GYMNOSPERMS

Araucariaceae

Monoecious or dioecious, evergreen coniferous trees of columnar to pyramidal shape. Branches symmetrically whorled. Leaves opposite or spirally arranged, sessile, evenly distributed or crowded on the branches, broadly ovate, scale-like or needle- (awl-) like. Male cones consisting of solitary or fasciculate catkins. Female cones large, terminal on short shoots, more or less globose; seed one per cone-scale, large, winged or unwinged.

1. Araucaria Jussieu

Characteristics of the family Araucariaceae, with the leaves spirally arranged and crowded on the branches, ovate-lanceolate to needle-like and scale-like.

Key to Species

1. Mature crown of tree dome-shaped; leaves all of one kind; seed not winged
   1. Araucaria

1. Mature crown of tree pyramidal; leaves dimorphic (the juvenile needle-like, the adult scale-like)
   2. Araucaria heterophylla

1. Araucaria araucana (Molina) K. Koch, Dendrologie 2(2): 206 (1873). MONKEY PUZZLE TREE. Dioecious, dome-crowned tree to 15 (-40) m, with symmetrically (4-) 5 (-8)-whorled, horizontally spreading branching pattern. Leaves decurrent, all of one kind, ovate-lanceolate, with spinose apex, 2.5-5 cm. Male cones cylindrical, to 12 cm. Female cones erect, ovoid to spherical, to 13 x 5 cm, with long-acuminate cone-scales. Seed oblongoid, not winged, to 4 cm.

Range: Chile, Argentina. Grown as an ornamental on Torarica hotel grounds in Paramaribo, Surinam.

2. Araucaria heterophylla (Salisbury) Franco, Anais Instituto Superior de Agronomia (Lisbon) 19: 11 (1952). NORFOLK ISLAND PINE. Dioecious, pyramidal tree to 24 (-60) x 2.1 m, with symmetrically 4- to 7-whorled, horizontally spreading branching pattern. Leaves crowded, decurrent, dimorphic, the juvenile leaves needle- or awl-like and 6-13 mm, the adult leaves scale-like, ovate, c.7 mm; leaves deciduous with the twigs. Male cones oblongoid, to 5 cm. Female cones erect, subglobose, to 12.5 x 15 cm, with acuminate cone-scales. Seed oblongoid, winged, to c.3.2 cm.

Range: Norfolk Island (Pacific Ocean). Occasionally grown as a decorative accent plant in gardens of the Georgetown area, Guyana; on Torarica hotel grounds and in roadside gardens in Paramaribo and environs (e.g. along Camelannstraat), Surinam; and in Cayenne, French Guiana.

Fig. 1. *Araucaria heterophylla* (Araucariaceae).
Fig. 2. *Araucaria heterophylla* (Araucariaceae).
Cupressaceae

Monoecious or dioecious, coniferous, usually evergreen trees or shrubs; sap resinous. Trunk branched. Leaves 4-ranked in opposite pairs or verticillate in whorls of 3, usually needle-like on juvenile branches and scale-like on adult branches. Male cones in leaf-axils or terminal at tips of branches. Female cones terminal or on short branches, with opposite, paired scales, dry, leathery or fleshy and berry-like; ovules 1-20 per scale. Seeds unwinged or 2- to 3-winged.

Key to Genera

1. Juvenile (needle-like) leaves 4-ranked in opposite pairs; fruiting cones dry, woody, hard
   1. Cupressus

1. Juvenile (needle-like) leaves usually verticillate in whorls of 3; fruiting cones fleshy, berry-like
   2. Juniperus

1. Cupressus Linnaeus

Monoecious, evergreen, coniferous, often pyramidal trees. Branches radiating, flattened; sap resinous. Leaves 4-ranked in opposite pairs (decussate), appressed, dimorphic, those of young plants linear or awl-shaped, those of adult plants scale-like. Cones terminal on the branches, solitary; male cones small; female cones shortly stipitate, the scales woody, peltate, persistent, variably umbonate. Seeds 6-20 per fertile scale, with narrow wing.

1. Cupressus sempervirens Linnaeus, Species Plantarum 1002 (1753). MEDITERRANEAN CYPRRESS. Erect tree to 55 x 3 m, often smaller, sometimes strictly columnar; branches ascending to horizontally spreading; branchlets forming a spray in one plane. Adult leaves scale-like, obtuse, appressed, 4-ranked, 0.5-1.0 mm, with glandular dot on the back. Female cones ellipsoid-oblong, 4.0 x 3.5 cm, of 8-14 scales each bearing 8-20 seeds.

Range: Aegean Sea region (Greece, Crete); Southwest Asia. Grown as an ornamental in Paramaribo, Surinam (Ostendorf, 1962).

An undetermined species of Cupressus is grown for ornament in French Guiana (de Granville, 1985A).

2. Juniperus Linnaeus

Dioecious (usually) or monoecious, evergreen, coniferous trees or shrubs. Branches radiating. Leaves monomorphic and needle-like or dimorphic; when dimorphic those of adult foliage on older branches in opposite pairs, usually appressed, overlapping, and scale-like, those of juvenile foliage opposite or in whorls of 3 (ternate), needle-like. Male cones catkin-like; female cones maturing as a berry-like structure comprising 3-8 coalesced, fleshy scales. Seeds 1-12 per fertile scale, not winged.

1. Juniperus chinensis Linnaeus, Mantissa Plantarum 1: 127 (1767). CHINESE
Fig. 3. *Cupressus sempervirens* (Cupressaceae).
Fig. 4. *Juniperus chinensis* (Cupressaceae).
JUNIPER. Dioecious, conical or pyramidal trees to 20 m, or much smaller, mounded shrubs; branches short. Leaves dimorphic; juvenile leaves needle-like, mostly in whorls of 3 (ternate), spreading, 5-12 mm; adult leaves in opposite pairs, scale-like, appressed, c.1.5 mm, with glandular dot on the back. Female cones (berries) dark purple or blue, glaucous, 2- to 5-seeded, subglobose, 6-8 mm wide.

Range: Mongolia, China, Japan. Grown as an ornamental in the Promenade Gardens, Georgetown, Guyana.

More than 100 named cultivars and "clonal sports" exist; grown principally in the world’s North Temperate climatic zone.

Cycadaceae

Dioecious, evergreen, palm-like plants. Trunk mostly unbranched, ringed with persistent leaf-bases. Leaves usually in a terminal, spreading crown, peltiote, pinnate or bipinnate (Bowenia); pinnae with prominent midrib, without lateral veins. Sporophylls (seed-bearing organs) spirally arranged, the male scale-like and in cones, the female toothed to pinnatifid, with 2-10 marginal ovules, not organized into a cone, but in loose terminal, massed clusters. Seeds flattened.


1. Cycas Linnaeus

Characteristics of the family Cycadaceae, with leaves pinnate, in a terminal spreading crown.

Key to Species

1. Leaflets (pinnae) with flat margin, the margin not distinctly thickened, to 35 x 0.9-1.4 cm, pliable, fern-like, gracefully spreading; leaves mostly to 2.5 m; trunk usually to 4.5 (-12) m
   1. C. circinalis

1. Leaflets (pinnae) with revolute (rolled-under) margin, the margin distinctly thickened, to 20 x 0.7 cm, stiff and rigid; leaves mostly to 1.5 m; trunk usually less than 1.8 m (to 4 m)
   2. C. revoluta

1. Cycas circinalis Linnaeus, Species Plantarum 1188 (1753). GROTE FOENGOE PALM (Surinam); FERN PALM, QUEEN SAGO, SAGO PALM. Trunk usually unbranched, often bearing suckers (plantlets), to 4.5 (-12) m x 30 cm. Leaves 1.8-2.5 (-3.6) m; leaflets 40-50 pairs, narrowly linear-lanceolate, 15-35 x 0.9-1.4 cm, the margin flat, not distinctly thickened. Male cones cylindrical, to 70 cm. Sterile part of megasporophyll serrate. Seeds yellow to brown, to 5.5 cm.
Fig. 5. *Cycas circinalis* (Cycadaceae).
Fig. 6. *Cycas revoluta* (Cycadaceae).
Range: East Indies. Grown as an ornamental in the Promenade Gardens and Botanic Gardens, Georgetown, and on Timehri Airport grounds, Guyana; on hotel grounds, in roadside gardens, at the Palmentuin, and in the sierplanten area of the Cultuurtuin, Paramaribo, as well as in yards along Kwattaweg road outside Paramaribo, Surinam; and in the Jardin Botanique and on hotel grounds in Cayenne, French Guiana.

This species had already reached Cayenne, French Guiana by the middle 1700's (Aublet 2: 973. 1775).

2. *Cycas revoluta* Thunberg, *Flora Japonica* 229 (1784). KLEINE FOENGOE PALM (Surinam); JAPANESE SAGO PALM, SAGO PALM. Trunk sometimes branched above, to (2.1) 4 m x 30 cm. Leaves 75 cm - 1.5 m; leaflets c.60 pairs, linear, 10-20 x 0.7 cm, the margin revolute, distinctly thickened. Male cones cylindrical, to 50 cm. Sterile part of megasporophyll pinnatifid. Seeds red or orange, to 3.8 cm.

Range: Southern Japan and Ryukyu Islands. Grown as a potted ornamental at the Esther Stichting near Paramaribo, and on Gravenstraat opposite the Parket van de Procureur General in Paramaribo, Surinam.

**Pinaceae**

Monoecious, evergreen or sometimes deciduous, coniferous trees of conical or pyramidal shape, with resinous sap. Branches usually whorled. Leaves alternate, spirally arranged, or in fascicles of 2-30, linear and needle-like. Male cones consisting of clustered catkins. Female cones often large, solitary or few together on a branch, with spirally arranged, usually distinct bract-scales and fertile seed-bearing scales; seeds 2 per scale, often winged.

1. *Pinus* Linnaeus

Characteristics of the family Pinaceae, with leaves in fascicles of 2-5 and cone-scales bearing an apical projection (umbo).

1. *Pinus caribaea* Morelet, *Revue Horticole de la Cote d'Or* (Dijon) 1: 107 (1851). PIN DES CARAIBES (French Guiana); CARIBBEAN PINE. Tree to 30 m x 6 dm. Leaves in fascicles of 3 (4-5), 12-30 cm; basal sheath of fascicle persistent. Female cones conical, to 14 x 4 cm; cone-scales reddish-brown, with an apical prickle. Seeds with persistent wing to 2.5 cm.

Range: Bahamas; Cuba; Central America from Belize to Nicaragua. Grown as an ornamental in garden on Borretstraat in Paramaribo, Surinam; and in French Guiana (de Granville, 1985).

Fig. 7. Pinus caribaea (Pinaceae).
Zamiaceae

Dioecious, evergreen, palm-like plants. Trunk mostly unbranched, ringed with persistent leaf-bases. Leaves in a terminal, spreading rosette or crown, petiolate, pinnate or bipinnate; pinnae without midrib, with lateral, dichotomously branched veins. Sporophylls (reproductive structures) spirally arranged, the male in a cone, the female peltate, with 2 ovules beneath the apex, organized in a cone. Seeds not flattened.

1. *Microcycas* (Miquel) DeCandolle

Characteristics of the family Zamiaceae, with leaves pinnate, in a terminal spreading crown.

1. *Microcycas calocoma* (Miquel) DeCandolle, *Prodromus Systematis Naturalis Regni Vegetabilis* 16(2): 538 (1868). PALMA CORCHO. Trunk unbranched, conspicuously ringed, 3-9 m. Leaves 0.6-1 m; leaflets 50-80 pairs, opposite or alternate, revolute-margined, parallel-veined, 8-12 cm, villous-pubescent when young, glabrous in age. Male cones cylindrical, to 30 cm. Female cones narrowly conical, to 70 cm.

Range: Western Cuba (Pinar del Rio province). Recently introduced from Cuba to the Botanic Gardens nursery, Georgetown, Guyana.


According to Cuban folklore, the roots are useful as a rat poison. This endangered species is being grown in several botanic gardens as a conservation measure.