

**ENCYCLOPAEDI
A CONIFERAE**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649003884

Encyclopaedia Coniferae by John Silba

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

JOHN SILBA

**ENCYCLOPAEDI
A CONIFERAE**

PHYTOLOGIA MEMOIRS VIII

ENCYCLOPAEDIA CONIFERAE



Compiled by

JOHN SILBA

Consultant Botanist, 198 West Hoffman Avenue, Lindenhurst, New York 11757

PHYTOLOGIA MEMOIRS are published by Harold N. Moldenke and Alma L. Moldenke, 509 Hemlock Avenue N.W. Corvallis, Oregon 97330-3818 USA as a cooperative nonprofit series to facilitate the publication of larger botanical and phyto-ecological papers.

1986

Preface

In a continuation of my comprehensive taxonomic analysis of the Coniferae I have now prepared a manuscript giving concise taxonomic descriptions of all species and varieties accepted in my *An International Census of the Coniferae*, I (1984). A supplement to the original checklist with a few nomenclatural changes and additional citations of published names was recently published in *Phytologia* (1985). Many descriptions in the literature of various species have been quite vague as regards to the listing of morphological characteristics of the rarer taxa. I have tried to list as many morphological characteristics of a given taxon as possible. These descriptions are based on an examination of type specimens, descriptions in the literature and by my own personal observations in the field and in arboreta. This manuscript is a mere listing of the morphological characteristics of taxa which I believe to be valid taxa. The style here can be likened to that of *Hortus Third*, in that I have not made any keys here. It is possible that I may have keys in a later edition or in following individual monographic essays in which I will be able to take a closer examination of all the critical morphological characteristics of a given taxon.

What I am stressing in this manuscript is distinctions based on gross morphological characteristics which can easily be seen in the field or sometimes with the use of a simple hand lens at the type locality of a given taxon. It should be noted that the morphological characteristics can vary greatly within a individual species, especially in a species that has a relatively widespread distribution.

I must stress that it is sometimes just as important to make studies of cultivated plants as it is to make studies of plants in the wild, especially when the origin of a species is questionable. An example of this is Cupressus torulosa var. cashmeriana (Carr.) Kent. Recent collections of a wild Cupressus in Bhutan by D. Long (E) look identical to me in gross morphology to the plant long known in cultivation in Britain as C. cashmeriana Carr., which was previously unknown in the wild. However, Long had first concluded that the Cupressus collected in Bhutan was similar to the plant named C. corneyana Carr. or C. torulosa var. corneyana (Carr.) Carr., which again was long cultivated in Britain and unknown in the wild. My own analysis is that the wild Cupressus in Bhutan has long, flattened, chain-like branchlets with sharply acute leaves, characteristics of which match the plant long known in cultivation in Britain as C. cashmeriana. Photographs of the Bhutan Cupressus indicate that the trees have a greener foliage as opposed to the silvery-glaucous foliage of cultivated specimens in Britain. However, color of foliage is not always a valid characteristic, as is also the example of Cedrus libani var. atlantica cv. 'glauca' which normally appears as having glaucous foliage. Interestingly, the foliage of the Blue Atlas Cedar may appear markedly green at various times of the season, especially after rainy weather or sometimes in the autumn. Further, cultivated material of Cupressus corneyana Carr. in Britain has short, irregularly disposed branchlets with yellowish-green, obtuse leaves and does not look anything like the Bhutan Cupressus. If one were just to examine the literature the original descriptions of C. cashmeriana and C. corneyana are quite similar, however on a examination of cultivated material long known under these names the relationship of C. cashmeriana to the Bhutan Cupressus can clearly be seen. This is one of the reasons why it is essential to study cultivated plants as well as looking at descriptions in the literature and studying plants in the wild to see the correlation between these.

The basis for my analysis is from comparisons of type herbarium specimens, type descriptions and an examination of cultivated material in many arboreta in the U.S., Europe and Australasia. An examination of type specimens is a very important factor. An example of this is a taxon I am calling Juniperus barbadensis var. urbaniana (Pilg. et Skm.) Silba, which is native to S.W. Haiti and the W. Dominican Republic. A synonym of this taxon is J. ekmanii Florin, as to the type specimen. The type specimen of J. ekmanii has quadrangular branchlet systems and sharply acute leaves with an acuminate apex which are the same characteristics I am using to distinguish the plant J. barbadensis var. urbaniana on the basis of the type specimen of the latter taxon. Typical J. barbadensis has rounded branchlets with distinct obtuse leaves which do not have an acuminate apex. Interestingly, recent collections by T. Zanoni in Haiti and the Dominican Republic labeled as J. ekmanii do not look anything like the type specimen of that taxon, instead these collections have rounded branchlet systems and obtuse leaves typical of J. barbadensis. Again, if one were just to look at the type description of J. ekmanii the essential characteristics of the quadrangular branchlets and acute leaves are not highlighted there. It seems logical how easy it can be for collectors to confuse or missapply the name of a particular taxon if they have not actually seen the type specimen itself. Another example of this is a taxon formerly named Agathis dammara (Lamb.) Rich., the type specimen is actually a specimen of A. borneensis Warb., however the type description of A. dammara agrees with typical A. philippinensis Warb..

In these series of monographic essays what I am stressing is the need for a uniform system of classification of the Coniferae. Many authors have completely different opinions on certain individual species, for example some botanists in certain countries have named new species primarily on the basis of geographic distribution. That is some authors seem to recognize separate taxa just because they are native in different nearby countries. I seriously wonder whether politics sometimes interferes with scientific studies. This can be further illustrated by some scientists following trends as to just be accepted by their colleagues. For instance, most botanists in the Western United States use the term "subspecies" for infraspecific taxa of the Coniferae as opposed to most botanists in the Eastern United States that use the term "varietas" for infraspecific variation in the wild. It has been my observation that just because a certain majority of scientists follow one particular theory it does not mean that they are always right. It is often true that a scientist can not always depend on the work of earlier scientists, but that he has to make his own observations from scratch. Then the scientist has to try to correlate his new data with previous data and to make his observations known even if they are in general disagreement with the majority.

Some botanists seem to classify species on the sole basis of chemotaxonomy and other questionable characteristics that can not be easily seen on hand in the field. An example of this is Abies bifolia Murr., which is actually a synonym of A. lasiocarpa (Hook.) Nutt.. Recent publications have stated that A. bifolia is chemically distinct from A. lasiocarpa. However, if we were to compare herbarium specimens of these two taxa it can clearly be seen that there is absolutely no consistent difference in visible morphological characteristics. I do not view characteristics such as volatile oils of leaves or tropolones of heartwood of various species to be the sole basis for the distinction of a species. These characteristics should be combined with differences in morphological characteristics if they are to have any use to the taxonomist. Further, such characteristics as hypodermis of leaves is a

questionable basis for the distinction of a species if it is used as the sole basis for the naming of a species. An example is that of Amentotaxus assamica Ferguson, which is supposedly distinct in its continuous hypoderm of the leaves as opposed to other Amentotaxus species without continuous hypoderm. Yet, how can this feature be of any value when probably less than five incomplete specimens of Amentotaxus have been collected from Assam. Interestingly, the general description of A. assamica Ferguson well agrees in gross morphological characteristics to that of typical A. argotaenia (Hance) Pilg. and is reduced to synonymy in this manuscript.

Characteristics which I am stressing is that of gross morphology combined with geographic distribution. These characteristics do vary considerably in some species, however what I am stressing is that these characteristics can be used in the field when looking at type localities in particular. Certain taxa with relatively widespread distributions may look rather different in areas other than the type locality and as such may appear to merge into or sometimes hybridize with closely related species. Another interesting point is that what works well as far as taxonomic distinctions in one group or genus may not work very well in another group or genus. An example of this is that of Callitris Vent., the primary distinction of species in this genus is that of differences in the female cones. If we were to use foliage characteristics as the only basis to distinguish the various Callitris species in a key it would nearly be impossible to use this as a valuable taxonomic guide. Whereas, in Cupressus L. leaf characteristics can easily be distinguished in a key if they are combined with branchlet characteristics, though unfortunately in some species of Cupressus L. female cone distinctions can not always be easily seen.

My own definition of a species is a taxon which is usually separated geographically from another related taxon and which differs in at least two or three major morphological characteristics. A species in my opinion should be based on differences in habit (crown characteristics), bark, bud, leaf characteristics (shape, texture, duration, structure, shape of the apex, stomata), male strobili (number of scales, shapes of the microsporophylls), female cones (arrangement, duration, umbos), seeds (shape, color, wings), cotyledons (number, size, shape of the apex, hypogeal or epigeal) combined with geographic distribution and ecological habitats. A clear example of this is Cupressus chengiana Hu and C. duclouxiana Hickel. The former species grows in dry regions in S. Kansu and N.W. Szechuan and is distinguished by its fissured bark, the branchlets divided into a fishbone pattern, its distinctly glandular leaves, glaucous-brown female cones with smooth, flattened, rounded, tan seeds. The latter species grows in wet regions in S.E. Tibet and N.W. Yunnan and has finely fissured bark, finely divided branchlet systems, obscurely glandular leaves, reddish-brown female cones with warty, non-flattened, ovoid, reddish-brown seeds. A less clear distinction of species is that of Cupressus goveniana Gord. and C. macrocarpa Hartw.. Both species are similar in foliage characteristics and occupy similar ecological habitats within close proximity of one another. Both species have irregularly disposed branchlets, dark green obtuse leaves with obscure glands and also have similar male strobili. However, they differ markedly in crown and female cone characteristics. Cupressus goveniana is a broadly conical tree with small, globular female cones with 6-10 scales and with small, blackish, densely warty seeds. Cupressus macrocarpa has a rounded crown with horizontal branches, it has large subglobose female cones with 8-12 scales with larger, brown, less warty seeds. These characteristics which I am stressing are of value in the field and in cultivation not only to the botanist, but also to the horticulturist and to the forester, as opposed to chemotaxonomic

characteristics which are usually only valuable to the biologist in the laboratory.

Some botanists may argue that the characteristics used to distinguish the species of the Coniferae are vague and would not hold up if compared to morphological characteristics used to distinguish species of Angiosperms. However, as I have already stated what works with one group may not work at all in another group. The Conifers are a unique group of plants and there are also other plant groups that are unique such as Palms. It is my opinion that morphologically each distinct group should be viewed as to taxonomic distinctions as to what works well with that particular group. I am also under the impression that this can be done in a uniform manner.

As to the definition of infraspecific variation it is my opinion that only one term is needed for taxa in the wild, namely the term "varietas". This is necessary as to designate a uniform system of classification on an international scale. The term "varietas" has appeared more frequently in the literature on the Coniferae, also it is an older term. The terms "subspecies" and "formas" are recent terms in which the distinctions between these terms and "varietas" are ill-defined and probably subject to bias opinion. There are many taxa of the Coniferae at the "species" level which are closely related and yet there are some that are markedly distinct from one another. For instance, Pinus cembroides Zucc. and P. culminicola Andr. et Beam. are closely related, whereas P. krempfii Lecompte is markedly distinct from these, yet all these distinctions are at the "species" level. In other words, why should other terms be introduced to distinguish greater distinctions between different infraspecific taxa without giving an equal argument to distinctions at the species level? It is appropriate to classify different species into different sections of a particular genus on the basis of their degree of distinctions, however to introduce other commonly used terms such has been done at the infraspecific level is not at all necessary. A level which can be distinguished from infraspecific variation in the wild as opposed to infraspecific variation in cultivation or civilization is the term "cultivar". The term cultivar can be appropriately used because its level of distinction is quite different from the "varietas" level. Taxa at the "cultivar" level are usually not found in the wild and are usually the results of chance seedlings or odd mutations which cultivation gives a better chance of survival for than in the wild. Also, a "cultivar" differs from a "varietas" in that it did not slowly differentiate from the typical species by geographic isolation in the wild. My own definition of a "varietas" is a taxon which is usually separated geographically from the typical variety, is similar in general gross morphology to the typical variety, however differs in at least one or more significant consistent morphological characteristics. An example is Cupressus lusitanica var. benthamii (Endl.) Carr., the general characteristics of this taxon well agree with typical C. lusitanica Mill. Both taxa have shreddy bark, drooping branchlets, acute leaves with inconspicuous glands and female cones which open upon maturity. However, C. lusitanica var. benthamii differs in its branchlets being disposed in one plane, its greener foliage with more conspicuous glands on younger trees and by its female cones with fewer scales, whereas typical C. lusitanica has irregularly disposed branchlets with gray-green foliage and with obscure glands. Another example is Abies pindrow var. brevifolia Dallim. et Jacks., which agrees in female cone characteristics to typical A. pindrow (Lamb.) Royle, however it is different in its shorter, spirally arranged leaves and by its reddish-brown branchlets. It is my opinion that a single species should not contain more than four varieties including the typical variety.

No doubt there are always exceptions to the general rule, however what I am stressing here again is international uniformity. In the past authors have included species with several varieties each with other several subspecies and with numerous forms of a single species. Such treatments are quite misleading and are too broad. To avoid excessive lumping or splitting of a species I propose that a single species should not contain more than four varieties, including the typical variety, of the Coniferae, with perhaps only a few exceptions to this general rule.