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Contents

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Cover photo by Jeff Bisbee : *Cupressus revealiana* in its natural habitat near El Rincón, Baja California, Mexico.

Cupressus revealiana (Silba) Bisbee, *comb. nova* validation as a new *Cupressus* species

with notes on identification and distribution of other nearby cypress species.

The range of *Cupressus stephensonii* is limited to the slopes of Cuyamaca Peak

Several authors (Farjon, 2005 ; Eckenwalder, 2009 ; Debreczy & Rácz, 2011) consider the cypress of northern Baja California (Mexico) to be the same taxon as the one growing on the slopes of the Cuyamaca Peak in San Diego County, in southern California, *Cupressus stephensonii* C.B.Wolf. Several visits by Jeff Bisbee to both places as well as observations of both taxa in cultivation in southern France lead to the conclusion they are separate species, morphologically distinct and unable to hybridise naturally.

Morphology

Jeff Bisbee visited the Cuyamaca Cypress and the cypress near Rincón in Baja California in July 2004. He took photos and made the following observations. Several morphological characters distinguish these two taxa in the field.

- Young trees :

  The colour of the foliage and form of young trees differs considerably. The Cuyamaca trees have darker, greener foliage, and long branches forming a more open, irregular crown. The Rincón trees have more blue-glaucous foliage and a dense bushy crown, in some ways looking more similar to *Cupressus glabra* Sudw.

Figure 1 : Rincón, Baja California. Cuyamaca Peak, San Diego County.

- Trunk :

After the Cedar Fire in October 2003, which destroyed most of the stand (J. B., *pers. obs.*), the Cuyamaca tree represented here is the oldest remaining tree. The difference between the bark colours is very obvious.

Figure 2 : Rincón, Baja California. Cuyamaca Peak, San Diego County.

- Bark :

Side by side comparison of bark, both taken in late July 2004.

Figure 3 : Rincón, Baja California. Cuyamaca Peak, San Diego County.

- First year cones:

Several interesting differences were noted between the Cuyamaca population and the one in Rincón. One of the most striking is the colour of the first year cones. Of hundreds of trees Jeff Bisbee observed before the fire at Cuyamaca, none had the blue cones observed in the Rincón trees. The Cuyamaca trees all have brown first year cones. The two photos below were both taken in late July. Current DNA studies point to the fact that the Rincón population is a different species. The studies by Bartel (2003) suggested that the Rincón trees were *Cupressus montana* Wiggins. We do not agree with this suggestion. They are not only very distinct from the Cuyamaca trees, but also from the San Pedro Martir Cypress (see Appendix 3: *Cupressus montana*, for further comparison).

Figure 4 : Rincón, Baja California. Cuyamaca Peak, San Diego County.

- Mature cones:

Another difference noted is that the Cuyamaca Peak stand usually has cones in dense clusters, on short stems, where the Rincón trees had cones with long stems, generally hanging from the branch similar to *Cupressus bakeri* Jeps., not in large clusters.

Figure 5 : Rincón, Baja California. Cuyamaca Peak, San Diego County.

For a further comparison between these two taxa, see Appendix 2: Photos, page 9.

From seeds of *Cupressus stephensonii* obtained before 2003 from an US seed merchant and from material collected by Jeff Bisbee near Rincón, seeds were germinated and the following cotyledon statistics were established.

Table I

	Cuyamaca Cypress						El Rincón Cypress				
Cotyledons	3	4	5	6	7	Total	3	4	5	6	Total
Seedlings	34	250	109	23	1	417	20	13	1	0	34
%	8.15	59.95	26.14	5.52	0.24	100.00%	58.82	38.24	2.94	0.00	100.00%

The differences in cotyledon numbers are obvious. Although there were only a few germinations of the El Rincón Cypress, if they were similar, one would have been expecting at least one seedling with 6 cotyledons and eight with 5 cotyledons. Also striking is the very small number of seedlings of *Cupressus stephensonii* with 3 cotyledons, while they represent more than half of the El Rincón Cypress. This very low number of 3-cotyledon seedlings is a characteristic also encountered in *Cupressus macnabiana* A.Murray (article in preparation).

Phenology

Seedlings were planted in southern France at about 600 metres altitude, some of them in the same field and not far from each other, to observe and compare their physiology and phenology with the same edaphic and climatic conditions. The first Cuyamaca Cypresses were planted in July 2000. It took 9 years for them to produce the first pollen cones and one more year for the seed cones to appear. Observed during three successive summers, the pollen is released in July. The seed cones do not enlarge during the following months, but only after the next winter.

The first Rincón Cypress was planted in October 2007. Only four years were necessary for the first pollen cones and one more year for the seed cones. This taxon releases its pollen at the beginning of spring, later than most other cypress species, but several months earlier than Cuyamaca Cypress. The time gap observed between when these two taxa are pollinating excludes any possible natural hybridisation between them (see figures 12 to 16).

Physiology

These two cypresses were already showing an obvious colour difference as saplings, as noticed by Jeff Bisbee on young trees growing in their natural habitat. It is possible to distinguish them easily after only a few years once the intermediate foliage has developed. The Cuyamaca Cypress keeps its intermediate foliage for a longer time.

Both taxa are hardy to at least -13°Celsius. At the beginning of February 2012, there was a two weeks frost period when the thermometer never went above 0°C and with several lows below -10°C. The seedlings (both in the nursery and in the field) and trees experienced strong winds and direct sunlight. A slight difference in hardiness was observed. The Rincón Cypress showed no damage at all, while the Cuyamaca Cypress had some shoots burned and more branches changed colour on the side exposed to the sun and wind. In the nursery in containers above soil, some Cuyamaca Cypresses died. It is a well known fact that roots in Cupressaceae are less hardy than foliage.

Conclusions

Considering all these observations, we conclude that these two taxa form two different species. The phenology of *Cupressus stephensonii* places this species distant from any member of the *Cupressus arizonica* Greene group and thus it should not be considered as a variety or

even as a synonym [1] of *C. arizonica*, but as a distinct species. *Cupressus stephensonii* was first described by C.B.Wolf in 1948 [2]. Molecular analysis by Bartel *et al.* (2003; see figure 2, p. 700) shows that *Cupressus stephensonii* clusters with *Cupressus macnabiana*. It is to be noted that while *Cupressus stephensonii* releases its pollen in July, *Cupressus macnabiana* does so even later, in August (in cultivation, southern France).

The Cuyamaca Cypress range is thus limited to only one population on the western slopes of the Cuyamaca Peak and it should be considered as critically endangered after the Cedar Fire in October 2003. This fire went right through the stand sparing only a few trees. Regeneration is occurring, but is less extensive than would be expected compared to the recruitment of other fire adapted cypresses in California after similar destruction of mature trees. A new fire before a full seed load can be produced (considering the late coning of this species) would put this species in danger of extinction in its natural range.

The northern Baja California Cypress was first described in 1981 by J. Silba as a variety of *Cupressus arizonica* under the name *C. a.* var. *revealiana*. Later, Silba (2009) treated it as a species but in the segregate genus *Hesperocyparis*, publishing the combination *Hesperocyparis revealiana*. With the recent conclusion of monophyly of the genus *Cupressus* sensu lato (Mao *et al*. 2009 ; Christenhusz *et al*. 2011), it is necessary to make the following new combination :

Cupressus revealiana (Silba) Bisbee, *comb. nova*
Basionym : *Cupressus arizonica* Greene var. *revealiana* Silba, Revised Generic Concepts of *Cupressus* L. (Cupressaceae). *Phytologia* 49 (4): 393 (1981).
Synonyms :
≡ *Cupressus arizonica* Greene subsp. *revealiana* (Silba) Silba, A Monograph of the Genus *Cupressus* L. in the Twenty-First Century. *Journal of the International Conifer Preservation Society* 12 (2): 51 (2005).
≡ *Hesperocyparis revealiana* (Silba) Silba, The Taxonomy of the Genus *Hesperocyparis* Bartel et Price in Mexico and Honduras (Cupressaceae). *Journal of the International Conifer Preservation Society* 16 (2): 67 (2009).
Type : Mexico, Baja California Norte, Sierra Juarez, near El Rincón, *R. Moran 21251* (holo-: SD).

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Mao, K., Hao, G., Liu, J., Adams, R.P., & Milne, R.I. (2010). Diversification and biogeography of *Juniperus* (Cupressaceae) : variable diversification rates and multiple intercontinental dispersals. *New Phytologist* 188 (1): 254-272.

Silba, J. (1981). Revised Generic Concepts of *Cupressus* L. (Cupressaceae). *Phytologia* 49 (4): 390-399.

Silba, J. (2005). A Monograph of the Genus *Cupressus* L. in the Twenty-First Century. *Journal of the International Conifer Preservation Society* 12 (2): 31-103.

[1] See the Jepson Manual, 2012, as *Cupressus arizonica* subsp. *arizonica*, available on the 17.4.2012 at: http://ucjeps.berkeley.edu/cgi-bin/get_JM_treatment.pl?157,160,162,163

[2] Wolf is certainly the botanist who studied the Californian Cypresses most thoroughly.

Silba, J. (2009). The Taxonomy of the Genus *Hesperocyparis* Bartel et Price in Mexico and Honduras (Cupressaceae). *Journal of the International Conifer Preservation Society* 16 (2): 65-67.
Wolf, C.B. (1948). Taxonomic and distributional studies of the New World cypresses. *El Aliso* 1: 1-250.

Appendix 1 : Diagnosis of *Cupressus stephensonii*. In Farjon (2005), the author, while considering this species as a variety of *arizonica*, is proposing the following diagnosis (Key to varieties, page 180) :

> Leaves eglandular or inconspicuouly [sic] glandular, rarely with resin drops.

In fact the resin drops are a very variable character, likely depending on weather conditions. If such is the case, this character cannot be used to distinguish a *Cupressus stephensonii* specimen from other Cypresses. A further study is under way.

Figure 6 : *Cupressus stephensonii* leaves with abundant resin dots, Cuyamaca Peak.

Figure 7 : *Cupressus stephensonii*, leaves with abundant resin dots, cultivated.

Appendix 2 : Photos

Figure 8 : *Cupressus revealiana* in its natural habitat, March 2011.

Figure 9 : *Cupressus stephensonii* in its natural habitat, with *Pinus coulteri* in the background.

Figure 10 : Mature cones of *Cupressus revealiana*, near El Rincón, March 2011. Notice the abundance of the resin dots.

Figure 11 : *Cupressus stephensonii*, immature cones, Cuyamaca Peak. The variability of these cones (size, shape, scales, umboes, colour) is still to be studied.

Figure 12 : *Cupressus stephensonii*, cultivated, 25 June 2011, pollen cones before pollination.

Figure 13 : *Cupressus stephensonii*, cultivated, 6 August 2011, pollen cones after pollination with one year-old cone.

Figure 14 : *Cupressus revealiana*, cultivated, 18 February 2012, seed cones before pollination.

Figure 15 : *Cupressus revealiana*, cultivated, 12 April 2012, seed cones at pollination time or soon after.

Appendix 3 : Summary table : comparison of the 3 *Cupressus* species.

Characters	*Cupressus stephensonii*	*Cupressus revealiana*	*Cupressus montana*
Height [1]	Below 15 m.	15 - 20 m.	To 30 m.
Crown	Irregular, open	Dense, bushy	Regular, narrow conical
Foliage	Dark green	Light blue-glaucous	Green [3]
Bark (old trunk)	Smooth, whitish/gray	Smooth, reddish	Fibrous, reddish-brown
1st year cones	Brown	Pruinose blue	Pruinose grey-blue (or green)
Mature cones	Large clusters, serotinous	Not in large clusters, serotinous	Clusters, not serotinous
Peduncles	Short	Long	Very short
Cotyledons	(3-)4-5(-6-7)	3-4(-5)	— [4]
Pollination	Summer	End of Winter	Summer
First cones [2]	At least 9 - 10 years	4 - 5 years	None before 6 years
Cone scales	6 [32.3%]-8 [66.2%] (-10 [1.5%]) [5]	6-8	10-12

[1] Field estimated height. — The fire intervals shall be taken into account.
[2] Cultivated — After plantation in the field + 2-3 years in the nursery.
[3] Can be yellowish in the wild due to edaphic conditions.
[4] Still under study. [5] 65 cones.

Appendix 4 : *Cupressus montana* Wiggins

Compared to *Cupressus revealiana* and *Cupressus stephensonii*, this species grows at higher elevations in a much cooler and moister environment (between 2200 and 3000 m altitude), within the montane forest, where winter snow is frequent, while *Cupressus revealiana* grows in the dryer pinyon-juniper belt (between 1200 and 1500 m). The cone shapes are quite different and cannot be mistaken; *Cupressus montana* cones open at maturity and mostly have 10–12 scales, while *Cupressus revealiana* cones do not open without fire and have 6–8 scales.

Figures 16 & 17 : *Cupressus montana* in its natural habitat, March 2011, large specimen and young one.

Figure 18 : *Cupressus montana* crown shape.

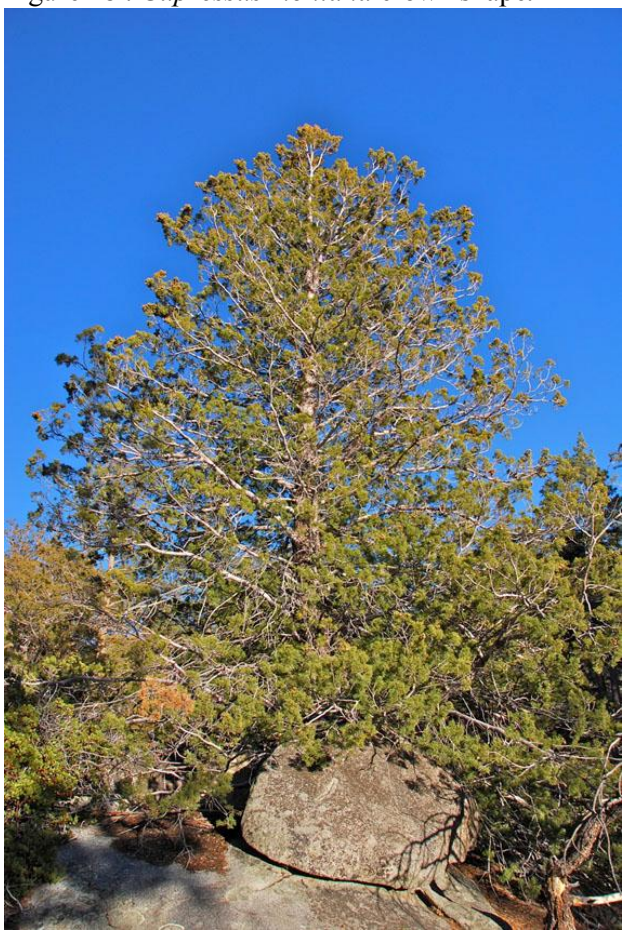


Figure 19 : *Cupressus revealiana* crown shape.

Figure 20 : *Cupressus montana* bark, March 2011.

Figure 21 : *Cupressus revealiana* bark, March 2011.

Figure 22 : *Cupressus montana* mature cones.

Figure 23 : *Cupressus revealiana* mature cones

Figure 24: *Cupressus montana* in its native habitat growing with *P.lambertiana*, *P.jeffrey* and *A.concolor*.

Photo credit : Jeff Bisbee : figures 1 to 5, 8, 10, 16 to 24 – Joey Malone : figures 6, 9 and 11 – *Cupressus* Conservation Project : figures 7, 12 to 15.

Cupressus sempervirens L. 1753

New measurements on *Cupressus sempervirens* L. cones

Different authors (see table I) give 14 as the maximum value for the number of scales, and to 40 mm for the maximum length of *Cupressus sempervirens* L. seed cones.

Table I : Summary of published maximum *Cupressus sempervirens* seed cone measurements.

		Seed cones	
	Year	Max. length mm	Scale number
Masters	1896	-	14
Coode & Cullen	1965	30	-
Den Ouden	1965	-	14
Dallimore & Jackson	1966	32	14
Mouterde	1966	-	14
Riedl	1968	25	-
Bean	1970	32	14
Mitchell	1972	35	-
Mitchell	1978	40	"7-8 large scales"
Krüssmann	1983	30	14
Silba	1986	35	14
Rushforth	1987	35	14
Vidakovic	1991	30	14
Frankis	1992	44	14
Christensen	1997	36	14
Raddi & Panconesi	2004	-	14
Farjon	2005	40	14
Little, Damon	2005	32.6	12
Eckenwalder	2009	40	14
Farjon	2010	40	14
Debreczy & Rácz	2011	40	14

From this set of data it becomes obvious that several authors just copied what was observed before. In the recent years, Frankis (1992), Christensen (1997) and Little (2005) appear to have conducted their own measurements. Insufficient sampling can explain the failure to show the current maximum measures of *Cupressus sempervirens* cones.

The following new observations increase the scale maximum number to 16 (see figure 1). The size of a female cone can reach 50 mm (see figure 2). It is to be noticed that this cone, still closed and vascularised at collection time, was measured at 50 mm, and while drying, its length diminished by a few millimetres. This characteristic can be verified with practically all cypress cones. The two trees on which the cones were collected are cultivated specimens in the Aude Department in France (see figures 3 to 5). Both these cones although exceptional are not unique.

Table II : Measures of six other collected cones with lengths over 40 mm.

	length	max.width	length/max.width	min.width	max/min.width	indice
1	46.41	35.11	1.32	33.20	1.06	54.10
2	45.57	36.26	1.26	34.96	1.04	57.77
3	45.54	35.27	1.29	33.87	1.04	54.40
4	44.58	29.17	1.53	27.11	1.08	35.25
5	43.68	33.57	1.30	32.54	1.03	47.71
6	42.86	33.11	1.29	32.66	1.01	46.35
Average	**44.77**	**33.75**	**1.33**	**32.39**	**1.04**	**49.26**

indice = length x max.width x min.width/1000

Figure 1 : This cone shows 8 pairs of scales. Three scales of the distal part of the cone are still fused, but distinct. Length of cone : 42.2 mm.
The picture on the right shows the cone right side of the previous picture. Background : millimetre paper.

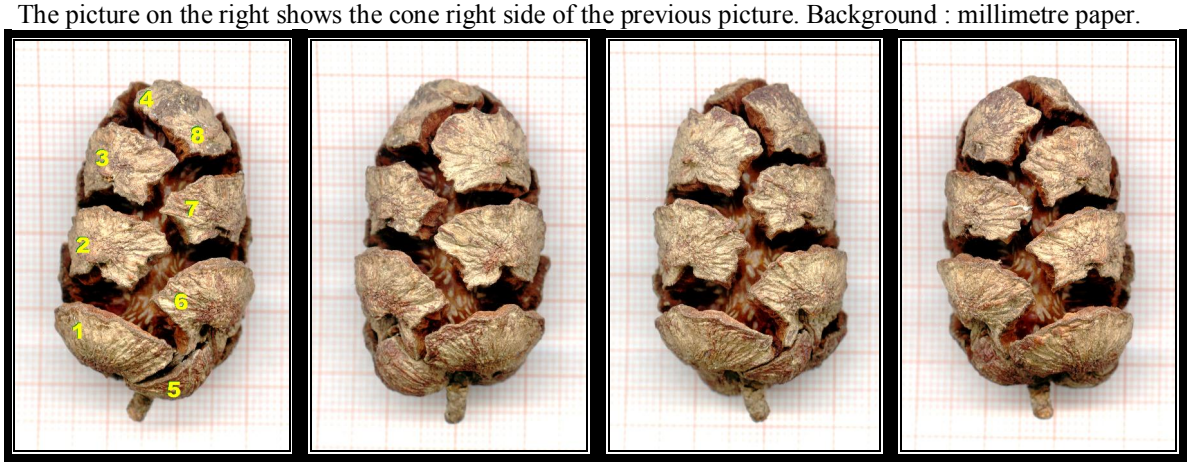
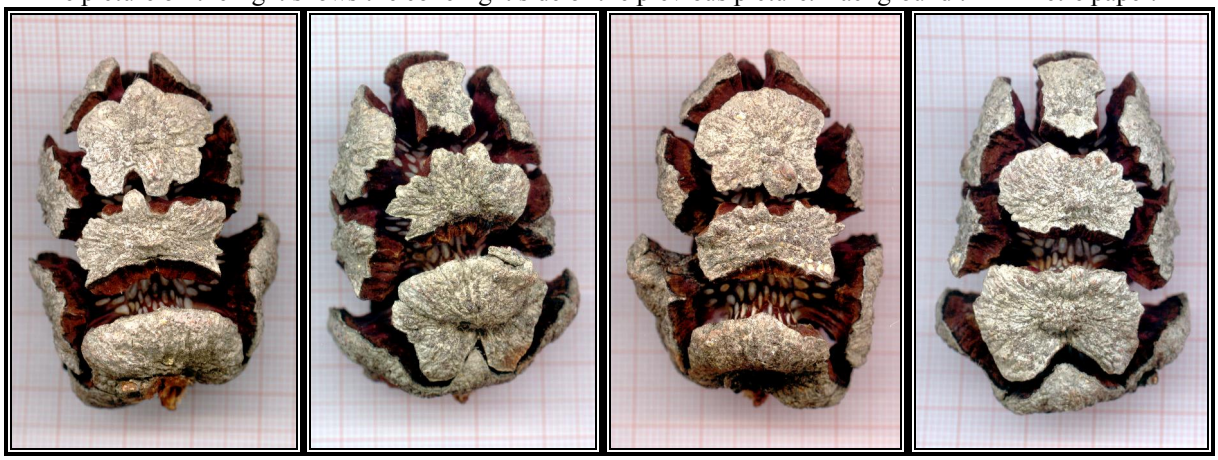


Figure 2 : This cone was measured at 50 mm at collection time : while drying it shrank to 48.64 mm. Other dimensions : maximum width : 36.38 mm. ; scales : 14 ; seeds : 286.
The picture on the right shows the cone right side of the previous picture. Background : millimetre paper.



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Figures 3 to 5 : A *Cupressus sempervirens* specimen with an abundance of cones over 4 cm in length.

Nomenclatural notes on *Cupressus nootkatensis* D.Don

Callitropsis nootkatensis was validly published by Ørsted in 1864

In 2002, Farjon *et al*., described a new genus of Cypress in *Novon* under the name of *Xanthocyparis*, and they included in it the Nootka Cypress *Cupressus nootkatensis* D.Don 1824. In 2004, Damon P. Little made the remark that the genus *Callitropsis*, published by Ørsted in 1864 in an article *Bidrag til Naaletraeernes Morphologi* [*Contributions to Conifer Morphology*] published in *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i Kjöbenhavn* [*Scientific notes from the Danish Natural History Society in Copenhagen*], had priority over the new genus. Subsequently, Mill & Farjon (2006) published a proposal to conserve the new name *Xanthocyparis* over *Callitropsis* and, while recognising that a mistake had been made, they put forward at the same time the argument that the combination *Callitropsis nootkatensis* had not been validly published by Ørsted in the above article.

According to Mill and Farjon, it was Florin who finally validated this new combination in 1944 and 1979 (in Farr *et al.* 1979).

In 2009, Debreczy, Musial, Price and Rácz discussed the arguments of Mill and Farjon about the absence of a valid publication of the combination *Callitropsis nootkatensis* by Ørsted and, while not accepting the validation by Florin, finally argued that Damon Little did do so inadvertently in 2004.

However, what was overlooked by all these authors, was that Ørsted's *Videnskabelige Meddelelser* paper was only a short contribution explaining some points he would be using in his major two-volume text on Danish tree cultivation, *Frilands-Trævæxten i Danmark*, also published in 1864. In this book, the new combination *Callitropsis nootkatensis* was validly published, with citation of the new name and its basionym as required by the botanical conventions of the time. Figures 2 to 5 reproduce the cover and title pages and pages 17-18 of volume 1 of *Frilands-Trævæxten* (see appendix 1, p. 21).

Translation from Danish (with orthographic correction of scientific names):

Callitropsis Ørd.

Bladene som hos Biota. Koglerne bestaae af 4 (eller 6) femkantet-runde Skjæl med en sammentrykt, i Spidsen blad-agtig Torn omtrent midt paa Rygsiden; 3 sammentrykte, vingede Frøe ved hvert Skjæl i een Række.

Den Art, som ligger til Grund for nærværende Slægt, er hidtil urigtig bleven henført enten til Cupressus, til Chamæcyparis eller til Thuiopsis, men da Kogleskjællene ere klappeformig forenede paa en sammentrængt Kogleaxe, kan den ikke bringes ind under nogen af disse Slægter. Den opstilles derfor her som Typus for en egen Slægt, der ved Koglens Bygning slutter sig nærmest til Callitris og Frenela.

Callitropsis nutkaensis (Lamb.) Nutkacypres.
Fig. 15.

Et 80 – 100' høit, meget smukt Træ med hængende Grene. Stammen 3 – 4' i Tværmaal; hvidt og blødt Ved; taaler af alle Cupressineer den største Kulde; bærer Kogler allerede i en Alder af 4 – 5 Aar. – Cupressus nutkaensis Lamb. – Chamæcyparis

Callitropsis Oersted

Leaves as in *Biota* [*Platycladus*]. Cones made up of 4 (or 6) five-sided rounded scales with a compressed, leaf-like thorn at the the apex roughly in the middle of the back; 3 compressed, winged seeds on each scale in one row.

This species, which is ancestral to the current genus, has up to now been wrongly placed either in *Cupressus*, in *Chamaecyparis*, or in *Thujopsis*, but as the cone scales are valvate, joined on a compressed cone axis, it cannot be placed in any of these genera. It is therefore treated as the type of its own genus, which from the cone structure is closest to *Callitris* and *Frenela* [= *Callitris*].

Callitropsis nootkatensis (Lamb.) Nootka Cypress.
Fig. 15.

An 80–100' [25–30m] tall, very beautiful tree with hanging branches. Trunks 3–4' [1–1.3m] diameter, soft white wood; of all the Cupressineae tolerates the most cold; bears cones already at an age of 4–5 years. – *Cupressus nootkatensis* Lamb. – *Chamaecyparis*

nutkaensis Spach. – Thuiopsis borealis Fisch. Vestkysten af Nordamerika, Nutkasundet, Sitcha.– Allerede opdaget af Menzies 1797, men først i den senere Tid udbredt fra den botaniske Have i St. Petersborg, hvor den var indført fra Sitcha.

Var. α. glauca Rgl., Bladene blaagronne, længere og spidsere end hos Hovedarten ; fremkommet af Frøe fra Sitcha i den bot. Have i St. Petersborg (Gartenflora V. 88).

Fig. 15.

Callitropsis nutkaensis. a et Stykke af en Gren. b Hunrakle. c en ung Kogle. d samme gjennemskaaren paalangs. e udvoxen Kogle. f Kogleskjæl seet fra den indvendige Side med tre Frøe. (Alle Figurerne svagt forstørrede).

nootkatensis Spach. – *Thujopsis borealis* Fisch. West coast of North America, Nootka Sound, Sitka. Already discovered by Menzies in 1797, but only recently distributed by the Botanical Garden in St Petersburg, where it was introduced from Sitka.

Variety α. glauca Regel, leaves blue-green, longer and slenderer than the species; arose from seed from Sitka in the Botanical Garden in St Petersburg (Gartenflora V. 88).

Fig. 15.

Callitropsis nootkatensis. a portion of a shoot. b Female conelet [at pollination time]. c young cone. d same, cut longitudinally. e mature cone. f cone scale seen from the upper side with three seeds. (All figures slightly magnified).

Ørsted's author citation of Lambert rather than D.Don, and mis-spelling of *nootkatensis* as '*nutkaensis*', do not affect validity (ICBN Articles 33.2 and 61). The correct full citation for the Nootka Cypress when treated in *Callitropsis* is therefore:

Callitropsis nootkatensis (D.Don) Oersted, *Frilands-Trævæxten i Danmark* 1: 17 (1864).

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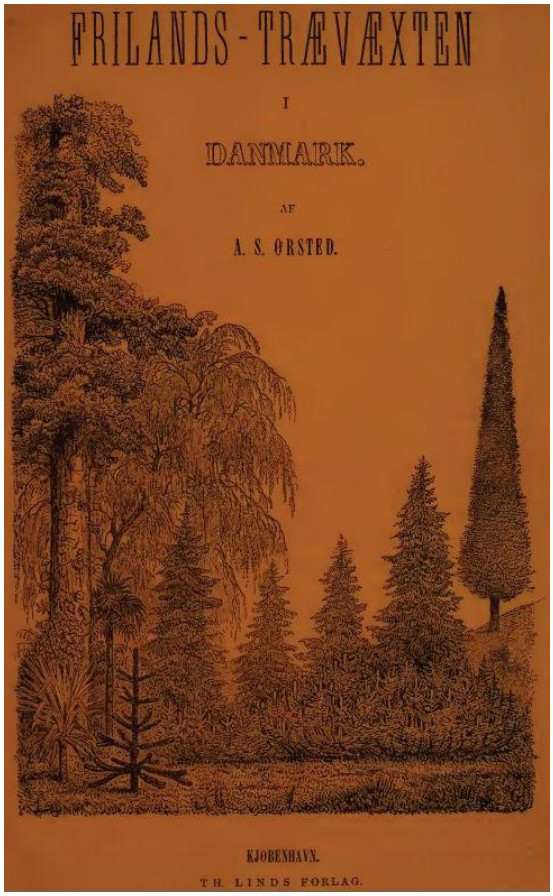
Figure 1 : Cones of *Cupressus nootkatensis*, cultivated.

Appendix 1 :

Figures 2 – 5 : *Frilands-Trævæxten*, volume 1 (book cover, title page, and protologue of *Callitropsis nootkatensis*, pages 17-18) by Ørsted, published in 1864.



FRILANDS-TRÆVÆXTEN

I

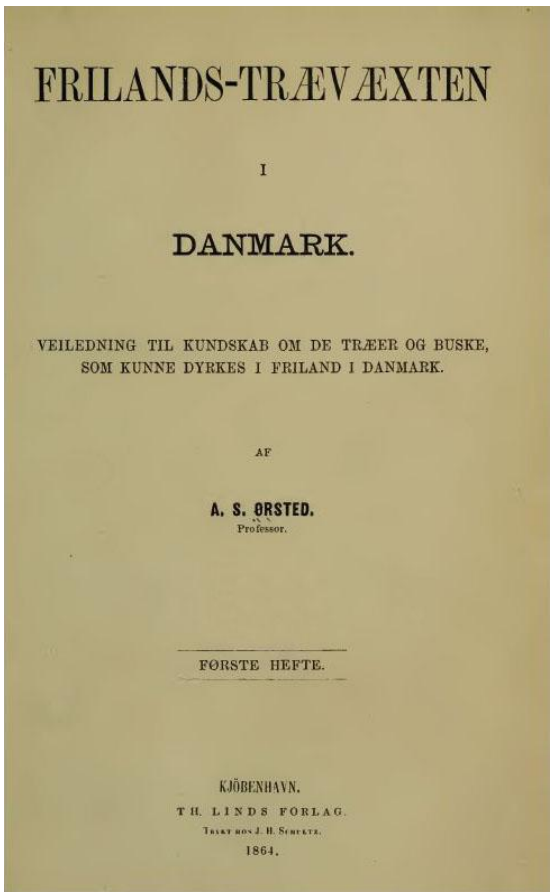
DANMARK.

AF

A. S. ØRSTED.

KJØBENHAVN.

TH. LINDS FORLAG.



FRILANDS-TRÆVÆXTEN

I

DANMARK.

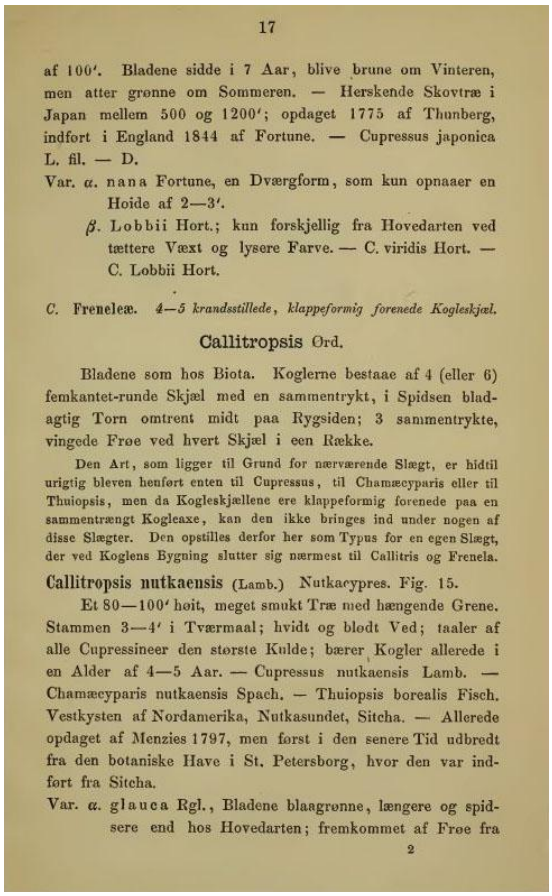
VEILEDNING TIL KUNDSKAB OM DE TRÆER OG BUSKE, SOM KUNNE DYRKES I FRILAND I DANMARK.

AF

A. S. ØRSTED.
Professor.

FØRSTE HEFTE.

KJØBENHAVN.
TH. LINDS FORLAG.
Trykt hos J. H. Schultz.
1864.



17

af 100′. Bladene sidde i 7 Aar, blive brune om Vinteren, men atter grønne om Sommeren. — Herskende Skovtræ i Japan mellem 500 og 1200′; opdaget 1775 af Thunberg, indført i England 1844 af Fortune. — Cupressus japonica L. fil. — D.

Var. α. nana Fortune, en Dværgform, som kun opnaaer en Høide af 2—3′.

β. Lobbii Hort.; kun forskjellig fra Hovedarten ved tættere Vext og lysere Farve. — C. viridis Hort. — C. Lobbii Hort.

C. Freneleæ. *4—5 krandsstillede, klappeformig forenede Kogleskjæl.*

Callitropsis Ord.

Bladene som hos Biota. Koglerne bestaae af 4 (eller 6) femkantet-runde Skjæl med en sammentrykt, i Spidsen bladagtig Torn omtrent midt paa Rygsiden; 3 sammentrykte, vingede Frøe ved hvert Skjæl i een Række.

Den Art, som ligger til Grund for nærværende Slægt, er hidtil urigtig bleven henført enten til Cupressus, til Chamæcyparis eller til Thuiopsis, men da Kogleskjællene ere klappeformig forenede paa en sammentrængt Kogleaxe, kan den ikke bringes ind under nogen af disse Slægter. Den opstilles derfor her som Typus for en egen Slægt, der ved Koglens Bygning slutter sig nærmest til Callitris og Frenela.

Callitropsis nutkaensis (Lamb.) Nutkacypres. Fig. 15.

Et 80—100′ høit, meget smukt Træ med hængende Grene. Stammen 3—4′ i Tværmaal; hvidt og blødt Ved; taaler af alle Cupressineer den største Kulde; bærer Kogler allerede i en Alder af 4—5 Aar. — Cupressus nutkaensis Lamb. — Chamæcyparis nutkaensis Spach. — Thuiopsis borealis Fisch. Vestkysten af Nordamerika, Nutkasundet, Sitcha. — Allerede opdaget af Menzies 1797, men først i den senere Tid udbredt fra den botaniske Have i St. Petersborg, hvor den var indført fra Sitcha.

Var. α. glauca Rgl., Bladene blaagrønne, længere og spidsere end hos Hovedarten; fremkommet af Frøe fra

2

18

Sitcha i den bot. Have i St. Petersborg (Gartenflora V. 88).

Fig. 15.

a c e b d f

Callitropsis nutkaensis. a et Stykke af en Gren. b Hunrakle. c en ung Kogle. d samme gjennemskaaren paalangs. e udvoxen Kogle. f Kogleskjæl seet fra den indvendige Side med tre Frøe. (Alle Figurerne svagt forstørrede).

Libocedrus Endl.

Bladene som hos Thuia. Ægformede Kogler, 4 aflange Kogleskjæl med en Torn paa Rygsiden, 2 større og 2 mindre; 1 (eller 2) kun paa den ene Side med en Vinge forsynet Frø ved hvert af de større Kogleskjæl. 3½ Arter.

Libocedrus chilensis (Don.) Hooker Lond. Journ. of Bot. V. 2. 199. t. 4. Grenene flade; de fladestillede Blade meget mindre*) end de side-

*) De danne næsten ikke andet end en Kjertel.

Cupressus Conservation Project

Menaces sur plusieurs espèces de cyprès

Le genre *Cupressus* est représenté par 31 espèces exclusivement de l'hémisphère nord (voir page 24). Beaucoup de ces espèces ont des aires naturelles de répartition très restreintes, ou plus ou moins étendues, mais avec des populations isolées et parfois limitées à quelques dizaines d'individus seulement.

Les menaces qui peuvent peser sur ces populations sont les plus diverses. Il est possible de citer :

- le feu : plusieurs espèces sont adaptées au feu et régénèrent naturellement après un incendie ; c'est la fréquence des incendie qui constitue une menace en ne laissant pas le temps à une nouvelle génération de reconstituer un stock de graines ; c'est le cas en Californie où la pression humaine est un facteur défavorable (retours d'incendie trop fréquents à la frontière Californie-Mexique notamment) ;
- le déboisement : la plupart des espèces ne sont pas rentables pour le bois et la foresterie, d'où un nombre limité d'études comparativement à d'autres genres de conifères, et hormis quelques espèces utilisées pour l'ornement, le désintérêt est général en dehors des jardins botaniques ; d'autres espèces cependant présentent un intérêt certain comme les *Cupressus lusitanica* et *macrocarpa* parmi les espèces du nouveau monde (croissance rapide en milieu subtropical), et les *Cupressus torulosa*, *tortulosa* et *austrotibetica* pour l'ancien monde, utilisés depuis des centaines d'années dans la construction des monastères ; dans les régions désertiques (Maroc, Algérie), des branches ou des arbres sont coupés comme bois de feu : *Cupressus atlantica* et *Cupressus dupreziana* ;
- l'hybridation : la plantation horticole d'espèces exotiques à proximité des populations sauvages fait courir un risque d'hybridation à ces populations ; le dernier exemple en date est la découverte d'un croisement possible entre *Cupressus pygmaea* et *Cupressus glabra* ; on notera également la plantation de *Cupressus sempervirens* dans l'aire du *Cupressus atlantica* ;
- le changement climatique : la population de *Cupressus dupreziana* limitée à quelques 200 arbres résiste tant bien que mal depuis plusieurs millénaires au changement climatique, mais selon les dernières études, le dépérissement d'importantes populations de *Cupressus nootkatensis* dans plusieurs parties de son aire naturelle est expliqué par le changement climatique : l'absence de couverture neigeuse expose les racines superficielles à des gels tardifs qui se révèlent fatals ;
- les maladies fongiques : le *Seiridium* ou maladie du chancre pose un problème pour l'instant limité surtout aux arbres cultivés ;
- le surpâturage : occasionné notamment par les chèvres, il empêche toute régénération, laissant la population vieillir au risque de finalement dépérir ; en éradiquant les animaux exotiques de l'île de Guadalupe, il a été possible de constater en très peu d'années une explosion de nouveaux plants de *Cupressus guadalupensis* et de *Pinus radiata* var. *binata*, alors même qu'aucune régénération n'avait été constatée auparavant pendant des décennies ; le *Cupressus atlantica* souffre actuellement du surpâturage ;
- la pression humaine : si la plupart des espèces de cyprès se trouvent dans des zones encore sauvages, quelques espèces voient leurs populations cernées par l'habitat humain ; sont dans ce cas les populations de *Cupressus macrocarpa* et *goveniana*.

Parmi les espèces les plus menacées, citons les espèces suivantes :

- *Cupressus stephensonii* : suite à un incendie en octobre 2003, l'unique population de cette espèce, estimée à quelque 800 arbres, a été presque complètement ravagée, ne laissant vivant que trois bosquets le long de la pente sud-ouest du Pic Cuyamaca. Quatorze personnes périrent dans cet incendie. C'est suite à ce dramatique événement que fut créé le *Cupressus* Conservation Project. Selon un rapport récent, la régénération se fait laborieusement et

graduellement, principalement le long d'un cours d'eau temporaire. Une période plus sèche que la normale depuis 2003 rend cette espèce plus particulièrement vulnérable à un nouvel incendie.

- *Cupressus dupreziana* : au cœur du Sahara, dans les monts du Tassili, cette espèce relique n'est représentée que par 233 arbres selon un recensement complet effectué de 1997 à 2001 ; depuis cette date, des arbres ont déjà disparu ; la régénération existe, mais elle est extraordinairement limitée.
- *Cupressus vietnamensis* : cette espèce découverte seulement en septembre 1999 par une équipe de botanistes vietnamiens est représentée par une faible population dans les montagnes karstiques du nord du Vietnam ; même si une deuxième population a été découverte, la faible régénération constitue une menace importante pour la survie de l'espèce.
- *Cupressus tonkinensis* : confondue avec *Cupressus funebris* ou *Cupressus torulosa* (!), cette espèce également du nord du Vietnam n'est plus connue actuellement que par des spécimens en culture.

Le *Cupressus* Conservation Project – association sans but lucratif – s'est fixé comme mission l'étude, la protection dans leur aire naturelle et la conservation dans des arboreta *ex-situ* des espèces de cyprès en mettant l'accent sur les plus menacées. Il vise à développer leur connaissance, notamment par l'intermédiaire de ce bulletin. Un centre de documentation a été constitué visant à regrouper les informations et études disponibles sur ces espèces. Il entreprend d'établir une taxonomie basée sur des données scientifiques de ce groupe d'arbres, devant permettre de définir les taxa qui méritent des efforts de protection et de conservation. Des contacts sont établis et une collaboration est développée avec toutes les personnes et tous les instituts, jardins botaniques et autres organisations qui manifestent un intérêt pour la sauvegarde de ce groupe de conifères. Le *Cupressus* Conservation Project souhaite également jouer un rôle d'alerte et de sensibilisation.

Figure 1 : *Cupressus forbesii*, cultivated.

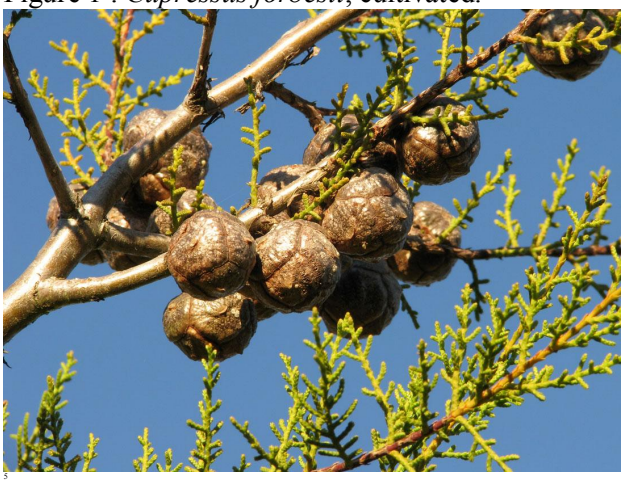


Figure 2 : *Cupressus stephensonii*, cultivated.

Figure 3 : *Cupressus goveniana*, cultivated.

Figure 4 : *Cupressus abramsiana*, cultivated.

TAXONOMY OF THE GENUS *CUPRESSUS*

The following list contains the species currently acknowledged by the *Cupressus* Conservation Project. All taxa are sufficiently distinct to be recognised at the rank of species. Twenty-nine out of the thirty-one were first described by their authors at this taxonomic level. Reducing many of these taxa at the variety or subspecies level is not supported by our observations. Articles are in preparation to sustain these choices, when necessary. Until now descriptions are relying almost exclusively on morphological characters and dry and dead herbarium material observations or insufficient sampling. More recently molecular analysis brought valuable sets of information, but considered alone they could be deceptive, if not contradictory. We propose to go beyond these approaches taking into account all available data, several of them new. The conservation needs are better sustained by this taxonomy.

1. *Cupressus sempervirens* Linnaeus (1753)
2. *Cupressus dupreziana* A.Camus (1926)
3. *Cupressus atlantica* Gaussen (1950)
4. *Cupressus torulosa* D.Don in Lambert (1824)
5. *Cupressus tortulosa* Griffith (1854)
6. *Cupressus austrotibetica* Silba (1988)
7. *Cupressus gigantea* W.C.Cheng & L.K.Fu (1975)
8. *Cupressus chengiana* S.Y.Hu (1974)
9. *Cupressus duclouxiana* Hickel in Camus (1924)
10. *Cupressus funebris* Endlicher (1847)
11. *Cupressus tonkinensis* Silba (1994)
12. *Cupressus vietnamensis* (Farjon & Hiep) Xiang & Li (2005)
13. *Cupressus nootkatensis* D.Don in Lambert (1824)
14. *Cupressus bakeri* Jepson (1909)
15. *Cupressus macnabiana* A.Murray bis (1855)
16. *Cupressus stephensonii* C.B.Wolf (1948)
17. *Cupressus revealiana* (Silba) Bisbee (2012)
18. *Cupressus glabra* Sudworth (1910)
19. *Cupressus arizonica* Greene (1882)
20. *Cupressus nevadensis* Abrams (1919)
21. *Cupressus montana* Wiggins (1933)
22. *Cupressus goveniana* Gordon (1849)
23. *Cupressus pygmaea* (Lemmon) Sargent (1901)
24. *Cupressus abramsiana* C.B.Wolf (1948)
25. *Cupressus sargentii* Jepson (1909)
26. *Cupressus macrocarpa* Hartweg ex Gordon (1849)
27. *Cupressus guadalupensis* S.Watson (1879)
28. *Cupressus forbesii* Jepson (1922)
29. *Cupressus lindleyi* Klotzsch ex Endlicher (1847)
30. *Cupressus benthamii* Endlicher (1847)
31. *Cupressus lusitanica* Miller (1768)