

**FLORA MESOAMERICANA**  
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**GUIDE FOR AUTHORS**

## **1. Introduction**

The purpose of the Flora is to provide a comprehensive, electronic and a synoptic printed account of the vascular plants of Mesoamerica. *Flora Mesoamericana* summarizes existing information and incorporates much new research. The Flora comprises the most comprehensive database for the floristics and taxonomy of the area. This taxonomic framework provides fundamental data for conservation and land use programs, as well as for more detailed taxonomic studies in the area. We foresee that the production of local and special purpose Floras, covering such topics as economic or medicinal uses, will be a major spin-off from the *Flora Mesoamericana*. It is especially with this in view that publication is in Spanish. Examples of conventions used in the Flora will be given here with reference to the page number of Volume 6 or Volume 1 where they occur.

Because the volume approach for the printed version necessarily involves delays in the publication of completed treatments, we now publish any completed, fully edited treatment on the web version of *Flora Mesoamericana* at <http://www.tropicos.org/Project/FM>

## **2. Groups to be covered**

The Flora covers vascular plants including ferns and fern allies. In addition to native species, naturalized aliens, crop weeds and ruderals are included. Conspicuous cultivated plants, including crops planted on field scale, street trees and extensively planted decorative species are included. Hybrids are treated more (see *Crocasmia*, p. 80, vol. 6) or less (see *Lilium*, p. 32 or *Gladiolus*, p. 80, vol. 6) fully depending on their frequency of occurrence.

## **3. Areas covered**

The Flora covers the following 12 politically defined regions

1. Tabasco State, México
2. Chiapas State, México
3. Yucatán State, México
4. Campeche State, México
5. Quintana Roo State, México
6. Belize
7. Guatemala
8. Honduras (including Swan Islands)
9. El Salvador
10. Nicaragua
11. Costa Rica (including Isla del Coco)

## 12. Panama

The northern boundary in México is close to but not coincident with a reasonably well-defined phytogeographical boundary, any additional taxa occurring in the states of Oaxaca and Veracruz up to a line drawn from the Gulf of Tehuantepec along the Río Tehuantepec, to the Sierra Mixe at the 300 m contour, along this level through the isthmus westwards along the Sierra Mixe and the Sierra de Juárez to the Río Papaloapan and down this river to the Gulf of México, should be included at the discretion of the author if they comprise part of the Mesoamerican element. Similarly, taxa so far known only from the southern or northern borders but expected in Mesoamerica with more thorough collection may be included. Comments on taxa occurring in these areas can be accommodated in the discussion paragraph after the main descriptions.

### 4. Language

Manuscripts should be submitted in whatever language the author can write most effectively. The Flora is published in Spanish. The editors have expert translation facilities available for English/Spanish, and will greatly prefer a manuscript in well-written English to a less well-written one in Spanish.

### 5. Authorship

The authorship of all accounts will be clearly indicated in the text. The editors will retain final responsibility for all the contents, and the editor for each family will also be indicated if necessary. (see Vol. 6 for examples)

Pattern:

Family description and generic key by (name filled in with abbreviations).

Family description by (name): for monotypic families.

Organized by A.R. Vickery, family description and generic key by A.R. Vickery: for families in which the generic treatments were organized and compiled by one (or several) person.

For each genus, regardless of whether one person wrote all genera in the family, the author should always be indicated as follows: By Initial Last Name (s, initial of mother's last name or spelled out in full). e.g. By E. Martínez S. / By D.A. Sutton & R. Lira S. / By D.A. Sutton & R. Khan.

### 6. Order of taxa

The Flora's first volumes were arranged using the Melchior/Engler system, however APG III was adopted from volume 4(2) and APG IV since 2016 [onwards], although in many instances this has been modified at the discretion of the editors. Genera and species may be arranged alphabetically (preferred) or taxonomically see treatments of Bromeliaceae versus Poaceae in Vol. 6).

### 7. General style

Volume 6 and Volume 1 illustrate most of the stylistic features that have been adopted. However, please note the following major changes since the publication of the first two volumes.

- References to illustrations of species (see section 17).
- If a type is from México, please cite the state as well as the country (see section 15, Types).
- Voucher specimens should be cited for each of the Yucatán peninsula states instead of only one specimens for an inclusive Yucatán (see section 24).
- In the general distribution for the Americas cite individual countries rather than broadly covering a region: e.g. (Colombia, Ecuador, Perú, Bolivia) instead of (Panamá to Bolivia), or (Colombia, Venezuela, Ecuador) instead of (NW South America) (see section 26).

Sections 12-25 explain the style and content of the various items in the order in which they appear in the Flora text. Where applicable, examples from Volume 6 or 1 are cited using the page number.

## 8. Numbering

Families, genera, species, subspecies, etc. are numbered in sequence.

## 9. Keys

Keys should be included for all groups of taxa. They should be dichotomous, indented and artificial as a rule, although multi-entry keys may be used in special cases. As the aim of the Flora is to be practical, in a few cases it may be useful to subdivide keys. The two halves of a dichotomy should always be clearly contrasted, and when more than one character is used, the more important one should come first but measurements of dimensions should always directly follow the noun that they modify, as in the descriptions (Leaves 4-5 cm, lanceolate). The shorter half of the dichotomous key should come first. In keys and descriptions the terms plants, annuals, perennials, epiphytes, terrestrials etc. should always be in the plural. Since geographical information is explicitly cited for each species, contrasting geographical distributions in the keys is discouraged. Exceptions to this are most useful in the case of well-known, narrow endemics. In keys where ranges are given the entire range should be given in both halves of the couplet.

When keys are excessively long, keys to keys may be used. These should be indicated as follows: Key 1. (e.g. *Dioscorea*, p. 54, Vol. 6, *Tillandsia*, p. 100, Vol. 6). Short diagnostic subheadings may be used as headings to subkeys.

Double space between each numbered entry in the key

In keys use one space instead of two after lead numbers and species numbers:

- |                          |                              |
|--------------------------|------------------------------|
| 1. Achenes to 20.        | <b>1. <i>E. tenellus</i></b> |
| 1. Achenes more than 20. | <b>2. <i>E. berteroi</i></b> |

When species are keyed out in generic keys the following format applies:

3. Etc. etc. **5. Cyperus (30. C. *inactivus*)**

If elevation is used as a part of a key lead, it should terminate the lead, and should be abbreviated as follows:

1. Leaves 4-5 cm; buds globose; alt. 100-200 m.

**10. Citation of literature**

Published literature on families or genera (or exceptionally even species) should be cited after the description; it should be literature that is helpful for identification, which provides significant additional information, and/or which was extensively used in writing the account. It should not, except in exceptional cases, be treatments in other Floras. *Flora Neotropica*, however, should always be cited as literature under the family concerned, if the family has been treated. Literature citations should be abbreviated following BPH/S and TL2 (see section 16). Authors are requested to provide a complete list of literature cited.

Authors, when possible, should supply a complete list of references.

Fl. Neotrop. = Flora Neotropica

Pflanzenr. = Das Pflanzenreich

Fl. Novo-Galiciana = Flora Novo-Galiciana

Publication titles should be *italics*, except for the names of genera and lower ranks (see example 6 below).

Multiple citations are arranged alphabetically by author and are separated by periods (full stops).

Multiple entries by the same author are arranged chronologically by date of publication and are separated by semicolons.

Volume numbers are normally in Arabic numerals, never in Roman numerals. Only in certain bibliographically complex publications are Roman numerals used, notably Das Pflanzenreich (see example 3 below).

For multiple authors cite all the names.

Common examples:

1. Single authors: Conert, H.J. *Die Syst. Anat. Arundinae* 79-122 (1962). Davidse, G. *Ann. Missouri Bot. Gard.* 65: 1133-1254 (1978); 66: 359-360 (1979); *Brittonia* 36: 402-405 (1985).
2. Multiple authors: Smith, L.B. & Ayensu, E.S. *Smithsonian Contr. Bot.* 30: 1-172 (1976).
3. *In format*: Buchenau, F. in Engler, A. *Pflanzenr.* IV. 25(Heft 36): 98-284 (1906).

4. Books without volume: Ravenna, P. in Prance, G.T. & Elias, T.S. *Extinction Is Forever*. 257-259 (1976).

5. Flora Neotropica citations: Smith, L.B. & Downs, R.J. *Fl. Neotrop.* 14: 1493-2142 (1979).

6. Theses: Verhoek-Williams, S.E. *A Study of the Tribe Poliantheae (Including Manfreda and Revisions of Manfreda and Prochnyanthes (Agavaceae))*. Unpublished Ph.D. thesis, Cornell University, Ithaca: 1-415 (1975).

Titles are to remain in the original language.

7. In press or preparation format: Gómez P., L.D. Triuridaceae. *Fieldiana, Bot.* (in press).

8. Same year citation:

Citation in text: Robinson (2006a, 2006b).

Citation in short bibliography: Robinson, H. et al. *Fl. Ecuador* 77(1): 1-230 (2006a); 77(2): 1-233 (2006b).

Citation in full bibliography (end of volume):

Robinson, H. et al. 2006a. 190(6). Compositae-Heliantheae Part I: Introduction, genera A--L. *Fl. Ecuador* 77(1): 1-230.

Robinson, H. et al. 2006b. 190(6). Compositae-Heliantheae Part II. genera M--Z. *Fl. Ecuador* 77(2): 1-233.

9. Publication date problems:

**Dicksonia dissecta** Sw., *J. Bot. (Schrader)* 1800(2): 91 (1801 [1802]).

## 11. Terminology

The terminology to be used must be kept as simple as accuracy permits. A Spanish glossary by Sousa et al. is available in Volume 1 and on the Web (<http://www.mobot.org/MOBOT/TROPICOS/Meso/Glossary/termfr.html>).

The *Glosario Inglés-Español, Español-Inglés* by Chiang, Sousa S. & Sousa P. is available free of charge to all authors (contact Davidse or Sousa) and on the Web (<http://www.mobot.org/MOBOT/TROPICOS/Meso/Glossary/glossfr.html>), and no term should be used in a sense that contradicts the meaning given in these two publications. In certain cases it will be helpful to explain unfamiliar terms in special notes under the taxa concerned (e.g., Volume 1, p. 366, Grammitidaceae).

## 12. Families

The name of the family, without author, and a concise description should be given, followed by a statement about the number of genera and the general distribution.

Categories between families and genera are centered, numbered, and may have a description (see Volume 6 for examples: e.g. p. 193:

1. **Poaceae**  
I. **Poaceae** subfam. **Bambusoideae**  
A. **Bambusoideae** tribus **Bambuseae**  
a. **Bambuseae** subtribus **Bambusineae**

\*

1. **Agave**  
I. **Agave** subg. **Agave**  
A. **Agave** sect. **Agave**  
a. **Agave** subsect. **Agave**

### 13. Genera

The name of the genus should be followed by the author and description. A brief statement concerning the number of species (can be approximated) and the general distribution of the genus should be given. Synonyms (followed by the author) should be cited using the same guidelines as for species, but should also include generally familiar names which are no longer acceptable. The abbreviation nom. cons. should be used for conserved names (see below in section 14, Species). Subgenera and sections are treated as in *Agave* (Agavaceae) in Volume 6, p. 40: I. Subgen. **Littaea** (Tagliabue) Baker

### 14. Species

The name of the species will be followed by the author and place of publication (abbreviated as in section 16). Although the generic name has been abbreviated in Volumes 1 and 6, it will be fully written out in future volumes (e.g. [a hypothetical case!] instead of -- 12. **S. lanceolatum** Ruiz & Pav., in Vol. 6, for future volumes, format should be -- 12. **Solanum lanceolatum** Ruiz & Pav.). If the accepted name is a combination, the basionym should follow, also with author and place of publication, as a sentence on the same line. This is immediately followed by the type citation for the accepted name.

If the accepted name is a nom. nov.: Cite the replaced name on the same line, with place of publication and year, followed by the author and year of the blocking name. Ex.:

- **Pinus maximinoi** H.E. Moore, *Baileya* 14: 8 (1966). *Pinus tenuifolia* Benth., *Pl. Hartw.*: 92. (1842) non Salisb. (1796). Holotipo: Guatemala, *Hartweg* 620 (K!). Ilustr.: Farjon & Styles, *Fl. Neotrop. Monogr.* 75: 145, t. 35 (1997).

Conventions used in Flora Mesoamericana for the citation of scientific names:

edition: *Aralia arborea* L., *Syst. Nat. ed.* 10 967 (1759).

edition: *Blepharodon mucronatum* (Schltdl.) Decne. in A. DC., *Prodr.* 8: 603 (1844).

sensu: *Fuchsia parviflora* sensu Hemsl. non Lindl.

pro parte: *Abarema grandiflora* Cham. & Schltdl., *Linnaea* 2: 152 (1827), pro parte.pro parte in synonymy:

*Briza minor* L. pro parte.

auct., non: *Jasminum azoricum* auct. non L.

homonyms: *Bucida angustifolia* DC. non A. Rich.

nom. cons.: Use after a conserved name.

hybrids: *Crocasmia* × *crocosmiiflora* (Lemoine ex Morren) N.E. Br., *Trans. Roy. Soc. S. Africa* 20: 264 (1932) (= *C. pottsii* Chater × *C. aurea* Sousa). Do not use a space after the multiplication sign in named hybrids.

books: *Solanum bogotense* Kunth in Humb., Bonpl. & Kunth, *Nov. Gen. Sp.* 1: 42 (1815).

Orthographic variants correctable under ICBN should be indicated. In the printed version they are simply corrected without indicating the original spelling; in the electronic version all important variants will be indicated.

## 15. Types

Please refer to the Introduction to Volume 6 and Volume 1 for a discussion of the special usage of types employed in Flora Mesoamericana (Notas Acerca del Formato: Vol. 6, p. XVI; Vol. 1, p. XX).

Types should be indicated whenever possible, even if not seen by the contributor, in the form:

- Holotype: Country, *Collector (last name) number* (Acronym).

The type should be cited concisely; if possible simply by country (if within Mexico cite the state as well, if known, otherwise the citation is: México, state unknown), collector, number and herbarium acronym, preceded by an indication of what sort of type it is, e.g., holotype, lectotype, isotype, syntype...

If the type has been seen, the herbarium acronym is followed by an exclamation mark, for example:

- Isotype: Guatemala, *Jones 913* (US!).

If the type was collected by two collectors their names are separated by (and) &, if collected by three or more use the last name of the first collector followed by et al.:

- Holotype: Costa Rica, *Knapp & Mallet 862* (CR!).
- Holotype: Panamá, *Knapp et al. 4663* (MO!).

If only a photograph, a microfiche, or a digital image has been seen, this should be indicated in the form:

- Holotype: México, Jalisco, *Jones 962* (K, photo F!).
- Isotype: México, Jalisco, *Jones 962* (B, microfiche F!).

- Isotipo: México, Jalisco, *Jones 962* (US-[nr] 123456, imagen en Internet). (The institutional number should be included if known).
  - Holotype: México, Jalisco, *Jones 962* (P, photo *Amer. Fern J.* 48: t. 13, 14 [1958]). Indicating that the photo (or microfiche) seen is deposited at F and is a photo (or microfiche) of the sheet at K (or B), or is published in the cited work based on the type P.

In the citation of types, a reference to the selector of a lectotype or neotype should be given in the form:

- Lectotype (designated here): Costa Rica, *Jones 2137* (MO-[cb] 123456!).
- If isolectotypes are known, cite as: Lectotype (designated here): Costa Rica, *Jones 2137* (MO-[bc] 123456!; isolectotypes: A-[nr] 4578910, US-[cb] 11121314!).
- Lectotype (designated by Smith, 1966): Costa Rica, *Jones 2137* (MO!).
  - If known, specify the accession number [nr] or barcode [cb] as follows: MO-[nr] 123456! o MO-[cb] 123456!

The full citation of the literature reference must be supplied to the editors who will incorporate it into the bibliography.

When a particular sheet is identified, add the accession number of the type sheet in the following format:

- Holotype: United States, *Clayton s.n.*, Herb. Linn. 65.8 (LINN).
- Holotype: Nepal, *Buchanan-Hamilton s.n.*, Herb. Smith 902.71 (LINN!).

Type fragments are now considered (St. Louis Code onwards) isotypes and should be cited as follows:

- Isotype: United States, *Michaux s.n.* (fragm. NY!)

If the origin of the type fragment is known, this may be indicated as follows; however, this information will be used only in the electronic version of the flora.

- Isotype: United States, *Michaux s.n.* (fragm. NY! ex P)

When the type is a plate from a journal article, author name and page numbers are usually omitted:

- Type: *Ann. Mus. Imp. Fis Firenze* 2(2): t. 6 (1810).

When the type is a plate from a book, author name (abbreviated according to Brummit and Powell, *Authors of Plant Names*, RBG, Kew, 1992) is included but page numbers are omitted. Use t. as the abbreviation for plate or table, and f. for subdivisions of plates.

- Type: Aubl., *Hist. Pl. Guiane* t. 11 (1775).
- Lectotype (designated by Thomas, 1984): Sloane, *Voy. Jamaica* 1: t. 78, f. 1 (1707).

If the type is only known from a literature citation:



- Type: "A cultivated plant, raised from material sent from México by Ghiesbreght; not seen, perhaps in Brussels." (Morton 1962: 305). Note use of quotation marks for citations in the original language of publication and literature citation.

If a segregated herbarium does not have an official acronym, use the main herbarium acronym plus an abbreviation of the name of the segregate:

- Type: Mexico, *Anon.* (C-folio herb.!).

If a segregated herbarium has an official acronym (cited in *Index Herbariorum*) use the acronym:

- Holotype: Guayanas, *Richard s.n.* (P-LA).
- Holotype: Colombia, *Humboldt & Bonpland s.n.* (P-Bonpl.!).

For types from cultivated specimens:

- Type: Cultivated in Europe (BM!).
- Type: Cultivated Hort. Kew no. 337-71-03053 (K!).
- Type: Cultivated in New York Bot. Gard., *Alexander s.n.* (NY!).
- Type: Cultivated in Berlin from Venezuela (B!).

When the collector's name is not known, use the abbreviation *Anon.*:

- Type: México, *Anon. s.n.* (fragm. US! ex F).

If a type is looked for but not found at the designated institution:

- Holotype: México, *Ghiesbreght s.n.* (B, not found).

If the location of the type specimen is unknown:

- Type: Venezuela, *Moritz 72* (unknown).

If the type is not known:

- Type: Not known.

If the type was destroyed, but not yet lectotypified (e.g., frequently applicable to B):

- Type: Venezuela, *Fendler 255* (B, destroyed).

If the type is from a historic collection (because of Article 8.3 of ICBN it should generally be either a syntype or should be lectotypified, **not** cited as type, see below):

- Type: *Herb. Clifford 61, Solanum 13* (BM!). **NOT ACCEPTABLE!**
- Syntype: *Herb. Hermann 36*, v.1, fol. 3 (BM-SL!). (*Cyperus rotundus*, p. 430, Vol. 6).

- Lectotype (designated by Loos & Jarvis, 1992): *Herb. Burser I: 113* (UPS). (*Lolium temulentum*, p. 228, Vol. 6).

In general for historical collections we have been using syntype in a very broad sense, including plates upon which names were based (contrary to usage specified in ICBN, where syntypes are limited to specimens) in order to avoid lectotypification problems posed by the strict application of Article 7.10 of the Melbourne Code (see pp. 428-429, Vol. 6, *Cyperus*).

- Syntype: Sloane, *Voy. Jamaica* 1: t. 76, f. 1 (1707). (*Cyperus compressus*, p. 429, Vol. 6).

## 16. Synonyms

Synonyms, comprising all names based on Mesoamerican types, all accepted names in any cited literature (see section 10) and in the Floras listed in section 36, as well as any nomenclaturally essential synonyms, should then be cited without places of publication or types, in a separate paragraph. Names accepted in other current taxonomic literature (especially South America) may sometimes be usefully cited at the author's discretion, especially when names used in the Flora are based on new taxonomic judgements not previously published.

Generic names of synonyms should be written out in full, then abbreviated until another generic name intervenes (see *Torulinum odoratum*, p. 442, Vol. 6) and below:

2. ***Sciaphila picta*** Miers, *Trans. Linn. Soc. London* 21: 48 (1852). Holotype: Colombia, *Purdie s.n.* (K!).

*Sciaphila paradoxa* L.D. Gómez.

Trinomials should include the binomial author only the first time cited.

Ex. ***Hydrolea elatior*** Schott, *Syst. Veg.* 4(2): 404 (1827).

*Hydrolea albiflora* (Chodat & Hassl.) Brand, *H. albiflora* var. *depressa* Brand, *H. cryptantha* Brand. var. *meridionalis* Hassl., *H. elatior* Schott var. *hirsutior* A.W. Benn. ex Brand.

## 17. Illustrations

Because of financial constraints, illustrations are not used in the synoptic, printed version of *Flora Mesoamericana*. However, since the majority of species have been illustrated in other printed publications, authors are requested to supply a reference to an accurate illustration, especially one that occurs in a readily available publication. The illustration citation should come directly after the type citation, in the following format:

Illustr.: Téllez, *Novon* 3: 343, t. 2 (1993).

If no illustration can be found please indicate this as follows: Illustr.: not found. Authors are requested to supply the complete bibliographic citation which will be included in the Bibliography by the Editors.

Although the printed volumes are not illustrated, many types of illustrations are now being used on the Web version of Flora Mesoamericana – including line drawings and photographs. The editors would appreciate any information that authors might have as to the availability of images of specific groups, and if an author has slides or photographs they would like to have included in the Web version of their Flora account. These photographs will of course be copyright of the author (or photographer) and will be for non-commercial use only.

## 18. Common names

Following the illustration citation, in the case of cultivated species, and, at the author's discretion, of well-known or distinctive native species, well established common names widely used in Mesoamerica may be given. If the names are local in use, the letters used in the geographical distributions may be used to indicate this. Common names for whole genera can often usefully be given after the generic name. Common names are arranged in alphabetical order and geographic sequence after the illustration citation. Format is as follows:

Generic names: **Lasiacis** (Griseb.) A. Hitchc. N.v.: Carrizo, carricillo.

Species names: **Ipomoea alba** L., *Sp. Pl.* 161 (1753). Lectotipo (designado por Verdcourt, 1963): India. Rheede, *Hort. Ind. Malabar.* 11: 103, t. 50 (1692). Illustr.: Austin, *Fl. Venez. Guayana* 4: 400, t. 305 (1998a). N.v.: Moonflower, moon vine; haapolin, luna blanca, zutub, G; panal de niño, H; camotillo; flor de luna, galán de noche, garza, ES.

## 19. Abbreviated citations

Authors of plant names should be abbreviated according to R.K. Brummitt and C.E. Powell, *Authors of Plant Names* (APN), Royal Botanic Gardens, Kew (1992); books according to F.A. Stafleu and R.S. Cowan, *Taxonomic Literature* (TL2), but capitalizing all major words in the title (using their principles for books not dealt with by them); periodicals according to G.D.R. Bridson and E.R. Smith (1991) *Botanico-Periodicum-Huntianum/Supplementum* (BPH/2). The terms loc cit. and op cit. should not be used.

## 20. Descriptions

(i) General. Descriptions should be of the taxon as it occurs in the area of the Flora, although in the case of families and genera an indication should be given whenever this is misleading as a description of the family or genus on a world scale. If Mesoamerican material is misleading in this manner, use the format "character (Mesoamerica)" (see *Eragrostis*, p. 263, Vol. 6 and *Puya*, p. 90, Vol. 6). Descriptions should be concise and diagnostic, but descriptive enough both to confirm identifications made with the keys and to provide basic information for a database for the flora. Descriptions of related taxa should be as directly parallel as possible, and diagnostic characters used in the keys should in general be repeated in the descriptions. In keys and descriptions the terms plants, annuals, perennials, epiphytes, terrestrial, etc. ( as well as stems, roots, leaves) should always be in the plural.

(ii) Length. Descriptions of genera and species should be complete and parallel and should not be limited to any particular length. Authors should aim for the minimum length that still allows the objectives above to be fully met. Characters in common to all species in a genus should not be repeated in the species descriptions.

(iii) Order. The conventional order of characters from base to apex should be followed. For the plant the order in general is from habit through roots, rhizomes or other underground organs, stems, leaves, inflorescences, bracts, flowers, fruits, seeds, seedlings. In the case of leaves the order should be dimensions, arrangement, sessile or stalked, shape, texture, color, venation, indumentum (upper surface then lower), base characters, margin characters, apex characters; stipules, dimensions, shape, etc., petiole; dimensions, shape etc. For flowers the order in general is: general characters, calyx characters, corolla characters, androecium characters, gynoecium characters.

(iv) Sentences. The description of each major character should form a separate sentence, subsidiary characters being separated by semicolons; for further divisions each major noun is preceded by an article (usually "the").

(v) Abbreviations. These should not be used except in a few conventional, non-botanical cases (see section 37). See *Notas Acerca del Formato*, p. XX, Vol. 1 for a complete list.

(vi) Measurements and numbers. These should **always** follow immediately after the noun they qualify. The only exception to this is for multiple organs, e.g. Bracts 5-7, 6.5-3 x 1-1.5 cm. A single measurement or range of measurements indicates length or height, e.g., sepals 6-10 mm; sepals 6-10 x 3-4 mm indicates length times width. Length times width dimensions should always be converted to this format. Exceptional limits of measurement should be indicated in the form: sepals (5-)6-10(-12) mm, and of number in the form: stamens 5(10) or 5 or 10 (not 5,10) if a simple alternative is meant or 5(-10) if a range is meant.

Convert L/W ratios as follows: L/W ratio 2-3:1 = 2-3 times as long as wide.

Maintain the same units of measurement of the same structure in all species descriptions in a genus.

Do not use dm in descriptions: convert to cm or m.

(vii) Miscellaneous: When shapes are described in the shape of letters express as follows: Seed in the shape of an "S" (with the letter in double quotes).

Fractions are presented as 1/2, and not using the fraction format ½

## 21. Flowering time

If reliably known for the Flora area this may be indicated at the end of the morphological description and before the chromosome number using the following format: Flowering Oct.-Dec. Fruiting Dec.-Mar.

## 22. Chromosome number

This should be given for species or infraspecific taxa in the form  $2n =$  whenever a reliable count has been made on material from the area covered by the Flora.

## 23. Ecology

This should be indicated using the simplest and briefest terms possible (see *Glosario Inglés-Español, Español-Inglés*, p. 56 under selva, p. 40 under bosque for examples). If habitat is unknown, use the phrase (Habitat unknown).

## 24. Distribution within Mesoamerica and specimen citation

This should be indicated by using initials in the following sequence: **T** (Tabasco state), **Ch** (Chiapas state), **Y** (Yucatán state), **C** (Campeche state), **QR** (Quintana Roo state), **B** (Belize), **G** (Guatemala), **H** (Honduras), **ES** (El Salvador), **N** (Nicaragua), **CR** (Costa Rica), **P** (Panamá). For each territory one specimen seen by the author should be cited in parentheses giving the collector's name and number and one herbarium acronym (see format below). In distribution statements the State of México is abbreviated as Edo. México to distinguish it from the country's name. Other state names for México are used without the abbreviation Edo. The former Distrito Federal is now called Ciudad de México and it is abbreviated as "Cd. México". For Brazilian states add the country name. When the only specimen cited is from the phytogeographical area (outside of strict FM area) give this form: Veracruz (*Sousa 653*, MEXU) or Oaxaca (*Standley 1642*, MEXU). If only from Chiapas and Oaxaca, for example, cite only the Chiapas specimen and mention Oaxaca in the general distribution. Question marks under this heading, as elsewhere in the Flora, should always follow, not precede, the item being queried. The terms naturalized or cultivated should be added, as appropriate, after the Mesoamerican distribution.

Actually state the distribution of subsp. or var., even if it is the same as the species as a whole.

Format for specimen citations: Ch (*Chavelas ES-3060*, MEXU); G (*Smith 8549*, MO).

Never use first name initials in citations even for common names such as Gómez, Ortega, Gentry or Smith. However, the mother's initials are used (if given) for Spanish surnames: Molina R., Martínez S., Sousa S.

Date of collection is not used in specimen citations where the collector did not use numbered collections: Y (*Hahn s.n.*, NY).

Format for pro parte in specimen citations: N (*Chater 100 en parte*, BM).

If a contributor believes a species to occur in a country solely on the basis of a literature report, a reference to this should be used in place of a specimen, e.g., CR (Jones, 1979: 312). The full citation of the literature reference *must* be supplied separately to the editors who will incorporate it into the general bibliography.

## 25. Altitude

Where appropriate and available this should be indicated after the Mesoamerican distribution in the form xx-xxx m, rounded off to the nearest 100 m (provided it does not exceed the highest point, see below). Do not use symbols in elevational statements, use: above 1000 m; below 1000 m; c. 3500 m (for single collections); if in sea or sea level, use 0 m, 0-10 m. If the altitude is known below 100 m, round off to the nearest 10 m: e.g. 0-80 m. If altitudinal distribution is not known, use the expression "Elevation unknown". Only the elevational distribution in Mesoamerica should be used.

Highest elevations in Mesoamerica are as follows:

<i>Geogr. unit</i>	<i>Mountain</i>	<i>Elevation</i>
Tabasco	Cerro Madrigal	ca. 900 m
Chiapas	Volcán Tacaná	4093 m
Campeche	Central Chiclera	365 m
Yucatán	Approx. 89.15', 19.56' – no locality name	203 m
Quintana Roo	Approx. 89.26', 17.54' – no locality name	355 m
Belize	Doyle's Delight	1140 m
Guatemala	Tajumulco	4220 m
Honduras	Celaque	2849 m
El Salvador	El Pital	2780 m
Nicaragua	Mogotón	2107 m
Costa Rica	Chirripó Grande	3819 m
Panamá	Volcán Barú (Chiriquí)	3475 m

(source: National Geographic Society, Central America Map, 1986, and México and Central America Map, 1961).

## 26. General distribution

Whenever possible and definitely known this should always be indicated by citing individual countries for the Americas in the following order: Canada, United States, México, Mesoamerica, Colombia, Venezuela, Guyana, Surinam, French Guiana, Ecuador, Galapagos, Perú, Bolivia, Brasil, Paraguay, Uruguay, Chile, Argentina, West Indies. Islands of the West Indies should be cited in the general order of the Greater Antilles, Leeward Islands, Windward Islands, Bermuda. If a taxon occurs in Guyana, Surinam and French Guiana, this should be cited as Guayanas. Continents should be cited in the following order: North America, Mesoamerica, South America, Europa, Asia, Africa, Australia, Pacific islands. The Galapagos Islands may be cited separately as Galapagos, next to Ecuador in the general distribution statement.

When the United States or Mexican states are known they can be cited as: (Estados Unidos [Carolina del Sur], México [Veracruz], Mesoamérica, Colombia).

For introduced taxa, the native range should be indicated first, followed by the naturalized or cultivated range, as follows: (Native of China; cultivated in the tropics).

When a taxon is endemic, i.e., confined within the area of the Flora, this should be indicated by the word "Endemic" in parentheses following the specimen citations. Format: CR (*Jones* 123, MEXU); P (*Knapp* 5664, MO). 1000-1500 m. (Endemic).

## 27. Discussion

At the end of the account of any taxon, a note may be included explaining or commenting upon any points of special interest. These notes should contain any information that will aid identification and distinction for closely related species, information on relationships or ecology (not too lengthy) and/or references to taxonomic, nomenclatural or distributional problems. These notes should be written in complete sentences. In family descriptions, this discussion paragraph should precede the bibliographic citations.

## 28. Intraspecific taxa

Subspecies (subsp.), varieties (var.), and form (forma) should be used as appropriate. They should be treated in the same way as species, but with shorter descriptions. In cases where the typical element does not occur in the area of the Flora, the type, distribution, etc. of the species itself should always also be given (in case the user of the Flora prefers to ignore the infraspecific category).

Format for treatment of infraspecific taxa:

A. Two or more varieties including the type variety or not (see also *Lasiacis*, pp. 318-321, Vol. 6)

1. **Lasiacis oaxacensis** (Steud.) Hitchc., *Proc. Biol. Soc. Wash.* 24: 145 (1911). *Panicum oaxacense* Steud., *Syn. Pl. Glumac.* 1: 73 (1854). Holotype: México, *Lenormand s.n.* (P!).

Full description.

1a. **Lasiacis oaxacensis** (Steud.) Hitchc., var. **oaxacensis**.

Short description.

1a. **Lasiacis oaxacensis** (Steud.) Hitchc., var. **maxonii** (Swallen) Davidse, *Ann. Missouri Bot. Gard.* 64: 375 (1978). *L. maxonii* Swallen, *Ann. Missouri Bot. Gard.* 30: 321 (1943). Holotype: Panamá, *Maxon 4999* (US!).

Short description.

B. If typical variety only:

1. **Lasiacis oaxacensis** (Steud.) Hitchc., *Proc. Biol. Soc. Wash.* 24: 145 (1911). *Panicum oaxacense* Steud., *Syn. Pl. Glumac.* 1: 73 (1854). Holotype: México, *Lenormand s.n.* (P!).

No description.

1a. **Lasiacis oaxacensis** (Steud.) Hitchc., var. **oaxacensis**.

Full description.

C. If one atypical variety:

1. **Lasiacis oaxacensis** (Steud.) Hitchc., *Proc. Biol. Soc. Wash.* 24: 145 (1911). *Panicum oaxacense* Steud., *Syn. Pl. Glumac.* 1: 73 (1854). Holotype: México, *Lenormand s.n.* (P!).

No description.

1a. **Lasiacis oaxacensis** (Steud.) Hitchc., var. **maxonii** (Swallen) Davidse, *Ann. Missouri Bot. Gard.* 64: 375 (1978). *L. maxonii* Swallen, *Ann. Missouri Bot. Gard.* 30: 321 (1943). Holotype: Panamá, *Maxon 4999* (US!).

Full description(s).

D. If two infraspecific ranks are recognized use as in Zea, p. 401, Vol. 6.

E. Notes about other subspecific taxa recognized in other areas outside Mesoamerica are optional, but are often of interest to users of the Flora.

#### **29. Excluded taxa**

Excluded taxa should be listed alphabetically at the end of the generic treatment with complete bibliographic citations, type, and brief reasons for exclusion. For an example see *Tillandsia*, p. 121, Vol. 6.

#### **30. Monotypic families and genera**

Family, generic and specific descriptions should be used even in cases where the family or genus is monotypic. General characters most useful at the family and generic levels should be included in the family and genus descriptions. Precise character states should be included in the species descriptions.

#### **31. Novitates**

New taxa, combinations, etc. should be validated before publication in the Flora, and it may often be useful to do the same with significant novelties of taxonomy or nomenclature. *Novon*, *Bulletin of the British Museum (Natural History)*, *Botany Series*, and *Anales del Instituto de Biología de la Universidad Nacional Autónoma de México, Serie Botánica* will be open to authors for this purpose if they have no easier means of publication.

#### **32. Index**

A complete index to names and synonyms will be included in each volume. Manuscripts should be submitted complete with indices, synonyms underlined, and each name referred to the relevant species or genus number using a combination of the numbers used for each rank e.g., *Axonopus jeanyae* 129-11

#### **33. Major herbaria**

Section 38 is a very selective annotated list of some of the herbaria with especially important Mesoamerican collections. Many other important Mesoamerican collections, of course, exist in other herbaria.

#### **34. Availability of literature**

The editors will attempt to make available as copies or on loan literature which is not easily accessible to authors. It would be helpful if authors could indicate to the editors any references they cite which they have not been able to check personally.

#### **35. Annotation of specimens**

Annotation of specimens is an important part of preparation of accounts for the Flora, as specimen citations in the Flora itself are in no way exhaustive. Authors are therefore



strongly urged to annotate material seen by them in the course of preparation of accounts for *Flora Mesoamericana*. The editors will gladly receive extensive lists of exsiccatae for inclusion in the computerized Flora Mesoamericana database. Please contact any one of the editors for details concerning this.

### 36. Sources of Synonyms

The names accepted in the following (mostly relatively recent and widely available) works should be cited in synonymy or included in the discussion paragraphs if based on misidentifications or if they differ from those accepted in *Flora Mesoamericana*. All names based on Mesoamerican types should be included in the treatment.

Balick, M. J., M. H. Nee & D.E. Atha. 2000. Checklist of the vascular plants of Belize. *Mem. New York Bot. Gard.* 85: i-ix, 1-246.

Berendsohn, W.G., A. K. Gruber & J. A. Monterrosa Salomón. 2009-onwards. Nova Silva Cuscatlanica. Árboles nativos e introducidos de El Salvador. *Englera* 29(1-onwards).

Breedlove, D.E. & T.F. Daniel 1981-onwards. *Flora of Chiapas* 1-onwards.

Breedlove, D.E. 1986. Flora de Chiapas. *Listados Florísticos de México* 4: i-v, 1-246.

Bueno, J., F. Álvarez & S. Santiago. (eds.) 2005. Biodiversidad del Estado de Tabasco: i-xviii, 1-370. CONABIO-UNAM, México.

Burger, W. 1971-. Flora Costaricensis. *Fieldiana, Bot.* 35 volúmenes subsiguientes.

Correa A., M.D., C. Galdames & M. Stapf. 2004. Catálogo de las Plantas Vasculares de Panamá: 1-599. Smithsonian Tropical Research Institute, Panama.

Cowan, C. P. 1983. Flora de Tabasco. *Listados Florísticos de México* 1: 1-123.

Dwyer, J. D. & D. L. Spellman. 1981. A list of the Dicotyledoneae of Belize. *Rhodora* 83: 161-236.

*Flora Neotropica*. 1968-. Varios autores. New York, etc.

Linares, J. L. 2003 [2005]. Listado comentado de los árboles nativos y cultivados en la república de El Salvador. *Ceiba* 44(2): 105-268.

Molina R., A. 1975. Enumeración de las plantas de Honduras. *Ceiba* 19:1-118.

Nelson, C. H. 2008. Catálogo de las Plantas Vasculares de Honduras:1-1576.

Sousa Sánchez, M. & E. F. Cabrera Cano. 1983. Flora de Quintana Roo. *Listados Florísticos de México* 2: 1-100.

Spellman, D. L., J. D. Dwyer & G. Davidse. 1975. A list of the Monocotyledoneae of Belize. *Rhodora* 77: 105-140.

Standley, P. C. 1920-1926. Trees and shrubs of Mexico. *Contr. U.S. Natl. Herb.* 23.

Standley, P. C. 1930. Flora of Yucatan. *Publ. Field Mus. Nat. Hist., Bot. Ser.* 3: 157-492.

Standley, P. C. 1937-1938. Flora of Costa Rica. *Publ. Field Mus. Nat. Hist., Bot. Ser.*18. (Excepto cuando son sustituidos por Burger 1971- .)

Standley, P.C. & S. Calderón. 1941. *Lista Preliminar de las Plantas de El Salvador*. Ed. 2. San Salvador.

Standley, P. C., J. A. Steyermark & L. O. Williams. 1946-1977. Flora of Guatemala. *Fieldiana, Bot.* 24.

Woodson, R. E. & R. W. Schery. 1943-1980. Flora of Panamá. *Ann. Missouri Bot. Gard.* 30 y volúmenes subsiguientes.

### 37. Abbreviations

a. Conventional abbreviations to be used in the Flora, see also Notas Acerca del Formato, p.XX, Vol. 1.

CAS	Chiapas
CR	Costa Rica
DUKE	Costa Rica, Panamá
EAP	Guatemala, Honduras, Nicaragua
F	The most important general collection of Mesoamerica
IJ	General
INB	Costa Rica
MEXU	México
MICH	Belize, Guatemala
MO	Belize, Nicaragua, Costa Rica, Panamá
TEX	Belize, Guatemala, Yucatán
US	General

b. The most important herbaria in Mesoamerican countries:

Belize	BRH
Costa Rica	CR [INB is incorporated in CR, cite as CR]
El Salvador	ITIC, LAGU
Guatemala	AGUAT, BIGUA, GUAT, USCG, UVAL
Honduras	EAP, TEFH
México	CHAPA, CHIP, CICY, CIQR, CSAT, ENCB, MEXU, UADY, UCAM, UJAT
Nicaragua	HNMN, HULE
Panamá	PMA, SCZ

c. Many historically important collections are in major herbaria such as BM, GH, K, P. Specialized collections occur in many others, such as Poaceae in ISC, Orchidaceae in AMES and AMO.

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