

ANDINOCLEOME COMPLANATICARPA (CLEOMACEAE): A NEW SPECIES FROM SOUTHWESTERN ECUADOR

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Abstract. *Andinocleome complanaticarpa*, a new species from southwestern Ecuador characterized by the strongly complanate ovaries and fruit, is formally described and illustrated, and its relationship to morphologically closely related species is discussed.

Keywords: Ecuador, endemics, Cleomaceae, Neotropics

Resumen. *Andinocleome complanaticarpa*, una nueva especie del suroeste de Ecuador caracterizada por los ovarios y frutos fuertemente aplanados es descrita e ilustrada, se discute sus relaciones con las especies morfológicamente cercanas.

Palabras claves: Ecuador, endémicas, Cleomaceae, neotrópicos

Andinocleome (Iltis and Cochrane, 2014; *sensu* Cornejo, 2024) is a small Neotropical genus in Cleomaceae centered in the northern and north-central Andes of South America, except for one isolated species, *A. magnifica*, which occurs in southern Mexico and Guatemala (Cornejo and Cochrane, submitted). The genus was originally defined in a broad sense, including the *lechleri* and *chilensis* clades (McGinty and Roalson, 2020). Subsequent examination of morphology in fresh material related to the geographic pattern of distribution, and, based on previous phylogenetic studies, led the author to the recognition of *Andinocleome* in a strict sense as a monophyletic genus only based on the *lechleri* clade. In the *chilensis* clade, a closely related sister genus, *Incacleome*, is recognized and is restricted to the Andes and coastal deserts of Peru and Chile (Cornejo, 2024). *Andinocleome* is the only genus of subwoody shrubs to woody treelets in the Cleomaceae, reaching from 0.8 m up to 4 m high, the tallest in this family in the Neotropics. Currently, *Andinocleome* comprises seven species, including the new species presented here. These species can

be recognized by: the palmately compound leaves, folioles with brochodromous venation and tertiary veins that are sulcate above and conspicuously prominent beneath, the highly distinctive and unique floral nectaries that are thick, bowl-shaped, subhexagonal, 5–10 mm wide, with six shallow infrastaminal depressions often separated by six radial interstaminal fleshy elevations or crests, margins that are wavy or dentate, petals that are light green to yellowish or purple, fruit valves that are thick, coriaceous to subwoody, usually crowned by a short and thick style, otherwise the style is absent (Cornejo, 2024). Similar to the case of *Capparidastrum* in the closely related Capparaceae family (Cornejo and Iltis, 2005; Cornejo et al., 2021), during the revision of Cleomaceae for the Flora of Ecuador project, it was observed that in *Andinocleome*, the shape and size of the ovaries in fresh material can provide useful characters for separating and recognizing species. Based on these characters in some specimens from southwestern Ecuador with strongly flattened ovaries and fruit, a new species is formally described here.

TAXONOMY

1. *Andinocleome complanaticarpa* Cornejo, *sp. nov.*

TYPE: ECUADOR. El Oro: Cerro de Chilla, 3°43'S, 79°38', 3595 m, 3 May 1997 (fl), *H. Vargas & C. Canaday 1389* (Holotype: MO [5339848]; Isotypes: MO [5185823], QCNE, US [3396031], US [3396031]). Fig. 1.

Andinocleome complanaticarpa is similar to *A. longifolia* (C. Presl) Iltis ex E.M. McGinty & Roalson, but differs by the narrowly elliptic or elliptic-oblong, strongly complanate ovaries, 3–4 mm wide (vs. ovaries linear-cylindric, 1–2 mm wide), and complanate fruit (vs. cylindric fruit).

Shrubs, ca 1.3 m tall, generally short-pilose to glabrous, hairs simple. *Leaves* 5(–9?)-foliolate; petioles 2–10 cm long; leaflets sessile or with petiolule up to 5 mm long; blades narrowly elliptic, central leaflet ca 10–12 × 1.5–2.0 cm, narrowly cuneate or attenuate at base, entire or finely serrulate-ciliate at the margin, acute to shortly caudate at the apex, lateral veins ca 14–20 on each side, short pilose

abaxially. *Racemes* terminal and lateral, to 0.8 m long, flowers few at any one time, very dense [bracts and buds numerous on older racemes]; bracts lanceolate, 2.0–3.5 × 0.7–1.5 cm. *Pedicels* 2.5–3.0 cm long, (sub)glabrous; *sepals* fused at the base, lanceolate, ca 5–6 × 2–3 mm, glabrous; *petals* oblong, spatulate, 20–27 × 5–9 mm, gradually to abruptly attenuate at base, entire to irregularly denticulate at the margins, rounded and often cucullate at the apex, yellow to purplish-yellow, glabrous; filaments 6–9 cm long; *anthers* 8–11 mm long, purple; *gynophore* 5–9 cm long; *ovary* narrowly elliptic or elliptic-oblong, 1.2–1.7 × 0.3–0.4 cm, strongly complanate and irregularly torulose (fresh), glabrous; style gradually narrowed from ovary apex, nearly absent or oblong; stigma undeveloped, narrower than or equaling style in diameter. *Capsules* subpendulous to pendulous, narrowly elliptic, 5–7 × 0.5–0.6 cm, strongly complanate, undulate along both sutures and irregularly

Thanks to the MO herbarium for the reproduction of the isotype image of *Andinocleome complanaticarpa*.

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Harvard Papers in Botany, Vol. 29, No. 2, 2024, pp. 253–255.

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ISSN: 1938-2944, DOI: 10.3100/hpib.v29iss2.2024.n4, Published online: 31 December 2024

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ECUADOR

DAPPARACEAE
Cleome longifolia C. Presl ?

det. S.F. Smith (US), August 2000

El Oro: Chilla

Cerro de Chilla. Vegetación de páramo, arbustiva y herbácea.
03°30'S 079°38'W 3595 m

Arbusto de 1.30 m. Flor terminal amarilla con varios filamentos que salen del interior de la flor.

3 Mayo 1997

Homero Vargas & C. Canaday 1389
HERBARIO NACIONAL DEL ECUADOR (QCNE)
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)

FIGURE 1. *Andinocleome complanaticarpa* Cornejo, Vargas & Canaday 1389, the holotype.

torulose, smooth, glabrous; style 1–3 mm long; carpophore 5–9 cm long; pedicel ca 3 cm long; *seeds* not seen.

Andinocleome complanaticarpa vegetatively resembles *A. longifolia*, but the new species is differentiated from the latter and from all other species in the genus by the compressed ovary and fruit as described in the diagnosis.

Etymology: The epithet *complanaticarpa* is composed from the Latin words *complanatus*, meaning flattened, and *carpus*, meaning fruit, and refers to the laterally compressed fruit, a conspicuous character of this taxonomic novelty.

Habitat and distribution: Known only from the type locality, in cerro de Chilla, where it was collected and later photographed in the disturbed upper montane Andes in the province of El Oro, southwestern Ecuador. An image

of *Andinocleome complanaticarpa* with fruit from the type locality is posted on iNaturalist (<https://ecuador.inaturalist.org/observations/109709231>).

Phenology: Flowering and fruiting specimens have been collected and observed in March and May.

Conservation status: *Andinocleome complanaticarpa* is known only from the type locality. As the area of occupancy of the species is less than 100 km², and due to the steady deforestation and fragmentation in the region, with small patches of native vegetation remaining, all surrounded by extensive grass areas for cattle (pers. obs.), it is suggested that this new species should be assigned as Critically Endangered (CR) following the IUCN criterion B1 ab(iii) (IUCN, 2022).

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