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CONTENTS

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ESTUDIO PALINOLOGICO DE LAS ESPECIES MEXICANAS DEL GENERO *STENANDRIUM* NEES (ACANTHACEAE)

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ABSTRACT

The pollen of seven Mexican species of *Stenandrium* is studied with light microscopy. The species are: *S. barbatum* Torrey & Gray, *S. chameranthemoideum* Oersted, *S. dulce* (Cav.) Nees, *S. manchonense* T.F. Daniel, *S. nanum* (Standley) T.F. Daniel, *S. pedunculatum* (Donn.-Smith) Leonard, and *S. pilosulum* (S.F. Blake) T.F. Daniel.

Pollen is usually prolate and tricolpate with differences in the ends of the colpi, and the ornamentation observed is faintly reticulate, punctitegillate, psilate or verrucate and gemmate.

Only *Stenandrium dulce* has pollen very different, not similar to the other species, being spherical, trichotomocolpate, verrucate and gemmate.

KEY WORDS: Palynology, *Stenandrium*, México, Acanthaceae

RESUMEN

El polen de siete especies mexicanas de *Stenandrium* es estudiado con el microscopio de luz; las especies corresponden a *S. barbatum* Torrey & Gray., *S. chameranthemoideum* Oersted, *S. dulce* (Cav.) Nees, *S. manchonense* T.F. Daniel, *S. nanum* (Standley) T.F. Daniel, *S. pedunculatum* (Donn.-Smith) Leonard, y *S. pilosulum* (S.F. Blake) T.F. Daniel.

El polen en general resulto ser prolato y tricolpado con diferencias en las terminaciones de los colpos y la ornamentación observada es ligeramente reticulada, puntitegilada, psilada o verrugada y gemada.

Unicamente *Stenandrium dulce* tiene polen muy diferente sin ninguna relación con el de las demás especies, el cual es esférico, tricotomocolpado, verrugado y gemado.

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INTRODUCCION

Stenandrium es un género constituido por plantas herbáceas y subarbustivas que progresa en las regiones tropicales y subtropicales.

Aproximadamente 50 especies de este taxon han sido descritas para el continente americano (Daniel 1984) y tiene una distribución que abarca desde el sur de los Estados Unidos hasta Argentina y Chile. En territorio mexicano indica (Daniel 1984) que existen nueve especies: *Stenandrium barbatum* Torrey & Gray.; *S. chameranthemoideum* Oersted, *S. dulce* (Cav.) Nees, *S. manchonense* T.F. Daniel; *S. nanum* (Standley) T.F. Daniel; *S. pedunculatum* (Donn.-Smith) Leonard; *S. pilosulum* (S.F. Blake) T.F. Daniel; *S. subcordatum* Standley, y *S. verticillatum* Brandegee.

Desde el punto de vista palinológico, este género ha sido estudiado por Raj (1961) quien describe brevemente el polen de *Stenandrium barbatum* de Texas, como tricolpado, prolato (48 × 30 μ), colpos de 45 × 4 μ con terminaciones redondeadas; exina tectada de 3.5 μ de grosor, densamente soportada por delgados báculos. El de *S. droseroides* de Cuba, tricolpado, prolato de (35 × 20 μ), finamente reticulado con apocolpio muy pequeño. El de *S. pohlii* de Brasil, pantoporado, esferoidal con diámetro de 40 μ y con la exina verrugada. El de *S. trinerve* (Uruguay) con aberturas irregulares, esferoidal cerca de 32 μ de diámetro, con la exina verrugada y finalmente el de *S. dulce* descrito como tectado, con el tegilum ondulado, soportado por delgados báculos.

Heusser (1971) describe el polen de *Stenandrium dulce* de la flora de Chile como inaperturado, verrugado a gemado, esferoidal de 30 μ de diámetro. Markgraf & D'Antoni (1978) hacen la descripción de *S.* cf. *trinerve* como inaperturado, verrugado a gemado, esferoidal de 30 μ de diámetro.

El trabajo más completo que se ha desarrollado sobre este taxon en el área de la palinología es el de Furness (1993) quien estudia el polen de catorce especies procedentes de Africa y Madagascar con microscopio de luz, barrido y transmisión. Encontrando que el polen de este género tiene suficientes variaciones para establecer cuatro tipos de polen a mencionar:

I. Polen generalmente prolato, tricolpado, con colpos sin márgenes prominentes, reticulado, perforado o fosulado.

II. Oblato esferoidal, 3-6 colpado con aberturas irregulares, finamente reticulado.

III. Perprolato, tricolpado, colpos con márgenes prominentes, finamente rugulado o perforado.

IV. Prolato a perprolato, tricolpado con márgenes prominentes y puentes mesocolpiales, y la ornamentación variable.

MATERIALES Y METODOS

El material de estudio (muestras florales) fue obtenido del herbario de la Escuela Nacional de Ciencias Biológicas del Instituto Politécnico Nacional (ENCB) a excepción de las especies de *Stenandrium nanum* y *S. pedunculatum* que se obtuvieron del herbario del Instituto de Biología de la Universidad Nacional Autónoma de México (MEXU). No se incluyen las descripciones de los granos de polen de *S. subcordatum* y de *S. verticillatum* porque no fue posible obtener muestras de estas especies.

El material floral obtenido fue tratado por medio de la técnica de acetolisis de Erdtman (1943) y las observaciones de los granos de polen se realizaron mediante el microscopio de luz.

DESCRIPCION DE LOS GRANOS DE POLEN

Stenandrium barbatum Torrey & Gray. 4 km al SW de Ciudad Juárez, Chihuahua. *G. Borja 400* (ENCB). Lám. I. Figs. 1 a 4.

Polen tricolpado, tectado, prolato, de 51(56)60 × 35(37)40 μ. P/E=1.5. Vista polar circular de 38(40)44 μ de diámetro. Exina de 2.4 μ de grosor, sexina de 1.6 y la nexina de 0.8 μ de espesor, superficialmente puntitegilada. Colpos cubiertos con membranas lisas y con terminaciones circulares.

Stenandrium chameranthemoideum Oerst. Pachuquilla, Mun. de Puente Nacional, Veracruz. *F. Ventura 7764* (ENCB). Lám. I. Figs. 5 a 8.

Polen tricolpado, semitectado, prolato, de 42(47)53 × 28(31)34 μ. P/E=1.5. Vista polar circular de 32(36)40 μ de diámetro. Exina de 2.4 μ de grosor, sexina de 1.6 y nexina de 0.8 μ de espesor, superficie finamente reticulada. Colpos operculados y con terminaciones circulares. Opérculo central finamente reticulado, la situación de esta estructura a veces es confusa, de tal forma que algunos granos dan la impresión de ser hexacolpados.

Stenandrium dulce (Cav.) Nees. Cerro Gordo, Edo. de México. *J. Rzedowski 22205* (ENCB). Lám. I. Figs. 9 a 11.

Polen tricotomocolpado, intectado, esférico, de 43.0(45.0)51.2 μ de diámetro. Exina de 5.6 μ de grosor, con la sexina de 3.2 y la nexina de 2.4 μ de espesor, superficialmente verrugada y gemada, gemas de 4 a 5 μ de diámetro y las verrugas de 3(5)6 μ de alto × 7(8)12 μ de ancho. Colpo en forma de "Y" con las membranas escabrosas.

Stenandrium manchonense T.F. Daniel. Manchón, Distrito de Mina, Guerrero. *Hinton 10460* (ENCB). Lám. I. Figs. 12 a 15.

Polen dicolpado, tectado, prolato, de 41(47)52 × 22(27)34 μ. P/E=1.77. Vista polar cuadrangular de 28(33)38 μ de diámetro.

Exina de 1.8 μ de grosor, con la sexina de mayor espesor que la nexina, superficialmente puntitegilada. Colpos con los márgenes irregulares cubiertos con membranas lisas y con terminaciones circulares.

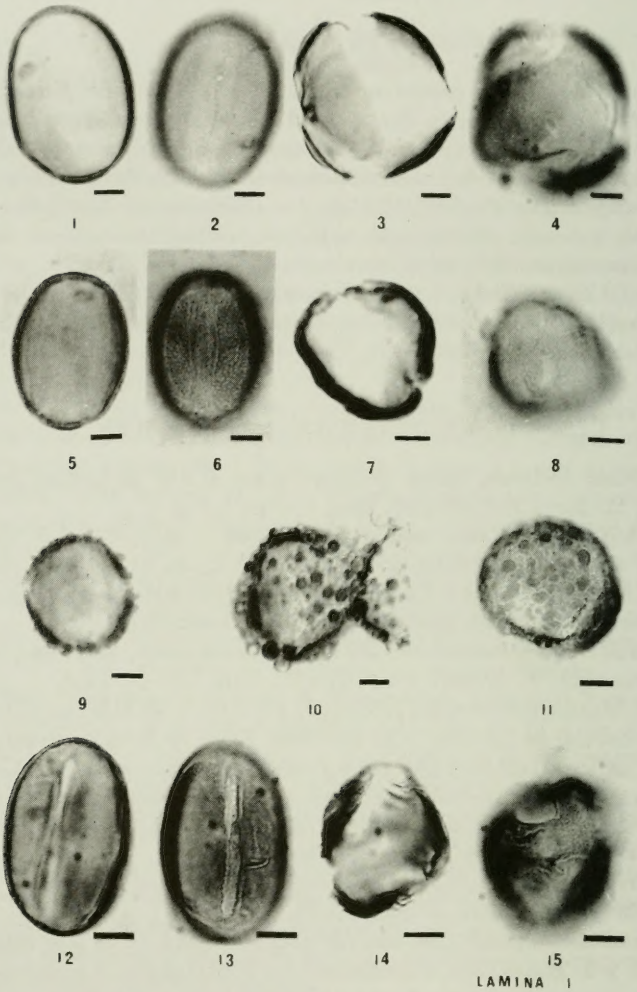

Lámina I. *Stenandrium barbatum*: 1. Sección óptica de la vista ecuatorial; 2. Vista ecuatorial superficial; 3. Vista polar en sección óptica; 4. Vista polar mostrando las terminaciones de los colpos. *S. chameranthemoideum*: 5. Vista ecuatorial en sección óptica; 6. Vista ecuatorial superficial; 7. Vista polar mostrando el grosor de la exina; 8. Vista polar mostrando la ornamentación. *S. dulce*: 9. Sección óptica. 10. Abertura trirradiada y ornamentación; 11. Vista superficial. *S. manchonense*: 12. Vista ecuatorial en sección óptica; 13. Vista ecuatorial superficial; 14. Vista polar en sección óptica; 15. Vista polar mostrando las terminaciones de los colpos.

Stenandrium nanum (Standley) T.F. Daniel. Rancho de dos Fierros, 7 km al S de la desviación a Puerto Morelos, Quintana Roo. *E.F. Cabrera 6313* (MEXU). Lám. II. Figs. 16 a 19.

Polen tricolpado, semitectado, prolato, de 46(54)61 × 24(31)37 μ. P/E= 1.74. No se pudo observar vistas polares. Exina de 1.6 μ de grosor, con la sexina y la nexina de igual espesor, superficie ligeramente reticulada. Colpos cubiertos con membranas escabrosas y con las terminaciones agudas.

Stenandrium pedunculatum (Donn.-Smith) Leonard. Estación de Biología de Chamela, Jalisco. *E. Lott 1366* (MEXU). Lám. II. Figs. 20 a 22.

Polen tricolpado, tectado, prolato, de 41(52)63 × 23(30)44 μ. P/E=1.7. Vista polar circular de 24(32)46 μ de diámetro. Exina de 3.2 μ de grosor, con la sexina y la nexina de igual espesor, superficie ligeramente reticulada. Colpos cubiertos con membranas granulosas, abriéndose hacia los extremos con terminaciones circulares, que aparentan ser poros cubiertos con membranas escabrosas.

Stenandrium pilosulum (S.F. Blake) T.F. Daniel. 7 millas al NW de Yecare, Sonora. *R. Moran 21965* (ENCB). Lám. II. Figs. 23 a 27.

Polen dicolpado, algunas veces tricolpado, tectado, prolato, de 50(54)62 × 32(38)43 μ. P/E=1.5. Vista polar circular de 38(40)44 μ de diámetro. Exina de 2.4 μ de grosor, sexina de 1.6 y la nexina de 0.8 μ de espesor, superficialmente psilada. Colpos constreñidos en el ecuador, abriéndose hacia los extremos en forma de poros circulares, cubiertos con membranas granulosas.

CONCLUSIONES

El polen de las especies mexicanas del género *Stenandrium* resulto ser prolato en la mayor parte de los taxa en estudio, a excepción de *S. dulce* que lo tiene esférico, sin embargo otras diferencias observadas radican principalmente en las aberturas y en la ornamentación de esos granos de polen. Con referencia a la primera observación es notable que algunas especies tienen colpos con terminaciones circulares dando la impresión que poseen poros en los extremos de los colpos, es dicolpado con estas características en *S. barbatum* y tricolpado en *S. manchonense*, *S. pedunculatum*, y *S. pilosulum*. Polen con otro tipo de aberturas se aprecia en *S. chameranthemoideum* donde es tricolpado y los colpos son operculados de tal forma que algunos granos dan la impresión de ser hexacolpados. Tricolpado con terminaciones agudas fue encontrado en *S. nanum*. Tricotomocolpado sólo fue observado en *S. dulce*.

En lo que a ornamentación se refiere se puede apreciar que esta es poco conspicua, resulto ser puntitegilada en el polen de *Stenandrium barbatum* y *S. manchonense*; psilada en *S. pilosulum* y ligeramente reticulada en *S. chameranthemoideum*, *S. nanum*, y *S. pedunculatum*.

Comparando los resultados obtenidos con los de otros autores el polen de *Stenandrium barbatum* coincide con las características dadas por Raj (1961),

LAMINA II

Lámina II. *Stenandrium nanum*: 16. Vista ecuatorial en corte óptico; 17. Vista ecuatorial superficial mostrando las aberturas; 18. Vista ecuatorial superficial; 19. Vista ecuatorial donde se aprecia uno de los colpos. *S. pedunculatum*: 20. Vista ecuatorial sección óptica. 21. Vista ecuatorial mostrando uno de los colpos; 22. Vista ecuatorial superficial. *S. pilosulum*: 23. Vista ecuatorial en sección óptica; 24. Vista ecuatorial mostrando dos de los colpos; 25. Vista ecuatorial superficial; 26. Contorno de la vista polar; 27. Vista polar donde se aprecia la terminación de los colpos.

Tabla 1. Principales características palinológicas establecidas en las especies del género *Stenandrium*.

Especie	Forma	Abertura	Terminación de los colpos	Ornamentación
Stenandrium barbatum	Prolato	Tricolpado	Circular	Puntitegilada
S. chameranthemoideum	Prolato	Tricolpado	Circular	Reticulada
S. dulce	Esférico	Tricotomo colpado	——	Verrugada y gemada
S. manchonense	Prolato	Dicolpado	Circular	Puntitegilada
S. nanum	Prolato	Tricolpado	Aguda	Reticulada
S. pedunculatum	Prolato	Tricolpado	Circular	Reticulada
S. pilosulum	Prolato	Tricolpado	Circular	Psilada

pero para el de *S. dulce* son diferentes en lo referente a tectum y ornamentación, por lo que quizás se trate de otro taxon. De acuerdo con los tipos establecidos por Furness (1993) el polen de las especies *S. barbatum* y *S. nanum* se pueden situar dentro del tipo I; polen oblato no se pudo observar, tampoco el esferoidal, el perprolato, el margocolpado, ni con puentes mesocolpiales perteneciente a los otros grupos que señala el mismo autor.

Es indudable que las especies mexicanas de *Stenandrium* tienen polen muy diferente al de las especies de Africa y Madagascar. Sobresale el polen de *S. dulce* que por sus características se aleja por completo de cualesquiera de las especies que aqui se mencionan.

Las diferencias palinológicas más notorias que podemos señalar en el género *Stenandrium* se resumen en la Tabla 1.

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NOMENCLATURAL NOTES FOR THE NORTH AMERICAN FLORA. XIII.

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ABSTRACT

The nomenclature and taxonomy of the following are discussed: *Blastania*, *Caltha palustris* var. *flabellifolia*, *Chaenomeles*, *Choenomeles*, *Ctenolepis*, *Heracleum lanatum*, *H. maximum*, *Coincya monensis* var. *recurvata*, *Frangula*, *Laburnum*, *Physalis ixocarpa*, *Physalis philadelphica*, *Prunus pumila* vars. *cuneata* and *susquehanae*, *Ranunculus glaberrimus* var. *reconditus*, *Rhamnus*, *Rhamnus davurica* and *Rhamnus citrifolia*. Fourteen new combinations and one *status novum* are proposed: **Frangula betulifolia** (E. Greene) V. Grub. ssp. **obovata** (Kearney & Peebles) Kartesz & Gandhi, *comb. nov.*; **Frangula** × **blumeri** (E. Greene) Kartesz & Gandhi, *comb. nov.*; **Frangula californica** (Eschsch.) A. Gray ssp. **crassifolia** (Jepson) Kartesz & Gandhi, *comb. nov.*; **Frangula californica** ssp. **cuspidata** (E. Greene) Kartesz & Gandhi, *comb. nov.*; **Frangula californica** ssp. **occidentalis** (T.J. Howell) Kartesz & Gandhi, *comb. nov.*; **Frangula californica** ssp. **tomentella** (Benth.) Kartesz & Gandhi, *comb. nov.*; **Frangula californica** ssp. **ursina** (E. Greene) Kartesz & Gandhi, *comb. nov.*; **Frangula rubra** (E. Greene) V. Grub. ssp. **modocensis** (C.B. Wolf) Kartesz & Gandhi, *comb. nov.*; **Frangula rubra** ssp. **nevadensis** (A. Nels.) Kartesz & Gandhi, *comb. nov.*; **Frangula rubra** ssp. **obtusissima** (E. Greene) Kartesz & Gandhi, *comb. nov.*; **Frangula rubra** ssp. **yosemitana** (C.B. Wolf) Kartesz & Gandhi, *comb. nov.*; **Frangula sphaerosperma** (Sw.) Kartesz & Gandhi, *comb. nov.*; **Frangula sphaerosperma** ssp. **longipes** (M.C. & L.A. Johnston) Kartesz & Gandhi, *comb. nov.*; **Physalis ixocarpa** Brot. *ex* Hornem. var. **immaculata** (Waterfall) Kartesz & Gandhi, *comb. nov.* and var. **parviflora** (Waterfall) Kartesz & Gandhi, *comb. nov.*; **Rhamnus davurica** Pallas ssp. **nipponica** (Makino) Kartesz & Gandhi, *comb. nov.*; **R. lanceolata** Pursh ssp. **glabrata** (Gleason) Kartesz & Gandhi, *stat. nov.*

KEY WORDS: varietal autonyms, Apiaceae, Brassicaceae, Cucurbitaceae, Fabaceae, Ranunculaceae, Rhamnaceae, Rosaceae, Solanaceae, *Blastania*, *Coincya*, *Caltha*, *Chaenomeles*, *Choenomeles*, *Ctenolepis*, *Frangula*, *Heracleum*, *Laburnum*, *Physalis*, *Prunus*, *Ranunculus*, *Rhamnus*

INTRODUCTION

Continuing with the "NOMENCLATURAL NOTES FOR THE NORTH AMERICAN FLORA" (Kartesz & Gandhi 1989; 1990a, b, c; 1991a, b, c, d; 1992a, b, c, d), a thirteenth note in the series is presented here toward advancing our understanding of North American plants.

APIACEAE

Heracleum maximum and *H. lanatum*

Contrary to Fernald's (1950, p. 1104) and Voss' (1985, p. 661) treatments of the Cow-parsnip as *Heracleum maximum* Bartr. (published in 1791), Gleason & Cronquist (1991, p. 382) accepted the name *H. lanatum* Michx. (published in 1803) for this species and cited *H. maximum* as its synonym. Regarding the usage of one name over another, the dispute is not over the taxonomy, nor over name priority, but rather over the validity of Bartram's binomials published in his 1791 work. A brief discussion is here provided.

Bartram (1791), in his work titled "*Travels through North and South Carolina* ..."), published 49 new binomials (Wilbur 1971). At the same time he also used a few polynomials (*e.g.*, p. 378, "*Pinus palustris, foliis trinis longissimis, strobilo elongato* ..."). Due to his occasional use of polynomials, the validity of the 49 binomials has been in dispute. Based on Art. 68.4 of the 1935 *Code* (see Camp 1947; presently *International Code of Botanical Nomenclature* (*ICBN*) Art. 23.6c; Greuter 1988), Rickett (1944) rejected Bartram's binomials. However, Merrill (1945) and Wilbur (1971) stated that such occasional usage of polynomials are also found in Linnaeus (1753; *e.g.*, p. 213: *Apocynum fol. androesimifolium*) and in P. Miller (1768; *e.g.*, *Alchemilla foliis lobatis sericeis acutis, Aloe foliis erectis subulatis radicatis undique inerme spinosis, Asparagus caule herbaceo erecto, foliis setaceis*).

Both Merrill (1945) and Wilbur (1971) argued that Bartram's usage of polynomials was an exception rather than a rule, and therefore, his new binomials should be treated as valid. Wilbur listed Bartram's 49 new binomials. We concur with Merrill and Wilbur, and conclude that the name *Heracleum maximum* was validly published in Bartram's work.

Heracleum maximum Bartr., *Travels.* 344. 1791.

SY: *Heracleum lanatum* Michx., *Fl. Bor. Amer.* 1:166. 1803.

BRASSICACEAE

Coincya monensis var. *recurvata*

Coincya monensis (L.) Greuter & Burdet, a European native, has become established in Pennsylvania, and New Jersey, and southward to North Carolina. The North American expression of this species is referable to var. *recurvata* (Rollins 1993, p. 329). Regarding the nomenclature of this variety, our analysis follows.

Leadlay & Heywood (1990, pp. 370-380) recognized four varieties within the protologue of the new combination *Coincya monensis* ssp. *recurvata* (All.) Leadlay. They (p. 375) did not cite authorship for var. *recurvata.* It appears as though these authors treated var. *recurvata* as a typical expression of ssp. *recurvata* and considered that authorship was unnecessary for the varietal autonym. Although permitted prior to the Sydney Congress, this practice is unacceptable under the present *Code*, *i.e.*, the name *Coincya monensis* var. *recurvata* represents an autonym of a non-typical subspecies.

We (Kartesz & Gandhi, Taxon 40:308-310. 1991.) argued that varietal autonyms of non-typical subspecies must be treated as validly published, which was opposed (see Taxon 41:158. 1992.). We (Taxon 41:784. 1993.) countered the opposition by proposing that a new Art. 32.9, along with an example be added to the *Code.* The Tokyo Congress referred the example to the Editorial Committee of the *ICBN* for consideration (see Taxon 42:916. 1994.).

In light of the above situation, we consider the varietal autonym *Coincya monensis* var. *recurvata* to be validly published.

Coincya monensis (L.) Greuter & Burdet ssp. *recurvata* (All.) Leadlay, J. Linn. Soc. Bot. 102:370. 1990. BASIONYM: *Synapsis recurvata* All., *Fl. Pedem.* 1:2654. 1785.

Coincya monensis (L.) Greuter & Burdet var. *recurvata* (All.) Leadlay, J. Linn. Soc. Bot. 102:375. 1990. BASIONYM: *Synapsis recurvata* All., *Fl. Pedem.* 1:2654. 1785.

CUCURBITACEAE
Blastania, Ctenolepis

Ctenolepis cerasiformis (Stocks) Hook.*f.*, a native of tropical Africa, has been reported for Maryland. For this taxon, Meeuse (1962, p. 12) used the name *Blastania cerasiformis* (Stocks) A. Meeuse. In our study, we found that the genus *Blastania* Kotschy & Peyritsch has been treated as a taxonomic synonym of *Ctenolepis* Hook.*f.* (Hutchinson 1954; Welman 1987, p. 201) or vice versa (Meeuse, p. 11). Our analysis follows.

Regarding the effective publication of the genus *Blastania* Kotschy & Peyritsch, Jackson (1895) and Meeuse (1962, p. 11) mentioned the date to be 1865-66, whereas C. Jeffrey (KEW; pers. comm.) believes the date to be Oct 1867. However, we concur with Stafleu & Cowan (1979), who stated the publication date of Kotschy & Peyritsch's work to be Jul 1867.

For *Ctenopsis* Naudin (published in 1866, *non* de Notaris 1847), Hooker (in Bentham & Hooker, Sep 1867, p. 832) published *Ctenolepis* Hook.*f.* as a substitute name. With this analysis, we assert that the name *Blastania* is older than the name *Ctenolepis.*

Since *Blastania* and *Ctenolepis* represent the same entity and since *Blastania* has priority over *Ctenolepis*, the former should be accepted to be the correct name. To date, *Ctenolepis* has not been conserved over *Blastania.* In this situation, *Ctenolepis* should be treated as a heterotypic taxonomic synonym of *Blastania.*

Blastania cerasiformis (Stocks) A. Meeuse, Bothalia 8:12. 1962. BASIONYM: *Zehneria cerasiformis* Stocks, J. Bot. Kew Gard. Misc. 4:149. 1852. SY: *Ctenolepis cerasiformis* (Stocks) Hook.*f.*, *Fl. Trop. Africa* 1:178. 1871.

FABACEAE
Laburnum

The Golden-chain tree (*Laburnum anagyroides* Medik.), a European native and extensively used in horticultural plantings in the eastern United States, has been reported as an escape in Massachusetts and elsewhere. The name *Laburnum anagyroides* was based on *Cytisus laburnum* L. The genus name *Laburnum* has been attributed either to Fabricius (Frodin & Heywood *in* Tutin, *et al.* 1968; Greuter 1989; Wiersema 1990; Brummitt 1993) or to Medikus (Jackson 1895).

Within Fabaceae, Fabricius (1759) proposed the genus name *Laburnum*, but did not designate a type. Twenty eight years later, Medikus (see below) proposed *Laburnum* as a new genus within Fabaceae. Pfeiffer (*Nom.* 2[1]:1874) lectotypified *Laburnum* Medik. by *L. anagyroides* Medik. All those

who recognize *Laburnum* Fabr. include *L. anagyroides* within it. Regarding the nomenclature of *Laburnum*, our analysis is given below.

If the name *Laburnum* Fabr. was validly published, then *Laburnum* Medik. is a later homonym. *Laburnum* Medik. is not an isonym, since its type is not that of *Laburnum* Fabr. (To the best of our knowledge, the latter has not been typified.). Dandy (1967) stated that Fabricius provided a diagnostic key for all generic names. Furthermore, some generic names were provided with descriptions or references to earlier published descriptions. Stafleu & Cowan (1976, pp. 810-811) concurred with Dandy's assessment that validation of Fabricius' generic names by means of author reference or by means of key are in full agreement with the *Code*. However, the nomenclatural validity of such names was questioned by Rauschert (1968) and Holub (1970).

In his detailed analysis of Fabricius' work, Holub (1970) concluded that not all of the generic names were validly published in that work. Regarding the generic names for which Fabricius either provided descriptions or references to earlier published descriptions, Holub considered them to be valid. Other names, appearing to be generic, but lacking validating descriptions, were treated by Holub to be uninomial designations of species (not true generic names; see *ICBN* Art. 20.4b, Ex. 10; Greuter 1988). Holub (pp. 84-86) divided all generic names (listed in Fabricius' work) into eight groups. He listed 120 invalid generic names (*i.e.*, uninomial designations) within groups 1-6, and listed 32 valid generic names within groups 7 and 8. He treated the name *Laburnum* as a uninomial designation within group 3.

We concur with Holub's analysis, and treat *Laburnum* Fabr. as a unitary name. However, if some author were to use *Laburnum* Fabr. as a genus (prior to Medikus' 1787 work), then inadvertently, the unitary name would become a valid generic name. In the absence of such evidence, we accept *Laburnum* Medik. as a legitimate generic name.

Laburnum Medik., Vorles. Churpfalz. Phys.-Ocon. Ges. 2:363. 1787.

RANUNCULACEAE

Caltha palustris var. *palustris*, var. *radicans*, var. *flabellifolia*

Smit (1973, pp. 141-142) assigned the expression of *Caltha palustris* L., found mostly in Europe, Russia (?Cape Serdtze), Sakhalin, Kuril Islands, Japan, Alaska, and the Yukon territories of Canada, to var. *radicans* (Forst.) Beck. She cited *C. palustris* var. *flabellifolia* (Pursh) Torr. & Gray (based on *C. flabellifolia* Pursh) with its type from Pennsylvania, as a synonym. However, she (p. 143) did not include Pennsylvania within the range of var. *radicans*.

Gray (1895, p. 39) treated *Caltha palustris* var. *flabellifolia* as a synonym of the typical expression of *C. palustris*. Probably unaware of Beck's combination,

Gray proposed *C. palustris* var. *radicans* as a "new var." based upon *C. radicans*, and thus created an isonym.

Keener (Blumea 23:161. 1976.) stated that *Caltha palustris* var. *flabellifolia* is the correct name for the above complex, since the preceding varietal name has priority over *C. palustris* var. *radicans* at varietal rank (see below). Clapham (1987, p. 33), perhaps following Keener, assigned the British Isles' *C. palustris* [previously known as *C. palustris* var. *radicans* (Forst.) Beck] to var. *flabellifolia*. Akeroyd (*in* Tutin, *et al.* 1993, p. 254) merely mentioned the name *C. palustris* var. *radicans*, but did not mention the name *C. palustris* var. *flabellifolia*. Furthermore, he erred in attributing the name *C. palustris* var. *radicans* to (Forst.) Hook.

We believe that Gray was correct in his assessment of the type of *Caltha flabellifolia* belonging to *C. palustris* var. *palustris*. For the North American flora, we recognize two varieties within *C. palustris* as given below.

Caltha palustris L. var. *palustris*.

SY: *Caltha flabellifolia* Pursh, *Fl. Amer. Sept.* 390. 1814. *Caltha palustris* L. var. *flabellifolia* (Pursh) Torr. & Gray, *Fl. N. Amer.* 1:27. 1838.

Caltha palustris L. var. *radicans* (Forst.) Beck, Verh. Zool. Bot. Gesellsch. Wien 36:350. 1886. BASIONYM: *Caltha radicans* Forst., Trans. Linn. Soc. 8:324. 1807.

Ranunculus L.

Based on the belief that *Ranunculus triternatus* A. Gray (published in 1886) was a later homonym of *R. triternatus* Poir. (published in 1815), Nelson & Macbride (Bot. Gaz. 56:473. 1913.) proposed *R. reconditus* as a nom. nov. for Gray's taxon. When Benson (Amer. J. Bot. 23:170. 1936) reduced Gray's taxon as a variety under *R. glaberrimus* Hook., he believed that the epithet "*triternatus*" was not available for a transfer and therefore, chose the epithet "*reconditus*." However, eighteen years later, Benson (Amer. Midl. Naturalist 52:357. 1954.) realized that the name *R. triternatus* Poir. was invalidly published and that *R. triternatus* A. Gray was legitimate when published. This disposition rendered the name *R. reconditus* Nels. & Macbr. illegitimate (*i.e.*, superfluous). Benson also realized that his earlier choice of the epithet "*reconditus*" at varietal rank was final; however, he failed to omit the parenthetical authorship for the var. *reconditus* (see *ICBN* Art. 72.2 Note 1). The correct authorship of var. *reconditus* is given below.

Ranunculus glaberrimus Hook. var. *reconditus* Benson, Amer. J. Bot. 23:170. 1936. BASIONYM: *Ranunculus reconditus* Nels. & Macbr., Bot. Gaz. 56:473. 1913, *nom. superfl.*

SY: *Ranunculus triternatus* A. Gray, Proc. Amer. Acad. Arts 21:370. 1886.

RHAMNACEAE
Frangula and *Rhamnus*

Ever since P. Miller (1768) proposed the genus *Frangula*, its disposition has varied. It was treated either as a subgenus or section of the genus *Rhamnus* L. (De Candolle 1825; Torrey & Gray 1838; Bentham & Hooker 1862; Weberbauer 1896; C. B. Wolf 1938; Johnston & Johnston 1978) or as a distinct genus (Martius 1861; V.I. Grubov 1949a, b; Tutin, *et al.* 1968; Weber 1990; Weber & Wittmann 1992).

Gray's treatment on the rank of *Frangula* varied. In Torrey & Gray (1838), *Frangula* was included within *Rhamnus*. However, in his independent works (1856-1867), Gray recognized *Frangula* as a distinct genus. But this position was reversed in Gray's 1889 work (which was revised by Watson & Coulter).

The traditional morphological separation of *Frangula* and *Rhamnus* has been as shown in Table 1 (based on our specimen observation and literature from the authors listed above).

Regarding the comparison of the above two genera, Johnston & Johnston (pp. 5-6) also provided a table summarizing the differences. They (p. 3) argued that *Frangula* "is exceedingly closely related to *Rhamnus*, more closely in fact than either group is to other taxa of the family." Furthermore, they stated that the recognition of a rank within a complex such as this "is not a scientific question, but one depending on tradition, usage and the practical consideration of the optimization of communication." They chose to treat *Frangula* as a subgenus within *Rhamnus*. These authors were critical of the European works on this complex remarking that "this tendency to recognize segregate genera seems to be fashionable in Europe."

Historically, the segregation or lumping of genera was an author's choice based primarily upon morphology. In modern literature, morphological differences are complemented with support from other areas, such as cytology, genetics, cladistics, phenetics, and protein and DNA analyses. For the segregation of *Frangula* from *Rhamnus*, Grubov (1949b) added the anatomical difference (*fide* Johnston & Johnston 1978): "the vessels have a different distribution in the xylem of *Frangula* than in that of the rest of *Rhamnus*."

In most of the recent North American floristic literature (excluding Weber 1990; Weber & Wittmann 1992), *Frangula* has been treated as a subgenus

Table 1. Comparison of *Rhamnus* and *Frangula*.

	Frangula	*Rhamnus*
Bud Scales	Absent	Present
Thorns	Absent	Present or absent
Leaf Pinnate Nerves	Almost straight	Often arcuate
Inflorescence	Umbels, fascicles, or flowers solitary	Racemes, fascicles, or flowers solitary
Flowers	Bisexual & mostly 5-merous	Mostly unisexual & 4-merous
Sepals	Mostly erect, fleshy keeled ventrally	Spreading, thin unkeeled
Petals	Well-developed, short-clawed	Usually small, often absent in pistillate
Anthers	Equalling filaments	Much shorter than filaments
Ovary	2 or 3-locular	2 or 4-locular
Style	Usually unbranched & not exserted	3- or 4-branched & exserted
Seeds	Smooth	Grooved outside
Raphe Position	Lateral	Apical
Cotyledons	Thick, straight	Thin, usually curved
Endosperm	Scanty	Abundant

within *Rhamnus*. However, we concur with Grubov (1949b), Tutin, *et al.* (1968), and Weber & Wittman (1992) in treating *Frangula* and *Rhamnus* as distinct genera. We assert that the differences summarized in the above table warrant the restoration of generic status to *Frangula*, which necessitates the following new combinations.

Frangula betulifolia (E. Greene) V. Grub. ssp. **obovata** (Kearney & Peebles) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus betulifolia* E. Greene var. *obovata* Kearney & Peebles, J. Wash. Acad. Sci. 29:486. 1939.

Frangula × **blumeri** (E. Greene) Kartesz & Gandhi, *comb. nov.* (*pro sp.*) [*betulifolia* × *californica*]. BASIONYM: *Rhamnus blumeri* E. Greene, Leafl. Bot. Obs. & Crit. 2:266. 1912.

Frangula californica (Eschsch.) A. Gray ssp. **crassifolia** (Jepson) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus californica* Eschsch. var. *crassifolia* Jepson, *Fl. Pl. Calif.* 615. 1925. SY: *Rhamnus californica* Eschsch. ssp. *crassifolia* (Jepson) C.B. Wolf, *N. Amer. Sp. Rhamnus* 68. 1938. *Rhamnus tomentella* Benth. ssp. *crassifolia* (Jepson) O. Sawyer, Madroño 40:65. 1993.

Frangula californica (Eschsch.) A. Gray ssp. **cuspidata** (E. Greene) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus cuspidata* E. Greene, Leafl. Bot. Obs. & Crit. 1:64. 1904. SY: *Rhamnus californica* Eschsch. ssp. *cuspidata* (E. Greene) C.B. Wolf, *N. Amer. Sp. Rhamnus* 72. 1938. *Rhamnus tomentella* Benth. ssp. *cuspidata* (E. Greene) O. Sawyer, Madroño 40:65. 1993.

Frangula californica (Eschsch.) A. Gray ssp. **occidentalis** (T.J. Howell) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus occidentalis* T.J. Howell, Pittonia 2:15. 1899. SY: *Rhamnus californica* Eschsch. ssp. *occidentalis* (T.J. Howell) C.B. Wolf, *N. Amer. Sp. Rhamnus* 66. 1938. *Rhamnus californica* Eschsch. var. *occidentalis* (T.J. Howell) Jepson, *Fl. Pl. Calif.* 615. 1925.

Frangula californica (Eschsch.) A. Gray ssp. **tomentella** (Benth.) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus tomentella* Benth., *Pl. Hartw.* 303. 1848. SY: *Rhamnus californica* Eschsch. ssp. *tomentella* (Benth.) C.B. Wolf, *N. Amer. Sp. Rhamnus* 70. 1938.

Frangula californica (Eschsch.) A. Gray ssp. **ursina** (E. Greene) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus ursina* E. Greene, Leafl. Bot. Obs. & Crit. 1:63. 1904. SY: *Rhamnus californica* Eschsch. ssp. *ursina* (E. Greene) C.B. Wolf, *N. Amer. Sp. Rhamnus* 74. 1938. *Rhamnus californica* Eschsch. var. *ursina* (E. Greene) McMinn, *Ill. Man. Calif. Shrubs* 329. 1939. *Rhamnus tomentella* Benth. ssp. *ursinus* (E. Greene) O. Sawyer, Madroño 40:65. 1993.

Frangula rubra (E. Greene) V. Grub. ssp. **modocensis** (C.B. Wolf) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus rubra* E. Greene ssp. *modocensis* C.B. Wolf, *N. Amer. Sp. Rhamnus* 89. 1938.

Frangula rubra (E. Greene) V. Grub. ssp. **nevadensis** (A. Nels.) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus nevadensis* A. Nels., Proc. Biol. Soc. Wash. 18:174. 1905. SY: *Rhamnus rubra* E. Greene ssp. *nevadensis* (A. Nels.) C.B. Wolf, *N. Amer. Sp. Rhamnus* 86. 1938.

Frangula rubra (E. Greene) V. Grub. ssp. **obtusissima** (E. Greene) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus obtusissima* E. Greene, Leafl. Bot. Obs. & Crit. 1:64. 1904. SY: *Rhamnus rubra* E. Greene ssp. *obtusissima* (E. Greene) C.B. Wolf, *N. Amer. Sp. Rhamnus* 88. 1938.

Frangula rubra (E. Greene) V. Grub. ssp. **yosemitana** (C.B. Wolf) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus rubra* E. Greene ssp. *yosemitana* C.B. Wolf, *N. Amer. Sp. Rhamnus* 90. 1938.

Frangula sphaerosperma (Sw.) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus sphaerosperma* Sw., *Prodr. Veg. Ind. Occ.* 50. 1788.

Frangula sphaerosperma (Sw.) Kartesz & Gandhi ssp. **longipes** (M.C. & L.A. Johnston) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus sphaerosperma* Sw. var. *longipes* M.C. & L.A. Johnston, Fl. Neotrop. Monogr. 20:62. 1978.

Rhamnus davurica and *R. citrifolia*

Hess & Stearn (1979) replaced the name *Rhamnus davurica* Pallas (published in 1776), a widespread species in southeastern Asia and introduced elsewhere, with their new combination *R. citrifolia* (Weston) Hess & Stearn, based on *Cornus citrifolia* Weston (published in 1770). These authors also made a new varietal combination in *R. citrifolia*: var. *nipponica* (Makino) Hess & Stearn, based on *R. davurica* var. *nipponica* Makino. Hess & Stearn's nomenclature was followed by Pratt (1980), and Gleason & Cronquist (1991, p. 342). Unfortunately, Hess & Stearn's combination is a later homonym of *R. citrifolia* Rusby (1907, p. 340), a South American taxon. These two identical names belong to two different genera: Weston's taxon is a *Rhamnus*, whereas Rusby's taxon is a *Frangula* (e.g., *F. citrifolia* (Rusby) V. Grub., Trudy Bot. Inst. Akad. Nauk SSSR, ser. 1. 8:276. 1949.).

Since Hess & Stearn's combination is illegitimate, the name *Rhamnus davurica* is reinstated here in place of *R. citrifolia* (Weston) Hess & Stearn (see the nomenclature given below), and a new subspecific combination is made here.

Rhamnus davurica Pallas, *Reise Prov. Russ.* 3:721. 1776 as '*davuricus*'; Grubov, *Fl. URSS* 14:658, t. 36, f. 4. 1949. SY: *Rhamnus cathartica* L. var. *davurica* (Pallas) Maxim., Mem. Acad. Sci. St. Petersb. 7(11):9. 1886. *Cornus citrifolia* Weston, Univ. Bot. 1:74. 1770. *Rhamnus citrifolia* (Weston) Hess & Stearn, Taxon 28:555. 1979, *non* Rusby, 1907.

Rhamnus davurica Pallas ssp. **nipponica** (Makino) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Rhamnus davurica* Pallas var. *nipponica* Makino, Bot. Mag. Tokyo 18:98. 1904. SY: *Rhamnus citrifolia* (Weston) Hess & Stearn var. *nipponica* (Makino) Hess & Stearn, Taxon 28:556. 1979.

Rhamnus lanceolata

Within *Rhamnus* species, we recognize subspecific (rather than varietal) rank, and therefore elevate *Rhamnus lanceolata* var. *glabrata* to subspecific rank as given below.

Rhamnus lanceolata Pursh ssp. **glabrata** (Gleason) Kartesz & Gandhi, *stat. nov.* BASIONYM: *Rhamnus lanceolata* Pursh var. *glabrata* Gleason, Phytologia 2:288. 1947.

ROSACEAE

The genus name *Chaenomeles* Lindl. was originally spelled *Choenomeles* by Lindley in 1821. In 1830, Bartling altered the name to *Chaenomeles*. This change in spelling was adopted by Lindley himself and most later authors. Wijnands (1990) proposed the conservation of the current usage of the spelling (i.e., *Chaenomeles*). However, based on *ICBN* Art. 73.3, we opted to use the original spelling, as did Zander's *Handworterbuch*, ed. 13. 1984. The *ICBN* Committee for Spermatophyta (Taxon 42:877. 1993) recommended the conservation of the spelling *Chaenomeles*. The committee also stated that the change in spelling was allowed by Art. 73.1. We accept the committee's recommendation.

Chaenomeles Lindl., Trans. Linn. Soc. London 13:96. 1821. ("*Choenomeles*").

Prunus pumila var. *susquehanae*

In the protologue of *Prunus pumila* L. (the Sand-cherry), Gleason & Cronquist (1991, p. 260) included four varieties. For var. *cuneata* (Raf.) L.H. Bailey, they cited *P. susquehanae*, without authorship. as a synonym. However, Groh & Senn (1940, p. 332) used the name *P. pumila* L. var. *susquehanae* (hort. *ex* Willd.) Jaeg. and cited *P. pumila* var. *cuneata* (Raf.) Bailey as its synonym. We conclude that Groh & Senn were correct in their assessment as delineated below.

Prunus pumila L. var. *susquehanae* (hort. *ex* Willd.) Jaeg., *Ziergehoelze der Garten und Parkanlagen* 400. 1865. BASIONYM: *Prunus susquehanae* hort. *ex* Willd., *Enum. Pl. Hort. Berol.* 519. 1809. SY: *Prunus cuneata* Raf., Ann. Nat. 11: 1820. *Prunus pumila* L. var. *cuneata* (Raf.) L.H. Bailey, *Cycl. Amer. Hort.* 1451. 1901.

SOLANACEAE
Physalis ixocarpa, P. philadelphica

Regarding the occurrence of *Physalis ixocarpa* Brot. *ex* Hornem. in North America (north of México), Waterfall (1958, p. 160) gave its Canadian range as Ottawa and its US range as CA, DC, DE, MA, MD, NJ, NM, NY, OR, PA, TX, VA, VT, WA, and WV. He did not mention the species *P. philadelphica* Lam., which is found in México and Central America. However, in his treatment of *Physalis* in México, Central America, and West Indies, Waterfall (1967, p. 213) cited *P. ixocarpa* as a synonym of *P. philadelphica.* Furthermore, Waterfall recognized two varieties within *P. philadelphica*: var. *immaculata* and var. *parviflora.* Gleason & Cronquist (1991, p. 403) followed Waterfall's 1967 treatment and stated that *P. philadelphica* occasionally escaped from cultivation in the northeastern United States.

Based on her morphological and cytological analyses, Fernandes (1970, pp. 357-366) segregated *Physalis ixocarpa* from the *P. philadelphica* complex. She stated that *P. ixocarpa* has small flowers (calyx 4.00-5.25 mm long, 2.5-3.5 mm wide; corolla 5-10 mm in diameter; filaments 1.00-2.50(-2.75) mm long; anthers 1.25-1.75(-2.00) mm long; style 1.75-3.00 mm long), clavate stigma, and satellited chromosomes. The species *P. philadelphica* (mentioned as *P. ixocarpa* auct. *non* Brot. *ex* Hornem.) has large flowers (calyx ca. 8 mm long and 10 mm wide; corolla (10-)13-25(-30) mm in diameter; filaments ca. 5 mm long; anthers 3-4 (-5) mm long; style ca. 8 mm long), and lacks satellited chromosomes. Hudson (1983, p. 13; 1986, p. 417), who accepted Fernandes' conclusion, stated that *P. philadelphica* vars. *immaculata* and *parviflora* are self-compatible, and do not cross with *P. philadelphica* var. *philadelphica*, which is self-incompatible. He concluded that vars. *immaculata* and *parviflora* of *P. philadelphica* should be referred to *P. ixocarpa.*

Based on Fernandes' and Hudson's findings, we treat *Physalis ixocarpa* and *P. philadelphica* as two distinct species, and exclude *P. philadelphica* from North America, north of México. Furthermore, we transfer vars. *immaculata* and *parviflora* to *P. ixocarpa*, and make the two new combinations given below.

Physalis ixocarpa Brot. *ex* Hornem., *Suppl. Hort. Bot. Hafin.* 26. 1819.

Physalis ixocarpa Brot. *ex* Hornem. var. **immaculata** (Waterfall) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Physalis philadelphica* Lam. var. *immaculata* Waterfall, Rhodora 69:215. 1967.

Physalis ixocarpa Brot. *ex* Hornem. var. **parviflora** (Waterfall) Kartesz & Gandhi, *comb. nov.* BASIONYM: *Physalis philadelphica* Lam. var. *parviflora* Waterfall, Rhodora 69:215. 1967.

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A NEW LICHEN SPECIES, *NIEBLA CEDROSENSIS* (RAMALINACEAE), IS DESCRIBED FROM BAJA CALIFORNIA, MEXICO

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ABSTRACT

A new species, **Niebla cedrosensis** Marsh & Nash, *sp. nov.*, is described from Baja California, México. This saxicolous species has pendant terete branches, black pycnidia, terminal to subterminal apothecia and adglutinated hyphae in the medulla. At its center of distribution on Isla Cedros, the thallus has a distinctive pale yellow-green color due to cortex abrasion.

KEY WORDS: lichen, Ramalinaceae, Baja California

Niebla cedrosensis Marsh & Nash, *sp. nov.* (Figure 1). TYPE: MEXICO. Baja California. Isla Cedros at southwest end, NE of Wayle, 28°07′ N 115°19′ W: on siliceous pebble on steep hillside, N aspect, 150 m elevation. March 22, 1994. *Marsh 7460* (ASU). Isotype (1): (ASU).

Description: Thallus saxicolus, pendulus usque ad 6.0 cm longus, luteo-viridis pallido; rami teretes ad 1.5 mm lati; medulla densa cum hyphae adglutinae continuae.

Thallus fruticose, saxicolous, pendant to 4.5 cm (-10.5 cm) long, 1.5 mm wide, stiff terete branches from a thick narrowly attached holdfast. Cortex smooth/foveate/reticulate, sometimes transversely cracked. Medulla solid, of adglutinated hyphae without distinctive chondroid strands, as is the case in the *Niebla homalea* group. Pycnidia black, on upper two-thirds of branch. Apothecia terminal to subterminal, to 4.5 mm diameter, multiple, disc white, pruinose; spores 8, straight to slightly curved, 2-celled, hyaline, 10.0-14.0 × 3.0-4.0 μm.

Figure 1. *Niebla cedrosensis*, (Type in ASU). (Scale=mm).

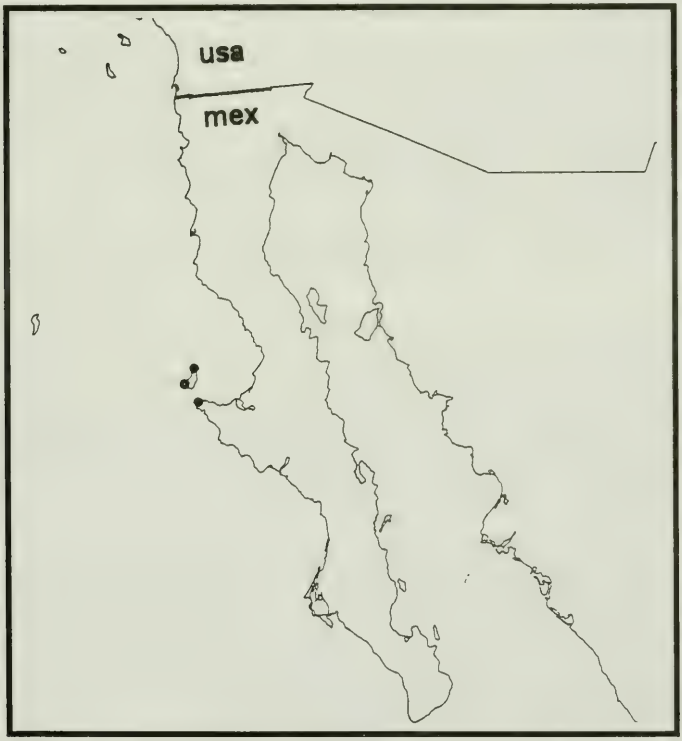

Figure 2. Distribution of *Niebla cedrosensis*.

Chemistry: ±usnic, 16-α-hydroxykurane, zeorin, unknown triterpene, ± salazinic acid

Habitat and Distribution: *Niebla cedrosensis* is saxicolous on sides and overhangs of boulders and rock outcrops. It is restricted to Cedros Island and the tip of the Vizcaino Peninsula (Figure 2) at 40-500 m elevation. Wind and salt and/or sand have abraded the thalli of this species so that it has a distinctive pale whitish yellow-green appearance and hence stands out from all other *Niebla*/*Ramalina* species. One yellowish-green non-abraded collection was found from Bahía Tortuga at the north-western tip of the Vizcaino Peninsula (13 miles southeast).

Representative Specimens Examined: MEXICO. Baja California: Isla Cedros, north end, *Marsh 7194, 7283, 7294, 7295, 7306, 7309, 7339, 7342, 7344* (ASU); *Nash* 5 collections *s.n.*, southwest end, *Marsh 7418, 7446, 7458, 7523* (ASU). Bahía Tortuga, *Marsh 4279* (ASU).

Remarks: Since the distribution of *Niebla cedrosensis* is restricted to Cedros Island and the tip of the Vizcaino Peninsula, this species should not be confused in the field. Other saxicolous *Niebla* species whose distributions overlap that of *N. cedrosensis* are *N. josecuervoi* (Rundel & Bowler) Rundel & Bowler having only salazinic acid (Rundel *et al.* 1972) and flat branches; this species has two morphologies in this area, 1) long thin spirally twisted branches, 2) broad fan-like branches. Another species being described separately with similar chemistry is the same size as *N. cedrosensis*, but has sordid green branches, usually with black necrotic tissue at the base and lower portion of the branch and lacks adglutinated medullary hyphae.

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WEED FLORA OF KHAMMAM DISTRICT IN ANDHRA PRADESH, INDIA

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ABSTRACT

A summary of the weed flora of Khammam District is provided.

KEY WORDS: Floristics, invasive species, India

INTRODUCTION

Khammam District in Andhra Pradesh lies between 16° 45′ and 18° 35′ north latitude and between 79° 47′ and 80° 47′ east longitude. The district ranks sixth in the state with respect to area, covering 15,921 square kilometers, and is very rich in vegetation–particularly the ground flora. Khammam District has not been well explored floristically. A few botanists made random collections during brief periods over the past 90 years (Partridge 1911; Sayeedud-Din 1935-1941; Saxena 1944-1946; Khan 1953). Therefore, the present work is undertaken to summarize detailed observations on the wealth of weed species and floristic components.

ENUMERATION OF SPECIES

Identifications of plant material collected were made with help of *Flora of Madras Presidency* and *Flora of British India*, and later authenticated by the botanical Survey of India.

ACANTHACEAE: *Andrographis echioides* L.; *Andrographis paniculata* (Burn. *f.*) Nees; *Blepharis asperrima* Nees; *Barleria strigosa* Wall.; *Dipterocanthus prostratus* (Poir.) Nees; *Justicia glauca* Rottl.; *Justicia procumbens* L.; *Justicia simplex* D. Don. *Ruellia tuberosa* L.; *Rungia pectinata* (L.) Nees; *Rungia repens* Nees.

AIZOACEAE: *Giseckia pharmacoides* L. *Glinus lotoides* L.; *Glinus oppositifolius* (L.) A. DC.; *Mollugo nudicaulis* Lamk.; *Mollugo pentaphylla* L.; *Trianthema portulacastrum* L.

AMARANTHACEAE: *Achyranthes aspera* L.; *Aerva lanata* (L.) Juss.; *Allamania nodiflora* (L.) R.Br.; *Alternanthera sessilis* (L.) R.Br. *Amaranthus spinosus* L.; *Digera muricata* (L.) Beitr.; *Gomphrena decumbens* Jacq.

APOCYNACEAE: *Catharanthus pusillus* (Murr.) G. Don; *Catharanthus roseus* (L.) G. Don.

ASCLEPIADACEAE: *Calotropis gigantea* (L.) R.Br.; *Pergularia aemia* (Forsk.) Chiov.; *Tylophora indica* (Burn. *f.*) Merrill.

ASTERACEAE: *Acanthospermum hispidum* DC.; *Ageratum conyzoides* L.; *Caesulia axillaris* Roxb.; *Eclipta alba* L.; *Emilia sonchifolia* (L.) DC.; *Parthenium hysterophorus* L. *Sonchus oleraceus* L.; *Sphaeranthus indicus* L.; *Tridax procumbens* L.; *Vernonia cinerea* (L.) Less.; *Xanthium strumarium* L.

BORAGINACEAE: *Coldenia procumbens* L.; *Heliotropium indicum* L.; *Heliotropium scabrum* Retz.; *Trichodesma indicum* (L.) R.Br.

CAESALPINACEAE: *Cassia absus* L. *Cassia occidentalis* L.; *Cassia sophora* L.; *Cassia tora* L.

CAPPARIDACEAE: *Capparis zeylanica* L. *Cleome aspera* Koening.; *Cleome monophylla* L.; *Cleome viscosa* L.; *Gynandropsis pentaphylla* (L.) DC.

COMMELINACEAE: *Commelina attenuata* Koening; *Commelina bengalensis* L.; *Commelina erecta* L.; *Commelina longifolia* Lamk.; *Cyanotis axillaris* Roem. & Schult.

CONVOLVULACEAE: *Ipomoea carnea* Jacq.; *Ipomoea hederifolia* L.; *Ipomoea nil* (L.) Roth.; *Ipomoea pestigradis* L.; *Merremia emarginata* (Burn. *f.*) Hall; *Merremia tridentata* (L.) Hall.

CUCURBITACEAE: *Bryonopsis laciniosa* (L.) Naud.; *Ctenolepis garcini* Naud. *Cucumis trigonus* Roxb.; *Mukia scabrella* Arn.

CYPERACEAE: *Cyperus alopecuroides* Roth.; *Cyperus cephalotus* Vahl.; *Cyperus compactus* Retz.; *Cyperus difformis* L.; *Cyperus distans* L.; *Cyperus iria* L.; *Cyperus platystylis* R.Br.; *Cyperus triceps* (Rottb.) Endl.; *Fimbristylis dichotoma* (L.) Vahl.; *Fimbristylis ovata* Burn. *f.*

EUPHORBIACEAE: *Acalypha indica* L.; *Chrozophora rottleri* (Geiss.) Juss.; *Croton bonplandianum* Baill.; *Euphorbia hirta* L.; *Micrococca mercurialis* (L.) Benth.; *Phyllanthus amarus* Schum. & Thorn.; *Phyllanthus debilis* Klein.; *Phyllanthus maderaspatensis* L.; *Phyllanthus virgatus* Forst.; *Sebastiana chamaelea* (L.) Muell.

FABACEAE: *Alysicarpus monilifer* (L.) DC.; *Atylosia rugosa* W. & A.; *Atylosia scarabaeoides* (L.) Benth.; *Crotalaria linifolia* L.; *Crotalaria nana* Burn.; *Crotalaria prostrata* Rottl.; *Crotalaria verrucosa* L.; *Desmodium gangetium* (L.) DC.; *Desmodium triflorum* (L.) DC.; *Rhynchosia minima* (L.) DC. *Rhynchosia suaveolens* (L. *f.*) DC.; *Tephrosia hirta* Ham.; *Tephrosia procumbens* Buch-Ham.; *Tephrosia purpurea* L.; *Zornia diphylla* Pers.

LAMIACEAE: *Acrocephalus indicus* (Burn. *f.*) O. Ktze.; *Anisochilus carnosus* (L.) Wall.; *Anisomeles indica* (L.) O. Ktze.; *Hyptis suaveolens* (L.) Poir.; *Leucas aspera* (Willd.) Spr. *Ocimum americanum* L.; *Ocimum basilicum* L.

MALVACEAE: *Pavonia zeylanica* Con. *Sida acuta* Burn. *f.*; *Sida cordifolia* L.; *Sida rhombifolia* L.; *Sida veronicifolia* Lamk.; *Urena lobata* L.

PAPAVERACEAE: *Argemone mexicana* L.

PEDALIACEAE: *Martynia annua* L. *Pedalium murex* L.

POACEAE: *Apluda mutica* L.; *Aristida funiculata* Trin. & Rupr.; *Brachiaria distachya* L.; *Cynodon dactylon* (L.) Pers.; *Dactyloctenium aegyptium* (L.) Beauv. *Eragrostiella bifaria* (Vahl.) Bor.; *Eragrostis tenella* (L.) Beauv.; *Eragrostis unioloides* Nees; *Panicum repens* L.; *Perotis indica* (L.) O. Ktze.; *Themeda triandra* Forsk.; *Urochloa panicoides* Beauv.

PORTULACACEAE: *Portulaca oleracea* L.; *Portulaca quadrifida* L.

RUBIACEAE: *Borreria articularis* (L. *f.*) Williams.; *Borreria stricta* (L.) K. Schum.; *Galium asperifolium* Wall. *Knoxia sumatrensis* (Retz.) DC.; *Oldenlandia corymbosa* L.; *Oldenlandia herbacea* (L.) Roxb.; *Oldenlandia umbellata* L.

SAPINDACEAE: *Cardiospermum halicacabum* L.; *Dodonaea viscosa* (L.) Jacq.

SCROPHULARIACEAE: *Bacopa monnieri* (L.) Pennell; *Lindernia crustacea* (L.) F. Muller; *Scoparia dulcis* L.; *Stemodia viscosa* Roxb.; *Striga densiflora* Benth.

SOLANACEAE: *Physalis minima* L. *Solanum nigrum* L.; *Solanum surattense* Burn.; *Solanum trilobatum* L.

STERCULIACEAE: *Buettneria herbacea* Roxb.; *Helicteres isora* L.; *Melhania cannabina* Wight. *Waltheria americana* L.

TILIACEAE: *Corchorus aestuans* L. *Triumfetta pentandra* A. Rich.; *Triumfetta rhomboidea* Jacq.

VERBENACEAE: *Lantana camara* L.; *Lippia nodiflora* Mich.

ZYGOPHYLLACEAE: *Tribulus terrestris* L.

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A NEW SPECIES OF *CASTILLEJA* (SCROPHULARIACEAE) RELATED TO *C. ASPERA* FROM SOUTHEASTERN DURANGO, MEXICO

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ABSTRACT

Castilleja gonzalezii, *sp. nov.*, is described from southeastern Durango, México. It is most closely related to three other species from the Sierra Madre Occidental with evenly divided, acute-lobed calyces, *C. aspera*, *C. chlorosceptron*, and *C. durangensis*. The new species differs from all three of these particularly in its densely stipitate-glandular vestiture.

KEY WORDS: *Castilleja*, Scrophulariaceae, Durango, México

Among recently incoming material at TEX is a specimen of *Castilleja* from southeastern Durango, México, that apparently represents a remarkably distinct, undescribed species.

Castilleja gonzalezii Nesom, *sp. nov.* TYPE: MEXICO. Durango: Mpio. Mezquital, 33 km de la Guajolota por el camino a Platanitos; bosque abierto de pino-encino, 2220 m, 16 Mar 1985, *M. González et al. 1693* (HOLOTYPE: TEX!; Isotype: CIIDIR).

Castillejae durangensi Nesom similis sed differt vestimento dense stipitati-glanduloso, calycibus longioribus, et bracteis floralibus angustioribus.

Plants apparently perennial. Stems erect, 35 cm tall, broken off at the base but apparently several-stemmed from the base, probably taprooted, simple or with a single branch; stems, leaves, floral bracts, and calyces densely stipitate-glandular with hairs mostly 0.1-0.5 mm long, the glandular trichome apex orangish, eglandular hairs absent or rarely a few present along the leaf margins. Leaves erect-ascending, sometimes slightly recurved, linear-lanceolate, entire,

strongly 3-veined, the lowermost subclasping, non-clasping above, mostly 25-40 mm long, slightly shorter upwards, 2-4 mm wide (at midpoint), often folded at the middle. Mature inflorescence and infructescence ca. 8-10 cm long; floral bracts entire, 3-veined, 2.0-2.5 cm long, lanceolate, abruptly tapered from the base, 1.5-2.5 mm wide at midpoint, reddish or with a red apex, the apex slightly dilated. Calyces pink to red, 22-30 mm long, tubular (in fruit basally inflated and chartaceous, immediately constricted above the fruit), the primary lobes 10-14 mm long, nearly equal in length or the abaxial sinus slightly deeper, the secondary lobes 1-2 mm long, narrowly triangular. Corollas 24-37 mm long, the lower lip of 3, thick, green teeth ca. 1 mm long, the galea 12-17 mm long, sparsely glandular-pilose dorsally, 43-46% as long as the corolla, exserted 0-6 mm from the calyx; stigma bilobed, not or barely exserted.

Castilleja gonzalezii, known only from the type collection, is named for its collector, Martha González-Elizondo. She and her sister, Socorro González-Elizondo, have produced a detailed study of the vegetation of La Reserva de la Biosfera "La Michilia" in generally the same area of southeastern Durango where the new species was collected.

The new species is a member of *Castilleja* sect. *Euchroma* Benth. (sensu Eastwood 1909), which is characterized by an equally divided calyx and by the corolla tube and galea about equal in length. Within sect. *Euchroma*, *C. gonzalezii* is part of a small subgroup of four species with distinctly triangular, sharply acute, calyx lobes. All four of these species are restricted to the Sierra Madre Occidental of México: *C. aspera* Eastwood and *C. durangensis* Nesom (Nesom 1992a), and *C. chlorosceptron* Nesom (Nesom 1992b). *Castilleja gonzalezii* is most similar to *C. durangensis* and *C. chlorosceptron* in its linear, densely arranged leaves, but it differs from all three of its close relatives in its densely stipitate-glandular vestiture, the others being essentially eglandular. *Castilleja chlorosceptron* is diffusely rhizomatous and produces glabrous leaves and very small flowers (calyces 12-13 mm long, corollas 15-16 mm long); *C. durangensis* is taprooted and produces densely hispidulous leaves, small flowers (calyces 18-22 mm long, corollas 21-25 mm long), and floral bracts distinctly broadened at the apex.

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TWO NEW SPECIES OF *SISYRINCHIUM* SUBG. *ECHTHRONEMA* (IRIDACEAE) FROM NUEVO LEON, MEXICO

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ABSTRACT

Two new species of *Sisyrinchium* subg. *Echthronema* are described from Nuevo León, México. **Sisyrinchium hintoniorum** is a high elevation endemic most closely related to the more widespread *S. schaffneri*; **S. microbracteatum** apparently is restricted to gypsum outcrops and is most similar to *S. tenuifolium*.

KEY WORDS: *Sisyrinchium*, Iridaceae, México

Two remarkably distinct species of *Sisyrinchium* have been brought to attention in recent collections by the Hinton family from the state of Nuevo León in northeastern México. Flowers of both species are yellow and produce spreading, free staminal filaments, marking them as members of subg. *Echthronema* (Herbert) Goldblatt. Recent publications regarding the taxonomy of Mexican and Central American *Sisyrinchium* were summarized by Nesom & Hernández (1992) in the introduction to the description of a new species of subg. *Sisyrinchium* from Nuevo León.

Sisyrinchium hintoniorum Nesom, *sp. nov.* TYPE: MEXICO. Nuevo León, Mpio. Zaragoza, Cerro El Viejo, pine woods, 3125 m, 10 May 1992 [flowering], *Hinton et al. 22440* (HOLOTYPE: TEX!).

Sisyrinchio schaffneri S. Wats. similis sed differt floribus numerosioribus, corollis multo majoribus, bracteis spathae longioribus, et seminibus majoribus sine depressione distincta.

Perennials from a short (5-10 mm), densely fibrous-rooted rhizome or caudex, the roots slightly thickened but not distinctly swollen, herbage glabrous. Stems 4-5 per plant, erect, 28-45 cm tall, flattened and 2-winged, 1.5-2.0 mm

wide, unbranched, bearing a single spathe at the apex. Leaves linear, linear-lanceolate apically, 1.5-4.0 mm wide, 2.5-3.5 cm long. Spathes solitary, 6-8-flowered, compressed, narrowly lanceolate-elliptic in outline, 3-4 mm wide, the spathe bracts subequal to unequal in length, the outer 44-55 mm long and 35-50% longer than the inner, the inner 30-35 mm long, the outer with basally connate margins 4-9 mm above the base. Tepals yellow, broadly ovate-lanceolate, 18-20 mm long; filaments united ca. 1.5 mm, free ca. 4 mm; anthers 5 mm long; ovaries obpyriform, glabrous. Capsules obovate-oblong in outline, 7-9 mm long, 4-5 mm wide, apically truncate, 3-angled, the surface often distinctly shiny; pedicels strongly nodding in fruit, ca. 20 mm long. Seeds black, distinctly foveolate, 1.5-2.0 mm in diameter, spheroid to slightly angular, without a distinct depression or the depression very shallow and ca. 1/3 of seed width.

Additional collection examined: MEXICO. Nuevo León: Mpio. Aramberri, Cerro El Viejo, dense "ayarin" forest, 3225 m, 20 Nov 1993 [fruiting only], *Hinton et al. 23975* (TEX).

Within subg. *Echthronema*, the new species is similar and clearly closely related to three other species primarily centered in northern México: (1) *Sisyrinchium schaffneri* S. Wats., known from Arizona, Chihuahua, Coahuila, Nuevo León, Tamaulipas, San Luis Potosí (the type), Edo. México, Puebla, Michoacán, Jalisco, and Aguascalientes; (2) *S. cernuum* (Bickn.) Kearney, known from Arizona, Texas, Chihuahua, Coahuila, Nuevo León, Tamaulipas, Veracruz, Hidalgo, Querétaro, Puebla, Edo. México, Guanajuato, Aguascalientes, Jalisco, Sinaloa, and Durango; and (3) *S. longipes* (Bickn.) Kearney & Peebles, known from Arizona, Sonora, and Chihuahua. Each of these species produces unbranched stems with a single terminal spathe, spathe bracts of subequal to unequal length, and distinctly unthickened fibrous roots. These species can be distinguished by the contrasts in the following key.

1. Pedicels erect or ascending; tepals 8-12 mm long. ..... *S. longipes*

1. Pedicels distinctly arcuate-nodding; tepals 3-5, 10-13, or 18-20 mm long. ..... (2)

2. Tepals 3-5 mm long. ..... *S. cernuum*

2. Tepals 10-20 mm long. ..... (3)

3. Tepals 10-13 mm long; flowers 2-4(-6) per spathe, the longer spathe bract 22-30(-35) mm long, shorter bract 20-26 mm long; seeds 1.2-1.5 mm wide, depressed-spherical, with a deep and sharply defined depression ca. 2/3 the seed width. ..... *S. schaffneri*

3. Tepals 18-20 mm long; flowers 6-8 per spathe, the longer spathe bract 44-55 mm long, shorter bract 30-35 mm long; seeds 1.5-2.0 mm wide, rounded

to somewhat angular, without a distinct depression or the depression 1/3 the seed width and very shallow. ..... *S. hintoniorum*

Of these, only *Sisyrinchium hintoniorum* and *S. schaffneri* occur in Nuevo León. The latter occurs at 1550-2380 meters on Cerro Viejo, apparently not reaching the high elevation of that mountain where *S. hintoniorum* grows, but it seems clear that *S. hintoniorum* cannot be considered merely a large, ecological variant of *S. schaffneri*. *Sisyrinchium schaffneri* is found at and near the top of two other high peaks in the area, Peña Nevada and Cerro Potosí, each of which is near 3300 meters.

Sisyrinchium microbracteatum Nesom, *sp. nov.* TYPE: MEXICO. Nuevo León, Mpio. Aramberri, Aramberri to El Salitre, gypsum hillside, 1325 m, 26 Oct 1993, *Hinton et al. 29737* (HOLOTYPE: TEX!; Isotypes: CAS!,ENCB,GH!,MEXU!,NY!,US!).

Sisyrinchio tenuifolio Willd. similis sed differt caulibus elatioribus, bracteis spathae libris ad basim, bracteis pusillis ad nodos ac internodos superos, ovariis glabris, et capsulis minoribus laevibus.

Perennials without an evident caudex, with a fascicle of fleshy-thickened fibrous roots ca. 4-8 cm long, 2-4 mm wide, tapered slightly at the tips; herbage glabrous. Stems mostly 1-3 per plant, wiry-thin, terete, erect, 25-40 cm tall, (2-)3-5 branched in the upper half, each branch node with a folded bract (similar to outer spathe bract) 5-15 mm long, diminishing in size upward, a small peduncular bract commonly present 10-35 mm immediately below the spathe. Leaves linear, not folded basally, 1.0-2.5 mm wide, the basal 15-30 cm long, leaving a mass of persistent, fibrous bases mostly 2-4 cm long, cauline leaves shorter and 1-3 in number. Spathes solitary, 4-9-flowered, slightly compressed, elliptic to elliptic-lanceolate in outline, 2-4 mm wide, the spathe bracts equal, 10-14 mm long, or the outer 1/2-2/3 the length of the inner, the margins usually free to the very base but sometimes connate 0.3-0.6 mm, brownish-green, often purplish along the edges, the inner bract with distinctly hyaline margins. Tepals yellow, broadly obovate-oblanceolate, 9-12 mm long; filaments and style united into a column 1.0-1.5 mm long, the filaments spreading and free 2.0-2.5 mm, style branches 2.0-2.5 mm long, anthers ca. 2 mm long, strongly curved; ovaries spherical, glabrous. Capsules (mature) slightly oblong in outline, 3.5-5.5 mm long, 2.5-3.5 mm wide; pedicels erect, extending 0-4 mm above the spathe apex. Seeds black, very shallowly foveolate-reticulate, ca. 1 mm in diameter, spheroid, slightly depressed, with a deep, distinctly margined depression ca. 2/3 the width of the seed.

Additional collections examined: MEXICO. Nuevo León: Mpio. Galeana, near Río de San José, oak and pine woods, 1720 m, 2 Oct 1991, *Hinton et al. 21570* (TEX); Mpio. Zaragoza, near Zaragoza, gypsum hillside, 1365 m, 28 Jul 1993, *Hinton et al. 23104* (TEX); Mpio. Zaragoza, Cerro Viejo, gypsum hillside, 1350 m, 23 Sep 1993, *Hinton et al. 23515* (TEX); Mpio. Aramberri, Aramberri to El Salitre, gypsum hillside, 1325 m, 26 Oct 1993, *Hinton et al. 23736* (TEX).

Within *Sisyrinchium* subg. *Echthronema*, *S. microbracteatum* is similar and apparently most closely related to *S. tenuifolium* Willd., a widespread species in México. Both species produce branched, wingless, nearly terete stems, narrow leaves, a fascicle of fleshy-thickened fibrous roots, subequal spathe bracts, and at least some forms of *S. tenuifolium* have persistent, fibrous leaf bases. The new species differs from *S. tenuifolium* in its generally taller stems (vs. stems mostly 15-25 cm high), spathe bracts free to the base (vs. margins connate to 1.5-3.0 mm above the base), numerous small bracts at the branch nodes and on the peduncles (vs. lanceolate nodal bracts, without peduncular bracts), glabrous ovaries (vs. pubescent), and smaller, smooth-walled capsules (vs. mostly 6-9 mm long, with warty-roughened walls). *Sisyrinchium microbracteatum* is restricted to gypsum outcrops in central and south-central Nuevo León; *S. tenuifolium* apparently is much less common but has been collected in the same area.

Over almost all of its range, *Sisyrinchium tenuifolium* produces pubescent ovaries that mature into capsules with the surfaces conspicuously roughened by persistent, expanded trichome bases. Some plants of *S. tenuifolium* in Nuevo León and Coahuila are typical of the species in this respect, but in both states, other plants have glabrous ovaries and smooth fruits. In a population sampled from central Coahuila (*Wendt 1842* [ASU,TEX]), some plants have glabrous ovaries, others pubescent, but other differences among these plants are not apparent. Other accepted Mexican species very closely related to *S. tenuifolium*, however, are consistently separable from it with the emphasis of glabrous ovaries (e.g., *S. tolucense* Peyr., *S. palmeri* Greenm., *S. conzattii* Cald. & Rzed. - see Calderón 1988; McVaugh 1989), and when more specimens are at hand, the "*S. tenuifolium* complex" in northern México should be reexamined.

With the addition of the two new species described here, a total of six species of *Sisyrinchium* subg. *Echthronema* are presently known from the northeastern Mexican states of Coahuila, Nuevo León, and Tamaulipas:

Sisyrinchium microbracteatum and *S. hintoniorum* (Nuevo León),

Sisyrinchium arizonicum Rothr. (rare in Coahuila and Nuevo León),

Sisyrinchium convolutum Nocca (rare in Coahuila and Nuevo León),

Sisyrinchium tenuifolium Willd. (scattered in Coahuila and Nuevo León), and

Sisyrinchium schaffneri S. Wats. (common in Coahuila and Nuevo León, rare in Tamaulipas).

ACKNOWLEDGMENTS

I thank Billie Turner and Mark Mayfield for their review of the manuscript.

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Phytologia (June 1994) 76(6):473-479.

ADDITIONS TO THE NATIVE AND ADVENTIVE FLORA OF NEW MEXICO

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ABSTRACT

Sixteen new records of angiosperms are added to the New Mexico flora. Eight are native species and eight are adventive.

KEY WORDS: Flora, New Mexico

Botanical field surveys and herbarium searches by the authors have resulted in the following sixteen new records for the native and adventive flora of New Mexico. Several new angiosperm records for New Mexico have been recently published for the southern part of the state (Spellenberg *et al.* 1993). The report presented here is a more general accumulation of New Mexico records and has been produced to assist in preparing distribution maps for the remaining volumes of the *Flora of North America*. Nomenclature follows references cited.

AMARANTHACEAE

Amaranthus crassipes Schlecht. Chaves Co.: Bitter Lake National Wildlife Refuge (Salt Creek Wilderness), T8S, R25E, sect. 25, occasional in depressions in *Sporobolus airoides* grassland, elev. 1100 m, 30 October 1983, *Peterson 83-486* (UNM). Otero Co.: Upper Dog Canyon, T24S, R20E, section 25, sprawling on sand among matted *Bouteloua barbata*, elev. 1600 m, 23 October 1984, *Peterson 84-642* (UNM).

Comment: A native of tropical America that has become naturalized at eastern seaports. It was previously noted as far west as Trans-Pecos Texas (Correll & Johnston 1970).

APOCYNACEAE

Amsonia jonesii Woods. San Juan Co.: 12.2 road-kilometers east of Newcomb, west of confluence of Hunter's Wash and Chaco River on Pictured Cliff Sandstone, T24N, R16E, elev. 1670 m, 26 August 1961 (fruiting), *Cannon s.n.* (UNM); same location, 9 May 1962 (flowering), *Cannon s.n.* (UNM).

Comment: These collections represent a minor southern and eastern range extension from the adjacent states of Arizona, Colorado, and Utah.

ASTERACEAE

Matricaria matricarioides (Less.) Porter. Sandoval Co.: Jemez Mts., Capulin Canyon, Forest Road 501 on gravel roadway and adjacent road reclamation, T18N, R5E, sect. 22, elev. 2270 m, 5 June 1991, *Peterson 91-168* (UNM).

Comment: Martin & Hutchins (1981) included this species in *A Flora of New Mexico*, but with no certain records. This collection documents its residence in the state. It was observed again at the same location in 1993 and was spreading away from the gravel road. The reclamation of adjacent road disturbance occurred in 1989.

Onopordum acanthium L. San Miguel Co.: Pecos National Historical Park, 2-5 km south of Pecos on Hwy 63, T15N, R12E, sections 4, 5, 8, 9. and 16, in piñon-juniper woodland, common and well established on disturbed areas, elev. 2080 m, 30 July 1993, *Sivinski 2476* (UNM); same location, 3 July 1994, *Sivinski 2766* (NMC).

Comment: This European thistle is rapidly spreading throughout the western states. It is well established in disturbed areas on the highway, farms, and ranching operations near Pecos.

Scorzonera laciniata L. Bernalillo Co.: Albuquerque, University of New Mexico Campus, weed in flower bed near Geology Building, 13 May 1994,

Lowrey 1555 (UC). McKinley Co.: Red Rock State Park, 9 km E of Gallup, T15N, R17W, sect. 11, abundant in campground on deep sandy soil with *Bromus tectorum* and *Hordeum*, elev. 2020 m, 25 May 1994, *Sivinski & Lightfoot 2694* (NMC,UNM); Cañon de las Lagunitas, T16N, R5W, in *Bouteloua gracilis-Hilaria jamesii* rangeland, elev. 1950-2000 m, 11 June 1994, *Peterson 94-84* (UNM). San Miguel Co.: Las Vegas, weed in sidewalk, 29 May 1991, *Worthington 20939* (NMC); Pecos National Historical Park, disturbed area behind Trading Post stables at Fork Lightning Ranch, T15N, R12E, sect. 9 SW$\frac{1}{4}$, old landfill in piñon-juniper woodland, elev. 2070 m, 14 June 1993, *Sivinski & Simpson 2251* (UNM). Santa Fe Co.: near Edgewood, grassland just below level of juniper, May 1987, *Townsend s.n.* (NMC) [determined by Guy Nesom 1987]; Santa Fe, T17N, R10E, sect. 31, with *Bouteloua gracilis* and *Stipa comata* in *Pinus edulis* woodland, elev. 2150 m, 17 May 1993, *Peterson 93-139* (UNM).

Comment: This European species was first reported in North America along the eastern slope of Colorado in the 1950s (Great Plains Flora Assoc. 1986). It has since spread to Kansas and is now a common weed in north and west-central New Mexico. Leaf shape is quite variable and several of the New Mexican collections have narrower leaves than the description in the *Flora of the Great Plains* (Great Plains Flora Assoc. 1986). However, *Flora Europaea* (Tutin *et al.* 1976) describes this species as extremely variable in leaf shape.

BORAGINACEAE

Antiphytum floribundum (Torr.) A. Gray. Hidalgo Co.: Animas Mts., T32S, R19W, sect. 8 NW$\frac{1}{4}$, scattered and uncommon on a steep, S-facing slope of rocky rubble at the base of a rhyolitic cliff with *Quercus arizonica*, *Gymnosperma glutinosum*, and *Dasylirion wheeleri*, elev. 2050 m, 21 August 1993, *Sivinski & Irick 2526* (BRY,MO,NMC,UNM).

Comment: First New Mexico record for the genus and species. This species ranges from the Trans-Pecos region of Texas south through the Sierra Madre Occidentale to central México.

Heliotropium fruticosum L. Grant Co.: City of Rocks State Park, T20S, R11W, sect. 4 SE$\frac{1}{4}$, abundant in shallow pockets of soil on large outcrops of rhyolitic rock, desert grassland of *Bouteloua eriopoda* and *Yucca elata*, with *Quercus emoryi* and *Juniperus deppeana* growing against the rock faces, elev. 1600 m, 16 October 1993, *Sivinski 2616* (BRY,NMC,UNM).

Comment: This annual ranges south to northern South America and east to the West Indies. It is a highly variable species with forms that are short and basally branched with small corollas, or tall and terminally branched with large corollas. The New Mexico collection belongs to the autogamous variant with minute (0.5-1 mm), included corollas and several short, basal branches, which is similar to the form in adjacent, southern Arizona.

BRASSICACEAE

Alyssum desertorum Stapf. McKinley Co.: Red Rock State Park just east of Gallup, growing in campground with *Ranunculus testiculatus*, 5 May 1980, *McCallum 699* (UNM); same location on deep, sandy soil, elev. 2040 m, 25 May 1994, *Sivinski & Lightfoot 2695* (NMC,UNM).

Comment: This European species is persistent, but not yet common in New Mexico. The first specimen was identified as *Alyssum alyssoides* (L.) L. Nevertheless, its glabrous silicles and early deciduous sepals clearly place it within *A. desertorum*. This species was noted to be not abundant at the time of the second collection.

Cardaria chalepensis (L.) Handel-Mazzetti. Bernalillo Co.: Albuquerque, in valley along roadside, 6 May 1951, *Clark s.n.* (UNM). Sandoval Co.: roadside close to Bernalillo, elev. 1550 m, 8 May 1931, *Castetter 4569* (UNM) [annotated by Ronald McGregor 1984].

Comment: This European species has not been recollected in New Mexico for more than forty years. It did occur in central Rio Grande Valley for at least twenty years and may still persist in that location.

EUPHORBIACEAE

Euphorbia carunculata Waterfall. Chaves Co.: Mescalero Sands, North Dunes 56 km east of Roswell, T11S, R31E sect. 6, elev. 1250 m, 13 September 1987, *Peterson 87-97* (UNM); Mescalero Sands, North Dunes 56 km east of Roswell and 1.6 km south of US 380, T10S, R30E, sect. 35, elev. 1240 m, prostrate on sand dunes partly anchored by *Quercus havardii*, 29 September 1991, *Peterson 91-401* (UNM).

Comment: This annual ranges from Oklahoma south to Chihuahua. It is locally common on sand dunes in this region (Great Plains Flora Assoc. 1986).

LAMIACEAE

Salvia pratensis L. Sandoval Co.: Near entrance to Jemez Falls Campground on Hwy 4, 2 October 1980, *Threlkeld s.n.* (UNM). Los Alamos/ Sandoval Co.: State Rt. 502 at county line, roadside, several clumps, 10 June 1990, *Foxx s.n.* (UNM).

Comment: These are the first records in the southwestern United States for this European species. It is an established weed in the Pacific Northwest east of the Cascade crests (Hitchcock & Cronquist 1973). The Fenton Lake, New Mexico collection label documents approximately 50 rosettes persisting for the previous three years. It was found a decade later as a roadside weed

further to the west of the first location. It is, therefore, established in the Jemez Mountains where it appears to be spreading.

MORACEAE

Morus alba L. Bernalillo Co.: Albuquerque, Rio Grande valley at Central Ave. Bridge, common in riparian woodland with *Populus fremontii* and *Ulmus pumila*, elev. 1510 m, 25 May 1994, *Sivinski 2696* (NMC,UNM).

Comment: This Asian tree has been cultivated in the Rio Grande valley since at least 1906 (*Wooton s.n.* [NMC]). It is a well known feral tree, but this is apparently the first published record of its naturalization to New Mexico. The native cottonwood riparian forest of the Rio Grande valley through Albuquerque is frequently burned by wildfire. The fire replacement stand consists of *Elaeagnus angustifolia* L., *Ulmus pumila* L., *Morus alba*, and *Tamarix ramosissima* L. This stand of exotic trees is slowly replacing the native cottonwood bosque for several miles along the central portion of the Rio Grande.

POLEMONIACEAE

Gilia stellata Heller. Grant Co.: Gila National Forest, south-facing slopes above Middle Box of the Gila River, T18S, R18W, sect. 13, occasional in desert scrub dominated by *Mimosa biuncifera*, elev. 1360 m, 16 March 1983, *Peterson 83-9* (UNM).

Comments: This species was previously known from the Mohave and Colorado Deserts. The southwestern New Mexico collection represents a significant eastward range extension from central Arizona.

RUBIACEAE

Galium bifolium S. Watson. San Juan Co.: Lukachukai Mts. (Chuska Mts.), 1 June 1950, *Clark 15313* (UNM).

Comment: This species ranges from British Columbia to northwestern New Mexico and was included in the *Flora of New Mexico* (Martin & Hutchins 1981) as a single occurrence in Sandoval County. The *Flora* record, however, was based upon a misidentified specimen. The San Juan County collection correctly places this species in New Mexico.

Kelloggia galioides Torr. San Juan Co.: Lukachukai Mts., on old logging spur Navajo Forestry Road 7051I, 36°23′15″ 109°02′45″, ponderosa pine zone, white, sandy soil, elev. 2570 m, 22 June 1989, *Hevron 184* (UNM).

Comments: First New Mexico record for the genus and species, which ranges from Idaho to northwestern New Mexico. The Lukachukai Mts. straddle the NM/AZ border and are often called the Chuska Mts. The presence of

this species and *Galium bifolium* represent an element of a more northwestern flora in this mountain range.

VIOLACEAE

Viola nuttallii Pursh. Colfax Co.: Above Sugarite Canyon in what is now Sugarite Canyon State Park, west of Lake Maloya near Segerstrom Creek, T32N, R24E, with grasses and forbs near *Pinus ponderosa* and *Quercus gambelii*, elev. 2340 m, 11 June 1984, *Peterson 84-239* (UNM). San Juan Co.: Mesa east of Los Pinos arm of Navajo Lake, T32N R7W, sect. 17, on sandy clay soil with *Artemisia tridentata* and *Pinus edulis*, elev. 1950 m, 9 May 1991, *Sivinski 1653* (NMC,UNM).

Comment: Martin & Hutchins (1981) included this species in *A Flora of New Mexico*, but with no certain records. These collections document the species for the state.

ACKNOWLEDGMENTS

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Phytologia (June 1994) 76(6):480-481.

BOOKS RECEIVED

Saltmarsh Ecology Paul Adam. Cambridge Studies in Ecology. Cambridge University Press, 40 West 20th Street, New York, New York 10011-4211. 1993. xii. 461 pp. $37.95 ISBN 0-521-44823-9 (paper).

This paperback edition of a volume first published in 1990 provides a broadly comprehensive view of saltmarshes. Although much of the text is drawn from saltmarshes of the British Isles, considerable information is also drawn from Australia, with somewhat less coverage of saltmarshes in other parts of the world. As might be expected most of the contents deal with coastal salt marshes, but inland saltmarshes are discussed also. The introductory chapter examines general features of saltmarshes, including processes contributing to their formation, and defines what constitutes a saltmarsh for the purpose of this book. Subsequent chapters examine the biota, types and causes of variation, environmental factors affecting saltmarshes, human effects on saltmarshes, and other topics.

The Cruciferae of Continental North America, Systematics of the Mustard Family from the Arctic to Panama. Reed C. Rollins. Stanford University Press, Stanford, California 94305-2235. 1993. xviii. 976 pp. $125.00 ISBN 0-8047-2064-9 (cloth).

This massive compendium on the mustards of North America is an essential component of the library of any researcher planning a study of members of the family. The bulk of the content consists of keys to and descriptions of genera, species, and varieties. Black and white photographs and line drawings supplement the text. The only negative comment might be that the book includes several new combinations and taxonomic descriptions. These might best have been first published elsewhere, then included in the book.

The Masked Bobwhite Rides Again. John Alcock. The University of Arizona Press, 1230 N. Park Avenue, Suite 102, Tucson, Arizona 85719-4140. 1993. xii. 186 pp. $16.95 ISBN 0-8165-1405-4 (paper); $35.00 ISBN 0-8165-1387-2 (cloth).

This book is the third by the same author in which he provides ecological insight to the general public through a series of essays describing natural systems. In the case of the present volume, the main topic is the deserts of the southwestern United States, but Alcock uses everything from ants and Apaches, to coyotes and towhees to bring interesting features of the desert to the lives of readers who may never have seen a desert. The book is interesting and thought provoking not only for the general public, but for scientists as well.

The Message of Fossils. Pascal Tassy. McGraw-Hill, Inc., 11 West 19th Street, New York, New York 10011. 1993. 163 pp. $10.95 ISBN 0-07-062947-1 (paper).

Published through McGraw-Hill's *Horizons of Science Series*, this book examines the concept of evolution more than fossilization *per se*. The impacts of fossils on Darwin's theory, as well as modifications of his ideas and more modern ideas of evolutionary mechanisms are discussed.

Phytologia (June 1994) 76(6):482.

INDEX TO AUTHORS, VOLUME 76

Phytologia (June 1994) 76(6):483-509.

INDEX TO TAXA, VOLUME 76

New taxa described in this volume are indicated in bold face type.

Phytologia (June 1994) 76(6):510.

INDEX TO REVIEWERS, VOLUME 76

The editor express his most sincere appreciation to the following individuals. These are persons who have reviewed papers that were submitted for publication in volume 76 of Phytologia. Without the willingness and diligence of these reviewers, the task of the editor would be much more difficult, and the quality of the papers published would be lessened. To each of you, I offer my most sincere thanks. Michael J. Warnock, Editor.

Allred, K.
Barkworth, M.E.
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Rodríguez J., C.
Rundell, J.R.
Spellenberg, R.M.
Strother, J.
Turner, B.L.
VanDevender, R.
Wasshausen, D.C.
Watson, T.
Wieboldt, T.F.
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Zanoni, T.

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CORRECTIONS AND ADDITIONS

Volume 74, issue 3, page 178, line 4 of abstract, "Fab-anae" should read "Fabanae".

Volume 75, issue 2, inside front cover, contents, "SUTHERLAND, D.M." omitted as an author on the paper entitled "Chromosome numbers for *Dalea* species (Fabaceae) from southwestern New Mexico and southeastern Arizona.

Volume 76, issue 4, on pages 290-302, due to an editorial error made during spell checking the manuscript, the specific epithet *potosinus* was replaced with "partisans" throughout the manuscript.

Phytologia (June 1994) 76(6):512.

AVAILABILITY OF BACK ISSUES OF PHYTOLOGIA

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