The genera Pingraea Cassini and Neomolina Hellwig (Compositae-Astereae)

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The genera Pingraea Cassini and Neomolina Hellwig (Compositae-Astereae)

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ABSTRACT

HELLWIG, F. H. (1993). The genera Pingraea Cassini and Neomolina Hellwig. *Candollea* 48: 203-219. In English, English and German abstracts.

The genus *Pingraea* Cassini is rehabilitated and its description emended. The new genus *Neomolina* Hellwig is described. Several taxa are typified and a number of new combinations are given. Characters by which the genera *Baccharis, Pingraea* and *Neomolina* can be differentiated are discussed.

ZUSAMMENFASSUNG

HELLWIG, F. H. (1993). Die Gattungen Pingraea Cassini und Neomolina Hellwig. *Candollea* 48: 203-219. Auf Englisch, englische und deutsche Zusammenfassungen.

Die Gattung *Pingraea* Cassini wird wiederhergestellt und mit einer emendierten Beschreibung versehen. Die neue Gattung *Neomolina* Hellwig wird beschrieben. Einige Taxa werden typifiziert, und es wird eine Anzahl neuer Kombinationen vorgenommen. Merkmale, durch die sich die Gattungen *Baccharis, Pingraea* und *Neomolina* unterscheiden lassen, werden diskutiert.

KEY-WORDS: Pingraea — Neomolina — Baccharis — COMPOSITAE — ASTEREAE — Taxonomy.

1. Introduction

The genus *Baccharis* L. was known to be the largest in the tribe *Astereae* (GRAU, 1977). A very clear definition of the genus as a group of dioecious, aligulate species within the subtribe *Baccharidinae* contrasted with an extreme diversity in habit.

A revision of the genus for Chili (HELLWIG, 1990) revealed that characters shared by all species are almost lacking. Even the dioecious condition failed to be a "character generalis". The author proposed a new classification, reserving the generic name *Baccharis* L. to a well defined group of species including *Baccharis halimifolia* L. as typus conservandus (HELLWIG, 1989, 1990).

In consequence most of the species of *Baccharis* L. s.l. remain within the genus in its modified extension. A considerable number of species, however, have to be rearranged in a couple of new or rehabilitated genera, two of which are presented here. As a complete revision of the subtribe *Baccharidinae* Less. is in preparation, no comments on the position of the two genera will be given here. It should be mentioned only that both are related with *Baccharis* L. and certainly closely related to each other. The species of these genera have common characters which will be discussed below.

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2. Taxonomically valuable characters

As pointed out (HELLWIG, 1990) several characters are useful for distinguishing genera in this part of the tribe *Astereae*. In Table 1 these characters are presented for the genera discussed here.

	Baccharis L.	*Pingraea* Cass.	*Neomolina* Hellwig
Indument	tufted hairs; uniseriate hairs not incurved	tufted hairs or hairs with pedestal; uniseriate hairs not incurved	tufted hairs or hairs with pedestal; uniseriate hairs incurved
Number of flowers per capitulum	fem./male 0.5-2.0	fem./male (2)3	fem./male 0.5-2.0
Style-tip of the male flower	club-shaped; branches attached, rhombic or triangular	bifurcate to columnar; branches ± separated, lanceolate	bifurcate; branches separated, lanceolate
Pappus	pluriseriate, caduceous	uniseriate, persistent	pluriseriate, persistent
Rudimentary achene of the male flower	with twin-hairs and biseriate glandular hairs	with twin-hairs and biseriate glandular hairs	with uniseriate and biseriate glandular hairs
Achene	glabrous; ± 10 ribs; mature achenes hidden by the involucre	generally not glabrous, with twin-hairs, biseriate glandular hairs and/or papillae; 5(-8) ribs; mature achenes hidden by the involucre	with uniseriate glandular hairs, rarely also biseriate hairs and/or papillae; 5-8(-10) ribs; mature achenes visible above the involucre

Table 1. — Synopsis of differential characters of the genera *Baccharis* L., *Pingraea* Cass., and *Neomolina* Hellwig.

2.1. Indumentum

There is much variation in the repertoire of trichomes and types of indumentum in the whole group of genera (HELLWIG, 1992). Two main types of indumentum can be distinguished, the tufted hair indument (with syncladous hairs) and the hair-with-pedestal indument.

Most genera can be characterized by the occurring trichome forms and/or type of indument. All species of *Baccharis* L., for example, present the tufted hair indument with infrageneric variation in the shape of the uniseriate hairs. The genera *Heterothalamus, Baccharidastrum, Stephananthus* and *Palenia* are also characterized by the tufted hair indument, whereas other genera never present this type of indument (e.g. *Archibaccharis*). A third group of genera is somewhat heterogeneous (e.g. *Pingraea cymosa* (Phil.) Hellwig with a typical hair-with-pedestal indument, its achene morphology indicating a close relationship to *P. sphaerocephala* (Hook. & Arn.) Hellwig, in which species a tufted hair indument can be observed).

Within the genus *Neomolina* there is a tendency towards a reduction of the biseriate glandular hairs which are almost ubiquitous in the Compositae (SOLEREDER, 1908). The extreme forms present only uniseriate glandular hairs which are enlarged in comparison with the normal condition. The distal portion of these hairs may be formed by more than one row of cells. In other cases both moderately enlarged uniseriate hairs and biseriate glandular hairs occur together. In this case both types may be combined in tufts, or tuft formation may be confined to the biseriate hairs.

In all species of the genus *Neomolina* the uniseriate trichomes are glandular hairs which often are inserted at the bottom of a depression in the surface of leaves and stems. Despite the great variation among these trichome forms there is a common feature given by the shape of their cells. On a small basal cell stands a more or less cylindrical body consisting of several cells followed by a collapsed thin terminal cell. In most cases the cylindrical body is recurved, with the hair tip pointing to the surface of the organ which bears the trichomes (Fig. 1a, b). The male plants of this genus have uniseriate glandular hairs mixed with biseriate glandular hairs on the outer epidermis of the corolla.

In the genus *Pingraea* the uniseriate trichomes are of a different shape: on a long stalk consisting of several narrow cells there is a thickened head, formed by one or two enlarged cells. The terminal cell is a long, often curved flagellum. The trichomes as a whole are not curved as in the genus *Neomolina* (Fig. 1c, d). Biseriate trichomes are always present and produce the lacquer-like resin that covers the plants belonging to the genus *Pingraea*.

2.2. Number of flowers in the capitula

The number of flowers in a capitulum, although varying within a considerable range, in most cases is a diagnostic feature by which species can be distinguished. This was shown for *Baccharis* L. (HELLWIG, 1990) and is also true for many species of the genera *Pingraea* Cass. and *Neomolina* Hellwig. The following statements describe different tendencies in the two genera discussed in this paper; exceptions are nevertheless likely to be found.

In the genus *Pingraea* the numbers of flowers per capitulum differ largely between both sexes in one species. The most striking example has been observed in *Pingraea sphaerocephala* (Hook. & Arn.) Hellwig with 304 female and 51 male flowers. The species of *Pingraea* can be characterized by a female/male ratio of 3 or more (only exceptionally between 2 and 3). The number of female flowers normally is higher than 50, in most species higher than 70 in first- or second-order capitula (Fig. 2).

In contrast the number of female flowers per capitulum always lies below 50 in the genus *Neomolina*. The female/male ratio varies around 1 between 0.5 and 2 (Fig. 2).

In *Pingraea* small achenes are correlated with large numbers of female flowers. In the genus *Neomolina* the size of the achenes varies within a considerable range, the number of female flowers per capitulum always being low. Both parameters (number of flowers, achene-size) vary within *Baccharis* L., but at a narrower range than in the other genera (Fig. 3 and Table 2).

2.3. Style

One of the important characters is the shape of the style-tip in the male plant. In *Baccharis* L. it is club-shaped with its two short arms tightly attached, whereas in most species of the other two genera it is lanceolate with two well separated arms (bifurcate). A third type, which is found in few species of *Pingraea*, resembles to some extent the style-tip of certain genera of the tribe *Plucheae* (HELLWIG, 1990: Abb. 7, Abb. 8).

2.4. Pappus

The pappus may consist of one or several rows of rough to barbellate bristles. Unfortunately no sharp distinction between a uniseriate pappus and a biseriate one can be made due to the occasional presence of supernumerary bristles.

In *Baccharis* L. we always find more than one row of bristles which can easily be separated completely from the achene. Often the pappus falls down as a whole or in few parts (HELLWIG, 1990: Abb. 6a).

The species of the genus *Neomolina* present pappus bristles in more than one row. The bristles do not separate easily from the achene, mostly they break off leaving their basal part or a distinct scar in each dehiscence-point (HELLWIG, 1990: Abb. 6b).

A uniseriate pappus, generally without supernumerary bristles, is found in most species of the genus *Pingraea*. As in *Neomolina*, the bristles do not separate easily.

2.5. Fruit

Perhaps the most important characters for the grouping of species in this part of the tribe are those concerning shape and structure of the fruit. *Baccharis* L. is characterized by subterete, glabrous, straw-coloured achenes with about 10 longitudinal ribs (HELLWIG, 1990), as shown in Fig. 4a. The ribs usually are brighter than the part of the fruit between them.

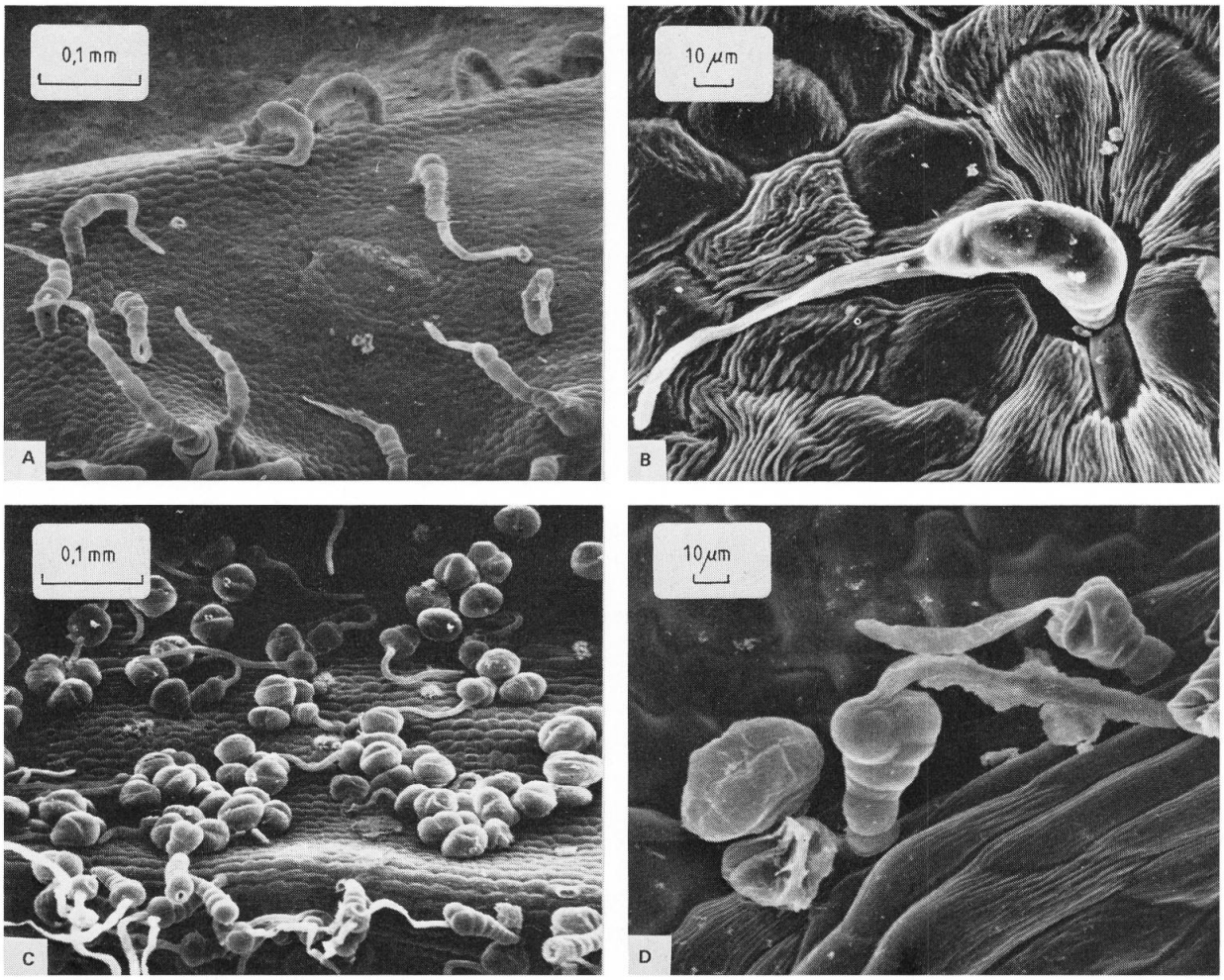

Fig. 1. — SEM-Photographs of: **a,** *Neomolina racemosa* (R. & P.) Hellwig, leaf surface; **b,** *N. paniculata* (DC.) Hellwig, uniseriate hair; **c,** *Pingraea viscosa* (R. & P.) Hellwig, leaf surface; **d,** *P. viscosa*, uniseriate and biseriate hairs.

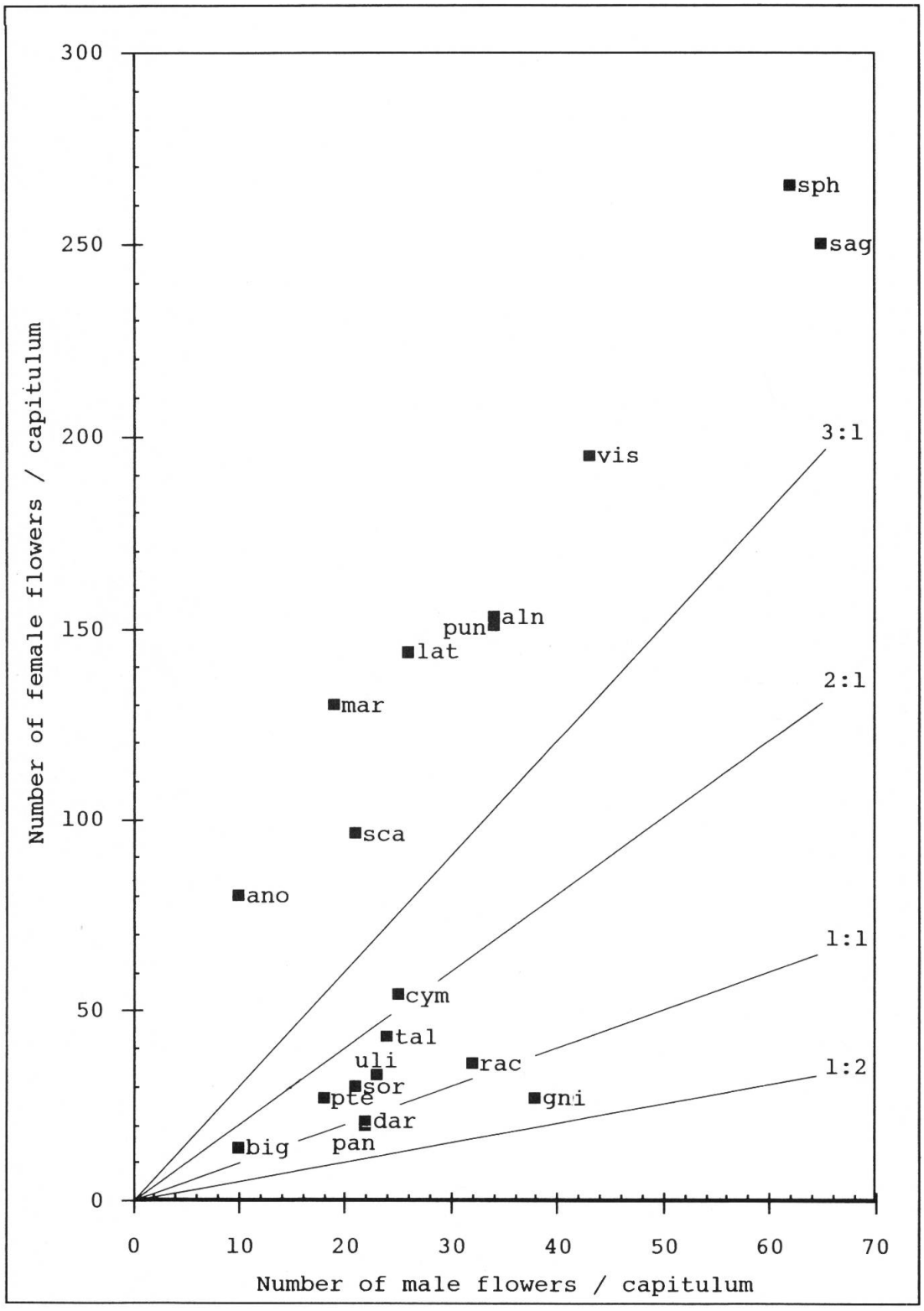

Fig. 2. — Relation between number of male flowers/capitulum and number of female flowers/capitulum. Species names are abbreviated by their first three letters (see Table 2).

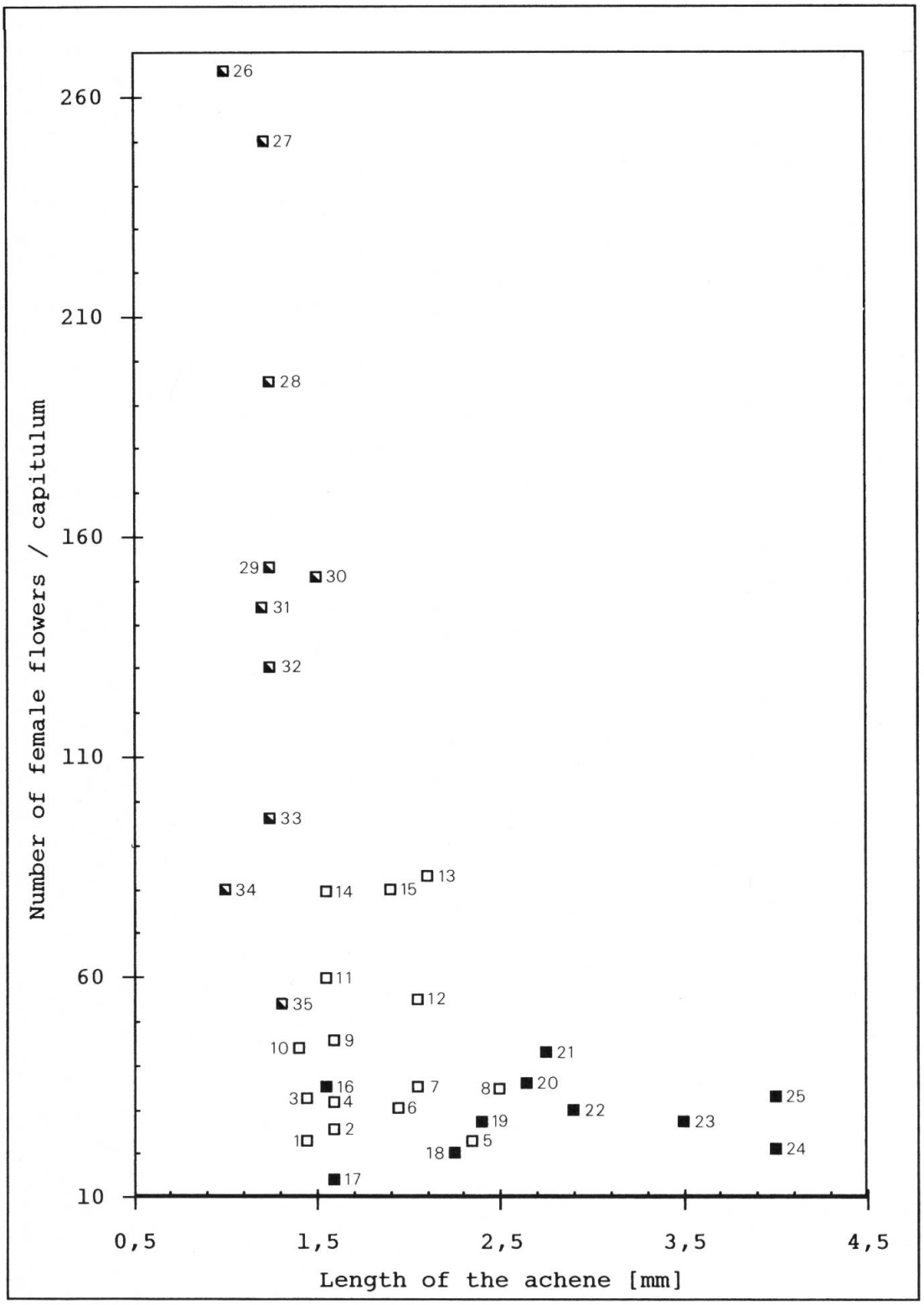

Fig. 3. — Relation between achene length and number of female flowers/capitulum; (□) = *Baccharis* L.; (■) = *Neomolina* Hellwig; (◥) = *Pingraea* Cass. For explanation of the numbers see Table 2.

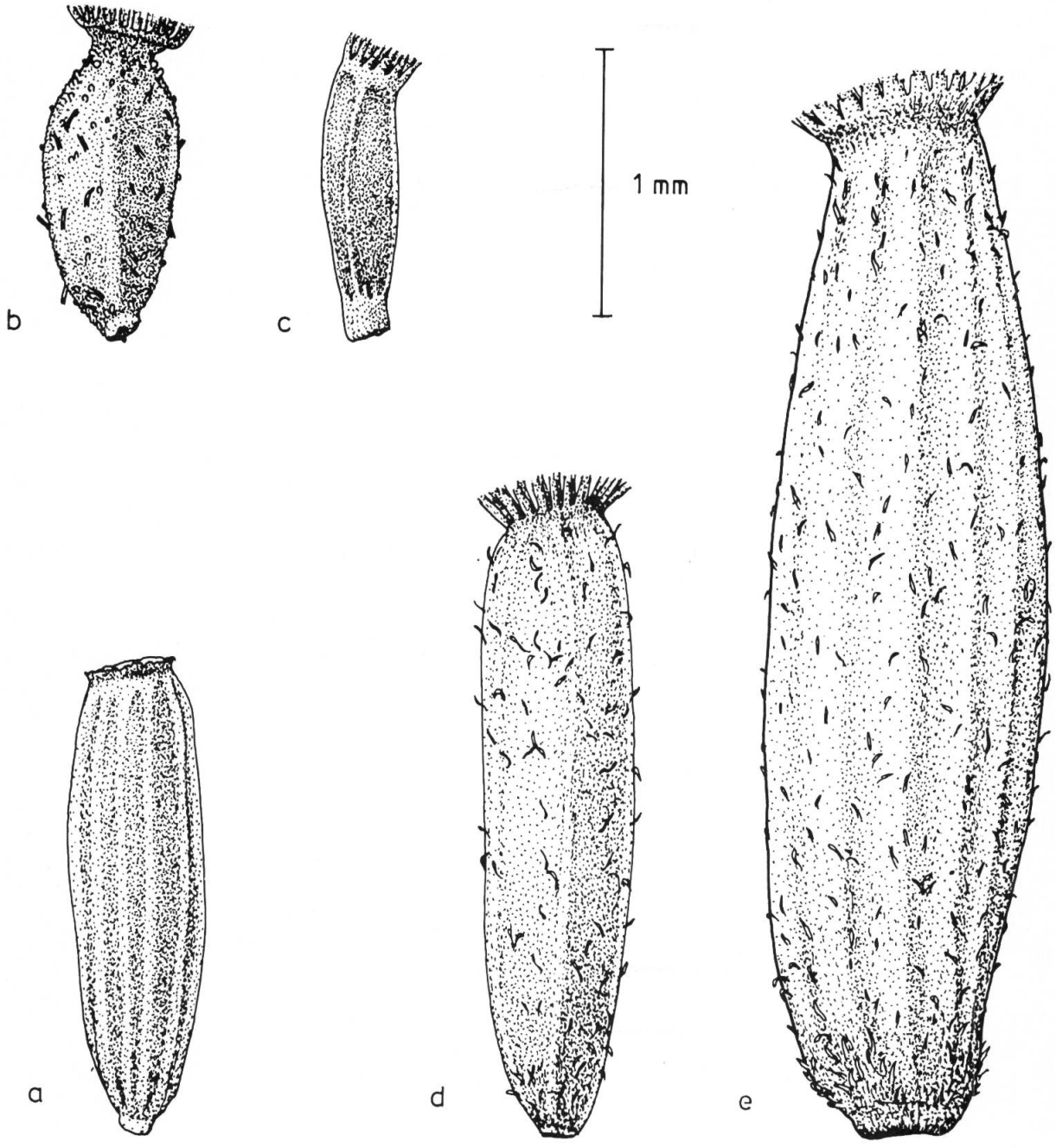

Fig. 4. — Achenes of: **a,** *Baccharis magellanica* (Lam.) Pers.; **b,** *Pingraea cymosa* (Phil.) Hellwig; **c,** *Pingraea marginalis* (DC.) Hellwig; **d,** *Neomolina racemosa* (R. & P.) Hellwig; **e,** *Neomolina darwinii* (Hook. & Arn.) Hellwig.

Table 2. — Names and numbers of species represented in Figures 2 and 3.

Baccharis L.

1 *linearis* (R. & P.) Pers.
2 *zoellneri* Hellwig
3 *lycioides* Remy
4 *neaei* DC.
5 *santelicis* Phil.
6 *pilcensis* Hellwig
7 *magellanica* (Lam.) Pers.
8 *tola* Phil.
9 *rhomboidalis* Remy
10 *vernalis* Hellwig
11 *obovata* Hook. & Arn.
12 *poeppigiana* DC.
13 *macraei* Hook. & Arn.
14 *mylodontis* Hellwig
15 *patagonica* Hook. & Arn.

Neomolina Hellwig

16 *mexicana* (Cuatrecasas) Hellwig
17 *bigelovii* (A. Gray) Hellwig
18 *paniculata* (DC.) Hellwig
19 *pteronioides* (DC.) Hellwig
20 *racemosa* (R. & P.) Hellwig
21 *taltalensis* (Johnston) Hellwig
22 *sordescens* (DC.) Hellwig
23 *gnidiifolia* (H. B. K.) Hellwig
24 *darwinii* (Hook. & Arn.) Hellwig
25 *ulicina* (Hook. & Arn.) Hellwig

Pingraea Cass.

26 *sphaerocephala* (Hook. & Arn.) Hellwig
27 *sagitalis* (DC.) Hellwig
28 *viscosa* (R. & P.) Hellwig
29 *alnifolia* (Meyen & Walpers) Hellwig
30 *punctulata* (DC.) Hellwig
31 *latifolia* (R. & P.) Hellwig
32 *marginalis* (DC.) Hellwig
33 *scandens* (R. & P.) Hellwig
34 *anomala* (DC.) Hellwig
35 *cymosa* (Phil.) Hellwig

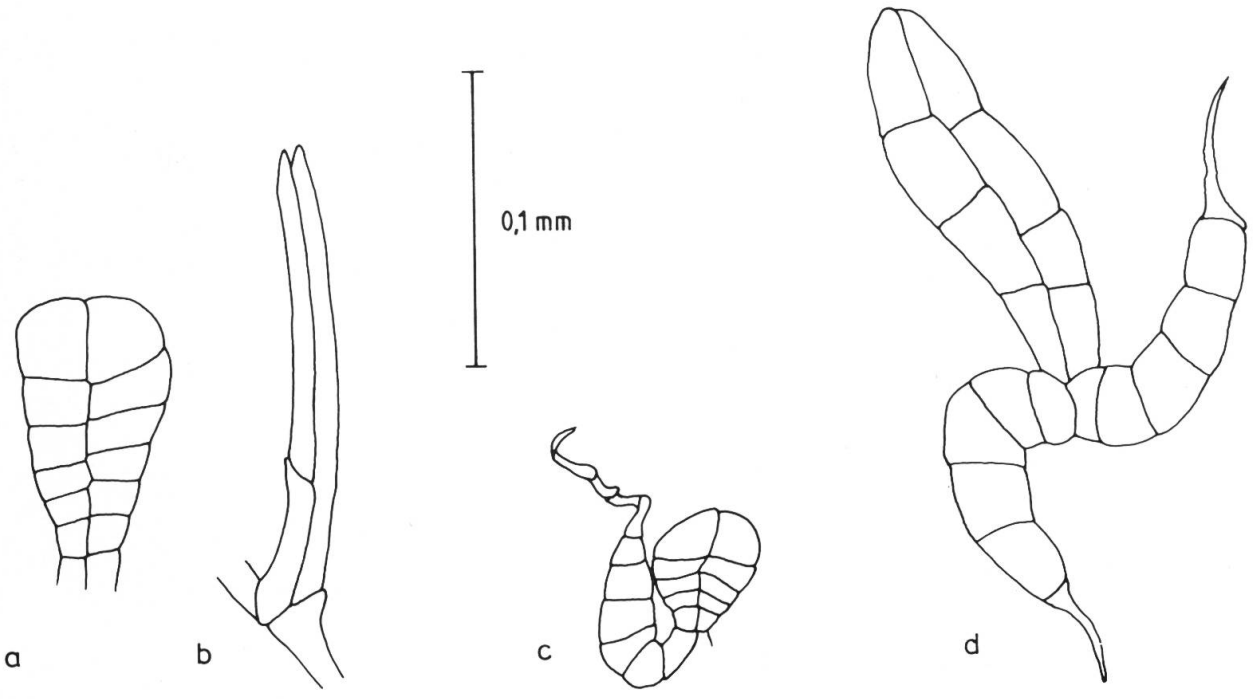

Fig. 5. — Trichomes from the achenes of: **a,** *Pingraea cymosa* (Phil.) Hellwig (biseriate glandular hair); **b,** *Pingraea cymosa* (twin hair); **c,** *Neomolina paniculata* (DC.) Hellwig (uniseriate flagellate and biseriate glandular hairs); **d,** *Neomolina gracilis* (DC.) Hellwig (two uniseriate flagellate and one biseriate hair).

The achenes of the species belonging to the genus *Pingraea* Cass. are smaller than those of most species of *Baccharis* L. (they usually do not surpass 1.5 mm in length; Fig. 4b, c). Their surface in many cases is provided with either biseriate glandular hairs (Fig. 5a) or twin hairs (Fig. 5b), or with papillae or combinations of these. Uniseriate trichomes are lacking and the hairs are never tufted. Sometimes the achenes may be glabrous. The number of longitudinal ribs, which are generally weaker than in the former genus, varies from 4 to 8, 5 being the most common number. In some cases, the ribs are brighter than the rest of the fruit (e.g. *P. marginalis*).

The species of the genus *Neomolina* Hellwig are characterized by medium to big-sized achenes, as a rule with 5-8 not very prominent longitudinal ribs (Fig. 4d, e). The ribs cannot be distinguished by their colour from the areas between them. The achenes have a peculiar pubescence which consists of uniseriate glandular hairs, often combined with biseriate glandular ones (Fig. 5c, d). The trichomes are often tufted as they are in the vegetative parts of the plants. The uniseriate trichomes end in a slender tail-like cell. Twin hairs never occur, papillae are rare. Some species possess achenes with anthocyanics in the cells of the fruit wall (e.g. *N. darwinii, N. paniculata, N. ulicina*).

3. Neomolina Hellwig, a new genus of Astereae-Baccharidinae

This group of species is named *Neomolina*, acknowledging the work of Ruiz and Pavón, who were the first botanists to recognize the species of their genus *Molina* to be dioecious. As their generic name *Molina* cannot be used because of the older name *Molina* Cav. (CAVANILLES, 1790), the new name *Neomolina* is an attempt to remember the merits of the Spanish botanists.

Neomolina Hellwig, **gen. nov.**

Typus generis: *Neomolina racemosa* (R. & P.) Hellwig.

Basionym: *Molina racemosa* R. & P., Syst. veg. fl. peruv. chil.: 209 (1798).

= *Baccharis* L. subgenus *Pteronioides* Heering, Jahrb. Hamburg. Wiss. Anst., 3. Beiheft zu Band 21: 15 (1906).

Typus subgeneris: *Baccharis pteronioides* DC. (Lectotypus, hic designatus)

= *Baccharis* L. sect. *Paniculatae* Heering, Jahrb. Hamburg. Wiss. Anst., 3. Beiheft zu Band 21: 19 (1906).

Typus sectionis: *Baccharis paniculata* DC. (Lectotypus, vide CUATRECASAS, 1967).

= *Baccharis* L. sect. *Gladiatae* Cuatrecasas, Revista de la Academia Colombiana de Ciéncias exactas, Físicas y Naturales 13(49): 85 (1967).

Typus sectionis: *Baccharis marcetiaefolia* Bentham

= *Baccharis* L. sect. *Bogotenses* Cuatrecasas, Revista de la Academia Colombiana de Ciéncias exactas, Físicas y Naturales 13(49): 85 (1967).

Typus sectionis: *Baccharis bogotensis* H. B. K.

= *Baccharis* L. sect. *Glandulicarpae* Nesom, Phytologia 69(1): 43 (1990).

Typus sectionis: *Baccharis wrightii* A. Gray

= *Baccharis* L. sect. *Aristidentes* Nesom, Phytologia 69(1): 42 (1990).

Typus sectionis: *Baccharis multiflora* H. B. K.

3.1. Description

Neomolina Hellwig, **gen. nov.**

Plantae dioicae vel subdioicae. Frutices vel suffrutices, aliqui scandentes. Folia alterna. Capitula homogama vel raro imperfecte homogama, solitaria vel corymbos formantia. Involucrum cylindricum vel poculiforme ad campanulatum, involucri phylla imbricata, (3-)4-5(-6)-seriata. Corolla plantae masculae 5-lobata, supra insertionem filamentorum infundibuliformis vel campanulata, albida vel eburnea, pilis glandulosis biseriatis et uniseriatis conspersa. Antherae appendice apicale ovato-lanceolata. Stylus apicem versus pilis collectoribus provisus. Rami styli lanceolati. Pappus uniseriatus; setae pappi barbellatae, stramineae, eburneae vel rubentes, apicem versus incrassatae. Corolla plantae femineae filiformis, margine 5-lobulata vel irregulariter incisa, alba vel albida. Antherae nullae. Stylus bifidus, rami styli longe lanceolati, papillae stigmatis apicem versus in duabus lineis marginalibus apicem versus concurrentes. Pappus pluriseriatus raro subbiseriatus; setae pappi barbellatae, non caducae. Achaenia teretia, 5-8(-10)-costata, saepe rubentia vel atropurpurea, pilis flagellatis, raro etiam pilis glandulosis biseriatis conspersa.

The geographical distribution reaches from southern U.S.A. to Patagonia. Most of the species occur in dry open forests or semidesertic areas. They are, in most cases, not confined to riversides or moist places.

3.2. New combinations in Neomolina Hellwig

1. **Neomolina bigelovii** (A. Gray) Hellwig, **comb. nov.**

   Basionym: *Baccharis bigelovii* A. Gray, Gray in Torrey, J.: Botany of the Boundary: 84 (1859).

2. **Neomolina bogotensis** (H. B. K.) Hellwig, **comb. nov.**

   Basionym: *Baccharis bogotensis* H. B. K., Nov. gen. sp. 4: 61 (1820).

3. **Neomolina brachyphylla** (A. Gray) Hellwig, **comb. nov.**

   Basionym: *Baccharis brachyphylla* A. Gray, Smiths. Contr. Knowl. 3(6): 83 (1853).

4. **Neomolina darwinii** (Hook. & Arn.) Hellwig, **comb. nov.**

   Basionym: *Baccharis darwinii* Hook. & Arn., Hook. J. Bot. 3: 39 (1841).

5. **Neomolina elegans** (H. B. K.) Hellwig, **comb. nov.**

   Basionym: *Baccharis elegans* H. B. K., Nov. gen. sp. 4: 60 (1820).

6. **Neomolina gnidiifolia** (H. B. K.) Hellwig, **comb. nov.**

   Basionym: *Baccharis gnidiifolia* H. B. K., Nov. gen. sp. 4: 61 (1820).

7. **Neomolina gracilis** (DC.) Hellwig, **comb. nov.**

   Basionym: *Baccharis gracilis* DC., Prodr. 5: 423 (1836).

8. **Neomolina macrocephala** (Sch. Bip. ex Greenman) Hellwig, **comb. nov.**

   Basionym: *Baccharis macrocephala* Sch. Bip. ex Greenman, Proc. Am. Acad. 34: 575 (1898).

9. **Neomolina marcetiaefolia** (Benth.) Hellwig, **comb. nov.**

   Basionym: *Baccharis marcetiaefolia* Bentham, Pl. Hartwegianae: 202 (1843).

10. Neomolina mexicana (Cuatrecasas) Hellwig

Basionym: *Baccharis mexicana* Cuatrecasas, Brittonia 12: 195 (1960).

11. Neomolina multiflora (H. B. K.) Hellwig, **comb. nov.**

Basionym: *Baccharis multiflora* H. B. K., Nov. gen. sp. 4: 59 (1820).

12. Neomolina paniculata (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis paniculata* DC., Prodr. 5: 420 (1836).

13. Neomolina plummerae (A. Gray) Hellwig, **comb. nov.**

Basionym: *Baccharis plummerae* A. Gray, Proc. Am. Acad. 15: 48 (1880).

14. Neomolina potosina (A. Gray) Hellwig, **comb. nov.**

Basionym: *Baccharis potosina* A. Gray, Proc. Am. Acad. 15: 33 (1880).

15. Neomolina ptarmicaefolia (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis ptarmicaefolia* DC., Prodr. 5: 419 (1836).

16. Neomolina pteronioides (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis pteronioides* DC., Prodr. 5: 410 (1836).

17. Neomolina pulchella (Sch. Bip. ex Klatt) Hellwig, **comb. nov.**

Basionym: *Baccharis pulchella* Sch. Bip. ex Griseb., Symb. Fl. Arg.: 181 (1879).

18. Neomolina racemosa (R. & P.) Hellwig, **comb. nov.**

Basionym: *Molina racemosa* R. & P., Syst. veg. fl. peruv. chil.: 209 (1798).

19. Neomolina sordescens (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis sordescens* DC., Prodr. 5: 405 (1836).

20. Neomolina taltalensis (Johnston) Hellwig, **comb. nov.**

Basionym: *Baccharis taltalensis* Johnston, Contr. Gray Herb. 85: 125 (1929).

21. Neomolina texana (A. Gray) Hellwig, **comb. nov.**

Basionym: *Baccharis texana* A. Gray, Plantae fendlerianae novi-mexicanae: 75 (1849).

22. Neomolina thesioides (H. B. K.) Hellwig, **comb. nov.**

Basionym: *Baccharis thesioides* H. B. K., Nov. gen. sp. 4: 61 (1820).

23. Neomolina ulicina (Hook. & Arn.) Hellwig, **comb. nov.**

Basionym: *Baccharis ulicina* Hook. & Arn., Hook. Journ. Bot. 3: 38 (1841).

24. Neomolina volubilis (H.B.K) Hellwig, **comb. nov.**

Basionym: *Baccharis volubilis* H. B. K., Nov. gen. sp. 4: 57 (1820).

25. Neomolina wrightii (A. Gray) Hellwig, **comb. nov.**

Basionym: *Baccharis wrightii* A. Gray, Smiths. Contr. Knowl. 3(5): 101 (1852) et 3(6): 83 (1853).

3.3. The type specimen of Neomolina racemosa (R. & P.) Hellwig

In order to clarify the use of the name *Molina racemosa* R. & P. (the basionym of *Neomolina racemosa*), CABRERA (1960) performed a lectotypification of this taxon. Perhaps it was too simple to treat the specimen at MA as "Typus", because there do exist some duplicates of it at several other herbaria (P, OXF, G, FI for example). There is, however, no reason to object to the choice of the specimen at MA as lectotype for *Molina racemosa* R. & P. As a revision of the species is forthcoming, the long list of synonyms of this taxon will not be given here.

4. Pingraea Cassini, a rehabilitated genus of Astereae-Baccharidinae

For some of the species excluded from *Baccharis* L. old generic names are available. One of these names is *"Pingraea"*, created by CASSINI (1826).

Pingraea Cass., Dict. Sci. Nat. 41: 57 (1826).

Typus generis: Pingraea viscosa (R. & P.) Hellwig, **comb. nov.**

Basionym: *Molina viscosa* R. & P., Syst. veg. fl. peruv. chil.: 207 (1798).

= *Baccharis* L. subgenus *Molina* Heering, Jahrb. Hamburg. Wiss. Anst., 3. Beiheft zu Band 21: 17 (1906), pro parte.

Typus subgeneris: *Baccharis marginalis* DC. (Lectotypus, vide CUATRECASAS, 1967).

4.1. Emended description

Pingraea Cass.

Plantae dioicae vel subdioicae. Herbae, suffrutices vel frutices. Folia alterna vel subopposita. Capitula homogama vel raro heterogama, corymbos formantia. Involucrum cylindricum vel poculiforme ad campanulatum, involucri phyllae imbricatae, 3-5(6)-seriatae. Receptaculum nudum vel reticulato-foveatum; plantae femineae aliquarum specierum receptaculo raro paleaceum. Corolla plantae masculae radialis, quinquelobata, superne campanulata vel infundibuliformis, alba, rubescens vel eburnea. Antherae basi obliquae, apice acuto. Rami styli exserti, lanceolati, acuti, raro apicem versus imperfecte connati, pilis collectoribus provisi. Pappus uniseriatus; setae pappi albae vel rubescentes, barbellatae saepe apicem versus curvatae et incrassatae. Corolla plantae femineae filiformis, margine integra, laciniata vel quinquelobulata, rariore brevissime limbata. Antherae nullae. Rami styli exserti, lanceolati, acuti, glabri vel vix pilosi, papillae stigmatis in lineis duabus marginalibus in apicem concurrentibus. Pappus uniseriatus, setae pappi non caducae, barbellatae, albidae vel rubescentes, apice non vel vix incrassatae. Achaenia minuta (usque ad 2 mm longa), teretia, cylindrica, obconica vel ovoidea, (4-)5(-8)-costata, glabra vel papillosa, pilosa vel glandulosa. Cellulae glandularum biseriatae.

The genus *Pingraea* is distributed from U.S.A. to Patagonia, most of the species growing in relatively humid areas and, less frequently, in regions with arid climate where they are confined to riversides, swamps or places with subterraneous waters.

4.2. History of the genus

As CASSINI (1826) had only a male plant in his hands, his description of both the genus *Pingraea* and its only species *P. angustifolia* are incomplete. That was the reason for the classification of the genus into the tribe *Vernonieae* Cass., which remained uncertain even to the author himself: "L'observation de l'individu femelle seroit nécessaire pour mettre hors de doute que cette espèce se rapporte à la tribu des vernoniées; car, dans ce cas, les stigmatophores du style féminin doivent être privés de bourrelets stigmatiques." If, however, sterile appendages were present on the style tips, the plant would have been placed in the Astereae and "peut-être ne diffèreroit pas assez des vrais baccharis pour en être distinguée génériquement."

The sense of the concluding part of CASSINI's statement is not quite clear, since the female plants of *Baccharis* L. have styles without sweeping hairs.

Regarding the style alone, the knowledge of the female plant of *P. angustifolia* would have led CASSINI to a wrong conclusion, and in consequence he probably would have included the genus in the *Vernonieae* as well. It must be remarked that in CASSINI's system this tribe included part of the *Inuleae* (i.e. *Plucheae*, ANDERBERG, 1989), and CASSINI thought of a close relationship between *Pingraea* and the genera *Pluchea, Tessaria* or *Monarrhenus.* On the other hand CASSINI recommended to examine some further characters to get certainty about the correct position of *Pingraea.*

With the incorporation into the large genus *Baccharis* by De CANDOLLE (1836), the genus *Pingraea* Cass. disappeared from taxonomic literature. The main reason was the opinion that *Pingraea angustifolia* Cass. as a dioecious plant belonged to the dioecious genus *Baccharis.* Other differential characters led, if at all, to subdivisions at the subgeneric or sectional level.

When LESSING (1831) tried to distinguish a group of species from *Baccharis* mainly by pappus characters, he used the generic name *Molina* for this group. Instead of using the illegitimate generic name *Molina* (see below), LESSING should have employed the validly published name *Pingraea* Cass.

4.3. The correct name for the type species of Pingraea Cass.

When De CANDOLLE (1836) included *Pingraea angustifolia* Cass. in the genus *Baccharis*, he had to change the epitheton, because *Baccharis angustifolia* Michx. had been described much earlier (MICHAUX, 1803). The plant in question had been described several times before CASSINI published the name *Pingraea angustifolia* in June 1826. But as will be shown below, all epitheta which had been used for it were not available within the genus *Baccharis* L.

RUIZ & PAVON (1798) described a plant from Chili which they named *Molina viscosa.* PERSOON (1807), who included the genus *Molina* R. & P. into *Baccharis* L., changed the name to *Baccharis glutinosa* Pers. because the epitheton "viscosa" was occupied by *Baccharis viscosa* Lam. (LAMARCK, 1783).

Two or three months before CASSINI published the combination *Pingraea angustifolia* Cass., SPRENGEL (1826) described the same species as *Conyza montevidensis* Spr. which is also conspecific to *Molina viscosa* R. & P. In the same paper he gave the diagnosis for *Baccharis montevidensis* Spr. (for which the correct name is *Vernonia nitidula* Less.). Since the epitheton "montevidensis" was no longer available for another taxon within the genus *Baccharis*, De CANDOLLE (1836) was right in creating the epitheton "pingraea".

As already mentioned, the oldest validly published name for the species is *Molina viscosa* R. & P. As *Molina* R. & P. is an illegitimate generic name because of *Molina* Cav. (CAVANILLES, 1790), the name *Molina viscosa* R. & P. cannot be employed. Using the oldest legitimate generic name we get the correct name *Pingraea viscosa* (R. & P.) Hellwig for the species.

The complete synonymy of *Pingraea viscosa* (R. & P.) Hellwig will be given in the revision of the taxon for Chili.

4.4. Typification of Pingraea angustifolia Cass. and Molina viscosa R. & P.

Any typification of CASSINI's new taxa is a problem because he often gave very little information on the specimens he used for his description. In the case of *Pingraea* he wrote:

> "Nous avons fait cette description spécifique et celle des caractères génériques, sur un échantillon sec, que M. Desfontaines a eu la bonté de nous donner, en nous disant qu'il avoit été recueilli dans l'Isle-de-France, et que la même plante est vivante au Jardin du Roi, où on la cultive."

A checking of the material at the herbarium at P showed that there is no specimen with a remark that would identify it as the one used by CASSINI. The description of the plant, however, is so precise, that there can be no doubt regarding its identity. For example CASSINI notes that *Pingraea angustifolia* has "pollen blanc". This is a character that is extremely rare among other similar species. Especially *Neomolina paniculata* can readily be distinguished from *Pingraea viscosa* because it presents yellow pollen. This was not noted by DeCANDOLLE, in whose herbarium a piece of *Pingraea viscosa* and another of *Neomolina paniculata* (DC.) Hellwig are mounted on the sheet which is labeled as the type of *Baccharis paniculata* DC.

Due to the lack of any specimen which could be used as a lectotype of *Pingraea angustifolia* Cass., a neotype is chosen. At P no specimen from "L'isle de France", mentioned by CASSINI in the protolog of the taxon, has been found. This island, today known as Mauritius, cannot be the place of origin of the plant in question, because the genus is strictly American. At L there are two specimens which are labeled as "Baccharis angustifolia. Ins. Franciae. Chili." "Hb. Pers.". Since there is no hint to suggest that one of these specimens may be the type of *Pingraea angustifolia* Cass., the neotype is chosen among herborized specimens of plants which were cultivated at the Botanic Garden at Paris and which are named *Pingraea angustifolia* Cass. The following specimen at P is the neotype of *Pingraea angustifolia* Cass.: "Pingraea angustifolia Cass., Baccharis angustifolia DC. non Michx., h. Par. 1829." "Herb. Mus. Par., Baccharis pingraea. Herbier d'Edouard Spach, donné au Muséum par sa famille, en juillet 1879." A part of a male plant is mounted on the sheet.

By comparing the description of *Pingraea angustifolia* Cass. with the type specimen of *Molina viscosa* R. & P. (see below), the synonymy of both taxa becomes obvious. No other species of the *Baccharidinae* can have been meant by CASSINI. All sheets with herborized specimens of the plant, cultivated in the Jardin du Roi at Paris, which are labeled as *Pingraea angustifolia* Cass. are conspecific with the type specimen of *Molina viscosa* R. & P.

Accepting *Molina viscosa* as the oldest validly published name for the species under investigation we now have to treat with the type of this name. The typification of *Molina viscosa* R. & P. is difficult, as no holotype exists in any of the herbaria at MA, P, G, OXF and FI, where parts of the collections of Ruiz, Pavón and Dombey have come to be preserved. Apparently no specimen is known which bears the name *Molina viscosa*. A plant probably meant by the description of RUIZ & PAVÓN (1798), however, is represented on several sheets at P, G and G-DC. The specimens originate from Herbarium Dombey and are in part poorly labeled. Among the specimens that have come to my knowledge, the one at MA is provided with an indication of the locality where it has been collected ("Concepcion de Chili") and the year which the expedition of Ruiz, Pavón and Dombey spent in Chili (1782). On the other hand, two sheets exist at G, possibly separated from Herbarium Pavón (printed label "Herb Pavón"), with the following handwritten label: "Erigeron amphibium, Chili 1782, Concepcion, Mart." The name was never published, as it was the case with many other provisional names of Ruiz's and Pavón's (LACK, 1979). As parts of the collection at MA was sold by Pavón after 1814, the printed label of the specimen at G may indicate that the specimens originate from MA.

Since no holotype for *Molina viscosa* has been found, a lectotypification is needed in order to assure the nomenclature of the group under study. Two references are available for the choice: the published description in "Systema vegetabilium..." (RUIZ & PAVÓN, 1798) and the manuscript of "Flora peruviana et chilensis ..." (RUIZ & PAVÓN, unpublished). The published text says: "Molina viscosa: 13. M. foliis lanceolatis dentato-serratis, corymbis terminalibus. Planta suffruticosa,

bipedalis. Habitat in Regni Chilensis ruderatis et aridis locis ad Conceptionis et Puchacay Provincias. Floret Januario et Februario." The handwritten description is as follows: "Molina viscosa: foliis lanceolatis, dentato-serratis, corymbis terminalibus. Planta dioica viscosa bipedalis, resinifera. Caulis suffruticosus, ramosus, erectus, teres, leviter striatus. Folia alterna, sessilia, lanceolata, dentato-serrata. Flores corymbosi, terminales. Corolla alba. Habitat in ruderatis et aridis Conceptionis Chile. Floret Januario et Februario."

The most useful characters given in these descriptions are that the plant is "suffruticosa", that the height is only "bipedalis", and its viscid surface. This is true only for one dioecious plant that can be placed in the genus *Molina* R. & P., which at present is known as *Baccharis pingraea* DC.

The qualification as "suffruticosa, bipedalis" is the reason why the placement of *Molina viscosa* R. & P. within the synonymy of *Baccharis salicifolia* (R. & P.) Pers., which CABRERA (1960) suggests, is to be rejected. All the variants of *Baccharis salicifolia* are shrubs, although often with large younger shoots which are still green, and they all grow much higher than *M. viscosa*. This is mentioned also by RUIZ & PAVON (1798) in the description of *Molina salicifolia*, which is the basionym of *Baccharis salicifolia*. This species is characterized as "fruticosa biorgyalis". As CABRERA had not seen type-material of *Molina viscosa* R. & P., this identification was only tentative.

Although there is strong evidence for the assumption that the cited specimens are the base for the description and the name *Molina viscosa* R. & P., a clear indication is lacking. The fact that this name does not appear on the sheets does not allow a simple lectotypification. Taking into account these doubts, a neotype is chosen among the material originating from Chili and collected during the expedition under the direction of Ruiz in order to give a solid base to the use of the name and especially the epitheton "viscosa". The following specimen at G is chosen as neotype for *Molina viscosa* R. & P.: "Erigeron amphibium, Chili 1782, Concepcion, Mart.".

4.5. New combinations in Pingraea Cass.

1. Pingraea alnifolia (Meyen & Walpers) Hellwig, **comb. nov.**

Basionym: *Baccharis alnifolia* Meyen & Walpers, Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19, Suppl. 1: 264 (1843).

2. Pingraea anomala (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis anomala* DC., Prodr. 5: 403 (1836).

3. Pingraea articulata (Lam.) Hellwig, **comb. nov.**

Basionym: *Conyza articulata* Lam., Enc. 2: 94 (1786).

4. Pingraea conyzoides (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis conyzoides* DC., Prodr. 5: 403 (1836).

5. Pingraea crispa (Sprengel) Hellwig, **comb. nov.**

Basionym: *Baccharis crispa* Sprengel, Syst. veg. 3: 466 (1826).

6. Pingraea cymosa (Phil.) Hellwig, **comb. nov.**

Basionym: *Baccharis cymosa* Phil. Pl. nuevas chil.: 703 (1894).

7. Pingraea flexuosa (Baker) Hellwig, **comb. nov.**

Basionym: *Baccharis flexuosa* Baker, in Martius, Fl. Bras. 6, 3: 83 (1882).

8. Pingraea latifolia (R. & P.) Hellwig, **comb. nov.**

Basionym: *Molina latifolia* R. & P., Syst. veg. fl. peruv. chil.: 208 (1798).

9. Pingraea marginalis (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis marginalis* DC., Prodr. 5: 402 (1836).

10. Pingraea nervosa (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis nervosa* DC., Prodr. 5: 399 (1836).

11. Pingraea oxyodonta (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis oxyodonta* DC., Prodr. 5: 404 (1836).

12. Pingraea punctulata (DC.) Hellwig, **comb. nov.**

Basionym: *Baccharis punctulata* DC., Prodr. 5: 405 (1836).

13. Pingraea pycnantha (Phil.) Hellwig, **comb. nov.**

Basionym: *Baccharis pycnantha* Phil., Anal. Univ. Chil. 87: 701 (1894).

14. Pingraea rhexioides (H. B. K.) Hellwig, **comb. nov.**

Basionym: *Baccharis rhexioides* H. B. K., Nov. gen. sp. 4: 66 (1820).

15. Pingraea sagittalis (DC.) Hellwig, **comb. nov.**

Basionym: *Molina sagittalis* Less., Linnaea 6: 141 (1831).

16. Pingraea salicifolia (R. & P.) Hellwig, **comb. nov.**

Basionym: *Molina salicifolia* R. & P., Syst. veg. fl. peruv. chil.: 210 (1798).

17. Pingraea scandens (R. & P.) Hellwig, **comb. nov.**

Basionym: *Molina scandens* R. & P., Syst. veg. fl. peruv. chil.: 205 (1798).

18. Pingraea sphaerocephala (Hook. & Arn.) Hellwig, **comb. nov.**

Basionym: *Baccharis sphaerocephala* Hook. & Arn., Hook. Journ. Bot. 3: 25 (1841).

19. Pingraea viscosa (R. & P.) Hellwig, **comb. nov.**

Basionym: *Molina viscosa* R. & P., Syst. veg. fl. peruv. chil.: 207 (1798).

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