Revista Mexicana de Biodiversidad 85: 445-462, 2014
DOI: 10.7550/rmb.32511

The orchid flora of the Colombian Department of Valle del Cauca

La orquideoflora del departamento colombiano de Valle del Cauca

Marta Kolanowska✉

Department of Plant Taxonomy and Nature Conservation, University of Gdańsk. Wita Stwosza 59, 80-308 Gdańsk, Poland.
✉ *martakolanowska@wp.pl*

Abstract. The floristic, geographical and ecological analysis of the orchid flora of the department of Valle del Cauca are presented. The study area is located in the southwestern Colombia and it covers about 22 140 km^2 of land across 4 physiographic units. All analysis are based on the fieldwork and on the revision of the herbarium material. A list of 572 orchid species occurring in the department of Valle del Cauca is presented. Two species, *Arundina graminifolia* and *Vanilla planifolia*, are non-native elements of the studied orchid flora. The greatest species diversity is observed in the montane regions of the study area, especially in wet montane forest. The department of Valle del Cauca is characterized by the high level of endemism and domination of the transitional elements within the studied flora. The main problems encountered during the research are discussed in the context of tropical floristic studies.

Key words: biodiversity, ecology, distribution, Orchidaceae.

Resumen. Se presentan los resultados de los estudios geográfico, ecológico y florístico de la orquideoflora del departamento colombiano del Valle del Cauca. El área de estudio está ubicada al suroccidente de Colombia y cubre aproximadamente 22 140 km^2 de tierra a través de 4 unidades fisiográficas. Todos los análisis aquí presentados se llevaron a cabo basándose en trabajo de campo y en la revisión de material de herbario. Se presenta la lista de las 572 especies de orquídeas que se presentan en el departamento de Valle del Cauca. Dos de ellas, *Arundina graminifolia* y *Vanilla planifolia*, son elementos no nativos de la flora de orquídeas estudiada. La mayor diversidad de especies se observa en las regiones montañosas de la zona de estudio, sobre todo en los bosques montanos húmedos. El departamento de Valle del Cauca se caracteriza por el alto nivel de endemismo y la dominancia de elementos de transición en la flora estudiada. Los principales problemas encontrados durante la investigación se discuten en el contexto de los estudios florísticos tropicales.

Palabras clave: biodiversidad, ecología, distribución, Orchidaceae.

Introduction

The vast majority of plant species are concentrated in the tropical and sub-tropical regions of the world. One of the most important tasks for the scientists today is to describe the biodiversity of these areas, in which the researchers face the interactions of environmental, economic and social problems.

The Republic of Colombia, containing about 10% of the known species in the world, is one of the most biodiverse countries on Earth. Nearly 30% of the vascular plants occurring in Colombia are endemic. Unfortunately, the economic and social problems associated with development in the last 2 decades has resulted in a noticeable habitat loss and the threat of the national biodiversity.

The extraordinary flora of the Colombian vascular plants accounts for over 24 000 species with the best representation observed within the Orchidaceae family (Jørgensen et al., 2011). Previous work by Ortiz and Uribe (2007) included over 3 200 species and 4 years later this number was elevated to over 3 500 by Jørgensen et al. (2011). Unfortunately, only the orchid flora of the department of Antioquia has been catalogued so far (Idárraga-Piedrahita et al., 2011).

The aim of the present study was to prepare a complete catalog of Orchidaceae occurring in the department of Valle del Cauca, which is one of the most poorly floristically known regions of Colombia, encompassing at the same time 4 important physiographic units.

The department of Valle del Cauca occupies about 22 140 km^2 in southwestern Colombia (Fig. 1) constituting about 2% of the country's territory. It extends from the Pacific lowlands across the Western Cordillera and the valley of the upper Cauca river to the western slope of the Central Cordillera (3°05'-5°01' N, 75°42'-77°33' W).

Recibido: 30 julio 2012; aceptado: 15 noviembre 2013

Figure 1. Location of the study area.

The natural limits of the department are the Pacific Ocean on West and the Cauca River on the South. It is bordered by the departments of Caldas and Risaralda in the North, Chocó in the North-West, Quindio and Tolima in the North-East and Cauca in the South (Bolívar et al., 2004).

In the study area 4 physiographic units are present: the Pacific Plate, the Western Cordillera, the Valley of Cauca River, and the western flank of the Central Cordillera. This physiographic diversity is reflected in a wide variety of environmental conditions. According to the Etters' map (1998), 18 different ecosystems occur in the department of Valle del Cauca –10 natural and 8 transformed. The most widespread are: sub Andean humid forest (*bosque húmedo subandino*), which covers about 7.6% of the area, high-montane humid forest (*bosque altoandino húmedo*), and cloud forest (*bosque de niebla*) occupying about 6.6% of the department (Bolívar et al., 2004).

The most important ecosystems for biodiversity are paramo, sub Andean and Andean forests, dry tropical forest and tropical very dry and sub xerophytic forests, wetlands, tropical wet forests and flooded forests.The variety of ecosystems and natural habitats have resulted in a great diversity of species in the study area. Unfortunately, the flora of this region has been very poorly studied.

Material and methods

The information about orchid species documented in the department of Valle del Cauca, their distribution in the study area, their geographical and altitudinal range, and the habitat requirements were obtained during the fieldwork, and the revision of herbarium material. All information was complemented by data obtained from the literature, mostly protologues and Neotropical orchid floras (i.a. Garay 1978; Hamer, 1988, 1990; Hágsater and Salazar, 1990; Hágsater and Sánchez Saldaña 2001, 2004, 2006, 2007, 2008, 2009, 2010; Hágsater and Soto Arenas 2003, 2008; Dodson and Luer 2005, 2009, 2010) and the electronic database provided by the herbarium AMO.

Herbarium specimens were examined according to the standard procedures. Every studied sheet was photographed and the data were taken from the labels. Both vegetative and reproductive characters of each plant were studied. In total 3 576 dried specimens and 76 flowers preserved in alcohol stored in AMES, AMO, COL, CUVC, K, MO, P, S, UGDA, VALLE and W were examined. Herbarium acronyms follow Index Herbariorum (Thiers, continuously updated).

The fieldwork in the department of Valle del Cauca was conducted during 4 expeditions between 2009 and 2011. The objective of the excursions was to collect the geolocation data and information about the type of habitat in which orchid populations occur. The habitats were classified according to the Espinal and Montenegro (1980) system, based on the presence of the characteristic taxa defined by Cuatrecasas (1958) and Bolívar et al. (2004).

The data gathered on species distribution and elevation range were used to define directional and altitudinal elements within orchid flora of the department of Valle del Cauca. The directional elements were defined based on the general geographical range of each species, the species which geographical range do not have limits in the study area were classified as transitional elements, and those with a limited distribution in the department of Valle del Cauca as southern (northern range limit), northern (southern range limit) or western (east range or eastern (western range limit) elements, according to their distribution. Each species was classified in one of 6 categories based on the vertical distribution of its populations and that was the basis for defining the altitudinal elements: lowland (below 300 m), upland (300-700 m), premontane (700-1 200 m), montane (1 200-2 500 m), high-montane (2 500-3 400 m) and paramo (above 3 400 m). The elevation limits are related to the vertical distribution of the habitats in the study area.

Results

Orchid species richness and taxonomic diversity. This study confirmed the occurrence of 572 orchid species in the department of Valle del Cauca, including the description of 6 new taxa. Previous information on the occurrence of 48 species was incorrect being the result of the misidentification of herbarium material or incorrect interpretation of the locality given on the herbarium sheet label. Neither fieldwork nor examination of dried specimens could confirm the occurrence of 17 orchid species previously reported from the study area, i.a. information given in "Libro Rojo de las plantas en Colombia vol. 6" (Calderón, 2007), without herbarium reference material.

The Orchidaceae of the study area constitute about 16% of the Colombian orchid flora estimated by Ortiz and Uribe (2007) as 3 497 species (Appendix, Fig. 2). From all 133 genera, nearly 45% are represented by a single species - this group embraces also 4 monotypic genera: *Frondaria* Luer, *Gerlachia* Szlach., *Soterosanthus* F. Lehm. *ex* Jenny and *Trizeuxis* Lindl. The richest genus, with 121 species, 8 of which are endemic to the study area is *Epidendrum* L.

According to the classification system of Chase et al. (2003), with later changes (Bateman et al. 2003), the vast majority of Orchidaceae occurring in the study area belong to the subfamily Epidendroideae (91%), represented mainly by the tribe Epidendreae (64%). Within those taxa, most of the species belong to the subtribe Pleurothallidinae (24 genera, 195 species) and Laeliinae (7 genera, 143 species; Appendix).

Distribution patterns. Information on the vertical distribution of 22 species occurring in the department of Valle del Cauca is not provided. For all other orchids, the altitudinal distribution and the vertical range in the study area have been determined. Almost all species listed are native to Colombia and only 2: *Arundina graminifolia* (D.Don) Hochr. and *Vanilla planifolia* Jacks. ex Andrews were found as invasive in the zone.

The highest species diversity is observed in the montane regions (1 200-2 500 m alt.), where populations of 347 (60%) species have been documented. Simultaneously, 63% of these (218 species) do not occur in the lowlands and/or in the high-montane and paramo areas. Both the lowlands and high-montane areas are characterized by a low orchid diversity –only 85 (15%) species were reported from altitudes below 300 m and only 24 (4%) from higher elevations above 3 400 m.

The determination of the vertical range of 548 species, for which sufficient data were gathered, allowed for the determination of 333 altitudinal elements within the orchid flora (Appendix). The best representation is observed among montane species, which constitute 38% of the Orchidaceae (218 species) occurring in the department of Valle del Cauca. Contribution of other elements is comparatively insignificant. Only 36 (6%) of species are associated with the lowland regions, 7 with uplands (1.2%), 39 (6.8%) with premontane areas, 23 with high mountains (4%) and 10 species (1.7%) with paramo. About 3.7% of the orchids (215 species) are characterized by a wide vertical range.

The gathered data allowed the determination of the general geographical range of 543 (94%) of the orchid species occurring in the department of Valle del Cauca (Appendix). The endemic and invasive species were excluded from the analysis of the directional elements. Almost 70% (325 species) do not reach the limit of their range in the study area, hereby these are transitional elements. The distribution of 29 (0.6%) species is related with the Andes which are eastern elements. The western elements include 29 species (0.6%) which range extends for a few kilometers from the coastal zone of the Pacific. Thirty-five species (7.5%) were classified as northern, and 49 as southern elements (10%).

The level of endemism observed is extremely high (Appendix). The localities of 74 species (almost 13%) are known exclusively from the study area. Most of the endemic taxa belong to the subtribes Pleurothallidinae and Laeliinae (tribe Epidendreae).

Ecological analysis. The orchid flora of the department of Valle del Cauca is dominated by the epiphytes (83.2%, 476 species) –most of them (400 species) are holoepiphytic. Only 15% of species occurring in the study area are lithophytic (4 obligatory) or terrestrial (81 obligatory) and exclusively 3 species of the genus *Vanilla* were reported growing as vines. The variability of the plant habit was observed within the populations of 87 (15%) species.

The suitable habitats were determined for 95% orchids reported from the department of Valle del Cauca. Two species, *Arundina graminifolia* and *Vanilla planifolia*, have been excluded from the analysis, as they are non-native species in the study area and their long-time persistence in the department is unsure.

Within the natural habitats, the greatest diversity of orchid species was observed in wet montane forests with 225 species (nearly 40% of the orchid flora of the department of Valle del Cauca). In moist premontane forest, which is the most widely spread habitat in the study area, 171 species (30%) were found. On the other hand, mangroves show the poorest orchid flora with only 6 species (less than 1.5%) recorded. Only 2% of Orchidaceae are related with the open areas of disturbed montane and premontane forests. Another 15 species are associated with exposed, steep slopes –both rocky and grassy.

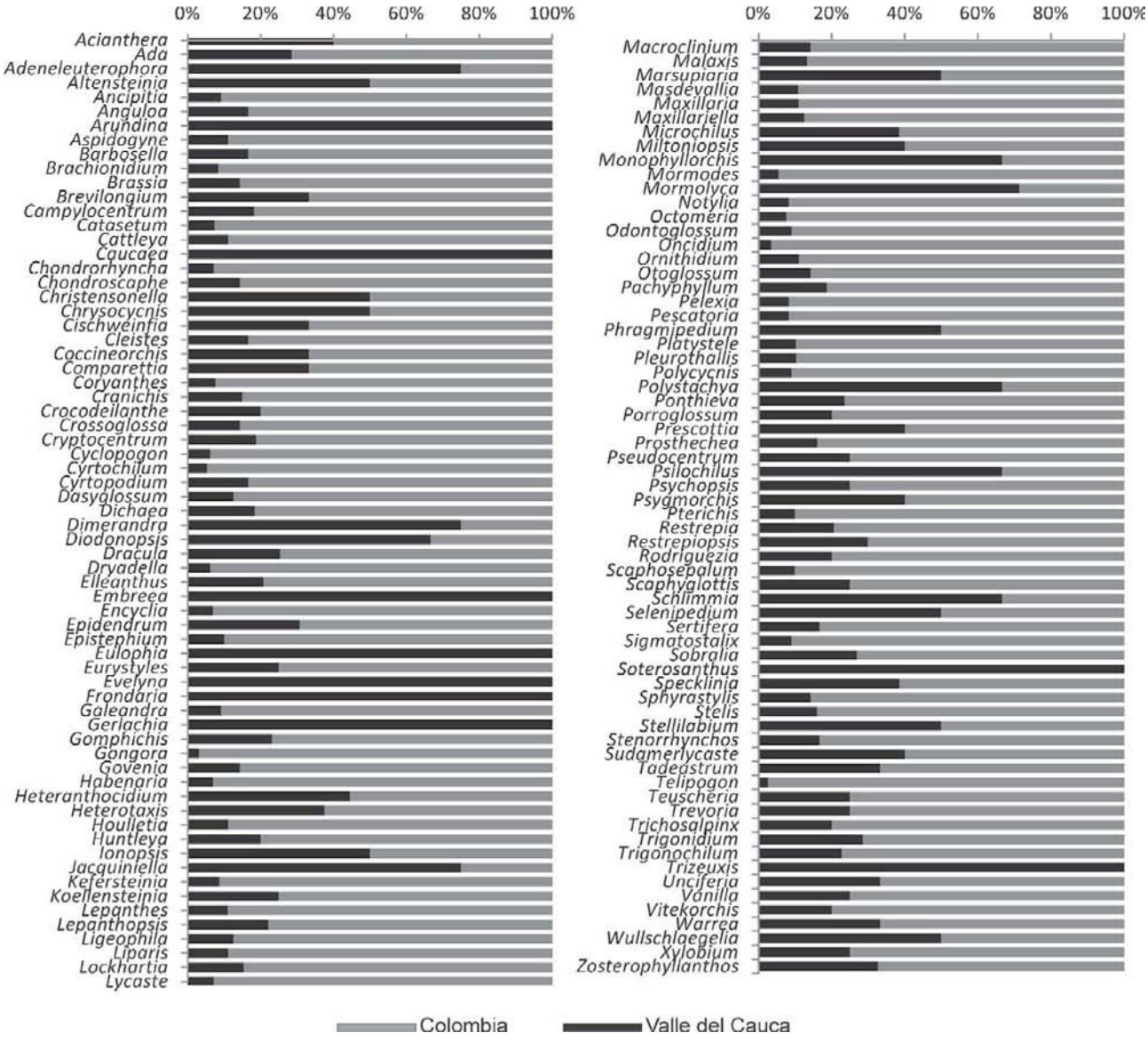

Figure 2. Orchidaceae of the department of Valle del Cauca in the Colombian orchid flora.

The occurrence of 14 Orchidaceae species was reported from the areas of orchards. Most of them were found in abandoned cocoa plantations. A smaller number of taxa are related to *Coffea* and *Citrus* orchards. In the tea (*Camellia*) and rubber (*Hevea*) plantations the occurrence of a single species was recorded (Table 1).

Discussion

As mentioned before, a complete list of orchid species has been compiled only for the department of Antioquia. As the territory of this administrative unit is much larger (over 63 000 km^2) than the department of Valle del Cauca and it is located within completely different physiographic units (eg. Carribean coast, Darién gap) it is not comparable with the studied area. Noteworthy is that in the department of Antioquia there is a high level of endemism within the orchid flora –over 25% of Orchidaceae is known exclusively from this region (Idárraga-Piedrahita et al., 2011).

No data exists on the orchid species richness of other Colombian physiographic or administrative units. So far studies on Orchidaceae has been conducted in relatively small areas (e.g. Kolanowska et al. 2011; Misas Urreta,

2005, Santa Jiménez et al., 2009). Since the floral composition, as well as biogeographical and ecological aspects of Colombian orchid flora are still poorly recognized, the necessity to intensify the comprehensive research is unquestionable.

The geological history and current habitat continuity observed in the equatorial direction, make the Pacific region and the Andes dispersal routes for many orchid species. The department of Valle del Cauca, which embraces both the Pacific lowlands and the chains of the Western and Central Cordilleras, is therefore a region rich in transitional taxa originating from both Central America and the central part of South America.

Our results confirme the information regarding the concentration of Orchidaceae in the montane areas (Vareschi, 1976). In the study area the occurrence of about 70% (391 species) of orchids was observed above 1 200 m altitude, while in the lowlands and uplands only 104 species were recorded. Moreover, only 10 endemic species were found below 700 m altitude.

The greatest threat to the existing orchid populations is the increase in agricultural areas, mainly sugar cane crops and pasturelands. Due to the intensive logging of tropical dry forests which began in the 1960's (Bolívar et al., 2004), the poorest Orchid flora is now observed within the valley of Cauca river area.

Orchid flora of the department of Valle del Cauca, which covers less than 2% of the Colombia's territory, is extremely rich –572 species found in the study area represent about 16% of the national Orchid Flora. At the same time, the observed level of endemism is very high (13%). However, there is a huge possibility that the actual number of orchid species occurring in the Republic of Colombia is much higher than the numbers that appear in the previously published studies (eg. Ortiz and Uribe, 2007).

The number of field studies conducted in Colombia is very limited, even if it seems that the financial resources allocated in nature conservation, including research, are not directly related to this fact (Galán and Canal, 2002). The scarce number of field studies seems to be connected with 2 other factors. The first one is the specificity of the tropical vegetation - many regions of Colombia are basically inaccessible to scientists because of the complete lack of communication routes, or to temporarily cutting off those areas from the nearest human settlements. In the department of Valle del Cauca the problem is noticeable in the southern part of the Buenaventura district, which is almost completely devoid of terrestrial roads. Getting into many regions of this area in the rainy season is not possible due to the high water levels in the rivers, which intersect the entire territory of the district. On the other hand, the terrorist and drug cartel threat is still high in many Colombian regions. The most dangerous areas, in this aspect, are the high-montane areas of the Western Cordillera. In the department of Valle del Cauca, field studies are not conducted for safety reasons (paramilitary threats), i.e. in the Páramo de Bavaya (Central Cordillera), where the last floristic studies were conducted in 1946 by José Cuatrecasas.

This limited fieldwork results in insufficient floristic documentation of the tropical regions, hence the results of the research based only on herbarium material revision seems to not reflect the entire diversity of Colombian plant species, including orchids. For the same reason, the geographical ranges of taxa may be underestimated, or seem to be disjunct.

Another issue is the correct identification of the

Table 1. Orchid species reported from the various kind of orchard

Kind of orchard	*Orchidaceae species*
Theobroma cacao L.	*Heterotaxis equitans* (Schltr.) Ojeda and Carnevali
	Maxillaria friedrichsthalii Rchb.f.
	Maxillariella variabilis (Bateman *ex* Lindl.) M.A. Blanco and Carnevali
	Scaphyglottis prolifera (R.Br.) Cogn.
	Specklinia capillaris (Lindl.) Luer
	Stelis perpusilliflora Cogn.
Camellia L.	*Epidendrum mathewsii* Rchb.f.
Citrus L.	*Campylocentrum micranthum* (Lindl.) Rolfe
	Cryptocentrum latifolium Schltr.
	Polystachya foliosa (Hook.) Rchb.f.
Coffea L.	*Catasetum tabulare* Lindl.
	Oncidium pyramidale Lindl.
	Trizeuxis falcata Lindl.
Hevea Aubl.	*Epidendrum campyloglossum* P. Ortiz and Hágsater

herbarium material. The errors in the determination of specimens results in copying from the available literature false information about the number and the distribution of many taxa. Within the herbarium material collected in the department of Valle del Cauca many errors of identification were uncovered among specimens representing 23 species of Orchidaceae.

Acknowledgements

I would like to express my sincere gratitude to Oscar Alejandro Pérez Escobar and Edicson Parra Sánchez for their accompaniment during the field studies. I am grateful to Eric Hágsater, Carlyle A. Luer and Pedro Ortiz for their cooperation during the research. The curators and staff of the cited herbaria are thanked for their kind hospitality and assistance during the visits. The research described here has been supported by the grant from the Polish Ministry of Science and Higher Education (project No. N N304 043939).

Literature cited

Bateman, R. M., P. M. Hollingsworth, J. Preston, Y. Luo, A. M. Pridgeon and M. W. Chase. 2003. Molecular phylogenetics and evolution of Orchidinae and selected Habenariinae (Orchidaceae). Botanical Journal of Linnean Society 142:1-40.

Bolívar, W., J. Echeverri, M. Reyes, N. Gómez, M. I. Salazar, L. A. Muñoz, E. Velasco and L. S. Calderón. 2007. Libro rojo de plantas de Colombia Vol. 6. Orquídeas. Instituto Alexander von Humboldt, Ministerio del Medio Ambiente, Vivienda y Desarrollo Territorial, Bogotá. 828 p.

Chase, M. W., K. M. Cameron, R. L. Barrett and J. V. Freudenstein. 2003. DNA data and Orchidaceae systematics: A new phylogenetic classification. *In* Orchid conservation, K. W. Dixon, S. P. Kell, R. L. Barrett and P. J. Cribb (eds.). Natural History Publications, Kota Kinabalu, Sabah. p. 69-89.

Cuatrecasas, J. 1958. Aspectos de la vegetación colombiana. Revista de la Academia Colombiana de Ciencias Exactas Físicas y Naturales 10:221-268.

Dodson, C. H. and C. Luer. 2005. Orchidaceae. Genera *Aa - Cyrtidiorchis*. *In* Flora of Ecuador 76, G. Harling and L. Andersson, (eds.). Stockholm, Botanical Institute, University of Göteborg, Riksmuseum. 347 p.

Dodson, C. H. and C. Luer. 2009. Orchidaceae, *Masdevallia* and Affiliates. *In* Flora of Ecuador 84, G. Harling and C. Persson (eds.). Department of Plant and Environmental Sciences, Göteborg. 395 p.

Dodson, C. H. and C. Luer. 2010. Orchidaceae, Genera *Cyrtochiloides - Epibator. In* Flora of Ecuador 87. G. Harling and C. Persson (eds.). Department of Plant and Environmental Sciences, Göteborg. 438 p.

Espinal, S. and M. Montenegro. 1980. Zonas de vida o formaciones vegetales de Colombia, Memoria explicativa sobre el mapa ecológico de Colombia. Instituto Geográfico "Agustín Codazzi", Departamento Agrológico, Imprenta Canal Ramírez, Bogotá. 201 p.

Etter, A. 1998. Mapa general de ecosistemas de Colombia. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Ministerio del Ambiente, Programa de las Naciones Unidas para el Desarrollo, PNUMA, Pontificia Universidad Javeriana, Bogotá.

Galán, F. A. and F. J. Canal. 2002. Gasto, inversión y financiamiento para el desarrollo sostenible en Colombia. Impreso en Naciones Unidas, Santiago de Chile. 82 p.

Garay, L. A. 1978. Orchidaceae (Cypripedioideae, Orchidoideae and Neottioideae). *In* Flora of Ecuador 9, G. Harling and B. Sparre (eds.). University of Göteborg and Swedish Museum of Natural History, Göteborg and Stockholm. 305 p.

Hágsater, E. and G. A. Salazar (eds.). 1990. Icones Orchidacearum 1. Orchids of Mexico, part 1. Mexico, Asociación Mexicana de Orquideología. pl. 1-100.

Hágsater, E. and L. Sánchez-Saldaña (eds.). 2001. Icones Orchidacearum. Fascicle 4. The genus *Epidendrum*, part 3. A third Century of new species in *Epidendrum*. México, D. F. Instituto Chinoín, A. C. pl. 401-500.

Hágsater, E. and L. Sánchez-Saldaña. (eds.). 2004. Icones Orchidacearum. Fascicle 7. The genus *Epidendrum*, part 4. A fourth Century of new species in *Epidendrum*. México, D. F. Instituto Chinoín, A. C. pl. 701-800.

Hágsater, E. and L. Sánchez-Saldaña (eds.). 2006. Icones Orchidacearum. Fascicle 8. The genus *Epidendrum*, part 5. Species new and old in *Epidendrum*. México, D. F. Instituto Chinoín, A. C. pl. 801-900.

Hágsater, E. and L. Sánchez-Saldaña (eds.). 2007. Icones Orchidacearum. Fascicle 9. The genus *Epidendrum*, part 6. Species new and old in *Epidendrum*. México, D. F. Instituto Chinoín, A. C. pl. 901-1000.

Hágsater, E. and L. Sánchez-Saldaña (eds.). 2008. Icones Orchidacearum. Fascicle 11. The genus *Epidendrum*, part 7. Species new and old in *Epidendrum*. Mexico, D. F. Instituto Chinoín, A. C. pl. 1101-1200.

Hágsater, E. and L. Sánchez-Saldaña (eds.). 2009. Icones Orchidacearum. Fascicle 12. The genus *Epidendrum*, part 8. Species new and old in *Epidendrum*. México, D. F. Instituto Chinoín, A. C. pl. 1201-1300.

Hágsater, E. and L. Sánchez-Saldaña (eds.). 2010. Icones Orchidacearum. Fascicle 13. The genus Epidendrum, part 9. Species new and old in Epidendrum. México, D. F. Instituto Chinoín, A. C. pl. 1301-1400.

Hágsater, E. and M. A. Soto-Arenas (eds.). 2003. Icones Orchidacearum Fascicles 5-6. Orchids of Mxico, parts 2-3. México, D. F. Instituto Chinoín, A. C. pl. 501-700.

Hágsater, E. and M. A. Soto-Arenas (eds.). 2008. Icones Orchidacearum Fascicle 10. Orchids of Mexico, part 4. México, D. F. Instituto Chinoín. A. C. pl. 1001-1100.

Hamer, F. 1988. Orchids of Central America: an illustrated field guide. A. L. Selbyana 10, Suppl: 1-422.

Hamer, F. 1990. Orchids of Central America: an illustrated field guide. M. Z. Selbyana 10, Suppl: 423-860.

Idárraga-Piedrahita, A., R. D. C. Ortiz, R. Callejas-Posada and M. Merello. 2011. Flora de Antioquia. Catálogo de las Plantas Vasculares, vol. 2. Listado de las Plantas Vasculares del Departamento de Antioquia. 939 p.

Jørgensen, P. M., C. Ulloa-Ulloa, B. León, S. León-Yánez, S. G. Beck, M. Nee, J. L. Zarucchi, M. Celis, R. Bernal and R. Gradstein. 2011. Regional patterns of vascular plant diversity and endemism. *In* Climate change and biodiversity in the Tropical Andes, S. K. Herzog, R. Martínez, P. M. Jørgensen and H. Tiess (eds.). Inter-American Institute for Global Change Research (IAI) and Scientific Committee on Problems of the Environment (SCOPE). p. 192-203

Kolanowska, M., O. A. Pérez-Escobar, E. Parra-Sánchez and D. L. Szlachetko. 2011. An illustrated field guide to the orchids of the Yotoco Forest Reserve (Colombia). Fundacja Rozwoju Uniwersytetu Gdańskiego, Gdańsk. 293 p.

Misas-Urreta, G. 2005. Orquiìdeas de la serraniìa del Baudoì Chocoì, Colombia. Corporación Capitalina de Orchideología, Bogotá. 787 p.

Ortiz, P. and C. Uribe. 2007. Galería de orquídeas de Colombia (edición en CD). Asociación Bogotana de Orquideología, Bogotá.

Santa-Jiménez, N. N., T. García-Rodríguez and G. D. Gómez-Marín. 2009. Estructura y composición de la comunidad de orquídeas en dos zonas de la reserva natural "La Montaña del Ocaso" Quimbaya-Quindío. Revista de Investigaciones Universidad del Quindío 19:122-134.

Thiers, B. [continuously updated]. Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. http://sweetgum.nybg.org/ih/; last access: 30.III.2011.

Vareschi, V. 1976. Orchideen und ihre ökologischen Nischen in den Tropen. *In* Tagungsbericht der 8. Welt-Orchideen-Konferenz, K. Senghas (ed.). German Orchid Society, Frankfurt. p. 516-527.

Appendix. Alphabetical list of orchids occurring in the Department of Valle del Cauca with their taxonomic affinity (Chase and al. 2003), data on their habit (*, endemic species; E, epiphytic; L, lithophytic; T, terrestrial; V, vine), information about the directional (DD, data deficient; Tr, transitional; Es, Eastern; N, Northern; S, Southern; W, Western) and altitudinal elements (DD, data deficient; Hm, high-montane; Lo, lowland; M, montane; Pr, premontane; P, paramo).

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
* *Acianthera adeodata* P. Ortiz, O. Pérez and E. Parra	Epidendreae	Epidendroideae	E	DD	M
Acianthera chamensis (Lindl.) Pridgeon and M.W. Chase	Epidendreae	Epidendroideae	E	DD	M
Acianthera pazii Luer	Epidendreae	Epidendroideae	E	Tr	M
Acianthera sicaria (Lindl.) Pridgeon and M.W. Chase	Epidendreae	Epidendroideae	E	Tr	M
Ada aurantiaca Lindl.	Cymbidieae	Epidendroideae	EL	Es	
Ada elegantula (Rchb. f.) N.H. Williams	Cymbidieae	Epidendroideae	E	DD	
Adeneleuterophora fractiflexa (Schltr.) Dudek and Szlach.	Sobralieae	Epidendroideae	ET	Tr	M
Adeneleuterophora graminifolia Barb. Rodr.	Sobralieae	Epidendroideae	E	Tr	
Adeneleuterophora linifolia (C. Presl) Dudek and Szlach.	Sobralieae	Epidendroideae	E	Tr	
Altensteinia fimbriata Kunth	Cranichideae	Orchidoideae	T	Es	
Ancipitia crocodiliceps (Rchb.f.) Luer	Epidendreae	Epidendroideae	E	Tr	
Anguloa cliftonii Rolfe	Cymbidieae	Epidendroideae	E	DD	M
Anguloa virginalis Linden ex Schltr.	Cymbidieae	Epidendroideae	T	Tr	
Arundina graminifolia (D.Don) Hochr.	Arethuseae	Epidendroideae	LT		
Aspidogyne boliviensis (Cogn.) Garay	Cranichideae	Orchidoideae	T	Tr	M
Barbosella cucullata (Lindl.) Schltr	Epidendreae	Epidendroideae	ELT	Es	
Brachionidium imperiale Luer and R. Escobar	Epidendreae	Epidendroideae	ET	Tr	M
Brassia arcuigera Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	Pr
Brassia forgetiana Hort. and C. Schweinf.	Cymbidieae	Epidendroideae	E	Tr	
Brevilongium globuliferum (Kunth) Christenson	Cymbidieae	Epidendroideae	E	Tr	
Campylocentrum micranthum (Lindl.) Rolfe	Vandeae	Epidendroideae	E	Tr	
* *Campylocentum palominoi* Kolan., Pérez and Parra	Vandeae	Epidendroideae	E	DD	M
Catasetum ochraceum Lindl.	Cymbidieae	Epidendroideae	LT	Tr	
Catasetum tabulare Lindl.	Cymbidieae	Epidendroideae	E	Tr	
Cattleya quadricolor Lindl.	Epidendreae	Epidendroideae	E	Tr	
Caucaea radiata (Lindl.) Mansf.	Cymbidieae	Epidendroideae	E	Tr	Hm
* *Chondrorhyncha manzurii* P. Ortiz	Cymbidieae	Epidendroideae	E	DD	M

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Chondroscaphe fimbriata (Linden and Rchb.f.) Dressler	Cymbidieae	Epidendroideae	E	Tr	
Christensonella uncata (Lindl.) Szlach., Mytnik, Górniak and Smiszek	Cymbidieae	Epidendroideae	E	W	Lo
Chrysocycnis schlimii Linden and Rchb.	Cymbidieae	Epidendroideae	E	Tr	M
Cischweinfia dasyandra (Rchb.f.) Dressler and N.H. Williams	Cymbidieae	Epidendroideae	E	Tr	
Cleistes rosea Lindl.	Pogoniieae	Vanilloideae	LT	Tr	
Coccineorchis cernua (Lindl.) Garay	Cranichideae	Orchidoideae	T	Tr	
Comparettia falcata Poepp. and Endl.	Cymbidieae	Epidendroideae	E	Tr	
Coryanthes mastersiana F.C. Lehm	Cymbidieae	Epidendroideae	E	Tr	Pr
Cranichis ciliata (Kunth) Kunth	Cranichideae	Orchidoideae	T	Es	
Cranichis fertilis (F. Lehm. and Kraenzl.) Schltr.	Cranichideae	Orchidoideae	T	Tr	
Cranichis schlimii Rchb. f.	Cranichideae	Orchidoideae	T	Tr	Hm
Crocodeilanthe cassidis (Lindl.) Luer	Epidendreae	Epidendroideae	ET	Tr	
* *Crocodeilanthe choerorhyncha* (Luer) Luer	Epidendreae	Epidendroideae	E	DD	Hm
Crocodeilanthe floribunda (Poepp. and Endl.) Luer	Epidendreae	Epidendroideae	ET	Tr	
Crocodeilanthe galeata (Lindl.) Luer	Epidendreae	Epidendroideae	E	Tr	
Crocodeilanthe siphonantha (Luer) Luer	Epidendreae	Epidendroideae	E	S	Hm
Crocodeilanthe velaticaulis (Rchb.f.) Luer	Epidendreae	Epidendroideae	E	Es	
Crossoglossa tipuloides (Lindl.) Dodson	Malaxideae	Epidendroideae	T	Tr	M
Cryptocentrum latifolium Schltr.	Cymbidieae	Epidendroideae	E	Tr	
Cryptocentrum silverstonei Carnevali	Cymbidieae	Epidendroideae	E	Es	
Cryptocentrum standleyi Ames	Cymbidieae	Epidendroideae	E	Tr	
Cyclopogon elatus (Sw.) Schltr.	Cranichideae	Orchidoideae	T	Tr	
Cyrtochilum aemulum (Rchb.f. and Warsz.) Kraenzl.	Cymbidieae	Epidendroideae	ET	Es	
Cyrtochilum trifurcatum (Lindl.) Kraenzl.	Cymbidieae	Epidendroideae	ET	Es	
Cyrtopodium paniculatum (Ruiz and Pav.) Garay	Cymbidieae	Epidendroideae	LT	Tr	
Dasyglossum funis (F. Lehm. and Kraenzl.) Königer and Schildh.	Cymbidieae	Epidendroideae	ET	Tr	Hm
Dichaea brachypoda Rchb. f.	Cymbidieae	Epidendroideae	E	Tr	
Dichaea hystricina Rchb. f.	Cymbidieae	Epidendroideae	E	Tr	
Dichaea latifolia Lindl.	Cymbidieae	Epidendroideae	EL	Tr	
Dichaea morrisii Fawc. and Rendle	Cymbidieae	Epidendroideae	E	Tr	M
Dichaea muricata (Sw.) Lindl.	Cymbidieae	Epidendroideae	E	Tr	
Dichaea panamensis Lindl.	Cymbidieae	Epidendroideae	E	Tr	
Dichaea pendula (Aubl.) Cogn.	Cymbidieae	Epidendroideae	E	Tr	
* *Dimerandra buenaventurae* (Kraenzlin) Siegerist	Epidendreae	Epidendroideae	E	DD	M
Dimerandra elegans (H. Focke) Siegerist	Epidendreae	Epidendroideae	E	Tr	
Dimerandra stenopetala (Hook.) Schltr.	Epidendreae	Epidendroideae	E	Tr	
Diodonopsis erinacea (Rchb.f.) Pridgeon and M.W. Chase	Epidendreae	Epidendroideae	E	W	Lo
Diodonopsis pygmaea (Kraenzl.) Pridgeon and M.W. Chase	Epidendreae	Epidendroideae	E	Tr	M
Dracula amaliae Luer and R. Escobar	Epidendreae	Epidendroideae	E	S	M
Dracula andreettae (Luer) Luer	Epidendreae	Epidendroideae	E	Tr	M
* *Dracula aphrodes* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
Dracula bellerophon Luer and R. Escobar	Epidendreae	Epidendroideae	E	Tr	M
* *Dracula carcinopsis* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
Dracula chestertonii (Rchb. f.) Luer	Epidendreae	Epidendroideae	E	N	M
Dracula chimaera (Rchb. f.) Luer	Epidendreae	Epidendroideae	E	N	M
Dracula decussata Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	DD
Dracula diana Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	M
Dracula gigas (Luer and Andreetta) Luer	Epidendreae	Epidendroideae	ET	S	M
Dracula gorgona (H.J. Veitch) Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	M
Dracula inaequalis (Rchb. f.) Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	
* *Dracula insolita* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
* *Dracula ortiziana* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	Pr

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Dracula platycrater (Rchb. f.) Luer	Epidendreae	Epidendroideae	E	N	
* *Dracula verticulosa* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
Dracula vespertilio (Rchb. f.) Luer	Epidendreae	Epidendroideae	E	Tr	M
Dracula wallisii (Rchb. f.) Luer	Epidendreae	Epidendroideae	E	Tr	M
* *Dracula xenos* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
Dryadella cristata Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	DD
Elleanthus ampliflorus Schltr.	Sobralieae	Epidendroideae	E	S	M
Elleanthus aurantiacus (Lindley) Rchb. f.	Sobralieae	Epidendroideae	T	Tr	
Elleanthus aureus (Poepp. and Endl.) Rchb.f	Sobralieae	Epidendroideae	E	Es	
Elleanthus formosus Garay	Sobralieae	Epidendroideae	E	Tr	
Elleanthus gracilis (Rchb. f.) Rchb. f.	Sobralieae	Epidendroideae	T	Tr	
* *Elleanthus killipii* Garay	Sobralieae	Epidendroideae	E	DD	Lo
Elleanthus lancifolius C. Presl	Sobralieae	Epidendroideae	T	Tr	
Elleanthus lupulinus (Lindl.) Rchb.f.	Sobralieae	Epidendroideae	ET	Tr	Hm
Elleanthus oliganthus (Poepp. and Endl.) Rchb. f.	Sobralieae	Epidendroideae	ET	Tr	
Elleanthus purpureus (Rchb. f.) Rchb. f.	Sobralieae	Epidendroideae	T	Tr	M
Elleanthus smithii Schltr.	Sobralieae	Epidendroideae	T	Tr	
Embreea rodigasiana (Claes ex Cogn.) Dodson	Cymbidieae	Epidendroideae	E	Tr	Pr
Encyclia aspera (Lindl.) Schltr.	Epidendreae	Epidendroideae	E	Tr	
Encyclia ceratistes (Lindl.) Schltr.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum agathosmicum Rchb.f.	Epidendreae	Epidendroideae	T	Tr	M
Epidendrum aggregatum Lindl.	Epidendreae	Epidendroideae	E	Tr	
* *Epidendrum anchinocturnum* Hágsater	Epidendreae	Epidendroideae	E	DD	Lo
Epidendrum andrei Hágsater and L. Sánchez	Epidendreae	Epidendroideae	E	S	M
Epidendrum angustissimum Lindl.	Epidendreae	Epidendroideae	E	Tr	Hm
Epidendrum anthropophorum Rchb.f.	Epidendreae	Epidendroideae	E	S	M
Epidendrum arachnoglossum Rchb.f. ex André	Epidendreae	Epidendroideae	E	Tr	M
Epidendrum batesii Dodson	Epidendreae	Epidendroideae	E	W	Lo
Epidendrum baumannianum Schltr.	Epidendreae	Epidendroideae	ELT	Tr	U
Epidendrum bispathulatum Hágsater, O. Pérez and E. Santiago	Epidendreae	Epidendroideae	E	Tr	M
Epidendrum blepharistes Barker ex Lindl.	Epidendreae	Epidendroideae	ELT	Es	
Epidendrum bogotense Schltr.	Epidendreae	Epidendroideae	T	Es	
Epidendrum buenaventurae F. Lehm. and Kraenzl.	Epidendreae	Epidendroideae	EL	Tr	
* *Epidendrum campyloglossum* P. Ortiz and Hágsater	Epidendreae	Epidendroideae	E	DD	Lo
Epidendrum cardiophyllum Kraenzl.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum catillus Rchb.f. and Warsz.	Epidendreae	Epidendroideae	ET	Tr	M
Epidendrum cernuum Kunth	Epidendreae	Epidendroideae	ET	Tr	
Epidendrum cirrhochilum F. Lehm. and Kraenzl.	Epidendreae	Epidendroideae	ET	Tr	
Epidendrum cleistocoleum Hágsater and E.Santiago	Epidendreae	Epidendroideae	E	N	M
Epidendrum cocornocturnum Hágsater	Epidendreae	Epidendroideae	E	Tr	M
Epidendrum commelinoides Schltr.	Epidendreae	Epidendroideae	E	Tr	M
Epidendrum coriifolium Lindl.	Epidendreae	Epidendroideae	ET	Tr	M
Epidendrum cornanthera F.Lehm. and Kraenzl.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum cottoniiflorum (Rchb.f.) Hágsater	Epidendreae	Epidendroideae	E	Tr	M
Epidendrum cristatum Ruiz and Pav.	Epidendreae	Epidendroideae	ET	Tr	
Epidendrum cuatrecasasii Garay	Epidendreae	Epidendroideae	E	W	Lo
Epidendrum cylindrostachys Rchb.f. and Warsz.	Epidendreae	Epidendroideae	E	Tr	M
Epidendrum dendrobii Rchb.f.	Epidendreae	Epidendroideae	ET	Tr	
Epidendrum dentiferum Ames and C. Schweinf	Epidendreae	Epidendroideae	E	Tr	
Epidendrum difforme Jacq.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum diphyllum Schltr.	Epidendreae	Epidendroideae	E	S	Hm
Epidendrum elatum C. Schweinf.	Epidendreae	Epidendroideae	ET	Tr	Hm
Epidendrum escobarianum Garay	Epidendreae	Epidendroideae	E	S	
Epidendrum eugenii Schltr.	Epidendreae	Epidendroideae	E	S	Hm
Epidendrum excisum Lindl.	Epidendreae	Epidendroideae	ET	Tr	Hm
* *Epidendrum farallonense* Hágsater	Epidendreae	Epidendroideae	E	DD	M

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Epidendrum filamentosum Kraenzl.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum fimbriatum Kunth	Epidendreae	Epidendroideae	T	Es	
Epidendrum flexuosum G. Mey.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum frutex Rchb.f.	Epidendreae	Epidendroideae	T	Tr	
Epidendrum gaertelmaniae Hágsater and O. Pérez	Epidendreae	Epidendroideae	L	Tr	P
Epidendrum gastropodium Rchb.f.	Epidendreae	Epidendroideae	ET	Tr	
Epidendrum geminiflorum Kunth	Epidendreae	Epidendroideae	E	Es	
Epidendrum globiflorum F. Lehm. and Kraenzl.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum goodspeedianum A.D. Hawkes	Epidendreae	Epidendroideae	L	S	M
Epidendrum gratissimum (Rchb.f.) Hágsater and Dodson	Epidendreae	Epidendroideae	ET	Es	
* *Epidendrum guaridense* Hágsater and E. Santiago	Epidendreae	Epidendroideae	E	DD	M
Epidendrum hesperium Hágsater and E. Santiago	Epidendreae	Epidendroideae	T	N	P
* *Epidendrum holtonii* Hágsater and L. Sánchez	Epidendreae	Epidendroideae	E	DD	DD
Epidendrum hymenodes Lindl.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum ibaguense Kunth	Epidendreae	Epidendroideae	ET	Tr	M
Epidendrum igneum Hágsater	Epidendreae	Epidendroideae	T	N	M
Epidendrum ionodesme Schltr.	Epidendreae	Epidendroideae	ET	Es	
Epidendrum ionophyllum P. Ortiz	Epidendreae	Epidendroideae	E	S	M
Epidendrum isomerum Schltr.	Epidendreae	Epidendroideae	E	W	Lo
Epidendrum kerryae Hágsater and L. Sánchez	Epidendreae	Epidendroideae	E	W	Lo
Epidendrum killipii Hágsater and L. Sánchez	Epidendreae	Epidendroideae	E	W	Lo
Epidendrum klotzscheanum Rchb.f.	Epidendreae	Epidendroideae	ET	Tr	Hm
Epidendrum lacustre Lindl.	Epidendreae	Epidendroideae	EL	Tr	
Epidendrum lanipes Lindl.	Epidendreae	Epidendroideae	E	Tr	Pr
Epidendrum leeanum (Rchb.f.) Hágsater	Epidendreae	Epidendroideae	E	Tr	Pr
Epidendrum leucochilum Link, Klotzsch and Otto	Epidendreae	Epidendroideae	ET	Tr	
Epidendrum lindae Hágsater and Dodson	Epidendreae	Epidendroideae	T	S	M
Epidendrum litense Hágsater and Dodson	Epidendreae	Epidendroideae	E	S	
Epidendrum littorale Hágsater and Dodson	Epidendreae	Epidendroideae	E	S	
Epidendrum macroophorum Hágsater and Dodson	Epidendreae	Epidendroideae	EL	S	
Epidendrum macrostachyum Lindl.	Epidendreae	Epidendroideae	ELT	Tr	
Epidendrum mathewsii Rchb.f.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum megalospathum Rchb.f.	Epidendreae	Epidendroideae	E	Es	
Epidendrum melinanthum Schltr.	Epidendreae	Epidendroideae	EL	DD	
Epidendrum microdiothoneum Hágsater and Dodson	Epidendreae	Epidendroideae	ET	S	M
Epidendrum microphyllum Lindl.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum mininocturnum Dodson	Epidendreae	Epidendroideae	E	W	Lo
Epidendrum muricatoides Hágsater and Dodson	Epidendreae	Epidendroideae	T	S	
Epidendrum musciferum Lindl.	Epidendreae	Epidendroideae	EL	Tr	
Epidendrum nocturnum Jacq.	Epidendreae	Epidendroideae	E	W	Lo
* *Epidendrum nora-mesae* Hágsater and O. Pérez	Epidendreae	Epidendroideae	E	DD	
Epidendrum oraion Hágsater	Epidendreae	Epidendroideae	T	N	M
Epidendrum oxycalyx Hágsater and Dodson	Epidendreae	Epidendroideae	LT	S	
Epidendrum palaciosii Hágsater and Dodson	Epidendreae	Epidendroideae	T	S	
Epidendrum paniculatum Ruiz and Pav.	Epidendreae	Epidendroideae	ET	Es	
Epidendrum pazii Hágsater	Epidendreae	Epidendroideae	T	N	M
Epidendrum peperomia Rchb.f.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum peraltum Schltr.	Epidendreae	Epidendroideae	ET	Es	
Epidendrum phragmites A.H. Heller and L.O. Williams	Epidendreae	Epidendroideae	E	S	Pr
* *Epidendrum phragmitoides* Hágsater	Epidendreae	Epidendroideae	E	DD	Pr
Epidendrum phyllocharis Rchb.f.	Epidendreae	Epidendroideae	E	Tr	Pr
Epidendrum porquerense F. Lehm. and Kraenzl.	Epidendreae	Epidendroideae	E	S	M
Epidendrum pseudonocturnum Hágsater and Dodson	Epidendreae	Epidendroideae	ET	Tr	
Epidendrum pseudoschumannianum Fowlie	Epidendreae	Epidendroideae	E	N	
Epidendrum ptochicum Hágsater	Epidendreae	Epidendroideae	E	S	DD
Epidendrum purpurascens Focke	Epidendreae	Epidendroideae	ET	Tr	DD
Epidendrum radicans Pav. ex Lindl.	Epidendreae	Epidendroideae	ET	Tr	

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Epidendrum ramosum Jacq.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum recurvatum Lindl.	Epidendreae	Epidendroideae	E	DD	M
Epidendrum rigidum Jacq.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum rocalderianum P. Ortiz and Hágsater	Epidendreae	Epidendroideae	E	W	Lo
Epidendrum rostratum Garay and Dunst.	Epidendreae	Epidendroideae	E	Tr	
Epidendrum rugulosum Schltr.	Epidendreae	Epidendroideae	E	Tr	M
Epidendrum ruizianum Steud.	Epidendreae	Epidendroideae	ET	Tr	M
Epidendrum santaclarense Ames	Epidendreae	Epidendroideae	E	Tr	
Epidendrum scharfii Hágsater and Dodson	Epidendreae	Epidendroideae	E	Tr	Pr
Epidendrum schlimii Rchb.f.	Epidendreae	Epidendroideae	E	Tr	Pr
Epidendrum sculptum Rchb.f.	Epidendreae	Epidendroideae	E	W	Lo
Epidendrum secundum Jacq.	Epidendreae	Epidendroideae	LT	Tr	
Epidendrum silverstonei Hágsater	Epidendreae	Epidendroideae	E	N	M
Epidendrum siphonosepalum Garay and Dunst.	Epidendreae	Epidendroideae	E	Tr	M
Epidendrum spathatum Schltr	Epidendreae	Epidendroideae	E	Es	
Epidendrum spilotum Garay and Dunst.	Epidendreae	Epidendroideae	E	Tr	M
Epidendrum stamfordianum Bateman	Epidendreae	Epidendroideae	E	N	
Epidendrum stangeanum Rchb.f.	Epidendreae	Epidendroideae	E	W	Lo
Epidendrum stellidifforme Hágsater and Dodson	Epidendreae	Epidendroideae	E	Tr	Pr
Epidendrum summerhayesii Hágsater	Epidendreae	Epidendroideae	E	Tr	
Epidendrum tridens I.Bock	Epidendreae	Epidendroideae	EL	Tr	
* *Epidendrum tropinectarium* Hágsater and E. Santiago	Epidendreae	Epidendroideae	E	DD	M
Epidendrum uribei A.D. Hawkes	Epidendreae	Epidendroideae	E	DD	Hm
Epidendrum villotae Hágsater and Dodson	Epidendreae	Epidendroideae	E	Tr	
Epidendrum vincentinum Lindl.	Epidendreae	Epidendroideae	EL	Tr	
Epidendrum wallisii Rchb.f.	Epidendreae	Epidendroideae	EL	Tr	
Epidendrum xanthinum Lindl.	Epidendreae	Epidendroideae	T	Tr	
Epidendrum xanthoianthinum Hágsater	Epidendreae	Epidendroideae	T	Tr	M
Epistephium elatum Kunth	Vanillineae	Vanilloideae	T	Tr	Pr
Eulophia alta (L.) Fawc. and Rendle	Cymbidieae	Epidendroideae	T	Tr	
Eurystyles cotyledon Wawra	Cranichideae	Orchidoideae	E	Tr	
Evelyna capitata Poepp. and Endl.	Sobralieae	Epidendroideae	ELT	Tr	M
Frondaria caulescens (Lindl.) Luer	Epidendreae	Epidendroideae	E	Tr	Hm
Galeandra beyrichii Rchb.f.	Cymbidieae	Epidendroideae	T	Tr	
Gerlachia tricornis (Lindl.) Szlach.	Cymbidieae	Epidendroideae	E	Tr	
Gomphichis altissima Renz	Cranichideae	Orchidoideae	T	DD	M
Gomphichis scaposa Schltr.	Cranichideae	Orchidoideae	T	Tr	Hm
Gomphichis traceyae Rolfe	Cranichideae	Orchidoideae	T	Tr	P
Gongora gratulabunda Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	
Govenia utriculata (Sw.) Lindl.	Calypsoeae	Epidendroideae	T	Tr	Pr
Habenaria monorrhiza (Sw.) Rchb. f.	Orchideae	Orchidoideae	T	Tr	
Habenaria repens Nutt.	Orchideae	Orchidoideae	T	Tr	
Heteranthocidium abortivum (Rchb.f.) Szlach., Mytnik and Romowicz	Cymbidieae	Epidendroideae	E	Tr	M
Heteranthocidium adelaidae (Köniiger) Szlach.	Cymbidieae	Epidendroideae	E	S	M
Heteranthocidium cultratum (Lindl.) Szlach.	Cymbidieae	Epidendroideae	ET	S	P
Heteranthocidium heteranthum (Poepp. and Endl.) Szlach., Mytnik and Romowicz	Cymbidieae	Epidendroideae	E	Tr	
Heterotaxis crassifolia Lindl.	Cymbidieae	Epidendroideae	E	Tr	M
Heterotaxis equitans (Schltr.) Ojeda and Carnevali	Cymbidieae	Epidendroideae	E	Tr	
Heterotaxis fritzii Ojeda and Carnevali	Cymbidieae	Epidendroideae	T	S	M
* *Houlletia conspersa* P. Ortiz	Cymbidieae	Epidendroideae	E	DD	M
Huntleya burtii (Endres and Rchb.f.) Pfitzer	Cymbidieae	Epidendroideae	E	Tr	U
Huntleya wallisii (Rchb.f.) Rolfe	Cymbidieae	Epidendroideae	E	W	Lo
Ionopsis utricularioides (Sw.) Lindl.	Cymbidieae	Epidendroideae	E	Tr	
Jacquiniella globosa (Jacq.) Schltr.	Epidendreae	Epidendroideae	E	Tr	
Jacquiniella pedunculata Dressler	Epidendreae	Epidendroideae	E	W	Lo

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Jacquiniella teretifolia (Sw.) Britton and P. Wilson	Epidendreae	Epidendroideae	E	N	
Kefersteinia niesseniae P. Ortiz	Cymbidieae	Epidendroideae	E	DD	DD
Kefersteinia tolimensis Schltr.	Cymbidieae	Epidendroideae	E	Tr	
Koellensteinia graminea (Lindl.) Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	
Lepanthes aciculifolia Luer	Epidendreae	Epidendroideae	E	S	M
Lepanthes auriculata Luer	Epidendreae	Epidendroideae	ET	S	
* *Lepanthes auspicata* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
* *Lepanthes caetanoae* Pérez, Parra and Kolan.	Epidendreae	Epidendroideae	E	DD	M
* *Lepanthes calimae* P. Ortiz	Epidendreae	Epidendroideae	E	DD	M
Lepanthes calodictyon Hook.	Epidendreae	Epidendroideae	E	Tr	Pr
Lepanthes cincinnata Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	DD
Lepanthes cingens Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	M
Lepanthes cornualis Luer and R. Escobar	Epidendreae	Epidendroideae	E	Tr	Hm
* *Lepanthes cuatrecasasii* Luer	Epidendreae	Epidendroideae	E	DD	Hm
* *Lepanthes declivis* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
Lepanthes dunstervilleorum Foldats	Epidendreae	Epidendroideae	E	Tr	P
Lepanthes elata Rchb.f.	Epidendreae	Epidendroideae	E	N	M
Lepanthes felis Luer and R. Escobar	Epidendreae	Epidendroideae	E	Tr	M
* *Lepanthes foreroi* P. Ortiz, O. Pérez and E. Parra	Epidendreae	Epidendroideae	E	DD	M
* *Lepanthes giraldoi* Luer	Epidendreae	Epidendroideae	E	DD	M
* *Lepanthes labiata* Luer	Epidendreae	Epidendroideae	E	DD	Lo
Lepanthes lycocephala Luer and R. Escobar	Epidendreae	Epidendroideae	E	Tr	M
Lepanthes manabina Dodson	Epidendreae	Epidendroideae	E	Tr	M
Lepanthes ollaris Luer and R. Escobar	Epidendreae	Epidendroideae	E	Tr	M
Lepanthes ophelma Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	M
* *Lepanthes ortiziana* O.Pérez, E. Parra and Kolan.	Epidendreae	Epidendroideae	E	DD	M
* *Lepanthes oteroi* Luer	Epidendreae	Epidendroideae	E	DD	DD
Lepanthes pseudocaulescens L.B. Sm. and S.K. Harris	Epidendreae	Epidendroideae	E	S	M
Lepanthes quadricornis Luer and R. Escobar	Epidendreae	Epidendroideae	E	S	M
* *Lepanthes refracta* Luer	Epidendreae	Epidendroideae	E	DD	DD
Lepanthes ribes Luer	Epidendreae	Epidendroideae	E	S	M
* *Lepanthes rutrum* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	Pr
* *Lepanthes silverstonei* Luer	Epidendreae	Epidendroideae	E	DD	M
Lepanthes stellaris Luer and Hirtz	Epidendreae	Epidendroideae	E	S	M
Lepanthes trimerinx Luer	Epidendreae	Epidendroideae	E	S	M
* *Lepanthes tsubotae* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
* *Lepanthes yubarta* E. Calderón	Epidendreae	Epidendroideae	E	DD	M
Lepanthopsis acuminata Ames	Epidendreae	Epidendroideae	E	Tr	M
Lepanthopsis floripecten (Rchb.f.) Ames	Epidendreae	Epidendroideae	E	Tr	
Ligeophila juruenensis (Hoehne) Garay	Cranichideae	Orchidoideae	T	Tr	
Liparis nervosa (Thunb.) Lindl.	Malaxideae	Epidendroideae	LT	Tr	
Lockhartia longifolia (Lindl.) Schltr.	Cymbidieae	Epidendroideae	E	Tr	M
* *Lockhartia niesseniae* Kolan. and O. Pérez	Cymbidieae	Epidendroideae	E	DD	Pr
Lycaste macrophylla (Poepp. and Endl.) Lindl.	Cymbidieae	Epidendroideae	LT	Tr	
* *Macroclinium escobarianum* Dodson ex Pupulin	Cymbidieae	Epidendroideae	E	DD	M
Malaxis excavata (Lindl.) Kuntze	Malaxideae	Epidendroideae	T	Tr	M
Malaxis moritzii (Ridl.) Kuntze	Malaxideae	Epidendroideae	T	Tr	M
Marsupiaria valenzuelana (A. Rich.) Garay	Cymbidieae	Epidendroideae	E	Tr	
Masdevallia bicolor Poepp. and Endl.	Epidendreae	Epidendroideae	E	Tr	
Masdevallia caesia Roezl	Epidendreae	Epidendroideae	E	Tr	M
Masdevallia chimboensis Kraenzl.	Epidendreae	Epidendroideae	E	W	Lo
Masdevallia filaria Luer and R. Escobar	Epidendreae	Epidendroideae	E	Tr	M
Masdevallia geminiflora P. Ortiz	Epidendreae	Epidendroideae	ET	Tr	
Masdevallia laevis Lindl.	Epidendreae	Epidendroideae	E	Tr	P
Masdevallia molossus Rchb.f.	Epidendreae	Epidendroideae	E	N	M
Masdevallia mutica Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	M
Masdevallia nidifica Rchb.f.	Epidendreae	Epidendroideae	E	Tr	M

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
* *Masdevallia niesseniae* Luer	Epidendreae	Epidendroideae	E	DD	M
Masdevallia picturata Rchb.f.	Epidendreae	Epidendroideae	E	Es	
Masdevallia platyglossa Rchb.f.	Epidendreae	Epidendroideae	E	Tr	M
Masdevallia pteroglossa Schltr.	Epidendreae	Epidendroideae	E	Tr	M
Masdevallia schizopetala Kraenzl.	Epidendreae	Epidendroideae	E	Tr	
Masdevallia strumifera Rchb.f.	Epidendreae	Epidendroideae	E	Tr	
* *Masdevallia strumosa* P. Ortiz and E. Calderón	Epidendreae	Epidendroideae	E	DD	Hm
Masdevallia uncifera Rchb.f.	Epidendreae	Epidendroideae	E	Tr	
Masdevallia zahlbruckneri Kraenzl.	Epidendreae	Epidendroideae	E	Tr	M
Maxillaria acuminata Lindl.	Cymbidieae	Epidendroideae	E	Tr	M
Maxillaria aequiloba Schltr.	Cymbidieae	Epidendroideae	E	Tr	M
Maxillaria brunnea Linden and Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	Pr
Maxillaria carolii Christenson	Cymbidieae	Epidendroideae	E	DD	DD
Maxillaria caulina Schltr.	Cymbidieae	Epidendroideae	E	Es	
Maxillaria fractiflexa Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	M
Maxillaria friedrichsthalii Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	Pr
Maxillaria gentryi Dodson	Cymbidieae	Epidendroideae	E	S	
Maxillaria hennisiana Schltr.	Cymbidieae	Epidendroideae	E	Tr	
Maxillaria lepidota Lindl.	Cymbidieae	Epidendroideae	E	Tr	M
Maxillaria longissima Lindl.	Cymbidieae	Epidendroideae	E	Tr	M
Maxillaria meridensis Lindl.	Cymbidieae	Epidendroideae	E	Tr	M
Maxillaria nanegalensis Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	DD
Maxillaria niesseniae Christenson	Cymbidieae	Epidendroideae	E	Tr	DD
Maxillaria pseudoreichenheimiana Dodson	Cymbidieae	Epidendroideae	E	S	
Maxillaria rodrigueziana J.T. Atwood and Mora-Ret.	Cymbidieae	Epidendroideae	E	N	M
Maxillaria speciosa Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	M
* *Maxillaria strictifolia* P. Ortiz	Cymbidieae	Epidendroideae	E	DD	M
Maxillariella lawrenceana (Rolfe) M.A. Blanco and Carnevali	Cymbidieae	Epidendroideae	E	Es	
Maxillariella variabilis (Bateman ex Lindl.) M.A. Blanco and Carnevali	Cymbidieae	Epidendroideae	E	Tr	
Microchilus arietinus (Rchb.f. and Warm.) Ormerod	Cranichideae	Orchidoideae	T	Tr	
* *Microchilus aspidogynoides* Ormerod	Cranichideae	Orchidoideae	T	DD	U
* *Microchilus canaliculatus* Ormerod	Cranichideae	Orchidoideae	T	DD	Pr
Microchilus constrictus Ormerod	Cranichideae	Orchidoideae	T	Tr	U
* *Microchilus dryanderae* Ormerod	Cranichideae	Orchidoideae	T	DD	M
* *Microchilus gentryi* Ormerod	Cranichideae	Orchidoideae	T	DD	M
* *Microchilus giraldo-gensinii* Ormerod	Cranichideae	Orchidoideae	T	DD	M
Microchilus major C. Presl	Cranichideae	Orchidoideae	T	Tr	M
* *Microchilus nugax* Ormerod	Cranichideae	Orchidoideae	T	DD	
Microchilus procerus (Schltr.) Ormerod	Cranichideae	Orchidoideae	T	Tr	M
* *Microchilus queremalensis* Ormerod	Cranichideae	Orchidoideae	T	DD	Pr
Microchilus sparreorum (Garay) Ormerod	Cranichideae	Orchidoideae	T	S	M
Microchilus venezuelanus (Garay and Dunst.) Ormerod	Cranichideae	Orchidoideae	T	N	M
* *Microchilus vilnerae* Ormerod	Cranichideae	Orchidoideae	T	DD	M
* *Microchilus zingarae* Ormerod	Cranichideae	Orchidoideae	T	DD	M
Miltoniopsis roezlii (Rchb.f.) God.-Leb.	Cymbidieae	Epidendroideae	E	Tr	
Miltoniopsis vexillaria (Rchb.f.) God.-Leb.	Cymbidieae	Epidendroideae	E	Tr	
Monophyllorchis maculata Garay	Triphoreae	Epidendroideae	T	W	Lo
Monophyllorchis microstyloides (Rchb.f.) Garay	Triphoreae	Epidendroideae	T	Tr	M
Mormodes lawrenceana Rolfe	Cymbidieae	Epidendroideae	E	W	Lo
Mormolyca aureoglobula (Christenson) M.A. Blanco	Cymbidieae	Epidendroideae	E	DD	DD
Mormolyca hedwigiae (Hamer and Dodson) M.A. Blanco	Cymbidieae	Epidendroideae	E	W	Lo
Mormolyca rufescens (Lindl.) M. A. Blanco	Cymbidieae	Epidendroideae	E	Tr	
* *Mormolyca sanantonioensis* (Christenson) M.A. Blanco	Cymbidieae	Epidendroideae	E	DD	DD

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Mormolyca tenuibulba (Christenson) M.A. Blanco	Cymbidieae	Epidendroideae	E	DD	Pr
Notylia sagittifera (Kunth) Link, Klotzsch and Otto	Cymbidieae	Epidendroideae	E	Tr	
Octomeria brevifolia Cogn.	Epidendreae	Epidendroideae	E	Tr	
Odontoglossum aureopurpureum Rchb. f.	Cymbidieae	Epidendroideae	ET	Tr	
Odontoglossum costatum Lindl.	Cymbidieae	Epidendroideae	LT	Es	
Odontoglossum cristatellum Rchb.f.	Cymbidieae	Epidendroideae	ET	S	Hm
Odontoglossum luteopurpureum Lindl.	Cymbidieae	Epidendroideae	E	DD	M
Odontoglossum pardinum (Lindl.) Lindl.	Cymbidieae	Epidendroideae	ET	Tr	
Odontoglossum portmannii Bockemühl	Cymbidieae	Epidendroideae	E	DD	M
Odontoglossum ramosissimum Lindl.	Cymbidieae	Epidendroideae	ET	Tr	Hm
Odontoglossum ramulosum Lindl.	Cymbidieae	Epidendroideae	E	Tr	M
Odontoglossum revolutum Lindl.	Cymbidieae	Epidendroideae	E	Tr	P
Oncidium baueri Lindl.	Cymbidieae	Epidendroideae	E	Tr	
Oncidium chrysomorphum Lindl.	Cymbidieae	Epidendroideae	E	Tr	M
Oncidium dichromaticum Rchb.f.	Cymbidieae	Epidendroideae	E	DD	Lo
Oncidium niesseniae Königer	Cymbidieae	Epidendroideae	E	DD	U
Oncidium pictum Kunth	Cymbidieae	Epidendroideae	E	Tr	
Oncidium pyramidale Lindl.	Cymbidieae	Epidendroideae	E	Tr	
Ornithidium aggregatum (Kunth) Rchb.f.	Cymbidieae	Epidendroideae	ELT	Es	
Ornithidium aureum Poepp. and Endl.	Cymbidieae	Epidendroideae	ET	Tr	
Otoglossum coronarium (Lindl.) Garay and Dunst.	Cymbidieae	Epidendroideae	ET	Tr	DD
Pachyphyllum crystallinum Lindl.	Cymbidieae	Epidendroideae	EL	Tr	P
Pachyphyllum micranthum Schltr.	Cymbidieae	Epidendroideae	E	DD	P
Pachyphyllum squarrosum Lindl.	Cymbidieae	Epidendroideae	E	S	P
Pelexia olivacea Rolfe	Cranichideae	Orchidoideae	T	Tr	
Pescatoria klabochorum Rchb.f.	Cymbidieae	Epidendroideae	E	DD	
Phragmipedium andreettae P.J. Cribb and Pupulin	Phragmipedieae	Cypripedioideae	L	S	Pr
Phragmipedium fischeri	Phragmipedieae	Cypripedioideae	L	S	Pr
Phragmipedium longifolium (Warsz. and Rchb.f.) Rolfe	Phragmipedieae	Cypripedioideae	LT	Tr	
Phragmipedium schlimii (Linden ex Rchb.f.) Rolfe	Phragmipedieae	Cypripedioideae	LT	Tr	Pr
* *Platystele beatricis* P. Ortiz	Epidendreae	Epidendroideae	E	DD	DD
Platystele consobrina Luer	Epidendreae	Epidendroideae	E	Tr	M
Platystele misera (Lindl.) Garay	Epidendreae	Epidendroideae	E	Tr	M
Platystele oxyglossa (Schltr.) Garay	Epidendreae	Epidendroideae	E	Tr	
Pleurothallis antennifera Lindl.	Epidendreae	Epidendroideae	ET	Es	
Pleurothallis aves-seriales Luer and R. Escobar	Epidendreae	Epidendroideae	E	Tr	M
Pleurothallis biserrula Rchb.f.	Epidendreae	Epidendroideae	E	Tr	M
Pleurothallis chloroleuca Lindl.	Epidendreae	Epidendroideae	E	Tr	M
Pleurothallis circinata Luer	Epidendreae	Epidendroideae	E	N	M
Pleurothallis divaricans Schltr.	Epidendreae	Epidendroideae	E	Tr	M
Pleurothallis imber-florum Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	M
* *Pleurothallis incongrua* Luer	Epidendreae	Epidendroideae	E	DD	M
Pleurothallis jaculifera Luer and R. Escobar	Epidendreae	Epidendroideae	E	Tr	M
Pleurothallis lindenii Lindl.	Epidendreae	Epidendroideae	E	Tr	Hm
* *Pleurothallis manicosa* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
* *Pleurothallis nellyae* P. Ortiz	Epidendreae	Epidendroideae	E	DD	DD
Pleurothallis notabilis Luer and R. Escobar	Epidendreae	Epidendroideae	E	N	M
Pleurothallis pedunculata (Klotzsch) Rchb.f.	Epidendreae	Epidendroideae	E	Tr	M
Pleurothallis penicillata Luer	Epidendreae	Epidendroideae	E	S	DD
Pleurothallis phratria Luer and Hirtz	Epidendreae	Epidendroideae	E	S	M
Pleurothallis ramificans Luer	Epidendreae	Epidendroideae	E	Tr	Hm
Pleurothallis ruscifolia (Jacq.) R.Br.	Epidendreae	Epidendroideae	E	Tr	
Pleurothallis secunda Poepp. and Endl.	Epidendreae	Epidendroideae	E	Tr	
Pleurothallis silverstonei Luer	Epidendreae	Epidendroideae	E	N	M
Pleurothallis talpinaria Rchb.f.	Epidendreae	Epidendroideae	E	Es	
Polycycnis barbata (Lindl.) Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	Pr
Polystachya concreta (Jacq.) Garay and H.R. Sweet	Vandeae	Epidendroideae	E	Tr	Pr

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Polystachya foliosa (Hook.) Rchb.f.	Vandeae	Epidendroideae	E	Tr	
Ponthieva diptera Linden and Rchb.f.	Cranichideae	Orchidoideae	T	Tr	
Ponthieva microglossa Schltr.	Cranichideae	Orchidoideae	T	DD	Hm
Ponthieva racemosa (Walter) C.Mohr	Cranichideae	Orchidoideae	T	Tr	
Ponthieva villosa Lindl.	Cranichideae	Orchidoideae	T	S	M
Porroglossum eduardii (Rchb.f.) H.R. Sweet	Epidendreae	Epidendroideae	E	Tr	M
Porroglossum muscosum (Rchb.f.) Schltr.	Epidendreae	Epidendroideae	E	Tr	
Prescottia petiolaris Lindl.	Cranichideae	Orchidoideae	T	Tr	Pr
Prescottia stachyodes (Sw.) Lindl.	Cranichideae	Orchidoideae	T	Tr	
Prosthechea grammatoglossa (Rchb.f.) W.E. Higgins	Epidendreae	Epidendroideae	E	Tr	
Prosthechea lindenii (Lindl.) W.E. Higgins	Epidendreae	Epidendroideae	E	Tr	M
Prosthechea livida (Lindl.) W.E.Higgins	Epidendreae	Epidendroideae	E	Tr	
Prosthechea venezuelana (Schltr.) W.E.Higgins	Epidendreae	Epidendroideae	E	Tr	
Prosthechea vespa (Vell.) W.E. Higgins	Epidendreae	Epidendroideae	ET	Tr	
Pseudocentrum macrostachyum Lindl.	Cranichideae	Orchidoideae	T	S	M
Psilochilus macrophyllus (Lindl.) Ames	Triphoreae	Epidendroideae	T	Tr	
* *Psilochilus vallecaucanus* Kolan. and Szlach.	Triphoreae	Epidendroideae	T	DD	M
Psychopsis krameriana (Rchb.f.) H.G. Jones	Cymbidieae	Epidendroideae	E	Tr	
Psygmorchis pumilio (Rchb.f.) Dodson and Dressler	Cymbidieae	Epidendroideae	E	Tr	
Psygmorchis pusilla (L.) Dodson and Dressler	Cymbidieae	Epidendroideae	E	Tr	
Pterichis galeata Lindl.	Cranichideae	Orchidoideae	T	Tr	
Restrepia antennifera Kunth	Epidendreae	Epidendroideae	E	Es	
Restrepia brachypus Rchb.f.	Epidendreae	Epidendroideae	E	Tr	M
* *Restrepia chrysoglossa* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
Restrepia contorta (Ruiz and Pav.) Luer	Epidendreae	Epidendroideae	E	Tr	
Restrepia flosculata Luer	Epidendreae	Epidendroideae	E	S	
Restrepia trichoglossa F.Lehm. ex Sander	Epidendreae	Epidendroideae	E	Tr	
* *Restrepiopsis lehmannii* Luer	Epidendreae	Epidendroideae	E	DD	Lo
* *Restrepiopsis niesseniae* Luer	Epidendreae	Epidendroideae	E	DD	DD
Restrepiopsis tubulosa (Lindl.) Luer	Epidendreae	Epidendroideae	EL	W	Lo
Rodriguezia granadensis (Lindl.) Rchb.f.	Cymbidieae	Epidendroideae	E	Tr	
Rodriguezia lanceolata Ruiz and Pav.	Cymbidieae	Epidendroideae	E	Tr	
Scaphosepalum odontochilum Kraenzl.	Epidendreae	Epidendroideae	E	Tr	M
Scaphosepalum swertiifolium (Rchb.f.) Rolfe	Epidendreae	Epidendroideae	E	Tr	M
Scaphyglottis aurea (Rchb.f.) Foldats	Epidendreae	Epidendroideae	ET	Tr	M
Scaphyglottis gentryi Dodson and Monsalve	Epidendreae	Epidendroideae	E	W	Lo
Scaphyglottis longicaulis S.Watson	Epidendreae	Epidendroideae	E	W	Lo
Scaphyglottis minutiflora Ames and Correll	Epidendreae	Epidendroideae	E	W	Lo
Scaphyglottis prolifera (R.Br.) Cogn.	Epidendreae	Epidendroideae	E	Tr	
Scaphyglottis propinqua C.Schweinf.	Epidendreae	Epidendroideae	E	Tr	U
Scaphyglottis punctulata (Rchb.f.) C. Schweinf.	Epidendreae	Epidendroideae	ET	Tr	M
* *Scaphyglottis triloba* B.R. Adams	Epidendreae	Epidendroideae	E	DD	M
* *Schlimmia pandurata* Schltr.	Cymbidieae	Epidendroideae	E	DD	M
Schlimmia trifida Rchb. f.	Cymbidieae	Epidendroideae	E	Tr	M
Selenipedium aequinoctiale Garay	Phragmipedieae	Cypripedioideae	T	W	Lo
Sertifera major Schltr.	Sobralieae	Epidendroideae	T	S	M
Sigmatostalix cuculligera (Schltr.) Garay	Cymbidieae	Epidendroideae	E	N	M
Sigmatostalix picturatissima Kraenzl.	Cymbidieae	Epidendroideae	E	Tr	U
Sigmatostalix sergii P. Ortiz	Cymbidieae	Epidendroideae	E	S	M
Sobralia bimaculata Garay	Sobralieae	Epidendroideae	T	Tr	M
Sobralia cattleya Rchb.f.	Sobralieae	Epidendroideae	T	Tr	M
Sobralia crocea (Poepp. and Endl.) Rchb.f.	Sobralieae	Epidendroideae	ET	Tr	M
Sobralia decora Bateman	Sobralieae	Epidendroideae	ET	Tr	M
Sobralia dichotoma Ruiz and Pav.	Sobralieae	Epidendroideae	T	Tr	M
Sobralia gloriosa Rchb.f.	Sobralieae	Epidendroideae	T	Tr	M
Sobralia klotzscheana Rchb.f.	Sobralieae	Epidendroideae	T	Tr	M
Sobralia macrophylla Rchb.f.	Sobralieae	Epidendroideae	ET	Tr	Pr

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Sobralia pulcherrima Garay	Sobralieae	Epidendroideae	T	Tr	
Sobralia roezlii Rchb.f.	Sobralieae	Epidendroideae	T	Tr	M
Sobralia rosea Poepp. and Endl.	Sobralieae	Epidendroideae	T	Tr	
Sobralia violacea Linden ex Lindl.	Sobralieae	Epidendroideae	E	Tr	
Sobralia virginalis Peeters and Cogn.	Sobralieae	Epidendroideae	T	Tr	M
Sobralia xantholeuca B.S. Williams	Sobralieae	Epidendroideae	ET	Tr	M
Soterosanthus shepheardii (Rolfe) Jenny	Cymbidieae	Epidendroideae	E	W	Lo
Specklinia acuminata (Kunth) Lindl.	Epidendreae	Epidendroideae	E	Es	
Specklinia angustilabia (Schltr.) Luer	Epidendreae	Epidendroideae	E	Tr	
Specklinia aryter (Luer) Luer	Epidendreae	Epidendroideae	E	Tr	Pr
Specklinia barbulata (Lindl.) Luer	Epidendreae	Epidendroideae	E	Tr	
Specklinia campylotyle (P. Ortiz) Pridgeon and M.W. Chase	Epidendreae	Epidendroideae	E	Tr	M
Specklinia capillaris (Lindl.) Luer	Epidendreae	Epidendroideae	E	DD	Pr
Specklinia corniculata (Sw.) Steud.	Epidendreae	Epidendroideae	E	N	
Specklinia gelida (Lindl.) Luer	Epidendreae	Epidendroideae	E	Tr	M
Specklinia grobyi (Bateman ex Lindl.) F. Barros	Epidendreae	Epidendroideae	E	W	Lo
Specklinia minutissima (Luer) Luer	Epidendreae	Epidendroideae	E	W	Lo
Specklinia muricaudata (Luer) Luer	Epidendreae	Epidendroideae	E	Tr	M
* *Specklinia niesseniae* (Luer) Luer	Epidendreae	Epidendroideae	E	DD	DD
* *Specklinia pereziana* Kolan.	Epidendreae	Epidendroideae	E	DD	Lo
Specklinia picta (Lindl.) Pridgeon and M.W. Chase	Epidendreae	Epidendroideae	E	Tr	
* *Specklinia purpurella* (Luer) Pridgeon and M.W. Chase	Epidendreae	Epidendroideae	E	DD	DD
Specklinia semperflorens (Lindl.) Pridgeon and M.W. Chase	Epidendreae	Epidendroideae	E	Tr	
Specklinia tripterantha (Rchb.f.) Luer	Epidendreae	Epidendroideae	E	Tr	M
Sphyrastylis ecuadorensis Garay	Cymbidieae	Epidendroideae	E	S	M
Stelis alata Lindl.	Epidendreae	Epidendroideae	E	Es	
Stelis argentata Lindl.	Epidendreae	Epidendroideae	ET	Tr	
Stelis bigibba Schltr.	Epidendreae	Epidendroideae	E	Tr	
* *Stelis caucae* Schltr.	Epidendreae	Epidendroideae	ET	DD	M
Stelis chamaestelis (Rchb.f.) Garay and Dunst.	Epidendreae	Epidendroideae	E	DD	
* *Stelis clipeus* O. Duque	Epidendreae	Epidendroideae	E	DD	M
Stelis decepiens Schltr.	Epidendreae	Epidendroideae	E	DD	
Stelis lanceolata (Ruiz and Pav.) Willd.	Epidendreae	Epidendroideae	ET	Tr	M
Stelis lankesteri Ames	Epidendreae	Epidendroideae	E	DD	M
Stelis lindenii Lindl.	Epidendreae	Epidendroideae	E	Tr	M
* *Stelis macropoda* Schltr.	Epidendreae	Epidendroideae	E	DD	M
Stelis micrantha (Sw.) Sw.	Epidendreae	Epidendroideae	E	W	Lo
Stelis morganii Dodson and Garay	Epidendreae	Epidendroideae	E	DD	M
Stelis pardipes Rchb.f.	Epidendreae	Epidendroideae	E	Tr	M
Stelis perpusilliflora Cogn	Epidendreae	Epidendroideae	E	DD	Pr
Stelis preclara Luer and Hirtz	Epidendreae	Epidendroideae	E	DD	M
Stelis purdiaei Lindl.	Epidendreae	Epidendroideae	E	DD	M
Stelis purpurea (Ruiz and Pav.) Willd.	Epidendreae	Epidendroideae	E	Tr	
Stelis pusilla Kunth	Epidendreae	Epidendroideae	E	Tr	
* *Stelis rhamphosa* O. Duque	Epidendreae	Epidendroideae	E	DD	M
* *Stelis scaphoides* O. Duque	Epidendreae	Epidendroideae	E	DD	M
Stelis sellaformis O. Duque	Epidendreae	Epidendroideae	E	Tr	M
Stelis spathulata Poepp. and Endl.	Epidendreae	Epidendroideae	E	Tr	M
* *Stelis stella* O. Duque	Epidendreae	Epidendroideae	E	DD	
Stelis superbiens Lindl.	Epidendreae	Epidendroideae	E	Tr	
Stelis tridactylon Luer	Epidendreae	Epidendroideae	E	S	M
Stellilabium lankesteri (Ames) Dressler	Cymbidieae	Epidendroideae	E	N	M
Stellilabium pogonostalix (Rchb. f.) Garay and Dunst.	Cymbidieae	Epidendroideae	E	Tr	M
Stenorrhynchos speciosum (Jacq.) Rich.	Cranichideae	Orchidoideae	ET	Tr	M

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Sudamerlycaste fimbriata (Poepp. and Endl.) Archila	Cymbidieae	Epidendroideae	E	Tr	Pr
Sudamerlycaste longipetala (Ruiz and Pav.) Archila	Cymbidieae	Epidendroideae	ELT	Tr	M
Tadeastrum reichenbachianum (Roezl ex Rchb.f.) Szlach.	Cymbidieae	Epidendroideae	E	Tr	
* *Telipogon mariae* P. Ortiz	Cymbidieae	Epidendroideae	E	DD	M
Teuscheria pickiana (Schltr.) Garay	Cymbidieae	Epidendroideae	E	Tr	Pr
Trevoria escobariana Garay	Cymbidieae	Epidendroideae	E	DD	DD
Trichosalpinx chamaelepanthes (Rchb.f.) Luer	Epidendreae	Epidendroideae	E	Tr	
Trichosalpinx ciliaris (Lindl.) Luer	Epidendreae	Epidendroideae	E	Tr	
* *Trichosalpinx decorata* Luer and R. Escobar	Epidendreae	Epidendroideae	E	DD	M
Trichosalpinx ectopa Luer	Epidendreae	Epidendroideae	E	N	M
Trichosalpinx intricata (Lindl.) Luer	Epidendreae	Epidendroideae	E	Tr	
Trichosalpinx pergrata (Ames) Luer	Epidendreae	Epidendroideae	E	N	M
Trichosalpinx pseudolepanthes Luer and R. Escobar	Epidendreae	Epidendroideae	E	Tr	M
Trigonidium egertonianum Bateman ex Lindl.	Cymbidieae	Epidendroideae	E	Tr	
Trigonidium riopalenquense Dodson	Cymbidieae	Epidendroideae	E	W	Lo
Trigonochilum cimiciferum (Rchb.f. ex Lindl.) Königer	Cymbidieae	Epidendroideae	E	Tr	M
Trigonochilum flexuosum (Kunth) Königer and Schildhauer	Cymbidieae	Epidendroideae	E	Tr	M
Trigonochilum meirax (Rchb. f.) Königer and Schildhauer	Cymbidieae	Epidendroideae	E	Tr	
Trigonochilum murinum (Rchb.f.) Königer and Schildh.	Cymbidieae	Epidendroideae	E	Tr	M
Trigonochilum williamsianum (Dodson) Königer	Cymbidieae	Epidendroideae	E	DD	M
Trizeuxis falcata Lindl.	Cymbidieae	Epidendroideae	E	Tr	
Unciferia amaliae (Luer and R. Escobar) Luer	Epidendreae	Epidendroideae	E	S	
Vanilla dressleri Soto Arenas	Vanillineae	Vanilloideae	EV	N	
Vanilla odorata C. Presl	Vanillineae	Vanilloideae	E	Tr	Pr
Vanilla planifolia Jacks. ex Andrews	Vanillineae	Vanilloideae	EV		
Vitekorchis obryzata (Rchb.f. and Warsz.) Romowicz and Szlach.	Cymbidieae	Epidendroideae	E	Tr	M
Warrea warreana (Lodd. ex Lindl.) C. Schweinf.	Cymbidieae	Epidendroideae	T	Tr	M
Wullschlaegelia calcarata Benth.	Calypsoeae	Epidendroideae	T	W	Lo
Xylobium corrugatum (Lindl.) Rolfe	Cymbidieae	Epidendroideae	E	Tr	Pr
Xylobium leontoglossum (Rchb.f.) Benth. ex Rolfe	Cymbidieae	Epidendroideae	E	Tr	M
Xylobium pallidiflorum (Hook.) G. Nicholson	Cymbidieae	Epidendroideae	E	Tr	
Zosterophyllanthos amphigya (Luer and R. Escobar) Szlach.	Epidendreae	Epidendroideae	E	Tr	M
Zosterophyllanthos ascera (Luer and R. Escobar) Szlach. and Kulak	Epidendreae	Epidendroideae	E	Tr	M
Zosterophyllanthos baccatus (Luer) Szlach.	Epidendreae	Epidendroideae	E	Tr	M
Zosterophyllanthos bivalvis (Lindl.) Szlach	Epidendreae	Epidendroideae	E	Tr	Pr
Zosterophyllanthos cardiostola (Rchb.f.) Szlach. and Kulak	Epidendreae	Epidendroideae	E	Tr	
Zosterophyllanthos colossus (Kraenzl. ex Kerch.) Szlach.	Epidendreae	Epidendroideae	ET	Tr	M
Zosterophyllanthos cordata (Ruiz and Pav.) Szlach.	Epidendreae	Epidendroideae	E	Tr	
Zosterophyllanthos cordifolius (Rchb.f. and H. Wagener) Szlach. and Kulak	Epidendreae	Epidendroideae	E	Tr	M
Zosterophyllanthos giraldoi (Luer) Szlach. and Kulak	Epidendreae	Epidendroideae	E	Tr	M
Zosterophyllanthos grandiflorus (Lindl.) Szlach. and Marg.	Epidendreae	Epidendroideae	ET	Tr	
* *Zosterophyllanthos marthae* (Luer and R. Escobar) Szlach.	Epidendreae	Epidendroideae	ET	DD	Pr
Zosterophyllanthos matudanus (C. Schweinf.) Szlach. and Marg.	Epidendreae	Epidendroideae	E	Tr	M

Species	*Tribe*	*Subfamily*	*Habit*	*Directional element*	*Altitudinal element*
Zosterophyllanthos pileata (Luer and R. Escobar) Szlach. and Kulak	Epidendreae	Epidendroideae	E	N	M
Zosterophyllanthos ruberrimus (Lindl.) Szlach. and Kulak	Epidendreae	Epidendroideae	E	Tr	M
* *Zosterophyllanthos sagittilabia* (Luer) Szlach.	Epidendreae	Epidendroideae	E	DD	M
Zosterophyllanthos titan (Luer) Szlach. and Kulak	Epidendreae	Epidendroideae	E	Tr	Pr