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RESEARCH ARTICLE

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The species of *Citrus* (*Rutaceae*) with pinnate leaves

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Key words

Aurantioideae
Citrus
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Rutaceae

Abstract *Feroniella* (*Rutaceae*: *Aurantiodeae*) is formally transferred to *Citrus* and a new combination, *C. lucida*, made.

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INTRODUCTION

In a recent molecular analysis (Bayer et al. 2009), based on nine cpDNA sequences, the circumscription of the genus *Citrus* L. (*Rutaceae*: *Aurantioideae*, *Aurantieae* [*Citreae*]) was broadened beyond that of Mabberley (1998, 2004, 2008, where *Clymenia* Swingle, *Fortunella* Swingle, *Poncirus* Raf., *Microcitrus* Swingle and *Eremocitrus* Swingle are reunited with the genus), to include *Oxanthera* Montrouz. and, very surprisingly – because its species, unlike those of all the others, have never been included in *Citrus* before – *Feroniella* Swingle. Until this revelation, *Citrus* was considered (Zhang & Mabberley 2008) to comprise species with simple, unifoliolate (often with a markedly winged petiole) or trifoliolate (*C. trifoliata* L., formerly referred to the genus *Poncirus*) leaves, but the species hitherto referred to *Feroniella* has imparipinnate leaves. They are deciduous, like those of the hardy *C. trifoliata*, and both deciduousness and the toughened pericarp seem to be adaptations to the seasonal forests where the species is found.

The range of leaf form in the genus gives support to the hypothesis of Corner (1964: 146, t. 50), who considered that the unifoliolate leaf typical of most species of *Citrus* represents the terminal leaflet of an incompletely developed pinnate leaf typical of Sapindales in general. Unifoliolate or simple and trifoliolate leaves are found within several other genera of subfam. *Aurantioideae*, e.g. *Aeglopsis* Swingle, *Balsamocitrus* Stapf, *Burkillanthus* Swingle, *Luvunga* Buch.-Ham. ex Wight & Arn. (from which the unifoliolate/simple-leaved *Paramignya* Wight may not be distinct – Mabberley 1998), *Pleiospermium* (Engl.) Swingle and *Triphasia* Lour.; the full range to imparipinnate is found in *Citropsis* (Engl.) Swingle & Kellerm. and *Naringi* Adans.

As its name suggests, *Feroniella* was formerly considered allied to *Limonia* L. (syn. *Feronia*), being classed as one of the 'wood apples' of Swingle (1943) because of its tough pericarp. *Limonia*, however, is diplostemonous whereas species of *Feroniella* have four times as many stamens as petals as is typical of *Citrus*.

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NOMENCLATURE

Citrus L.

Citrus L., Sp. Pl. 2 (1753) 782. — Type: *Citrus medica* L.
Feroniella Swingle (1913) 776, *syn. nov.* — Type: *Feroniella oblata* Swingle = *Citrus lucida* (Scheff.) Mabb.

According to Swingle (1943: 468–471, q.v. for key and species descriptions), there are three pinnate-leaved species, but one of these (Forman 1958), *F. pubescens* Tanaka, is actually *Harrisonia perforata* (Blanco) Merr. (*Rutaceae*), while the other two, following Guillaumin (1946: 651), are now considered conspecific. In readiness for an account for *Flora malesiana* the single recognised '*Feroniella*' species is here formally transferred to *Citrus*:

1. *Citrus lucida* (Scheff.) Mabb., *comb. nov.*

Feronia lucida Scheff., Natuurk. Tijdschr. Ned.-Indië 31 (1870) 19; Icon. Bogor. 2 (1904) t. 149.
Ferioniella lucida Swingle (1913) 781; (1943) 470, t. 74; Guillaumin (1946) 651. — Type: *Anon. s.n.* (ex Rembang coll. *Teijsmann*) (holo BO; iso L, U), Indonesia, Java, cult. Hort. Bogor.
Feroniella oblata Swingle (1913) 779; (1943) 469. — Type: *Pierre 652* (holo P), Cambodia, Samroing-Aong.

Distribution — Cambodia, Laos, ?Vietnam, Thailand, Java (teak forests)

Notes — I am grateful to J-F Veldkamp for confirmation of L and U sheets as isotypes of *F. lucida*. *Feroniella puberula* Tanaka, Stud. Citrol. 2 (1928) 23 is a *nomen nudum*.

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