

DIOON MEROLAE (ZAMIACEAE), A NEW SPECIES FROM MEXICO

PAOLO DE LUCA, SERGIO SABATO AND MARIO VÁZQUEZ TORRES

De Luca, Paolo, Sergio Sabato (Istituto di Botanica, Università di Napoli, via Foria 223, Napoli, Italy) and Mario Vázquez Torres (Facultad de Ciencias Biológicas, Universidad Veracruzana, Xalapa, Veracruz, Mexico). *Dioon merolae* (Zamiaceae), a new species from Mexico. *Brittonia* 33: 179-185, 1981.—A new species of *Dioon* found in northwestern Chiapas is characterized by linear-lanceolate leaflets arising at an acute angle from the rachis, obliquely inserted on it and imbricate.

The knowledge of taxonomy and distribution of the genus *Dioon* Lindley in Chiapas, Mexico is rather ambiguous and uncertain. Schuster (1932) reported as dubious the existence of *Dioon* in southern Mexico.

Actually, E. A. Howard (1933a, b), a California plant collector, in 1909 found *Dioon* specimens in Chiapas that he ascribed to a new species, "*D. dohenyi*," so named in honor of E. L. Doheny, who had financed his botanical expedition to Central America. Howard never published the description of "*D. dohenyi*." He simply reported the discovery of "*D. dohenyi*" in the highlands of Chiapas at a locality vaguely placed "100 miles north of the Guatemalan border and 25-30 from the Pacific coast." The exact station, mentioned in a letter from L. H. Bailey to J. N. Rose, dated 27 Nov 1926 (deposited at US), is in the vicinity of Tonalá (Chiapas) at an altitude of about 5000 feet, on the top of a ridge about one mile to the south of Tres Picos, on the road to Madre Mia. This letter also stated that specimens (*L. H. Bailey 8003 and 8003a*), coming from plants grown at Beverly (California) but originally collected at Tonalá by Howard, were deposited at the U.S. National Herbarium. The discovery of "*D. dohenyi*" had already been published (Anonymous, 1912) but its distribution was cited erroneously in the Guatemalan mountains.

In our herbarium research, we found that in 1925 C. A. Purpus had collected *Dioon* specimens in Chiapas, on the mountains east of Montserrat. His specimens bore an unpublished name attributed to Rose honoring the Del Pino family who owned that territory.

Furthermore, at the Field Museum, Chicago, there are specimens from plants grown in California, but originally collected in Chiapas by Howard. Those specimens, grown at Sharp Estate at Coronado Beach, are labelled "*D. purpusii* Rose." Others, from the Doheny Collection¹ at Los Angeles, are labelled with the epithet "tomentosum." On one of those herbarium sheets (F1526575) there is a note, probably in the hand of C. J. Chamberlain, saying that "[it] looks to the *Dioon* no. 209563 of the U.S. Nat. Herb., collected at Montserrat by Purpus."

All these herbarium specimens, even though assigned to different taxa, are characterized by flat fronds with leaflets imbricate and obliquely inserted on the rachis. However, most of them come from plants in cultivation under various conditions: *L. H. Bailey 8003 and 8003a* were grown in the open under dense shade, whereas *L. H. Bailey 7961* was grown in a greenhouse.

In order to verify the similarities observed in the specimens, we explored, in

¹ Unfortunately, the Doheny Collection no longer exists (Myron Kimnach, pers. comm.). One living specimen remains in cultivation under the name "*D. dohenyi*" at Huntington Botanical Gardens, San Marino, California (Hertrich, 1951). Examination of exsiccata from this plant revealed no relationship with the other *Dioon* specimens from Chiapas.

the course of a botanical expedition to Mexico, the localities of Montserrat and Tonala. There we found *Dioon* plants with the same characteristics. Further investigating *Dioon* distribution in Chiapas, we found a new station for the genus at a locality near Villa Flores, between Montserrat and Tonala (Fig. 1).

Examination of all the specimens from Chiapas revealed that they were similar to each other but differed from known species of *Dioon* and, therefore, they have been referred to a new species.

***Dioon merolae* De Luca, Sabato & Vázquez Torres, sp. nov. (Figs. 2, 3)**

Truncus cylindricus, erectus vel reclinatus, 3 m vel ultra altus, 25–40 cm diam. Cataphylla dense lanata, ca 10 cm longa, basi 2 cm lata. Folia plana, numerosa, rigide coriacea, adscendentia, in statu juvenili tomentosa, deinde glabra, 100 cm vel ultra longa. Rachis semiteres, recta vel irregulariter torta; petiolus semiteres, 7–10 cm longus, basi 2–3 cm latus. Foliola 120 et ultra utroque latere, subopposita, lineari-lanceolata, acute pungentia, supra rachidem oblique inserta, praeter infima supremaeque imbricata, margine revoluta, supra basin angustata, apice versus spinulosa. Foliola inferiora primum 1 cm longa, 2 mm lata, sensim crescentia, margine integerrima; foliola mediana 7–9 cm longa, 10–12 mm lata, nervis 20 ca, margine integerrima vel margine superiore dentibus 1–2 spinosis 1 mm longis praedita; foliola superiora sensim decrescentia usque ad 1.5–2 cm longa, 3 mm lata, margine inferiore integerrima vel dentibus 1 raro 2 spinosis praedita, margine superiore dentibus 1–4 spinosis 1 mm longis praedita. Strobilus ♀ ovoidens, 45 x 25 cm, apice acutus; squamae lanceolatae 10–12 x 4–5 cm, extus dense lanosae; semina ovoidea, 3 cm diam. Strobilus ♂ elongato-cylindricus, 30–40 x 8–10 cm; microsporophylla basi angustata, 2.5 cm longa, parte fertili biloba, parte sterili sursum arrecta.

TYPE: MEXICO. CHIAPAS: [REDACTED]

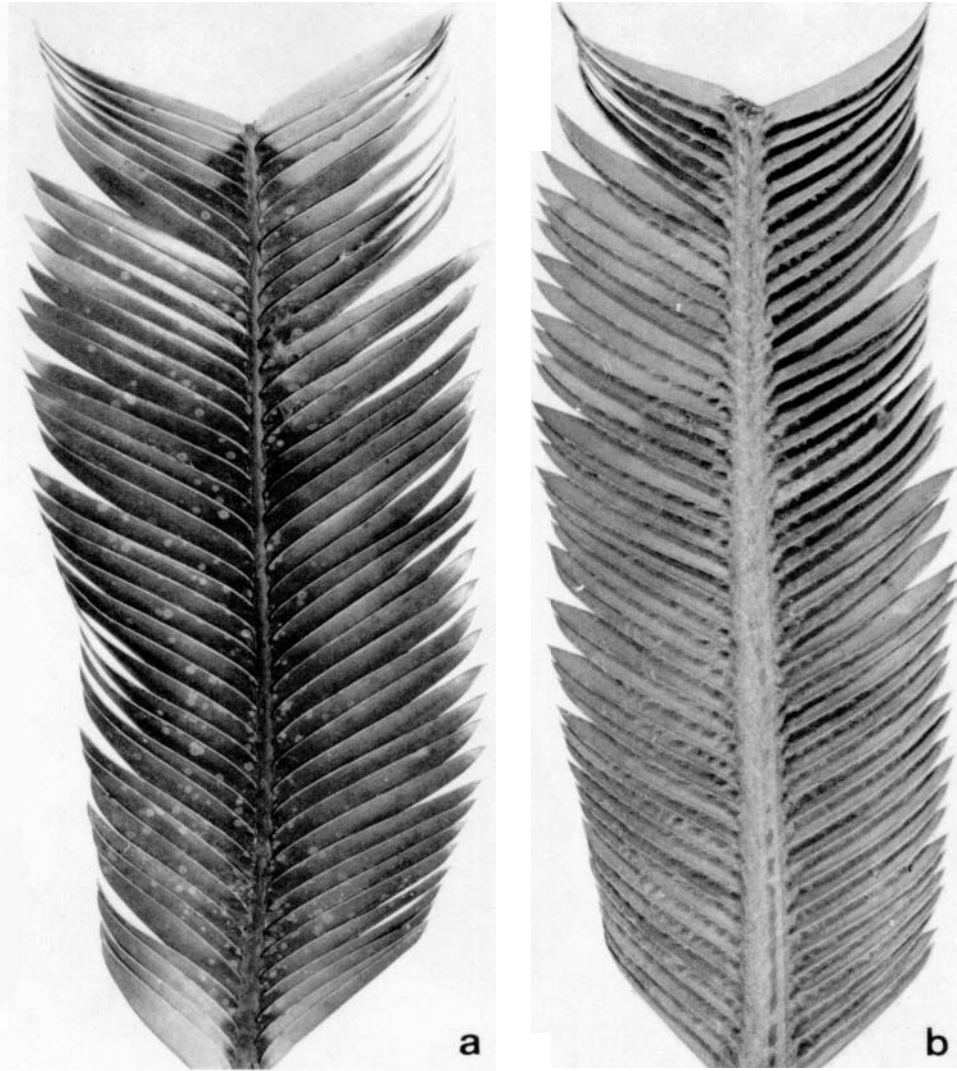


FIG. 2. Middle portion of frond of *Dionmerolae* showing imbricate leaflets obliquely inserted on the rachis. A. Ventral view. B. Dorsal view. Both x2/5.

27 May 1979, *Vázquez Torres 2301* (HOLOTYPE: NAP; ISOTYPES, FL, MEXU, NY, XALUV).

Other localities:

28 May 1979, *Vázquez Torres 2302* (FI, NAP, XALUV);

30 May 1979, *Vázquez Torres 2303* (FI, NAP, XALUV).

Other specimens examined:

Jun 1925, *C. A. Purpus 10225*, (F, GH, M, MO, NY, S, UC, US).

The following specimens came from cultivated plants originally collected in Chiapas by E. A. Howard. UNITED STATES: 25 Oct 1926, *L. H. Bailey 7869* (US);

Nov 1926, *L. H. Bailey 8003* (BH, US), Nov

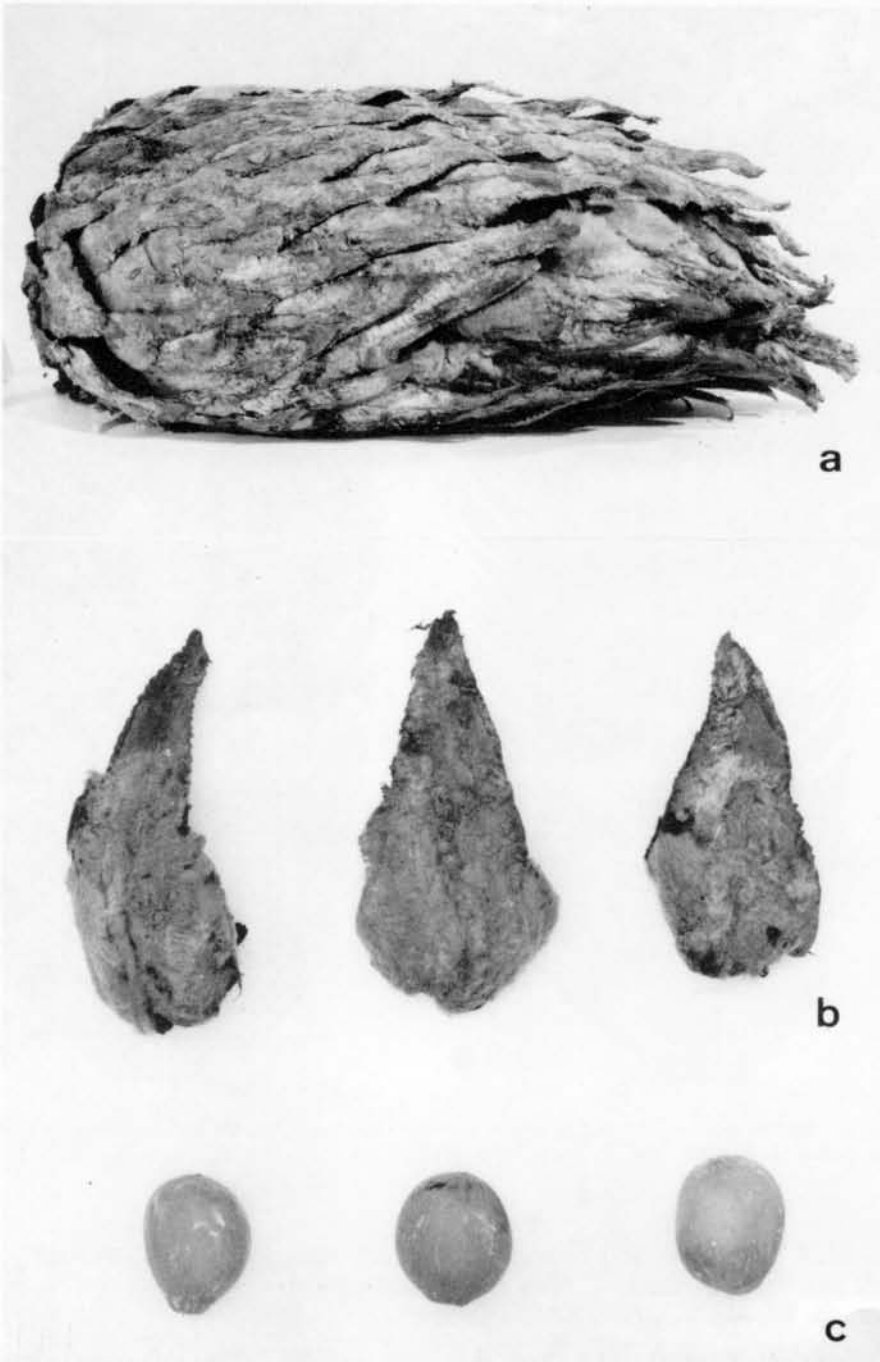


FIG. 3. *Dioon merolae*. A. Megasporangiate cone, $\times 1/4$. B. Seeds, $\times 1/2$. C. Megasporophylls, $\times 1/2$.



FIG. 4. Habit of *Dioon merolae* in understorey of tropical semi-deciduous forest at Cerro de la Placa.

1926, L. H. Bailey 8003a (US); [redacted] Nov 1926, L. H. Bailey 7961 (US); [redacted] 13 Sep 1937, F 1169480-1-2-3 Rose (F); [redacted] F 1526575-6-7-8, 1529825, 1529833-4 (F).

The peculiar characters of this species are flat fronds with linear-lanceolate leaflets arising at an acute angle from the rachis, imbricate and obliquely inserted on it, except for the basal portion of the frond. These characters allow us to separate *Dioon merolae* from the other species of the genus. The imbricate leaflets, however, could suggest that *D. merolae* is related to *D. imbricatum* Miq. (Miquel, 1848, 1851), a form of *D. edule* Lindley (Miquel, 1861) which is easily distinguishable by leaflets arising at right angles to the rachis, not inserted obliquely on it and imbricate only in the apical portion of the frond (specimens of *D. imbricatum* at K, U).

The authors observed living plants of *Dioon merolae* in the understorey of

pine-oak forest at Montserrate and Cerro Grande (Villa Flores) and in tropical semi-deciduous forest at Cerro de la Placa (Tonalá) (Fig. 4). The tallest plants are 5–6 m high, but older individuals have reclining stems. The young plants always have leaflets strongly spinulose on both margins and very tomentose fronds. Plants from Montserrate have larger and wider leaflets, whereas those from Cerro Grande have leaflets imbricate to a lesser extent. These differences, however, are not, in our opinion, sufficient to establish infraspecific taxa. The vernacular name is *espadaña*.

In northwestern Chiapas, *Dioon merolae* occurs (Fig. 1) in the physiographic region of the Sierra Madre (Breedlove, 1973). Here the genus *Dioon* does not show the specific isolation encountered in the contiguous states of Oaxaca and Puebla (De Luca, Sabato & Vázquez Torres, 1980), probably because the Sierra Madre de Chiapas in this area vary little in elevation. It is noteworthy, furthermore, that *D. merolae* is well separated orographically from the other Mexican species by the Isthmus of Tehuantepec. Southwards there is no orographical discontinuity, but only *D. mejiae*, a species very distinct from *D. merolae*, has been described from Honduras (Standley & Williams, 1951). In Guatemala, the genus *Dioon* is unknown (Standley & Steyermark, 1958).

Living plants were collected at Tonalá and Montserrate and are growing in Naples Botanical Garden.

This species is dedicated to Aldo Merola, professor of Botany and Director of Orto Botanico de Napoli, in recognition of his remarkable contribution to knowledge and conservation of cycads.

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