

MATHIASELLA, A NEW GENUS OF NORTH AMERICAN UMBELLIFERAE

Lincoln Constance and C. Leo Hitchcock

SOME NINETY-TWO GENERA (twenty of them wholly introduced) of Umbelliferae are known to occur in North America, according to the latest general taxonomic treatment of the representatives of the family on this continent (North American Flora 28B: 43-295, 1944-45). So far as we are aware, no additional genera have been proposed in the past ten years, and very few tenable ones since the vigorous pioneering activities of Coulter and Rose in the two earliest decades of the twentieth century. Many, even of those genera which are usually accorded acceptance in floras and manuals, are based on highly technical characters, and are maintained largely from considerations of tradition and convenience.

The discovery of a strikingly unique Mexican plant referable—we are convinced—to no previously described genus of Umbelliferae, is, then, an event of importance. In placing this remarkable find officially on record, it seems to us appropriate to dedicate the genus to an outstanding American student of this difficult but fascinating family.

Mathiasella Constance and Hitchcock, gen. nov.

Herbae perennes graciles erectae caulescentes glabrae e caudice ligneo. Folia petiolata membranacea ternato-pinnata, foliolis magnis serratis lobatisve. Petioli vaginantes. Umbellae inflorescentiae compositae laxae, pedunculis terminalibus solitariis vel terminalibus lateralibusque. Involucri bracteae paucae conspicuae. Radii pauci patenti-adscedentes glabri. Involucelli bracteolae paucae conspicuae, flores superantes. Pedicelli patenti-adscedentes glabri. Flores femini fere apetalis, petalis florum masculinorum viridibus purpureo-maculatis ovatis apice inflexis; calycis dentes obsoleti; stylopodium deficiens, stylis tenuibus patentibus. Carpophorum incognitum. Fructus (immaturus) oblongo-ovatus dorsaliter valde compressus glaber, costis dorsalibus filiformibus, eis lateralibus latioribus tenuiter alatis; vittae in valleculis solitariae, in commissuris paucae; semina dorsaliter valde compressa, facie plana.

Slender, erect, caulescent, branching, glabrous perennials from a woody caudex. Leaves petiolate, membranaceous, ternate-pinnate with rather large, serrate and often lobed leaflets. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal only, or terminal and lateral. Involucre conspicuous, few-bracteate. Rays few, spreading-ascending, glabrous. Involucel conspicuous, few-bracteate, exceeding the flowers. Pedicels spreading-ascending, glabrous. Flowers of two kinds, the carpellate usually apetalous, the staminate with greenish, purple-splotched ovate petals, the apex narrower and inflexed; calyx teeth obsolete; styles slender, spreading, the stylopodium lacking. Carpophore not seen. Fruit (slightly immature) oblong-oval, strongly flattened dorsally, glabrous; dorsal

ribs filiform, the lateral broadly thin-winged; vittae distinct, solitary in the intervals, several on the commissure; seed strongly flattened in cross section, the face plane.

Type species: *Mathiasella bupleuroides* Constance and Hitchcock.

Mathiasella bupleuroides Constance and Hitchcock, sp. nov. (fig. 1-8).

Plantae aliquanto graciles glabrae, 3-7.5 dm. altae; folia basalia in ambitu deltoidea ternato-pinnata, 5-10 cm. longa, foliolis oblongis ovalibusve obtusis serratis, 1-3 cm. longis, 0.5-1.5 cm. latis; petioli 4-8 cm. longi, infra medium marginis scariosis vaginantes; folia caulina pauca foliis basilaribus similia alternata; inflorescentiae umbella unica terminalis, interdum pedunculo laterale instructa; pedunculi graciles, 3-15 cm. longes; involucri bracteae obovatae imbricatae virides purpurascetes lutescentesve radiis breviores, 1.5-3 cm. longi; radii fertiles inaequali, 2-4.5 cm. longi; involucelli bracteolae circa 5 obovatae bracteis similes flores superantes, 10-18 mm. longae; flores purpurascens-virides; ovarium glabrum; pedicelli 4-8, 5-10 mm. longi; fructus oblongo-ovatus apice basiue rotundatus glaber, circa 10 mm. longus, 5 mm. latus, costis dorsalibus distinctis, eis lateralibus tenuiter alatis; vittae magnae in intervallis solitariae; in commissuris circa 4; semina sub vittis canaliculata facie plana.

Plants rather slender, 3-7.5 dm. high, glabrous (sometimes minutely scaberulous) throughout; basal leaves deltoid, 5-10 cm. long, ternate-pinnate, the leaflets oblong to oval, obtuse, 1-3 cm. long, 0.5-1.5 cm. broad, serrate, the distal slightly confluent at base; petioles 4-8 cm. long, scariosusheathing to the middle or above; cauline leaves few, alternate, like the basal; inflorescence of a terminal and sometimes also a lateral peduncle, each bearing a single umbel; peduncles slender, 3-15 cm. long; involucre of 3-5 obovate, laterally overlapping green, or purplish or yellowish, bracts 1.5-3 cm. long, shorter than the mature rays; fertile rays 3-8, unequal, 2-4.5 cm. long; involucel of ca. 5 obovate bractlets like the bracts, 10-18 mm. long, exceeding the flowers; flowers purplish-green, the ovary glabrous; mature pedicels 4-8, 5-10 mm. long; fruit oblong-oval, blunt at apex and base, ca. 10 mm. long, 5 mm. broad, glabrous, the dorsal ribs evident, the laterals thin-winged; vittae large, solitary in the intervals, ca. 4 on the commissure; seed slightly channeled under the intervals, the face plane.

Type locality: "On east and south slopes and summit of Peña Nevada, Tamaulipas, Mexico," 19 July 1949, *L. R. Stanford, L. A. Taylor* [Mrs. Richard E. Norris] & *S. M. Lauber* [Mrs. Douglas M. Post] 2542. (Type: UC 985,500; isotypes are being distributed to the following herbaria: F, GH, K, MICH, MO, NY, US, WTU.)

The material on which the proposed new genus is based was sent to the senior author together with

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a dozen other representatives of the Umbelliferae from the same general region. These latter specimens included four species first described by Mathias and Constance during the past few years, emphasizing the remarkable richness of this little-known flora.

Once it is realized that the present collection represents a member of the Umbelliferae—one is likely to think first of such families as Euphorbiaceae, Papaveraceae, or Ranunculaceae!—it is clear that there is nothing heretofore known from either American continent that is anything like it in general aspect. The fruit, although slightly immature, is clearly peucedanoid, but there is no peucedanoid genus known which possesses such a flamboyant involucre and involucl. The apparently monoecious condition, with essentially naked carpellate flowers is, also, presumably unique. The involucre and involucl are reminiscent, rather, of such Old World genera as *Bupleurum* and *Pleurospermum*, but the former has always entire leaves, and the fruits of both genera are such as to cause them to be classified in another part of the family. Assuming that carpel morphology is a reliable clue, actual affinity may exist with the Latin American genus *Prionosciadium*, with which the fruit roughly agrees, but the involuclral and involuclular charac-

ters are wholly at variance with this genus. At present, therefore, *Mathiasella* appears to constitute a clearly unique type without any known close relatives.

We take exceptional pleasure in dedicating this distinctive and attractive genus to Dr. Mildred Esther Mathias [Mrs. Gerald L. Hassler] of the University of California, Los Angeles Campus. Beginning in 1928, she has been contributing steadily to a better understanding of the taxonomy of American Umbelliferae. Equally notable, however, are her personal qualities, which have been an important influence in promoting an attitude of friendly cooperation and good will among botanists all over the United States.

SUMMARY

A new genus and species of peucedanoid Umbelliferae, *Mathiasella bupleuroides*, is proposed on the basis of a unique and recently discovered plant from Tamaulipas, Mexico.

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Fig. 1-8. *Mathiasella bupleuroides*.—Fig. 1, 2. Habit, $\times\frac{1}{2}$.—Fig. 3. Umbellet, showing involucl and carpellate and staminate flowers, $\times 4$.—Fig. 4. Carpellate flower, $\times 4$.—Fig. 5. Carpellate flower with one petal and one stamen, $\times 4$.—Fig. 6. Staminate flower, $\times 15$.—Fig. 7. Fruit, dorsal view, $\times 8$.—Fig. 8. Fruit, transverse section, $\times 8$. (All from the type collection.)

THE GROWTH AND FRUITING OF SORDARIA FIMICOLA¹

Carl W. Bretzloff, Jr.²

THE EXTERNAL AND INTERNAL FACTORS which control sporulation of fungi have been studied for over a century. Since almost all fungi are disseminated by spores, the practical as well as the theoretical implications of information concerning the sporulation processes are readily comprehensible. External factors governing these processes, being more amenable to experimental attack than internal ones, have received the most attention. In general, the approach has been a qualitative or, at best, a semi-quantitative one in which fungi have been supplied with known amounts of essential metabolites and the relative amount of sporulation observed. Underlying most of this work seems to

have been the tacit assumption that fruiting, as contrasted with vegetative growth, must involve fundamental differences in the biochemistry of an organism which may, in turn, be reflected in qualitatively different nutritional patterns. It would seem illogical to ascribe the present unsatisfactory state of knowledge to an overemphasis upon the nutritional approach until its quantitative aspects have been more thoroughly examined. It has been the aim of this work, by analyzing compositional changes in the culture medium, during the growth of a representative ascomycete, to determine whether relative or absolute changes in uptake of major nutrients are associated with the onset of fruiting.

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Probably more physiological studies have been made on fruiting among the Sordariaceae than on any other family of the Ascomycetes with the possible exception of the Saccharomycetaceae and the Ceratostomataceae. Semeniuk (1941, 1942, 1943, 1944) studied the glucose and phosphate nutrition of the Chaetomiaceae, and Hawker (1939a) fol-