NOTES ON *CUPRESSUS* IN MEXICO

The species of *Cupressus* that ranges from Coahuila and Chihuahua southward into Chiapas, México and into Central America (Guatemala, Honduras, and El Salvador) and variously referred to as *C. lusitanica* P. Miller, *C. benthamii* S. Endlicher, and *C. lindleyi* J. F. Klotzsch has been a point of confusion as to its nomenclatural history and identity.

Franco (1945) concluded that the plants present in Mexico were identical with those found in cultivation in Portugal and that the name for the species should be

Cupressus lusitanica Miller based upon nomenclatural priority. *Cupressus lusitanica* was determined to have been in cultivation in Portugal since at least 1643. Tournefort, who first applied the name *Cupressus lusitanica* to the plants in 1700 indicated the Portuguese origin. Other writers, notably Philip Miller, wrote that the *C. lusitanica* was considered to have been introduced to Portugal from Goa, India. Later writers realized that whatever the origin, it was not native to Portugal.] Several authors (Standley, 1950; Standley and Steyermark, 1958; Little, 1970) Have followed the decision of Franco (1945) in assigning the Mexican and Central American plants to *C. lusitanica*, even to the point of ignoring or not admitting the infraspecific taxa recognized by Franco.

Martínez (1947 and 1963) maintained that *Cupressus lusitanica* of Portuguese cultivation was not readily attributable to the same taxon as the native plants of México. Martínez recognized two species in Mexico, *C. benthamii* and *C. lindleyi*. He commented that the origin of *C. lusitanica* had not been resolved by Franco (1945) and that morphologically *C. lusitanica* was not the same as *C. benthamii* and *C. lindleyi*.

After examining a photograph (at New York Botanical Garden) of the type of *Cupressus lusitanica* from the herbarium of Philip Miller, which is now located at the British Museum (BM), I was not able to determine for certain that it was conspecific with the Mexican plants. The specimen is a sterile branch segment from a rapidly growing shoot, probably of a plant that grew in England. It appears that the identity of the Miller specimen can not be established beyond any doubt.

Although extremely interesting that the historical aspects of *Cupressus lusitanica* in Portugal may be, it remains that the identity of *C. lusitanica* rests in the Miller specimen, which may not have been derived from the Portugal material. The code of botanical nomenclature and the type concept requires the identity to rest in the type specimen and the description of the taxon when it was published.

Keeping the uncertainty of the identity of the Miller specimen of *Cupressus lusitanica* in mind, it is better to follow the treatment of the Mexican and Central American taxa as put forth by Maximino Martínez (1947 and 1963) in recognizing the plants as taxa distinct from *C. lusitanica*, but probably related. Rodriguez J. (1975) found the karyotypes of *C. benthamii* and *C. lindleyi* to be quite similar to each other, and both being different from *C. lusitanica*. She also suggested a possible affinity of *C. lusitanica* to *C. benthamii* and *C. lindleyi*.

The plants referred to as *Cupressus lindleyi* are more widely distributed than those of *C. benthamii*. Martínez distinguished the two taxa by distichousness of the leafy branchlet systems, bark thickness, diameter of megastrobili (female cone), and number of megasporophylls (scales) in the megastrobili (Table 1).

In the examination of specimens of *Cupressus benthamii* and *C. lindleyi* from the herbaria of ENCB, F, LL, MEXU, MICH, NY, TEX, and XAL for the treatment of the Cupressaceae for the Flora de Veracruz, I have come to the conclusion that the differences cited by Martínez are not reliable for consistently distinguishing the taxa. It appears that the *C. benthamii* plants can be readily distinguished by the distichous nature of the leafy branchlet systems. The lateral branchlets and ultimate branchlets are all in the same plane to the point of attachment of the leafy system to the first brach that is devoid of the leaves that once covered it and that presently has a distinctive reddish-brown or grayish-brown bark. The number of sporophylls

Table 1. Comparison of morphological characteristics of *Cupressus benthamii* and *C. lindleyi* from Mexico (adapted from Martínez, 1963).

<i>Cupressus benthamii</i>	<i>Cupressus lindleyi</i>
Leafy branchlet system: distichous	Leafy branchlet system: not distichous
Leafy branchlets short, 10-12 mm long	Leafy branchlet system longer, 10-15 mm or more
Trunk bark less rough	Trunk bark rougher
Megastrobili 10-15 mm (4) 6 (8) sporophylls	Megastrobili 12-15 (-20) mm (6) 9 sporophylls

is variable in both taxa and does not show the pattern Martínez indicated. Even in cones on a single branch, the number may be 6 or 8. Undersized megastrobili may even have fewer sporophylls than the normal sized megasporophylls. The thickness of the leafy branchlets is variable from specimen to specimen and even on a single specimen.

It seems that the best treatment of the variability of *Cupressus lindleyi* and *C. benthamii* and the peculiar distribution pattern is to recognize one species with two varieties, that is, *C. benthamii* with var. *benthamii* and var. *lindleyi*. The two varieties can be distinguished in the following manner:

Cupressus benthamii:

Leafy branchlet systems distichous var. *benthamii*

Leafy branchlet systems branching in three dimensions, not distichous var. *lindleyi*

Martínez (1963, Fig. 6, p. 225; Fig. 15, p. 242) indicated the distribution of *Cupressus lindleyi* and *C. benthamii* in Mexico. The accumulation of many additional herbarium specimens since the time of his work has not substantially added to our knowledge of the distribution of these two taxa. It should be noted that *C. lindleyi* is more widespread in México where it occurs from Coahuila and Tamaulipas to Chihuahua, southward to Chiapas. *Cupressus benthamii* is found in Veracruz, Puebla, and Hidalgo where the three states meet to the northeast of Pachuca, Hidalgo.

It should be noted that each of these varieties is frequently in cultivation throughout much of México. Both taxa are also being used in reforestation and reclamation projects. It is imperative that collectors of herbarium specimens of the *Cupressus* in México should carefully note whether the plants which are being sampled are cultivated and should note such on labels for their specimens. It is difficult to anticipate whether a herbarium specimen of *C. benthamii* var. *lindleyi* is from a cultivated plant if the collector has not marked it as such.

SYNONYMY OF THE TWO VARIETIES

Cupressus benthamii S. Endlicher

1847. Synop. Conif. 59. Type: México: Hidalgo: El Banco. Harteweg 434.

1. var. *benthamii* *C. lusitanica benthamii* (S. Endlicher) E.-A. Carrière, 1867. *Traite Gen. Conif.* ed. 2. 155. *C. lusitanica* ssp. *benthamii* (S. Endlicher) J. Do A. Franco, 1945 *Agros*, Lisboa 28: 24.
2. var. *lindleyi* (J. F. Klotzsch) M. T. Masters, 1896. *Bot. J. Linn. Soc.* 31: 339. *C. lindleyi* J. F. Klotzsch ex S. Endlicher, 1847. *Synop. Conif.* 59 **Type:** México: Michoacan: inter Anganguero et Tlalpujahua. Hartweg 437. *C. lusitanica lindleyi* (J. F. Klotzsch) E.-A. Carrière, 1867. *Traite Gen. Conif.* ed. 2. 156. *C. lusitanica* ssp. *genuina* y var. *lindleyi* (J. F. Klotzsch) J. d. A. Franco 1945. *Agros*, Lisboa 28: 24.

NAMES OF TAXA OF UNCERTAIN IDENTITY AND UNCERTAIN ORIGIN

Several other taxa have been proposed for *Cupressus* from México. The uncertain origin or ambiguous descriptions of these taxa leave one in doubt as to which taxa were actually being considered. The commonness of *Cupressus* in the horticultural trade and gardens of Europe during the 1700's and 1800's greatly increased the confusion as to the identity of the taxa. Synonymy in the manuals of conifers from the 1800's increased the confusion to a very high level. Other than assigning nomenclatural synonyms, it is unproductive to contemplate other kinds of synonyms for the taxa listed below.

Various European names applied to selections of *Cupressus lusitanica* are not listed here.

1. *Cupressus coulteri* J. Forbes, 1839. *Pinetum Woburn*. 190. This plant was discovered by Coulter in México and seed from the Coulter herbarium specimen was used to generate the seedling from which this species was described. The seedling's identity is not determinable.
2. *Cupressus ehrenbergi* D. G. Kunze 1847. *Linnaea* 20:16. This taxon was named from plants that were grown from seed that C. Ehrenberg sent to Leipzig in 1839. The first immature female cones were observed in 1844. The type specimen (if one existed) was probably destroyed at Leipzig during World War II. If a type were extant, it would be extremely difficult to determine the species because of the young plant characteristics and, as described by Kunze, no mature cones were available.
3. *Cupressus excelsa* E.-A. Carrière, 1855. *Traite Gen. Conif.* ed. 1. 128. Called the Tall Guatemalan Cypress, with *Cupressus skinneri* hort. as a synonym, this taxon was said to have originated in Guatemala, "Cupressus species des montagnes de Cachiquel". It was introduced to cultivation in France in 1852 by Thibaut and Keteleer of Paris from seed sent by Scott from England. Probably, this is referable to *C. benthamii* var. *lindleyi*.
4. *Cupressus karwinskyana* E. Regel, 1857. *Gartenflora* 6: 346. This species is said to have been introduced from southern California. Also, plants grown from seed sent by Karwinsky from México to Regel at St. Petersburg [Leningrad] are said to belong to the same species. Regel indicated that *Cupressus karwinskyana* was similar to *C. lindleyi*. The combination of a southern California and a Mexican *Cupressus* indicates the composite nature of the species as described by Regel; thus the description fits poorly for either plant.
5. *Cupressus knightiana* J. Knight & T. A. Perry, 1850. *Synop. Conif.* Pl. 19, 20.

- nomen nudum. *C. knightiana* J. Knight & T. A. Perry in G. Gordon, 1858. Pinetum 61. *C. thurifera knightiana* G. Gordon 1858. Pinetum 61. pro syn. *C. benthamii* var. *knightiana* (J. Knight & T. A. Perry) M. T. Masters, 1896. Bot. J. Linn. Soc. 31: 340. *C. lusitanica* var. *knightiana* (J. Knight & T. A. Perry) A. Rehder 1919. J. Arnold Arbor. 1: 52. *C. lusitanica* ssp. *benthamii* β var. *knightiana* (J. Knight & T. A. Perry) J. do A. Franco 1945. Agros, Lisboa 28: 24. This taxon was originally published with the origin of the plants being unknown. Subsequent authors (Gordon, etc.) attributed the origin to the mountains of Mexico; the identity of the taxon and its origin remain uncertain.
6. *Cupressus thurifera* sensu Schlechtendal, non H.B.K., 1838. Linnaea 12: 493. This use of the name of Humboldt, Bonpland, and Kunth's *Cupressus thurifera* is a misapplication by Schlechtendal. Martínez (1947 and 1963) clearly showed that *C. thurifera* H.B.K. is really *Juniperus flaccida* Schlechtendal!
 7. *Cupressus uhdeana* G. Gordon 1850. J. Royal Hort. Soc. 5: 206. nomen nudum. *C. Uhdeana* G. Gordon ex J. Knight & T. A. Perry 1850. Synop. Conif. P1. 19. nomen nudum.

RESUMEN

Las especies nativas de *Cupressus* en México y América Central a las que variablemente se referían como *C. lusitanica* Miller, *C. benthamii* Endlicher, y *C. lindleyi* Klotzsch, deben de ser referidas a una especie, *C. benthamii*. Dos variedades de *C. benthamii* están actualmente reconocidas, var. *benthamii* y var. *lindleyi* (Klotzsch) Masters. La var. *benthamii* se encuentra en los estados de Veracruz, Puebla y Hidalgo, México, y la var. *lindleyi* es nativa de la región comprendida entre el norte de México hasta Guatemala, Honduras y El Salvador. Ambas variedades están siendo cultivadas en México.

Las identidades de *Cupressus coulteri* Forbes, *C. ehrenbergii* Kunze, *C. excelsa* Carrière, *C. karwinskyana* Regel, *C. knightiana* Knight & Perry, and *C. uhdeana* Gordon permanecen inciertas.

SUMMARY

The native species of *Cupressus* in México and in Central America that was variously referred to as *C. lusitanica* Miller, *C. benthamii* Endlicher, and *C. lindleyi* Klotzsch should be referred to one species, *C. benthamii*. Two varieties of *C. benthamii* are now recognized, var. *benthamii* and var. *lindleyi* (Klotzsch) Masters. Var. *benthamii* is found in the states of Veracruz, Puebla, and Hidalgo, México, and Var. *lindleyi* is native to the region from northern México into Guatemala, Honduras, and El Salvador. Both varieties are in cultivation in México.

The identities of *Cupressus coulteri* Forbes, *C. ehrenbergii* kunze, *C. excelsa* Carrière, *C. karwinskyana* Regel, *C. knightiana* knight & Perry, and *C. uhdeana* Gordon remain uncertain.

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