TAXONOMIC NOVELTIES IN *AIPHANES* (PALMAE) FROM COLOMBIA AND VENEZUELA

Novedades taxonómicas en *Aiphanes* (Palmae) de Colombia y Venezuela

Rodrigo Bernal
Instituto de Ciencias Naturales, Facultad de Ciencias, Universidad Nacional de Colombia, Apartado 7495, Bogotá D. C., Colombia. rgbernalg@unal.edu.co

Finn Borchsenius
Department of Biological Sciences, Aarhus University, Ny Munkegade building 1540, 8000 Aarhus C, Denmark.

ABSTRACT
Two new species of *Aiphanes* from Colombia, *Aiphanes buenaventurae* and *Aiphanes multiplex*, are described and illustrated. Two other species, *Aiphanes killipii* and *Aiphanes concinna,* previously included in synonymy under *Aiphanes horrida*, and *Aiphanes lindeniana*, respectively, are restored. *Aiphanes stergiosii* described from Venezuela is included in synonymy under *Aiphanes lindeniana*. An epitype is designated for *Aiphanes simplex*.

Key words. Arecaceae, *Aiphanes*, Colombia, Venezuela.

RESUMEN
Se describen e ilustran dos especies nuevas de *Aiphanes* de Colombia, *Aiphanes buenaventurae* y *Aiphanes multiplex*. Se restablecen además otras dos especies, *Aiphanes killipii* y *Aiphanes concinna*, previamente incluidas en sinonimia de *Aiphanes horrida* y *Aiphanes lindeniana*, respectivamente. *Aiphanes stergiosii* descrita de Venezuela, se incluye en la sinonimia de *Aiphanes lindeniana*. Se designa un epitipo para *Aiphanes simplex*.

Palabras clave. Arecaceae, *Aiphanes*, Colombia, Venezuela.

INTRODUCTION

After the publication of our monograph of the palm genus *Aiphanes* (Borchsenius & Bernal 1996), several changes in our understanding of the group have taken place, which make it necessary to re-evaluate the circumscription of some of the species recognized at that time. The discovery of several new species (Bernal 2001, Galeano & Bernal 2002, Cerón & Bernal 2004) has revealed that narrow endemism in the genus is more common than previously appreciated. On the other hand, new collections and the study of older ones not previously available to us have emphasized the need for a general update of the taxonomy of the genus. In the following we describe two new species and reassess the taxonomic status and delimitation of three others. Finally, an epitype is designated for *Aiphanes simplex* Burret.

***Aiphanes buenaventurae* R. Bernal & Borchs. sp. nov.** Fig. 1a-b

Type. COLOMBIA. Valle del Cauca: Buenaventura, 6 May 1926 (fl), *O. F. Cook 86* (holotype, US).

Aiphanes erinaceae foliis pinnis 13 in eodem plano fere regulariter dispositae, anguste cuneatis vel linearibus, medialis 42-52 cm longis (vs. 14-32 cm), atque inflorescentia ramis paucis, floribus femineis crebre dispositis differt.

Stem solitary or more often in clusters of 3-4, to 4 m tall, with adventitious roots up to 1 m high on the stem. Leaves 5-8, spreading; sheath ca. 22 cm long, with a thin indumentum of brown scales and with brown and yellowish bicolor spines to 3 cm long; petiole ca. 25 cm long, with scales like the sheath, with only a few scattered bicolor spines to 5.5 cm; rachis 78 cm long, adaxially ridged, abaxially with a scaly indumentum like that of the sheath, covered on both sides with a dense indumentum of brown spinules ca. 0.5 mm long, armed only toward the base with a few bicolor spines to 2 cm; pinnae 8-13 on each side, subregularly arranged in one plane, except for a basal group of five rather closely arranged pinnae, middle pinnae separated 7-11 cm, plicate, narrowly cuneate to almost linear, 4-13 times as long as wide, oblique to incised-premorse at apex, often with a 1-3 cm long finger-like projection on the distal margin, adaxially glabrous, abaxially sparsely and minutely pilose, and with a narrow marginal strip of brown scales, mostly along the distal margin, without spinules or spines; basal pinnae 12-18 x 0.5-4 cm; middle pinnae 42-52 x 4 cm; apical pinnae 5-7 ribbed, 45-47 cm long, 9-11 cm wide, occupying 15.4 cm along rachis. Inflorescences 90-123 cm long, interfoliar or infrafoliar when old; prophyll 35 cm long, 1.5 cm wide; peduncular bract (only a fragment seen) apparently thin and fibrous; peduncle 68-90 cm long, 5-6 mm wide at apex, compressed, covered with brown scales and minute spinules, unarmed or with a few scattered, brown or yellow spines to 1 cm long; rachis 21-24 cm long, with minute brown spinules; rachillae 8-12, evenly spaced 3-4 cm apart along the rachis, covered with

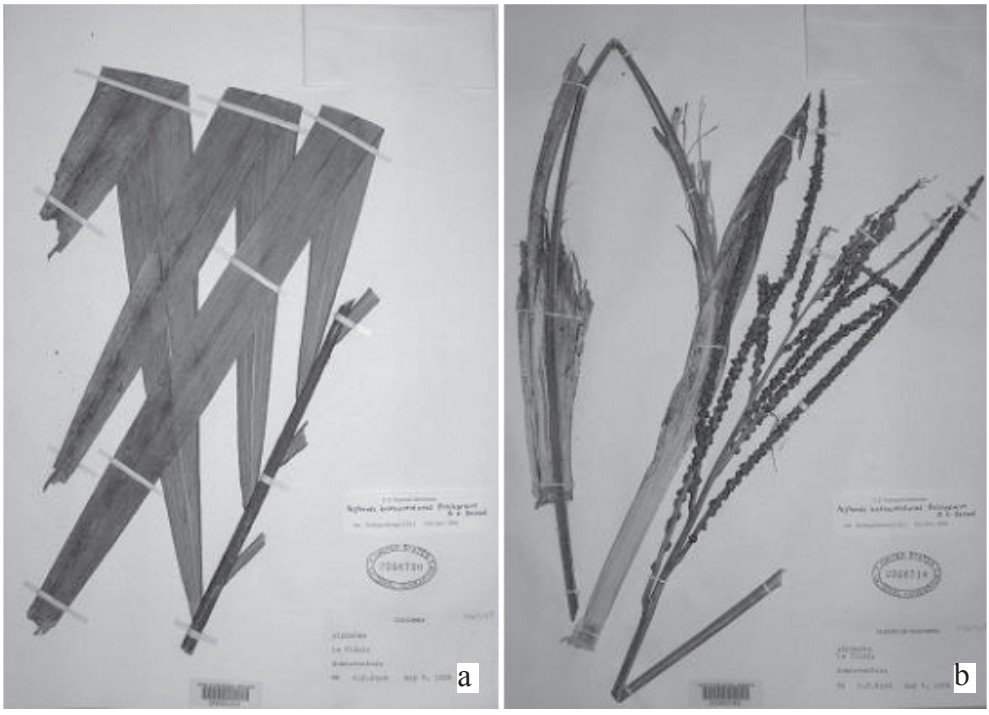

Figure 1. *Aiphanes buenaventurae*. a, detail of leaf: b, inflorescence (*O.F. Cook 86*, US).

minute brown spinules like those of the rachis, with brown scales mainly on the abaxial surface, only the pistillate portion seen; basal rachillae 25-32 cm long in the proximal, triad-bearing portion, without flowers for 1.5-2.5 cm, triads loosely arranged toward base, progressively closer above, most densely arranged near the middle; apical rachillae with pistillate flowers for ca. 6-7 cm; triads sunken into pits in the rachillae. Staminate flowers not seen. Pistillate flowers 3.5 mm long; sepals broadly ovate, 1.8 mm long, glabrous; petals 3 mm long, connate for 1/2 their length, the lobes ovate, acute or rounded at apex, adaxially glabrous, abaxially with a few minute, scattered spinules; staminodial ring 2.1 mm long, inconspicuously toothed, adnate to petals; pistil ca. 2 mm long, glabrous; fruits not seen.

Distribution. Known from only two collections made at the bay of Buenaventura, on the Pacific coast of Colombia, near sea level.

Conservation status. *Aiphanes buenaventurae* has been collected only twice in 84 years, in spite of the fact that extensive collections have been made in the Buenaventura area over this period. Since forest cover in the region has changed dramatically, this species must be considered as *Critically Endangered*, according to IUCN parameters (IUCN 2001), following criteria A2c -an estimated reduction of population size in more than 80% in the last three generations, due to causes that are still operating and have caused a reduction in its area of occupancy.

Paratype. COLOMBIA. Valle del Cauca: Agua Dulce, an island in Buenaventura Bay, 12 Feb 1967 (fl), *H. E. Moore et al. 9470* (BH!).

In our treatment of *Aiphanes erinacea* we discussed a geographically isolated specimen (*Moore et al. 9470*) resembling *Aiphanes erinacea* but with longer, more narrowly cuneate pinnae, inflorescences with few rachillae inserted at long intervals along a short rachis, and spiny pollen. We indicated that future studies would reveal whether it represented a different species or a wider circumscription of *A. erinacea*. The study of an old collection not available to us during our revision, as well as a better understanding of the morphological variation and narrow endemism in the genus, has led us to conclude that this entity represents a distinct species. Differences between *Aiphanes erinacea* and *Aiphanes buenaventurae* are shown in table 1.

***Aiphanes multiplex* R. Bernal & Borchs. sp. nov.** Fig. 2.

Type. COLOMBIA. Valle del Cauca: Old rd. Cali-Buenaventura, 6-7 km below Queremal, 1200-1300 m, 22 Mar 1988 (fl, fr), *Bernal & Prado 1448* (holotype, COL; isotypes FTG, TULV).

Table 1. *Aiphanes buenaventurae* and *Aiphanes erinacea* compared.

Character	*A. buenaventurae*	*A. erinacea*
Middle pinnae length	50-69 cm	14-40 cm
Middle pinnae shape	Narrowly cuneate to almost linear	Broadly cuneate
Middle pinnae length/width ratio	4-13	1.5-4.5
Number of rachillae	8-13	15-180
Insertion of rachillae	Evenly spaced 3-4 cm apart along the rachis	Widely separated proximallly, densely crowded distally
Pollen	Spiny	With densely positioned, sparsely fusing supratectal clavae

Aiphanes gelatinosae habitu solitario, foliis majoribus pinnis anguste cuneatis atque fortiter plicatis, inflorescentiis 3-4 in quoque nodo, polline spinis carentibus, sepalis femineis minoribus, atque fructibus rubris apice bruneo differt.

Stems solitary 3-9 m tall, 5.5-10 cm diam., internodes armed with black, retrorse spines, to 23 cm long. Leaves 7-11, polistichous, erect and arching, lower ones borne horizontally; sheath 90-114 cm long, the distal part free and appearing like the petiole, armed with black spines to 12 cm long, these fewer distally and only to 2 cm long; petiole 5-17 cm long; rachis 170-400 cm long, with a grey or brown, scaly, caducous indument, armed with numerous spinules and proximally with few to many black spines, to 2 cm long, distally without spines; pinnae 19-30 per side, regularly inserted and held in one plane or in remote groups of 2-6 separated by up to 14 cm, in slightly divergent planes, always strongly plicate, often very rigid, narrowly cuneate, 5-8 times as long as wide, incised- praemorse and symmetrical around the midrib, with a finger-like projection up to 5 mm long on the distal margin, glabrous or with scattered scales and minute spinules abaxially; basal pinnae 20-26 x 3.9-5.1 cm; middle pinnae 30-67 x 6-14 cm; apical pinnae 3-6 ribbed, 33-39 x 8-20 cm. Inflorescences interfoliar, 3-4 per node, sharing a common, 3-4-chambered prophyll, curving, becoming pendulous, branched to one order with appressed rachillae; prophyll 34-72 x 7-8.5 cm; peduncular bract ca. 60 cm long or more, to 10 cm wide, thick, unarmed or spiny at apex, with a thick, brown, caducous indument; peduncle 151-240 cm long at anthesis, 5-10 mm in diam. at apex, densely armed (at least distally) with brownish black spines, to 3 cm long; rachis 23-29 cm long, armed like peduncle, but spines shorter distally; rachillae 22-24, white at anthesis, appressed to rachis, the distal ones somewhat spreading; basal rachillae to 20 cm long, armed with black, crimped spines to 1 cm long, the proximal half thickened, to 1.5 cm wide, with densely packed triads, basally only with flowers abaxially, distal half slender, 2-3 mm diam., with densely packed staminate dyads; apical rachillae 8-11 cm long, slender, staminate; triads sunken into deep pits, staminate flowers borne marginally on 2-3 mm long pedicels; dyads borne in shallow cavities, surrounded by fused, ca. 1 mm tall bracts, the proximal flower of each dyad sessile, the distal with a ca. 1 mm long pedicel. Staminate flowers greenish, the petals with purple margins, 1.5-2.5 mm long; sepals narrowly triangular, not overlapping, 1-2 x 0.5-1 mm; petals basally connate, valvate, strongly striate when dry, 2-2.5 x 1.5-2 mm; filaments ca. 0.5 mm long, anthers slightly longer than wide, 0.4-0.7 x 0.5-0.7 mm; pistillode minute, sunken into the swollen, 0.7-0.8 mm thick receptacle. Pistillate flowers purple or the petals green with purple margins, with green ovary and pale pink stigmas, ca. 7 mm long; sepals broadly ovate, imbricate, 2 mm long, much shorter than petals and then enclosed in the flower pit; petals very thick, connate for /3 of their length, valvate distally, ca. 6-7 x 5 mm; staminodial cup 3-4 mm tall, nearly truncate; pistil glabrous. Fruits red with black apex at first, finally bright red, subglobose, somewhat acute at base, 15 x 17 mm, green on basal unexposed part, rostrate 1-2 mm; endocarp 1 1-14 x 13-16 mm, more or less acute at base, prominently pitted and irregularly grooved.

Paratypes. COLOMBIA. **Valle del Cauca**: Old rd. Cali-Buenaventura, km 50, 1 km W of Queremal, 12 Mar 1975 (fem fl, fr), *Anderson 31* (BH); **Cauca**: El Tambo, Munchique National Park, vereda El Condor, upper Santa Lucía creek, 2º44'02''N, 76º56'57'', 1600-1800 m,19 Jun 2001, *Bernal & Lopera* 2837 (COL); Reserva Natural Tambito, 2° 30' 17" N, 77° 59' 37.9" W, 1600 m, 25 May 2000, *Casañas 242* (CAUP, COL); 2° 30' 57.3" N,

77° 59' 54" W, 1597 m, 11 Jan 2001, *Casañas 770* (CAUP, COL). ECUADOR. **Carchi**: Environs of Maldonado, 1450-1650 m, 30 May 1978 (fr), *Madison et al. 4804* (SEL); El Pailon, ca. 45 km below Maldonado along foot path to Tobar Donoso, 800 m, 30 Nov 1979 (fl, fr), *Madison & Besse 7187* (BH, K, QCA, SEL); trail Gualpi Alto-La Guana, km 3, on highest point, 1000 m, 15 May 1985 (fem fl, fr), *Barfod & Skov 60003* (AAU, COL, MO, NY).

Distribution. Western slopes of the Andes in southern Colombia (Valle and Cauca) and northern Ecuador (Carchi). There is an area in between, in the department of Nariño, Colombia, where the species has not been found. It may have been overlooked or mistaken for *A. gelatinosa*, but its occurrence in this area is likely.

Conservation status. At present *Aiphanes multiplex* is not threatened, due to the extense forest cover of the areas where it grows. It is furthermore protected in the Muchique National Park, in Colombia.

Figure 2. Inflorescences of *Aiphanes multiplex* (Bernal 1448, COL, FTG, TULV).

In our treatment of *Aiphanes gelatinosa* (Borchsenius & Bernal 1996), we recognized two morphological forms, which we thought might represent different taxa. Plants from the type locality have caespitose stems, linear, weakly plicate pinnae, single inflorescences, and spiny pollen, whereas plants from two different localities north and south of the type locality have solitary stems, narrowly cuneate, strongly plicate pinnae, multiple inflorescences and pollen without spines. The latter form was informally called by us 'triplex.' The lack of further evidence, however, made us refrain from giving this form any taxonomic status. Given our current undertanding of intra- and interspecific variation in the genus, however, we recognize that this was clearly a mistake. Preliminary molecular evidence (Borchsenius et al. unpublished data) also indicate that typical *A. gelatinosa* and the form called 'triplex' by us belong to different clades. As a new collection from Munchique National Park has four inflorescences per node, we have preferred the name *multiplex* instead of the misleading *triplex*. Differences between the two species are shown in table 2.

Aiphanes killipii (Burret) Burret vs. *Aiphanes horrida* (Jacq.) Burret

Burret (1932a) described *Martinezia killipii* based on a collection made by E. P. Killip in the department of Santander, Colombia, in 1927. A few months later, in his synopsis of *Aiphanes* (Burret 1932b), he transferred the species to this genus. Burret considered *Aiphanes killipii* to be closely related to *A. horrida* (as *A. caryotifolia*), from which he separated it on account of the spinulose fruits, the abundant yellowish spinules on the infructescence, the rachillae not curved at the insertion of each staminate flower, the larger fruits and fruiting perianth, and the pinnae more abruptly and strongly broadened.

Table 2. *Aiphanes multiplex* and *Aiphanes gelatinosa* compared (modified from Borchsenius & Bernal 1996).

Character	*A. multiplex*	*A. gelatinosa*
Habit	Solitary	Cespitose
Number of leaves	7-11	4-6
Leaf rachis length	170-400 cm	110-150 cm
Middle pinnae shape	Narrowly cuneate	Linear
Middle pinnae length/width ratio	5-8	10-12
Middle pinnae apex shape	Incised praemorse	Obliquely praemorse
Pinna structure	Strongly plicate	Weakly plicate
Inflorescences	Three-four per node	One per node
Pollen	Without spines	With long spines
Pistillate sepals length	2 mm	6 mm
Fruit size	ca. 15 x 17 mm	12-13 x 13-14 mm
Fruit color	Red with black apex at first, finally bright red	Red with black apex
Infructescences	Not encased in jelly	Encased in jelly

Based on the only collection available at the time of our study, the type specimen without a field description, we included *A. killipii* in synonymy under *A. horrida* (as *A. aculeata*). However, a recent re-collection of *Aiphanes killipii* from Santander, ca. 116 km S of the type locality, shows that the type was not just a deviating individual of *A. horrida*, but represents a population with constant morphological characteristics and spanning a substantial geographic area. The conclusion is that Burret's taxon should be treated as a separate species, differing from *A. horrida* in a number of morphological characters (Table 3).

***Aiphanes killipii* (Burret) Burret,** Notizbl. Bot. Gart. Berlin-Dahlem 11: 561. 1932. Fig. 3-4.

Martinezia killipii Burret, Notizbl. Bot. Gart. Berlin-Dahlem 11: 326. 1932. Type. COLOMBIA, Santander, Río Suratá valley, between Bucaramanga and El Jaboncillo, 800-1500 m, 2 Jan 1927, *Killip & Smith 16362* (holotype, B, destroyed; isotypes, A, BH, GH, US).

Stem solitary, 2.5-4 m tall, 4.5-5 cm diameter, with black spines to 10 cm long. Leaves 12; sheath 30 cm long, with black spines to 3.5 cm; petiole 44 cm long, with black spines; rachis 163 cm, glabrous, armed above and below with black spines to 5.5 cm long; pinnae 33 on each side, in groups of 3-4, inserted at different angles, groups occupying 2-4.5 cm along the rachis, separated by gaps 17-20 cm long, pinnae very narrow for most of their length, and abruptly widening near apex, 2.2-3.7 times as long as wide, incised to truncate or bicuspidate at apex, glabrous on both sides, sometimes with a black spine to 3 cm long on the midvein below; basal pinnae 25-42 x 4.5-12.5 cm; middle pinnae 31-42 x 13-17 cm; apical pinnae 27.5-30 x 7.5-14.5 cm. Inflorescence erect or curved, pendulous in fruit, once branched; peduncle 80 cm long, with brownish indumentum, densely armed with black (yellowish in bud) spines to 4 cm long; peduncular bract >52 cm long, 2.4 cm wide, coriaceous, with brown indumentum, unarmed; rachis 28-38 cm long, with indumentum like that of the peduncle, with abundant short spinules up to 0.1 mm long, and scattered spines up to 1 cm, mostly near base; rachillae 54-62, densely spinulose; basal rachillae 17-20 cm long, with a basal sterile portion up to 12 mm, with triads in the basal 1/3-

1/4 their length; apical rachillae ca. 10 cm long, mostly staminate. Flowers yellowish; staminate flowers 4-7 mm long; sepals ovate-acuminate, carinate toward the apex, 1.8-3 mm long, with a short, rounded spur at base; petals shortly connate at base, ovate, acute, 4-7 mm long; anthers linear, dorsifix, 2.2-3 mm long; connective dark; pitillode minute, trifid. Pistillate flowers (immature) 4.3 mm long; sepals broadly ovate, 2.5 mm long; petals ovate, 5 mm long; staminodial cup 4 mm long, with triangular teeth 1 mm long; pistil 3.3 mm long, the ovary densely covered with whitish trichomes to 1 mm long. Fruit subglobose, brownish, 1.5-1.6 cm long, 1.7-1.8 cm diam., with an abrupt rostrum to 2 mm long, the epicarp with dense brown tomentum and scattered, dark spinules to 1 mm long; endocarp globose, 11-13 mm diam., shallowly pitted, with three equatorial pores.

Distribution. Currently known from only one locality on the Eastern Cordillera in Colombia, ca. 116 km S of the type locality. At this area, *A. killipii* grows in very narrow forest remnants along a creek, surrounded by pastures. The species was not found at its type locality during a search for it in 1987.

Specimen examined. COLOMBIA: Santander, Mun. Suaita, corregimiento de San José de Suaita, carretera a Guadalupe, 500 m de San José, 6º 9´ N, 73º 21´ W, 1400 m, 29 Sep 2003, *Bernal 3433* (COL).

Conservation status. *Aiphanes killipii* must be considered as *Critically Endangered*, according with the parameters of IUCN (IUCN 2001), following criteria A2c --an estimated reduction of population size in more than 80% in the last three generations, due to causes that are still operating and have caused a reduction in its area of occupancy.

Table 3. *Aiphanes killipii* and *Aiphanes horrida* compared.

Character	*Aiphanes killipii*	*Aiphanes horrida*
Stem diameter	4.5-5 cm	10-15 cm
Sheath spines	to 3.5 cm	to 13.5 cm
Petiole length	44 cm	0-1 cm
Apex of pinnae	Incised to truncate or bicuspidate	Tricuspidate
Apical pinnae connate for	2 cm	5-7.5 cm
Number of veins in apical pinnae	2	4-7
Peduncle length	80 cm	45-50 cm
Peduncle diameter	5 mm	8-15 mm
Rachis length	28-38 cm	44-50
Indument of rachillae	Densely spinulose	With white scales, without spinules
Insertion of staminate flowers	Shallow depressions on the rachilla, rachillae slightly arched at each flower, 2 small bracteoles	Rachillae projected into a hook-shaped structure to 1 mm, where the staminate flowers are inserted
Staminate flowers length	4-7 mm	4-5.5 mm
Shape of staminate sepals	Ovate-acuminate	Narrowly triangular, carinate
Length of staminate sepals	2-3 mm	1-2 mm
Length of staminate petals	4-7 mm	2.5-5.5 mm
Indument of Pistil	Densely covered with whitish trichomes to 1 mm long	Glabrous
Epicarp	Brown, spinulose	Mostly red, smooth

Figure 3. *Aiphanes killipii*. a, habit; b, detail of leaves. Colombia, Santander. Photos by R. Bernal.

Figure 4. Fruits of *Aiphanes killipii* (*R. Bernal 3433*, COL).

***Aiphanes lindeniana* (H. Wendl.) H. Wendl., *Aiphanes concinna* H.E. Moore, and *Aiphanes stergiosii* M. Niño, Dorr & F.W. Stauffer**

Aiphanes lindeniana was described by Wendland (1857) as *Martinezia lindeniana*, based on a specimen collected by Funk & Schlim in Florida, Sandander, in northeastern Colombia, at 1800 m of elevation. Our interpretation of this name (Borchsenius & Bernal 1996) was based on the rather incomplete lectotype at LE, and on an incomplete topotypic collection made in 1987, and we concluded that it was the same entity as the one described from the mountains of Cundinamarca as *Aiphanes concinna* H.E. Moore. We, therefore, placed the latter in synonymy of *A. lindeniana*.

In 2004, one of us (RB) made new and complete collections of *Aiphanes lindeniana* at the original locality. About the same time, a new species, *Aiphanes stergiosii*, based on plants similar to these, was proposed by Niño et al. (2005) from the Andes of Venezuela. Comparison of an isotype collection of *A. stergiosii* in US and the recent topotypic collections of *A. lindeniana*, lead to the unambiguous conclusion that these represent a single species, the one described by Wendland as *A. lindeniana*, and that this species differs from *A. concinna* in a number of characters. *Aiphanes lindeniana* is a solitary palm with polystichous leaves that have 18-31 narrowly cuneate pinnae per side, these with the margins usually spineless; *A. concinna* is cespitose, with distichous leaves that have 32-45 linear to lanceolate pinnae per side, the pinna margins densely spiny. We therefore, reinstate *A. concinna* as a distinct taxon, and place *A. stergiosii* in synonymy of *A. lindeniana*.

***Aiphanes lindeniana* (H. Wendl.) H. Wendl.** in Kerch., Les Palmiers 230. 1878.

Martinezia lindeniana H. Wendl., Linnaea 28: 349. 1857. Type. COLOMBIA, Santander ["Pamplona"], Florida, 2000 m, *Funck & Schlim 1655* (lectotype, annotated by N. Imschanitzkaja, LE).

Aiphanes stergiosii M. Niño, Dorr & F.W. Stauffer, Sida 21(3): 1600. 2005. **Syn. Nov.** Type. VENEZUELA, Portuguesa, Mun. Sucre: Parque Nacional Guaramacal, "La Concepción" (Coord UTM 19-382173 E, 1.033.526 N), 1700 m, Dec 2000, *M. Niño & B. Stergios 1431* (holotype, PORT; isotypes K, US!, VEN, Z-ZT)

Distribution. Southern slopes of the Andes in western Venezuela (Portuguesa), Eastern Cordillera of Colombia in Santander, and Central Cordillera of Colombia in Antioquia, just across the Magdalena valley from Santander. Grows in cloud forest at 1600-2000 m. Probably grows also in the intervening areas of Norte de Santander (Colombia) and Mérida (Venezuela).

Conservation status. *Aiphanes lindeniana* must be considered as *Endangered*, according to IUCN parameters (IUCN 2001), following criteria B1abiii (restricted distribution represented by very few localities and habitat in continued deforestation).

Specimens examined. COLOMBIA. **Antioquia**: Santa Rita, 5 km E of Guatape, 2000 m, 17 Sep 1987 (fl), *Bernal & Tobón 1375* (AAU, COL); **Santander**: Mun. Floridablanca, trail between hill La Judía and San Ignacio. 7° 6' N, 72° 56' W, 1900 m, 24 Jun 2004, *Bernal & Acosta 3574* (COL); Mun. Tona, 2-4 km on rd. from El 18 (km 16 on Bucaramanga-Pamplona rd.) to Tona, 1800 m, 7° 8'N, 72° 59'W, 20 Jun 2004, *Bernal & Acosta 3484* (COL); 7 km S of the road Bucaramanga-Pamplona, on the road to Piedecuesta, 2200 m, *Bernal & Galeano 1352* (AAU, COL). VENEZUELA. **Portuguesa**: Mun. Sucre, Alto de la Divisoria de La Concepción, southern slope of Parque Nacional Guaramacal, Coord. UTM 19-367038

E, 1022723 N, 1880 m, 21 Jan 2000, *Cuello et al. 1868* (US).

The type locality of *Aiphanes lindeniana* has been cited (Borchsenius & Bernal 1996) as Pamplona, in Norte de Santander. However, this is a mistake, as Wendland states in the protologue that the plant was collected "in the forests at Florida", which is on the western slopes of the Cordillera Oriental in Santander. The present departments of Santander and Norte de Santander were referred to in the 19th century as Provincia de Pamplona.

Niño *et al.* (2005) distinguished *A. stergiosii* from *A. lindeniana* by a less robust habit, and the presence of fewer and shorter spines. They also noted that *A. lindeniana* tends to be a clustered palm whereas *A. stergiosii* was solitary. As key characters they mentioned differences in the indument of the leaf axis and pinnae, as well as the presence in *A lindeniana* of small spines lining the pinna margins and major veins. The differences were, however, established through comparison with specimens of *A. concinna* from the central part of the Cordillera Oriental in Colombia (Cundinamarca, Huila) and not with specimens of the true *A. lindeniana* described by Wendland from Northern Colombia. The latter populations correspond in all aspects to *A. stergiosii*. It may also be added that indument and spine characters are notoriously labile in species of *Aiphanes* (Borchsenius & Bernal 1996), so minor differences in these characters observed in a small number of specimens should be interpreted with caution.

The specimens cited above include all collections of *A. lindeniana* that we have seen. Two were cited by Borchsenius and Bernal (1996): *Bernal & Tobón 1375* and *Bernal & Galeano 1352*. All other specimens cited under *A. lindeniana* in the monograph are *A. concinna*.

***Aiphanes concinna* H.E. Moore**, Gentes Herb. 8: 223, fig. 91. 1951. Type. COLOMBIA. Cundinamarca: near Fusagasugá, 3000 m, 12 Oct 1946, *Foster & Foster 1870* (holotype, BH; isotype A).

Distribution. Eastern Cordillera of Colombia from S Santander south to Putumayo, and Central Cordillera of Colombia from Huila to Antioquia. Grows in cloud forest at 1700-3000 m.

Conservation status. *Aiphanes concinna* has been considered as *Not threatened* by Galeano & Bernal (2005).

New specimens not cited by Borchsenius and Bernal (1996). COLOMBIA. **Cundinamarca**: Mun. San Francisco, vereda El Peñón, Finca La Cumbre, 2000 m, 7 Nov 1997, *Albesiano et al. 596* (COL). **Putumayo**: Rd. from Sibundoy to Mocoa, beyond milestone of km 109, 2200 m,16 Jun 2000, *Bernal et al. 2485* (COL). **Santander**: Charalá, El Bogotacito, El Carmen-Virolín rd., 2300 m, 23 Nov 1994, *Betancur et al. 5829* (COL).

An epitype for *Aiphanes simplex* Burret

Aiphanes simplex was described by Burret (1932) based on a specimen collected by W. Kalbreyer in Antioquia, Colombia. There are many collections of this species, and it is well defined and clearly understood. The type specimen was kept at B, where it was destroyed in World War II, except for a single staminate flower (Borchsenius & Bernal 1996), which scarcely serves any taxonomic purpose. After our monograph was submitted, the concept of epitype was introduced at the Tokyo Code (Greuter et al. 1994), and therefore we here designate an epitype for this species.

***Aiphanes simplex* Burret**, Notizbl. Bot. Gart. Berlin-Dahlem 11: 567. 1932. Type.

COLOMBIA, Antioquia: Río Verde, 1500-1700 m, 28 Jul 1880, *Kalbreyer 1864* (holotype, B, a single staminate flower). Epitype. COLOMBIA, Mun. Medellín, Palmitas, quebrada Miserengo, 1900-2000 m, 18 Mar 1979 (fl, imm fr), *Galeano et al. 14* (COL, HUA).

LITERATURE CITED

Bernal, R. 2001. Una nueva especie de *Aiphanes* (Palmae) de los Andes de Colombia. Caldasia 23(1): 163-167.

Borchsenius, F. & R. Bernal. 1996. *Aiphanes* (Palmae). Flora Neotropica 70: 1-95.

Burret, M. 1932a. Palmae neogeae. Notizbl. Bot. Gart. Berlin-Dahlem 11: 313-327.

Burret, M. 1932b. Die Palmengattungen *Martinezia* und *Aiphanes*. Notizbl. Bot. Gart. Berlin-Dahlem 11: 557-577.

Cerón, C. E. & R. Bernal. 2004. Una nueva especie de *Aiphanes* (Palmae) del occidente de Ecuador. Caldasia 26 (2): 433-438.

Galeano, G. & R. Bernal. 2002. New species and new records of Colombian palms. Caldasia 24: 277-292.

Galeano, G. & R. Bernal. 2005. Palmas (familia Arecaceae o Palmae). Pp. 59-223 in: E. Calderón, G. Galeano & N. García (eds.). Libro Rojo de Plantas de Colombia, Volumen 2. Ministerio de Ambiente, Vivienda y Desarrollo Territorial/ Instituto Alexander von Humboldt/Instituto de Ciencias Naturales, Bogotá.

Greuter, W., F. R. Barrie, H. M. Burdet, W. G. Chaloner, V. Demoulin, D. L. Hawksworth, P. M. Jørgensen, D. H. Nicolson, P. C. Silva, P. Trehane, J. & Mcneill. 1994. International Code of Botanical Nomenclature (Tokyo Code). Regnum Vegetabile 131. Koeltz Scientific Books, Königstein.

IUCN. 2001. IUCN red list categories: Version 3.1. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland, and Cambridge.

Niño, S.M., L.J. Dorr & F.W. Stauffer. 2005. Una nueva especie de *Aiphanes* (Arecaceae) de la Cordillera de Mérida, Venezuela. Sida 21(3): 1599-1606.

Wendland, H. 1857. Einige neue Palmen Amerika's. Linnaea 28: 333-352.

Recibido: 01/09/2009
Aceptado: 21/04/2010