

THE CLASSIFICATION OF CONIFERALES

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ABSTRACT

Several botanists have proposed raising the subfamilies of conifers to the rank of families, which seems to be more and more justified as their morphology becomes better known. In suggesting such a revision the writer would wish to retain the time-honored grouping of the conifers into the two groups formerly called the families: Pinaceae and Taxaceae. Since these two names have been retained as more restricted family names by Pilger¹ in his new classification, the writer proposes these two groups with the rank of suborders: *Phanarostrobilares* and *Aphanostrobilares*.

Phanarostrobilares are characterized by well developed and usually conspicuous seed cones. In addition to this the plants are mostly monoecious and the cones are nearly all woody; they are fleshy only among members of the genus *Juniperus*.

Aphanostrobilares have, for the most part, small or poorly developed cones, or the cones are reduced to only a few scales and usually the cone or the ovule is fleshy. Most species of this group are dioecious.

We would also propose the division of some of Pilger's seven families still further, thus increasing the number of families to ten. On embryological grounds as well as on the basis of recognized taxonomic differences

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²Pilger, R., 1926, in Engler & Prantl, Natürl. Pflanzenfam. 13: 163-166.

the family *Sciadopitaceae* should be separated from the *Taxodiaceae* of Pilger (= *Taxodineae* of Eichler), as was proposed many years ago by Arnould² and more recently by Hayata³.

Lawson's morphological investigations of *Microcachrys* and of *Pherosphaera*⁴ have made it reasonably certain that these two genera have little in common and very little which would justify their inclusion with *Podocarpaceae*. *Microcachrys* and *Saxegothaea* may be grouped together into a family: *Saxegothaceae* and the genus *Pherosphaera* into another family by itself: *Pherosphaeraceae*. With these changes the ten families may be arranged as follows:

A. PHANEROSTROBILARES

- I. *Pinaceae*—including *Pinus*, *Cedrus*, *Pseudolarix*, *Larix*, *Keteleeria*, *Tsuga*, *Abies*, *Picea* and *Pseudotsuga*.
- II. *Araucariaceae*—including *Araucaria* and *Agathis*.
- III. *Sciadopitaceae*—including one genus; *Sciadopitys*.
- IV. *Taxodiaceae*—including *Cunninghamia*, *Taiwania*, *Athrotaxis*, *Sequoia*, *Taxodium*, *Glyptostrobus* and *Cryptomeria*.
- V. *Cupressaceae*
 - a. *Cupressoidae*—including *Cupressus*, *Chamaecyparis*, *Libocedrus*, *Biota* and possibly some of the following: *Thujaopsis*, *Fokienia*, *Fitzroya*, and *Diselma*.
 - b. *Callitroidae*—including *Widdringtonia*, *Actinostrobus*, *Callitris* and possibly *Tetraclinis*.
 - c. *Thujoideae*—including *Thuja* and possibly some mentioned in (a) above.
 - d. *Juniperoideae*—including *Juniperus* and *Arceuthos*.

B. APHANOSTROBILARES

- VI. *Saxegothaceae*—including *Saxegothaea* and *Microcachrys*.
- VII. *Podocarpaceae*—including *Podocarpus*, *Dacrydium*, *Acropyle* and *Phyllocladus*.
- VIII. *Pherosphaeraceae*—including only one genus; *Pherosphaera*.
- IX. *Cephalotaxaceae*—including *Amentotaxus* and *Cephalotaxus*.
- X. *Taxaceae*—including *Austrotaxus*, *Taxus* and *Torreya*.

Elsewhere the writer is presenting a more complete discussion of this classification together with a summary of some of the embryological as well as taxonomic characters which justify the separation of the conifers into these ten families.

² Arnould, W., 1901. Beitrage zur Morphologie einiger Gymnospermen V. Bull. Soc. Imp. Nat. Moscow for 1901: 451-476. See 470.

³ Hayata, B. 1931. Bot. Mag. (Tokyo), 45: 568.

⁴ Lawson, A. A. 1923. Life-history of *Microcachrys tetragona* (Hook.). Proc. Linn. Soc. N. S. W. 48: 177-193.

⁵ ———, 1923. Life-history of *Pherosphaera*. Proc. Linn. Soc. N. S. W. 48: 499-516.