Five new Ficus L. species (Moraceae) from Melanesia were discovered during recent ecological research on plant-insect interactions in the northern lowland rainforests of Papua New Guinea. The objective of these studies was to quantify turnover in plant and caterpillar species diversity, or beta-diversity, across 75,000 km² of contiguous forest in the Ramu-Sepik river basins (Novotny et al., 2007). In plant surveys at eight sites across the area (Fig. 1), 87 Ficus species were encountered including the five described here and one in preparation. The number of Ficus species per site averaged 43 and local endemism was low such that most of the new taxa are known from multiple localities. One of the new taxa was included in previous studies of pollinator specificity and co-phylogeny (Silvieus et al., 2007). Species descriptions were generated by coding information on aspects of growth, branching, leaves, stipules, and figs in DELTA format (Dallawitz et al., 1993). A justification for character states and completely parallel descriptions is provided in Laman and Weiblen (1998), whose regional interactive key has been extended to New Guinea. New species described below raise the total number of Ficus species known from New Guinea to 157 (Berg and Corner, 2005; Weiblen, 2006).

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2–4 mm long; globose or obconical, rounded at the apex; 5.0–8.5 mm long × 6.0–8.2 mm wide; green, yellow, or brown; ripening red; without spots; basal bracts 3 at the bottom of the stipe, persistent in mature figs, glabrous, acuminate, more or less equal in size, 0.5 mm long; lateral bracts several; apical bracts 3, projecting; ostiolar bracts overlapping; inner epidermis without glandular hairs; pistillate florets varying within figs from sessile to pedicellate; pedicels glabrous; perianth glabrous, white, with free tepals, margins entire; style subterminal; ovary white. 

**Etymology:** of black magic or ‘sanguma’ in Melanesian Pidgin English. The plant is reported to have utility in practices concerning the supernatural.

**Field characters:** a rather slight, scandent shrub of poorly drained soils and closed canopy forest margins. Figs attached low on the stem or on rhizomatous branches and ripening bright red.
Distribution: Papua New Guinea: Madang Province, East Sepik Province, West Sepik Province; Indonesia: Papua, Vogelkop Peninsula.

Habitat: primary lowland rainforest with a 30–40 m canopy.

Local names and uses: ‘dawong’ (Wanang language), ‘menafuay’ (Utai language); Utai villagers (West Sepik Province) report that leafy twigs are uprooted and brushed against the legs and feet to detach forest spirits from
the body upon leaving forest. Wanang villagers (Middle Ramu, Madang Province) describe a preparation of boiled twigs that is swallowed to purify the body when witchcraft is suspected.


**2. *Ficus rubrijuvenis* Weiblen & Whitfeld, sp. nov.** TYPE: PAPUA NEW GUINEA. Madang Province: Ohu Conservation Area, 05°13′S, 143°41′E, 100 m, 3 November 2005, G. D. Weiblen and B. Isua 2692 (Holotype: LAE; Isotypes: MIN, US). Fig. 3.

*Differs from* *F. erythrospermate* Miq. *in praesentia foliorum rubrarum juvenalium et ex fico rubervestimentio in absentia venarum rubrarum in foliis adultis. Laminae glabrae sed venis pilis.*

Tree 5–10 m. Branches orthotropic. Twigs glabrous, 1.2–3.5 mm diam., hollow; without a waxy gland below the node; stipules caducous, pubescent, 0.5–1.5 cm long. *Leaves* spirally arranged, elliptic, 11–18 cm long × 3.5–8.2 cm wide, glabrous, with hairs on veins; coriaceous; margin entire; base cuneate or rounded; symmetrical; apex pointed; venation pinnate; basal veins paired, as prominent as the secondary veins, 0.1–0.3 times as long as the leaf, departing at an angle of 20–65 degrees from the midrib; secondary veins 8–11 pairs, more prominent than tertiary veins, raised below but not above in dried specimens; areoles of more or less equal size; petioles pubescent, 0.7–2.5 cm long; leaf glands none; cystoliths abaxial. *Figs* axillary or cauliflorous; sessile or lateral bracts few; apical bracts more than 3; ostiolar bracts overlapping; inner epidermis with glandular hairs; pistillate florets varying within figs from sessile to pedicellate; pedicels glabrous; perianth glabrous with free tepals, red, entire; stamine florets ostiolar, 1 stamen per floret, filaments with epidermal hairs at the base, anthers not mucronate. *Achene* not seen.

**Etymology:** named for the red juvenile leaves.

**Field characters:** red juvenile leaves.

**Distribution:** Papua New Guinea: Madang Province.

**Habitat:** secondary and primary lowland rainforest.


Recognized by villagers in Madang Province on the basis of its juvenile red leaves. Differs from *Ficus erythrosperma* Miq. in having larger and broader leaves (11–18 × 3.5–8.2 cm vs. 6.0–10.5 × 1.5–3.0 cm) with less acuminate apices. The short peduncle or absence thereof also distinguishes the species from *F. erythrosperma*.


*Similaris ad* *F. erythrospernum* Miq. *sed foliiis maturis rubellis venis.*

Tree to 4 m and 3–11 cm dbh. Buttresses absent or less than 0.5 m in height. Branches orthotropic. *Twigs* glabrous, or pubescent, 1.6–3.0 mm in diam., hollow or with spongy pith; without waxy glands below nodes; latex color yellow; stipules caducous, pubescent, 1.2–2.3 cm long. *Leaves* spirally arranged, elliptic or obovate, 10.5–18.5 cm long × 4–7

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**SUBGEN. SYCOMORUS, sect. ADENOSPERMA**
Ficus rubrijuvenis Weiblen & Whitfeld. A, branchlet; B, detail showing fig attachment; C, detail showing sessile, axillary figs. From G. D. Weiblen 2692 (MIN). Illustration by Lisa McGrath.

cm wide, glabrous except for sparse brown hairs on abaxial surface of veins, coriaceous; margin entire, base cuneate, symmetric; apex pointed; venation pinnate; basal veins paired, as prominent as the secondary veins, 0.1–0.3 times as long as the leaf, departing at an angle of 40–70 degrees from the midrib; secondary veins 9–13 pairs, more prominent than tertiary veins, raised below in dried leaves; aeroles of more or less equal size; petioles glabrous or pubescent, 0.7–1.7 cm long; leaf glands none; cystoliths abaxial. Figs axillary; pedunculate; peduncle
**Figure 4.** *Ficus rubrivestimenta* Weiblen & Whitfeld. 

- **A**, branchlet; 
- **B**, detail showing fig attachment; 
- **C**, mature fig; 
- **D**, detail of fig interior; 
- **E**, detail showing pistillate florets. From *G. D. Weiblen 2310* (MIN). Illustration by Marilyn Garber.

Surface pubescent, 12–16 mm long; globose, rounded at the apex, glabrous, 8–12 mm long × 8–12 mm wide, green, without spots; basal bracts 3 scattered along the peduncle, persistent in mature figs, glabrous, acuminate, more or less equal in size, 0.5–1.0 mm long; lateral bracts none; apical bracts more than 3; ostiolar bracts overlapping; inner epidermis with glandular hairs; pistillate florets varying within figs from sessile to pedicellate; pedicels glabrous; perianth glabrous with free tepals, white, entire; style subterminal to lateral, glabrous, not divided at the apex; stigma clavate; ovary superior, white. *Achene* flattened, smooth.
**Etymology:** named for the red dye produced from a boiled preparation of leaves and applied to natural fibers.

**Field characters:** mature leaves have reddish secondary veins.

**Distribution:** Papua New Guinea. Morox and Wanang (Madang Province), Wamungu (East Sepik Province).

**Habitat:** secondary and primary lowland rainforest.

**Local names and uses:** ‘kolenohpakuwe’ (Urimo language); ‘ramon’ (Miani language); ‘kamam te’ (Wanang language). Leaves are boiled to extract a red dye that is applied to grass skirts and string bags.


Recognized by villagers in Madang Province on the basis of mature leaves with red lateral veins and juvenile leaves lacking red coloration (vs. *F. rubrijuvenis*). Also distinguished from the latter by fig peduncles exceeding 1.2 cm in length (vs. < 1 cm). Differs from *F. erythrosperma* in having larger leaves (10.5–18.5 × 4–7 cm vs. 6.0–10.5 × 1.5–3.0 cm) with less acuminate apices, and figs with longer peduncles (1.2–1.6 cm vs. less than 1 cm).

4. *Ficus wamanguana* Weiblen & Whitfeld, *sp. nov.* **TYPE:** PAPUA NEW GUINEA. East Sepik Province: near Wamangu village, 19 October 2004, 03°47.23'S, 143°39.12'E, 100 m, G. D. Weiblen 2186 (Holotype: LAE; Isotypes: MIN, US, A, K, L, CANB, SING, MO, NY, F). Fig. 5.

*Arbor parva, ramificatione terminali praesente proximis cursibus aquae in sylvae inapertis aulaeis. Similaris ad *F.* servulum Corner glabrum sed cum ramunculis pubescentibus ficisque et petiolis ubi juvenibus.*

Tree to 16 m and 15 cm dbh. Twigs pubescent, 1.5–2.5 mm in diam., hollow or with spongy pith; without waxy glands below the nodes; stipules caducous, pubescent, 0.7–1.4 cm long. *Leaves* spirally arranged, elliptic or obovate, 10.5–15.1 cm long × 2.8–5.4 cm wide, pubescent, chartaceous; margin entire, serrate or dentate; base cuneate or rounded, symmetric; apex pointed; venation pinnate; basal veins paired, as prominent as the secondary veins, 0.1 times as long as the leaf; departing at an angle of 50 degrees from the midrib; secondary veins 12–14 pairs, more prominent than tertiary veins, raised below but not above in dried leaves; areoles of unequal size; leaf glands none; cystoliths abaxial. *Figs* axillary, sessile or pedunculate; peduncle surface glabrous, 0.4–2.0 mm long; globose, rounded at the apex, pubescent, 1.2–1.6 mm long × 1.2–1.7 mm wide; yellow-green at maturity; basal bracts 3 at the top of the peduncle, caducous, pubescent, acuminate, more or less equal in size, 2 mm long; lateral bracts none; apical bracts 3, forming a flattened disc; ostiolar bracts overlapping; inner epidermis with glandular hairs; pistillate florets varying within figs from sessile to pedicellate, pedicels glabrous; pistillate perianth with tepals free, glabrous, white or red, margins entire; style subterminal to lateral, glabrous, not divided at the apex; stigma clavate; ovary red. *Achene* flattened, smooth.

**Etymology:** named for Wamangu village in East Sepik Province where the species was first collected.

**Field characters:** small tree along water-courses in closed canopy forests, with ‘*Terminalia*’ branch architecture differing from the model of Aubréville in the potential for lateral shoots to overtake the main axis.

**Distribution:** Papua New Guinea: East Sepik Province.

**Habitat:** primary lowland rainforest.

**Local names and uses:** ‘kolingipakuli’ (Urimo language); sap turns red upon boiling in water and is used to dye grass skirts.

**Additional specimen examined:** PAPUA NEW GUINEA. East Sepik Province: Wamangu, G. D. Weiblen 2741 (MIN, LAE).

The species is similar to *Ficus pilulifera* Corner but differs in the presence of dense, erect, curling, 1 mm long hairs on the figs and adaxial leaf surface, as opposed to the absence of hairs on the figs and the presence of sparse, shorter hairs on the adaxial leaf surface in *F. pilulifera*. The species can be distinguished from *F. subcuneata* Miq. by several characters, most notably by the smaller, narrower leaves (10.5–15.1 × 2.8–5.4 cm vs. up to 20 cm × 9 cm) and smaller figs (1.2–1.6 × 1.2–1.7 mm vs. 1.2–2.2 × 2.1–2.8 mm) at maturity.
Figure 5. *Ficus wamanguana* Weiblen & Whitfeld. A, branchlet showing ‘Terminalia’ branching pattern; B, detail of leaf apex; C, mature fig; D, detail of leaf base; E, detail of fig in cross section. From G. D. Weiblen 2186 (MIN). Illustration by Bruce Wilson.
5. *Ficus aurantiacafolia* Weiblen & Whitfeld, sp. nov. TYPE: PAPUA NEW GUINEA. Madang Province: Morox village, near Yoro, Bogia, 04°16'S, 144°58'E, 60 m, 28 March 2005, G. D. Weiblen 2337 (Holotype: LAE; Isotype: MIN). Fig. 6.

**Figure 6.** *Ficus aurantiacafolia* Weiblen & Whitfeld. **A,** branchlet showing subnodal gland on twig; **B,** cauliflorous fig-bearing branches; **C,** detail showing stipules; **D,** detail of fig showing basal bracts. From J. Ericho & D. Wright JE28 (MIN). Illustration by Debra Greenblatt.
Folia siccitate aurantiaca clara, cum rubellis ad aurantiacum venis in paginae folii inferiori.

Tree to 10 m. Twigs glabrous, 2.2–5.0 mm in diam., hollow or with spongy pith; with waxy glands below the nodes; stipules caducous, glabrous, 0.7–1.0 cm long. Leaves spirally arranged, elliptic or lanceolate or obovate, 14–25 cm long × 3.8–6.8 cm wide, glabrous, coriaceous; margin serrate or dentate; base cuneate, symmetric or asymmetric; apex pointed; venation pinnate; basal veins not paired, as prominent as secondary veins; secondary veins 7–9 pairs, more or less equal size; petioles glabrous, 0.7–1.0 cm long; leaf glands in axils of the secondary veins; secondary veins 7–9 pairs, more or less equal size; petioles glabrous, 0.7–1.0 cm long; leaf glands in axils of the secondary veins; cystoliths abaxial. Figs cauliflorous on short leafless branches along the main trunk; pedunculate; peduncle surface glabrous, 4–9 mm long; globose or obconical, rounded at the apex, pedunculate; peduncle surface glabrous, 4–9 mm long; ripening yellow; glabrous, 7–12 mm long × 6.8–13 mm wide, glabrous, 7–12 mm long × 6.8–13 mm wide, ripening yellow; basal bracts 3 at the apex of the peduncle, persistent in mature figs, glabrous, acuminate, more or less equal in size, 1 mm long; lateral bracts none; apical bracts more than 3; pistillate florets varying in size; pistillate florets varying in size; pistillate florets overlapping; inner epidermis without glandular hairs; pistillate florets varying within figs from sessile to pedicellate; pedicels glabrous; perianth glabrous, with tepals fused within figs from sessile to pedicellate; pedicels glabrous; perianth glabrous, with tepals fused within figs from sessile to pedicellate; anthers bilocular, not seen. Achene not seen.

Etymology: named for the orange color of the dried leaves.

Field characters: leaves drying orange with reddish orange veins on lower leaf surface.

Distribution: Papua New Guinea: Madang Province, West Sepik Province, Chimbu Province; Indonesia: Papua.

Habitat: secondary and primary lowland rainforest to hill forest.

Local names: ‘ta-tea’ (Nobanob language); ‘tumbi tumbi’ (Mian language).


Differing from Ficus ternatana Miq. of the Moluccas in the absence of axillary figs, the absence of hairs on the abaxial surface of the lamina, and the presence of sparse, short, tightly appressed white hairs on the adaxial veins. In New Guinea, the species is distinguished from similar species of sect. Syccocarpus in several characters: leaf margins are more crenulate and figs much smaller (1.3 cm wide vs. up to 3 cm wide) than in F. congesta Roxb., and leafless branchlets bearing cauliflorous figs are much shorter (1–3 cm vs. 5 cm) and more densely branched than in F. arfakensis King. In contrast to F. adelpha K. Schum. & Lauterb., the receptacle is completely glabrous (vs. sub-hispid). The species was referred to as F. cf. ternatana in Novotny et al. (2007) and Silvieus et al. (2007).

LITERATURE CITED


