A New Species of *Ceratozamia* (Zamiaceae, Cycadales) from Chiapas, Mexico

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**ABSTRACT.** A new species of cycad, *Ceratozamia alvarezi* (Zamiaceae) from Chiapas, is described and illustrated. This species has affinities with *C. matudai* from Chiapas and *C. sabatoi* from Queretaro and Hidalgo. It differs from these species with regard to trunk, leaf habit, and male and female cones. It differs from *C. norstogii*, also from Chiapas, in that the latter is a much larger unbranched plant with a spirally twisting leaf rachis.

**RESUMEN.** Se describe e ilustra una nueva especie, *Ceratozamia alvarezi* (Zamiaceae). Esta especie presenta afinidad con *C. matudai* y *C. sabatoi* de Queretaro e Hidalgo. Esta especie difiere de las anteriores por la hoja, hábito de los estróbilos y morfología del tronco. También difiere de *C. norstogii* dado que la última es una planta más grande, no ramificada y la raíces torcida espiralmente.

During the course of botanical explorations in one of the natural areas of Chiapas that has recently been decreed as a Biosphere Reserve, we collected a species of *Ceratozamia* with a unique combination of trunk, leaf, and cone characters.

We believe that the new species is close to *Ceratozamia matudai* Lundell. Specimens of the new plant and *C. matudai* were cultivated under the same conditions for comparison purposes for a period of two years, in which time new leaf flushes and cones occurred. The plants under cultivation continued to present the same characteristics as those of the natural habitat. The cones of *Ceratozamia alvarezi* differed from those of *C. matudai* as well as those of *C. norstogii* Stevenson, which also is from Chiapas; *C. norstogii* also differs in its much larger habit, and in having an erect non-branching trunk and leaves with a spirally twisted rachis.


Planta trunco subgloboso ad cylindricum semihypogeae ad hypogaeum, ramoso, 10–50 cm alt. cataphylls lanatis triangularius, stipulatis. Folia pinnata; petiolo 14–42 cm long.; rachidi 25–66 cm longa; foliolis oppositis ad suboppositis. 24-62-jugis. lineari-lanceolatis. Strobilus masculinus lineari-cylindricus 11–31 cm longus pedunculo tomentoso 4–5 cm longo insidens; strobilus femininus 14.5–19 cm longus pedunculo tomentoso 4.5–6.5 cm longo insidens; semenibus 1.7–2.5 cm longis.

Trunk subglobose, 10–50 cm long, partially subterranean, becoming cylindrical with age, branching freely, 8.9–17.5 cm diam. and protected by persistent petiole bases. Cataphylls stipulate, lanulose, 2.1–5 cm long, 1.5–3 cm wide, brown. Leaves 4–18, pinnate, spirally arranged forming an open crown, 54–109 cm long, 31.5–61 cm wide. Petiole 14–42 cm long, rachis 25–66 cm long, both ascending, tomentose, especially at the base, armed with short stout prickles 2–5 mm, which decrease toward the apical part of the rachis, occasionally mildly twisted. Leaflets 24–62, linear-lanceolate, opposite to subopposite, flat, coriaceous, margins entire, pubescent when immature, glabrous with age, adaxial surface dark green, abaxial surface light green, 16–32.5 cm long, 4–9 mm wide, veination visible on the abaxial surface, number of veins 5–9, distance between veins 0.05–1 mm. Microstrobilus cylindrical to conical, light green to olive green upon emergence, light yellow to creamy yellow when mature, 11–31 cm long, 2.5–4.5 cm diam., peduncle tomentose, 4–5 cm long, 1–1.8 cm diam. Microsporophylls numerous, inserted spirally with vertical rows, cuneiform, 1.4–1.7 cm long.

of the female cone of *C. alvearezi* is thick and erect, while that of *C. matudai* is long, thin, and decumbent. *Ceratozamia sabatoi* Vovides, Vázquez Torres, Schutzman & Iglesias (Vovides et al., 1993) differs from *C. alvearezi* by having wider, longer leaflets and blue-green to blue-brown megastrobili. *Ceratozamia norstogii* is a much larger plant with an unbranching trunk and a spirally twisted leaf rachis. The consistent differences in cone and vegetative habit led us to consider *C. alvearezi* as a separate species. The chromosome count for the new species (2n = 16) appears consistent with members of this genus investigated so far. We consider *C. alvearezi* to be endangered, since the oak forests in which it occurs are being transformed for agricultural expansion.

The following key separates *Ceratozamia alvearezi* from *C. matudai*, *C. sabatoi*, and *C. norstogii*.

**Diagnostic Key**

1a. Leaf rachis spirally twisted ............... *C. norstogii*

1b. Rachis not twisted.

2a. Leaflet articulation yellow ............... *C. matudai*

2b. Leaflet articulation green.

3a. Leaflet lanceolate, narrowly obovate to subulate; leaflet veins 9 to 14 ............... *C. sabatoi*

3b. Leaflet linear-lanceolate; leaflet veins 5 to 9 ........................................ *C. alvearezi*

Due to the morphological characteristics that the new species presents, coriaceous linear-lanceolate leaflets with long-attenuate tips, we include it within the second group within *Ceratozamia* described by Stevenson et al. (1986), which includes *C. mexicana* Bronniiart, *C. zarogozae* Medellin, *C. matudai*, *C. kuesteriana* Regel, *C. robusta* Miquel, *C. sabatoi*, and, in our opinion, *C. whitelockiana* Chemnick & Gregory.

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Literature Cited


