

CONIFERS FROM YUCCA STALKS

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CLINIC HANDOUT

15TH ANNUAL SN³ SYMPOSIUM

DENVER, COLORADO
FEBRUARY 18-20, 2000

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Section 1 – Introduction

It would be hard to imagine a narrow gauge railroad without conifers. These magnificent plants are so common that we tend to take them for granted. Like many of you, I have tried numerous methods for populating my scenery with model conifers. The key is to find one that yields realistic results, is relatively inexpensive, and easy to do. The method described in this clinic meets all three requirements.

In this handout, you will learn about real conifers and how to make realistic models of them using Yucca flower stalks for the trunks. Yucca is a common plant found throughout the United States, but particularly plentiful in the west. A description of Yuccas and information on collecting the stalks are included in the reprint of the article “*Yucca Plants Make Great Conifers*”, beginning on page 16. The article was originally published in the Fall/Winter 1999 issue of Sn3 Modeler Magazine, and is reprinted in this handout with permission of Heimburger House Publishing Company.

The photograph on the cover shows model conifers made by following the step-by-step instructions contained in this handout. Give this method a try. I think you will be extremely pleased with the results.

Section 2 – Conifer Basics

Gymnosperms, the familiar coniferous, needle-leaved trees, often called evergreens or conifers, make up one of the two great subdivisions of the seed-bearing plants. The other subdivision, *Angiosperms*, includes the broad-leaved, deciduous tree forms – the so-called hardwoods. Conifers manifest a striking range of variation in structure, habit, size, and longevity.

Coniferous Forests

The most widespread forests of North America are those of conifers or softwoods – the cone-bearing evergreen trees with small leaves shaped like needles and scales. Within the United States, main geographic types are the northern coniferous forest, the Pacific Coast coniferous forest, and the Rocky Mountain coniferous forest.

Northern coniferous forests, sometimes called “north woods”, range from Alaska and Canada down into the northern U.S. Tree heights vary from 100 feet down to about 20 feet, decreasing northward towards the tundra areas. Eight species compose this forest: white spruce, black spruce, balsam fir, jack pine, tamarack, paper birch, balsam poplar and quaking aspen.

Along the humid, cool northwest Pacific coast of America, from Alaska down into northern California, is the greatest stand of timber on earth. It is the densest, tallest, most magnificent, and most valuable. Giant evergreens typically grow from 200 to 250 feet high and from 5 to 8 feet in trunk diameter. Some reach over 350 feet high or 30 feet in trunk diameter. Major species include western hemlock, Sitka spruce, Lawson cypress, redwood, Douglas-fir, western white pine, sugar pine, ponderosa pine, and Jeffrey pine.

The Rocky Mountains from Canada south into Mexico have coniferous forests in altitudinal zones. Evergreen trees typically range from 40 to 150 feet in height with trunk diameters from 1 to 4 feet. Lodgepole Pine is common throughout the northern Rockies in dense stands of medium-sized trees on burned areas. At the timberline is the subalpine spruce-fir forest of Englemann Spruce and subalpine fir. Douglas-fir, often with aspens, occupies the next lower zone. Southward, especially into Arizona and New Mexico, are open forests of ponderosa pine. At lower altitudes is the pinyon-juniper woodland, composed of scattered dwarf nut pines called pinyons, and junipers, shrubby rounded trees usually less than 20 feet high.

Coniferous Tree Parameters

To a modeler, the six most important parameters of a conifer are size, shape, color, texture, habitat, and range. Size includes the total tree height, the trunk diameter, and even the size of the cones. Shape includes the branching pattern, general foliage outline, and crown configuration. Color includes the trunk, branches, twigs, and cones. Texture includes the bark and foliage. Modelers must also be aware of growth habitats and range to create realistic model trees that are appropriate for the layout and to locate them in appropriate settings.

Size. Trees are probably the most under-scaled item on any model railroad. In S scale, a model of a mature 130-foot ponderosa pine tree should be about 24" high, 4" wide, with a trunk diameter of 3/4" and with cones about 3/32" long. In HO scale, a model of a mature 160 foot sugar pine tree should be about 21" high, 3" wide, with a trunk diameter of 5/8" and cones about 3/16" long.

Shape. Conifers come in a wide variety of shapes. Some are tall and cylindrical; others are pyramidal or cone shaped. Crown foliage varies from sharply pointed to flat. Some conifers are light and open; others extremely dense. Trees on slopes and in protected groves are generally symmetrical unless crowded; near the timberline they are windswept and often grotesquely gnarled. Trunks may rise straight up or may be sharply tapered. Some trunks have heavily buttressed or spreading bases. Branching patterns may be flat horizontal, pendulous, or upswept. Patterns may vary widely within the same tree between lower and upper branches.

Some conifers are branched to the ground; others show a large expanse of bare trunk between ground level and the lowest branch. Cones may point up, or may hang down. Some are on uppermost branches only, at branch ends; others dispersed throughout the foliage.

Color. Conifer foliage ranges from steely gray-blue, through blue, blue-green, dark green, green, to yellow-green. Needles may be of different colors on upper and lower edges. The individual needles may also have whitish or yellowish stripes, which, from a distance, impart a characteristic hue to the foliage. New growth may be of a different color than the older needles. Cones, which may be cylindrical, egg-shaped, or berry-like, vary from brown, through all shades of reddish-brown and yellow-brown to purple, red, and blue. Trunks, branches, and twigs vary from blackish-brown, through brown, reddish-brown and gray-brown, to gray and whitish-gray.

Texture. Bark texture may be smooth, ridged, deeply furrowed, fibrous, or plated. Foliage texture includes needle-like and scaly types of leaves. Needles may be round, flat, or angular. Foliage texture is also influenced by length of needles, which range from ½" to 12". The foliage may be sharp and prickly or soft and pliant.

Habitat. Conifers grow either in pure stands or mixed forests. In the pure stands, all trees are of the same species and are uniformly sized. Pure stands may be small groves or entire forests encompassing many square miles. Mixed forests include varying species. Some conifers, like those in the Rocky Mountain coniferous forest, reach maturity in less than 100 years. Others, in the Pacific Coast coniferous forests may take 400 - 600 years. Some conifers are over 4,000 years old, such as the sequoias and bristlecone pines. Conifers are greatly influenced by fires; in fact, some species require fires to reproduce. Forests are also dynamic. They go through stages after fires, disease, or clearing; some plant species recover quickly, then give way to others. Modelers should not be too greatly influenced by what a particular prototype scene looks like today; the species there may have changed significantly since the period being modeled.

Range. Some conifers are unique to the Pacific Coast or to the Rocky Mountains. Others exist in both locales, sometimes with slightly different growth characteristics.

Conifer Names

Botanists group conifers into several *families* that share similar characteristics. These include the Yew, Pine, Redwood, and Cypress families. Each family is a collection of *Genera* (singular: *Genus*), which further subdivide the conifers. For example, the Pine family is composed of several *Genera* including the pines (*Pinus*), larches (*Larix*), spruces (*Picea*), hemlocks (*Tsuga*), firs (*Abies*), and

Douglas-firs (*Pseudotsuga*). Each *Genera* is composed of several closely related *species*.

Each conifer has at least two names, a common name and a scientific name. Common names may vary locally, but the scientific name is used uniformly throughout the world. The scientific name is composed of two parts. The first word, always capitalized, is the *Genus*; the second word, not capitalized, is the *species*.

Section 3 - Tips for Realistic Model Conifers

Since real conifers vary tremendously in size, color and shape, it can be difficult to create an accurate model. In addition to the wide variations of actual color on the trunk, needles and cones, other factors influence how we see conifers. Moss and lichen may accumulate on the bark, giving a greenish cast to the trunks. Trees may ooze resin or sap, causing trunks to glisten. Texture and color variations in the bark, needles and cones can affect our overall perception.

Perceived conifer color is also dependent on numerous other factors such as:

- (1) Distance at which the tree is viewed,
- (2) Time of day in which it is viewed,
- (3) Vertical angle between the viewer and the tree,
- (4) Altitude,
- (5) Weather, clouds or other atmospheric conditions, and
- (6) Nearby terrain and vegetation.

To further complicate matters, the modeled conifer seldom is viewed under ideal artificial light which replicates true outdoor lighting conditions. The bottom line is – simply stated – it is neither possible nor desirable to duplicate a real conifer's color in a model. It is, however, possible to create realistic model conifers by adhering to the following principles:

- (1) Model the appropriate species,
- (2) Choose correct shapes and sizes,
- (3) Vary textures,
- (4) Use full range of applicable colors, and
- (5) Add sensory "tricks" to alter viewer's perception.

Modeling the appropriate species means more than just not putting Redwoods or Sugar Pines on the Ophir Loop. It includes knowing the correct habitat and range for each of the conifers that you model.

Choosing correct shapes and sizes means using the proper profile and branch patterns. It also means using a variety of heights and ages for each species, and

creating randomly interspersed models of young, intermediate, mature, dying, dead and fallen trees. Don't forget the leaning, contorted, doubled-trunk, burnt, broken, or lightning-struck specimens either. Don't be afraid to make scale-sized conifers. It is hard to break the mindset of using undersized, uniformly shaped and colored trees but, once you do, you will find that your modeling looks much more realistic.

By varying textures in your model conifers, you create more-interesting subjects for the viewer. Try to re-create – even exaggerate – the bark and foliage textures. Use the standard artist's tricks of adding-in artificial texture details, shadows and highlights.

Use the full range of applicable colors. For example, if the real conifer has yellow-green foliage, don't limit your model to a single shade of yellow-green. Use every variation of yellow-green you can come up with. Keep in mind that every color is composed of three components: hue, intensity and value. Vary the intensities and values as much as possible to add visual interest. Remember that errors in choice of hue are far less serious than in choices of intensity or value.

And finally, experiment with sensory "tricks" to fool the viewer's perception of the model. Use pine scent on the trunks. Spray the foliage with pine-scented air freshener. Plant trees in odd-numbered groups, e.g., 1,3,5,7, etc. Use irregular, random spacing between trees. Use the "rule of threes" – use a given color or texture three different times in three different places. The viewer's eye will subconsciously connect the three points, and jump from point to point, creating visual interest. Use special "spotlight" lighting to emphasize a special tree or grouping.

Above all, don't create a model conifer based on what you think real conifers look like. Go out and observe real conifers, or – better yet – get a good reference book on trees and use it.

Section 4 – Safety Precautions

Exercise caution when using pruning shears and utility knives to trim stalks.

Use appropriate eye protection when cutting heads from finishing nails with diagonal cutting pliers.

Use spray paints with adequate ventilation, preferably outdoors.

Spray paints and isopropyl alcohol are flammable. Take appropriate measures to avoid flames and sparks while in use.

Paints, stain and ink will discolor hands and work surfaces. Wear gloves when painting / staining and protect work surfaces with newspaper or plastic.

Never, ever use your wife's good sewing scissors to trim furnace filter material. An irate spouse is a modeler's worst nightmare.

Section 5 – Tools Required

Garden shears or pruning shears

Utility knife

File Cleaner (stiff wire brush)

Needle-nose pliers

Diagonal cutting pliers

Squeeze-type glue applicator

Stiff-bristled paint brushes

Scissors

Tweezers

Pin vice and #61 drill bit

Scale ruler

Section 6 – Materials Required

Raw yucca stalks *One per tree. (See article reprint beginning on page 16 for sources.)*

1 ¾" or 2" finishing nails *One per tree.*

Scrap Styrofoam *(For temporary tree bases.)*

Furnace filter material *(For main branches.) Commonly available in 1 inch thick sheets at most hardware or home-improvement stores. Standard sizes are 20" x 30" and 20" x 25". Called washable, cut-to-size furnace filter. Usually blue in color. Common brands include: "Frost-King" and "Purolator". About \$3 to \$5 per sheet. A 20" x 30" sheet will make enough branch material for 10 to 15 mature, tall trees or 20 to 30 younger, average trees.*

Tree-top branch material *(See Section 7 text.) "Bottle-brush" type small-scale trees, available at hobby stores; Bump Chenille, available at craft stores; Small wedge-shaped pieces of furnace filter, as from above; Dried flowers and weeds (Amaranthus, Lagurus, etc.), or artificial plastic flowers (Astilbe) available from home decorating stores and/or collected in the field.*

Yellow carpenters glue *Elmer's brand, or equivalent.*

Isopropyl alcohol *Rubbing alcohol. (Generic drug-store variety.)*

India ink *Higgins Black Magic brand, or equivalent. Available at art supply or hobby stores.*

Flat primer spray paint *Krylon brand, #1317, Ruddy Brown Primer, and/or #1318, All Purpose Primer Gray.*

Camouflage colors spray paints *Rust-oleum Painter's Touch brand, #1917, Khaki and #1918, Earth Brown or Krylon brand, #8141, Khaki and #8142, Brown.*

Acrylic artist's colors *Liquitex brand; #2002-224, Hooker's Green and #2002-904, Soft White.*

Water-based wood stain *Minwax brand, Colonial Pine.*

Ground foam *Woodland Scenics brand; Soil T-41, Earth T-42, Earth Blend T-50, Blended Turf T-49, Green Grass T-45, Weeds T-46. Also other shades are sometimes available from various manufacturers including Timber Products, Timberline Designs and A.M.S.I.*

Unscented extra-hold hair spray *Generic.*

Pine scented air freshener *Generic or candle maker's pine scent Yaley Candle Crafting brand, #110117.*

Cone materials *Various dried flower pods and seeds (Mini-Gyp, Mountain Heather, Rice Flowers, Broom Bloom, etc.), spices (Mustard Seed, Celery Seed), birdseed, vegetable garden seeds (Broccoli), ground cork, brown ground foam, grass seed (especially Bermuda.) Availability varies. Dried flower pods and seeds available at home decorating centers.*

Section 7 – Step-by-step Instructions

General Notes: Where the phrase “depending on species being modeled appears in the instructions, refer to Section 8.

Steps preceded with [OPTIONAL] may be omitted if desired.

Prepare trunks:

1. Trim stalk to desired height, depending on species being modeled.
2. Remove side branchlets from stalk with utility knife.
3. Add texture to stalk with file cleaner, depending on species being modeled.
4. Using needle-nose pliers, make hole in base of stalk by pushing a finishing nail into stalk about ½” to 1”. Remove the nail. If stalk is hollow or not firm enough to hold nail, strengthen with wood filler or tissue paper soaked in glue.
5. Using diagonal cutting pliers, cut off head of finishing nail
6. Fill hole made in step 4 with glue. Using needle-nose pliers, push cut-off end of finishing nail into hole until about ¾” to 1” of nail remains exposed
7. Coat stalk with India ink wash. Prepare wash by adding 20 to 30 drops of India ink to one ounce of isopropyl alcohol. Allow stalk to dry thoroughly.
8. Brush stalk with brown stain to add bark detail, depending on species being modeled. Vary the amount of brown from trunk to trunk or even on the same trunk. Allow stalk to dry thoroughly.
9. [OPTIONAL] Dry-brush the stalk with green / white paint mixture (1 part green to 3 parts white) to simulate lichen. Not all conifers have moss or lichen, although most do to a certain extent. Also, remember it is not just on the north side of the trunk!
10. [OPTIONAL] Dry-brush the stalk with white paint to produce highlights.
11. Depending on species being modeled, drill holes in the trunk for dead lower branches as follows: In the two-inch section of trunk area starting 2” from the base and ending 4” from the base, drill a random pattern of holes (about 8 to 10 holes total) with the #61 bit. Holes should be drilled perpendicular to the stalk or slightly sloped so that the branches will droop towards the ground. Holes should only go about halfway into the trunk and not completely through. Rotate the stalk about a quarter turn or so after each hole is drilled, so that the holes are scattered randomly around the trunk. This step is not required when making tree varieties with branches all the way to ground level.
12. [OPTIONAL] Spray trunks with pine scent or rub lightly with candle maker’s pine scent wax block.

Prepare branch material:

13. Remove net backing from furnace filter material.
14. Cut filter material into approximate 6” x 6” pieces with scissors.

15. Cut one of the pieces of 6" x 6" filter material into 1" x 6" strips. Cut each strip into small wedge-shaped pieces about an inch wide at one end by ½" wide at the other. You will get about six to eight wedges per strip. These little wedges will be shaped to form the tree-tops. Tree-tops may also be made from small-scale, "bottle-brush" type tree armatures, from bump chenille, or from dried flowers and weeds.
16. Separate each of the remaining 6" x 6" pieces of filter material into thin sheets by pulling apart. Try to get 3 or more sheets from each piece. Don't worry if pieces tear off irregularly.
17. Tear the sheets into random size pieces (¾" to 4 ½".)
18. Place all torn pieces and wedge-shaped pieces on newspaper and spray with ruddy brown primer. Insure all of the original blue color of the filter material is covered. If using alternate materials for the tree-tops, spray them the same ruddy brown primer color at this time.
19. [OPTIONAL] Spray branch material very lightly with flat khaki and/or flat earth brown to breakup the uniformity of the primer color. This step is more important for sparsely foliated or open trees. You can also use a flat gray.
20. Sort branch material into piles by sizes – small, medium and large. Save little scraps and individual fibers for use as dead branches.

Apply branch material to trunk:

21. Depending on species being modeled and using appropriate tree profile as a guide, select pieces of branch material and arrange in order to be assembled from bottom to top. The number of pieces required will depend on the size and species. You will average about 1 piece for every ½" of trunk to be covered. Each layer should be generally smaller in diameter than the preceding one. In some species, the widest diameter is not at the bottom, but slightly above the bottom.
22. Slide first piece of branch material down trunk, stopping about 4" from base. Apply dab of glue where branch material touches trunk. If making tree varieties that branch all the way to the ground, slide first piece down to about 1" from the base.
23. Slide second piece of branch material down trunk, stopping about ½" above the first piece. Apply a dab of glue where the branch material touches the trunk, if needed. Usually, the friction alone is sufficient to hold the branch material in place.
24. Continue sliding pieces of branch material down the trunk until top is reached. Add variety by occasionally putting a smaller layer before a larger one, or by putting the pieces slightly off-center. The distance between layers can also be varied.
25. Add a dab of glue to the top of the trunk and set one of the wedge-shaped pieces of branch material at the top. Let glue dry thoroughly before continuing with trimming. The alternate tree-top materials are better suited for modeling sharply pointed trees.

26. Using scissors, trim the top into the proper crown shape depending on species being modeled. If alternate tree-top material is used, insure joint between the two types of branch material is hidden. Also, trim away any unusual looking branch material, unsightly clumps, or individual fibers which curve back toward the trunk. Don't be afraid to remove branch material. Remember – when in doubt, less is always better.

Add foliage:

27. Hold trunk upside down by nail.
28. Spray branches thoroughly with hair spray.
29. Hold trunk over container and sprinkle with dark brown (soil) ground foam. Save excess.
30. Hold trunk upright by nail.
31. Spray branches thoroughly with hair spray again.
32. Hold trunk over container and sprinkle with brown (earth) ground foam. Save excess.
33. Allow branches to dry slightly before continuing (3 to 5 minutes.)
34. Hold trunk upright by nail.
35. Spray branches thoroughly with hair spray again.
36. Hold trunk over container and sprinkle with desired shade(s) of green foam depending on species being modeled. Save excess.
37. Repeat spraying and sprinkling until desired texture and foliage color are achieved.
38. For final sprinkle, use cone material to simulate cones depending on species being modeled.
39. Spray tree all over one last time as fixative. Allow tree to dry thoroughly.
40. [OPTIONAL] Spray tree with pine-scented air freshener.

Add individual dead branches: (Skip if branches go all the way to ground level)

41. Select a piece of scrap gray/brown branch material (single fiber.)
42. Using tweezers, touch the end of the branch into glue and insert into holes previously drilled in trunk.
43. Repeat using random length pieces until all holes are filled or until trunk "looks right."

Plant your new conifer and enjoy!

Special Note: Although these instructions were intended for Sn³ modelers, the techniques are equally applicable for modelers in other scales – just adjust the sizes accordingly. For you non-Sn³ modelers, there is one additional step:

44. Green side up!

Section 8 – Conifers of Interest to Colorado Modelers

Species:	<i>Abies concolor</i>
Common Name(s):	"White Fir", "Silver Fir", "Concolor Fir"
Average (max) Height:	100' – 180' (210')
Average (max) Diameter:	1.5' – 4' (6')
Bark:	Smooth, ash-gray becoming deeply furrowed at base; with light brown or gray twigs
Needles:	Light blue-green, white lined
Crown:	Narrow, pointed, with short symmetrical horizontal branches
Branches:	Horizontal
Cones:	3" – 5"; Greenish, purple or yellow-brown; Cylindrical, upright on topmost twigs
Habitat:	Various terrain, including extremely steep and unstable slopes; develops best on gentle slopes and level ground; in pure stands and in mixed fir forests
Elevation:	6900' – 8900'



FIGURE 8-1. WHITE FIR

Species:	<i>Abies lasiocarpa</i>
Common Name(s):	"Sub-alpine Fir", "Alpine Fir", "Rocky Mountain Fir", "Balsam", "White Balsam", "Western Balsam Fir", "Corkbark Fir", "White Fir"
Average (max) Height:	20' – 100' (140')
Average (max) Diameter:	1' – 2' (7')
Bark:	Grayish-white, smooth, becoming fissured; with gray, rust-colored twigs
Needles:	Dark green, white-lined
Crown:	Long, pointed, spire-like
Branches:	Horizontal or slightly upswept, reaching nearly to ground
Cones:	2 ¼" – 4"; Dark purple; Cylindrical, upright, on topmost twigs
Habitat:	Lower slopes, alluvial floodplains, and glacial moraines; high elevations on well drained, fine- to medium-textured sand and silt loams; in mixed spruce-fir forests on rocky soils
Elevation:	8000' – 11,500'



FIGURE 8-2. SUB-ALPINE FIR

Species:	<i>Picea engelmannii</i>
Common Name(s):	"Engelmann Spruce", "Columbian Spruce", "Mountain Spruce", "White Spruce", "Silver Spruce"
Average (max) Height:	80' – 120' (180')
Average (max) Diameter:	1' – 3' (8')
Bark:	Grayish-brown or purplish-brown, thin; with slender brown twigs
Needles:	Dark green to blue-green
Crown:	Dense, narrow, conical
Branches:	Slightly down-swept, reaching nearly to ground
Cones:	1 ½" – 2 ½"; Shiny, light brown; Cylindrical, hanging at twig ends, crowded at tree-top
Habitat:	Moist slopes and canyons; best on moderately deep, well drained, loamy sands and silts; in mixed conifer forests; dominant with Subalpine Fir
Elevation:	9000' – 11,000'



FIGURE 8-3. ENGELMANN SPRUCE

Species: *Picea pungens*
Common Name(s): "Blue Spruce", "Colorado Spruce", "Silver Spruce"
Average (max) Height: 80' – 100' (150')
Average (max) Diameter: 1' – 2' (3')
Bark: Dark, gray or brown, thick and furrowed, with yellow-brown twigs
Needles: Dull blue-green or bluish with whitish lines
Crown: Conical, with stout horizontal branches
Branches: Upswept near top, horizontal at middle, drooping, slightly pendulous at bottom
Cones: 2 ¼" – 4"; Shiny, light brown; Cylindrical
Habitat: Gentle upland and slopes, in well-watered tributary drainages, extending down intermittent streams, and on lower northerly slopes.
Elevation: 7000' – 10,000'



FIGURE 8-4. BLUE SPRUCE

Species: *Pinus contorta*
Common Name(s): "Lodgepole Pine", "Tamarack Pine", "Rocky Mountain Lodgepole Pine", "Black Pine"
Average (max) Height: 60' – 100' (115')
Average (max) Diameter: 2' – 4' (8')
Bark: Light brown or yellowish-brown, thin, scaly
Needles: Sparse, yellow-green to dark green
Crown: Tall with narrow, dense, conical crown, or small with broad, rounded crown
Branches: Mainly horizontal
Cones: ¾" – 2" (in Rocky Mtns); Shiny, yellow-brown, egg-shaped
Habitat: Pure stands on dry soils
Elevation: 7000' – 11,500'



FIGURE 8-5. LODGEPOLE PINE

Species: *Pinus flexilis*
Common Name(s): "Limber Pine", "White Pine", "Rocky Mountain White Pine"
Average (max) Height: 35' – 50' (80')
Average (max) Diameter: 1' – 2' (3')
Bark: Brownish-black, furrowed
Needles: Light or dark green, with white lines
Crown: Broad, rounded
Branches: Horizontal or slightly down-swept, stout, nearly to ground
Cones: 3" – 6"; Light brown to yellow-brown; Egg-shaped
Habitat: Dry, rocky slopes and ridges, often in pure stands
Elevation: 5000' – 12,000'



FIGURE 8-6. LIMBER PINE

Species: *Pinus ponderosa*
Common Name(s): "Ponderosa Pine", "Western Yellow Pine", "Blackjack Pine"
Average (max) Height: 60' – 130' (230')
Average (max) Diameter: 2 ½' – 4' (8')
Bark: Dark, furrowed when young; brownish-yellow, plated when mature; darker in Rocky Mtns
Needles: Dark green
Crown: Broad, open, conical
Branches: Spreading, slightly down-swept
Cones: 3" – 6", smaller in Rocky Mtns; dull, light reddish-brown; Egg-shaped
Habitat: Pure stands & mixed conifer forests
Elevation: 6000' – 10,000'



FIGURE 8-7. PONDEROSA PINE

Species: *Pseudotsuga menziesii*
Common Name(s): "Douglas-fir", "Red Fir", "Douglas Spruce", "Oregon Pine"
Average (max) Height: 80' – 100' (300')
Average (max) Diameter: 2' – 5' (14')
Bark: Reddish-brown, thick and deeply furrowed, with orange twigs
Needles: Blue-green (in Rocky Mtns)
Crown: Narrow, pointed
Branches: Slightly drooping with upswept ends
Cones: 1 ½" – 3"; Light brown; Narrowly egg-shaped
Habitat: Pure stands & mixed conifer forests on rocky soils
Elevation: 8000' – 9500'



FIGURE 8-8. DOUGLAS-FIR

Species: *Juniperus scopulorum*
Common Name(s): "Rocky Mountain Juniper", "Rocky Mountain Redcedar", "River Juniper"
Average (max) Height: 20' – 30' (50')
Average (max) Diameter: 1' – 2' (9')
Bark: Reddish-brown, shreddy; with thin, threadlike scaly twigs
Needles: Dark green to gray-green
Crown: Usually narrow, pointed
Branches: Slender, spreading, upswept; sometimes shrubby
Cones: ¼"; Bright blue with whitish coating
Habitat: Lower tree border on dry slopes and canyons
Elevation: 5000' – 9000'



FIGURE 8-9. ROCKY MOUNTAIN JUNIPER

Species: *Juniperus osteosperma*
Common Name(s): "Utah Juniper"
Average (max) Height: 15' – 20' (40')
Average (max) Diameter: 1' (3')
Bark: Gray-brown, shreddy, weathering to almost-white; stout twigs
Needles: Yellow-green
Crown: Rounded or conical, open
Branches: Spreading, upswept; often multi-trunked
Cones: ¼" – ½"; Bluish, turning red-brown
Habitat: Pure stands & with pinyons on rocky hillsides and canyons
Elevation: 4000' – 7500'



FIGURE 8-10. UTAH JUNIPER

Species: *Pinus edulis*
Common Name(s): "Two-needle Pinyon", "Two-leaf Pinyon", "Colorado Pinyon", "Nut Pinyon"
Average (max) Height: 15' – 25' (50')
Average (max) Diameter: 1' – 2' (3')
Bark: Gray to reddish-brown, rough, furrowed
Needles: Light to dark green
Crown: Compact, rounded
Branches: Bushy, spreading, mainly horizontal
Cones: 1 ½" – 2"; Yellow-brown; Egg-shaped
Habitat: Lower slopes and dry sites
Elevation: 5000' – 8000'



FIGURE 8-11. TWO-NEEDLE PINYON

Section 9 – Questions or Comments

For questions or comments about this handout, making model conifers, or just to trade new tips and ideas, you can e-mail me directly at: sn3nut@mmcable.com.

You can also post your thoughts on the subject at the Sn3 list at onelist.com

If you want to write, my snail-mail address is: Bob Hyman
17206 Cedar Lane
Choctaw, OK 73020-7482

(Notice how I live on a street with a conifer name. My last house, in California, was on a street named Pinedale Drive. Makes you wonder, eh? Maybe some type of conifer conspiracy going on!)

Section 10 – References

Here are some related books, articles, and web sites that you might find helpful:

The Audubon Society Field Guide to North American Trees – Western Region; Little, Elbert L.; Alfred A. Knopf, Inc.; New York, NY; 1980.

Western Trees – Peterson Field Guide Series; Petrides, G.A. and Petrides, O.; Houghton Mifflin Co.; Boston, MA; 1998.

“Conifer”; *Microsoft Encarta 97 Encyclopedia*; Microsoft Corp.; 1996

<http://www.treeguide.com/treeguide/index.htm>

(All Trees) *** Great web site! ***

http://willow.ncfes.umn.edu/silvics_manual/Table_of_contents.htm

(USDA Forest Service Agriculture Handbook 654 "Silvics of North America") *** Lots of detail, but no pictures! ***

<http://www.orst.edu/instruct/for241/index>

(Pacific Northwest Conifers)

<http://www.metla.fi/info/vlib/forestry>

(Virtual Tree Library)

<http://www.fs.fed.us/>

(USDA Forest Service General Information)

Article Reprint – “Yucca Plants Make Great Conifers”

***Note: Article reprint is not included in electronic media format.
See Sn3 Modeler Magazine, Fall/Winter 1999 issue, pages 16-18.***