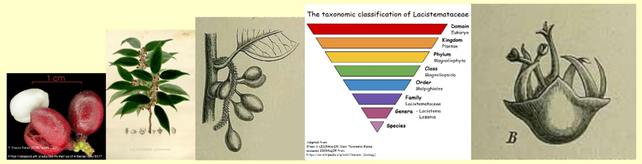


The plant monographer : our role in botany
- the one stop shop for Lacistemataceae -

www.lacistemataceae.org/whatsnew.html

Fi Young

What is a monographer...

writes a monograph - a treatise or a 'one stop shop' on a family of closely related plant species in this case Lacistemataceae - a small Neotropical family that consists of 2 genera : *Lacistema* (11 species) and *Lozania* (5 species).

Why do we write monographs?

So every species can be identified by their unique characteristics such as plant habit, leaf form, flower color, pollen shape, phytochemicals, genetic sequences and so on.

This information forms the basis for other databases such as :

- Wikipedia;
- Catalogue of Life;
- IUCN Red List of Threatened Species;

There is a shift away from printed and stored material...

tucked away in museums, herbaria and libraries to :

- Digital book and article libraries such as the Biodiversity Heritage Library;
- 2D & 3D imagery;
- Virtual herbaria;

Why are we moving from printed material to digital formats?

Botanists are working towards completing the five objectives of the CBD 2011-2020 Global Strategy for Plant Conservation

and these are :

Objective I: Plant diversity is well understood, documented and recognized;

Objective II: Plant diversity is urgently and effectively conserved;

Objective III: Plant diversity is used in a sustainable and equitable manner;

Objective IV: Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on Earth is promoted;

Objective V: The capacities and public engagement necessary to implement the Strategy have been developed;

So everyone has access to this information and can make informed choices on monitoring and evaluation of species for conservation.

Problems with a traditional printed monograph

As many plant collectors were from Europe most of their specimen collections are stored in European herbaria such as Royal Botanic Gardens, Kew and the Natural History Museum both in London and here at the University of Reading.

Writing a monograph takes time decades rather than years or months. As a static entity it is out of date as soon as a new species or name is located. The monographer needs to visit as many herbaria and museum libraries as possible. With 4,000+ herbaria and 1,000s of museum libraries it is impossible to visit all these places in a lifetime so a great deal of relevant information will be missed.

Writing the Lacistemataceae digital monograph

My quest began in 2007 with the previous monograph written in 1980 by Herman Sleumer it contained 10 *Lacistema* and 3 *Lozania* species.

Each species has a Latin name but for this name to valid it must be linked to plant type specimens (the holotype, isotypes and syntypes) held at various herbaria and its description published in an article or a book (the protologue).

Plant collectors worked in specific locations providing names to 'new species'that had already been discovered so many species have multiple Latin names. This family has 140+ species names and *Lacistema aggregatum* has the most - 28 invalid names associated with it!

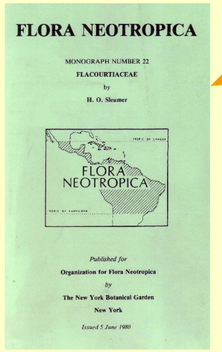
So my task is to check which names are validly published, find all the type specimens and all the protologues. But Sleumer visited just 51 herbaria to write his monograph, I have digital access to 180 (GBIF) 500 (SpeciesLink) which means I have located even more names, types, common names plus photographs and illustrations held by them.

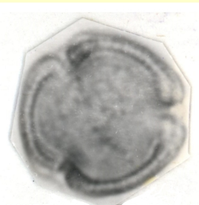
With this information I could now design and build an electronic dynamic version of the printed monograph.

I had to learn new skills :

- how to create a domain name (www.lacistemataceae.org);
- how to use a web hosting site;
- how to design logos, banners, buttons and more;
- code in HTML, CSS and Javascript;
- how to incorporate images from other websites into my pages;
- taking photomicrographs of plant parts;

Each species name has its own page with links to its protologue and its type specimens. For validly published names there maybe additional information including common names, photographs and other illustrations, links to molecular sequences, IUCN red list category, distribution range, human uses, seed dispersal vectors, wood anatomy and descriptions.





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Moving away from the traditional printed monograph

Lozania mutisiana J. A. Schultes, Add. Mant. **1:** 75. 1824; J. A. Schultes & J. H. Schultes, Add. Mant. **3:** 109. 1827; Mansfeld, Notizbl. Bot. Gart. Berlin **11:** 596. 1932; Baehni, Candollea **8:** 38. 1940; Publ. Field Mus. Bot. **13**(4): 53. 1941; Agostini, Phytologia **26:** 174. 1973; Pittieria **4:** 49. 1972; Act. Bot. Venez. **8:** 171, *f. 2*. 1973.

n. 57. a. LOZANIS.

L. Mutisiana *Matis Semunar Grenad.* in *Journ. d. Phys. t. 65, fa. 184.*

Arbor foliis alternis, oblongis, denticulatis, aestis. Floris spicati. Pedunculi axillares, bracteis parvis linearibus. *In Nov. Grenad. sylvis.* h. (Confer Mantissam I. p. 3. in adnotatione.)

Lozania nemoralis de Candolle, Prodr. **3:** 30. 1828. Based on the description of *Lozania* Mutis 1810.
Monandrodendron schultzei Mansfeld, Notizbl. Bot. Gart. Berlin **10:** 860, *f. 13*. 1929. Type. *Schultze 1462*, Colombia, Magdalena, Sierra de Santa Marta, Playoncito am Chinchicuá, fl (holotype, B, lost).
Monandrodendron peruvianum Mansfeld, Repert. Spec. Nov. **29:** 161. 1931. Type. *Killip & Smith 25968*, Peru, Junín, Pichis trail, San Nicolás, fl (holotype, US; isotypes, F, phot F 50689, IAN, NY, US).
Lozania bipinnata L. B. Smith, Phytologia **1:** 138, *f. 1*. 1935. Type. *Lawrance 524*, Colombia, Boyacá, El Umbo region, Mt. Chapon, fl (holotype, US; isotypes, A, BM, F, G, GH, MO, NY, S, U).
Lozania montana Standley, Publ. Field Mus. Bot. **18:** 722. 1937; Nevling, Ann. Missouri Bot. Gard. **47:** 86. 1960. Type. *Brenes 4365*, Costa Rica, Alajuela, La Palma de San Ramón, fl (holotype, F; isotype, NY).
Perrottetia racemosa Standley, Publ. Field Mus. Bot. **18:** 633. 1937. Type. *Standley & Valerio 49894*, Costa Rica, Heredia, Yerba Buena, NE of San Isidro de Heredia, fl (holotype, F; isotype, US).
Perrottetia costaricensis Lundell, Phytologia **1:** 451. 1940, new name for *P. racemosa* Standley, non Loesener 1937.

Shrub or generally tree, (2.0-)5.0-20.0 m high, trunk up to 30.0 cm diam; bark gray, smooth. Branchlets slender, tips sparsely appressedly pubescent, glabrescent, older parts striate and covered with brownish-reddish cork, lenticels linear-elongate. Leaves ovate- or oblong-elliptic or lanceolate, apex shortly subacutely acuminate, base cuneate to almost rounded, thin-coriaceous, glabrous above, initially sparsely to subdensely pubescent mainly on midrib, nerves and veins beneath, subentire to serrulate, 8.0-13.0(-15.0) cm long, 2.5-5.0(-8.0) cm broad, lateral nerves 7-9(-10) pairs arcuate-ascending, prominent beneath, veins more or less transverse, forming with the venlets a dense reticulation which is slightly raised on both faces; petiole pubescent, 8.0-12.0 mm long; stipules subulate, puberulous, 4.0 mm long, caducous. Racemes solitary or 2-3(-5)-fascicled from foliate axils, slender, laxly many-flowered, rather laxly short-pubescent, 2.5-6.0(-8.0) cm long; pedicels articulate at or close to base, glabrous, 1.5-3.0 mm long; basal bract small, similar to the 2 bracteoles. Flowers ♀, greenish. Sepals 4, broadly ovate, obtuse, glabrous, ca 1.5 mm long, 1.0 mm broad. Filament hardly 1.0 mm long. Ovary glabrous or pubescent; style-branches 0.1-0.2 mm long. Fruit ovoid-trigonous, greenish-yellow, 3.0-5.0 mm long; seeds ellipsoid, 2.2-2.5 mm long, 1.2-1.5 mm broad, sarcotesta orange.

Types. *Mutis 2186*, Colombia, locality unknown (holotype, MA; isotype, US, fragm IAN); *Mutis 1606* (syntype, K, MA, US); *Mutis 1607* (syntype, G, K, MA, US); *Mutis 1163* (syntype, MA, US).

Distribution. Costa Rica to Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia; in montane (cloud) forest, (200-)600-1100(-2400) m alt.

COSTA RICA. Alajuela: *Brenes 5499* (A, F, GH, NY); *6821* (F, NY); *9542* (NY); *20634* (F, NY). Heredia: *Lent 1701* (BM, F); *Lutzen 595* (MICH, NY); *Skutch 3654* (A, GH, K, MO, NY, S, US); *3781* (A, GH, K, MO, NY, S, US); *Standley & Valerio 49852* (F, US). Cartago: *Stork 4680* (GH, MICH, NY); *valerio 1677* (F); *Wilbur & Stone 10478* (F, MICH, MO, NY). Limón: *Maas 1131* (L, U). PANAMA. Chiriquí: *Allen 4842* (G, MO, NY, US); *Kirkbride & Duke 955* (MO, NY); *Pittier 3205* (F, US). No locality known: *Hayes 925* (NY). COLOMBIA. Magdalena: *Romero-Castañeda 8012* (COL, NY); *H. H. Smith 1428* (L); *1441* (F, G, GH, K, L, NY, U). Norte de Santander: *Fosberg 19128* (IAN, NY, US). Antioquia: *Archer 1234* (IAN, NY, US); *1580* (IAN, US); *Barkley et al 124* (F, US); *Bro. Daniel 483* (IAN, US); *3830* (IAN, US); *Bro. Raphael 2961* (IAN, US); *Espinal 1235* (COL); *Gutiérrez et al 123* (IAN, K, US); *Hodge 6785* (GH, P, US); *Johnson & Barkley 18 C 760* (COL, GH, LIL, US). Caldas: *St. John 20836* (US). Cundinamarca: *Schneider 1059* (S). Boyacá: *Lawrance 407* (A, F, G, GH, K, LL, MO, NY, P, S, U, US). Valle: *Killip 5907* (NY, US); *Lehmann 6091* (F, K, US). Tolima: *von Sneidern 3100* (COL, S); *3101* bis (A); *3103* (COL); *3103* bis (S). Huila: *Little 8784* (US); *8797* (US); *8798* (NY). Cauca: *Fosberg 20465* (S). Com. Putumayo: *Cuatrecasas 11659* (COL, F, IAN, US); *Schultes & Villarreal 7693* (COL, GH, IAN, K, LIL, US). No locality known: *Triana "915"* (K). VENEZUELA. Lara: *Steyermark & Espinoza 111122* (VEN). Mérida: *Bernardi 1870* (VEN); *2229* (K, NY, VEN); *6266* (MER); *Steyermark & Rabe 97134* (US, VEN). ECUADOR. *Steyermark 53942* (NY). Imbabura: *Acosta Solis 12175* (F); *12600* (F). Tungurahua: *Dodson & Thien 1989* (MO). Azuay: *Steyermark 52911* (NY). Napo/Pastaza: *Asplund 18315* (S); *18796* (S); *Harling 3123* (S); *3804* (S); *Lugo 58* (S); *Prescott 883* (NY). PERU. Amazonas: *Kayap 414* (MO). Loreto: *Klug 3204* (A, F, G, GH, IAN, K, MO, NY, S, US). Cuzco: *Marín 2459* (LIL); *Vargas 9713* (US). BOLIVIA. La Paz: *Pearce anno 1866* (BM).