

SUMMARY

Chromosome counts are published for all mainland species of the fleshy-fruited species of *Galium* of California and environs, showing the complex polyploid nature of the group. Some specific taxonomic conclusions are drawn, and two new taxa are described: *G. californicum* ssp. *luciense* of the Santa Lucia Mountains and *G. martirensense* of Baja California. A former variety is raised to specific rank as *G. cliftonsmithii*.

Department of Botany, University of California, Berkeley
Department of Genetics, University of California, Davis

LITERATURE CITED

- FERRIS, R. S. 1960. *Galium*. In L. R. Abrams and R. S. Ferris, Illustrated flora of the Pacific States. Vol. 4. Stanford Univ. Press.
- JEPSON, W. L. 1925. A manual of the flowering plants of California. Associated Students Store, Berkeley.
- MUNZ, P. A. 1959. A California flora. Univ. Calif. Press, Berkeley.

A FURTHER DESCRIPTION OF GOSSYPIUM TRILOBUM

PAUL A. FRYXELL

The exact nature of the Mexican plant originally described by De Candolle (1824) as *Ingenhouzia triloba* has never been clear, and considerable doubt has been expressed that it is, in fact, distinct from *Thurberia thespesioides* A. Gray. It is now possible to provide a more complete description and on such a basis to resolve the doubt by asserting that these two species are indeed distinct.

De Candolle's generic name was noted by Tidestrom (in Dayton, 1927) as a variant spelling of *Ingenhoussia* Dennst. 1818 and therefore to be illegitimate under Article 64. Irrespective of this rejection, however, it is generally accepted that both De Candolle's and Gray's plants belong in *Gossypium* L.

A third name, *G. lanceiforme* Miers, was subsequently published that is probably based on an isotype of De Candolle's species (Kearney, 1952). A historical summary of the taxonomic disposition of these three names is presented in Fig. 1.

Mauer's publication (1954) of three varietal names under *G. trilobum* contravenes Articles 26 and 36; the varietal names therefore are not validly published.

Gossypium thurberi Tod. (= *Thurberia thespesioides* A. Gray) is a plant, well represented in herbaria and in living collections, that occurs in southern Arizona, northern Sonora, and parts of western Chihuahua. It has been described and illustrated many times, notably among the

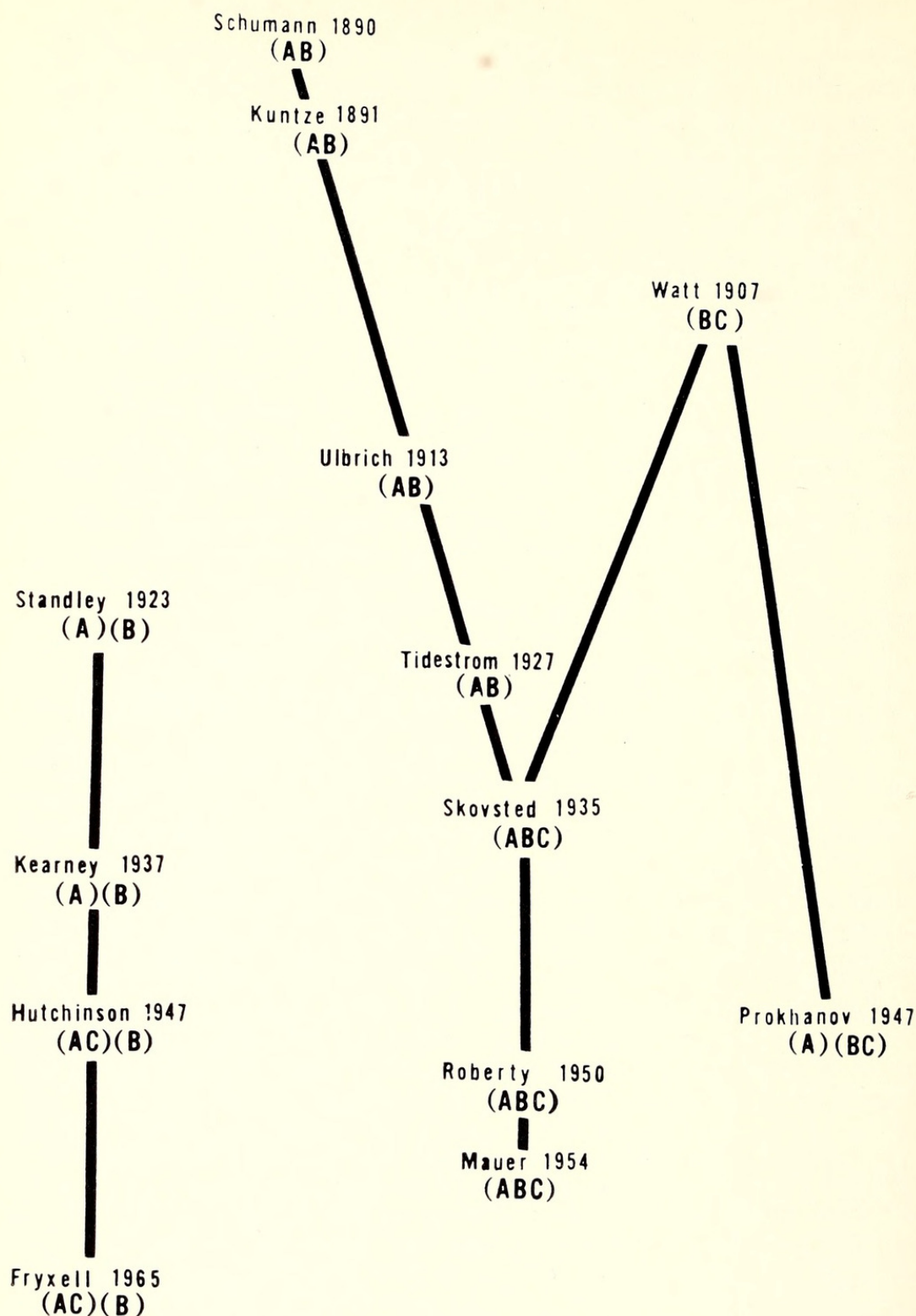


FIG. 1. Historical summary of views on the taxonomic disposition of: A. *Ingenhouzia triloba*, B. *Thurberia thespesioides*, and C. *Gossypium lanceiforme*.

fine drawings published by Saunders (1961). *Gossypium trilobum* (= *Ingenhouzia triloba* DC.), on the other hand, is poorly known; its existence is doubted by some and its distribution has been unclear to those who accept the species. It has never been available in culture.



FIG. 2. Geographic distribution of three species of *Gossypium*.

Gossypium trilobum has, moreover, been confused to some extent with still a third, relatively dissimilar species, *G. gossypioides* (Ulbr.) Standl. (= *Selera gossypioides* Ulbr), because of certain superficial similarities, although the distinction was made sufficiently and explicitly clear by Ulbrich (1913) in his description of *Selera gossypioides*. Roberty (1950), in fact, placed all three species in synonymy under *G. trilobum*. Standley (1923) recognized the distinctiveness of *G. gossypioides* and its position in *Gossypium*. Kearney (1937) underscored Standley's view and, except for Roberty (1950), has been followed by subsequent authors, including Hutchinson (1947) who, however, unfortunately cited two specimens under *G. gossypioides* that in fact represent *G. trilobum*. Hutchinson's citation of these specimens was quoted by Mauer (1954). Consequently, detailed comparisons involving *G. gossypioides* are also needed.

Gossypium gossypioides would be as poorly known as *G. trilobum* were it not that it has become available in culture from the seed collections of T. R. Richmond and C. W. Manning in 1946 and C. W. Manning and J. O. Ware in 1948. Brown and Menzel (1952a; 1952b)

TABLE 1. PRINCIPAL SIMILARITIES OF *G. TRILOBUM* AND *G. THURBERI* TOGETHER WITH PRINCIPAL FEATURES DISTINGUISHING THEM FROM *G. GOSSYPIOIDES*.

	<i>G. trilobum</i> or <i>G. thurberi</i>	<i>G. gossypoides</i>
Investiture of young twigs and petioles	Stellate, clusters <.1 mm, appearing lepidote, sparse, becoming glabrate	Soft-tomentose; hairs predominantly single, whitish, up to 0.5 mm
Twigs	Angled or ridged	Terete
Foliar nectaries	Present and functional	Vestigial
Involucral nectaries	Present and functional	Lacking
Bracts	1–2 cm long, distinct	3 cm long, connate prior to anthesis
Petal size	2–3 cm long	5 cm long
Petal spot	Small to vestigial	Large, covering half of petal
Filament color	Cream-colored	Dark red
Capsules	Non-flaring, persistent, with copious hairs on sutures	Flaring, abscissing at base of peduncles, lacking suture hairs
Seeds	6–10 per loculus, 3–4 mm long, with sparse, minute pubescence, appearing black	1–4 per loculus, 5–7 mm long, with tan seed hairs up to 1 cm

TABLE 2. PRINCIPAL FEATURES DISTINGUISHING *G. TRILOBUM* FROM *G. THURBERI*.

	<i>G. trilobum</i>	<i>G. thurberi</i>
Leaf dissection	About $\frac{2}{3}$ dissected; sinuses acute; lobes ovate-acuminate, 2–3½ cm broad	About 9/10 dissected; sinuses rounded; lobes lanceolate-acuminate, 1–2 cm broad
Bracts	Cordate-acuminate, entire, 10–12 mm broad, 15–20 mm long	Subulate to cuneate, entire to (sometimes) toothed, 2–4 mm broad, 8–12 mm long
Calyx	With few to many (up to 12) irregular acuminate to aristate tips up to 4 mm long	Subtruncate, becoming undulate in fruit
Petal	Pale yellow	Cream-colored
Fruit	15–18 mm long, 10–12 mm broad, 8–10 seeds per loculus	10–15 mm long, 8–12 mm broad, 6–8 seeds per loculus

presented genetic and cytological data bearing on the position of this species in *Gossypium*. Subsequent studies (recently summarized by Saunders, 1961) indicate *G. thurberi* and *G. gossypoides* not to be closely related genetically.

Published knowledge of *G. trilobum* beyond the original description is nearly confined to the two plates and accompanying description published by Hutchinson (1947) and the few descriptive comments made by Kearney (1937). However, additional specimens of *G. trilobum* are now known that permit a full (and comparative) description of the species and an indication of its geographical distribution.

The following three species are compared in Tables 1 and 2 and their distribution is shown in Fig. 2. It is worth noting that the specimens of *G. trilobum* that are cited below fall within the relatively narrow altitudinal range of approximately 2500–5000 feet.

NOMENCLATURE

GOSSYPIUM THURBERI Todaro, Relaz. 120. 1877. *Thespesia thurberi* Alefeld, Bot. Zeit. 19:301. 1861, name illegitimate. *Thurberia thespesioides* A. Gray, Mem. Am. Acad. 5:308. 1855, not *Gossypium thespesioides* F. Muell. ex Tod. Relaz. 103. 1877. *Hibiscus ingenhousii* Kuntze, Rev. Gen. Pl. 1:69. 1891, pro parte. *Thurberia triloba* Tid. ex Dayt. Proc. Biol. Soc. Wash. 40:120. 1927, pro parte. *Gossypium trilobum* Skov. Jour. Genet. 31:288. 1935, pro parte.

Type. Cocospera-Barbasaqui, Sonora, Mexico, *Thurber* 914 (US).

Representative specimens. CHIHUAHUA. SW Chihuahua, *Palmer* 269 (BM); Rio Bonito, *LeSueur* 792 (LL, TEX, UC, US). SONORA. 18 mi SE of Magdalena, *Wiggins* 7183 (ARIZ, DS, UC, US); Municipio de Nacore Chico, *Muller* 3653 (GH, LL, UC, US); Rio de Bavispe, *White* 4718 (ARIZ, GH, LL, MICH). ARIZONA. Santa Rita Mts., *Thornber* 186 (ARIZ, UC); Mule Mts., *Goodding* 3 (ARIZ); Rincon Mts., *Blumer* 3323 (ARIZ); near Bisbee, *Jones* 308 (ARIZ); Santa Catalina Mts. *Ginter s. n.* (ARIZ, UC).

GOSSYPIUM TRILOBUM (Moç. & Sess. ex DC.) Skov. Jour. Genet. 31:288. 1935, pro parte; emend. Kearney. Am. Jour. Bot. 24:299. 1937. *Ingenhouzia triloba* Moç. & Sess. ex DC. Prodr. 1:474. 1824. *Hibiscus ingenhousii* Kuntze, Rev. Gen. Pl. 1:69. 1891, pro parte. *Gossypium lanceiforme* Miers ex Britt. Jour. Bot. 31:331. 1893. *Thurberia triloba* (Moç. & Sess. ex DC.) Tid. ex Dayt. Proc. Biol. Soc. Wash. 40:120. 1927, pro parte.

Type. Sessé and Moçiño's specimen, kept in the Madrid herbarium and illustrated by Hutchinson (1947). Kearney (1952) notes that the type of *G. lanceiforme* may be a duplicate of the type of *Ingenhouzia triloba* DC.

Specimens examined. Guadalajara, Jalisco, *Rose & Hay* 6284 (GH, US); Concordia, Sinaloa, *de Ortega* 6033 (US); Acatitlán, Mexico, *Hinton* 5133 (GH, K); Zihuagio, Mexico, *Hinton* 9701 (MO, UC, US); Zitácuaro, Michoacán, *Hinton* 13253 (UC, US); km 15 Yautepec-Cuernavaca Road, Morelos, *Lundell & Lundell* 12498 (LL, UC, US); Sinaloa, *Mexia* 432 (MO).

In addition to the above specimens, Hutchinson's plate of the type and of the type of *G. lanceiforme* Miers ex Britt. (Hutchinson, 1947) have been consulted. On this basis the following description is presented.

Shrub, up to 4 m high, nigro-punctate, minutely stellate-puberulent becoming glabrate; twigs distinctly ridged. Leaves 3- (sometimes 5-) lobed, glabrate; lobes ovate-acuminate, up to 3½ cm broad; margin minutely ciliate. Petiole glabrate, ridged, nearly equaling lamina. Foliar nectary single, narrowly elongate, 1-2 mm. Stipules subulate to acuminate, ciliate, caducous. Fruiting branches many-jointed. Pedicels upright, ridged, glabrate, 1-1½ cm, surmounted by 3 nectaries. Bracts distinct, cordate, entire, acuminate, 10-12 mm broad, 15-20 mm long. Calyx prominently nigro-punctate with variable number (up to 12) of irregular acuminate to aristate tips up to 4 mm long. Petals punctate, pale yellow with small red basal spot. Androecial column pale-colored, punctate; filaments 2-3 mm. Style slender, exceeding androecium; stigma

clavate. Fruit glabrous, nigro-punctate, oblong, beaked, 15–18 mm long, 10–12 mm broad, generally 3-loculed; 8–10 seeds per loculus. Hairs on inner suture of capsule dense, tan, 2 mm long. Seeds angularly turbinate, 3–4 mm, black appearing striped because of minute tan pubescence.

GOSSYPIMUM GOSSYPIOIDES (Ulbr.) Standl. Contr. U. S. Nat. Herb. 23:783. 1923. *Selera gossypoides* Ulbr. Verh. Bot. Ver. Prov. Brandenburg 55:51. 1913. *Gossypium trilobum* (Moç. & Sess. ex DC.) Skov. emend. Rob. Candollea 13:30. 1950, pro parte.

Type. Im Gebüsch, San Bartolo Yautepec, Oaxaca, C. & E. *Seler* 1700 (location of specimen not ascertained).

Specimens examined. Cuicatlan, Oaxaca, *Nelson* 1704 (GH, US); *Conzatti* 3874 (US); cultivated plants grown from collections from 83 miles S of Oaxaca, *Richmond & Manning* s. n. (ARIZ, TAES).

U. S. Department of Agriculture, Soil and Crop Sciences Department,
Texas A & M University, College Station

LITERATURE CITED

- BROWN, M. S. and M. Y. MENZEL. 1952a. The cytology and crossing behavior of *Gossypium gossypoides*. Bull. Torrey Club 79:110–125.
- . 1952b. Additional evidence on the crossing behavior of *Gossypium gossypoides*. Bull. Torrey Club 79:285–292.
- DAYTON, W. A. 1927. New names for some western montane plants. Proc. Biol. Soc. Wash. 40:119–122.
- HUTCHINSON, J. B. 1947. The classification of the genus *Gossypium*. In Hutchinson, J. B., R. A. Silow, and S. G. Stephens. The Evolution of *Gossypium*. Oxford Univ. Press, London.
- KEARNEY, T. H. 1937. *Ingenhouzia* and *Thurberia*. Am. Jour. Bot. 24:298–300.
- . 1952. Notes on Malvaceae II. Leaf. West. Bot. 6:165–172.
- KUNTZE, O. 1891. *Revisio generum plantarum*. Vol. I.
- MAUER, F. M. 1954. Origin and systematics of cotton. [In Russian.] Tashkent.
- PROKHANOV, Y. I. 1947. Conspectus of a new system of *Gossypium* L. [In Russian.] Bot. Zhur. 32:61–78.
- ROBERTY, G. 1950. *Gossypiorum revisionis tentamen*. Candollea 13:9–165.
- SAUNDERS, J. H. 1961. The wild species of *Gossypium*. Oxford Univ. Press, London.
- SKOVSTED, A. 1935. Chromosome numbers in the Malvaceae. I. Jour. Genet. 31:263–296.
- SCHUMANN, K. 1890. Malvaceae. In Die Natürlichen Pflanzenfamilien 3(6): 30–53.
- STANDLEY, P. C. 1923. Trees and shrubs of Mexico. Contr. U. S. Natl. Herb. Vol. 23.
- ULBRICH, E. 1913. *Selera*, eine neue Malvaceen-Gattung aus der Verwandtschaft von *Gossypium* L. Verh. Bot. Ver. Prov. Brandenburg 55:50–54.
- WATT, G. 1907. The wild and cultivated cotton plants of the world. Longmans, Green, & Co., London.



Fryxell, Paul A. 1965. "A FURTHER DESCRIPTION OF GOSSYPIUM TRILOBUM."
Madroño; a West American journal of botany 18, 113–118.

View This Item Online: <https://www.biodiversitylibrary.org/item/185219>

Permalink: <https://www.biodiversitylibrary.org/partpdf/170355>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In Copyright. Digitized with the permission of the rights holder

Rights Holder: California Botanical Society

License: <http://creativecommons.org/licenses/by-nc/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.