THIS THESIS IS DEDICATED TO MY PARENTS.
WORDS CANNOT DESCRIBE YOUR LOVE, SUPPORT AND ENCOURAGEMENT THROUGHOUT.
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LIST OF ABBREVIATIONS

Common words and taxonomic terms

c. about
comb. nov. new combination
DNA deoxyribonucleic acid
e.g. example
excl. excluding
Fig. Figure
i.e. that is
nom. illeg. illegal name
nom. invalid. name invalid
nom. nud. naked name (illegal name)
pro parte partly
quoad as far as is concerned
sensu in the sense of
s.l. sensu lato (in a broad sense)
sp. species
s.s. sensu stricto (in a strict sense)
syn. synonym
var. variety
viz. namely

Places, units of measurement, collecting information

alt. altitude
cm centimeter(s)
ft. foot (feet)
F.R. Forest Reserve
km kilometer(s)
m meter(s)
min minutes
mm millimeter(s)
Mt. Mount
s seconds
sine coll. without collector
s.n. sine numero (without number)
µl microliter

Cardinal points and other positions

C Central
E East
N North
NE North-East
NW North-West
S South
SE South-East
SW South-West
W West

Developmental stages

FB Flower Bud
FL Flower
FR Fruit
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systematic study of the Peninsular Malaysian species of *Fagraea sensu lato* was undertaken. This was done in the light of recent revisionary work done for Borneo that documented 20 new species and demonstrated that previous species concepts for *Fagraea* were too broad. Parallel to this the distinction of the subgeneric groups recognised as sections, i.e., *Cyrtophyllum*, *Fagraea* and *Racemosae*, were investigated with molecular phylogenetic methods. Representative taxa from the Malay Peninsula and Borneo augmented by sequences from other taxa in the same subtribe and tribe were used in the molecular analysis. Gene sequences from ITS, *trn*L–*F* (*trn*L intron + *trn*L–*F* spacer) and *ndh*F were analysed with two methods viz., maximum parsimony and Bayesian analyses. The results indicate that *Fagraea s.l.* includes four well-supported monophyletic groups, with the several gene sequences analysed with two phylogenetic methods. Two of the clades, viz., *Fagraea* and *Racemosae*, could be equated to sections *Fagraea* and *Racemosae*, respectively. The remaining two clades, viz., *Elliptica* and *Gigantea* appear to be parts of the section *Cyrtophyllum*. The Racemosae clade had the most morphological synapomorphies, with a distinct plant architecture where trunk growth is continuous and branches are plagiotropic (with distichous leaf arrangement); pendulous inflorescences; and a firm fruit wall with an epidermis that does not detach and wrinkle upon drying. The Fagraea clade (excluding *Fagraea crenulata*) has fruits that produce copious creamy pale yellowish latex in the fruit epidermis and fruit wall and have ellipsoid-rounded seeds. In comparison, all the other species of *Fagraea* (including *F. crenulata*) either have no latex or produce small amounts of translucent gummy latex and have polygonal seeds. *F. crenulata* is aberrant in the Fagraea clade in having unique characters such as a distinct architectural model, thorny bark and crenulate leaf margins. It is however, related to the Fagraea clade in having petiolar sheaths that do not or only slightly fuse at the edges and a peltate stigma structure. Phylogenetic analyses with the ITS region did not include *F. crenulata* in the Fagraea clade. However, *F. crenulata* is resolved basal to the Fagraea clade with chloroplast gene analyses. The clear split of section *Cyrtophyllum* into the Gigantea and Elliptica clades was somewhat surprising as these groups have a number of similar morphological features, such as small flowers and much-protruding stamens and styles. In comparison, the other groups are generally distinguishable with bigger flowers and less exserted stamens and styles. The only morphological difference between these two groups is the position of the inflorescence, terminal in Elliptica and axillary in Gigantea. Recognition of *Fagraea s.l.* as four distinct genera is indicated, as the complex is considered morphologically too divergent to be regarded as a single genus. These correspond to the four clades recognised in the molecular analyses, viz., *Elliptica*, *Fagraea*, *Gigantea* and *Racemosae*, and could adopt *Picrophloeus* Bl., *Fagraea Thunb. (sensu stricto)*, *Cyrtophyllum Reinw. ex Bl.* and *Utania* G.Don, respectively, as good genus names. The position of *F. crenulata* is doubtful and it is provisionally maintained in *Fagraea s.s.* pending future molecular investigations with a larger taxon sampling over wider geographical context, and the use of further gene regions.
ABSTRAK