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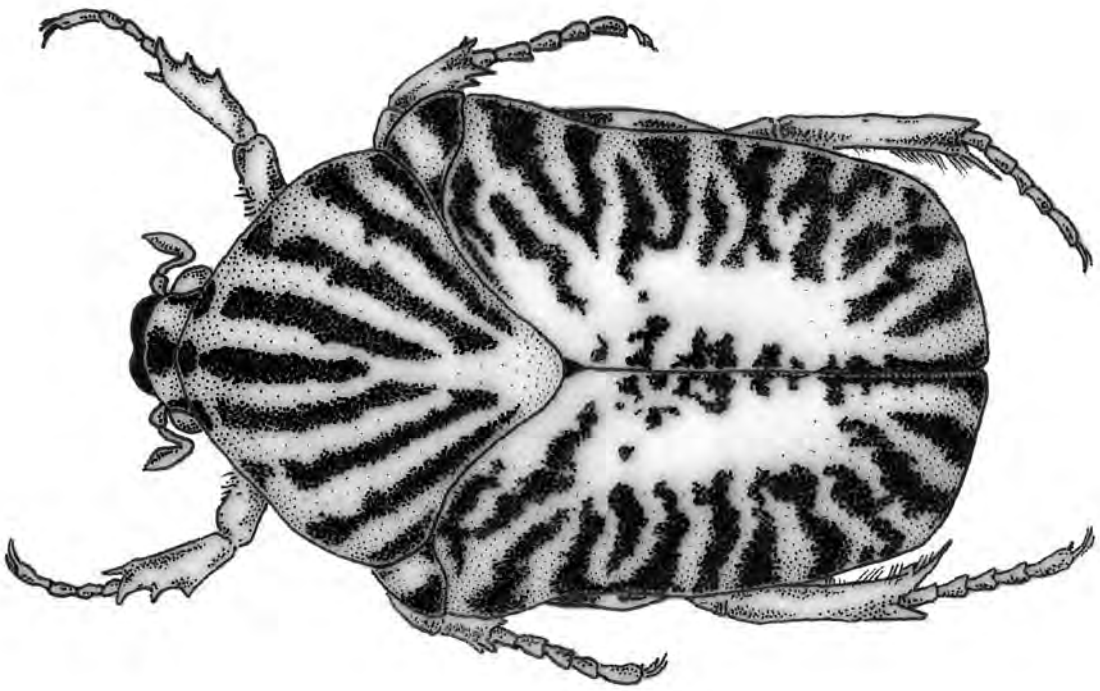

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Diversity of Colombian Passifloraceae: biogeography and an updated list for conservation

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Abstract

The list of Colombian Passifloraceae was revised, using 3.930 records from literature, herbaria, and field observations. It includes 167 species, 165 of them native, which is equivalent to 27% of the family. Our list includes more details on species distribution and presents 26 species new to Colombia. *Passiflora* is the most important genus, with 162 species, whose center of diversity is in the Ecuadorian and Colombian Andes. Inside Colombia, the highest diversity is concentrated in the Andean region, which houses 81% of the species, particularly in the departments of Antioquia, Valle del Cauca, Cundinamarca, Quindío, Risaralda, and Caldas. The highest number of species is found at between 1000 and 2000 m above sea level and the most common thrive in disturbed habitats, such as roadsides, cultivated plots, and secondary forests. Most of the 58 endemic species are found at between 1500 to 2500 m and belong mainly to subgenera *Tacsonia* and *Decaloba*. Forty-two species produce an edible fruit, and nine are commercially cultivated. Among the species reported, 70% are threatened to some degree and three are considered extinct. Colombia may still house many unknown species in poorly explored departments, but more information about *Passiflora* diversity and distribution is needed to develop its economic potential. The conservation of this threatened species along with its habitat is essential and urgent. Because of the species' multiple ecological interactions with many organisms, both aspects can be combined using Passifloraceae as an indicator of biodiversity in the Andean region.

Keywords: biogeography, biodiversity, Colombia, Neotropics, Passifloraceae, passionflower, threatened species

Resumen

La lista de Passifloraceae colombianas fue revisada, usando 3.930 datos provenientes de la literatura, herbarios, y observaciones de campo. Incluye 167 especies, de las cuales 165 son nativas, representado el 27% de la familia. Nuestra lista trae más detalles de la distribución de las especies y presenta 26 especies nuevas para Colombia. Passiflora es el género más importante, con 162 especies. En comparación con otras regiones, los Andes de Colombia y del Ecuador constituyen su centro de la diversidad. Dentro de Colombia, la mayor diversidad se concentra en la región andina con 81% de las especies, particularmente en los bosques de las cuencas hidrográficas entre 1000 y 2000 m, en los departamentos de Antioquia, Valle del Cauca, Cundinamarca, Quindío, Risaralda, y Caldas. Las especies comunes crecen generalmente en habitats disturbados, como bordes de caminos y de cultivos, y bosques secundarios. La mayoría de las especies endémicas (58) son encontradas entre los 1500 y 2500 m, y pertenecen principalmente a los subgéneros Tacsonia y Decaloba. Veinte y dos especies producen un fruto comestible, y nueve se cultivan comercialmente. Entre las especies reportadas, 70% presentan algún grado de amenaza y tres se consideran extintas. Colombia puede ser el escenario de muchas especies desconocidas en departamentos poco explorados. Un mejor conocimiento de la diversidad del género Passiflora *y de su distribución es necesario para desarrollar su potencial económico. Es una tarea urgente la conservación de esta riqueza amenazada y de su habitat. Proponemos combinar ambos aspectos, utilizando las Passifloraceae como indicador de la biodiversidad en la región andina, lo cual parece justificado por sus múltiples interacciones ecológicas con otros organismos.*

Palabras claves*: *biogeografía, biodiversidad, Colombia, Neotrópico, Passifloraceae, flor de la pasión, especies amenazadas

Introduction

The Passifloraceae consist of 18 genera and approximately 630 species, distributed throughout the tropics from the coastal zones up to 3800 m above sea level in the Andean paramos (Holm-Nielsen *et al*. 1988). In America, the family is represented by four genera (*Ancistrothyrsus*, *Dilkea*, *Mitostemma* and *Passiflora*), of which *Passiflora,* with about 530 species distributed mainly in the New World, is numerically and economically the most important genus of the family (Ulmer & MacDougal 2004). Only 22 species of the subgenus *Decaloba* (syn. *Plectostemma sensu* Killip) are distributed in the Old World, in the tropical and sub-tropical regions of Southeast Asia and Austral Pacific. Passionflowers are generally perennial lianas or herbaceous vines with tendrils, although some are trees, shrubs, or even annuals. Their wide morphological variation appears to result from the diversity of their habitats as well as their coevolutionary relationships with many organisms, including protective ants (Apple & Feener 2001), herbivores (particularly *Heliconius* spp. butterflies; Gilbert 1982), pollinators, and the plant communities providing them physical support and access to sunlight. Pollination is mainly carried out by insects and birds; several species are bat-pollinated (Endress 1994; Büchert & Mogens 2001), and a few species exhibit elements of the carnivory syndrome (Radhamani *et al*. 1995). Many species are cultivated for their edible fruit, as ornamentals, or for their medicinal properties (Ulmer & MacDougal 2004; Coppens d'Eeckenbrugge 2003; Martin & Nakasone 1970; Dharwan *et al*. 2004). *P. edulis* Sims (maracuja) is by far the best known and economically important species of the family.

When Spanish missionaries arrived in South America in the 16th century, they felt that passionflowers were a good omen for their mission. In their unique morphology, they saw the elements of the Passion of Jesus Christ and a sign that the New World would successfully be converted to Christianity (Killip 1938; Uribe 1955a). This religious symbolism gave the plant its common name of *Flos Passionis*, or "Passion Flower". The Latin translation by Pluckenet (1696) was accepted for the genus *Passiflora* created by Linnaeus in 1753, who described 24 species in his *Species Plantarum*, a number increased to 35 by Lamarck (1789). The first extensive monograph of the family was published by Cavanilles in 1780, with 43 species treated. They were followed by authors like Jussieu (1805), De Candolle's (1828), Roemer (1846), Masters (1872), Triana & Planchon (1873) and Harms (1925), who described about 250 species divided into 21 sections (Killip 1938). In his 1938 monograph, *The American Species of Passifloraceae*, Killip made the most extensive description of the New World species, classifying 355 species into 17 genera and 22 subgenera, based on floral morphology. In Colombia, the priest Uribe (1954, 1955a, 1955b, 1957, 1958, 1972) described several new species, and Escobar (1986, 1987, 1988a, 1988b, 1989, 1990, 1990 inedited, 1994) revised the subgenera *Distephana*, *Manicata* (syn. *Granadillastrum*), *Rathea* and *Tacsonia*, including *Tacsoniopsis* in the latter, and described one additional subgenus, *Porphyropathanthus*. She passed away in 1993, leaving an inedited document on her revision of subgenus *Astrophea*. MacDougal revised subgenus *Plectostemma* in 1994, restoring its ancient name *Decaloba*. In the last decade, MacDougal and Feuillet have published many papers including the description of about 15 new species, mainly of the subgenera *Decaloba* and *Astrophea* (MacDougal 1992, 1994, 2006; Feuillet 2002, 2004). Recently, Feuillet & MacDougal (2003) proposed a new infrageneric classification in *Passiflora*. According to this proposal, only based on morphological characters, four subgenera would be recognized: *Astrophea* and *Deidamioides*, from South and Central America; *Decaloba*, from America, Southeast Asia and Australia; and *Passiflora*, exclusively from America (Ulmer & MacDougal 2004). Additionally, they proposed to downgrade the genus *Tetrastylis* as a section of the subgenus *Deidamioides*. Recent molecular analyses (Muschner *et al*. 2003; Yockteng & Nadot 2004; Hansen *et al*. 2006) partly support the reduction in the number of subgenera, with the existence of at least three major groups, corresponding globally to subgenera *Decaloba*, *Passiflora* and *Astrophea* of the new proposal. On the other hand, molecular data from the different studies are not always consistent on the relative placement of these groups, and their results are less clear at lower levels, with inconsistent grouping of particular species and poor correspondence with some well established morphological divisions. In addition, the monophyly of *Passiflora* has not been established, and the study of Muschner et al. (2003) even raises some doubts about it. Clearly, more studies, involving more numerous species samples, are needed before re-evaluating such a complex and fast evolving group as is that of the *Passiflora*.

Colombia is the second most biodiverse country in the world (MacNeely *et al*. 1990). The country is divided into five main biogeographic regions: Amazon, Andes, Caribbean, Orinoco, and Pacific. The Andean region presents a highly varied topography (1000-5400 m) with three main mountain ranges. Thus, the Eastern, Central and Western Cordilleras separate two large inter-Andean valleys from the Pacific Coast to the West and the Orinoquean'Llanos' to the East. The uplift of the Andes created new habitats and increased local isolation, favoring high speciation rates in many taxa. In *Passiflora*, a particularly striking example is given by subgenus *Tacsonia*, whose beautiful and large-flowered species are strictly adapted to high altitudes in cloud

forests (2000-3800 m), and pollination by the sword-billed hummingbird *Ensifera ensifera* Lesson, which shows the same distribution (Büchert & Mogens 2001). As a result of this variety of habitats, Colombian flora includes one of the world's most diverse groups of vascular plants, with 51.220 documented species (May 1992; UNEP-WCMC 2004). However, Colombia has undergone recent transformation of large parts of its natural ecosystems, in particular in the Andean region. Seventy percent of the Andes, an area vital to the conservation of Colombia's water supply, has been deforested as a result of both agricultural colonization and human migration (World Press Review 1993). Destruction of natural habitats has drastically affected many species distributions, often reducing their historical ranges to a set of small, fragmented populations (Brooks *et al.* 2002). It has been predicted that such habitat alteration will lead to a substantial risk of extinction in the near future.

Passifloraceae are of great interest within this context of rapid erosion of biodiversity, and not only for their fast radiation and spectacular variation in morphology and reproductive biology. Indeed, as stated above, this family is exemplative from the standpoint of coevolution in many respects, such as their particular relationship with specialized herbivores, ants and other nectar feeding insects; most importantly, they are parasites of structure, as they depend on many very different species for support, from low shrubs in disturbed habitats to high trees in primary forests. They are mainly perennials, but their life cycle is much shorter than that of their supports. They are sensitive to long-term changes in the ecosystem (dependence on trees) as well as short-to medium-term changes (by their other adaptive traits). Thus, they should constitute an excellent indicator group for the monitoring of biodiversity in Colombia. In addition, Colombia presents a long tradition of diversity in fruit production and consumption, and it is the country with the highest number of marketed passion fruit species, so the study of *Passiflora* diversity must also be thought of in terms of conservation of genetic resources of important or promising fruit crops.

The last inventory by Hernández & Bernal (2000) recorded 141 Passifloraceae species distributed in all the biogeographic regions. Forty-eight of them, mainly housed in the Andean region, are endemic to Colombia. This inventory was based on the study of specimens from five herbaria (COL, HUA, JAUM, MEDEL and MO), and the citations made in publications compiled by several authors that have worked on the family.

Several recent collaborative projects have been focused on Passifloraceae. The Interamerican Development Bank (BID) has supported a regional project, coordinated by Bioversity International (formerly IPGRI) in 1994-1997. Colciencias funded, in 1999-2001, the national project "Conservación y utilización de los recursos genéticos de pasifloras", developed by French and Colombian scientists at the Bioversity Americas office. In 2004, the same group developed a study of diversity of the *Passifloraceae* and *Caricaceae* in the Colombian coffee growing area. All these projects have generated a considerable amount of information on morphology, cytology, palynology, molecular diversity, and biogeography of *Passiflora*, providing most of the material for the present inventory and allowing us to supplement and update the list of Hernández & Bernal (2000) with new information, such as species new to science or to the country and elements of ethnobotanical information. In addition, the use of a Geographic Information System (GIS) allowed us to re-assess the conservation status of Colombian Passifloraceae species.

Materials and methods

Study Area

Colombia is situated in the north of South America, between 12° 26' 46" N and 4° 13' 30" S, and between 66° 50' 54" W and 79° 02' 33" W, covering an area of 1,141,748 km^2, with an altitudinal range from sea level up to 5775 m (http://www.igac.gov.co). The main administrative division defines 32 departments, and geographers recognize five biogeographic regions (Hernández *et al.* 1991).

Herbarium and Literature Data

The data set consists of information gathered from specimen labels from 18 Colombian herbaria (AFP, CAUP, CDMB, CHOCO, COL, COAH, CUVC, FAUC, FMB, HUA, HUQ, JAUM, MEDEL, PSO, SURCO, TOLI, VALLE, UIS), and five herbaria in other countries (K, MA, MO, NY, P). These collections were gathered between 1750 and 2006. Most specimens were verified or identified, using the keys and descriptions of Killip (1938), Holm-Nielsen *et al.* (1988), Escobar (1988a, 1994), MacDougal (1994) and Tillet (2003). A synonymy list, based on the general list of Feuillet & MacDougal (2003), is given in Appendix 1. When possible, voucher label information was used to assign geographic coordinates to specimens, using gazetteers and topographic maps of Colombia (scale 1:50,000 and 1:250,000). The database was supplemented with materials mentioned in species descriptions, essentially those of Killip (1938, 1960), Uribe (1955a), and Escobar (1988a,b, 1989, 1990, 1990 inedited, 1994). Collection records with obviously inaccurate or doubtful data were excluded from the analysis. Coordinates were further checked by plotting all species on a dot map, using the DIVA-GIS 5.2 software (Hijmans *et al.* 2001). Finally, we followed the infrageneric classification by Killip (1938) with the amendments of Escobar (1988, 1989) and MacDougal (1994).

Expeditions and Samples Collected

The dot map of all geo-referenced specimens was used to plan germplasm collecting trips. The prioritization of explored areas followed three criteria: permission to access (unfortunately not obtained for protected areas), richness of species and collection gaps. The collecting trips were carried out during 2003-2006, covering 555 localities in 17 departments, between 0 and 4200 m of altitude. The explorations were concentrated in the Andean region, in watersheds, wild forest areas, cultivated fields and road edges. Data were recorded for each collected specimen, including locality names, elevation, geographic coordinates using a hand-held GPS device, status (wild, cultivated or introduced), and ethnobotanical information (if any). These passport data were recorded and tabulated. Finally, the Geographic Information System software DIVA-GIS 5.2 was used to generate a dot map of the distribution of accessions collected / observed during the expedition.

Threat Status of Passifloraceae

The distribution area of each native species was characterized by the maximum distance (MaxD) and the circular area (CA_{50}), following the method of Hijmans *et al*. (2001). This methodology has been applied in a number of studies to provide quantitative assessment of the distribution area required by the Red List criteria, for example by Maxted et al. (2005). MaxD is the largest distance between any pair of observations of one species. CA_{50} is the total surface within a 50-km radius around all the observations for a same species. These methods were supplemented with historical records of each taxon and subjected to the Red List criteria of the World Conservation Union (IUCN 2003, 2004), involving complex combinations of quantitative observations concerning the size and structure of the population, the range and fragmentation of its distribution (extent of occurrence and area of occupancy), as well as the intensity of their past or foreseeable variation. Along these lines, we considered that CA_{50} under 20.000 km^2, MaxD under 100 km and number of observations under six, as well as the absence of records younger than 100 years, are critical.

Results

Data collecting

A total of 3330 herbaria and 45 literature data, concerning 120 species, were gathered and georeferenced when coordinates were not directly available. The highest number of species and specimens were found in the Colombian herbaria COL and HUA, with 1056 and 976 records respectively. During the collecting trips, most specimens were observed in forest fragments, gallery forest and forest and road edges, mainly in the watersheds of the coffee growing zone, between 1000 and 2000 m. In all sites visited during the expeditions, 87 Passifloraceae species were recorded, of which five individuals could not be identified. The dot map in Figure 1 shows the spatial distribution of our final dataset of 3930 records per herbarium (3330), literature (45) and field collections (555) of Passifloraceae in the different biogeographic regions.

Distribution of Species Richness

The number of observations and species richness was highest on the Andean slopes with 123 species, followed by the Amazonian region with 45 species (Box 1). The Orinoquean region was the poorest, with only 18 species. The Andean and Caribbean regions share the highest number of species (27). By contrast, the Pacific and Caribbean regions only present four species in common. Figure 2 gives a synthetic image of the similarities in species occurrence among regions, confirming a relative similarity between the Amazonian and Orinoquean, as well as between the Andean and Caribbean regions. The Pacific Coast Passifloraceae appears relatively divergent. The Andean region, as well as the departments of Antioquia, Valle del Cauca, Cundinamarca and Santander displayed the highest richness of specimens and species (Box 2). Considering their area, Quindío, Risaralda and Caldas are even more diverse. The department of San Andrés and Providencia (Caribbean islands) are only represented by *P. biflora* Lam. and *P. pallida* L.

Box 1 Distribution of Passifloraceae by biogeographic region. The diagonal gives their contribution in species number (bold) and contribution to the country's total. The other cells give the number and proportion of shared species for each pair of regions.

Biogeographic region	amz	and	car	**ori**	**pac**
Amazonian	45 (28%)	21 (14%)	9 (12%)	**15 (31%)**	**15 (23%)**
Andean		123 (76%)	27 (20%)	**7 (5%)**	**14 (10%)**
Caribbean			38 (23%)	**9 (19%)**	**4 (6%)**
Orinoquian				**19 (12%)**	**9 (14%)**
Pacific					**36 (22%)**

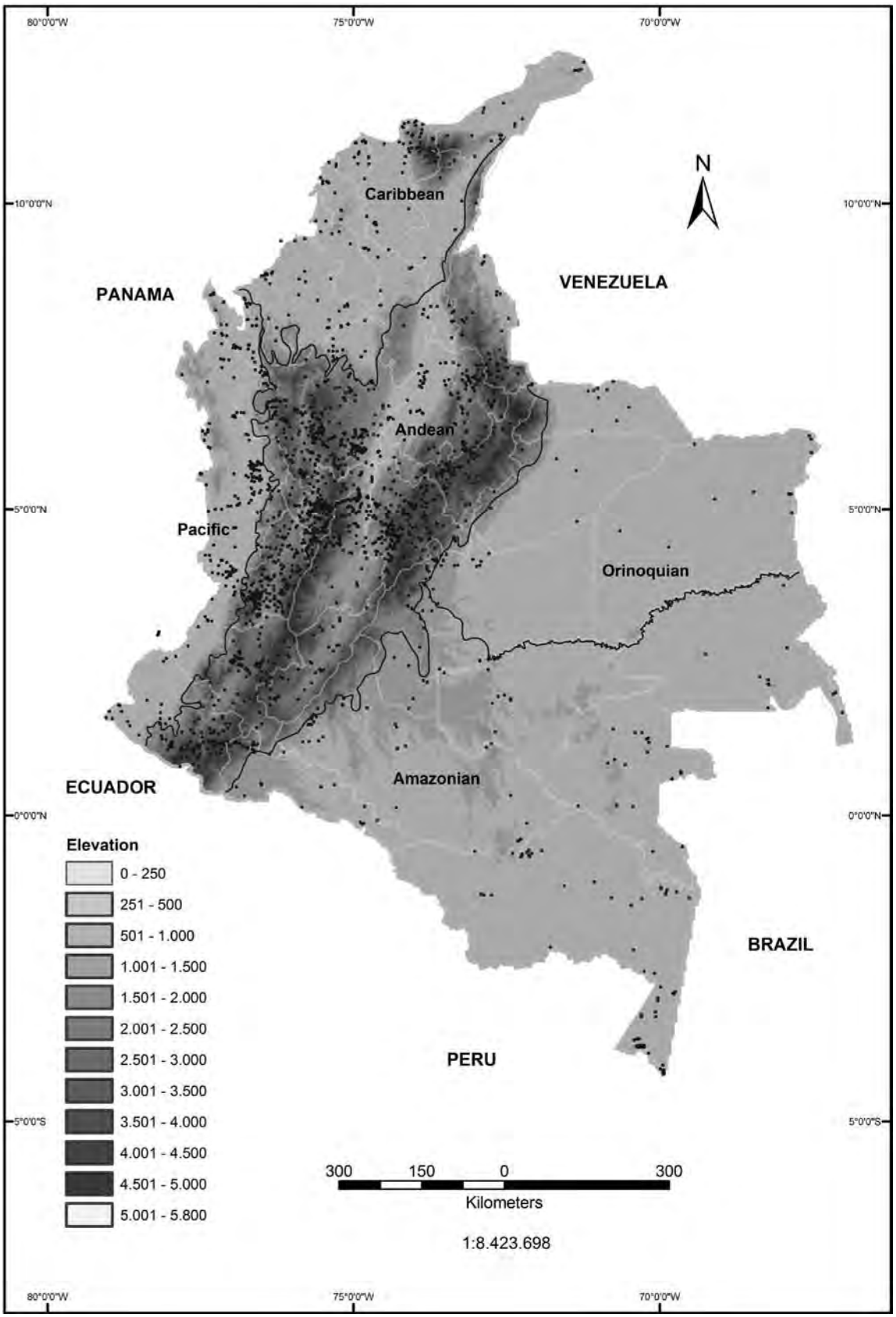

Figure 1. Map of distribution of Passifloraceae specimens for 3,930 collections on five biogeographic regions in Colombia. Points on the maps represent sites of collection.

Box 2 Number of observations and species of Passifloraceae in the 32 Colombian departments.

Department	Abbreviation	Biogeographic region	Observation number	Species number
Amazonas	ama	amz	87	19
Antioquia	ant	and car pac	784	70
Arauca	ara	and ori	10	6
Atlántico	at	car	18	7
Bolívar	bl	and car	33	17
Boyacá	by	and ori	145	36
Caldas	cl	and	245	36
Caquetá	cq	amz and	47	18
Casanare	cs	and ori	4	4
Cauca	cau	amz and pac	161	42
Cesar	ce	and car	13	10
Chocó	cho	and pac	211	40
Córdoba	cor	and car	33	9
Cundinamarca	cun	and ori	419	53
Guainía	gn	amz	16	10
Guaviare	gv	amz	27	14
Huila	hu	and	62	22
La Guajira	lg	and car	21	12
Magdalena	ma	car	71	31
Meta	met	amz and ori	85	24
Nariño	na	and pac	170	44
Norte de Santander	ns	and	79	36
Putumayo	pu	amz and	56	26
Quindío	qu	and	150	38
Risaralda	ri	and pac	68	24
San Andrés y Providencia	sp	car	4	2
Santander	snt	and	203	48
Sucre	suc	car	6	3
Tolima	to	and	213	44
Valle del Cauca	vc	and pac	420	56
Vaupés	va	amz	35	20
Vichada	vch	ori	16	9

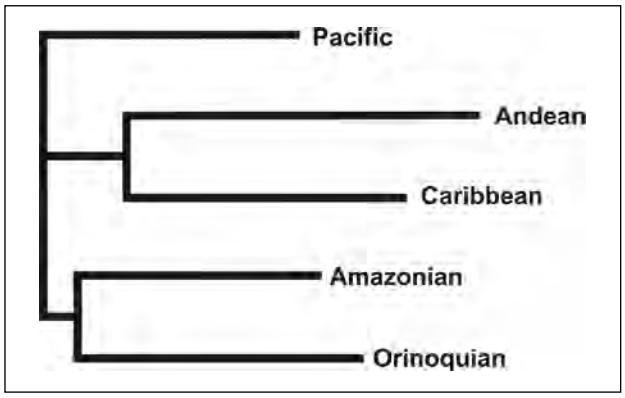

Figure 2. Diagram comparing the similarity in contribution of Passifloraceae species to the floras of the Colombian biogeographic regions (Jaccard distance).

New Passifloraceae Checklist for Colombia

Box 3 gives the number of species for each genus and subgenus present in Colombia in relation with the number of species present in the Neotropics. The updated inventory of the Colombian species (Box 4) includes a total of 167 Passifloraceae species, representing three genera, *Ancistrothyrsus*, *Dilkea* and *Passiflora*. This is equivalent to 27% of all Passifloraceae. The genus *Passiflora* is by far the most important with 162 species, representing 11 of Killip's subgenera, and all the four subgenera defined in the classification proposed by Feuillet and MacDougal (2003). The most abundant species were *P. vitifolia* Kunth (359 specimens) and *P. mixta* L. (162 specimens), while 67 species (23%) were represented by a single specimen.

In the expeditions, we found some species that had not been collected in the last decades, such as *P. erytrophylla* Mast., *P. guazumaefolia* Juss., and the semi-arborescent *P. mariquitensis* Mutis *ex* Uribe. The latter was described in 1783 by José Celestino Mutis during the Botanical Expedition of the "Nuevo Reino de Granada" in Mariquita (Tolima). It was considered extinct by Uribe (1955a) and a synonym of *P. pittieri* Mast. by Escobar (1990 inedited). However, we could verify that *P. mariquitensis* still exists, as three specimens that we have collected in a forest with high distribution near Mariquita corresponded closely to the type specimen, while they appeared morphologically distinct from *P. pittieri* specimens from Costa Rica, Panama, and northwestern Colombia in several traits (e.g. nectar shape, peduncle length, nerve shape). Similarly, after comparing the collected materials with the type specimens, we maintained other species that had been considered synonyms by Hernández & Bernal (2000), such as *P. mollis* Kunth H.B.K. (vs. *P. cuspidifolia* Harms), and *P. hahnii* (Fourn) Mast. (vs. *P. guatemalensis* S. Watson). Our list includes 26 species new to Colombia, from those recognized by Killip (1960), Feuillet & MacDougal (2003) and Ulmer & McDougal (2004) and three inedited from Escobar (1990) and Hernández (2003): *Ancistrothyrsus antioquiensis* L.K Escobar (ined.), *P. alata* Curtis, *P. andina* Killip, *P. bucaramangensis* Killip, *P. candollei* Tr. & Planch., *P. chocoensis* Gerlach & Ulmer, *P. cincinnata* Mast., *P. hahnii*, *P. hirtiflora* Jørgensen & Holm-Nielsen, *P. killipiana* Cuatrecasas, *P. lyra* Planch. & Linden & *ex* Killip, *P. megacoriacea* Porter-Utley (ined.), *P. mollis*, *P. monadelpha* Jørgensen & Holm-Nielsen, *P. munchiquensis* Hernández (ined.), *P. occidentalis* Hernández (ined.), *P. pallida* L. (clearly separated from *P. suberosa* by Porter-Utley, 2003), *P. pillosissima* Killip, *P. popenovii* Killip, *P. sodiroi* Harms, *P. tuberosa* Jacq., *P. rigidifolia* Killip, *P. tricuspis* Mast., *P. truxillensis* Planch. & Lind. *P. caerulea* L., recently introduced from Brazil and Argentina and cultivated as an ornamental, was not included in the counts of each department. *P. alata* was not counted for Quindío and Valle del Cauca either, as the material under cultivation was also introduced from Brazil. *P. micrantha* Killip was not included because Hernández (2003) considered it a synonym of *P. erythrophylla*. Nine more species occur close to the Colombian international border (less than 100km), and possibly exist also in the country, although they have not been included in this inventory. Another important result is the presence of the genera *Ancistrothyrsus* and *Dilkea* in the Andean and Pacific regions, the former following the mention of *A. antioquiensis* by Escobar (1990 ined.), who, unfortunately, passed away before publishing her monograph on arborescent Passifloraceae.

Several botanical forms and varieties are mentioned for *P. edulis* Sims, *P. cumbalensis* (Karst.) Harms, *P. foetida* L, *P. ligularis* Juss., *P. longipes* Juss., *P. rugosa* (Mast.) and *P. tripartita* (Juss.) Poir. A total of 42 species with edible fruit are reported. Nine of them are sold on the international, national and/or local markets, *P. edulis* f. *flavicarpa* Degener and *P. edulis* f. *edulis* (introduced), *P. ligularis*, *P. tripartita* var. *mollissima*, *P. tarminiana* Coppens & Barney, *P. quadrangularis* L., *P. maliformis* L., *P. popenovii* Killip, *P. nitida* Kunth, and *P. alata* Curtis. Other species, such as *P. antioquiensis* H. Karst., *P. cumbalensis*, *P. laurifolia* L., *P. nitida* Kunth, *P. palenquensis* Holm-Niels. & Lawesson *P. tiliifolia* L., and *P. pinnatistipula* Cav. are cultivated in home gardens. Some commonly cultivated species seem to depend on human activity for their propagation, which suggests an advanced stage of domestication and/or an incomplete acclimatisation following an ancient introduction. Thus, *P. edulis* f. *flavicarpa*, *P. ligularis*, *P. quadrangularis* L., *P. popenovii*, *P. tripartita* var. *mollissima*, and *P. tarminiana*, are exceptionally found as feral plants. The latter has pullulated as an invasive plant in Hawaii and New Zealand. Another particular

case is *P. edulis* f. *edulis*, introduced from southern South America, which has naturalized at intermediate to high altitudes, where it is not uncommon in the wild.

The vernacular names are very diverse for each species. In the Amazonian region, we noted several indigenous names for the species *P. foetida* var. *gossypiifolia* Desv. (Iñana-leeg, Murulale), *P. holtii* Killip (Guachique), *P. nitida* (Burucuña, Gemarundare, Tuchica, Jino-Gojé), *P. serratodigitata* L. (Cipo-Cipo), *P. vitifolia* (Maloca de Fisi). In the Cauca and Nariño departments (south of the Andean region) *P. fimbriatistipula* Harms and *P. ligularis* are named Pachuaca and Awapit in the indigenous languages.

Among the species collected in our expeditions, we found several species growing very commonly in disturbed habitats like the road edges, secondary forest margins, and especially riverbanks between 1000 and 2000 m: *P. adenopoda* Moc, & Sessé *ex* DC., *P. alnifolia* Kunth, *P. coriaceae* Juss., *P. capsularis* L., *P. rubra* L, and *P. suberosa* L. The latter two are considered weeds in the coffee plantations. At higher altitudes (above 2500 m), *P. mixta* is also very common in disturbed habitats.

Box 3 Number of Passifloraceae species in Colombia and the Neotropics.

Genus	Subgenus	Colombia	Neotropics
Ancystrothyrsus		2	3
Dilkea		3	5
Mitostemma		0	3
Passiflora	*Astrophea*	22	57
	Decaloba	52	190
	Dysosmia	2	20
	Distephana	6	15
	Manicata	1	5
	Passiflora	38	156
	Porphyropathanthus	1	1
	Psilanthus	3	4
	Rathea	2	3
	Tacsonia	30	55
	Tryphostemmatoides	4	7
All Passifloraceae		**167**	**533**

Endemism

Among the 165 native species, 58 (36%) are endemic to the country. The largest concentration of these occurs in the Andean region, principally in the Cordillera Central, in the departments of Antioquia and Tolima. The elevation belt between 1500 and 2500 m presents the highest richness of endemic and rare species (≤ 5 observations). Only eight of these were represented with only one specimen (e.g. *P. cremastantha* Harms), while *P. bogotensis* Benth and *P. antioquiensis* were the most common endemic species, with 23 recorded specimens each. The proportion of endemic species varied considerably among taxonomic groups, especially among the subgenera of *Passiflora* (Box 4). Thus, *Tacsonia* (21), *Decaloba* (14), *Passiflora* (9) and *Astrophea* (7) present the highest number of endemic species. Subgenus *Tacsonia* displays the highest richness of endemic species in the Cordillera Central with eight species, mainly of the Colombian section characterized by a very long peduncle (*P. flexipes* Triana & Planch., *P. linearistipula* L.K. Escobar,

P. quindiensis Killip and *P. tenerifensis* L.K. Escobar). Twenty-one species (37%) are restricted to very small areas of one department. These are located mainly in the departments of Antioquia (7), Tolima (4), Santander (3), Cauca (2), while only one such narrow endemic species is found for the departments of Bolivar, Boyacá, Chocó, Caldas, Cauca, and Magdalena.

Threatened Species

The distribution parameters of the 165 Colombian Passifloraceae native species are given in Appendix 2, and Figure 3 shows their repartition according to their threat status under the criteria of the IUCN (2003, 2004). Seventy-one percent of them are under some degree of threat, 10% being critically endangered (**CR**), 6.1% vulnerable (**VU**) or endangered (**EN**). Four of the 16 critically endangered species are endemic. All three extinct species (**EX**) belong to the Andean subgenus *Tacsonia*. Unfortunately, the only two species of genus *Ancistrothyrsus* are included in the category CR. Only 16% of the species were placed in the two categories **LC** and **NT**, 'least concern' and 'near threatened'. The species *P. alata*, *P. megacoriacea* Porter-Utley and *P. rigidifolia* Killip are placed in the **DD** category because of deficient data. The 29.3% classified in 'least concern', belong mostly to subgenera *Decaloba* and *Passiflora* with 18 and 14 species, respectively.

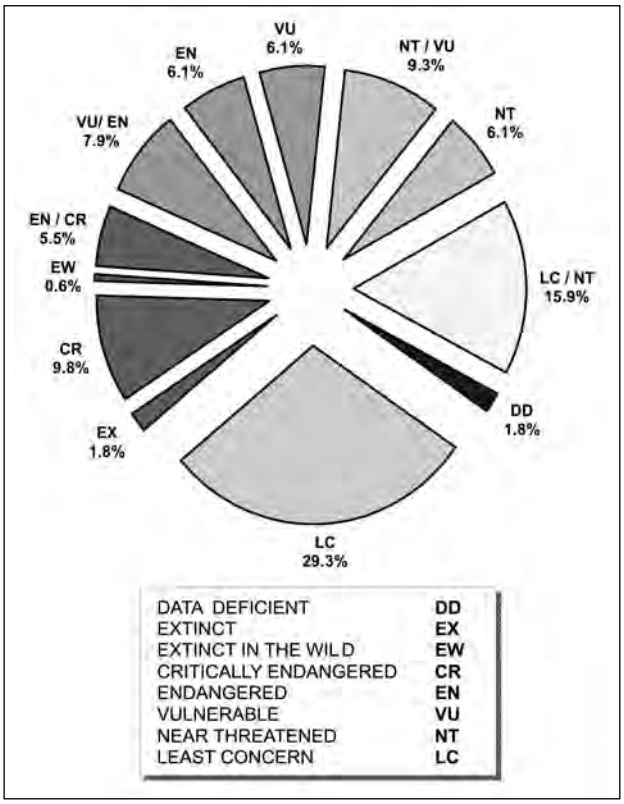

Figure 3. Percentual number of the threat status of 165 Passifloraceae native species under the IUCN criteria.

Box 4 List of 167 Passifloraceae species of Colombia. Fifty-eight endemic species are marked by an asterisk (*); twenty-six species new to Colombia by the abbreviation 'nr'; nine species probably present in the country are indicated between square brackets. New records, for a given biogeographic region, department (abbreviated as in Tables 1 and 2) or elevation-range are indicated by bold letters. Abbreviations in bold letters in the 'Notes' column correspond to the plant habits: shrub (Ab), tree (Ar), and climber (Tr). V.N and I.N. indicate vernacular and indigenous names, respectively.

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Genus *Ancistrothyrsus* Harms, 1931							
Ancistrothyrsus antioquiensis L.K Escobar (ined), 1988 * nr	and	ant	90-800	Escobar & Roldán 8819 (HUA) - Type	F.J Roldán (*pers. com.*), Escobar (1990 inedited)	CR	Tr
[*Ancistrothyrsus hirtellus* A.H. Gentry, 1992]	amz		150-350	Gentry & Stein 47114 (MO) - Isotype	Gentry 1992		Tr Reported in the Ecuadorian, Peruvian and Venezuelan Amazon.
Ancistrothyrsus tessmannii Harms, 1931	amz	ama pu	50-400	Vester & Matapi 639 (COAH)	Holm-Nielsen *et al.* 1988	CR	Tr

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Genus *Dilkea* Mast., 1871							
Dilkea johannesii Barb. Rodr., 1885	amz	va	100-500	Soejarto 2461 (HUA)	Killip 1938	CR	Tr
Dilkea parviflora Killip, 1938	amz	ama cq va	100-500	Gentry 64981 (MO)	Holm-Nielsen *et al*. 1988	LC	Tr V.N.: Canilla de Tente, Tripa de Tente (ama). Edible fruit
Dilkea retusa Mast., 1871	amz and pac	ama ant cho cq gv met pu snt va vc	100-500	López *et al*. 5947 (COAH)	Killip 1938; Uribe 1955b; Holm-Nielsen 1974; Holm-Nielsen *et al*.1988	LC	Tr
Genus *Passiflora* L., 1753							
Subgenus *Astrophea* (DC.) Masters, 1871							
Section *Astrophea*							
Passiflora callistema L.K. Escobar, 1994 *	car	bl	100	E. Forero 487 (COL) - Type	Escobar 1990 Inéd., 1994	CR	Tr Known only from the type.
Section *Botryastrophea*							
Passiflora holtii Killip, 1938	amz	ama cq gn va	150-500	Jaramillo 7890 (COL)	Killip 1938; Escobar 1990 Inéd., 1994	LC/NT	Tr I.N: Guachique, Bejuco (ama). Edible fruit
Passiflora pyrrhantha Harms, 1926	amz	va	400-1000	Shultes & Cabrera 12693 (COL)	Killip 1938; Holm-Nielsen *et al*.1988; Escobar 1990 Inéd., 1994	EN/CR	Tr
Passiflora securiclata Mast., 1893	amz ori	ara by gv va vch	150-500	Betancourt *et al*. 9753 (COAH)	Killip 1960; Escobar 1990 Inéd., 1994	LC	Tr
Passiflora spicata Mast., 1872	amz	gv	150-500	Cuatrecasas 7397 (COL)	Killip 1938; Holm-Nielsen *et al*. 1988; Escobar 1990 Inéd, 1994	VU	Tr
Passiflora spinosa (Poepp. & Endl.) Mast., 1871	amz and ori car	ama ant by cq cor cun gn met pu snt va vch	150-500	Zarucchi 4279 (COL)	Killip 1938; Holm-Nielsen 1974; Holm-Nielsen *et al*.1988; Escobar 1990 Inéd., 1994	VU	Tr V.N.: Cocorella (bl), Bejuco campano (snt)

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Section *Dolichostemma*							
Passiflora citrifolia (Juss.) Mast., 1871	amz	va vch	85-500	Barbosa & Zurucchi 2989 (COAH)	Killip 1838; Escobar 1990 Inéd.	LC	Tr
Passiflora haughtii Killip, 1938 *	and	snt	100-700	Haught 1635 (COL)	Killip 1938; Escobar 1990 Inéd., 1994	CR	Ab
Passiflora mariquitensis Mutis *ex* Uribe, 1954 *	and	to	420-700	Ocampo *et al*. 55 (TOLI)	Killip 1938; Escobar 1990 Inéd., 1994	CR	Ab Formerly considered extinct.
Passiflora mutisii Killip, 1938 *	and	to	600	Mutis 2279 (MA) - Type	Killip 1938; Escobar 1990 Inéd., 1994	EX	Tr
Passiflora pittieri Mast., 1897	pac	ant cho	50-1000	Gentry & Aguirre 15318 (COL)	Killip 1938; Escobar 1990 Inéd., 1994; Gentry 1976	VU	Ab
Section *Euastrophea*							
Passiflora arborea Spreng., 1826	and car	ant bl by cau cl cun hu ma na qu ri to vc	1000-2300	Humboldt & Bonpland 5864 (P) - Type	Killip 1938; Pérez 1956; Holm-Nielsen *et al*. 1988; Escobar 1990 Inéd.	NT	Ar V.N: Cherimoyo (vc), Granadillo arboreo (cun). Edible fruit
Passiflora lindeniana Planch. *ex* Triana & Planch., 1873	and	cun ns snt	1000-2700	Linden 1409 (P) - Type	Escobar 1994	NT	Ab
Passiflora emarginata Humb. & Bonpl., 1813 *	and pac	cau cl cho na vc	1500-2000	Humboldt & Bonpland (P) - Type	Killip 1938; Escobar 1990 Inéd., 1994	LC	Ar Edible fruit
Passiflora engleriana Harms, 1894 *	and	ant	1500-2500	Escobar 8853 (COL)	Killip 1938; Escobar 1990 Inéd., 1994	VU/EN	Ar
Passiflora macrophylla Spruce *ex* Mast., 1883	amz and pac	ant cau cho pu na	60-1800	Alcázar & Salgado 1203 (CAUP)	Killip 1938; Holm-Nielsen *et al*. 1988; Escobar 1990 Inéd., 1994	LC	Ab V.N: Acaba familia (cho)
Passiflora putumayensis Killip, 1938	and	pu	1350-2500	Mora-0. 3438 (PSO)	Killip 1938; Escobar 1990 Inéd., 1994	EN/CR	Ab
Passiflora sphaerocarpa Triana & Planch., 1873 *	and	ant ce cun na ns qu ri snt to vc	400-1700	Schlim 285 (P) - Type	Killip 1938; Uribe 1972; Escobar 1990 Inéd., 1994	LC/NT	Ar V.N: Gulupo de Arbol (cun), Capafraile (to). Edible fruit

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora tica Gomez-Laur. & L.D. Gómez, 1981	pac	ant cho	450-1500	Escobar 2192 (HUA)	Escobar 1990 Inéd., 1994	LC/NT	Ar
Section *Pseudoastrophea*							
[*Passiflora costata* Mast., 1872]	amz		50-350	Spruce 1670 (K) - Type	Killip 1938; Escobar 1990 Inéd., 1994		Tr Reported in the Amazon of Peru, Brazil, Guianas, and Venezuela) (confluence of the rivers Rio Negro and Casiquiare).
Passiflora grandis Killip, 1938 *	and	ns snt	1000-2000	Schlim 585 (K)	Escobar 1990 Inéd., 1994	EN/CR	Ar
[*Passiflora ovata* Martin *ex* DC., 1828]	ori		0-150	Colector n.v.	Killip 1938; Escobar 1990 Inéd., 1994		Tr Reported in the Amazon of Venezuela.
Passiflora phaeocaula Killip, 1927	amz ori	gn va vch	150-1100	Madriñan 893 (MO,GH)	Killip 1938; Holm-Nielsen 1974; Escobar 1990 Inéd., 1994	LC/NT	Tr Ab
Passiflora skiantha Huber, 1960	amz	gv	150-500	Cuatrecasas 7366 (COL)	Killip 1938; Escobar 1990 Inéd.	NT/VU	Tr
[*Passiflora tessmannii* Harms, 1926]	amz		50-500	Tessmann 4385 (N) - Type	Killip 1938; Escobar 1990 Inéd., 1994		Tr Reported in the northern Amazon of Peru.
Passiflora venosa Rusby	and pac	cho	50-450	Juncosa s.n. (JAUM) n.v.	Killip 1938; Escobar 1990 Inéd.	VU/EN	Tr
Subgenus *Decaloba* (DC.) Rchb., 1828							
Section *Cieca*							
Passiflora apoda Harms, 1929	and	ant cau cl qu na ri to vc	1900-3260	Hazen 9688 (MO) - Isotype	Killip 1938; Hernández 2003	LC/NT	Tr
Passiflora coriacea Juss., 1805	and car pac	ant by cau cl cho cun hu ma ns qu ri snt to vc	250-1500	Uribe 2565 (COL)	Croat 1978; Holm-Nielsen *et al*. 1988	LC	Tr V.N.: Ala de Murcielago
Passiflora holosericea L., 1753	car	at bl ce	0-1400	Cuadros-H 1882 (COL)	Killip 1938	LC/NT	Tr

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora megacoriacea Porter-Utley, 2003 nr	car	bl	100-200	Killip & Smith 14415 (US)	Porter-Utley 2003	DD	Tr
Passiflora pallida L., 1753 nr	car	at bl ma sp	0-200	Dugand & Jaramillo 2844 (COL)	Porter-Utley 2003	LC	Tr Appel Monkey (sp)
Passiflora sodiroi Harms, 1922 nr	and	cau	1850-2150	Escobar *et al.* 4368 (PSO)	Holm-Nielsen *et al.* 1988	EN/CR	Tr
Passiflora suberosa L., 1753	and car	ant cau cl cun gv na ns qu snt suc to vc	200-2200	Cuatrecasas 15930 (VALLE)	Holm-Nielsen *et al.* 1988	LC	Tr V.N.: Curubita de Monte (ant)
Section *Decaloba*							
Series *Auriculatae*							
Passiflora auriculata Kunth, 1817	amz and car ori pac	ama ant bl by cau cl cho cor cq cun gn gv met na ns pu qu snt to va vc vch	0-1500	Killip & Cuatrecasas 58988 (VALLE)	Holm-Nielsen 1974; Holm-Nielsen *et al.* 1988	LC	Tr V.N: Rejito (cun)
Series *Sexflorae*							
Passiflora sexflora Juss., 1805	and	ant hu qu to vc	1700-2300	Zurucchi *et al.* 5813 (CHOCO)	Holm-Nielsen *et al.* 1988	NT/VU	Tr V.N.: Corvejo (na)
Series *Luteae*							
Passiflora filipes Benth., 1843	and	qu ri vc	950-1250	Silverstone 7205 (CUCV)	Holm-Nielsen *et al.* 1988	VU	Tr
Series *Miserae*							
Passiflora misera Kunth, 1817	and car ori pac	ant at ara bl by cau cl cho cor cun cs lg ma met vc ns	0-1050	E. Forero 9936 (COL)	Killip 1938	LC	Tr
Passiflora tricuspis Mast., 1872 nr	and	met	1220-2000	Estrada *et al.* 146 (MA)	Killip 1938	CR	Tr
[*Passifora trifasciata* Lemaire, 1868]	amz	ama pu	130-1100	Brandbyge *et al.*33556 (AAU)	Killip 1938; Nielsen *et al.* 1988		Tr Reported in the Amazon of Ecuador, Brazil and Peru. Ornamental (qu)
Series *Punctatae*							
Passiflora alnifolia Kunth, 1817	and car	ant by cau cl cun ma na pu qu ri snt to vc	1400-2500	Hno. Daniel 2803 (MEDEL)	Holm-Nielsen *et al.* 1988	LC	Tr

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora andreana Mast., 1883	and	ant cau cun ma na qu ri	1500-3150	Garcia-B.12949 (COL)	Holm-Nielsen *et al*. 1988	CR	Tr
Passiflora azeroana L. Uribe, 1955 *	and	by cun hu snt	2500-3000	Lozano 3718 (COL)	Uribe 1957	NT/VU	Tr
Passiflora biflora Lam., 1789	and car	ant at bl ce cl cho cun hu ma met na ns ri sp snt to vc	0-1500	Garcia-B. 11720 (COL)	Killip1938; Holm-Nielsen 1974; Croat 1978	LC	Tr V.N.: Peyen Papaya (sp), Desjarretadera (cun)
Passiflora bogotensis Benth., 1845 *	and car	by cun hu lg ma ns snt vc	2000-3700	Garcia-B. 15291 (COL)	Killip 1938; Holm-Nielsen 1974	LC	Tr V.N.: Curubo macho (cun)
Passiflora bucaramangensis Killip, 1930 * nr	and	snt	1500-2600	Killip & Smith 16787 (MO) - Isotype	Killip 1930, 1938	EN	Tr
Passiflora candollei Tr. & Planch., 1873 nr	amz	ama	100	Rudas *et al*. 2180 (COL)	Killip 1938	NT	Tr
Passiflora chelidonea Mast., 1979	and car pac	ant ara cau cho na ns pu ri snt vc	900-3000	Cuatrecasas 12526 (COL)	Holm-Nielsen *et al*. 1988	LC	Tr
Passiflora cuneata Willd., 1809	and car	ant by cho cun ma met ns snt vc	900-3000	Uribe 5973 (COL)	Killip 1938; Hno. Daniel 1968; Holm-Nielsen 1974	LC	Tr V.N.: Granadillita de Monte (ant)
Passiflora cuspidifolia Harms, 1893	and	by cun snt	2000-3200	Prieto 302 (UIS)	Holm-Nielsen *et al*. 1988	LC	Tr
Passiflora dawei Killip, 1930 *	and	cun snt	900-1600	Idrobo 2037 (COL)	Killip 1930, 1938; Hernández 2003	VU/EN	Tr
Passiflora erytrophylla Mast., 1872 *	and	by cun	1600-2790	Ocampo *et al*. 54 (HUA)	Killip 1938; Uribe 1955a; Hernández 2003	EN	Tr Not collected since 1938.
Passiflora lyra Planch. & Lind. *ex* Killip, 1846 nr	and	ant	400-840	MacDougal 4161 (HUA)	Killip 1938	NT/VU	Tr
Passiflora magdalenae Triana & Planch., 1873 *	and	cl cun to	200-1200	Uribe 2568 (COL)	Killip 1938; Pérez 1956	NT/VU	Tr V.N.: Granadillo del Magdalena.
Passiflora micropetala Mast., 1872	amz and	ama ant by cho cq met pu vc	0-710	Perez-A.669 (COL)	Holm-Nielsen *et al*. 1988	LC	Tr
Passiflora mollis HBK., 1817 * nr	and	ant cl cho qu lg snt to vc	1400-2500	Humboldt & Bonpland (P) - Type	Killip 1938; Hno. Daniel 1968	LC/NT	Tr

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora monadelpha Jørgensen & Holm-Nielsen, 1987 nr	and	to vc	2800-3310	Escobar 4859 (HUA)	Holm-Nielsen *et al.* 1988; Hernández 2003	VU/EN	Tr
Passiflora munchiquensis Hernández (ined), 2003 * nr	and	cau vc	1900-3200	Vargas 3909 (HUA)	Hernández 2003; A.Hernández (*pers. com.*).	NT/VU	Tr
Passiflora occidentalis Hernández (ined), 2003 * nr	and pac	cau cho na pu vc	50-1200	Killip 39025 (COL)	Hernández 2003; A.Hernández (*pers. com*).	LC/NT	Tr
Passiflora panamensis Killip, 1922	pac car	ant bl cho cor	0-500	Zarucchi *et al.* 5107 (CHOCO)	Killip 1938	NT	Tr V.N.: Gulupa (ant)
Passiflora pilosissima Killip, 1931 * nr	and	ant vc	1500-2100	Lehmann 7630 (US)	Killip 1938	CR	Tr
Passiflora popayanensis Killip, 1930 *	and	cau	2400-2900	Lozano 6472 (COL)	Killip 1938	VU/EN	Tr
Passiflora punctata L., 1753	and pac	cau cun na vc	20-1750	Romero-C. 3150 (COL)	Croat 1978; Holm-Nielsen *et al.* 1988	LC/NT	Tr
[*Passiflora sandrae* J. MacDougal, 2006]	pac	cho	800-1100	Garwood 1178 (MO) - Type	MacDougal 2006		Tr Collected in the border of Panama and Colombia (cho)
Passiflora tribolophylla Harms, 1922 *	pac	ant cau cho	50-1820	Lehmann 5420 (foto, COL)	Killip 1938; Hno. Daniel 1968	LC/NT	Tr
Passiflora tuberosa Jacq., 1804 nr	and	vc	1200	Cuatrecasas 15930 (VALLE)	Killip 1938	EN	Tr
Passiflora ursina Killip & Cuatrec., 1960	and	ant na vc	2100-3100	Roldán 2345 (HUA)	Killip 1960; Holm-Nielsen *et al.* 1988; Hernández 2003	VU/EN	Tr
Passiflora vespertilio L., 1753	amz and ori	ama met na	150-500	Plowman 2425 (COL)	Holm-Nielsen *et al.* 1988	LC/NT	Tr
Section *Hahniopathanthus*							
Passiflora guatemalensis S. Watson, 1887	and car	ant cl lg ma qu ri to vc	0-1580	Uribe 2532 (COL)	Killip 1938; Ulmer & MacDougal 2004	LC	Tr

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora hahnii (Fourn.) Mast., 1872 nr	and car	ant cl lg ma to vc	100-1250	Killip & Hazen 8670 (Y)	Uribe 1955b; Holm-Nielsen 1974; Ulmer & MacDougal 2004	CR	Tr V.N.: Granadilla Abroquelada (ant)
Section *Pseudodysosmia*							
Passiflora adenopoda Moc. & Sessé *ex* DC., 1828	and car	ant by cl cun cau ma qu ri to vc	100-2100	Cuatrecasas 15703 (VALLE)	Holm-Nielsen *et al*. 1988; MacDougal 1994	LC	Tr V.N: Pegajosa (qu), Granadilla Culebra (vc), Gulupo (cun). Edible fruit
Passiflora lobata (Killip) Hutch. *ex* J.M. MacDougal,1986	pac	ant cho	0-1200	Gentry 23791 (COL)	MacDougal 1994; Ulmer & MacDougal 2004	NT	Tr
Passiflora morifolia Mast., 1872	and	na	500-1000	Karsten s.n. (W) n.v.	Killip 1938; MacDougal 1994.	EN	Tr
Section *Pseudogranadilla*							
Passiflora bicornis Mill., 1768	car	ant at bl lg ma	0-500	Saravia 3643 (COL)	Killip1938; Holm-Nielsen 1974	LC	Tr V.N.: Cachito de Venado (bl), Cinco Llagas (at)
Passiflora hirtiflora Jørgensen & Holm-Nielsen, 1987 nr	and	ns	2650	Escobar 3152 (HUA)	Hernández 2003	CR	Tr
Passiflora kalbreyeri Mast., 1883 *	and car	ce ns snt	1100-3100	Killip 20284 (COL)	Killip 1938	LC/NT	Tr
Passiflora menispermacea Triana & Planch., 1873 *	and	to	1400-3000	Cuatrecasas 9247 (MA)	Killip 1938	LC	Tr
Section *Xerogona*							
Passiflora capsularis L., 1753	and car pac	ant cl cun cho hu lg ma na ns qu snt to vc	100-2000	Uribe 2566 (COL)	Killip 1938; Holm-Nielsen 1974; Holm-Nielsen *et al*. 1988	LC	Tr
Passiflora costaricensis Killip, 1922	pac	cho	20-1500	Croat 42591 (HUA)	Holm-Nielsen 1974; Holm-Nielsen *et al*. 1988	NT	Tr

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora escobariana J.M. MacDougal, 1992	and	ant	1090-1100	MacDougal 3823 (HUA) - Isotype	MacDougal 1992; Ulmer & MacDougal 2004	VU	Tr
Passiflora rubra L., 1753	and car	ant cl cau cun hu lg pu na pu qu ri to vc	500-2000	Garcia-B. 17279 (COL)	Holm-Nielsen *et al*. 1988	LC	Tr V.N.: Chulupa de Monte (cl)
Subgenus *Dysosmia* (DC.) Killip, 1938							
Passiflora foetida var. *eliasii* Killip, 1938	car	at bl ma	0-500	Penell 12029 (N)	Kiliip 1938	VU	Tr V.N.: Flor de la Pasión, Pasionaria (at)
Passiflora foetida var. *gossypiifolia* (Desv.) Mast. 1872	amz and car ori pac	ama ant ara at bl by cau ce cor cq cs cun cho gn gv hu lg ma met na ns qu snt suc to va vc	0-1500	Schultes 22576 (COL)	Killip 1938; Martin & Nakasone 1970; Romero-C. 1991; Ulmer & MacDougal 2004; Ulmer & Ulmer, 2005	LC	Tr V.N.: Granadilla (cho), Flor de la Pasión (at), Gulupo (cun), Bejuco Canastilla (met), Chulupa de Loma (ant hu), Cinco Llagas (cor). I.N.: Iñana-leeg murulale (ama). Edible fruit
Passiflora foetida var. *hispida* (DC.) Killip *ex* Gleason, 1931	and car	ant bl cun ns to	0-1500	Killip & Smith 21000 (N)	Killip 1938; Ulmer & Ulmer, 2005	LC	Tr V.N: flor de la pasión (ma), gulupo (cun)
Passiflora foetida var. *isthmina* Killip, 1938	and pac	na snt vc	0-1200	Killip 5289 (N)	Killip 1938	VU	Tr V.N.: Flor de la Pasión (vc)
Passiflora foetida var. *moritziana* (Planch.) Killip *ex* Pull, 1937	car	ma	0-500	Killip & Smith 21088 (N)	Killip 1938	VU	Tr V.N.: Flor de la Pasión (ma)
Passiflora foetida var. *sanctae-martae* Killip, 1938 * nr	car	ma	0-500	Smith 1532 (P)	Kiliip 1938	EN	Tr Flor de la Pasión (ma)
Passiflora vestita Killip, 1938	amz	pu	0-500	Betancourt 5164 (MO) n.v.	Killip 1938; Holm-Nielsen *et al*. 1988	VU/EN	Tr
***Distephana* (Juss.) Killip, 1938**							
Passiflora coccinea Aubl., 1775	amz ori	ama cs gn gv met na va vch	150-1500	Davidse 5321 (COL)	Escobar 1988a	LC	Tr V.N.: Lluvia Padie, Granadillo de Conga (ama), Granadilla colorada (cs). Edible fruit

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora involucrata (Mast) A.H. Gentry, 1981	amz	ama cq va	150-350	Schultes 6923 (COL)	Escobar 1988a	LC	Tr
Passiflora glandulosa Cav., 1790	amz	va	150-500	Romero-C. 3668 (AAU) n.v.	Killip 1938; Holm-Nielsen 1974	EN	Tr
Passiflora quadriglandulosa Rodschied, 1796	amz	ama gu	150-500	Lozano 604 (COL)	Escobar 1988a; Holm-Nielsen *et al*. 1988	LC/NT	Tr
Passiflora variolata Poepp. & Endl., 1838	amz	ama cq va	150-500	Zarucchi 2197 (COL)	Escobar 1988a	LC/NT	Tr V.N.: Granadilla, Oncilla, Parcha de Culebra de Agua (ama)
Passiflora vitifolia Kunth, 1817	amz and car ori pac	ama ant bl by cau ce cl cho cor cq cun lg gv ma met na pu ri snt to va vc vch	0-1800	Cuatrecasas 15740 (VALLE)	Killip 1938; Romero C. 1956, 1991; Martin & Nakasone 1970; Holm-Nielsen 1974; Holm-Nielsen *et al*. 1988	LC	Tr V.N.: Chulupo (cq), Granadilla de Monte (cho), Granadillo (met cq), Gulupa (to). I.N.: Maloca de Fisi (ama). Edible fruit
Subgenus *Manicata* (Harms) Escobar, 1988 (Syn. *Granadillastrum*)							
Passiflora manicata (Juss.) Pers., 1807	and	by cau cl cun na ns qu snt to vc	1400-2700	Richter s.n. (COL)	Jussieu 1805; Holm-Nielsen 1974; Escobar 1988a	LC	Tr V.N.: Tacso (na), Curubo de Monte (qu ns).
***Passiflora* (Medik.) Mast., 1871 (Syn. *Granadilla*)**							
Series *Digitatae*							
Passiflora serratodigitata L., 1753	amz and pac	ama cho ns ant	0-1000	Renteria 3542 (COL)	Killip 1938; Holm-Nielsen 1974; Holm-Nielsen *et al*. 1988; Romero-C. 1991	LC	Tr V.N.: Cocorilla (cho). Granadilla, Naracujinha (ama). N.I.: Cipo-Cipo Naracujinha (ama).
Series *Laurifoliae*							
Passiflora ambigua Hemsl. *ex* Hook., 1902	amz and ori pac	ant by cl cho cun hu ma met pu snt vc	0-2000	Fuchs 21744 (COL)	Holm-Nielsen *et al*. 1988	LC	Tr Edible fruit

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora gleasonii Killip, 1924	ori	gn	150-500	Madriñán 1014 (COL)	Killip 1938	EN	Tr
Passiflora guazumaefolia Juss., 1805	and car	ce cor bl ma snt	0-500	Uribe 2405 (COL)	Killip 1938; Coppens 2003	LC/NT	Tr V.N: La Parcha (ce), Cocorilla (ma). Edible fruit
Passiflora killipiana Cuatrecasas, 1960 nr	amz	cq	250-500	Schultes 5875 (US)	Killip 1960	CR	Tr
Passiflora laurifolia L., 1753	and amz pac	ama cho cq gv hu met snt va	0-1700	Zarucchi 1824 (COL)	Killip 1938	LC	Tr Edible fruit
Passiflora nitida Kunth, 1817	amz and car ori pac	ama ant cho cq cun cs gn gv ma met na pu va vc	0-1940	Triana 2931 (P)	Killip 1938; Romero-C. 1956, 1991; Holm-Nielsen 1974; García-B. 1975; Croat 1978	LC	Tr V.N.: Granadilla (cho met), Granadilla Babosa (na). N.I.: Burucuña, Gemarundare, Tuchica, Jino-Gojé (va). Edible fruit
[*Passiflora phellos* C. Feuillet, 2004]	amz		90-150	Wurdack & Addeley 43479 (NY) - Holotype	Feuillet 2004		Tr Reported in the Amazon of Brazil, Peru and Venezuela
Passiflora popenovii Killip, 1922 nr	and	cau na vc	1200-2050	Escobar & Escobar 1017 (HUA)	Killip 1938; Holm-Nielsen *et al*. 1988; Romero-C. 1991; Ulmer & MacDougal 2004	EW	Tr V.N: Granadilla de Quijos (na), granadilla caucana, curubejo (cau). Cultivated. Edible fruit
Passiflora riparia Mart. e*x* Mast., 1872	amz	cq pu va	300-400	Smith 3157 (US)	Killip 1960	LC/NT	Tr Edible fruit
Passiflora tolimana Harms, 1894 *	and	ant to vc	820-2000	Echeverry 3627 (TOLI)	Killip 1938	NT/VU	Tr Edible fruit
Series *Incarnatae*							
Passiflora cincinnata Mast., 1868 nr	and	ns	1200	Killip & Smith 20879 (Y)	Killip 1938	CR	Tr Ornamental (qu). Edible fruit
Passiflora edulis f. *edulis* Sims, 1818	amz and pac	ant cl cau cho cun gv met na qu ri snt to vch vc	1100-2750	Idrobo 1637 (COL)	Holm-Nielsen *et al*. 1988; Vanderplank 2000; Ulmer & MacDougal 2004	NE	Tr Introduced from Brazil in the 1950s. V.N: Curuba Redonda (ant cl ri qu), Gulupa (cun). Cultivated or feral. Edible fruit

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Passiflora edulis f. *flavicarpa* Degener, 1932 nr	amz and car ori pac	ant ara bl ce cl cho cun gn hu met pu qu snt ri to vc	0-1800	Silvestone 14399 (CUVC)	Killip 1938; Ulmer & MacDougal 2004	NE	Tr Introduced from Brazil in the 50s. V.N.: Maracuyá. Cultivated. Edible fruit
Series *Kermesinae*							
Passiflora lehmanni Mast., 1885 *	amz and	ant cau cl cun hu pu qu ri snt vc	1000-2000	Uribe 2588 (COL)	Killip 1938; Holm-Nielsen 1974	LC	Tr
Passiflora smithii Killip, 1930	and car	cun ma qu snt to vc	500-2000	Killip & Smithii 15015 (MO) - Holotype	Killip 1938; Holm-Nielsen 1974	LC	Tr V.N.: Curuba Silvestre (to).
Passiflora trisulca Mast., 1887 *	and	ant cl vc	1300-1800	Marulanda 91 (HUA)	Killip 1938; Hno. Daniel 1968	NT	Tr
Series *Lobatae*							
Passiflora caerulea L., 1753 nr	and	cl cun qu	1000-2700	Ocampo 83 (VALLE)	Deginani 2001		Tr Introduced from Argentina. Ornamental. Edible fruit
Passiflora gritensis H. Karst., 1859	and	by ns	2450-2500	Cuatrecasas 1808 (COL)	Killip 1938	LC/NT	Tr
[*Passiflora montana* Holm-Nielsen & Lawesson, 1987]	and		2600	Holm-Nielsen *et al.* 6200 (AAU)	Holm-Nielsen *et al.* 1988		Tr Collected on the border of Ecuador and Colombia (na)
Passiflora picturata Ker, 1822 nr	ori	met	450	Uribe 1334 (US)	Killip 1938, 1960	DD	Tr
Passiflora pennellii Killip, 1924 *	and	ant cun	1200-1600	Uribe 4827 (COL)	Killip 1938	NT/VU	Tr
Passiflora resticulata Mast. & André, 1884	amz and pac	cau gv na vc	0-2000	Marulanda & Márquez 1665 (HUA)	Killip 1938; Holm-Nielsen 1974;Holm-Nielsen *et al.* 1988	NT/VU	Tr
Passiflora semiciliosa Planch & Linden, 1873 *	and car	ma ns	1850-3000	Garcia-B. 20749 (COL)	Killip 1938	VU	Tr V.N.: Gulupa, Palcha (ns)
Passiflora subpeltata Ortega, 1798	amz and car ori	ant bl cau ce cor cq cs cun ma suc to vc	0-2400	Ramírez *et al.* 11507 (CAUP)	Killip 1938; Holm-Nielsen 1974	LC	Tr V.N.: Cocorilla (bl)

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Series *Quadrangulares*							
Passiflora alata Curtis, 1788 nr	amz	ama	200	Ocampo 82 (VALLE)	Killip 1938; Ulmer & MacDougal 2004	DD	Tr Introduced (qu vc) from Brazil in the 90s. V.N.: Maracúa. Cutivated. Edible fruit
Passiflora quadrangularis L.,1759	amz and car ori pac	ama ant bl cau cl cho cq cun gn hu ma met na ns qu va ri snt to vc	0-1500	Gentry 15371 (COL)	Killip 1938; Romero-C. 1956, 1991; Holm-Nielsen1974; Holm-Nielsen *et al*. 1988	LC	Tr V.N.: Badea (ant cl hu cun met qu ri), corvejo (snt), Granadillo Grande (cau), curuba (vc), Motorro (gn). Cultivated. Edible fruit
Series *Menispermifoliae*							
Passiflora chocoensis G. Gerlach & T. Ulmer, 2000 * nr	pac	cho	0-100	Gerlach 434917 (COL) - Holotype	Gerlach & Ulmer, 2000; Ulmer & MacDougal 2004	CR	Tr
Passiflora menispermifolia Kunth, 1817	amz car and pac	ant bl by cho cor cq cun met na ns snt to vc	0-2140	Cuatrecasas 15541 (VALLE)	Croat 1978; Holm-Nielsen *et al*. 1988	LC	Tr V.N.: Chulupe (cq)
Series *Simplicifoliae*							
Passiflora danielii Killip, 1960 *	and	ant	1300-2600	Hno. Daniel 1536 (MEDEL) - Isotype	Killip 1960; Hno. Daniel 1968	VU/EN	Tr
Passiflora longipes Juss., 1805 *	and	cun by qu snt to	2500-3500	Sanchez 17 (COL)	Killip 1938	NT	Tr
Passiflora longipes var. *oxyphylla* L. Uribe, 1977 *	and	by ns snt	2000-2600	Cadena 83 (UIS)	Uribe 1977	NT	Tr
Passiflora oerstedii Mast., 1872	and ori pac	ant cau cho cun cau met na qu ri vc	0-2000	Romero-C. 6141 (COL)	Killip 1938; Holm-Nielsen 1974; Holm-Nielsen *et al*. 1988	LC	Tr

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Series *Tiliaefoliae*							
Passiflora ligularis f. *lobata* (Mast.) Killip, 1938 nr	and	ant	1800-2000	Archer 1498 (COL)	Killip 1938	NT	Tr V.N: Granadilla. Cultivated. Edible fruit
Passiflora ligularis Juss., 1805	and	ant cl cun cau by cho hu met na ns pu qu ri snt to vc	1550-2500	Dombey 739 (P) - Type	Killip 1938; Romero-C. 1956, 1991; Holm-Nielsen *et al*. 1988	LC	Tr V.N: Granadilla; Granadilla Pipo (na). N.I.: Awapit (na). Cultivated. Edible fruit
Passiflora magnifica L.K. Escobar, 1990 *	and	ant	1250-1750	Callejas 6586 (HUA) n.v.	Escobar 1990; Ulmer & MacDougal 2004	VU	Tr Edible fruit
Passiflora maliformis L., 1753	and car pac	ant by cl cau cun cho hu ma na qu snt to vc	0-2200	Humboldt & Bonpland 1804 (P) - Type	Killip 1938; Romero-C, 1956, 1991; Holm-Nielsen, 1974; García-B. 1975; Holm-Nielsen *et al*. 1988	LC	Tr V.N: Gulupa, Granadilla de Piedra, o de Hueso (cu, na vc), Gurapa (snt), Chulupa (hu). Cultivated. Edible fruit
Passiflora multiformis Jacq., 1809	and car	lg ma ns	0-1300	Romero-C. 8992 (COL)	Killip 1938	NT/VU	Tr V.N: Palchita (ns). Edible fruit
Passiflora palenquensis Holm-Niels. & Lawesson, 1987	pac	ant cau cho na vc	0-1200	Espina & Garcia 1951 (COL)	Holm-Nielsen & Lawesson 1987; Holm-Nielsen *et al*. 1988	LC	Tr V.N.: Granadilla (cho), "Camelo" (vc). Cultivated. Edible fruit
Passiflora platyloba Killip, 1922	pac	cho	0-1050	Gentry & Juncosa 40946 (COL)	Gentry 1976	NT/VU	Tr Edible fruit
Passiflora seemannii Griseb., 1858	amz and pac ori	ant by cho cun gn gv met ns snt va vc vch	0-1300	MacDougal 4144 (HUA)	Croat 1978	LC	Tr V.N.: Palcha, Chulupa (met), Granadilla Montañera (cun). Edible fruit

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Passiflora serrulata Jacq., 1767	car	at ma lg	0-500	Bunch 601 (FMB)	Killip 1938; Coppens 2003	NT/VU	Tr V.N.: Guayabita Cimarrona (ma). Edible fruit
Passiflora tiliifolia L., 1753	and pac	ant cau cho cl na qu vc to	1100-2500	González 1411 (CAUP)	Killip 1938; Holm-Nielsen 1974; Holm-Nielsen *et al*.1988; Coppens 2003	LC/NT	Tr V.N.: Granadilla, Machimbi (Colombia). Cultivada. Fruto comestible.
Subgenus *Porphyropathanthus* L.K Escobar, 1989							
Passiflora sierrae L.K. Escobar, 1989 *	car	ma	3000-3700	Cuatrecasas 24375 (COL)	Escobar 1989	EN/CR	Tr
Subgenus *Psilanthus* (DC.) Killip, 1938							
Passiflora bicuspidata (H. Karst.) Mast., 1872 *	and	by cun ns snt	2500-3500	Rojas 138 (CDMB)	Uribe 1972; Killip 1978	VU	Tr
Passiflora hyacinthiflora Planch. & Linden, 1873 *	and	by ma ns	2900-3300	Garcia-B. 20700 (COL)	Killip 1938	LC/NT	Tr
Passiflora trinervia (Juss.) Poir., 1811 *	and	cl qu to vc	2500-3700	Cuatrecasas 20241 (VALLE)	Jussieu 1805; Killip 1938	VU	Tr
Subgenus *Rathea* (Karst.) Killip, 1938							
Passiflora andina Killip, 1938 nr	and	na	2800	Karsten (V)	Killip 1938; Holm-Nielsen *et al*.1988	CR	Tr
Passiflora colombiana L.K. Escobar, 1986 *	and	na pu	3000-3600	Mora 6175 (PSO) - Paratype	Escobar 1986, 1988	CR	Tr
Subgenus *Tacsonia* (Juss.) Tr. & Planch, 1873							
Section *Bracteogama*							
Passiflora cumbalensis var. *caucana* L.K. Escobar, 1987 *	and	cau	2300-2800	Tryon 6001 (COL)	Escobar 1987, 1988b	LC	Tr V.N.: Curuba de Monte. Edible fruit

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Passiflora cumbalensis var. *cumbalensis* (H. Karst.) Harms,1894	and	na pu	3000-3800	Fernandez 5834 (COL)	Romero-C. 1956; Holm-Nielsen 1974; Escobar 1987, 1988; Holm-Nielsen *et al*. 1988	LC/NT	Tr V.N.: Curuba Roja, Tauso (na). Edible fruit
Passiflora cumbalensis var. *goudotiana* (Triana & Planch.) L.K. Escobar, 1987	and car	ant by cl cq cun hu ma na pu qu ri snt to vc	1800-3300	Uribe 2593 (COL)	Escobar 1987, 1988; Holm-Nielsen *et al*. 1988	LC	Tr V.N.: Curuba bogotana (cun), Curubo mucura, curuba rosada, Tausa (na). Cultivated. Edible fruit
[*Passiflora sanctae-barbarae* Holm-Nielsen & Jørgensen, 1987]	and		2200-2700	Harling & Andersson 12445 (AAU) - Isotype	Holm-Nielsen *et al*. 1988		Tr Reported in the northern Andes of Ecuador
Passiflora tripartita var. *azuayensis* Holm-Nielsen & Jørgensen, 1988 nr	and car	ant by cun ma ns	2000-2610	Escobar 19999 (HUA)	Holm-Nielsen *et al*. 1988	LC/NT	Tr V.N.: Curuba. Edible fruit (by cun)
Passiflora tripartita var. *mollissima* Holm-Nielsen & Jørgensen, 1988	and car	ant by cau cl cun ma na ns pu snt vc	2200-3500	Romero-C 8007 (PSO)	Holm-Nielsen *et al*. 1988; Romero-C. 1991; Ulmer & MacDougal 2004	LC	Tr V.N.: Curuba de Castilla (ant by cu cl); Tauxso (na). Cultivated. Edible fruit
Passiflora tarminiana Coppens & Barney, 2001	and	ant by cau cl cun hu na qu snt to vc	2000-2900	Coppens 72 (COL) - Type	Coppens *et al*. 2001; Campos 2001	LC	Tr V.N.: Curuba India. Cultivated. Edible fruit.
Section *Colombiana*							
Series *Colombianae*							
Passiflora adulterina L.f., 1781 *	and	by cun snt to	2600-3600	Barclay 4517 (COL)	Escobar 1988a	NT	Tr
Passiflora crispolanata L.Uribe, 1954 *	and	by cun	2500-3500	Uribe 6773 (COL)	Uribe 1954; Escobar 1988a	NT	Tr V.N.: Curuba Paramera (cun)
Passiflora cuatrecasasii Killip, 1960 *	and	by cun met snt	2200-3500	Cuatrecasas 9479 (foto, MEDEL)	Killip 1960; Escobar 1988a	VU	Tr

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Passiflora formosa T. Ulmer, 1999 *	and	by	3000-3100	Uribe 5945 (COL)	Ulmer 1999	EN	Tr
Passiflora lanata (Juss.) Poir., 1811 *	and	cun by snt to	2200-3500	Uribe 2587 (COL)	Jussieu 1805; Holm-Nielsen 1974; Escobar 1988a	NT/VU	Tr V.N.: Granadilla (cun)
Passiflora pamplonensis Planch.& Linden *ex* Triana & Planch., 1873 *	and	snt	2000-3000	Funck & Schlim 1385 (foto, VALLE)	Escobar 1988a	EN/CR	Tr Curubita de Piñuela (snt)
Passiflora rigidifolia Killip, 1960 * nr	and	ant	3750	Burke 185 (K) - Type	Killip 1960	DD	Tr Known only from the type.
Passiflora rugosa var. *rugosa* (Mast.) Triana & Planch., 1873	and	cun met ns	3000-3500	Peñuela 008 (COL)	Escobar 1988a	LC/NT	Tr
Passiflora rugosa var. *venezolana* L.K. Escobar, 1986	and	ns snt	2500-3500	Garcia-B. 20001 (COL)	Escobar 1988a	LC/NT	Tr
Passiflora trianae Killip, 1938 *	and	ns snt	3000-3500	Escobar 569 (COL)	Escobar 1988a	VU/EN	Tr
Passiflora truxillensis Planch. & Linden, 1873 nr	and	ns	1800-3000	V. Barney & G. Coppens (foto), *pers. com*.	Escobar 1988a; Ulmer & Ulmer 2005	EN	Tr
Series *Leptomischae*							
Passiflora antioquiensis H. Karst., 1859 *	and	ant cau cl cun hu pu qu ri to vc	1800-2700	Escobar 2133 (HUA)	Hno. Daniel 1968; Uribe 1972; Garcia-B. 1975; Escobar 1988a	LC/NT	Tr V.N.: Granadilla (vc), Curuba Antioqueña (ant). Wild or cultivated in home gardens. Edible fruit
Passiflora cremastantha Harms, 1922 *	and	cau	2000-2500	Lehmann 5421 (F) - Type	Escobar 1988a	EX	Tr Known only from the type.
Passiflora flexipes Triana & Planch., 1873 *	and	cl qu ri	2500-3380	Vargas 626 (FAUC)	Escobar 1988a	NT/VU	Tr V.N.: Curuba de Monte (cl qu ri). Edible fruit
Passiflora leptomischa Harms, 1922 *	and	ant cau qu vc	2000-2800	Escobar *et al*. 4421 (PSO)	Escobar 1988a	LC/NT	Tr Edible fruit

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora tenerifensis L.K. Escobar, 1988 *	and	vc	2800-3100	Escobar 4853 (COL)	Escobar 1988a, 1989b; Campos 2001	EN/CR	Tr V.N.: Curuba de Monte (vc). Edible fruit
Series *Quindiensae*							
Passiflora linearistipula L.K. Escobar, 1988 *	and	cl	2650-3170	Ocampo *et al*. 56 (HUA)	Escobar 1988a	EN/CR	Tr Not collected since 1984.
Passiflora quindiensis Killip, 1938 *	and	to	2900-3100	Uribe 3320 (COL)	Escobar 1988; Campos 2001	VU/EN	Tr
Section *Fimbriatistipula*							
Passiflora fimbriatistipula Harms, 1894 *	and	cau hu	2130-3240	Fernandez *et al*. 30182 (AFP)	Escobar 1988a	NT/VU	Tr I.N.: Pachuaca (cau)
Passiflora uribei L.K. Escobar, 1988 *	and	na pu	2500-2700	Escobar *et al*. 2896 (HUA)	Uribe 1958; Escobar 1988a	EN	Tr
Section *Parritana*							
Passiflora jardinensis L.K. Escobar, 1988 *	and	ant	2750-3000	Zarucchi 6963 (COL)	Escobar 1988b	VU/EN	Tr
Passiflora parritae (Mast.) L.H. Bailey, 1916 *	and	cl qu ri to	2500-3020	Sánchez 15 (FAUC)	Escobar 1988a	VU/EN	Tr Curuba de Monte (to). Edible fruit
Section *Poggendorffia*							
Passiflora pinnatistipula Cav., 1799	and	ant by cun na ns	2000-3600	Uribe 6643 (COL)	Escobar 1988b; Holm-Nielsen 1974; Holm-Nielsen *et al*. 1988; Campos 2001	LC/NT	Tr V.N.: Curuba Redonda, Gulupa (cun) Cultivated. Edible fruit
Passiflora x *rosea* (H. Karst.) Killip, 1938	and	by cun	2500-3500	Uribe 3941 (COL)	Escobar 1988a	VU	Tr Natural hybrid of *P. pinnatistipula* x *P. tripartita* var. *mollissima*. Edible fruit (when fertile)
Section *Tacsonia*							
Passiflora mixta L. f., 1781	and	ant cl by cau cun na ns qu ri snt to vc	1700-3700	Humboldt & Bonpland (P) - Type	Escobar 1988a; Holm-Nielsen 1974; Holm-Nielsen *et al*. 1988; García-B. 1975	LC	Tr V.N.: Curuba de Monte (vc), Curubo de Páramo (cun), Palchuaca (cau), Curubito de Indio (cl). Edible fruit

Taxon	Biogeographic Region	Geopolitical Distribution	Elevation	Collection for Reference	Bibliographic Reference	IUCN Category	Notes
Passiflora schlimiana Triana & Planch., 1873 *	car	ce lg ma	2400-3220	Romero-C. 7407 (COL)	Holm-Nielsen 1974; Escobar 1988a; Romero-C. 1991; Coppens 2003	VU/EN	Tr V.N.: Curuba. Edible fruit
Section *Tacsoniopsis*							
Passiflora bracteosa Planch. & Linden, 1873	and	ns snt	2200-3000	Garcia-B. 20745 (COL)	Escobar 1988a	EN	Tr V.N.: Palchoaca (ns, snt)
Passiflora purdiei Killip, 1938 *	and	cun ma		Purdie s.n. (K) n.v.	Escobar 1988a	EX	Tr Known only from the type.
Subgenus *Tryphostemmatoides* (Harms) Killip), 1938							
Passiflora tryphostemmatoides Harms, 1894	and	ant cau hu qu ri vc	1000-2700	Lehmann 5662 (K) - Isotype	Killip 1938; Holm-Nielsen *et al.* 1988	NT	Tr
Passiflora gracillima Killip, 1924	and	ant cau cl hu na qu to	2000-3150	Penell 9393 (MO) - Isotype	Killip 1924, 1938	LC	Tr V.N.
Passiflora arbelaezii L. Uribe, 1957	and pac	ant cau cho cun na vc	0-2300	Roldán 1162 (COL)	Uribe 1957	LC/NT	Tr V.N.: Golondrina (cho)
Passiflora pacifica L.K. Escobar, 1988 *	pac	cho na vc	0-1800	Escobar 2143 (HUA)	Escobar 1988b	LC/NT	Tr

Discussion

Colombia has been subject of many studies focused on inventories of plant species groups (Gentry 1993; Silverstone-Sopkin & Ramos 1995; Galeano *et al.* 1998; Rangel 1995, 2002). Passifloraceae have been inventoried in taxonomical works by Escobar (1998a, 1989, 1990 inedited) and Hernández & Bernal (2000). Compared to the latter, we have added new information on geographical distribution of each taxon and extended the list to a total of 167 Passifloraceae species, from three genera and the five biogeographic regions, with reports of 26 species new to Colombia.

For obvious reasons, the quality of botanical inventories depends on the quality of taxonomical work in this complex family. While the definition of genera and subgenera should not significantly affect studies of the distribution of its diversity across the Colombian territory, such work may be affected to some extent by poor definitions below the subgenus level. Indeed, several morphological groups include species that are very similar, and regularly reported as very difficult to distinguish from each other. In several cases, experts may have underestimated intraspecific variation in widely distributed species, or even intra-individual variation, splitting well-known species in several new species only distinguished by a few quantitative or color traits. Among the difficult groups, let us mention particularly subgenus *Astrophea*, whose species tend to be less well differentiated, at least in sterile specimens, by the position and number of the nectar glands, having only two at the junction of the lamina and petiole, while they may show impressive intraspecific variation in pubescence and intra-individual variation in leaf size and shape according to light exposure and whole tree development (heteroblasty). Also in the subgenus *Decaloba* there are several morphological groups that demand great experience and care in their identification, even for the most common species such as *P. capsularis* and *P. rubra*, which can be found in the same habitats. In the most difficult cases, several species have even changed status several times. For instance, Killip

merged *P. bauhinifolia* Kunth. with *P. andreana* Mast. in 1938, and restored it as a distinct species in 1960, while Holm-Nielsen *et al*. (1988) merged *P. bauhinifolia* with another close relative, *P. alnifolia*, a position we have adopted here. A couple of other species, such as *P. mollis* and *P. cuspidifolia* or *P. hahnii* and *P. guatemalensis,* may also show very little morphological difference, but differ in their altitudinal distribution, which confirms they are different. Many new species of subgenus *Distephana* are also questionable, as one of its two most common species, *P. coccinea* Aubl., distributed in most of the Amazon, has been split in several species on the basis of bract size, number of nectar glands, and small variation in numbers and respective colors of the corona series. Concerning Colombia, Vanderplank (2006) underlined that the description of *P. coccinea* by Escobar (1988) matches perfectly that of *P. miniata* Vanderplank, so he considered the latter a Colombian species. However, we have not adhered to this opinion for several reasons: Vanderplank described it on material grown in glasshouse and his report does not refer to the examination of Colombian materials. The type and level of the differentiation described between the various new species and *P. coccinea* is at most of the same order as morphological variation in other common widespread species (e.g. *P. vitifolia*, *P. foetida*, *P. suberosa*, *P. alnifolia*, *P. capsularis*, *P. mixta*, *P. cumbalensis*, *P. maliformis*, or *P. emarginata*). He reported a high level of sexual compatibility with the other common *Distephana* species, *P. vitifolia*, which raises the expectation of sexual compatibility with the even closer "true" *P. coccinea*. Thus we have stuck to the treatment of *P. coccinea* by Escobar (1988), whose quantitative description is more precise than the original by Aublet (1775), but not fundamentally different. Within subgenus *Passiflora*, *P. maliformis*, *P. serrulata* and *P. multiformis* constitute other cases of possible overclassification, as they are mostly differentiated by the degree of lobation of their leaves, a trait that is quite variable in many other species, including other *Tiliifoliae*, such as *P. ligularis* (Killip 1938; *pers. obs*.). A wider problematic group is the series *Laurifoliae*, with ten species in Colombia, always difficult to identify from incomplete specimens. Although they probably constitute a very young group and they exhibit a high number of common traits, species of subgenus *Tacsonia* are relatively easy to differentiate. Particularly interesting are the endemics of Colombian section, from the center of the cordilleras, often characterized by a very long peduncle and linear-lanceolate stipules, and from the northeast and up to the Venezuelan Andes. Several authors have reported easy interspecific hybridization in subgenus *Tacsonia*, involving cultivated, as well as wild materials (Escobar 1985). This phenomenon, by producing spontaneous off-types, may have led to some overclassification in this subgenus. Indeed, of the 30 species reported here for Colombia, five are known only from the type material (*P. cremastantha* Harms, *P. formosa* Ulmer, *P. pamplonensis* Planch.& Linden *ex* Triana & Planch., *P. purdiei* Killip, *P. rigidifolia* Killip) are known only from the type material. Whether this is due to high endemism, ancient extinction, or off-types resulting from hybridization cannot be ascertained, unless a second specimen is recorded, as we did for *P. linearistipula*. It is important to note that *P. formosa* was described as a new species from the same specimen considered an off-type of *P. lanata* (Juss.) by Escobar (1988). Overclassification may be suspected even in better known species, as *P. parritae* (Mast.) Bailey, and *P. jardinensis* L.K. Escobar. Indeed, in populations of the former, we have observed sufficient morphological variation to include the few known specimens of the latter species, which might simply represent a small isolated population. On the other hand, most endemics of subgenus *Tacsonia* were found in difficult to access highlands, and more species can be described from relatively poorly explored areas such as the South of Tolima, Santander and Norte de Santander departments.

Our list ranks Colombia as the country with the highest richness of Passifloraceae, followed by Brazil with 127 species. Figure 4 allows comparisons for species richness and relative diversity of passion flowers in the Neotropics, showing the strong influence of latitude (typical of a tropical distribution) and topography on *Passiflora* diversity**.** Colombian species richness and diversity is more than twice that of Peru and Venezuela, two countries of similar surface and latitude. Given its much smaller area, Ecuador also presents an impressive diversity. Thus, the northern Andes of Colombia and Ecuador clearly constitute the center of diversity for the genus *Passiflora*. This is probably due to the greater availability of habitats, especially at high elevations, in these two countries. The presence of three Andean cordilleras in Colombia very probably played a significant role. Indeed, radiation has been very active in the northern Andes, with particular contribution of recent and fast evolving groups, such as subgenera *Rathea* and *Tacsonia*, accounting for more than 41 highland species in Colombia and Ecuador. Among them, 21 (14%) species are endemic to Colombia. Colombian highlands are also rich in representatives of subgenus *Decaloba*.

According to Escobar (1988a), 40% of the New World Passifloraceae are found in the Andes. In Colombia, habitats between 1000 and 3000 m account for only 27% of the land area, yet 81% of the species of Passifloraceae grow there. With 123 species, the Andean region concen-

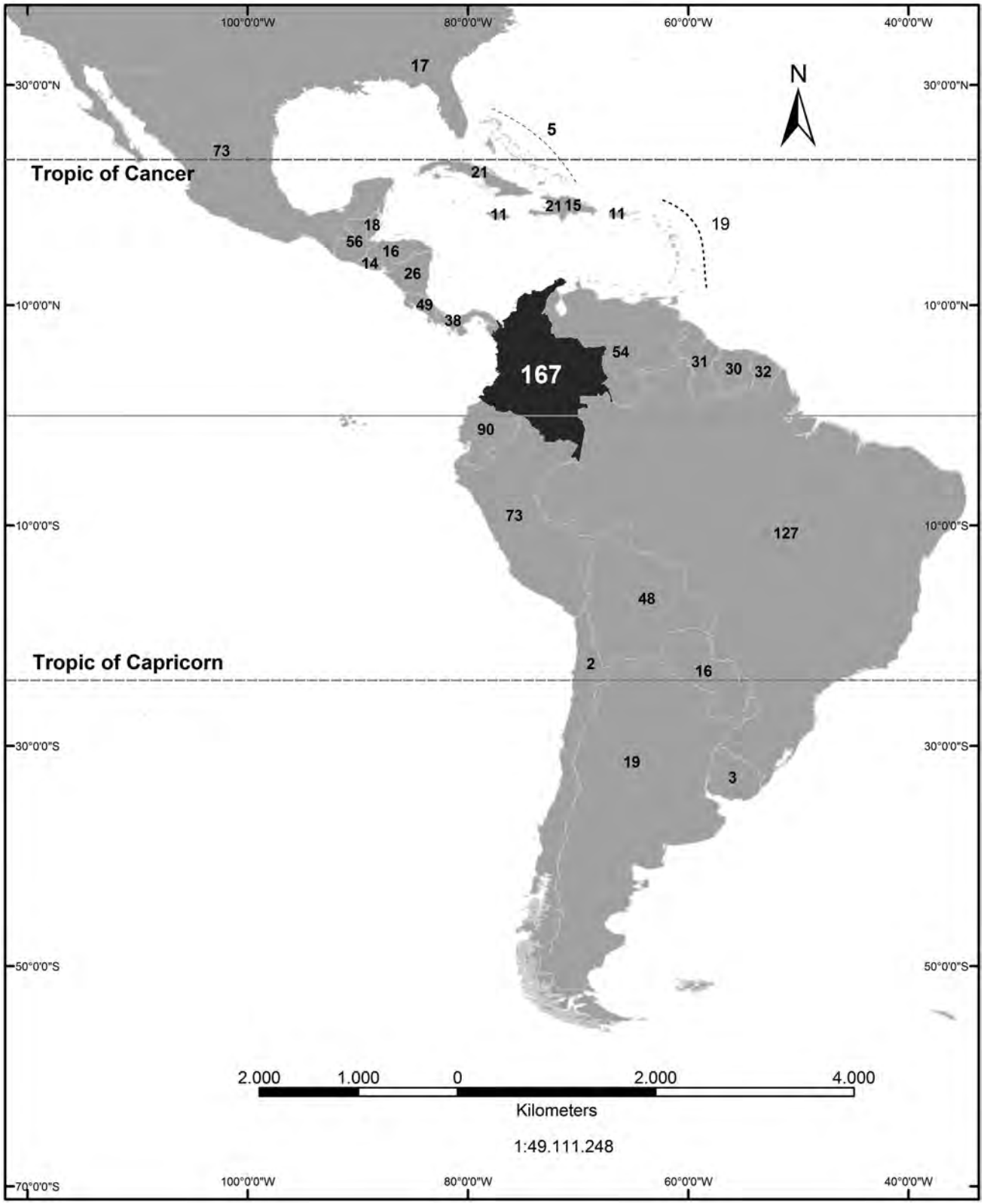

Figure 4. Distribution of species richness of Passifloraceae in American countries, according to information gathered from Killip (1938, 1960), Escobar (1988, 1989, 1990 inedited, 1994), Holm-Nielsen *et al*. (1988), Jørgensen & León (1999), MacDougal (1994), Vanderplank (2000), Deginiani (2001), Tillet (2003), Ulmer & MacDougal (2004), records of the herbaria cited in this study and many journal articles related with the description of new species present in the America.

trates the highest richness, mainly between 1000 and 2000 m. The Caribbean region shares the highest proportion of species (27) with the Andean region (Box 1). This is mostly due to the presence of the Sierra Nevada de Santa Marta mountain range in northern Colombia, with a steep gradient of elevation from the Caribbean Sea to 5775m summits. The increase of species richness and endemism with the elevation is generally interpreted as a result of the increasing isolation and decreasing habitat surface in high mountain regions, leading to small, fragmented populations which are prone to speciation (Simpson 1975; Jørgensen *et al*. 1995).

Another contribution to the particular species richness in Colombia and Ecuador is that of the Pacific Coast region, which continues down from the similar highly diverse ecosystems of Central America (Chocó-Darién/Western Ecuador hotspot of Myers *et al*. 2000). In strong contrast with the conditions prevailing in the westerns Andes and the Peruvian coast that are arid or semi-arid, or the drier and more contrasted climate of Venezuela, this area receives one of the highest precipitation rates in the world. The composition of the Passifloraceae species of this region appears both diverse and well-differentiated when compared to that of the other biogeographic regions (Figure 2). This is not surprising, considering that the Choco region is recognized as one of the most diverse biotas in the world, with nearly 40% endemism (Gentry 1986).

Until recently, the genera *Dilkea* and *Ancistrothyrsus* were only known as originating from the Amazon basin; however, Escobar's description of *A. antioquiensis* (1990 ined.) in the Andes and the observation of *Dilkea retusa* in the Andes and Pacific regions extend their distribution to other important biota.

The distribution of Passifloraceae has been drastically affected by deforestation, principally in the Andean region. Its historical range corresponds to a region with a long history of livestock and agriculture that now supports extensive coffee, sugar cane, rice, banana, and potato plantations. According to our field observations, very common species, such as *P. adenopoda*, *P. alnifolia*, *P. capsularis*, *P. coriaceae*, *P. rubra*, *P. suberosa*, and *P. mixta*, are mostly species that thrive in secondary forests or disturbed old-growth forests. Human disturbances may even have contributed to the extention of their distribution, as reported with other plants (Svenning 1998).

According to Myers *et al*. (2000) and Robbirt *et al*. (2006), rarity and endemism represent two factors of particular significance in the consideration of the risk of decline and extinction. In this context, most Colombian Passifloraceae (70.6%) are under some degree of threat according to IUCN criteria. Only 29.4% (48 species) fall in the 'least concern' category (**LC**), which clearly illustrates the alarming situation for the family (Figure 3). Our results are consistent with a first Red List of Colombian Plants published by the von Humboldt Institute (Calderón 2005), based on the 141 species listed by Hernández & Bernal (2000), with similar percentages for each category. However, this list only includes *P. colombiana* L.K Escobar under the category of critically endangered species (**CR**), while ours places 16 species in this category. A second list, recently published by Hernández & García (2006), includes two different species, *P. cremastantha* and *P. pamplonensis*, in this category. Despite several attempts by Escobar and ourselves, the former species, collected before 1922, is only known from the type specimen. Escobar (1988) was followed in considering its probable extinction. Moreover, the list of Hernández & García (2006) gives much lower numbers for the other threat categories, placing as few as 25 species in the threat categories (including two species in the NT category) and 119 species in the Least Concern one. These numbers are far from likely for a group which (i) exhibits its highest diversity in the highly disturbed central coffee growing zone and (ii) includes 58 endemics. The general discrepancy is probably due the fact that our extensive inventory and direct field observations allowed us to take into account both the number of records and existing populations, as well as the date of the last record for each species, evidencing their dramatic reduction over the recent period.

Exploration for Passifloraceae was not possible in the protected areas of Colombia that are of essential importance for the conservation of the country's biodiversity, as the Colombian Ministry of the Environment (MMA) denied us permission to access. Another limiting factor of research for conservation purposes is the armed conflict prevailing in many parts of the country (Martin & Szuter 1999; Dévalos 2001).

Forests in the northern Andes are currently one of the major conservation priorities on a global scale due to their fragility, biological richness, high rates of endemism and multiple anthropogenic threats (Olson & Dinerstein 1998). As Passifloraceae display very high species richness, endemism and risk of extinction in this area; and given their multiple ecological interactions with many organisms, as well as their economic potential, this family should constitute both an important conservation target, as well as a good indicator of the success of the efforts made.

Conclusions

With 167 reported species, Colombia is the country with the highest Passifloraceae richness. This richness is concentrated in the Andean region, particularly in the departments of Antioquia, Valle del Cauca and Cundinamarca. Comparing data with other countries confirms that the northern Andes of Colombia and Ecuador constitute the center of diversity for the most important genus, *Passiflora*. The limited number of explorations in parts of the Andes, the Amazonian and the Orinoquean regions raises expectations that Colombia may harbor many, as yet, unknown species. Future studies should encompass new regions, including protected areas and areas of conflict. Indeed, more information about the species' diversity and its distribution is urgently required for the *in situ* conservation of, both, species and habitat. Both aspects may even be combined if the genus *Passiflora* can be used as an indicator of biodiversity in the Andean region, as was the objective of a project in the coffee growing area. Another important aspect is its direct valorization as a germplasm resource for crop diversification programs, implying the need for a better understanding of its morphological and genetic diversity.

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Appendix 1. Synonymy = valid name

Cieca auriculata M. Roemer, 1846 = *Passiflora auriculata* Kunth, 1817

Cieca coriacea (Juss) M. Roemer, 1846 = *Pasiflora coriacea* Juss., 1805

Cieca discolor M. Roemer, 1846 = *Passiflora misera* Kunth., 1817

Cieca pallida (L.) M. Roemer, 1846 = *Passiflora pallida* L., 1753

Decaloba alnifolia M. Roemer, 1846 = *Pasiflora alnifolia* Kunth, 1817

Decaloba biflora (Lam.) M. Roemer., 1846 = *Pasiflora biflora* Lam., 1789

Decaloba bogotensis (Benth.) M. Roemer, 1846 = *Passiflora bogotensis* Benth., 1845

Decaloba cuneata M. Roemer., 1846 = *Passiflora cuneata* Willd., 1809

Decaloba filipes M. Roemer, 1846 = *Pasiflora filipes* Benth, 1843

Decaloba holosericea M. Roemer, 1846 = *Passiflora holosericea* L., 1753

Decaloba jacquini M. Roemer, 1846 = *Passiflora pulchella* Kunth, 1817

Dilkea johannesii var. *parvifolia* Hoehne, 1915 = *Dilkea johannesii* Barb.Rodr., 1885

Dilkea acuminata Mast., 1871 = *Dilkea retusa* Mast., 1871

Dilkea magnifica Steyerm., 1968 = *Dilkea retusa* Mast., 1871

Dilkea wallisii Mast., 1872 = *Dilkea retusa* Mast., 1871

Disemma hahnii E. Fourn., 1869 = *Passiflora hahnii* Mast., 1872

Disemma hahnii Fourn., 1869 = *Passiflora hahnii* (Fourn.) Mast., 1872

Distephana cuneata M. Roemer, 1846 = *Passiflora bicuspidata* (H.Karst.) Mast., 1872

Distephana spinosa (Poeep. & Endl.) M. Roemer, 1835 = *Passiflora spinosa* (Poepp. & Ende.) Mast., 1871

Granadilla rubra Moench, 1802 = *Passiflora rubra* L., 1753

Grandilla vespertilio Moench, 1802 = *Passiflora vespertilio* L., 1753

Passiflora erubescens Triana & Planch., 1873 = *Passiflora erytrophylla* Mast., 1872

Passiflora velata Mast., 1872 = *Passiflora serrulata* Jacq., 1767

Passiflora williamsii Killip, 1922 = *Passiflora platyloba* var. *williamsii* (Killip) A.H. Gentry, 1976

Passiflora adenophylla Mast., 1872 = *Passiflora subpeltata* Ortega, 1798

Passiflora alba Link & Otto, 1798 = *Passiflora subpeltata* Ortega, 1798

Passiflora albicans L. Uribe, 1958 = *Passiflora uribei* L. K. Escobar, 1988

Passiflora angustifolia Swartz, 1788 = *Passiflora suberosa* L., 1753

Passiflora appendiculata G.F.W. Mey., 1818 = *Pasiflora auriculata* Kunth, 1817

Passiflora bauhinifolia Kunth, 1817 = *Passiflora alnifolia* Kunth, 1817

Passiflora bifurca Mast., 1873 = *Passiflora cuneata* Willd., 1809

Passiflora bilobata Vell., 1827 = *Passiflora rubra* L., 1735

Passiflora boyacana Killip, 1960 = *Passiflora crispolanata* L. Uribe, 1954

Passiflora capsularis var. *geminifolia* DC., 1828 = *Passiflora sexflora* Juss., 1805

Passiflora caucaense Holm-Niels., 1974 = *Passiflora emarginata* Humb. & Bonpl., 1813

Passiflora chilensis Miers, 1826 = *Passiflora pinnatistipula* Cav., 1799

Passiflora cisnana Harms, 1894 = *Passiflora rubra* L., 1753

Passiflora corumbaensis Barb., 1898 = *Passiflora cincinnata* Mast., 1868

Passiflora cualiflora Harms, 1906 = *Passiflora citrifolia* (Juss.) Mast., 1871

Passiflora difformis Kunth, 1817 = *Passiflora coriaceae* Juss., 1805

Passiflora digitata L., 1763 = *Passiflora serratodigitata* L., 1753

Passiflora elegans Triana & Planch., 1873 = *Passiflora quindiensis* Killip, 1938

Passiflora emiliae Sacco, 1966 = *Passiflora ambigua* Hemsl. *ex* Hook., 1902

Passiflora eminula Mast., 1883 = *Passiflora costata* Mast., 1872

Passiflora eriocaula Harms, 1922 = *Passiflora rugosa* (Mast.) Triana & Planch.var. *rugosa,*1873

Passiflora erosa Rusby, 1907 = *Passiflora morifolia* Mast., 1872

Passiflora erosa Rusby, 1906 = *Passiflora morifolia* Mast., 1872

Passiflora fulgens Wallis *ex* Morren, 1866 = *Passiflora coccinea* Aubl., 1775

Passiflora gigantifolia Harms, 1894 = *Passiflora macrophylla* Spruce *ex* Mast., 1883

Passiflora glauca Humb. & Bonpl., 1813 = *Passiflora arborea* Spreng., 1826

Passiflora goudotiana Triana & Planch., 1873 = *Passiflora cumbalensis* (H. Karst.) Harms var. *goudotiana* (Triana & Planch.) L. K. Escobar, 1987

Passiflora heydei Killip, 1922 = *Passiflora morifolia* Mast., 1872

Passiflora hydrophila Barb Rodr., 1891 = *Passiflora costata* Mast., 1872

Passiflora incana Seemann *ex* Mast., 1883 = *Passiflora seemanni* Griseb., 1858

Passiflora inundata Ducke, 1925 = *Passiflora costata* Mast., 1872

Passiflora laticualis Killip, 1924 = *Passiflora misera* Kunth., 1817

Passiflora longipes var. *retusa* Triana & Planch., 1873 = *Passiflora longipes* Juss., 1805

Passiflora lorifera Mast. & André, 1883 = *Passiflora macrophylla* Spruce *ex* Mast., 1883

Passiflora lunata J.E. Smith., 1790 = *Passiflora biflora* Lam., 1879

Passiflora macrocaropa Mast., 1869 = *Passiflora quadrangularis* l., 1759

Passiflora micrantha Killip, 1938 = *Passiflora erythrophylla* Mast., 1872

Passiflora miraflorensis Killip, 1924 = *Passiflora sexflora* Juss., 1805

Passiflora mollis var. *integrifolia* Planch. *ex* Mast., 1872 = *Passiflora cuspidifolia* Harms, 1893

Passiflora nympheoides Karst., 1859 = *Passiflora nitida* Kunth, 1817

Passiflora oblongifolia Pulle, 1906 = *Passiflora laurifolia* L., 1753

Passiflora ocanensis Planch. & Linden, 1873 = *Passiflora lindeniana* Planch. *ex* Triana & Planch., 1873

Passiflora ornata Kunth, 1817 = *Passiflora maliformis* L., 1753

Passiflora pala Planch. & Linden, 1873 = *Passiflora bogotensis* Benth., 1845

Passiflora paraguayensis Chad., 1899 = *Passiflora capsularis* L., 1753

Passiflora pennipes Sm., 1819 = *Passiflora pinnatistipula* Cav., 1799

Passiflora praeacuta Mast., 1887 = *Passiflora oerstedii* Mast., 1872

Passiflora pubera Planch. & Linden, 1873 = *Passiflora sphaerocarpa* Triana & Planch., 1873

Passiflora pulchella Kunth,1817 = *Passiflora bicornis* Mill., 1768

Passiflora quadriglandulosa var. *involucrata* (Mast.) Killip, 1938 = *Passiflora involucrata* (Mast.) A.H. Gentry, 1981

Passiflora reticulata Sauv., 1873 = *Passiflora holosericea* L.,1753

Passiflora salmonea Harms, 1894 = *Passiflora parritae* (Mast.) Bailey, 1916

Passiflora sanguinea J.E. Smithi, 1819 = *Passiflora vitifolia* Kunth, 1817

Passiflora schultzei Harms, 1929 = *Passiflora arborea* Spreng., 1826

Passiflora spherocarpa var. *pilosula* Mast., 1883 = *Passiflora pubera* Planch. & Linden, 1873

Passiflora stipulata Aubl., 1858 = *Passiflora subpeltata* Ortega, 1798

Passiflora suberosa var. *pallida* (L.) Mast. = *Passiflora pallida* L., 1753

Passiflora tomentosa Lam. var. *mollissima* Triana & Planch., 1873 = *Passiflora mollissima* (Kunth) L.H. Bailey, 1916

Passiflora trisecta Planch. & Linden *ex* Triana & Planch., 1873 = *Passiflora trianae* Killip, 1938

Passiflora Van-Volxemii Triana & Planch., 1893 = *Passiflora antioquienesis* Karst., 1859

Passiflora var. *cuellensis* Goudot *ex* Triana & Planch., 1873 = *Passiflora menispermifolia* Kunth, 1817

Passiflora vesicaria L., 1753 = *Passiflora foetida* L., 1753

Passiflora vitifolia var. *involucrata* Mast., 1872 = *Passiflora involucrata* (Mast.) A.H. Gentry, 1981

Passiflora weberiana André, 1885 = *Passiflora morifolia* Mast., 1872

Passiiflora acerifolia Schlecht. & Cham., 1830 = *Passiflora adenopoda* Moc. & Sessé *ex* DC., 1828

Rathea floribunda Karst., 1859 = *Passiflora andina* Killip, 1938

Tacsonia adulterina Juss., 1805 = *Passiflora adulterina* L. f., 1781

Tacsonia bicuspidata H. Karst., 1859 = *Passiflora bicuspidata* (H. Karst.) Mast., 1872

Tacsonia cumbalensis H. Karst., 1859 = *Passiflora cumbalensis* var. *cumbalensis* (H. Karst.) Harms, 1894

Tacsonia cuneata Benth, 1845 = *Passiflora bicuspidata* (H. Karst.) Mast.,1872

Tacsonia flexipes (Triana & Planch) Mast., 1883 = *Passiflora flexipes* Triana & Planch., 1873

Tacsonia glandulosa Juss., 1805 = *Passiflora glandulosa* Cav.,1790

Tacsonia infundibularis Mast., 1883 = *Passiflora bracteosa* Planch. & Linden, 1873

Tacsonia lanata Juss., 1811= *Passiflora lanata* (Juss.) Poir., 1811

Tacsonia mixta (L.f.) Juss., 1805 = *Passiflora mixta* L.f., 1781

Tacsonia mollissima Kunth var. *glabrescens* Mast.,1872 = *Passiflora mollissima* (Kunth) L.H. Bailey, 1916

Tacsonia mollissima Kunth, 1817 = *Passiflora mollissima* (Kunth) L.H. Bailey, 1916

Tacsonia parritae Mast., 1882 = *Passiflora parritae* (Mast.) L.H. Bailey, 1916

Tacsonia pinnatistipula var. *pennipes* (Sm.) DC., 1828 = *Passiflora pinnatistipula* Cav., 1799

Tacsonia pinnatistipula (Cav.) Juss., 1805 = *Passiflora pinnatistipula* Cav.,1799

Tacsonia quadriglandulosa (Rodschied) DC., 1828 = *Passiflora quadriglandulosa* Rodschied, 1796

Tacsonia rosea (H. Karst.) Sodiro, 1903 = *Passiflora* x *rosea (*H. Karst.) Killip, 1938

Tacsonia rugosa Mast., 1872 = *Passiflora rugosa* (Mast.) Triana & Planch, 1873 var. *rugosa*

Tacsonia spinescens Klotsch in Schomb., 1848 = *Passiflora securiclata* Mast., 1893

Tacsonia spinosa Poepp. & Endl., 1835 = *Passiflora spinosa* (Poepp. & Ende.) Mast., 1871

Tacsonia trinervia Juss., 1805 = *Passiflora trinervia* (Juss.) Poir., 1811

Tetrastylis lobata Killip, 1926 = *Passiflora lobata* (Killip) Hutch. *ex* J.M. MacDougal, 1986

Appendix 2. Total number of Passifloraceae present in Colombia.

Number of observations, Maximum distance (MaxD) and Circular area (CA) for each species. Endemic species are highlighted by an asterisk (*). RC: species rare for Colombia; Roc: species rare in other countries; Rne: rare narrow endemic, Ne: narrow endemic; Re: rare endemic; Ce: common endemic.

Species	Nb. observ.	MaxD (km)	CA (km2)	Rare species	Endemics and distribution
Ancistrothyrsus antioquiensis L.K. Escobar (ined.)*	2	41	11,762	RC	Rne (Antioquia)
Ancistrothyrsus tessmannii Harms	1	0	7,814	RC / Roc	
Dilkea johannesii Barb. Rodr.	1	0	7,814	RC / Roc	
Dilkea parviflora Killip	22	1,185	40,688		
Dilkea retusa Mast.	5	952	106,159	RC	
Passiflora adenopoda Moc. & Sessé *ex* DC.	51	383	82,65		
Passiflora adulterina L.f. *	43	234	39,072		Ce
Passiflora alnifolia Kunth	121	1,244	170,761		
Passiflora alata Curtis	1	0	7,814	RC	
Passiflora ambigua Hemsl. *ex* Hook.	48	929	137,261		
Passiflora andina Killip	1	0	7,814	RC /Roc	Colombia and Ecuador
Passiflora andreana Mast.	3	45	12,214	RC	
Passiflora antioquiensis H. Karst. *	55	667	99,064		Ce
Passiflora apoda Harms	43	678	83,615		
Passiflora arbelaezii L. Uribe	48	746	113,491		
Passiflora arborea Spreng.	67	1,204	144,115		
Passiflora auriculata Kunth	128	1,635	334,952		
Passiflora azeroana L. Uribe *	10	574	34,734		Ce
Passiflora bicornis Mill., 1768	11	675	52,098		
Passiflora bicuspidata (H. Karst.) Mast. *	16	438	61,674		Ce
Passiflora biflora Lam.	40	1,326	122,047		
Passiflora bogotensis Benth. *	56	1,057	89,25		Ce
Passiflora bracteosa Planch. & Linden	7	122	23,18	RC /Roc	Colombia and Venezuela

Species	Nb. observ.	MaxD (km)	CA (km2)	Rare species	Endemics and distribution
Passiflora bucaramangensis Killip *	8	70	15,032	RC	Ne (Santander)
Passiflora callistema L.K. Escobar *	1	0	7,814	RC	Rne (Bolivar)
Passiflora candollei Tr. & Planch.	4	854	26,294	RC	
Passiflora capsularis L.	64	1,437	159,962		
Passiflora chelidonea Mast.	18	1,024	94,209		
Passiflora chocoensis G. Gerlach & T. Ulmer *	1	0	7,814	RC	Rne (Choco)
Passiflora cincinnata Mast.	1	0	7,814	RC	
Passiflora citrifolia (Juss.) Mast.	3	68	14,049	RC	
Passiflora coccinea Aubl.	21	1,285	107,128		
Passiflora colombiana L.K. Escobar *	2	42	11,91	RC	Rne
Passiflora coriacea Juss.	59	741	136,372		
Passiflora costaricensis Killip	1	0	7,814	RC	
Passiflora cremastantha Harms *	1	0	7,814	RC	Rne (Cauca)
Passiflora crispolanata L.Uribe *	11	246	29,72		Ce
Passiflora cuatrecasasii Killip *	9	181	21,312		Ne
Passiflora cumbalensis (Karst.) Harms	156	1,196	199,941		
Passiflora cuneata Willd.	9	877	50,607		
Passiflora cuspidifolia Harms, 1893	33	812	86,64		
Passiflora danielii Killip *	5	180	20,59	RC	Rne (Antioquia)
Passiflora dawei Killip *	4	208	23,702	RC	Rne
Passiflora emarginata Humb. & Bonpl.*	46	654	78,393		Ce
Passiflora engleriana Harms *	2	110	8,902	RC	Rne (Antioquia)
Passiflora erytrophylla Mast. *	6	225	27,643		Ne
Passiflora escobariana J.M. MacDougal	2	3	8,136	RC	
Passiflora filipes Benth.	3	48	13,227	RC / Roc	México to Ecuador
Passiflora fimbriatistipula Harms *	18	198	33,664		Ne
Passiflora flexipes Triana & Planch. *	24	322	36,121		Ce

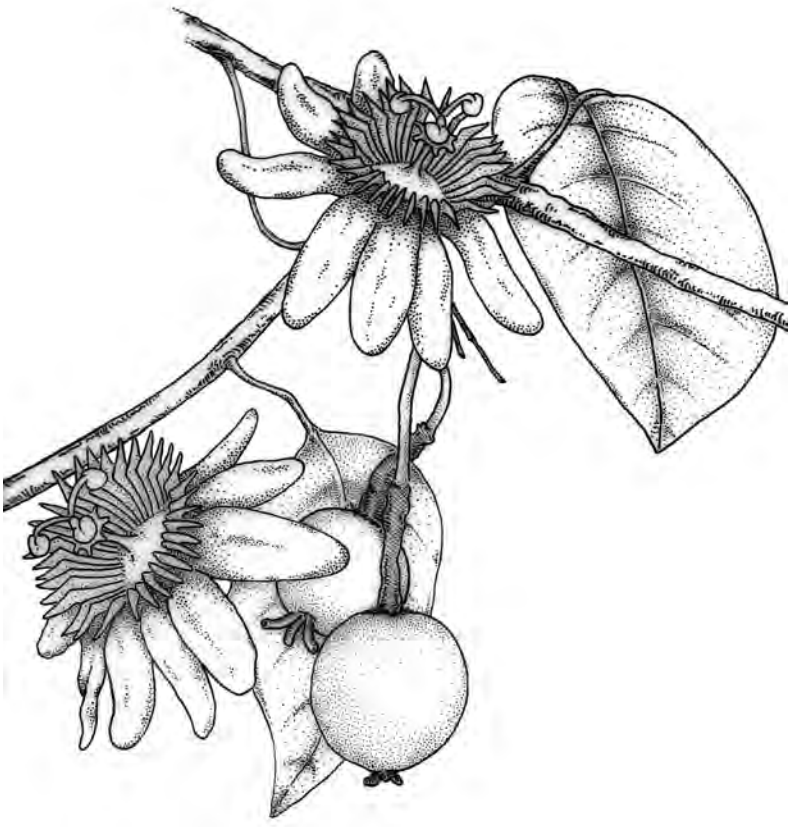
Species	Nb. observ.	MaxD (km)	CA (km2)	Rare species	Endemics and distribution
Passiflora foetida L.	143	1,83	420,44		
Passiflora formosa T. Ulmer *	1	0	7,814	RC	Rne (Boyacá)
Passiflora glandulosa Cav.	1	0	7,814	RC	
Passiflora gleasonii Killip	2	3	8,075	RC	
Passiflora gracillima Killip	29	684	74,546		
Passiflora grandis Killip *	2	14	9,161	RC	Rne
Passiflora gritensis H. Karst.	8	346	26,115		
Passiflora guatemalensis S. Watson	11	971	59,505		
Passiflora guazumaefolia Juss.	8	349	41,192		
Passiflora hahnii (Fourn.) Mast.	1	0	7,814	RC	
Passiflora haughtii Killip *	1	0	7,814	RC	Rne (Santander)
Passiflora hirtiflora Jorgensen & Holm-Nielsen	1	0	7,814	RC	
Passiflora holosericea L.	7	238	25,632		
Passiflora holtii Killip	1	0	7,814	RC / Roc	
Passiflora hyacinthiflora Planch. & Linden *	3	305	17,746	RC	Re
Passiflora involucrata (Mast) A.H. Gentry	8	1,197	48,827		
Passiflora jardinensis L.K. Escobar *	8	35	11,335	RC	Ne (Antioquia)
Passiflora kalbreyeri Mast. *	19	426	41,237		Ce
Passiflora killipiana Cuatrecasas	1	0	7,814	RC / Roc	Colombia to Peru
Passiflora lanata (Juss.) Poir. *	32	284	45,476		Ce
Passiflora laurifolia L.	11	1,35	84,672		
Passiflora lehmanni Mast. *	17	805	91,156		Ce
Passiflora leptomischa Harms *	21	449	46,331		Ce
Passiflora ligularis Juss.	101	914	170,123		
Passiflora lindeniana Planch. *ex* Triana & Planch.	2	395	15,628	RC / Roc	Colombia and Venezuela
Passiflora linearistipula L.K. Escobar *	4	8	8,695	RC	Rne (Caldas)

Species	Nb. observ.	MaxD (km)	CA (km2)	Rare species	Endemics and distribution
Passiflora lobata (Killip) Hutch. *ex* J.M. MacDougal	3	194	23,115	RC	
Passiflora longipes Juss. *	21	334	45,557		Ce
Passiflora lyra Planch. & Lind. *ex* Killip	4	69	14,716	RC / Roc	
Passiflora macrophylla Spruce *ex* Mast.	20	716	90,432		
Passiflora magdalenae Triana & Planch. *	21	129	31,127		Ne
Passiflora magnifica L.K. Escobar*	6	33	12,215	RC	Ne (Antioquia)
Passiflora maliformis L.	122	1,208	212,27		
Passiflora manicata (Juss.) Pers.	62	889	114,036		
Passiflora mariquitensis Mutis *ex* Uribe *	3	10	8,436	RC	Rne (Tolima)
Passiflora megacoriacea Porter-Utley (ined.)	1	0	7,814	RC	
Passiflora menispermacea Triana & Planch. *	2	18	9,61	RC	Rne (Tolima)
Passiflora menispermifolia Kunth	43	1,41	167,659		
Passiflora micropetala Mast.	11	1,318	68,015		
Passiflora misera Kunth	54	1,148	145,398		
Passiflora mixta L. f.	162	966	191,787		
Passiflora mollis Kunth	17	554	208,941		
Passiflora monadelpha Jorgensen & Holm-Nielsen	7	67	33,665	RC / Roc	Colombia and Ecuador
Passiflora morifolia Mast.	1	0	7,814	RC	
Passiflora multiformis Jacq.	4	147	17,652	RC	
Passiflora munchiquensis Hernandez (ined.)*	4	200	22,441	RC	Rne
Passiflora mutisii Killip *	1	0	7,814	RC	Rne (Tolima)
Passiflora nitida Kunth	72	1,452	279,511		
Passiflora occidentalis Hernandez (ined.)*	10	474	42,35		Ce
Passiflora oerstedii Mast.	41	728	148,975		
Passiflora pacifica L.K. Escobar *	9	510	39,585		Ce
Passiflora palenquensis Holm-Niels. & Lawesson	20	1,181	100,769		
Passiflora pamplonensis Planch.& Linden *ex* Tr. & Planch. *	1	0	7,814	RC	Rne (N. de Santander)

Species	Nb. observ.	MaxD (km)	CA (km2)	Rare species	Endemics and distribution
Passiflora pallida L.	6	898	50,078		
Passiflora panamensis Killip	15	295	41,614		
Passiflora parritae (Mast.) L.H. Bailey *	14	100	20,357	RC	Ne
Passiflora pennellii Killip *	6	313	24,413		Ce
Passiflora phaeocaula Killip	5	498	28,305	RC / Roc	
Passiflora picturata Ker	1	0	7,814	RC	
Passiflora pilosissima Killip *	2	270	15,628		Re
Passiflora pinnatistipula Cav.	21	750	57,114		
Passiflora pittieri Mast.	1	0	12,661	RC	
Passiflora platyloba Killip	4	201	16,471	RC	
Passiflora popayanensis Killip *	6	64	15,078	RC	Ne (Cauca)
Passiflora popenovii Killip	17	636	31,075		
Passiflora punctata L.	8	592	40,022		
Passiflora purdiei Killip *	1	0	7,814	RC	Rne
Passiflora putumayensis Killip	1	0	7,814	RC / Roc	
Passiflora pyrrhantha Harms	1	0	7,814	RC / Roc	
Passiflora quadrangularis L.	112	1,676	314,317		
Passiflora quadriglandulosa Rodschied	4	414	21,256	RC	
Passiflora quindiensis Killip *	8	225	24,711		Ne (Tolima)
Passiflora resticulata Mast. & André	4	414	18,938		
Passiflora rigidifolia Killip *	1	0	7,814	RC	Rne (Antioquia)
Passiflora riparia Mart. *ex* Mast.	3	716	23,442	RC	
Passiflora rubra L.	90	1,351	117,934		
Passiflora rugosa (Mast.) Triana & Planch	12	421	35,549		
Passiflora schlimiana Triana & Planch. *	7	181	27,852	Roc	Ne
Passiflora securiclata Mast.	4	849	30,708	RC / Roc	Colombia and Venezuela
Passiflora seemannii Griseb.	40	1,341	129,777		

Species	Nb. observ.	MaxD (km)	CA (km2)	Rare species	Endemics and distribution
Passiflora semiciliosa Planch & Linden *	4	578	26,175	RC	Re
Passiflora serratodigitata L.	18	1,566	67,105		
Passiflora serrulata Jacq.	10	331	29,354		
Passiflora sexflora Juss.	14	353	43,143		
Passiflora sierrae L.K. Escobar *	2	46	12,194	RC	Rne (Magdalena)
Passiflora skiantha Huber	1	0	7,814	RC / Roc	Colombia and Peru
Passiflora smithii Killip	28	827	72,555		
Passiflora sodiroi Harms	1	0	7,814	RC / Roc	Colombia and Ecuador
Passiflora sphaerocarpa Triana & Planch. *	35	878	96,244		Ce
Passiflora spicata Mast.	1	0	7,814	RC / Roc	Colombia and Brazil
Passiflora spinosa (Poepp. & Endl.) Mast.	20	1,521	118,197		
Passiflora suberosa L.	66	1,497	158,86		
Passiflora subpeltata Ortega	35	1,344	89,527		
Passiflora tarminiana Coppens & Barney	28	832	103,373		
Passiflora tenerifensis L.K. Escobar *	4	71	15,195	RC	Rne (Valle del Cauca)
Passiflora tica Gómez-Laur. & L.D. Gómez	5	319	23,119	RC	
Passiflora tiliifolia L.	48	1,01	97,205		
Passiflora tolimana Harms *	12	426	33,711		Ce
Passiflora trianae Killip *	2	39	11,594	RC	Rne
Passiflora tribolophylla Harms *	1	0	7,814	RC	Rne
Passiflora tricuspis Mast.	1	0	7,814	RC	
Passiflora trinervia (Juss.) Poir.*	27	220	36,932		Ne
Passiflora tripartita (Juss.) Poir.	56	1,21	145,398		
Passiflora trisulca Mast. *	8	441	25,258		Ce
Passiflora truxillensis Planch. & Linden *ex* Triana & Planch.	1	0	15,628	RC / Roc	Colombia and Venezuela
Passiflora tryphostemmatoides Harms	25	557	77,831		
Passiflora tuberosa Jacq.	1	0	7,814	RC	

Species	Nb. observ.	MaxD (km)	CA (km2)	Rare species	Endemics and distribution
Passiflora uribei L.K. Escobar *	3	54	12,96	RC	Rne
Passiflora ursina Killip & Cuatrec.	2	7	8,503	RC / Roc	Colombia and Ecuador
Passiflora variolata Poepp. & Endl.	6	412	27,059		
Passiflora venosa Rusby	1	0	7,814	RC / Roc	
Passiflora vespertilio L.	3	292	20,887	RC	
Passiflora vestita Killip	1	0	7,814	RC / Roc	Colombia and Ecuador
Passiflora vitifolia Kunth	359	1,729	456,229		
Passiflora x *rosea* (H. Karst.) Killip	7	161	20,988		



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Guía para autores

(ver también: http://www.humboldt.org.co/biota)

Preparación del manuscrito

Los autores que deseen hacer sus contribuciones a *Biota Colombiana* pueden someter sus documentos a través de correo electrónico, o enviando por correo una copia magnética del manuscrito. Para la elaboración de los textos del manuscrito se puede usar un procesador de palabra cualquiera (preferiblemente Word); los listados (a manera de tabla) deben ser elaborados en una hoja de cálculo (preferiblemente Excel). Para someter un manuscrito es necesario anexar una carta de intención en la que se indique claramente:

1. Nombre(s) completo(s) del(os) autor(es), y direcciones para envío de correspondencia (es indispensable suministrar una dirección de correo electrónico para comunicación directa)
2. Titulo completo del Manuscrito
3. Nombres, tamaños y tipos de archivos suministrados
4. Lista de mínimo 2 o 3 revisores[1] que puedan evaluar el manuscrito, con sus respectivas direcciones.

Estructura de los listados:

Biota Colombiana es una publicación bilingüe, con sus contenidos en español e inglés. Los autores deben presentar sus manuscritos en los dos idiomas según sea el caso. *Biota Colombiana* está organizada en seis secciones: 1) Listados taxonómicos; 2) Análisis cladísticos; 3) Estudios biogeográficos; 4) Claves de identificación; 5) Noticias y comentarios de colecciones e instituciones y 6) Reseñas y Novedades bibliográficas. (Para mayores detalles por favor visitar la página web *http://www.humboldt.org.co/biota*).

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Los manuscritos sometidos serán revisados por pares científicos calificados cuya respuesta final de evaluación puede ser: a) Aceptado (en cuyo caso se asume que no existe ningún cambio, omisión u adición al artículo, y que se recomienda su publicación en la forma actualmente presentada); b) Aceptación Condicional (se acepta y recomienda el artículo para su publicación solo sí se realizan los cambios indicados por el evaluador); y c) Rechazo (en el cual el evaluador considera que los contenidos y/o forma de presentación del artículo no se ajustan al esquema de publicación de *Biota Colombiana*).

LISTA DE INSTRUCCIONES

- Para la presentación del manuscrito configure las páginas de los textos en tamaño carta, márgenes de 2,5cm en todos los lados, doble espacio y alineación hacia la izquierda (incluyendo título y bibliografía).
- Las tablas donde se presentan los listados taxonómicos, no necesitan de una configuración de página específica. Simplemente se requiere que todas las columnas estén dentro de una misma página (no se aceptan columnas en páginas separadas). Evite el uso de bordes de cualquier tipo en la edición de las tablas.
- ?En la construcción de las tablas use encabezados para las columnas UNICAMENTE en la primera hoja. Continúe siempre las tablas en hojas nuevas con registros nuevos; NUNCA corte la información de un registro para continuarlo en una nueva página.
- Las figuras deben estar a una resolución de 300 dpi y en formato .jpg, .eps ó .tiff
- Utilice como fuente Times New Roman o Arial, tamaño 12, en todos los textos. Para tablas cambie el tamaño de la fuente a 10. Géneros y especies en itálica. Evite el uso de negritas o subrayados;.
- -Todas las páginas de texto (a excepción de la primera correspondiente al título), deben numerarse en la parte inferior - derecha de la hoja.
- Cada referencia de la bibliografía debe estar citada en el texto, y viceversa. Para citar un autor use: Gómez (1995) o (Gómez 1995); para dos autores: Otero & Blum (1970) o (Otero & Blum 1970); para más de dos autores: Silva *et al*. (1998) o (Silva *et al*. 1998). Para citar varias referencias al final de una frase ordénelas cronológicamente, de la más antigua a la más reciente, y luego ordénelas alfabéticamente: (Otero & Blum 1970; Gómez 1995; MacArthur 1995; Silva *et al*. 1998); utilice este mismo esquema para citar varias veces un mismo autor: Santos (1995, 1997), o (Santos 1995, 1997), o en medio de varias citas: (Otero & Blum 1970; Santos 1995, 1997; Silva *et al*. 1998).
- En la literatura citada escriba las referencias completas, de acuerdo con el siguiente patrón:
  - **Revistas:** Agosti D., C. R. F. Brandao, S. Diniz. (1999). The New World species of the subfamily Leptanilloidinae (Hymenoptera: Formicidae). *Systematic Entomology* 24:14-20
  - **Libros:**Watkins W. F. Jr. (1976). The identification and distribution of New World Army Ants. Waco, Texas, 102pp.
  - **Capítulos**:Fernández F., E. E. Palacio, W. P. MacKay (1996). Introducción al estudio de las hormigas (Hymenoptera: Formicidae) de Colombia pp.349-412 En: G. D. Amat, G. Andrade, F. Fernández (eds.) Insectos de Colombia, Estudios Escogidos Academia Colombiana de Ciencias Exactas, Físicas y Naturales & Centro Editorial Javeriano, Bogotá D.C.
- Utilice puntos seguidos para separar autores de año, año de título, etc. En caso de varios autores sepárelos por medio de comas; no utilice &, y, o and para referirse al último autor. Los volúmenes, números y páginas deben presentarse de manera continua, sin espacios entre sí. Para el caso de artículos de revistas, escriba el nombre completo de la revista, no use abreviaturas. No use sangrías ni subrayados en la presentación de la bibliografía.
- Para referirse a números dentro del texto, escriba en palabras únicamente los números del uno al diez (p.e., cinco especies) a menos que esté combinado con otros números o se trate de medidas (p.e., 3 géneros y 7 especies; 8 km2). Emplee comas para separar miles (a excepción de 1000), y comas para decimales. Para porcentajes utilice el símbolo % seguido del valor, sin espacios.
- Dentro del texto puede referirse a comunicaciones y/o observaciones personales, de la siguiente forma: E. Palacio (com. pers.); (E. Palacio, com. pers.); C. Sarmiento (obs. pers.); (C. Sarmiento, obs. pers.).
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- Si para la columna de Distribución en listados nacionales utiliza un referente biogeográfico distinto a región, debe suministrar de forma separada una clave de las abreviaturas empleadas. Si el esquema biogeográfico utilizado por usted ya ha sido presentado en artículos de números anteriores de la revista, se recomienda usar la misma clave de abreviaturas allí expuesta.
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- No se olvide de leer la presente guía en su totalidad antes de someter un manuscrito para evaluación. Cualquier duda o inquietud consúltela inmediatamente al editor en jefe de *Biota Colombiana*.

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Guidelines for authors

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Authors interested in contributing to *Biota Colombiana* may submit manuscripts by email, or by sending their file on a diskette by regular mail. Any word-processing program may be used for text (Word is recommended). We prefer for taxonomic lists and any other type of table to be sent in spread format (Excel is recommended). Lists for taxonomic groups inferior to genera, such as subgenera or species groups, will not be accepted.
Submitted manuscripts must be accompanied by a cover letter which clearly indicates:

1. *Full names, mailing addresses and e-mail addresses of all authors. (Please note that email addresses are essential).*
2. *The complete title of the article.*
3. *Names, sizes, and types of files submitted.*
4. *A list of the names and addresses of at least three (3) reviewers[1] who are qualified to evaluate the manuscript.*

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Biota Colombiana *is a completely bilingual publication, with all contents in both Spanish and English. Authors may present manuscripts in either language, or in both.* Biota Colombiana *is divided into six sections: 1) Taxonomic lists; 2) Cladistic analyses; 3) Biogeographic studies; 4) Identification keys 5) News and comments from Institutions 6) Reviews and bibliographic novelties. (For further information, see* http://www.humboldt.org.co/biota*).*

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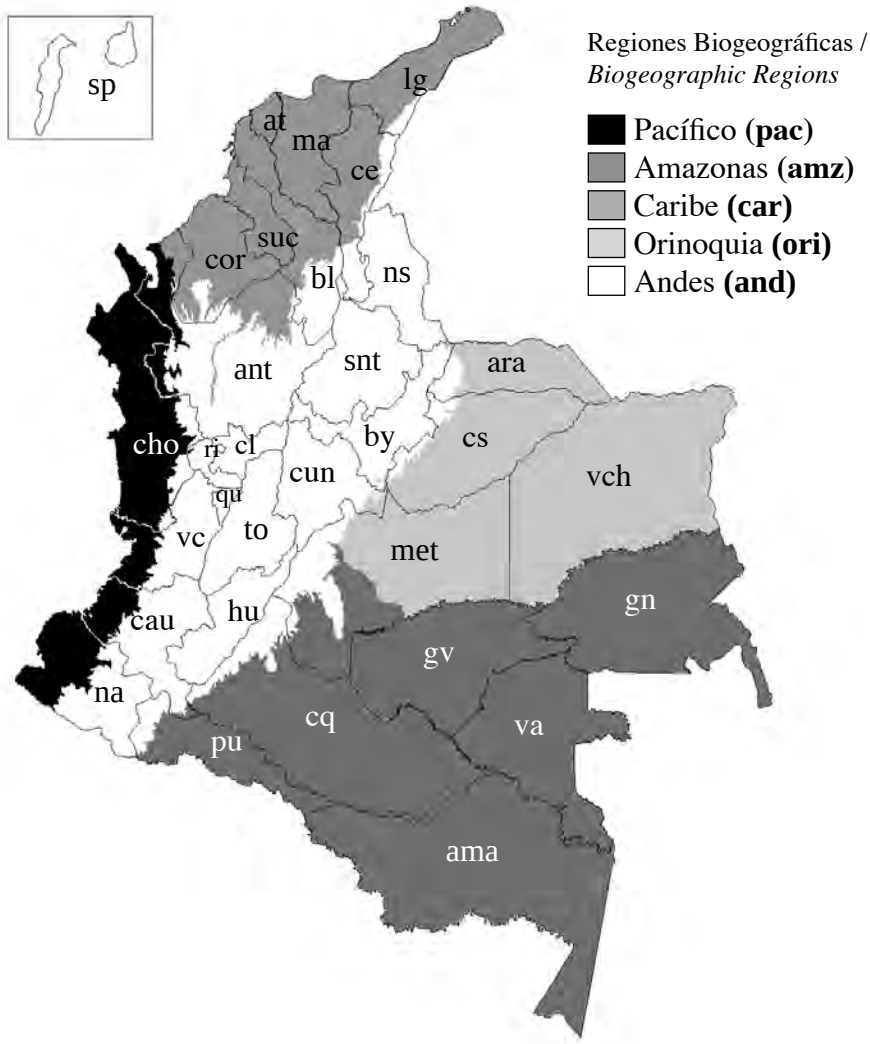
The evaluation could result in any of the following: a) Accepted (In this case we assume that no change, omission or addition to the article is required and it will be published as presented.); b) Conditional acceptance (The article is accepted and recommended to be published but it needs to be corrected as indicated by the evaluator); and c) Rejected (in this case the evaluator considers that the article presentation, contents and/or form are not compatible with the usual publication scheme of Biota Colombiana*).*

INSTRUCTIONS

- *The manuscript should be configured for letter size paper, with 2.5cm margins on all side. It should be single-spaced and left-aligned (including title and bibliography).*
- *The tables in which the lists are presented do not require any specific page configuration. All the columns must fit across a single page (columns on separate pages are not acceptable). Avoid the use of borders of any type in editing the tables.*
- *In setting up the tables, use column headings ONLY for the first page. Always start additional pages with a new record; NEVER cut the information of one record so that it continues on a subsequent page.*
- *Figures must be sent at 300 dpi and in .jpeg, .eps or .tiff format.*
- *Use Times New Roman or Arial font, size 12, for all texts. Use size 10 text in tables. Avoid the use of* ***bold*** *or underlining (italics are recommended where considered necessary for emphasis or clarity).*
- *All pages of the text (with the exception of the title page) should be numbered. Page numbers should be located in the lower right corner of the page.*
- *Each reference in the bibliography should be cited in the text, and vice versa. Only cite published material or that which is in press. To cite a single author use the format: Gómez (1995) or (Gómez 1995); to cite two authors: Otero & Blum (1970) or (Otero & Blum 1970); for more than two authors: Silva et al. (1998) or (Silva et al. 1998). To cite various references at the end of a sentence, order them chronologically, from oldest to most recent, and then alphabetically: (Otero & Blum 1970; Gómez 1995; MacArthur 1995; Silva et al. 1998). Use the same format for citing the same author more than once: Santos (1995, 1997), or (Santos 1995, 1997), or among several citations: (Otero & Blum 1970; Santos 1995, 1997; Silva et al. 1998).*
- *In the bibliography, write the complete reference, according to the following pattern:*
  - ***Journals:*** *Agosti D., C. R. F. Brandao, S. Diniz 1999 The New World species of the subfamily Leptanilloidinae (Hymenoptera: Formicidae) Systematic Entomology 24:14-20*
  - ***Books:*** *Watkins W. F. Jr. 1976 The identification and distribution of New World Army Ants Waco, Texas, 102pp.*
  - ***Chapters****: Fernández F., E. E. Palacio, W. P. MacKay 1996 Introducción al estudio de las hormigas (Hymenoptera: Formicidae) de Colombia pp.349-412 In: G. D. Amat, G. Andrade, F. Fernández (eds.) Insectos de Colombia, Estudios Escogidos Academia Colombiana de Ciencias Exactas, Físicas y Naturales & Centro Editorial Javeriano, Bogotá D.C.*
- *Use periods to separate author from year, year from title, etc. In the case of several authors, separate them by commas; do not use &, y, or and before the last author. The volume, issue, and page numbers should be presented in continuous format, without spacing. Check all citations for names, accent marks, and spelling. In the case of journal articles, write the full name of the journal, without abbreviations. Do not use hanging indents or underlining in the bibliography.*
- *To refer to numbers within the text, write only the numbers from one to ten in words (e.g., five species), unless combining with other numbers or measures (e.g., 3 genera and 7 species; 8 km²). Use commas to separate thousands (with the exception of 1000), and commas for decimal points. For percentages, use the symbol % followed by the value, without spaces.*
- *Within the text, refer to personal communication or observations in the following way: E. Palacio (pers. comm.); (E. Palacio, pers. comm.); C. Sarmiento (pers. obs.); (C. Sarmiento, pers. obs.).*
- *In Neotropical or national lists, use the standardized abbreviations at the end of this issue. If possible, use different columns for geopolitical and biogeographical subdivisions. When using several abbreviations for the same record, order them alphabetically and separate them by spaces. DO NOT USE COMMAS (e.g., am cq gn vu).*
- *If, in the Distribution column of national lists, you use a different biogeographical referent from 'region'; you must provide an alternative abbreviations key. If the biogeographical system you use has been published previously in earlier issues of the journal, it is recommended that you use the same key for the abbreviations.*
- *Read the complete guidelines before submitting a manuscript for evaluation. If you have any questions, do not hesitate to consult the editor of* Biota Colombiana.

[1] *The editor and members of the editorial committee reserve the right to select the reviewers for each manuscript and to choose anonymous reviewers different from those initially suggested by the author(s).*

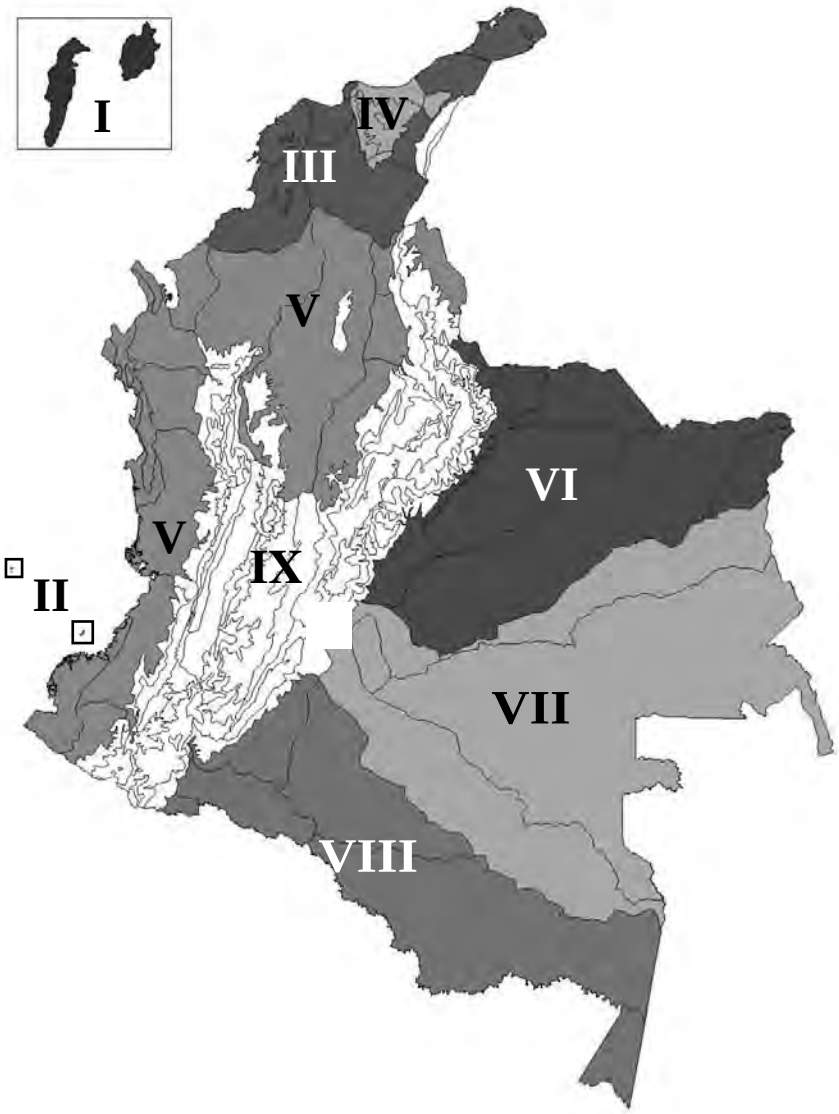
Departamentos y Regiones Biogeográficas Continentales de Colombia
Geopolitical Distribution and Continental Biogeographic Regions of Colombia



Departamentos / *Departments*

Amazonas	ama	**Huila**	hu
Antioquia	ant	**La Guajira**	lg
Arauca	ara	**Magdalena**	ma
Atlántico	at	**Meta**	met
Bolívar	bl	**Nariño**	na
Boyacá	by	**Norte de Santander**	ns
Cauca	cau	**Putumayo**	pu
Cesar	ce	**Quindío**	qu
Caldas	cl	**Risaralda**	ri
Córdoba	cor	**Santander**	snt
Caquetá	cq	**San Andrés y Providencia**	sp
Casanare	cs	**Sucre**	suc
Cundinamarca	cun	**Tolima**	to
Chocó	cho	**Vaupés**	va
Guainía	gn	**Valle del Cauca**	vc
Guaviare	gv	**Vichada**	vch

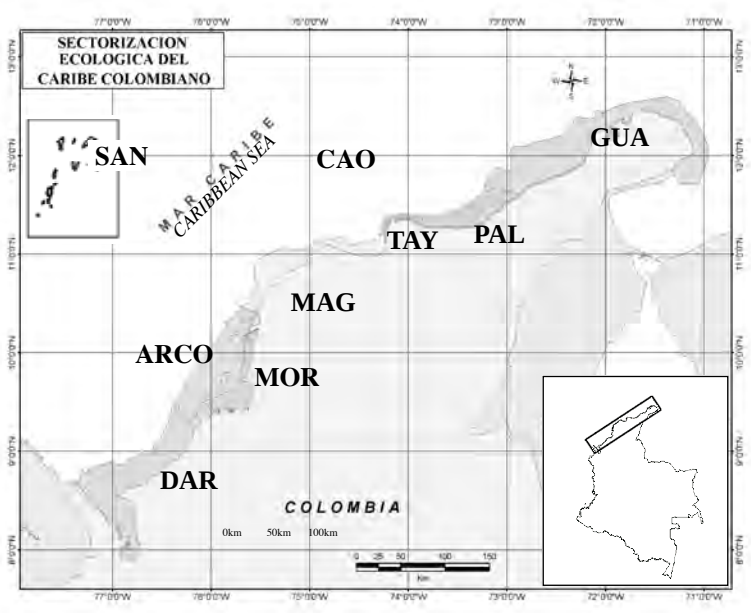
Unidades Biogeográficas de Colombia / *Biogeographic units of Colombia*



Unidades Biogeográficas / *Biogeographic Units*	
Territorios Insulares Oceánicos Caribeños / *Caribbean Oceanic Insular Territories*	**I**
Territorios Insulares Oceánicos del Pacífico / *Pacific Oceanic Insular Territories*	**II**
Cinturón Arido Pericaribeño / *Arid Peri-Caribbean Belt*	**III**
Macizo de la Sierra Nevada de Santa Marta / *Massif of the Sierra Nevada de Santa Marta*	**IV**
Provincia del Chocó-Magdalena / *Choco-Magdalena Province*	**V**
Provincia de la Orinoquia / *Orinoquia Province*	**VI**
Provincia de la Guyana / *Guyana Province*	**VII**
Provincia de la Amazonia / *Amazonian Province*	**VIII**
Provincia Norandina / *North-Andean Province*	**IX**

Tomado de: Hernández J., A. Hurtado, R. Ortiz, T. Walschburger 1991 Unidades Biogeográficas de Colombia En: Hernández J., R. Ortiz, T. Walshburger, A. Hurtado (Eds.) Estado de la Biodiversidad en Colombia Informe Final Santafé de Bogotá, Instituto Colombiano para el Desarrollo de la Ciencia y la Tecnología "Francisco José de Caldas" – Colciencias

Paisaje Natural Marino del Atlántico y Pacífico / *Natural Marine Landscape of the Atlantic and Pacific*

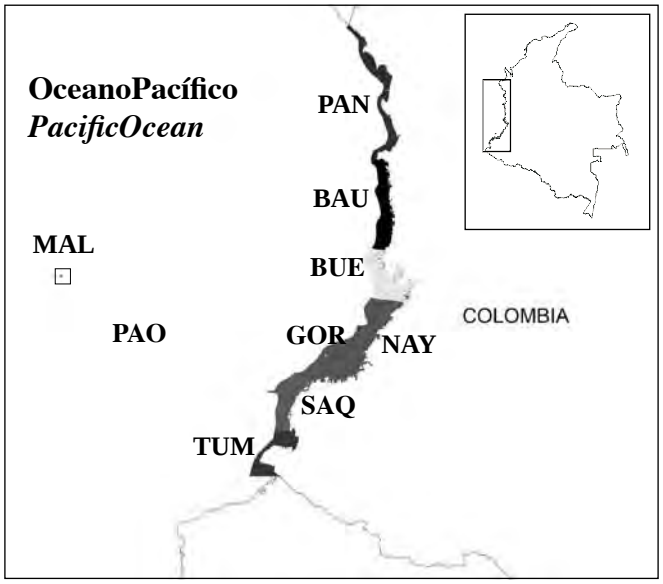


Paisaje Natural Marino - Atlántico
Natural Marine Landscape - Atlantic

Archipiélagos Coralinos / *Reef Archipielago*	ARCO
Caribe Oceánico / *Oceanic Carib*	CAO
Darién / *Darién*	DAR
Guajira / *Guajira*	GUA
Magdalena / *Magdalena*	MAG
Morrosquillo / *Morrosquillo*	MOR
Palomino / *Palomino*	PAL
San Andrés y Providencia / *San Andres and Providencia*	SAN
Tayrona / *Tayrona*	TAY

Paisaje Natural Marino - Pacífico
Natural Marine Landscape - Pacific

Baudó / *Baudo*	BAU
Buenaventura / *Buenaventura*	BUE
Gorgona / *Gorgona*	GOR
Malpelo / *Malpelo*	MAL
Naya / *Naya*	NAY
Pacífico Norte / *North Pacific*	PAN
Pacífico Oceánico / *Oceanic Pacific*	PAO
Sanquianga / *Sanquianga*	SAQ
Tumaco / *Tumaco*	TUM



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Abreviaturas de Países / *Countries Abbreviations*

Países / *Countries*

Antillas Mayores / *Greater Antilles*	**am**	Guyana Francesa / *French Guiana*	**gf**
Antillas Menores / *Lesser Antillas*	**an**	Guyana / *Guyana*	**gi**
Argentina / *Argentina*	**ar**	Guatemala / *Guatemala*	**gu**
Bahamas / *Bahamas*	**bh**	Honduras / *Honduras*	**ho**
Belice / *Belize*	**be**	Jamaica / *Jamaica*	**ja**
Bolivia / *Bolivia*	**bo**	México / *Mexico*	**me**
Brasil / *Brazil*	**br**	Nicaragua / *Nicaragua*	**ni**
Colombia / *Colombia*	**co**	Perú / *Peru*	**pe**
Costa Rica / *Costa Rica*	**cr**	Panamá / *Panama*	**pn**
Cuba / *Cuba*	**cu**	Paraguay / *Paraguay*	**pr**
Chile / *Chile*	**ch**	Surinam / *Suriname*	**su**
Ecuador / *Ecuador*	**ec**	Trinidad y Tobago / *Trinidad and Tobago*	**tt**
El Salvador / *El Salvador*	**es**	Uruguay / *Uruguay*	**ur**
Estados Unidos / *United States*	**eu**	Venezuela / *Venezuela*	**vn**

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