

**FRUIT ATTRIBUTES SUPPORT THE RE-ESTABLISHMENT
OF *SAPRANTHUS FOETIDUS* (ANNONACEAE),
A MEXICAN SPECIES OF THE *SAPRANTHUS VIOLACEUS* COMPLEX**

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ABSTRACT

In some individuals identified as *Sapranthus violaceus* (Dunal) Saff. from Guerrero, Mexico, the fruit surface is characterized by plate-like, lamellar, lacerate excrescences. These are present in the type of *S. foetidus* (Rose) Saff., currently treated as a synonym of *S. violaceus*, but not in the type of *S. violaceus*. *Sapranthus foetidus* is a distinct species. We discuss the importance of fruit characteristics in distinguishing *Sapranthus* species and provide a dichotomous key to identify species of the *S. violaceus* complex.

The Neotropical genus *Sapranthus* Seem. is a monophyletic group consisting of eight species of small trees distributed in Mexico, Central America, and Colombia (Ortiz-Rodriguez et al. 2018; Schatz et al. 2018). Most species inhabit dry forests and rarely occur in humid forests (Schatz 1998). Species of *Sapranthus* can be distinguished from other Neotropical genera by their trimerous flowers, with large, fleshy and distinctly veined petals, often with reddish colors and unpleasant smells; also for their large, fleshy, spherical or cylindrical (apocarpic) fruits (Schatz et al. 2018).

Among the species of *Sapranthus*, the type species of the genus, *S. violaceus* (Dunal) Saff shows great morphological variation (mainly in size and shape of the petals and pedicel length), and different morphotypes have been recognized as distinct species (*S. borealis* R.E. Fr., *S. foetidus* (Rose) Saff., *S. longipedunculatus* R.E. Fr., *S. megistanthus* Standl. & Steyerm., and *S. nicaraguensis* Seem.). Constant features of *S. violaceus* (Schatz et al. 2018) are pubescent leaves with short, whitish appressed and erect hairs, solitary, usually leaf-opposed flowers, large petals, and numerous stipitate monocarps with a smooth but pubescent surface. *Sapranthus chiapensis* Standl. ex G.E. Schatz, the species most similar to *S. violaceus*, is distinguished from it by rhipidia-like inflorescences borne on leafless sections of branches (not solitary, leaf-opposed peduncles as in *S. violaceus*) and fruit surfaces with plate-like, lamellar, lacerate excrescences. The latter attribute also distinguishes *S. chiapensis* from the rest of species of the genus (Schatz et al. 2018).

In the taxonomic review of the Mexican species of *Sapranthus*, we noticed that type material of *Asimina foetida* Rose (Palmer 189, MEXU and US; = *Sapranthus foetidus*) from Acapulco, Guerrero, has young fruits with short plate-like, lamellar, lacerate excrescences similar to those of *S. chiapensis* (Fig. 1). Fruit attributes of *S. foetidus* have not been accounted for (Rose 1897) and do not appear in subsequent descriptions (Standley 1922) or in its most recent description (as *Sapranthus violaceus*, (Schatz et al. 2018). New collections and photographs of live plants show that indeed the ripe fruits of the individuals around Acapulco, Guerrero, have plate-like, lamellar, lacerate excrescences similar to immature fruits of individuals originally described as *Asimina foetida* (Figs. 1-4). This is convincing evidence that *S. foetidus* should be recognized as a distinct species and not as a synonym of *S. violaceus*.

Sapranthus foetidus (Rose) Safford, Science 33(847): 471. 1911. *Asimina foetida* Rose, Contr. U.S. Natl. Herb. 5: 134. 1897. **Lectotype** (designated by Fries 1930): **MEXICO. Guerrero.** Acapulco and vicinity, February 1895 (with flowers), *E. Palmer 394* (US-00323909 image). Figures 1-4.

Small trees 3–5 m tall, 15–24 cm dbh; young twigs and petiole densely covered with erect, pale golden-brown hairs, branches glabrescent. **Leaves:** petioles 2–6 mm long; lamina broadly elliptic to oblong, 10–20 cm long, 3–8 cm width, sparsely covered with appressed hairs above to glabrescent, densely covered with erect, white soft hairs below, base slightly asymmetric, obtuse to rounded, apex acute to acuminate, venation weakly brochidodromous, primary and secondary veins slightly prominent above, raised below, secondary veins 8–10 on either side of primary vein, tertiary veins percurrent, slightly prominent above, pocket domatia at the axils of secondary veins (often inconspicuous). **Inflorescences:** flowers solitary, leaf-opposed and often borne on leafless part of branches (ramiflory), pedicels and outer side of bracts, sepals, and petals sparsely to densely covered with appressed and erect, pale golden-brown hairs. **Flowers:** pedicels 10–30 mm long, (fruiting pedicels to c. 50 mm long), densely covered with appressed and erect hairs, often bearing at its base a tiny to small leafy bract; sepals 3, ovate, 12–15 mm long, around 10 mm wide, base truncate to concave and decurrent along the pedicel, apex acute, with evident venation; petals 6, sub-equal, membranous, dark purple, distinctly veined, narrowly elliptic, often wider in the middle and reducing towards the ends, 40–120 long, 10–30 mm wide, base obtuse to rounded, apex acute, inner petals with a corrugated base at the adaxial surface. **Monocarps** often 1 or 2 (initially 4 or 5), ellipsoid, 50–65 long, 20–40 mm width, surface densely to sparsely covered with appressed hairs and with anastomosing, plate-like, lamellar, lacerate excrescences, stipes 10–19 mm long. **Seeds** not studied.

Sapranthus foetidus occurs at lower elevations in seasonally tropical dry forests. Flowering occurs in the first months of the year, fruits ripening between August and December. Endemic to Guerrero.

Additional collections examined. MEXICO. Guerrero. Mpio. Acapulco: Parque Nacional El Veladero (colonia Independencia), 26 Jan 1985, *Noriega Acosta 440* (MEXU-661080!); Parque Nacional El Veladero (parte posterior de la colonia Francisco Villa), 2 Sep 1984, *Noriega Acosta 114* (FCME, Fig. 4); Acapulco and vicinity, Oct 1894 (fruits), *Palmer 189* (MEXU!, US-Fig. 1). **Mpio. Petatlán:** Laguna Carrizal, 10 Jan 1995, *Lozada 1889* (FCME!). **Mpio. Juan Escudero:** Tierra Colorada, 6 Jun 1966 (fruits), *Kruse 1101* (MEXU!).

Key to species of the *Sapranthus violaceus* complex

1. Fruit surface smooth **Sapranthus violaceus**
1. Fruit surface with lamellar, lacerate, plate-like excrescences.
 2. Rhipidia-like inflorescences, pedicels up to 10 mm long (up to 20 mm in fruit); Chiapas
..... **Sapranthus chiapensis**
 2. Single-flowered inflorescences, pedicels 10–20 mm long (up to 50 mm in fruit); Guerrero
..... **Sapranthus foetidus**

Sapranthus foetidus is further distinguished from *S. violaceus* by its inflorescences often borne on leafless sections of branches. *Sapranthus foetidus* is very similar to *S. chiapensis* but can be distinguished by its solitary, longer pedicels and its fruits with longer stipes. In addition, the latter two species are geographically separated by more than 800 kilometers.

The fruit surfaces of *Sapranthus foetidus* and *S. chiapensis* are unusual in the genus. In fact, these types of fruits are uncommon in Annonaceae and present in America only in *Stenanona costaricensis* R.E. Fr. (Schatz et al. 2010).



Figure 1. *Sapranthus foetidus*. Palmer 189 (US, type material of *Asimina foetida*). The young fruit has plate-like, lamellar, lacerate excrescences on the surface.



Figure 2. *Sapranthus foetidus*. A. Branchlet with inflorescence. B. Branchlet with fruits — fruit surface with plate-like, lamellar, lacerate excrescences. Photos by Roberto Otero Zaragoza.



Figure 3. Fruits of *Sapranthus foetidus* from Tierra Colorada, Guerrero (Irekani 2021)

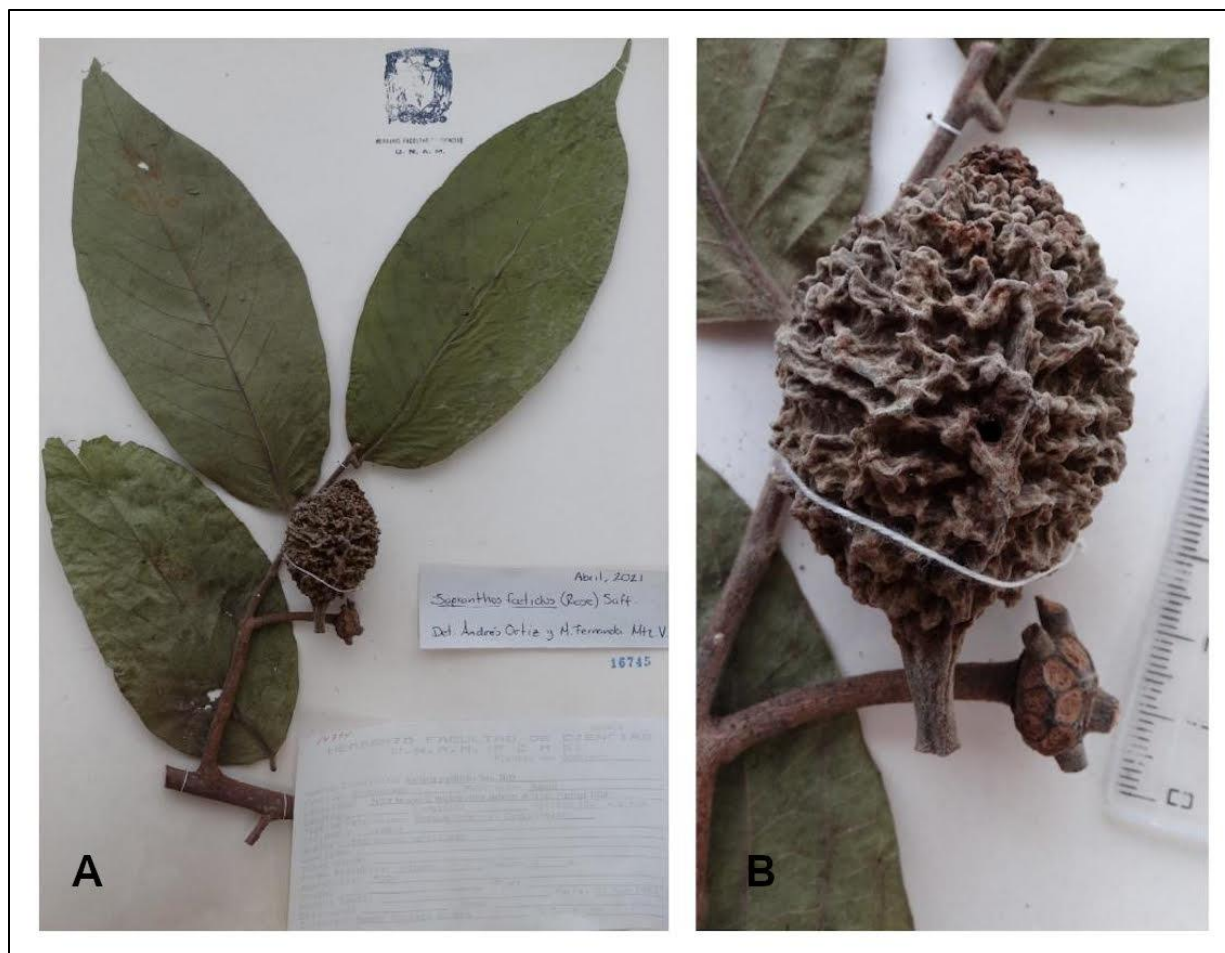


Figure 4. *Sapranthus foetidus* from Guerrero, México (Noriega Acosta 114, FCME). A. Complete specimen. B. Close-up of the fruit.

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