Plukenetia huayllabambana sp. nov. (Euphorbiaceae) from the upper Amazon of Peru

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A new species of Plukenetia from the Peruvian Department of Amazonas is described. *Plukenetia huayllabambana* R. W. Bussmann, C. Téllez & A. Glenn sp. nov. seems to be endemic to rocky patches in the cloud forest region of Mendoza. The species is similar to *Plukenetia volubilis* L., a species widely known from the Caribbean and Latin America, and *Plukenetia stipellata* L. J. Gillespie, which is only known from Central America. Both of these species occur only up to about 1200 m a.s.l., while *Plukenetia huayllabambana* has only been found above 1300 m a.s.l. The new species distinctly differs in its small number of stamens, stylar column length, and very large fruits and seeds. In Peru, *Plukenetia* spp. are widely known as ‘Sacha Inchi’ (forest Peanut), and *Plukenetia huayllabambana* could have a good potential to become an income source for the local communities.

**Plukenetia L.** (Euphorbiaceae) is a pantropical genus of lianas and scrambling vines. Of the 16 known species (Gillespie 1994), 11 occur in the Neotropics, four in Africa and Madagascar, and one in Asia. It is most noteworthy for four-carpellate ovaries, fused styles that are often massive, scandent habit, adaxial, basilaminar glands, numerous stamens and pistillate, often large, flowers with four sepals. *Plukenetia* belongs to the tribe *Plukenetieae* (Webster 1975), characteristically lacking latex. The *Plukenetieae* were monographed by Pax (1890) and Pax and Hoffmann (1919, 1931), whereas Gillespie (1994) reviewed the pollen morphology. The genus *Plukenetia* is amongst the most well recognized of the tribe (Baillon 1858, Mueller 1866, Bentham 1880, Pax 1890). After MacBride (1951), Gillespie (1993) provided a thorough revision of the Neotropical species.

All Neotropical species of the genus are lianas or vines, and the majority occurs in humid tropical forest at altitudes up to around 1000 m. *Plukenetia lehmanniana* (Pax & K. Hoffm.) Huft & L. J. Gillespie is only known from Colombia and Ecuador, reaching montane forest locations up to 2100 m. The only other species known from mountain forests is *Plukenetia multiglandulosa* Jabl., known from a single locality in Venezuela. *Plukenetia volubilis* L. is mostly found from sea level to less than 1000 m. However, Gillespie (1993) notes that collections from Peru labeled *P. volubilis* occur at altitudes from 1600–2100 m, and “may represent a distinct species”.

**Plukenetia huayllabambana**

*Plukenetia huayllabambana* R. W. Bussmann, C. Téllez & A. Glenn sp. nov. (Fig. 1)

Haece species *P. stipellatae* L. J. Gillespie et *P. volubili* L. similis, sed a hac sepalis florum staminatorum plerumque 5, ab illa petiolo apice convexo bullis glandulatis nullis, stylis longioribus (8–12 mm) atque filamentis latioribus, ab ambabus filamentis brevioribus (0.1–0.3 mm), fructu majore (3–4 × 4–6 cm) atque seminibus majoribus crasse porcatis differt.

**Type:** Peru. Región Amazonas, Provincia de Rodríguez de Mendoza, pendientes rocosas del bosque nuboso cerca de El Cedro Cruzpata (region Amazonas, Rodríguez de Mendoza province, rocky slopes of cloud forest close to El Cedro–Cruzpata), 1676 m a.s.l., 5 Jul 2008, 06°24.231’S, 77°26.969’W, C. Téllez, C. Vega, L. Cabrera 002 (holotype: INBIAPERU (Inst. para el Desarrollo Local Sostenible y la Conservación Biológica y Cultural Andino-Amazonica San Martín 375, Trujillo); isotypes: MO!).

Monoeocious liana or twining vine; branches slender, puberulous. Leaves alternate, simple, stipules small, persistent; petiole 2–9 cm long, puberulous; blade large, 4–10 × 7–14 cm, elliptic to ovate-elliptic, slender acuminate at apex with acumen 1–2 cm long, and 0.3–0.7 cm wide, cuneate to slightly cordate at base, serrulate, glabrescent...
with a few unbranched hairs, sparsely puberulous on major veins below. Primary veins 3, secondary veins 3–4 on each side of central primary vein and 4–5 on lower side of lateral primary veins; tertiary veins percurrent; quaternary veins reticulate; basilaminar glands 2, narrowly transverse 2–5 mm long, 0.3–1.0 mm wide, marginal, adaxial, laminar glands absent; small pair of stipples at petiole apex between basilaminar glands, conical, 0.2–1.2 mm long, rounded at apex; without glandular knob. Inflorescence slender, racemose, (3) 4–12 cm long, bisexual, axillary; axes puberulous, pistillate flowers 1–4 at basalmost node; staminate flowers numerous, cyme axes 1–3 mm long, bracts triangular, 0.2–1.0 mm long. Staminate pedicel 0.1–0.7 mm long, puberulous; bud elliptic to broadly elliptic, 1–2 mm long; sepals 5 (rarely 4), ovate, 2.5–3.5 mm long, 2.0–2.5 mm wide, corolla and disc absent; stamens 10–
14, 0.2–0.4 mm in diameter; filaments flattened, broad, 0.1–0.3 mm long. Pistillate pedicel 1–3 mm long, puberulous, sepal; 4; ovary 4 locular, 2–5 mm wide, 2–3 mm long, puberulous, 4-winged; styles puberulous in cylindrical column, 8–12 mm long, 1–2 mm wide; 4 free style arms 4–5 mm long, forming a cross shape when mature. Fruiting pedicel 1–3 cm long, capsule 4-lobed, 3×4×6 cm; glabrous, each lobe with a small, winged horn. Seeds very large, lenticular, laterally compressed, 3–4 cm long, 3–4 cm wide, 1.5–2.5 cm thick, with large, corrugated ridges.

Plukenetia huayllabambana displays characteristics similar to P. stipellata L. J. Gillespie and P. volubilis L. It differs however from P. volubilis by having a larger number of sepal (5) in the staminate flowers, and from P. stipellata by having a convex pediole apex without glandular knob, longer styles (8–12 mm), and broader filaments. It differs from both related species by having much shorter filaments (0.1–0.3 mm), very large fruits (3×4×6 cm), and very large seeds with pronounced ridges.

Distribution

Known only from the Peruvian region Amazonas, provinces Rodríguez de Mendoza, Bongará and Chachapoyas, on the eastern slopes of the northern Peruvian Andes, where it grows in a mixture of slightly disturbed, deeply incised gorges in dense cloud forest at altitudes between 1300–2200 m asl. The species was found in the districts Chimiramo, San Nicolás, Longar, Cochamal, Milpuc, Huambo, Mariscal Benavides, Yambrabamba and Leymebamba (Los Chilos). Northern Peru seems to be a diversity center of Plukenetia, and further collections are needed.

Etymology

The region Amazonas is located in the northeastern part of Peru, in the transition zone between Andes and Amazon. The region harbors a mosaic of different life zones, and is known for its high degree of endemism. The Marañón and Huallaga river catchments form major tributaries of the Amazon. The new species is mainly found in the Huayllabamba river catchment, a tributary of the Huallaga, for which the name Plukenetia huayllabambana was chosen.

Uses

Plukenetia spp. are well known in Peru as sacha inchi, sacha inchic, mani del monte, yuchi, which all translate to ‘forest peanut’ (Brack Egg 1999). Plukenetia huayllabambana has very large seeds with a high content of fatty acids. It could provide a good additional protein and nutrition source for the local population, especially children. The species is not only interesting from nutritional, medicinal and cultural perspectives, but could also be an interesting economic alternative to illegal crops. The species is only known from natural cloud forest habitat. Provided sustainable harvest methods can be developed, the species could become a new income source for the disenfranchised communities of Mendoza, and would thus make an excellent conservation product (Vega 2008).

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References

W. Engelmann, pp. 1–108.