

Coprosma bougainvilleensis (Rubiaceae), A New Species from Bougainville Island, Papua New Guinea

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Abstract

With the description of a new species, *C. bougainvilleensis* Gideon, from Bougainville, the genus *Coprosma* (Rubiaceae) is reported for the first time from the Solomons. The species is described and illustrated. Infrageneric relationships and biogeography are briefly discussed.

Introduction

In May 1988, I had the opportunity to collect on Bougainville and Buka islands. One of the most interesting collecting sites was Mt Balbi, a dormant volcano, whose summit at 2,590 m is the highest point on the island of Bougainville. Amongst the many plants collected from this mountain was a curious species of *Coprosma*. The discovery of *Coprosma* on Bougainville was exciting because, firstly, *Coprosma* was not previously known from the Solomons Group or the Bismarck Archipelago, and secondly, it showed no resemblance to any of the *Coprosma* species from New Guinea, plants that I am familiar with. Examining the collection at LAE, I was able to establish that it represents a distinct new species, and that it shows affinities with a Pacific group of *Coprosma*. This species is in striking contrast to the New Guinea species, which are generally low spreading shrubs with small, obscurely veined leaves.

Coprosma bougainvilleensis Gideon *sp. nov.*

A Coprosma novaehebraeae in foliis omnino glabris, stipulis edentatis eciliatis, inflorescentis terminalis et baccis comparate maioribus (9-10.5 mm longis contra 5 mm longos) differt. **Typus:** Papua New Guinea - Bougainville Island: Mt Balbi, Emperor Range, Gideon LAE 78543, 8 May 1988 (LAE, holo; L, UPNG, iso).

Figure 1

Erect dioecious shrub, 2-5 m tall, young branchlets tetragonous, glabrous. *Leaves* opposite, narrowly elliptic, with 6-8 prominent veins on each side of the midrib, blade entirely glabrous, 8-13 by 2-3.5 cm, base cuneate, apex acuminate, acumen 6-15 mm; petiole glabrous, terete, 1-2 cm long. *Stipules* triangular, connate with the bases of the petioles, 5-7 mm long, caudate, acumen 3-4 mm long, base 5-6 mm broad, entirely glabrous. *Inflorescence* terminal, in few- to several-flowered cymes, either on the main axes or on lateral branches of a higher order. *Flowers* small, pale greenish. *Male flowers*: calyx green, glabrous, 4- or 5-lobed, lobes deltoid or triangular, 0.5-1 mm long; corolla funnel-shaped to campanulate, tube 3-5 mm long, lobes 4 or 5, narrowly ovate, 4-6 by 1.5-4 mm, apex acute; stamens 4 (or 5), inserted at the base of the corolla tube, filaments filiform, 15-20 mm long, anthers dorsifixed, greatly exerted and dangling, 5-6 mm long, base sagittate, apex acute, opening with two introrse slits. *Female flowers*: calyx similar to that of male flowers; corolla tubular, 6-7.5 mm long, entirely glabrous, lobes 4 or 5, narrowly ovate, 3-4 by 0.5-1.5 mm, apex acute, staminodes absent. Ovary ovoid-globose, 2-locular, ovules solitary, 1-2.5 by 1-2 mm, glabrous; style with 2 long stigmatic lobes, stylar part 3-3.5 mm long, stigma lobes greatly exerted, 26-30 mm long, hispidulous. *Fruit* a globose drupe, 9-10.5 by 9-10 mm, green, ripening bright red and crowned by the persistent calyx; pyrenes 2, stony, ellipsoid, 6-7 by 3-4 mm.

Distribution: So far known only from the type locality.

Habitat: A very common plant in moderately open situations in the forest, along walking tracks and along creek banks. Growing on volcanic ash soils between 1900 and 2300 m altitude.

Notes: The affinity of this new species appears to lie with the western Polynesian group "Persicaeifoliae" (subgenus *Lucidae* C.J. Webb), which includes three species, each endemic to a single island, Samoa, Fiji or Vanuatu. The group is characterised by lanceolate leaves with pilose veins, triangular, ciliate, dentate stipules, and shortly branched peduncles. Among these, it most nearly resembles the Vanuatu species, *Coprosma novaehebridae* W.R.B. Oliv., which has a sparsely pilose lamina and pilose petiole; ciliate, dentate stipules; and a 5-mm long fruit. (Oliver was unable to describe the flowers as none was available). In contrast, *C. bougainvilleensis* is entirely glabrous, the stipules are neither ciliate nor dentate, and the fruits are 9-10.5 mm long.

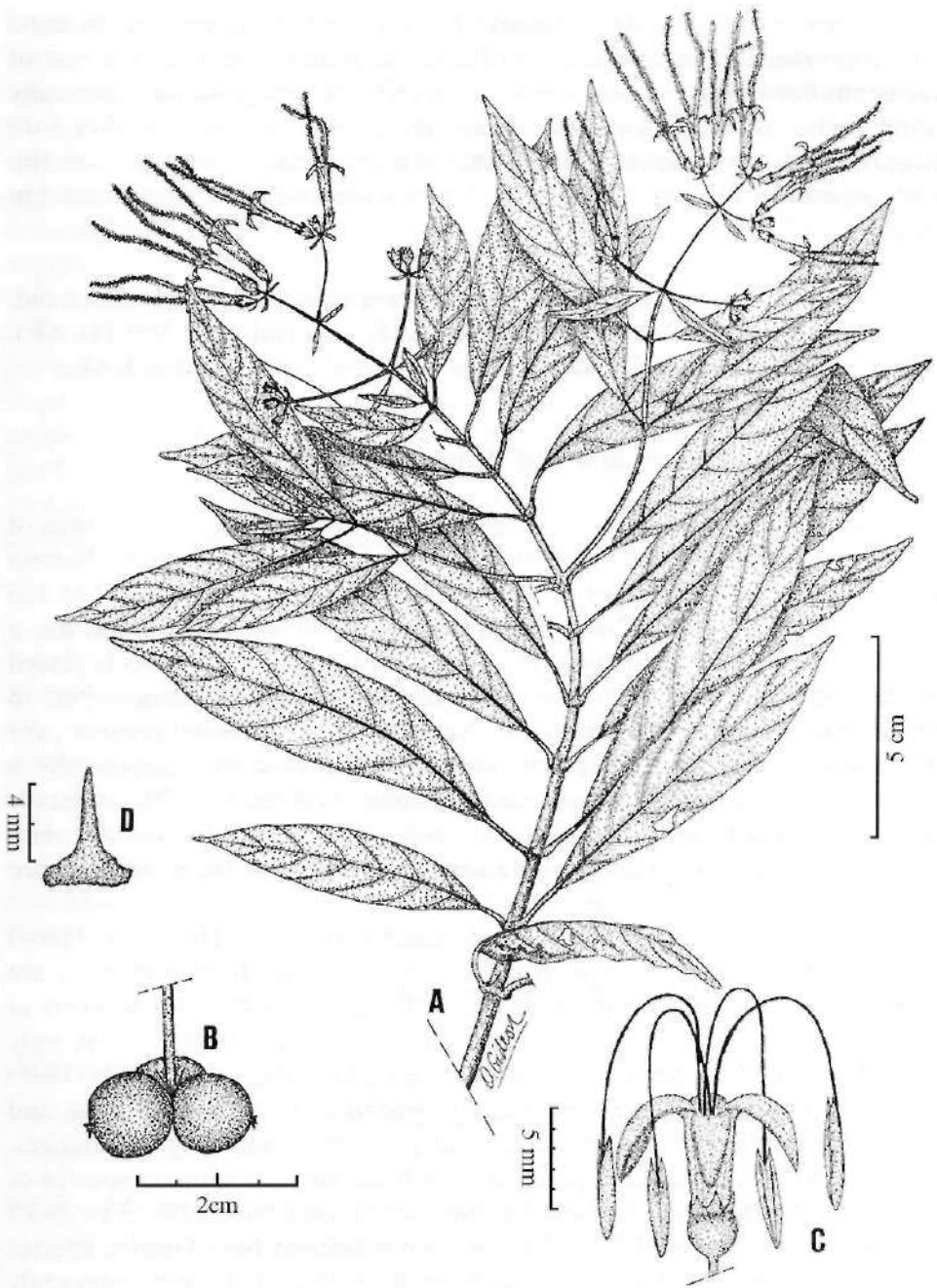


Figure 1. *Coprosma bougainvilleensis* Gideon

A - female flowering twig; B - Fruits; C - Male flower; D - stipule.

Although *C. bougainvilleensis* most resembles *Coprosma* in tribe *Anthospermeae*, it is anomalous in having terminal cymes; all the rest of the genus have axillary inflorescences and inflorescence position is generally quite stable in tribe *Anthospermeae*. Its generic position is therefore regarded as provisional until the Australasian members of the *Anthospermeae* are better understood. Molecular data may prove useful in shedding light on its affinities.

Other specimens examined: Mt Balbi, Emperor Range, Bougainville Island, Papua New Guinea. *Gideon LAE 78596* (LAE); *Gideon LAE 78597* (LAE). (Duplicates of these collections will shortly be distributed from LAE).

Taxonomic and Biogeographic Notes

Coprosma J.R. & G. Forst. is a large, mainly southern temperate genus of about 90 species (Darwin, 1979), recently expanded to include *Nertera* Banks & Sol. ex Gaertn. and *Leptostigma* Arm, bringing the total to 128 species (Heads, 1996). The genus is centred in New Zealand, and has a secondary centre of diversity in the Hawaiian Islands. *Coprosma* is placed within the south temperate amphi-pacific subtribe *Coprosminae* Puff in tribe *Anthospermeae* Cham. & Schldtl. The *Anthospermeae* are characterised by their unisexual, anemophilous flowers, undoubtedly a derived condition in the predominantly zoophilous Rubiaceae. The stigmatic lobes are usually long and filiform, and are completely covered with hispidulous hairs, significantly increasing their receptive surfaces. They are usually longer than the style.

In his treatment of the New Zealand *Coprosma*, Hooker f. (1864) recognised two main groups, based on whether the female flowers are clustered or solitary, a distinction generally accepted by later workers at subgeneric level (Oliver, 1935; Allan, 1961; Heads, 1996). Oliver, the only monographer of the genus, recognised seven informal groups. Heads (1996) reduced the genera *Nertera* and *Leptostigma* to sections of *Coprosma*, and somewhat modified the subgeneric concepts to accommodate the changes.

Coprosma bougainvilleensis differs from all New Guinea species of *Coprosma* by its generally larger stature and larger leaves (8-13 by 2-3.5 cm) with 6-8 prominent lateral veins. The mainland New Guinea species are usually low spreading shrubs with small (3-35 by 1-10 mm), obscurely veined, needle-tipped leaves, and all occur in the alpine regions. Heads (1996) placed most of the New Guinea species in the informal group "Malesia" within the subgenus *Coprosma*.

Heads (1996) provided an in-depth discussion of the evolution and

biogeography of *Coprosma*, and interested readers are referred to that paper. Prior to the inclusion of *Nertera* and *Leptostigma* in *Coprosma*, the two clearly distinct groups (subgenera) were western (subgenus *Coprosma*) or eastern (subgenus *Lucidae*) in distributional range, with both groups overlapping in New Zealand and Hawaii (see Heads, 1996, Fig.1), both important centres of species diversity for the genus. The evolution and biogeography of the *Coprosminae* remains controversial. Puff (1986) suggested that the present distribution and diversity of the *Coprosminae* in the southern regions was a result of long distance dispersal from the north followed by secondary speciation, while Heads (1996) argued that the present distribution of *Coprosma* is a result of vicariance rather than dispersal. We must look to molecular biology to provide a more precise estimation of the geographic origin and the evolutionary relationships of the *Coprosminae*. The intrusion of the subgenus *Lucidae* into Papuasia is probably best explained by (short distance) dispersal, and birds are the most likely candidates as dispersers.

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