

A LONG-FLOWERING *HECHTIA* (BROMELIACEAE): *HECHTIA SANCHEZII*,
A NEW SPECIES FROM SAN LUIS POTOSÍ, MEXICO
UNA *HECHTIA* (BROMELIACEAE) DE LARGA FLORACIÓN: *HECHTIA SANCHEZII*,
UNA NUEVA ESPECIE DE SAN LUIS POTOSÍ, MÉXICO

IVÓN M. RAMÍREZ-MORILLO^{1*}, CLAUDIA T. HORNUNG-LEONI², AND KATYA J. ROMERO-SOLER¹

¹ Unidad de Recursos Naturales, Centro de Investigación Científica de Yucatán, A.C., Mérida, Yucatán, México.

² Centro de Investigaciones Biológicas, Universidad Autónoma del Estado de Hidalgo, Mineral de la Reforma, Hidalgo, México.

*Author for correspondence: ramirez@cicy.mx

Abstract

Background: *Hechtia* is known among Bromeliaceae by its unisexual, sexually dimorphic, mainly fragrant flowers and dioecy; delimitation of taxa particularly on those with lateral inflorescence, requires qualitative morphological evidence from both sexes, because dimensions of structures change during its growth.

Hypotheses: *Hechtia* species are delimited based on a combination of discrete morphological characters from both sexes, associated with narrow geographical distributions. If examination of populations of San Luis Potosi shows characters that place the taxon in the genus and distinguish it from other species in *Hechtia*, the taxon will be described as new.

Taxon: Hechtioideae, *Hechtia* sp. nov.

Study site and dates: Mexican State of San Luis Potosí and vicinities, 2015-2021.

Methods: Live plants as well as herbarium material of the new taxon and the most morphological similar species, were analyzed, with examination of inflorescences and flowers of both sexes, fruits, and seeds. Geographical distribution was mapped and conservation status using IUCN criteria is reported for the new species.

Results: *Hechtia sanchezii* has been confused with *H. glomerata* since both share lateral, glomerulate-like infructescences, but *H. sanchezii* shows red to ferruginous indumentum on floral bracts and sepals (vs. white), these red (vs. greenish or brownish), pink petals (vs. white), scentless (vs. fragrant) flowers, stamens with filaments of two lengths, three epipetalous, and three alternating with petals (vs. two lengths but all filaments epipetalous).

Conclusions: Morphological and geographical evidence allow the recognition of *H. sanchezii* as a new species native from San Luis Potosi, Mexico.

Keywords: conservation, endemic, gypsum soil, Hechtioideae, new species.

Resumen

Antecedentes: *Hechtia* se destaca dentro de Bromeliaceae por sus especies mayormente dioicas, flores unisexuales, dimórficas, principalmente fragantes; la delimitación de taxones particularmente en aquellos con inflorescencia lateral requiere evidencia morfológica cualitativa de ambos sexos, porque las dimensiones de las estructuras cambian durante su crecimiento.

Hipótesis: Especies en *Hechtia* se delimitan con base en una combinación de caracteres morfológicos discretos de ambos sexos, asociados a distribuciones geográficas estrechas. Si las poblaciones de San Luis Potosí muestran caracteres que ubican al taxón en el género y lo distinguen de otras especies, el taxón será nuevo.

Taxón: Hechtioideae, *Hechtia* sp. nov.

Sitio y fechas de estudio: San Luis Potosí y alrededores, 2015-2021.

Métodos: Se analizaron plantas vivas y material de herbario del nuevo taxón y especies morfológicamente similares, analizando inflorescencias y flores de ambos sexos, frutos y semillas. Se cartografió la distribución geográfica y se reporta el estado de conservación de la nueva especie utilizando criterios de la UICN.

Resultados: *Hechtia sanchezii* se ha confundido con *H. glomerata* ya que comparten infrutescencias laterales con ramas en forma de glómerulos, pero *H. sanchezii* muestra indumento de color rojo a ferruginoso en brácteas florales y sépalos (vs. blancos), mismos que son rojos (vs. verdosos o parduscos), pétalos rosados (vs. blancos), flores sin olor (vs. fragantes), filamentos de dos longitudes, tres epipétalos y tres alternados con pétalos (vs. dos longitudes pero todos los filamentos epipétalos).

Conclusiones: La evidencia morfológica y geográfica permite reconocer a *H. sanchezii* como una nueva especie, nativa de San Luis Potosi, México.

Palabras clave: conservación, endémica, Hechtioideae, nueva especie, suelo yesoso.

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Hechtioideae Givnish currently contain three genera, based on morphological, molecular, and biogeographical evidence (Ramírez-Morillo *et al.* 2018a, b), all previously included in the genus *Hechtia* Klotzsch (Givnish *et al.* 2007). The first one, *Mesoamerantha* I. Ramírez & K. Romero (Ramírez-Morillo *et al.* 2018b), with three species confined to the geographical area south of the Motagua River in Guatemala to the northern portion of Nicaragua (Romero-Soler *et al.* 2022a), in the drier regions north of the Lago Cocibolca, with a disjunct population of *M. guatemalensis* (Mez) I. Ramírez & K. Romero in Belize (Holst *et al.* 2017). The second genus is *Bakerantha* L.B. Sm., with five species endemics to the central eastern region of Mexico (Romero-Soler *et al.* 2022b), with plants that vegetatively resemble those of the distantly related species of *Pitcairnia* L'Hér. by their long, hanging leaves, especially on species such as *B. lundelliorum* (L.B. Sm.) I. Ramírez & K. Romero and *B. tillandsioides* (André) L.B. Sm. The third genus is *Hechtia*, groups several different lineages (see Ramírez-Morillo *et al.* 2018b), that includes from caespitose to rhizomatous rosettes, with central to lateral inflorescences, variable inflorescence branching pattern, floral color, fruit texture, and seed (Ramírez-Morillo *et al.* 2018b; Espejo-Serna *et al.* 2020). *Hechtia* is the genus with the widest geographical distribution and larger number of species (with more than 92 species for Hechtioideae *sensu* Gouda & Butcher 2022; our estimate is 100 taxa for the subfamily, five for *Bakerantha*, three for *Mesoamerantha* (Ramírez-Morillo *et al.* 2018b) and 92, including the species here described, for the genus *Hechtia*), spreading from the south of the USA throughout Mexico to at least Honduras, within an area called Megamexico III by Rzedowski (1991), the distributional range for Hechtioideae.

The relationships within *Hechtia* are not clear yet but some lineages show high support (Ramírez-Morillo *et al.* 2018a, b, Rivera-Martínez *et al.* 2022). One of them is the *Hechtia glomerata* complex (Clade D in Ramírez-Morillo *et al.* 2018a, b), basically characterized by the presence of lateral, glomerulate, floccose infructescences, bearing fragrant flowers with a superior or almost superior ovary and mostly white petals. A previous phylogenetic hypothesis (Ramírez-Morillo *et al.* 2018a) indicates that all these characters have evolved independently more than once in the family but are not linked; we call it the “*Hechtia glomerata* syndrome”. Despite the monophyletic nature of the *Hechtia glomerata* complex, all species with lateral inflorescence challenge taxonomists because the wide variation in the size of the plants and inflorescences (Ramírez-Morillo *et al.* 2018a, Espejo-Serna *et al.* 2020), mostly on features related with the age of the polycarpic rosette, *i.e.*, an individual rosette blooms many times, sometimes more than once in one year, the larger and older the rosette gets, the larger and more branched the inflorescence/infructescence become. These age-related changes are linked to the poor understanding of species limits in this lineage, with other species remaining undescribed, or few proposed as described twice (*sensu* Burt-Utley *et al.* 2011), when treated *H. mexicana* L.B. Sm. as a synonym of *H. glomerata* Zucc., and *H. elliptica* L.B. Sm. and *H. zacatecae* L.B. Sm. as synonyms of *H. texensis* L.B. Sm. Although field work allows the observation and understanding of population variation, cultivation of plants is an excellent choice when long-term field observations cannot be conducted. Daily observations allow detailed recording of changes on vegetative and floral characters, usually overseen in the field and definitively impossible to see on herbarium material.

About 15 years ago, Dr. Adolfo Espejo-Serna showed us a picture of a new species also from the Mexican State of San Luis Potosí (López-Ferrari *et al.* 3059, CICY, SLPM, UAMIZ); in 2018, CTHL visited the botanical garden El Izotal from the Universidad Autónoma de San Luis Potosí and saw the same species in bloom, mentioning the most remarkable feature of the species: lateral inflorescences and pink petals in female and male flowers. In 2020 IMRM visited the same botanical garden and photographed a staminate individual in bloom. In 2021, Ing. Francisco Sánchez Barra, who is in charge of the garden, managed to get pistillate plants in bloom. Based on these material and herbarium specimens reviewed in several herbaria, the new species is described and illustrated herein.

Materials and methods

This work is based on the study of specimens deposited in the following herbaria: CICY, ENCB, HGOM, IEB, MEXU, SLPM, TEX-LL, and UAMIZ (acronyms according to Thiers 2022). Also, live specimens were studied and photographed from cultivated plants at the Botanical Garden El Izotal from the Universidad Autónoma de San Luis

Potosí. Micromorphological characters of pollen and seed were obtained from herbarium and fresh material and analyzed using images captured using a scanning electron microscope (SEM) at Centro de Investigación Científica de Yucatán, A.C. A geographic distribution map was created using QGIS 3.12 (qgis.org). In some cases, geographic coordinates were estimated from label data on herbarium specimens using Google Earth Pro v. 7.3.2.5776. These estimates of coordinates are provided within brackets in the specimen citations. For morphological terminology we used Smith & Downs (1974) and Hornung-Leoni & Gaviria (1999), for growth patterns Ramírez-Morillo *et al.* (2014). Limits of the biogeographical provinces were defined following Morrone *et al.* (2017). An assessment of the conservation status of the species was carried out using the IUCN methodology (www.iucnredlist.org). We relied on the set of B criteria, which allows an evaluation based on data on the distribution of the species, obtained from herbarium specimens. The subcriteria B1 (extent of occurrence, EOO) and B2 (area of occupancy, AOO), were calculated through the GeoCAT software (Bachman *et al.* 2011). These assessments were further documented with our own field experience and published data.

Results

Hechtia sanchezii I. Ramírez & C.T. Hornung, sp. nov. (Figures 1-3, 5).

Type. Mexico. San Luis Potosí, municipio Villa Juárez, +/- 2 km al SW de Buenavista, 22° 12' 07" N; 100° 19' 09" W, 1,281 m, 5 julio 2006, S. Zamudio 13454 ♂ (Holotype: IEB!; isotypes: CICY!, UAMIZ!).

Diagnosis. *Hechtia sanchezii* differs from *H. glomerata* in having red to ferruginous indument on the bracts and sepals (*vs.* white), floral bracts and sepals red (*vs.* greenish or brownish), pink (*vs.* white) petals, scentless (*vs.* fragrant) flowers, stamens with filaments of two lengths, three epipetalous, with the short filaments attached at mid length of the petal, and three alternating with petals with filaments basally connate to the base of them (*vs.* two filaments of different lengths but attached to each petal).

Description. Plants lithophytic, rosettes cespitose, globose in general shape, 25-30 cm tall, 35-40 cm diameter, generally forming dense, large colonies of 20-30 rosettes, the new ones are produced in the periphery of the clump where they become asymmetrical by the clumping of the rosettes. *Rhizomes* short to inconspicuous. *Leaves* 30-40 in number, rigid, reflexed; *sheaths* broadly ovate, 4-6 × 4.5-6.5 cm, light brown, a round-shaped, dark brown spot in the middle of it, margins erose, thin and soft when dry, densely white lepidote abaxially, lustrous and glabrous adaxially; *blades* narrowly triangular, attenuate, 25-30 × 1.8(-4) cm, succulent, channeled in cross section then margins erect when live, light green, densely white lepidote when young and becoming glabrous with age, with small trichome spots, minutely verrucose on both surfaces when dry, densely white lepidote below, margin armed; *spines* antrorse and erect due to the transversely channeled foliar blade, triangular, 3-4 mm long, 1.5-2 cm apart, opposite to alternate, reddish, pungent, with a tuft of white trichomes at the axile of the basal ones, shorter than the spine. *Inflorescence* lateral, erect to arcuate, emerging from a mature rosette (type PMP growth pattern). *Staminate inflorescences* a 2-divided panicle, narrow cylindrical in shape, erect to arcuate, 40-100 cm long; *peduncle* terete, (15-)30-40 cm long, (3-)4-5 mm diameter at the base, surpassing the rosette, internodes (2-)4.5-5 cm long, purple when young becoming brown as flowering progresses, glabrous; *peduncle bracts* surpassing (basal ones) or not (apical ones) internodes, with triangular sheaths, almost enclosing the peduncle, 2.5-3 × 0.4-0.5 cm, light green, drying light brown, margins entire to erose, thin, the blades foliaceous, triangular, long attenuate, multinerved, 3-4 × 0.2-0.4 cm, basally spinose, densely white lepidote abaxially, glabrous adaxially; *main axis* 20-50 cm long, 4-5 mm diameter, terete, reddish, drying brown, internodes 2.5-5 cm long; *primary bracts* triangular, attenuate, 1.5-2 × 0.4-0.5 cm, shorter than branches except those at the base where they are as long as the branch (usually one branch), brown when live and dry, sparsely white-lepidote on both surfaces, margin spinose-dentate; *primary branches* 7-9 in number, forming an angle of 45° or less with the main axis, *secondary branches* 1-3 in number, 1.5-3 cm long, less than 1 cm diameter, each with 40-70 flowers; *stipe* ca. 0.5 mm long, 2-3 mm diameter, flattened, drying brown, glabrous; *floral bracts*

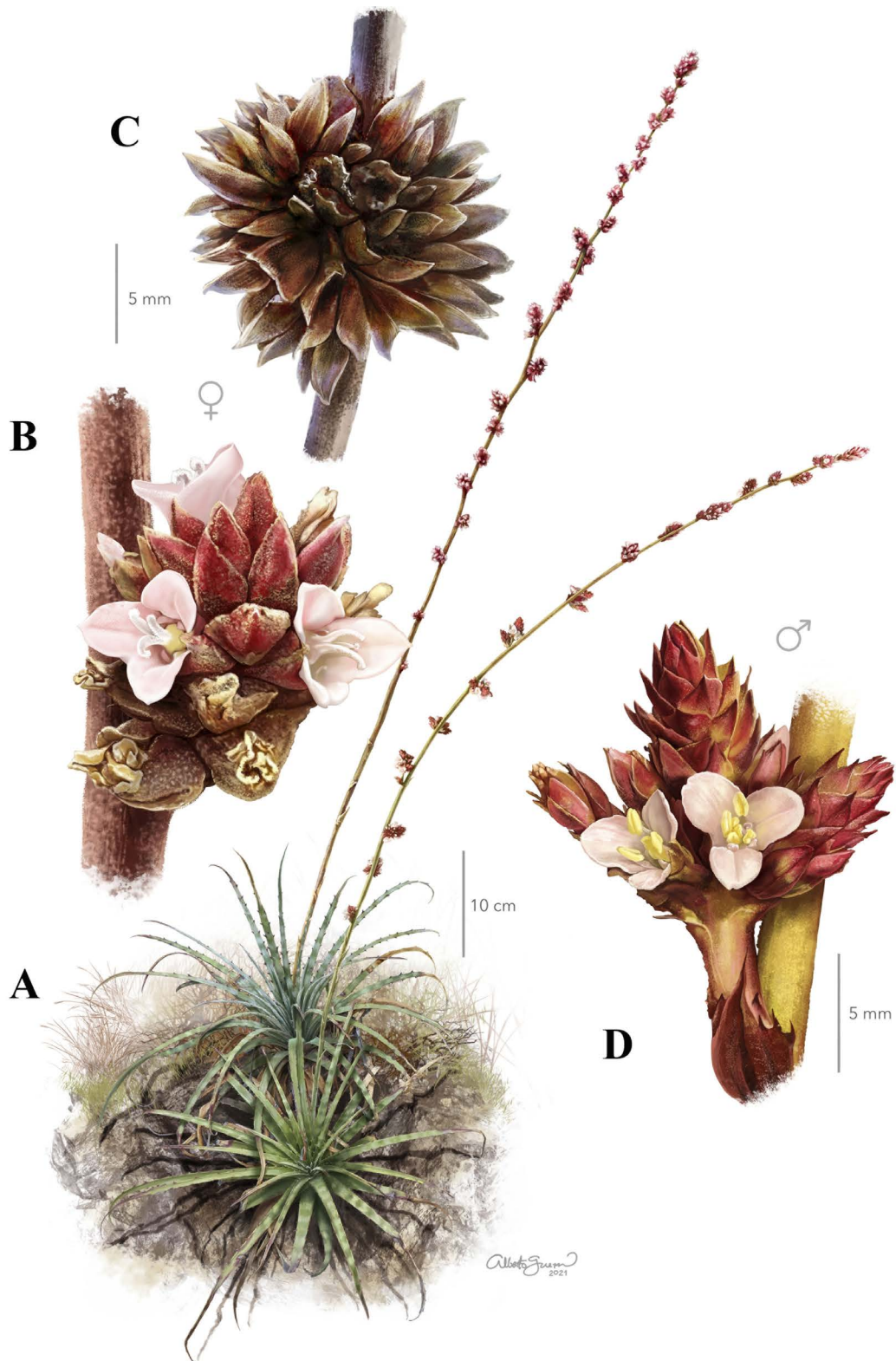


Figure 1. *Hechtia sanchezii*. A) Plants in bloom, showing the pistillate (right) and staminate (left) inflorescences, B) female flowers, C) open fruits, D) male flowers. Illustrated by Alberto Guerra based on photographs by (A) Ivón M. Ramírez-Morillo, (B) Francisco Sánchez Barra, (C) Claudia T. Hornung-Leoni, (D) Germán Carnevali.

wide-triangular to oblong, acute, $5.5\text{-}6 \times 3\text{-}5$ mm, membranous, white basally, then red, and apically brown, margin erose, punctuated adaxially, 5-nerved, erect and adnate to the sepals. *Flowers* sessile, polystichous, actinomorphic; *sepals* wide-elliptical, $3.5\text{-}4 \times 2$ mm, red, minutely serrulate, scarcely punctulate, 5-nerved, shorter than petals, erect; *petals* oblong to obovate, rounded, $5\text{-}6(-7.5) \times 1.5\text{-}2.5$ mm, pink, 7-nerved; *filaments* in two lengths, the shortest one attached to the petal mid length, ca. 2-3 mm long, white, the longest between the margins of petals, 4-4.2 mm long, with triangular filaments, flattened, basally connate; *anthers* oblong, ca. 1.5×0.6 mm long, dorsifixed, pale yellow, pollen yellow, ellipsoid, monosulcate, $37\text{-}40$ μm polar, 17 μm equatorial, reticulate; *pistillode* reduced, ca. 2 mm long, greenish-yellowish, stigmatic lobes reduced, erect, ca. 0.5 mm long. *Pistillate inflorescences* a 1-divided panicle to rarely 2-divided panicle, cylindrical in shape, erect, 30-40(-100) cm long; *peduncle* terete, 20-30 cm long, 5-6 mm diameter at the base, reddish, internodes 2.4-5.6 cm long, glabrous; *peduncle bracts* much shorter (1/2 to 1/3 of the length) than internodes, with oblong sheaths, $1\text{-}8 \times 5\text{-}6$ mm, green, drying light brown, a central spot dark brown, margins entire to erose, thin, the blades foliaceous, narrowly triangular, long attenuate, slightly pungent, multinerved, $1\text{-}2 \times 0.5\text{-}0.6$ cm, sparsely spinose, green with purple spots or reddish, drying light brown, densely white lepidote abaxially, glabrous adaxially; *main axis* 25-75 cm long, 2-3 mm diameter, terete, green to red, drying dark brown, internodes (1-)3-4.5 cm long; *primary bracts* with no distinction between sheath and blade, mostly present on the most basal branches, wide triangular, long and abruptly attenuate, $0.9\text{-}1.7 \times 0.6\text{-}0.8$ cm, longer than branches (the most basal ones), to shorter than branches to absent on apical branches, red becoming brown, sparsely white-lepidote, margin sparsely spinose to serrulate, thin, hyaline; *branches* 7-20 in number; *secondary branches* sessile, 1-4 in number, fasciculate, ellipsoid to wide-oblong in shape, (1-)2-3 cm long, 1-1.5 cm diameter, with 10-40 flowers each; *floral bracts* elliptical to ovate-elliptical, abruptly acute, $5\text{-}7 \times 4\text{-}5$ mm, red to purple, sparsely punctulate, margin sparsely serrulate, irregular, 5-nerved, erect. *Flowers* almost sessile, polystichous, actinomorphic; *sepals* ovate to

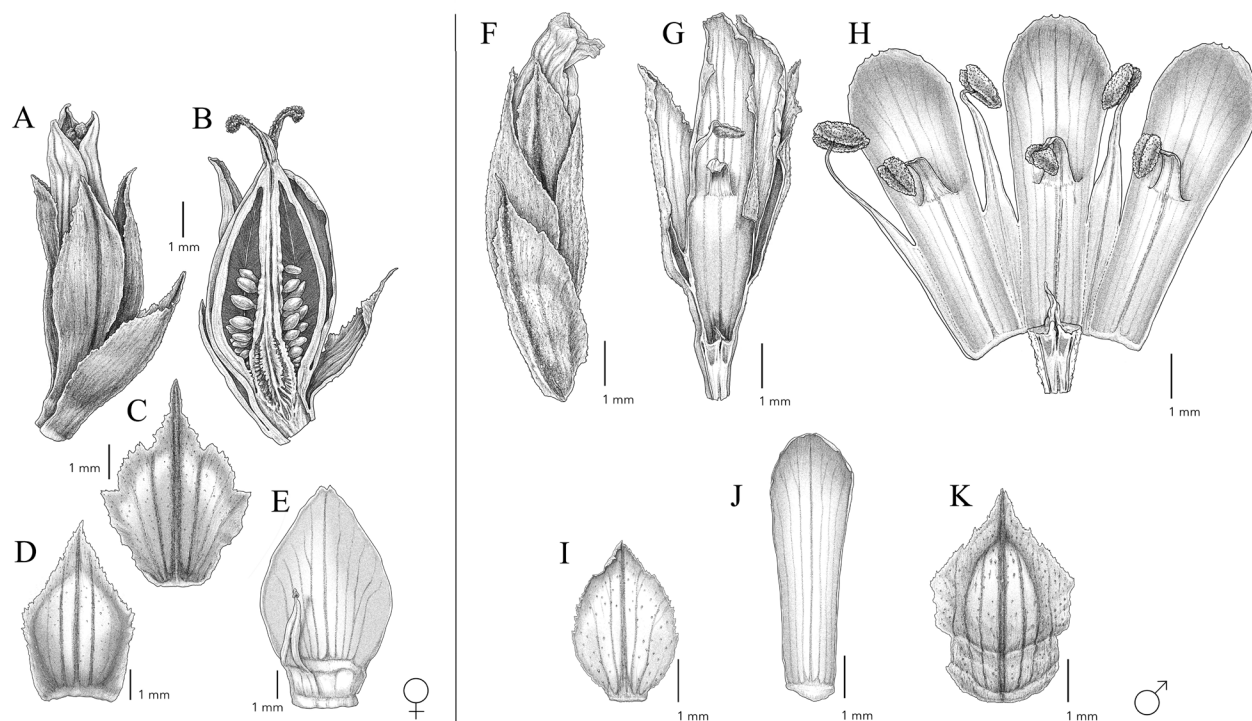


Figure 2. *Hechtia sanchezii* (A-E) Female flower, A) flower closed, B) longitudinal section showing ovary and ovules, C) floral bract, D) sepal, E) petal and staminode. (F-K) Male flower, F) flower closed, G) longitudinal section of the flower, H) details of stamens, I) sepal, J) petal, K) floral bract. Illustrated by Alberto Guerra based on (A-E) F. Sánchez 2079 (SLPM), (F-K) I. Ramírez *et al.* 2441a (CICY).

Hechtia sanchezii (Bromeliaceae) from San Luis Potosí



Figure 3. A) Type specimen of *Hechtia sanchezii* (*S. Zamudio 13454* ♂, isotype CICY), B) details of the rosette, C) lateral inflorescence development in *H. sanchezii*, D) details of foliar indumenta (adaxial, upper image, abaxial surface, bottom image of a young leaf), E) male branches, F) pollen, G) seed. Photographs by Ivón Ramírez-Morillo (A–E), Lilia Can (F–G).

elliptical, acute-attenuate, (4-)6-7 × (3-)4-6 mm, red, minutely serrulate, pubescent at margin, 5-nerved; *petals* ovate to elliptical, 5-7 × 3-4 mm, pink, entire, 9-nerved; *staminodes* six, hyaline, triangular, laminar, ca. 4 mm long, white; *ovary* superior, ellipsoid, 5-7 mm long, 2-3 mm diameter, white, slightly lepidote, stigmatic lobes recurved, 2-3 mm long, white. *Fruits* ellipsoid, sessile, 9-12 mm long, 6-9 mm diameter, glabrous, erect, brown when mature, septical

and loculicidal dehiscence; *seeds* fusiform, brown to reddish, 3-5.6 mm long, 1-1.4 mm diameter, with two apical wings, these hyalines.

Distribution and ecology. Plants of *Hechtia sanchezii* have been found in submontane shrublands, with species such as *Gochnatia hypoleuca* (DC.) A. Gray (Asteraceae), *Dasylyrion longissimum* Lem. (Asparagaceae), on gypsum soils, along with species of *Selaginella* P. Beauv. (Selaginellaceae) among other species. This new species is presently reported from San Luis Potosí, but it may be found in neighboring states due to similarities in the associated vegetation types. The actual distribution of *Hechtia sanchezii* occurs within the biogeographical areas of the Chihuahuan Desert and Sierra Madre Oriental according to Morrone *et al.* (2017), specifically in the region of the Zacatecano-Potosino Plateau (*sensu* CONABIO www.gob.mx/conabio), characterized by arid to semiarid climates, on elevations from 1,274 to 2,280 m, inhabiting xerophytic shrubland on gypsum substrate, as several other species in the genus.

Preliminary conservation status. The EOO is 4,438 km², within the threshold for “Endangered” status under subcriterion B1, while the AOO is estimated as 48 km², which is below the threshold for “Endangered” status under subcriterion B2. *Hechtia sanchezii* is only known from 20 collections, which represents 12 occurrences, and about 10 subpopulations, collected between 1955 to 2021 from San Luis Potosí. Most of these collections have been made along roads or near urban areas, which may have a negative impact on the habitat of this species, causing its fragmentation and degradation in the short to medium term. Therefore, these 12 occurrences represent nine locations (www.iucnredlist.org) with regard to the most serious plausible threats (road impacts and urbanization). These threats predict a present and future decline of the quality of its habitat. *Hechtia sanchezii* is therefore assigned a preliminary status of “Vulnerable” [VU B1ab(iii)+2ab(iii)].

Phenology. Specimens have been collected with flowers during June, July, and September, with fruits in September.

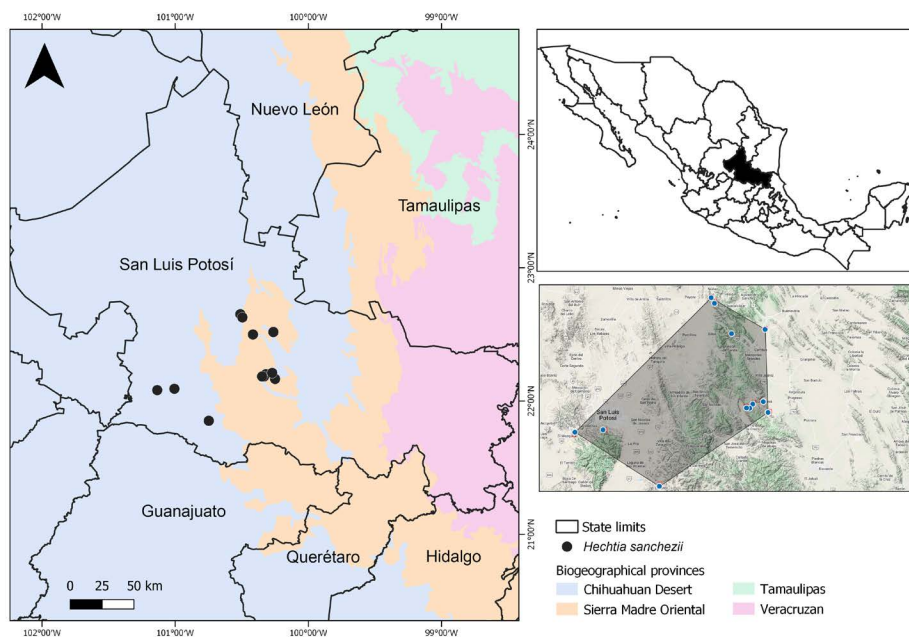


Figure 4. Distribution of *Hechtia sanchezii* based on specimens collected in central San Luis Potosí, and the polygon generated (GeoCAT) with their information.

Hechtia sanchezii (Bromeliaceae) from San Luis Potosí

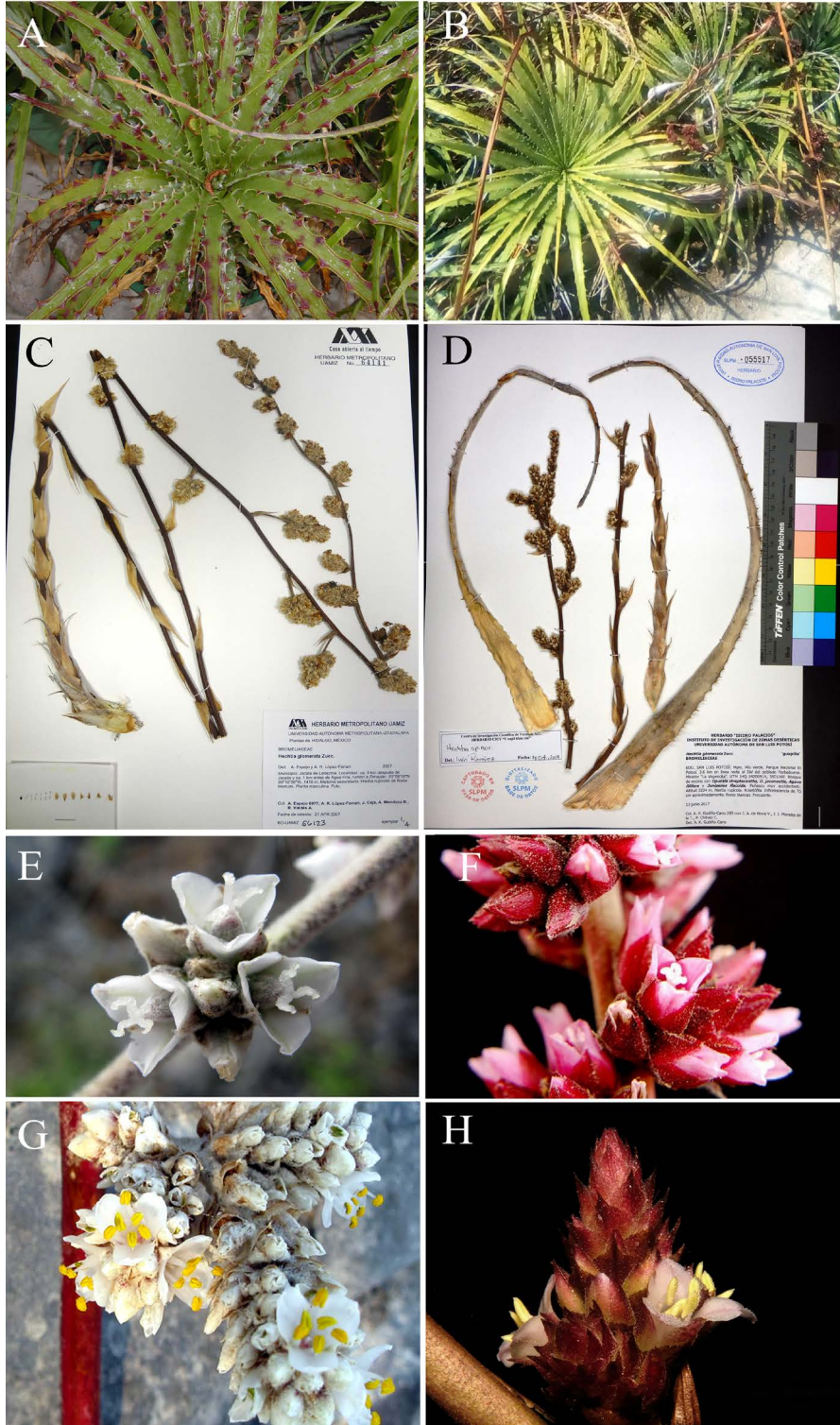


Figure 5. Comparison of most relevant morphological features between *Hechtia glomerata* (A, C, E, G) and *Hechtia sanchezii* (B, D, F, H). A, B) rosettes, note foliar surface; C, D) male inflorescences, note the shape of the branches; E, F) pistillate flowers, note floral colors; G, H) staminate flowers, note indument and floral colors. Photographs by (A, C, D) Ivón Ramírez-Morillo, (B, E, G) Claudia T. Hornung-Leoni, (F) Francisco Sánchez Barra, (H) Germán Carnevali.

Etymology. The specific Latin epithet honors Francisco Sánchez Barra, the garden manager of Botanical Garden El Izotal, located in Tangamanga Park, owned and managed by Universidad Autónoma de San Luis Potosí, in Mexico. Francisco Sánchez Barra has collected and cultivated this species and many more from San Luis Potosí, he provided photographs and material that allow the description of the new species.

Additional specimens examined (paratypes). Mexico. San Luis Potosí, Mun. De Cerritos, cauce del arroyo El Sauz, ca. 7 km después de Pozo de Acuña, rumbo a Cerritos, 22° 31' 07" N, 100° 15' 47" W, 1,225 m, 4 September 2003, *A.R. López-Ferrari, A. Espejo & J. Ceja* 3047 fruits (UAMIZ); 1 km south of Guadalcázar, path to base of hills of town, 22° 30' N; 100° 25' W, 9 June 1989, *D. & J. Bogler* 621 ♂ (TEX-LL). Mun. De Ciudad Fernández, 3 km después de Puerto de Santa Gertrudis, ca. 12 km después de El Paraíso, en brecha a Saucillo a Puerta del Río, 22° 11' 07" N, 100° 20' 52" W, 1,302 m, 13 September 2015, *I. Ramírez, A. Espejo, A. López-Ferrari, J. Ceja & A. Mendoza* 1370 fruits (CICY). Mun. De Guadalcázar, ca. 3 km al noreste de Charco Blanco, 22° 39' 14" N; 100° 30' 37" W, 5 June 1964, *F. Medellín Leal* 1556 ♀ (SLPM), 1555 ♂ (SLPM); Ca. 10 km al W de Guadalcázar, 22° 37' 42" N, 100° 29' 44" W, 1,590 m, 4 September 2003, *A.R. López-Ferrari, A. Espejo & J. Ceja* 3042 fruits (UAMIZ). Mun. de San Luis Potosí, 3 km al W de Pozuelos, ca. 17.5 km al SW de San Luis Potosí, carretera San Luis Potosí-Aguascalientes, 22° 04' 57" N; 101° 08' 7" W, 2,280 m, 16 July, 1994, *J. Ceja, A. Espejo & A.R. López-Ferrari* 13 fruits (CICY, UAMIZ). Mun. Santa María del Río, Ojo Caliente, [21° 51' 10" N; 100° 44' 53" W], 1,800 m, 5 June 1959, *F. Takaki* 133 ♂ (SLPM). Mun. De Villa de Arriaga, Sierra de San Miguelito, cañada de San Antonio, [22° 05' 34" N; 101° 00' 23" W], 2,250 m, 5 enero 1955, *J. Rzedowski* 5679 fruits (SLPM). Mun. de Villa Juárez, ca. 1 km al oeste de Agua del Medio, creciendo sobre bancos de yeso, 22° 09' 59.2" N, 100° 15' 0.34" W, matorral xerófilo, 1,274 m, 28 October 2021, *F. Sánchez* 2079 ♀ (SLPM); same previous locality; 28 October 2019, *I. Ramírez & N. Raigoza* 2441a ♂ (CICY), 2441 fruits (CICY, SLPM); Cerro de Guascamá [Guaxcamá], [22° 12' 42" N; 100° 16' 19" W], 1,250 m, 26 March 1962, *F. Takaki* 1250 ♀ (ENCB); 8.5 km después de Guaxcamá, rumbo al Puerto de Santa Gertrudis, 22° 11' 05" N, 100° 20' 00" W, 1,418 m, 4 September 2003, *A.R. López Ferrari, A. Espejo & J. Ceja* 3059 ♂ (2xCICY, UAMIZ); Cerro de Guascamá [Guaxcamá], [22° 12' 42" N; 100° 16' 19" W], 26 March 1962, *F. Takaki* 1715 ♀ (MEXU, SLPM).

Discussion

Hechtia sanchezii is an interesting species due to the presence of a combination of morphological characters previously unknown in the genus. It is morphologically similar to members of the *Hechtia glomerata* complex by its cespitose growth, rosette with narrow triangular leaves, serrate margins, and lateral female inflorescences with glomerule-like branches. Nevertheless, staminate inflorescences of the new species have oblongoid branches (*vs.* pyramidal) and longer in *H. glomerata*, with floral bracts membranaceous (*vs.* stramineous). Live plants of the new species show unique characters, main inflorescence axis, primary and floral bracts, as well as sepals are red, and flowers have pink petals (Figures 1-3, 5). Furthermore, a detail examination of the staminate flowers revealed the presence of stamens with filaments of two lengths, three epipetalous, with the short filaments attached at mid length of the petal, and three alternating with petals with filaments connate to the base of them (*vs.* two filaments of different lengths but attached to each petal; see Figure 2). These structures were cited already by Smith & Till (1998) for some *Hechtia* species. An additional feature of this new species, when compared with *H. glomerata*, is the absence of floral fragrance compared with the sweet diurnal fragrance on flowers of the latter. Floral fragrance is a common feature on Hechtioideae: a sweet diurnal smell perceptible by the human nose, but imperceptible just in few species, especially those with red sepals and/or petals, such as *H. rosea* E. Morren ex Baker, *H. meziana* L.B. Sm., *H. iltisii* Burt-Utley & Utley, and the new taxon here described. Preliminary studies (Ramírez-Morillo *et al.* 2022) characterizing nectar composition on species with different pollination syndromes (melittophily and ornithophily) in *Hechtia* (*H. jaliscana* L.B. Sm. and *H. rosea*, respectively) show differences supporting the hypothesis of two different syndromes in the genus.

One of the most conspicuous features of *Hechtia sanchezii*, is that male inflorescences continuously produce flower buds as the basal flowers open, which causes a long flowering period and the continuous elongation of the

branches, something uncommon in the genus, where branches reach their maximum length, produce all the buds and then, just after that, blooming begins. This phenomenon has also been observed in species in the *Hechtia glomerata* complex native to Tamaulipas, which have not yet been described.

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