Dawn redwood a 'living fossil'

By Dr. Susan Yost
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Is it possible that a species of large trees, numbering in the thousands in the wild, escaped the notice of scientists until the 1940s? This is true of dawn redwood (Metasequoia glyptostroboides), a native of China, considered one of the greatest botanical discoveries of the 20th century.

The history of the dawn redwood tree is an intriguing story. This "living fossil" was unknown to science until the 1940s. In 1941, a millions-of-years-old fossil of Metasequoia was discovered and named, but no one knew that any living trees still existed. Then, in 1943, a living tree was discovered growing in China and a herbarium specimen collected by C. Wang, but it wasn't formally described and named as a new living species until 1948.

More than 5,700 dawn redwood trees with a diameter over 30 centimeters (1 foot) grow naturally in the wild in China; most of these are in Metasequoia Valley in southeastern China.

These trees are considered endangered and are now protected. Unfortunately, this species isn't reproducing well in the wild, possibly because of human disturbance or problems with seed germination. In the distant past, the genus Metasequoia had a much wider natural distribution, growing in North America, Europe and Asia.

After its discovery, dawn redwood was propagated by seeds and cuttings, and is now cultivated in nearly 50 countries in different parts of the world, especially north temperate regions. In North America, it is cultivated from Nova Scotia and Vancouver in the north, to Georgia, California and Mexico in the south.

Dawn redwood is not known to have spread naturally from planted trees. Some of these fast-growing planted dawn redwood trees are large, with the tallest reaching 125 feet in height at Princeton University in New Jersey. However, none of these planted trees can be older than about 60 years old, since this species hadn't been discovered before that time!

Dawn redwood may be confused with bald cypress (Taxodium distichum), a different conifer
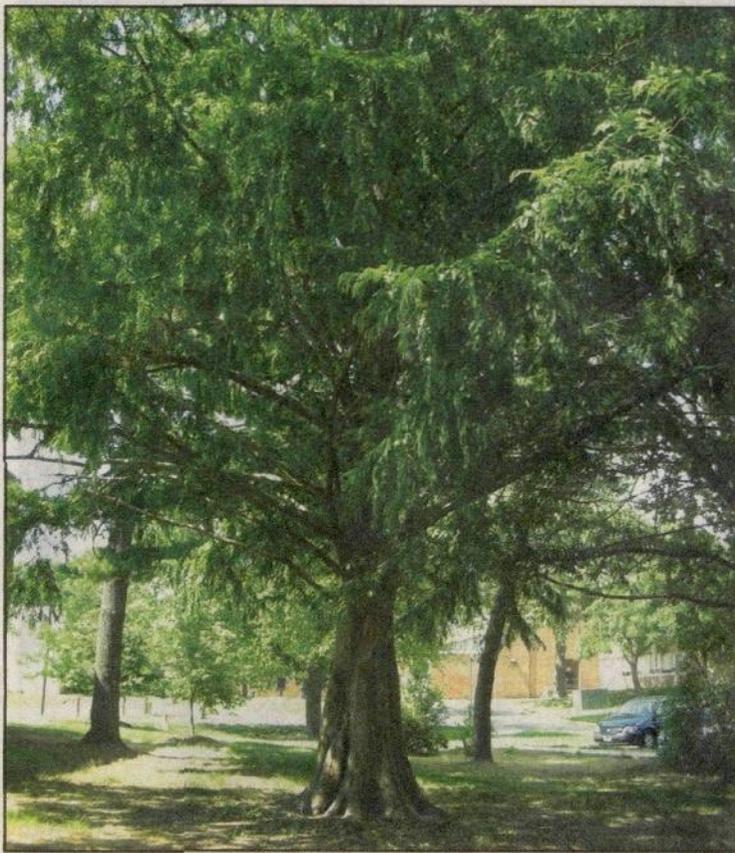
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A dawn redwood tree (Metasequoia glyptostroboides), a "living fossil" planted approximately 35 to 40 years ago and 80 feet tall, on the campus of Delaware State University.

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that was the subject of this column last month. Both of these lovely trees have feathery foliage that is shed in winter, and are in the same family, Cupressaceae (also placed in Taxodiaceae), along with giant sequoia (Sequoiadendron giganteum) and coast redwood (Sequoia sempervirens).

However, a closer look will allow you to distinguish between dawn redwood and bald cypress. One of the easiest ways to do this is to look at the arrangement of the leaves and branches, which are opposite in dawn redwood, and alternate in bald cypress. The cones of dawn redwood are smaller (about 2/3-inch diameter) with persistent scales; whereas the cones of bald cypress are larger and rounder, and fall apart at maturity.

Although both of these species may be found planted in similar habitats in Delaware, dawn red-wood is native to China, whereas bald cypress is a native tree typical of southern U.S. "cypress swamps". Dawn redwood does not have the "knees" that are typical of bald cypress growing in a wet area. The wood of dawn redwood is soft and weak, so it is rarely used as lumber.

At Delaware State University, an 80-foot-tall dawn redwood tree, planted approximately 35-40 years ago by former DSU professor Dr. Norman H. Dill, can be visited on the Campus Tree Walk (for brochure and map, see http://herbarium.desu.edu/services.htm).

Editor's note: Dr. Susan Yost is educator at Claude E. Phillips Herbarium on the campus of Delaware State University. The herbarium is Delaware's center for research, education, and outreach about plant identification, locations, and uses. Call 857-6452 to arrange a tour of the herbarium, or for more information about this article.