THE ENDEMIC GENERA OF ROSACEAE (POTERIEAE) IN MACARONESIA.

DAVID BRAMWELL

Jardín Botánico Canario "Viera y Clavijo" del Excmo. Cabildo Insular de Gran Canaria.

RESUMEN

Se discuten las interrelaciones de los endemismos Macaronésicos de Rosaceae (Poterieae) y tres géneros son reinstalados *(Bencomia, Marcetella* y *Dendriopoterium)* sobre bases morfológicas, anatómicas y citológicas.

Se describe una nueva especie de *Dendroipoterium* descubierta por E. R. Sventenius.

SUMMARY

The relationships of the Macaronesian endemic Rosaceae (Poterieae) are discussed and three genera *(Bencomia, Marcetella* and *Dendriopoterium* reinstated on morphological, anatomical and cytological grounds. A new species of *Dendriopoterium* discovered by E. R. Sventenius is described.

CONTENTS

Introductions 67
Cytological and morphological relationships..... 68
Discussion 69
Referencias 73

INTRODUCTION

The group of endemic taxa of Rosaceae (Poterieae) from Macaronesia are of considerable interest in the context of insular phytogeography and evolution because of their woody habit, unisexual flowers and diversity of dispersal mechanisms involving comparatively

large fruits. Their nearest continental relatives seem to be a group of trees and shrubs found in East and South Africa *(Hagenia, Leucosidea, Cliffortia),* in South America *(Polylepis, Tetraglochin, Magyricarpus)* and in the Mediterranean region *(Sarcopoterium).* This affinity with a series of continental, disjunct trees and shrubs suggests that the Macaronesian group is basically woody rather than an *in situ* insular derivative of colonizing herbaceous ancestors.

Sventenius (1948) revised the Macaronesian taxa and recognised three distinct genera, *Bencomia* Webb & Berth, with a more or less globose, spongy, unwinged receptacle, *Marcetella* with a flattened, dry or spongy, marginally winged receptacle and *Dendriopoterium* with a small dry 4-angled receptacle.

In her studies of the tribe Sanguisorbeae Nordborg (1966) maintained only *Bencomia* as a separate genus and included *Marcetella* and *Dendriopoterium* in a widely circumscribed *Sanguisorba* on the grounds that they shared the common characteristic of a dry 4-angled receptacle.

Hutchinson (1964) also recognized only *Bencomia* but he included *Dendriopoterium and Marcetella* in it maintaining the Macaronesian group separate from *Sanguisorba.*

CYTOLOGICAL AND MORPHOLOGICAL RELATIONSHIPS

Experimental studies on hybridization between species of *Bencomia, Marcetella* and *Dendriopoterium* have shown that intergeneric hybrids between *Bencomia* and *Dendriopoterium,* and *Bencomia* and *Marcetella* show relatively high pollen fertility and (Fig. 1) virtually normal meiotic chromosome behaviour (Ortega & Bramwell unpubl.) indicating a close genetic affinity within the Macaronesian group.

The three Macaronesian genera are also closely linked by their woody candelabra shrub habit and their unisexual flowers, characters not found in the genus *Sanguisorba sensu stricto* and it is apparent that in separating *Marcetella* and *Dendriopoterium* from *Bencomia* and relegating them to a subgenus of *Sanguisorba* Nordborg overaccentuated the importance of the dry receptacle as a generic character and produced an unacceptably wide circumscription for the genus *Sanguisorba.* Further evidence for this overemphasis of the importance of the dry receptacle comes from the examination of the receptacle

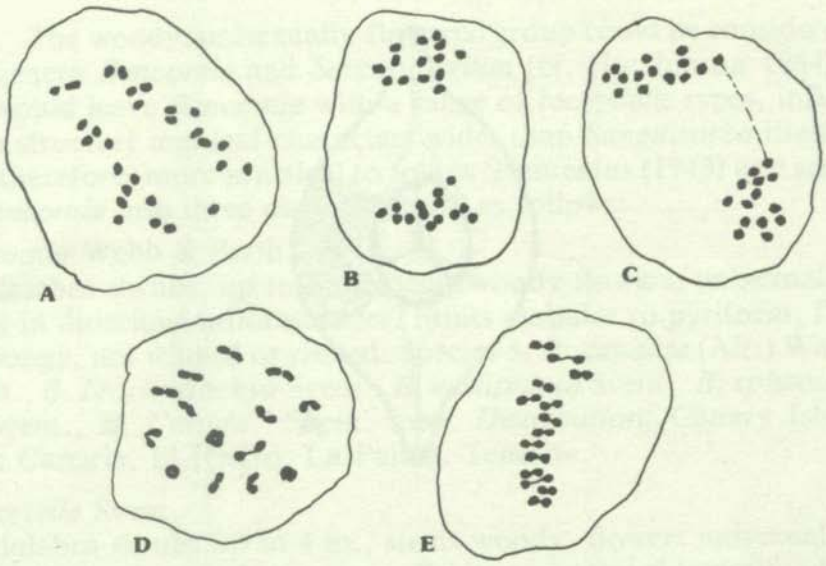

Figure 1.
Behaviour of chromosomes in 1° Meiosis in the hybrid *Bencomia caudata* x *Dendriopoterium menendezii* A and B, Anaphase (normal); C Anaphase 1 with bridge, D Diakinesis (normal), E Metaphase 1 (normal). (All from J. Ortega, unpublished).

itself in the mature fruit of *Marcetella maderensis* (Bornm.) Svent. which is, in fact, a receptacle with a structure very similar to that of *Bencomia* (Fig. 2) *Marcetella* does not have a dry receptacle of the *Sanguisorba s.s.* type. The seeds of *M. maderensis* are surrounded by a thick layer of spongy tissue (Fig. 2) homologous to the fleshy/spongy receptacle of *Bencomia* and even in *M. moquiniana* this spongy layer is present but very reduced as part of the strong adaptation to anemochory in this species.

DISCUSSION

The three Macaronesian groups *(Marcetella, Bencomia* and *Dendriopoterium)* along with the Mediterranean *Sarcopoterium* differ consistently from *Sanguisorba sensu stricto* in their woody habit and their unisexual flowers (and also in their obvious stipules) and it would appear to be most practical to use these closely correlating characters for a primary delimitation of natural groups. The fleshy/spongy versus dry receptacle character does not, however, correlate consistently with any other character and a group based on the presence of a dry receptacle only would include both shrubby and herbaceous habit, hermaphrodite and unisexual flowers and taxa with and without obvious stipules, anomalies which are eliminated when the grouping is based on habit and sexual state of the flowers.

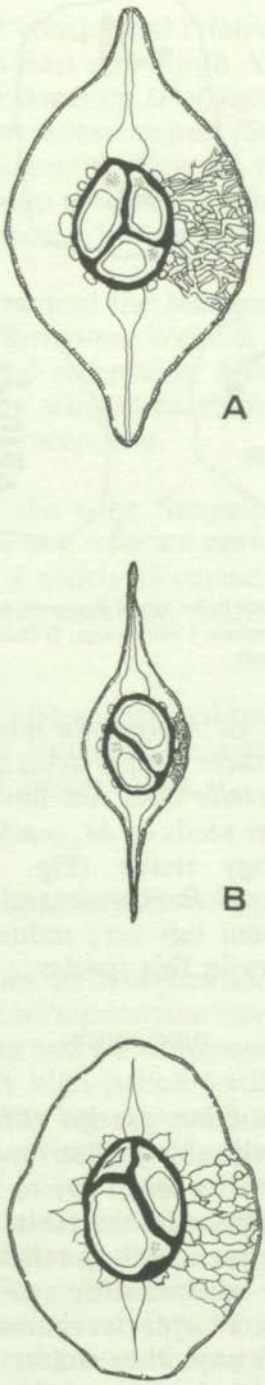

Figure 2:
T.S. of mature fruits of A. *Bencomia caudata*, B, *Marcetella moquiniana* and C. *M. maderensis* showing the fleshy/spongy nature of the receptacle in all three (sp = spongy tissue).

The woody, unisexually-flowered group could be considered as two genera *Bencomia* and *Sarcopoterium* (cf. Hutchinson 1964) but this would leave *Bencomia* with a range of receptacle types, inflorescence structure and leaf-characters wider than *Sanguisorba* itself and it is, therefore, more practical to follow Sventenius (1948) and separate *Bencomia* into three distinct genera as follows:

Bencomia Webb & Berth.
Candalabra shrubs, up to 3 m. stems woody flowers, unisexual normally in dioecious inflorescences. Fruits globular to pyriform, fleshy or spongy, not winged or ribbed. Species 5: *B. caudata* (Ait.) Webb & Berth., *B. brachystachya* Svent., *B. exstipulata* Svent., *B. sphaerocarpa* Svent., *B. "nitida"* Svent. ined. *Distribution:* Canary Islands: Gran Canaria, El Hierro, La Palma, Tenerife.

Marcetella Svent.
Candalabra shrubs up to 4 m., stems woody, flowers unisexual normally in dioecious inflorescences. Fruits compressed laterally, dry or spongy, with a broad or narrow marginal wing. Species 2: *M. moquiniana* (Webb & Berth.) Svent., *M. maderensis* (Brnm.) Svent. *Distribution:* Canary Islands: Tenerife, Gran Canaria, Gomera, Madeira.

Dendriopoterium Svent.
Candalabra shrubs, up to 2 m., stems woody, not thorny, flowers unisexual, inflorescences monoecious. Fruit small, dry, 4-angled andribbed. *Distribution:* Canary Islands: Gran Canaria.
Species2: *D. menendezii* Svent., *D. pulidoi* Svent.

Both *Hagenia* and *Sarcopoterium* share with this group the unisexual flowers and woody habit.

UNA NUEVA ESPECIE DE DENDRIOPOTERIUM DESCUBIERTA POR E.R. SVENTENIUS.

De entre los trabajos científicos del fallecido Profesor E.R. Sventenius hemos encontrado sin publicar la descripción y ejemplares de herbario de una nueva especie de *Dendriopoterium* a la que se le dió el nombre de *D. pulidoi* en honor de Don Juan Pulido Castro, ex Presidente del Excmo. Cabildo Insular de Gran Canaria. La especie, que se encuentra en las regiones Central y Oeste de Gran Canaria, es facilmente distinguible de *D. menendezii* Svent, que hasta ahora era la única especie del género, por sus estipulas elongadas laciniadas y sus grandes frutos, con cuatro amplias costillas aladas 4 veces mayor que las de *D. menendezii*.

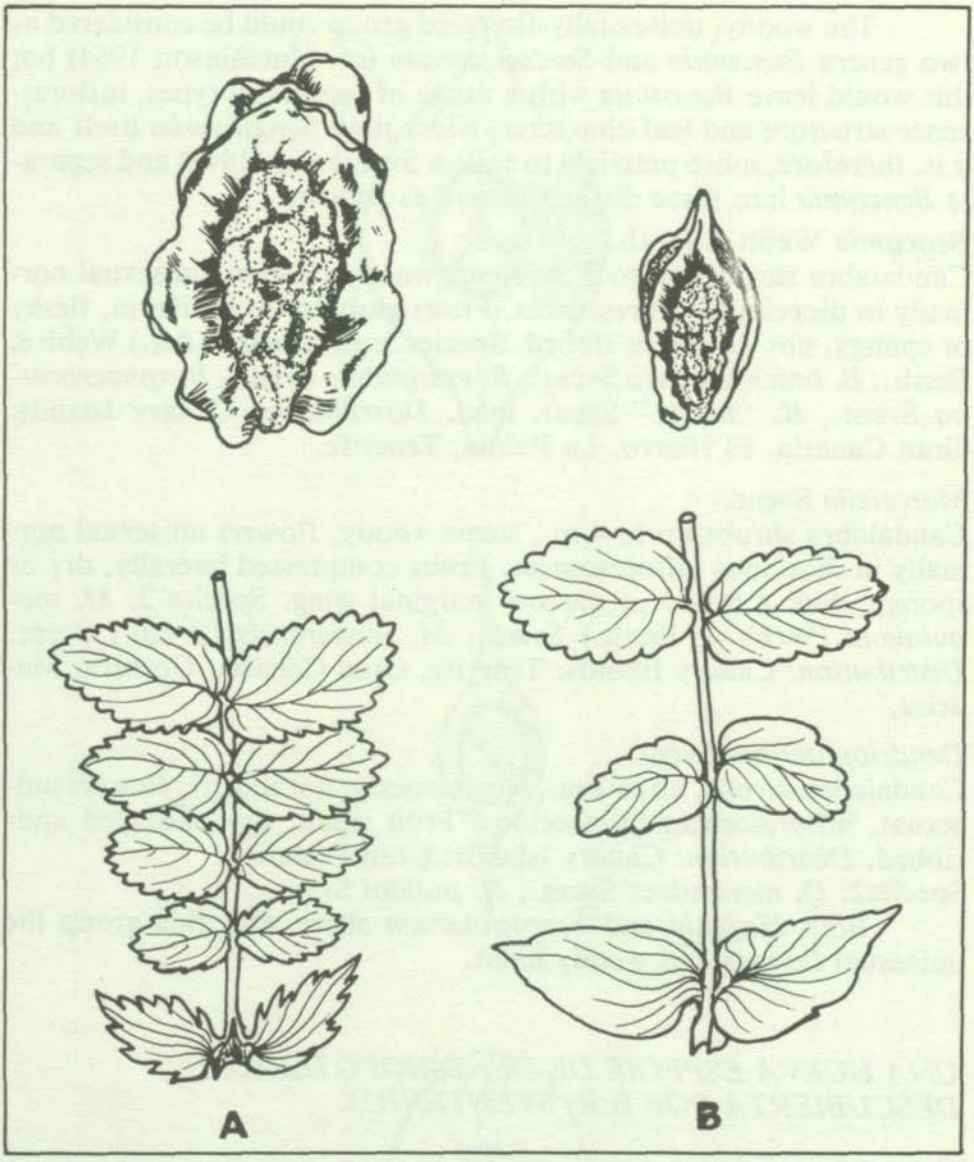

Figure 3:
A. Fruit and leaf-base *Dendriopoterium pulidoi*. B. Fruit and leaf-base of *D. menendezii*.

Dendriopoterium pulidoi Svent., spec. nova.

Fruticulus aliquantos 25-40 cm. altitudine, habitu depresse et torte ramoso-ramulosa vel frutex multicaule, caulibus erectis generaliter simplicis rariore ramoso, valde lignoso; cortice fissuroso-squamuloso seu cinnamomiae coloro, aspera, ad apicem reciduiis stipulorum atque petiolorum sat dense tectis. Foliis in densa rosula subplano, 30-40

cm. diam., ad apicem caulorum vel ramulorum congregatis, ovalis vel elipticis plus minusve glauco-viridis, rhachis et petiolulis a pubescentia pilosoglandulosa brunnea sat dense tectis. Stipulae obovato-rhomboideae, margine parte superiore grosse serratis, foliolis 5-7 jugis, oppositis vel jugis inferioribus plus minusve subalternis, ellipticis, leviter petiolulatis; jugis superiores inaequaelatris. Inflorescentia versus apicem, thyrsiodea composita recta, spiculae inferiores sat longe pedicellatis, bracteatis. Bracteis inferiores plus minusve compositis, superiores simplicis; spiculis inferiores irregulariter interuptas vel dense aglomeratis, flores masculis bractea principalea lanceolate cochleariformis, laceralibus minutissimis rotundatis, omnibus extus pilosis, petalea ca. 4 mm. long. 3 mm. lat. eliptica, viridis, albidaemarginatis; flores minutissimis petalis 2 mm. long., ca. 1 mm. lat. plus minusve ellipticis, virides vel albidimarginatis, ovarium ca. 1 mm. long., quadriforme, viride, laciniis stigmatis filiformibus albidis. Fructus tetragonus leviter costado-alatus fissuroso alae undulatae-crispato 3-4 mm long. et 2-2.5 mm. lat Floret verae, fructificat Sept.-Oct.
Habitat inter saxus abruptas.
Canaria Magna in regionia montanae regionibus boreo-occidentalis, ubi est sat pauca, Bco. de Tejeda 30-9-1971, E.R.S. Sventenius Legit. (Holotypus, JVC) Hanc speciosam stirpem cl. Joanni Pulido Castro amico et benefactorimeo dico.

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