FLORA VITISIENSA NOVA
Vol. 3

ORDER POLYGALAE

KEY TO FAMILIES OCCURRING

Stamens usually 10, the filaments usually basally connate, the anthers dehiscing by longitudinal slits (rarely by terminal pores); petals 5, free, usually subpersistent; ovary usually 3-lobed; lower lip usually oroverticulate (at least in our species); our representatives, trees, shrubs, or lianas.

155. MALPIGHACEAE

Stamens usually 8, the filaments usually connate into a dark sheath, the anthers dehiscing by apical pores or short subapical slits (rarely by longitudinal slits); petals 3 (in our genus), basally adnate to a filament tube; ovary usually 2-locular; leaves usually alternate; our representatives an adventisepheric herb.

156. POLYGALACEAE

FAMILY 155. MALPIGHACEAE


Shrubs, small trees, or frequently lianas, commonly with indument of unicellular, modified, eglandular ("malpighiaceous") hairs, usually stipulate, the stipules often inconspicuous, sometimes large and connate, sometimes lacking; leaves usually opposite, sometimes verticillate or subopposite, simple, the petiole or proximal margins of blade often with a pair of large, feathery glands, (infrequently reduced), often gland-dotted, inflorescences terminal or axillary, paniculate or cymose or racemeform, bracteate, the pedicels articulated, bicarpellate; flowers, yellow, usually sessile, rarely pedunculate; petals usually 3, rarely 5, the stamens 10-20, filaments usually connate, rarely connate to the ovary; filaments of each flower, 2 or 3 (rarely 5) each and having an atypical position, the ovary usually 2-locular, the ovules 1 per locule, pendulous, hemianatropic, epipetalous (with ventral raphe), the styles distinct or only basally connate, rarely fully connate, the stigmas terminal or subterminal, the stigma usually 5, filaments filiform, the fruchtiology usually a schizocarp with winged to nectariferous, multicarp, these seldom dormant, sometimes a raft or a drone not or tardily separating into members, the seeds with a large, to curved embryo, the endosperm none or scanty.

DIVISION: PANTROPICAL and subtropical, with 55-60 genera and 880-1200 species. Four genera have been recorded in Fiji, only one of them being represented by an indigenous species.


Fruits small, or 1-2 mm. high, usually scabrid and crested, the crests of some branches usually serrated along the length of the branch. Flowers usually of 5-6 mm. long, leaf blades subcordate to chartaceous, oblong to ovate-oblong, occasionally suboblong, the petals 5-6 mm. long, the stamens usually 5, filaments usually connate, the ovary usually 3-lobed; filaments filiform, the ovary usually ovary usually 2-locular; leaves usually opposite; our representatives an adventisepheric herb.

2. Proteanisepheres


Fruits smooth, with unwinged mericarps or pyrenes; our species shrubs or small trees; cultivated only.

Leaf blades with 2 axial glands at base; flowers axillarily actinomorphic; calyx usually epigamic; stamina usually staminoid; ovary usually 1 or 2 of the 3 locules undeveloped; fruit.

Leaf blades eglandular; flowers zygomorphic; calyx with 5-10 distinct glands; petals usually alternate; ovary usually 2-locular; fruit a feathery drupe with 3 subabundant pyrenes.


Trees or often scabrid shrubs or lianas, the stipules minute and glandlike, sometimes lacking, if present free between petioles; leaves opposite, the petioles short, the blade subcordate, entire, usually with 2 basal glands on lower surface, often with smaller, scattered glands beneath; inflorescences terminal and axillary, racemiform or paniculiform, the flowers, yellow, deeply lobed, often with one large posterior gland sometimes deciduous on petiole, the petals usually 5, rarely 6, the base of the petals bounded by a pair of large, feathery glands, the glands usually not or tardily separating into members, the seeds with a large, to curved embryo, the endosperm none or scanty.


Mature trees or shrubs, often scabrid shrubs or lianas, the stipules minute and glandlike, sometimes lacking, if present free between petioles; leaves opposite, the petioles short, the blade subcordate, entire, usually with 2 basal glands on lower surface, often with smaller, scattered glands beneath; inflorescences terminal and axillary, racemiform or paniculiform, the flowers, yellow, deeply lobed, often with one large posterior gland sometimes deciduous on petiole, the petals usually 5, rarely 6, the base of the petals bounded by a pair of large, feathery glands, the glands usually not or tardily separating into members, the seeds with a large, to curved embryo, the endosperm none or scanty.

DISTRIBUTION: Ceylon, the Himalayas, southern China, and Formosa into Malayasia to Celebes and Timor, with a disjunct endemic species terminating the generic range in Fiji, with 20-30 species.
slender, 1.5–3 mm long, the anthers yellow, 1–1.3 mm long; style greenish white, 7–11 mm long; fruits pink to red, the wings lanceolate to obovoid or oblong, variable in shape and size, the largest ones up to 4 × 1.5 cm, the dorsal crest prominent and often nearly as large as smaller wings. Flowers have been observed in April, May, and September to December, fruits in June and October to December.

**Typification:** The material referred by Gray to *Hippage myrrhifolia* was from Ovalau and Vanua Levu, but it is not now possible to tell the locality of individual specimens. Gray's var. *a*, presumably representing his principal concept of the species, is based on *U. S. Exp. Exped. (US 14045) holotype; paratypes **at GH, K; var. B, with somewhat larger and thinner leaf blades, is represented by *U. S. Exp. Exped. (US 14049, GH, K).* No reasons are apparent for the maintenance of infraspecific taxa. The source of Gray's concept of *H. javanica* was *U. S. Exp. Exped. (GH, NY, US),* from "Somo-i-tomu and Najaut" (i.e., Taveuni and Nayau). As noted in 1950, I believe these specimens to fall into a reasonable concept of the Fijian endemic.

**Distribution:** Endemic to Fiji and now known from about 35 collections from seven islands, including some in the Lau Group.

**Local names:** Recorded names, none widely known, are *waʻa-baua, tumba ni vono,* and *mangairangawa.*

**Representative Collections:** *Viti Levu:* *Mai Vaini of Nauluva, eastern coast of Mt. Evans Range, Smith 4886; vicinity of Nabautuva, Gillespie 4294, Setaia, ridge between Nawa River and Wainyavu Creek, near Navua, Smith 9012, Namoli vicinity of Namoli, Gillespie 2647, Nakikuvevu Creek, DA 13844, Nakasoko, Nakasoko River, DA 14026; vicinity of Naiara, Gillespie 2354, Talaiha, south of Lami, DA 1071, Viti Levu without further locality. *Graeffe* s. n. (as cited as no. 18 by Sterkow, 1865); *Vanua Levu:* *Makaula, near Misima, Ndekele River, DA 1516; vicinity of Lautoka, Greenwood 596, Thaumastom, Nakakotou, south of Lautoka, DA 1520, Vanua MBA; *Lau:* *Northern limestone caves, Bryan, Sept. 20, 1924, KATAPANGA, Northern end of island, Bryan 347.* Fai without further locality, Sterkow s. n. *Borne 546.*

The closest relative (Jacobs, 1935) of *Hippage myrrhifolia* is *H. javanica* Merr., of the Philippines and Celebes; the Fijian species differs in its very short petals, its more distinctly ovate and duller leaf blades with obtuse to acute (only rarely somewhat acuminate) apices, and its fruits with a very obvious dorsal crest (very rarely absent), which is always lacking in *H. javanica.* Gray's original description and illustration can scarcely be improved upon, except that the disparity of filament length is generally greater than indicated by his illustrator.


Lianas, usually glabrous, the stipules small, connate to base of petiole; leaves opposite or verticillate, the blades entire, usually with 2 marginal glands at base; inflorescences terminal and lateral, racemiform or paniculiform; flowers essentially actinomorphic, *σ = 5,* calyx glandular or with very small glands; petals long-unguiculate, oblong or ovate, entire, dorsally carinate; stamens with unequal filaments connate at base, those of the outer whorl the longer and basally the broader; ovary

**Figure 181:** *Hippage myrrhifolia.* A, distal portion of branchlet, with foliage and inflorescences. *× 1/3,* B, flower, showing calyx gland (g), the petals beginning to separate, dissecting 2 slender, posterior filaments. *× 6,* C, flower with petals and 6 anthers fallen, showing calyxoid gland (g), style (s), and filaments of varying lengths, the anterior one (f) much exceeding the others. *× 6,* D, inner surfaces of 2 petals, the upper one an outer petal, the lower one an inner (proteros) petal with 2 basal outgrowths. *× 6,* E, flower with petals and 2 sepals removed, showing calyxoid gland (g), ovary (o) with incipient, conspicuous wings (w), style (s), and filaments (f) of large stamens. *× 6,* F, ventral and lateral views of fruit, showing the dorsal crest (c) developing longitudinally on the largest wing. *× 1.* A from DA 13846. B–E from Smith 9013. F from Gillespie 2359.
globose, with 1 (or 2) styles developing, the others abortive; fruit a samaroid mericarp with a coriaceous lateral wing, this with 4-10 lobes stellately expanding in one plane, a median wing sometimes also developing and resembling lobes of the lateral wing.

**Type species:** *Tristellaria madagascariensis* Poir. (vide Morton in Taxon 17: 324. 1968); ING (1979) indicates the type species as “non designatus.”

**Distribution:** East Africa and (mostly) Madagascar, with one paleotropical species from southeastern Asia to New Caledonia, with about 22 species. One species is occasionally cultivated in Fiji.


*T. madagascariensis,* sparingly cultivated near sea level in Fiji, is a liana or climbing vine with yellow petals; the filaments are also yellow but turn dark red. The only available collection was flowering in January.

**Typification:** Richard mentioned the plant as coming from “port Dorey à la Nouvelle-Guine,” presumably Dore Bay, Vogelkop Peninsula, West New Guinea.

**Distribution:** Southeastern Asia and Formosa through Malesia to the Caroline Islands, New Ireland, Queensland, and New Caledonia; cultivated elsewhere, in the Pacific at least in the Society Islands and Hawaii. It is presumably a fairly recent introduction into Fiji. Seemann (1855) mentioned only a Barclay collection from New Guinea.

**Local Name and Use:** This very attractive ornamental is locally known as *shower of gold* climber.

**Availability Collection:** VITI LEvu: RENW. SIVAN, in private garden, DA 10094


Shrubs, the stipules connate at base of pediole; leaves opposite, the blades entire, with 2 small glands at base; inflorescences terminal and axillary, racemose; flowers 5-, essentially actinomorphic; calyx usually glabulous; petals unequal, entire or crenulate; stamens with filaments free or very shortly connate at base alternately slightly unequal; ovary subglobose, 3-lobed, often with 1 or 2 of the locules undeveloped, the styles free, subulate or filiform, coiled in bud; fruits smooth, the mericarps not winged, dehiscient.


**Distribution:** America from southwestern U. S. to Peru, mostly in Central America, with 25-35 species, of which two have been cultivated in Fiji.

**Key to species**

Small, compact shrub usually less than 2 m. high; leaves often fasciculate, the blades ovate, 0.5-4.5 cm. long; petiole white to pale pink, 0.5-12 mm. long; flowers composed of 1 or 2 mericarps or pyrenes 0.7-1 cm. long.

1. **Coccigera**

Shrub or small tree usually 3-7 m. high; leaves not fasciculate, the blades elliptic, 2.5-7.5 cm. long, 1.3-3.5 cm. wide, to rounded or retuse at apex, entire at margin; pedicels 0.5-10 cm. long, petals pink, about 8 mm. long; fruits fleshy, 1-2 cm. in diameter, with seed, edible pulp and sepaloid pyrenes.

2. **multifolia**


Shrub 2-3 m. high, with stiff branches, infrequently cultivated in Fiji near sea level. The petals are white to pale pink and filibracteate, the anthers yellow, and the fruits vary from red to orange. Flowers and fruits were observed in March.

**Typification:** The only reference indicated by Linnaeus was to Plumer, Nov. Gen. 40. 1703.

**Distribution:** West Indies; cultivated elsewhere in tropical areas, although in the Pacific I have seen collections only from the Mariana Islands and Hawaii in addition to Fiji, where presumably it was a recent introduction.
Local name and use: Sometimes known as Singapore holly (not recorded in Fiji), *Malpighia coccigera* is an attractive, compact ornamental, said to form good hedges.

Available collection: VITI LEvu: Renn. Latul. in private garden, EA 1644.


Shrub or small tree to 7 m. high, with a trunk to 10 cm. in diameter, introduced into cultivation in Fiji for experimental purposes. The pink petals are fimbriate, and the fruits are subglobose, sulcate, 1–2 cm. in diameter, and red to scarlet. No herbarium material has been located from Fiji.

**Typification:** A number of earlier references were listed by Linnæus.

**Distribution:** Southern Mexico to Peru and also in the West Indies; often cultivated elsewhere.

Local names and use: Introduced into Fiji as *acerola*. The species is also widely known as *West Indian cherry* or *Barbados cherry*. The fruits are edible raw or preserved and are one of the richest sources of vitamin C; the pressed, dried fruit pulp has been used commercially as such a source. The species is also sometimes used as a garden ornamental.

*Malpighia puniceifolia* is sometimes considered a synonym of *M. glabra* L. (1753) (cf. Pursglove, Trop. Crops. Dicot. 637. 1968; Cronquist, 1981, p. 770), but Niedenzu placed the two taxa in different subgenera, and they are well distinguished by Little, Woodbury, and Wadsworth, *Trees of Puerto Rico and the Virgin Islands* 2: 372, fig. 422. vs. 380, fig. 426. 1974. In the absence of herbarium material one may assume that the plant introduced into Fiji as *acerola*, experimentally for its high vitamin C content, was correctly referred to *M. puniceifolia* by Parham.