

HOME

PHYLOGENETICS

LITERATURE

IMAGES

DATABASE

DOWNLOADS

PEOPLE

LINKS

This study is a continuation of our work on other subtribes of the tribe [Maxillarieae](#), especially subtribes [Oncidiinae](#), Stanhopeinae, and [Zygopetalinae](#) and is related to a new project on the subtribe [Pleurothallidinae](#).

INTRODUCTION TO MAXILLARIINAE

In recent years, orchid systematists have made great progress in clarifying evolutionary relationships among orchid genera, based largely upon cladistic analyses of both molecular and morphological/anatomical data sets. A well-supported outline of tribal and subtribal relationships is quickly emerging, limited primarily by the rate that rare taxa can be collected and analyzed. As such broad scale studies progress, it is becoming clear that one of the most daunting remaining tasks will be the phylogenetic revision of very large, species rich genera (e.g., *Bulbophyllum*, *Epidendrum*, *Maxillaria*, *Pleurothallis*). An even greater problem is that few taxonomists have the years of intensive study and breadth of knowledge to work with these large taxa. For example, few taxonomists are able to accurately identify a randomly-chosen *Pleurothallis* or *Maxillaria* species. Existing keys and subgeneric classifications are incomplete and are based upon admittedly artificial classifications.

To attempt a modern molecular and morphology-based phylogenetic revision of these huge genera, a broad collaboration is required among alpha-taxonomists who have intensive, detailed knowledge of the species, their variation and nomenclature, and molecular systematists who can generate and analyze the large data sets necessary to resolve these genera. We have assembled such a collaborative group, which includes: 1) herbarium/field botanists with years of study and deep knowledge of these species and their nomenclature; 2) orchid molecular systematists with experience in collecting and analyzing large combined DNA data sets; 3) pollination biologists; and 4) natural product chemists experienced in analyzing floral rewards.

Why study *Maxillaria*? This tribe (Maxillarieae) contains >2800 species (about 10% of Orchidaceae) and is a major component of the neotropical flora and epiphytic vegetation. The subtribe Maxillariinae (sensu Whitten et al. 2000) includes ±600-700 species currently divided into eight genera. *Maxillaria* ranks fourth in species-richness among genera of neotropical Orchidaceae but is still poorly known. Dressler (1993) estimated that approximately 420 species are accepted as valid species. Index Kewensis lists 634 names in the genus of which about 80

are perhaps synonyms for a probable minimum of 564 accepted species (Atwood, pers. comm.). Based on studies of *Maxillaria* from Costa Rica (Atwood and Mora de Retana, 1999), we believe that species numbers will exceed 620. These plants are often large, conspicuous, and numerically important components of the epiphytic vegetation in the Neotropics.

Generic limits have been chaotic for more than a century and current/ongoing taxonomic treatments offer little hope of stability unless the revisions are based upon well-sampled molecular/morphological cladograms. Preliminary molecular data (below) confirm the long-suspected paraphyly of *Maxillaria* s.l. Neotropical orchid floras must confront such taxonomically difficult genera in their treatments, but such treatments are hampered by conflicting, arbitrary, and unsupported non-monophyletic generic concepts proposed by various taxonomists. Our previous work has demonstrated that combined molecular data sets can yield highly supported cladograms that can serve as the basis for stable, objective classifications within this tribe (Whitten et al. 2000; Ryan et al. 2000; Williams et al. 2001a,b; Koehler et al. 2002).

This site contains: 1) molecular data matrices for Maxillarieae as self-extracting files, 2) cladograms from both published and unpublished studies in several subtribes, 3) literature references, 4) photographs, 5) biographical sketches of a number of collaborators, 6) a list of all known species of *Maxillaria* following the classification proposed by Atwood, Carnevali, and Dodson, and 7) links to some useful sites.

Acknowledgments - Kent Perkins helped tremendously in setting up this site, which I modified from the excellent [Melastomataceae](#) site of Darin Penneys and is used with his permission, for which I thank him greatly. Eric Christenson has been most helpful in pointing out extremely serious omissions in the literature that was published after this site was initially developed in December 2001. His kind, constructive suggestions are greatly appreciated. We are, of course, responsible for any additional errors and/or omissions and solicit polite, constructive criticisms. Funding was provided by U.S. National Science Foundation grant No. DEB-0234064 to N. H. Williams and W. M. Whitten for the project **Systematics of Maxillariinae (Orchidaceae): Generic delimitation, pollinator rewards, and pollination**. Additional funding was provided by a Furniss Foundation graduate student fellowship from the American Orchid Society to M. A. Blanco and by Kew Latin American Research Fellowships to M. A. Blanco (to study specimens in European herbaria) and to S. Koehler (to study systematics of the *Maxillaria madida* alliance). Funding was provided to R. Singer by a FAPESP postdoctoral grant 01/08958-1 and to G. Carnevali from CICY for the project "*Orchidaceae Neotropicales*".

[- Top of Page -](#)

[Home](#) | [Phylogenetics](#) | [Literature](#) | [Images](#) | [Database](#) | [Downloads](#) | [People](#) | [Links](#) |

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LITERATURE

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DATABASE

DOWNLOADS

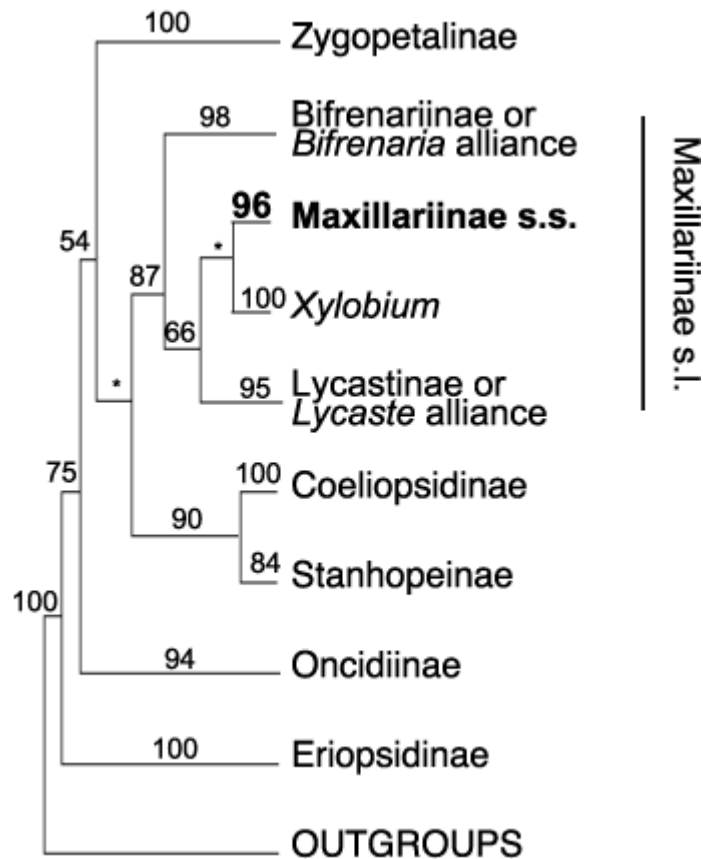
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PHYLOGENETICS OF TRIBE MAXILLARIEAE

Although this site is primarily concerned with the subtribe Maxillariinae, we have worked on the other subtribes of the tribe Maxillarieae, as well as on the overall systematics and phylogenetics of the tribe. The monophyly (100% bootstrap support) and subtribal relationships of tribe Maxillarieae were established based on highly resolved, well-supported cladograms of combined ITS, *matK*, and *trnL-F* sequence data (Whitten et al. 2000). We recognized six subtribes: Coeliopsidinae, Eriopsidinae, Maxillariinae (including Lycastinae and Bifrenariinae), [Oncidiinae](#) (including Pachyphyllinae, Ornithocephalinae, Telipogoninae, and Lockhartiinae), Stanhopeinae, and [Zygopetalinae](#) (including Cryptarrheninae, Dichaeinae, Huntleyinae, and Warreinae). These data do not support the taxonomic systems of Brieger et al. (1994-2000) or Szlachetko (1995). The relationships shown below of subtribes in [Maxillarieae](#) are based on the combined ITS/*matk*/*trnL-F* analyses. For other subtribes, see [Oncidiinae](#), Stanhopeinae, [Zygopetalinae](#). The relationships in subtribes in [Oncidiinae](#) and [Zygopetalinae](#) are also based on the combined ITS/*matk*/*trnL-F* analyses.



PHYLOGENETICS OF SUBTRIBE MAXILLARIINAE

Cladograms based on molecular data sets

Phylogenetic relationships within the orchid subtribe Maxillariinae sensu Dressler (1993) with emphasis on *Maxillaria* s.l. were inferred using parsimony analyses of individual and combined DNA sequence data. We analyzed nrITS DNA, the plastid *matK* gene and flanking *trnK* intron, and the plastid *atpB-rbcL* intergenic spacer for 619 individuals representing ca. 354 species. The plastid *rpoC1* gene (ca. 2600 bp) was sequenced for 84 selected taxa and combined in a more limited analysis (Fig. 8 below) with the other data sets to provide greater resolution in the spine of the trees. A well-resolved and supported consensus was found, for which most clades were present in more than one individual analysis. All the currently recognized minor genera of "core" Maxillariinae (*Anthosiphon*, *Chrysocycnis*, *Cryptocentrum*, *Cyrtidiorchis*, *Mormolyca*, *Pityphyllum*, and *Trigonidium*) are embedded within a polyphyletic *Maxillaria* s.l. Our results support the recognition of a smaller, more restricted

Maxillaria, of some previously published segregate genera (*Brasiliorchis*, *Camaridium*, *Christensonella*, *Heterotaxis*, *Ornithidium*, *Sauvetrea*), and of several novel clades at the generic level. These revised monophyletic generic and infrageneric concepts will hopefully minimize further nomenclatural changes, encourage monographic studies, and facilitate more focused analyses of character evolution within Maxillariinae. **ABSTRACT** from Whitten, W.M., M. A. Blanco, N. H. Williams, S. Koehler, G. Carnevali, R. B. Singer, L. Endara, & K. M. Neubig. 2007. **Molecular Phylogenetics of *Maxillaria* and Related Genera (Orchidaceae: Cymbidieae) Based Upon Combined Molecular Data Sets.** *American Journal of Botany* 94: 1860-1889.

The cladograms below are based on the combined analyses extracted from Whitten, W.M., M. A. Blanco, N. H. Williams, S. Koehler, G. Carnevali, R. B. Singer, L. Endara, & K. M. Neubig. 2007. **Molecular Phylogenetics of *Maxillaria* and Related Genera (Orchidaceae: Cymbidieae) Based Upon Combined Molecular Data Sets.** *American Journal of Botany* 94: 1860-1889. This paper is available as a pdf from the Botanical Society of America web site at <http://www.amjbot.org/cgi/reprint/94/11/1860>.

Nomenclature has been updated and follows Blanco, M. A. G. Carnevali, W. M. Whitten, R. Singer, S. Koehler, N. H. Williams, I. Ojeda, K. Neubig, & L. Endara. 2007. **Generic Realignments in Maxillariinae (Orchidaceae).** *Lankesteriana* 7(3): 515-537.

The following cladograms will open in a new window. Because these files are quite large, it takes a few seconds for the image to load. Click to zoom, drag to move image; other controls at bottom. Representative photographs of these clades are shown in the IMAGES section of this site..

[Fig.8, Summary cladogram based on nrITS, the plastid *matK* gene and flanking *trnK* intron, the plastid *atpB-rbcL* intergenic spacer, and the plastid *rpoCl* gene.](#)

[Fig.1, *Pityphyllum*, *Ornithidium*, *Heterotaxis*, *Nitidobulbon*, and outgroups](#)

[Fig.2, *Mormolyca*, *Sauvetrea*, *Cyrtidiorchis*, *Cryptocentrum*, *Inti*, *Brasiliorchis*](#)

[Fig.3, *Christensonella*, *Mapinguari*](#)

[Fig.4, *Trigonidium*, *Maxillariella*, *Rhetinantha*](#)

[Fig.5, *Camaridium*](#)

[Fig.6, *Maxillaria s.s.*](#)

Funding was provided by U.S. National Science Foundation grant No. DEB-0234064 to N. H. Williams and W. M. Whitten for the project ***Systematics of Maxillariinae (Orchidaceae): Generic delimitation, pollinator rewards, and pollination.*** Additional funding was provided by a Furniss Foundation graduate student fellowship from the American Orchid Society to M. A. Blanco and by Kew Latin American Research Fellowships to M. A. Blanco (to study specimens in European herbaria) and to S. Koehler (to study systematics of the *Maxillaria madida* alliance). Funding was provided to R. Singer by a FAPESP postdoctoral grant 01/08958-1 and to G. Carnevali from CICY for the project "***Orchidaceae Neotropicales***".

[- Top of Page -](#)

[Home](#) | [Phylogenetics](#) | [Literature](#) | [Images](#) | [Database](#) | [Downloads](#) | [People](#) | [Links](#) |

HOME

PHYLOGENETICS

LITERATURE

IMAGES

DATABASE

DOWNLOADS

PEOPLE

LINKS

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INTRODUCTION TO MAXILLARIINAE

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The following is taken from the References Cited section of an NSF grant proposal submitted in 2001 and applies more to the proposal than to a comprehensive list of references on Maxillariinae. We have added a reference or two as our colleagues have pointed out our extremely serious omissions to the literature that have appeared after the proposal was submitted. The papers by Blanco et al., 2007, and Whitten et al., 2007, contain more up to date references.

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[- Top of Page -](#)

[Home](#) | [Phylogenetics](#) | [Literature](#) | [Images](#) | [Database](#) | [Downloads](#) | [People](#) | [Links](#) |

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HOME

PHYLOGENETICS

LITERATURE

IMAGES

DATABASE

DOWNLOADS

PEOPLE

LINKS

INTRODUCTION TO MAXILLARIINAE

This page is under construction and will eventually contain photos of a large number of species of *Maxillaria*, but until then check out the [Links](#) to find other sites with photos and information on *Maxillaria*. In addition, we should soon have up a Lucid key to the species of *Maxillaria* of Costa Rica, as well as several hundred photos of species of *Maxillaria*.

Our highly trained staff of orchidologists. Left to right: Robert L. Dressler, Norris H. Williams, and W. Mark Whitten. Photo by Lotte Skov.



[*Maxillaria fletcheriana*](#)-

Really close up, very large image. The "horse-shoe" shaped viscidium is quite noticeable.

[*Maxillaria fletcheriana*](#) - *Maxillaria fletcheriana* near Patuca, Ecuador

[*Maxillaria fletcheriana*](#) - *Maxillaria fletcheriana* near Patuca, Ecuador

[*Maxillaria grandiflora*](#) - *Maxillaria grandiflora* in its native habitat near Chiriboga, Ecuador. This was taken with a telephoto lens, as the plant was about 15 meters up on a cliff.

[*Maxillaria endresii*](#) - *Maxillaria endresii* in its native habitat near El Valle, Panama. Note size of hand for scale.

[*Maxillaria endresii*](#)2 - *Maxillaria endresii* close up

[*Maxillaria tenuifolia*](#)

[*Mormolyca*](#) - *Mormolyca* side view

[*Trigonidium egertonianum*](#)

[Representatives of major clades of core Maxillariinae- part 1.](#)

[Representatives of major clades of core Maxillariinae- part 2.](#)

[- Top of Page -](#)

[Home](#) | [Phylogenetics](#) | [Literature](#) | [Images](#) | [Database](#) | [Downloads](#) | [People](#) | [Links](#) |

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HOME

PHYLOGENETICS

LITERATURE

IMAGES

DATABASE

DOWNLOADS

PEOPLE

LINKS

INTRODUCTION TO MAXILLARIINAE

We recently completed our study of the molecular systematics of *Maxillaria* and its relatives and published the results in the following paper

Whitten, W.M., M. A. Blanco, N. H. Williams, S. Koehler, G. Carnevali, R. B. Singer, L. Endara, & K. M. Neubig. 2007. **Molecular Phylogenetics of *Maxillaria* and Related Genera (Orchidaceae: Cymbidieae) Based Upon Combined Molecular Data Sets.** *American Journal of Botany* 94: 1860-1889.

ABSTRACT. Phylogenetic relationships within the orchid subtribe Maxillariinae sensu Dressler (1993) with emphasis on *Maxillaria* s.l. were inferred using parsimony analyses of individual and combined DNA sequence data. We analyzed nrITS DNA, the plastid *matK* gene and flanking *trnK* intron, and the plastid *atpB-rbcL* intergenic spacer for 619 individuals representing ca. 354 species. The plastid *rpoC1* gene (ca. 2600 bp) was sequenced for 84 selected taxa and combined in a more limited analysis with the other data sets to provide greater resolution in the spine of the trees. A well-resolved and supported consensus was found, for which most clades were present in more than one individual analysis. All the currently recognized minor genera of "core" Maxillariinae (*Anthosiphon*, *Chrysocycnis*, *Cryptocentrum*, *Cyrtidiorchis*, *Mormolyca*, *Pityphyllum*, and *Trigonidium*) are embedded within a polyphyletic *Maxillaria* s.l. Our results support the recognition of a smaller, more restricted *Maxillaria*, of some previously published segregate genera (*Brasiliorchis*, *Camaridium*, *Christensonella*, *Heterotaxis*, *Ornithidium*, *Sauvetrea*), and of several novel clades at the generic level. These revised monophyletic generic and infrageneric concepts will hopefully minimize further nomenclatural changes, encourage monographic studies, and facilitate more focused analyses of character evolution within Maxillariinae.

We published the nomenclatorial changes in another paper

Blanco, M. A. G. Carnevali, W. M. Whitten, R. Singer, S. Koehler, N. H. Williams, I. Ojeda, K. Neubig, & L. Endara. 2007. **Generic Realignment in Maxillariinae (Orchidaceae).** *Lankesteriana* 7(3): 515-537.

You can access the pdf here [Generic Realignments in Maxillariinae \(Orchidaceae\)](#).

ABSTRACT. A recent phylogenetic analysis of four DNA regions for ca. 354 species of core Maxillariinae strongly indicate that the genus *Maxillaria*, as traditionally circumscribed, is grossly polyphyletic. We present a new phylogenetic classification for core Maxillariinae that recognizes 17 genera. Necessary realignments include: 1) resurrection of the genera *Camaridium*, *Heterotaxis*, and *Ornithidium*; 2) recognition of the recent segregates *Brasiliorchis* (= *Maxillaria* sect. *Repentes*), *Christensonella* (= *Maxillaria* sect. *Urceolatae*), *Nitidobulbon* (in press), and a recircumscribed *Sauvetrea* (= *Maxillaria* sect. *Trigoneae*); 3) adoption of the new genera *Inti* (= *Maxillaria* sect. *Polyphyllae*), *Mapinguari*, *Maxillariella* (= *Maxillaria* sections *Ebulbes* and *Erectae*), and *Rhetinantha*; 4) transfers from *Maxillaria* sect. *Reflexae* to *Ornithidium*, and *Maxillaria* sect. *Rufescens* to *Mormolyca*; and 5) synonymizing of the genera *Adamanthus*, *Pseudomaxillaria*, *Psittacoglossum*, and *Sepalosaccus* (under *Camaridium*), *Anthosiphon* (under *Cryptocentrum*), *Chrysocynis* (under *Mormolyca*), *Dicrypta*, *Marsupiarina*, and *Pentulop* (under *Heterotaxis*), and *Laricorchis*, *Neo-urbana*, and *Siagonanthus* (under *Ornithidium*). Some new synonyms at the specific level are also presented.

We have not updated the list below to reflect the changes in the paper above, but leave this here to show the thinking on *Maxillaria* and its relatives when we began our project.

The list below was compiled before any molecular work was begun on the Maxillariinae and changed as the molecular systematics project progressed. For an up to date publication on nomenclature and the new names and combinations, see our recent paper cited above.

Subtribe Maxillariinae: Proposed Species Alliances

¹J. T. Atwood, ²G. Carnevali, ³C. H. Dodson

The long list below was an attempt by several workers to bring together and organize all the names associated with the genus *Maxillaria* into a purposely flexible classification borrowing heavily from the work of Pabst and Dungs (Orchidaceae Brasilienses, volume 2). The list attempts to do no more than to bring together likes with likes, and no categories are formal. Questions of relationships are provided and names for which we have almost no information are indicated as "Alliance Unknown" at the end of *Maxillaria*. No attempt is made to compare the system of Senghas (in R. Schechter, Die Orchideen, third edition)

, although comparison will no doubt stimulate lengthy discussion. This list is a product of the digestion of over five hundred original descriptions and any available line drawings, photographs or specimens, types and otherwise seen by the describing authors of the various species. Names in parenthesis following a formal entry justified to the left include homotypic synonyms and possible heterotypic synonyms, but most of the latter are at present mostly matters of opinion. A more complete list of species can be found by searching for *Maxillaria* on the Kew web site [World Checklist of Monocotyledons](#). Eric Christenson (2002) has published an overview of *Maxillaria* in the Proceedings of the 16th World Orchid Conference pp. 279-290, where he proposes a number of infrageneric divisions (see Literature for a complete citation). His work appeared in print well after this web site was first constructed, but we thank him nevertheless for pointing out that we did not foresee his publication. He maintains *Sepalosaccus* as a distinct genus, but includes *Ornithidium* in *Maxillaria*. Our molecular work is completely at odds with this proposal. Any further discussion of subgeneric divisions of the genus awaits additional molecular and morphological work. We regret any omissions and errors and we will attempt to correct them as work progresses. We always appreciate polite, constructive criticisms. We do not listen to whinning or shouting.

Most of Atwood's specimens are in [TROPICOS](#).

ANTHOSIPHON

Anthosiphon roseans Schltr. (=Cryptocentrum roseans (Schltr.) A.D.Hawkes)

Anthosiphon sp. (Costa Rica, or Panama)

Our molecular work supports lumping this genus into **Cryptocentrum**.

CHRYSOCYCNIS Lind. & Rchb.f.

C. ecuadorensis Dodson & Garay

C. lehmannii Rolfe

C. schlimii Linden & Rchb.f. (Chrysocycnis trigonidii Lind. & Rchb.f.)

Hypothesis: *Maxillaria tigrina* C. Schweinf. belongs here despite atypical pollinia.

Excluded Taxa

Chrysocycnis glumaceum L.O.Williams (Cyrtidiorchis alatum (Lindl.) Rauschert

C. rhomboglossum Lehm. & Kraenzl. (Cyrtidiorchis rhomboglossum (Lehm. & Kraenzl.) Rauschert

C. tripterum Schltr. (Cyrtidiorchis rhomboglossum (Lehm. & Kraenzl. Rauschert, (Cyrtidiorchis triptera (Schltr.) Rauschert)

CRYPTOCENTRUM Benth. & Hook.

The classification given here is based upon the doctoral dissertation of Germán Carnevali, and is not likely to change.

Cryptocentrum subgenus *Cryptocentrum*

- C. caespitosum* Carnevali (ined.)
- C. calcaratum* (Schltr.) Schltr. (=Pittierella calcarata Schltr.)
- C. dodsonii* Carnevali (ined.)
- C. dunstervilleorum* Carnevali & G.A.Romero (*C. gracillimum* of authors, not Ames & C.Schweinf.)
- C. escobarii* Carnevali (ined.)
- C. gracillimum* Ames & C.Schweinf.
- C. hirtzii* Dodson
- C. inaequisepalum* C.Schweinf. (*C. jamesonii* of authors, not Benth.)
- C. latifolium* Schltr. (*C. latifolium* var. *brachypetalum* Garay; *C. chocoensis* Hawkes, name only)
- C. lehmannii* (Rchb.f.) Garay (*Aeranthus lehmannii* Rchb.f.; *C. gracilipes* Schltr.; *C. jamesonii* Benth.)
- C. longipetalum* Carnevali (ined.)
- C. silverstonei* Carnevali (ined.)
- C. spathaceum* Dodson

Cryptocentrum subgenus *Polysticha* Carnevali

- C. flavum* Schltr. (*C. peruvianum* of authors, not (Cogn.) C.Schweinf.)
- C. peruvianum* (Cogn.) C.Schweinf. ssp. *peruvianum* (=Centroglossa peruviana Cogn.; *C. hoppii* Schltr.)
- C. peruvianum* ssp. *dactylinum* Carnevali, ined.
- C. peruvianum* ssp. *minus* (Schltr.) Carnevali, ined.(=C. minus Schltr.)
- C. standleyi* Ames (*C. longiscapum* Brieger; *C. brenesii*, name only)

Cryptocentrum subgenus *Pseudobulbosa* Carnevali

- C. pseudobulbosum* C.Schweinf.

Excluded names

- C. costaricensis* (Schltr.), comb. ined. (=Pittierella costaricensis Schltr., invalid)
- C. pergracile* Schltr. (no type material has been found)

CYRTIDIORCHIS Hypothesis: belongs with **Chrysocynis** (=Cyrtidium Schltr. 1924 not Vainio, 1921)

- C. alata* (Lindl.) Rausch. (=Camaridium alatum Lindl., Cyrtidium alatum (Lindl.) Garay; Chrysocynis glumaceum L.O.Williams)
- C. frontinoensis* (Garay) Rauschert

C. rhomboglossa (Lehm. & Kraenzl.) Rauschert (*Chrysocycnis rhomboglossa* Lehm. & Kraenzl.,
Cyrtidium rhomboglossum (Lehm. & Kraenzl.) Schltr.;
Cyrtidiorchis triptera (Schltr.) Rausch.,
Chrysocycnis tripterum Schltr., *Cyrtidium tripterum* (Schltr.) Schltr.)
C. stumpflei (Garay) Rauschert (= *Cyrtidium stumpflei* Garay)

MAXILLARIA

Acuminata Alliance Hypothesis: close to *Friedrichsthali* Alliance

M. acuminata Lindl.
M. cerifera Barb.Rodr. (= *Ornithidium ceriferum* (Barb.Rodr.) Barb. Rodr.; *M. divaricata* (Barb.Rodr.) Cogn., *M. nervosa* Rolfe ex Britton, *M. flavoviridis* Barb.Rodr. *Ornithidium flavoviride* (Barb.Rodr.) Barb.Rodr., *Ornithidium divaricatum* Barb.Rodr.)
M. huancabambae (Kraenzl.) C.Schweinf. (= *Ornithidium huancabambae* Kraenzl.; *M. huancabambae* (Kraenzl.) C.Schweinf. var. *cuzcoensis* C.Schweinf.
M. mariaisabelae J.T.Atwood
M. microblephara Schltr.
M. monacensis Kraenzl.
M. neillii Dodson [Pseudobulbs with three, linear, apical leaves.]
M. notylioglossa Rchb.f. (*M. meirax* Rchb.f. & Warm.; ?=*M. fallax* Schltr. fide C. Schweinfurth)
M. ophioidens J.T.Atwood
M. polybulbon Kraenzl.
M. ramosissima Kraenzl.
M. schistostele Schltr. [only 1 leaf at pseudobulb apex]
M. sulfurea Schltr. [Flowers sulfur yellow.]
M. unguiculata Schltr.
M. unguilabia Schltr.

Alba Alliance (abscission layers, but no blades at pb base, colors white to green to purplish or brownish?)

M. alba (J.D.Hook.) Lindl. (= *Dendrobium album* Hook.f., *Broughtonia alba* (Hook.f.) Spreng., *Camaridium album* (Hook.f.) Hoehne, ?=*M. hedyosma* Schltr., ?
M. lactea Schltr. 1925, not 1923)
M. anceps Ames & C.Schweinf.
M. diuturna Ames & C.Schweinf.
M. nagelii L.O.Williams ex Correll (= *Camaridium tuerckheimii* Schltr.)
M. oreocharis Schltr.
[? *Camaridium caquetanum* Schltr.]

Albata Alliance

M. albata Lindl. [Carnevali has this as isolated]

Alpestris Alliance [Is this near *Trigonidium* as suggested by

Carnevali? Or near Mormolyca?]

M. alpestris Lindl. (?=*Maxillaria baumanniana* Schltr., *M. chlorochila* Lehm. & Kraenzl. ex Kraenzl.,
M. compressibulba Schltr., *M. trigona*, C.Schweinf., *M. xantholeuca* Schltr., *M. xantholeuca* var. *peruviana* C.Schweinf.,
Maxillaria peruviana (C.Schweinf.) D.E.Benn. & Christenson)
M. bomboizensis Dodson
M. brachypetala Schltr.
M. casta Kraenzl. [flowers white]
M. chlorochila Lehm. & Kraenzl. ex Kraenzl.
M. cornuta C.Schweinf.
[*Mormolyca fuchsii* J.T.Atwood?]
M. koehleri Schltr. (?=*M. laevilabris* Lindl.)
M. laevilabris Lindl.
[*M. mathewsii* of authors, not Lindl. (1845) nor Rchb.f. (1863)]
M. napoensis Dodson (long foot)
M. piestopus Schltr.
M. sessilis Lindl., not *M. sessilis* (Sw.) Fawc. & Rendle
M. uncarinata C.Schweinf.

Hastulata/Pulla Suballiance (poorly developed column foot)

[*Mormolyca fuchsii* J.T.Atwood belongs here?]
M. dalstromii Dodson (=pulla?)
M. hastulata Lindl.
M. longipes Lindl. [possibly belongs with Parkeri group]
M. macrura Rchb.f. (Syn.: *M. longisepala* Rolfe)
M. nutantiflora Schltr.? (No types found, but description of plant and illustration of flower seems to fit here)
M. pannieri Fold.
M. pulla Lind. & Rchb.f.
M. rotundilabia C.Schweinf.

Grobbyoides Suballiance (No foliaceous sheaths; pseudobulbs 2-foliate. Near *M. picta*? (Trigonidium?))

M. grobyoides Garay & Dunsterville
M. steyermarkii Fold.

Biolleyi Alliance

Amabilis Suballiance

M. amabilis J.T.Atwood
M. monteverdensis J.T.Atwood & G. Barboza
M. synsepala J.T.Atwood
M. tricarinata J.T.Atwood

Biolleyi Suballiance

M. adolphii Ames & Correll (=Camaridium adolphii Schltr.,
Ornithidium tonduzii Schltr.)
M. biolleyi (Schltr.) L.O.Williams (=Ornithidium biolleyi Schltr.)

Camaridium biolleyi (Schltr.) Schltr.)
M. falcata Ames & Correll (= *Ornithidium costaricense* Schltr.)
M. quadrata Ames & Correll (= *Ornithidium lankesteri* Ames)
M. tutae J.T. Atwood

Inaudita Suballiance

M. inaudita Rchb.f.
M. inaudita var. *minor* Ames & C. Schweinf.
?[*trilobata* Ames & C. Schweinf. Suballiance]
M. trilobata A. & C., (= *Camaridium brenesii* Schltr.)

Scalariformis Suballiance [This may bridge the gap between *Biolleyi* and *Camaridium* alliances. Lip is similar to that of *M. bradeorum* but monopodial canes belongs in *Biolleyi* Alliance.]

M. scalariformis J.T. Atwood

Tonduzii Suballiance

M. parvilabia Ames & C. Schweinf.
M. tonduzii (Schltr.) Ames & Correll (= *Camaridium tonduzii* Schltr., *Camaridium costaricense* Schltr.,
Maxillaria heidelbergensis Senghas, nom. illeg.)

Camaridii Alliance

Bradeorum Suballiance

M. ampliflora C. Schweinf. (*Camaridium grandiflorum* Ames, not Schltr.)
M. bradeorum (Schltr.) L.O. Williams (= *Camaridium bradeorum* Schltr.; *M. semiorbicularis* Ames & C. Schweinf.)
M. campanulata C. Schweinf.
M. carinulata Rchb.f. [close to *M. ampliflora*]
M. darienensis J.T. Atwood
M. lamprochlamys (Schltr.) [comb. ined.] (= *Camaridium lamprochlamys* Schltr.)
M. umbratilis L.O. Williams (= *Camaridium nutantiflorum* Schltr.,
C. vinosum Schltr., *M. vinosa* (Schltr.) Senghas)

Camaridii Suballiance

M. camaridii Rchb.f. (= *Camaridium ochroleucum* Lindl.,
Cymbidium ochroleucum Lindl.;
? = *Ornithidium album* Hook., *Maxillaria lutescens* Scheidw.,
Camaridium lutescens (Scheidw.)
Rchb.f., *Ornithidium fragrans* Rolfe, *Camaridium cryptodanthum*
of authors, *Camaridium*
cyrtopodanthum Barb. Rodr., *Camaridium affine* Schltr.,
Camaridium amazonicum Schltr., *Maxillaria hoehneana*
P.F. Hunt)
M. cozieriana H.G. Jones????
M. suaveolens Barringer

M. pulchra (Schltr.) L.O.Williams ex Correll

M. insolita Dressler????

Chicana Alliance [Only a single species here that is unlike any others. Plants have ovoid pseudobulbs with a single terete apical leaf. Lip has well defined lateral lobes above the middle.]

M. chicana Dodson

Ctenostachya Alliance

M. ctenostachya Rchb.f. (=Camaridium arachnites Schltr.)

Cucullata Alliance (close to Imbricata Alliance?)

M. atrata Rchb.f. (=M. soconuscana D.Breedlove?)

M. cacaoensis J.T.Atwood

M. cedralensis J.T.Atwood & D.E.Mora

M. cucullata Lindley

M. hematoglossa Rich. & Gal.)

[*M. herzogiana* Kraenzl., possibly belongs in Alpestris or Rufescens Alliance.]

M. lexarzana Soto Arenas & F.Chiang (=Psittacoglossum atratum Llave & Lex.)

M. lindeniana Rich. & Gal.

M. meleagris Lindl.

M. mombachoensis Heller ex J.T.Atwood

M. obscura Lind. & Rchb.f. (?=M. atrata var. brachyantha Rchb.f.)

M. praestans Rchb.f.

M. punctostriata Rchb.f. (=M. rubrilabia Schltr.)

M. rhombea Lindl.

M. seymouriana J.T.Atwood

Densa Alliance [Near Cucullata Alliance?]

M. densa Lindl. (=Ornithidium densum (Lindl.) Rchb.f., ?

Maxillaria glomerata Gal.)

M. hagsateriana Soto Arenas

Densifolia Alliance (with or without pseudobulbs, always forming elongate canes, sheaths foliaceous, flowers with short, broad segments)

Densifolia Suballiance ["Broad" leaves]

M. alfaroi Ames & C.Schweinf.

M. cuencana Garay (=Ornithidium luteorubrum Lehm. & Kraenzl., Camaridium luteorubrum (Lehm. & Kraenzl.) Schltr.)

M. densifolia (Poepp. & Endl.) Rchb.f. (=Dicrypta densifolia Poepp. & Endl. 1835, Camaridium densifolium (Poepp. & Endl.) Benth. & Hook. 1883) [are pseudobulbs really absent as in original description?]

M. funicaulis C.Schweinf.
M. guareimensis Rchb.f.
M. johannis Pabst (=Camaridium robustum Barb.Rodr.)
M. platypetala Ruiz & Pav. (=Dendrobium platypetalum (Ruiz & Pav.) Pers., note specimen at K;?
M. polypetala Steud. (Schweinfurth suggests *M. platypetala* may be a *Lycaste*.)
M. procurrens Lindl.
M. saxatilis Rchb.f. 1855
M. schnitteri Schltr.
M. spilotantha Rchb.f.
M. subpandurata Schltr. [Schlechter compares this to *M. variabilis* which lacks foliaceous sheaths.]
M. xanthorhoda Schltr.[Description needed]

Arbuscula Suballiance ["Narrow" leaves]

M. arbuscula Rchb.f., not *Camaridium arbuscula* Lindl. (?
 =*Fernandezia punctata* Ruiz & Pav.)
M. arbuscula (Lindl.) comb. ined. (=Camaridium arbuscula Lindl.)
M. camaridioides Schltr.
M. christobalensis Rchb.f. (=Camaridium christobalense (Rchb.f.) Hoehne)
M. lawrenceana (Rolfe) Garay & Dunsterv. (=Camaridium lawrenceanum Rolfe)
M. microdendron Schltr.
 ?*M. pamplonensis* Lind. & Rchb.f.
M. pastensis Rchb.f. [type needed]
M. purpurata (Lindl.) Rchb.f. (=Camaridium purpuratum Lindl.)
M. stenophylla Rchb.f. (1854) not Lehm. & Kraenzl. (1899)
M. stictantha Schltr.
 ?*M. vulcanica* Lehm. & Kraenzl.

Ponerantha Suballiance

M. acervata Rchb.f. (=M. foliosa Ames & C.Schweinf.)
M. ponerantha Rchb.f.
M. swartziana C.D.Adams (=Epidendrum proliferum Sw.,
Cymbidium proliferum (Sw.) Sw., *Isochilus prolifer* (Sw.) R.Br.,
Ornithidium proliferum (Sw.) Fawc. & Rendle)
M. cauae Garay (=M. parvula Schltr.) (?=M. ponerantha of
 authors, not Rchb.f. (Purple flowered. Possibly allogamous forms
 of *M. swartziana*)
 [Camaridium] *vinosum* Rolfe, not Schltr. Flowers are described
 as wine colored. This may be an allogamous form of *M.*
swartziana.

Desvauxiana Alliance

M. auyantepuiensis Foldats
M. brachypoda Schltr.
 [M. caparaoensis Brade]
M. desvauxiana Rchb.f. (=M. coriacea Barb. Rodr., *M. petiolaris*

A. Rich. ex Rchb.f., M. verrucifera C.Schweinf.)
M. foldatsiana Carnevali & Ramirez
M. huebneri Schltr.
M. longipetiolata Ames & C.Schweinf.
M. riopalenquensis Dodson (=M. auyantepuiensis ssp. epiphytica
Carnevali & Ramirez) [not M. neophylla Rchb.f.]

Dicrypta (Heterotaxis) Alliance (including Valenzuelana
Suballiance of Pabst)
[M. boliviensis Schltr.?)

Bicallosa Suballiance (Leaves thin, never monopodial)

M. bicallosa (Rchb.f.) Garay (=Zygopetalum bicallosum Rchb.f.,
Kefersteinia bicallosa (Rchb.f.) Rchb.f., Ornithidium
dolichophyllum Schltr., M. caespitosa C.Schweinf., Trigonidium
equitans Garay)
M. bolleoides Schltr. (Possibly the same as M. chartacifolia)
M. chartacifolia Ames & C.Schweinf.
M. sp. nov., "spotted"
Ornithidium cyperifolium Schltr. [close to M. bicallosa; flowers
"wine red"]
Ornithidium rhodoleucum Schltr. [close to M. bicallosa; flowers
dark red with white lip]

Crassifolia Suballiance

[M. brasiliensis Brieger & Bicalho?]
M. crassifolia (Lindl.) Rchb.f. (=Heterotaxis crassifolia Lindl.,
Dicrypta crassifolia (Lindl.) Lindl. ex Loud., Epidendrum sessile
Sw., M. sessilis (Sw.) Fawc. & Rendle, Dicrypta baueri Lindl.; ?
=M. gatunensis Schltr.)
M. cymbidioides Dodson, J.T.Atwood, & Carnevali
M. discolor (Lodd. ex Lindl.) Rchb.f. (=Dicrypta discolor Lodd.
ex Lindl.)
M. maleolens Schltr.
M. nasuta Rchb.f. (=M. nasalis Rchb.f., M. brevipedunculata
Ames & C.Schweinf., ? M. oxysepala Schltr.)
M. proboscidea Rchb.f.
M. santanae Carnevali & Ramirez
M. superflua Rchb.f. (M. longifolia (Barb.Rodr.) Cogn. not
Lindl., M. tarumaensis Hoehne)
M. verecunda Schltr. [close to M. villosa?]
M. villosa (Barb.Rodr.) Cogn. (=Dicrypta villosa Barb. Rodr.)
M. violaceopunctata Rchb.f.

Valenzuelana Suballiance

M. equitans (Schltr.) Garay (=Camaridium equitans Schltr., M.
mattogrossensis Brade, Camaridium vandiforme Schltr.,
Marsupiarina vandiformis (Schltr.) Hoehne, M. vandiformis
(Schltr.) C.Schweinf.)
M. fritzii Carnevali & Dodson, ined.
M. valenzuelana (A.Rich) Nash (=Pleurothallis valenzuelana

A.Rich., *Marsupiaria valenzuelana* (A.Rich) Garay, *Dicrypta iridifolia* Bateman ex Rchb.f., *M. iridifolia* (Batem. ex Rchb.f.) Rchb.f.,
Marsupiaria iridifolia Hoehne, *Dicrypta irisphyta* Barb.Rodr., *M. valenzuelana* ssp. *angustata* J.T.Atwood
M. witsenioides Schltr.

Elatior Alliance (close to *Densifolia* Alliance?)

M. elatior (Rchb.f.) Rchb.f. (= *Dicrypta elatior* Rchb.f., *M. triangularis* Lindl., *M. albertii* Schltr.; ?=*Camaridium xylobiichilum* Kraenzl.)
M. tubercularis J.T.Atwood

Floribunda Alliance

M. caveroi D.E.Benn. & Christenson
M. dodsonii Carnevali, ined.
M. floribunda Lindl.
M. merana Dodson
M. platyloba Schltr. (Possibly misapplied to this alliance)
M. quelchii Rolfe
M. dunstervillei Carnevali & Ramirez
M. yanganensis Dodson

Friedrichsthalii Alliance (Hypothesis: close to *Acuminata* Alliance)

M. aciantha Rchb.f. (= *Lycaste aciantha* (Rchb.f.) Rchb.f.)
M. encyclioides Dodson & J.T.Atwood
M. friedrichsthalii Rchb.f. (= *M. turialbae* Schltr.)
[? *M. nymphopolitana* Kraenzl.]
M. ochroglossa Schltr.
M. scorpioidea Kraenzl. (= *Camaridium scorpioideum* (Kraenzl.) Hoehne; ?=*Maxillaria rhodosticta* Kraenzl.)

Graminifolia Alliance (may be able to divide into three or more suballiances)

Dendrobioides suballiance

M. allenii L.O.Williams
M. dendrobioides (Schltr.) L.O.Williams (= *Camaridium dendrobioides* Schltr., *Camaridium jimenezii* Schltr., ? *Camaridium simile* Schltr.)
M. valerioi Ames & C.Schweinf.
M. fragrans J.T.Atwood

Graminifolia Suballiance : No pseudobulbs in adults, lanceolate leaves

M. cassapensis Rchb.f. (= *Camaridium cassapense* (Rchb.f.) Schltr.)
M. graminifolia (Kunth) Rchb.f. (= *Isochilus graminifolius* Kunth,

Camaridium graminifolium (Kunth) Rchb.f.). *M. lancifolia* (Rchb.f.) Rchb.f. (= *Camaridium lancifolium* Rchb.f.) *M. polyphylla* Rchb.f. (= *Camaridium polyphyllum* (Rchb.f.) Schltr.). *M. similis* Garay & Dunsterville (= *M. mathewsii* Rchb.f. (1863) not Lindl. (1845), *Camaridium mathewsii* (Rchb.f.) Schltr.)

M. linearifolia Ames & C.Schweinf. (very close to *M. casapensis*, but has longer ovary and is from Costa Rica and Panama.)

Luteorubra Suballiance: No pseudobulbs in adults, elliptic leaves

M. appendiculoides C.Schweinf.

M. brevifolia (Lindl.) Rchb.f. (= *Camaridium brevifolium* Lindl.)

M. caucana (Schltr.) [needs new name?] (= *Camaridium caucanum* Schltr.)

M. flavum (Schltr.), unpublished homonym (= *Camaridium flavum* Schltr.)

M. haenkei Correll (= *Isochilus grandiflorum* Lindl., *M. longibracteata* (Lindl.) Rchb.f. var. *grandiflora* (Lindl.) C.Schweinf.

M. longibracteata (Lindl.) Rchb.f. (= *Camaridium longibracteatum* Lindl.)

M. luteorubra (Lindl.) Rchb.f. (= *Camaridium luteorubrum* Lindl.)

M. nitidula Rchb.f.

Suballiance in question: pseudobulbs present in mature shoots

M. arbuscula Rchb.f.

M. sanguineomaculata Schltr.

M. sodiroi (Schltr.) Dodson (= *Camaridium sodiroi* Schltr.)

Grandiflora Alliance (Close to *Lepidota* Alliance?)

This group interfaces with both *Lepidota* and *Parkeri* groups and may not be separable from them. The *Grandiflora* Alliance is characterized by the plant habit-cespitose with apically 1-foliate leaves, subtended by 1-2 foliaceous sheaths, and the the flowers which are generally large for the genus, at least with broad perianth parts and lip with pseudopollen. Flower colors are usually white, less often tinged yellow, sometimes spotted with large pokadots. Plants are mostly cool wet growing mid to high Andean plants that are impossible to grow in hot climates.

M. amesiana Hort. ex Gard. Chron.

M. anatomorum Rchb.f.

M. augustaevictoriae Lehm. & Kraenzl. ex Kraenzl. (syn.: *M. hirtzii* Dodson & A.Andreetta)

M. dalessandroi Dodson

M. dichroma Rolfe

M. eburnea Lindl.

M. elegantula Rolfe [Yellowish and spotted apically]

M. fletcheriana Rolfe

M. fucata Rchb.f.
M. grandiflora (HBK) Lindl.
M. grandis Rchb.f.
M. grayi Dodson [Or could this possibly be close to the Bicallosa Suballiance?]
M. hillsii Dodson
M. hoppii Schltr.
M. huebschii Rchb.f. [Possibly same as *M. fucata* Rchb.f.]
M. insignis Rolfe
M. irrorata Rchb.f.
M. johniana Kraenzl.
M. jucunda Lehm. & Kraenzl.
M. kalbreyeri Rchb.f.
M. lehmannii Rchb.f.
M. lindenii Cogn.
M. litensis Dodson
M. melina Lindl.
M. mirabilis Cogn. [yellow base color]
M. molitor Rchb.f. [yellow base color]
M. mooreana Rolfe
M. nutans Lindl.
M. sanderiana Rchb.f.
M. striata Rolfe
M. urbaniana Lehm. & Kraenzl.
M. venusta Lind. & Rchb.f.

THE FOLLOWING IS GERMAN'S LIST AS IS

M. nuriensis Carnevali & Ramirez

Imbricata Alliance

M. bracteata (Schltr.) Ames & Correll (=Ornithidium bracteatum Schltr., Camaridium bracteatum (Schltr.) Schltr.; *M. vagans* Ames & C.Schweinf.)
M. gomeziana J.T.Atwood (?=*M. admonens* Bock)
M. imbricata Barb.Rodr. (Camaridium imbricatum (Barb.Rodr.) Hoehne 1947 non Schltr. 1918, *M. iguapensis* Hoehne & Schltr., Camaridium iguapense (Hoehne & Schltr.) Hoehne, Camaridium imbricatum (Barb.Rodr.) Hoehne, Maxillaria carinata Barb. Rodr., Camaridium carinatum (Barb.Rodr.) Hoehne, Camaridium hoehnei Pabst)
M. praetexta Rchb.f. [1854, probably an earlier name for *M. imbricata* Barb. Rodr. (1877)]

Lepidota Alliance

Lepidota Suballiance

[M. angustissima Ames, Hubbard, & C.Schweinf. (=M. acutifolia Schltr., not Lindl.)]
M. arachnites Rchb.f.
M. arachnitiflora Ames & C.Schweinf.
M. attenuata Ames & C.Schweinf. (?=*M. guadalupensis*)

M. bolivarensis C.Schweinf.
M. bradei Schltr. ex Hoehne
M. caucana Schltr., not *Camaridium caucanum* Schltr.
M. colorata Rchb.f.
M. confusa Ames & C.Schweinf.
M. crocea Lindl. not Poepp. & Endl. (= *M. lindleyana* Schltr.)
M. cuzcoensis C.Schweinf.
M. ecuadorensis Schltr.
M. edwardsii D.E.Benn. & Christenson
[? *M. elegans* Schltr.; close to *M. reichenheimia* fide Schltr.]
M. farinifera Schltr.
M. fractiflexa Rchb.f.
M. guadalupensis Cogn.
M. guiardiana Chiron
M. lepidota Lindl. (*M. pertusa* Lindl. ex Rchb.f., *M. saxicola* Schltr.)
M. lilliputana D.E.Benn. & Christenson
M. longissima Lindl. (*M. pentura* Lindl.)
M. macropoda Schltr.
M. marmoliana Dodson
M. muscicola Rchb.f., 1878 (=earlier name for *M. arachnites* Rchb.f., 1880?)
[? *M. neophylla* Rchb.f.]
M. chionantha J.T.Atwood
M. pachyacron Schltr.
M. patens Schltr.
M. pseudoreichenheimiana Dodson
M. ramonensis Schltr. (= *M. brevipes* Schltr.)
M. reichenheimiana Endr. & Rchb.f.
M. rubioi Dodson
M. simplicilabia C.Schweinf.
M. thurstoniorum Dodson
M. trilobulata D.E.Benn. & Christenson
M. virguncula Rchb.f.
M. whittenii Dodson

Pterocarpa Suballiance

M. brachybulbon Schltr. (1-2 lvs. at base of bulb)
[*M. liparophylla* Summerhayes (This species is compared by the author to a large *M. pterocarpa* but may not even belong to the Suballiance)]
M. pterocarpa Barb.Rodr.
[*M. xylobiiflora* Schltr.]

Speciosa Suballiance (very close to *Lepidota* Suballiance)

M. gentryi Dodson
M. langlassei Schltr.
M. rodrigueziana J.T.Atwood & Mora
M. speciosa Rchb.f. (= *M. scurrilis* Rolfe)

Splendens Suballiance (three or more leaves at base of pseudobulb, flowers with linear tepals)

M. chlorantha Lindl.
M. gracilipes Schltr.
M. granditenuis D.E.Benn. & Christenson
M. klugii C.Schweinf.
M. mathewsii Lindl., not Rchb.f.
M. ochroleuca Lodd. ex Lindl.
M. ochroleuca var. *longipes* Sander
M. pauciflora Barb.Rodr.
M. rodriguesii Cogn. (= *M. longipetala* Barb. Rodr., not Ruiz Pav.)
M. splendens Poepp. & Endl. (*M. histiologorum* Rchb.f., fide Pabst, ? *M. buchtienii* Schltr.)
M. tenuis C.Schweinf.
M. weberbaueri Schltr.

Suballiance unknown

M. bennettii Christenson [Possibly this belongs in its own alliance]
M. hirsutilabia D.E.Benn. & Christenson

Lueri Alliance (Germán says this may be part of Meridensis Alliance)

M. lueri Dodson
M. linearis C.Schweinf.

Meridensis Alliance

[? *M. caquetana* Schltr.]
 [? *M. caulina* Schltr.]
 [*M. chasei* Dodson]
 [? *M. elata* Schltr.]
M. embreei Dodson
M. exaltata (Kraenzl.) C. Schweinf. (= *Camaridium exaltatum* Kraenzl.)
M. longicaulis Schltr.
M. meridensis Lindl.
M. nanegalensis Rchb.f.
M. schlechteri Foldats (= *M. rugosa* Schltr. 1914, not Scheidw. 1843; *Camaridium rugosum* (Schltr.) Hoehne; *M. sulcata* C.Schweinf., illeg.
M. williamsii Dodson

Microphyton Alliance

M. burgeri J.T.Atwood
M. flava Ames, Hubbard, & C.Schweinf. (= *Ornithidium ramonense* Schltr.)

Wercklei Suballiance

M. jugata Garay

M. lankesteri Ames (=Ornithidium aurantiacum Schltr.)
M. microphyton Schltr. (=O. parvulum Schltr., O. pallidiflavum Schltr., *M. pallidiflava* (Schltr.) Senghas)
M. muscoides J.T.Atwood
M. oestlundiana L.O.Williams
M. wercklei (Schltr.) L.O.Williams (=Ornithidium wercklei Schltr.)

Nardoides Alliance Pseudobulbs apically 3-5 foliate. Interfaces with Pityphyllum?

M. nardoides Kraenzl.

Neourbania Alliance (close to or part of Ornithidium Alliance, Aurea Suballiance?)

M. adendrobium (Rchb.f.) Dressler (=Ponera adendrobium Rchb.f., Pleuranthium adendrobium (Rchb.f.) Benth. & Hook.f., Neourbania adendrobium (Rchb.f.) Fawc. & Rendle; Camaridium parviflorum Fawc.)
M. chrysocynoides (Schltr.) Dodson. (=Ornithidium chrysocynoides Schltr.)
M. conduplicata (Ames & C.Schweinf.) L.O.Williams (=Ornithidium conduplicatum Ames & C.Schweinf.)
M. haemathodes (Ruiz & Pav.) Garay (=Fernandezia haemathodes Ruiz & Pav.; Ornithidium weberbauerianum Kraenzl.; Maxillaria crassicaulis C.Schweinf.) [This is the now famous blue Maxillaria recently rediscovered in Bolivia.]
M. nicaraguensis (Hamer & Garay) J.T.Atwood (=Neourbania nicaraguensis Hamer & Garay)
M. machinazensis D.E.Benn. & Christenson [=M. mapiriensis?]
M. mapiriensis (Kraenzl.) L.O.Williams (=Ornithidium mapiriense Kraenzl., ?including Maxillaria condensata C.Schweinf.). Is this close to the Ramosa Alliance?
M. pastoensis (Schltr.) comb. ined. (=Ornithidium pastoense Schltr.)
M. pleuranthioides (Schltr.) Garay (=Ornithidium pleuranthioides Schltr.)
M. quitensis (Rchb.f.) C. Schweinf.
M. sp. nov. ined. identified as *M. adendrobium* (Rchb.f.) Dressler (Dodson 7364 (SEL); Dodson et al. 8511 (SEL), Ecuador

Ornithidium (Aggregata) Alliance (Neourbania Alliance may belong here)

M. affinis (Poepp. & Endl.) Garay (=Scaphyglottis affinis Poepp. & Endl., Ponera affinis Rchb.f.), not Camaridium affine Schltr., not *M. affinis* Hort. Petrop. ex Rchb.f.)
M. aggregata (H.B.K.) Lindl.
M. bicolor (Rolfe) (=Ornithidium bicolor Rolfe) Possibly this belongs in Biolleyi Alliance]
M. disticha (Lindl.) C.Schweinf. (Ornithidium distichum Lindl.)
M. jamesonii (Rchb.f.) Garay & C.Schweinf. (=Ornithidium jamesonii Rchb.f.)

?*M. lehmannii* (Kraenzl.) comb. ined.; needs new name,
 (*Ornithidium lehmannii* Kraenzl.), not *Maxillaria lehmannii*
 Rchb.f.
M. nubigena (Rchb.f.) C.Schweinf. (= *Ornithidium nubigenum*
 Rchb.f., ?=*Pachyphyllum pamplonense* Kraenzl.)
M. palmensis Dodson (= *Ornithidium breve* Schltr.) [Not
Maxillaria brevis (Hoehne & Schltr.) Hoehne]
 ?*M. pfitzerianum* (Lehm. & Kraenzl.) comb. ined. (= *Ornithidium*
pfitzerianum Lehm. & Kraenzl.)
M. squarrosa (Schltr.)?
M. torifera (Schltr.) comb. ined. (= *Ornithidium toriferum* Schltr.)
 [*Ornithidium*] *vagans* Schltr. (not *Maxillaria vagans* Ames &
 C.Schweinf.)

Aurea Suballiance

M. aurea (Poepp. & Endl.) L.O.Williams (= *Ornithidium aureum*
 Poepp. & Endl., *Camaridium aureum* (Poepp. & Endl.) Hoehne)
Maxillaria cordyline (Rchb.f.) Dodson (= *Ornithidium cordyline*
 Rchb.f.)
M. crassicaulis C.Schweinf.
M. gigantea (Lindl.) Dodson (= *Ornithidium giganteum* Lindl.,
Camaridium aureum var. *giganteum* Hoehne; ?=*Ornithidium*
bolivianum Schltr.)
M. gigantea ssp. *condorensis* D.E.Benn. & Christenson [this may
 be a good species, and close to *M. conduplicata* of *Neourbania*
 Alliance.]
M. latifolia (Kunth) Lindl. (fide C. H. Dodson) (= *Dendrobium*
latifolium Kunth)
M. longa (Schltr.) Dodson (= *Camaridium longum* Schltr.)

Coccinea Suballiance

M. alticola C.Schweinf. (= *Ornithidium serrulatum* Lindl., not *M.*
serrulata Ames & Correll)
M. coccinea (Jacq.) L.O.Williams ex Hodge (= *Epidendrum*
coccineum Jacq., *Ornithidium coccineum* (Jacq.) Salisb.,
Camaridium coccineum (Jacq.) Hoehne)
M. fulgens (Rchb.f.) L.O.Williams (= *Ornithidium fulgens*
 Rchb.f.)
M. heraldica Rchb.f.
M. jensischiana Rchb.f. (*Ornithidium jensischianum* Rchb.f.)
M. miniata (Lindl.) L.O.Williams (= *Ornithidium miniatum*
 Lindl.). Fls. crimson-vermillion; lip yellow edged and blotched
 with crimson.
M. nivea (Lindl.) L.O.Williams (= *Ornithidium niveum* Lindl.).
 Fls. white.
M. pittieri (Ames) L.O.Williams (*Ornithidium pittieri* Ames)
M. ruberrima (Lindl.) Garay (= *Scaphyglottis ruberrima* Lindl.).
 Fls. bright red.
M. sanguinolenta (Lindl.) C.Schweinf. (= *Ornithidium*
sanguinolentum Lindl.). Fls. bright yellow; lip with red spot.
 [*Ornithidium*] *semiscabrum* Lindl.

Paleata (wrightii) Alliance

M. dichotoma (Schltr.) L.O.Williams (=Camaridium dichotomum Schltr.)
? *M. insolita* Dressler
M. lutheri J.T.Atwood
M. minor (Schltr.) L.O.Williams (=Camaridium minus Schltr.)
M. paleata (Rchb.f.) Ames & Correll (=Ornithidium paleatum Rchb.f.; Camaridium wrightii Schltr., *M. wrightii* (Schltr.) Ames & Correll, Ornithidium wrightii (Schltr.) C.Schweinf.)
M. pardalina Garay (=M. pantherina Rchb.f. not Hoffmsgg.)
M. schlechteriana J.T.Atwood (=Camaridium imbricatum Schltr., Ornithidium schlechterianum C.Schweinf. [nom. illeg.], *M. wrightii* (Schltr.) Ames & Correll var. imbricata (Schltr.) Ames & Correll.
M. serrulata Ames & Correll (=Camaridium amparoana Schltr., Ornithidium amparoanum (Schltr.) Pabst)
M. sigmoidea (C.Schweinf.) Ames & Correll (=Ornithidium sigmoideum C.Schweinf.)
M. vaginalis Rchb.f. (=Camaridium wercklei Schltr.)

Parkeri Alliance [No foliaceous sheaths; pseudobulbs unifoliate]

M. aequiloba Schltr.
M. albiflora Ames & C.Schweinf.
M. angustisegmenta Ames, Hubbard, & C.Schweinf., Maxillaria endresii Rchb.f. var. angustisegmenta (Ames, Hubbard, & C.Schweinf.) C. Schweinf.)
M. argyrophylla Poepp. & Endl.
M. aurorae D.E.Benn. & Christenson
M. batemanii Poepp. & Endl. (may have a foliaceous sheath at pseudobulb base)
M. breviscapa Poepp. & Endl.
M. calantha Schltr.
M. callichroma Rchb.f.
M. caloglossa Rchb.f.
[*M. candida* Lodd. ex Lindl.]
M. dillonii D.E.Benn. & Christenson [close to *M. callichroma* Rchb.f.]
M. divitiflora Rchb.f.
M. endresii Rchb.f. (=M. leptosepala?)
M. galantha J.T.Atwood & Carnevali
M. grandimentum C.Schweinf.
M. lactea Schltr. 1925, not 1923 (close to *M. yauaperiensis* Barb.Rodr. and *M. xanthosia* Barb.Rodr.)
M. leptosepala Hook. (=M. robusta Barb.Rodr.)
M. loretoensis C.Schweinf. (close to *M. parkeri*)
M. luteoalba Lindl.
M. monantha Barb.Rodr. (close to *M. parkeri*? Rufescens Alliance fide Pabst)
M. multiflora Barb.Rodr.(close to *M. parkeri*?)
M. nigrescens Lindl. (*M. rubro-fusca* Klotzsch)
? *M. pachyneura* Lehm. & Kraenzl.
M. parkeri (Spreng.) Hook. (=Colax parkeri Spreng., *M.*

hirtilabia Lindl.?, *M. lorifolia* Rchb.f.?)
M. perryae Dodson
M. plicata Schltr.
 ?*M. schultzei* Schltr. (Flowers sulfur-yellow; lip painted with red. Schlechter believes this is close to *M. leucaimata* Barb.Rodr., but may be close to *M. parkeri*).
M. setigera Lindl.
M. shepherdii Rolfe (close to *M. parkeri* or *M. schultzei*?)
 [*M. taracuana* Schltr., close to *M. ringens*?]
M. triloris Morren
M. verrucifera C.Schweinf.
M. woytkowskii C.Schweinf.
M. xanthosia Barb.Rodr.
M. yauaperyensis Barb.Rodr. [close to *M. parkeri*?]

Porrecta (Brunnea) Suballiance (lack of leaf at pb base, probably best as suballiance of Parkeri Alliance)

M. acostaei Schltr. (small *M. brunnea*-sort)
M. amazonica (?=*M. powellii*)
M. brunnea Lind. & Rchb.f. (including *M. bogotensis* Rchb.f. & Triana, name only based on W 51428, *M. brenesii* Schltr., and probably earlier described *M. porrecta* Lindl., *M. trinitatis* Ames, *M. trinitensis* Ames ex W.E.Broadway, name only)
 [? *M. aurantiaca* Schltr., not *M. aurantiaca* A.Rich. & Gal. If a good species, a new name is needed]
M. cryptobulbon Carnevali & J.T.Atwood
M. dolichophylla Schltr.
M. furfuracea Scheidw. (belongs with *M. porrecta* fide Pabst)
 [? *M. glauca* Lindl. ex W. Baxt. Description needed]
M. glumacea Rolfe (belongs with *M. porrecta* fide Pabst)
M. guentheriana Kraenzl. [Kraenzlin compares this with *M. dolichophylla* Schltr., but the pseudobulbs are described as apically bifoliate.]
M. kegelii Rchb.f. [or does this belong with *M. ringens* Suballiance?]
M. leucaimata Barb.Rodr.
M. leucantha Schltr. (1929), not Kl., Otto, & Dietr. (1850)
M. longiloba (Ames & C.Schweinf.) J.T.Atwood (= *M. brenesii* Schltr. var. *longiloba* Ames & C.Schweinf.)
M. microtricha Schltr.
M. modestiflora Pabst (= *M. modesta* Brade. Close to *M. cryptobulbon*?)
M. pleiantha Schltr. [Schlechter compares this to *M. melina* Lindl.]
M. poicilotheca Schltr. (close to *M. brunnea*)
M. porrecta Lindl. (*M. aurea* Hort. ex Rchb.f., *M. mutabilis* Hort. ex Rchb.f.) (includes *M. brunnea*?)
M. powellii Schltr. (part of *M. brunnea* or *M. porrecta*?)
 [? *M. simacoana* Schltr.]
M. spiritu-sanctensis Pabst

Ringens Suballiance (close to Luteoalba Alliance?)

M. fuerstenbergiana Schltr.
M. hennisiana Schltr.
M. maderoi Schltr. [Schlechter compares this to *M. lepidota* but seems more similar to a large *M. fuerstenbergiana*.]
M. parvibulbosa C.Schweinf.
M. ringens Rchb.f. (?=*M. amparoana* Schltr., *M. lactea* Schltr. 1923 not 1925, *M. pubilabia* Schltr., *M. rouseauae* Schltr., *M. tuerckheimii* Schltr., *M. yzabalana* S.Watson, *M. lactiflora* Pabst, *M. leucoxantha* Endres, name only based on Endres collection at W)

Picta Alliance (Brazilian Alliance, two apical leaves)

M. brevis (Hoehne & Schltr.) Hoehne (= *M. picta* var. *brevis* Hoehne & Schltr.)
M. barbosae Loeffgren ex Porto
M. consanguinea Kl. (*M. picta* Hook. var. *brunnea* Rchb.f., *M. serotina* Hoehne, not Regnell & Barb.Rodr.)
M. gracilis Lodd. (= *M. acutipetala* Hook., *M. liliacea* Barb. Rodr. not Ll. & Lex., *M. penduliflora* Fenzl., *M. queirogana* Barb.Rodr.)
[? *M. guayanensis* Klinge]
M. heismanniana Barb.Rodr.
M. kautskii Pabst
M. moutini Pabst (*M. moutinhoi* ex Index Kewensis)
? *M. parviloba* Rolfe [type needed. Origin was thought to have been Brazil.]
M. phoenicanthera Barb.Rodr. (*M. punctata* Schltr. not Lodd.)
M. picta Hook. (*M. leucocheile* Hoffmsgg., *M. kreysigii* [Regel?], *M. fuscata* Kl. ex Rchb.f. [1863], non Hort. ex Rchb.f. [1863], *M. monoceros* Kl. ex Rchb.f., *M. pallidiflora* Rchb.f. ex Barb. Rodr., illeg., not *M. pallidiflora* Hook.)
M. polyantha Barb.Rodr.
M. porphyrostele Rchb.f.
M. punctata Lodd.
M. regeliana Cogn. (*M. galeottiana* Regel, not Rich. et Gal.; Regel description of 1860 indicates "Mexico," but doubtful)
M. rupestris Barb.Rodr. (*M. punctata* Hoehne non Lodd., *M. hoehnei* Schltr.)
M. schunkeana Campacci & Kaustsky
[*M. tristis* Schltr.; but possibly close to *M. grobyoides*]
M. ubatubana Hoehne

Marginata Suballiance (elongate rhizomes)

M. chrysantha Barb.Rodr. (*M. picta* Rchb.f. non Hook., *M. serotina* Regnell & Barb.Rodr.)
M. marginata Fenzl. (*M. tricolor* Lindl., *M. punctulata* Kl., *M. deflexa* Kl. ex A.Br.Kl. & Bouche, *M. crassipes* Kraenzl., *M. murilliana* Hoehne)
M. piresiana Hoehne

Madida Suballiance (plants small, rarely pseudobulbs apically 1-foliate)

[?M. *broadwayi* (Cogn.) R.E.Schultes (=Ornithidium *broadwayi* Cogn.)]
M. *cogniauxiana* Hoehne, (=M. *heterophylla* Hoehne)
M. *madida* Lindl. (M. *cepula* Rchb.f., M. *mosenii* Kraenzl., M. *hatschbachii* (Schltr.) Hoehne, M. *echinochila* Kraenzlin)
M. *neowiedii* Rchb.f.
M. *paranaensis* Barb. Rodr.

Planicola Alliance

M. *haberi* J.T.Atwood
M. *planicola* C.Schweinf. (=Camaridium *latifolium* Schltr.)

Pseudomaxillaria Alliance

M. *brevilabia* Ames & Correll (Ornithidium *alfaroi* Ames & C.Schweinf.)
?M. *compacta* (Schltr.) comb. ined. (=Ornithidium *compactum* Schltr.) [The flower is most similar to that of M. *parviflora*, but description of plant habit is very different.]
M. *concvilabia* Ames & Correll (Ornithidium *stenophyllum* Schltr.)
M. *horichii* Senghas (=Sepalosaccus *horichii* (Senghas) Senghas)
M. *neglecta* (Schltr.) L.O.Williams (=Ornithidium *neglectum* Schltr.)
M. *parviflora* (Poepp. & Endl.) Garay (=Scaphyglottis *parviflora* Poeppig & Endl. Ornithidium *parviflorum* (Poepp. & Endl.) Rchb.f., Pseudomaxillaria *parviflora* (Poepp. & Endl.) Brieger; Ornithidium *confertum* Griseb., M. *conferta* Ames & C.Schweinf., Ornithidium *chloroleucum* Barb. Rodr., Pseudomaxillaria *chloroleuca* (Barb.Rodr.) Hoehne, M. *simulans* (Ames & C.Schweinf.) L.O.Williams, Ornithidium *simulans* Ames & C.Schweinf., M. *exigua* Regel, M. *surinamensis* Focke ex Rchb.f., M. *purpurea* Ames & Correll, Ornithidium *rhomboglossum* Schltr., Pseudomaxillaria *rhomboglossa* (Schltr.) Brieger, Epidendrum *vestitum* Sw., Cymbidium *vestitum* (Sw.) Sw., Camaridium *vestitum* (Sw.) Lindl., Pseudomaxillaria *vestita* (Sw.) Sw. Brieger, Ornithidium *vestitum*(Sw.) Rchb.f., Camaridium *purpureum* Spreng.)
M. *pseudoneglecta* J.T.Atwood (=Ornithidium *anceps* Rchb.f., Ornithidium *xanthinum* Rchb.f., ined.)
M. *virescens* (Schltr.) comb. ined. (=Ornithidium *virescens* Schltr., Pseudomaxillaria *virescens* (Schltr.) Brieger

Pumila Alliance (including Paulistana Alliance. Always a single leaf, but close to or perhaps belonging to Madida suballiance of Picta Alliance)

M. *ferdinandiana* Barb.Rodr
M. *fuscopurpurea* Drapiez
M. *funerea* Lindl.
M. *minuta* Cogn.
M. *pachyphylla* Schltr. ex Hoehne

M. parahybunensis Cogn.
M. parva Rolfe
M. paulistana Hoehne
M. plebeja Rchb.f.
M. pumila Hook.
? *M. pusilla* Rolfe
M. spannagelii Hoehne

Ramosa Alliance [Related to *Neorbania* group?]

M. fasciculata C.Schweinf.
M. histrionica (Rchb.f.) L.O.Williams (= *Ornithidium* *histrionicum* Rchb.f., *Maxillaria aristeguietae* Foldats) [? *M. inflexa* (Lindl.) Griseb. (= *Ornithidium inflexum* (Lindl.) Rchb.f., *Camaridium inflexum* Lindl.; ? = *Ornithidium croceorubens* Rchb.f., *Maxillaria croceorubens* (Rchb.f.) L.O.Williams]
M. lasallei Fold.
M. loefgrenii (Cogn.) Pabst (= *Ornithidium loefgrenii* Cogn., *Camaridium loefgrenii* (Cogn.) Hoehne,
M. spathulata C.Schweinf.)
M. multicaulis (Poepp. & Endl.) C.Schweinf. (= *Siagonanthus multicaulis* Poepp. & Endl., *Ornithidium multicaule* (Poepp. & Endl.) Rchb.f., *Camaridium multicaule* (Poepp. & Endl.) Hoehne)
M. ochracea (Rchb.f.) Garay (= *Ornithidium ochraceum* Rchb.f.)
M. pendens Pabst (= *Camaridium pendulum* Barb.Rodr. 1877)
M. pendula (Poepp. & Endl.) C.Schweinf. (= *Scaphyglottis pendula* Poepp. & Endl., *Ornithidium pendulum* cogn.)
[*M. perijaensis* Carnevali & Romero, G. ined.]
M. ramosa Ruiz & Pav. (*Dendrobium ramosum* Pers., ? = *Scaphyglottis taphallae* Rchb.f., *Ornithidium taphallae* (Rchb.f.) Rchb.f., *Maxillaria taphallae* (Rchb.f.) C.Schweinf., *O. dichotomum* Schltr.)
M. repens L.O.Williams
M. rigida Barb. Rodr. (= *Camaridium rigidum* Schltr.)
M. sillarensis Dodson & Viquez
M. tonsoniae Soto Arenas
[*Camaridium sterrocaulon* Schltr.]
[*Camaridium vagans* Schltr.], not *Maxillaria vagans* Ames & C.Schweinf.

Rufescens Alliance (hypothesis: *Mormolyca ringens* (Lindl.) Schltr. belongs here)

M. abelei Schltr.
M. acutifolia Lindl., not Schltr.
M. articulada Kl., fide Hammer, Icon. Pl. Trop. plate 1047
M. chacoensis Dodson
[*M. cleistogama* Brieger & Bicalho, fide Pabst]
M. dressleriana Carnevali & J.T.Atwood
M. hedwigiae Hamer & Dodson
M. moralesii Carnevali & J.T.Atwood
? *M. muelleri* Regel
M. richii Dodson

M. rufescens Lindl. (Syn.: *M. fuscata* Hort. ex Rchb.f. 1863, non Kl. ex Rchb.f.)
M. rugosa Scheidw.
M. suarezorum Dodson
M. vanillodora A.Rich & Gal.

Saragurensis Alliance (Near *Nardoides* Alliance or *Pityphyllum*?)

M. saragurensis Dodson. Odd plant with hooks on each side of the sheath apex.

Sepalosaccus Alliance (probably this belongs with the *Parviflora* Alliance)

M. strumata (Endres & Rchb.f.) Ames & Correll (= *Ornithidium strumatum* Endres & Rchb.f., *Sepalosaccus strumatum* (Endr. & Rchb.f.) Garay; ?=*Sepalosaccus humilis* Schltr.)

Sophronitis Alliance

M. jamboensis Dodson
M. patula C.Schweinf.
M. sophronitis (Rchb.f.) Garay (*Ornithidium sophronitis* Rchb.f.)

Subulata Alliance (close to *Picta* Alliance; leaves 2-3, terete or nearly so)

M. acicularis Herb.
M. echinophyta Barb.Rodr.
M. juergensii Schltr.
M. perpusilla Kraenzl.
M. poaeifolia Schltr. (from Bolivia)
M. seidelii Pabst
M. subulata Lindl.
M. vernicosa Barb.Rodr.
M. vitelliniflora Barb.Rodr.

Tigrina Alliance (Hypothesis: close to or within genus *Chrysocycnis*)

M. tigrina C.Schweinf., (= *Chrysocycnis tigrinum* (C.Schweinf.) J.T.Atwood.)

Uncata Alliance

M. subulifolia Schltr.
M. uncata Lindl. (= *Camaridium uncatum* (Lindl.) Hoehne), ?*M. macleei* Batem. ex Lindl., ?*M. nana* Hook., ?*M. squamata* Barb.Rodr., *Ornithidium squamatum* (Barb. Rodr.) Barb. Rodr., *Camaridium squamatum* (Barb. Rodr.) Hoehne). ?*M. stenostele* Schltr., ?*M. striatella* Kraenzl.

Variabilis Alliance (Pseudobulbs apically 1-foliate; no

foliaceous sheaths at base, flowers never with greatly attenuate floral segments.

M. adscendens Schltr.

M. angustifolia Hook. (?=*M. variabilis* Batem. ex Lindl.)

M. caespitifica Rchb.f. [?Syn.: *M. modesta* Schltr.]

M. cobanensis Schltr. [Carnevali has this near *Pseudomaxillaria*]

M. costaricensis Schltr.

M. estradae Dodson

M. houtteana Rchb.f.

M. infausta Rchb.f.

M. mexicana J.T. Atwood & Soto, ined.

M. panamensis Schltr.

M. sanguinea Rolfe

M. tenuifolia Lindl. (?*M. gracilifolia* Kraenzl.)

M. truncatilabia Schltr. [Near *M. cobanensis* Schltr. or possibly a synonym, but type is from Colombia.]

M. variabilis Batem. ex Lindl. (?*M. chiriquensis* Schltr., *M. curtipes*, Hook., *M. henchmannii* Hooker, *M. lyonii* Lindl., *M. revoluta* Kl., *M. variabilis* var. *unipunctata* Lindl.)

Vittariifolia Alliance

M. vittariifolia L.O. Williams

Bifrenaria rudolfii Alliance (interface with *Maxillaria* at *M. desvauxiana*?)

Bifrenaria rudolfii (Hoehne) Carnevali & G. Romero (*Maxillaria rudolfii* Hoehne, new name. for *M. petiolaris* Schltr., *Maxillaria perparva* Garay & Dunsterv., *Bifrenaria minuta* Garay, not *Maxillaria minuta* Cogn.)

Alliance Unknown

Camaridium boliviense Rolfe ex Stapf [description and type needed]

C. luteobrunneum Kraenzl. [description and type needed]

C. quercicola Schltr. [type needed]. Schlechter was not able to suggest a species related to this. Apparently the plant has pseudobulbs placed very distantly on a rhizome, and whitish waxy yellow flowered suffused with red with sepals about 2 cm long.

M. amblyantha Kraenzl. [description and type needed]

M. alata Ruiz & Pav., not *Camaridium alatum* Lindl.

M. angustibulbosa C. Schweinf. [Does this belong with *Lepidota* Alliance?]

M. antioquiana Kraenzl. [description and type needed]

M. barkeri Lindl. ex Beer [description and type needed]

M. binoti De Willd. [description and type needed]

M. brasiliensis Brieger & R.D. Illg. [description and drawings, etc., needed]

M. chapadensis Barb. Rodr. [listed by Cal Dodson from Kew List]

M. cinnabarina Lindl. ex J.C.Stevens, catalogue listing only.
M. connellii Rolfe [Grandiflora Alliance?]
M. convencionis Kraenzl. [description and type needed]
M. diamantensis Kraenzl. [description and type needed]
M. erubescens Kraenzl. [description and type needed]
M. galeottiana A. Rich. [Louis O. Williams (1951) could not find a drawing or type at Paris which presumably was collected in Mexico. The description indicates that the pseudobulbs are bifoliate, and that the scape is very short, features that do not correspond with any species of Maxillariinae known from Mexico.
M. graminea Lindl. [Type needed]
M. gymnochila Kraenzl. [description and type needed]
M. heterobulbon Kraenzl. [description and type needed]
M. houtteii Beer [description and type needed]
M. kreysigii Rchb.f. ex Beer [description needed], non *M. kreysigii* [Regel?]
M. linguaeformis Regel [Regel compares the species with *M. picta*, but the description indicates that the pseudobulbs are apically unifoliate]
M. luteograndiflora Hort. ex. Flor. Mag. 10: t. 599. [description needed]
M. littoralis Rouy. [description needed]
M. ornithoglossa Lodd. ex Baxt. [published in a list]
M. parthoni Dum. [description needed. Kew Index indicates "Bras." but not treated by Pabst.]
M. phaeoglossa Schltr. [description needed, illustration available similar to *M. porrecta*]
M. podochila Kraenzl. [description needed]
M. poeppigiana Steud. (=crocea Poepp. & Endl.)
M. polypetala Steud. Index Kewensis suggests that this is a synonym of *M. platypetala* Ruiz & Pav.
M. prolifera Ruiz & Pav. (obscure name)
M. sinuosa Batem. ex W.Baxt. (This may be just a name without a type)
M. spagazziniana Kraenzl. [Description and type needed]
M. stenophylla Lehm. & Kraenzl. (1899), not Rchb.f. (1854)
M. stictissimum Kraenzl.
M. tocotana Schltr. (=M. stenophylla Lehm. & Kraenzl., not Rchb.f.) [Type needed]
M. turneri Nichols. [description and type needed]
M. vestita Schltr. [possibly in Lepidota Alliance, but Schlechter compares to *M. fuerstenbergiana*]
M. villonacensis Dodson C. polyanthum Lehm. & Kraenzl. [type needed; not *M. polyantha* Barb.Rodr.]
Ornithidium heterobulbon Kraenzl. [description needed]
O. nanum Rolfe (not *Maxillaria nana* Hook.) [type needed]
O. olivaceum Kraenzl.

Excluded taxa. Each homotypic synonym may be a heterotypic synonym of an accepted name that is not included.

Maxillaria affinis Hort. Petrop. ex. Rchb.f., not (Poepp. & Endl.) Garay. *Xylobium hyacinthina*.

M. aromatica Graham ex Hooker. =*Lycaste aromatica*
M. atropurpurea Lodd. =*Bifrenaria atropurpurea*
M. aurantiaca A.Rich. & Gal. The original description indicates "scapo radicali 4-5-floro."
M. aureofulva Hook. =*Bifrenaria aureofulva*

M. balsamea Beer =*Lycaste balsamea*
M. barbata Knowles & Westc. =*Bifrenaria vitellina*
M. barringtoniae Hort. ex Rchb.f. =*Bifrenaria harrisioniae*
M. barringtoniae Lodd. =*Lycaste barringtoniae*
M. bicolor Ruiz & Pav. "Floribus racemosis."
M. boothii Lindl. =*Nidema boothii*
M. brachypus Rchb.f. =*Xylobium brachypus*
M. bractescens Lindl. =*Xylobium bractescens*
M. brasiliensis Brieger, invalid. Published without Latin description or type.
M. brevispatha Kl., Otto, & Dietr. =*Lycaste candida*
M. brocklehurstiana Lindl. =*Houlletia brocklehurstii*

M. chrysoptera Beer =*Lycaste chrysoptera*
M. ciliata Ruiz & Pav. =*Lycaste barringtoniae*
M. cochleata Beer =*Lycaste cochleata*
M. coelia Rchb.f. & Warsz. This is probably a *xylobium*.
M. colleyi Batem. ex Lindl. =*Batemannia colleyi*
M. concava Lindl. =*Xylobium concavum*
M. corrugata Lindl. This is probably a *xylobium*.
M. costata Lindl. =*Lycaste costata*
M. crinita Beer =*Lycaste crinita*
M. cristata Lindl. =*Lycaste cristata*
M. cruenta Lindl. =*Lycaste cruenta*
M. cuneiformis Ruiz & Pav. "Floribus racemosis."
M. cyanea Beer. =*Acacallis cyanea*
M. cyanocheile Hoffmanns. =*Pabstia placanthera*
M. cylindrobulba Regel. Probably *Xylobium elongatum*

M. decolor Lindl. =*Xylobium palmifolium*
M. deppei Lodd. =*Lycaste deppei*

M. elongata Lindl. & Paxt. =*Xylobium elongatum*

M. fimbriata Poepp. & Endl. =*Lycaste* aff. *ciliata*
M. flagellifera Lindl. ex Rchb.f. =*Scuticaria steelii*
M. foveata Lindl. =*Xylobium foveatum*
M. fulvescens Beer =*Lycaste fulvescens*
M. fuscata "Rchb.f." ex Gard. Chron. Error based on *M. fucata* Rchb.f.

M. galeata Lindl. =*Gongora galeata*
M. galeata Scheidw, Otto, & Dietr. =*Mormolyca galeata*
M. gigantea Beer, not (Lindl.) Dodson =*Lycaste gigantea*
M. glumibracteum Hemsl. =*Epidendrum glumibracteum*
M. goeringii Rchb.f. =*Cymbidium goeringii*
M. guttata Hort. ex. Rchb.f. =*Zygopetalum xanthinum*

M. harrisoniae Lindl. = *Bifrenaria harrisoniae*
M. hastata Ruiz & Pav. "Scapo racemosis."
M. heteroclita Poepp. & Endl. = *Chaubardia heteroclita*
M. heynderyexii E.Morr. = *Lycaste longipetala*
M. hyacinthina Rchb. = *Xylobium hyacinthinum*
M. hypocrita Rchb.f. = *Xylobium hypocritum*

M. jugosa Lindl. = *Pabstia jugosa*

M. laricina Kraenzl. = *Pityphyllum laricinum*
M. lawrencei Kraenzl. ex Index Kewensis. Invalid name based on *Masdevallia lawrencei* Kraenzl.
M. leiantha Beer = *Lycaste deppei*
M. lentiginosa Lindl. = *Promenaea lentiginosa*
M. leucantha Kl., Otto, & Dietr. = *Lycaste leucantha*
M. ligulata Ruiz & Pav. "Floribus paniculatis."
M. liliacea La Llave = *Govenia liliacea*
M. longifolia Lindl. = *Xylobium longifolium*
M. longipetala Ruiz & Pav. = *Lycaste longipetala*
M. luteola Beer = *Polystachya luteola* [= *Polystachya concreta*]
M. lyncea Lindl. = *Stanhopea tigrina*

M. macrobulbon Hook. = *Lycaste macrobulbon*
M. macrophylla Poepp. & Endl. = *Lycaste macrophylla*
M. maculata Lindl. Basionym: *Dendrobium maculatum* Kunth
"Scapus...multiflorus."
M. miliacea Rchb.f. = *Xylobium miliaceum*

M. ornata Kl., Otto, & Dietr. = *Xylobium ornatum*

M. pallidiflora Hook. = *Xylobium pallidiflorum*
M. palmifolia Lindl. = *Xylobium palmifolium*
M. paniculata Ruiz & Pav. "Floribus paniculatis."
M. paraensis Brieger, invalid name: without Latin description or designation of type.
M. parvilabia Rolfe. This is a spelling error made by Rolfe based on *M. parviloba* Rolfe.
M. parvula Hook. = *Bifrenaria parvula*
M. petiolaris Schltr. = *Bifrenaria rudolphii*
M. phyllomega Steud. = *Lycaste macrophylla*
M. plaeanthera Hook. = *Pabstia viridis*
M. psittacina Batem. ex Steud. Name only.
M. pubigera Kl. Otto & Dietr. = *Bifrenaria harrisoniae*
M. purpurascens Know. & Westc. = *Bifrenaria parvula*
M. purpurea Beer = *Polystachya purpurea*

M. racemosa Hook. = *Bifrenaria racemosa*
M. rebellis Rchb.f. = *Xylobium rebelle*
M. roezlii Rchb.f. ex Lindl., Name only.
M. rollinsonii Steud., orthographic error based on *M. rollissonii* Lindl. = *Zygopetalum rollissonii*
M. rollissonii Lindl. = *Zygopetalum rollissonii*
M. rudolfii Hoehne = *Bifrenaria rudolfii*

M. scabrilinguis Lindl. = *Xylobium scabrilingue*
M. skinneri Batem. ex Lindl. = *Lycaste skinneri*
M. spathacea Lindl. = *Bifrenaria harrisoniae*
M. squalens Hook. = *Xylobium squalens*
M. stachyobiora Rchb.f. = *Xylobium stachyobiorum*
M. stapelioides (Link & Otto) Lindl. = *Promenaea stapelioides*
M. steelii Hook. = *Scuticaria steelii*
M. stenobulbon Kl. = *Xylobium pallidiflorum* fide Dunsterville & Garay
M. stenopetala Know. & Westc. = *Bifrenaria aureo-fulva*
M. sulfurina Lem. = *Xylobium sulfurinum*
M. superba La Llave & Lex. = *Govenia superba*
M. supina Poepp. & Endl. = *Xylobium supinum*

M. tetragona Lindl. = *Lycaste tetragona*
M. tricolor Kl. Otto & Dietr. = *Lycaste tricolor*
M. tricolor Ruiz & Pav. "Floribus racemosis."
M. triphylla Ruiz & Pav. "Floribus racemosis."
M. truxillensis Rchb.f. = *Xylobium truxillense*
M. tyrianthina Hort. ex W.Baxt. = *Bifrenaria tyrianthina*

M. undatiflora Ruiz & pav. "Floribus paniculatis."
M. undulata Ruiz & Pav. "Scapo racemoso."

M. varicosa Rchb.f. = *Xylobium varicosum*
M. variegata Ruiz & Pav. = *Xylobium variegatum*
M. virginalis Scheidw. = *Lycaste skinneri*
M. viridis Lindl. = *Pabstia viridis*
M. vitelina lindl. = *Bifrenaria vitellina*

M. wagneri (Rchb.f.) Rchb.f. = *Bifrenaria wagneri*
M. warreana Lodd. ex Lindl. = *Warrea warreana*

M. xanthina Lindl. = *Promenaea xanthina*
M. (lyothii A.D.Hawkes, invalid name published without Latin description.

MORMOLYCA (Near *Alpestris* or *Rufescens* Alliances?)

M. aurorae D.E.Benn. & Christenson
M. galeata (Scheidw.) Garay & Wirth
M. gracilipes (Schltr.) Garay & Wirth
[*Maxillaria piestopus* Schltr.?]
M. polyphylla Garay & Wirth
M. schweinfurthiana Garay & Wirth
M. fuchsii J.T.Atwood (= *Maxillaria*?)
M. peruviana C.Schweinf.
M. ringens (Lindl.) Schltr. (= *Trigonidium ringens* Lindl.,
Mormolyca lineolata Fenzl). Hypothesis: close to *Rufescens*
Alliance

PITYPHYLLUM

P. amesianum Schltr.

P. antioquiense Schltr.
P. hirtzii Dodson
P. laricinum (Kraenzl.) Schltr. (= *Maxillaria laricina* Kraenzl.)
P. pinoides H.R.Sweet

TRIGONIDIUM

Acuminatum Alliance [Single narrow apical leaf]

T. acuminatum Batem. ex Lindl. (*T. turbinatum* Rchb.f., *T. subrepens* Rolfe, *T. tenue* Lodd.)
T. pervuvianum Schltr.
T. turbinatum Rchb.f.

Egertonianum Alliance

T. egertonianum Batem. Ex Lindl. (= *T. seemannii* Rchb.f., ?
Maxillaria brachyglossa Rich & Gal.,
T. brachyglossum (Rich. & Gal.) Schltr.), *T. insigne* Rchb.f. ex
Benth. & Hook., *T. seemannii* Rchb.f., *T. spathulatum* Lind. &
Rchb.f., *T. callistele* Rchb.f.
T. riopalenquense Dodson

Lankesteri Alliance

T. aurorae D.E.Benn. & Christenson
T. christensonii D.E.Benn.
T. grande Garay
T. lankesteri Ames (= *T. amparoanum* Schltr.)

Latifolium Alliance

T. latifolium Lindl.
T. loretoensis Schltr.
T. macranthum Barb.Rodr.
T. obtusum Lindl.

Excluded Taxa

T. amesianum, unpublished name on herbarium sheet at AMES
T. cucullatum Rchb.f., unpublished name on herbarium sheet at
AMES
T. equitans Garay (= *Maxillaria bicallosa* (Rchb.f.) Garay)
T. monophyllum Griesb. (= *Neocogniauxia monophylla* (Griseb.)
Schlechter)

INDEX OF TAXA [Alliances to be completed]

Aeranthus lehmannii Rchb.f.

ANTHOSIPHON

Anthosiphon roseans Schltr.
Anthosiphon sp.

Bifrenaria minuta Garay

***Bifrenaria rudolfii* Alliance**

Bifrenaria rudolfii (Hoehne) Carnevali & G.Romero

Broughtonia alba (Hook.f.) Spreng.

Camaridium (Barb.Rodr.) Hoehne

Camaridium adolphii Schltr.

Camaridium alatum Lindl.

Camaridium album (Hook.f.) Hoehne

Camaridium amazonicum Schltr.

Camaridium amparoana Schltr.

Camaridium arachnites Schltr.

Camaridium arbuscula Lindl.

Camaridium aureum (Poepp. & Endl.) Hoehne

Camaridium aureum var. *giganteum* Hoehne

Camaridium biolleyi (Schltr.) Schltr.

Camaridium boliviense Rolfe ex Stapf

Camaridium bracteatum (Schltr.) Schltr.

Camaridium bradeorum Schltr.

Camaridium brenesii Schltr.

Camaridium brevifolium Lindl.

Camaridium caquetanum Schltr.

Camaridium carinatum (Barb.Rodr.) Hoehne

Camaridium cassapense (Rchb.f.) Schltr.

Camaridium caucanum Schltr.

Camaridium christobalense (Rchb.f.) Hoehne

Camaridium coccineum (Jacq.) Hoehne

Camaridium costaricense Schltr.

Camaridium cryptodanthum Authors, not Barb. Rodr.

Camaridium cryptopodanthum Authors, not Barb. Rodr.

Camaridium cyrtopodanthum Barb. Rodr.

Camaridium dendrobioides Schltr.

Camaridium densifolium (Poepp. & Endl.) Benth. & Hook.

Camaridium dichotomum Schltr.)

Camaridium equitans Schltr.

Camaridium exaltatum Kraenzl.

Camaridium flavum Schltr.

Camaridium graminifolium (Kunth) Rchb.f.)

Camaridium grandiflorum Ames, not Schltr.

Camaridium hoehnei Pabst

Camaridium iguapense (Hoehne & Schltr.) Hoehne

Camaridium imbricatum (Barb.Rodr.) Hoehne not Schltr.

Camaridium imbricatum Schltr.

Camaridium inflexum Lindl.

Camaridium jimenezii Schltr.

Camaridium lamprochlamys Schltr.

Camaridium lancifolium Rchb.f.)

Camaridium latifolium Schltr.

Camaridium lawrenceanum Rolfe

Camaridium loefgrenii (Cogn.) Hoehne

Camaridium longibracteatum Lindl.

Camaridium longum Schltr.

Camaridium luteo-brunneum Kraenzl.

Camaridium luteorubrum (Lehm. & Kraenzl.) Schltr.

Camaridium luteorubrum Lindl.

Camaridium lutescens (Scheidw.) Rchb.f.

Camaridium mathewsii (Rchb.f.) Schltr.

Camaridium minus Schltr.

Camaridium multicaule (Poepp. & Endl.) Hoehne

Camaridium nutantiflorum Schltr.

Camaridium ochroleucum Lindl.

Camaridium parviflorum Fawc.

Camaridium pendulum Barb.Rodr.

Camaridium polyanthum Lehm. & Kraenzl.

Camaridium polyphyllum (Rchb.f.) Schltr.

Camaridium purpuratum Lindl.

Camaridium purpureum Spreng.

Camaridium quercicola Schltr.

Camaridium rigidum Schltr.

Camaridium robustum Barb.Rodr.

Camaridium rugosum (Schltr.) Hoehne

Camaridium scorpioideum (Kraenzl.) Hoehne

Camaridium simile Schltr.

Camaridium sodiroi Schltr.

Camaridium squamatum (Barb. Rodr.) Hoehne

Camaridium sterrocaulon Schltr.

Camaridium tonduzii Schltr.

Camaridium tuerckheimii Schltr.

Camaridium uncatum (Lindl.) Hoehne

Camaridium vagans Schltr.

Camaridium vandiforme Schltr.

Camaridium vestitum (Sw.) Lindl.

Camaridium vinosum Rolfe, not Schltr.

Camaridium vinosum Schltr.

Camaridium wercklei Schltr.

Camaridium wrightii Schltr.

Camaridium xylobiichilum Kraenzl.

Centroglossa peruviana Cogn.

CHRYSOCYCNIS Lind. & Rchb.f.

Chrysocynis ecuadorensis Dodson & Garay

Chrysocynis glumaceum L.O.Williams

Chrysocynis glumaceum L.O.Williams

Chrysocynis lehmannii Rolfe

Chrysocynis rhomboglossa Lehm. & Kraenzl.

Chrysocynis schlimii Linden & Rchb.f.

Chrysocynis tigrinum (C.Schweinf.) J.T.Atwood.

Chrysocynis trigonidii Lind. & Rchb.f.

Chrysocynis tripterum Schltr.

Colax parkeri Spreng.

CRYPTOCENTRUM Benth. & Hook.

Cryptocentrum alata (Lindl.) Rausch.

Cryptocentrum brenesii, name only

Cryptocentrum caespitosum Carnevali (ined.)

Cryptocentrum calcaratum (Schltr.) Schltr.

Cryptocentrum chocoensis Hawkes

Cryptocentrum costaricensis (Schltr.), comb. ined.

Cryptocentrum dodsonii Carnevali (ined.)

Cryptocentrum dunstervilleorum Carnevali & G.A.Romero

Cryptocentrum escobarii Carnevali (ined.)

Cryptocentrum flavum Schltr.

Cryptocentrum frontinoensis (Garay) Rauschert

Cryptocentrum gracilipes Schltr.

Cryptocentrum gracillimum Ames & C.Schweinf.

Cryptocentrum gracillimum of authors, not Ames & C.Schweinf.

Cryptocentrum hirtzii Dodson

Cryptocentrum hoppii Schltr.)

Cryptocentrum inaequisepalum C.Schweinf.

Cryptocentrum jamesonii Benth.

Cryptocentrum jamesonii of authors, not Benth.

Cryptocentrum latifolium Schltr.

Cryptocentrum latifolium var. *brachypetalum* Garay

Cryptocentrum lehmannii (Rchb.f.) Garay

Cryptocentrum longipetalum Carnevali (ined.)

Cryptocentrum longiscapum Brieger

Cryptocentrum minus Schltr.

Cryptocentrum pergracile Schltr.

Cryptocentrum peruvianum (Cogn.) C.Schweinf. ssp.
peruvianum

Cryptocentrum peruvianum ssp. *dactylinum* Carnevali, ined.

Cryptocentrum peruvianum ssp. *minus* (Schltr.) Carnevali, ined.

Cryptocentrum peruvianum of authors, not (Cogn.) C.Schweinf.

Cryptocentrum pseudobulbosum C.Schweinf.

Cryptocentrum rhomboglossa (Lehm. & Kraenzl.) Rauschert
Cryptocentrum roseans (Schltr.) A.D.Hawkes
Cryptocentrum silverstonei Carnevali (ined.)
Cryptocentrum spathaceum Dodson
Cryptocentrum standleyi Ames
Cryptocentrum strumpflei (Garay) Rauschert
Cryptocentrum subgenus Cryptocentrum
Cryptocentrum subgenus Polysticha Carnevali
Cryptocentrum subgenus Pseudobulbosa Carnevali

Cymbidium ochroleucum Lindl.
Cymbidium proliferum (Sw.) Sw.
Cymbidium vestitum (Sw.) Sw.

CYRTIDIORCHIS

Cyrtidiorchis alatum (Lindl.) Rauschert
Cyrtidiorchis frontinoensis (Garay) Rausch.
Cyrtidiorchis rhomboglossum (Lehm. & Kraenzl.) Rauschert
Cyrtidiorchis stumpflei (Garay) Rausch.
Cyrtidiorchis triptera (Schltr.) Rausch.

Cyrtidium Schltr.
Cyrtidium alatum (Lindl.) Garay
Cyrtidium frontinoensis Garay
Cyrtidium rhomboglossum (Lehm. & Kraenzl.) Schltr.
Cyrtidium stumpflei Garay
Cyrtidium tripterum (Schltr.) Schltr.

Dendrobium album Hook.f.
Dendrobium latifolium Kunth.
Dendrobium maculatum Kunth.
Dendrobium platypetalum (Ruiz & Pav.) Pers.
Dendrobium ramosum Pers.

Dicrypta (Heterotaxis) Alliance

Dicrypta baueri Lindl.
Dicrypta crassifolia (Lindl.) Lindl. ex Loud.
Dicrypta densifolia Poepp. & Endl.
Dicrypta discolor Lodd. ex Lindl.
Dicrypta elatior Rchb.f.
Dicrypta iridifolia Bateman ex Rchb.f.
Dicrypta irisphyta Barb.Rodr.
Dicrypta villosa Barb. Rodr.

Epidendrum coccineum Jacq.
Epidendrum proliferum Sw.
Epidendrum sessile Sw.
Epidendrum vestitum Sw.

Fernandezia haemathodes Ruiz & Pav.
Fernandezia punctata Ruiz & Pav.

Heterotaxis crassifolia Lindl.

Isochilus prolifer (Sw.) R.Br.
Isochilus graminifolius Kunth
Isochilus grandiflorum Lindl.

Kefersteinia bicallosa (Rchb.f.) Rchb.f.

Lycaste aciantha (Rchb.f.) Rchb.f.

Marsupiaria iridifolia Hoehne
Marsupiaria valenzuelana (A.Rich) Garay
Marsupiaria vandiformis (Schltr.) Hoehne

MAXILLARIA

Maxillaria X dunstervillei Carnevali & Ramirez

Maxillaria X lyothii A.D.Hawkes)?

Maxillaria abelei Schltr.

Maxillaria acervata Rchb.f.

Maxillaria aciantha Rchb.f.

Maxillaria acicularis Herb.

Maxillaria acostaei Schltr.

Maxillaria Acuminata Alliance

Maxillaria acuminata Lindl.

Maxillaria acutifolia Lindl., not Schltr.

Maxillaria acutifolia Schltr., not Lindl.

Maxillaria acutipetala Hook.

Maxillaria adendrobium (Rchb.f.) Dressler

Maxillaria admonens Bock

Maxillaria adolphii Ames & Correll

Maxillaria adscendens Schltr.

Maxillaria aequiloba Schltr.

Maxillaria affinis (Poepp. & Endl.) Garay

Maxillaria affinis Hort. Petrop. ex. Rchb.f., not (Poepp. & Endl.)
Garay.

Maxillaria aggregata (H.B.K.) Lindl.

Maxillaria alata Ruiz & Pav.

Maxillaria Alba Alliance

Maxillaria alba (J.D.Hook.) Lindl.

Maxillaria Albata Alliance

Maxillaria albata Lindl.

Maxillaria albertii Schltr.

Maxillaria albiflora Ames & C.Schweinf.

Maxillaria alfaroi Ames & C.Schweinf.

Maxillaria allenii L.O.Williams

Maxillaria Alpestris Alliance

Maxillaria alpestris Lindl.

Maxillaria alticola C.Schweinf.

Maxillaria Amabilis Suballiance

Maxillaria amabilis J.T.Atwood

Maxillaria amazonica

Maxillaria amblyantha Kraenzl.

Maxillaria amesiana Hort. ex Gard. Chron.

Maxillaria amparoana Schltr.

Maxillaria ampliflora C.Schweinf.
 Maxillaria anatomorum Rchb.f.
 Maxillaria anceps Ames & C.Schweinf.
 Maxillaria angustibulbosa C.Schweinf.
 Maxillaria angustifolia Hook.
 Maxillaria angustisegmenta Ames, Hubbard, & C.Schweinf.
 Maxillaria angustissima Ames, Hubbard, & C.Schweinf.
 Maxillaria antioquiiana Kraenzl.
 Maxillaria appendiculoides C.Schweinf.
 Maxillaria arachnites Rchb.f.
 Maxillaria arachnitiflora Ames & Correll
Maxillaria Arbuscula Suballiance
 Maxillaria arbuscula (Lindl.) comb. ined., new name perhaps
 needed
 Maxillaria arbuscula Rchb.f.
 Maxillaria argyrophylla Poepp. & Endl.
 Maxillaria aristeguietae Foldats
 Maxillaria aromatica Graham ex Hooker.
 Maxillaria articulada Kl.
 Maxillaria atrata Rchb.f.
 Maxillaria atrata var. brachyantha Rchb.f.
 Maxillaria atropurpurea Lodd.
 Maxillaria attenuata Ames & C.Schweinf.
 Maxillaria augustaevictoriae Lehm. & Kraenzl. ex Kraenzl.
 Maxillaria aurantiaca A.Rich. & Gal.
 Maxillaria aurantiaca Schltr., not A.Rich. & Gal.
Maxillaria Aurea Suballiance
 Maxillaria aurea (Poepp. & Endl.) L.O.Williams
 Maxillaria aurea Hort. ex Rchb.f.
 Maxillaria aureofulva Hook.
 Maxillaria aurorae D.E.Benn. & Christenson
 Maxillaria auyantepuiensis Foldats
 Maxillaria auyantepuiensis ssp. epiphytica Carnevali & Ramirez

 Maxillaria balsamea Beer
 Maxillaria barbata Knowles & Westc.
 Maxillaria barbosae Loeftgren ex Porto
 Maxillaria barkeri Lindl. ex Beer
 Maxillaria barringtoniae Hort. ex Rchb.f.
 Maxillaria barringtoniae Lodd.
 Maxillaria batemanii Poepp. & Endl.
 Maxillaria baumanniana Schltr.
 Maxillaria bennettii Christenson
Maxillaria Bicallosa Suballiance
 Maxillaria bicallosa (Rchb.f.) Garay
 Maxillaria bicolor (Rolfe) ined.
 Maxillaria bicolor Ruiz & Pav.
 Maxillaria binoti De Willd.
Maxillaria Biolleyi Alliance
Maxillaria Biolleyi Suballiance
 Maxillaria biolleyi (Schltr.) L.O.Williams
 Maxillaria bolivarensis C.Schweinf.
 Maxillaria boliviensis Schltr.
 Maxillaria bolleoides Schltr.

Maxillaria bomboizensis Dodson
Maxillaria boothii Lindl.
Maxillaria brachybulbon Schltr.
Maxillaria brachyglossa Rich & Gal.
Maxillaria brachypetala Schltr.
Maxillaria brachypoda Schltr.
Maxillaria brachypus Rchb.f.
Maxillaria bracteata (Schltr.) Ames & Correll
Maxillaria bractescens Lindl.
Maxillaria bradei Schltr. ex Hoehne
Maxillaria Bradeorum Suballiance
Maxillaria bradeorum (Schltr.) L.O.Williams
Maxillaria brasiliensis Brieger, invalid
Maxillaria brasiliensis Brieger & Bicalho
Maxillaria brasiliensis Brieger & R.D.Illg.
Maxillaria brenesii Schltr.
Maxillaria brenesii var. *longiloba* (Ames & C.Schweinf.)
J.T.Atwood
Maxillaria brevifolia (Lindl.) Rchb.f.
Maxillaria brevilabia Ames & Correll
Maxillaria brevipedunculata Ames & C.Schweinf.
Maxillaria brevipes Schltr.
Maxillaria brevis (Hoehne & Schltr.) Hoehne
Maxillaria breviscapa Poepp. & Endl.
Maxillaria brevispatha Kl., Otto, & Dietr.
Maxillaria broadwayi (Cogn.) R.E.Schultes
Maxillaria brocklehurstiana Lindl.
Maxillaria brunnea Lind. & Rchb.f.
Maxillaria buchtienii Schltr.
Maxillaria burgeri J.T.Atwood

Maxillaria cacaoensis J.T.Atwood
Maxillaria caespitifica Rchb.f.
Maxillaria caespitosa C.Schweinf.
Maxillaria calantha Schltr.
Maxillaria callichroma Rchb.f.
Maxillaria caloglossa Rchb.f.
Maxillaria Camaridii Alliance
Maxillaria Camaridii Suballiance
Maxillaria camaridii Rchb.f.
Maxillaria camaridioides Schltr.
Maxillaria campanulata C.Schweinf.
Maxillaria candida Lodd. ex Lindl.
Maxillaria caparaoensis Brade
Maxillaria caquetana Schltr.
Maxillaria carinata Barb. Rodr.
Maxillaria carinulata Rchb.f.
Maxillaria cassapensis Rchb.f.
Maxillaria casta Kraenzl.
Maxillaria cauae Garay
Maxillaria caucana Schltr.
Maxillaria caucana (Schltr.) comb. ined.
Maxillaria caulina Schltr.

Maxillaria caveroi D.E.Benn. & Christenson
 Maxillaria cedralensis J.T.Atwood & D.E.Mora
 Maxillaria cepula Rchb.f.
 Maxillaria cerifera Barb.Rodr.
 Maxillaria chacoensis Dodson
 Maxillaria chapadensis Barb. Rodr.
 Maxillaria chartacifolia Ames & C.Schweinf.
 Maxillaria chasei Dodson
Maxillaria Chicana Alliance
 Maxillaria chicana Dodson
 Maxillaria chionantha J.T.Atwood
 Maxillaria chiriquensis Schltr.
 Maxillaria chlorantha Lindl.
 Maxillaria chlorochila Lehm. & Kraenzl. ex Kraenzl.
 Maxillaria christobalensis Rchb.f.
 Maxillaria chrysantha Barb.Rodr.
 Maxillaria chrysocynoides (Schltr.) Dodson
 Maxillaria chrysoptera Beer
 Maxillaria ciliata Ruiz & Pav.
 Maxillaria cinnabarina Lindl. ex J.C.Stevens
 Maxillaria cleistogama Brieger & Bicalho
 Maxillaria cobanensis Schltr.
Maxillaria Coccinea Suballiance
 Maxillaria coccinea (Jacq.) L.O.Williams ex Hodge
 Maxillaria cochleata Beer
 Maxillaria coelia Rchb.f. & Warsz.
 Maxillaria cogniauxiana Hoehne
 Maxillaria colleyi Batem. ex Lindl.
 Maxillaria colorata Rchb.f.
 Maxillaria compacta (Schltr.) comb. ined.
 Maxillaria compressibulba Schltr.
 Maxillaria concava Lindl.
 Maxillaria concavilabia Ames & Correll
 Maxillaria condensata C.Schweinf.
 Maxillaria conduplicata (Ames & C.Schweinf.) L.O.Williams
 Maxillaria conferta Ames & C.Schweinf.
 Maxillaria confusa Ames & C.Schweinf.
 Maxillaria connellii Rolfe
 Maxillaria consanguinea Kl.
 Maxillaria convencionis Kraenzl.
 Maxillaria cordyline (Rchb.f.) Dodson
 Maxillaria coriacea Barb. Rodr.
 Maxillaria cornuta C.Schweinf.
 Maxillaria corrugata Lindl.
 Maxillaria costaricensis Schltr.
 Maxillaria costata Lindl.
 Maxillaria cozieriana H.G.Jones
 Maxillaria crassicaulis C.Schweinf.
 Maxillaria crassicaulis C.Schweinf.
Maxillaria Crassifolia Suballiance
 Maxillaria crassifolia (Lindl.) Rchb.f.
 Maxillaria crassipes Kraenzl.
 Maxillaria crinita Beer
 Maxillaria cristata Lindl.

Maxillaria crocea Lindl. not Poepp. & Endl.
 Maxillaria crocea Poepp. & Endl.
 Maxillaria croceorubens (Rchb.f.) L.O.Williams
 Maxillaria cruenta Lindl.
 Maxillaria cryptobulbon Carnevali & J.T.Atwood
Maxillaria Ctenostachya Alliance
 Maxillaria ctenostachya Rchb.f.
Maxillaria Cucullata Alliance
 Maxillaria cucullata Lindley
 Maxillaria cuencana Garay
 Maxillaria cuneiformis Ruiz & Pav.
 Maxillaria curtipes, Hook.
 Maxillaria cuzcoensis C.Schweinf.
 Maxillaria cyanea Beer.
 Maxillaria cyanocheile Hoffmanns.
 Maxillaria cylindrobulba Regel.
 Maxillaria cymbidioides Dodson, J.T.Atwood, & Carnevali

Maxillaria dalessandroi Dodson
 Maxillaria dalstromii Dodson
 Maxillaria darienensis J.T.Atwood
 Maxillaria decolor Lindl.
 Maxillaria deflexa Kl. ex A.Br.Kl. & Bouche
 Maxillaria dendrobioides (Schltr.) L.O.Williams
Maxillaria Densa Alliance
 Maxillaria densa Lindl.
Maxillaria Densifolia Alliance
Maxillaria Densifolia Suballiance
 Maxillaria densifolia (Poepp. & Endl.) Rchb.f.
 Maxillaria deppei Lodd.
Maxillaria Desvauxiana Alliance
 Maxillaria desvauxiana Rchb.f.
 Maxillaria diamantensis Kraenzl.
 Maxillaria dichotoma (Schltr.) L.O.Williams
 Maxillaria dichroma Rolfe
 Maxillaria dillonii D.E.Benn. & Christenson
 Maxillaria discolor (Lodd. ex Lindl.) Rchb.f.
 Maxillaria disticha (Lindl.) C.Schweinf.
 Maxillaria diuturna Ames & C.Schweinf.
 Maxillaria divaricata (Barb.Rodr.) Cogn.
 Maxillaria divitiflora Rchb.f.
 Maxillaria dodsonii Carnevali, ined.
 Maxillaria dolichophylla Schltr.
 Maxillaria dressleriana Carnevali & J.T.Atwood

Maxillaria eburnea Lindl.
 Maxillaria echinophyta Barb.Rodr.
 Maxillaria echinochila Kraenzlin
 Maxillaria ecuadorensis Schltr.
 Maxillaria edwardsii D.E.Benn. & Christenson
 Maxillaria elata Schltr.
Maxillaria Elatior Alliance
 Maxillaria elatior (Rchb.f.) Rchb.f.
 Maxillaria elegans Schltr.

Maxillaria elegantula Rolfe
Maxillaria elongata Lindl. & Paxt.
Maxillaria embreei Dodson
Maxillaria encyclioides Dodson & J.T. Atwood
Maxillaria endresii Rchb.f.
Maxillaria endresii Rchb.f. var. angustisegmenta (Ames, Hubbard, & C. Schweinf.) C. Schweinf.
Maxillaria equitans (Schltr.) Garay
Maxillaria erubescens Kraenzl.
Maxillaria estradae Dodson
Maxillaria exaltata (Kraenzl.) C. Schweinf.
Maxillaria exigua Regel

Maxillaria falcata Ames & C. Schweinf.
Maxillaria fallax Schltr.
Maxillaria farinifera Schltr.
Maxillaria fasciculata C. Schweinf.
Maxillaria ferdinandiana Barb. Rodr.
Maxillaria fimbriata Poepp. & Endl.
Maxillaria flagellifera Lindl. ex Rchb.f.
Maxillaria flava Ames, Hubbard, & C. Schweinf.
Maxillaria flavoviridis Barb. Rodr.
Maxillaria flavum (Schltr.) comb. ined.
Maxillaria fletcheriana Rolfe

Maxillaria Floribunda Alliance

Maxillaria floribunda Lindl.
Maxillaria foldatsiana Carnevali & Ramirez
Maxillaria foliosa Ames & C. Schweinf.
Maxillaria foveata Lindl.
Maxillaria fractiflexa Rchb.f.

Maxillaria Friedrichsthalii Alliance

Maxillaria friedrichsthalii Rchb.f.
Maxillaria fritzii Carnevali & Dodson, ined.
Maxillaria fucata Rchb.f.
Maxillaria fuerstenbergiana Schltr.
Maxillaria fulgens (Rchb.f.) L.O. Williams
Maxillaria fulvescens Beer
Maxillaria funerea Lindl.
Maxillaria funicaulis C. Schweinf.
Maxillaria furfuracea Scheidw.
Maxillaria fuscata "Rchb.f." ex Gard. Chron.
Maxillaria fuscata Hort. ex Rchb.f. 1863, non Kl. ex Rchb.f.
Maxillaria fuscata Kl. ex Rchb.f. [1863], non Hort. ex Rchb.f. [1863]
Maxillaria fuscopurpurea Drapiez

Maxillaria galantha J.T. Atwood & Carnevali
Maxillaria galeata Lindl.
Maxillaria galeata Scheidw, Otto, & Dietr.
Maxillaria galeottiana A. Rich.
Maxillaria galeottiana Regel, not Rich. et Gal.
Maxillaria gatunensis Schltr.
Maxillaria gentryi Dodson
Maxillaria gigantea (Lindl.) Dodson

Maxillaria gigantea Beer, not (Lindl.) Dodson
Maxillaria gigantea ssp. condorensis D.E.Benn. & Christenson
Maxillaria glauca Lindl. ex W. Baxt.
Maxillaria glomerata Gal.
Maxillaria glumacea Rolfe
Maxillaria glumibracteum Hemsl.
Maxillaria goeringii Rchb.f.
Maxillaria gomeziana J.T.Atwood
Maxillaria gracilifolia Kraenzl.
Maxillaria gracilipes Schltr.
Maxillaria gracilis Lodd.
Maxillaria graminea Lindl.

Maxillaria Graminifolia Alliance

Maxillaria graminifolia (Kunth) Rchb.f.

Maxillaria Grandiflora Alliance

Maxillaria grandiflora (HBK) Lindl.
Maxillaria grandimentum C.Schweinf.
Maxillaria grandis Rchb.f.
Maxillaria granditenuis D.E.Benn. & Christenson
Maxillaria grayi Dodson

Maxillaria Grobyoides Suballiance

Maxillaria grobyoides Garay & Dunsterville
Maxillaria guadalupensis Cogn.
Maxillaria guareimensis Rchb.f.
Maxillaria guayanensis Klinge
Maxillaria guentheriana Kraenzl.
Maxillaria guiardiana Chiron
Maxillaria guttata Hort. ex. Rchb.f.
Maxillaria gymnochila Kraenzl.

Maxillaria haberi J.T.Atwood
Maxillaria haemathodes (Ruiz & Pav.) Garay
Maxillaria haenkei Correll
Maxillaria hagsateriana Soto Arenas
Maxillaria harrisoniae Lindl.
Maxillaria hastata Ruiz & Pav.

Maxillaria Hastulata/Pulla Suballiance

Maxillaria hastulata Lindl.
Maxillaria hatschbachii (Schltr.) Hoehne
Maxillaria hedwigiae Hamer & Dodson
Maxillaria hedyosma Schltr.
Maxillaria heidelbergensis Senghas, illeg.
Maxillaria heismanniana Barb.Rodr.
Maxillaria hematoglossa Rich. & Gal.
Maxillaria henchmannii Hooker
Maxillaria hennisiana Schltr.
Maxillaria heraldica Rchb.f.
Maxillaria herzogiana Kraenzl.
Maxillaria heterobulbon Kraenzl.
Maxillaria heteroclita Poepp. & Endl.
Maxillaria heterophylla Hoehne
Maxillaria heynderyexii E.Morr.
Maxillaria hillsii Dodson
Maxillaria hirsutilabia D.E.Benn. & Christenson

Maxillaria hirtilabia Lindl.
Maxillaria hirtzii Dodson & A.Andreetta
Maxillaria histiologorum Rchb.f., fide Pabst
Maxillaria histrionica (Rchb.f.) L.O.Williams
Maxillaria hoehneana P.F.Hunt
Maxillaria hoehnei Schltr.
Maxillaria hoppii Schltr.
Maxillaria horichii Senghas
Maxillaria houtteana Rchb.f.
Maxillaria houtteii Beer
Maxillaria huancabambae (Kraenzl.) C.Schweinf.
Maxillaria huancabambae (Kraenzl.) C.Schweinf. var. cuzcoensis
C.Schweinf.
Maxillaria huebneri Schltr.
Maxillaria hyacinthina Rchb.
Maxillaria hypocrita Rchb.f.

Maxillaria iguapensis Hoehne & Schltr.

Maxillaria Imbricata Alliance

Maxillaria imbricata Barb.Rodr.

Maxillaria Inaudita Suballiance

Maxillaria inaudita Rchb.f.
Maxillaria inaudita var. minor Ames & C.Schweinf.
Maxillaria infausta Rchb.f.
Maxillaria inflexa (Lindl.) Griseb.
Maxillaria insignis Rolfe
Maxillaria insolita Dressler
Maxillaria iridifolia (Batem. ex Rchb.f.) Rchb.f.
Maxillaria irrorata Rchb.f.

Maxillaria jamboensis Dodson
Maxillaria jamesonii (Rchb.f.) Garay & C.Schweinf.
Maxillaria jenschiana Rchb.f.
Maxillaria johannis Pabst
Maxillaria johniana Kraenzl.
Maxillaria jucunda Lehm. & Kraenzl.
Maxillaria juergensii Schltr.
Maxillaria jugata Garay
Maxillaria jugosa Lindl.

Maxillaria kalbreyeri Rchb.f.
Maxillaria kautskii Pabst
Maxillaria kegelii Rchb.f.
Maxillaria klugii C.Schweinf.
Maxillaria koehleri Schltr.
Maxillaria kreysigii [Regel?]
Maxillaria kreysigii Rchb.f. ex Beer, non M. kreysigii [Regel]

Maxillaria lactea Schltr. 1923 not 1925
Maxillaria lactea Schltr. 1925, not 1923
Maxillaria lactiflora Pabst
Maxillaria laevilabris Lindl.
Maxillaria laevilabris Lindl.
Maxillaria lamprochlamys (Schltr.) comb. ined.

Maxillaria lancifolia (Rchb.f.) Rchb.f.
Maxillaria langlassei Schltr.
Maxillaria lankesteri Ames
Maxillaria laricina Kraenzl.
Maxillaria lasallei Fold.
Maxillaria latifolia (Kunth) Lindl.
Maxillaria lawrenceana (Rolfe) Garay & Dunsterv.
Maxillaria lawrencei Kraenzl. ex Index Kewensis
Maxillaria lehmannii Rchb.f.
Maxillaria lehmannii (Kraenzl.) comb. ined.
Maxillaria leiantha Beer
Maxillaria lentiginosa Lindl.
Maxillaria Lepidota Alliance
Maxillaria Lepidota Suballiance
Maxillaria lepidota Lindl.
Maxillaria leptosepala Hook.
Maxillaria leucaimata Barb.Rodr.
Maxillaria leucantha Kl., Otto, & Dietr.
Maxillaria leucantha Schltr. (1929), not Kl., Otto, & Dietr. (1850)
Maxillaria leucocheile Hoffmsgg.
Maxillaria lexarzana Soto Arenas & F.Chiang
Maxillaria ligulata Ruiz & Pav.
Maxillaria liliacea Barb. Rodr. not Ll. & Lex.
Maxillaria liliacea La Llave
Maxillaria lilliputana D.E.Benn. & Christenson
Maxillaria lindeniana Rich. & Gal.
Maxillaria lindenii Cogn.
Maxillaria lindleyana Schltr.
Maxillaria linearifolia Ames & C.Schweinf.
Maxillaria linearis C.Schweinf.
Maxillaria linguaeformis Regel
Maxillaria liparophylla Summerhayes
Maxillaria litensis Dodson
Maxillaria littoralis Rouy.
Maxillaria loefgrenii (Cogn.) Pabst
Maxillaria longa (Schltr.) Dodson
Maxillaria longibracteata (Lindl.) Rchb.f.
Maxillaria longibracteata (Lindl.) Rchb.f. var. *grandiflora* (Lindl.) C.Schweinf.
Maxillaria longicaulis Schltr.
Maxillaria longifolia (Barb.Rodr.) Cogn. not Lindl.
Maxillaria longifolia Lindl.
Maxillaria longiloba (Ames & C.Schweinf.) J.T.Atwood
Maxillaria longipes Lindl.
Maxillaria longipetala Barb. Rodr., not Ruiz & Pav.
Maxillaria longipetala Ruiz & Pav.
Maxillaria longipetiolata Ames. & C.Schweinf.
Maxillaria longisepala Rolfe
Maxillaria longissima Lindl.
Maxillaria loretoensis C.Schweinf.
Maxillaria lorifolia Rchb.f.
Maxillaria Lueri Alliance
Maxillaria lueri Dodson
Maxillaria luteograndiflora Hort. ex. Flor. Mag. 10: t. 599.

Maxillaria luteoalba Lindl.
Maxillaria luteola Beer
Maxillaria luteorubra (Lindl.) Rchb.f.
Maxillaria lutescens Scheidw.
Maxillaria lutheri J.T.Atwood
Maxillaria lyncea Lindl.
Maxillaria lyonii Lindl.

Maxillaria machinazensis D.E.Benn. & Christenson
Maxillaria macleei Batem. ex Lindl.
Maxillaria macrobulbon Hook.
Maxillaria macrophylla Poeë\pp. & Endl.
Maxillaria macropoda Schltr.
Maxillaria macrura Rchb.f.
Maxillaria maculata Lindl.
Maxillaria maderoi Schltr.

Maxillaria Madida Suballiance

Maxillaria madida Lindl.
Maxillaria maleolens Schltr.
Maxillaria mapiriensis (Kraenzl.) L.O.Williams

Maxillaria Marginata Suballiance

Maxillaria marginata Fenzl.
Maxillaria mariaisabelae J.T.Atwood
Maxillaria marmoliana Dodson
Maxillaria mathewsii Lindl., not Rchb.f.
Maxillaria mathewsii of authors, not Lindl. (1845) nor Rchb.f. (1863)

Maxillaria mathewsii Rchb.f. not Lindl.

Maxillaria mattogrossensis Brade
Maxillaria meirax Rchb.f. & Warm.
Maxillaria meleagris Lindl.

Maxillaria melina Lindl.
Maxillaria merana Dodson

Maxillaria Meridensis Alliance

Maxillaria meridensis Lindl.
Maxillaria mexicana J.T.Atwood & Soto, ined.
Maxillaria microblephara Schltr.
Maxillaria microdendron Schltr.

Maxillaria Microphyton Alliance

Maxillaria microphyton Schltr.
Maxillaria microtricha Schltr.
Maxillaria miliacea Rchb.f.
Maxillaria miniata (Lindl.) L.O.Williams
Maxillaria minor (Schltr.) L.O.Williams
Maxillaria minuta Cogn.
Maxillaria mirabilis Cogn.
Maxillaria modesta Brade not Schltr.
Maxillaria modesta Schltr. not Brade
Maxillaria modestiflora Pabst
Maxillaria molitor Rchb.f.
Maxillaria mombachoensis Heller ex J.T.Atwood
Maxillaria monacensis Kraenzl.
Maxillaria monantha Barb.Rodr.
Maxillaria monoceros Kl. ex Rchb.f.

Maxillaria monteverdensis J.T.Atwood & G. Barboza
Maxillaria mooreana Rolfe
Maxillaria moralesii Carnevali & J.T.Atwood
Maxillaria mosenii Kraenzl.
Maxillaria moutinhoi ex Index Kewensis
Maxillaria moutini Pabst
Maxillaria muelleri Regel
Maxillaria multicaulis (Poepp. & Endl.) C.Schweinf.
Maxillaria multiflora Barb.Rodr.
Maxillaria murilliana Hoehne
Maxillaria muscicola Rchb.f.
Maxillaria muscoides J.T.Atwood
Maxillaria mutabilis Hort. ex Rchb.f.

Maxillaria nagelii L.O.Williams ex Correll
Maxillaria nana Hook.
Maxillaria nanegalensis Rchb.f.
Maxillaria napoensis Dodson
Maxillaria Nardoides Alliance
Maxillaria nardoides Kraenzl.
Maxillaria nasalis Rchb.f.
Maxillaria nasuta Rchb.f.
Maxillaria neglecta (Schltr.) L.O.Williams
Maxillaria neillii Dodson
Maxillaria neophylla Rchb.f.
Maxillaria neowiedii Rchb.f.
Maxillaria nervosa Rolfe ex Britton
Maxillaria nicaraguensis (Hamer & Garay) J.T.Atwood
Maxillaria nigrescens Lindl.
Maxillaria nitidula Rchb.f.
Maxillaria nivea (Lindl.) L.O.Williams
Maxillaria notylioglossa Rchb.f.
Maxillaria nubigena (Rchb.f.) C.Schweinf.
Maxillaria nuriensis Carnevali & Ramirez
Maxillaria nutans Lindl.
Maxillaria nutantiflora Schltr.
Maxillaria nymphopolitana Kraenzl.

Maxillaria obscura Lind. & Rchb.f.
Maxillaria ochracea (Rchb.f.) Garay
Maxillaria ochroglossa Schltr.
Maxillaria ochroleuca Lodd. ex Lindl.
Maxillaria ochroleuca var. longipes Sander
Maxillaria oestlundiana L.O.Williams
Maxillaria ophioides J.T.Atwood
Maxillaria oreocharis Schltr.
Maxillaria ornata Kl., Otto, & Dietr.
Maxillaria ornithoglossa Lodd. ex Baxt.
Maxillaria oxysepala Schltr.

Maxillaria pachyacron Schltr.
Maxillaria pachyneura Lehm. & Kraenzl.
Maxillaria pachyphylla Schltr. ex Hoehne
Maxillaria Paleata (wrightii) Alliance

Maxillaria paleata (Rchb.f.) Ames & Correll
Maxillaria pallidiflava (Schltr.) Senghas
Maxillaria pallidiflora Hook.
Maxillaria pallidiflora Rchb.f. ex Barb. Rodr., illeg.
Maxillaria palmensis Dodson
Maxillaria palmifolia Lindl.
Maxillaria pamplonensis Lind. & Rchb.f.
Maxillaria panamensis Schltr.
Maxillaria paniculata Ruiz & Pav.
Maxillaria pannieri Fold.
Maxillaria pantherina Rchb.f. not Hoffmsgg.
Maxillaria paraensis Brieger
Maxillaria parahybunensis Cogn.
Maxillaria paranaensis Barb. Rodr.
Maxillaria pardalina Garay
Maxillaria Parkeri Alliance
Maxillaria parkeri (Spreng.) Hook.
Maxillaria parthoni Dum.
Maxillaria parva Rolfe
Maxillaria parvibulbosa C.Schweinf.
Maxillaria parviflora (Poepp. & Endl.) Garay
Maxillaria parvilabia Ames & C.Schweinf.
Maxillaria parvilabia Rolfe
Maxillaria parviloba Rolfe
Maxillaria parvula Hook. not Schltr.
Maxillaria parvula Schltr. not Hook.
Maxillaria pastensis Rchb.f.
Maxillaria pastoensis (Schltr.) comb. ined.
Maxillaria patens Schltr.
Maxillaria patula C.Schweinf.
Maxillaria pauciflora Barb.Rodr.
Maxillaria paulistana Hoehne
Maxillaria pendens Pabst
Maxillaria pendula (Poepp. & Endl.) C.Schweinf.
Maxillaria penduliflora Fenzl.
Maxillaria pentura Lindl.
Maxillaria perijaensis Carnevali & Romero, ined.
Maxillaria perparva Garay & Dunsterv.
Maxillaria perpusilla Kraenzl.
Maxillaria perryae Dodson
Maxillaria pertusa Lindl. ex Rchb.f.
Maxillaria petiolaris A. Rich. ex Rchb.f.
Maxillaria petiolaris Schltr.
Maxillaria peruviana (C.Schweinf.) D.E.Benn. & Christenson
Maxillaria pfitzerianum (Lehm. & Kraenzl.) comb. ined.
Maxillaria phaeoglossa Schltr.
Maxillaria phoenicanthera Barb.Rodr.
Maxillaria phyllomega Steud.
Maxillaria Picta Alliance
Maxillaria picta Hook.
Maxillaria picta Hook. var. *brunnea* Rchb.f.
Maxillaria picta Rchb.f. non Hook.
Maxillaria picta Hook. var. *brevis* Hoehne & Schltr.
Maxillaria piestopus Schltr.

Maxillaria piresiana Hoehne
 Maxillaria pittieri (Ames) L.O.Williams
 Maxillaria plaeanthera Hook.
Maxillaria Planicola Alliance
 Maxillaria planicola C.Schweinf.
 Maxillaria platyloba Schltr.
 Maxillaria platypetala Ruiz & Pav.
 Maxillaria plebeja Rchb.f.
 Maxillaria pleiantha Schltr.
 Maxillaria pleuranthioides (Schltr.) Garay
 Maxillaria plicata Schltr.
 Maxillaria poaefolia Schltr.
 Maxillaria podochila Kraenzl.
 Maxillaria poeppigiana Steud.
 Maxillaria poicilotheca Schltr.
 Maxillaria polyantha Barb.Rodr.
 Maxillaria polybulbon Kraenzl.
 Maxillaria polypetala Steud.
 Maxillaria polyphylla Rchb.f.
 Maxillaria ponerantha of authors, not Rchb.f.
 Maxillaria ponerantha Rchb.f.
Maxillaria Ponerantha Suballiance
 Maxillaria porphyrostele Rchb.f.
Maxillaria Porrecta (Brunnea) Suballiance
 Maxillaria porrecta Lindl.
 Maxillaria powellii Schltr.
 Maxillaria praestans Rchb.f.
 Maxillaria praetexta Rchb.f.
 Maxillaria proboscidea Rchb.f.
 Maxillaria procurrens Lindl.
 Maxillaria prolifera Ruiz & Pav.
 Maxillaria pseudoneglecta J.T.Atwood
 Maxillaria pseudoreichenheimiana Dodson
 Maxillaria psittacina Batem. ex Steud
 Maxillaria pterocarpa Barb.Rodr.
Maxillaria Pterocarpa Suballiance
 Maxillaria pubigera Kl. Otto & Dietr.
 Maxillaria pubilabia Schltr.
 Maxillaria pulchra (Schltr.) L.O.Williams ex Correll
 Maxillaria pulla Lind. & Rchb.f.
Maxillaria Pumila Alliance
 Maxillaria pumila Hook.
 Maxillaria punctata Hoehne non Lodd.
 Maxillaria punctata Lodd.
 Maxillaria punctata Schltr. not Lodd.
 Maxillaria punctostriata Rchb.f.
 Maxillaria punctulata Kl
 Maxillaria purpurascens Know. & Westc.
 Maxillaria purpurata (Lindl.) Rchb.f.
 Maxillaria purpurea Ames & Correll
 Maxillaria purpurea Beer
 Maxillaria pusilla Rolfe

 Maxillaria quadrata Ames & Correll

Maxillaria queirogana Barb.Rodr.
Maxillaria quelchii Rolfe
Maxillaria quitensis (Rchb.f.) C. Schweinf.

Maxillaria racemosa Hook.
Maxillaria ramonensis Schltr.
Maxillaria Ramosa Alliance
Maxillaria ramosa Ruiz & Pav.
Maxillaria ramosissima Kraenzl.
Maxillaria rebellis Rchb.f.
Maxillaria regeliana Cogn.
Maxillaria reichenheimiana Endr. & Rchb.f.
Maxillaria repens L.O.Williams
Maxillaria revoluta Kl.

Maxillaria rhodosticta Kraenzl.
Maxillaria rhombea Lindl.
Maxillaria richii Dodson
Maxillaria rigida Barb. Rodr.

Maxillaria Ringens Suballiance

Maxillaria ringens Rchb.f.
Maxillaria riopalenquensis Dodson
Maxillaria robusta Barb.Rodr.
Maxillaria rodriguesii Cogn.
Maxillaria rodrigueziana J.T.Atwood & Mora
Maxillaria roezlii Rchb.f. ex Lindl.
Maxillaria rollinsonii Steud.
Maxillaria rollissonii Lindl.
Maxillaria rotundilabia C.Schweinf.
Maxillaria rouseauae Schltr.
Maxillaria ruberrima (Lindl.) Garay
Maxillaria rubioi Dodson
Maxillaria rubrilabia Schltr.
Maxillaria rudolfii Hoehne

Maxillaria Rufescens Alliance

Maxillaria rufescens Lindl.
Maxillaria rugosa Scheidw.
Maxillaria rugosa Schltr. 1914, not Scheidw. 1843
Maxillaria rupestris Barb.Rodr.

Maxillaria sanderiana Rchb.f.
Maxillaria sanguinea Rolfe
Maxillaria sanguineomaculata Schltr.
Maxillaria sanguinolenta (Lindl.) C.Schweinf.
Maxillaria santanae Carnevali & Ramirez

Maxillaria Saragurensis Alliance

Maxillaria saragurensis Dodson.
Maxillaria saxatilis Rchb.f.
Maxillaria saxicola Schltr.
Maxillaria scabrilinguis Lindl.

Maxillaria Scalariformis Suballiance

Maxillaria scalariformis J.T.Atwood
Maxillaria schistostele Schltr.
Maxillaria schlechteri Foldats
Maxillaria schlechteriana J.T.Atwood

Maxillaria schnitteri Schltr.
 Maxillaria schultzei Schltr.
 Maxillaria scorpioidea Kraenzl.
 Maxillaria scurrilis Rolfe
 Maxillaria seidelii Pabst
 Maxillaria semiorbicularis Ames & C.Schweinf.
 Maxillaria serotina Hoehne, not Regnell & Barb.Rodr.
 Maxillaria serotina Regnell & Barb.Rodr.
 Maxillaria serrulata Ames & Correll
 Maxillaria sessilis (Sw.) Fawc. & Rendle
 Maxillaria sessilis Lindl.
 Maxillaria setigera Lindl.
 Maxillaria seymouriana J.T.Atwood
 Maxillaria shepheardii Rolfe
 Maxillaria sigmoidea (C.Schweinf.) Ames & Correll
 Maxillaria sillarensis Dodson & Viquez
 Maxillaria simacoana Schltr.
 Maxillaria similis Garay & Dunsterville
 Maxillaria simplicilabia C.Schweinf.
 Maxillaria simulans (Ames & C.Schweinf.) L.O.Williams
 Maxillaria sinuosa Batem. ex W.Baxt.
 Maxillaria skinneri Batem. ex Lindl.
 Maxillaria soconuscana D.Breedlove
 Maxillaria sodiroi (Schltr.) Dodson
 Maxillaria sophronitis (Rchb.f.) Garay
Maxillaria Sophronitis Alliance
 Maxillaria sp. nov. ined.
 Maxillaria sp. nov., "spotted"
 Maxillaria spannagelii Hoehne
 Maxillaria spathacea Lindl.
 Maxillaria spathulata C.Schweinf.
 Maxillaria speciosa Rchb.f.
Maxillaria Speciosa Suballiance
 Maxillaria spegazziniana Kraenzl.
 Maxillaria spilotantha Rchb.f.
 Maxillaria spiritu-sanctensis Pabst
 Maxillaria splendens Poepp. & Endl.
Maxillaria Splendens Suballiance
 Maxillaria squalens Hook.
 Maxillaria squamata Barb.Rodr.
 Maxillaria squarrosa (Schltr.) comb. ined.
 Maxillaria stachyobiora Rchb.f.
 Maxillaria stapelioides (Link & Otto) Lindl.
 Maxillaria steelii Hook.
 Maxillaria stenobulbon Kl.
 Maxillaria stenopetala Know. & Westc.
 Maxillaria stenophylla Lehm. & Kraenzl. (1899), not Rchb.f. (1854)
 Maxillaria stenophylla Rchb.f., not Lehm. & Kraenzl.
 Maxillaria stenosteles Schltr.
 Maxillaria steyermarkii Fold.
 Maxillaria stictantha Schltr.
 Maxillaria stictissimum Kraenzl.
 Maxillaria striata Rolfe

Maxillaria striatella Kraenzl.
Maxillaria strumata (Endres & Rchb.f.) Ames & Correll
Maxillaria suarezorum Dodson
Maxillaria suaveolens Barringer
Maxillaria subpandurata Schltr.
Maxillaria Subulata Alliance
Maxillaria subulata Lindl.
Maxillaria subulifolia Schltr.
Maxillaria sulcata C.Schweinf., illeg.
Maxillaria sulfurea Schltr.
Maxillaria sulfurina Lem.
Maxillaria superba La Llave & Lex.
Maxillaria superflua Rchb.f.
Maxillaria supina Poepp. & Endl.
Maxillaria surinamensis Focke ex Rchb.f.
Maxillaria swartziana C.D.Adams
Maxillaria synsepala J.T.Atwood

Maxillaria taphallae (Rchb.f.) C.Schweinf.
Maxillaria taracuana Schltr.
Maxillaria tarumaensis Hoehne
Maxillaria tenuifolia Lindl.
Maxillaria tenuis C.Schweinf.
Maxillaria tetragona Lindl.
Maxillaria thurstoniorum Dodson

Maxillaria Tigrina Alliance

Maxillaria tigrina C.Schweinf.
Maxillaria tocotana Schltr.

Maxillaria Tonduzii Suballiance

Maxillaria tonduzii (Schltr.) Ames & Correll
Maxillaria tonsoniae Soto Arenas
Maxillaria torifera (Schltr.) comb. ined.
Maxillaria triangularis Lindl.
Maxillaria tricarinata J.T.Atwood
Maxillaria tricolor Kl., Otto, & Dietr.
Maxillaria tricolor Lindl.
Maxillaria tricolor Ruiz & Pav.
Maxillaria trigona C.Schweinf.

Maxillaria Trilobata Suballiance

Maxillaria trilobata Ames & Correll
Maxillaria trilobulata D.E.Benn. & Christenson
Maxillaria triloris Morren
Maxillaria trinitatis Ames
Maxillaria trinitensis Ames ex W.E.Broadway, name only
Maxillaria triphylla Ruiz & Pav.
Maxillaria tristis Schltr.
Maxillaria truncatilabia Schltr.
Maxillaria truxillensis Rchb.f.
Maxillaria tubercularis J.T.Atwood
Maxillaria tuerckheimii Schltr.
Maxillaria turialbae Schltr.
Maxillaria turneri Nichols.
Maxillaria tutae J.T.Atwood
Maxillaria tyrianthina Hort. ex W.Baxt.

Maxillaria ubatubana Hoehne
Maxillaria umbratilis L.O.Williams

Maxillaria Uncata Alliance

Maxillaria uncata Lindl.
Maxillaria undatiflora Ruiz & pav.
Maxillaria undulata Ruiz & Pav.
Maxillaria unguiculata Schltr.
Maxillaria unguilabia Schltr.
Maxillaria unicarinata C.Schweinf.
Maxillaria urbaniana Lehm. & Kraenzl.

Maxillaria vagans Ames & C.Schweinf.
Maxillaria vaginalis Rchb.f.

Maxillaria Valenzuelana Suballiance

Maxillaria valenzuelana (A.Rich) Nash
Maxillaria valenzuelana ssp. angustata J.T.Atwood
Maxillaria valerioi Ames & C.Schweinf.
Maxillaria vandiformis (Schltr.) C.Schweinf.
Maxillaria vanillodora A.Rich & Gal.

Maxillaria Variabilis Alliance

Maxillaria variabilis Batem. ex Lindl.
Maxillaria variabilis Batem. ex Lindl.
Maxillaria variabilis var. unipunctata Lindl.
Maxillaria varicosa Rchb.f.
Maxillaria variegata Ruiz & Pav.
Maxillaria venusta Lind. & Rchb.f.
Maxillaria verecunda Schltr.
Maxillaria vernicosa Barb.Rodr.
Maxillaria verrucifera C.Schweinf.
Maxillaria verrucifera C.Schweinf.)
Maxillaria vestita Schltr.
Maxillaria villonacensis Dodson
Maxillaria villosa (Barb.Rodr.) Cogn.
Maxillaria vinosa (Schltr.) Senghas
Maxillaria violaceopunctata Rchb.f.
Maxillaria virescens (Schltr.) comb. ined.
Maxillaria virginalis Scheidw.
Maxillaria virguncula Rchb.f.
Maxillaria viridis Lindl.
Maxillaria vitelina lindl.
Maxillaria vitelliniflora Barb.Rodr.
Maxillaria Vittariifolia Alliance
Maxillaria vittariifolia L.O.Williams
Maxillaria vulcanica Lehm. & Kraenzl.

Maxillaria wagneri (Rchb.f.) Rchb.f.
Maxillaria warreana Lodd. ex Lindl.
Maxillaria weberbaueri Schltr.

Maxillaria Wercklei Suballiance

Maxillaria wercklei (Schltr.) L.O.Williams
Maxillaria whittenii Dodson
Maxillaria williamsii Dodson
Maxillaria witsenioides Schltr.

Maxillaria woytkowskii C.Schweinf.
Maxillaria wrightii (Schltr.) Ames & Correll
Maxillaria wrightii (Schltr.) Ames & Correll var. *imbricata*
(Schltr.) Ames & Correll

Maxillaria xanthina Lindl.
Maxillaria xantholeuca Schltr.
Maxillaria xantholeuca var. *peruviana* C.Schweinf.
Maxillaria xanthorhoda Schltr.
Maxillaria xanthosia Barb.Rodr.
Maxillaria xylobiiflora Schltr.

Maxillaria yanganensis Dodson
Maxillaria yauaperyensis Barb.Rodr.
Maxillaria yzabalana S.Watson

MORMOLYCA

Mormolyca aurorae D.E.Benn. & Christenson
Mormolyca fuchsii J.T.Atwood
Mormolyca galeata (Scheidw.) Garay & Wirth
Mormolyca gracilipes (Schltr.) Garay & Wirth
Mormolyca lineolata Fenzl
Mormolyca peruviana C.Schweinf.
Mormolyca polyphylla Garay & Wirth
Mormolyca ringens (Lindl.) Schltr.
Mormolyca schweinfurthiana Garay & Wirth

Neocogniauxia monophylla (Griseb.) Schlechter

Neourbania Alliance

Neourbania adendrobium (Rchb.f.) Fawc. & Rendle
Neourbania nicaraguensis Hamer & Garay

Ornithidium (Aggregata) Alliance

Ornithidium anceps Rchb.f.
Ornithidium album Hook.
Ornithidium alfaroi Ames & C.Schweinf.)
Ornithidium amparoanum (Schltr.) Pabst
Ornithidium aurantiacum Schltr.
Ornithidium aureum Poepp. & Endl.

Ornithidium bicolor Rolfe
Ornithidium biolleyi Schltr.
Ornithidium bolivianum Schltr.
Ornithidium bracteatum Schltr.
Ornithidium breve Schltr.
Ornithidium broadwayi Cogn.

Ornithidium ceriferum (Barb.Rodr.) Barb. Rodr.
Ornithidium chloroleucum Barb. Rodr.
Ornithidium chrysocycnoides Schltr.
Ornithidium coccineum (Jacq.) Salisb.
Ornithidium compactum Schltr.

Ornithidium conduplicatum Ames & C.Schweinf.
Ornithidium confertum Griseb.
Ornithidium cordyline Rchb.f.)
Ornithidium costaricense Schltr.
Ornithidium croceorubens Rchb.f.
Ornithidium cyperifolium Schltr.

Ornithidium densum (Lindl.) Rchb.f.
Ornithidium dichotomum Schltr.)
Ornithidium distichum Lindl.
Ornithidium divaricatum Barb.Rodr.
Ornithidium dolichophyllum Schltr.

Ornithidium flavoviride (Barb.Rodr.) Barb.Rodr.
Ornithidium fragrans Rolfe
Ornithidium fulgens Rchb.f.)

Ornithidium giganteum Lindl.

Ornithidium heterobulbon Kraenzl.
Ornithidium histrionicum Rchb.f.
Ornithidium huancabambae Kraenzl.

Ornithidium inflexum (Lindl.) Rchb.f.

Ornithidium jamesonii Rchb.f.
Ornithidium jenischianum Rchb.f.

Ornithidium lankesteri Ames
Ornithidium lehmannii Kraenzl.
Ornithidium loefgrenii Cogn.
Ornithidium luteorubrum Lehm. & Kraenzl.

Ornithidium mapiriense Kraenzl.
Ornithidium miniatum Lindl.
Ornithidium multicaule (Poepp. & Endl.) Rchb.f.

Ornithidium nanum Rolfe (not Maxillaria nana Hook.)
Ornithidium neglectum Schltr.
Ornithidium niveum Lindl.
Ornithidium nubigenum Rchb.f.

Ornithidium ochraceum Rchb.f.
Ornithidium olivaceum Kraenzl.

Ornithidium paleatum Rchb.f.
Ornithidium pallidiflavum Schltr.
Ornithidium parviflorum (Poepp. & Endl.) Rchb.f.
Ornithidium parvulum Schltr.
Ornithidium pastoense Schltr.
Ornithidium pendulum cogn.
Ornithidium pfitzerianum Lehm. & Kraenzl.
Ornithidium pittieri Ames
Ornithidium pleuranthioides Schltr.

Ornithidium proliferum (Sw.) Fawc. & Rendle)

Ornithidium ramonense Schltr.

Ornithidium rhodoleucum Schltr.

Ornithidium rhomboglossum Schltr.

Ornithidium sanguinolentum Lindl.

Ornithidium schlechterianum C.Schweinf. [nom. illeg.]

Ornithidium semiscabrum Lindl.

Ornithidium serrulatum Lindl.

Ornithidium sigmoideum C.Schweinf.

Ornithidium simulans Ames & C.Schweinf.

Ornithidium sophronitis Rchb.f.

Ornithidium squamatum (Barb. Rodr.) Barb. Rodr.

Ornithidium stenophyllum Schltr.

Ornithidium strumatum Endres & Rchb.f.

Ornithidium taphallae (Rchb.f.) Rchb.f.

Ornithidium tonduzii Schltr.

Ornithidium toriferum Schltr.

Ornithidium vagans Schltr.

Ornithidium vestitum (Sw.) Rchb.f.

Ornithidium virescens Schltr.

Ornithidium weberbauerianum Kraenzl.

Ornithidium wercklei Schltr.

Ornithidium wrightii (Schltr.) C.Schweinf.

Ornithidium xanthinum Rchb.f., ined.

PITYPHYLLUM

Pityphyllum amesianum Schltr.

Pityphyllum antioquiense Schltr.

Pityphyllum hirtzii Dodson

Pityphyllum lariciis annum (Kraenzl.) Schltr.

Pityphyllum pinoides H.R.Sweet

Pachyphyllum pamplonense Kraenzl.

Pittierella costaricensis Schltr., invalid

Pittierella calcarata Schltr.

Pleuranthium adendrobium (Rchb.f.) Benth. & Hook.f.

Pleurothallis valenzuelana A.Rich.

Ponera adendrobium Rchb.f.

Ponera affinis Rchb.f.

Pseudomaxillaria Alliance

Pseudomaxillaria chloroleuca (Barb.Rodr.) Hoehne

Pseudomaxillaria parviflora (Poepp. & Endl.) Brieger
Pseudomaxillaria rhomboglossa (Schltr.) Brieger
Pseudomaxillaria vestita (Sw.) Brieger
Pseudomaxillaria virescens (Schltr.) Brieger

Psittacoglossum atratum Llave & Lex.

Scaphyglottis affinis Poepp. & Endl.
Scaphyglottis parviflora Poeppig & Endl.
Scaphyglottis pendula Poepp. & Endl.
Scaphyglottis ruberrima Lindl.
Scaphyglottis taphallae Rchb.f.

Sepalosaccus Alliance

Sepalosaccus horichii (Senghas) Senghas
Sepalosaccus humilis Schltr.
Sepalosaccus strumatum (Endr. & Rchb.f.) Garay

Siagonanthus multicaulis Poepp. & Endl.

TRIGONIDIUM

Trigonidium Acuminatum Alliance

Trigonidium acuminatum Batem. ex Lindl.
Trigonidium amesianum
Trigonidium amparoanum Schltr.
Trigonidium aurorae D.E.Benn. & Christenson
Trigonidium brachyglossum (Rich. & Gal.) Schltr.
Trigonidium callistele Rchb.f.
Trigonidium christensonii D.E.Benn.
Trigonidium cucullatum Rchb.f.

Trigonidium Egertonianum Alliance

Trigonidium egertonianum Batem. Ex Lindl.
Trigonidium equitans Garay
Trigonidium grande Garay
Trigonidium insigne Rchb.f. ex Benth. & Hook.

Trigonidium Lankesteri Alliance

Trigonidium lankesteri Ames

Trigonidium Latifolium Alliance

Trigonidium latifolium Lindl.
Trigonidium loretoensis Schltr.
Trigonidium macranthum Barb.Rodr.
Trigonidium monophyllum Griesb.
Trigonidium obtusum Lindl.
Trigonidium obtusum Lindl.
Trigonidium pervuvianum Schltr.
Trigonidium ringens Lindl.
Trigonidium riopalenquense Dodson
Trigonidium seemannii Rchb.f.
Trigonidium spathulatum Lind. & Rchb.f.
Trigonidium subrepens Rolfe
Trigonidium tenue Lodd.
Trigonidium turbinatum Rchb.f.

Zygopetalum bicallosum Rhcb.f.

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²Germán Carnevali, Centro de Investigación Científica de Yucatan (CICY), Ex Hacienda Xcumpich, Vieja Carretera a Progreso, A. P. 87, Cordemex, Merida 97310, Yucatan, México

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[- Top of Page -](#)

[Home](#) | [Phylogenetics](#) | [Literature](#) | [Images](#) | [Database](#) | [Downloads](#) | [People](#) | [Links](#) |

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Page last updated: 28 January 2008

HOME

PHYLOGENETICS

LITERATURE

IMAGES

DATABASE

DOWNLOADS

PEOPLE

LINKS

This study is a continuation of our work on other subtribes of the tribe [Maxillarieae](#), especially subtribes [Oncidiinae](#) and Stanhopeinae.

PHYLOGENETICS OF MAXILLARIINAE

Downloads available here.

The following *.sea.bin files can be downloaded for you to examine on your computer, ONLY IF YOU USE A MAC. These files are self extracting and will work only on a MacIntosh, preferably a late model one with lots of RAM. You need to first extract or expand the "Colorfonts.sea.bin" file and then put it in your SYSTEM folder in the FONTS folder on your MAC. You need the latest version of [PAUP*](#) (- available from Sinaeur -) to examine or run these files, but this is the only good way for you to see our data matrices. We assume you know something about cladistics and molecular systematics, as well as how to execute a NEXUS file and run PAUP* analyses. Sorry, but we have no plans to make this available for PC's.

The file [max147.sea.bin](#) is a large data matrix of 147 samples from 123 taxa for ITS. This will allow you to generate a cladogram based on just ITS for a limited number of taxa.

The file [Colorfonts.sea.bin](#) contains the color font file you will need to really work with the data matrix and see what's going on.

The file [4geneMAX.sea.bin](#) is a matrix of ITS/*matK*/*trnL-F*/*atpBeta-rbcL* intergenic spacer for six taxa. It is set up so you can analyze for any one region, or all of them combined.

[- Top of Page -](#)

[Home](#) | [Phylogenetics](#) | [Literature](#) | [Images](#) | [Database](#) | [Downloads](#) | [People](#) | [Links](#) |

HOME

PHYLOGENETICS

LITERATURE

IMAGES

DATABASE

DOWNLOADS

PEOPLE

LINKS

This study is a continuation of our work on subtribes of the tribe [Maxillarieae](#), especially subtribes [Oncidiinae](#) and Stanhopeinae (see [Links](#) under construction). This page is based on our NSF proposal submitted in 2001.

INTRODUCTION TO MAXILLARIINAE

People involved with this project. This changes as new students become involved and others finish their work.

BIOGRAPHICAL SKETCH

[NORRIS H. WILLIAMS](#) - for a complete cv

PROFESSIONAL PREPARATION:

- University of Alabama Biology Sept. 1961 - Aug. 1964 B.S.
- Washington University Botany Sept. 1964 - May 1965
- University of Alabama Biology June 1965 - Aug. 1966 M.S.
- University of Miami Biology Sept. 1966 - Jan. 1971 Ph.D.
- University of Miami Biology Jan. 1971 - Aug. 1971 (Post-doc)
- Smithsonian Institution Botany Aug. 1971 - Aug. 1972 (Post-doc)

APPOINTMENTS:

- Curator, Joint Professor of Botany, and Keeper of the Herbarium, Florida Museum of Natural History, University of Florida 1984-present
- Chairman, Department of Natural Sciences, Florida Museum of Natural History 1985-1994
- Associate Curator, Joint Associate Professor of Botany, and Keeper of the Herbarium, Florida Museum of Natural History, University of Florida 1981-84
- Associate Professor, Department of Biological Science, Florida State University 1978-81
- Assistant Professor, Department of Biological Science, Florida State University 1973-78

- Research Associate, Fairchild Tropical Garden, Miami, FL 1972-73

FIVE PUBLICATIONS RELEVANT TO THIS PROPOSAL:

- Williams, N. H. and W. M. Whitten 1999. Molecular phylogeny and floral fragrances of male euglossine bee-pollinated orchids: A study of *Stanhopea* (Orchidaceae). *Plant Species Biology* 14: 129-137.
- Whitten, W. M., N. H. Williams, and M. W. Chase. 2000. Subtribal and generic relationships of Maxillarieae (Orchidaceae) with emphasis on Stanhopeinae: Combined molecular evidence. *American Journal of Botany* 87: 1842-1856.
- Williams, N. H., M. W. Chase, T. Fulcher, and W. M. Whitten. 2001. Molecular systematics of the Oncidiinae based on evidence from four DNA sequence regions: expanded circumscriptions of *Cyrtorchilum*, *Erycina*, *Otoglossum*, and *Trichocentrum* and a new genus (Orchidaceae). *Lindleyana* 16: 113-139.
- Sosa, V., M. W. Chase, G. Salazar, W. M. Whitten, and N. H. Williams. 2001. Phylogenetic Position of *Dignathe* (Orchidaceae: Oncidiinae): evidence from nuclear ITS ribosomal DNA sequences. *Lindleyana* 16: 94-101.
- Williams, N. H., M. W. Chase, and W. M. Whitten. 2001. Phylogenetic position of *Miltoniopsis*, *Caucaea*, a new genus, *Cyrtorchiloides*, and relationship of *Oncidium phymatochilum* based on nuclear and chloroplast dna sequence data (Orchidaceae: Oncidiinae). *Lindleyana* 16: 272-285.

FIVE OTHER RELATED PUBLICATIONS:

- Wood, T. H., W. M. Whitten, and N. H. Williams. 2000. Phylogeny of *Hedychium* and related genera (Zingiberaceae) based upon ITS sequence data. *Journal of the Edinburgh Botanical Garden*. 57: 261-270.
- Dressler, R. L. and N. H. Williams. 2000. *Chelyorchis*, a new genus. P. 1130 in Romero-González, G. A. and G. Carnevali Fernández-Concha. *Orchids of Venezuela: An illustrated field guide*. Second edition. Armitano Editores. Caracas, Venezuela.
- Iudica, C. A., W. M. Whitten, and N. H. Williams. 2001. Small bones from dried mammal museum specimens as a reliable source of DNA. *BioTechniques* 30: 732-736.
- Williams, N. H. and W. M. Whitten. 2001. Checking an orchid hybrid's background: The use of molecular data in determining parentage of hybrids. *Orchids* 70: 1056-1061.
- Zomlefer, W. B., N. H. Williams, W. M. Whitten, and W. S. Judd. 2001. Generic circumscription and relationships in the tribe Melanthieae (Liliales, Melanthiaceae), with

emphasis on *Zigadenus*: evidence from ITS and trnL-F sequence data. American Journal of Botany 88: 1657-1669.

THESIS ADVISOR AND POSTGRADUATE-SCHOLAR SPONSOR.

- Kurt Neubig, M.S., Mario Blanco, Ph.D., Lorena Endara, Ph. D.; four former Ph.D. students; three M.S. students; two post-doctoral associates in the past.
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BIOGRAPHICAL SKETCH

WILLIAM MARK WHITTEN

PROFESSIONAL PREPARATION:

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- University of Tennessee Botany 1976 - 1979 M.S.
- Florida State University Biological Science 1979 - 1981 transferred to UF
- University of Florida Botany 1981 - 1985 Ph.D.

APPOINTMENTS:

- Postdoctoral research associate, Florida Museum of Natural History 1985-1993
- Senior Biological Scientist, Florida Museum of Natural History 1993-present

FIVE PUBLICATIONS RELEVANT TO THIS PROPOSAL:

- Whitten, W. M., N. H. Williams, and M. W. Chase. 2000. Subtribal and generic relationships of Maxillarieae (Orchidaceae) with emphasis on Stanhopeinae: Combined molecular evidence. American Journal of Botany 87: 1842-1856.
- Ryan, A., W. M. Whitten, M. A. Johnson, and M. W. Chase. 2000. A phylogenetic assessment of *Lycaste* and *Anguloa* (Orchidaceae: Maxillarieae). Lindleyana 15:33-45.
- Cameron, K. M., M. W. Chase, W. M. Whitten, P. J. Kores, D. C. Jarrell, V. A. Albert, T. Yukawa, H. G. Hills, and D. H. Goldman. 1999. A phylogenetic analysis of the Orchidaceae: Evidence from rbcL nucleotide sequences. American Journal of Botany 86: 208-224.

- Eltz, T., W. M. Whitten, D. W. Roubik, and K. E. Linsenmair. 1999. Fragrance collection, storage, and accumulation by individual male orchid bees. *Journal of Chemical Ecology* 25: 157-176.
- van den Berg, C., W. E. Higgins, R. L. Dressler, W. M. Whitten, M. A. Soto Arenas, A. Culham, and W. M. Chase. 2000. A phylogenetic analysis of Laeliinae (Orchidaceae) based on sequence data from internal transcribed spacers (ITS) of nuclear ribosomal DNA. *Lindleyana* 15: 96-114.

FIVE OTHER RELATED PUBLICATIONS:

- Whitten, W. M., A. M. Young, and N. H. Williams. 1989. Function of glandular secretions in fragrance collection by male euglossine bees (Apidae: Euglossini). *Journal of Chemical Ecology* 15:1285-1295.
- Whitten, W. M., A. M. Young, and D. L. Stern. 1993. Non-floral sources of chemicals that attract male euglossine bees. *Journal of Chemical Ecology* 19: 3017-3027.
- Stern, W. L. and W. M. Whitten. 1999. Comparative vegetative anatomy of Stanhopeinae (Orchidaceae). *Botanical Journal of the Linnean Society* 129: 87-103.
- Zomlefer, W. B., N. H. Williams, W. M. Whitten, and W. S. Judd. 2001. Generic circumscription and relationships in the tribe Melanthieae (Liliales, Melanthiaceae), with emphasis on *Zigadenus*: evidence from ITS and trnL-F sequence data. *American Journal of Botany* 88: 1657-1669.
- Whitten, W. M. and N. H. Williams. 1992. Floral fragrances of *Stanhopea* (Orchidaceae). *Lindleyana* 7: 130-153.

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- University of Missouri-St. Louis Botany Jan. 1989 - Jan 1991 M.S.

- University of Missouri-St. Louis Botany Jan. 1991 - May 1996 Ph.D.

APPOINTMENTS:

- Profesor Investigador Titular B and Keeper of the Herbarium CICY, Centro Investigaci3n Cient3fica de Yucat3n, (CICY) 2001-present.
- Investigador Titular A and Keeper of the Herbarium CICY, Centro Investigaci3n Cient3fica de Yucat3n, (CICY) 1996(2001).
- Natural History Biologist, Flora of Missouri Project January 1995-July 1996.
- Editorial assistant, Flora of the Venezuelan Guayan Project, Missouri Botanical Garden Aug.(Dec. 1989
- Botanist, Herbario Nacional de Venezuela (VEN), Jard3n Bot3nico de Caracas, INPARQUES 1985(1988).
- Laboratory Technician, Viveros Urimare, Caracas, Venezuela 1977(1985).

FIVE PUBLICATIONS RELEVANT TO THIS PROPOSAL:

- Carnevali, G., 2001. A synoptical view of the classification of *Cryptocentrum* Benth. (Orchidaceae), new taxa, and a key to the genus. Harvard Papers in Botany 5: 467-486.
- Carnevali, G. and J. T. Atwood. 1991. Orchidaceae Dunstervillorum II: *Maxillaria cryptobulbon* nova sp. and a note on the *Maxillaria brunnea* complex. Novon 1: 159-164.
- Carnevali, G. and J. T. Atwood. 1996. Two new species in the *Maxillaria rufescens* complex from Central America. Lindleyana 11: 27-33.
- Carnevali, G., 1999. *Cryptocentrum* pp. 27-32, in Atwood and Mora de Retana: Flora Costaricensis: Orchidaceae. Fieldiana Botany (New Series) No. 40.
- Carnevali, G. and W. Fritz. 2000. The *Maxillaria porrecta* Lindley complex in the Venezuelan Guayana and the Guianas with a new species in the group. Selbyana 21: 129-135.

FIVE OTHER RELATED PUBLICATIONS:

- Carnevali, G. and I. Ram3rez. 1989. New or Noteworthy Orchids for the Venezuelan Flora. VII. Additions in *Maxillaria* from the Venezuelan Guayana. Ann. Missouri Bot. Gard. 76: 374-380.
- Carnevali, G. and G. A. Romero. 1994. Orchidaceae Dunstervillorum VII: A new *Cryptocentrum* from the Guayana Highlands. Die Orchidee, Beiheft 1: 3-12.

- Carnevali, G. and I. Ramírez. 1998. Notes on the Orchid Flora of the Cruz Carrillo National Park (Guaramacal), Venezuela. *Harvard Papers in Bot.* 12(4): 239-252.
- Romero, G. A. and G. Carnevali. 2000. *Orchids of Venezuela, An illustrated Field Guide. Second Edition.* Armitano Editores. Caracas. Venezuela.
- Carnevali, G., J. L. Tapia-Muñoz, R. Jiménez-Machorro, L. Sánchez-Saldaña, L. Ibarra-González, I. M. Ramírez, and M. P. Gómez-Juárez. 2001. Notes on the flora of the Yucatan Peninsula II: A synopsis of the orchid flora of the Mexican Yucatán Peninsula and a tentative checklist of the Orchidaceae of the Yucatán Peninsula Biotic Province. *Harvard Papers in Botany* 5: 383-466.

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- Universidade Estadual de Campinas (Brazil) Botany Febr. 97 - Nov. 2001 Ph.D.

FIVE PUBLICATIONS RELEVANT TO THIS PROPOSAL:

- Singer, R. B. and A. A. Cocucci. 1999. Pollination mechanisms in four sympatric southern Brazilian Epidendroideae orchids. *Lindleyana* 14: 47-56.
- Singer, R. B. and M. Sazima. (in press). The pollination mechanism of three sympatric *Prescottia* (Orchidaceae: Prescottinae) species in southeastern Brazil. *Annals of Botany*. Published electronically 8 Oct 2001.
- Singer, R. B. and M. Sazima. (in press). Flower Morphology and Pollination Mechanism in Three Sympatric Goodyerinae Orchids from South-eastern Brazil. *Annals of Botany*. Published electronically 8 Oct 2001.
- Singer, R. B. (in press). The pollination of *Trigonidium obtusum* Lindl. (Orchidaceae: Maxillariinae): trap-flowers and sexual mimicry. *Annals of Botany*.
- Singer, R. B. (in press). The pollination mechanism in *Sauroglossum elatum* Lindl. (Orchidaceae): protandry and moth-pollination in Neotropical Spiranthinae. *Botanical Journal of the Linnean Society*.

FIVE OTHER RELATED PUBLICATIONS:

- Singer, R. B. and M. Sazima. 2000. The pollination of *Stenorrhynchos lanceolatus* (Aublet) L. C. Rich. (Orchidaceae: Spiranthinae) by Hummingbirds in Southeastern Brazil. *Plant Systematics and Evolution* 223: 221-227.
- Singer, R. B. and A. A. Cocucci. 1999. Pollination mechanism in southern Brazilian orchids which are exclusively or mainly pollinated by halictid bees. *Plant Systematics and Evolution*. 217: 101-117.
- Singer, R. B. and M. Sazima. 1999. The pollination mechanism in the "*Pelexia* alliance" (Orchidaceae: Spiranthinae). *Botanical Journal of the Linnean Society* 131: 249-262.
- Singer, R. B. and A. A. Cocucci. 1997. Eye attached hemipollinaria in the Hawkmoth and Settling Moth. Pollination of *Habenaria* (Orchidaceae): A study on functional morphology in 5 species from subtropical South America. *Botanica Acta* 110: 328-337.
- Singer, R. B. and A. A. Cocucci. 1997. Pollination of *Pteroglossaspis ruwenzoriensis* (Rendle) Rolfe

(Orchidaceae) by beetles in Argentina. *Botanica Acta* 110: 338-342.

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- Universidade Estadual de Campinas Botany Mar. 1999 - Oct. 2001 M.S.

PUBLICATIONS:

- Koehler, S. 2001. Phylogeny and systematics of *Bifrenaria* (Orchidaceae) sensu lato. Masters Thesis. Universidade Estadual de Campinas. Campinas, Brasil.
- Koehler, S. and C. P. Bove. 2001. Hydrocharitaceae from Central Brazil: a new species of *Egeria* Planchon and a note on *Apalanthe granatensis* (Humbolt and Bonpland) Planchon. *Novon* 11: 63-66.
- Koehler, S. 2001. Alismataceae, in Flora nacional da restinga de Jurubatiba e arredores, Rio de Janeiro, Brasil: listagem florística e fitogeografia: Angiospermas,

Pteridofitas, algas continentais. Editora Museu Nacional, Rio de Janeiro.

- Koehler, S. and E. L. M. Catharino. 2001. *Bifrenaria* Lindl. sensu lato. Flora Fanerogâmica do Estado de São Paulo. in press.
- Koehler, S. and C. P. Bove. 2001. Alismatidae in the Araguaia River Basin (MT/GO, Brazil): Taxonomical survey and identification keys. Kurtziana. in press.

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- Singer, R.B. Departamento de Botânica, Instituto de Biologia, Unicamp, CP 6109, Campinas, São Paulo, BRAZIL
- Whitten, W. M., University of Florida, Florida Museum of Natural History
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BIOGRAPHICAL SKETCH

MARIO A. BLANCO

PROFESSIONAL PREPARATION:

- Universidad de Costa Rica Biology Mar. 1992 - Dec. 1996 B.S.

PUBLICATIONS:

- Monge-Najera, J. and M. A. Blanco. 1995. The influence of leaf characteristics on epiphyllic cover: a test of hypotheses with artificial leaves. *Tropical Bryology* 11: 5-9.
- Pupulin, F. and M. A. Blanco. 2001. *Myoxanthus vittatus* (Orchidaceae), a new species from Costa Rica.

Lankesteriana 2: 15-18.

- Blanco, M. A. *Aristolochia gorgona* (Aristolochiaceae), a new species with giant flowers from Costa Rica and Panama. Brittonia: in press.
- Blanco, M. A. Notes on the natural history of *Cyclopogon obliquus* (Orchidaceae) in Costa Rica. In preparation.
- Blanco, M. A. and G. Barboza. Pollination by pseudocopulation in *Lepanthes* (Orchidaceae). In preparation.

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[- Top of Page -](#)

[Home](#) | [Phylogenetics](#) | [Literature](#) | [Images](#) | [Database](#) | [Downloads](#) | [People](#) | [Links](#) |

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Page last updated: 17 January 2008

HOME

PHYLOGENETICS

LITERATURE

IMAGES

DATABASE

DOWNLOADS

PEOPLE

LINKS

LINKS TO INTERESTING AND USEFUL SITES

Adapted in part from Darin Penneys [Melastomataceae](#) WebSite and used with his permission.

Phylogenetics

[TreeBASE](#) - A centralized location for a vast scope of phylogenetic information.

[Tree of Life](#) - A searchable, clickable cladogram with information about every form of life on earth.

[PAUP*](#) - PAUP* is the most commonly used phylogenetic analysis program. The MAC version is a necessity for anyone seriously interested in molecular systematics.

[Orchid Tree of Life Project](#) - This links to an unsuccessful proposal to assemble a complete phylogeny of the Orchidaceae.

Herbaria and Collections

[Types at the Smithsonian Institution](#) - Search the Smithsonian (US) collection of thousands of type specimens.

[New York Botanical Garden](#) - Search the entire collection at the New York Botanical Garden (NY).

[Types at NYBG](#) - Type specimens at the New York Botanical Garden (NY).

[Harvard](#) - Type and general specimens at the Harvard University Herbaria (HUH).

[Types at the University of Florida](#) - Type specimens at the University of Florida herbarium (FLAS).

[Paris](#) - Search the Museum National d'Histoire Naturelle (P).

[Instituto Nacional de Biodiversidad \(INBio\), Costa Rica](#) - A directory of genera, species, and collection label data for Orchidaceae in the collection at the Instituto Nacional de Biodiversidad (INBio), Costa Rica.

[Missouri Botanical Garden - TROPICOS](#) - The source for tropical specimens, most of Atwood's specimens databased here.

DNA - find gene sequences, chromosome numbers, or see how PCR and cycle sequencing work

[NCBI](#) - Search GenBank for DNA sequences of anything.

[IPCN](#) - Index to Plant Chromosome Numbers.

[DNA Learning Center](#) - This takes you to a great site devoted to public genetics education. An operating unit of Cold Spring Harbor Laboratory, it offers news and information about resources, workshops, and programs. Good animation to show how PCR and cycle sequencing work. Essential to understanding molecular systematics. Works on PC's and MAC's, but you need

to download the animations.

Taxonomic resources

[Kew Orchid Checklist](#) - The Kew Orchid Checklist of all currently recognized genera and species [Royal Botanic Gardens, Kew (2004)] is used as our reference. The current link is to the entire live, database-driven monocot checklist.

[IPNI](#) - The ultimate in plant names and bibliographic references.

[Kew Record](#) - This is an important resource for conducting literature searches. This is what we used to call Kew Record. It now takes you to a more extensive database. Here you can search across Kew's three major bibliographic databases in one go.

Floristics

Just a few links to get you to some interesting pages.

[Flora Mesoamericana](#) - THE major floristic work for Central America. In Spanish and English.

[Biological Diversity of the Guianas](#) - Covers the three countries in northeastern South America.

Orchid Related Web Sites

This part could go on and on and on, so only a few preliminary links are given here. This should get you started in finding orchid web pages.

[Selby Gardens](#) - The Marie Selby Botanical Gardens in Sarasota Florida - great to visit, large display collection of orchids

[Key to Costa Rican Maxillarias by John Atwood](#) - John's work is the basis for our molecular work, but this is now somewhat out of date.

[Orchid Research Newsletter](#) - Newsletter from Kew, covers all aspects of scientific research on orchids

[The Tribe Maxillarieae](#) - This site has a number of good photographs of species of *Maxillaria*, as well as photos of numerous other interesting orchids.

[The Orchid Mall](#) - A set of links to a number of orchid related pages, many commercial ones. We have no relation to any of these vendors or web pages, but thought this link might be useful.

[American Orchid Society](#) - The major organization devoted to all aspects of orchids

[The Sobralia Page](#) - Not maxillarias, but devoted to another very interesting group of orchids, and has some good links. We have some molecular data on this group and should have it available soon.

[The Stanhopea Page](#) - Another good page for interesting genera.

[- Top of Page -](#)

[Home](#) | [Phylogenetics](#) | [Literature](#) | [Images](#) | [Database](#) | [Downloads](#) | [People](#) | [Links](#) |

