

# Landscaping for Water Conservation

## A Guide for New Jersey



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The purpose of this publication is to help you plan for your home unique and pleasing landscapes that will use less water. By using the correct combination of design, plants, mulches, and watering techniques, you will be able to create landscapes that not only environmentally suit your locale, but also conserve water. Our goal is to reach every person who is planning new landscapes or renovating older designs to improve outdoor water use efficiency for all New Jersey.

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# Contents

<b>Introduction .....</b>	<b>5</b>
<b>The Lawn and Water Conservation .....</b>	<b>7</b>
Reducing the Size of the Lawn Turf Tips .....	7
Alternatives to Turf .....	9
<b>Guide to the Cost of Watering .....</b>	<b>10</b>
<b>Mulches and Mulching to Save Water .....</b>	<b>11</b>
Organic Mulches .....	11
Inorganic Mulches .....	11
<b>Selection Guide to Living Ground Covers .....</b>	<b>13</b>
<b>Selection Guide to Woody Ground Covers .....</b>	<b>15</b>
<b>Selection Guide to Ground Covers for Small and Irregular Spaces .....</b>	<b>16</b>
<b>Let Natural Selection Landscape Your Property .....</b>	<b>18</b>
Positive Aspects of Natural Landscapes .....	18
Negative Aspects of Natural Landscapes .....	18
<b>Landscaping Techniques .....</b>	<b>20</b>
<b>Selection Guide to Drought-Tolerant Plants .....</b>	<b>21</b>
Shade Trees .....	21
Small Trees .....	22
Evergreens .....	24
Drought-Tolerant Shrubs .....	25
Evergreen Shrubs .....	25
Deciduous Shrubs .....	26
<b>Appendix A-Glossary .....</b>	<b>27</b>
<b>Appendix B-Selected List of Drought-Tolerant Plants for New Jersey .....</b>	<b>29</b>
<b>References .....</b>	<b>30</b>

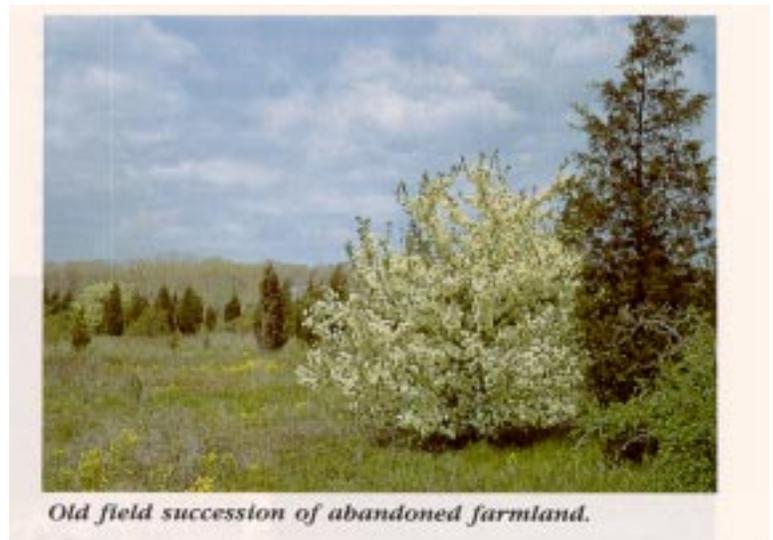
# Introduction

Like most of the Northeast, New Jersey has relatively abundant water, although fluctuations in precipitation do cause periodic shortages. In addition, the demands of a growing population are straining some water supplies. In rapidly growing communities, summertime water shortages are no longer uncommon, and restricted water use, particularly outdoors, is increasingly familiar. New Jersey's most easily exploited water supplies have already been developed. Understandably, concerns about the environment and rising labor and capital costs have delayed additional development. For all these reasons, water conservation looms ever more important, and our use of water to irrigate landscaping becomes an appropriate subject for examination.

Experts agree that properly designed and managed landscaping can save large amounts of water. By wisely using water outdoors, we can reduce peak water demand, prevent drops in water pressure that endanger a community's fire-fighting ability, eliminate watering restrictions, and save energy needed to pump water into storage areas around town.

Nature can be a very effective guide. Studying how plants react to droughts in the wild teaches us valuable lessons about which plants and combinations of plants will be both aesthetic and practical in landscaping. In New Jersey, abandoned farm fields, the seashore, the Pine Barrens, and, surprisingly, flood plains are some of the environments where we can observe drought-tolerant plants.

Once farmland is abandoned, an ecological process called *old field succession* begins. Years of erosion and heavy cropping often leave these fields without nutrients to feed plants and without organic matter to retain water. Invading plants have to be tough, durable, and drought tolerant to survive. Old field succession begins first with annual weeds and perennial grasses. An early woody colonizer is the Red Cedar (*Juniperus virginiana*). Because it is so common in New Jersey, many people find it unattractive. As an individual specimen plant the Red Cedar may lack excitement, but as a background plant it can provide an excellent setting for such flowering small trees as naturalized Oriental Crabapples, native Dogwoods, and Blackhaw Viburnum. The display of summer field flowers such as Queen Anne's Lace, blue chicory, and Brown-eyed Susan, as well as the brilliant red and orange fall colors of sumacs and sassafras, is enhanced by the soft green foliage of Red Cedars. In the winter cold this evergreen often turns purple. In time such valued shade trees as Pin Oak, Green Ash, Hackberry, and Red Maple will begin to invade the old fields, and the Red Cedars will begin to be shaded out of the picture.



*Old field succession of abandoned farmland.*

The sands of the Pine Barrens and the beach provide the ultimate test for drought tolerance in plants, yet many beautiful ornamentals can be found growing in these two sites. Pitch Pines grow in such profusion that, like the Red Cedar, they often go unappreciated by the public. Individual specimens, however, can be very picturesque.

The Pine Barrens have several beautiful, drought-tolerant ground covers, such as Bearberry, Wintergreen, and Lowbush Blueberry, which should not be disturbed. Hudsonia, or Beach Heather, creates a gray-green carpet on the sand dunes, but will not survive transplanting. Virginia Creeper forms a vigorous, five-leafleted dune cover along with its three-leaflet, toxic companion, Poison Ivy. Turf grass is conspicuously absent from the Pine Barrens and the beach. Because constant supplies of both water and fertilizer are necessary to keep grass green in excessively sandy soils, homeowners should be encouraged to find alternatives to turf.

Excellent examples of drought-tolerant native shrubs include Bayberry, which can be found growing in profusion among the sand dunes at the beach as well as in old fields further inland, shrubby Gray Dogwood, and the thicket-forming sumacs — Smooth, Winged, and Staghorn.

Native small trees also brighten sandy soil areas: Gray Birch, for example, is prized for its multiple white trunks. The Shadblow has year-round interest: clouds of white flowers in spring, edible fruits in summer, orange color in fall, and striped gray trunks throughout the year. Both species require spraying to prevent severe insect foliar damage.

The last of the drought-tolerant natural areas is the flood plain. Plants growing on river banks obviously must tolerate wet sites to survive spring flooding, but the river bank in the summer is often as dry and hard as concrete. Of the shade trees native to flood plains, Green Ash, Red Maple, Hackberry, and Pin Oak have the most to offer the homeowner.

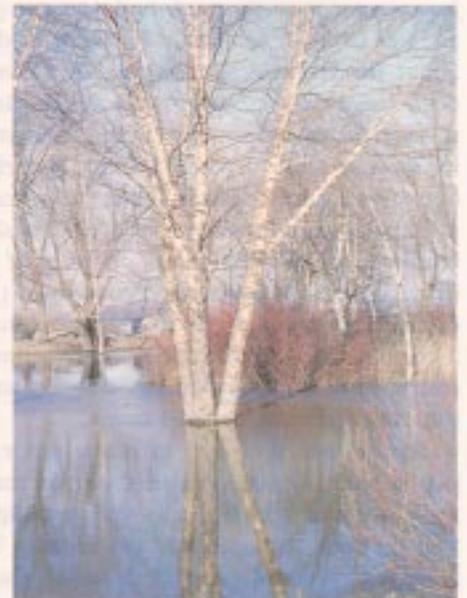
### **Drought-Tolerant Natural Areas**



*The Seashore*



*The Pine Barrens*



*The Flood Plain*

# The Lawn and Water Conservation

When drought occurs, the lawn quickly and obviously becomes stressed. Indeed, of all outdoor consumers of water, the lawn is the main one. Reducing the size of the lawn and using common sense to establish, maintain, and manage it will reduce the quantity of water needed.

## Reducing the Size of the Lawn

In most suburban neighborhoods the lawn is the most prominent vegetation. This observation should come as no surprise. The aesthetics of an emerald green carpet, the physical benefits of erosion control and heat absorption, and a ground cover that will endure both passive and active recreation are benefits that only the lawn can provide. The question many homeowners should ask is, "Do I have too much grass?" The answer is yes if the homeowner is trying to grow grass under the following situations:

- Are you trying to grow grass under the dense shade of shallow-rooted trees such as Norway Maple, European Beech, or Horsechestnut?
- Are you trying to grow grass where maintenance is nearly impossible, such as on steep slopes, among rock outcroppings, or in that narrow space between the walkway and the house?
- Are you trying to grow grass where active play tramples out all vegetation?
- Are you growing grass just because you can't think of anything else to do with your property?

Examine the two plans of a typical back yard. In the "before" plan (Figure 1), nearly all the ground surface is grass. The homeowner must cut around the lower branches of the evergreens and the base of the fence. Grass won't grow under the shade tree.

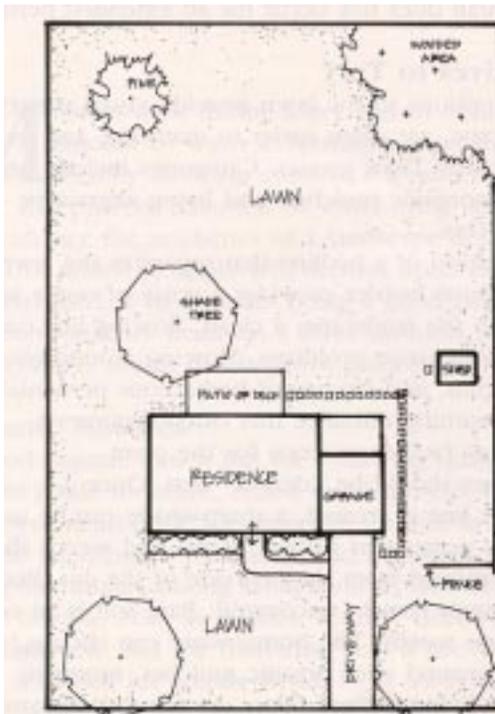


Figure 1. The "before" plan: a conventional landscape.

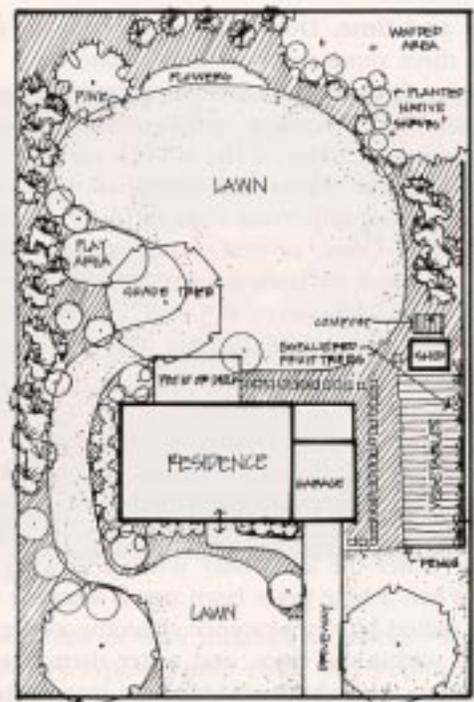
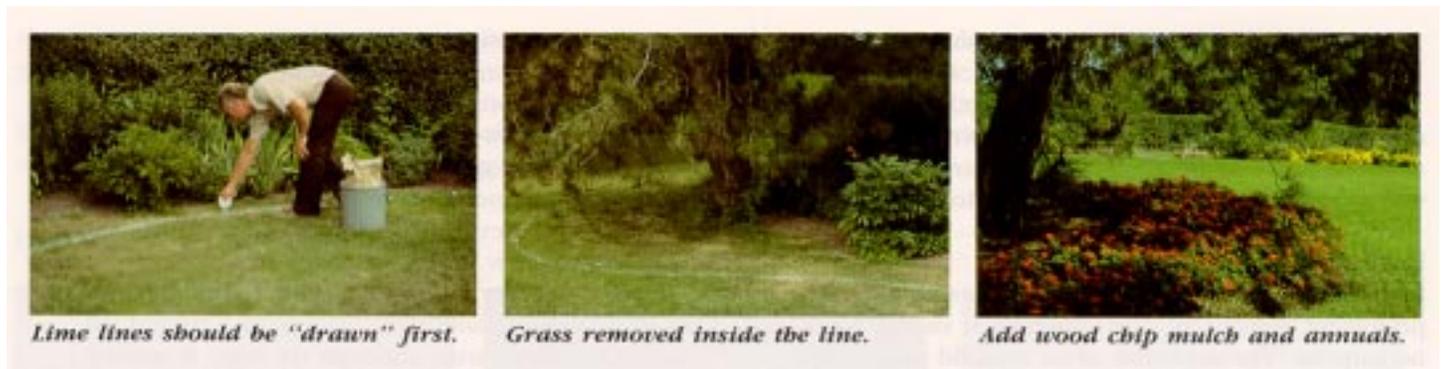


Figure 2. The "after" plan: a landscape planned to reduce lawn area.

In Figure 2, the “after” plan, the lawn is confined to an easy-to-mow panel that “disappears” around the rear of the shade tree; although the lawn is smaller than in Figure 1, it gives the impression of being larger than it really is. The shade tree with its shallow roots is no longer competing with the lawn. An organic mulch (wood chips or bark), alone or in combination with an alternative ground cover such as English Ivy, is a more successful and water-saving solution. Drought-tolerant ornamental trees create a view from the deck or patio, and their trunks are protected from the lawn mower by a bed of mulch or ground cover. The fence can be used as a growing surface for vines or espalier.

A vegetable or flower garden and storage shed have been added. With mulches, organic or plastic, possibly with trickle irrigation, the vegetable garden can provide a practical productive alternative to turf.



### **Turf Tips**

Once the lawn has been reduced to manageable proportions, it can be given the care and management it needs.

**Seed selection.** Blue grass mixes are fine for full-sun, rich, moist, and well-drained soil situations, but if your soil type and sun exposure are less than optimum, another type of turf may be more suitable and require less water. The improved perennial ryes, in mixtures with blue grass, have been proven to resist people and drought. Similar results in full sun have been achieved by lawns of tall fescue. In the shade, under low fertilizer situations, the fine fescues are still the most successful of the grasses.

**Fertilizer and lime.** Do not overfeed your lawn. Fertilizing three times per year is adequate for a healthy lawn. For a “lean lawn” it is possible to get away with only one feeding, which should be applied in mid to late November. If the lawn is too lush, it will require more water and be susceptible to fungus attack. Lime is even more important than fertilizer; in the acid soils of the East Coast, several of the essential nutrients become unavailable to lawn grasses. Adding lime to raise the soil pH to between 6.5 and 7.0 not only makes these nutrients available, but also makes a lawn more drought-resistant,

**Mowing.** Mowing height is also an important consideration during droughts. Lawns cut shorter than 2 inches are more prone to browning out.

**Watering.** Water the lawn only when and where it needs it. When a blue grass lawn needs water it will take on a wilted blue appearance. Become aware of stress areas within the lawn, and water them first: areas in competition with shade and shallow tree roots, compacted soils, and southwest embankments.

Watering should be done only in the cool of the morning or when the lawn is in shade. On a windy, bright, sunny day as much as 40 percent of sprinkler-applied water is lost to evaporation. Although mentioning it may seem unnecessary, sprinklers should be set to water the lawn, not the street, driveway, or sidewalks. In addition,

frequent watering keeps moisture near the surface, promoting the growth of shallow roots, which makes the plants less drought-tolerant.

The typical summer thunderstorm may provide 3/4 of an inch of water. No watering should be necessary for a minimum of 4 days, so turn off those automatic timers that control your underground sprinkler system. Remember that millions of acres of crops depend entirely on natural rainfall; watering is necessary only when rainfall does not occur for an extended period.

### **Alternatives to Turf**

Aesthetic options to the lawn provide visual variety to the landscape, are often easier to maintain, and require less water than lawn grasses. Categories include organic mulches, inorganic mulches, and living alternative ground covers.

The creation of a bedline that separates the lawn from the shrub border provides a sense of order and harmony in the landscape; a clean, flowing line can reduce maintenance problems. Mowing around tree trunks, shrubs, and clumps of herbaceous perennials is a time-consuming nuisance that often becomes a damaging or fatal experience for the plant.

Lime lines should be “drawn” first. Once a satisfactory line is created, a sharp spade can be used to create a permanent bedline. Grass and weeds should then be removed from the bed side of the cut. But the ground cannot remain uncovered. Bare soil is an open invitation to weeds. The homeowner can choose to cover the ground with organic mulches, inorganic mulches, a living ground cover, or some combination of these alternatives.

# Guide to the Cost of Watering

The following information will allow you to estimate the quantity of water flowing from a typical 50-foot garden hose at the standard household water pressure of 40 pounds per square inch (psi). Longer hoses will decrease flows slightly. Higher pressures will cause greater flows.

Hose Diameter, inch	Length, feet	Pressure, psi	Flow Rate, gal/min
1/2	50	40	5.0
5/8	50	40	6.4
3/4	50	40	8.8

To apply 1 inch of water to 1,000 square feet of lawn or garden requires 620 gallons of water. This takes 97 minutes watering time, using the 5/8-inch hose from the table above (gal=gallons):

$$\frac{620 \text{ gal}}{6.4 \text{ gal/min}} = 97 \text{ minutes}$$

The cost of water in New Jersey ranges from approximately \$.50 to \$3.25, with \$1.50 per 1,000 gallons being about average. Thus, 620 gallons cost approximately \$.93. You can compute your watering costs using the formula below:

Total cost of watering=

$$\text{Number of square feet of lawn or garden} \times \frac{620 \text{ gall per inch of water applied}}{1,000 \text{ ft}^2} \times \frac{\text{Cost of water in your town}}{1,000 \text{ gall}}$$

### Example:

$$5,000 \text{ ft}^2 \text{ of lawn} \times \frac{620 \text{ gall (1 inch of water applied)}}{1,000 \text{ ft}^2} \times \frac{\$1.50}{1,000 \text{ gall}} = \$4.65$$

# Mulches and Mulching to Save Water

Mulches used during a dry season reduce the amount of water evaporating from the soil, thereby allowing considerable water saving. They also prevent intrusion of water-using weeds and can enhance the aesthetics of a landscape design. The depth of mulch to apply will depend upon the type of material used, 2 to 4 inches being a good guide. In addition, mulches maintain a more uniform soil temperature, which can improve plant growth.

## Organic Mulches

A good organic mulch has the following qualities: it should retain moisture, retard weed growth, create an attractive neutral surface, improve the soil as it decays, and be inexpensive to acquire and maintain. Peat moss, a popular mulch among homeowners, fails nearly all these criteria. Peat, as it dries, actually draws water from the soil, and the following year it provides an ideal seed bed for weeds. It can blow away, float away, and catch fire. Furthermore, peat moss is expensive. Peat moss should be used as a soil conditioner, not a mulch.

Wood chips or bark mulches are better. Wood chips come in two types: winter chips and summer chips. Summer chips are considered to be less desirable because they often contain large quantities of leaf pieces. As the leaves decay, plants mulched with these chips may experience temporary nitrogen deficiencies (their leaves may turn yellow). Scattering a handful of high nitrogen lawn fertilizer in the mulched bed should solve the problem.



Shredded bark mulch products are also successful organic mulches. Because they mat together they are less likely to float away than chips. Bark nuggets, however, should be avoided. They are expensive, they float, and they tend to be weedy.

For weed reduction an organic mulch should be 3 to 4 inches thick. Weed control can be enhanced if preemergent weed-control chemicals are applied to the soil surface prior to mulching.

## Inorganic Mulches

Inorganic mulches may range from pea-size gravels and river-worn cobbles to boulders. If the gravel is too small, it will stick to the feet of pedestrians walking across it. If black plastic is laid out first, and then overlaid with 3 to 4 inches of gravel, weed control and water retention are greatly enhanced. Fears that black plastic will “smother” desirable ornamentals have proven to be unfounded. (Black plastic should not underlay organic mulches because they slide off and the black plastic looks unsightly.)

Many homeowners develop a hatred for the native rocks that impede their horticultural endeavors, but once these “indigenous” rocks are washed down with the garden hose they often make a very attractive rock mulch surface. Gravels may be purchased in many dyed colors, but natural colors blend best into the landscape.

One type of mulch that is not only aesthetically offensive, but may harm plant materials, is white marble chips. Reflected glare hurts the eye and may cause leaf scorch. A marble chip mulch is especially damaging to Rhododendrons and their kin. As the chips weather, soil pH is raised, causing iron deficiency (yellow leaves with green veins).

Cobbles, or naturally rounded stones, can be very useful as a ground cover. If no roof drains are present, these stones break up the force of splashing water. They also can be moved aside, creating planting holes for annuals. During the summer, flowers spread across the stones, creating color delights during the growing season. In the fall, after frost kills the annuals, the dead plants are pulled and composted. Then the cobbles can be put back in place. Herbs, herbaceous perennials, and woody ground covers like junipers can also be successfully planted in the cobbles.



*Indigenous rock*



*Cobbles*

# Selection Guide to Living Ground Covers

Many alternative living ground covers thrive where grass does not do well. Three excellent ground covers for shady areas are the big three: English Ivy, Pachysandra, and Periwinkle.

Very few refined ground covers can be successfully grown when exposed to the late-afternoon winter sun. The combination of summer drought and winter temperature fluctuation is often fatal. Low-growing junipers provide the best evergreen ground covers for this stressful exposure.



## *Hedera helix*, **English Ivy.**

This plant can be grown either as a vine or as a ground cover. As a ground cover it will bear only lobed “ivy” leaves. Grown -as a vine, it will produce woody horizontal branches that protrude from the attached woody trunks and bear flowers, fruits, and rounded leaves. These physiologically mature branches are difficult to root from cuttings, whereas the juvenile branches with lobed leaves will produce roots in a glass of water. English Ivy is an excellent ground cover for stabilizing north, east, and northeast embankments. Late-afternoon, southwest sun during January and February can cause severe scorch. Several cultivars of English

Ivy are available: *Hedera helix pedata*, Birdfoot English Ivy, has a long central lobe and fine texture. *Hedera helix baltica*, Baltic Ivy, is similar to straight ivy in leaf size, but has prominent white veins. The main asset of Baltic Ivy, however, is its reported superior winter hardiness.

As a ground cover, newly planted beds of English Ivy may be slow to get established. A little doggerel will help explain this fact to impatient homeowners: “The first year it sleeps; the second year it creeps; and the third year it leaps.”



*Pachysandra terminalis*, **Pachysandra** (Japanese Spurge). Pachysandra is a 6 to 8 inch, succulent, stoloniferous, broadleaf evergreen. Although the bright green leaves are arranged alternately along short stems, the terminal leaves appear to be arranged in a rosette. In the spring, small white flower clusters are borne at the centers. With southwest sun exposure Pachysandra will scorch, and under prolonged drought it will die out, but in semishady locations a well-established bed of Pachysandra is virtually free of weeds and needs no maintenance.



*Vinca minor*, **Periwinkle** (Myrtle). *Vinca minor* is also a broadleaf, evergreen ground cover that thrives in semishade, but, unlike Pachysandra, which spreads by underground stolons, Periwinkle stems spread over the surface of the ground, rooting wherever they touch the soil. Glossy green, oval opposite leaves are enhanced by many five-petaled violet-blue flowers in the spring, then intermittently throughout the growing season. *Vinca minor* is successful in stabilizing north, east, and northeast embankments, but it is not as competitive as either English Ivy or Pachysandra, and some weed invasion can be expected.

*Juniperus horizontalis*, **Creeping juniper**, is native to the sandy embankments of the Great Lakes and the rocky escarpments of the Maine coast. This species has provided nurserymen and landscape architects with many cultivars. *Juniperus horizontalis plumose*, Andorra Creeping juniper, has blue-green summer foliage and plum purple winter color. The 1- to 1 ½ -foot-high Andorra has been one of the most popular cultivars, but tip blight and a ragged appearance in old age have stimulated a search for better cultivars. Waukegan (*Juniperus horizontalis douglasi*) and 'Bar Harbor' have long been on the market. Their 12-inch height gives them a more refined appearance, but their steel-gray color lacks winter appeal.



*Juniperus horizontalis wiltoni*, **Blue Rug Creeping juniper**. Blue Rug, with its 6-inch carpet of summer blue foliage, is well named and has caught the public's fancy. The center of the plant creates a raised mound. Berrylike fruits are large and gray-blue in color. On flat surfaces, all creeping junipers grow outward in an expanding circle, but on an embankment gravity dictates a descending growth habit. Blue Rug, like all its *horizontalis* 'cousins,' goes off color in winter. The research for other cultivars continues.



*Juniperus chinensis sargentii*, **Sargent juniper**, is as tall as Andorra, but retains a green winter color. There are several other good ground cover junipers. *Juniperus conferta*, the Shore juniper, has a grassy appearance creating a fine-textured cover for embankments and dunes. Blue Pacific is the best cultivar. Tam juniper (*Juniperus sabina tamariscifolia*) creates a starburst growth pattern, while the dwarf Japanese Garden Juniper (*Juniperus procumbens*), 'nana,' is an ideal companion of rocks, gravel, and stone outcroppings.

## Selection Guide to Woody Ground Covers

For homeowners, some of the most exciting options are found among the small-scale ground covers. These ground covers, because of their growth habit, vigor, or seasonal interest, should be confined to small spaces.



*Cotoneasters* (pronounced KUH TONY ASTER) include Rock Cotoneaster, which, with its fishbone branching habit, bears small oval leaves and small applelike fruits. Although this plant could be grown in large-scale plantings, its sensitivity to lacebug and its tendency to ensnare leaves and litter reduce its usefulness for this purpose.

Its evergreen cousin *Cotoneaster dammeri*, the Bearberry cotoneaster, shares its liabilities. *Cotoneaster apiculata* is less successful in covering the ground, but its refined growth and large red showy fruit are especially attractive assets in combination with stone walls and natural stone outcroppings. The beautifully textured evergreen Dwarf Willowleaf Cotoneaster should not be grown north of the Mason-Dixon line.

Here are two evergreen woody natives. When they are good, they are very, very good; otherwise, they can be very frustrating.



*Arctostaphylos uva-ursi*, **Bearberry**. Native to sandy acid soils of Cape Cod, the Great Lakes, and the Pine Barrens. The dark green oval leaves of Bearberry may turn bronzy red in the winter. Pink/white, urnshaped flowers and shiny red drupe fruits enhance the foliage. Slow growth and poor transplanting survival limit the potential of this plant for large scale areas.



*Paxistima canbyi*, **Paxistima**, a native of the Virginias, bears tiny hollylike leaves on 1-foot-high spreading branches.

# Selection Guide to Ground Covers for Small and Irregular Spaces

There is a mind-boggling list of ground covers for small and irregular spaces.



*Ajuga reptans*, **Carpet Bugle**, or Ajuga, needs little introduction. The foliage, according to Arab lore, has healing powers. The oval leaves may be green, bronze, purple, or variegated. Although blue spikes of florets are most common, pink- and white-flowered alternatives are available. The main problem with Ajuga is that it grows better as a lawn weed than as a refined ground cover.



*Asperula odorata*, **Sweet Woodruff**. This 6-inch perennial herb is an ideal summer ground cover for dense shade. In the spring, white flowers are nestled in a rosette of bright green leaves. The plant dies back to the ground in the winter.



*Convallaria majalis*, **Lily of the Valley**, an old fashioned garden favorite, covers shady sites with dense, upright oval leaves and fragrant spikes of white florets. Leaves yellow and wither in the fall revealing poisonous fruits.



*Heuchera sanguinea*, **Coral Bells**, are southwestern wild flowers, but they have long been hardy herbaceous perennials in northeastern gardens. The leaves are geranium-shaped, forming a dense mat of vegetation 6 inches in height. The charm of the plant is its foot-high airy stalks of pink bell-shaped flowers.

*Hosta*, **Funkia**. The flowers of these herbaceous perennials are commonly blue or white bells borne on long stalks, but the primary asset of this genus is its multitude of bold foliage colors and texture. This plant thrives in shady sites.



*Iberis sempervirens*. **Evergreen Candytuft** is at its best during May when the white clusters of flowers cover the plant. The long evergreen leaves are attractive but not prominent assets.



*Sedums*, or **Stone Crops**, are succulent perennials. Some species, such as *Sedums acre*, the Gold Moss Stone Crop, seem to be determined to cover the earth. Other species are much more refined. One of the best of the lot is *Sedum spurium*. This vigorous but not invasive ground cover, which thrives between the rocks in sun or shade, is covered with rosettes of succulent leaves borne on 1- to 2-inch stalks.



*Sempervivum tectorum*. **Hen and Chickens**, or common house leek, may be too “cute” for the sophisticated gardener, but there is charm and nostalgia for a succulent rose-shaped mother plant producing baby roses around it.



*Thymus serpyllum*. **Mother of Thyme** bears gray-green foliage and most commonly, rose-purple flowers. (White and near-red cultivars are available.) Both foliage and flowers are attractive, but the most appealing aspect of the plant is its ability to thrive in hot rock outcroppings and between stepping stones where the crushed foliage provides herbal fragrance.

*Pinks and Phlox*. **Mountain Pink** and **Ground Phlox** are both mat-forming ground covers. The Pinks, however, belong to the genus *Dianthus* and bear pink flowers that contrast sharply with blue-green foliage. Ground Phlox is the common name for *Phlox subulata*. This herbaceous perennial bears needlelike evergreen foliage that sparsely covers the ground. The flowers are the primary ornamental asset, and, although this plant may be used with subtlety and reserved taste, too often the homeowner tries to combine all color options in one rock garden.

Many good ground covers have been omitted from the above list for brevity. Pachysandra, Vinca, Ajuga, and Sweet Woodruff will all wilt if exposed to prolonged drought, and supplemental watering may be needed. They rarely fail to rally once the rains come again. There should be a sufficient number of varieties to allow you to find an appropriate plant at your local nursery.

## **Let Natural Selection Landscape Your Property**

During a prolonged summer drought with water restrictions, a homeowner may watch in dismay as the lush green lawn turns to straw, the newly planted dogwood wilts and browns, and the rhododendron leaves curl up and die. In comparison, nearby fields and woods appear healthy and green. Why not give in and let nature prevail and do the landscaping for you?

Complete abandonment to nature is not practical. Neighbors, family members, and local government officials won't permit it, but it is possible, even on small properties, to let nature have a piece of the turf. Assets and liabilities of natural landscaping must be considered, and, even more important, those landscape techniques should be employed that will satisfy neighborhood aesthetics.

### **Positive Aspects of Natural Landscapes**

Letting nature landscape a portion of the home grounds permits the homeowner to enjoy the excitement of natural selection. Over the years a whole parade of plants will colonize this area, beginning with annual weeds similar to those that invade the vegetable garden. These will be followed by herbaceous perennials and grasses. Little Bluestem, or poverty grass, often predominates, but such field flowers as Daisy, Brown-eyed Susan, Queen Anne's Lace, Goldenrod, and New England Aster may brighten the site.

Native shrubs and trees, such as Gray Dogwood, Bayberry, Sumacs, Red Cedars, Pin Oaks, Red Maple, and Green Ash, will be the next to appear. If the homeowner could live 100 years, the final, or climax, plants would be such trees as Sugar Maple, American Beech, Ironwood, and, in North Jersey, Hemlocks. These plants would be the last ones because they require the rich organic soils produced by the death of their predecessors, and they are capable of reproducing in their own shade.

### **Negative Aspects of Natural Landscapes**

Not all colonizers of your natural area will be welcome. Ragweed is one of the first invaders. Out of courtesy to hay fever sufferers, this plant should be pulled. After 3 years, however, ragweed won't be a problem, because it cannot grow in competition with other plants. More serious nuisances are Poison Ivy, Hall's Honeysuckle, and Multiflora Rose.

Poison Ivy is amazing for its site-tolerance. It will thrive in open fields, shady woodlands, urban lots, and sand dunes at the beach. The shiny metallic "leaflets three" are recognized by many people, but, when it climbs a tree, the hairy rope often goes unnoticed until it is too late for susceptible victims. Branches that protrude from the "rope" bear white fruits and large leaflets which are dull green in color. Fall color can be yellow or brilliant orange-red. White fruits are attractive to birds, which disseminate the seed. As a result, seedlings may appear anywhere. The seedlings can be pulled carefully with rubber gloves. Larger more established plants may require spot treatment with herbicides, such as Amitrol or Roundup.

Aggressive aliens, such as Hall's Honeysuckle and Multiflora Rose, may also invade the site. Hall's Honeysuckle bears fragrant white flowers that yellow with age. Black fruit follows and is eaten and the seeds are

disseminated by birds. The twining vines that sprout can kill a tree as large as 6 inches in diameter. Hand-pulling and careful 2,4-D treatments provide some control.

Multiflora Rose will create an impenetrable thicket of thorns if it is not controlled. Tiny white flowers in clusters are followed by clusters of small red fruits called “hips.” Hand-removal and spot application of brush killer are the only controls.

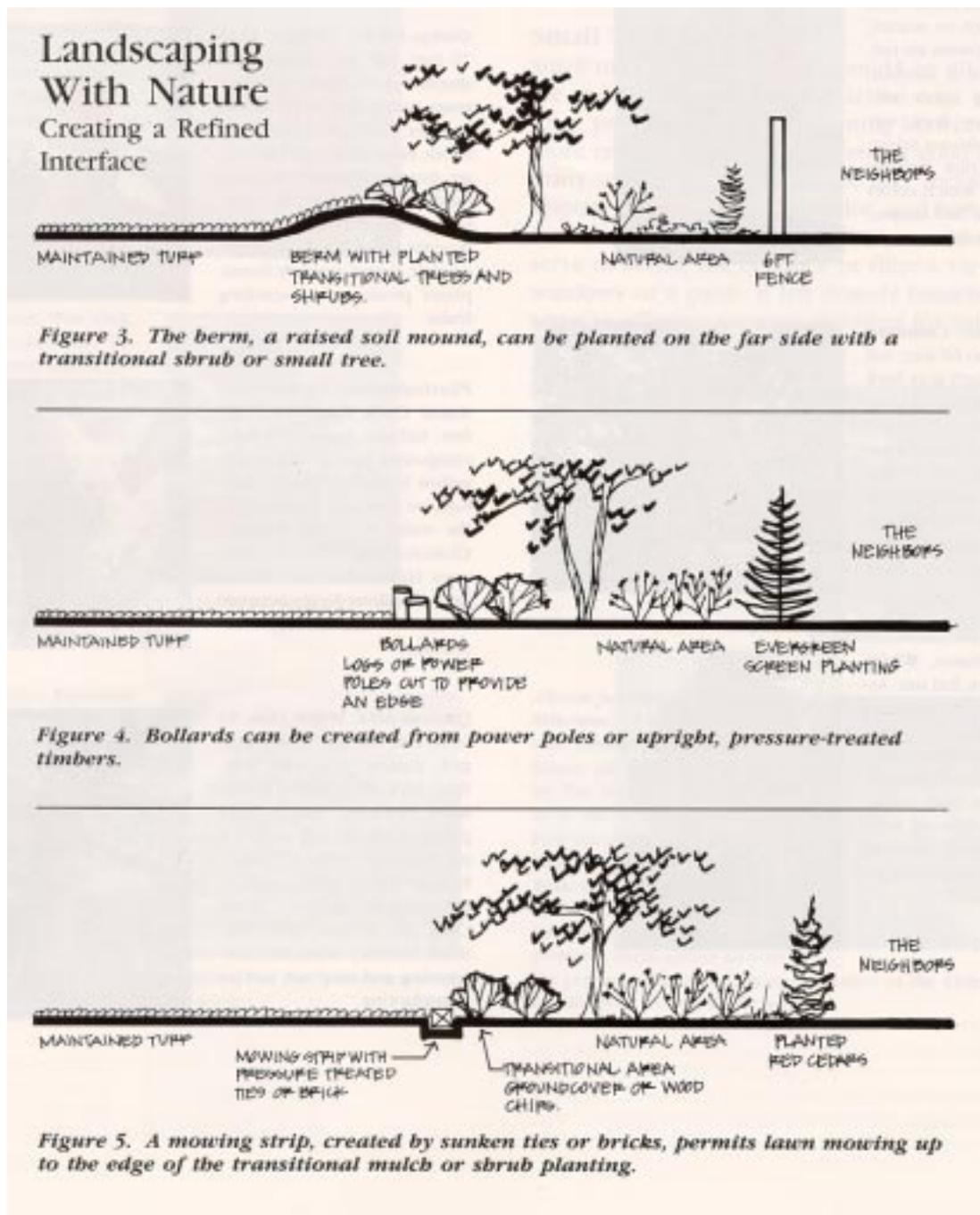
Other “weed” trees often regarded as trespassers include Norway Maple, Tree of Heaven, and White Mulberry. Hand-removal is the most practical solution.

# Landscaping Techniques

The easiest area to handle and allow to go natural is the edge of the woods. This area will need little or no maintenance or supplemental water if you use shade-tolerant plants. These include small trees such as Dogwood and Shadblow, shrubs such as Rhododendron and Mountain Laurel, and organic mulches and ground covers.

Natural open fields are more difficult to aesthetically integrate into a manicured neighborhood. If you provide a refined edge between maintained turf and the natural area, the ecological experiment will appear less unkempt. Berms, bollards, and mowing strips, illustrated below, are several techniques that have been successfully employed.

Out of sensitivity to the neighbors, who should not be expected or required to share in ecological experiments, screening with fencing or evergreen plantings is essential.



# Selection Guide to Drought-Tolerant Plants

## Shade Trees

Because shade trees require 25 to 30 years to mature, homeowners should plant them before any other vegetation. A shade tree located to intercept the hot afternoon southwest sun will provide cooling in the summer and permit solar collection in the winter. The following trees are the most drought tolerant:



*Acer rubrum*, **Red Maple**, 40 to 60 feet; full sun. Assets: Fall color is often red to scarlet, may be yellow; flowers are red. ID features: Bark is smooth; gray on young trees and branches. Habitat: Both wet and dry sites. Cultivars selected for red fall color include: 'October Glory,' which colors in November, and 'Red Sunset,' which shows excellent early color.



*Celtis occidentalis*, **Common Hackberry**, 40 to 60 feet; full sun. Assets: Smooth gray bark with pebbled surface. ID features: Dense clusters of branchlets called *witches brooms* are considered ugly by some; others consider them exotic. Habitat: Native to old fields and

flood plains. Hackberry trees are not available at most nurseries.



*Fraxinus americana*, **White Ash**, 50 to 70 feet; full sun. Assets: Opposite compound leaves have a fall color range from yellow to purple. ID features: Single-winged seed on female tree. Habitat: Early native colonizer of abandoned farm fields. The cultivar 'Autumn Purple' has been selected for its consistent fall color.



*Fraxinus pennsylvanica*, **Green Ash**, 40 to 60 feet; full sun. Assets: Opposite compound leaves turn yellow in the fall and drop early. ID features: Single-winged seed on female trees. Habitat: Native to flood plains; will withstand flooding and drought. 'Marshalls' is a popular cultivar.



*Ginkgo biloba*, **Ginkgo**, 50 to 70 feet; full sun. Assets: Fanshaped leaves, home on short spurs, turn yellow in the fall. ID features: Thick, corky bark and exotic branching provide winter interest. Habitat: A living fossil not found in the wild, Ginkgo will survive urban and drought stress. Plant only grafted male clones, because female plants produce foul smelling fruits.



*Pbellodendron amurense*, **Amur Cork Tree**, 40 to 60 feet; full sun. Assets: Opposite compound leaves turn bright yellow in the fall. Thick, corky bark on low-branched trees is the main asset. ID features: Clusters of black fruit on female trees. Habitat: Introduced from the Amur River Valley between Russia and China. Very cold tolerant.



*Quercus alba*, **White Oak**, 50 to 70 feet; full sun. Assets: Rugged, durable tree with gray, flaky bark. ID features: Leaves have rounded lobes, turn purple-red in the fall, and often persist on the tree in winter. Habitat: Native to open fields, oak hickory woods. White Oaks are durable and long-lived, but they

often are slow growing and may not survive transplanting.



*Quercus coccinea*, **Scarlet Oak**, 40 to 50 feet; full sun. Assets: Deeply dissected, pointed leaves turn brilliant red in the fall. Habitat: Oak woods, Pint, Barrens. Scarlet Oak is slowgrowing and may not survive transplanting, but, like

White Oak, its assets are worth the risk.



*Zelkova serrata*, **Japanese Zelkova**, 40 to 60 feet; full sun. Assets: Elmlike habit, serrated (sawtooth) leaves turn brick orange in fall. ID features: Bark is smooth with horizontal lines of lenticels. Habitat: Native to Japan, grows well in dry, shaley soils. ‘Village Green’ and ‘Green Vase’ are two good cultivars.



*Quercus rubra*, **Red Oak**, 50 to 70 feet; full sun. Assets: Large pointed leaves, durable rounded habit. ID features: Large acorns. Habitat: Primary tree of oak woods. Red Oak is the state tree of New Jersey. It is a durable shade tree with a moderate to fast growth rate.



*Quercus palustris*, **Pin Oak**, 50 to 70 feet; full sun. Assets: Small pointed leaves, pyramidal habit. ID features: Upper branches stretch skyward, central branches are horizontal, and lower branches point to the ground. Habitat: Grows in both wet and dry sites. Pin Oaks are the fastest growing oaks. The low-hanging branches

provide screening in the right place in the landscape but cause head room problems for vehicles and pedestrians.



*Sophora japonica*, **Japanese Pagodatree**, 40 to 60 feet; full sun. Assets: Compound leaves with small, pointed, dark green leaflets, yellow fall color. ID features: White pealike flowers in the summer are followed by pods shaped like strings of jelly beans.

Habitat: Native to the Orient; will tolerate soils of low fertility. In severe winters the tree may suffer from branch dieback. Canker disease may be a problem, but the flowers are an outstanding asset. ‘Regent’ is the best cultivar.

### Small Trees

Small trees range in height from 15 to 40 feet. Many are understory trees growing at the edge of the woods. They provide a transition planting between natural and more refined areas of a property. A good small tree has many seasons of beauty, which may include flower display, foliage effects, fall color, and bark or habit interest. In the residential landscape small trees may serve to accent the entrance or filter a view from windows or a patio. If left densely branched, they serve as effective summer plantings for privacy.



*Acer ginnala*, **Amur Maple**, 15 to 20 feet; full sun. Assets: Three-lobed opposite leaves turn orange to red-orange in the fall. ID features: Trunks are low-branched with striping. Habitat: Native to the Amur River Valley and very cold hardy.



*Albizia julibrissin*, **Mimosa** or **Silk-tree**, 15 feet; full sun. Assets: Powder puff pink flowers bloom all summer, followed by flat bean pods that ripen to a tan color. ID features: Fine-textured, twice-compound leaves provide textural interest. Wide-

spreading branches may break during wind storms. Winter injury, leading to death, is common. Seeds sprout all over break during wind storms. Winter injury, leading to death, is common. Seeds sprout all over the property. Habitat: Mimosa is a native of the Orient and will grow rapidly even in dry, sandy soils.



*Amelanchier canadensis*, **Shadblow Serviceberry**, 20 to 30 feet; full sun or shade. Assets: Clouds of white flowers early in the spring are followed by edible, bluish fruit. If leaf damaging insects are controlled, orange or yellow-orange fall color will be an asset. ID features: The multi-trunked branches have attractive gray striping. Habitat: Edge of the woods in either

dry or wet sites.



*Betula Populifolia*, **Gray Birch**, 20 to 25 feet; full sun, Assets: Multi-trunked clumps of three or more trunks are white with black triangles. ID features: Triangular leaves must be sprayed to prevent brown blisters caused by insect larvae called Leaf Miner. Habitat: Native to old fields, either dry or wet.



*Hamamelis virginiana*, **Common Witchhazel**, 15 to 20 feet; full sun or shade. Assets: Yellow flowers with straplike petals, depending upon the individual plant, may be produced from October to December, making this native large shrub/small

tree the last to flower. Liabilities: The coarsely scalloped leaves can become unsightly if infected by nipple galls. Plants that flower after leaf drop are more valuable in the landscape.



*Koelreuteria paniculata*, **Goldenraintree**, 25 to 30 feet; full sun. Assets: Yellow flowers, borne during the summer in upright clusters, are followed by chartreuse lanterns. ID features: Later in the fall these fruits turn brown. Habitat: This

Oriental species will tolerate dry soils and urban conditions.

*Malus*, **Crabapples**, 20 to 50 feet; full sun. Crabapples are prized for their flower display, but fruit size and disease resistance are equally important considerations for residential landscapes. In addition to flowers, the ideal crabapple should have small showy red fruit and resistance to apple scab, cedar apple rust, and fire blight. The following cultivars come close to this ideal.



*Malus hupehensis* (*Malus thiefera*), **Tea Crabapple**, 15 feet. One of the most disease resistant crabapples has a vase-shaped exotic habit. Flowers are pink in bud and white in full bloom.



*Malus sieboldi zumi* (*Malus x zumi calocarpa*), **Zumi Crabapple**. Assets: Rounded in habit, the bud is red, with white flowers in full bloom. This tree is also prized for bright red, tiny fruits which are held until January.



*Malus x 'Katherine'*, **Katherine Crabapple**, 20 feet, pink in bud, vase-shaped, white in full bloom. Other good Crabapple cultivars: Carmine Crabapple, deep pink flowers; *Malus Floribunda*, Japanese Crabapple, low-branched, red in bud, white

in full bloom; *Malus x 'David'*, white flowers followed by branches covered with tiny red fruit. Habitat: Oriental crabapples have escaped to the wild and can be found growing in combination with Red Cedars in dry, abandoned fields.



*Syringa reticulata*, **Japanese Tree Lilac**, 20 to 30 feet; full sun. Assets: Creamy, white clusters of flowers are borne in late June. Fragrance is poor. ID features: Cherrylike bark provides winter interest. Habitat: Tolerates drought and urban conditions.



*Viburnum prunifolium*, **Blackhaw Viburnum**, 15 to 20 feet; partial shade to full sun. Assets: Depending upon pruning, this plant may be a large shrub or a small tree. ID features: White flowers in flat clusters are followed by fruit that changes color as

it ripens from cream to pink to blueblack. Fall color is red and longlasting. Decaying leaves emit a strange odor. Habitat: Native to abandoned fields.

## Evergreens

Evergreens hold their leaves through the dormant season. Evergreens may be classed as *narrowleaf*, bearing needles or scales, or *broadleaf*, having a leaf blade and midvein. More important from a landscaping perspective, evergreens may be *significant conifers*, needle evergreens, that grow to heights of 40 feet or more. The remaining evergreens may be broadleaves, scale, or needle conifers, but they are all more shrublike in habit.

The following drought-tolerant significant conifers improve our environment by absorbing and filtering out air pollutants and road dust. In addition, they retard water runoff, screen out unsightly views, and serve as wind breaks. Significant conifers planted in the wrong place, however, become growing obstacles in the landscape.



*Abies concolor*, **White Fir**, native to the Rocky Mountains, tough, drought- and urban-tolerant. Needles 1 ½ inches long with bluish cast, cones borne upright.



*Cedrus Atlantic*, **Atlas Cedar**, native to the Atlas Mountains of Morocco and Algeria. This true cedar is especially well-adapted to hot dry sites. Although the blue form *glanca* is more popular, the green Atlas Cedar is a handsome, picturesque conifer. When locating Atlas Cedar in the landscape, remember that this tree can grow to 150 feet tall and 75 feet wide.

*Picea*, the **Spruces**, formal, classic Christmas tree shape, look best when young. All spruces are shade-intolerant, which means they will lose branches and die in shade.



*Picea abies*, **Norway Spruce**, a European Spruce but used so frequently here many believe it to be a native. ID features: Needles square in cross section, dark green in color, orange branchlets. Cones 6 to 8 inches long. Habit: Formal and dark green when young, pendulous branchlets in old age, giving the tree a somber appearance.

*Picea pungens*, **Colorado Spruce**, ranges in color from green to gray-green to superblue. Habit: Formal in outline. ID features: Needles, borne in a bottle brush around the branches, are sharp to the touch. Green forms blend better than blue. Urban-tolerant.



*Picea pungens glauca*, **Blue Colorado Spruce**, use where there is plenty of room (80-foot height at maturity). Glaucous covering of needles gives the blue color; Moerheimi, Koster, and Hoops are superblue cultivars. Exotic cultivars: *Picea pungens glauca nana*, Dwarf Blue, and *Picea pungens glauca pendula*, Weeping Blue.



*Pseudotsuga menziesii*, **Douglas Fir**, West Coast native frequently grown as a Christmas tree. Mountain, not coastal, grown seed selections should be used on the East Coast. Color range is from green to gray-green to bluish. ID features: Needles are flat, buds are pointed, and cones are very distinctive, having pointed papery bracts under each scale. This conifer is softer looking and feeling than spruce.



*Pinus strobus*, **White Pine**, five needles, soft to the touch; when young this pine is a very full plant providing a good screening; in old age it becomes a picturesque flat-topped silhouette on the skyline. If pruned correctly, White Pines can be pruned into a hedge. Habitat Limitations: Sensitive to wet sites and seashore and road salt. Subject to winter breakage, which leads to picturesque habit.



*Pinus thunbergiana*, **Japanese Black Pine**, two needles and sharp to the touch. Overall exotic, S-shaped habit is the best ID and ornamental feature. Seashore-tolerant.



*Juniperus chinensis* provides cultivars that range in habit types. For a narrow columnar form, 'Keteleer' is appropriate. For a massive 10 x 10 foot spreading habit, **Pfitzer juniper** still ranks among the best. 'Hetz,' a blue cultivar, is more popular, but it becomes open and straggly in old age. All junipers are especially drought-tolerant.



*Pinus sylvestris*, **Scotch Pine**, two needles twisted and wide-spreading, bluish in color (some turn yellow in winter). Exotic habit. Upper branches are orange. Also susceptible to Tip Blight.

### Evergreen Shrubs



*Berberis Juliana*, **Wintergreen Barberry**, bears spiny leaves and sharp three-pronged thorns. Summer dark evergreen leaves turn purple in the winter, and yellow flowers are attractive in the spring. Both evergreen and deciduous species are

### Drought-Tolerant Shrubs

Intermediate in size between large conifers and shrubs are two drought-tolerant evergreens, American Holly and two species of upright junipers.



*Ilex opaca*, **American Holly**, 15 to 20 feet, sun, part shade, spiny evergreen leaves, pyramidal habit, and red fruits on female plants are primary assets. Leaf miner, an insect pest which disfigures leaves with unsightly feeding

trails, can be controlled with systemic insecticides. Since this plant is native to beaches and southern pine barrens, hardy cultivars, such as Jersey Princess, Farage, Manig, and the male Jersey Knight, should be grown to avoid winter injury.

drought-tolerant, but thorns make them difficult to place in the landscape.



*Ilex crenata*, **Japanese Holly**, is yet another species with a wide range of cultivar types. The Little Leaf Japanese Holly *microphylla* can grow to 20 feet in height; *convexa* and 'Hetz,' with their cup-shaped leaves, can be

maintained at 5 to 6 feet; even shorter 'Heller' becomes a 3 to 4-foot tall, mound-shaped plant for massing as a foundation plant.



*Juniperus virginiana*, **Red Cedar**, 15 to 20 feet, full sun. As an early colonizer of abandoned fields, highway embankments, and sand dunes, this species is a common sight throughout New Jersey. An abandoned field will often provide a great variety of habits,

from tight columnar forms to open picturesque plants. Females have tiny, gray, berrylike cones.



*Pinus mugo mugo*, the **Mugo Pine**, is more commonly used for landscaping than its parent, the Swiss Mountain Pine. Mugo Pines are grown from seed; thus, plants from the same nursery may vary widely in habit and

growth rates.



*Taxus x media densiformis*  
**Dense Yew**, is one of the best spreading types, and can easily be maintained at 4 feet in height. *Taxus cuspidata* and *Taxus x media* also provide many habit options. *Taxus cuspidata capitata*, the Cap Yew, is broadly pyramidal

and can reach heights of 20 feet if left unsheared. All yews require well drained soils for survival.



*Yucca filamentosa*, **Adams Needle**, is the drought-tolerant plant of last resort because it will grow in the most adverse environmental conditions. The clumps of lance-shaped leaves are evergreen. In June, stalks of creamy white flowers

extend up 3 feet or more from the base.

Dwarf conifer cultivars are available in nearly all the significant conifer genera and species. Most of them are just as drought tolerant as their parent types.

### Deciduous Shrubs

Most of the traditional, spring-blooming flowering shrubs are drought-tolerant. Forsythia, Lilac, Spirea, and Weigelia will grow in any well-drained site, provided they receive full sun. Native drought-tolerant deciduous shrubs have already been cited in the introduction.

To extend the blooming season, drought-tolerant, summer-blooming shrubs should be included in the landscape.



*Abelia x grandiflora*.  
**Glossy Abelia** is a 3- to 4-foot shrub that tolerates both drought and shade. Tiny pink trumpet-shaped flowers are produced in early summer and intermittently until frost.



*Spirea x bumalda* 'Anthony Waterer.' **Anthony Water Spirea**, 3 to 4 feet tall, bears raspberry-colored flowers from summer until frost.



*Vitex agnus-castus*, **Chaste Tree**. In reality a 6- to 8-foot shrub, not a tree, this plant bears opposite, dissected, aromatic, palmately compound leaves that have on occasion been confused with Marijuana. Spikes of violet-blue flowers are produced from summer until fall.

One flowering shrub that is not drought tolerant, Doublefile Viburnum (*Viburnum plicatum tomentosum*), can be a very useful indicator plant, for it wilts badly under drought stress. When this plant begins to wilt, it is time to water.

## Appendix A - Glossary

**Berm**-a mound of soil created to provide ornamental or functional benefits. A berm that flows with the natural contours can be beautiful, while one that is placed in the middle of a front lawn and planted with exotic specimens, appears gaudy and artificial.

**Bollard**-a vertical postlike structure. Bollards are often employed to control traffic, or they may be installed to define a line or serve as a boundary.

**Bract**-a somewhat modified leaf associated with the reproductive structure of a plant.

**Cultivar** (cv.)-a plant that can be produced only by asexual means (cuttings, grafting, etc.).

**Espalier**-a plant which is trained to grow flat against a support such as a wall or trellis.

**Evergreen**-a plant that holds its foliage through the dormant season. The foliage may be needlelike (pines, spruces), scalelike (arborvitae, junipers), or broadleaf (azaleas, rhododendrons).

**Conifer**-a plant that bears either needlelike or scalelike foliage. Cones are the most common reproductive structure.

**Formal**-a term that is synonymous with symmetry. Blue Colorado spruces are excellent examples of formal plants. A formal landscape employs even numbers of like plants. A formal plant is one with either natural or human imposed geometrical symmetry.

**Glaucous**-having a whitish, waxy coating that can impart a bluish cast to vegetation. This material provides a “superblue” appearance to such Blue Spruce cultivars as ‘Koster,’ ‘Moerheimi,’ and ‘Hoops.’

**Habit**-the shape and form of a plant.

**Herbaceous**-refers to plants that flourish during the growing season but die back to the ground and overwinter in some underground structure such as bulbs.

**Lenticels**-long believed to be “breathing pores.” These structures are found on the bark of limbs, branches, and trunks. They may be inconspicuous dots or, as in the case of birches and cherries, they may appear as horizontal lines up and down the trunk.

**Mulch**-organic by-products, such as wood chips, shredded bark, or even grass clippings that are spread upon beds or gardens to reduce weeds and conserve moisture. Their breakdown can improve the organic component of the soil.

**Pendulous**-a term that is synonymous with a weeping or drooping habit. Weeping Willows, for example, have a pendulous habit.

**Pine**-a conifer that bears its needles in clusters of two, three, or five. The term *pine* is often misused to describe any large conifer.

**S-shaped Habit**-a plant that is contorted in its form may have twists and turns in its trunk shaped like the letter “S.”

**Shrub**-a plant that is 20 feet high or lower and has many trunks or stems protruding from the ground.

**Species**-the basic taxonomic unit for plants and animals. A species has two names, the genus, whose first letter is capitalized; and the species name, which describes some physical feature or geographic location or honors some prominent plant scientist. Red Maple has the scientific name *Acer rubrum*.

**Specimen or feature plant**-a plant that possesses some asset (form, foliage effects, bark interest, or flower display) that makes it stand out from the rest in the landscape. The most successful specimen plant will have something to offer all four seasons of the year.

**Stoloniferous**-a plant that has the ability to spread by underground or surface shoots, which will root and produce a new plant. Stoloniferous plants make the best ground cover and erosion control plants.

**Succulent**-a class of plants with fleshy foliage that can store water during times of drought.

**Understory**-shade-tolerant plants that can grow beneath the arching branched canopy of woodland shade trees.

**Variety**-a term often used where the term *cultivar* should be employed. Botanically a variety is a population within a species that has some consistent heritable feature that distinguishes it from the general species population. If this feature is considered to be desirable and the plant can be successfully propagated asexually, a member of a variety may become the source of a cultivar.

**Vase-shaped**-a plant that possesses an arching habit. The American Elm is considered to have a classic “vase-shape.” Zelkova and several Crabapple cultivars are considered to have a “vase-shape.”

## Appendix B-Selected List of Drought-Tolerant Plants for New Jersey

### Trees

*Acer rubrum*, Red Maple  
*Celtis occidentalis*, Common Hackberry  
*Fraxinus americana*, White Ash  
*Fraxinus pennsylvanica*, Green Ash  
*Ginkgo biloba*, Ginkgo  
*Phellodendron amurense*, Amur Cork Tree  
*Quercus alba*, White Oak  
*Quercus coccinea*, Scarlet Oak  
*Quercus rubra*, Red Oak  
*Quercus palustris*, Pin Oak  
*Sophora japonica*, Japanese Pagodatree  
*Zelkova serrata*, Japanese Zelkova

### Small Trees

*Acer ginnala*, Amur Maple  
*Albizia julibrissin*, Mimosa or Silk-tree  
*Amelanchier canadensis*, Shadblow Serviceberry  
*Betula populifolia*, Gray Birch  
*Hamamelis virginiana*, Common Witchhazel  
*Koelreuteria paniculata*, Goldenrain tree  
*Malus*, Crabapples  
    *Malus hupehensis* (*Malus thiefera*), Tea Crabapple  
    *Malus sieboldi zumi* (*Malus x zumi calocarpa*), Zumi Crabapple  
    *Malus x 'Katherine'*, Katherine Crabapple  
    *Malus Floribunda*, Japanese Crabapple  
    *Malus x 'David'*, David Crabapple  
*Syringa reticulata*, Japanese Tree Lilac  
*Viburnum prunifolium*, Blackhaw Viburnum

### Evergreens

*Abies concolor*, White Fir  
*Cedrus atlantica*, Atlas Cedar  
*Picea abies*, Norway Spruce  
*Picea pungens*, Colorado Spruce  
*Picea pungens glauca*, Blue Colorado Spruce  
    *Picea pungens glauca nana*, Dwarf Blue  
    *Picea pungens glauca pendula*, Weeping Blue  
*Pseudotsuga menziesii*, Douglas Fir

*Pinus strobus*, White Fir  
*Pinus thunbergiana*, Japanese Black Pine  
*Pinus sylvestris*, Scotch Pine

### Drought-Tolerant Shrubs

*Ilex opaca*, American Holly  
*Juniperus virginiana*, Red Cedar  
*Juniperus chinensis*

### Evergreen Shrubs

*Berberis juliana*, Wintergreen Barberry  
*Ilex crenata*, Japanese Holly  
    *Ilex crenata convexa*  
    *Ilex crenata microphylla*, Little Leaf Japanese Holly  
*Pinus mugo mugo*, Mugo Pine  
*Taxus cuspidata*  
    *Taxus cuspidata capitata*, Upright (Cap) Yew  
    *Taxus cuspidata densiformis*, Dense Yew  
    *Taxus cuspidata nana*, Dwarf Yew  
    *Taxus x media*, cv.  
*Yucca filamentosa*, Adams Needle

### Deciduous Shrubs

*Abelia x grandiflora*, Glossy Abelia  
*Spirea x bumalda*, Anthony Waterer  
*Vitex agnus-castus*, Chaste Tree

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