

The Umbelliferae of Macaronesia

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Although the Umbelliferae do not constitute one of the largest families in the Macaronesian flora, they are richly represented and contain many interesting endemic genera and species. In terms of crude statistics there are 34 genera of which 5 are endemic: *Drusa*, *Tinguarra*, *Todaroa*, *Astydamia* and *Melanoselinum*, and 61 species of which 31 are endemic.

HYDROCOTYLOIDEAE

The subfamily Hydrocotyloideae is represented by two species *Hydrocotyle vulgaris* in the Azores and the endemic *Drusa glandulosa* (Poir.) Bornm. which is found in all the islands of the Canaries group and has been recorded once from Madeira. *Drusa glandulosa* was first described by Poir. as a species of *Sicyos* of the Cucurbitaceae and was made the basis of a new genus, *Drusa* by De Candolle. It is monotypic and is allied to the South American *Bowlesia* and Chilean *Homalocarpus*. It has been revised recently by Mathias and Constance (1965) who give a full discussion of its affinities. Although several authors have united *Drusa* with *Bowlesia* or have placed those species of *Bowlesia* which possess glochidiate fruits in *Drusa*, there does not seem to be a very close relationship between the genera and they are best kept distinct. Mathias and Constance comment that "the closest relationship of *Drusa* might appear to be with *Bowlesia uncinata* of Chile, but we have no theory to explain the tremendous geographical disjunction".

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The distribution given by Mathias and Constance needs slight revision. In their map (fig. 23) a locality should be added to the island of Gomera, and they do not list Madeira where the species has been recorded by Menezes (cf. Hansen, 1969). The records from the Moroccan mainland are dubious and apparently erroneous.

SANICULOIDEAE

The subfamily Saniculoideae is represented in the Macaronesian flora by a single species *Sanicula azorica* which is endemic to the Azores. It is curious that the genus *Eryngium* which has a large concentration of species in N. Africa is not found at all in the region.

APIOIDEAE

The vast majority of the Macaronesian Umbelliferae belong to the subfamily Apioideae.

Scandiceae - Scandicinae. This subtribe contains the genus *Tinguarra* (*T. cervariaefolia*) which is endemic to the Canary Islands (only on Gomera, Tenerife, Palma, and Hierro). The taxonomic position of this genus is not clear: it is considered by Bentham (1867) as containing three species, *T. sicula* (L.) Benth, *T. cervariaefolia* Parl. and *T. montana* Webb. The first of these is currently regarded as an *Athamanta* (*A. sicula* L.) which grows in Sicily and C. and S. Italy; the second is the Canarian endemic species; while the third is placed in the genus *Todaroa*, ditypic Canarian endemic genus. It is clear that a detailed study of the taxonomy and relationships of these species is required.

Another member of the *Scandicinae* that requires further study is *Scandix pecten-veneris* subsp. *brachycarpa* (Guss.) Thell. The type-subspecies is widespread in the Canary Islands and in Madeira but subsp. *brachycarpa* is a Mediterranean taxon which occurs in Greece, Italy and Sicily. Its status in the Canary Islands from where it has been recorded needs examination.

A further endemic member of the *Scandicinae* is *Chaerophyllum azoricum* Trel., confined to the Azores.

Caucalideae - *Caucalinae*. This subtribe is represented in the Macaronesian region by three common species of *Torilis*, *T. nodosa*, *T. leptophylla* and *T. arvensis*. Lowe (1868), however, described a number of Madeiran endemic species — *T. brevipes*, *T. obscura* and *T. tenuifolia* — but these appear to be conspecific with *T. arvensis* and further studies are in progress at Reading (S. L. Jury, unpublished).

The tribes *Coriandreae* and *Smyrnieae* do not contain any noteworthy species.

Apiaceae - *Apiinae*. This subtribe is well represented in the region and contains numerous endemics and other taxa of phylogeographical interest. Amongst these is *Ruthea herbanica* Bolle which is endemic to the Canary Islands (Fuerteventura); the only other species of the genus is *R. burchellii* (Hook. fil.) Drude, a rare plant restricted to St. Helena.

There are six species of *Bupleurum* in the Macaronesian flora of which three are endemic: *B. salicifolium* Solander in Madeira, *B. aciphyllum* Webb & Berth. in the Canary Islands (previously confused with the preceding species — cf. Cauwet, 1971 and Hansen, 1970) and *B. handiense* Bolle (Canary Islands, Fuerteventura and Lanzarote).

Cryptotaenia is represented by a single endemic species, *C. elegans* Webb ex Bolle found in the Laurel forests of the Western Canary Islands. The genus is somewhat confused in the literature: Drude (1878) divided into two sections — sect. *Cyrtospermum* (= *Cryptotaenia*) containing *C. canadensis* and Sect. *Lereschia* (*Lereschia* Boiss.) with *C. thomasii* and *C. africana*, with no mention of the Canary Island species. Wolff (1927), on the other hand, divided the genus into three sections — sect. *Cyrtospermum* with *C. canadensis*, sect. *Lereschia* with *C. thomasii* and *C. flahaultii*, and sect. *Afroscadium* with *C. africana* and the Canarian *C. elegans*. *C. canadensis* is nowadays interpreted so as to include *C. japonica* and its consequent distribution is E. North America and Japan (cf. Hiroe and Constance, 1958). *C. thomasii* from Calabria, S. Italy, is currently treated as belon-

ging to a separate genus, *Lereschia* which Tutin (1968) regards as 'very similar to *Petagnia* in appearance and perhaps more closely related to it than to *Cryptotaenia*'. *C. africana* which is known from Tropical West Africa and the Canary Island species, *C. elegans* are distinct from *C. canadensis* but whether they should either or both be placed in the genus *Lereschia* along with *C. thomasi* or treated as a separate genus is a matter requiring further detailed investigation.

The situation is further complicated by an overlooked paper by Koso-Poljansky (1915) in which he replaced the genus *Cryptotaenia* by *Deringa* Adanson* on nomenclatural grounds which he then divided into sect. *Cryptotaeniopsis* comprising *D. vulgaris* which is usually treated as a separate genus *Cryptotaeniopsis*, and sect. *Cryptotaenia* which he divided into two series, *Alacospermum* with *D. canadensis* and *D. japonica* and series *Lereschia* with *D. flahaultii* and *D. thomasi*. He regarded the African species, *D. africana* as very distinct on the grounds that it possesses biternate (not ternate) leaves with ovate petiolulate scabrid segments but since he had not seen fruits he was dubious as to its position although he in fact included it in *Deringa*. On the other hand he considered *Cryptotaenia elegans* as certainly to be excluded from *Deringa* and probably referable to the genus *Sphallerocarpus*.

The position of *C. elegans* appears then, to be much disputed — should it be included with the *Lereschia* group, with the African species in a separate group, or should it be excluded from *Cryptotaenia* altogether? A full study of the whole genus is being undertaken at Reading prompted by this situation. This illustrates the way in which a consideration of a Macaronesian species requires an investigation of other species from very diverse areas — Canary Islands, Calabria, Caucasus, Tropical Africa, North America and Japan. Until firm taxonomic conclusions can be arrived at the 'stark disjunkter Verbreitung' which Melchior com-

**Cryptotaenia* has since been conserved against *Deringa*.

ments on in the *Syllabus der Pflanzenfamilien* may be more apparent than real. It is dangerous to rely on inadequate taxonomy for drawing phytogeographical conclusions.

The genus *Ammi* contains three endemic species in Macaronesia *A. procerum* Lowe from the Canary Islands and Madeira, and two Azorean entities — *A. huntii* Wats. and *A. trifoliatum* (Wats.) Trel. which Tutin (in Palhinha, 1966) regards, along with a further species *A. seubertianum* (Wats.) Trel., as representing local populations of a single species but with *A. trifoliatum* as the most distinctive.

The single species of *Bunium* in the region is *B. brevifolium* Lowe, endemic to Madeira.

The genus *Pimpinella* shows a remarkable development in the region with four of the five species endemic to the Canary Islands: *P. anagodendron* Bolle (incl. *P. rupicola* Svent.) on basalt blocks in Tenerife, *P. junionae* Ceb. & Ort. on Gomera, *P. cumbrae* in the subalpine zone of Tenerife and *P. dendrotragium* in Palma and Tenerife.

Apiaceae — *Seselinaceae*

In addition to an endemic *Seseli* in the Canary Islands (*S. webbii* Coss.) and an endemic *Oenanthe* in Madeira (*O. pteridifolia* Lowe), this subtribe contains the endemic genus *Todaroa* containing two Canary Island species, *T. montana* Webb and *T. aurea* Parl. Both these species have recently reported as having $2n = 22$ (Bramwell et al., 1971) as does *Tinguarra cervariaefolia* (cf. Moore, 1971). The relationships of these species, as indicated above, required further study.

Peucedaneae

In this tribe four of the five species in the Macaronesian flora are endemic, including one genus *Astydamia* which has a single species *A. latifolia* (L. fil.) O. Ktze. in Madeira and all the Canary Islands.

This halophyte which resembles *Crithmum maritimum* in ecology has also been recorded from N. Africa. The genus *Ferula* is represented by *F. linkii* Webb, endemic to the Canary Islands except Lanzarote where it is replaced by the

endemic *F. lancerottense* Parl. There is a single species of *Peucedanum* — *P. lowei* (Coss.) Menz., endemic to Madeira.

Laserpitieae

This tribe is represented by the remarkable development of an endemic genus *Melanoselinum* containing seven endemic species — one in Madeira and the Azores, one in Madeira and five in the Cape Verde Islands. The chromosome numbers so far reported are variable with $2n = 18, 20$ and 22 (Bramwell et al. 1972).

Dauceae

Apart from *Daucus carota* and *D. aureus*, the other representative of this tribe in the region is *Ammodaucus leucotrichus* Coss. & Dur. which is the subject of current research at Reading in view of its obscure relationships. This species is found also in Morocco, Algeria and Libya and extends S. to Timbuktoo. It was recently described again from Morocco as a new species of *Cuminum*, *C. maroccanum* Davis & Hedge which we have shown to be identical with *Ammodaucus leucotrichus*. However, the relationships between *Ammodaucus*, *Cuminum* and *Psammogeton* are highly confused following the earlier proposal of Wagenitz (1956) to remove part of *Psammogeton* to *Cuminum*, i.e. *P. setifolium* and *P. borsczovii* (Urals to Caspian) from *C.* Asia and Iran while *P. canescens* syn. *P. crinitum* and *P. brevisetus* from Persia, Afghanistan and Pakistan are left in *Psammogeton*.

The results of our studies of fruit structure, anatomy, pollen and chemistry indicate a multidimensional relationship between all these taxa and still further assessment is needed. Phytogeographical conclusions, under the circumstances, would be premature to say the least.

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