

USDA  
NATURAL RESOURCES  
CONSERVATION SERVICE  
MARYLAND CONSERVATION  
PRACTICE STANDARD  
CONSERVATION COVER  
CODE 327  
(Reported by Acre)

**DEFINITION**

Establishing and maintaining permanent vegetative cover to protect soil and water resources.

**PURPOSES**

This practice may be applied for one or more of the following purposes:

1. To reduce soil erosion and sedimentation;
2. To improve water quality;
3. To create or enhance wildlife habitat.

**CONDITIONS WHERE PRACTICE  
APPLIES**

This practice may be applied on land retired from agricultural production or other lands requiring protective cover, including land entered into conservation programs sponsored by USDA or other government agencies and private organizations.

This practice does not apply to:

1. Plantings primarily intended for forage production. (Refer to the conservation practice standard for Pasture and Hay Planting, Code 512.)
2. Tree planting that is primarily intended for production of timber and other forest products. (Refer to the conservation practice standard for Tree/Shrub Establishment, Code 612.)

3. Plantings that will be established on critically eroding areas that usually cannot be stabilized by ordinary conservation treatment. (For site stabilization on these areas, refer to the conservation practice standard for Critical Area Planting, Code 342.)
4. Plantings on field edges or in riparian buffers, for which other standards are applicable. (Refer to the conservation practice standards for Field Border, Code 386; Filter Strip, Code 393; and Riparian Forest Buffer, Code 391.)

**CONSIDERATIONS**

Consider the long-term land use objectives of the client. If the client is interested in providing wildlife habitat, consider the wildlife species or groups of species to be supported and the habitat needs that can be met on the managed property.

Assess site conditions including surrounding land uses, soils, residual herbicides (to the extent known), available moisture during the growing season, and existing vegetation on the site and in adjacent areas, including any noxious weeds that may be present.

Consider using plant species that have multiple values such as those suited for nesting, biomass, timber, nuts, fruit, seeds, browse, aesthetics and tolerance to locally used herbicides.

Avoid selecting plant species or planting near existing species that may be alternate hosts to undesirable pests, or that may be considered invasive or undesirable. Species diversity, should be encouraged in order to minimize problems due to species-specific pests.

Consider the need for firebreaks when warm-season grass plantings are used. Mature plantings of warm-season grasses can be quite flammable. Large areas of warm-season grasses should have cool-season grass firebreaks adjacent to woodlands and buildings, and in other locations where firebreaks may be needed to manage a prescribed burn.

Consider the adverse impacts of high populations of nuisance wildlife such as deer, groundhog, beaver, or resident geese, on the establishment and maintenance of vegetation. When feasible, select plant species that are not preferred foods

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

of the nuisance animals, and utilize methods for protecting the plants until they become well established.

Also consider the potential for attracting nuisance wildlife into an area, either intentionally or unintentionally. Plantings that contain preferred wildlife foods may be used to attract nuisance wildlife away from valuable agricultural crops or ornamental plantings, but may also result in attracting additional nuisance wildlife into an area.

Take note of other constraints such as economic feasibility, access, regulatory or program requirements, social effects, and visual aspects.

Consider long-term maintenance requirements of the established vegetation.

Refer to the Maryland Wildlife Biology and Management Handbook for additional habitat considerations for wildlife species.

### **CRITERIA**

Select vegetative cover to accomplish the intended purpose of the practice and the objectives of the client. Select plant types and species selected based on their compatibility in growth rates, shade tolerance, moisture requirements, and other characteristics. Herbaceous and/or woody plants may be appropriate. For best results, use species and varieties with proven conservation traits.

Plant materials shall either be native to Maryland, or introduced and non-invasive (i.e., not likely to spread beyond the planted area and displace native species). When feasible, select locally native plant species and/or species that are beneficial to wildlife.

Plantings shall consist of two or more species to provide greater vegetative diversity.

To establish high-quality grassland habitat for wildlife, select mixes that have a diverse combination of grasses, forbs, and legumes to provide food and cover.

Site preparation and planting to establish vegetative cover shall be done at a time and manner to insure survival and growth of selected species. Provide supplemental moisture if and when necessary to assure early survival and

establishment of selected species.

Apply lime and fertilizer if needed based on soil test results. Refer to the appropriate job sheets for warm-season grasses, cool-season grasses, and trees and shrubs for more specific information about pH and nutrient requirements. The use of commercial fertilizer and other forms of plant nutrients must be in compliance with Maryland nutrient management regulations, as applicable.

Only viable, high quality seed and planting stock shall be used. The method of planting shall include hand or machine planting techniques, suited to achieving proper depths and placement for the selected plant species.

Vegetation may be established by using seed, bare-root seedlings, containerized stock, or balled-and-burlapped stock. Younger planting stock is generally preferred to older stock because younger plants adapt more readily to new conditions.

Select the plant species to be established from Tables 2, 3, and/or 4 of this standard. These tables contain lists of herbaceous and woody plant species, including key attributes of each species, which can be used when selecting vegetative cover.

For herbaceous plantings, use the seeding rates listed in Table 2. For tree and shrub plantings, use the rates listed in Table 5.

All plant materials shall be correctly handled before planting. In general, plant rooted and unrooted materials as soon as possible after receiving them from the supplier. For bare-root seedlings, keep the roots moist at all times and keep the plants out of direct sunlight as much as possible. Keep seed cool and dry until planting.

Use Figure 1 and Table 1 to determine the appropriate planting dates for the different types of plant materials.

Protect the planting from unacceptable impacts due to pests, wildlife, livestock, or fire. Exclude livestock as needed to establish the planting.

Control noxious weeds as required by state law.

*Specific program requirements may dictate criteria in addition to those specified above.*

**SPECIFICATIONS**

Plans and specifications for establishment of vegetative cover shall be prepared in accordance with the previously listed criteria. Plans and specifications shall contain sufficient detail concerning site preparation and establishment to ensure successful installation of the practice. Documentation shall be in accordance with the section "Supporting Data and Documentation" in this standard.

Follow the establishment recommendations provided in the Maryland job sheets for warm-season grasses, cool-season grasses, and trees and shrubs. The completed job sheet(s) can serve as the planting plan and specifications for the practice.

**OPERATION AND MAINTENANCE**

An operation and maintenance (O&M) plan shall be prepared for each practice. Appropriate Job Sheet(s) may be used to serve as the management plan as well as supporting documentation, and shall be provided to the client. At a minimum, the following components shall be addressed in the O&M plan, as applicable:

1. Describe the extent of management needed to maintain vegetation in the desired species composition or age class (if applicable), or no management required (e.g., natural area);
2. Management may consist of mowing, prescribed burning, selective cutting, or other actions, as appropriate;
3. If native cover (other than what was planted) becomes established, and this cover meets the intended purpose of the practice and the client's objectives, the cover should be considered adequate;
4. Control undesirable plants by pulling, mowing, or spraying with a selective herbicide. To the extent feasible, "spot" spray or mow to control weeds, so that desirable plants are not destroyed unnecessarily. Noxious weeds must be controlled as required by state law;

5. When optimum wildlife habitat is desired, do not mow, burn, or otherwise disturb the cover during the nesting season of the desired wildlife species. For Maryland, the primary nesting season is generally from April 15 through August 15. During the establishment period, mowing may be needed during the nesting season to reduce heavy competition from annual weeds;
6. Describe the acceptable uses (e.g., timber production, grazing, hunting, nature preserve, etc.) and time of year/frequency of use restrictions, if any.

**SUPPORTING DATA AND DOCUMENTATION**

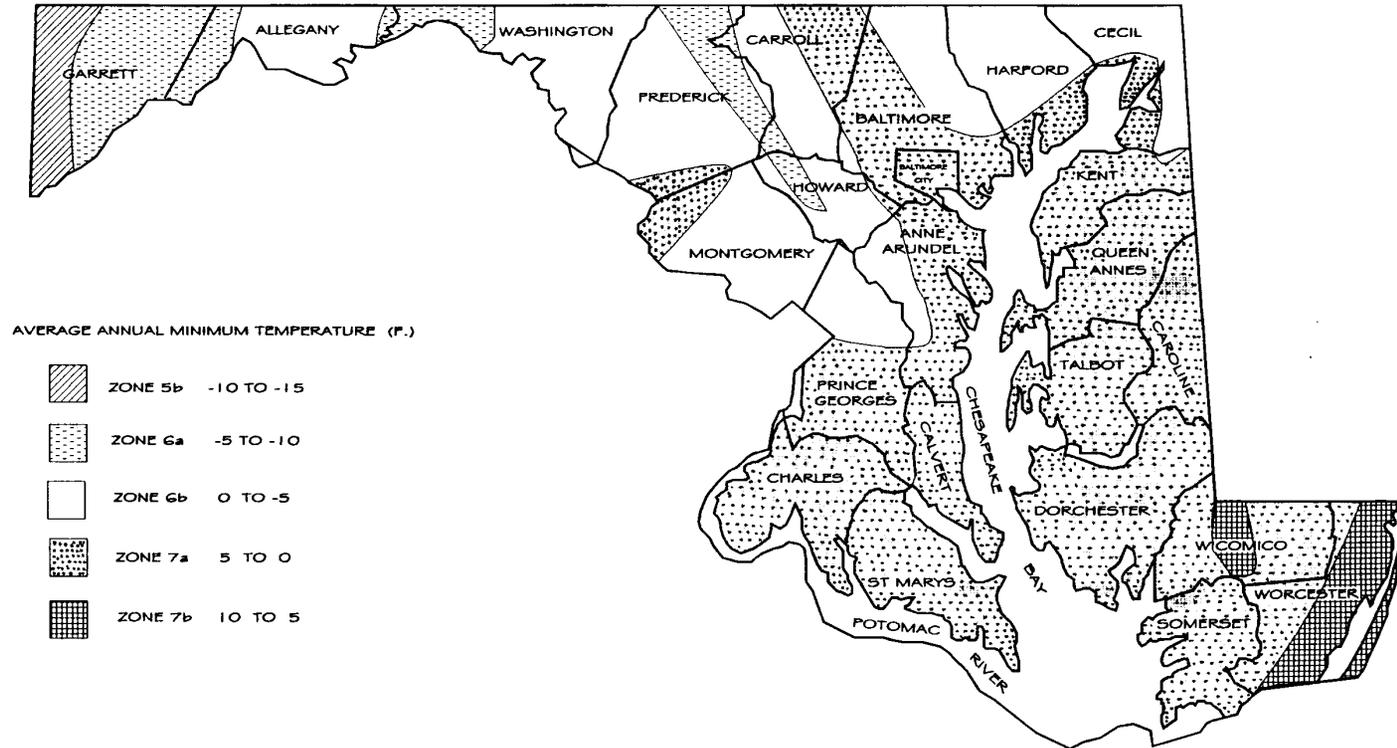
The following is a list of the minimum data and documentation to be recorded in the case file:

1. Field location and extent of planting in acres, and assistance notes. Also note the location of the planting on the conservation plan map. Assistance notes shall include dates of site visits, name or initials of the person who made the visit, specifics as to alternatives discussed, decisions made, and by whom;
2. Completed copy of the appropriate Job Sheet(s) or other specifications, and management plans. Must include species selected for establishment, seeding/planting rates, and planting dates.

**REFERENCES**

1. Brown, Melvin L. and Russell G. Brown, 1984. *Herbaceous Plants of Maryland*. University of Maryland, Port City Press, Baltimore.
2. Brown, Russell G. and Melvin L. Brown, 1972. *Woody Plants of Maryland*. University of Maryland, Port City Press, Baltimore.
3. Fish and Wildlife Service, Chesapeake Bay Field Office with the Natural Science Center and Adkins Arboretum, 1995. *Native Plants for Wildlife Habitat*. Annapolis, MD.
4. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Critical Area Planting, Code 342*. Maryland Field Office Technical Guide, Section IV.
5. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Fence, Code 382*. Maryland Field Office Technical Guide, Section IV.
6. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Field Border, Code 386*. Maryland Field Office Technical Guide, Section IV.
7. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Filter Strip, Code 393*. Maryland Field Office Technical Guide, Section IV.
8. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Pasture and Hay Planting, Code 512*. Maryland Field Office Technical Guide, Section IV.
9. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Riparian Forest Buffer, Code 391*. Maryland Field Office Technical Guide, Section IV.
10. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Tree/Shrub Establishment, Code 612*. Maryland Field Office Technical Guide, Section IV.
11. USDA, Natural Resources Conservation Service, 1994. *Grass Varieties in the United States*. Agricultural Handbook 170, Washington D.C.
12. USDA, Natural Resources Conservation Service. *Maryland Wildlife Biology and Management Handbook*.
13. USDA, Natural Resources Conservation Service, and Ducks Unlimited Canada. *Vegetating with Native Grasses in Northeastern North America*.

**FIGURE 1: USDA Plant Hardiness Zones for Maryland**



Plant Hardiness Zones delineate areas where a species can be successfully established based on average annual minimum temperatures.

<b>TABLE 1: Recommended Planting Dates in Maryland <sup>1/</sup></b>			
<b>Type of Plant Material</b>	<b>Plant Hardiness Zones</b>		
	<b>5b and 6a</b>	<b>6b</b>	<b>7a and 7b</b>
Seeds - Cool-Season Grasses (includes mixes with forbs and/or legumes)	Mar 15 to May 31 Aug 1 to Sep 30	Mar 1 to May 15 Aug 1 to Oct 15	Feb 15 to Apr 30 Aug 15 to Oct 31 Nov 1 to Nov 30♦
Seeds - Warm-Season/Cool-Season Grass Mixes (includes mixes with forbs and/or legumes)	Mar 15 to May 31♦♦ Jun 1 to Jun 15*	Mar 1 to May 15♦♦ May 16 to Jun 15*	Feb 15 to Apr 30♦♦ May 1 to May 31*
Seeds - Warm-Season Grasses (includes mixes with forbs and/or legumes)	Mar 15 to Jun 15♦♦ Jun 15 to Jun 30* Nov 1 to Dec 1**	Mar 1 to Jun 15♦♦ Jun 15 to Jun 30* Nov 15 to Dec 15**	Feb 15 to May 31♦♦ Jun 1 to Jun 30* Dec 1 to Dec 31**
Unrooted Woody Materials; Bare-Root Plants; Bulbs, Rhizomes, Corms, and Tubers <sup>2/</sup>	Mar 15 to May 31 Jun 1 to Jun 30*	Mar 1 to May 15 May 16 to Jun 30*	Feb 15 to Apr 30 May 1 to Jun 30*
Containerized Stock; Balled-and-Burlapped Stock	Mar 15 to May 31 Jun 1 to Jun 30* Sep 1 to Nov 15*✦	Mar 1 to May 15 May 16 to Jun 30* Sep 15 to Nov 30*✦	Feb 15 to Apr 30 May 1 to Jun 30* Oct 1 to Dec 15*✦

**TABLE 1 NOTES:**

1. The planting dates listed are averages for each zone. These dates may require adjustment to reflect local conditions, especially near the boundaries of the zones.
2. When planted during the growing season, most of these materials must be purchased and kept in a dormant condition until planting. Bare-root grasses are the exception—they may be supplied as growing (non-dormant) plants.
  - ♦ Additional planting dates for the lower Coastal Plain, dependent on annual rainfall and temperature trends.
  - ♦♦ In general, planting during the latter portion of this period allows more time for weed emergence and weed control prior to planting. When selecting a planting date, consider the need for weed control vs. the likelihood of having sufficient moisture for later plantings, especially on droughty sites.
  - \* Additional planting dates during which supplemental watering may be needed to ensure plant establishment.
  - \*\* Fall dormant season plantings of warm-season grasses – starting approximately 2 weeks after the first hard freeze (average date based on air temperature reading of 28 degrees F or lower, 50% probability of occurrence). Warm-season grasses need a soil temperature of at least 50 degrees F in order to germinate. If soil temperatures are colder than 50 degrees, or moisture is not adequate, the seeds will remain dormant until conditions are favorable.
  - ✦ Frequent freezing and thawing of wet soils may result in frost-heaving of materials planted in late fall, if plants have not sufficiently rooted in place. Large containerized and balled-and-burlapped stock may be planted into the winter months as long as the ground is not frozen and soil moisture is adequate.

**TABLE 2: Selected List of Herbaceous Cover Mixes**

Mix	Recommended Cultivar	Seeding Rate (lbs/ac) <sup>1/</sup>	Plant Hardiness Zones <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Max. Height (feet)	All Native Species <sup>4/</sup>	Type of Grass in Mix	Remarks <sup>5/</sup>
1. Switchgrass <i>Panicum virgatum</i> Eastern Gamagrass <i>Tripsacum dactyloides</i> Coastal Panicgrass <b>OR</b> <i>Panicum amarum</i> var. <i>amarulum</i> Red Fescue <i>Festuca rubra</i> <b>AND ONE OF THE FOLLOWING:</b> Partridge Pea <b>OR</b> <i>Chamaecrista fasciculata</i> Mix 8	Shelter Pete Atlantic Common Common	1 - 2 3 - 4 2 - 3 2 - 4 1 - 2 0.25 - 0.50	All  (See Remarks)	W - SP	6 - 8	Y*	Warm & cool season grasses	Plant with a regular grass drill.  <u>Coastal Panicgrass:</u> PHZ 6a - 7b only.  <u>Eastern Gamagrass:</u> Use stratified seed. Cannot mix gamagrass in the seedbox with the other seeds -- it is much larger and needs to be planted deeper. Plant using separate boxes, or a corn drill, or recalibrate drill depth and make a separate trip over the field.
2. Big Bluestem <i>Andropogon gerardii</i> Switchgrass <i>Panicum virgatum</i> Indiangrass <i>Sorghastrum nutans</i>	Niagara or Rountree Shelter Rumsey	2 - 4 1 - 3 2 - 4	All	E - MW	6 - 8	Y	Warm season grasses	All of these grasses have fluffy seeds. Use a native seed drill.
3. Indiangrass <i>Sorghastrum nutans</i> Big Bluestem <i>Andropogon gerardii</i> Little Bluestem <i>Schizachyrium scoparium</i>	Rumsey Niagara or Rountree Aldous or Blaze	2 - 3 2 - 3 1 - 2	All	E - MW	6 - 8	Y	Warm season grasses	All of these grasses have fluffy seeds. Use a native seed drill.

\*Depends on the species selected from Mix 8.

**TABLE 2: Selected List of Herbaceous Cover Mixes**

Mix	Recommended Cultivar	Seeding Rate (lbs/ac) <sup>1/</sup>	Plant Hardiness Zones <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Max. Height (feet)	All Native Species <sup>4/</sup>	Type of Grass in Mix	Remarks <sup>5/</sup>
4. Switchgrass <i>Panicum virgatum</i> Indiangrass <i>Sorghastrum nutans</i> Big Bluestem <i>Andropogon gerardii</i>  Coastal Panicgrass <i>Panicum amarum</i> var. <i>amarulum</i>  <b>AND ONE OF THE FOLLOWING:</b> Partridge Pea <b>OR</b> <i>Chamaecrista fasciculata</i>  Mix 8	Shelter Rumsey Niagara or Rountree  Atlantic  Common	1 - 2 1 - 2 1 - 2  2 - 3  1 - 2  0.25 - 0.50	    6a, 6b, 7a, 7b	    E - MW	    6 - 8	    Y*	    Warm season grasses	    Indiangrass and big bluestem have fluffy seeds. Use a native seed drill.
5. Switchgrass <i>Panicum virgatum</i>  Coastal Panicgrass <i>Panicum amarum</i> var. <i>amarulum</i>	Shelter  Atlantic	2 - 3  4 - 5	  6a, 6b, 7a, 7b	  E - W	  6 - 8	  Y	  Warm season grasses	  Plant with a regular grass drill.
6. Deertongue <i>Dichanthelium clandestinum</i> Virginia Wild Rye <i>Elymus virginicus</i> Red Fescue <i>Festuca rubra</i> <b>OR</b> Little Bluestem <i>Schizachyrium scoparium</i>  <b>AND ONE OF THE FOLLOWING:</b> Partridge Pea <b>OR</b> <i>Chamaecrista fasciculata</i>  Mix 8	Tioga Common Common Aldous  Common	1 - 2 2 - 3 3 - 4 2 - 3  1 - 2  0.25 - 0.50	    All	    E - P (See remarks)	    2 - 3	    Y*	    Warm & cool season grasses	    Low growing native mix.  Little bluestem has fluffy seeds, and Virginia wild rye often is sold with awns attached. Use a native seed drill.  Substitute Canada wild rye for Virginia wild rye on drier soils.  Use little bluestem on drier soils and red fescue on wetter soils.
7. Red Fescue <i>Festuca rubra</i>  Switchgrass <i>Panicum virgatum</i>	Common  Shelter	6 - 10  2 - 4	  All	  E - P	  4 - 6	  Y	  Cool & warm season grasses	  Must add Mixture 8 if planted for wildlife food and cover purposes.  Select a lowland variety of switchgrass for wetter soils.

\*Depends on the species selected from Mix 8.

**TABLE 2: Selected List of Herbaceous Cover Mixes**

Mix	Seeding Rate (lbs/ac) <sup>1/</sup>	Plant Hardiness Zones <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Max. Height (feet)	Maryland Native Species <sup>4/</sup>	Sun/Shade <sup>6/</sup>	Flower Color
8. Wildflowers and Legumes Select at least 2 wildflowers and 1 legume from the list below. Legumes should not comprise more than 25% of the total mix. Other Maryland native species may be also used.	0.25 - 0.50						
8a. Wildflower Meadow Use Mix 11 plus 10 lb/ac of selected wildflowers and legumes	10						
Wildflowers:							
Black-eyed Susan <i>Rudbeckia hirta</i>		All	W - MW	1-2	Y	○	Yellow
Bee Balm <i>Monarda didyma</i>		All	W - SP	2-4	Y	○	Scarlet
Blazing Star <i>Liatris spicata</i>		All	W - SP	2-5	Y	○ - ◐	Pink-Lavender
Boneset <i>Eupatorium perfoliatum</i>		All	SP - P	2-4	Y	○ - ◐	White
Butterflyweed <i>Asclepias tuberosa</i>		All	W - MW	1-2	Y	○	Bright Orange
Fall Phlox <i>Phlox paniculata</i>		All	W - SP	2-5	Y	○ - ◐	Lavender
Heath Aster <i>Aster pilosus</i>		All	E - MW	2-5	Y	○	Light Purple
Joe-Pye Weed <i>Eupatorium fistulosum</i>		All	SP - P	4-6	Y	○ - ◐	Pink-Purple
Lance-leaved Coreopsis <i>Coreopsis lanceolata</i>		All	W - MW	2-3	N*	○	Yellow
New York Ironweed <i>Vernonia noveboracensis</i>		All	MW - P	5-8	Y	○	Purple
New York Aster <i>Aster novi-belgii</i>		All	MW - P	3-5	Y	○	Violet
Purple Coneflower <i>Echinacea purpurea</i>		All	W - SP	2-3	N*	○ - ◐	Purple
Rough Goldenrod <i>Solidago rugosa</i>		All	SP - P	2-6	Y	○	Yellow
Showy Goldenrod <i>Solidago speciosa</i>		All	W - MW	2-6	Y	○	Yellow
Spotted Joe-Pye Weed <i>Eupatorium maculatum</i>		5a, 6a, 6b	SP - P	4-6	Y	○ - ◐	Pink-Purple
Tickseed <i>Coreopsis tinctoria</i>		All	W - MW	2-3	Y	○	Yellow
Wild Bergamot <i>Monarda fistulosa</i>		All	W - SP	2-4	Y	○ - ◐	Lavender
Wild Blue Indigo <i>Baptisia australis</i>		All	W - MW	3-5	Y	○	Blue
Wild Columbine <i>Aquilegia canadensis</i>		All	W - MW	1-2	Y	○ - ◐	Scarlet
Legumes:							
American Vetch <i>Vicia americana</i>		All	E - MW	2-3	Y	○	Purplish Blue
Bush Clover <i>Lespedeza capitata</i>		All	E - MW	2-4	Y	○	White to Yellow
Partridge Pea <i>Chamaecrista fasciculata</i>		All	W - SP	2-3	Y	○ - ◐	Yellow

\*Native of the Midwestern U.S.-- Ohio, Indiana and west. Probably not native to Maryland. These are non-invasive species that are approved for planting in Maryland.

**TABLE 2: Selected List of Herbaceous Cover Mixes**

Mix	Recommended Cultivar	Seeding Rate (lbs/ac) <sup>1/</sup>	Plant Hardiness Zones <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Max. Height (feet)	All Native Species <sup>4/</sup>	Type of Grass in Mix	Remarks <sup>5/</sup>
9. Orchardgrass <i>Dactylis glomerata</i> Red Fescue <i>Festuca rubra</i> Alsike Clover <i>Trifolium hybridum</i> White Clover <i>Trifolium repens</i>	Any Common Common Common	3 - 6 3 - 4 1 - 2 1 - 2	All	W - MW	2 - 3	N	Cool season grasses	Can be used for: FIREBREAK.  Once well-established, orchardgrass may tend to dominate the stand.  Alsike clover can be toxic to horses.
10. Orchardgrass <i>Dactylis glomerata</i> Bluegrass <i>Poa pratensis</i> <b>AND/OR</b> Timothy <i>Phleum pratense</i> <b>AND ONE OF THE FOLLOWING:</b> White Clover <i>Trifolium repens</i> Red Clover <i>Trifolium pratense</i> Common Lespedeza <i>Lespedeza striata</i> Korean Lespedeza <i>Lespedeza stipulacea</i>	Any Not a turf type Climax  Common Any Kobe Climax or Rowan	4 - 6 2 - 4 4 - 6  1 - 2 1 - 2 3 - 5 3 - 5	All  (See remarks)	W - MW	2 - 3	N	Cool season grasses	Can be used for: FIREBREAK.  Timothy does not perform well in zones 7a and 7b.  Once well-established, orchardgrass may tend to dominate the stand.
11. Chewings Fescue <i>Festuca rubra ssp.commutata</i> Hard Fescue <i>Festuca trachyphylla</i>  Sheep Fescue <i>Festuca ovina</i>	Common Attila or Aurora Bighorn	3 - 6 3 - 6 3 - 6	All	W - MW	0.5 - 1	N	Cool season grasses	Must add Mixture 8 if planted for wildlife food and cover purposes.  Can be used for: FIREBREAK PATHS COMPANION PLANTING

**TABLE 2: Selected List of Herbaceous Cover Mixes**

Mix	Recommended Cultivar	Seeding Rate (lbs/ac) <sup>1/</sup>	Plant Hardiness Zones <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Max. Height (feet)	All Native Species <sup>4/</sup>	Type of Grass in Mix	Remarks <sup>5/</sup>
12. Sheep fescue <i>Festuca ovina</i>  Hard Fescue <i>Festuca trachyphylla</i>  <b>AND ADD WILDFLOWER MIX:</b> Black-eyed Susan <i>Rudbeckia hirta</i> Lance-leaved Coreopsis <i>Coreopsis lanceolata</i> Partridge Pea <i>Chamaecrista fasciculata</i> Purple Coneflower <i>Echinacea purpurea</i>  <b>OR ADD CLOVER MIX:</b> White Clover <i>Trifolium repens</i> Red Clover <i>Trifolium pratense</i>	Common or Bighorn  Attila or Aurora  Common Common Common Common  Common Any	4 - 8  4 - 8  0.13 - 0.25 0.13 - 0.25 1 - 2 0.13 - 0.25  1 - 2 1 - 2	All	W - MW	2 - 3	N	Cool season grasses	Attractive, low-growing grass and wildflower (or clover) mix.
13. Rough Bluegrass <i>Poa trivialis</i> Virginia Wild Rye <i>Elymus virginicus</i> Fowl Meadowgrass <i>Poa palustris</i> <b>OR</b> Red Fescue <i>Festuca rubra</i>	Common Common Common Common	4 - 8 1 - 2 2 - 4 2 - 4	All	SP - P	4 - 5	N	Cool season grasses	Can be used for: FIREBREAK
14. Fowl Meadowgrass <i>Poa palustris</i> Virginia Wild Rye <i>Elymus virginicus</i> Red Fescue <i>Festuca rubra</i>  <b>AND ADD :</b> Partridge Pea <i>Chamaecrista fasciculata</i>  <b>OR ADD CLOVER MIX:</b> Alsike Clover <i>Trifolium hybridum</i> White Clover <i>Trifolium repens</i>	Common Common Common  Common Common Common	2 - 4 1 - 2 2 - 4  1 - 2 1 - 2 1 - 2	All	SP - P	2 - 3	Y (See Remarks)	Cool season grasses	Low-growing mix of native grasses for wet sites.  Use partridge pea if an all-native mix is desired. (Alsike and white clover are not native to Maryland.)  Alsike clover can be toxic to horses.

**TABLE 2 NOTES:**

- 1. Seeding Rate:** Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses, legumes, or wildflowers. All legume seeds shall be inoculated before planting with the appropriate *Rhizobium* bacteria. When feasible, hard-seeded legumes should be scarified to improve germination.

When a seeding rate is expressed as a range (i.e., 4 - 6), the lower rate should be used if erosion is not a concern. Where erosion is a concern, use the higher seeding rate and add one of the following nurse crops with the selected mix: 20 - 40 lbs/ac of oats or barley. This can be planted with the selected mix at the time of seeding. If using a conservation tillage method, plant the small grain as a cover crop in the fall, mow in early spring, and drill the permanent planting into the remaining stubble. Do not use cereal rye as a nurse crop. It has allelopathic properties that inhibit the germination and growth of other plants.

Oats are the recommended nurse crop for warm-season grasses.

- 2. The Plant Hardiness Zones** designate where a species can be successfully planted in Maryland, while the geographic distribution describes where the species usually occurs under natural conditions.
- 3. Soil Drainage Class** (refer to the county soil survey for further information):  
E - Excessively Drained; W - Well Drained; MW - Moderately Well Drained; SP - Somewhat Poorly Drained; P - Poorly Drained.
- 4. Native Species:** The term "native" refers to species that occur naturally in one or more geographic regions of Maryland. Native mixes may include non-native nurse crops (which are short-lived) for site stabilization during establishment of the permanent planting.

Due to page limitations, this listing of native species is not all-inclusive. There are many more native plants that occur in Maryland and may be suitable for use in conservation plantings.

**5. Additional Remarks:**

FIREBREAK - Mix can be used as a firebreak around warm-season grass plantings when prescribed burning will be used for management.

PATHS - Mix provides a low growing, low maintenance planting suitable for pathways and walkways that will receive light to moderate use.

COMPANION PLANTING - Mix provides a non-competitive planting that can be used for erosion control in conjunction with tree and shrub plantings.

- 6. Sun - Shade:** Sunlight and shade tolerance for each species (Table 2, Mix 8).

- Full Sun - 6 or more hours of light per day or 4 hours of midday sun;
- ◐ Part Shade - 3 to 6 hours of light per day;
- Shade - less than 3 hours of light per day.

TABLE 3: Selected List of Native Trees <sup>1/</sup>

Plant Names	Plant Hardiness Zones <sup>2/</sup>	Geographic Distribution in Maryland <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Height at 20 Years	Wildlife Value for Food	Remarks
<b>DECIDUOUS TREES</b>						
ASPEN, LARGE-TOOTHED <i>Populus grandidentata</i>	5b, 6a	Western Maryland	W - SP	40 ft.	Medium: browsed by deer and rabbits; buds and catkins eaten by grouse; bark and buds eaten by beaver.	Beneficial to cavity-nesting species when trees get older. Very fast-growing; relatively short-lived tree. Has aggressive roots—keep away from structures, sewers, and tile lines.
ASPEN, QUAKING <i>Populus tremuloides</i>	5b, 6a, 6b	Higher elevations of W. Md. (mostly Garrett Co.)	W - SP	40 ft.	Medium: browsed by deer and rabbits; buds and catkins eaten by grouse; bark and buds eaten by beaver.	Very fast-growing; relatively short-lived tree. White bark and brilliant fall color. Has aggressive roots—keep away from structures, sewers, and tile lines. Beneficial to cavity-nesting species when trees get older.
ASH, GREEN <i>Fraxinus pennsylvanica</i>	All	Statewide	SP -P	35 ft.	Medium: seeds eaten by ducks, gamebirds, songbirds, squirrels; browsed by deer.	Naturally occurring on streambanks and floodplains.
ASH, WHITE <i>Fraxinus americana</i>	All	Statewide	W - SP	35 ft.	Medium: seeds eaten by ducks, gamebirds, songbirds, squirrels; browsed by deer.	Important lumber tree. Attractive fall color (yellow to maroon).
BIRCH, RIVER <i>Betula nigra</i>	All	Mostly Coastal Plain; Piedmont, Ridge & Valley at lower elevations.	W - P	30 ft.	Low: seeds eaten by ducks and songbirds.	Unique peeling reddish bark. Naturally occurring on streambanks and floodplains.
BLACKGUM <i>Nyssa sylvatica</i>	All	Statewide	W - P	30 ft.	Medium: fruits eaten by squirrels, quail, turkey, and songbirds; browsed by deer.	Foliage turns bright red in early fall.
BOX-ELDER <i>Acer negundo</i>	All	Statewide; less common on Coastal Plain & at higher elevations of W. Md.	MW - P	40 ft.	Medium: seeds eaten by gamebirds, songbirds, squirrels; browsed by deer.	Naturally occurring on streambanks and floodplains. Soft wood may split in ice storms. Fast growth rate. Attracts box-elder bugs.
CHERRY, BLACK <i>Prunus serotina</i>	All	Statewide; less common on the Coastal Plain.	W - SP	35 ft.	High: fruits eaten by songbirds, grouse, turkey, quail; browsed by rabbits and deer.	Leaves and branches are poisonous if eaten by livestock.

TABLE 3: Selected List of Native Trees <sup>1/</sup>

Plant Names	Plant Hardiness Zones <sup>2/</sup>	Geographic Distribution in Maryland <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Height at 20 Years	Wildlife Value for Food	Remarks
<b>DECIDUOUS TREES (continued)</b>						
COTTONWOOD, EASTERN <i>Populus deltoides</i>	All	Statewide; esp. common in Potomac River watershed.	W - P	60 ft.	Low: browsed by deer and rabbits; buds and catkins eaten by squirrels and quail.	Naturally occurring on streambanks and floodplains. Tolerates dry soils. Grows rapidly, can be used to quickly establish cover for wildlife. Is weak-wooded, tends to be messy. Has aggressive roots; keep away from structures, sewers, and tile lines.
CYPRESS, BALD <i>Taxodium distichum</i>	6a, 6b, 7a, 7b	Lower Eastern Shore (esp. Pocomoke River); also in Calvert Co.	MW - P	30 ft.	Low: seeds eaten by ducks and marsh birds.	Naturally occurring on streambanks and in swamps.
DOGWOOD, FLOWERING <i>Cornus florida</i>	All	Statewide.	W - SP	20 ft.	High: berries eaten by songbirds, grouse, turkey, quail, squirrels; browsed by deer, rabbits.	White flowers and red fruit. Widely planted as an ornamental. Susceptible to anthracnose disease.
HACKBERRY <i>Celtis occidentalis</i>	All	Statewide.	W - SP	30 ft.	High: fruits eaten by quail, turkey, and songbirds. Larval food for butterflies.	Adaptable to a wide range of conditions.
HICKORY, SHAGBARK <i>Carya ovata</i>	All	Mostly Piedmont & W. Md.	W - SP	30 ft.	High: nuts eaten by squirrels, turkey, quail, deer.	Wood used for furniture, tool handles, charcoal.
LOCUST, BLACK <i>Robinia pseudoacacia</i>	All	Statewide; esp. common in W. Md.	W - MW	35 ft.	Low: seeds eaten by songbirds and squirrels.	Spreads readily, seeds freely and suckers. Nitrogen fixing. Flowers are poisonous if eaten by livestock.
MAPLE, RED <i>Acer rubrum</i>	All	Statewide.	W - P	35 ft.	Medium: seeds eaten by ducks, gamebirds, songbirds, squirrels; browsed by deer.	Red fall color and blooms.
MAPLE, SILVER <i>Acer saccharinum</i>	All	Statewide; less common on Coastal Plain & at higher elevations of W. Md.	SP - P	40 ft.	Medium: seeds eaten by ducks, gamebirds, songbirds, squirrels; browsed by deer.	Naturally occurring on streambanks and floodplains. Good source of woody debris for riparian systems. Spreads readily by seed. Aggressive roots.

TABLE 3: Selected List of Native Trees <sup>1/</sup>

Plant Names	Plant Hardiness Zones <sup>2/</sup>	Geographic Distribution in Maryland <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Height at 20 Years	Wildlife Value for Food	Remarks
<b>DECIDUOUS TREES (continued)</b>						
NANNYBERRY <i>Viburnum lentago</i>	5b, 6a, 6b	Mostly Western Maryland.	W - P	20 ft.	Medium: berries eaten by turkey, grouse, songbirds, squirrels; browsed by rabbits, deer.	Often suckers. Creamy white flowers. Berries are blue-black.
OAK, CHESTNUT <i>Quercus prinus</i>	All	Mostly Piedmont & W. Md.; infrequent on Coastal Plain.	W - MW	35 ft.	High: acorns eaten by quail, turkey, grouse, squirrels, and deer.	Grows well on dry, rocky, or gravelly soils.
OAK, CHINQUAPIN <i>Quercus muehlenbergii</i>	6a, 6b, 7a, 7b	Mostly Allegany & Washington Cos.; uncommon.	W - MW	35 ft.	High: acorns eaten by quail, turkey, grouse, squirrels, and deer.	Under used, native tree. Usually found on dry, limestone outcrops.
OAK, OVERCUP <i>Quercus lyrata</i>	6a, 6b, 7a, 7b	Mostly Patuxent River valley & Charles Co.; uncommon.	SP - P	25 ft.	High: same as above.	Important lumber tree. Withstands flooding.
OAK, PIN <i>Quercus palustris</i>	All	Statewide, except in Garrett Co.	MW - P	35 ft.	High: same as above.	Bronze or red fall foliage. Widely planted as an ornamental. Produces small acorns.
OAK, NORTHERN RED <i>Quercus rubra</i>	All	Mostly Piedmont & W. Md.; uncommon on Coastal Plain.	W - SP	35 ft.	High: same as above.	Excellent red fall color. Fast growing.
OAK, SOUTHERN RED <i>Quercus falcata</i>	7a, 7b	Mostly Coastal Plain; infrequent elsewhere.	W - SP	35 ft.	High: same as above.	Excellent red fall color. Tolerates poor, dry soil.
OAK, SWAMP WHITE <i>Quercus bicolor</i>	All	Mostly Coastal Plain; infrequent elsewhere.	SP - P	30 ft.	High: same as above.	Good choice for wet sites; important lumber tree. Requires acid soils.
OAK, WILLOW <i>Quercus phellos</i>	6b, 7a, 7b	Mostly Coastal Plain; infrequent elsewhere.	MW - P	30 ft.	High: same as above.	Frequently used as an ornamental planting. Produces small acorns. Red fall color.

TABLE 3: Selected List of Native Trees <sup>1/</sup>

Plant Names	Plant Hardiness Zones <sup>2/</sup>	Geographic Distribution in Maryland <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Height at 20 Years	Wildlife Value for Food	Remarks
<b>DECIDUOUS TREES (continued)</b>						
OAK, WHITE <i>Quercus alba</i>	All	Statewide.	W - SP	35 ft.	High: acorns eaten by quail, turkey, grouse, squirrels, and deer.	Variable fall color, stately tree. Important lumber tree. Slow growing.
PAWPAW <i>Asimina triloba</i>	6a, 6b, 7a, 7b	Statewide; infrequent.	MW - P	20 ft.	High: important food source for fox, raccoon, and opossum.	Suckers and forms colonies. Purple flowers; large yellow fruit.
POPLAR, TULIP <i>Liriodendron tulipifera</i>	All	Statewide.	W - SP	40 ft.	Low: seeds eaten by squirrels and songbirds; seedlings browsed by deer.	Important lumber tree. Fast growing. Flowers produce abundant nectar, much used by bees.
REDBUD <i>Cercis canadensis</i>	All	Mostly Piedmont & W. Md.; infrequent elsewhere.	MW - SP	20 ft.	Low: seeds eaten by quail, pheasants, and deer.	Nitrogen-fixing. Useful as an ornamental. Bright pink flowers, appearing in early spring before the leaves.
SWEETGUM <i>Liquidambar styraciflua</i>	6b, 7a, 7b	Mostly Coastal Plain; infrequent elsewhere.	MW - P	40 ft.	Low: seeds eaten by songbirds, squirrels, and chipmunks.	Excellent yellow-red fall color. Widely planted as an ornamental. Fallen seed heads are a nuisance on lawns. Fruitless types are available.
SYCAMORE <i>Platanus occidentalis</i>	All	Statewide; infrequent at higher elevations of W. Md.	MW - SP	40 ft.	Low: seeds eaten by songbirds and squirrels.	Naturally occurring on streambanks and floodplains. Unique peeling bark, fast growth rate. Susceptible to anthracnose; mix with other species for disease control. Constantly drops leaves, twigs, bark, and fruits. Good den tree.
WALNUT, BLACK <i>Juglans nigra</i>	All	Mostly Piedmont & W. Md.; infrequent elsewhere.	MW - SP	40 ft.	Low: nuts eaten by squirrels.	Very important lumber tree. Valuable for furniture and nut production. Can be allelopathic to other plants.
WILLOW, BLACK <i>Salix nigra</i>	All	Statewide.	SP -P	60 ft.	Medium: browsed by grouse, beaver, and deer.	Naturally occurring on streambanks and floodplains. Fast growth rate. Can be aggressive and weedy.

TABLE 3: Selected List of Native Trees <sup>1/</sup>

Plant Names	Plant Hardiness Zones <sup>2/</sup>	Geographic Distribution in Maryland <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Height at 20 Years	Wildlife Value for Food	Remarks
<b>EVERGREEN TREES</b>						
CEDAR, ATLANTIC WHITE <i>Chamaecyparis thyoides</i>	All	Lower Eastern Shore; uncommon.	SP - P	25 ft.	Low: seeds eaten by songbirds and deer.	Cannot compete with hardwoods; best planted in solid stands.
CEDAR, EASTERN RED <i>Juniperus virginiana</i>	All	Mostly Piedmont & W. Md.	W - SP	20 ft.	Medium: seeds eaten by songbirds, quail, turkey; browsed by deer and rabbits.	Should not be planted near apple orchards; alternate host of cedar-apple rust.
HEMLOCK, EASTERN <i>Tsuga canadensis</i>	All	Mostly Western Maryland.	W - SP	20 ft.	Medium: seeds eaten by songbirds and squirrels; browsed by deer.	Often planted as an ornamental. Can become infested with hemlock woolly adelgid, a serious insect pest.
HOLLY, AMERICAN <i>Ilex opaca</i>	6a, 6b, 7a, 7b	Mostly Coastal Plain.	W - P	20 ft.	Medium: fruits eaten by songbirds, quail, and squirrels.	Need male and female plants for fruit production. Shade tolerant.
PINE, LOBLOLLY <i>Pinus taeda</i>	6b, 7a, 7b	Mostly Coastal Plain.	MW - P	45 ft.	Medium: seeds eaten by songbirds, quail, turkey; browsed by deer and rabbits.	Important lumber tree on Coastal Plain; fast growth rate.
PINE, PITCH <i>Pinus rigida</i>	5b, 6a, 6b	Mostly Piedmont & W. Md.	W - SP	30 ft.	Medium: seeds eaten by songbirds, quail, grouse, turkey; browsed by deer and rabbits.	Tolerant of dry, rocky, sandy soils. Mature trees are resistant to fire. Will reproduce from stump sprouts.
PINE, WHITE <i>Pinus strobus</i>	All	Mostly Western Maryland.	W - MW	40 ft.	Medium: seeds eaten by songbirds, quail, turkey; browsed by deer and rabbits.	Frequently planted statewide as an ornamental.
PINE, VIRGINIA <i>Pinus virginiana</i>	All	Statewide.	W - MW	30 ft.	Medium: seeds eaten by songbirds, quail, turkey; browsed by deer and rabbits.	Can be used for pulpwood. Tolerant of adverse site conditions.

Notes for this table are located on Page 21.

TABLE 4: Selected List of Native Shrubs <sup>1/</sup>

Plant Names	Plant Hardiness Zones <sup>2/</sup>	Geographic Distribution in Maryland <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Sun/Shade <sup>4/</sup>	Height at 20 years	Wildlife Value for Food	Remarks
ALDER, SMOOTH <i>Alnus serrulata</i>	All	Statewide; less common on Coastal Plain.	SP - P	○ - ◐	10 ft.	Medium: seeds eaten by ducks, quail, doves; browsed by deer, beaver.	Nitrogen-fixing. Attractive catkins. Provides good cover for woodcock.
ALDER, SPECKLED <i>Alnus incana ssp. rugosa</i> (formerly <i>A. rugosa</i> )	5b, 6a, 6b	Only in W. Md.; uncommon.	SP - P	○ - ◐	15 ft.	Medium: seeds eaten by ducks, quail, doves; browsed by deer, beaver.	Nitrogen-fixing. Attractive catkins. Provides good cover for woodcock.
ARROWWOOD <i>Viburnum dentatum</i>	All	Statewide.	W - P	○ - ◐	10 ft.	Medium: berries eaten by turkey, grouse, songbirds, squirrels; browsed by rabbits, deer.	Suckers freely; wood used to make arrows. White flowers, bluish-black berries.
BAYBERRY, NORTHERN <i>Myrica pensylvanica</i>	6b, 7a, 7b	Coastal Plain.	W - SP	○ - ◐	10 ft.	Medium: berries eaten by quail, songbirds. Browsed by deer.	Need male and female plants for fruit production. Salt tolerant (0-20 ppt.) Suckers to form colonies. Wax of berries used in candles.
BLACK-HAW <i>Viburnum prunifolium</i>	All	Statewide.	W - SP	○ - ◐	12 ft.	Medium: berries eaten by turkey, grouse, songbirds, squirrels; browsed by rabbits, deer.	White flower clusters, blue berries, red fall color. Fruits may remain on shrubs for much of the winter.
BLUEBERRY, Highbush <i>Vaccinium corymbosum</i>	All	Coastal Plain.	MW - P	○ - ◐	10 ft.	High: berries eaten by songbirds, turkey, squirrel; browsed by deer, rabbits.	Prefers acid soils. Slow growing.
BUSH, HIGH-TIDE (GROUNDSEL) <i>Baccharis halimifolia</i>	7a, 7b	Coastal Plain	MW - P	○	10 ft.	Low: minimal value for food. Occasionally browsed by deer.	Usually in brackish and coastal marshes, above MHW. Salinity 0-15 ppt. Has fluffy white seeds. Male flowers & female flowers on separate plants.
BUSH, HIGH-TIDE (MARSH-ELDER) <i>Iva frutescens</i>	7a, 7b	Coastal Plain	MW - P	○	10 ft.	Low: minimal value for food. Occasionally browsed by deer.	Usually in brackish and coastal marshes, above MHW. Salinity 0-15 ppt.

TABLE 4: Selected List of Native Shrubs <sup>1/</sup>

Plant Names	Plant Hardiness Zones <sup>2/</sup>	Geographic Distribution in Maryland <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Sun/Shade <sup>4/</sup>	Height at 20 years	Wildlife Value for Food	Remarks
BUTTONBUSH <i>Cephalanthus occidentalis</i>	6a, 6b, 7a, 7b	Statewide.	SP - P	○ - ◐	8 ft.	Medium: seeds and nectar; food for hummingbirds, ducks, beavers, and rails; browsed by deer.	Unusual, round white flowers. Tolerates extended periods of flooding and ponding. Prefers permanent saturation.
CHOKEBERRY, RED <i>Aronia arbutifolia</i>	All	Statewide; less common in W. Md.	MW - P	○ - ◐	10 ft.	Medium: fruits eaten by songbirds, grouse, bear, squirrel; browsed by deer, rabbits.	Fruits may remain on shrubs for much of the winter. Tends to sucker.
CRANBERRYBUSH <i>Viburnum trilobum</i>	All	Mostly Western Maryland.	MW - P	○ - ◐	12 ft.	Medium: berries eaten by turkey, grouse, songbirds, squirrels; browsed by rabbits, deer.	Yellow to red fall color; white flower clusters. Bright red berries.
DOGWOOD, GRAY <i>Cornus racemosa</i>	All	Mostly Western Maryland.	MW - SP	○ - ◐	10 ft.	High: berries eaten by songbirds, grouse, turkey, quail, squirrels; browsed by deer, rabbits.	White flowers, white berries with red pedicels. Forms thickets that can provide good wildlife cover.
DOGWOOD, REDOSIER <i>Cornus sericea</i>	All	Statewide; uncommon.	MW - P	○ - ◐	8 ft.	High: berries eaten by songbirds, grouse, turkey, quail, squirrels; browsed by deer, rabbits.	Good for streambank stabilization. Attractive red stem color. White flowers and fruit.
DOGWOOD, SILKY <i>Cornus amomum</i>	All	Common on Coastal Plain & Piedmont.	MW - P	○ - ◐	10 ft.	High: berries eaten by songbirds, grouse, turkey, quail, squirrels; browsed by deer, rabbits.	Produces fruit at 3-5 years of age. White flowers with blue berries. Prefers some shade.
ELDERBERRY <i>Sambucus nigra</i> <i>ssp. canadensis</i> (formerly <i>S. canadensis</i> )	All	Statewide.	MW - P	○ - ◐	12 ft.	High: berries eaten by songbirds, turkey, squirrels; browsed by deer, rabbits.	Large clusters of white flowers followed by purple berries; fast growth rate. Suckers freely.
FETTERBUSH <i>Leucothoe racemosa</i>	6a, 6b, 7a, 7b	Mostly Coastal Plain; common	SP - P	○ - ◐	12 ft.	Low: seeds eaten by songbirds; plants browsed by deer.	Small white flowers in drooping racemes. Prefers permanent saturation.

TABLE 4: Selected List of Native Shrubs <sup>1/</sup>

Plant Names	Plant Hardiness Zones <sup>2/</sup>	Geographic Distribution in Maryland <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Sun/Shade <sup>4/</sup>	Height at 20 years	Wildlife Value for Food	Remarks
INDIGO, FALSE (INDIGO BUSH) <i>Amorpha fruticosa</i>	All	Statewide; uncommon.	W - P	○ - ◐	12 ft.	Medium: seeds eaten by quail, turkey, doves; foliage browsed by deer; nectar used by butterflies and other insects.	Nitrogen-fixing multi-stemmed shrub. Flowers in attractive purple spikes during late spring. Tolerates a wide range of moisture conditions, from seasonal saturation to drought. Individual plants may have a limited life span (5-10 years), but naturally regenerate from seed.
INKBERRY <i>Ilex glabra</i>	6a, 6b, 7a, 7b	Coastal Plain	SP - P	○ - ◐	10 ft.	Medium: berries eaten by songbirds, quail, and squirrels.	Black fruits persist during the winter. Extensive rhizomes, often forms colonies. Prefers permanent saturation.
PEPPERBUSH, SWEET <i>Clethra alnifolia</i>	All	Coastal Plain.	MW - P	○ - ◐	8 ft.	Medium: nectar for butterflies, other insects.	Showy, fragrant white flower spikes in mid-summer, often when other flowers & nectar are less abundant.
POSSUM-HAW <i>Viburnum nudum</i>	All	Mostly Coastal Plain.	SP - P	○ - ◐	12 ft.	Medium: berries eaten by turkey, grouse, songbirds, squirrels; browsed by rabbits, deer.	White flower clusters, red berries, red fall color. Fruits may remain on shrubs for much of the winter.
RAISIN, WILD <i>Viburnum cassinoides</i>	All	Mostly Western Maryland.	SP - P	○ - ◐	8 ft.	Medium: berries eaten by turkey, grouse, songbirds, squirrels; browsed by rabbits, deer.	White flower clusters, black berries. Fruits may remain on shrubs for much of the winter. Reddish-purple foliage in fall.
ROSE, SWAMP <i>Rosa palustris</i>	All	Statewide; more common on Coastal Plain	SP - P	○	6 ft.	Low: fruits eaten by songbirds. Plants browsed by deer.	Pink flowers, red fruits. Fruits may remain for much of the winter. Prefers permanent saturation.
SPICEBUSH <i>Lindera benzoin</i>	All	Statewide.	MW - P	○ - ◐	12 ft.	Low: berries eaten by songbirds.	Fragrant leaves and twigs; yellow fall color. Bright red berries.

TABLE 4: Selected List of Native Shrubs <sup>1/</sup>

Plant Names	Plant Hardiness Zones <sup>2/</sup>	Geographic Distribution in Maryland <sup>2/</sup>	Soil Drainage Class <sup>3/</sup>	Sun/Shade <sup>4/</sup>	Height at 20 years	Wildlife Value for Food	Remarks
SWEETSPIRE, VIRGINIA <i>Itea virginica</i>	6a, 6b, 7a, 7b	Coastal Plain	SP - P	○ - ●	8 ft.	Low: flowers attractive to butterflies.	Small white flowers in elongated clusters up to 6 inches long. Prefers permanent saturation.
WAXMYRTLE, SOUTHERN <i>Myrica cerifera</i>	7a, 7b	Coastal Plain.	W - SP	○ - ◐	10 ft.	Medium: berries eaten by quail, songbirds. Browsed by deer.	Need male and female plants for fruit production. Salt tolerant (0-10 ppt.). Wax of berries used in candles.
WITCH-HAZEL <i>Hamamelis virginiana</i>	All	Statewide; less common on Coastal Plain.	W - SP	○ - ◐	15 ft.	Low: seeds eaten by grouse and squirrels; browsed by deer.	Bark is used for making witch-hazel lotion. Fragrant yellow flowers.
WINTERBERRY <i>Ilex verticillata</i>	All	Statewide; less common on Coastal Plain.	SP - P	○ - ◐	10 ft.	Medium: fruits eaten by songbirds, quail, and squirrels.	Need male and female plants for fruit production. Bright red berries persist after leaves drop.

## TABLES 3 – 4 NOTES:

- Native Trees/Shrubs:** The term "native" refers to species that occur naturally in one or more geographic regions of Maryland. Due to page limitations, this listing of native species is not all-inclusive. There are many more native plants that occur in Maryland and may be suitable for use in conservation plantings.
- The **Plant Hardiness Zones** designate where a species can be successfully planted in Maryland, while the **Geographic Distribution** describes where the species usually occurs under natural conditions.
- Soil Drainage Class** (refer to the county soil survey for further information):  
E - Excessively Drained; W - Well Drained; MW - Moderately Well Drained; SP - Somewhat Poorly Drained; P - Poorly Drained.
- Sun - Shade:** Sunlight and shade tolerance for each species (Table 4).
  - Full Sun - 6 or more hours of light per day or 4 hours of midday sun;
  - ◐ Part Shade - 3 to 6 hours of light per day;
  - Shade - less than 3 hours of light per day.

**TABLE 5: Planting Rates for Trees, Shrubs, and Tree & Shrub Mixes**

Step 1: Identify the primary purpose of the planting and its associated establishment goal. The establishment goal is the number of trees and/or shrubs expected to survive two years after planting.

Step 2: Determine the planting rate based on the type of planting stock used and the expected survival rate. (For more details, refer to the Note at the end of this table.) Use the information listed below as a guide to determine the number of plants needed per acre.

Primary Purpose	Establishment Goal (number of trees and/or shrubs per acre after two years)	Type of Planting Stock	Planting Rate (per acre)	Number of Plants Needed (per acre) for Standard Spacings (in feet)	Remarks
Create or Enhance Wildlife Habitat	200 - 300	Bare-root seedlings	308 - 462	363 plants at 10 x 12 436 plants at 10 x 10	Where trees and/or shrubs will be used to provide wildlife cover within or adjacent to herbaceous areas, they should be planted in groups so that the woody cover area is at least 20 feet wide and at least 400 sq. ft. in size.
		Containerized (1 gallon or larger)	211 - 316	302 plants at 12 x 12	
Reduce Soil Erosion and/or Improve Water Quality	300 - 400	Bare-root seedlings	462 - 615	544 plants at 8 x 10	Recommend using Mix 11 from Table 2 as a ground cover on highly erodible land and on other land where erosion is a concern.
		Containerized (1 gallon or larger)	316 - 421	363 plants at 10 x 12	

**TABLE 5 NOTE:**

The planting rate is determined by dividing the establishment goal by the expected survival rate. For example, if the establishment goal is 300 - 400, and the expected survival rate is 65% (0.65), then the planting rate is 462 - 615. The planting rates in this table are based on estimated survival rates of 65% for bare-root seedlings and 95% for containerized stock. It may be necessary to adjust planting rates if survival is expected to be significantly different than the 65% or 95% rates.