Agave gomezpompae Cházaro & Jimeno–Sevilla A New Species of *Agave* (Agavaceae) from Central Veracruz, Mexico

Miguel Cházaro–Basáñez, H. David Jimeno–Sevilla and Héctor Oliva–Rivera (Mexico)

ABSTRACT. *Agave gomezpompae* Cházaro & Jimeno–Sevilla, a new species from karstic hills in the neighbourhood of Cordoba and Zongolica, in the central part of Veracruz state, eastern Mexico, is described and illustrated.

It belongs to subgenus *Littaea* (Tagliabue) Baker, group Polycephalae Gentry, its closest relative being *Agave pendula* Schnittsp., also from central Veracruz, sharing with this species a long stem that bifurcates, although there are conspicuous differences between them: such as vegetation type where they live, in the lenght and diameter of the stems, leaves, flowers, inflorescences and phenology.

Keywords: Agavaceae, *Agave*, century plant, Mexico, Veracruz.

In May 2002, one of us (M. Cházaro) learned from Lorenzo Escandón, an orchidiologist and former student of the Biology School, University of Veracruz, at Cordoba, of an *Agave* that thrives in the karstic hills north of this city, known by the local people as “cacayas”, and harvested by them, as the flowers are edible.

Lorenzo brought the inflorescences without the leaves, to M. Cházaro, who inmediatly realized it could be something new or at least rare, unfortunately Cházaro was ready to leave the town (Cordoba) in his way back home to Guadalajara, Jalisco.

2 years later, on 17th August 2004, when Cházaro returned to Cordoba, he asked Lorenzo to guide him to the site of the “cacayas”. Upon arrival and seeing the whole plant, he confirmed the suspicion that it was indeed an undescribed species.

Again 2 years later, on 1st August 2006, we the authors went back to the Cerro del Divino Rostro to collect botanical material to be used as Types (Holotype and Isotypes).

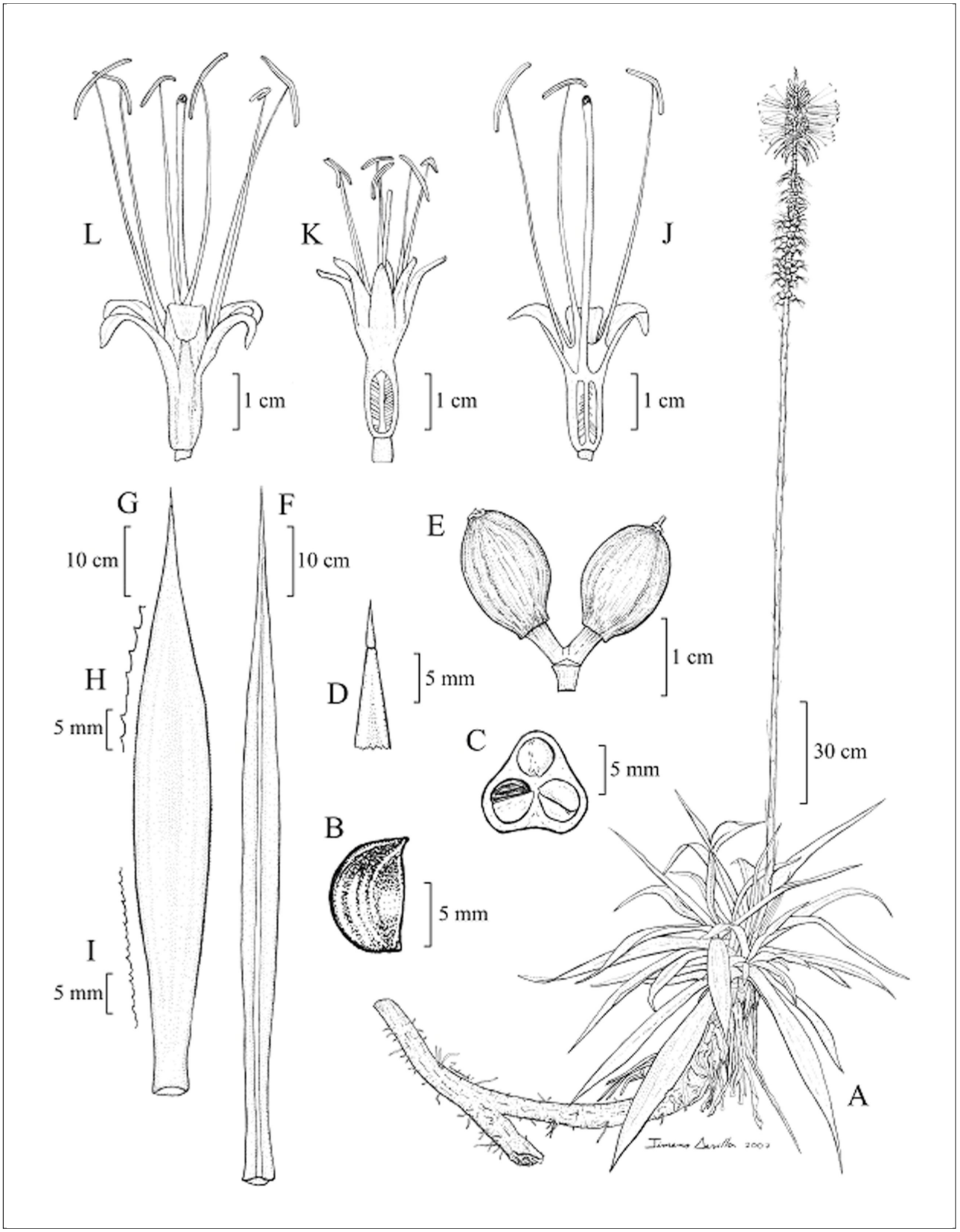

Fig.1. ***Agave gomezpompae*** Cházaro & Jimeno-Sevilla. **A.** habit; **B**. seeds, lateral view; **C**. transversal cut of the fruit; **D**. leaf apex; **E**. peduncle with mature fruits; **F**. leaf of ***Agave pendula*** Schnittsp.; D. Jimeno S. 253 (XAL); **G**. leaf; **H, I**. detail of the leaf denticulation; **J.** flower, longitudinal section; **K.** flower of ***Agave pendula*** Schnittsp.; D. Jimeno S. 419 (XAL); **L**. flowers; A-E,G-I. after D. Jimeno S. 247 (XAL), and J, L. D. Jimeno S. 411 (XAL).

Drawing: H. David Jimeno S.

Fig. 2 ***Agave gomezpompae*** Cházaro & Jimeno-Sevilla. **A**. detail of inflorescence ; **B.** detail of the leaf denticulation ; **C**. detail of stem; **D**. habit. (Photo : A: H. Oliva, B-C-D: D. JImeno)

When all the facts were gathered, they pointed it out that ***A. gomezpompae*** was endemic to 3 carstic hills near Cordoba. It happened that on 10th March 2009, David Jimeno in the company of Jose Viccon, Gerardo Sánchez-Vigil, Thorsten Krömer and Humberta Flores, from CITRO, carried out a botanical expedition to the Zongolica region, as part of the reaserch project: "Endemic flora and oustanding species of Veracruz state Atlas" from the Tropical Research Institute, University of Veracruz, and they found 3 more populations of *Agave gomezpompae,* 1 km south of Zongolica village, at the locality of La Quinta.

Following is the formal description of this new taxa:

Agave gomezpompae Cházaro & Jimeno – Sevilla sp. nov. (figure 1 and 2) **TYPE:** Mexico, Veracruz, Amatlan county, Cerro del Divino Rostro, *ca* 4 km northeast of Cordoba city, 850 m in alt., very abundant locally, 1st August 2006 (fruits). **D. Jimeno S., M. Cházaro B., H. Oliva R. and Amparo Albalat 247.** (holotype: XAL; Isotypes: CHAPA, CHAP, ENCB, IEB, IBUG, MEXU).

Paratypes. MEXICO, Veracruz. Amatlan county, Cerro del Divino Rostro, near Colonia Cuauhtemoc towards rio Seco (4 km east of Cordoba), 850m in alt., 1st June 2003 (flowers). **H. Oliva** no number (CORU); idem, 26th September 2006 (fruits). **D. Jimeno S., M. Cházaro B., H. Bojorquez, P. van der Meer and J. van Roosbroeck 305** (XAL); idem, 9th July 2007 (flowers). **D. Jimeno S., et al. 411** (XAL); Zongolica county, La Quinta, hill of Amatitla, 1 km S of Zongolica village, abundant, 10th March 2009, (sterile material). **D. Jimeno et al. 1085** (IBUG, IEB, MEXU, XAL).

Planta nec monocarpica nec surculosa, caulibus repentibus 2–3-chotome furcis exorientia; folia pauca ad apicem caulis rosulata, atroviridibus, supra concava, infra convexa, lanceolata vel oblanceolata, 80–85 × 10—13 cm, margine denticulato, spina terminali 2 cm vel plus longa; inflorescentia lateralis erecta spicata, scapo ad 2.7 m longo, bracteis inferioris triangulis 12-16 cm longis et bracteolis superior filiformi ad 4 cm longis instructa; flores parvi ca. 3–5 cm longi (7.5 cm longi pistillo atque staminibus incluso); ovarium viridulum, ovoideum vel oblongo-ellipsoideum apice incluso ca. 1.5—2 cm longum; segmenta viridia vel intra luteola, spatulata, 20–28 mm longa; filamenta ad 43 mm longa, antheris luteolis, 7–9 mm longis; capsula brevipedicellata 3–angulata parva, 2 cm longa, ab apice ad basin dehiscens; semina anthracina parva, 3–4 × 2 mm.

A non surculose, non monocarpic plant, creeping rounded stems up to 1·5 m long and 8–15 cm thick, the stems bifurcate three or more times, each stem bears a terminal leaves rossette that turns upright, with few leaves per rosette, flexible, fleshy, concave above, convex below, lanceolate to oblanceolate, 80–85 cm long, 10–13 cm wide, dark green, denticulate margins along the leaf, terminal spine dark, 2 or more cm long, lateral inflorescence an erect spike, inflorescence stem 2–3 cm in diameter, up to 2·7 m long, bracts 12–16 mm long, 3–5 mm wide at base, triangular, apex acuminate and curve, geminate flowers, 32–49 mm long (without the stamens), with stamens and pistil 74 mm long, peduncles 3–4 mm, single or geminate, tepals 6, green or creamish-yellow inside, 20–28 mm long, espatulate, base 2–4 mm wide, obtuse apex, ovary greenish, ovoid or

barrel shape, 15–21 mm long, 3–5 mm wide, style up to 43 mm long and slender, stamens 6, filaments up to 43 mm long, anthers yellowish, 7–9 mm long, attached to the filament in the middle part, fruits geminate capsules, with pedicels 5 mm long, trigonous, with rest of the periant temporarly attached to the tip, each capsule subtended by a filiferous bracteole up to 4 cm long, capsules green and fleshy when unripe, turning blackish when ripen, 20 mm long, dehiscent from the top,with 3 row of numerous seeds inside of each locule, seeds black, shiny, 3–4 mm long by 2 mm wide.

Distribution: *Agave gomezpompae* is an endemic of the neighbourhood of Cordoba and Zongolica, Veracruz, Mexico, currently known only from the Cerro del Divino Rostro, near La Colonia Cuauthemoc, in Amatlan County and two adjacent limestone hills, as well in several limestone hills south of Zongolica. It is very likely more populations will be find in the mountainous region of Zongolica when it is better explored.

Habitat: In Cordoba it grows on karstic (cretaceous limestone) rocks, at 850m in alt., in tropical subperennial forest, with *Pseudobombax ellipticum, Plumeria rubra*, *Vallesia glabra*, *Pittocaulon orcutii*, *Dioscorea mexicana*, *Hechtia* aff. *purpusii*., *Echeveria* sp., *Catopsis* sp., *Monstera deliciosa*, *Philodendron* sp., and epiphytes like *Epiphyllum phyllanthus, Laelia anceps*, *Prostechea cochleata*, *Tillandsia* spp., etc. Also in Zongolica at 1400m in alt., also on calcareous rocks, but in the cloud forest with *Quercus* spp., *Liquidambar styraciflua, Clethra mexicana, Juglans pyrifomis, Oreopanax capitatus, Nemaconia* sp., *Monstera deliciosa, Stanhopea* sp., etc., thriving on rocky outcrops and vertical walls.

Common name and local uses. “Cacaya” as stated before, is the common local name (of Popoluca indian origin), both for the plants and of the inflorescences, the buds of the flowers are harvested by the local inhabitants in May, boiled and fried with eggs.

Eponym: The specific epithet is after Dr. Arturo Gómez–Pompa, emeritus professor of the University of California-Riverside, United States of America, currently associated with CITRO (Centro de Investigaciones Tropicales (Tropical Research Center), Universidad Veracruzana, at Xalapa, Veracruz, Mexico.

Dr. Gómez–Pompa, received his Ph. D. in 1966, from the National Autonomus University of Mexico , with a floristic and taxonomic study of the Misantla region in central Veracruz, afterwards he became interested in the flora of Veracruz state; in 1973 he published the Ecology of the Vegetation of Veracruz, then the floristic list of Veracruz (Sosa & Gómez–Pompa, 1994) and from 1978 up to now (2010) he has been in charge of the editorial part of the Flora of Veracruz project (Gómez–Pompa, 1966, 1973, 1978). Up to now 148 fascicules of the Flora of Veracruz have been published.

Gómez-Pompa himself has been always interested in the genus *Agave* (Gómez-Pompa, 1963). In the early 1960’s, Gómez-Pompa, stared out and promoted the collection of agaves in the botanical garden of the Biology Institute, National Autonomous University

Agave gomezpompae, habitat (photo : D. Jimeno).

of Mexico, in Mexico city, that later on became the national collection of Agavaceae and Nolinaceae.

For all these reasons we deemed it appropiate to name this species after him.

Agave gomezpompae belongs to the Littaea subgenus, and Polycephalae group of Gentry (1982), for its restricted geographic distribution in our opinion it should be regarded as threatened.

Agave gomezpompae is similar to *A. pendula* in having a long and dichotomous stem and lateral inflorescences, both features of the Polycephalae group, however there are differences among them such as lenght and diameter of the stem, the width and coloration of the leaves, the size and arrangement of the inflorescence, the size and form of the flowers, diferent phenology and type of vegetation where it grows (Table 1).

Although both species ocurr in central part of Veracruz, their growth is never sympatric (overlapping). ***Agave pendula*** is associated with the seasonal climate of the Tropical Deciduous forest, whereas ***A. gomezpompae*** grows in an even more humid climate of Tropical subperennial forest or Cloud forest.

For the long, ligneous, creeping and dichotomous stem, as well for the lateral inflorescence that do not die after flowering, we putatively consider ***A. gomezpompae*** to be a primitive species within the genus, a fact to be proved by molecular analyses.

Table 1. Comparison of the morphological and phenological characters of *Agave pendula* et *A. gomezpompae.*

Species character	***Agave pendula***	***Agave gomezpompae***
Leaves		
outline	Oblong, lanceolate	oblanceolate
long (cm)	93	81
wide (cm)	4·8	10.1
Colour	Light green with a yellow stripe in the centre.	Green, without a yellow central stripe.
Denticulation arrangement	12-16 cm beneath the terminal spine	All along the leaf margin
Stem		
Form	Bifurcate, sometimes creeping, mostly hanging	Bifurcate, creeping or erect in the distal portion
Long (cm)	200	150
Wide (cm)	5-11	8-15
Inflorescence		
arrangement	Lateral, penduluous	Lateral, erect
Long (cm)	130-180	250-265
Diameter (cm)	1	2
Flowers arrangement	In the last third of the shaft	From the middle all the way up of the shaft.
Fruits		
long (mm)	22	20
Végétation	Tropical deciduous forest	Tropical subperennial forest and cloud forest
Blooming time	January–February	May–June
Fructification time	March- April	July–August–September
Distribution	Central Veracruz-Chiapas-Guatemala	Central Veracruz

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Agave gomezpompae, infl., habitat, Mexico (photo : Hector Oliva R.)

Agave gomezpompae, infl.., habitat, Mexico (photo : Hector Oliva R.)

Agave gomezpompae, habitat, Mexico (photo : D. Jimeno).

Apendix 1. Consulted specimens of *Agave pendula* , for geographic distribution and morphological comparision with *Agave gomezpompae*.

Material studied. GUATEMALA, Huehuetenango. Nentón, 1 km before of the village . (N15º47'30'' W 91º45'54'') 5000mm in alt., 19 February 2003 (flowers). ***M Véliz, R. Moráles 12986*** (MEXU); **MEXICO, Chiapas.** Ocozocuautla county, at El Aguacero, río (river) La Venta. 700mm in alt., 18 May 1989 (fruits). ***E. Marínez S., M. A. Soto 24244*** (MEXU); Ocozocuautla county, steep-walled canyon at the head of the rio (river) de la Venta at the Aguacero near Derna. 800-1000 mals, 20 March 1973 (fruits). ***D. E. Breedlove 34328*** (MEXU);**Veracruz.** Actopan county, at W of Almolonga village, (N 19º35'23'' W 96º48'36'') 690m in alt., 4 February 1998. ***G. Castillo-Campos, S. Avendaño R., y R. A. Palestina G. 17079*** (XAL); Alto Lucero county, between La Reforma and El Alto de Altizar, (N19º44' W 96º39') 700m in alt., April 1979. ***M. Cházaro B. 936*** (XAL); Jalcomulco county, 1.5 km NW of the town of Jalcomulco (N 19º29'47, W 96º46'37''), 595m in alt., 17 june 1998, ***G. Castillo-Campos, S. Avendaño R., R. A. Palestina G. 17883*** (XAL); Jalcomulco county, Barranca (ravine) del Jabalí, S of Jalcomulco (N 19º19'54'' W 96º45'42''), 11 November 1992, ***G. Castillo-Campos, M. Aranda 8827*** (XAL); Actopan county, NE of Mozomboa (N 19º32'36'' W 96º26'17''), 90m in alt., 1 April 1998, ***G. Castillo-Campos, S. Avendaño R., R. A. Palestina G. 17583*** (XAL); Paso de Ovejas county, 2 km SW of Cantarranas, 200m in alt., 30 January 1985, ***G. Castillo C., M. E. Medina A. 3555*** (XAL); Naolinco county, Chiverias, near Almolonga village (N 19º33' W 96º48'), 600m in alt., 2 May 1978, ***R. Ortega O. 809*** (XAL); Jalcomulco county, trail from Jalcomulco village to Buena Vista village (N 19º19'10" W 96º46'13") 603m in alt., (sterile) ***D. Jimeno–Sevilla 253*** (XAL); Emiliano Zapata county, Cascada (waterfall) of Palo Gacho (N 19º24'04" W 96º38'04") 239m in alt., (flowers) ***D. Jimeno–Sevilla 419*** (XAL); Teocelo county, 2 km SE of Tejería, towards Llano Grande, 510m in alt., 20 January 1989 (flowers), ***P. Tenorio L. 15487*** (MEXU); Actopan county, Cerro de la Campana, N slope (Sierra Manuel Díaz) (N 19º33' W 96º22'), 50m in alt., 19 march 1985 (flowers), ***R. Acosta P., G. Castillo C., J. Barradas M. 991*** (MEXU); Actopan county, Cerro Gordo, by Rt. 140, 10-20 miles SE of Jalapa, 1400 feet, 28 February 1974 (flowers), ***H. S. Gentry, J. Dorantes 23375*** (MEXU); Actopan county, Cerro Gordo, 10 february 1999 (flowers), ***A. García-Mendoza 6754*** (MEXU); Actopan county, 3 km S of Cerro Gordo, highway Xalapa-Veracruz, 500m in alt., 9 October 1992 (fruits), ***A.*** García-***Mendoza, S. Franco, J. Reyes 5728*** (MEXU); Puente Nacional county, Rinconada, 50m in alt., 12 January 1973 (sterile), ***R. Hernández M.., J. Dorantes L. 1792*** (MEXU); Comapa county, Barranca (ravine) of Panoaya, 2 km at NE of El Coyol (N 19º12' W 96º41'), 250m in alt., 13 December 1985 (flowers), ***M. E. Medina, M. Ortiz D. 848*** (MEXU); Comapa county, Barranca of Panoaya, 2 km at N of El Coyol 450-500m in alt., 18 April 1992 (fruits), ***M. Cházaro B., R. Acevedo R. 6902*** (IBUG, MEXU).

Miguel Cházaro-Basáñez
Departamento de Geografía, Centro Universitario de Ciencias Sociales y Humanidades
Univ. de Guadalajara, Av. Maestros y Mariano Barcenas, C.P. 42260, Guadalajara, Jalisco, Mexico
chazaro55@hotmail.com
H. David Jimeno–Sevilla
Centro de Investigaciones Tropicales, Universidad Veracruzana, Interior de la Exhacienda Lucas Martín, Calle Araucarias S/N, Colonia Periodistas, CP. 91019, Xalapa, Veracruz, Mexico
bpdjimeno@yahoo.com.mx
Héctor Oliva–Rivera
Facultad de Ciencias Biologicas, Universidad Veracruzana, Peñuela, Córdoba, Veracruz, Mexico
holiva@uv.mx

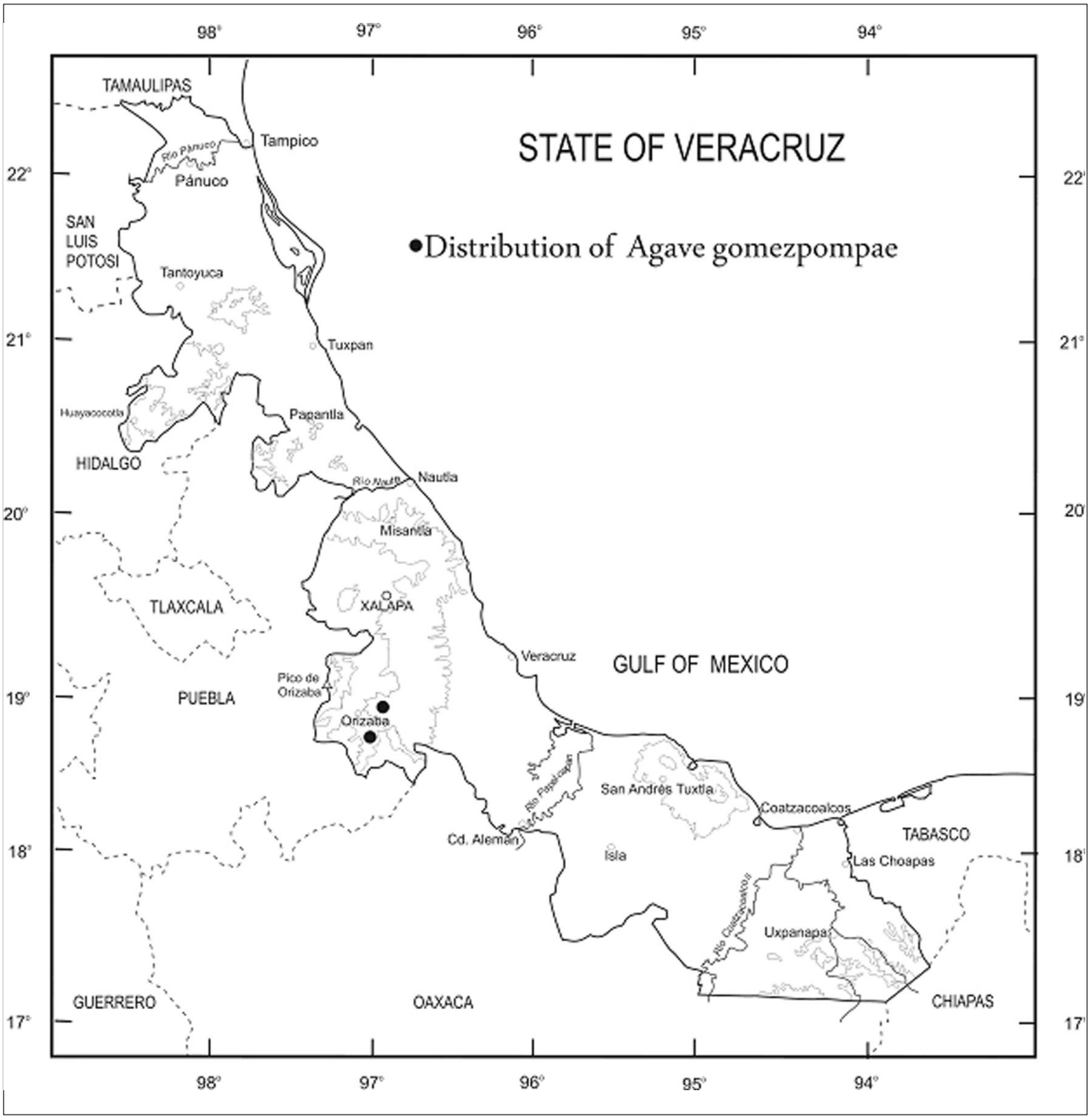

Fig. 3. Distribution map of *Agave gomezpompae.*

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