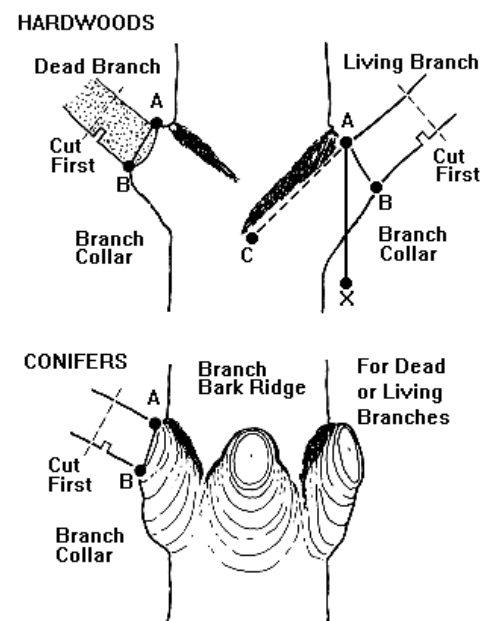
Pruning

- ◆ Pruning allows more light to reach your understory plants (remove up to 1/3 of the canopy branches in the trees above), helps strengthen stems and branches, gives plants a more vigorous and leafy look, and encourages flowering and fruiting.
- ◆ Prune correctly – learn yourself using the guidelines in Figures 10 and 11, or consult a tree care professional – and prune only when needed.
- ◆ Prune any dead or broken branches from newly planted trees and shrubs right after planting. Don't prune again during the first year.
- ◆ Remove suckers that grow from a tree's base or shoots that grow straight up from a branch or the trunk; they divert water and nutrients.
- ◆ Remove branches and twigs that rub against each other, and any branches growing at an awkward angle or in an undesirable direction.
- ◆ Prune out broken or dead branches on trees and shrubs every year.
- ◆ Prune diseased branches back to healthy tissue; then sterilize pruners.
- ◆ Never cut into the branch collar (the thickened ring where the branch attaches to the trunk). Special cells in the branch collar help heal wounds and prevent fungi and disease from invading the tree. Making a flush cut allows the branch stump to heal cleanly and prevents rot.
- ◆ Prune shrubs that flower in the spring after they've finished flowering. Prune summer-flowering shrubs in early spring before growth begins.
- ◆ Most flowering shrubs that sucker (spread by creating new stems from underground roots) will produce more flowers if 1/3 of the oldest stems are pruned back every year.
- ◆ When pruning, make your cut back to a bud that's pointing outward, away from the interior of the plant (interior-pointing buds will grow stems that cross and obstruct the middle of the plant).
- ◆ To promote more branching and bushier growth, prune by pinching or heading. To promote more open growth, prune by thinning. See Figure 10. From: *Landscaping with Nature* (see the "References and Resource Guides" section).
- ◆ For larger branches, see Figure 11. From: *Homeowner's Guide for Beautiful, Safe, and Healthy Trees* (see the "References and Resource Guides" section).



Pinching – removing the growing point or tip of a branch.
 Heading – cutting the branch back farther to a bud.
 Thinning – selectively removing a branch flush with the branch collar.

Figure 10. Different types of pruning for smaller branches.



- 1) Locate the branch bark ridge (the dark shaded area above).
- 2) Find target A - outside the branch bark ridge.
- 3) Locate the branch collar (the thickened ring where the branch attaches to the trunk).
- 4) Find target B - where the branch meets the branch collar.
- 5) If B cannot be found, drop an imaginary line at AX. Angle XAC equals XAB.
- 6) Stub cut the branch first to prepare it for the final cut.
- 7) Make the final cut at line AB, flush with the branch collar (if using a power saw, make the final cut on the upstroke to keep bark from tearing off the tree when the branch is cut through).

Figure 11. Natural target pruning.

Pesticides (Herbicides, Insecticides, Rodenticides)

- ◆ Prevent pest problems by choosing a variety of hardy, native plants (they're more resistant) that bloom and bear fruit during different times of the year. Water and add nutrients properly. Remove weeds before they go to seed. Encourage birds, bats, and beneficial insects.
- ◆ Check plants regularly and look for signs of damage. Identify potential problems early so the most effective treatment can be applied.
- ◆ Minimize pesticide use, follow label instructions carefully, and spot-treat only. Make sure pesticides are not hazardous to people, pets, wildlife, or beneficial insects. Never apply pesticides when it's windy.
- ◆ For lowest maintenance, eliminate the use of insecticides altogether. Remember, many birds thrive on insects and are efficient at removing them from your wildscape.
- ◆ Bees and butterflies (plant pollinators) are extremely sensitive to insecticides. Avoid using insecticides on or near plants that attract these species.
- ◆ Most insects and microorganisms are beneficial; many will prey on insect pests, which reduces or eliminates the need for insecticides. Beneficial insects include ladybugs (control aphids, potato bugs), lacewings (control aphids, mealy bugs, thrips, spider mites), praying mantises (control almost any insect), predatory beetles (control caterpillars that attack trees and shrubs), parasitic nematodes (control grubs, beetles, cutworms, army worms), and several types of parasitic wasps (control borers and other worms).
- ◆ If control is necessary, use Integrated Pest Management (IPM) techniques. IPM is a logical, efficient, and economical approach to controlling pest problems, and uses the full range of pest control tactics (biological, mechanical, chemical) in an appropriate manner.
 - From: *PlainsScapes: Environmentally-Sound Landscape Management for the Western Plains and Backyard Conservation* (see the "References and Resource Guides" section).
 - Ask yourself, "What is the pest?" "Is the pest causing unacceptable damage?" "Are controls needed?" "What pest control method or methods should be used?"

- The IPM approach follows these steps for pest control:
 - 1) Identify what the pest is and monitor it. Pests can include weeds, insects, diseases, and some species of wildlife (typically rodents, rabbits, and deer in unwanted places).
 - 2) Determine the amount of damage the pest has caused to the plant's health or its aesthetic value. Damage from chewing, sucking, or boring insects will result in chewed plant leaves and flowers; misshapen plant leaves or flower petals; and bore holes in stems, fruit, and leaves. Plant diseases can cause mushroom-like growths on tree trunks; a grayish, mildewy look on leaves; spots on leaves, flowers, or fruit; sudden wilting or death of a plant or branch; oozing sap from branches or tree trunks; and stunted growth. Remember that improperly applied nutrients and pesticides, flooding, and freezing can also cause conditions – leaves that are yellowing or reddening, curling, or misshapen – that resemble some disease problems.
 - 3) Determine if control is needed. Use pest control only when the chosen control methods will prevent the pest from causing more damage than is reasonably acceptable.
 - 4) Evaluate available control methods including cultural (weeding, trimming, pruning, mulching, crop rotation), host resistance (choosing disease-resistant varieties of plants), biological (natural predators), mechanical (removing by hand, trapping, vacuuming, spraying with water, fencing, covering, netting), sanitation (pest-free seeds, pruning), and chemical (pesticides).
 - 5) Select a combination of pest control methods that is most effective to protect people, pets, and the environment.
- ◆ Questions? Contact your County Extension agent, your local Weed and Pest agent, the U.S. Forest Service, the Wyoming State Forestry Division (see the "Need More Information?" section), or a tree care professional.



Other Maintenance Considerations

- ◆ If using black plastic as a weed barrier in your wildscape, punch a few holes in it near your plants to allow water to drain into the root zone.
- ◆ Trees grow faster if grass is kept out from under the leaf canopy for 5 to 8 years. Use organic mulch to reduce competition with grass.
- ◆ Replace organic mulch as needed. Allow fallen leaves to decompose into the mulch layer to reduce time and labor spent on raking. This will also provide a place for robins, thrushes, sparrows, and towhees to scratch for insects among the fallen leaves.
- ◆ Leave grass clippings on your lawn after mowing to reduce yard waste and add up to 2 pounds of natural fertilizer per year to your turfgrass.
- ◆ Use fencing or chicken wire to protect small plants from browsing damage by deer, pronghorn, elk, moose, rabbits, and porcupines. Use a 4-foot high barrier for pronghorn, a 6-foot high barrier for deer, and an 8-foot high barrier for moose and elk.
- ◆ Check trees and shrubs for signs of drought stress, especially the first few years after planting. Deciduous leaves will curl or wilt, edges will turn brown, leaf veins will turn brown or yellow, and leaves may not grow as large. Evergreen needles may turn purple or yellow, and tips may turn brown. Focus limited water supplies on trees and shrubs and allow lawns to go dormant; a lost tree or shrub takes years to replace, while turfgrass rebounds the next growing season.
- ◆ It's better to monitor soil moisture to determine when to water rather than relying on a pre-set watering schedule.
- ◆ Avoid using sprinkler systems that throw a fine mist of water into the air; water is lost to evaporation instead of soaking into the soil.
- ◆ Irrigate sloping landscapes more slowly than flat landscapes to allow water enough time to soak into the soil rather than running off the soil.
- ◆ In winter if there's been no precipitation, soak tree and shrub root zones every month during the first 3 years after planting.
- ◆ If needed, add limestone to raise the pH of acidic soil, or elemental sulphur to lower the pH of alkaline soil. However, it's easier and less expensive to choose native plants that are adapted to a particular type of soil rather than trying to change the soil type to fit the plant.

- ◆ When plants are established (in 5 to 8 years), rake organic mulch aside, remove all landscape cloth or black plastic, and reapply the mulch so it can decompose directly into the soil.
- ◆ Keep weeds in check when planting wildflowers and grasses, especially during the first few growing seasons while plants are setting their roots and becoming established.
- ◆ Remove dead plant parts from wildflowers and grasses in late autumn or early spring to minimize pest and disease problems and reduce interference with new growth.
- ◆ For larger wildscapes, burning to remove dead grass growth can replace mowing. Determine a "burn plan", inquire about any necessary permits, inform your local fire department and neighbors, burn only under the proper conditions, have a source of water handy, and take extreme caution.
- ◆ Use native plants to maintain an edge effect between formal lawn and garden areas to increase diversity in your wildscape.
- ◆ Define high traffic areas with a pathway of wood chips or stepping stones. Although walkways don't provide habitat for wildlife, they're low maintenance features that will save time, water, and money.
- ◆ To conserve energy while maintaining your wildscape, use hand tools rather than power tools, electric tools rather than gas tools, 4-cycle engines rather than 2-cycle engines, and keep power tools well tuned.
- ◆ It's healthier for cats *and* the wildlife in your wildscape if cats are kept indoors. Cats kill millions of birds and other wildlife each year in the U.S. alone. If cats must be outside, use preventative steps like a kennel or leash line to keep cats from killing birds and other wildlife. A bell on your cat's collar is not effective because birds and other wildlife don't naturally associate the sound of a bell with danger. Have your cat spayed or neutered. Do not feed stray or feral cats. Contact your local animal control officer to remove stray or feral cats.



WILDSAPING DO'S AND DON'TS

- ◆ Do choose to wildscape with plants native to Wyoming (see Table 1).
- ◆ Do check to ensure that the plants you choose are not invasive (plants that tend to spread out of control).
- ◆ Do use wildscaping to replace as much of your non-native lawn as possible, and plant native turfgrass in place of the rest.
- ◆ Do add compost, organic matter, and amendments to soil, if needed.
- ◆ Do core aerate lawn areas every spring or autumn to improve soil structure. Leave cores to add additional nutrients, or compost them.
- ◆ Do keep grass height above 2½ inches to ensure lawns are resistant to drought, heat, weeds, disease, and insect pests.
- ◆ Do choose a wildflower or grass mixture that's adapted to your area rather than planting a generic wildflower or grass seed mixture.
- ◆ Do water your wildscape at night if foliage mold and fungus are not a problem. Otherwise, water early in the morning to reduce evaporative water loss and avoid scorching your plants during the heat of the day.
- ◆ Do add water to your compost pile, if needed. A dry pile won't decay.
- ◆ Do not include weeds; diseased plants; oils; animal scraps like meat, fat, or bones; manure; or human, dog, or cat waste in compost piles.
- ◆ Do not use sand as a soil amendment. Sand alone will not work.
- ◆ Do not use rocks or gravel in place of organic mulch near plants (they will raise soil temperature, cause moisture loss, and compact soil).
- ◆ Do not handle trees or shrubs by the trunk or branches; handle by the root ball. Do not drop B&B plants; gently slide or roll them into place.
- ◆ Do not plant large trees directly under overhead wires or adjacent to foundations (large roots can cause foundations to crack).
- ◆ Do not "top" trees by cutting the apex (top growing) branch off. Topping a tree will weaken it, make it more susceptible to insects and disease, or kill it outright.
- ◆ Do not fertilize at planting time (this will encourage grass growth).
- ◆ Do not compact soil around plantings (this will restrict root growth).
- ◆ Do not wound plantings with lawnmowers, trimmers, or other tools.



SEASONAL TO-DO LIST

- ◆ From: *Creating Native Landscapes in the Northern Great Plains and Rocky Mountains* (see the "References and Resource Guides" section).
- ◆ Spring
 - ✓ Prune evergreen trees, evergreen shrubs, and summer-flowering shrubs before new growth begins
 - ✓ Mow lawn to a 3-inch height; leave grass clippings to add nitrogen
 - ✓ Aerate lawn, especially high traffic areas
 - ✓ Add last year's compost to wildscape, lawn, and garden areas
 - ✓ Check automatic sprinklers and drip irrigation systems; make any needed repairs or adjustments; water all plants if it's been dry
 - ✓ Plant trees, shrubs, and some grasses
- ◆ Summer
 - ✓ Water plants according to their needs; don't over-water
 - ✓ Prune suckers and shoots from trees
 - ✓ If needed, use Integrated Pest Management techniques to control pests, while leaving beneficial insects and plants unharmed
 - ✓ Prune spring-flowering shrubs right after blooming has finished
 - ✓ Mow and hand-pull weeds
- ◆ Autumn
 - ✓ Plant wildflowers and some grasses
 - ✓ Compost equal parts of "browns" and "greens" for next spring's soil amendment
 - ✓ Prepare the planting site for next year's wildscape additions
 - ✓ Prune deciduous trees and late summer-flowering shrubs
 - ✓ Remove dead plant material from flowers and grasses
 - ✓ Water plants one last time before the onset of winter
 - ✓ Drain and blow out automatic sprinklers, drip irrigation systems, and hoses
- ◆ Winter
 - ✓ Soak root zones of trees and shrubs once a month if there hasn't been any precipitation during the winter
 - ✓ Water windy areas and south-facing slopes as needed

NEED MORE INFORMATION?

For More Information on Plants Native to Wyoming

- ◆ Natural Resources Conservation Service <http://plants.usda.gov>.
- ◆ University of Wyoming Botany Department Herbarium, P.O. Box 3165, Laramie, WY 82071 (307-766-2236) www.rmh.uwyo.edu.
- ◆ University of Wyoming Department of Plant Sciences, P.O. Box 3354, Laramie, WY 82071 (307-766-3103) plantsciences@uwyo.edu.
- ◆ Wyoming Native Plant Society, P.O. Box 3452, Laramie, WY 82070 (307-745-5026) www.rmh.uwyo.edu/wnps.html.

For More Information on Landscaping with Native Plants

- ◆ Little Goose Native Plants and Wildflowers, 226 Main Street, P.O. Box 445, Bighorn, WY 82833 (307-672-5340).
- ◆ Northern Gardens, 84 County Road 2AB N, Cody, WY 82414 (307-527-6272).
- ◆ Sweetwater Garden, 1602 West Main Street, Riverton, WY 82501 (307-856-6663).
- ◆ Contact your local Conservation District.

For More Information on Backyard Wildscaping

- ◆ National Wildlife Federation Backyard Wildlife Habitat Program, 11100 Wildlife Center Drive, Reston, VA 20190-5362 (1-800-822-9919) www.nwf.org/backyardwildlifehabitat.

For More Information on Creating a Healthy Yard

- ◆ National Audubon Society – Audubon at Home, 700 Broadway, New York, NY 10003 (212-979-3000) www.audubon.org/bird/at_home/.

For More Information on Watering Efficiently

- ◆ University of Wyoming Cooperative Extension Service, Department 3354, 1000 East University Avenue, Laramie, WY 82071 www.uwyo.edu/ces/ceshome.htm.

For More Information on Water Conserving Landscape Methods

- ◆ Cheyenne Botanic Gardens, 710 South Lions Park Drive, Cheyenne, WY 82001 (307-637-6458) www.botanic.org.
- ◆ Colorado Springs Utilities, Xeriscape www.csu.org/xeri.
- ◆ USDA Natural Resources Conservation Service, 100 East B Street, Room 3124, Casper, WY 82601 (307-261-6453 or national office at 1-800-888-LANDCARE) www.nrcs.usda.gov/feature/backyard/.
- ◆ Xeriscape Colorado, Inc., P.O. Box 40202, Denver, CO 80204-0202, www.xeriscape.org.
- ◆ Contact your local Conservation District.

For More Information on Trees and Shrubs

- ◆ National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410 www.arborday.org.
- ◆ Wyoming State Forestry Division, 1100 West 22nd Street, Cheyenne, WY 82002 (307-777-3626) www.lands.state.wy.us/forestry.htm.
- ◆ Contact your local Conservation District.

For More Information on Wildflowers and Grasses

- ◆ Granite Seed Company, 1697 West 2100 North, Lehi, UT 84043 (801-768-4422) www.graniteseed.com.
- ◆ High Plains Grasslands Research Station, 8408 Hildreth Road, Cheyenne, WY 82009 (307-772-2433) <http://rrru.usda.gov>.
- ◆ Mountain West Seeds, P.O. Box 1471, Cheyenne, WY 82003 (307-634-6328).
- ◆ Super Seeds, 15 Riggs Road, Shoshone, WY 82649 (307-856-0500).
- ◆ University of Wyoming Cooperative Extension Service, Department 3354, 1000 East University Avenue, Laramie, WY 82071 www.uwyo.edu/ces/ceshome.htm.
- ◆ Wind River Seed, 3075 Lane 51½, Manderson, WY 82432 (307-568-3361) www.windriverseed.com.
- ◆ Wyoming Native Plant Society, P.O. Box 3452, Laramie, WY 82070 (307-745-5026) www.rmh.uwyo.edu/wnps.html.

[For More Information on Collecting Native Seeds and Plants](#)

- ◆ Wyoming Native Plant Society, P.O. Box 2500, Laramie, WY 82073 http://uwadmnweb.uwyo.edu/WYNDD/wnps/wnps_home.htm.
- ◆ Obtain a permit to collect plants on state or federal lands from the Wyoming State Division of Forestry, U.S. Forest Service, U.S. Bureau of Land Management, or U.S. Bureau of Reclamation.

[For More Information on Creating a Wetland](#)

- ◆ USDA Natural Resources Conservation Service, 100 East B Street, Room 3124, Casper, WY 82601 (307-261-6453 or national office at 1-800-888 LANDCARE) www.nrcs.usda.gov/feature/backyard/.

[For More Information on Building a Terrace](#)

- ◆ USDA Natural Resources Conservation Service, 100 East B Street, Room 3124, Casper, WY 82601 (307-261-6453 or national office at 1-800-888-LANDCARE) www.nrcs.usda.gov/feature/backyard/.

[For More Information on Composting](#)

- ◆ University of Wyoming Cooperative Extension Service and Agricultural Experiment Station; Plant, Soil, and Insect Sciences Publications – Backyard Composting www.uwyo.edu/ces/pubs/b974r.pdf.
- ◆ USDA Natural Resources Conservation Service, 100 East B Street, Room 3124, Casper, WY 82601 (307-261-6453 or national office at 1-800-888-LANDCARE) www.nrcs.usda.gov/feature/backyard/.

[For More Information on Weeds, Pests, and Invasive Plants](#)

- ◆ BLM Wyoming State Office, 5353 Yellowstone Road, Cheyenne, WY 82009 (307-775-6256) www.wy.blm.gov/weeds/index.htm.
- ◆ Contact your local Conservation District or Weed and Pest agent.

[For More Information on Bats](#)

- ◆ Bat Conservation International, P.O. Box 162603, Austin, TX 78716 (512-327-9721) www.batcon.org.

[For More Information on Butterflies](#)

- ◆ National Wildlife Federation, 11100 Wildlife Center Drive, Reston, VA 20190-5362 (1-800-822-9919) www.nwf.org/backyardwildlifehabitat.
- ◆ Northern Prairie Wildlife Research Center, USDI U.S. Geological Survey, 8711 37th Street SE, Jamestown, ND 58401 (701-253-5500) www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/wy/toc.htm.

[For More Information on Beneficial Insects](#)

- ◆ National Audubon Society, 700 Broadway, New York, NY 10003, (212-979-3000) www.audubon.org.
- ◆ Planet Natural, 1612 Gold Avenue, Bozeman, MT 59715 (800-289-6656 or 406-587-5891) www.planetnatural.com.
- ◆ University of Wyoming Cooperative Extension Service and Agricultural Experiment Station; Plant, Soil, and Insect Sciences Publications – Landscape Pests www.uwyo.edu/ces/pubs/b-1035.pdf.
- ◆ Contact your local Weed and Pest agent.

[For More Information on Birds](#)

- ◆ American Bird Conservancy, P.O. Box 249, The Plains, VA 20198 (540-253-5780) www.abcbirds.org.
- ◆ American Birding Association, P.O. Box 6599, Colorado Springs, CO 80934-6599 (719-578-9703) www.americanbirding.org.
- ◆ Audubon Wyoming, 400 East 1st Street, Suite 308, Casper, WY 82601 (307-235-3485) www.audubonwyoming.com.
- ◆ Cats Indoors! The Campaign for Safer Birds and Cats. American Bird Conservancy, The Humane Society of the United States, and American Humane Association, www.abcbirds.org/cats/.
- ◆ National Audubon Society, 700 Broadway, New York, NY 10003, (212-979-3000) www.audubon.org.
- ◆ Wyoming Game and Fish Department Nongame Bird Biologist, 260 Buena Vista, Lander, WY 82520 (in-state 1-800-654-7862 or 307-332-2688) gf.state.wy.us.



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The Best Way to Plant Trees. G. A. Moll and P. Rodbell. USDA Forest Service Urban Forest Forum Technical Update.

The Landscaping Revolution. A. Wasowski. 2002. McGraw-Hill.

Trees and Shrubs. 2003. Lander Urban Forest Council.

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NOTES



NOTES



Table 1. Selected native plants ideal for wildscaping in Wyoming.

Common Name (Alternate) Scientific Name Maximum Height Maximum Width Growth Form and Density	Sunlight Conditions	Moisture Preferences and Tolerances	Soil Information	Wildlife Value	Stress, Disease, and Pest Information	Additional Remarks
Coniferous Trees (Evergreens that produce cones)						
Black Hills Spruce <i>Picea glauca densata</i> 45 – 90' 30' Pyramidal, conical	Full sun. Tolerates some shade.	Poor drought tolerance. Prefers wet to moist areas; needs adequate moisture.	Grows in most soils, but prefers moderately fine to medium textured, acidic soils. Tolerates a pH range of 4.5 – 7.5.	Cover (including winter) and nesting sites. Seeds provide food and persist through winter. Not attractive to deer.	To reduce stress and benefit the tree, remove competing grasses, acidify the soil, and mulch. Possible pests: spider mites in drier areas outside the Black Hills.	Hardy. Slow growing. Long-lived (200 years in the Black Hills, 150 years elsewhere in Wyoming). Does well up to 10,000 feet in elevation. Ideal for sound screens and windbreaks. Transplants easily in spring. Native to the Black Hills.
Blue Spruce <i>Picea pungens</i> 40 – 100' 15 – 35' Pyramidal, conical, dense crown	Full sun to partial shade.	Moderate drought tolerance. Tolerates dry areas and moist areas. More drought tolerant than most other spruces. Needs at least 12" of annual precipitation.	Grows best in medium textured to moderately coarse, acidic soils. Tolerates clay soils and sandy soils. Tolerates a pH range of 4.5 – 6.5.	Cover (including winter) and nesting sites. Seeds and foliage provide food. Rough bark attracts insects favored by birds. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 120 frost-free days/ year. If stressed, acidify the soil, remove competing grasses, and mulch. Avoid using insecticides on or near this plant. Possible diseases: cankers, spruce witches' broom. Possible pests: pine needle scale, tussock moth, terminal weevil, spruce gall aphid, spruce budworm, spider mites.	Hardy. Slow to moderately slow growing. Long-lived (300 years or more). Does well up to 9,000 feet in elevation. Ideal for sound screens and windbreaks. Best planted in a group or protected area due to shallow roots. Native to the mountainous parts of western and southern Wyoming.
Douglas Fir <i>Pseudotsuga menziesii</i> 50 – 100' 20 – 35' Conical to pyramidal, dense crown	Full sun to partial shade.	Drought tolerant. Needs at least 14" of annual precipitation.	Grows in most soils, but prefers deep, dry, medium textured, acidic soils. Tolerates rocky soils. Tolerates a pH range of 5.0 – 7.5.	Cover (including winter) and nesting sites. Seeds and foliage provide food and persist through winter. Attracts insects favored by birds. Not attractive to deer.	Low fire tolerance, high fire resistance. Needs at least 130 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: root rot, dwarf mistletoe, bacterial gall. Possible pests: spruce budworm.	Hardy. Moderately slow growing. Long- lived (200 years or more). Does well from 4,000 to 11,000 feet in elevation. Ideal for sound screens and windbreaks. Native to the mountainous parts of Wyoming.
Englemann Spruce <i>Picea engelmannii</i> 70 – 125' 20 – 30' Conical to spire-like, cylindrical, pyramidal, dense crown	Full sun to partial shade.	Moderate drought tolerance. Needs at least 21" of annual precipitation.	Grows in most soils, but prefers deep, moist, fine to medium textured soils. Tolerates a pH range of 6.0 – 8.0.	Cover (including winter) and nesting sites. Seeds and foliage provide food. Attracts insects favored by birds. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 30 frost-free days/ year. Avoid using insecticides on or near this plant. Possible diseases: cytophora canker, root rot, spruce broom rust. Possible pests: spruce bark beetle, aphids, spruce budworm, spider mites.	Hardy. Slow growing. Long-lived (350 years or more). Does well from 8,000 to 11,500 feet in elevation. Ideal for sound screens and windbreaks. Best planted in a group or protected area due to shallow roots. May not do well under cultivation. Native to the mountainous parts of Wyoming.
Limber Pine <i>Pinus flexilis</i> 25 – 50' 7 – 10' Irregular, open crown	Full sun to partial shade. Intolerant of full shade.	Excellent drought and wind tolerance. Needs at least 10" of annual precipitation.	Grows best in moist, medium textured, well- drained, acidic soils. Tolerates rocky soils. Tolerates a pH range of 5.7 – 6.5.	Cover (including winter) and nesting sites. Seeds and foliage provide food. Attracts insects favored by birds. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 90 frost-free days/ year. Avoid using insecticides on or near this plant. Possible diseases: white pine blister rust, dwarf mistletoe. Possible pests: mountain pine beetle, borers.	Hardy. Slow growing. Long-lived (1,000 years or more). Does well from 5,000 to 11,500 feet in elevation. Ideal for windy areas. Native to the mountainous parts of Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

~ Fire tolerance = a plant's ability to re-sprout, re-grow, or re-establish from residual seed after a fire. Fire resistance = a plant's ability to resist burning through adaptations like thick bark, a high leaf crown, or high water content. (From: *USDA Natural Resources Conservation Service Plants Database*, see the "References and Resource Guides" and "Need More Information?" sections.)

~ Riparian areas = the plant zones adjacent to and influenced by the available water in rivers, streams, lakes, ponds, and other waterways.

~ Rhizomes = horizontal, underground, root-like stems. Stolons = stems that grow along the soil surface and then root. Tillers = above-ground stems that branch from stems at or below the soil surface.

~ Seeding rate: PLS = pure live seed (seed purity x germination rate / 100 = PLS % for each seed lot), and is a way to standardize seed quality. (From: *Granite Seed Company*, see the "References and Resource Guides" and "Need More Information?" sections.)

Table 1. Selected native plants ideal for wildscaping in Wyoming.

Common Name (Alternate) Scientific Name Maximum Height Maximum Width Growth Form and Density	Sunlight Conditions	Moisture Preferences and Tolerances	Soil Information	Wildlife Value	Stress, Disease, and Pest Information	Additional Remarks
Lodgepole Pine <i>Pinus contorta</i> 35 – 80' 15 – 30' Conical to spire-like, slender, open crown	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Tolerates periodic flooding. Needs at least 18" of annual precipitation.	Grows in most soils, but prefers deep, medium textured, well-drained soils. Tolerates fine soils, gravelly soils, and rocky soils. Tolerates a pH range of 6.2 – 7.5.	Cover (including winter) and nesting sites. Seeds and foliage provide food. Attracts insects favored by birds. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 100 frost-free days/ year. Avoid using insecticides on or near this plant. Possible diseases: dwarf mistletoe, western gall rust. Possible pests: aphids, borers, mountain pine beetle, spider mites.	Hardy. Moderately fast growing. Long- lived (200 years or more). Does well from 6,000 to 10,500 feet in elevation. Male and female flowers are on the same tree. Intolerant of pollution; choose planting sites accordingly. Native to the mountainous parts of Wyoming.
Pinyon Pine <i>Pinus edulis</i> 25 – 40' 15 – 30' Rounded to irregular, dense crown	Full sun. Intolerant of full shade.	Excellent drought tolerance. Needs at least 9" of annual precipitation.	Grows in a variety of well-drained soils. Tolerates dry soils and rocky soils. Tolerates a pH range of 6.5 – 8.5.	Cover (including winter) and nesting sites. Seeds and foliage provide food. Rough bark attracts insects favored by birds. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 200 frost-free days/ year. Avoid using insecticides on or near this plant. Possible diseases: needle cast, black stain root disease, dwarf mistletoe, needle rusts. Possible pests: mountain pine beetle, sawflies, needle scale, pinyon pitch borer, ips spindle gall midge, tip moth, spider mites.	Hardy. Slow growing. Long-lived (500 years or more). Small tree or large shrub. Does well up to 8,500 feet in elevation. Ideal for windbreaks. A deep taproot makes mature plants very difficult to transplant. Male and female flowers are on the same tree. Native to southwestern and south-central Wyoming.
Ponderosa Pine <i>Pinus ponderosa</i> 40 – 100' 20 – 30' Broad, flat-topped, open crown	Full sun. Intolerant of full shade.	Excellent drought tolerance. Needs at least 12" of annual precipitation.	Grows in most well- drained soils, but prefers medium textured to moderately coarse, well- drained soils. Tolerates poor soils and sandy soils. Tolerates a pH range of 5.0 – 8.0.	Cover (including winter) and nesting sites. Seeds and foliage provide food. Rough bark attracts insects favored by birds. Not attractive to deer.	High fire tolerance and resistance. Needs at least 150 frost-free days/ year. If stressed, acidify the soil and mulch heavily. Avoid using insecticides on or near this plant. Possible diseases: western gall rust, dwarf mistletoe, shoestring root rot, needle cast fungus. Possible pests: aphids, borers, sawflies, bark beetle, mountain pine beetle, pine engraver beetle, tip moth, spider mites.	Hardy. Moderately fast growing. Long-lived (up to 600 years). Does well up to 9,000 feet in elevation. Ideal for the east, south, and inside rows of windbreaks. Transplants best in spring, and if trees are less than 3 feet tall. Male and female flowers are on the same tree. Native to the eastern half of Wyoming.
Rocky Mountain Juniper <i>Juniperus scopulorum</i> 15 – 25' 12 – 20' Pyramidal to irregular, dense crown	Full sun. Young trees grow well in shade, but older trees are shade intolerant.	Excellent drought tolerance. Needs at least 10" of annual precipitation.	Grows in most soils, but prefers medium textured, well-drained soils. Tolerates rocky soils, dry soils, and moist soils. Tolerates a pH range of 5.0 – 8.0.	Cover (including winter shelter when planted in blocks or rows) and nesting sites. Berry-like cones and foliage provide food and persist through winter.	Low fire tolerance and resistance. Needs at least 160 frost-free days/ year. Seeds require 2 years to mature. Possible diseases: juniper broom rust, juniper gall rust, juniper true mistletoe. Possible pests: bark beetle, spider mites.	Hardy. Slow growing. Long-lived (200 years or more). Small tree or large shrub. Does well up to 9,000 feet in elevation. Ideal for the north, west, and outside rows of windbreaks. Transplants easily; needs little care once established. Can grow from cuttings. Male and female trees are needed to produce cones. Attractive, shredding bark. Native to all of Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

~ Fire tolerance = a plant's ability to re-sprout, re-grow, or re-establish from residual seed after a fire. Fire resistance = a plant's ability to resist burning through adaptations like thick bark, a high leaf crown, or high water content. (From: *USDA Natural Resources Conservation Service Plants Database*, see the "References and Resource Guides" and "Need More Information?" sections.)

~ Riparian areas = the plant zones adjacent to and influenced by the available water in rivers, streams, lakes, ponds, and other waterways.

~ Rhizomes = horizontal, underground, root-like stems. Stolons = stems that grow along the soil surface and then root. Tillers = above-ground stems that branch from stems at or below the soil surface.

~ Seeding rate: PLS = pure live seed (seed purity x germination rate / 100 = PLS % for each seed lot), and is a way to standardize seed quality. (From: *Granite Seed Company*, see the "References and Resource Guides" and "Need More Information?" sections.)

Table 1. Selected native plants ideal for wildscaping in Wyoming.

Common Name (Alternate) Scientific Name Maximum Height Maximum Width Growth Form and Density	Sunlight Conditions	Moisture Preferences and Tolerances	Soil Information	Wildlife Value	Stress, Disease, and Pest Information	Additional Remarks
Subalpine Fir <i>Abies lasiocarpa</i> 50 – 70' 10 – 20' Pyramidal to spire-like, dense crown	Full sun to partial shade.	Moderate drought tolerance. Prefers moist areas. Needs at least 20" of annual precipitation.	Grows best in moist, medium textured to moderately coarse, acidic soils. Tolerates a pH range of 4.0 – 6.5.	Cover (including winter) and nesting sites. Seeds and foliage provide food. Attracts insects favored by birds. Foliage provides browse for moose.	Low fire tolerance and resistance. Needs at least 120 frost-free days/ year. Avoid using insecticides on or near this plant. Possible diseases: root rot. Possible pests: balsam bark beetle, western spruce budworm, balsam woolly aphid, fir engraver beetle.	Hardy. Slow growing. Long-lived. Does well from mid to high elevations. Ideal for windbreaks and sound screens. Native to the mountainous parts of Wyoming.
Deciduous Trees (Leaves drop in autumn)						
American Elm <i>Ulmus americana</i> 75' Vase-shaped, open crown	Full sun to partial shade.	Drought tolerant. Needs at least 15" of annual precipitation.	Grows best in moderately fine to moderately coarse soils. Tolerates a pH range of 5.5 – 8.0.	Cover and nesting sites. Seeds and foliage provide food. Foliage provides food for butterfly caterpillars.	Low fire tolerance and resistance. Needs at least 80 frost-free days/ year. Avoid using insecticides on or near this plant. Possible diseases: Dutch elm disease, cytospora canker. Possible pests: aphids.	Hardy. Moderately fast to fast growing. Long-lived (175 to 200 years or more). Does well from low to mid elevations. Good shade tree. Can grow from cuttings. Autumn color. Native to extreme northeastern Wyoming.
American Plum <i>Prunus americana</i> 8 – 25' 8 – 15' Irregular, open crown	Full sun. Tolerates some shade.	Drought tolerant. Tolerates periodic flooding. Needs at least 14" of annual precipitation.	Grows in most soils, but prefers deep, moist, medium textured soils. Tolerates a pH range of 6.0 – 7.5.	Dense thickets provide cover (including thorns) and nesting sites. Flowers and fruit in spring and summer provide food and attract insects favored by birds. Fruit persists through autumn. Foliage provides browse for deer.	Moderate fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Susceptible to iron deficiencies (seen when new growth turns yellow); add iron. Avoid using insecticides on or near this plant. Diseases are usually not serious. Possible diseases: fire blight, powdery mildew, black knot, plum pocket. Possible pests: pear slug (sawfly larvae).	Hardy. Moderately fast to fast growing. Moderate life span. Small tree or large shrub. Does well up to 7,000 feet in elevation. Ideal for stabilizing soil. Transplants easily in spring or autumn. Suckers readily. Fragrant white flowers in spring. Edible purple fruit in summer for jam, canning, and wine. Yellow autumn color. Native to north-central and northeastern Wyoming.
Balsam Poplar <i>Populus balsamifera</i> 30 – 80' Narrow, open crown	Full sun. Intolerant of full shade.	Moderate drought tolerance. Tolerates periodic flooding. Needs at least 20" of annual precipitation.	Grows in most soils, but prefers deep, moist, well-drained, acidic soils. Tolerates a pH range of 4.5 – 7.0.	Cover and nesting sites. Older trees tend to develop cavities. Seeds and foliage provide food. Rough bark attracts insects favored by birds. Foliage provides food for butterfly caterpillars.	Low fire tolerance, high fire resistance. Needs at least 100 frost-free days/year. Avoid using insecticides on or near this plant. Has many diseases and pests, but diseases produce dead wood for cavity nesters. Do not plant near buildings or overhead wires because some diseases or pests may weaken branches.	Hardy. Fast growing. Moderate life span (up to 200 years). Does well up to 9,000 feet in elevation. Good shade tree. Ideal for riparian areas. Suckers from the roots. Can grow from cuttings. Male and female trees are needed to produce seeds. Attractive rough bark. Invasive roots; avoid planting near pipes. Native to all of Wyoming.

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~ Foliage = twigs, buds, and/or leaves or needles.

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Bebb Willow <i>Salix bebbiana</i> 15 – 25' Upright, irregular, dense	Full sun. Intolerant of full shade.	Moderate drought tolerance once established, but grows best with abundant moisture. Tolerates short periods of standing water. Needs at least 20" of annual precipitation.	Grows in most soils, but prefers moist, medium textured to moderately coarse soils. Tolerates a pH range of 5.5 – 7.5.	Cover and nesting sites. Seeds and foliage provide food. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars. Flowers produce nectar that attracts bees. Foliage provides browse for deer, elk, and moose.	High fire tolerance, low fire resistance. Needs at least 80 frost-free days/year. Avoid using insecticides on or near this plant. Possible pests: aphids, mites, scale insects.	Moderately hardy. Moderately fast growing. Moderate life span. Small tree or large shrub. Does well up to 8,300 feet in elevation. Ideal for disturbed sites, riparian areas, and marshes. Transplants easily in spring. Can grow from cuttings. Male and female trees are needed to produce seeds. One of 27 or more willow species in Wyoming. Native to the mountainous parts of Wyoming.
Black Cottonwood <i>Populus trichocarpa</i> 60 – 80' 35 – 40' Open, broad, rounded crown	Full sun. Intolerant of full shade.	Drought tolerant once established, but grows best with abundant moisture. Needs at least 20" of annual precipitation.	Grows in most soils, but prefers deep, moist, well-drained soils. Tolerates a pH range of 5.8 – 7.2.	Cover and nesting sites. Older trees tend to develop cavities. Seeds and foliage provide food. Rough bark attracts insects favored by birds. Foliage provides food for butterfly caterpillars.	Low fire tolerance and resistance. Needs at least 80 frost-free days/ year. Avoid using insecticides on or near this plant. Has many diseases and pests, but diseases produce dead wood for cavity nesters. Do not plant near buildings or overhead wires because some diseases or pests may weaken branches.	Hardy. Fast growing. Moderate life span. Does well up to 7,500 feet in elevation. Good shade tree. Ideal for riparian areas. Suckers in moist soil. Can grow from cuttings. Male and female trees are needed to produce seeds. Golden yellow autumn color. Attractive rough bark. Invasive roots; avoid planting near pipes. Native to Teton County.
Boxelder (Ashleaf Maple) <i>Acer negundo</i> 40 – 60' 25 – 55' Broad, irregular crown	Full sun. Tolerates some shade.	Drought tolerant once established. Needs at least 17" of annual precipitation.	Grows in most soils, but prefers deep, moderately fine to moderately coarse, well-drained soils. Tolerates a pH range of 5.0 – 8.0.	Cover and nesting sites. Older trees tend to develop cavities. Seeds, flowers, and foliage provide food. Seeds persist into winter. Produces sap that attracts insects favored by birds. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 100 frost-free days/ year. Very sensitive to herbicides, especially 2,4-D. Female trees attract boxelder bugs, which can be a nuisance but are harmless. Avoid using insecticides on or near this plant. Possible diseases: heart rot (mature trees are susceptible to stem breakage from heart rot). Possible pests: aphids, spider mites, oyster shell scale.	Hardy. Fast growing. Short-lived (up to 100 years). Does well up to 8,000 feet in elevation. Good shade and ornamental tree. Ideal for windbreaks and riparian areas. Transplants easily. Male and female trees are needed to produce seeds. Red autumn color. Native to the eastern half of Wyoming.
Bur Oak <i>Quercus macrocarpa</i> 25 – 40' 20 – 35' Rounded to irregular, broad crown	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Needs at least 12" of annual precipitation.	Grows in most soils, but prefers moist, well- drained, acidic soils. Intolerant of heavy clay soils. Tolerates a pH range of 4.5 – 7.5.	Cover and nesting sites. Older trees tend to develop cavities. Acorns and foliage provide food and browse. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars.	Low fire tolerance and resistance. Needs at least 110 frost-free days/ year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy. Slow growing. Long-lived (200 to 300 years). Does well up to 8,000 feet in elevation. Good shade tree. A deep taproot makes mature plants difficult to transplant. Male and female flowers are on the same tree. Autumn color. Native to extreme northeastern Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

~ Fire tolerance = a plant's ability to re-sprout, re-grow, or re-establish from residual seed after a fire. Fire resistance = a plant's ability to resist burning through adaptations like thick bark, a high leaf crown, or high water content. (From: *USDA Natural Resources Conservation Service Plants Database*, see the "References and Resource Guides" and "Need More Information?" sections.)

~ Riparian areas = the plant zones adjacent to and influenced by the available water in rivers, streams, lakes, ponds, and other waterways.

~ Rhizomes = horizontal, underground, root-like stems. Stolons = stems that grow along the soil surface and then root. Tillers = above-ground stems that branch from stems at or below the soil surface.

~ Seeding rate: PLS = pure live seed (seed purity x germination rate / 100 = PLS % for each seed lot), and is a way to standardize seed quality. (From: *Granite Seed Company*, see the "References and Resource Guides" and "Need More Information?" sections.)

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Gambel Oak <i>Quercus gambelii</i> 15 – 25' 12 – 20' Upright oval, dense crown	Full sun. Intolerant of full shade.	Drought tolerant once established. Needs at least 10" of annual precipitation.	Grows in most soils, but prefers medium textured to moderately coarse, well-drained soils. Intolerant of heavy clay soils. Tolerates a pH range of 6.5 – 8.0.	Cover and nesting sites, especially when it occurs in thickets. Older trees tend to develop cavities. Acorns and foliage provide food and browse. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: root rot, heart rot, powdery mildew, leaf blister. Possible pests: cankerworms, leaf gall, stem gall, leaf rollers.	Hardy. Moderately slow growing. Moderate life span (up to 120 years). Small tree or large shrub. Does well up to 8,000 feet in elevation. Good shade and street tree. Male and female flowers are on the same tree. Red, orange, and yellow autumn color. Native to south- central Wyoming.
Green Ash <i>Fraxinus pennsylvanica</i> 35 – 70' 20 – 40' Irregular to elliptical oval, moderately dense crown	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Tolerates periodic flooding. Needs at least 9" of annual precipitation.	Grows in most soils, but prefers medium textured to moderately coarse, sandy loam soils. Tolerates a pH range of 5.5 – 7.5.	Cover and nesting sites. Older trees tend to develop cavities. Seeds and foliage provide food. Seeds persist into winter. Attracts insects favored by birds. Not attractive to deer.	Medium fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: heart rot, powdery mildew. Possible pests: aphids, ash borer, spider mites, oyster shell scale.	Hardy. Fast growing. Fairly long-lived. Does well up to 6,000 feet in elevation. Good shade tree. Ideal for the middle row of windbreaks. Transplants and establishes easily. Male and female trees are needed to produce seeds. Yellow autumn color. Native to the eastern half of Wyoming.
Hawthorn <i>Crataegus</i> spp. 15 – 35' 15 – 35' Upright, rounded, dense	Full sun. Tolerates some shade.	Drought tolerant. Needs at least 6" of annual precipitation.	Grows in most well- drained soils. Tolerates rocky soils with sufficient moisture. Tolerates a pH range of 6.5 – 7.5.	Cover (including thorns) and nesting sites, especially when it occurs in thickets. Flowers provide food and attract insects favored by birds. Berries provide food and persist into winter. Flowers produce nectar that attracts hummingbirds and bees. Not attractive to deer.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: cedar-hawthorn rust, fire blight. Fungal attack will spot the leaves, but is harmless. Possible pests: aphids, scale insects.	Hardy. Moderately slow growing. Moderate life span. Small to medium sized tree or large shrub. Ideal for hedgerows. Transplants are variably successful. Can grow from cuttings. White flowers in spring. Edible fruit in summer. Deep red autumn color. Five hawthorn species are native to Wyoming: <i>Crataegus chrysoarpa</i> – northern WY from the Black Hills to the Big Horn range; <i>C. douglasii</i> – northern WY from the Big Horn range to the ID border; <i>C. erythropoda</i> – southeastern WY; <i>C. rivularis</i> – most of WY except the northeastern corner; <i>C. succulenta</i> – eastern WY from the CO border to the Big Horn range.
Hophornbeam <i>Ostrya virginiana</i> 25 – 40' 20 – 30' Rounded crown	Partial shade.	Prefers moist areas, but is drought tolerant. Needs at least 18" of annual precipitation.	Grows in most soils, but prefers rich, well- drained soils. Tolerates heavy clay soils. Tolerates a pH range of 5.5 – 7.6.	Cover and nesting sites. Attracts insects favored by birds. Foliage provides browse for deer.	Medium fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy. Slow growing. Short-lived. Difficult to transplant. Also known as ironwood because of its strong, durable wood. Attractive scaly bark. Intolerant of air pollution; choose planting sites accordingly. Native to the Black Hills.

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Lanceleaf Cottonwood <i>Populus acuminata</i> 50 – 100' 75' Open, broad, rounded crown	Full sun.	Drought tolerant once established, but grows best with abundant moisture. Needs at least 20" of annual precipitation.	Grows best in deep, moist, well-drained soils. Tolerates a pH range of 5.5 – 7.5.	Cover and nesting sites. Older trees tend to develop cavities. Flowers provide food and attract insects favored by birds. Rough bark attracts insects favored by birds. Foliage provides food for butterfly caterpillars.	Low to moderate fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Avoid using insecticides on or near this plant. Has many diseases and pests, but diseases produce dead wood for cavity nesters. Do not plant near buildings or overhead wires because some diseases or pests may weaken branches.	Hardy. Fast growing. Moderate life span. Is a cottonless hybrid between Narrowleaf and Plains Cottonwood. Often found in cultivation. Good shade tree. Can grow from cuttings. Male and female trees are needed to produce seeds. Attractive rough bark. Invasive roots; avoid planting near pipes.
Mountain Ash <i>Sorbus scopulina</i> 5 – 30' 10 – 12' Rounded crown	Full sun to partial shade.	Poor drought tolerance. Needs at least 15" of annual precipitation. Sensitive to both drought and heat, so plant where it is sheltered from hot summer winds.	Grows in most well-drained soils with sufficient moisture. Tolerates a pH range of 5.6 – 7.3.	Cover and nesting sites. Fruit provides food and persists into winter.	Low fire tolerance and resistance. Needs at least 120 frost-free days/year. To improve plant health and growth, acidify the soil and add a layer of mulch. Possible diseases: fire blight (the most serious of diseases and pests). Possible pests: borers, oyster shell scale, spider mites, sawflies.	Hardy. Moderately fast growing. Moderate life span. Small tree or large shrub. Does well up to 7,500 feet in elevation. Good shade tree. Transplants easily in spring. Can grow from cuttings. White flowers from June into July. Red fruit in autumn. Autumn color. Native to the mountainous parts of Wyoming.
Narrowleaf Cottonwood <i>Populus angustifolia</i> 50 – 60' 35 – 40' Oval to irregular, open, spreading, moderately dense crown	Full sun. Intolerant of full shade.	Drought tolerant once established, but grows best with abundant moisture. Needs at least 20" of annual precipitation.	Grows best in moist, medium textured, well-drained soils. Tolerates a pH range of 6.0 – 7.5.	Cover and nesting sites. Older trees tend to develop cavities. Rough bark attracts insects favored by birds. Foliage provides food for butterfly caterpillars.	Moderate fire tolerance, low fire resistance. Needs at least 115 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: cytospora canker, bacterial wetwood. However, diseases produce dead wood for cavity nesters. Possible pests: aphids, borers, blotch leafminer, oyster shell scale. Do not plant near buildings or overhead wires because some diseases or pests may weaken branches.	Hardy. Fast growing. Moderate life span. Does well up to 8,000 feet in elevation. Good shade tree. Fair for windbreaks. Suckers from the roots. Can grow from cuttings. Male and female trees are needed to produce seeds. Golden yellow autumn color. Attractive rough bark. Invasive roots; avoid planting near pipes. Native to all but northeastern Wyoming.
Northern Hackberry (Common Hackberry) <i>Celtis occidentalis</i> 30 – 60' 30 – 60' Rounded, spreading, moderately dense crown	Full sun. Tolerates some shade.	Drought tolerant once established, but grows best with abundant moisture. Needs at least 14" of annual precipitation.	Grows in most soils, but prefers deep, moist, moderately fine to moderately coarse soils. Tolerates a pH range of 6.0 – 7.8.	Cover and nesting sites. Berries provide food and persist through winter. Foliage provides food for butterfly caterpillars. Foliage provides browse for deer.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: hackberry witches' broom, hackberry nipple gall. Possible pests: leaf gall psyllids, spiny elm caterpillar.	Hardy. Fast to moderately fast growing. Moderate life span. Does well up to 6,000 feet in elevation. Good shade and ornamental tree. Ideal for windbreaks and windy areas. Transplants easily. Male and female flowers are on the same tree. Yellow autumn color. Native to southeastern Wyoming.

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Paper Birch <i>Betula papyrifera</i> 30 – 50' 25 – 30' Rounded, oval crown	Full sun. Intolerant of full shade.	Not as drought tolerant or heat resistant as most native species. Needs at least 12" of annual precipitation. Root system is sensitive to heat. Does best on cool, north-facing slopes.	Grows best in moist, well-drained, acidic soils. Tolerates rocky soils, sandy soils, and silty loam soils. Tolerates a pH range of 4.5 – 7.0.	Cover and nesting sites. Older trees tend to develop cavities. Seeds, flowers, foliage, and sap provide food. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars. Foliage provides browse for moose.	Moderate fire tolerance, low fire resistance. Needs at least 80 frost- free days/year. Does not compete well with grasses; remove grass around the tree and mulch the soil. Avoid using insecticides on or near this plant. Very sensitive to herbicides, especially 2,4-D. Possible diseases: cytospora canker. Possible pests: bronze birch borer.	Hardy. Moderately fast growing. Short-lived (up to 100 years). Good ornamental tree. Ideal for planting in groups. Has deep roots, so transplant when small. Can grow from cuttings. Male and female flowers are on the same tree. Attractive paper-like bark. Native to the Black Hills.
Peachleaf Willow <i>Salix amygdaloides</i> 30 – 40' 40' Spreading crown	Full sun. Intolerant of full shade.	Drought tolerant once established, but grows best with abundant moisture. Tolerates periodic flooding. Needs at least 24" of annual precipitation.	Grows best in moist or poorly-drained, medium textured soils. Tolerates a pH range of 6.0 – 8.0.	Cover and nesting sites. Older trees tend to develop cavities. Seeds, flowers, and foliage provide food. Nectar- producing glands attract insects favored by birds. Foliage provides food for butterfly caterpillars. Nectar-producing glands attract bees. Foliage provides browse for moose.	Low fire tolerance and resistance. Needs at least 130 frost-free days/ year. Avoid using insecticides on or near this plant. Hosts many fungal diseases and insects, but can survive most of their effects.	Hardy. Fast growing. Short-lived (about 75 years). Does well up to 7,500 feet in elevation. Ideal for riparian areas. Transplants easily in spring. Can grow from cuttings. Male and female trees are needed to produce seeds. One of 27 or more willow species in Wyoming. Native to all but southwestern and south- central Wyoming.
Plains Cottonwood <i>Populus deltoides</i> 60 – 100' 30 – 50' Broad, open crown	Full sun. Intolerant of full shade.	Drought tolerant once established, but grows best with abundant moisture. Needs at least 20" of annual precipitation.	Grows in most soils, but prefers deep, moist, well-drained, acidic, sandy loam and silty loam soils. Tolerates a pH range of 5.0 – 7.0.	Cover and nesting sites. Older trees tend to develop cavities. Flowers and foliage provide food. Flowers and rough bark attract insects favored by birds. Foliage provides food for butterfly caterpillars.	Low fire tolerance and resistance. Needs at least 90 frost-free days/ year. Avoid using insecticides on or near this plant. Possible diseases: leaf spot, cytospora canker and other canker diseases. However, diseases produce dead wood for cavity nesters. Possible pests: aphids, blotch leafminer, borers, oyster shell scale. Do not plant near buildings or overhead wires because some diseases or pests may weaken branches.	Hardy. Fast growing. Short-lived (60 to 80 years). Does well up to 7,000 feet in elevation. Good shade tree. Transplants easily in spring or autumn. Can grow from cuttings. Male and female trees are needed to produce seeds. Golden yellow autumn color. Attractive rough bark. Invasive roots; avoid planting near pipes. Native to the eastern half of Wyoming.

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Quaking Aspen <i>Populus tremuloides</i> 30 – 60' 20 – 35' Oval to columnar, open crown	Full sun to partial shade. Intolerant of full shade.	Moderate drought tolerance. Prefers moist areas, but does well with less water once established. Needs at least 20" of annual precipitation.	Grows best in deep, moist, well-drained, acidic soils. Intolerant of heavy clay soils. Tolerates a pH range of 5.0 – 7.5.	Cover and nesting sites. Older trees tend to develop cavities. Foliage provides food for butterfly caterpillars. Foliage provides browse for deer, elk, and moose.	High fire tolerance, low fire resistance. Needs at least 140 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: cytospora canker, leaf spot. Possible pests: aphids, blotch leafminer, poplar borer, tent caterpillar, oyster shell scale.	Hardy. Fast growing. Short-lived (up to 100 years). Does well up to 10,000 feet in elevation. Good ornamental and shade tree; best planted in a group. Not suitable for windbreaks. Suckers from the roots. Male and female trees are needed to produce seeds. Golden yellow or reddish-orange autumn color. Attractive white bark. Native to the mountainous parts of Wyoming.
Rocky Mountain Maple <i>Acer glabrum</i> 5 – 25' 10 – 20' Upright, dense	Full sun to partial shade.	Moderate drought tolerance. Prefers moist areas. Needs at least 12" of annual precipitation.	Grows best in moist, medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 5.8 – 7.5.	Dense thickets provide cover and nesting sites. Seeds and foliage provide food. Foliage provides browse for deer, elk, and moose.	High fire tolerance, low fire resistance. Needs at least 180 frost-free days/year. Susceptible to iron deficiencies (seen when new growth turns yellow); add iron. Possible pests: aphids, mites.	Hardy. Fast growing. Moderate life span. Small tree or large shrub. Does well from low to high elevations. Ideal for riparian areas. Red twigs, seeds, and foliage in autumn. Native to the mountainous parts of Wyoming.
Scouler Willow <i>Salix scouleriana</i> 6 – 35' Upright, dense	Full sun to partial shade. Intolerant of full shade.	Drought tolerant once established, but grows best with abundant moisture. Occurs in drier areas than other willows. Needs at least 11" of annual precipitation.	Grows in a variety of moist, moderately well-drained to well-drained soils. Tolerates a pH range of 6.5 – 8.0.	Cover and nesting sites. Seeds and foliage provide food. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars. Flowers produce nectar that attracts bees. Foliage provides browse for deer, elk, and moose.	High fire tolerance, low fire resistance. Needs at least 180 frost-free days/year. Avoid using insecticides on or near this plant. Possible pests: aphids, mites, scale insects.	Hardy. Fast growing. Moderate life span. Small tree or large shrub. Does well up to 10,500 feet in elevation. Ideal for riparian areas and stabilizing soil. Transplants easily in spring. Can grow from cuttings. Male and female trees are needed to produce seeds. One of 27 or more willow species in Wyoming. Native to the mountainous parts of Wyoming.
Thinleaf Alder (Mountain Alder) <i>Alnus incana tenuifolia</i> 15 – 30' 15 – 30' Rounded to irregular, moderately dense crown	Partial to full shade.	Poor drought tolerance. Prefers moist areas. Needs at least 30" of annual precipitation.	Grows best in medium textured, poorly-drained, acidic soils. Tolerates a pH range of 5.0 – 7.0. Stores nitrogen.	Dense thickets provide cover and nesting sites. Foliage provides food and persists into winter. Foliage provides browse for deer, elk, and moose.	Moderate fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Possible diseases: powdery mildew, cankers, leaf rust. Possible pests: aphids, flea beetle, alder lace bug, leafminer, tent caterpillar, sawflies.	Hardy. Moderately fast growing. Moderate life span. Small tree or large shrub. Does well up to 9,000 feet in elevation. Ideal for group plantings. Male and female flowers are on the same tree. Native to the mountainous parts of Wyoming.
Water Birch <i>Betula occidentalis</i> 15 – 30' 12 – 25' Oval to irregular, open crown	Full sun to partial shade.	Poor drought tolerance. Prefers moist areas. Tolerates periodic flooding. Needs at least 16" of annual precipitation.	Grows in most soils, but prefers rich, moist, well-drained soils. Tolerates a pH range of 5.5 – 7.0.	Cover and nesting sites. Older trees tend to develop cavities. Seeds, foliage, and sap provide food. Foliage provides food for butterfly caterpillars. Not attractive to deer.	High fire tolerance, low fire resistance. Needs at least 140 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: cytospora canker. Possible pests: borers.	Hardy. Fast growing. Short-lived. Small tree or large shrub. Does well up to 8,500 feet in elevation. Ideal for riparian areas. Transplants easily. Male and female flowers are on the same tree. Yellow autumn color. Attractive, reddish-brown bark. Native to the lower valleys of the mountainous parts of Wyoming.

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Coniferous Shrubs (Evergreens that produce cones)						
Common Juniper <i>Juniperus communis</i> 1 – 4’ 4 – 8’ Open, spreading	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Needs at least 12” of annual precipitation.	Grows in a variety of well-drained soils. Tolerates sandy soils, gravelly soils, rocky loam soils, and poor soils. Tolerates a pH range of 5.5 – 8.0.	Dense thickets provide cover (including winter) and nesting sites. Berry-like cones provide food and persist through winter. Not attractive to deer.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests. Possible pests: aphids, spider mites.	Hardy. Slow to moderately slow growing. Long-lived. Does well up to 9,000 feet in elevation. Ideal as ground cover for dry, rocky areas with thin soils. Very adaptable. A deep taproot makes mature plants very difficult to transplant. Male and female shrubs are needed to produce cones. Attractive, shredding, reddish- brown bark. Blue berry-like cones in winter. Native to the mountainous parts of Wyoming.
Evergreen Shrubs (Leaves remain throughout winter)						
Antelope Bitterbrush <i>Purshia tridentata</i> 2 – 15’ Low-growing to upright	Full sun. Tolerates some shade.	Excellent drought tolerance. Needs at least 12” of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Prefers soils that originated from sedimentary or igneous rock. Tolerates a pH range of 5.5 – 8.4.	Cover and nesting sites. Foliage provides browse for deer and pronghorn.	Low fire tolerance and resistance. Needs at least 120 frost-free days/ year. Mostly free of serious diseases and pests.	Hardy. Fast growing. Long-lived. Evergreen and deciduous. Does well from low to high elevations. Yellow flowers from spring into summer. Native to all but the eastern 1/3 of Wyoming.
Basin Big Sagebrush <i>Artemisia tridentata tridentata</i> 3 – 12’ Upright, rounded to spreading	Full sun. Intolerant of full shade.	Excellent drought tolerance. Tolerates more moisture than other big sagebrush species. Needs at least 6” of annual precipitation.	Grows best in deep, medium textured, well- drained soils. Tolerates a pH range of 6.0 – 8.2.	Cover and nesting sites. Seeds and foliage provide food and persist through winter. Attracts insects favored by birds. Foliage provides browse for deer and pronghorn, but is less palatable than other big sagebrush species.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy. Slow to moderately slow growing. Long-lived. Does well up to 7,000 feet in elevation. Does best in bare areas with little competition. A deep taproot makes mature plants very difficult to transplant. Can be started from local seed. Yellow flowers in late August.
Black Sagebrush <i>Artemisia nova</i> 2’ Irregular, spreading	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Needs at least 6” of annual precipitation.	Grows in most soils, but prefers shallow, alkaline soils. Tolerates a pH range of 7.0 – 8.5.	Cover and nesting sites. Seeds and foliage provide food and persist through winter. Foliage provides browse for deer and pronghorn.	Low fire tolerance and resistance. Needs at least 150 frost-free days/ year. Mostly free of serious diseases and pests.	Hardy. Moderately fast growing. Long-lived. Does well from 5,000 to 7,000 feet in elevation. A deep taproot makes mature plants very difficult to transplant. Can be started from local seed. Native to all but the eastern 1/3 of Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

~ Fire tolerance = a plant’s ability to re-sprout, re-grow, or re-establish from residual seed after a fire. Fire resistance = a plant’s ability to resist burning through adaptations like thick bark, a high leaf crown, or high water content. (From: *USDA Natural Resources Conservation Service Plants Database*, see the “References and Resource Guides” and “Need More Information?” sections.)

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~ Rhizomes = horizontal, underground, root-like stems. Stolons = stems that grow along the soil surface and then root. Tillers = above-ground stems that branch from stems at or below the soil surface.

~ Seeding rate: PLS = pure live seed (seed purity x germination rate / 100 = PLS % for each seed lot), and is a way to standardize seed quality. (From: *Granite Seed Company*, see the “References and Resource Guides” and “Need More Information?” sections.)

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Common Name (Alternate) Scientific Name Maximum Height Maximum Width Growth Form and Density	Sunlight Conditions	Moisture Preferences and Tolerances	Soil Information	Wildlife Value	Stress, Disease, and Pest Information	Additional Remarks
Curl-leaf Mountain Mahogany <i>Cercocarpus ledifolius</i> 6 – 20' 6 – 12' Rounded, compact crown	Full sun to partial shade.	Excellent drought tolerance. Needs at least 10" of annual precipitation.	Grows best in dry, shallow to medium depth, medium textured soils. Tolerates a pH range of 6.0 – 9.0.	Cover and nesting sites. Fruit and foliage provide food. Fruit persists into winter. Foliage provides browse for deer and pronghorn.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Moderately slow growing. Long-lived. Large shrub or small tree. Does well up to 9,000 feet in elevation. Ideal for dry sites. White to pale yellow flowers in spring. Fruits have attractive feathery tails. Native to the eastern 1/3 of Wyoming.
Fourwing Saltbush <i>Atriplex canescens</i> 3 – 6' 2 – 5' Upright, irregular	Full sun to partial shade.	Excellent drought tolerance. Intolerant of high water tables. Needs at least 10" of annual precipitation.	Grows in most soils, but prefers moderately fine to coarse, well-drained, alkaline soils. Tolerates a pH range of 6.6 – 9.0.	Cover and nesting sites. Seeds and foliage provide food and persist into winter. Foliage provides browse for deer and pronghorn.	High fire tolerance, low fire resistance. Needs at least 240 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Moderately slow growing. Long-lived. Evergreen and deciduous. Does well up to 8,500 feet in elevation. Ideal for harsh sites. A deep taproot makes mature plants very difficult to transplant. Seeds or transplants should be from areas with similar conditions, especially precipitation, temperature, and elevation. Male and female shrubs are needed to produce seeds. Native to all but northwestern to south-central Wyoming.
Gardner's Saltbush <i>Atriplex gardneri</i> ½ - 1' Irregular	Full sun. Intolerant of full shade.	Excellent drought tolerance. Needs at least 5" of annual precipitation.	Grows in most soils, but prefers moderately fine, alkaline soils. Tolerates a pH range of 6.6 – 9.0.	Cover and nesting sites. Seeds and foliage provide food. Foliage provides browse for deer and pronghorn.	High fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Slow growing. Long-lived. Does well from 3,500 to 7,000 feet in elevation. Ideal for dry sites. Native to all but southeastern Wyoming.
Mountain Big Sagebrush <i>Artemisia tridentata vaseyana</i> 2 – 5' Upright	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Needs at least 6" of annual precipitation.	Grows best in medium textured, well-drained soils. Tolerates a pH range of 6.0 – 8.2.	Cover and nesting sites. Seeds and foliage provide food and persist through winter. Attracts insects favored by birds. Foliage provides browse for deer and pronghorn.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy. Slow to moderately slow growing. Long-lived. Does well from mid to high elevations. A deep taproot makes mature plants very difficult to transplant. Can be started from local seed.
Prairie Sage (White Sage) <i>Artemisia ludoviciana</i> 1 – 2' Upright, irregular	Full sun. Intolerant of full shade.	Drought tolerant. Needs at least 10" of annual precipitation.	Grows in most soils, but prefers medium textured to moderately coarse soils. Tolerates a pH range of 6.0 – 7.5.	Cover and nesting sites. Foliage provides food. Foliage provides browse for deer, elk, and pronghorn.	High fire tolerance and resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Fast growing. Moderate life span. Does well from 2,500 to 9,000 feet in elevation. Spreads by rhizomes. Establishes quickly and easily, even on harsh sites.
Shadscale Saltbush <i>Atriplex confertifolia</i> 1 – 3' 1 – 5' Irregular	Full sun. Intolerant of full shade.	Excellent drought tolerance. Needs at least 4" of annual precipitation.	Grows best in moderately fine to medium textured, well-drained, alkaline soils. Tolerates a pH range of 7.5 – 9.0.	Cover and nesting sites. Seeds and foliage provide food. Foliage provides browse for deer and pronghorn.	Low fire tolerance, high fire resistance. Needs at least 165 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Slow growing. Moderate life span. Evergreen and deciduous. Does well up to 7,500 feet in elevation. Ideal for dry sites. Male and female shrubs are needed to produce seeds. Native to all but the eastern 1/3 of Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

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Silver Sagebrush <i>Artemisia cana</i> 2 – 5' 3' Upright, irregular	Full sun. Intolerant of full shade.	Drought tolerant. Tolerates moist areas, high water tables, and periodic flooding. Needs at least 8" of annual precipitation.	Grows in most soils, but prefers moderately coarse soils. Intolerant of clay soils. Tolerates a pH range of 5.2 – 9.0.	Cover and nesting sites. Seeds and foliage provide food and persist into winter. Flowers produce nectar that attracts bees. Foliage provides browse for deer, elk, and pronghorn.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Moderately fast growing. Long-lived. Does well up to 10,000 feet in elevation. May spread by rhizomes in favorable conditions. Can grow from cuttings. Attractive silver foliage. Yellow flowers in late summer. Native to all of Wyoming.
Spiny Hopsage <i>Grayia spinosa</i> 3' 3' Upright, irregular	Full sun. Intolerant of full shade.	Excellent drought tolerance. Needs at least 8" of annual precipitation.	Grows in a variety of well-drained, alkaline soils. Tolerates a pH range of 6.5 – 9.0.	Cover. Foliage provides food. Foliage provides browse for deer and pronghorn.	Moderate fire tolerance, low fire resistance. Needs at least 160 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Slow growing. Long-lived. Evergreen and deciduous. Does well up to 5,500 feet in elevation. Ideal for dry, alkaline sites. Native to the western half of Wyoming.
True Mountain Mahogany <i>Cercocarpus montanus</i> 12' Rounded, compact crown	Full sun to partial shade.	Excellent drought tolerance. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.0 – 8.0.	Cover and nesting sites. Fruit and foliage provide food. Fruit persists into winter. Foliage provides browse for deer.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Slow growing. Long-lived. Does well up to 8,500 feet in elevation. Large shrub or small tree. Ideal for dry sites. Fruits have attractive feathery tails. Native to all of Wyoming.
Winterfat <i>Krascheninnikovia lanata</i> Formerly <i>Ceratoides lanata</i> 1 – 3' 1 – 3' Erect or spreading	Full sun. Tolerates some shade. Intolerant of full shade.	Excellent drought tolerance. Intolerant of high water tables. Needs at least 10" of annual precipitation.	Grows in most soils, but prefers dry, medium textured to moderately coarse, alkaline soils. Tolerates a pH range of 6.6 – 8.3.	Cover and nesting sites. Foliage provides food and persists through winter. Foliage provides browse for deer, elk, and pronghorn.	High fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Moderately fast growing. Long-lived. Does well up to 7,300 feet in elevation. Ideal for disturbed sites. A deep taproot makes mature plants very difficult to transplant. Can grow from cuttings. Native to the eastern half of Wyoming.
Wyoming Big Sagebrush <i>Artemisia tridentata</i> <i>wyomingensis</i> 1 – 3' Upright, irregular	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Needs at least 6" of annual precipitation.	Grows best in shallow, medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.0 – 8.2.	Cover and nesting sites. Seeds and foliage provide food and persist into winter. Attracts insects favored by birds. Foliage provides browse for deer and pronghorn.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy. Slow to moderately slow growing. Long-lived. Evergreen and deciduous. Does well from 5,000 to 7,000 feet in elevation. Ideal for dry sites and disturbed sites. A deep taproot makes mature plants very difficult to transplant.
Yucca (Soapweed) <i>Yucca glauca</i> 3 – 4' 3 – 4' Upright, dense	Full sun. Intolerant of full shade.	Excellent drought tolerance. Needs at least 7" of annual precipitation.	Grows best in moderately coarse to coarse, well-drained, alkaline soils. Tolerates dry soils and poor soils. Tolerates a pH range of 7.0 – 8.5.	Cover. Flowers produce nectar that attracts hummingbirds and moths.	Low fire tolerance and resistance. Needs at least 140 frost-free days/ year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy. Moderately fast growing. Long-lived. Does well up to 6,500 feet in elevation. Ideal for dry sites and areas with poor soil. Spreads by rhizomes. Greenish-white flowers from June through July.

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Deciduous Shrubs (Leaves drop in autumn)						
Black Greasewood <i>Sarcobatus vermiculatus</i> 2 – 8' Irregular	Full sun. Intolerant of full shade.	Excellent drought tolerance. Needs at least 7" of annual precipitation.	Grows best in moderately fine to medium textured, well- drained, alkaline soils. Tolerates clay soils. Tolerates a pH range of 7.0 – 8.5.	Cover and nesting sites. Foliage provides food. Foliage provides browse for deer and pronghorn.	High fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Fast growing. Long-lived. Does well up to 8,500 feet in elevation. Ideal for dry, alkaline sites. Can grow from cuttings. Native to all of Wyoming.
Buffaloberry <i>Shepherdia canadensis</i> 6 – 8' 6 – 8' Upright, irregular	Full sun to partial shade.	Prefers moist areas, but is drought tolerant. Needs at least 14" of annual precipitation.	Grows best in moist, medium textured to moderately coarse soils. Tolerates a pH range of 5.3 – 8.0. Stores nitrogen.	Dense thickets provide cover (including thorns) and nesting sites. Berries provide food. Not attractive to deer.	Moderate fire tolerance, low fire resistance. Needs at least 95 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Moderately fast growing. Moderate life span. Does well in protected areas up to 8,500 feet in elevation. Ideal for erosion control. Attractive silvery leaves. Edible reddish- orange berries from July into September.
Common Chokecherry <i>Prunus virginiana</i> 12 – 25' 10 – 20' Oval to irregular, moderately dense crown	Full sun to partial shade.	Excellent drought tolerance. Tolerates moist areas and periodic flooding. Needs at least 12" of annual precipitation.	Grows in most soils, but prefers loose, medium textured, well-drained soils. Intolerant of hard, compacted soils. Tolerates a pH range of 6.5 – 7.5.	Loose thickets provide cover and nesting sites. Flowers and fruit in spring and summer provide food and attract insects favored by birds. Foliage provides browse for deer.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: black knot, fire blight. Possible pests: borers, pear slug (sawfly larvae), tent caterpillar.	Hardy. Fast growing. Moderate life span (100 to 200 years). Does well up to 9,000 feet in elevation. Transplants easily in spring and autumn. Spreads by rhizomes. Suckers readily. Male and female flowers are on the same shrub. Fragrant white flowers in spring. Edible fruit in summer for jam, syrup, pie, and wine. Golden yellow to orange autumn color. Avoid planting near fruit trees. Native to all of Wyoming.
Drummond's Willow <i>Salix drummondiana</i> 6 – 12' Upright, dense	Full sun to partial shade.	Moderate drought tolerance. Prefers moist areas. Tolerates seasonal flooding and high water tables. Needs at least 16" of annual precipitation.	Grows in a variety of moist soils. Tolerates a pH range of 5.2 – 7.4.	Dense thickets provide cover and nesting sites. Seeds, foliage, and sap provide food. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars. Foliage provides browse for moose.	High fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Avoid using insecticides on or near this plant. Possible pests: aphids, mites, scale insects.	Hardy. Fast growing. Long-lived. Does well from 6,000 to 10,000 feet in elevation. Ideal for riparian areas, marshes, and stabilizing soil. Transplants easily in spring. Can grow from cuttings. Male and female shrubs are needed to produce seeds. One of 27 or more willow species in Wyoming.
Dwarf Ninebark <i>Physocarpus opulifolius</i> 4 – 6' 4 – 6' Upright, dense	Full sun to partial shade.	Drought tolerant.	Grows in a variety of soils. Tolerates dry soils and alkaline soils.	Cover and nesting sites. Flowers in early summer provide food and attract insects favored by birds.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests. Possible diseases: fire blight.	Hardy. Moderately fast growing. Moderate life span. Ideal for hedgerows. White or pink flowers in early summer. Red seed pods in autumn. Attractive peeling bark in winter.

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Elderberry <i>Sambucus nigra</i> 7 – 12' 10' Upright, clumped	Full sun to partial shade. Intolerant of full shade.	Moderate drought tolerance. Prefers moist areas. Needs at least 34" of annual precipitation.	Grows best in rich, moist, acidic soils. Tolerates dry soils. Tolerates a pH range of 5.0 – 7.0.	Dense thickets provide cover and nesting sites. Flowers provide food and attract insects favored by birds. Flowers produce nectar that attracts hummingbirds. Berries provide food and persist into autumn. Foliage provides browse for deer and rabbits.	Moderate fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Avoid using insecticides on or near this plant. Very sensitive to herbicides, especially 2,4-D. Possible diseases: powdery mildew.	Hardy. Fast growing. Moderate life span. Large shrub or small tree. Does well up to 8,000 feet in elevation. Transplants easily. Suckers readily. White flowers from May to July. Yellow autumn color. Edible dark purple berries in autumn for jam and pie (berries must be cooked before eating). Native to the lower valleys of the mountainous parts of Wyoming.
Geyer's Willow <i>Salix geyeriana</i> 15' Upright, irregular	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers moist or wet areas. Needs at least 19" of annual precipitation.	Grows best in deep, fine, moist or poorly-drained soils. Tolerates a pH range of 6.5 – 7.5.	Cover and nesting sites. Seeds and foliage provide food. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars. Foliage provides browse for elk and moose. Highly palatable to livestock.	High fire tolerance and resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Possible pests: aphids, mites, scale insects.	Hardy. Fast growing. Moderate life span. Large shrub or small tree. Does well from low to high elevations. Larger than many other willow shrub species. Ideal for riparian areas, marshes, and stabilizing soil. Transplants easily in spring. Can grow from cuttings. Male and female shrubs are needed to produce seeds. One of 27 or more willow species in Wyoming. Native to all but the eastern 1/4 of Wyoming.
Golden Currant <i>Ribes aureum</i> 5 – 8' 3 – 6' Rounded, upright, spreading	Full sun to partial shade.	Prefers moist areas, but is drought tolerant. Tolerates periodic flooding. Needs at least 12" of annual precipitation.	Grows best in rich, medium textured, well-drained soils. Tolerates a pH range of 6.0 – 8.0.	Dense thickets provide cover and nesting sites. Flowers and fruit provide food and attract insects favored by birds.	Moderate fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. Avoid using insecticides on or near this plant. Possible pests: fruitworms.	Hardy. Moderately fast growing. Moderate life span. Does well up to 9,000 feet in elevation. Ideal near brush piles, for hedgerows, and for disturbed sites. Suckers readily. Can grow from cuttings. Clusters of bright yellow flowers from May into June. Colorful edible fruit in summer for jam and pie. Scarlet red autumn color.
Highbush Cranberry <i>Viburnum opulus</i> 6' 6' Rounded	Partial to full shade.	Poor drought tolerance. Prefers moist or wet areas. Needs at least 35" of annual precipitation.	Grows best in moist, fine to medium textured soils. Tolerates a pH range of 5.5 – 7.5.	Cover and nesting sites. Fruit provides food and persists well into winter.	Low fire tolerance and resistance. Needs at least 130 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Fast growing. Short-lived. Transplants easily. Has several closely related species and cultivars; check for locally adapted cultivars. White flowers in spring. Scarlet red or orange fruit.

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Lemmon's Willow <i>Salix lemmonii</i> 3 – 10' Upright, irregular	Full sun to partial shade. Intolerant of full shade.	Moderate to poor drought tolerance. Prefers moist or wet areas. Needs at least 20" of annual precipitation.	Grows in a variety of moist or poorly-drained soils. Tolerates a pH range of 5.2 – 7.4.	Cover. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars. Flowers produce nectar that attracts bees. Foliage provides browse for deer, elk, and moose.	High fire tolerance and resistance. Needs at least 110 frost-free days/year. Avoid using insecticides on or near this plant. Possible pests: aphids, mites, scale insects.	Hardy. Fast growing. Long-lived. Does well from low to high elevations. Ideal for riparian areas and stabilizing soil. Transplants easily in spring. Can grow from cuttings. Male and female shrubs are needed to produce seeds. One of 27 or more willow species in Wyoming.
Nannyberry <i>Viburnum lentago</i> 10 – 20' 8 – 15' Upright, spreading	Full sun to partial shade.	Drought tolerant. Tolerates both moist and dry areas. Needs at least 38" of annual precipitation.	Grows best in loose, medium textured, acidic soils. Intolerant of clay soils and compacted soils. Tolerates a pH range of 5.0 – 7.0.	Dense thickets provide cover and nesting sites. Berries provide food and persist into winter.	Low fire tolerance and resistance. Needs at least 128 frost-free days/year. Mostly free of serious diseases and pests.	Hardy. Fast growing. Short-lived. Ideal for borders. Transplants easily in spring. Suckers readily. White flowers in spring. Native to the Black Hills.
Narrowleaf Willow (Coyote Willow) <i>Salix exigua</i> 6 – 12' 10' Upright, dense	Full sun to partial shade. Intolerant of full shade.	Moderate drought tolerance once established, but grows best with abundant moisture. Needs at least 20" of annual precipitation.	Grows best in moist, moderately fine to moderately coarse soils. Tolerates a pH range of 6.0 – 8.5.	Dense thickets provide cover and nesting sites. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars. Flowers produce nectar that attracts bees. Foliage provides browse for moose.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Possible pests: aphids, mites, scale insects.	Hardy. Fast growing. Moderate life span. Does well up to 8,500 feet in elevation. Ideal for riparian areas and marshes. Transplants easily in spring. Can grow from cuttings. Male and female shrubs are needed to produce seeds. One of 27 or more willow species in Wyoming. Native to all of Wyoming.
Planeleaf Willow (Diamondleaf Willow) <i>Salix planifolia</i> 8' 6' Upright, irregular, dense	Full sun. Intolerant of full shade.	Moderate drought tolerance once established, but grows best with abundant moisture. Needs at least 18" of annual precipitation.	Grows best in moist, medium textured to moderately coarse, acidic soils. Tolerates a pH range of 4.5 – 6.0.	Dense thickets provide cover and nesting sites. Seeds and foliage provide food. Attracts insects favored by birds. Foliage provides food for butterfly caterpillars. Foliage provides browse for moose.	High fire tolerance, low fire resistance. Needs at least 80 frost-free days/year. Avoid using insecticides on or near this plant. Possible pests: aphids, mites, scale insects.	Hardy. Fast growing. Moderate life span. Large shrub or small tree. Ideal for riparian areas and marshes. Transplants easily in spring. Can grow from cuttings. Male and female shrubs are needed to produce seeds. One of 27 or more willow species in Wyoming.
Red-osier Dogwood <i>Cornus sericea</i> Formerly <i>Cornus stolonifera</i> 6 – 10' 10 – 12' Upright, spreading	Full sun to partial shade. Intolerant of full shade.	Prefers moist areas, but can tolerate dry conditions if grown in fine soil. Tolerates periodic flooding. Needs at least 24" of annual precipitation.	Grows in a variety of rich, moist, acidic soils. Will need care in dry, rocky soils. Tolerates a pH range of 5.0 – 7.5.	Cover and nesting sites. Foliage and berries provide food. Flowers produce nectar that attracts butterflies and bees. Foliage provides browse for deer, elk, and moose.	Moderate fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Susceptible to iron deficiencies (seen when new growth turns yellow); add iron. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy. Moderately fast growing. Short-lived. Does well up to 8,500 feet in elevation. Ideal for riparian areas. Transplants may not thrive. Suckers readily. Fragrant white flowers from June through July. Reddish-purple autumn color. Attractive red bark. Native to all but southeastern Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

~ Fire tolerance = a plant's ability to re-sprout, re-grow, or re-establish from residual seed after a fire. Fire resistance = a plant's ability to resist burning through adaptations like thick bark, a high leaf crown, or high water content. (From: *USDA Natural Resources Conservation Service Plants Database*, see the "References and Resource Guides" and "Need More Information?" sections.)

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~ Rhizomes = horizontal, underground, root-like stems. Stolons = stems that grow along the soil surface and then root. Tillers = above-ground stems that branch from stems at or below the soil surface.

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Rubber Rabbitbrush <i>Ericameria nauseosa</i> Formerly <i>Chrysothamnus nauseosus</i> 4' 4' Upright, dense	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Needs at least 6" of annual precipitation.	Grows best in dry, medium textured to moderately coarse, alkaline soils. Tolerates poor soils. Tolerates a pH range of 7.5 – 8.7.	Cover and nesting sites. Seeds and foliage provide food. Foliage provides browse for deer and pronghorn.	Low fire tolerance and resistance. Needs at least 150 frost-free days/ year. Mostly free of serious diseases and pests.	Hardy. Slow growing. Long-lived. Does well up to 8,500 feet in elevation. Establishes easily and may spread aggressively. Ideal for dry sites, areas with poor soil, and erosion control. A deep taproot makes mature plants very difficult to transplant. Yellow flowers from August through September. Native to all but the northwestern corner to south- central Wyoming.
Serviceberry (Juneberry) <i>Amelanchier alnifolia</i> 5 – 15' 4 – 12' Rounded, globular	Full sun to partial shade. Intolerant of full shade.	Prefers moist areas, but is drought tolerant. Needs at least 12" of annual precipitation.	Grows in most soils, but prefers medium textured, well-drained soils. Tolerates a pH range of 5.6 – 7.7.	Dense thickets provide cover and nesting sites. Flowers provide food and attract insects favored by birds. Berries provide food and persist through winter. Foliage provides browse for deer and elk.	High fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: cedar apple rust, fire blight.	Hardy. Moderately fast growing. Long- lived. Does well up to 9,000 feet in elevation. Ideal for windbreaks. Suckers from the roots. Can grow from cuttings. White flowers from May through June. Edible reddish-purple fruit for jam and pie in summer. Autumn color. Native to all but southeastern Wyoming.
Shrubby Cinquefoil <i>Pentaphylloides floribunda</i> Formerly <i>Potentilla fruticosa</i> 2 – 4' 2 – 4' Upright, rounded	Full sun. Tolerates some shade.	Drought tolerant. Needs at least 16" of annual precipitation.	Grows in a variety of well-drained soils. Tolerates poor soils. Tolerates a pH range of 5.0 – 8.0.	Cover. Flowers provide food and attract insects favored by birds. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 180 frost-free days/ year. Avoid using insecticides on or near this plant. Possible diseases: mildew if evenings are wet. Possible pests: spider mites.	Hardy. Slow growing. Long-lived. Does well up to 10,000 feet in elevation. Ideal for dry sites and areas with poor soil. Yellow or white flowers from June through August. Attractive, shredding, reddish- brown bark. Native to the eastern 1/3 of Wyoming.
Silverberry <i>Elaeagnus commutata</i> 5 – 12' 3 – 6' Mounded, upright	Full sun. Tolerates some shade. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Tolerates moist areas. Needs at least 12" of annual precipitation.	Grows in a variety of well-drained soils. Intolerant of compacted soils. Tolerates a pH range of 5.5 – 8.0. Stores nitrogen.	Cover and nesting sites. Berries provide food and persist into autumn. Foliage provides browse for moose. Not attractive to deer.	Moderate fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests. Possible diseases: leaf spot, leaf rust, dieback, root rot.	Hardy. Moderately fast growing. Long-lived. Does well from low to mid elevations. Ideal for slopes, embankments, and disturbed sites. Transplants easily. Suckers readily.
Silver Buffaloberry <i>Shepherdia argentea</i> 8 – 18' 6 – 12' Rounded to irregular, upright	Full sun. Tolerates some shade. Intolerant of full shade.	Prefers moist areas, but is drought tolerant. Tolerates periodic flooding. Needs at least 10" of annual precipitation.	Grows in most soils, but prefers medium textured, well-drained soils. Tolerates clay soils. Tolerates a pH range of 6.0 – 8.0. Stores nitrogen.	Dense thickets provide cover (including thorns) and nesting sites. Berries and foliage provide food. Attracts insects favored by birds. Foliage provides browse for deer and pronghorn.	Moderate fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: canker, heart rot.	Hardy. Moderately fast growing. Short-lived (up to 100 years). Does well from 3,500 to 7,500 feet in elevation. Suckers from the roots. Male and female shrubs are needed to produce fruit. Yellow or white flowers in spring. Attractive silver foliage. Edible gold or red berries for jam, canning, and wine. Native to all but northwestern Wyoming.

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Skunkbush Sumac <i>Rhus trilobata</i> Also known as <i>Rhus aromatica</i> 3 – 10' 7 – 20' Spreading, dense	Full sun. Tolerates some shade.	Drought tolerant. Needs at least 10" of annual precipitation.	Grows in most well- drained soils. Tolerates dry, exposed soils and clay soils if they are not compacted. Tolerates a pH range of 6.5 – 8.0.	Dense thickets provide cover and nesting sites. Berries provide food and persist into winter. Flowers produce nectar that attracts butterflies. Foliage provides browse for deer, elk, and pronghorn.	High fire tolerance, low fire resistance. Needs at least 140 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests. Possible diseases: damping-off fungus.	Hardy. Slow to moderately slow growing. Short-lived (up to 100 years). Does well up to 9,000 feet in elevation. Ideal for hedgerows, the inside rows of windbreaks, and erosion control. Transplants easily. Suckers readily. Male and female shrubs are needed to produce fruit. Yellow flowers in spring. Red fruit in summer. Orange-red autumn color. One of 2 <i>Rhus</i> species in Wyoming. Native to all of Wyoming.
Smooth Sumac <i>Rhus glabra</i> 4 – 7' 15' Spreading, dense	Full sun.	Drought tolerant. Needs at least 30" of annual precipitation.	Grows in a variety of well-drained soils. Intolerant of compacted soils. Tolerates a pH range of 6.0 – 7.5.	Dense thickets provide cover and nesting sites. Berries provide food and persist through winter. Flowers produce nectar that attracts butterflies. Bark and foliage provide browse for deer.	High fire tolerance, low fire resistance. Needs at least 135 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy. Moderately fast growing. Short-lived (about 30 years). Does well from mid to high elevations. Ideal for hedgerows, the inside rows of windbreaks, and erosion control. Transplants easily in any season. Spreads by rhizomes. Suckers readily. Male and female shrubs are needed to produce fruit. White flowers in spring. Dark red berries. Brilliant red autumn foliage. One of 2 <i>Rhus</i> species in Wyoming. Native to the eastern half of Wyoming.
Twinberry Honeysuckle <i>Lonicera involucrata</i> 6' 4 – 6' Irregular, upright, moderately dense crown	Full sun to partial shade. Intolerant of full shade.	Drought tolerant once established. Needs at least 14" of annual precipitation.	Grows in most soils, but prefers rich, moderately fine to medium textured soils. Tolerates a pH range of 5.5 – 8.0.	Cover. Flowers and fruit provide food and attract insects favored by birds. Flowers produce nectar that attracts hummingbirds. Not attractive to deer.	Moderate fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: honeysuckle witches' broom. Possible pests: aphids.	Hardy. Moderately fast to fast growing. Moderate life span. Does well up to 8,000 feet in elevation. Ideal for hedgerows, group plantings, and near brush piles. Pale yellow flowers in spring. Purplish-black fruit in summer. One of 6 honeysuckle species in Wyoming. Native to all but the Big Horn Mountains of Wyoming.
Wax Currant (Squaw Currant) <i>Ribes cereum</i> 4 – 5' 4 – 5' Open, upright, spreading	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Needs at least 13" of annual precipitation.	Grows best in moderately coarse to coarse, well-drained soils. Tolerates a pH range of 6.5 – 7.5.	Loose thickets provide cover. Fruit and foliage provide food and attract insects favored by birds.	High fire tolerance and resistance. Needs at least 300 frost-free days/ year. Possible pests: fruitworms.	Hardy. Fast growing. Moderate life span. Does well up to 8,000 feet in elevation. Ideal for hedgerows and near brush piles. Suckers readily. Fragrant white or pink flowers in spring. Edible red fruit in summer for jam and pie. Autumn color. Native to all of Wyoming.

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Western Snowberry <i>Symphoricarpos occidentalis</i> 3 – 6' 3 – 6' Broad, rounded	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Tolerates both dry and moist areas. Needs at least 12" of annual precipitation.	Grows in a variety of well-drained soils. Tolerates poor soils. Tolerates a pH range of 6.5 – 8.0.	Dense thickets provide cover and nesting sites. Flowers produce nectar that attracts hummingbirds. Berries provide food and persist into winter. Foliage provides browse for deer, elk, and pronghorn.	High fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests. Possible diseases: root rot.	Hardy. Moderately fast growing. Moderate life span. Does well up to 9,500 feet in elevation. Ideal for erosion control and disturbed sites. Transplants easily. Spreads by rhizomes. Suckers rapidly. Pink flowers from June into July. White berries from late summer into winter. Native to all of Wyoming.
Wild Rose (Woods' Rose) <i>Rosa woodsii</i> 4 – 6' 4 – 6' Rounded, spreading	Full sun to partial shade.	Prefers moist areas, but is drought tolerant. Tolerates periodic flooding. Needs at least 12" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 5.0 – 8.0.	Dense thickets provide cover (including thorns) and nesting sites. Fruit provides food and persists into winter. Foliage provides browse for deer and elk.	High fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. Possible diseases: leaf spot, leaf rust, common gall, cankers. Possible pests: tent caterpillar, leaf hopper, tussock moth.	Hardy. Moderately fast growing. Long-lived. Does well from 3,500 to 9,000 feet in elevation. Establishes quickly. Ideal for difficult areas and disturbed sites. Spreads by rhizomes. Suckers rapidly. Fragrant pink flowers from May to July. Red fruit (rose hips) from late summer into winter. Native to all of Wyoming.
Vines						
American Vetch <i>Vicia americana</i> 2 – 4' 1 – 4' ½ – 1¼" long flowers Elongated cluster Vine-like	Full sun to partial shade.	Drought tolerant. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse soils. Tolerates a pH range of 5.9 – 7.2. Stores nitrogen.	Cover. Seeds and foliage provide food.	Moderate fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Mostly free of serious diseases and pests.	Hardy legume ("fixes" nitrogen in the soil). Moderately fast growing. Moderate life span. Spreads by rhizomes. Clings by tendrils. Purple flowers from May through July. One of 3 vetch species in Wyoming. Plant in spring or autumn at 33,000 seeds/pound and 25-35 PLS pounds/acre.
Virginia Creeper (Woodbine) <i>Parthenocissus vitacea</i> 35' 35' Climbing, dense	Full sun to partial shade.	Drought tolerant. Needs at least 14" of annual precipitation.	Grows best in moderately fine to medium textured soils. Tolerates a pH range of 5.0 – 7.5.	Cover and nesting sites. Berries provide food and persist into winter.	Low fire tolerance and resistance. Needs at least 130 frost-free days/year. Possible diseases: leaf spot in wet seasons. Possible pests: scale insects, spider mites.	Hardy. Moderately fast growing. Moderate life span. Ideal near brush piles, for shady sites, and for sites with poor soil. Transplants easily. Brilliant red autumn color. Fruit is somewhat poisonous, especially to young children.
Western Clematis (Blue Virgin's Bower) <i>Clematis occidentalis</i> 10' 15' 1½ – 2½" long flowers Radially symmetrical Creeping or climbing	Partial shade.	Prefers moist areas, but is drought tolerant.	Grows best in moist, medium textured to coarse, well-drained soils. Tolerates a pH range of 6.0 – 7.0.	Cover.	Mostly free of serious diseases and pests. Possible diseases: blight.	Hardy. Does well from low to mid elevations. Ideal near brush piles. Pinkish-purple to bluish-violet flowers from June through July. Fruits have attractive feathery tails. One of 4 <i>Clematis</i> species in Wyoming. Native to north-central, south-central, and the western 1/3 of Wyoming.

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Ground Cover and Low-Growing Plants						
Bearberry (Kinnikinnick) <i>Arctostaphylos uva-ursi</i> 2 – 6” 24 – 36” Low, matted, trailing	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Needs at least 14” of annual precipitation.	Grows in a variety of well-drained soils. Tolerates a pH range of 5.5 – 8.0.	Cover. Attracts insects favored by birds. Berries provide food and persist through winter. Flowers produce nectar that attracts hummingbirds.	Low fire tolerance and resistance. Needs at least 140 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy evergreen shrub. Moderately slow growing. Long-lived. Does well up to 9,700 feet in elevation. Spreads by stolons. Ideal for erosion control. White or pink flowers from May through June. Red berries in autumn. Attractive red bark. Native to all of Wyoming.
Creeping Juniper <i>Juniperus horizontalis</i> 8 – 12” 60 – 96” Low, creeping, dense	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Needs at least 12” of annual precipitation.	Grows in most soils, but prefers well-drained, acidic soils. Tolerates rocky soils and sandy soils. Tolerates a pH range of 4.8 – 7.5.	Cover. Berry-like cones provide food and persist through winter.	Low fire tolerance and resistance. Needs at least 120 frost-free days/year. Mostly free of serious diseases and pests. Possible pests: aphids, spider mites.	Hardy coniferous shrub. Moderately slow growing. Moderate life span. Does well up to 7,000 feet in elevation. Very adaptable. A deep taproot makes mature plants very difficult to transplant. Spreads by tillers. Can grow from cuttings. Ideal near buildings. Male and female shrubs are needed to produce cones. Many cultivars are available; check for locally adapted cultivars.
Fringed Sagebrush (Prairie Sagewort) <i>Artemisia frigida</i> 6 – 14” 6 – 12” Low, mat-forming	Full sun to partial shade.	Excellent drought tolerance. Needs at least 10” of annual precipitation.	Grows best in medium textured, well-drained, alkaline soils. Tolerates a pH range of 7.0 – 9.0.	Cover. Foliage provides food. Foliage provides browse for pronghorn.	Moderate fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests.	Hardy evergreen shrub. Moderately fast growing. Moderate life span. Does well up to 10,500 feet in elevation. Spreads by rhizomes. Can grow from cuttings. Ideal for erosion control. Yellow flowers in summer. Native to all of Wyoming.
Long-stalked Clover <i>Trifolium longipes</i> 4 – 8” Low, creeping	Partial to full shade.	Moderate drought tolerance. Needs at least 19” of annual precipitation.	Grows best in moist, acidic soils. Tolerates a pH range of 5.6 – 6.8. Stores nitrogen.	Cover. Flowers produce nectar that attracts butterflies and bees.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Legume (“fixes” nitrogen in the soil). Fast growing. Long-lived. Does well from mid to high elevations. Spreads by rhizomes. Ideal for shady sites. White flowers from May to August. One of 8 clover species in Wyoming.
Oregon Grape (Holly Grape, Creeping Barberry) <i>Mahonia repens</i> 6 – 12” 48 – 72” Low, creeping	Full sun to partial shade.	Excellent drought tolerance. Needs at least 14” of annual precipitation.	Grows best in dry, moderately coarse to coarse, well-drained soils. Tolerates poor soils. Tolerates a pH range of 5.5 – 7.5.	Cover. Berries provide food. Flowers produce nectar that attracts bees. Not attractive to deer.	High fire tolerance, low fire resistance. Needs at least 180 frost-free days/year. Very sensitive to herbicides. Mostly free of serious diseases and pests. Possible diseases: black stem rust.	Hardy evergreen shrub. Moderately slow growing. Long-lived. Does well up to 10,000 feet in elevation. Transplants easily. Spreads by stolons. Can grow from cuttings. Ideal for shady sites and areas with poor soil. Male and female shrubs are needed to produce fruit. Yellow flowers from May through June. Edible blue berries in August for juice and jam. Red autumn color.

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Parry's Clover <i>Trifolium parryi</i> 4 – 8" 8" Low, creeping	Partial to full shade.	Moderate drought tolerance.	Grows best in moist soils. Stores nitrogen.	Cover. Flowers produce nectar that attracts butterflies and bees.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Legume ("fixes" nitrogen in the soil). Does well at high elevations. Ideal for shady sites. Reddish-purple flowers from May to August. One of 8 clover species in Wyoming.
Rocky Mountain Phlox <i>Phlox multiflora</i> 5" ¾" wide flowers Low, mat-forming, radially symmetrical	Full sun.	Drought tolerant.	Grows best in moderately coarse to coarse, well-drained soils.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests. Possible diseases: powdery mildew.	Hardy perennial wildflower. Does well from low to high elevations. Ideal for dry, rocky sites. White flowers from May into August. One of 12 phlox species in Wyoming.
Rose Pussytoes <i>Antennaria microphylla</i> 3 – 12" ¼" wide flower clusters Low, mat-forming, rounded cluster	Full sun to partial shade.	Drought tolerant. Needs at least 12" of annual precipitation.	Grows best in moderately fine to medium textured, well- drained soils. Tolerates a pH range of 5.9 – 7.8.	Cover. Foliage provides food for butterfly caterpillars.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial wildflower. Slow growing. Short-lived. Does well up to 11,000 feet in elevation. Spreads by stolons. Forms mats of leaves on the ground. Ideal for dry sites. Pink flowers in summer. One of 18 or more pussytoes species in Wyoming.
Scarlet Globemallow <i>Sphaeralcea coccinea</i> 4 – 8" 12" 1 – 1¼" wide flowers Radially symmetrical	Full sun.	Excellent drought tolerance. Prefers areas with low moisture. Needs at least 6" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates poor soils and sandy soils. Tolerates a pH range of 7.0 – 7.5.	Cover. Flowers produce nectar that attracts bees. Foliage provides forage for pronghorn. Not attractive to deer.	Moderate fire tolerance, low fire resistance. Needs at least 115 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial wildflower. Fast growing. Short-lived. Does well up to 9,000 feet in elevation. Spreads by rhizomes. Ideal for dry sites and disturbed sites. Reddish- orange flowers from May to July. One of 2 globemallow species in Wyoming. Plant at 500,000 seeds/ pound and 2-4 PLS pounds/acre. Native to all of Wyoming.
Sedum (Lanceleaf Stonecrop) <i>Sedum lanceolatum</i> 2 – 8" ½" wide flowers Rounded cluster	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers areas with low moisture.	Grows best in moderately fine to coarse, well-drained soils. Tolerates rocky soils.	Cover.	Mostly free of serious diseases and pests.	Hardy perennial wildflower. Does well up to 8,000 feet in elevation. Can grow from root cuttings. Ideal for dry sites. Bright yellow flowers from July into August. One of 6 <i>Sedum</i> species in Wyoming.
Silverweed Cinquefoil <i>Potentilla anserina</i> 2 – 12" ¾" wide flowers Low, creeping, matted	Full sun. Tolerates some shade.	Moderate drought tolerance. Prefers moist areas. Needs at least 11" of annual precipitation.	Grows in a variety of moist, well-drained soils. Tolerates a pH range of 7.0 – 8.0.	Cover. Flowers provide food and attract insects favored by birds. Not attractive to deer.	Moderate fire tolerance, low fire resistance. Needs at least 200 frost-free days/year. Avoid using insecticides on or near this plant. Possible diseases: mildew if evenings are wet. Possible pests: spider mites.	Hardy deciduous shrub. Fast growing. Short-lived. Does well up to 9,500 feet in elevation. Ideal for disturbed sites. Yellow flowers from May into June.

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~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

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Wildflowers						
Arrowleaf Balsamroot <i>Balsamorhiza sagittata</i> 8 – 28" 30" 4 – 5" wide flowers Daisy-like	Full sun. Tolerates some shade.	Excellent drought tolerance. Prefers areas with low to moderate moisture. Needs at least 8" of annual precipitation.	Grows best in medium textured, well-drained soils. Tolerates a pH range of 6.5 – 8.0.	Cover. Seeds and foliage provide food. Flowers produce nectar that attracts butterflies. Foliage provides spring forage for deer, elk, and pronghorn.	High fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Yellow flowers from late April through July. Does well up to 9,000 feet in elevation. Plant at 55,000 seeds/pound and 7-15 PLS pounds/acre. Native to all but east-central and southeastern Wyoming.
Bear River Fleabane Daisy <i>Erigeron ursinus</i> 10" 1½" wide flowers Daisy-like	Full sun to partial shade.	Moderate drought tolerance. Prefers areas with moderate moisture.	Grows best in medium textured, well-drained soils.	Cover. Flowers produce nectar that attracts butterflies and bees. Not attractive to deer.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Blue to pinkish-purple flowers from June into July. Does well from mid to high elevations. One of 44 daisy species in Wyoming.
Blanketflower <i>Gaillardia aristata</i> 8 – 28" 12" 3" wide flowers Radially symmetrical	Full sun.	Excellent drought and heat tolerance. Prefers areas with low moisture. Needs at least 10" of annual precipitation.	Grows in most soils, but prefers medium textured to moderately coarse, well-drained soils. Tolerates dry soils and sandy soils. Tolerates a pH range of 5.5 – 7.9.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 100 frost-free days/ year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Yellow, orange, or red flowers from June to September. Does well from low to high elevations. Can grow from root cuttings. Ideal for hot areas, dry sites, and disturbed sites. Plant at 153,000 seeds/ pound and 6-10 PLS pounds/acre.
Blue Columbine <i>Aquilegia caerulea</i> 18 – 24" 12" 2 – 3" wide flowers Radially symmetrical	Full sun to partial shade.	Moderate drought tolerance. Prefers areas with moderate moisture. Needs at least 12" of annual precipitation.	Grows best in moist, moderately fine to medium textured, well- drained soils. Tolerates a pH range of 6.2 – 8.4.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Low fire tolerance and resistance. Needs at least 130 frost-free days/ year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Short-lived. Blue and white flowers from June into August. Does well from mid to high elevations. Ideal for shady sites and cooler areas. One of 6 columbine species in Wyoming. Many cultivars are available; check for locally adapted cultivars. Plant at 368,000 seeds/pound and 3-6 PLS pounds/acre.
Blue Flax <i>Linum lewisii</i> 10 – 24" 18" ¾ – 1½" wide flowers Radially symmetrical	Full sun to partial shade.	Excellent drought tolerance. Prefers areas with low moisture. Needs at least 10" of annual precipitation.	Grows best in open, medium textured to moderately coarse, well- drained soils. Tolerates a pH range of 5.5 – 8.0.	Cover.	Low fire tolerance and resistance. Needs at least 90 frost-free days/ year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Blue flowers from June through August. Does well up to 8,500 feet in elevation. Reseeds and can be competitive. One of 6 flax species in Wyoming. Plant at 293,000 seeds/pound and 3-6 PLS pounds/acre. Native to all but the eastern 1/3 of Wyoming.

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Blue-pod Lupine <i>Lupinus polyphyllus</i> 24 – 60" ½" long flowers Elongated cluster	Partial shade.	Poor drought tolerance. Prefers areas with moderate to high moisture.	Grows best in moist, medium textured soils. Stores nitrogen.	Cover. Seeds provide food. Flowers produce nectar that attracts butterflies.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial legume ("fixes" nitrogen in the soil). Blue or lavender flowers from June through August. Does well up to 8,500 feet in elevation. One of 7 lupine species in Wyoming. Plant at 75,000 seeds/pound and 8-15 PLS pounds/acre. Poisonous to livestock. Native to the western 1/3 of Wyoming.
Blue Violet <i>Viola adunca</i> 4" 6" ½ – ¾" wide flowers Pansy-like	Full sun to partial shade.	Drought tolerant. Tolerates both moist and dry areas.	Grows in most soils, but prefers medium textured, well-drained soils.	Cover. Flowers produce nectar that attracts butterflies.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Violet-blue flowers from May into July. Does well from low to high elevations. One of 14 violet species in Wyoming.
Common Harebell <i>Campanula rotundifolia</i> 4 – 12" 6" ½ – 1" long flowers Radially symmetrical	Full sun to partial shade.	Drought tolerant. Prefers areas with low to moderate moisture.	Grows best in medium textured, well-drained soils.	Cover. Not attractive to deer.	Mostly free of serious diseases and pests.	Perennial. Blue flowers from June into September. Does well from low to high elevations. One of 5 harebell species in Wyoming. Plant at 1,200 seeds/pound and ¼ PLS pound/acre.
Common Sunflower <i>Helianthus annuus</i> 24 – 72" 24 – 72" 3 – 5" wide flowers Daisy-like	Full sun.	Drought tolerant. Tolerates both dry and moist areas. Needs at least 12" of annual precipitation.	Grows in a variety of well-drained soils. Tolerates disturbed soils. Tolerates a pH range of 5.5 – 7.8.	Cover. Seeds provide food. Flowers produce nectar that attracts butterflies and bees. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 80 frost-free days/ year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Annual. Fast growing. Short-lived. Yellow flowers from July through September. Does well from low to mid elevations. Establishes easily. Plant at 58,500 seeds/pound and 10-20 PLS pounds/acre. One of 7 sunflower species in Wyoming.
Crimson Columbine (Western Columbine) <i>Aquilegia formosa</i> 6 – 36" 2" wide flowers Radially symmetrical	Partial shade.	Moderate drought tolerance. Prefers areas with moderate moisture. Needs at least 15" of annual precipitation.	Grows best in medium textured to moderately coarse soils. Tolerates a pH range of 6.0 – 7.5.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	High fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Short- lived. Red and yellow flowers from May into August. One of 6 columbine species in Wyoming. Plant at 400,000 seeds/pound and 3-5 PLS pounds/acre. Native to the western half of Wyoming.
Cushion Buckwheat <i>Eriogonum ovalifolium</i> 1 – 12" 12 – 18" 1" wide flower clusters Rounded cluster	Full sun.	Excellent drought tolerance. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils.	Cover. Seeds provide food. Flowers produce nectar that attracts butterflies and bees.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Long-lived. Creamy yellow to reddish-purple flowers from May into July. Does well from low to high elevations. Ideal for dry sites and areas with rocky soil. One of 28 buckwheat species in Wyoming.

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Cut-leaved Coneflower <i>Rudbeckia laciniata</i> 24 – 40" 3 – 6" wide flowers Daisy-like	Full sun to partial shade.	Drought tolerant. Needs at least 15" of annual precipitation.	Grows in a variety of acidic soils. Tolerates a pH range of 4.5 – 7.0.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Low fire tolerance and resistance. Needs at least 100 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Short-lived. Yellow flowers from July through August. Does well from low to mid elevations. One of 3 <i>Rudbeckia</i> species in Wyoming. Mildly poisonous to livestock.
Desert Paintbrush (Narrowleaf Paintbrush) <i>Castilleja angustifolia</i> 4 – 12" 10" ¾ – 1¼" long flowers Elongated cluster	Full sun.	Excellent drought tolerance. Prefers areas with low moisture. Needs at least 12" of annual precipitation.	Grows best in medium textured, well-drained soils. Tolerates a pH range of 5.6 – 7.3.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Low fire tolerance and resistance. Needs at least 85 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Moderately fast growing. Moderate life span. Reddish-orange flowers from May through June. Does well from low to mid elevations. Root systems often connect with other plants, especially Wyoming Big Sagebrush, making transplanting difficult. One of 15 or more paintbrush species in Wyoming.
Dotted Gayfeather <i>Liatris punctata</i> 4 – 24" 5" ¾" long flowers Elongated cluster	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers areas with low moisture. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates sandy soils. Tolerates a pH range of 6.0 – 7.8.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees. Foliage provides forage for deer and elk.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Slow growing. Moderate life span. Deep pink flowers from August through September. Does well up to 7,400 feet in elevation. Spreads by rhizomes. One of 3 <i>Liatris</i> species in Wyoming. Native to the eastern half of Wyoming.
Fireweed <i>Chamerion angustifolium</i> Formerly <i>Epilobium angustifolium</i> 24 – 84" 36" ¾ – 1¼" long flowers Elongated cluster	Full sun.	Moderate drought tolerance. Prefers areas with moderate moisture. Needs at least 8" of annual precipitation.	Grows in most soils, but prefers rich, moist, medium textured, acidic soils. Tolerates a pH range of 4.8 – 7.0.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees. Foliage provides forage for deer, elk, and moose.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests. Possible pests: aphids.	Hardy perennial. Fast growing. Moderate life span. Pink flowers from June through August. Does well from mid to high elevations. Spreads by well-developed rhizomes. May become aggressive on preferred sites. Ideal for disturbed sites. One of 2 fireweed species in Wyoming. Plant at 8,500,000 seeds/pound and ¼ PLS pound/acre. Native to all of Wyoming.
Golden Aster <i>Heterotheca villosa</i> 8 – 24" 24" 1 – 1½" wide flowers Daisy-like	Full sun.	Drought tolerant. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.0 – 7.5.	Cover. Flowers produce nectar that attracts butterflies and bees.	High fire tolerance, low fire resistance. Needs at least 130 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Short-lived. Yellow flowers from May into September. Does well from low to high elevations. Ideal for cuttings and bouquets. Native to all of Wyoming.

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Golden Yarrow <i>Eriophyllum lanatum</i> 4 – 24" 2½" wide flowers Daisy-like	Full sun.	Excellent drought tolerance. Prefers areas with low moisture.	Grows in a variety of well-drained soils.	Cover. Flowers produce nectar that attracts butterflies and bees. Not attractive to deer.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Yellow flowers from May through July.
Longleaf Phlox <i>Phlox longifolia</i> 10" 10" 1" wide flowers Radially symmetrical	Full sun.	Drought tolerant. Needs at least 20" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates rocky soils and gravelly soils. Tolerates a pH range of 6.5 – 8.5.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Moderate fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests. Possible diseases: powdery mildew.	Hardy perennial. Slow growing. Long-lived. Bright pink, pale lilac, or white flowers from May through August. Does well from low to high elevations. Spreads by stolons. Ideal for cuttings and bouquets. One of 12 phlox species in Wyoming. Native to central and northern Wyoming.
Lowbush Penstemon <i>Penstemon fruticosus</i> 6 – 16" 8" 1 – 2" long flowers Bilaterally symmetrical	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Prefers areas with low moisture. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates rocky soils and gravelly soils. Tolerates a pH range of 6.0 – 8.0.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Moderate fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Moderately fast growing. Long-lived. Pale purple flowers from May through August. Does well up to 8,500 feet in elevation. One of more than 40 penstemon species in Wyoming. Plant at 573,000 seeds/pound and 2-4 PLS pounds/acre. Native to the western 1/4 of Wyoming.
Mintleaf Beebalm <i>Monarda fistulosa</i> 12 – 24" 1" long flowers Rounded cluster	Full sun to partial shade.	Moderate drought tolerance. Needs at least 20" of annual precipitation.	Grows best in moderately fine to medium textured, well-drained soils. Tolerates a pH range of 6.0 – 8.0.	Cover. Flowers produce nectar that attracts hummingbirds and bees. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 150 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Pale purple to rose pink flowers from July through August. Does well up to 8,500 feet in elevation. One of 2 <i>Monarda</i> species in Wyoming.
Mule's Ears <i>Wyethia amplexicaulis</i> 12 – 24" 3 – 5" wide flowers Daisy-like	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Needs at least 12" of annual precipitation.	Grows best in fine to medium textured, well-drained soils. Tolerates a pH range of 6.0 – 7.6.	Cover. Flowers produce nectar that attracts butterflies and bees. Foliage provides forage for deer and pronghorn.	High fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Deep yellow flowers from May into July. Does well up to 11,000 feet in elevation. One of 3 <i>Wyethia</i> species in Wyoming. Plant at 24,625 seeds/pound and 16 PLS pounds/acre. Native to all but north-central to southeastern Wyoming.

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Nuttall's Larkspur <i>Delphinium nuttallianum</i> 12 – 48" 24 – 30" 1" wide flowers Elongated cluster	Full sun to partial shade.	Drought tolerant. Prefers areas with low to moderate moisture.	Grows in a variety of well-drained soils.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees. Foliage provides forage for elk.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Violet-blue flowers from May through July. Does well from low to high elevations. Ideal for cuttings and bouquets. Plant in late spring as soon as the ground can be worked. One of 9 larkspur species in Wyoming. Poisonous to livestock.
Old Man's Whiskers (Prairie Smoke) <i>Geum triflorum</i> 4 – 12" ½" long flowers Radially symmetrical	Full sun. Tolerates some shade.	Drought tolerant. Needs at least 16" of annual precipitation.	Grows best in medium textured, well-drained soils. Tolerates a pH range of 6.0 – 7.5.	Cover. Flowers produce nectar that attracts butterflies and bees.	Moderate fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Short-lived. Pink flowers from May to July. Does well from low to high elevations. Seeds have attractive feathery tails.
Pasqueflower (Windflower) <i>Anemone patens</i> 4 – 6" 6" 1½ – 2" wide flowers Radially symmetrical	Full sun to partial shade.	Drought tolerant.	Grows best in well- drained, sandy loam soils. Tolerates a pH range of 6.0 – 8.0.	Cover. Bulbs provide food for small mammals.	Mostly free of serious diseases and pests.	Hardy perennial. Lavender, purple, or blue flowers from April to June. Does well up to 9,000 feet in elevation. Transplants easily in spring. Can grow from root cuttings. Seeds have attractive feathery tails. One of 9 <i>Anemone</i> species in Wyoming.
Platte River Penstemon (Wasatch Penstemon, Beardtongue) <i>Penstemon cyananthus</i> 20" 15" ¾ – 1¼" long flowers Elongated cluster	Full sun to partial shade.	Drought tolerant. Prefers areas with low to moderate moisture. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained, acidic, sandy loam soils. Tolerates a pH range of 4.5 – 7.8.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests. Possible diseases: root rot, mildew.	Hardy perennial. Blue flowers from May through July. Does well up to 8,500 feet in elevation. Can grow from stem and root cuttings, but seeds are best. Ideal for disturbed sites. One of more than 40 penstemon species in Wyoming. Plant at 550,000 seeds/pound and 2-4 PLS pounds/acre. Native to the western 1/3 of Wyoming.
Prairie Coneflower (Mexican Hat) <i>Ratibida columnifera</i> 12 – 36" 1 – 3" long flowers Daisy-like	Full sun. Intolerant of full shade.	Drought tolerant. Needs at least 16" of annual precipitation.	Grows in a variety of well-drained soils. Tolerates a pH range of 6.0 – 7.5.	Cover. Flowers produce nectar that attracts butterflies and bees. Not attractive to deer.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Yellow flowers from June to September. Does well up to 8,000 feet in elevation. One of 2 <i>Ratibida</i> species in Wyoming. Native to all but northwestern to south- central Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

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Prairie Golden Banner (Yellow Pea) <i>Thermopsis rhombifolia</i> 6 – 16" ½ – ¾" long flowers Elongated cluster	Full sun to partial shade.	Drought tolerant. Needs at least 8" of annual precipitation.	Grows best in moderately fine to medium textured, well- drained soils. Stores nitrogen.	Cover. Seeds provide food. Not attractive to deer.	Mostly free of serious diseases and pests.	Perennial legume ("fixes" nitrogen in the soil). Long-lived. Yellow flowers from May through June. Does well from low to high elevations. Spreads by stolons. Ideal for mass plantings, wildflower mixtures, and disturbed sites. One of 3 <i>Thermopsis</i> species in Wyoming.
Purple Prairie Clover <i>Dalea purpurea</i> 8 – 30" ¼" long flowers Elongated cluster	Full sun to partial shade.	Drought tolerant. Needs at least 14" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Stores nitrogen.	Cover. Flowers produce nectar that attracts butterflies.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial legume ("fixes" nitrogen in the soil). Fast growing. Long-lived. Purple flowers from June into August. Does well up to 7,500 feet in elevation. Ideal for wildflower mixtures, grass mixtures, and disturbed sites. One of 6 <i>Dalea</i> species in Wyoming. Native to the eastern 1/3 of Wyoming.
Rocky Mountain Beeplant <i>Cleome serrulata</i> 6 – 48" ½" long flowers Rounded cluster	Full sun. Tolerates some shade.	Drought tolerant. Needs at least 13" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.0 – 7.6.	Cover. Flowers produce nectar that attracts butterflies and bees.	Low fire tolerance and resistance. Needs at least 70 frost-free days/ year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Annual. Fast growing. Short-lived. Pink to purple flowers from August through September. Does well from low to mid elevations. Ideal for stabilizing soil and providing quick initial cover. One of 3 beeplant species in Wyoming. Plant at 65,900 seeds/pound and 10-16 PLS pounds/acre.
Rocky Mountain Iris <i>Iris missouriensis</i> 8 – 20" 10" 3 – 4" wide flowers Radially symmetrical	Full sun. Tolerates some shade.	Moderate to moderately poor drought tolerance. Prefers areas with moderate to high moisture. Tolerates periodic flooding. Needs at least 24" of annual precipitation.	Grows best in moist, moderately fine to medium textured, alkaline soils. Tolerates a pH range of 7.0 – 8.5.	Cover. Not attractive to deer.	High fire tolerance, low fire resistance. Needs at least 115 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Short-lived. Pale blue to bluish-violet flowers from May through June. Does well up to 8,000 feet in elevation. Spreads by stolons. Plant at 21,000 seeds/pound and 20-30 PLS pounds/ acre. May be poisonous to livestock.
Rydberg's Penstemon <i>Penstemon rydbergii</i> 16" ½ – ¾" long flowers Elongated cluster	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Prefers areas with low to moderate moisture. Needs at least 15" of annual precipitation.	Grows best in moderately fine to medium textured, well- drained soils. Tolerates a pH range of 6.0 – 8.0.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Moderate fire tolerance, low fire resistance. Needs at least 130 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Purple flowers from June into August. Does well from mid to high elevations. Ideal for cuttings and bouquets. One of more than 40 penstemon species in Wyoming. Plant at 850,000 seeds/pound and 1-2 PLS pounds/acre.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

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Sego Lily (Mariposa Lily) <i>Calochortus nuttallii</i> 4 – 12" 1 – 2" wide flowers Radially symmetrical	Full sun to partial shade.	Excellent drought tolerance. Prefers areas with low moisture.	Grows best in well- drained soils. Tolerates gravelly soils.	Cover. Bulbs provide food for small mammals.	Mostly free of serious diseases and pests.	Perennial. White flowers from June through July. Does well from low to high elevations. One of 3 <i>Calochortus</i> species in Wyoming.
Showy Daisy (Fleabane) <i>Erigeron speciosus</i> 12 – 36" 24" 2" wide flowers Daisy-like	Full sun to partial shade.	Moderate drought tolerance. Prefers areas with moderate moisture.	Grows best in medium textured to moderately coarse, well-drained, sandy soils.	Cover. Flowers produce nectar that attracts butterflies and bees. Not attractive to deer.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. White or pinkish-lavender flowers from June through August. Does well from mid to high elevations. One of 44 daisy species in Wyoming. Plant at 1,600,000 seeds/pound and 1 PLS pound/acre.
Showy Larkspur <i>Delphinium bicolor</i> 4 – 15" 1" wide flowers Elongated cluster	Full sun to partial shade.	Drought tolerant. Prefers areas with low to moderate moisture.	Grows best in rich, medium textured, well- drained soils.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees. Foliage provides forage for deer, elk, and pronghorn.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Purple flowers in early spring. Does well up to 11,600 feet in elevation. Ideal for disturbed sites. Plant in late spring as soon as the ground can be worked. One of 9 larkspur species in Wyoming. Poisonous to livestock. Native to all but northeastern to south- central Wyoming.
Showy Milkweed <i>Asclepias speciosa</i> 36" 1" wide flowers Rounded cluster	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Needs at least 16" of annual precipitation.	Grows in a variety of well-drained, acidic soils. Tolerates a pH range of 5.0 – 7.0.	Cover. Attracts insects favored by birds. Flowers produce nectar that attracts butterflies and bees. Foliage provides food for butterfly caterpillars. Main food for monarch butterflies.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Pink flowers from June through July. Does well from low to high elevations. Ideal for disturbed sites. Seeds have attractive feathery tails. One of 13 milkweed species in Wyoming.
Silvery Lupine <i>Lupinus argenteus</i> 20 – 30" ½" long flowers Elongated cluster	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Prefers areas with low moisture. Needs at least 10" of annual precipitation.	Grows in a variety of well-drained soils. Tolerates a pH range of 7.0 – 8.0. Stores nitrogen.	Cover. Seeds provide food. Flowers produce nectar that attracts butterflies.	Low fire tolerance and resistance. Needs at least 180 frost-free days/ year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial legume ("fixes" nitrogen in the soil). Fast growing. Short-lived. Blue or lavender flowers from June through August. Does well from low to high elevations. One of 7 lupine species in Wyoming. Poisonous to livestock.
Skyrocket (Trumpet Flower, Scarlet Gilia) <i>Ipomopsis aggregata</i> 6 – 24" 18" ¾ – 1¼" long flowers Elongated cluster	Full sun to partial shade.	Excellent drought tolerance. Prefers dry areas.	Grows best in medium textured to coarse, well- drained soils. Tolerates rocky soils.	Cover. Flowers produce nectar that attracts hummingbirds.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Bright red flowers from June into August. Does well from low to high elevations. One of 7 <i>Ipomopsis</i> species in Wyoming.

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Spreading Fleabane <i>Erigeron divergens</i> 4 – 28" 1" wide flowers Daisy-like	Full sun.	Excellent drought tolerance.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates sandy soils.	Cover. Flowers produce nectar that attracts butterflies and bees.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. White, pink, or lavender flowers from May into September. Does well from low to mid elevations. One of 44 daisy species in Wyoming.
Spreading Phlox <i>Phlox diffusa</i> 6" 1" wide flowers Radially symmetrical	Full sun to full shade.	Drought tolerant. Needs at least 20" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.5 – 8.5.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Moderate fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Slow growing. Moderate life span. Purple flowers from May through August. Does well from low to high elevations. Spreads by stolons. Ideal for cuttings and bouquets. One of 12 phlox species in Wyoming.
Sticky Geranium <i>Geranium viscosissimum</i> 15 – 30" ¾" wide flowers Radially symmetrical	Full sun to partial shade.	Drought tolerant. Prefers areas with low to moderate moisture. Needs at least 12" of annual precipitation.	Grows best in medium textured, well-drained soils. Tolerates a pH range of 7.0 – 8.0.	Cover. Seeds provide food. Foliage provides browse for deer, elk, and moose.	Moderate fire tolerance, low fire resistance. Needs at least 140 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Moderate life span. Pinkish-lavender flowers from June into August. Does well from low to high elevations. One of 7 geranium species in Wyoming. Plant at 52,000 seeds/pound and 6-12 PLS pounds/acre.
Tall Pussytoes <i>Antennaria anaphaloides</i> 4 – 10" ¼" wide flowers Rounded cluster	Full sun to partial shade.	Drought tolerant. Prefers areas with low to moderate moisture. Needs at least 14" of annual precipitation.	Grows best in medium textured, well-drained soils. Tolerates a pH range of 5.8 – 7.9.	Cover. Foliage provides food for butterfly caterpillars.	Moderate fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Short-lived. Pink flowers from April into July. Does well from low to high elevations. Creeping stems form mats of leaves on the ground. Ideal ground cover for dry sites. One of 18 or more pussytoes species in Wyoming.
Threadleaf Phacelia <i>Phacelia linearis</i> 10" ¼ – ¾" wide flowers Radially symmetrical	Full sun to partial shade.	Excellent drought tolerance. Prefers areas with low moisture.	Grows best in well-drained soils.	Cover.	Mostly free of serious diseases and pests.	Annual. Pinkish-lavender flowers from April through June. Does well from low to mid elevations. Ideal for disturbed sites. One of 18 <i>Phacelia</i> species in Wyoming.
Western Monkshood <i>Aconitum columbianum</i> 12 – 84" 1" long flowers Elongated cluster	Partial sun.	Prefers moist areas, but is drought tolerant. Needs at least 12" of annual precipitation.	Grows in most soils with adequate moisture. Tolerates a pH range of 5.4 – 7.2.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Moderate fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Moderately fast growing. Moderate life span. Bluish-violet flowers from July through August. Does well from mid to high elevations. Poisonous to humans and livestock.

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Western Yarrow <i>Achillea millefolium</i> 12 – 40" 2 – 5" wide flower clusters Upright, rounded cluster	Full sun to partial shade.	Excellent drought tolerance. Prefers areas with low moisture. Needs at least 8" of annual precipitation.	Grows best in medium textured, well-drained soils. Tolerates poor soils and moist soils if they are well-drained. Tolerates a pH range of 6.0 – 8.0.	Cover. Seeds provide food. Flowers produce nectar that attracts butterflies and bees. Not attractive to deer.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. White flowers from June through September. Pungent, fern-like leaves. Does well up to 11,000 feet in elevation. Spreads by rhizomes. Ideal for erosion control and disturbed sites. Plant at 2,770,000 seeds/pound and 1 PLS pound/acre. Native to all of Wyoming.
Whipple's Penstemon <i>Penstemon whippleanus</i> 4 – 12" 8" 1 – 2½" long flowers Elongated cluster	Partial shade.	Moderate to poor drought tolerance. Prefers areas with moderate moisture. Needs at least 13" of annual precipitation.	Grows best in moist, medium textured to moderately coarse soils. Tolerates a pH range of 7.0 – 8.0.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	High fire tolerance, low fire resistance. Needs at least 117 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Short-lived. Deep purple flowers from July through August. Does well up to 8,500 feet in elevation. One of more than 40 penstemon species in Wyoming.
Wild Mint <i>Mentha arvensis</i> 8 – 32" ¼" long flowers Rounded cluster	Partial shade.	Poor drought tolerance. Prefers areas with moderate moisture. Needs at least 20" of annual precipitation.	Grows best in moist, moderately fine to medium textured, acidic soils. Tolerates a pH range of 5.0 – 7.0.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees. Not attractive to deer.	Low fire tolerance and resistance. Needs at least 100 frost-free days/ year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Short-lived. Pink or lavender flowers from July through August. Pleasant mint aroma. Edible leaves and oil. One of 2 mint species in Wyoming.
Wood Lily (Rocky Mountain Lily) <i>Lilium philadelphicum</i> 12 – 24" 2 – 2½" wide flowers Radially symmetrical	Partial shade.	Moderate drought tolerance. Prefers areas with moderate moisture.	Grows best in rich, medium textured, well- drained, acidic soils. Tolerates a pH range of 4.0 – 6.0.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Reddish-orange flowers from June through July. Does well from low to mid elevations. Native to the eastern half of Wyoming.
Wyoming Paintbrush <i>Castilleja linariifolia</i> 12 – 24" 12" 2 – 3" long flowers Elongated cluster	Full sun to partial shade.	Excellent drought tolerance. Prefers areas with low moisture.	Grows best in well- drained soils.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Bright red flowers from July into August. Does well from low to mid elevations. Roots often connect with other plants, especially sagebrush, making transplanting difficult. One of 15 or more paintbrush species in Wyoming.
Yellow Paintbrush <i>Castilleja flava</i> 6 – 15" 1 – 1¼" long flowers Elongated cluster	Full sun to partial shade.	Excellent drought tolerance. Prefers areas with low moisture.	Grows best in well- drained soils.	Cover. Flowers produce nectar that attracts hummingbirds, butterflies, and bees.	Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Perennial. Bright yellow flowers from June into August. Does well from low to mid elevations. Roots often connect with other plants, making transplanting difficult. One of 15 or more paintbrush species in Wyoming.

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Grasses and Grass-like Plants						
Alkali Sacaton <i>Sporobolus airoides</i> 20 – 40" Warm season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Tolerates both dry and moist areas. Needs at least 5" of annual precipitation.	Grows best in deep, moist, fine to medium textured, alkaline soils. Tolerates a pH range of 6.5 – 9.0.	Cover. Seeds and foliage provide food. Good summer forage in dry areas. Palatable to livestock.	Moderate fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, densely tufted perennial with extensive, fibrous roots. Moderately fast growing. Moderate life span. Does well from low to mid elevations. Spreads by tillers. Ideal for binding soil. Plant in late summer at 1,758,000 seeds/pound and 2-3 PLS pounds/acre. Native to all of Wyoming.
Alpine Bluegrass <i>Poa alpina</i> 12 – 20" Cool season bunchgrass	Full sun to partial shade.	Moderate drought tolerance. Needs at least 24" of annual precipitation.	Grows best in medium textured to moderately coarse, acidic soils. Tolerates a pH range of 5.0 – 7.2.	Cover. Seeds and foliage provide food.	High fire tolerance, moderate fire resistance. Needs at least 120 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Does well at high elevations. Leaves form a dense mat. Ideal for rangeland improvement. Plant in spring or autumn at 1,000,000 seeds/pound and 1-2 PLS pounds/acre. Native to the western half of Wyoming.
Alpine Timothy <i>Phleum alpinum</i> 18" Cool season, sod-forming bunchgrass	Full sun to partial shade.	Moderate to poor drought tolerance. Prefers moist or wet areas. Needs at least 16" of annual precipitation.	Grows best in moist, fine to medium textured, acidic soils. Tolerates a pH range of 5.0 – 7.5.	Cover. Seeds and foliage provide food. Good summer forage for elk.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Slow growing. Moderate life span. Does well at high elevations. Ideal for moist meadows. Plant in spring or autumn at 1,300,000 seeds/pound and 1-2 PLS pounds/acre. Native to the western half of Wyoming.
American Mannagrass <i>Glyceria grandis</i> 36" Cool season sodgrass	Full sun to full shade.	Poor drought tolerance. Prefers wet areas. Tolerates periodic flooding.	Grows best in moderately fine, poorly-drained, alkaline soils.	Cover. Seeds and foliage provide food.	Mostly free of serious diseases and pests.	Perennial. Spreads by rhizomes. Ideal for wet meadows and alkaline basins. Plant at 1,280,000 seeds/pound and 1-2 PLS pounds/acre.
American Sloughgrass <i>Beckmannia syzigachne</i> 36" Cool season sodgrass	Full sun to partial shade.	Poor drought tolerance. Prefers wet areas. Needs at least 30" of annual precipitation.	Grows best in moderately fine to medium textured, poorly-drained soils. Tolerates a pH range of 5.5 – 7.5.	Cover. Seeds and foliage provide food.	High fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests.	Hardy annual. Moderately fast growing. Moderate life span. Ideal for wetlands, wet meadows, and riparian areas. Plant in spring or autumn at 1,150,000 seeds/pound and 3-5 PLS pounds/acre. Native to the eastern 1/3 of Wyoming.
Arrowgrass <i>Triglochin maritime</i> 24" Cool season, grass-like sod-former	Full sun to full shade.	Poor drought tolerance. Prefers moist or wet areas.	Grows best in moist, moderately fine, alkaline soils.	Cover. Seeds and foliage provide food.	Mostly free of serious diseases and pests.	Perennial. Does well from low to mid elevations. Ideal for moist meadows and alkaline basins. Plant in spring or autumn at 469,000 seeds/pound and 5 PLS pounds/acre. Poisonous to livestock.

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Table 1. Selected native plants ideal for wildscaping in Wyoming.

Common Name (Alternate) Scientific Name Maximum Height Maximum Width Growth Form and Density	Sunlight Conditions	Moisture Preferences and Tolerances	Soil Information	Wildlife Value	Stress, Disease, and Pest Information	Additional Remarks
Baltic Rush <i>Juncus balticus</i> 36 – 48" Cool season, grass-like sod-former	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers wet areas.	Grows best in fine to moderately coarse, poorly-drained soils. Tolerates a pH range of 6.0 – 9.0.	Cover and nesting sites. Seeds and foliage provide food. Good forage for elk. Palatable to livestock.	Low fire tolerance and resistance. Needs at least 90 frost-free days/ year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Long-lived. Does well from mid to high elevations. Spreads by well-developed rhizomes. Ideal for wetlands, wet meadows, marshes, and riparian areas. Plant in spring or autumn at 10,900,000 seeds/pound and 1-2 PLS pounds/acre. Native to all of Wyoming.
Basin Wildrye <i>Leymus cinereus</i> Formerly <i>Elymus cinereus</i> 60" 24 – 48" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Tolerates periodic flooding and sub- irrigated areas. Needs at least 8" of annual precipitation.	Grows in most soils, but prefers well-drained soils. Tolerates poor soils. Tolerates a pH range of 5.6 – 9.0.	Cover. Seeds and foliage provide food. Good winter forage for deer and elk. Palatable to livestock. Intolerant of heavy or repeated grazing.	High fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests. Possible pests: wheat stem sawfly.	Hardy perennial. Moderately fast growing. Long-lived. Does well up to 6,800 feet in elevation. Spreads by short rhizomes. Ideal for binding soil and as an ornamental grass. Flowers from early to mid summer. Yellow or tan autumn color. Plant in spring or autumn at 130,000 seeds/pound and 6-11 PLS pounds/acre. Native to all of Wyoming.
Beardless Bluebunch Wheatgrass <i>Pseudoroegneria spicata inermis</i> Formerly <i>Agropyron inerme</i> 24 – 30" Cool season sodgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Intolerant of seasonal flooding and high water tables. Needs at least 10" of annual precipitation.	Grows in most soils, but prefers medium textured, well-drained soils. Intolerant of poorly-drained soils. Tolerates a pH range of 6.4 – 8.4.	Cover. Seeds and foliage provide food. Good year-round forage for deer and elk. Palatable to livestock.	Low fire tolerance and resistance. Needs at least 90 frost-free days/ year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Ideal for rangeland improvement and as an ornamental grass. Yellow autumn color. Plant in spring or autumn at 117,000 seeds/pound and 6-12 PLS pounds/acre. Native to all but southeastern Wyoming.
Beardless Wildrye <i>Leymus triticoides</i> Formerly <i>Elymus triticoides</i> 36" Cool season sodgrass	Full sun to partial shade. Intolerant of full shade.	Prefers moist areas, but is drought tolerant. Needs at least 7" of annual precipitation.	Grows in a variety of moist soils. Tolerates a pH range of 6.0 – 9.0.	Cover. Seeds and foliage provide food.	High fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial with extensive roots. Fast growing. Long-lived. Ideal for rangeland improvement and riparian areas. Plant in spring or autumn at 51,000 seeds/pound and 15-20 PLS pounds/acre.
Bebb's Sedge <i>Carex bebbii</i> 24 – 36" Cool season, grass-like	Full sun to partial shade.	Poor drought tolerance. Prefers wet areas. Needs at least 14" of annual precipitation.	Grows best in moderately fine to medium textured, poorly-drained, acidic soils. Tolerates a pH range of 4.6 – 7.0.	Cover. Seeds and foliage provide food.	High fire tolerance, low fire resistance. Needs at least 80 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, tufted, bunchy perennial. Moderately fast growing. Long-lived. Does well from low to mid elevations. Ideal for wetlands, wet meadows, marshes, and riparian areas. Plant in spring or autumn at 1,402,000 seeds/ pound and 2 PLS pounds/acre. Native to all but extreme southeastern Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

~ Fire tolerance = a plant's ability to re-sprout, re-grow, or re-establish from residual seed after a fire. Fire resistance = a plant's ability to resist burning through adaptations like thick bark, a high leaf crown, or high water content. (From: *USDA Natural Resources Conservation Service Plants Database*, see the "References and Resource Guides" and "Need More Information?" sections.)

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Common Name (Alternate) Scientific Name Maximum Height Maximum Width Growth Form and Density	Sunlight Conditions	Moisture Preferences and Tolerances	Soil Information	Wildlife Value	Stress, Disease, and Pest Information	Additional Remarks
Big Bluestem <i>Andropogon gerardii</i> 48 – 72" 24 – 36" Warm season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Tolerates periodic flooding and high water tables. Needs at least 12" of annual precipitation.	Grows in most soils, but prefers moderately fine to medium textured, well-drained soils. Tolerates a pH range of 6.0 – 7.5.	Cover (including winter). Seeds and foliage provide food. Attracts insects favored by birds.	High fire tolerance, low fire resistance. Needs at least 155 frost-free days/year. Avoid using insecticides on or near this plant. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Does well up to 9,000 feet in elevation. Spreads by rhizomes. Ideal for erosion control, rangeland improvement, and as an ornamental grass. Flowers from July into September. Reddish-purple autumn color. Plant in summer at 130,000 seeds/pound and 6-11 PLS pounds/acre, or by dividing and replanting root clumps. Native to all but the western 1/5 of Wyoming.
Big Squirreltail <i>Elymus multisetus</i> Also known as <i>Sitanion jubatum</i> 24" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance.	Grows best in moderately coarse to coarse, well-drained soils.	Cover. Seeds and foliage provide food. Fair spring forage for deer and elk.	Moderate fire tolerance, low fire resistance. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Ideal for stabilizing soil. Plant in spring or autumn at 220,000 seeds/pound and 6-10 PLS pounds/acre. Native to the western half of Wyoming.
Bluebunch Wheatgrass <i>Pseudoroegneria spicata</i> Formerly <i>Agropyron spicatum</i> 12 – 24" Cool season bunchgrass	Full sun to partial shade.	Excellent drought tolerance. Needs at least 6" of annual precipitation.	Grows in most soils, but prefers moderately fine to medium textured, well-drained soils. Tolerates thin, non-productive soils. Intolerant of alkaline soils.	Cover. Seeds and foliage provide food. Good forage for deer and elk. Palatable to livestock. Intolerant of heavy grazing.	High fire tolerance, low fire resistance. Mostly free of serious diseases and pests.	Hardy perennial. Long-lived. Does well from low to high elevations. Spreads by tillers. Ideal for dry sites. Pale yellow autumn color. Plant in spring or autumn at 140,000 seeds/pound and 10-14 PLS pounds/acre. Native to all but southeastern Wyoming.
Blue Grama <i>Bouteloua gracilis</i> 6 – 12" Warm season, sod-forming bunchgrass	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Tolerates moist areas. Needs at least 7" of annual precipitation.	Grows best in moderately fine to medium textured, well-drained soils. Tolerates poor soils. Intolerant of sandy soils and heavy clay soils. Tolerates a pH range of 6.8 – 8.4.	Cover. Seeds and foliage provide food. Good winter forage for elk. Highly palatable to livestock. Nutritious year-round. Very resistant to grazing.	Moderate fire tolerance, low fire resistance. Needs at least 130 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, densely tufted perennial. Moderately slow growing. Moderate life span. Does well up to 6,500 feet in elevation. Spreads by tillers. Ideal as a turfgrass for lawns. Low maintenance. Establishes slowly. Plant in summer at 825,000 seeds/pound and 2-3 PLS pounds/acre or 1 PLS/1,000 square feet. Native to all but the extreme northwestern corner of Wyoming.
Bluejoint Reedgrass <i>Calamagrostis canadensis</i> 24 – 48" Cool season sodgrass	Full sun to full shade.	Moderate drought tolerance once established. Prefers wet or moist areas.	Grows best in moderately fine to medium textured, poorly-drained soils. Tolerates acidic soils.	Cover. Seeds and foliage provide food. Palatable to livestock when young. Intolerant of heavy grazing.	Mostly free of serious diseases and pests.	Hardy perennial. Long-lived. Does well from low to high elevations. Spreads by rhizomes. Ideal for moist, shady sites. Plant in spring or autumn at 2,270,000 seeds/pound and 2-4 PLS pounds/acre.

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~ Foliage = twigs, buds, and/or leaves or needles.

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Blue Wildrye <i>Elymus glaucus</i> 25 – 40" Cool season bunchgrass	Full sun to partial shade.	Drought tolerant. Needs at least 16" of annual precipitation.	Grows in most soils, but prefers medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 5.8 – 8.5.	Cover. Seeds and foliage provide food. Palatable to livestock. Intolerant of heavy or continuous grazing.	High fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, tufted perennial. Fast growing. Moderate life span. Does well from mid to high elevations. Ideal for stabilizing soil and erosion control. Attractive blue-green foliage. Plant in spring or autumn at 110,000 seeds/pound and 12 PLS pounds/acre.
Bottlebrush Squirreltail <i>Elymus elymoides</i> Formerly <i>Sitanion hystrix</i> 18" Cool season bunchgrass	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Needs at least 5" of annual precipitation.	Grows in both deep and shallow, moderately fine to medium textured, well-drained soils. Tolerates a pH range of 6.0 – 8.4.	Cover. Seeds and foliage provide food. Good winter forage. Palatable to livestock.	Moderate fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Does well up to 9,500 feet in elevation. Establishes quickly and easily, but is not overly aggressive. Ideal for disturbed sites and stabilizing soil. Plant in autumn at 192,000 seeds/pound and 7-12 PLS pounds/acre. Native to all of Wyoming.
Broadleaf Cattail <i>Typha latifolia</i> 60" Cool season, grass-like	Full sun. Tolerates some shade.	Poor drought tolerance. Prefers wet areas. Needs at least 60" of annual precipitation.	Grows best in fine to moderately coarse, poorly-drained soils. Tolerates a pH range of 5.5 – 7.5.	Cover and nesting sites. Seeds provide food.	High fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Moderate life span. Does well from low to high elevations. Spreads by well-developed rhizomes. May become aggressive on preferred sites. Ideal for marshes and wetlands. Plant in spring to summer or in autumn at 10,000,000 seeds/pound and 1 PLS pound/acre.
Buffalograss <i>Buchloe dactyloides</i> 6" Warm season sodgrass	Full sun to partial shade. Intolerant of full shade. Requires 6 to 8 hours of direct sunlight per day.	Excellent drought tolerance. Prefers dry areas. Tolerates moist areas. Needs at least 7" of annual precipitation.	Grows best in moderately fine to medium textured, well-drained soils. Tolerates heavy or compacted soils. Intolerant of sandy soils. Tolerates a pH range of 6.5 – 8.0.	Cover. Seeds and foliage provide food. Good forage for pronghorn. Highly palatable to livestock. Very resistant to grazing.	High fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. To minimize stress and control weeds, avoid frequent watering, short mowing, and over-fertilizing. If needed, control broadleaf weeds in the autumn. Mow at 2½-3 inches for lawns, or taller for low maintenance and natural areas. If needed, fertilize lawns at 1-1½ pounds of nitrogen/1,000 square feet; less on low maintenance and natural areas. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Does well up to 6,500 feet in elevation. Spreads by rhizomes. Establishes slowly unless treated with potassium nitrate. Ideal for stabilizing soil and as a turfgrass for lawns. Very low maintenance; withstands heavy use and requires little mowing and watering. Best results are achieved with grass plugs. Plant in spring at 56,000 seeds/pound and 8-16 PLS pounds/acre or 2-3 PLS pounds/1,000 square feet. Native to all but northwestern to south-central Wyoming.

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Canada Wildrye <i>Elymus canadensis</i> 36" Cool season bunchgrass	Full sun to partial shade.	Moderate drought tolerance. Needs at least 20" of annual precipitation.	Grows best in moist or periodically moist, moderately fine to moderately coarse, well-drained soils. Tolerates a pH range of 5.0 – 7.9.	Cover. Seeds and foliage provide food. Good spring forage for elk. Palatable to livestock until seeds mature. Intolerant of moderate to heavy grazing.	Low fire tolerance and resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests. Possible diseases: black sclerotia of ergot, especially in wet years.	Hardy perennial. Fast growing. Short-lived. Establishes easily. Ideal for disturbed sites, stabilizing soil, and providing quick initial cover. Plant in spring or autumn at 115,000 seeds/pound and 11-15 PLS pounds/acre. Native to all of Wyoming.
Columbia Needlegrass <i>Achnatherum nelsonii</i> Also known as <i>Stipa columbiana</i> 24" Cool season bunchgrass	Full sun to partial shade.	Excellent drought tolerance.	Grows best in medium textured, well-drained soils.	Cover. Seeds and foliage provide food.	Mostly free of serious diseases and pests.	Hardy perennial. Does well from mid to high elevations. Ideal for rangeland improvement. Plant in spring or autumn at 150,000 seeds/pound and 6-8 PLS pounds/acre. Native to all but extreme southeastern Wyoming.
Common Spikerush <i>Eleocharis palustris</i> 12 – 16" Cool season sodgrass	Partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers wet areas. Needs at least 16" of annual precipitation.	Grows best in fine to moderately fine, poorly-drained, acidic soils. Tolerates a pH range of 4.0 – 8.0. Stores nitrogen.	Cover. Seeds and foliage provide food.	Moderate fire tolerance, high fire resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Does well from low to mid elevations. Spreads by well-developed rhizomes. Ideal for wet meadows and stabilizing soil. Plant in spring or autumn at 620,000 seeds/pound and 2-4 PLS pounds/acre.
Cosmopolitan Bulrush <i>Schoenoplectus maritimus</i> 38" Cool season, grass-like sod-former	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers wet areas. Needs at least 40" of annual precipitation.	Grows best in fine to medium textured, poorly-drained, acidic soils. Tolerates a pH range of 4.0 – 7.0.	Cover and nesting sites. Seeds and foliage provide food.	Moderate fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Spreads by rhizomes. Ideal for mud flats, marshes, wetlands, and other areas next to shallow or standing water. Plant in spring or autumn at 162,600 seeds/pound and 8 PLS pounds/acre.
Fendler Three-awn <i>Aristida purpurea</i> 17" Warm season bunchgrass	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Needs at least 2" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 5.5 – 7.5.	Cover. Seeds and foliage provide food.	Moderate fire tolerance, low fire resistance. Needs at least 165 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Moderate life span. Ideal for dry sites. Plant in spring to summer or in autumn at 250,000 seeds/pound and 6 PLS pounds/acre. Native to all but the northwestern corner to south-central Wyoming.
Fowl Bluegrass <i>Poa palustris</i> 48" Cool season bunchgrass	Full sun to partial shade.	Poor drought tolerance. Prefers moist areas. Needs at least 28" of annual precipitation.	Grows best in fine to medium textured, poorly-drained, acidic soils. Tolerates a pH range of 4.9 – 7.5.	Cover. Seeds and foliage provide food. Good year-round forage.	High fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Ideal for riparian areas. Plant in spring or autumn.

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Fowl Mannagrass <i>Glyceria striata</i> 68" Cool season sodgrass	Full sun to full shade.	Poor drought tolerance. Prefers moist areas. Needs at least 10" of annual precipitation.	Grows best in moist, moderately fine to medium textured, seasonally flooded, acidic soils. Tolerates a pH range of 4.0 – 8.0.	Cover. Seeds and foliage provide food.	Low fire tolerance and resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Short-lived. Does well up to 11,500 feet in elevation. Spreads by rhizomes. Ideal for riparian areas and stabilizing soil. Plant at 180,000 seeds/pound and 7-12 PLS pounds/acre.
Green Needlegrass <i>Nassella viridula</i> Formerly <i>Stipa viridula</i> 30" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Drought tolerant. Tolerates occasional flooding. Needs at least 10" of annual precipitation.	Grows best in fine to medium textured soils. Tolerates a pH range of 6.6 – 8.4.	Cover. Seeds and foliage provide food. Good year-round forage for deer and elk. Palatable to livestock.	Moderate fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests. Resistant to grasshoppers.	Hardy, tufted perennial with extensive, fibrous roots. Fast growing. Moderate life span. Does well at mid elevations. Spreads by tillers. Establishes easily. Ideal when mixed with other cool season grasses. Plant in autumn at 181,000 seeds/pound and 5-10 PLS pounds/acre or 3 PLS pounds/1,000 square feet. Native to the eastern half of Wyoming.
Hardstem Bulrush <i>Schoenoplectus acutus</i> Also known as <i>Scirpus acutus</i> 70 – 115" Cool season, grass-like sod-former	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers wet areas. Tolerates flooding and high water tables. Needs at least 12" of annual precipitation.	Grows best in muddy, fine to medium textured, poorly-drained soils. Tolerates a pH range of 5.2 – 8.5.	Cover and nesting sites. Seeds and foliage provide food.	Moderate fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Does well at mid elevations. Spreads by rhizomes. Ideal for mud flats, marshes, wetlands, and other areas next to shallow or standing water. Plant in spring or autumn at 377,600 seeds/pound and 5 PLS pounds/acre. Native to all of Wyoming.
Idaho Fescue <i>Festuca idahoensis</i> 24" Cool season bunchgrass	Full sun to partial shade.	Moderate drought tolerance. Needs at least 12" of annual precipitation.	Grows best in deep, rich, moderately fine to medium textured soils. Tolerates thin, coarse, well-drained soils. Tolerates a pH range of 5.6 – 8.4.	Cover. Seeds and foliage provide food. Good spring forage for deer and elk. Palatable to livestock. Intolerant of heavy grazing.	Moderate fire tolerance, low fire resistance. Needs at least 130 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Does well from mid to high elevations. Spreads by tillers. Ideal as part of a turfgrass blend for lawns. Establishes slowly. Plant in spring or autumn at 450,000 seeds/pound and 3-6 PLS pounds/acre. Native to the western half of Wyoming.
Indiangrass <i>Sorghastrum nutans</i> 48" 36" Warm season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Moderate drought tolerance. Tolerates periodic flooding. Needs at least 12" of annual precipitation.	Grows in a variety of moist, well-drained soils. Tolerates a pH range of 5.0 – 7.8.	Cover. Seeds and foliage provide food. Good summer forage for deer and elk. Palatable to livestock. Intolerant of heavy or repeated grazing.	High fire tolerance, low fire resistance. Needs at least 160 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Spreads by short rhizomes. Ideal for improving pastures and haylands, for mass plantings, and as an ornamental grass. Yellow or bronze autumn color. Plant in spring at 170,000 seeds/pound and 5-10 PLS pounds/acre, or as 25% or less of a grass mixture. Native to the eastern half of Wyoming.

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Indian Ricegrass <i>Achnatherum hymenoides</i> Also known as <i>Oryzopsis hymenoides</i> 24" 12" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Intolerant of standing water. Needs at least 6" of annual precipitation.	Grows best in deep, medium textured to coarse, well-drained soils. Tolerates fine soils if they are well-drained. Tolerates a pH range of 6.6 – 8.6.	Cover. Seeds and foliage provide food (seeds are high in protein). Good spring, summer, and winter forage for deer and elk. Highly palatable to livestock. Intolerant of heavy spring grazing.	High fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, tufted perennial. Moderately fast growing. Moderate life span. Does well from 4,300 to 8,500 feet in elevation. Spreads by tillers. Establishes slowly. Ideal for rangeland improvement and as an ornamental grass. Flowers from May into June. Plant in autumn at 141,000 seeds/pound and 6-12 PLS pounds/acre. Native to the eastern half of Wyoming.
Inland Saltgrass <i>Distichlis spicata</i> Also known as <i>Distichlis stricta</i> 16" Warm season sodgrass	Full sun to partial shade. Intolerant of full shade.	Moderate drought tolerance. Prefers moist areas. Tolerates periodic flooding. Needs at least 5" of annual precipitation.	Grows best in moist, fine to medium textured, alkaline soils. Tolerates a pH range of 6.8 – 10.5.	Cover. Seeds and foliage provide food.	High fire tolerance, low fire resistance. Needs at least 80 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Slow growing. Long- lived. Does well up to 7,500 feet in elevation. Spreads by well-developed rhizomes. Ideal for alkaline basins. Plant in summer at 520,000 seeds/ pound and 4-10 PLS pounds/acre. Native to all of Wyoming.
Letterman's Needlegrass <i>Achnatherum lettermannii</i> Also known as <i>Stipa lettermanii</i> 24" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Needs at least 6" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.0 – 7.6.	Cover. Seeds and foliage provide food. Good spring forage for deer and elk. Highly palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, tufted perennial. Slow growing. Moderate life span. Does well from mid to high elevations. Ideal for rangeland improvement. Plant in spring or autumn at 150,000 seeds/pound and 8-12 PLS pounds/acre. Native to the western half of Wyoming.
Little Bluestem <i>Schizachyrium scoparium</i> Formerly <i>Andropogon scoparius</i> 36" 24" Warm season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Intolerant of wetlands, sub- irrigated areas, and poorly-drained areas. Needs at least 16" of annual precipitation.	Grows in most soils, but prefers medium textured, well-drained soils. Tolerates sandy soils and poor soils. Tolerates a pH range of 5.5 – 8.4.	Cover. Seeds and foliage provide food. Highly palatable to livestock in spring.	Moderate fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial with deep, fibrous roots. Moderately fast growing. Long-lived. Does well up to 7,400 feet in elevation. Spreads by tillers. Ideal for rangeland improvement and as an ornamental grass. Flowers from July to September. Reddish autumn color. Plant in spring to summer at 260,000 seeds/pound and 4-7 PLS pounds/acre, or as 25% or less of a grass mixture, or by dividing and replanting root clumps. Native to all but the western 1/4 of Wyoming.
Meadow Barley <i>Hordeum brachyantherum</i> 24" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Moderate drought tolerance. Tolerates periodic flooding. Needs at least 20" of annual precipitation.	Grows in most soils, but prefers moderately fine to medium textured soils. Tolerates a pH range of 6.0 – 8.5.	Cover. Seeds and foliage provide food.	High fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, tufted perennial. Moderately fast growing. Moderate life span. Does well up to 11,000 feet in elevation. Plant in spring or autumn at 85,000 seeds/pound and 12-15 PLS pounds/acre. Native to the western half of Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

~ Fire tolerance = a plant's ability to re-sprout, re-grow, or re-establish from residual seed after a fire. Fire resistance = a plant's ability to resist burning through adaptations like thick bark, a high leaf crown, or high water content. (From: *USDA Natural Resources Conservation Service Plants Database*, see the "References and Resource Guides" and "Need More Information?" sections.)

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Mountain Brome <i>Bromus marginatus</i> 40 – 48" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Moderate drought tolerance. Intolerant of high water tables. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse soils. Tolerates thin, infertile soils. Tolerates a pH range of 5.5 – 8.0.	Cover. Seeds and foliage provide food. Highly palatable to livestock.	Low fire tolerance and resistance. Needs at least 150 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Moderate life span. Does well from mid to high elevations. Establishes quickly and easily. Ideal for disturbed sites. Plant in late spring at 90,000 seeds/pound and 12-19 PLS pounds/acre. Native to all but north-central to southeastern Wyoming.
Muttongrass <i>Poa fendleriana</i> 24" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.0 – 8.0.	Cover. Seeds and foliage provide food. Highly palatable to livestock.	Low fire tolerance and resistance. Needs at least 180 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Does well from 3,500 to 10,500 feet in elevation. Ideal for dry sites. Plant in spring or autumn at 890,000 seeds/pound and 2-3 PLS pounds/acre. Native to all of Wyoming.
Nebraska Sedge <i>Carex nebrascensis</i> 36" Cool season, grass-like sod-former	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers wet or moist areas. Needs at least 14" of annual precipitation.	Grows in most soils, but prefers moderately fine to medium textured, poorly-drained soils. Can grow in dry soils as long as roots remain wet. Tolerates a pH range of 5.7 – 7.4.	Cover. Seeds and foliage provide food. Highly palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 85 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Spreads by rhizomes. Ideal for wetlands, wet meadows, marshes, and riparian areas. Plant in spring or autumn at 534,100 seeds/pound and 5 PLS pounds/acre. Native to all of Wyoming.
Needle and Thread <i>Hesperostipa comata</i> Also known as <i>Stipa comata</i> 36" Cool season bunchgrass	Full sun. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Needs at least 5" of annual precipitation.	Grows best in dry, medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.6 – 8.4.	Cover. Seeds and foliage provide food. Good spring forage for elk. Palatable to livestock until seeds mature. Mature seed is sharp and needle-like.	High fire tolerance, low fire resistance. Needs at least 130 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Does well from low to high elevations. Spreads by tillers. Ideal for disturbed sites and stabilizing soil. Plant in autumn at 115,000 seeds/pound and 10-14 PLS pounds/acre. Native to the eastern half of Wyoming.
Nuttall's Alkaligrass <i>Puccinellia nuttalliana</i> Also known as <i>Puccinellia airoides</i> 10" Cool season, bunchgrass sod-former	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers moist areas. Tolerates occasional standing water. Needs at least 24" of annual precipitation.	Grows in a variety of moist soils. Tolerates a pH range of 6.5 – 8.5.	Cover. Seeds and foliage provide food.	High fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Slow growing. Short-lived. Ideal in mixtures for marshes, moist meadows, shorelines, alkaline basins, and other waterways. Plant in spring or autumn at 2,788,700 seeds/pound and 1-3 PLS pounds/acre.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

~ Fire tolerance = a plant's ability to re-sprout, re-grow, or re-establish from residual seed after a fire. Fire resistance = a plant's ability to resist burning through adaptations like thick bark, a high leaf crown, or high water content. (From: *USDA Natural Resources Conservation Service Plants Database*, see the "References and Resource Guides" and "Need More Information?" sections.)

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Poverty Rush (Path Rush) <i>Juncus tenuis</i> 18" Cool season, grass-like sod-former	Full sun to partial shade.	Poor drought tolerance. Prefers moist areas. Needs at least 10" of annual precipitation.	Grows in most soils, but prefers moist, moderately fine, acidic soils. Tolerates disturbed soils and compacted soils. Tolerates a pH range of 4.5 – 7.0.	Cover. Seeds and foliage provide food.	High fire tolerance, low fire resistance. Needs at least 85 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Slow growing. Moderate life span. Spreads by rhizomes. Ideal for wetlands, wet meadows, marshes, and riparian areas. Plant in spring or autumn at 51,300,000 seeds/pound and 1 PLS pound/acre.
Prairie Junegrass <i>Koeleria macrantha</i> Also known as <i>Koeleria cristata</i> 18" Cool season bunchgrass	Full sun to partial shade.	Excellent drought tolerance. Needs at least 14" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.0 – 8.0.	Cover. Seeds and foliage provide food. Good spring forage for deer, elk, and pronghorn. Highly palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, loosely tufted perennial. Fast growing. Short-lived. Does well from 5,000 to 8,000 feet in elevation. Establishes easily. Ideal for disturbed sites and as an ornamental grass. Flowers from June to July. Pale yellow autumn color. Plant in autumn at 2,315,400 seeds/pound and 1-2 PLS pounds/acre. Native to all of Wyoming.
Prairie Sandreed <i>Calamovilfa longifolia</i> 24 – 72" Warm season sodgrass	Full sun. Intolerant of full shade.	Excellent drought tolerance. Needs at least 12" of annual precipitation.	Grows best in deep, medium textured to moderately coarse, well- drained, sandy soils. Tolerates a pH range of 5.6 – 8.4.	Cover. Seeds and foliage provide food. Important winter range forage for deer in some areas. Palatable to livestock. Intolerant of overgrazing.	Moderate fire tolerance, low fire resistance. Needs at least 130 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Does well up to 7,800 feet in elevation. Spreads by rhizomes. Ideal for stabilizing soil. Plant in spring at 273,000 seeds/pound and 4-7 PLS pounds/acre. Native to all but extreme southwestern Wyoming.
Reed Canarygrass <i>Phalaris arundinacea</i> 60" Cool season sodgrass	Full sun. Intolerant of full shade.	Poor drought tolerance. Prefers wet areas. Needs at least 35" of annual precipitation.	Grows best in moderately fine to medium textured, poorly-drained soils. Tolerates a pH range of 5.5 – 8.0.	Cover. Seeds and foliage provide food. Palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 160 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Long-lived. Does well up to 9,000 feet in elevation. Spreads by rhizomes. Can be competitive and aggressive on preferred sites. Ideal for wetlands, wet meadows, marshes, and riparian areas. Plant in spring or autumn at 533,000 seeds/pound and 2-4 PLS pounds/acre. Native to all of Wyoming.
Sandberg Bluegrass <i>Poa secunda</i> 12 – 16" 6 – 12" Cool season bunchgrass	Full sun to partial shade.	Excellent drought tolerance. Needs at least 10" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.5 – 8.2.	Cover. Seeds and foliage provide food. Good spring forage for deer, elk, and pronghorn. Palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 130 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Does well from low to high elevations. Spreads by tillers. Ideal for dry sites and areas with poor soil. Plant in spring or autumn at 925,000 seeds/pound and 2-4 PLS pounds/acre. Native to all of Wyoming.

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Sand Bluestem <i>Andropogon hallii</i> 36 – 72" Warm season sodgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Needs at least 10" of annual precipitation.	Grows best in moderately coarse to coarse, well-drained soils. Tolerates a pH range of 5.6 – 8.4.	Cover. Seeds and foliage provide food. Highly palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, bunchy perennial. Moderately fast growing. Moderate life span. Does well up to 4,800 feet in elevation. Spreads by well-developed rhizomes. Ideal for stabilizing soil. Plant in late spring at 113,000 seeds/pound and 7-12 PLS pounds/acre. Native to all but west-central to the southwestern corner of Wyoming.
Sand Dropseed <i>Sporobolus cryptandrus</i> 24 – 36" Warm season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Tolerates periodic flooding. Needs at least 8" of annual precipitation.	Grows best in medium textured to moderately coarse, well-drained soils. Tolerates a pH range of 6.6 – 8.0.	Cover. Seeds and foliage provide food. Good spring forage for elk. Palatable to livestock while green.	Moderate fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Short-lived. Does well up to 8,000 feet in elevation. Spreads by tillers. Establishes easily. Ideal for stabilizing soil and erosion control. Plant in late summer at 5,298,000 seeds/pound and 1-2 PLS pounds/acre. Native to all but the western 1/5 of Wyoming.
Sideoats Grama <i>Bouteloua curtipendula</i> 24 – 36" Warm season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Prefers dry areas. Intolerant of standing water. Needs at least 6" of annual precipitation.	Grows in most soils, but prefers shallow, medium textured to moderately coarse, well-drained soils. Tolerates heavy soils. Tolerates a pH range of 5.5 – 7.8.	Cover. Seeds and foliage provide food. Good forage for pronghorn. Highly palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Does well up to 7,500 feet in elevation. Spreads by rhizomes and tillers. Ideal for erosion control, grass mixtures, and as an ornamental grass. Flowers from July to September. Plant in summer at 191,000 seeds/pound and 5-9 PLS pounds/acre or 3 PLS pounds/1,000 square feet, or as 10-30% of a grass mixture. Native to all but the western 1/5 of Wyoming.
Slender Bulrush <i>Schoenoplectus heterochaetus</i> 60" Cool season, grass-like sod-former	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers wet areas. Needs at least 16" of annual precipitation.	Grows best in moderately fine to medium textured, poorly-drained, acidic soils. Tolerates a pH range of 4.0 – 7.5.	Cover and nesting sites. Seeds and foliage provide food.	Moderate fire tolerance, low fire resistance. Needs at least 110 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Spreads by rhizomes. Ideal for mud flats, marshes, wetlands, and other areas next to shallow or standing water. Plant in spring or autumn.
Slender Wheatgrass <i>Elymus trachycaulus</i> Formerly <i>Agropyron trachycaulum</i> 24 – 36" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Needs at least 8" of annual precipitation.	Grows best in moderately fine to medium textured, well-drained soils. Tolerates a pH range of 5.6 – 9.0.	Cover. Seeds and foliage provide food. Good forage for deer, elk, and pronghorn. Highly palatable to livestock. Intolerant of heavy grazing.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Short-lived. Does well from low to high elevations. Spreads by short rhizomes and tillers. Establishes easily. Ideal for stabilizing soil. Plant in autumn at 159,000 seeds/pound and 6-8 PLS pounds/acre. Native to all of Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

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Softstem Bulrush <i>Schoenoplectus tabernaemontani</i> Also known as <i>Scirpus validus</i> 72 – 108" Cool season, grass-like sod-former	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers wet areas. Needs at least 18" of annual precipitation.	Grows in a variety of poorly-drained soils. Tolerates a pH range of 5.4 – 7.5.	Cover and nesting sites. Seeds and foliage provide food.	High fire tolerance, low fire resistance. Needs at least 80 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Long-lived. Spreads by rhizomes. Ideal for mud flats, marshes, wetlands, and other areas next to shallow or standing water. Plant in spring or autumn at 550,000 seeds/pound and 2-4 PLS pounds/acre.
Spikerush <i>Eleocharis parvula</i> 12 – 15" Cool season, grass-like sod-former	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers wet areas. Needs at least 18" of annual precipitation.	Grows in a variety of poorly-drained soils. Tolerates a pH range of 6.0 – 8.0.	Cover. Seeds and foliage provide food.	High fire tolerance, low fire resistance. Needs at least 80 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Moderate life span. Spreads by weakly-developed rhizomes. Establishes quickly and easily, but is not overly aggressive. Ideal for wetlands, wet meadows, marshes, and riparian areas. Plant in spring or autumn at 754,000 seeds/pound and 4 PLS pounds/acre.
Streambank Wheatgrass <i>Elymus lanceolatus</i> Formerly <i>Agropyron riparium</i> 20 – 25" Cool season sodgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Needs at least 8" of annual precipitation.	Grows best in moderately fine to medium textured, well-drained soils. Tolerates a pH range of 5.6 – 9.0.	Cover. Seeds and foliage provide food. Highly palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 90 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Fast growing. Long-lived. Does well from low to high elevations. Spreads by well-developed rhizomes. Establishes easily. Ideal for erosion control and restoring disturbed sites. Plant in spring or autumn at 154,000 seeds/pound and 6-11 PLS pounds/acre or 3-4 PLS/1,000 square feet.
Switchgrass <i>Panicum virgatum</i> 36 – 60" 24 – 48" Warm season bunchgrass	Full sun. Tolerates some shade. Intolerant of full shade.	Moderate drought tolerance. Needs at least 20" of annual precipitation.	Grows in most relatively moist soils, but prefers moderately fine to medium textured, well-drained, acidic soils. Tolerates a pH range of 4.5 – 7.5.	Cover (including winter). Seeds and foliage provide food. Palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 150 frost-free days/year. To minimize stress and control weeds, graze or mow no lower than 8 inches, avoid fertilizing with nitrogen during the first year, and burn every 1-3 years, if possible (otherwise mow). Mostly free of serious diseases and pests.	Moderately hardy perennial. Fast growing. Long-lived. Spreads by well-developed rhizomes. Ideal for stabilizing soil, erosion control, grass mixtures, rangeland improvement, and as an ornamental grass. Attractive reddish foliage. Golden yellow autumn color. Plant in summer at 389,000 seeds/pound and 3-5 PLS pounds/acre, or as the lowest percentage of a grass mixture, or by dividing and replanting root clumps. Native to the eastern half of Wyoming.

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Torrey's Rush <i>Juncus torreyi</i> 24" Cool season, grass-like sod-former	Full sun to partial shade. Intolerant of full shade.	Moderate drought tolerance. Prefers wet areas, but can tolerate periods of drought. Needs at least 14" of annual precipitation.	Grows best in medium textured, poorly-drained, acidic soils. Tolerates a pH range of 4.5 – 6.5.	Cover. Seeds and foliage provide food.	Moderate fire tolerance, low fire resistance. Needs at least 85 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Does well up to 9,000 feet in elevation. Ideal for wetlands, wet meadows, marshes, and riparian areas. Plant in spring or autumn at 12,300,000 seeds/pound and 1 PLS pound/acre.
Tufted Hairgrass <i>Deschampsia caespitosa</i> 36" 24" Cool season bunchgrass	Full sun to partial shade. Intolerant of full shade.	Moderate drought tolerance. Prefers moist areas, but can tolerate periods of drought. Needs at least 14" of annual precipitation.	Grows best in moist, medium textured to moderately coarse, acidic soils. Tolerates a pH range of 4.8 – 7.2.	Cover. Seeds and foliage provide food and persist into winter. Good spring and summer forage for deer and elk. Highly palatable to livestock. Intolerant of heavy grazing.	High fire tolerance, low fire resistance. Needs at least 100 frost-free days/year. Mostly free of serious diseases and pests.	Hardy, densely tufted perennial. Moderately fast growing. Long-lived. Does well from 4,000 to 12,000 feet in elevation. Ideal for rangeland improvement and as an ornamental grass. Flowers from July to September. Plant in autumn at 2,500,000 seeds/pound and 1-2 PLS pounds/acre, or by dividing and replanting root clumps. Native to all but southeastern Wyoming.
Water Sedge <i>Carex aquatilis</i> 35" Cool season, grass-like sod-former	Full sun to partial shade. Intolerant of full shade.	Poor drought tolerance. Prefers moist or wet areas. Needs at least 15" of annual precipitation.	Grows best in moderately fine to medium textured, moist to poorly-drained, acidic soils. Tolerates a pH range of 4.0 – 7.5.	Cover. Seeds and foliage provide food. Good forage for elk and moose. Palatable to livestock.	Low fire tolerance, moderate fire resistance. Needs at least 120 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Long-lived. Does well from mid to high elevations. Spreads by well-developed rhizomes. Ideal for wetlands, wet meadows, marshes, and riparian areas. Plant in spring or autumn at 485,000 seeds/pound and 5 PLS pounds/acre.
Western Fescue <i>Festuca occidentalis</i> 36" Cool season bunchgrass	Full sun to partial shade.	Excellent drought tolerance. Needs at least 14" of annual precipitation.	Grows best in medium textured to coarse, well-drained soils. Tolerates a pH range of 6.0 – 7.5.	Cover. Seeds and foliage provide food. Highly palatable to livestock.	High fire tolerance, low fire resistance. Needs at least 160 frost-free days/year. Mostly free of serious diseases and pests.	Hardy perennial. Moderately fast growing. Short-lived. Does well from low to mid elevations. Plant in spring or autumn.
Western Wheatgrass <i>Pascopyrum smithii</i> Formerly <i>Agropyron smithii</i> 15 – 20" Cool season sodgrass	Full sun to partial shade. Intolerant of full shade.	Excellent drought tolerance. Tolerates both dry and moist areas. Needs at least 10" of annual precipitation.	Grows best in moderately fine to medium textured, well-drained soils. Tolerates a pH range of 4.5 – 9.0.	Cover. Seeds and foliage provide food. Good forage for elk. Highly palatable to livestock. Intolerant of heavy spring grazing.	Low maintenance. High fire tolerance, low fire resistance. Needs at least 120 frost-free days/year. Mostly free of serious diseases and pests. Possible pests: grasshoppers.	Hardy perennial. Fast growing. Long-lived. Does well from 3,400 to 8,200 feet in elevation. Spreads by well-developed rhizomes. Ideal for erosion control, rangeland improvement, and restoring disturbed sites. Attractive blue-green foliage. Plant in spring or autumn at 110,000 seeds/pound and 8-16 PLS pounds/acre or 4 PLS pounds/1,000 square feet. Native to all of Wyoming.

~ Soil texture range: fine, moderately fine, medium textured, moderately coarse, coarse.

~ Soil pH: neutral soil pH = 7, acidic soil pH < 7, alkaline (saline) soil pH > 7.

~ Foliage = twigs, buds, and/or leaves or needles.

~ Fire tolerance = a plant's ability to re-sprout, re-grow, or re-establish from residual seed after a fire. Fire resistance = a plant's ability to resist burning through adaptations like thick bark, a high leaf crown, or high water content. (From: *USDA Natural Resources Conservation Service Plants Database*, see the "References and Resource Guides" and "Need More Information?" sections.)

~ Riparian areas = the plant zones adjacent to and influenced by the available water in rivers, streams, lakes, ponds, and other waterways.

~ Rhizomes = horizontal, underground, root-like stems. Stolons = stems that grow along the soil surface and then root. Tillers = above-ground stems that branch from stems at or below the soil surface.

~ Seeding rate: PLS = pure live seed (seed purity x germination rate / 100 = PLS % for each seed lot), and is a way to standardize seed quality. (From: *Granite Seed Company*, see the "References and Resource Guides" and "Need More Information?" sections.)

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