

ADDITIONAL NOTES: I conducted considerable salt tolerance research and in one comparative study between this species and *P. strobus* found that *P. thunbergii* was tremendously salt tolerant. Apparently, it is able to exclude the sodium and chloride ions and thus resist injury. White Pine accumulated chloride at levels greater than 2% of needle dry weight and died. For a rather complete listing of salt tolerant plants see Dirr, *Journal of Arboriculture* 2:209–216 (1976). See Townsend and Kwolek, *J. Arboriculture* 13(9): 225–228 (1987) for a discussion of the salt-tolerance of 13 pine species.

NATIVE HABITAT: Japan, Korea. Grows by the seashore. Introduced 1855.

Pinus virginiana Mill. — Virginia (Scrub) Pine, Jersey Pine, Spruce Pine, Poverty Pine
(pī'nus vēr-jin'ē-ā'na)

LEAVES: In two's, remaining 3 to 4 years, twisted, spreading, stout, 1 1/2 to 3" long, margins with minute, irregular teeth, apex sharp-pointed, yellow-green to dark green; sheath persistent, 3/16" long.

BUDS: Ovoid with a short point, 1/3 to 1/2" long, resinous with closely pressed scales.

STEM: Young-slender, reddish purple with a pale bloom; good way to separate it from *P. banksiana* and *P. sylvestris*.

SIZE: 15 to 40' in height by 10 to 30' spread; respectable 60' plants at Bernheim Arboretum and Tyler Arboretum; national champion 91' by 43' in Arlington, VA.

HARDINESS: Zone 4 to 8.

HABIT: A broad, open pyramid, becoming flat-topped, the branches springing irregularly from the stem; finally low, straggling, scrubby, with long outstretched limbs.

RATE: Slow.

TEXTURE: Medium.

BARK: Thin and smooth, eventually scaly-plated, reddish brown, 1/4 to 1/2" thick.

LEAF COLOR: Yellow-green to dark green; often sickly yellowish green in winter.

FLOWERS: Monoecious; staminate orange-brown, pistillate pale green.

FRUIT: Cones 2 to 4 together or solitary, short-stalked or sessile, spreading or deflexed, oblong-conical, symmetrical, 1 1/2 to 3" long by 1 to 1 1/4" broad, apex blunt, dark brown; maturing in the second autumn but often persistent after that; cones sharp due to prickle-like appendage.

CULTURE: Does well in poor, dry soils where other pines will not grow; best on clay loam or sandy loam; dislikes shallow, chalky soils; open, sunny exposure.

DISEASES AND INSECTS: See *Pinus* introduction.

LANDSCAPE VALUE: Not very ornamental but valuable as a cover for dry and barren soils; served as the basis for the Christmas tree industry in the southern states, losing some of its steam because of Leyland Cypress intrusion and the extensive Fraser Fir production in North Carolina and Virginia.

CULTIVARS: Stanley & Sons 2007–2008 catalog lists 6 cultivars of *P. virginiana*.

'Wate's Golden'—Golden needles in winter, green in summer, start to change to yellow-gold in October; November; quite effective in the cold-weather landscape and combines well with the red, gold, yellow orange-stemmed, shrubby *Cornus*.

ADDITIONAL NOTES: Chief merit lies in its ability to reproduce and grow on heavy, clay land where few other plants will grow, both on virgin soil and impoverished farm land.

NATIVE HABITAT: Long Island, New York, southwestward to central Alabama, in the Appalachian, Ohio Valley, Piedmont, and part of the Coastal Plain regions. Introduced before 1739.

Pinus wallichiana A.B. Jacks. — Himalayan Pine, Bhutan Pine; also called *P. griffithii* McClelland
(pī'nus wâl-lik-ē-ā'na)

LEAVES: Five, persisting 3 to 4 years, on young shoots more or less erect, the older ones spreading or drooping; slender, flaccid, creating a feathery effect, 5 to 8" long, apex sharp pointed, grayish green to blue-green; margin minutely toothed, with glaucous, white stomatic lines inside, outside green, leaf sheaths about 3/4" long, soon falling, needles often bent abruptly near base so greater part of needle is pendulous.

STEM: Stout, bluish green, glabrous, slightly ridged below each bundle of needles towards the apex.

SIZE: 30 to 50' high under landscape conditions but can grow to 150'; spread is variable but the large specimens I have seen were 1/2 to 2/3's the height.

HARDINESS: Zone 5 to 7; shows considerable needle browning when temperatures drop below -15°F.

HABIT: Loosely and broadly pyramidal when young; graceful, of elegant habit and often feathered with branches to the ground in old age; tends to be more wide-spreading than many pines as it approaches maturity.

ovoid-oblong, brown, 6 to 8" (10") long cones (up to 5" wide at base) open promptly and abscise over the winter following maturation. Not a plant for everyday use but intriguing. On trips to the coast, from Metter to Savannah, GA, the broomy-grassy stage of Longleaf Pine is common in the sandy or clay-sand ridges along with the scrub oaks. Southeastern Virginia to Florida, east to Texas. Zone 7 to 10. Introduced 1727.

Pinus thunbergii Parl. — Japanese Black Pine

(pīnus thun-bērj'ē-i)

LEAVES: Two, persisting 3 to 5 years, densely crowded, twisted, more or less spreading, 2 1/2 to 4 1/2" long, 1/12" wide, apex stiff, fine-pointed, rigid, margins finely toothed, with stomatic lines on each surface; very lustrous dark green; leaf sheaths 1/2" long, ending in two long, thread-like segments, persistent.

BUDS: One of the few conifers in which the buds provide a good identification feature; the terminal buds characteristically ovoid-cylindrical, apex-pointed, 1/2 to 3/4" long (may be longer), not resinous, scales appressed, tips free, gray or silvery white (very prominent), fimbriated.

STEM: Light brown, glabrous, ridged with the scale leaves persisting during the first year; in the second and third year blackish gray.

SIZE: 20 to 80' in height with a greatly variable spread, usually 20 to 40' under cultivation.

HARDINESS: Zone (5)6 to 8, -10 to -15°F will burn the needles.

HABIT: In youth artistically uneven but more or less pyramidal, in old age with spreading often pendulous branches, however, young trees can be pruned into a full dense specimen.

RATE: Medium.

TEXTURE: Medium.

BARK: On old trees blackish gray, soon becoming fissured into elongated irregular plates.

LEAF COLOR: Dark green, very handsome.

FLOWERS: Monoecious.

FRUIT: Cones subterminal, solitary or clustered, short-stalked, spreading, symmetrical, ovoid to conical, 1 1/2 to 3" long, 1 1/4 to 1 3/4" wide; scale end flattened, shiny light brown; umbo depressed, small, obtuse or with a minute prickle.

CULTURE: Transplants easily balled-and-burlapped if root pruned or from containers; makes its best growth on moist, fertile, well-drained soils; will grow on sandy soils and has been used for reclaiming sand dunes and other protective work near the shore; quite salt tolerant and has been used where foliar salts present a cultural problem; best in full sun; displays heat and drought tolerance; many in coastal North Carolina growing literally in sand next to the Atlantic and quite prosperous.

DISEASES AND INSECTS: Abundant branch dieback (*Diplodia* ?) on plants in Zone 7 and 8. A nurseryman and I were discussing the merits of this species and asked whether the other had ever witnessed a robust old specimen, the answer was NO! Life span has been 5 to 10 years on the Georgia campus.

LANDSCAPE VALUE: Because of its tolerance to salt spray it is invaluable for seashore plantings and useful in stabilizing sand dunes; also a good accent or bonsai plant; in 1985 several 4 to 5' plants were used as an irregular mass to screen a clay hillside at the University's Botanical Garden, by fall of 1989 the plants had grown 10 to 12' high and filled in without any pruning, their habit was somewhat irregular, the lustrous deep green needles and white, candle-like buds were particularly handsome; these plants were dead by 1997, see the discussion under DISEASES AND INSECTS.

CULTIVARS: Stanley & Sons 2007-2008 catalog lists 36 *P. thunbergii* taxa.

'Compacta'—Dense irregular large shrub type.

'Frosty Patches'—Yellow shoots mixed with green; not particularly vigorous.

'Globosa'—Large dense globe habit, dark green needles.

'Iseli' ('Aocha Matsu')—Gold-variegated, broad pyramidal form, 7' by 3'.

'Kotobuki'—Small, pyramidal, with bright green, short needles.

'Majestic Beauty'—Habit like species, but more dense and compact, with lustrous dark green needles, resistant to smog, cutting propagated, Monrovia introduction.

'Mini Mounds'—Good name for this 2 to 4' high, 7 to 9' wide, 23-year-old selection; closely spaced, 3 to 5"(8") long needles that are bunched to form mounds; Vermeulen introduction.

'Mt. Hood Prostrate'—Dramatic low sweeping habit, dark green needles, 6 to 8' high, 8 to 12' wide; Iseli introduction.

'Oculus-draconis'—Needles are banded with yellow (2 bands) like *P. densiflora* 'Oculus draconis', very stiff appearance and wide-spreading habit; for the collector.

'Pygmaea'—Compact form with rich green needles, 5' to 4'; Iseli.

'Shioguro'—Compact, globose with bright green, long needles.

'Thunderhead'—Heavy bud set, i.e., white, candle-like buds above heavy, dense, dark green needles; dwarf, broad habit; Angelica Nursery introduction.

PROPAGATION: Seeds have no dormancy and will germinate immediately upon planting.

Manual of Woody Landscape Plants

Their Identification, Ornamental Characteristics,
Culture, Propagation and Uses

Sixth Edition

MICHAEL A. DIRR

Professor, Retired
Department of Horticulture
University of Georgia
Athens, Georgia

ILLUSTRATIONS BY

**BONNIE DIRR,
MARGARET STEPHAN,
ASTA SADAUSKAS
and
NANCY SNYDER**



STIPES PUBLISHING L.L.C.
P.O. Box 526
Champaign, Illinois 61824