

The Spruces

by Dr. Bert Cregg

A short drive around any suburban neighborhood in the winter will quickly demonstrate the importance of spruces in Michigan landscapes. Without a doubt, members of the genus *Picea* are the most popular choice among conifers for landscaping. And for good reason. Spruces are adapted to a wider range of sites than many other conifers. They will handle a wider range of soil conditions and exposure than firs or hemlocks. *Picea* species are extremely cold hardy. For example, *P. abies* is hardy to Zone 3 (-30°F), *P. pungens* and *P. glauca* are hardy to Zone 2 (-40°F) and *P. engelmannii* is hardy to Zone 1 (-50°F). Aside from some pines, spruces also handle drought better than other needled conifers. Beyond their broad adaptability, many spruces have outstanding ornamental characteristics that make them the conifer of choice in landscapes.

Although the genetic diversity within the genus *Picea* is not as great as *Pinus* (33 species versus over 100) spruces still represent an amazing array of plants, from some of the tiniest miniatures that grow a fraction of an inch per year to some of the giants of the forest. The current champion spruce is a Sitka Spruce (*P. sitchensis*) on the Olympic peninsula of Washington state that is nearly 200' tall and over 700" in circumference. Spruces are found only in the northern hemisphere and are mainly boreal species, occurring at high latitudes or at high elevations. In Michigan we have 2 native spruces, White Spruce (*P. glauca*) and Black Spruce (*P. mariana*), both of which are native to the Upper Peninsula and northern Lower

Peninsula.

While spruces are most widely known in lower Michigan as landscape trees, spruces are also important as commercial forest trees, conservation trees and as Christmas trees. In commercial forestry spruces are used for pulp and paper but the wood is also highly valued for specialty products such as sounding boards for pianos and other musical instruments. Because spruce wood has a high strength to weight ratio, spruces were used to build airplanes in World War I and, of course, Howard Hughes' massive "Spruce Goose", the largest airplane to ever fly (www.sprucegoose.org).

Spruces are important trees in many conservation forestry systems. Often termed "working trees", these are trees planted in a specific location and arrangement for conservation functions such as windbreaks, shelterbelts and living snowfences. Spruces such as Colorado blue spruce are well suited for these functions because of their overall hardiness and drought and salt tolerance. The dense

branch structure of spruces is ideal to prevent wind erosion, screen unsightly views, and dampen noise from roadways. For more information on working trees and how they can help your community contact the National Agroforestry Center (www.unl.edu/nac/) or the National Arbor Day Foundation (www.arborday.org).

Spruces for Landscaping

Spruces are some of the most diverse conifers available in the landscape with cultivars spanning the entire range of sizes, forms, and colors. The selections below are just a small sampling of the hundreds of spruce cultivars available.

Norway Spruce (*Picea abies*)

Chub Harper estimates there about "18 gazillion cultivars of *Picea abies*." Although it's impossible to get an exact count of the number of cultivars of a given species, there are probably more cultivars of Norway spruce than any other conifer species. Of the 586 spruce cultivars currently listed in the American Conifer

The start of uncommon conifers: mutants. Conifer grower Dave Armentrout displays several unusual Norway spruces he has picked out of his seedling beds.



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Where Do Uncommon Conifers Come From?

Whenever someone walks through a collection of dwarf, contorted, drooping, variegated, or otherwise unusual conifers such as the Harper Collection at Hidden Lake Gardens, one of the first questions is "Where did these trees come from?" In a few cases the trees represent relatively rare species that we don't see often in this part of the world. However, in most cases these unusual trees represent genetic mutants of otherwise common conifers such as *Pinus strobus*, *Picea glauca*, *Picea abies*, *Tsuga canadensis* or other run-of-the-mill species. The trees we see in collections that are prized by conifer connoisseurs are the result of genetic mutations that result in unusual color or variegation, extremely slow growth rate, or loss of apical dominance. The mutations usually happen one of two ways: seedling mutants or witch's brooms. Seedling growers that grow tens of thousands of seedlings from a given species will occasionally find individuals with unusual growth characteristics such as variegated or weeping form. Scions from these trees can be grafted onto other seedlings to propagate trees with the unusual trait. Likewise, mutations can arise within an individual tree. These are called witch's brooms or "sports". The unusual trees are propagated by grafting scions from the witch's broom onto seedlings. If the mutation results in a weeping form, different forms of the tree can be produced depending upon where the scion is grafted. Grafting high on the normal tree (or standard) results in a weeping form, whereas grafting at ground level results in a prostrate or low growing form.

Society database, 40% are *P. abies*. As the common name implies, Norway spruce is native to northern Europe. The species range also extends into central and eastern Europe. Norway spruce is extremely well adapted to soils and climate in Michigan and has become naturalized in many areas. On good sites Norway spruce grows extremely fast, up to 3' or more per year. Among conifers commonly grown in Michigan, only Eastern white pine grows faster.

Bird's Nest Spruce (*P. abies* 'Nidiformis')

A low-growing, spreading form. Well-known, flat-topped, spreading spruce with dense, horizontal layers of branches, much wider than tall. A refreshing, light green color. Zone 2, grows 3-6" per year.

Chub notes: "A rugged and versatile conifer. Could be used as a substitute for all those yews..."

Hedgehog Spruce (*P. abies* 'Echiniformis')

Very prickly needles, hence the common name "Hedgehog Spruce". Don Howse describes this plant aptly in the Porter Howse Farms catalogue as "a tidy cushion of dense dark green foliage on small branchlets radiating from the core of the plant." Considered a miniature conifer (<1" per year), a specimen at Hidden Lake Gardens was planted in 1981 and is



Snake Branch Spruce

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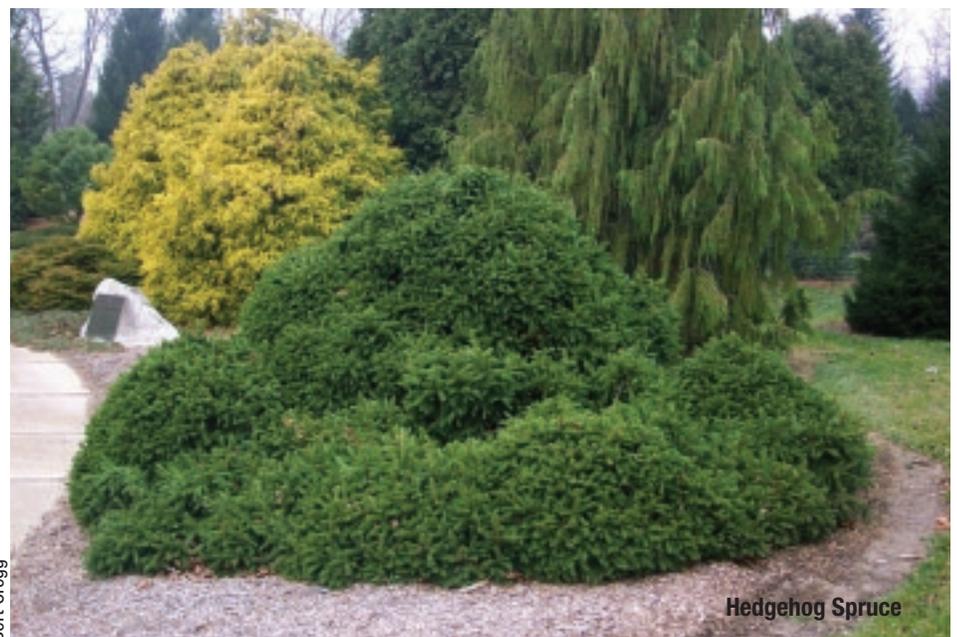
now about 5' tall.

Snake Branch Spruce (*P. abies* 'Virgata')

A dramatic tree, but may not be for everyone. Long, drooping leaders make a curtain of green. Will eventually become a relatively large tree.

P. abies 'Little Gem'

This is a superb rock garden specimen. It was a witch's broom that had developed on *P. abies*



Hedgehog Spruce

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***Picea mariana* 'Doumetii'**

This dwarf form will reach 3'-6' at age 10. A striking tree with bicolor, blue and green needles. Reports of hardiness vary between Zone 3 and Zone 4 but should easily handle most conditions in the Lower Peninsula.

'Nidiformis', the Nest Spruce, which itself was a witches' broom that had been found on a Norway Spruce.

***P. abies* 'Elegans'**

Compact mounded form. Great for foundation plantings.

Weeping Norway Spruce (*P. abies* 'Pedula')

Fast growing with pendulous branches. Can be staked to upright growth or allowed to grow as a ground cover.

***P. abies* 'Pumila'**

Attractive dwarf with dark green needles and wide-spreading dense growth. Tends to form a mound or central cone with age.

Serbian Spruce (*Picea omorika*)

A species that has attracted increased attention in recent years. As many landscapers and consumers grow weary of the ubiquitous blue spruce, Serbian Spruce offers a moderately fast growing, well adapted alternative that has an attractive, slightly weeping growth habit, even in the straight species.

Chub notes: "Serbian is always at the top of my list for spruces"

Weeping Serbian Spruce (*P. omorika* 'Pendula')

If the straight species doesn't weep enough for you, this cultivar will form a dramatic spire with drooping branches.

Dwarf Serbian Spruce (*P. omorika* 'Nana')

***Picea orientalis* 'Skylands'**



Oriental Spruce (*P. orientalis*)

This spruce is generally listed as Zone 5 so it is less cold hardy than other spruces discussed. May want to consider a slightly protected site.

***P. orientalis* 'Skylands'**

There are two specimens at Hidden Lake Gardens and both are show-stoppers. This cultivar has bright yellow foliage on the upper surface and dark green underneath.

Chub notes: "Skylands does well in the mid-Michigan area and is a great tree. Need to be a little careful with yellows; one or two is enough in most landscapes."



***Picea glauca* 'Delps Dwarf'**

***P. orientalis* 'Nigra Compacta'**

This beauty has shorter and darker needles than typical orientalis. Thin shoots, a compact habit that is wider than tall when young, developing into a broadly, conical tree.

White Spruce (*Picea glauca*)

Has a transcontinental range, from Newfoundland and Labrador west across Canada along the northern limit of trees to Hudson Bay, Northwest Territories, and Yukon. Outlying populations of the species reach south into Montana and South Dakota.

***Picea orientalis* 'Skylands' Close-up**



Chub notes: Cultivars of *P. glauca*, especially Dwarf Alberta Spruce, *P. glauca* 'Conica', really put spruces on the map. Almost all of the Dwarf Alberta types are subject to mites. Need to scout and stay on top of them. We've also found they are subject to winter burn. Look for locations where they don't get too much sun in the wintertime."

Black Hills Spruce (*P. glauca* var. *densata*)

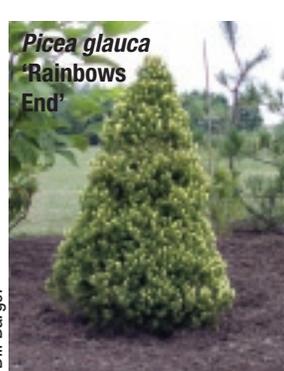
A dense compact tree that is excellent for landscaping. Extremely hardy (Zone 2) this tree gives the conical form of blue spruce but with a slower growth rate that won't go out of bounds in five years.

P. glauca 'Sanders Blue'

Chub notes: "A Dwarf Alberta-type. Starts blue then turns green to give a bi-color effect".

P. glauca 'Jean's Dilly'

An extraordinary dwarf form of the popular dwarf Alberta Spruce. 'Jean's (pronounced John's) Dilly' grows at only one-half to two-thirds the rate of Dwarf Alberta Spruce, making it a perfect accent for small to moderate-sized landscapes.



Picea glauca
'Rainbows
End'

Bill Barger

P. glauca
'Rainbows
End'

A mutation on 'Albertiana Conica'. The first flush of growth is light green in color the second flush

is a pleasant yellow giving the plant the appearance of a tiny Christmas tree decorated with lights.

Chub notes: "This is one that trips everyone's trigger."

Colorado Blue Spruce (*Picea pungens*)

The workhorse of landscape conifers in Michigan. Of course the goal in planting a blue spruce is to have one that is really blue. Seedlings



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Picea pungens
'Thompson'

Chub Notes

Justin "Chub" Harper is widely known as one of the leading experts on garden conifers in the United States. The Harper Collection of Dwarf and Rare Conifers at MSU's Hidden Lake Gardens is nationally recognized. Each *Conifer Corner* includes Chub's notes on his favorite (and not so favorite) conifers.

of blue spruce can vary widely from bright blue to dull green. The blue color is brightest on the newest foliage and is usually brighter when trees are grown in full sun.

P. pungens 'Fat Albert'

Dense, full pyramidal form. Intense blue. Can be grown from cuttings.

P. pungens 'Hoopsii'

Rich Eyre of Foxwillow Pines considers this the "standard for judging all other blues".

P. pungens 'Thompson'

Outstanding silver blue color.

P. pungens 'Walnut Glen'

A striking tree. Looks like the sun is shining on it even on a cloudy day. This Colorado Spruce cultivar is noted for its compact, upright, broadly pyramidal habit and powder blue needles with golden yellow variegation. Grows slowly (12"+ per year) typically to a height of 5-6' by 3' wide, but may grow taller.

P. pungens 'Morheim'

Intense gun-metal blue.



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Picea pungens 'Montgomery' is a slower growing form of Colorado blue spruce with consistent, wonderful color. *Picea abies* 'Parviformis' is at left.