

THE EVOLUTIONARY ORIGIN OF *BLUMEA VISCOSA* (ASTERACEAE) AND A FIRST REPORT FROM NORTH AMERICA

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Blumea viscosa (Mill.) Badillo has had an erratic recent nomenclatural history (Badillo, 1974; D'Arcy, 1972, 1975), but its evolutionary affinities are now better understood and its generic placement and epithet appear to be stabilized. To the list of synonyms of this species must be added *Conyza chiapensis* Brandg. (Univ. Calif. Bot. 10: 419. 1924. TYPE: MEXICO. CHIAPAS: sandy arroyo near Jalisco, *Purpus* 8987—HOLOTYPE: ~~US~~^{UC}; ISOTYPE: MO!).

Blumea viscosa occurs in South America from Bolivia to Columbia and Venezuela (Badillo, 1974). It is also known from the following collections (MO): CENTRAL AMERICA: Panama, Costa Rica, Honduras, and Guatemala; MEXICO: Yucatan, Chiapas, Oaxaca, Morelos, Guerrero, Michoacan, and Veracruz (the last the type locality of the species); WEST INDIES: Barbados (Gooding et al, 1965), Cuba, and Isla de Pinos. It previously has been unreported from North America (Kartesz and Kartesz, 1980), but the species has at least once grown and been collected there: Florida, no other locality data, 1842-1849, *F. Rugel* 301 (specimen at MO! "ex herb. Mus. Britt.", identified as *Conyza lyrata* HBK.). Almost all collections of *B. viscosa* have been from disturbed areas, and it probably would be no surprise to encounter it as a weed at localities along the United States coast of the Gulf of Mexico. Over its whole range, most of the collection localities appear to be coastal or near-coastal, but it has also been recorded from far inland. The species occurs on both the Atlantic and Pacific shores and is known from both by several collections made in the early 1800's.

Randeria (1960) believed that there were "no representatives of *Blumea* in Europe or in the Americas." She was aware of the combination, *B. lyrata* (HBK.) Badillo, but listed it with "taxa and names of uncertain status", apparently assuming that its generic placement was incorrect. After learning that the species indeed is a *Blumea*, as Badillo much earlier had indicated, D'Arcy (1975) noted correctly that it is a member of sect. *Paniculatae* DC. Further, I have studied *B. viscosa* and find that it differs only in a few micromorphological characters from *B. lacera* (Burm. f.) DC. It is much more closely similar to *B. lacera* than is *B. mollis* (D. Don) Merrill, which Randeria considered to be the closest relative of *B. lacera*. Specifically, *B. viscosa* differs from *B. lacera* by its 1) dark, purplish-brown achenes, 2)

Zwillingshaare of duplex trichomes that are widely divergent at their tips, and 3) pappus bristles with relatively long, antrorsely oriented barbels. *Blumea lacera* has orangish-brown achenes, Zwillingshaare with barely divergent duplex trichomes, and pappus bristles that are nearly smooth or have very short barbels barely distinct from the body of the bristle. The pappus bristles of *B. viscosa* are different from any of those illustrated by Randeria as representative of variability within the genus; the bristles of *B. virens* DC. (sect. *Paniculatae*) have distinct, ascending barbels, but they are not nearly as numerous or as long as in *B. viscosa*. Neither have I been able to observe achenes of any species that are as distinctively dark-colored as those of the single American species. I believe *B. viscosa* could justifiably be treated as a subspecies of *B. lacera*, but because of the differences in morphology and their wide disjunction, little would be gained by making yet another combination, if the close relationship between these taxa is recognized.

In Randeria's key to the species of sect. *Paniculatae*, *Blumea lacera* and *B. mollis* are separated from other taxa with glabrous receptacles by having "achenes terete or subangulate" vs. "achenes distinctly ribbed." However, all of these taxa have terete, ribbed achenes; the ribs of *B. lacera* and *B. mollis*, as well as those of *B. viscosa*, are simply thinner and slightly less conspicuous than in the others.

According to Randeria, "*Blumea lacera* is the most widespread and definitely the most variable species of the genus. A great deal of diversity is exhibited by its vegetative organs in the lobing of the leaves, the relative amount of pubescence, and the degree of compactness and laxity of the panicles." *Blumea viscosa* appears to be somewhat less variable in leaf and inflorescence morphology, but the degree of leaf and stem pubescence and glandularity is highly variable. This variability extends to the type specimens of *Conyza viscosa* Mill. and *C. lyrata* HBK. (both synonyms, McVaugh, 1972), probably the two oldest collections of the species. As in *B. lacera*, however, there are no morphological discontinuities and no clear geographical distinctions that would require recognition of subspecific taxa.

Reasonably convincing evidence exists to support a hypothesis that the Asian-American disjunction between the sister taxa *Blumea lacera* and *B. viscosa* has resulted from an event of long-distance dispersal rather than a more ancient splitting of ancestral stock to produce vicarious taxa. *Blumea viscosa* probably is directly derived from *B. lacera*. The latter has an extremely wide geographic range ("Africa, SE Asia, from India to the Ryukyus and New Guinea to Northern Australia and Guam", Randeria, 1960) and appears to be ecologically equivalent to *B. viscosa*; both are successful colonizers of disturbed sites. The primarily coastal habitats of *B. viscosa* might be expected if the initial American propagules were pre-adapted to such sites, where it is likely they would have had a first opportunity to germinate. All species of the genus have an efficient mechanism for wind dispersal (the pappus),

and according to Randeria, the genus is "extending its geographic range; this is proved by the records in recent years of *Blumea* from places from which it had been unreported previously." For example, the presence of *B. laciniata* (Roxb.) DC. on the Hawaiian Islands is probably due to a recent introduction (Randeria, 1960); otherwise it occurs in India, New Guinea, and the Solomon Islands.

It is impossible to date the dispersal event that could have introduced the stock of *Blumea viscosa* to the American continents, but that it is of some antiquity is suggested by several observations. The morphological divergence between *B. lacera* and *B. viscosa* is slight, but it is consistent and involves at least three characters. Of course, since one of these is a modification of the pappus bristles that conceivably could enhance dispersal capability, the founder achenes themselves could have possessed bristles with such an atypical, variant feature. Also, *B. viscosa* is widespread in Central and South America. This does not eliminate the possibility of a recent introduction, but at least the widely separated type collections of *Conyza viscosa* (Veracruz, Mexico) and *C. lyrata* (Guayaquil, Ecuador) were made prior to 1800 and both possess the features unique to the species.

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