

Empress-tree, Princess-tree
Paulownia tomentosa (Thunb.) Steud.
Trumpet-creeper Family (Bignoniaceae)

DESCRIPTION

Empress-tree is a fast growing, upright, deciduous tree with a rounded crown and spreading branches. Young shoots can grow as much as 8–10 feet in a single year. Whether flowering, in leaf, in fruit, or dormant, this tree is hard to miss. In mid-May its bare branches support immense upright clusters of tubular purple flowers. The leaves are huge, more than 2 feet long on vigorous shoots, and in the winter the fuzzy brown flower buds are very conspicuous. The egg-shaped capsules, which hang on through the winter are about 1½ inches long.

Large trees with a straight, solid trunk are worth several thousand dollars each for their wood, which is valued in Japan for making ceremonial wedding chests and other specialty items.

Height - Empress-tree grows to 60 feet in height; the canopy may be 50 feet wide.

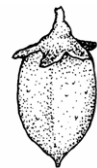
Stem - The bark is dark brown and rough on mature specimens. The twigs are thick and coarse with a large, thick, pinkish-orange pith and conspicuous, 3-lobed leaf scars.

Leaves - The leaves of the empress-tree can be up to 2 feet long; they are especially large on young, vigorous shoots. Rounded or heart-shaped at the base and pointed at the tip, they are opposite or whorled on the stem. Both surfaces of the leaves are hairy and the margin is smooth or may have a few coarse teeth or shallow lobes. In the fall the leaves turn yellow or brown.



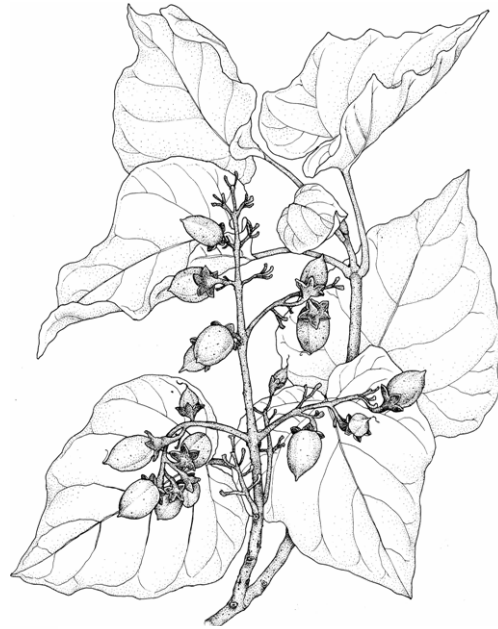
Flowers - Large tubular purple flowers are borne in erect clusters in May before the leaves open. They are insect pollinated.

Fruits and seeds - The fruits are 1½–2 inch-long, egg-shaped capsules each of which may contain several thousand small, winged seeds.



capsule

Roots - Roots are shallow and wide spreading. They can be the source of very vigorous, erect shoots.



fruiting branch of empress-tree

DISTRIBUTION AND HABITAT

Empress-tree is native to China where it is an early successional component of mixed deciduous forests. It was introduced from Asia in the 1840s as an ornamental and has naturalized in urban waste ground, along highways and railroad tracks, and in disturbed urban or suburban woodlots. It is still occasionally grown for ornament, as in Logan Circle in Philadelphia, or in plantations for its valuable wood.

EFFECTS OF INVASION

Empress-tree appears to be limited to edges or openings; however, it is occasionally found on steep rocky slopes or along stream banks. It is tolerant of dry, infertile soils and can be quite invasive in rocky areas with a naturally open canopy. Most of the documented occurrences are in southeastern Pennsylvania and the Pittsburgh vicinity, however empress-tree probably occurs elsewhere in the state also; its northern spread is limited by the vulnerability of the flower buds to winter injury.

REPRODUCTION AND METHODS OF DISPERSAL

The small winged seeds of empress-tree are disseminated by wind and water. A single mature specimen is capable of producing millions of seeds, which grow quickly and begin to flower in as few as 8–10 years. Established trees are also capable of sprouting prolifically from the lower stem and roots.

CONTROL

Mechanical - Girdling is an effective way to kill the tops of mature trees, but they will resprout below. Follow-up will be required to remove sprouts or treat with glyphosate or triclopyr.

Chemical - Cutting and immediately treating the stump with a 50% solution of glyphosate or triclopyr is recommended. Basal bark applications using a 25% solution of triclopyr in oil applied from the ground level to a height of 12–15 inches is another alternative.

Biological - No biological control options are currently known.

NATIVE ALTERNATIVES FOR LANDSCAPE USE

A variety of large native trees could be substituted for empress-tree for landscape use: tuliptree (*Liriodendron tulipifera*), basswood (*Tilia americana*), red oak (*Quercus rubra*), sweetgum (*Liquidambar styraciflua*). For timber plantations black walnut (*Juglans nigra*) would be a good substitute.

REFERENCES

Langdon, K. R. and K. D. Johnson. 1994. Additional notes on invasiveness of *Paulownia tomentosa* in natural areas. *Natural Areas Journal* 14(2): 139-140.

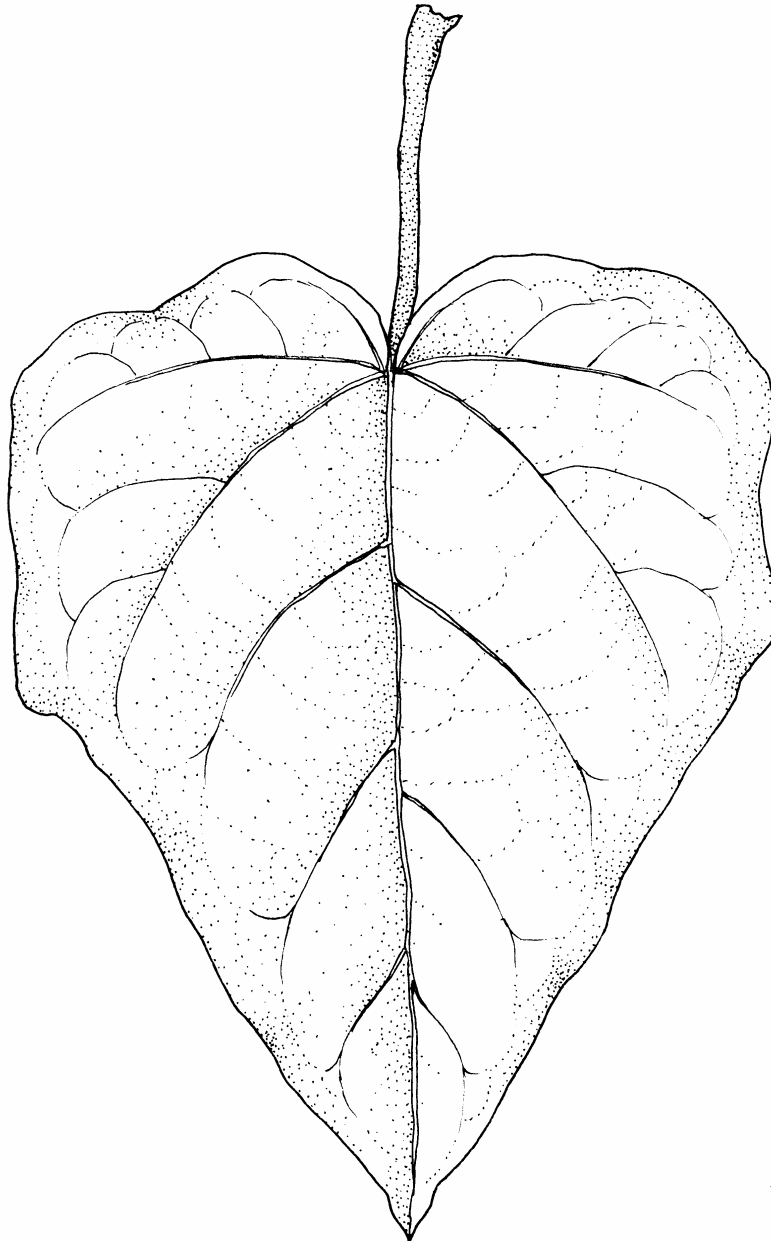
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Internet resources - <http://www.upenn.edu/paflora>, <http://www.invasivespecies.gov>, <http://tncweeds.ucdavis.edu>



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