ORMOSIA (LEGUMINOSAE) IN MEXICO, INCLUDING A NEW SPECIES FROM OAXACA

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Osmosia is a genus of tropical legumes of the papilionoid tribe Sophoreae. It comprises some 100 species, about one half of which are American, the other half known from southern Asia to northern Australia. All of the species are woody; most are trees, some up to 60 m. tall, others are small and scrubby; a few species have been cited as scandent.

The brightly colored seeds, red, or bicolored red and black, in most species, are often used as beads or other ornamentation inspiring the generic name *Osmosia*, derived from the Greek word, *hormos*, meaning necklace. The flowers may be yellowish or pinkish to dark purple. A distinguishing character of the genus is the bilobed, usually lateral, stigma.

Ormosia seems not to have had great economic importance in México, possibly due to scarcity, but, according to Standley and Steyermark in the Flora of Guatemala (Fieldiana 24 (5): 311. 1946) referring to *O. isthmensis*, "in Mexico the wood is used for ax handles, railroad ties, house-posts, and general construcción". The wood of *O. toledoana* (= *O. macrocalyx*) is used "for general construction and sometimes for canoes" (l. c. p. 312). No doubt, the wood of the various species has also been utilized to produce charcoal.

To date, three species of *Ormosia* have been known from México: *O. isthmensis*, *O. macrocalyx*, and *O. schippii*. Another species, *O. velutina*, known from Belize and Guatemala southward to Costa Rica, could, possibly, occur in Mexico but has not been identified with certainty. Recently, in the course of botanical work on Cerro Espina, in the Pochutla area of Oaxaca, Mario Sousa and colleagues have collected material of another species not referable to any other previously described.

In the years since my earlier treatment of the Mexican species of *Ormosia* (Contrib. U.S. Nat. Herb. 32: 279-384. 1965; Rhodora 70: 518-521. 1968) there have been relatively few additional collections of the genus in the country. This may be due, largely, to the diminishing forest habitat of the species. Following is an updated résumé of the genus as known to occur in México and adjacent areas, including the new species from Oaxaca.

ORMOSIA Jackson, Trans. Lim. Soc. London 10: 360, t. 25-27. 1811, nom. cons.

Type: *Ormosia coccinea* (Aublet) Jackson, based on *Robinia coccinea* Aublet. Aublet s. n.; French Guiana (holotype BM).

Trees, unarmed; leaves alternate, imparipinnate; leaflets opposite; stipules and stipels small, deltoide to linear, caducous, lacking in some species; inflorescences terminal or pseudoterminal, racemose; bracts and bracteoles like the stipules and stipels; flowers small to medium in size, about 6-25 mm. long; calyx campanulate, hypanthoid. with 5 subequal teeth or lobes; corolla papilionaceous with 5 separate petals, yellow to pinkish to blackish purple, the standar glabrous on the outer

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face; stamens normally 10, alternately subequal, the smaller sometimes sterile or lacking, the filaments separate to the base, the fertile anther small, ellipsoid, dorsifixed; style usually curved at the apex; stigma bilobed, usually lateral; fruit commonly dehiscent, a few species indehiscent, glabrous to densely pubescent, moderately compressed or turgid, 1-6-seeded; seeds ellipsoid, globose or lenticular, unicolored red, yellow, or black, or bicolored red and black, or yellowish and red, the hilum apical, elliptic in most species; germination epigeal to hypogeal; chromosome number, $n = 8$.

Key to species of *Ormosia* in México and adjacent countries.

- A. Leaflets glabrous on both surfaces with about 5-9 pairs of secondary veins; fruit coriaceous, finely pubescent, glabrescent; seeds red. México: Veracruz, Tabasco, Chiapas; Central America southward to Peru and Brazil.

1. *O. macrocalyx* Ducke

- A. Leaflets pubescent to subglabrous, usually with about 10-15 pairs of secondary veins; fruit lignous, velutinous to glabrous, or nearly so; seeds red, or bicolored, red and black.

- B. Seeds completely red..

- C. Fruit black to dark brown when dry, nitid or subnitid; seeds 10-13 mm. long, 8-11 mm. wide; leaflets glabrous above, the lower surface finely and sparsely appressed-pubescent, glabrescent. México: Puebla, Oaxaca, Veracruz, Tabasco; Central America; Colombia.

2. *O. insthmensis* Standley

- C. Fruit brown, fulvo-tomentulose, glabrescent with age; seeds about 15 mm. long, 17 mm. wide; leaflets minutely and sparsely crisp-pubescent above, especially along the midvein, the lower surface subglabrous. México: Oaxaca.

3. *O. oaxacana* Rudd

- B. Seeds bicolored, red and black.

- D. Fruit black or dark brown, essentially glabrous at maturity but usually with a trace of pubescence at the base; seeds 12-13 mm. long, 10-2 mm. wide; leaflets subglabrous above, the lower surface loosely crisppubescent. México: Campeche, Chiapas; Belize.

4. *O. schippii* Pierce ex Standley & Stermark, emend. Rudd

- D. Fruit ferrugino-velutinous; seeds 10-12 mm. long, 9-10 mm. wide; leaflets subglabrous above, the lower surface moderately to densely crisppubescent. Belize and Guatemala southward to Costa Rica.

5. *O. velutina* Rudd

1. *Ormosia macrocalyx* Ducke, Arch. Jard. Bot. Río de Janeiro 3: 137. 1922. Type: A. Ducke 7345. Brazil: Amazonas, Lake Teffé. (holotype MG; isotype BM).

Ormosia apulensis Cortés, Flora de Colombia, 61: 1919, nomen nudum.

Type: J. J. Triana 4336. Colombia: Río Apulo. (holotype COL; isotype BM).

Ormosia toledoana Standley, Carnegie Inst. Publ. 461: 64. 1935.

Type: W.A. Schipp 1052. Belize (as British Honduras): Toledo, Forest Home, in open pasture, 60 m. elev. (holotype F; isotypes A, BM, G, GH, K, MO, NY, S, UC, US).

Ormosia chlorocalyx Ducke, Bol. Técn. Inst. Agron. Belém 2: 23. 1944.

Fig. 1. Geographic distribution of *Ormosia* in Mexico and adjacent areas as known from herbarium specimens.

Type: **A. Ducke 1516**. Brazil: Amazonas, Esperança, Río Solimñas, boca do Javari. (holotype IAN; isotypes NY, Y, SI, US).

Trees, to about 40 m. tall; young stems finely pubescent with subappressed hairs, glabrescent; stipules linear, about 5 mm. long, caducous; leaves 7-11-foliolate; leaflets coriaceous, about 6-19 cm. long, 3-9 cm. wide, the apex obtuse to breviacuminate, the base rounded to subcordate, the surfaces glabrous, the secondary veins about 5-8 pairs, relatively inconspicuous; inflorescences with axes cinereo- to fulvo-pubescent with subappressed hairs; bracts linear, 3-10 mm. long, 1 mm. wide or less; bracteoles subulate, 1-1.5 mm. long; flowers 18-25 mm. long; calyx 8-15 mm. long, subappressed-pubescent; petals lilac to dark purple; fruit dehiscent, coriaceous, cinereo- to fulvo-pubescent when young, black or brown, glabrous or nearly so at maturity, 3-10 cm. long, 2-3.5 cm. wide, slightly constricted between the seeds, 1-15.5 cm. thick, 1-6-, commonly 2- or 2-, seeded; seeds red, lustrous, 10-13 mm. long, 10 mm. wide, 7-8 mm. thick, the hilum elliptic, 1.2-1.5 mm. long, 1-2 mm. wide; germination epigal or subepigal.

Distribution: In wet forest, southern Mexico to the Amazon basin of Peru and Brazil, at elevations up to about 350 meters.

México: Veracruz: Fortuño, Río Coatzacoalcas, **Ll. Williams 8926** (F, G, K, S, U, US). Fortuño, Río Coachapa, "selva alta simepre verde de *Dialium*," 250 m. elev., **Gómez-Pompa 114** (MEXU).

Tabasco: Mun. Comalcalco, Cocoital, **R. Guzmán s. n.** (MEXU, US). Carretera Macuspana-Escarcega, cerca de la desviación a Jalapa, 50 m. elev., **Pennington & Sarukhán 9362** (MEXU).

Chiapas: A 2 km. de La Bondad, o sea a 3 km. al NE de Arriaga, 100 m. elev., **Téllez & Magallanes 212** (DS, MEXU). Arriaga, **Breedlove & Thorne 20934** (DS, MEXU). Lacandona, Nuevo Jalisco, 350 m. elev., **Calzada 3123** (MEXU). Mun. Arriaga, No. 195 near Monte Bominto, 370 m. elev., **Ton 3398** (DS).

Local names: Colorín, caracolillo (México); alcornoque, casique, perilla del monte (Panama); cocho grande (Colombia); tento (Brazil); huyruro (Perú).

One collection cited above, **Ll. Williams 8926**, was originally included by Standley as a paratype of *O. isthmensis* but, he noted, it "exhibits some differences from the type, and it is possible that it really represents a different species."

2. *Ormosia isthmeensis* Standley Publ. Field. Mus. Bot. 17: 264. 1937.

Type: **Ll. Williams 9423**. México: Oaxaca, Ubero. (holotype F; isotypes BM, G, K, MEXU, S, US).

Trees, to about 50 m. tall; young stems ferrugino- to fulvo-velutinous; stipules deltoif, acicular, about 1-2 mm. long, 1-1.5 mm. wide at the base, pubescent; leaves (3- or 5-) 7-13-foliolate; leaflets coriaceous, ovate, or oblong, to obovate-oblong, 3-35 cm. long, 2-10 cm. wide, acute to abruptly acuminate, the acumen to about 10 mm. long, the base obtuse or truncate, the upper surface glabrous, nitid or subnitid, the lower surface finely velutinous along the major veins, otherwise finely and sparsely spressed-pubescent, glabrescent with age, the secondary veins about 10-12 pairs, moderately raised; inflorescences with axes fulvo- to cano-velutinous; bracts and bracteoles linear, 2-3 mm. long; flowers about 10 mm. long; calyx 7-8 mm. long, cano- to fulvo-velutinous; petals purplish-pink with white markings; fruit dehiscent, lignous, black or dark brown, glabrous, nitid or subnitid, 1-3-

commonly 1, seeded, 3-7 cm. long, 2-3 cm. wide, 1 cm. thick; seeds red, lustrous, 10-13 mm. long, 8-10 mm. wide, 6-8 mm. thick, the hilum elliptic, 2-5 mm. long, 1 mm. wide; germination pseudoeipgeal.

Distribution: In evergreen rain-forest, southern México to northern Colombia, at elevations from sea level to about 80000 meters altitude.

México: Veracruz: A 1.6 km. NW de Sotapan, 450 m. elevada., selva alta perennifolia, Sousa 3521 (MEXU). Arriba de San Francisco, 650 m. elev., encinar, Gómez-Pompa 4865 (MEXU). A 1 km. NE de la Palma, Sontecomapan, 90 m. elev., Sousa 3091 (MEXU). Km. 15.6 de Nachital (Panga) a Cárdenas, 20 m. elev., González L. et al. 9517 (MEXU). Coatzacoalcas, 50 m. elev., selva alta perennifolia, González L. et al. 9456 (MEXU). Ejido El Nigromante, Playa Vicente, Chavelas s. n. (MEXU). Puebla: Hueytamalco, Rancho Las Margaritas, López-Forment Conradt 241 (MEXU). Oaxaca: Sierra Juárez, Gómez-Pompa et al. 380 (MEXU, MICH, RSA, UC, US). Arriba de Valle Nacional, rumbo a Oaxaca, 650 m. elev., Gómez-Pompa 5 (MEXU). Santiago Yves, Choapan, Reko 9 (F). San Juan Lalana, Choapan Schultes & Reko 822 (F, GH, NA, UC). Tabasco: Km. 7 carretera Huimanguillo a Fco. Rueda Chavelas et al. ES-2048 (MEXU). Huimanguillo, Chavelas & González L. 134 (MEXU); Barlow 30/99c (MEXU, MICH). Km. 6 carretera Chontalpa a Malpaso, Chavelas et al. 2134 (MEXU).

Local names Colorín, frijolillo, macayo, caicoy, mu-sa, palo de Salvador (México); acu-té (Guatemala); hormiga (Belize); alasán (Costo Rica).

3. *Ormosia oaxacana* Rudd, sp. nov.

3. Type: M. Sousa S. et al. 7128. México: Oaxaca, Cerro Espino, Finca Montecristo, 860 m. elev. (holotype MEXU No. 204768; isotype MEXU No. 204831). Paratype: M. Sousa S. et al. 5590 (MEXU, SFV). Additional material to be distributed.

Arbor usque ad 32 m. alta, *O. isthmensis* affinis, differt praesertim folioliis oblongioribus necnon seminibus grandioribus; ramuli novelli fulvo-subsericeae; folia 11-13-foliolata; foliola subcoriacea, oblongo-elliptica, 7-13 cm. longa, 2.5-4 cm. lata, glabra vel subglabra, apice acutis, basi subcuneati; flores non visi; fructus dehiscent, coriaceus, fulvo-sericeus, fere 5-7 cm. longus, 3 cm. latus, 2 cm. crassus, 1-3-spermus; semina coccinea, 1.5 cm. longa et lata, 1 cm. crassa, hilo elliptico, 3 mm. longo, 1.5 mm. lato; germinato hypogaea.

Trees, up to about 32 m. tall; young stems fulvo- subsericeous, glabrescent; stipules deltoid-linear, 1.7-3.5 mm. long, caducous; leaves 11-13-foliolate; leaflets subcoriaceous, oblong-elliptic, 7-13 cm. long, 2.5-4 cm. wide, the apex acute, the base subcuneate, both surfaces glabrous or with a trace of pubescence along the midvein, the secondary veins about 9-11 pairs, slightly raised, relatively inconspicuous; inflorescences with axes fulvo-subsericeous; bracts and bracteoles not seen; flowers not seen; fruit dehiscent, coriaceous, fulvo-subsericeous to glabrous at maturity, about 5-7 cm. long, 3 cm. wide, 2 cm. thick, 1-3-, commonly 1-, seeded; seeds red, about 1.5 cm. long and wide, 1 cm. thick, the hilum elliptic, 3 mm. long, 1.5 mm. wide; germination hypogaeal, the seedlings with first pair of leaves opposite, unifoliolate.

Distribution: Known only from the type locality, in forest at 860 m. elevation.

Local name: palo verde.

As mentioned above in the diagnosis, this species appear to be related to *O. isthmensis*. The seeds are a little larger and resemble those of the other series members, *O. colombiana*, *O. peruviana*, and *O. venezolana*. The leaves suggest another Peruvian species, *O. schunkei*, but that has bicolored, black and red seeds, and appears to belong to a different series.

4. *Ormosia schippii* Pierces ex Standley & Steyermark emend. Rudd, Trop. Woods No. 113: 125. 1960.

Type: W.A. Schipp 1297. Belize: Toledo, Temash River (holotype F: isotypes A, BM, G, GH, K, MO, NY, S).

Ormosia schippii Pierces ex Standley & Steyermark, Fieldiana Bot. 24(5): 311. 1946, pro parte.

Trees, to about 35-40 m. tall; young stems fulvo- to cinereo-tomentulose; stipules not seen; leaves 5-9-foliolate; leaflets coriaceous to subcoriaceous, ovate to ovate-oblong or, brevicauminate, the acumens to about 10 mm. long, the base obtuse to subcordate, the upper surface glabrous except for a trace of pubescences along the major veins, the lower surface moderately pubescent with loosely crispate hairs, the secondary veins about 8-14 pairs, prominently raised; inflorescences with axes cinereo- or fulvo-tomentulose, glabrescent; bracts lanceolate, acuminate, 8-10 mm. long, 2-2.5 mm. wide; bracteoles linear, 7-8 mm. long, 1 mm. wide; flowers 18-22 mm. long; calyx cinereo- to fulvo-tomentulose, 7-10 mm. long; petals reddish-purple; fruit dehiscent, subglobose, black or dark brown, essentially glabrous at maturity except for a trace of pubescence at the base, commonly 1-seeded, 2-3 cm. long, 2-2.5 cm. wide, about 1.5 cm. thick, seeds bicolored, red and black, 12-13 mm. long, 10-12 mm. wide, 7-9 mm. thick, the hilum elliptic, 2-3 mm. long, 1-1.5 mm. wide.

Distribution: In rain forest, generally in swamy places, southern México and Belize.

México: Chiapas: Between La Arena and Salas, Miranda 4871/1 (MEXU). Selva Lacandona, Gómez-Pompa 339 (MEXU, US). San Jerónimo Tulija, Mpio. de Yajalon, 700 m. elev., selva alta perennifolia, Chavelas et al. ES-2941 (MEXU).

Campeche: Camp Experimental El Tormento, Escárcega, Marroquin s. n. (MEXU). Carretera Escárcega a Candelaria, km. 5, Hernández X. et al. ES-308 (MEXU).

Local names: Bayo, carne de caballo, palo macho, shi-inte, yabo (México); Jim Crow bead (Belize).

There is no particular problem in distinguishing this species with bicolored seeds from the other, unicolored seeded species in Mexico. With mature fruit present it is readily distinguished from *O. velutina*, known thus far only from Central America. However, the leaflets and imature fruit are not so clearly defined. The flowers of *O. schippii* are larger and the calyx pubescence lighter in color.

5. *Ormosia velutina* Rudd, Trop. Woods No. 113: 124. 1960.

Type: P.H. Gentle 4145. Belize: Toledo, Monkey River, near Jenkins Creek, in hammock (holotype US; isotypes A, MO, NY).

Ormosia schippii Pierce ex Standley & Steyermark, Fieldiana Bot. 24 (5): 311. 1946, pro parte.

Trees, to about 19 m. tall; young stems fulvo- to aureo-tomentose; stipules deltoid-acicular, tomentose, 4-7 mm. long, 1-2 mm. wide; leaves 5-7-foliolate; leaflets coriaceous, obovate to elliptic, 3-16 cm. long, 2-9.15 cm. wide, the apex obtuse to breviacuminate, the acumens to about 6 mm. long, the base obtuse to subacute, the margins usually somewhat revolute, the upper surface glabrous, nitid, sometimes with a trace of pubescence along the midvein, the lower surface densely fulvo-tomentulose with tightly crispate hairs, the secondary veins about (5-) 10-12 pairs, prominently raised; inflorescences with axes fulvo- to ferrugino-tomentose; bracts tomentose, deltoid-acicular, 5-6 mm. long, 1-2 mm. wide; bracteoles linear, tomentose, 5-6 mm. long, 0.5 mm. wide; flowers 14 mm. long; calyx fulvo- to ferrugino-tomentose, 10-12 mm. long; petals purple; fruit dehiscent, lignous, fulvo- to ferrugino-velutinous, 1-3, commonly 1-, seeded, 2.5-6 cm. long, 1.5-2.5 cm. wide, about 1.5 cm. thick; seeds bicolored red and black, 10-12 mm. long, 9-10 mm. wide, 8-10 mm. thick, the hilum elliptic, 2.5-3 mm. long, 1-1.5 mm. wide.

Distribution: In forest, Belize and Guatemala to Costa Rica, at elevations up to about 200 meters.

Local names: Pine-ridge grande betty (Belize); nena (Costa Rica).

This species is not known to occur in Mexico but it seems possible that it is similar to *O. schippii* but is distinguished by its velutinous mature fruit.

EXCLUDED SPECIES

Ormosia mexicana Standley, Contr. U.S. Nat. Herb. 23: 436. 1922, is *Dussia mexicana* (Standley) Harms, Repert. Sp. Nov. 19: 294. 1924. Type: C.A. Purpus 6326. México: Veracruz, Zacuapan. (holotype US; isotypes BM, GH, MO, NY).

Ormosia zahnii Harms, Repert. Sp. Nov. 19: 290. 1924. Syntypes: Zahn 336 and 688, Cameroon, West Africa, cultivated in the Victoria Botanic Gardens from seeds collected by Paul Preuss in Tropical America, 1899-1900. (Syntypes presumably at B, now destroyed). Duplicate specimens are not known, nor is it known if the type tree, or trees, still exist. As I mentioned previously, (Phytologia 18: 338. 1969), it is possible that this name could displace one in current use. From the character described it might be referable to *O. insthmensis* or a related species.