Araucaria araucana (J.I. Molina) K. Koch — Monkey Puzzle Tree

(*Araucaria imbricata*)

Other Common Names: Chile Pine, Chilean Pine, Monkey Puzzle.
Family: *Araucariaceae*.
Cold Hardiness: This species can be grown in USDA zones 8(7b) through 11.
Foliage: Evergreen; the stiff sharp-tipped leaves are 1⁰ to 2⁰ long; the mature form dark glossy green leaves are ovate-lanceolate with a broad base and are densely arranged in forward pointing spiral whorls; leaves are retained for several years in a live state, and even longer as dry dead appendages.
Flower: Usually dioecious; two to five female cones initially appear inconspicuous green blobs which develop into huge 4⁰ to 7⁰ long cones; the 3⁰ to 5⁰ long male inflorescences are mostly in whorls of five at a branch tips surrounding a growing point and are oriented horizontally to the main axis of the stem; the ovoid, pointed male cones are small green and covered with small brown hair-like appendages; females are spiny and rather formidable in appearance.
Fruit: The 1⁰ to 1½⁰ long wingless seeds are borne in a spiny green cone on female trees; cones are the size of a small coconut and take two to three years to ripen; mature cones are broadly ovoid-spherical in overall shape, consisting of tightly packed scales which ripen from green to brown beginning at the tips and proceeding basally; the spines are the narrowed forward pointing tips of the cone scales; although rarely produced in our region, these 4⁰ to 8⁰ diameter cones can weigh as much as 1⁰ lb, potentially producing a Texas size headache when they fall.
Stem / Bark: Stems — stout stiff limbs are green, eventually turning gray; the main branches are initially horizontal with upturned tips, later drooping and swooping and developing more or less pendent smaller lateral branches; needles are retained for several years; branches tend to be in whorls of five on the trunk interspersed with long internodes clothed in upward arching scale-like leaves; the overall resemblance of the sparsely branched ends of the limbs to intertwined monkey tails is where the common name of the tree is derived; Buds — green, terminals prominent and elongating to form branches; laterals may developing into smaller branches or brown cones; Bark — at maturity the trunk is reminiscent of a giant elephant foot with drooping folds of smooth gray bark; the bark even crumples at the base of the buttress roots which look like huge toes trailing off into the ground.
Habit: Monkey Puzzle Tree is broadly pyramidal to conical in youth, developing a spreading rounded dome of drooping and swooping branches atop a long clear trunk with age; mature heights in our region have not been fully determined, but this is a large tree in its native haunts reaching heights of 1⁰⁰ⁿ or more; references for similar climates suggest 6⁰ⁿ to 8⁰ⁿ might be a reasonable estimate in Texas.
Cultural Requirements: Best growth is in well drained, but moist fertile acidic soils and sunny exposures; however, the species is adapted to a wide range of soils as long as they are not soggy; moderately salt and plants can withstand moderate drought tolerant once established.
Pathological Problems: Few of serious consequence; scale insects and sooty molds are occasional maladies.
Ornamental Assets: *Araucaria araucana* makes a very bold statement in the landscape; in youth it is almost prehistoric in appearance and at maturity it lends an exotic other-world look to vistas.
Limitations & Liabilities: This species is painfully coarse in texture and is very difficult to work subtly into most conventional landscapes; this textural and context challenge, as well as the species' large mature size, may explain why it is not encountered more in American landscapes; the leaves are

sharp and stiff, leading to painful pruning experiences and a need to avoid contact with pedestrian traffic; roots tend to grown near the surface and can cause maintenance problems in turf areas; the fruit could be a potential pedestrian or vehicular hazard when falling; spent foliage and limbs are also maintenance liabilities.

Landscape Utilization: Use should be reserved for bold statements in parks where its full size can be expressed and plants can be admired at a distance; a good tree for creating an exotic flavor in estates, theme parks, zoos, and other large public places.

Other Comments: This is a very interesting species that landscape designers simply have a hard time locating either as a design element or as a plant from nurseries; the genus and specific epithet both refer to the species' province of origin in Chile.

Native Habitat: Arauco Province in Chile and Southwest Argentina.

Related Taxa: Several species in this genera are found in tropical landscapes, mostly in the Southern Hemisphere; *Araucaria araucana* is the most cold tolerant of the group whereas the other two species rarely found in Texas landscapes, *A. heterophylla* and *A. bidwillii*, are less cold tolerant.

Araucaria bidwillii J.D. Hooker **Bunya Bunya**

- C Also known as Bunya Bunya Pine or False Monkey Puzzle Tree; Bunya Bunya is only rarely seen in Texas landscapes, but can potentially develop into a very large, 150N tall, tree in its native habitat of Northeast Australia; trees are narrowly pyramidal in youth, eventually developing a broader crown at maturity; the habit is narrower, as are the leaves, and is softer in texture than *A. araucaria*; juvenile leaves are about 20 long and are held more or less in two rows; adult leaves are broader, shorter, and spirally arranged; fruit superficially resembles a dark green pineapple; the scarlet seeds are considered a great delicacy by Australian Aborigines in the tree's native land.
- C Limited plantings suggest that the species can be grown in southern portions of Texas and the Gulf Coast; references vary in their assessment of cold tolerance from USDA zone 8 to 9 and it will grow in tropical regions as well; a young specimen is surviving outdoors in College Station, Texas; the species appears to tolerate a range of soils as long as they are moderately well drained; plants are soil pH adaptable, this species is tolerant of moderate foliar salt exposure and drought once established; trees are slow to moderate growers.
- C Suitable for similar landscape settings as *A. araucaria* and the species has several of the same limitations in usage; plants retain their lower limbs longer than *A. araucaria*, with resultant potential as a large windbreak or screen; in youth plants may require pruning to maintain a central leader; scale insects, leaf spots and sooty mold can be occasional problems in the landscape; trees can be used in coastal plantings.

Araucaria heterophylla (R.A. Salisbury) J.M.A.P. do Amaral Franco **Norfolk Island Pine**
(*Araucaria excelsa*)

- C Also known as Australian Pine or House Pine; this subtropical to tropical evergreen is strongly pyramidal in habit with long internodes between tiered whorls of horizontal to slightly upward arching branches; the branching is much more open than with either *A. araucaria* or *A. bidwillii*; in their native land, trees may reach 200N tall, whereas plants are much shorter in the US, perhaps 60N to 80N, and are frequently even smaller due to cold damage or lightening strikes in Texas; this species is limited in our region to use as interiorscape plants or as marginally cold hardy trees in the lower Rio Grande Valley or immediate Gulf Coast.

- The juvenile foliage resembles short, ½0 long, lanceolate to awl-shaped conifer needles, whereas the mature foliage consists of 10 to 20 long contorted leathery ovate-lanceolate leaves; female cones can be huge, 10 to 5 lb, but are seldom produced in cultivation.
- These trees lend themselves to use in formal plantings for large public places, either as individual specimens or in small groves; this species is extensively utilized in tropical landscapes worldwide and has the most pleasing form of the species discussed herein; plants are tolerant of a range of soil pH and moderately salt and drought tolerant once established; suitable for coastal plantings; this species is truly reliable outdoors only in USDA zones 10 and 11, but is sometimes grown for a time in protected locations in 9b.

References: Bloom, 2002; Dirr, 1998; Gilman, 1996; Hora, 1980; Hudak, 1980; Macoboy, 1979; Odenwald and Turner, 1996; van Gelderen, 1996.