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SHORT COMMUNICATION

METASEQUOIA GLYPTOSTROBOIDES HU & CHENG OF TAXODIACEAE: NEWLY RECORDED ENDANGERED CONIFER TO THE FLORA OF PAKISTAN

ASAD ULLAH[*] AND RAEES KHAN

Centre of Plant Biodiversity, University of Peshawar, Khyber Pakhtunkhwa Peshawar, Pakistan
[*]Corresponding author E. mail: asadbotanist@yahoo.com

Abstract

The *Metasequoia glyptostroboides* Hu & Cheng is reported for the first time as a new record to the Flora of Pakistan from University of Peshawar Botanical Garden. *Metasequoia glyptostroboides* Hu & Cheng is an endangered species 50 m long beautiful monoecious, deciduous tree with ascending branches and narrowly conical crown. Botanical nomenclature, citation, common name, complete illustration, description, flowering period, altitude, voucher specimens numbers, photographs, coordinates and Geographic (GPS) position for this newly reported species has been presented. This conifer species is a new record from Pakistan.

Introduction

A single species of genus *Metasequoia* and family Taxodiaceae commonly known as water fir, dawn red wood, or Chinese red wood, which is a deciduous conifer and *Metasequoia glyptostroboides* Hu & Cheng is ranked as an endangered species. According to Chu & Cooper (1950) and Fu & Jin (1992) it is confined to Western part of Hubei, Eastern Sichuan and Northern Hunan provinces of central China covering a small geographical range. As stated by Hu and Cheng (1948) *Metasequoia glyptostroboides* was a famous discovery of 20th century and it is considered as a living fossil. Due to the fragile conservation status of *M. glyptostroboides* since 1940s it is propagated and distributed around the world and six (6) million tress are distributed in around 50 countries of the world. According to Li *et al.* (2012) still 90% of the wildly growing tress i.e. 5000 individuals are growing in a radius of 500 km^2 Lichuan city, Zhonglu town and Hubei province of China. The family Taxodiaceae is represented by 10 genera and 16 species throughout the world, while in Pakistan previously it was represented by one genus (*Taxodium*) and one species (*T. mucronatum*) (Nasir and Ali, 1987). With the addition of this newly reported species i.e. *Metasequoia glyptostroboides* Hu & Cheng the family Taxodiaceae has now 2 genera and 2 species in Pakistan.

Materials and Methods

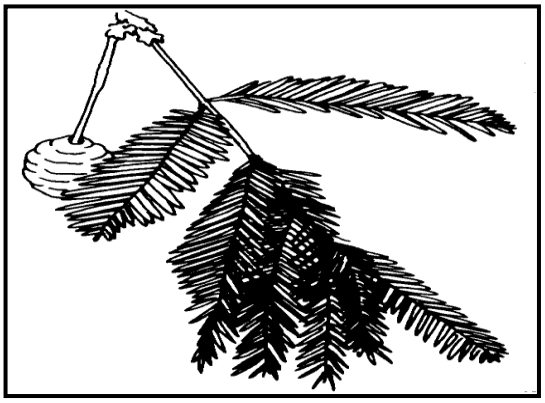
This newly reported conifer species i.e. *Metasequoia glyptostroboides* Hu & Cheng was collected for the first time during June 2014 from University of Peshawar Botanical Garden (UPBG). The shoots and other necessary parts were collected. The species was photographed and the coordinates were also taken with the help of Garmin Etrex GPS (Made in USA). The collected parts were pressed, properly dried and mounted on standard herbarium sheets. Family Taxodiaceae (Nasir and Ali, 1987) in Flora of Pakistan was consulted for taxonomic information and Phytogeographical distribution of the species. Identification was carried out with the help of Flora of China (Shui Shan in FOC (4) at Page 60). Illustration for the species was drawn after studying description in Flora of China. The voucher specimen was deposited in the Herbarium of Centre of Plant Biodiversity and Botanical Garden, University of Peshawar (UPBG).

Results and Discussion

Metasequoia glyptostroboides Hu & Cheng (Taxodiaceae) is an endangered, deciduous tree native to China is a famous ‘‘living fossil’’. During research studies carried out in University of Peshawar Botanical Garden, which is situated in District Nowshera and lies between $71^0 43^/$ E to $71^0 44^/$ E longitudes and $34^0 15^/$ N to $34^0 31^/$ N latitudes, at an altitude of 290 msl this newly reported conifer species was collected and identified. Presently this species occurs in more than 50 countries due the efforts for its conservation. It was distributed in Northern hemisphere, east and middle Eurasia and north America according to fossil studies and it was considered as extinct for millions of years before it was discovered in 1940s. According to Li *et al.* (2012) it has now a wider Phytogeographical range of distribution.

Metasequoia glyptostroboides Hu & Cheng is reported as a cultivated conifer tree which established in environment of Botanical Garden and showing growth. This species may be introduced to the Botanical Garden for its ex-situ conservation and as it showing healthy growth in this environment it can be introduced to the other parts and regions of the country. The detail taxonomic description of this newly reported conifer has been given as under.

1. Picture of the plant foliage



2. Illustration of the plant fruit

Plate 1 & 2**.** *Metasequoia glyptostroboides* Hu & Cheng a. Foliage b. Fruit,

Source: Fact Sheet ST-407, a series of the Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: October 1994, cited on 24-3-2015.

It is a deciduous tree up to 2.5 m dbh; the trunk is tapering and it up to 50m tall. When young the bark is pale orange to brown and dark flakes are exfoliating, the bark turns to gray to dark reddish brown, the crown is pyramidal or conical with ascending branches. The branches are pendulous, glabrous, the axis is purple or pink green in first year, then turned brownish grey. Yellow brownish scales are present which are 22.5 x 22.5 mm in size, the color of scales is yellow brown, and the winter buds are 5 x 3 mm in size with obtuse apex. The shorter and longer leaves are arranged alternatively resulting in to ovate elliptic outline which is 37 x 1.54 cm in size, the lateral branch lets are opposite, deciduous and a leaf like scale is present with each. The leaves are 25 mm apart, born at 45 to 60^0 to the axis of the branch, yellow green to blue green on upper surface, pale on lower surface, turn orange or red in autumn, on younger trees leaves are linear and size is 0.81.5 cm × 1.22 mm, may be longer on young trees. The apex is more sharply acute on leaves of leader branch let, with obtuse apex and hyaline mucro, on younger trees the stomatal band is 0.40.6 mm and is indistinct, while stomatal band at margin is 0.50.6 mm wide in size. The male cones are 2.55.5×23.8 mm; ovoid with obovate to triangular ovate bracts of 4 × 3 mm size, lowest one is ciliate slightly and the rest are glabrous. The female cones are black purplish at young stage, ellipsoid or oblong 9 × 5.5 mm when young, become sub globose and the size become larger i.e. 1.42.5 × 1.62.3 cm at maturity. The apical cone scale is sterile, distal with 5 ovules, middle with 7 ovules and basal with 9 ovules. The seed are obovate in shape, light brown in color and 5 × 4 mm in size. Pollination takes place during Feb-Mar and seeds get mature in during Oct-Nov. The number of cotyledons is two (2).

Source: Shui Shan in FOC (4) at Page 60
Vern., dawn redwood, Chinese redwood, water fir
University of Peshawar Botanical Garden (UPBG) $34^0\,00'\,390''$ N and $71^0\,52'\,565''$ E, 290 m.
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