

Molecular systematics and remodelling of *Chirita* and associated genera (Gesneriaceae)

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Abstract The polyphyletic genus *Chirita* is remodelled after an extensive molecular phylogenetic study of species assigned to it and to other associated genera. Most of *Chirita* sect. *Chirita* and the monotypic *Hemiboeopsis* are amalgamated with *Henckelia* sect. *Henckelia*, resulting in a very differently circumscribed genus *Henckelia* and the synonymisation of *Chirita*. The remaining species of *Chirita* sect. *Chirita* are accommodated in the revived genus *Damrongia*. *Chirita* sect. *Liebigia* is recognised as the genus *Liebigia*. *Chirita* sect. *Microchirita* is recognised as the genus *Microchirita*. *Chirita* sect. *Gibbosaccus* is, together with *Chiritopsis* and *Wentsaiboea*, included in the originally monotypic and now enormously expanded genus *Primulina*. The necessary combinations are made and a general list showing the present accommodation of the species previously described under *Chirita*, *Chiritopsis*, *Hemiboeopsis*, *Primulina* and *Wentsaiboea* is provided.

Keywords Bayesian inference analysis; *Chirita*; *Chiritopsis*; *Damrongia*; *Hemiboeopsis*; *Henckelia*; ITS; *Liebigia*; maximum parsimony; *Microchirita*; molecular phylogeny; *Primulina*; taxonomy; *trnL-F* intron-spacer; *Wentsaiboea*

Supplementary Material Diagnostics of the Bayesian inference analysis are available in Electronic Supplement 1 and Figures S1 and S2 and Table S1 are available in Electronic Supplement 2 to the online version of this article (<http://www.ingentaconnect.com/content/iapt/tax>).

■ INTRODUCTION

In its traditional sense, the genus *Chirita* Buch.-Ham. ex D. Don, established formally by Don (1822) and revised by Candolle (1845), Clarke (1883) and Wood (1974), is a large genus of perennial or annual herbs or subshrubs ranging from Sri Lanka, the Himalayas and southern China through continental Southeast Asia and into Malesia as far as Sumatra and Java. Wood (1974) recognised 77 species in three sections but the genus has grown rapidly in recent years, particularly through the addition of many new species from China (see Wang & al., 1998; Li & Möller, 2009). Wang (1985a,b), Wang & al. (1998) and Wang & al. (2011) estimated that there were about 140 species and Li & Möller (2009) 150 species, two-thirds of which belong to *Chirita* sect. *Gibbosaccus* C.B. Clarke and most of which are endemic to China. Weber (2004) gave a very large range of 80–140 species, marked the genus as highly heterogeneous and noted there were problems in the delimitation of the genus and the subdivisions within it. The great variance in the estimate of the number of species is also testament to the considerable problems of specific delimitation in *Chirita* but this problem will need to be addressed in subsequent revisions of the species rather than in this work. The genus has mostly (Wood, 1974; Wang, 1985a,b; Wang & al.,

1998; Li & Wang, 2004) been divided into three sections: *Chirita* sect. *Chirita*, *Chirita* sect. *Gibbosaccus* and *Chirita* sect. *Microchirita* C.B. Clarke. Wang (1985a,b) also recognised subsections and series in the genus and Hilliard (2004) resurrected *Chirita* sect. *Liebigia* (Endl.) C.B. Clarke from synonymy of *Chirita* sect. *Chirita* to create a fourth section.

In this paper we set out to investigate the relationships of *Chirita* to the other didymocarpoid genera (see Weber, 2004; Möller & al., 2009, 2011) and to establish a stable framework that can be used as a structure for investigating species delimitation. There have been several molecular phylogenetic studies that have included species of *Chirita*, beginning with Mayer & al. (2003), and continuing with Li & Wang (2007), Möller & al. (2009), Wang & al. (2011) and Möller & al. (2011). The focus of the paper by Li & Wang (2007) was to study the relationship between *Chirita* sect. *Gibbosaccus* and *Chiritopsis* W.T. Wang. They did not include representatives of other genera except as outgroups. Of the three sections recognised by Wood (1974) and Wang & al. (1998), *Chirita* sect. *Chirita*, *Chirita* sect. *Microchirita* and *Chirita* sect. *Gibbosaccus*, Li & Wang (2007) found the first two to be monophyletic and the last to be paraphyletic due to the inclusion of *Chiritopsis*. However, this result was more or less inevitable given the lack of sampling of other didymocarpoid

genera. In Möller & al. (2009, 2011), with more limited sampling in *Chirita* but considerably more in other genera, only *Chirita* sect. *Microchirita* remained monophyletic, albeit with low sampling in all sections. *Chirita* sect. *Chirita* (in the concept of Wood, 1974) was represented only by five species in Möller & al. (2009) and these did not group together. One of these was *Chirita asperifolia* (Blume) B.L. Burtt, the type of *Chirita* sect. *Liebigia* (Endl.) C.B. Clarke which Hilliard (2004) resurrected. The other species were *Chirita lacunosa* (Hook. f.) B.L. Burtt, *C. walkerae* Gardner (as *C. walkeri*), *C. pumila* D. Don, and *C. urticifolia* Buch.-Ham. ex D. Don, the type of *Chirita*. In Möller & al. (2009) four species of *Chirita* sect. *Gibbosaccus* were included but these were found to be paraphyletic due to the inclusion of the monotypic *Primulina* Hance and a single species of *Chiritopsis*. These results were confirmed in a larger analysis of didymocaroid Gesneriaceae (Möller & al., 2011).

Li & Wang (2007) did not include *Primulina* in their study. The largest published study to date is by Wang & al. (2011), a paper submitted for publication after we submitted ours to *Taxon* but which was reviewed and published in just a few weeks.¹ In their paper they included a larger sample of *Chiritopsis* and *Chirita* sect. *Gibbosaccus* species, combined with sequences from Möller & al. (2009) for the crucial Chinese species *Primulina tabacum* Hance and *Petrocodon dealbatus* Hance and for some non-Chinese taxa. They confirmed the basic topology of the previous findings by Möller & al. (2009) and proceeded to raise *Chirita* sect. *Microchirita* and *Chirita* sect. *Liebigia* to genus rank and to reduce *Chirita* sect. *Gibbosaccus*, *Chiritopsis* and *Wentsaiboa* D. Fang & D.H. Qin to synonymy of *Primulina*. They did not address the problem of *Chirita lacunosa* nor the relationship between species of *Chirita* sect. *Chirita* and *Henckelia* from Sri Lanka which were highlighted by Möller & al. (2009).

Chirita is morphologically quite variable (Wood, 1974; Weber, 2004). Clarke (1883, 1884) commented on how *Chirita* “is with difficulty distinguished from *Didymocarpus*”. Wood (1974: 126) remarked that the difference between the apically fused anthers in *Chirita* sect. *Microchirita*, in contrast to face-to-face fusion in the other sections, “together with the possibility that the syndrome of bilobed stigma and geniculate filaments has originated several times independently, suggests that *Chirita* may be polyphyletic.” Clarke’s and Wood’s comments may have been pertinent indeed and an investigation of *Chirita* clearly needs to take into account any possible relationships the species may have with other didymocaroid genera. Clarke (1883, 1884) was largely unaware of the large number of species of *Chirita* sect. *Gibbosaccus* that were yet to be collected in China and his comments mainly reflected his understanding of the species in *Chirita* sect. *Chirita*. *Chirita* sect. *Gibbosaccus* has since become by far the largest of the sections in *Chirita* (Wang & al., 1998; Li & Wang, 2004).

From the comments in the older literature and from the preliminary findings of Möller & al. (2009, 2011), the questions that need to be addressed for a better understanding of *Chirita* are: (1) Will a better sampling of *Chirita* confirm that

the genus is polyphyletic? (2) Are the three (Wood, 1974) or four (Hilliard, 2004) sections of *Chirita* each monophyletic? (3) What are the relationships of any possible new groupings of *Chirita* species to other didymocaroid genera, particularly to *Henckelia*, *Primulina* and *Chiritopsis*?

In this paper the responsibility for the various aspects of the paper are as follows: D.J. Middleton and A. Weber initiated the need to further investigate generic delimitation in *Chirita* and have compiled the taxonomic sections (with contributions by A.R. Rafidah in *Microchirita*); R. Kiew, C.L. Lim, D.J. Middleton, M. Möller, A.R. Rafidah, P. Triboun, Y.-G. Wei and T.L. Yao collected and identified most of the new material sequenced; A. Forrest, C.L. Lim, M. Möller and T.L. Yao generated the sequence data; S. Sontag helped to compile the formal taxonomy and procured the literature required; and M. Möller oversaw all aspects of the molecular work and analysed the molecular data.

■ MATERIAL AND METHODS

Plant material. — The samples included in the present study are those used in a recent study (Möller & al., 2011), plus 41 samples from additional species of *Chirita*, *Chiritopsis* and *Henckelia*. Some sequences came from GenBank, others from recent field collections (Table S1 in Electronic Suppl. 2). In total 232 samples have been included covering 66 out of the 80 genera classified in the Old World didymocaroid Gesneriaceae (Weber & Skog, 2007 onwards; Wei & al., 2010), or 58 out of 61 of the advanced Asiatic and Malesian genera to which *Chirita* belongs (Möller & al., 2011). Details of the sample coverage, ingroup and outgroup selection and rooting are given in Möller & al. (2011). Here we focus on the genus *Chirita*.

Sampling within the highly polyphyletic genus *Chirita* has been expanded from 15 to 42 samples (representing 33 species and three undescribed species), with nine species (plus one undescribed species) from section *Chirita* (out of 40 described), 14 species from section *Gibbosaccus* (out of 117 described), nine species (plus two undescribed species) from section *Microchirita* (out of 19 described) and one species from section *Liebigia* (out of 12 species described, all of which were previously included in synonymy of a variable *Chirita asperifolia*).

The genus *Chiritopsis* was earlier shown to be nested in *Chirita* sect. *Gibbosaccus* (Li & Wang, 2007; Möller & al., 2009, 2011). To investigate closer the relationships of *Chiritopsis* with *Chirita*, five out of the nine described species have also been included.

The polyphyletic *Henckelia* is represented by 15 species (out of ca. 180). We have increased the sampling in *Henckelia* because in Möller & al. (2009, 2011), with very low sampling, some species of *Henckelia* were nested in *Chirita* sect. *Chirita*. These 15 samples have been selected from a very much larger sample of *Henckelia* species, the results of which will be presented in follow-up papers concentrating on that genus (results of the larger *Henckelia* study confirm the results presented with the smaller 15 species sample included in this paper).

DNA extraction, PCR, and direct sequencing. — Molecular methods and protocols basically followed Möller & al.

¹ An invitation from us to combine the two papers before publication remained unanswered.

(2009, 2011), acquiring sequences of the plastid *trnL-F* intron-spacer (*trnL-F*) and the nuclear ribosomal internal transcribed spacer (ITS) region.

Phylogenetic analysis. — For this study 27 *trnL-F* and ITS sequences were newly generated and an additional 14 *trnL-F* and ITS sequences were obtained from GenBank (both sources given in bold in Appendix 2 and distinguished in the last two columns). Both sequence regions were available for all samples included (Appendix 2). The newly acquired and GenBank sequences were added to existing matrices (Möller & al., 2011). The *trnL-F* alignment was unproblematic, only 66 characters had to be excluded at the 5' end due to the poor quality of sequences, particularly those retrieved from GenBank. For the ITS matrix, initially aligned automatically and then adjusted by eye (see Möller & al., 2009), 155 characters had to be excluded due to alignment ambiguities.

The phylogenetic analysis basically followed Möller & al. (2009, 2011). In brief, two analyses, maximum parsimony (MP) implemented in PAUP* v.4.0b10 (Swofford, 2002), and Bayesian inference (BI) in MrBayes v.3.1.2 (Huelsenbeck & Ronquist, 2001, 2007) were carried out. The *trnL-F* and ITS sequences were analysed together after their combinability was checked by the incongruence length difference (ILD; $P = 0.07$) test implemented in PAUP*.

For the MP analysis characters were unordered and unweighted with alignment gaps treated as missing data. Starting trees were found by parsimony ratchet (Nixon, 1999), in PAUPRat (Sikes & Lewis, 2001) and PAUP*, and the saved trees further optimised in PAUP*, with both TBR and Multrees on. Statistical branch support was obtained from 10,000 heuristic bootstrap replicates (Möller & al., 2009, 2011) in PAUP*.

For the BI analysis models and parameter prior settings were obtained independently for the *trnL-F*, the ITS spacers and 5.8S sequences using MrModeltest v.2.3 (Nylander, 2004), and were GTR+G, GTR+I+G and SYM+I+G, respectively, as suggested by the Akaike Information Criterion (AIC; Akaike, 1974). Five million generations were run in two independent analyses each with four Markov chain Monte Carlo (MCMC) chains (Electronic Supplement 1A–D). One tree was sampled every 250 generations (= 20,000 trees), and the first 100,000 generations (the first 400 trees) discarded as burn-in, determined after plotting the generations against the Log(n) likelihoods (Electronic Supplement 1E–F). The remaining trees were used to reconstruct a majority rule consensus tree in PAUP*, and posterior probabilities (PP) obtained. The PP branch support values showed a high correlation between the two parallel Bayesian runs (Electronic Supplement 1G).

■ RESULTS

Matrix characteristics. — After the exclusion of ambiguous characters, the combined matrix had a length of 1966 characters, 1132 for *trnL-F* and 834 for ITS. In the combined analysis 906 of the remaining 1966 characters were constant, 309 variable but parsimony-uninformative, and 751 (38.2%) parsimony-informative.

Phylogenetic analyses. — The MP analysis on the combined data resulted in 117,344 most parsimonious trees of 6711 steps length, a consistency index of 0.2845 and retention index of 0.6648. The majority-rule consensus tree was highly resolved and was similar in topology to the previous phylogeny of Möller & al. (2011) where the clades received high branch support (Fig. S1 in Electronic Suppl. 2). The BI tree recovered was basically congruent to the MP tree, in areas where the branches were well supported (Fig. S2 in Electronic Suppl. 2). A detailed report and discussion of the inter- and intra-generic relationships of the advanced didymocarpoid Gesneriaceae is given in Möller & al. (2011) and we here refrain from repeating these. Instead we focus on the positions of the *Chirita* samples and associated genera. The results of the MP and BI analyses are summarised in a simplified tree (Fig. 1) and subtrees (Figs. 2–6), but given in full as Figs. S1 and S2 (in Electronic Suppl. 2).

Chirita samples fell in six different clades. Several nodes separating these clades received medium to high support values (Fig. 1, grey squares), supporting the separate phylogenetic positions of the six respective *Chirita* positions; i.e., they represent separate evolutionary lineages. The branches leading to the six clades with *Chirita* samples (Fig. 1, grey circles) all received high support values; these clades represent well defined separate genetic entities. This can also be inferred from the long branches leading to these clades in the BI tree (Fig. S2 in Electronic Suppl. 2).

Chirita elata Ridl. was nested inside the Malesian *Henckelia* clade, as sister to *Henckelia nana* A. Weber (BS = 100%, PP = 1.0) (Fig. 1; Figs. S1 and S2 in Electronic Suppl. 2). *Chirita lacunosa*, *C. purpureolineata* (Kerr ex Craib) D. Wood and an undescribed *Chirita* sample formed a clade (BS = 100%, PP = 1.0) sister to a highly supported clade of *Paraboea* (C.B. Clarke) Ridl., *Trisepalum* C.B. Clarke and *Phylloboea* Benth. samples (BS = 98%, PP = 1.0), but with no statistical support for this sister relationship (Figs. 1 and 2).

The 11 *Chirita* sect. *Microchirita* samples (not including *Chirita elata* which is discussed above), representing eight species (plus two undescribed), were placed in a highly supported clade (BS = 100%, PP = 1.0) (Fig. 3) forming the basal branch among the straight-fruited advanced Asiatic and Malesian genera (Fig. 1; Fig. S1 in Electronic Suppl. 2), though this position received no branch support, and was not present in the BI tree (Fig. S2 in Electronic Suppl. 2). Within the *Microchirita* clade the two samples of *Chirita hamosa* R. Br. were sister (BS = 100%, PP = 1.0).

Ten samples of seven species of *Chirita* sect. *Chirita* formed a strongly supported clade (BS = 92%, PP = 1.0) that also included samples of the monotypic *Hemiboeopsis* and two *Henckelia* samples, *Henckelia floccosa* (Thwaites) A. Weber & B.L. Burtt and *H. incana* (Vahl) Spreng. (Fig. 4). The relationships between *Hemiboeopsis* and *Chirita urticifolia* and *C. walkerae* received no branch support. The two *Henckelia* samples were sister (BS = 100%, PP = 1.0), and this pair was sister to five *Chirita* species (BS = 83%, PP = 1.0).

The grouping of *Chirita asperifolia* with *Allocheilos* W.T. Wang, *Gyrocheilos* W.T. Wang and *Didymocarpus* Wall. was highly supported (BS = 99%, PP = 1.0) (Figs. 1 and 5),

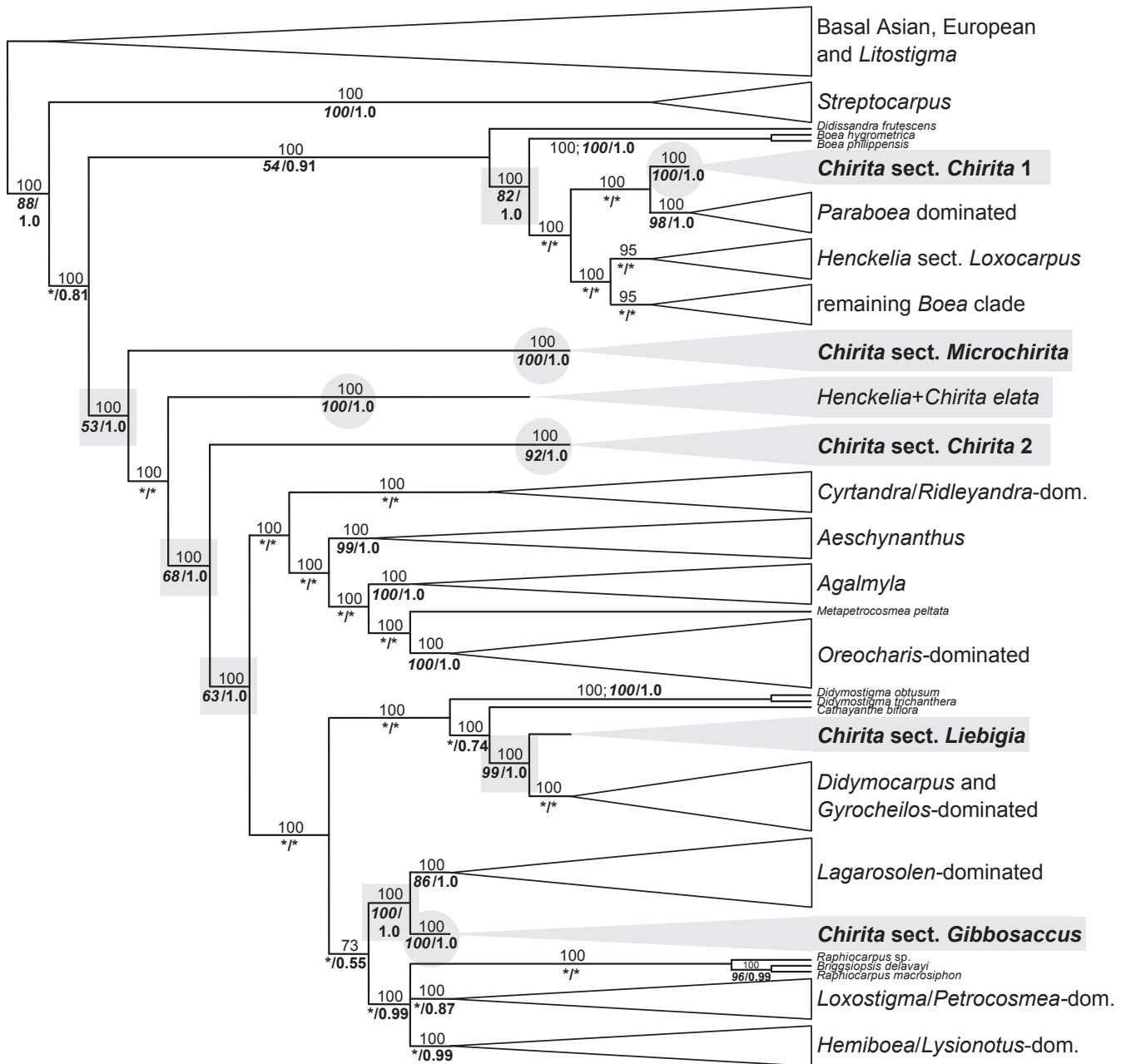


Fig. 1. Simplified maximum parsimony majority-rule consensus tree based on combined *trnL-F* and ITS sequences. Main clades are represented by names of genera dominating these clades. *Chirita* clades are highlighted in grey. Numbers above branches are majority-rule frequencies, numbers below branches are bootstrap values (bold italics) and Bayesian posterior probabilities (bold). Asterisks indicate branches with <50% bootstrap or <0.5 posterior probability values. Numbers in grey circles indicate branches supporting the monophyly of individual *Chirita* clades. Numbers in grey squares indicate branches supporting the independent origins and relationships of the different *Chirita* clades.

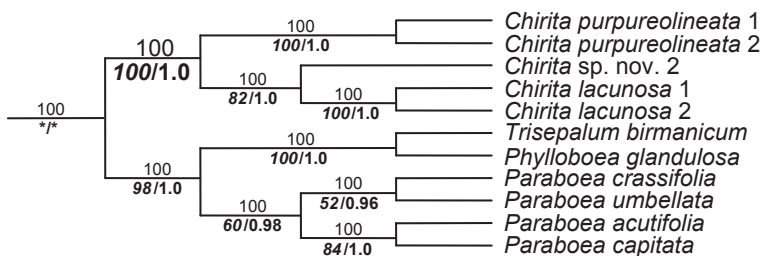


Fig. 2. Cladogram of the majority-rule consensus tree from the full analysis on combined *trnL-F* and ITS sequences of 232 didymocaroid Gesneriaceae samples, depicting the *Chirita* sect. *Chirita* clade 1 (→ *Damrongia*). For further explanation see Fig. 1.

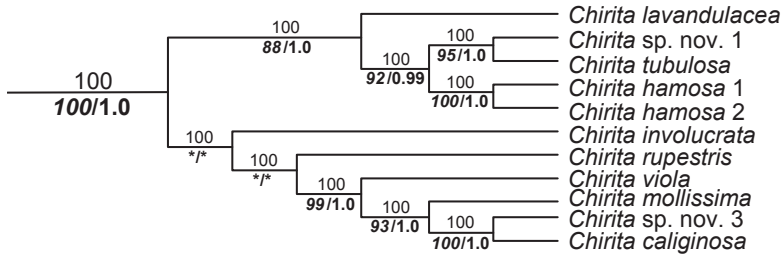


Fig. 3. Cladogram of the majority-rule consensus tree from the full analysis on combined *trnL-F* and ITS sequences of 232 didymocarpoid Gesneriaceae samples, depicting the *Chirita* sect. *Microchirita* clade (→ *Microchirita*). For further explanation see Fig. 1.

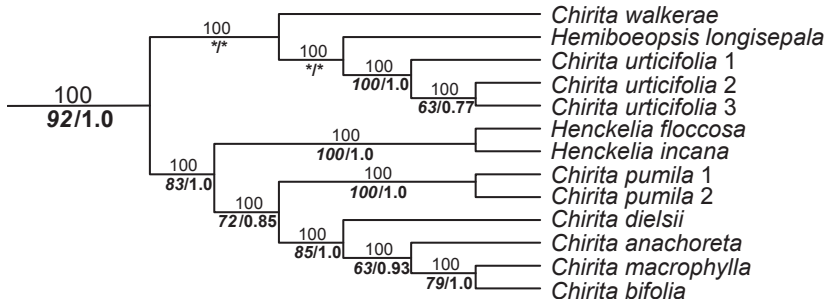


Fig. 4. Cladogram of the majority-rule consensus tree from the full analysis on combined *trnL-F* and ITS sequences of 232 didymocarpoid Gesneriaceae samples, depicting the *Chirita* sect. *Chirita* clade 2 (→ *Henckelia*). For further explanation see Fig. 1.

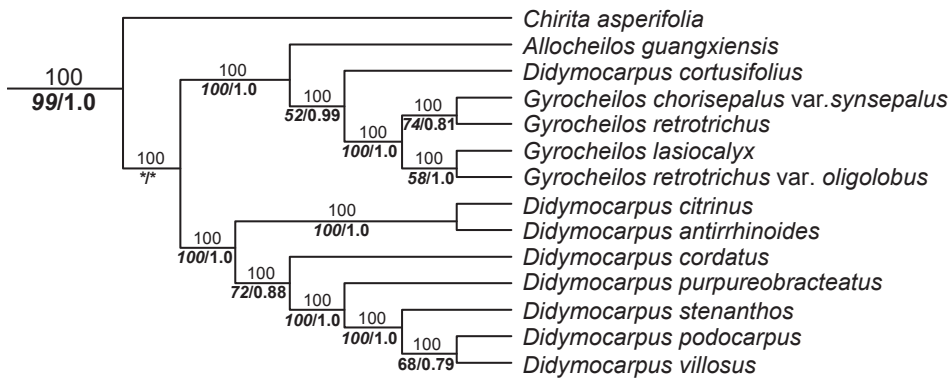


Fig. 5. Cladogram of the majority-rule consensus tree from the full analysis on combined *trnL-F* and ITS sequences of 232 didymocarpoid Gesneriaceae samples, depicting the *Chirita* sect. *Liebigia* clade (→ *Liebigia*). For further explanation see Fig. 1.

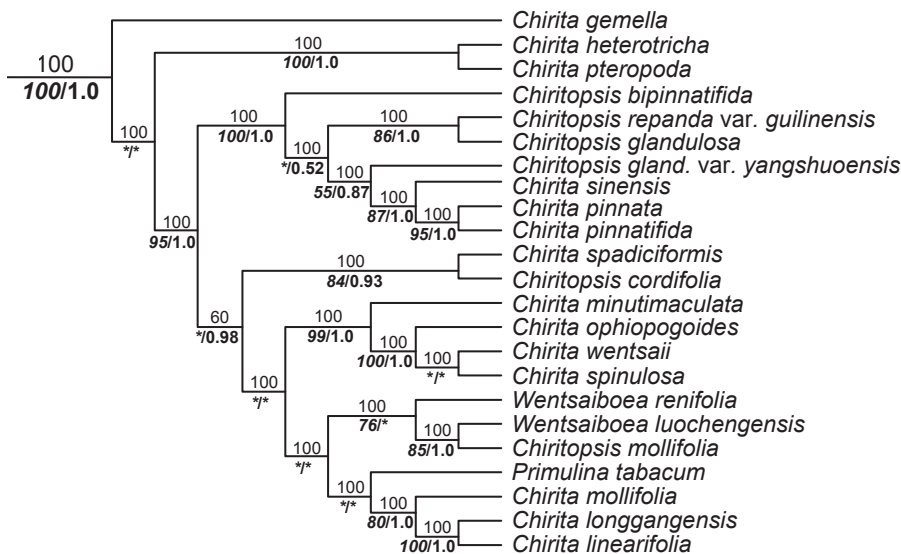


Fig. 6. Cladogram of the majority-rule consensus tree from the full analysis on combined *trnL-F* and ITS sequences of 232 didymocarpoid Gesneriaceae samples, depicting the *Chirita* sect. *Gibbosaccus* clade (→ *Primulina*). For further explanation see Fig. 1.

though the position among these genera is unclear. In the MP tree (Fig. S1 in Electronic Suppl. 2) *Chirita asperifolia* is sister to all three genera, though the branch supporting this relationship received no bootstrap support. In the BI tree (Fig. S2 in Electronic Suppl. 2) it was in a sister position to the *Didymocarpus* samples (BS=100%, PP=0.99).

The clade including the samples of *Chirita* sect. *Gibbosaccus* formed a strongly supported sister relationship to a clade dominated by *Lagarosolen* W.T. Wang samples (BS = 100%, PP = 1.0). The *Chirita* sect. *Gibbosaccus* clade itself received high branch support values (BS = 100%, PP = 1.0). As well as the 14 species of *Chirita* sect. *Gibbosaccus* it included six species of *Chiritopsis*, two species of *Wentsaiboea* and the monotypic genus *Primulina* (Fig. 6). The topology within the clade differed between the MP and BI analysis mainly due to the changing position of *Primulina tabacum* Hance and *Wentsaiboea renifolia* D. Fang & D.H. Qin (Figs. S1 and S2 in Electronic Suppl. 2). The *Chiritopsis* samples appeared in three places, in strongly supported relationships with *Chirita* samples or *Wentsaiboea luochengensis* Yan Liu & W.B. Xu (Fig. 6).

■ DISCUSSION

This work is an extension of the recent most comprehensive study on the “didymocarpoid Gesneriaceae” (Möller & al., 2011), with an additional 27 *Chirita*, four *Chiritopsis* and 10 *Henckelia* samples added. The present study focuses on the highly polyphyletic genus *Chirita* which appears in six different locations in the resulting phylogenies. Despite the differences in topology between the MP and BI analysis, which is mainly the result of a poorly supported backbone structure, the separate positions of the *Chirita* samples were highly supported and are not likely artefacts. Although the intergeneric and clade relationships cannot be elucidated from these results, the high support values for the individual clades containing *Chirita* species means that we can with some confidence propose redefined genera for these different clades, in some cases agreeing with the very recent changes proposed by Wang & al. (2011) and in some cases disagreeing.

***Chirita* sect. *Chirita* 1 clade.** — The clade labelled *Chirita* sect. *Chirita* 1 in Fig. 1 contains *Chirita purpureolineata*, *C. lacunosa* and an undescribed species. *Chirita purpureolineata* was originally described as *Damrongia purpureolineata* Kerr ex Craib and is the type species of the genus *Damrongia*. This genus name is available for this clade. This clade was not found by Wang & al. (2011), nor did they discuss the isolated position of *Chirita lacunosa* in Möller & al. (2009).

***Chirita* sect. *Chirita* 2 clade.** — The clade labelled *Chirita* sect. *Chirita* 2 in Fig. 1 contains the type species of the genera *Chirita* (*C. urticifolia*), *Henckelia* (*H. incana*) and *Hemiboeopsis* (*H. longisepala* (H.W. Li) W.T. Wang, the only species). The other species of *Henckelia* included, *H. floccosa*, is also a member of *Henckelia* sect. *Henckelia* which is a group of 14 rather similar species in South India and Sri Lanka. The other taxa in this clade are all species of *Chirita* sect. *Chirita*. This clade can be recognised as the genus *Henckelia* with *Chirita* and *Hemiboeopsis* in

synonymy. Given that both *Henckelia* and *Chirita* were large genera this conclusion has far-reaching implications, not only because *Chirita* now disappears altogether, but also due to the radical change in the delimitation of *Henckelia*. *Henckelia* now includes only the species of *Henckelia* from South India and Sri Lanka plus most of the species of *Chirita* sect. *Chirita* and excludes all species formerly placed in *Henckelia* from Thailand and Malaysia. Unfortunately the Thai and Malaysian species of *Henckelia* made up the very large majority of species. Manuscripts on the fate of these species, along with further molecular phylogenetic work, are in preparation. Wang & al. (2011) did not include any species of *Henckelia* in their study and concluded that this clade corresponded to *Chirita* sect. *Chirita* as defined by Wood (1974) except for *Liebigia* (see below).

***Chirita* sect. *Microchirita* clade.** — *Chirita* sect. *Microchirita* is a morphologically well defined group that, surprisingly, had never been recognised at generic rank before being raised by Wang & al. (2011). We agree that generic rank is appropriate for *Microchirita*. Although the sampling within the section is relatively good, the two subclades found do not have clear morphological distinction (both include species with crested inflorescences), but do reflect the two base chromosome numbers in the section (*C. involucrata* Craib, *C. caliginosa* C.B. Clarke and *C. rupestris* Ridl. belong to the group with $x = 9$, while *C. lavandulacea* Stapf and *C. hamosa* belong to the group having $x = 17$ —see Kiehn & al., 1998) as well as the geographical distribution (all diploids with $x = 9$ occur in Peninsular Malaysia and Southern Thailand, while the species with $x = 17$, possibly dys-tetraploids, derived from $2n = 18$, have a more northerly distribution in Central and Northern Thailand, Vietnam and Southern China (Wood’s, 1974 records of *C. hamosa* for Southern Thailand and Northern Peninsular Malaysia are erroneous due to confusion with *C. viola* Ridl.). The species (including the undescribed species) which have not had their chromosomes counted also divide into the same northern and southern clades. The group of species highlighted by Wood (1974) as having the unusual feature of the presence of hairs with swollen tips on the upper surface of the corolla throat, *C. caliginosa*, *C. mollissima* Ridl. and *C. viola*, do come out as a group sister to *C. rupestris*. *Chirita* sp. nov. 3, which is very close to *C. sericea*, is also in this group.

***Chirita* elata.** — The generic position of *Chirita elata* has been problematic since it was first described (see Rafidah & al., 2011). Our results show it nested firmly amongst the Malaysian species of *Henckelia* (in the sense of Weber & Burtt, 1998), which is in agreement with the diandrous flowers.

***Chirita* sect. *Liebigia* clade.** — *Chirita* sect. *Liebigia* was relatively recently resurrected as a distinct section within *Chirita* by Hilliard (2004), having been included in *Chirita* sect. *Chirita* by Wood (1974). Wood (1974) recognised only one widespread and variable species, *Chirita asperifolia*, but Hilliard (2004) recognised 12 species, 10 of them based on material also available to Woods (who freely admitted that “the account of *Chirita asperifolia* is probably the least satisfactory in this revision”). We have sampled only material identified by Hilliard as *Chirita asperifolia*, the type species of the section, and it is quite distinct from the other parts of *Chirita* sect. *Chirita*

and from other didymocarpoid genera. *Liebigia*, at genus rank, is already available for this group.

***Chirita* sect. *Gibbosaccus* clade.** — *Chirita* sect. *Gibbosaccus* is by far the largest section within *Chirita*. Our results show all species in a well-supported clade but with the species of *Chiritopsis*, *Wentsaiboea renifolia*, *W. luochengensis* and *Primulina* nested within. In this group the genus name *Primulina*, previously monotypic but very recently expanded to include these groups by Wang & al. (2011), has priority.

■ TAXONOMIC IMPLICATIONS

Each of the six clades identified above has already been highlighted in previous taxonomic work as morphologically distinct. The molecular work presented here lends weight to the recognition of each of the groups as distinct taxa (or in a different genus in the case of *Chirita elata*). However, these groups are not always easily distinguished from each other and not easily distinguished from other didymocarpoid Gesneriaceae, a not uncommon problem in the family.

The single character which was used to unite the species and sections of *Chirita* into one genus and distinguish it from other genera was the lack of development of the upper lobe of the stigma and the usually bifid development of the lower lobe (henceforth referred to as the chiritoid stigma). It was already recognised that this character, although useful, had its problems and led to confusion over the correct placement of some species. Below we discuss the morphological basis of each of the genera we now recognise but acknowledge that further research is necessary in the didymocarpoid Gesneriaceae to better understand the morphological as well as molecular evolution in the group.

Below we list all of the taxa we now recognise within each genus, including the many necessary new combinations. We list heterotypic synonyms when the synonym was published in *Chirita*, but we must emphasise that we have not critically checked the status of these synonyms. Instead we have generally adopted heterotypic synonyms for names in *Chirita* as they have appeared in recent revisions, especially by Wood (1974) and Wang & al. (1998). Further work may show that some names presently found in synonymy must be re-established and transferred to one of the present genera. In Appendix 1 we give a complete list of all names ever published in *Chirita* and the current name for each of them.

It should be borne in mind that we have moved all currently recognised taxa out of *Chirita* even when we cannot be sure we have made the correct decision. *Chirita* as a genus is a synonym of *Henckelia* and no currently recognised species can bear this generic name. To leave species in *Chirita* due to some uncertainties would result in competing and confusing classification frameworks for this group. Instead we have made new combinations for all taxa based on our best knowledge of where each taxon now belongs. We freely admit that in some cases we may be mistaken and have highlighted these taxa in the Appendices. These taxa, however, were already previously poorly understood and we have merely ensured that they are

accounted for in the new classification framework and hope their status can be better resolved in the future.

One new combination is made in the genus *Codonoboea* for *Chirita humilis* Miq. *Chirita humilis* was previously also included in *Henckelia*, the Malesian members of which must now be excluded from the genus. Manuscripts focusing on this group are in preparation but for the sake of completeness this new combination is proposed in Appendix 1.

- Henckelia*** Spreng., Anleit. Kenntn. Gew., ed. 2, 2(1): 402. 1817
 ≡ *Henckelia* sect. *Henckelia* Weber & Burt in Beitr. Biol. Pflanzen 70: 334. 1998 ('1997') ≡ *Didymocarpus* sect. *Orthoboea* Benth. in Benthem & Hooker, Gen. Pl. 2(2): 1022. 1876 – Type: *Henckelia incana* (Vahl) Spreng.
 = *Chirita* Buch.-Ham. ex D. Don, Edinburgh Philos. J. 7: 83. 1822
 ≡ *Chirita* sect. *Euchirita* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 111. 1883 ≡ *Didymocarpus* sect. *Euchirita* (C.B. Clarke) Chun in Sunyatsenia 6: 294. 1946 ≡ *Roettlera* sect. *Euchirita* (C.B. Clarke) Fritsch in Engler & Prantl, Nat. Pflanzenfam. IV/3b: 148. 1895 – Type (lectotype Burt, 1954): *Chirita urticifolia* Buch.-Ham. ex D. Don (≡ *Henckelia urticifolia* (Buch.-Ham. ex D. Don.) A. Dietr.).
 = *Calosacme* Wall., Numer. List: 800–806. 1829. All species names established in *Calosacme* by Wallich (1829) are nomina nuda.
 = *Babactes* DC. ex Meisn., Pl. Vasc. Gen. 1: tab. diag. 302, Comm. 211. 1840 – Type: *Babactes oblongifolia* (Roxb.) DC. (≡ *Henckelia oblongifolia* (Roxb.) D.J. Middleton & Mich. Möller).
 = *Gonatostemon* Regel in Gartenflora 15: 353. 1866 – Type: *Gonatostemon boucheanum* Regel (≡ *Henckelia urticifolia* (Buch.-Ham. ex D. Don.) A. Dietr.).
 = *Ceratoscyphus* Chun in Sunyatsenia 6: 276. 1946 – Type: *Ceratoscyphus caerulea* Chun (≡ *Henckelia ceratoscyphus* (B.L. Burt) D.J. Middleton & Mich. Möller).
 = *Hemiboeopsis* W.T. Wang in Acta Bot. Yunnan. 6: 397. 1984 – Type: *Hemiboeopsis longisepala* (H.W. Li) W.T. Wang (≡ *Henckelia longisepala* (H.W. Li) D.J. Middleton & Mich. Möller).

Perennial or annual herbs, sometimes woody at base, caulescent or acaulescent, rarely creeping. Leaves opposite, alternate or whorled, sometimes clustered at the stem apex, or reduced to just one or two leaves, petiolate, lamina variable, sometimes pinnately lobed. Inflorescences axillary (or sometimes appearing terminal by reduction of vegetative shoot), flowers 1–15; bracts paired or in whorls, free or connate at base, orbicular to linear, narrowly ovate or narrowly triangular, sometimes early caducous. Calyx of 5 free lobes or fused into a tube for part of length, when fused often more deeply divided on dorsal side, segments triangular or narrowly triangular. Corolla infundibuliform, more rarely tubular, tube often slightly pouched, sometimes rather constricted in throat; bilabiate with 2-lobed upper lip and 3-lobed lower lip; colouration variable, often with yellow markings in throat. Stamens 2; filaments geniculate or straight; anthers fused face to face, glabrous or pubescent. Disc a simple annular ring or 5-lobed, often very small. Ovary shortly stipitate or not; stigma chiritoid, often

weakly so and rarely almost truncate, lower lobe bifid or not. Fruit a capsule splitting into 2 valves or opening only along the dorsal side, stipitate or not, plagiocarpic or not, calyx persistent or not in fruit. Seeds minute, ellipsoid.

Distribution: Sri Lanka, Southern and Northeastern India, Nepal, Bhutan, Southern China, Northern Vietnam, Northern Laos, Northern Thailand. — As far as is known *Henckelia* species are found on soils and rocks but not on limestone. Approximately 56 species.

Clarke (1883, 1884) noted the difficulty of distinguishing *Didymocarpus* and *Chirita* but it is likely that he was, in particular, referring to those species which were later (Weber & Burt, 1998) removed from *Didymocarpus* to a resurrected *Henckelia*. *Henckelia* was distinguished by having a fruit which dehisces only along the dorsal side, whilst *Didymocarpus* has fruits which dehisce into two valves. It was noted by Weber & Burt (1998) that the South Indian and Sri Lankan species were distinct enough to form a section, *Henckelia* sect. *Henckelia*, the type section of the genus. Its morphology is described by these authors in some detail under “South Indian *Didymocarpus*” (Weber & Burt, 1998: 316–317). Study of specimens and evaluation of the older literature and illustrations have revealed that stigma shape is variable in this group, ranging from truncate-capitate to definitely chiritoid with a short or undeveloped upper stigma lobe and a large lower lobe. In one individual of *Henckelia incana* it has even been observed that the lower lobe is bifid, and the same is suggested in the description of the stigma of *Henckelia repens* by Clarke (1883, as *Didymocarpus repens*). Therefore, there is no sharp boundary between *Henckelia* sect. *Henckelia* and *Chirita* with regard to the crucial stigma character. A chiritoid stigma, however, has never been observed in the Malesian species placed in *Henckelia* by Weber & Burt (1998). In addition the fruit character used to characterise *Henckelia*, dehiscence only along the dorsal side, has also been observed in *Chirita smitinandii* B.L. Burt and *C. lachenensis* C.B. Clarke and may occur in other *Chirita* species in fresher material (drying of specimens often makes this character difficult to observe, particularly in those species with very long and thin fruits such as *Chirita pumila*). All but one species of *Henckelia* sect. *Henckelia* s.str. are acaulescent. Most species of *Chirita* sect. *Chirita* (without *Damrongia*) are caulescent but acaulescent species of *Chirita* sect. *Chirita* are known such as *C. briggsioides* W.T. Wang, *C. dielsii* (Borza) B.L. Burt, *C. lachenensis* and *C. primulacea* C.B. Clarke. It should also be noted that both caulescent and acaulescent species are known from other Gesneriaceae genera (e.g., *Paraboea*). Recorded chromosome numbers are $n = 4, 9, 10, 14, 16, 17, 27$ and ± 45 (see “Webcyte”, Möller & al., 2002 onwards). The newly defined genus *Henckelia* is variable but no more so than other large didymocarpoid genera. It occurs in South India and Sri Lanka, the Himalayas and continental Southeast Asia, excluding Peninsular Thailand and Malaysia. It does not get into Malesia.

Some of the species we include in *Henckelia* are known to us only from herbarium specimens and a few only from the literature. Habitat preference is something not well documented on specimens or in the literature with most species recorded as occurring on rocks. We have the impression from those species that we do know from the field that most, if not all, species in

the newly circumscribed *Henckelia* do not occur on limestone but rather on sandstone, granite and other non-limestone rocks. This is in marked contrast to *Damrongia*, *Microchirita* and *Primulina* which are almost exclusively found on limestone.

Although the name *Hemiboeopsis* suggests a close affinity to *Hemiboea*, it relates only to the similarity in habit. Wang (1984) himself stressed a possible relationship with *Chirita* in the diagnosis (“fortasse affinis *Chirita* D. Don”). The stamens, the stigma shape (though with short upper lobe), as well as the long, cylindrical and orthocarpic capsules are not similar to *Hemiboea* but rather confirm Wang’s suggestion of a relationship to *Chirita*. The molecular data show that it is part of the *Chirita* sect. *Chirita* clade.

Wang & al. (2011) included several species of *Chirita* sect. *Chirita* in their analysis but as they did not include any species of *Henckelia* they incorrectly maintained the genus *Chirita* to accommodate these species. They also did not include *Hemiboeopsis* in their analysis so did not reduce this genus to synonymy.

There are a number of species which we include in *Henckelia* but which have not been included in the molecular analyses and for which their inclusion could be debated. These include *Henckelia forrestii* (J. Anthony) D.J. Middleton & Mich. Möller, *H. smitinandii* (B.L. Burt) D.J. Middleton & Mich. Möller, and *H. tibetica* (Franch.) D.J. Middleton & Mich. Möller. Only a more focused study on these species can resolve this issue but until contrary evidence is found they should be included in *Henckelia* along with most other species in *Chirita* sect. *Chirita*.

In its new sense, *Henckelia* differs fundamentally from the (purely morphological) concept of Weber & Burt (1998): it is an amalgamation of the type sections of *Henckelia* and *Chirita* (excluding the species placed in *Damrongia*), but excludes all other infrageneric taxa referred to *Henckelia* by these authors (sects. *Loxocarpus*, *Didymanthus*, *Heteroboea* and *Glossadenia*). The fate of the species in these sections will be discussed in forthcoming papers.

Henckelia adenocalyx (Chatterjee) D.J. Middleton & Mich. Möller, **comb. nov.** \equiv *Chirita adenocalyx* Chatterjee in Kew Bull. 1948: 63. 1948. — Distr.: India (Arunachal Pradesh), Northern Burma, China (Yunnan).

Henckelia anachoreta (Hance) D.J. Middleton & Mich. Möller, **comb. nov.** \equiv *Chirita anachoreta* Hance in Ann. Sci. Nat., Bot., sér. 5, 5: 231. 1866 \equiv *Didymocarpus anachoretus* (Hance) H. Lévl. in Compt. Rend. Assoc. Franç. 34: 427. 1906 (‘1905’) = *Chirita minutiserrulata* Hayata, Icon. Pl. Formosan. 5: 133. 1915. — Distr.: India (Sikkim), Burma, Northern Thailand, China (Guangdong, Guangxi, Hunan, Yunnan, Xizang), Taiwan, Laos, Northern Vietnam.

Henckelia angusta (C.B. Clarke) D.J. Middleton & Mich. Möller, **comb. nov.** \equiv *Chirita zeylanica* var. *angusta* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 113. 1883 \equiv *Chirita angusta* (C.B. Clarke) W.L. Theob. & Grupe in Ceylon J. Sci., Biol. Sci. 10(1): 70. 1972. — Distr.: Sri Lanka.

Henckelia auriculata (J.M. Li & S.X. Zhu) D.J. Middleton & Mich. Möller, **comb. nov.** \equiv *Chirita auriculata* J.M. Li & S.X. Zhu in Ann. Bot. Fenn. 47: 222. 2010. — Distr.: China (Yunnan).

- Henckelia bifolia*** (D. Don) A. Dietr., Sp. Pl., ed. 6, 1: 574. 1831 ≡ *Chirita bifolia* D. Don, Prodr. Fl. Nepal.: 90. 1825 = *Chirita amplexans* Steud., Nomencl. Bot., ed. 2, 1: 351. 1840, nom. nud. = *Chirita scabra* Royle ex C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 113. 1883, nom. illeg. pro syn. — Distr.: India (Himachal Pradesh, Uttar Pradesh), Nepal, Bhutan.
- Henckelia briggsioides*** (W.T. Wang) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita briggsioides* W.T. Wang in Bull. Bot. Res., Harbin 2(2): 138. 1982. — Distr.: China (Hubei).
- Henckelia burttii*** D.J. Middleton & Mich. Möller, **nom. nov.** ≡ *Chirita reptans* B.L. Burtt & Panigrahi in Notes Roy. Bot. Gard. Edinburgh 26: 265. 1965, non *Henckelia reptans* (Jack) Spreng. (1827). — Distr.: Northern Burma.
- Henckelia calva*** (C.B. Clarke) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita calva* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 116. 1883. — Distr.: India (Assam, Sikkim), Northern Burma.
- Henckelia ceratoscyphus*** (B.L. Burtt) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita ceratoscyphus* B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 21: 212. 1954 ≡ *Ceratoscyphus caeruleus* Chun in Sunyatsenia 6: 278. 1946, non *Chirita caerulea* R. Br. (1840), non *Henckelia caerulea* (Ridl.) A. Weber (1998) = *Chirita corniculata* Pellegr. in Bull. Soc. Bot. France 73: 420. 1926, non *Henckelia corniculata* (Jack) Spreng. (1827). — Distr.: China (Guangxi), Northern Vietnam.
- Henckelia communis*** (Gardner) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita communis* Gardner in Calcutta J. Nat. Hist. 4: 481. 1846 = *Chirita zeylanica* Hook. in Bot. Mag. 71: t. 4182. 1845, non *Henckelia zeylanica* (R. Br.) A. Weber & B.L. Burtt (1998) = *Chirita vulgaris* Morren in Belgique Hort. 3: 238, t. 36. 1853, nom. nud. — Distr.: Sri Lanka.
- Henckelia dibangensis*** (B.L. Burtt, S.K. Srivastava & Mehrotra) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita dibangensis* B.L. Burtt, S.K. Srivastava & Mehrotra in Notes Roy. Bot. Gard. Edinburgh 45(3): 469. 1989 ('1988'). — Distr.: India (Arunachal Pradesh).
- Henckelia dielsii*** (Borza) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita dielsii* (Borza) B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 23: 97. 1960 = *Chirita orbicularis* W.W. Sm. in Notes Roy. Bot. Gard. Edinburgh 9: 94. 1916. — Distr.: China (Yunnan, Sichuan).
- Henckelia dimidiata*** (Wall. ex C.B. Clarke) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita dimidiata* Wall. ex C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 115. 1883 = *Chirita polyneura* Miq. var. *amabilis* C.B. Clarke, Commelyn. Cyrtandr. Bengal.: t. 76. 1874 = *Chirita dimidiata* Steud., Nomencl. Bot., ed. 2, 1: 351. 1840, nom. nud. — Distr.: India (Assam, Sikkim).
- Henckelia fasciculiflora*** (W.T. Wang) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita fasciculiflora* W.T. Wang in Bull. Bot. Res., Harbin 2(2): 139. 1982. — Distr.: China (Yunnan).
- Henckelia fischeri*** (Gamble) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 344. 1998 ('1997') ≡ *Didymocarpus fischeri* Gamble in Bull. Misc. Inform. Kew 1923: 117. 1923. — Distr.: South India.
- Henckelia floccosa*** (Thwaites) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 344. 1998 ('1997') ≡ *Didymocarpus floccosus* Thwaites, Enum. Pl. Zeyl.: 207. 1860. — Distr.: Sri Lanka.
- Henckelia forrestii*** (J. Anthony) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita forrestii* J. Anthony in Notes Roy. Bot. Gard. Edinburgh 18: 192. 1934 ≡ *Didymocarpus forrestii* (J. Anthony) Hand.-Mazz., Symb. Sin. 7: 882. 1936 = *Chirita forrestii* var. *acutidentata* W.T. Wang in Acta Phytotax. Sin. 13(3): 103. 1975. — Distr.: China (NW Yunnan). — *Chirita forrestii* was referred to *Chirita* sect. *Chirita* by Wood (1974), but to *Chirita* sect. *Gibbosaccus* by Wang & al. (1998) and Li & Wang (2004) which would result in it now being transferred to *Primulina*. We conclude that it is a *Henckelia* but further study is clearly necessary to resolve the issue of its correct placement.
- Henckelia fruticola*** (H.W. Li) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita fruticola* H.W. Li in Bull. Bot. Res., Harbin 3(2): 37. 1983. — Distr.: China (Yunnan).
- Henckelia gambleana*** (C.E.C. Fisch.) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 345. 1998 ('1997') ≡ *Didymocarpus gambleanus* C.E.C. Fisch. in Bull. Misc. Inform. Kew 1938: 36. 1938. — Distr.: South India.
- Henckelia grandifolia*** A. Dietr., Sp. Pl., ed. 6, 1: 576. 1831 ≡ *Chirita macrophylla* Wall., Pl. Asiat. Rar. 1: 56, t. 72. 1830), non *Henckelia macrophylla* (D. Don) Spreng. = *Chirita macrophylla* Wall. var. *tirapensis* Panigrahi in Bull. Bot. Soc. Bengal. 21: 32. 1967. — Distr.: Nepal, India (Assam, Sikkim, West Bengal), Bhutan, Northern Burma, China (Yunnan), Northern Thailand.
- Henckelia heterostigma*** (B.L. Burtt) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita heterostigma* B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 26: 262. 1965. — Distr.: Burma.
- Henckelia hookeri*** (C.B. Clarke) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita hookeri* C.B. Clarke, Commelyn. Cyrtandr. Bengal.: t. 70. 1874. — Distr.: India (Assam).
- Henckelia humboldtiana*** (Gardner) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 346. 1998 ('1997') ≡ *Didymocarpus humboldtianus* Gardner in Calcutta J. Nat. Hist. 6: 477. 1846. — Distr.: Sri Lanka.
- Henckelia incana*** (Vahl) Spreng., Syst. Veg. 1: 38. 1824 ≡ *Rottlera incana* Vahl, Enum. Pl. 1: 88. 1804. — Distr.: South India.
- Henckelia infundibuliformis*** (W.T. Wang) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita infundibuliformis* W.T. Wang in Acta Phytotax. Sin. 17(1): 111. 1979. — Distr.: China (Xizang).
- Henckelia innominata*** (B.L. Burtt) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 347. 1998 ('1997') ≡ *Didymocarpus innominatus* B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 21: 201. 1954. — Distr.: South India.

- Henckelia insignis* (C.B. Clarke) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita insignis* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 121. 1883. — Distr.: Burma.
- Henckelia lacei* (W.W. Sm.) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Didymocarpus lacei* W.W. Sm. in Rec. Bot. Surv. India 6: 41. 1913 ≡ *Chirita lacei* (W.W. Sm.) B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 21: 187. 1954. — Distr.: Burma. — Wood (1974: 161–162) placed the species tentatively in *Chirita* sect. *Chirita*, but earmarked it as “another anomalous” species, whose position “remains uncertain”. We make the transfer to *Henckelia* but note that further study is required.
- Henckelia lachenensis* (C.B. Clarke) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita lachenensis* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 118. 1883 ≡ *Chirita clarkei* Hook. f., Fl. Brit. India 4: 359. 1884, nom. illeg. = *Chirita umbricola* W.W. Sm. in Notes Roy. Bot. Gard. Edinburgh 10: 172. 1918 = *Chirita stolonifera* C.E.C. Fisch. & Kaul in Kew Bull. Misc. Inform. 1940: 196. 1940. — Distr.: Bhutan, India (Assam, Sikkim), Northern Burma, China (Yunnan).
- Henckelia longipedicellata* (B.L. Burtt) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita longipedicellata* B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 26: 264. 1965. — Distr.: Burma.
- Henckelia longisepala* (H.W. Li) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Lysionotus longisepalus* H.W. Li, Bull. Bot. Res., Harbin 3(2): 1. 1983 ≡ *Hemiboeopsis longisepala* (H.W. Li) W.T. Wang in Acta Bot. Yunnan. 6(4): 397. 1984. — Distr.: China (Yunnan), Laos.
- Henckelia lyrata* (Wight) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 349. 1998 (‘1997’) ≡ *Didymocarpus lyratus* Wight, Icon. Pl. Ind. Orient. 42: 10, t. 1350. 1848. — Distr.: South India.
- Henckelia macrostachya* (E. Barnes) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 349. 1998 (‘1997’) ≡ *Didymocarpus macrostachyus* E. Barnes in Bull. Misc. Inform. Kew 1938: 37. 1938. — Distr.: South India.
- Henckelia meeboldii* (W.W. Smith & Ramaswami) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 349. 1998 (‘1997’) ≡ *Didymocarpus meeboldii* W.W. Smith & Ramaswami in Rec. Bot. Surv. India 6: 43. 1913. — Distr.: South India.
- Henckelia mishmiensis* (Debbarm. ex Biswas) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita mishmiensis* Debbarm. ex Biswas in Assam Forest Rec., Bot. 1: 21. 1934. — Distr.: India (Assam).
- Henckelia missionis* (Wall. ex R. Br.) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 350. 1998 (‘1997’) ≡ *Didymocarpus missionis* Wall. ex R. Br., Cyrtandreae: 119. 1839. — Distr.: South India.
- Henckelia monantha* (W.T. Wang) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita monantha* W.T. Wang in Bull. Bot. Res., Harbin 2(4): 53. 1982. — Distr.: China (Hunan).
- Henckelia monophylla* (C.B. Clarke) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita monophylla* C.B. Clarke in J.D. Hooker, Fl. Brit. India 4: 360. 1884. — Distr.: India (Assam).
- Henckelia moonii* (Gardner) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita moonii* Gardner, Calcutta J. Nat. Hist. 6: 479. 1846. — Distr.: Sri Lanka.
- Henckelia oblongifolia* (Roxb.) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Incarvillea oblongifolia* Roxb., Fl. Ind., ed. 2, 3: 113. 1832 ≡ *Chirita oblongifolia* (Roxb.) J. Sinclair in Bull. Bot. Soc. Bengal 9: 102. 1957 ≡ *Chirita oblongifolia* (Roxb.) B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 22: 307. 1958, **comb. superfl.** = *Chirita acuminata* Wall. ex R. Br., Cyrtandreae: 117. 1839, nom. nud. = *Chirita acuminata* Steud., Nomencl. Bot., ed. 2, 1: 351. 1840, nom. nud. — Distr.: India (Assam), Northern Burma, China (Yunnan).
- Henckelia ovalifolia* (Wight) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 351. 1998 (‘1997’) ≡ *Didymocarpus ovalifolius* Wight, Icon. Pl. Ind. Orient. 4(2): 10, t. 1351. 1848. — Distr.: South India.
- Henckelia peduncularis* (B.L. Burtt) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita peduncularis* B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 26: 265. 1965. — Distr.: Northern Burma.
- Henckelia primulacea* (C.B. Clarke) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita primulacea* C.B. Clarke, Commelyn. Cyrtandr. Bengal.: t. 82. 1874. — Distr.: India (Sikkim), Nepal.
- Henckelia puerensis* (Y.Y. Qian) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita puerensis* Y.Y. Qian in Acta Phytotax. Sin. 34(2): 216. 1996. — Distr.: China (Yunnan).
- Henckelia pumila* (D. Don) A. Dietr., Sp. Pl., ed. 6, 1: 574. 1831 ≡ *Chirita pumila* D. Don, Prodr. Fl. Nepal.: 90. 1825 = *Chirita edgeworthii* A. DC., Prodr. 9: 269. 1845 = *Chirita polyneura* Miq. var. *thomsonii* C.B. Clarke, Commelyn. Cyrtandr. Bengal.: t. 75. 1874 = *Chirita sphagnicola* H. Lévl. & Vaniot in Bull. Soc. Bot. France 53: 550. 1906 = *Chirita diaphana* Royle, Ill. Bot. Himal. Mts.: 294. 1836, nom. nud. = *Chirita flava* Wall. ex R. Br., Cyrtandreae: 117. 1839, nom. superfl. = *Chirita flava* Steud., Nomencl. Bot., ed. 2, 1: 351. 1840, nom. nud. — Distr.: Northern India (Himachal Pradesh to Assam), Nepal, Bhutan, Northern Burma, Thailand, Southern China (Yunnan, Guizhou), Northern Vietnam.
- Henckelia pycnantha* (W.T. Wang) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita pycnantha* W.T. Wang in Novon 7(4): 425. 1998 (‘1997’). — Distr.: China (Yunnan).
- Henckelia repens* (Bedd.) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 354. 1998 (‘1997’) ≡ *Didymocarpus repens* Bedd., Icon. Pl. Ind. Orient. 1: 24, t. 120. 1874. — Distr.: South India.
- Henckelia rotundata* (Barnett) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita rotundata* Barnett in Kew Bull. 15: 254. 1961. — Distr.: Northern Thailand.
- Henckelia shuii* (Z. Yu Li) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita shuii* Z. Yu Li in Novon 7(4): 427. 1998 (‘1997’). — Distr.: China (Yunnan).
- Henckelia smitinandii* (B.L. Burtt) D.J. Middleton & Mich. Möller, **comb. nov.** ≡ *Chirita smitinandii* B.L. Burtt in Thai Forest Bull., Bot. 29: 89. 2001. — Distr.: Eastern Thailand (Khao Yai N.P.). — Burtt (2001) did not give the sectional

placement of the species but suggested it was related to *Chirita poilanei* Pellegr., a species we place in *Primulina*. However, in its distribution, thin leaves, dorsally dehiscent capsule and habitat preference (not on limestone) it would appear to be more similar to species now placed in *Henckelia*. Further study is necessary.

Henckelia speciosa (Kurz) D.J. Middleton & Mich. Möller, **comb. nov.** \equiv *Chirita speciosa* Kurz in J. Bot. 11: 195. 1873 = *Chirita brevipes* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 120. 1883 = *Chirita trailliana* Forrest & W.W. Sm. in Notes Roy. Bot. Gard. Edinburgh 9: 95. 1916. — Distr.: Southern China (Yunnan).

Henckelia tibetica (Franch.) D.J. Middleton & Mich. Möller, **comb. nov.** \equiv *Roettlera tibetica* Franch. in Bull. Mus. Hist. Nat. (Paris) 5: 251. 1899 \equiv *Didymocarpus tibeticus* (Franch.) Hand.-Mazz., Symb. Sin. 7: 881. 1936 \equiv *Chirita tibetica* (Franch.) B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 23: 99. 1960. — Distr.: China (Yunnan, Sichuan). — Burtt (1960: 99) discussed the transfer of *Hemiboea subacaulis* Hand.-Mazz. and *Roettlera tibetica* Franch. to *Chirita* and he regarded the two species as closely allied. Wang & al. (1998) did not accept the transfer of *Hemiboea subacaulis* to *Chirita*, and thus the two species are currently placed in different genera. The placement of the species thus is most problematic and requires further study. Given that to us it has closer affinities with *Chirita* sect. *Chirita* than to *Chirita* sect. *Gibbosaccus* we make the transfer to *Henckelia* pending these studies.

Henckelia urticifolia (D. Don.) A. Dietr., Sp. Pl., ed. 6, 1: 574. 1831 \equiv *Chirita urticifolia* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal.: 90. 1825 = *Chirita grandiflora* Wall., Pl. Asiat. Rar. 1: 43. 1830. — Distr.: India (Assam, Sikkim), Nepal, Bhutan, Northern Burma, Southern China (Yunnan).

Henckelia walkerae (Gardner) D.J. Middleton & Mich. Möller, **comb. nov.** \equiv *Chirita walkerae* Gardner in Calcutta J. Nat. Hist. 6: 480. 1846 ('walkeri') = *Chirita walkerae* var. *parviflora* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 112. 1883 \equiv *Chirita walkerae* Gardner subsp. *parviflora* (C.B. Clarke) W.L. Theob. & Grupe in Ceylon J. Sci., Biol. Sci. 10(1): 70. 1972. — Distr.: Sri Lanka. — The specific epithet has previously almost always been spelt 'walkeri' but Gardner makes very clear that his plant is named after a Mrs. Walker so must be corrected to 'walkerae' under Art. 60.11 of the ICBN (McNeill & al., 2006).

Henckelia wightii (C.B. Clarke) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 359. 1998 ('1997') \equiv *Didymocarpus rottlerianus* var. *wightii* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 101. 1883. — Distr.: South India.

Henckelia zeylanica (R. Br.) A. Weber & B.L. Burtt in Beitr. Biol. Pflanzen 90: 359. 1998 ('1997') \equiv *Didymocarpus zeylanicus* R. Br., Cyrtandrea: 119. 1839. — Distr.: Sri Lanka.

Damrongia Kerr ex Craib in Bull. Misc. Inform. Kew 1918: 364. 1918 – Type: *Damrongia purpureolineata* Kerr ex Craib. Perennial herbs, acaulescent. Leaves whorled, petiolate, lamina ovate or elliptic. Inflorescences axillary, scapose, flowers 1–10; bracts paired or ternate, free or fused along one

margin, linear to ovate. Calyx of 5 free lobes or fused into a tube for part of length, segments triangular or narrowly triangular, sometimes reduced to 3 lobes by fusion of upper 3 lobes. Corolla infundibuliform; bilabiate with 2-lobed upper lip and 3-lobed lower lip; white to deep purple, sometimes with yellow markings in throat. Stamens 2; filaments straight or curved; anthers fused face to face, glabrous. Stigma chiritoid, lower lobe bifid or not. Fruit a capsule splitting into 2 valves. Seeds minute, ellipsoid.

Distribution: Thailand and Peninsular Malaysia. — Found on limestone rocks, usually in shade. Approximately 6 species.

Damrongia was coined by Kerr but published by Craib (1918) for the accommodation of a single species, *D. purpureolineata* and was later transferred to *Chirita* by Wood (1972). Wood did not provide any argument for his decision to reduce the genus to a synonym of *Chirita*. A second species, *D. kerrii*, was incorrectly attributed to the genus by Pellegrin (1930) and is now recognised in *Petrocosmea*. The genus name honours Damrong Raja Nubhap (1862–1943) of Thailand who "has done so much for the advancement of education in his country" (Craib, 1918: 365).

Damrongia purpureolineata belongs to a small group of similar species restricted to Thailand and Peninsular Malaysia. The most-widespread species is perhaps *Damrongia lacunosa*, originally described as *Didymocarpus lacunosus*. It was transferred to *Chirita*, along with *Didymocarpus cyaneus*, by Burtt (1965). Wood (1974) combined the two species under *Chirita lacunosa* and suggested it was closely related to *Chirita fulva*, *C. integra* and *C. trisejala*, distinguishable "from the other species in the section [sect. *Chirita*] by an acaulescent habit and a scapose inflorescence". Three species of the group have been included in the molecular analysis under their names in *Chirita*: *Chirita purpureolineata* (the type species of *Damrongia*), *Chirita lacunosa* and an as yet undescribed species, *Chirita* sp. nov. 2. The clade, with all species possessing straight fruits, is nevertheless nested amongst the twisted-fruited genera. At present, only the chromosome number of *Damrongia lacunosa* is known with $n = 9$ (Kiehn & al., 1998).

Wang & al. (2011) included several *Chirita* samples from Möller & al. (2009) in their analysis but, curiously, did not include *Chirita lacunosa* despite its isolated position in Möller & al. (2009). They, therefore, incorrectly included *Damrongia* in synonymy of their maintained genus *Chirita*.

Damrongia cyanea (Ridl.) D.J. Middleton & A. Weber, **comb. nov.** \equiv *Didymocarpus cyaneus* Ridl. in J. Bot. 38: 68. 1900 \equiv *Chirita cyanea* (Ridl.) B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 26: 267. 1965. — Distr.: Southern Thailand (Surat Thani).

Damrongia fulva (Barnett) D.J. Middleton & A. Weber, **comb. nov.** \equiv *Chirita fulva* Barnett in Nat. Hist. Bull. Siam Soc. 20: 15. 1961. — Distr.: Southern Thailand (Nakhon Si Thammarat, Surat Thani).

Damrongia integra (Barnett) D.J. Middleton & A. Weber, **comb. nov.** \equiv *Chirita integra* Barnett in Nat. Hist. Bull. Siam Soc. 20: 16. 1961. — Distr.: Southern Thailand (Krabi).

Damrongia lacunosa (Hook. f.) D.J. Middleton & A. Weber, **comb. nov.** \equiv *Didymocarpus lacunosus* Hook. f. in Bot.

- Mag. 1892: t. 7236. 1892 ≡ *Chirita lacunosa* (Hook. f.) B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 26: 267. 1965. — Distr.: Peninsular Malaysia (Pahang, Perak), Southern Thailand (Krabi, Satun).
- Damrongia purpureolineata*** Kerr ex Craib in Bull. Misc. Inform. Kew 1918: 364. 1918 ≡ *Chirita purpureolineata* (Kerr ex Craib) D. Wood in Notes Roy. Bot. Gard. Edinburgh 31(3): 371. 1972. — Distr.: Northern Thailand (Lamphun).
- Damrongia trisejala*** (Barnett) D.J. Middleton & A. Weber, **comb. nov.** ≡ *Chirita trisejala* Barnett in Nat. Hist. Bull. Siam Soc. 20: 18. 1961; et in Kew Bull 15: 254. 1961. — Distr.: Central Thailand (Chanthaburi, Nakhon Nayok).
- Microchirita*** (C.B. Clarke) Y.Z. Wang in J. Syst. Evol. 49: 59. 2011 ≡ *Chirita* sect. *Microchirita* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5: 127. 1883 ≡ *Roettlera* sect. *Microchirita* (C.B. Clarke) Fritsch in Engler & Prantl, Nat. Pflanzenfam. IV/3b: 148. 1895 ≡ *Didymocarpus* sect. *Microchirita* (C.B. Clarke) Chun in Sunyatsenia 6: 290. 1946 – Type (lectotype Burtt, 1954): *Microchirita hamosa* (R. Br.) Y.Z. Wang.
- Annual or longer lived (flowering and fruiting for many years in a ± aseasonal climate, dying down to a rootstock in the dry season of more seasonal climates), caulescent, stems often fleshy or juicy. Leaves in distant pairs, except lowermost leaf solitary (macrocotyledon). Inflorescences usually two or several in a leaf axil, often displaced onto the petiole, often consisting of a short-stalked serial flower pair only, but this repeated several times (serial arrangement, “inflorescence crest”). Calyx lobes free to base, narrowly triangular to narrowly ovate, appressed to fruit. Corolla usually infundibuliform, more rarely tubular or funnel-shaped; limb bilabiate, upper lip 2-lobed, lower lip 3-lobed, lobes rounded; colour white, bluish, blue, purple, yellow, orange or reddish. Stamens 2, anthers usually joined by an apical ligature (projections on the connectives). Ovary not stipitate, stigma chiritoid. Fruit an elongate, straight or curved capsule, usually splitting into 2 valves. Seeds minute, ellipsoid; (always?) with conspicuous knobs on the testa cells.
- Distribution: Ranging from the Western Ghats of India, the foothills of the Himalayas, through continental Southeast Asia to Borneo, Sumatra and Java. — Rock plants, on limestone, growing in forest or on exposed rocks in the open or in light shade. Approximately 18 species.
- Microchirita* is perhaps the most readily recognisable of the genera to arise from *Chirita*. The highest concentration of species is in Thailand. Chromosome numbers of $n = 9, 17, 18$ have been recorded (see ‘Webcyte’, Möller & al., 2002 onwards). All species currently known are found only on karst limestone rocks, being sun-tolerant to some degree. Wang & al. (2011), using sequence data from Li & Wang (2007) and Möller & al. (2009), raised this group to genus level.
- Microchirita aratrimiformis*** (D. Wood) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita aratrimiformis* D. Wood in Notes Roy. Bot. Gard. Edinburgh 31(3): 367. 1972. — Distr.: Northern Vietnam.
- Microchirita barbata*** (Sprague) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita barbata* Sprague in Bot. Mag. 134: t. 8200. 1908. — Distr.: Only known from cultivated material but probably from Indochina.
- Microchirita bimaculata*** (D. Wood) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita bimaculata* D. Wood in Notes Roy. Bot. Gard. Edinburgh 31(3): 368. 1972. — Distr.: Thailand (Chiang Mai).
- Microchirita caerulea*** (R. Br.) Y.Z. Wang in J. Syst. Evol. 49: 60. 2011 ≡ *Chirita caerulea* R. Br., Cyrtandreae: 117. 1839 = *Chirita zollingeri* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 125. 1883. — Distr.: Indonesia (Bali, Java, Sumba).
- Microchirita caliginosa*** (C.B. Clarke) Y.Z. Wang in J. Syst. Evol. 49: 60. 2011 ≡ *Chirita caliginosa* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1) 122. 1883 = *Chirita fusca* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1) 129. 1883 = *Chirita parvula* Ridl. in J. Fed. Malay States Mus. 10: 149. 1920. — Distr.: Peninsular Malaysia (Perak, Pahang, Selangor), Sarawak.
- Microchirita elphinstonia*** (Craib) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita elphinstonia* Craib in Bull. Misc. Inform. Kew 1932: 149. 1932. — Distr.: Thailand (Prachin Buri).
- Microchirita hamosa*** (R. Br.) Y.Z. Wang in J. Syst. Evol. 49: 60. 2011 ≡ *Chirita hamosa* R. Br., Cyrtandreae: 117. 1839 = *Chirita hamosa* var. *finlaysonia* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1) 128. 1883 = *Chirita hamosa* R. Br. var. *unifolia* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1) 129. 1883 = *Chirita cristata* (Dalzell) B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 23: 96. 1960. — Distr.: Northern and Northeastern India, China (Guangxi, Yunnan), Burma, Thailand, Laos, Northern Vietnam.
- Microchirita involucrata*** (Craib) Y.Z. Wang in J. Syst. Evol. 49: 60. 2011 (“*involute*”) ≡ *Chirita involucrata* Craib in Gard. Chron., ser. 3, 83: 140. 1928 = *Chirita involucellata* Craib in Gard. Chron., ser. 3, 83: 140. 1928 = *Chirita capitata* Craib in Bull. Misc. Inform. Kew 1930: 173. 1930 = *Chirita geoffrayi* Pellegr. in Lecomte & al., Fl. Indo-Chine 4: 529. 1930. — Distr.: Central and southern Thailand, Cambodia, Peninsular Malaysia (Kedah, Kelantan, Penang, Perak, Pahang).
- Microchirita lavandulacea*** (Stapf) Y.Z. Wang in J. Syst. Evol. 49: 60. 2011 ≡ *Chirita lavandulacea* Stapf in Bot. Mag. 150: t. 9047. 1925. — Distr.: China, Northern Vietnam.
- Microchirita marcanii*** (Craib) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita marcanii* Craib in Bull. Misc. Inform. Kew 1926: 171. 1926. — Distr.: Thailand (Saraburi).
- Microchirita micromusa*** (B.L. Burtt) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita micromusa* B.L. Burtt in J. Roy. Hort. Soc. 85: 28. 1960. — Distr.: Thailand (Nakhon Nayok).
- Microchirita mollissima*** (Ridl.) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita mollissima* Ridl. in J. Linn. Soc., Bot. 32: 517. 1896. — Distr.: Thailand (Phangnga, Surat Thani).
- Microchirita oculata*** (Craib) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita oculata* Craib in Bull. Misc. Inform. Kew 1930: 174. 1930. — Distr.: Thailand (Prachin Buri).

Microchirita rupestris (Ridl.) A. Weber & Rafidah, **comb. nov.** ≡ *Chirita rupestris* Ridl. in J. Straits Branch Roy. Asiat. Soc. 44: 59. 1905 = *Chirita glasgovii* Ridl. in J. Straits Branch Roy. Asiat. Soc. 44: 60. 1905. = *Chirita kerrii* Craib in Bull. Misc. Inform. Kew 1914: 129. 1914. — Distr.: Southern Thailand, Peninsular Malaysia (Perak, Perlis, Kedah).

Microchirita sahyadriensis (Punekar & Lakshmin.) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita sahyadriensis* Punekar & Lakshmin. in Fol. Malaysiana 10: 18. 2009. — Distr.: India (Western Ghats).

Microchirita sericea (Ridl.) A. Weber & Rafidah, **comb. nov.** ≡ *Chirita sericea* Ridl. in J. Straits Branch Roy. Asiat. Soc. 44: 59. 1905 = *Chirita sericea* var. *scortechinii* Ridl. in J. Straits Branch Roy. Asiat. Soc. 43: 59. 1905. — Distr.: Peninsular Malaysia (Kedah, Perak, Kelantan).

Microchirita tubulosa (Craib) A. Weber & D.J. Middleton, **comb. nov.** ≡ *Chirita tubulosa* Craib in Bull. Misc. Inform. Kew 1922: 173. 1922. — Distr.: Southern Thailand.

Microchirita viola (Ridl.) A. Weber & Rafidah, **comb. nov.** ≡ *Chirita viola* Ridl., J. Linn. Soc., Bot. 32: 516. 1896. — Distr.: S Thailand, Peninsular Malaysia (Kedah: Langkawi Islands).

Liebigia Endl., Gen. Pl.: 1407. Feb–Mar. 1841 ≡ *Tromsdorffia* Blume, Bijdr. Fl. Ned. Ind.: 762. 1826, non Bernhardt (1800), nec Martius (1826) ≡ *Morstdorffia* Steud., Nomencl. Bot., ed. 2, 2: 162. Mar. 1841 ≡ *Chirita* sect. *Liebigia* (Endl.) C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 122. 1883; Hilliard in Edinburgh J. Bot. 60(3): 364. 2004 ('2003') – Type: *Liebigia speciosa* (Blume) Endl.

= *Hypopteron* Hassk., Cat. Hort. Bot. Bogor.: 154. 1844, nom. inval.

= *Bilabium* Miq., Fl. Ned. Ind. 2: 730. 1858 – Type: *Bilabium limans* Miq. (≡ *Liebigia limans* (Miq.) Mich. Möller & A. Weber).

Coarse perennial herbs or subshrubs, caulescent, stems often to 2 m tall. Leaves opposite, petiolate, lamina usually broadly elliptic to ovate, upper surface more or less asperous from harsh acute hairs. Inflorescences axillary, sometimes arising from small brachyblasts, bracts paired, either linear-lanceolate and free from one another or broadly lanceolate to suborbicular and margins contiguous and partly connate. Calyx funnel-shaped or tubular, subequally 5-lobed or spathaceous (split open on one side). Corolla broad-tubed, ventricose, white or pinkish, limb bilabiate, upper lip 2-lobed, lower lip 3-lobed, lobes rounded. Stamens 2; anthers globose or heart-shaped with a distinct apiculus, anther surface often with conspicuous beard; anthers cohering face to face at tips. Ovary shortly stipitate, stigma chiritoid, lower lobe deeply bilobed (fish-tailed). Fruit an elongate capsule splitting into 2 valves; seeds minute, ellipsoid.

Distribution: Sumatra, Java and Bali. — Forest plants, also in disturbed forest, open places and forest margins, river banks etc.; probably growing in acid soil (limestone not recorded, but ecological information generally scanty). Twelve species in Hilliard (2004).

Liebigia is morphologically and biogeographically well defined. The species represent large, coarse perennial herbs, with elongate stems (to 2 m long) and scabrid leaves in distant pairs. For a detailed description of the morphology see Hilliard (2004) and the generic description above. Chromosome numbers have been reported as $n = 14$ (Lee, 1962, as *C. blumei*) and 16 (Ratter & Prentice, 1967).

Liebigia adenonema (Hilliard) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita adenonema* Hilliard in Edinburgh J. Bot. 60: 381. 2004 ('2003'). — Distr.: Indonesia: Sumatra (North Sumatra).

Liebigia dissimilis (Hilliard) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita dissimilis* Hilliard in Edinburgh J. Bot. 60: 372. 2004 ('2003'). — Distr.: Indonesia: Sumatra (West Sumatra).

Liebigia glabra (Miq.) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita glabra* Miq., Fl. Ind. Bat. 2: 729. 1858. — Distr.: Indonesia: Sumatra (West Sumatra, Jambi).

Liebigia horsfieldii (R. Br.) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita horsfieldii* R. Br., Cyrtandreae: 117. 1839 = *Chirita scaberrima* R. Br., Cyrtandreae: 117. 1839 ≡ *Chirita horsfieldii* R. Br. var. *scaberrima* (R. Br.) C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 124. 1883 = *Liebigia bracteosa* Zoll. & Moritzi, Natuur-Geneesk. Arch. Ned.-Indië 2: 574. 1845 ≡ *Chirita bracteosa* (Zoll. & Moritzi) Miq., Fl. Ned. Ind. 2: 728. 1858. — Distr.: Indonesia: Java (West Java), Bali.

Liebigia leuserensis (Hilliard) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita leuserensis* Hilliard in Edinburgh J. Bot. 60: 383. 2004 ('2003'). — Distr.: Indonesia: Sumatra (North Sumatra).

Liebigia limans (Miq.) Mich. Möller & A. Weber, **comb. nov.** ≡ *Bilabium limans* Miq., Fl. Ned. Ind. 2: 730. 1858 ≡ *Chirita bilabium* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 127. 1883, nom. illeg. ≡ *Chirita limans* (Miq.) B.L. Burt in Notes Roy. Bot. Gard. Edinburgh 21: 196. 1954. — Distr.: Indonesia: Sumatra (West Sumatra).

Liebigia neoforbesii (Hilliard) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita neoforbesii* Hilliard in Edinburgh J. Bot. 60: 368. 2004 ('2003') ≡ *Chirita blumei* C.B. Clarke var. *cordifolia* S. Moore in J. Bot. 63 (Suppl.): 74. 1925. — Distr.: Indonesia: Sumatra (South Sumatra).

Liebigia polyneura (Miq.) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita polyneura* Miq., Fl. Ned. Bat. 2: 728. 1858 = *Chirita polyneura* Miq. var. *albiflora* Miq., Fl. Ned. Ind. 2: 728. 1858 = *Chirita spectabilis* Var. ? *pedicellata* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 125. 1883 = *Chirita alba* Ridl. in J. Fed. Malay States Mus. 8(4): 68. 1917 = ?*Chirita glabra* Miq. var. *intermedia* Ridl. in J. Fed. Malay States Mus. 8(4): 68. 1917. — Distr.: Indonesia: Sumatra (West Sumatra).

Liebigia praeterita (Hilliard) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita praeterita* Hilliard in Edinburgh J. Bot. 60: 370. 2004 ('2003'). — Distr.: Java.

Liebigia speciosa (Blume) Endl., Gen. Pl., Suppl. I: 1407. 1841 ≡ *Tromsdorffia speciosa* Blume, Bijdr. Fl. Ned. Ind.: 763.

1826 ≡ *Chirita blumei* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 122. 1883 ≡ *Chirita asperifolia* (Blume) B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 24: 41. 1962 = *Chirita spectabilis* Miq., Fl. Ned. Ind. 3: 564. 1861 = *Chirita forbesii* S. Moore in J. Bot. 37: 175. 1899 = *Chirita forbesii* Ridl. in J. Straits Branch Roy. Asiat. Soc. 44: 60. 1905, nom. illeg. = *Chirita ridleyana* S. Moore, J. Bot. 63 (Suppl.): 74. 1925. — Distr.: Indonesia: Sumatra (Benkulu, South Sumatra), Java, Krakatau island.

Liebigia tenuipes (Hilliard) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita tenuipes* Hilliard in Edinburgh J. Bot. 60: 384. 2004 ('2003'). — Distr.: Indonesia: Sumatra (North Sumatra).

Liebigia tobaensis (Hilliard) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita tobaensis* Hilliard in Edinburgh J. Bot. 60: 379. 2004 ('2003'). — Distr.: Indonesia: Sumatra (North Sumatra).

Primulina Hance in J. Bot. 21: 169. 1883 – Type: *Primulina tabacum* Hance.

= *Chirita* sect. *Gibbosaccus* C.B. Clarke in Candolle & Candolle, Monogr. Phan. 5(1): 130. 1883 – Type: *Chirita sinensis* Lindl. (≡ *Primulina dryas* (Dunn) Mich. Möller & A. Weber).

= *Deltocheilos* W.T. Wang in Bull. Bot. Res., Harbin, 1(3): 39. 1981 – Type: *Deltocheilos tenuitubum* W.T. Wang (≡ *Primulina tenuituba* (W.T. Wang) Y.Z. Wang).

= *Chiritopsis* W.T. Wang in Bull. Bot. Res., Harbin, 1: 21. 1981 – Type: *Chiritopsis repanda* W.T. Wang (≡ *Primulina repanda* (W.T. Wang) Y.Z. Wang).

= *Wentsaiboea* D. Fang & D.H. Qin in Acta Phytotax. Sin. 42(6): 534. 2004 – Type: *Wentsaiboea renifolia* D. Fang & D.H. Qin (≡ *Primulina renifolia* (D. Fang & D.H. Qin) Y.Z. Wang).

Perennial rhizomatous herbs, acaulescent, rarely with a short woody stem, rhizome usually stout. Leaves in a basal rosette, opposite (at least in young plants; later phyllotaxy often becoming blurred or possibly changing to alternate), petiolate or sessile, lamina form variable (including pinnately lobed). Inflorescences axillary, scapose, flowers in pair-flowered cymes, often umbel-like; bracts usually present, small to conspicuous. Calyx lobes free to base or rarely fused at base to form a short tube, segments narrowly triangular to narrowly ovate, sometimes toothed or fimbriate. Corolla usually infundibuliform, more rarely tubular or salverform; limb bilabiate with 2-lobed upper lip and 3-lobed lower lip, rarely almost actinomorphic, lobes rounded, colouration variable, often with two raised yellow bars on lower lip. Stamens 2, anthers fused face to face; ovary not stipitate, sometimes one carpel sterile, stigma chiritoid, rarely with short upper lobe, lower lobe usually bilobed. Fruit a capsule splitting into 2 valves, sometimes (esp. in species with only one fertile carpel) probably opening only on dorsal side and plagiocarpic. Seeds minute, ellipsoid.

Distribution: Western and Southern China, Vietnam. Plants growing (as far as is known) on limestone. Approximately 131 species (but see comments below).

Primulina, now comprising *Chiritopsis*, *Wentsaiboea* (except *W. tiandengensis* Yan Liu & B. Pan, a species found to be more closely related to *Lagarosolen* [Möller & al., 2011] and which will be dealt with in a forthcoming paper) and the large number of species described in *Chirita* sect. *Gibbosaccus*, is a genus of perennial, acaulescent rosette plants, with no exceptions known so far. The inflorescences are axillary and scapose. Phyllotaxis is primarily opposite (easily seen in the type species *Primulina tabacum* and *P. dryas* = *Chirita sinensis*, the type of *Chirita* sect. *Gibbosaccus*—see photos of many other species in Li & Wang, 2004), or in whorls of three, but this may become blurred in many-leaved rosettes or phyllotaxy may change from opposite to alternate in the course of development. The flowers are usually infundibuliform or tubular, with a slightly to distinctly bilabiate limb. Only *Primulina tabacum* has salverform flowers with an almost actinomorphic limb, apparently reflecting a different pollination syndrome (see below). The distribution is essentially in the southern half of China, with about a dozen species spreading into or being restricted to Vietnam. There is some geographical overlap with *Henckelia* (in the present sense), especially in western and southern China, but the species of the two genera seem to be ecologically well separated, those of *Primulina* growing in limestone areas, those of *Henckelia* not. There is no overlap with *Damrongia* and *Liebigia*. Only one species of *Microchirita*, the widespread *M. hamosa*, is found within the range of *Primulina*.

Available information suggests that *Primulina* is essentially a calciphilous genus with typical habitats being the karst limestone towers in southern China. Guangxi province is particularly rich in species with about half of the species described occurring there, either as local endemics or also occurring in other provinces such as Guizhou, Yunnan, Hunan, etc.

It may be that some of the species transferred to *Primulina* here may prove misplaced in future studies. Targeted studies are necessary to identify problematic species and eventually to find a better place for them. It is also our impression that too many species have been described with numerous pairs or small groups of species growing in adjacent areas and differing only in slight, quantitative characters. We accept that after a critical revision of the genus many of the species described in *Chirita* sect. *Gibbosaccus*, and here transferred to *Primulina*, will have been sunk into synonymy.

The relationship of *Chiritopsis* to *Chirita* (sect. *Gibbosaccus*) is evident from the name. The main difference is in the small flowers and the short ovoid capsule. The stigma is chiritoid in the enlarged and often bilobed condition of the lower stigma lobe. Recently described species further blur the boundaries between the two genera (e.g., *Chirita macrodonta*, with *Chiritopsis*-like foliage - Fang & al., 1994; *Chiritopsis lingchuanensis* with typical *Chirita* characteristics, such as an ovary shorter than the style, and a calyx length longer than the capsule - Liu & al., 2006). It is, therefore, no great surprise to see *Chiritopsis* embedded in *Chirita* sect. *Gibbosaccus* (as was already found by Li & Wang, 2007, Möller & al., 2009 and Wang & al., 2011) and *Primulina*, respectively.

Though *Primulina tabacum*, previously the sole representative of *Primulina*, looks quite different from the species

of *Chirita* sect. *Gibbosaccus*, especially in the narrow-tubed flowers with an almost actinomorphic patent limb (a salverform flower), the relationship is uncontroversial. The species has a typical chiritoid stigma and the rosette habit with opposite leaves also suggests a close relationship. In the treatments of Wang & al. (1990, 1998) and Li & Wang (2004) *Primulina* is directly associated with *Chirita*. The functional interpretation of the different flower form seems rather easy. *Primulina tabacum* has apparently switched from bee-pollination to butterfly-pollination. In their form and vivid colouration the flowers exhibit the typical syndrome of psychophilous flowers. Field studies are urgently needed to confirm or reject this hypothesis.

The recently described genus *Wentsaiboea* was said to be similar to *Dolicholoma* and *Chiritopsis* by Fang & Qin (2004). The differences to the latter, now in *Primulina*, in the palmately nerved leaves, the campanulate corolla tube and the “obliquely hippocrepiform” stigma would appear, from the molecular results, not to be very significant. Its position within *Primulina* thus does not pose a great problem.

Despite the large number of species described, the chromosome number of only one species, *Chirita sinensis* (which is the type species of *Chirita* sect. *Gibbosaccus* and which is now *Primulina dryas*: $n = 18$) has so far been published. Further counts, confirming that number, have been made by F. Christie at the Royal Botanic Garden Edinburgh (unpub.).

Primulina annamensis (Pellegr.) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita annamensis* Pellegr. in Lecomte & al., Fl. Indo-Chine 4: 530. 1930. — Distr.: Central Vietnam.

Primulina atroglandulosa (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita atroglandulosa* W.T. Wang in Novon 7(4): 423. 1998 (‘1997’). — Distr.: China (Guangxi).

Primulina atropurpurea (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita atropurpurea* W.T. Wang in Bull. Bot. Res., Harbin 1(4): 60. 1981. — Distr.: China (Guangxi).

Primulina baishouensis (Y.G. Wei, H.Q. Wen & S.H. Zhong) Y.Z. Wang in J. Syst. Evol. 49: 60. 2011 \equiv *Chirita baishouensis* Y.G. Wei, H.Q. Wen & S.H. Zhong in Acta Phytotax. Sin. 38(3): 299. 2000. — Distr.: China (Guangxi).

Primulina balansae (Drake) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita balansae* Drake in Bull. Annuel Soc. Philom. Paris, sér. 8, 2: 138. 1890. — Distr.: Northern Vietnam.

Primulina bicolor (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita bicolor* W.T. Wang in Bull. Bot. Res., Harbin 5(3): 59. 1985. — Distr.: China (Guangdong).

Primulina bipinnatifida (W.T. Wang) Y.Z. Wang in J. Syst. Evol. 49: 60. 2011 \equiv *Chiritopsis bipinnatifida* W.T. Wang in Bull. Bot. Res., Harbin 1(3): 26. 1981. — Distr.: China (Guangxi).

Primulina bogneriana (B.L. Burtt) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita bogneriana* B.L. Burtt in Gard. Bull. Singapore 54: 239. 2002. — Distr.: Vietnam.

Primulina brachystigma (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita brachystigma* W.T. Wang in Bull. Bot. Res., Harbin 4(1): 22. 1984. — Distr.: China (Guangxi).

Primulina brachytricha (W.T. Wang & D.Y. Chen) Y.Z. Wang in J. Syst. Evol. 49: 60. 2011. \equiv *Chirita brachytricha*

W.T. Wang & D.Y. Chen in Bull. Bot. Res., Harbin 5(3): 54. 1985. — Distr.: China (Guizhou).

Primulina brachytricha var. *magnibracteata* (W.T. Wang & D.Y. Chen) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita brachytricha* var. *magnibracteata* W.T. Wang & D.Y. Chen in Bull. Bot. Res., Harbin 5(3): 55. 1985. — Distr.: China (Guizhou).

Primulina brassicoides (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita brassicoides* W.T. Wang in Bull. Bot. Res., Harbin 1(4): 63. 1981. — Distr.: China (Guangxi).

Primulina brunnea (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita brunnea* W.T. Wang in Bull. Bot. Res., Harbin 3(4): 48. 1983. — Distr.: Vietnam.

Primulina carnosifolia (C.Y. Wu ex H.W. Li) Y.Z. Wang in J. Syst. Evol. 49: 60. 2011 \equiv *Chirita carnosifolia* C.Y. Wu ex H.W. Li in Bull. Bot. Res., Harbin 3(2): 36. 1983. — Distr.: China (Yunnan).

Primulina colaniae (Pellegr.) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita colaniae* Pellegr. in Bull. Soc. Bot. France 73: 418. 1926. — Distr.: Northern Vietnam.

Primulina confertiflora (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chiritopsis confertiflora* W.T. Wang in Bull. Bot. Res., Harbin 1(3): 25. 1981. — Distr.: China (Guangdong).

Primulina cordata Mich. Möller & A. Weber, **nom. nov.** \equiv *Chirita cordifolia* W.T. Wang in Bull. Bot. Res., Harbin 1(4): 51. 1981. — Distr.: China (Guangxi).

Primulina cordifolia (D. Fang & W.T. Wanga) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 \equiv *Chiritopsis cordifolia* D. Fang & W.T. Wang in Bull. Bot. Res., Harbin 2(4): 54. 1982, non *Chirita cordifolia* W.T. Wang. — Distr.: China (Guangxi).

Primulina crassituba (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita crassituba* W.T. Wang in Bull. Bot. Res., Harbin 9(4): 24. 1989. — Distr.: China (Hunan).

Primulina cruciformis (Chun) Mich. Möller & A. Weber, **comb. nov.** \equiv *Didymocarpus cruciformis* Chun in Sunyatsenia 6: 296. 1946 \equiv *Chirita cruciformis* (Chun) W.T. Wang in Bull. Bot. Res., Harbin 1(4): 45. 1981. — Distr.: China (Hunan).

Primulina cynostyla (B.L. Burtt) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita cynostyla* B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 23: 96. 1960. — Distr.: Central Vietnam.

Primulina cyrtocarpa (D. Fang & L. Zeng) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita cyrtocarpa* D. Fang & L. Zeng in Acta Phytotax. Sin. 31(5): 468. 1993. — Distr.: China (Guangxi).

Primulina demissa (Hance) Mich. Möller & A. Weber, **comb. nov.** \equiv *Didymocarpus demissus* Hance in J. Bot. 21: 166. 1883 \equiv *Chirita demissa* (Hance) W.T. Wang in Novon 7(4): 424. 1998 (‘1997’). — Distr.: China (Guangdong). — Further studies are required to confirm its generic placement.

Primulina depressa (Hook. f.) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita depressa* Hook. f. in Bot. Mag. t. 7213. 1892. — Distr.: China (Guangdong).

Primulina drakei (B.L. Burtt) Mich. Möller & A. Weber, **comb. nov.** \equiv *Chirita bracteosa* Drake in Bull. Annuel

- Soc. Philom. Paris, sér. 8, 2: 39. 1890, nom. illeg., non *Chirita bracteosa* (Zoll. & Moritzi) Miq. (1858) ≡ *Chirita drakei* B.L. Burtt in Notes Roy. Bot. Gard. Edinburgh 23: 98. 1960. — Distr.: Northern Vietnam.
- Primulina dryas*** (Dunn) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita dryas* Dunn in Bull. Misc. Inform. Kew, Addit. Ser. 10: 195. 1912 = *Chirita sinensis* Lindl. in Edwards's Bot. Reg. 30: t. 59. 1844. ≡ *Didymocarpus sinensis* (Lindl.) H. Lév. in Compt. Rend. Assoc. Franç. Avancem. Sci. 34: 427. 1906 ≡ *Primulina sinensis* (Lindl.) Y.Z. Wang in J. Syst. Evol. 49: 62. 2011, nom. illeg., non *Primulina sinensis* Hook. f. in Bot. Mag. 116: pl. 7117. 1890, nom. illeg. = *Chirita sinensis* var. *angustifolia* Dunn in J. Bot. (London) 45: 403. 1907 = *Chirita sinensis* var. *bodinieri* H. Lév. in Feddes Repert. 9: 328. 1911. — Distr.: China (Guangdong).
- Primulina eberhardtii*** (Pellegr.) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita eberhardtii* Pellegr. in Bull. Soc. Bot. France 73: 418. 1926. — Distr.: Central Vietnam.
- Primulina eburnea*** (Hance) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita eburnea* Hance in J. Bot. 21: 168. 1883 = *Chirita fauriei* Franch. in Bull. Mens. Soc. Linn. Paris 1: 45. 1885. — Distr.: China (Guangdong, Guangxi, Guizhou, Hubei, Hunan, Sichuan).
- Primulina fangii*** (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita fangii* W.T. Wang in Bull. Bot. Res., Harbin 2(4): 51. 1982. — Distr.: China (Sichuan).
- Primulina fimbriepala*** (Hand.-Mazz.) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita fimbriepala* Hand.-Mazz. in Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 65. 1925. — Distr.: China (Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi).
- Primulina fimbriepala*** var. ***mollis*** (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita fimbriepala* Hand.-Mazz. var. *mollis* W.T. Wang in Bull. Bot. Res., Harbin 2(4): 50. 1982. — Distr.: China (Guangxi).
- Primulina flavimaculata*** (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita flavimaculata* W.T. Wang in Bull. Bot. Res., Harbin 5(3): 40. 1985. — Distr.: China (probably Guangxi).
- Primulina floribunda*** (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita floribunda* W.T. Wang in Bull. Bot. Res., Harbin 4(1): 23. 1984. — Distr.: China (probably Guangxi).
- Primulina fordii*** (Hemsl.) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Didymocarpus fordii* Hemsl. in J. Linn. Soc., Bot. 26: 229. 1890 ≡ *Chirita fordii* (Hemsl.) D. Wood in Notes Roy. Bot. Gard. Edinburgh 31(3): 371. 1972 = *Chirita longistyla* W.T. Wang in Bull. Bot. Res., Harbin 1(4): 48. 1981. — Distr.: China (Guangdong, Guangxi, Guizhou, Hunan, Sichuan).
- Primulina fordii*** var. ***dolichotricha*** (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita gueilinensis* W.T. Wang var. *dolichotricha* W.T. Wang in Bull. Bot. Res., Harbin 2(4): 50. 1982 ≡ *Chirita fordii* (Hemsl.) D. Wood var. *dolichotricha* (W.T. Wang) W.T. Wang in Guihaia 12(4): 296. 1992. — Distr.: China (Guangdong).
- Primulina gemella*** (D. Wood) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita gemella* D. Wood in Notes Roy. Bot. Gard. Edinburgh 31(3): 370. 1972. — Distr.: Vietnam (Quang Ninh).
- Primulina glabrescens*** (W.T. Wang & D.Y. Chen) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita glabrescens* W.T. Wang & D.Y. Chen in Bull. Bot. Res., Harbin 5(3): 57. 1985. — Distr.: China (Guizhou).
- Primulina glandulosa*** (D. Fang, L. Zeng & D.H. Qin) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chiritopsis glandulosa* D. Fang, L. Zeng & D.H. Qin in Acta Phytotax. Sin. 31(5): 470. 1993. — Distr.: China (Guangxi).
- Primulina glandulosa*** var. ***yangshuoensis*** (F. Wen, Yue Wang & Q.X. Zhang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chiritopsis glandulosa* D. Fang, L. Zeng & D.H. Qin var. *yangshuoensis* F. Wen, Yue Wang & Q.X. Zhang in Guihaia 28(3): 291. 2008. — Distr.: China (Guangxi).
- Primulina grandibracteata*** (J.M. Li & Mich. Möller) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita grandibracteata* J.M. Li & Mich. Möller in Ann. Bot. Fenn. 46(2): 126. 2009. — Distr.: China (Yunnan).
- Primulina gueilinensis*** (W.T. Wang) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita gueilinensis* W.T. Wang in Bull. Bot. Res., Harbin 1(4): 43. 1981. — Distr.: China (Guangdong, Guangxi).
- Primulina guihaiensis*** (Y.G. Wei, B. Pan & W.X. Tang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita guihaiensis* Y.G. Wei, B. Pan & W.X. Tang in Nordic J. Bot. 25(5–6): 296. 2008 ('2007'). Distribution: China (Guangxi).
- Primulina halongensis*** (Kiew & T.H. Nguyễn) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita halongensis* Kiew & T.H. Nguyễn in Gard. Bull. Singapore 52(1): 189. 2000. — Distr.: Vietnam (Quang Ninh).
- Primulina hedyotideae*** (Chun) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Didymocarpus hedyotideus* Chun in Sunyatsenia 6: 291. 1946 ≡ *Chirita hedyotideae* (Chun) W.T. Wang in Bull. Bot. Res., Harbin 1(4): 65. 1981. — Distr.: China (Guangxi).
- Primulina heterotricha*** (Merr.) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita heterotricha* Merr. in Lingnan Sci. J. 13: 71 (1934). — Distr.: China (Hainan).
- Primulina hiepii*** (Kiew) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita hiepii* Kiew in Gard. Bull. Singapore 52(1): 192. 2000. — Distr.: Vietnam (Quang Ninh).
- Primulina hochiensis*** (C.C. Huang & X.X. Chen) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita hochiensis* C.C. Huang & X.X. Chen in Bot. J. S. China 1: 14 (1992). — Distr.: China (Guangxi).
- Primulina jiuwanshanica*** (W.T. Wang) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita jiuwanshanica* W.T. Wang in Guihaia 12(4): 294 (1992). — Distr.: China (Guangxi).
- Primulina juliae*** (Hance) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita juliae* Hance in J. Bot. 21: 168. 1883 = *Chirita mangshanensis* W.T. Wang in Bull. Bot. Res., Harbin 1(4): 49. 1981 = *Chirita mangshanensis* W.T. Wang var. *lasiandra* W.T. Wang in Bull. Bot. Res., Harbin 4(1): 15. 1984 = *Chirita gueilinensis* W.T. Wang var. *brachycarpa* W.T. Wang in Bull. Bot. Res., Harbin 4(1): 15. 1984. — Distr.: China (Fujian, Guangdong, Hunan, Jiangxi).

- Primulina langshanica* (W.T. Wang) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita langshanica* W.T. Wang in Guihaia 12(4): 293 (1992). — Distr.: China (Hunan).
- Primulina latinervis* (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita latinervis* W.T. Wang in Bull. Bot. Res., Harbin 9(4): 21. 1989. — Distr.: China (Hunnan).
- Primulina laxiflora* (W.T. Wang) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita laxiflora* W.T. Wang in Bull. Bot. Res., Harbin 4(1): 21. 1984. — Distr.: China (Guangxi).
- Primulina leei* (F. Wen, Yue Wang & Q.X. Zhang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita leei* F. Wen, Yue Wang & Q.X. Zhang in Guihaia 29(6): 719. 2009. — Distr.: China (Guangxi).
- Primulina leiophylla* (W.T. Wang) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita leiophylla* W.T. Wang in Guihaia 6(3): 159 (1986). — Distr.: China (Guangxi).
- Primulina liboensis* (W.T. Wang & D.Y. Chen) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita liboensis* W.T. Wang & D.Y. Chen in Bull. Bot. Res., Harbin 5(3): 56. 1985. — Distr.: China (Guizhou).
- Primulina lienxienensis* (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita lienxienensis* W.T. Wang in Bull. Bot. Res., Harbin 2(4): 48. 1982. — Distr.: China (Guangdong).
- Primulina liguliformis* (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita liguliformis* W.T. Wang in Bull. Bot. Res., Harbin 4(1): 20. 1984. — Distr.: China (Guizhou).
- Primulina linearifolia* (W.T. Wang) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita linearifolia* W.T. Wang in Bull. Bot. Res., Harbin 2(2): 136. 1982. — Distr.: China (Guangxi).
- Primulina lingchuanensis* (Yan Liu & Y.G. Wei) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chiritopsis lingchuanensis* Yan Liu & Y.G. Wei in Acta Phytotax. Sin. 44(3): 340. 2006. — Distr.: China (Guangxi).
- Primulina linglingensis* (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita linglingensis* W.T. Wang in Bull. Bot. Res., Harbin 1(4): 42. 1981. — Distr.: China (Hunan).
- Primulina liujiangensis* (D. Fang & D.H. Qin) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita liujiangensis* D. Fang & D.H. Qin in Acta Phytotax. Sin. 32(6): 569. 1994. — Distr.: China (Guangxi).
- Primulina lobulata* (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chiritopsis lobulata* W.T. Wang in Bull. Bot. Res., Harbin 2(4): 55. 1982. — Distr.: China (Guangdong).
- Primulina longgangensis* (W.T. Wang) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita longgangensis* W.T. Wang in Guihaia 2(4): 171. 1982. — Distr.: China (Guangxi).
- Primulina longgangensis* var. *hongyao* (S.Z. Huang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita longgangensis* var. *hongyao* S.Z. Huang in Guihaia 2(4): 173. 1982. — Distr.: China (Guangxi).
- Primulina longicalyx* (J.M. Li & Y.Z. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita longicalyx* J.M. Li & Y.Z. Wang in Ann. Bot. Fenn. 45(3): 212. 2008. — Distr.: China (Guangxi).
- Primulina longii* (Z. Yu Li) Y.Z. Wang in J. Syst. Evol. 49: 61. 2011 ≡ *Chirita longii* Z. Yu Li in Novon 12(4): 492. 2002. — Distr.: China (Guangxi).
- Primulina lunglinensis* (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita lunglinensis* W.T. Wang in Bull. Bot. Res., Harbin 1(4): 53. 1981. — Distr.: China (Guangxi, Guizhou).
- Primulina lunglinensis* var. *amblyosepala* (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita lunglinensis* var. *amblyosepala* W.T. Wang in Bull. Bot. Res., Harbin 2(4): 48. 1982. — Distr.: China (Guangxi).
- Primulina lungzhouensis* (W.T. Wang) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita lungzhouensis* W.T. Wang in Bull. Bot. Res., Harbin 1(4): 56. 1981. — Distr.: China (Guangxi).
- Primulina luochengensis* (Yan Liu & W.B. Xu) Mich. Möller & A. Weber, **comb. nov.** ≡ *Wentsaiboea luochengensis* Yan Liu & W.B. Xu in Nordic J. Bot. 28: 743. 2010. — Distr.: China (Guangxi).
- Primulina lutea* (Yan Liu & Y.G. Wei) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita lutea* Yan Liu & Y.G. Wei, J. Wuhan Bot. Res. 22(5): 391. 2004. — Distr.: China (Guangxi).
- Primulina luzhaiensis* (Yan Liu, Y.S. Huang & W.B. Xu) Mich. Möller & A. Weber, **comb. nov.** ≡ *Chirita luzhaiensis* Yan Liu, Y.S. Huang & W.B. Xu in J. Trop. Subtrop. Bot. 18(2): 137. 2010. — Distr. China (Guangxi).
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Appendix 1. Present placement of species hitherto referred to *Chirita*, *Chiritopsis*, *Hemiboeopsis*, *Primulina* and *Wentsaiboea* (in alphabetical order of epithets, irrespective of generic name).

- Chirita acaulis* Merr. = *Opithandra acaulis* (Merr.) B.L. Burt (see Wood, 1974; Wang & al., 1998).
- Chirita acuminata* Wall. ex R. Br., nom. nud. = *Henckelia oblongifolia* (Roxb.) D.J. Middleton & Mich. Möller
- Chirita acuminata* sensu A.D.C. = *Didymocarpus acuminatus* R. Br. (see Clarke, 1874; Burt, 1958)
- Chirita adenocalyx* Chatterjee = *Henckelia adenocalyx* (Chatterjee) D.J. Middleton & Mich. Möller
- Chirita adenonema* Hilliard = *Liebigia adenonema* (Hilliard) Mich. Möller & A. Weber
- Chirita alba* Ridl. = *Liebigia polyneura* (Miq.) Mich. Möller & A. Weber
- Chirita amplexans* Steud., nom. nud. = *Henckelia bifolia* (D. Don) A. Dietr.
- Chirita anachoreta* Hance = *Henckelia anachoreta* (Hance) D.J. Middleton & Mich. Möller
- Chirita angusta* (C.B. Clarke) Theobald & Grupe = *Henckelia angusta* (C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita annamensis* Pellegr. = *Primulina annamensis* (Pellegr.) Mich. Möller & A. Weber
- Chirita aratriformis* D. Wood = *Microchirita aratriformis* (D. Wood) A. Weber & D.J. Middleton
- Chirita asperifolia* (Blume) B.L. Burt = *Liebigia speciosa* (Blume) Endl.
- Chirita atroglandulosa* W.T. Wang = *Primulina atroglandulosa* (W.T. Wang) Mich. Möller & A. Weber
- Chirita atropurpurea* W.T. Wang = *Primulina atropurpurea* (W.T. Wang) Mich. Möller & A. Weber
- Chirita auriculata* J.M. Li & S.X. Zhu = *Henckelia auriculata* (J.M. Li & S.X. Zhu) D.J. Middleton & Mich. Möller
- Chirita baishouensis* Y.G. Wei, H.Q. Wen & S.H. Zhong = *Primulina baishouensis* (Y.G. Wei, H.Q. Wen & S.H. Zhong) Y.Z. Wang
- Chirita balansae* Drake = *Primulina balansae* (Drake) Mich. Möller & A. Weber
- Chirita barbata* Sprague = *Microchirita barbata* (Sprague) A. Weber & D.J. Middleton
- Chirita bicolor* W.T. Wang = *Primulina bicolor* (W.T. Wang) Mich. Möller & A. Weber
- Chirita bicornuta* Hayata = *Hemiboea bicornuta* (Hayata) Ohwi (see Wood, 1974; Wang & al., 1998)
- Chirita bifolia* D. Don = *Henckelia bifolia* (D. Don) A. Dietr.
- Chirita bilabium* C.B. Clarke, nom. illeg. = *Liebigia limans* (Miq.) Mich. Möller & A. Weber
- Chirita bimaculata* D. Wood = *Microchirita bimaculata* (D. Wood) A. Weber & D.J. Middleton
- Chiritopsis bipinnatifida* W.T. Wang = *Primulina bipinnatifida* (W.T. Wang) Y.Z. Wang
- Chirita blumei* C.B. Clarke = *Liebigia speciosa* (Blume) Endl.
- Chirita blumei* C.B. Clarke var. *cordifolia* S. Moore = *Liebigia neoforbesii* (Hilliard) Mich. Möller & A. Weber
- Chirita bogneriana* B.L. Burt = *Primulina bogneriana* (B.L. Burt) Mich. Möller & A. Weber
- Chirita brachystigma* W.T. Wang = *Primulina brachystigma* (W.T. Wang) Mich. Möller & A. Weber
- Chirita brachytricha* W.T. Wang & D.Y. Chen = *Primulina brachytricha* (W.T. Wang & D.Y. Chen) Y.Z. Wang
- Chirita brachytricha* W.T. Wang & D.Y. Chen var. *magnibracteata* W.T. Wang & D.Y. Chen = *Primulina brachytricha* var. *magnibracteata* (W.T. Wang & D.Y. Chen) Mich. Möller & A. Weber
- Chirita bracteosa* Drake, nom. illeg. = *Primulina drakei* (B.L. Burt) Mich. Möller & A. Weber
- Chirita bracteosa* (Zoll. & Moritz) Miq. = *Liebigia horsfieldii* (R. Br.) Mich. Möller & A. Weber
- Chirita brassicoides* W.T. Wang = *Primulina brassicoides* (W.T. Wang) Mich. Möller & A. Weber
- Chirita brevipes* C.B. Clarke = *Henckelia speciosa* (Kurz) D.J. Middleton & Mich. Möller
- Chirita briggsioides* W.T. Wang = *Henckelia briggsioides* (W.T. Wang) D.J. Middleton & Mich. Möller
- Chirita brunnea* W.T. Wang = *Primulina brunnea* (W.T. Wang) Mich. Möller & A. Weber
- Chirita caerulea* R. Br. = *Microchirita caerulea* (R. Br.) Y.Z. Wang
- Chirita caliginosa* C.B. Clarke = *Microchirita caliginosa* (C.B. Clarke) Y.Z. Wang
- Chirita calva* C.B. Clarke = *Henckelia calva* (C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita capitis* Craib = *Microchirita involuerata* (Craib) Y.Z. Wang
- Chirita carnosifolia* C.Y. Wu ex H.W. Li = *Primulina carnosifolia* (C.Y. Wu ex H.W. Li) Y.Z. Wang
- Chirita ceratoscyphus* B.L. Burt = *Henckelia ceratoscyphus* (B.L. Burt) D.J. Middleton & Mich. Möller (see Wang & al., 1998)
- Chirita chaneii* H. Lév. = *Rehmannia glutinosa* (Gaertn.) Libosch. ex Fisch. & C.A. Mey. (see Burt, 1960; Wood, 1974)
- Chirita chlamydata* W.W. Sm. = *Raphiocarpus begoniifolius* (H. Lév.) B.L. Burt (see Weber & Burt, 1998)
- Chirita cicatricosa* W.T. Wang = *Primulina minutiamata* (D. Wood) Mich. Möller & A. Weber
- Chirita clarkei* Hook. f., nom. illeg. = *Henckelia lachenensis* (C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita colaniae* Pellegr. = *Primulina colaniae* (Pellegr.) Mich. Möller & A. Weber
- Chirita communis* Gardner = *Henckelia communis* (Gardner) D.J. Middleton & Mich. Möller
- Chiritopsis confertiflora* W.T. Wang = *Primulina confertiflora* (W.T. Wang) Mich. Möller & A. Weber
- Chiritopsis cordifolia* D. Fang & W.T. Wang = *Primulina cordifolia* (D. Fang & W.T. Wang) Y.Z. Wang
- Chirita cordifolia* W.T. Wang = *Primulina cordata* (W.T. Wang) Mich. Möller & A. Weber
- Chirita corniculata* Pellegr. = *Henckelia ceratoscyphus* (B.L. Burt) D.J. Middleton & Mich. Möller
- Chirita cortusifolia* Hance = *Didymocarpus cortusifolius* (Hance) W.T. Wang. — Wood (1974) retained the species in *Chirita*, while Wang (1990) transferred it to *Didymocarpus*, a position retained in Wang & al. (1998). According to Möller & al. (2011) the species is in a clade with *Gyrocheilos* and *Allocheilos*.
- Chirita crassituba* W.T. Wang = *Primulina crassituba* (W.T. Wang) Mich. Möller & A. Weber
- Chirita cristata* (Dalzell) B.L. Burt = *Microchirita hamosa* (R. Br.) Y.Z. Wang
- Chirita cruciformis* (Chun) W.T. Wang = *Primulina cruciformis* (Chun) Mich. Möller & A. Weber
- Chirita cyanea* (Ridl.) B.L. Burt = *Damrongia cyanea* (Ridl.) D.J. Middleton & A. Weber
- Chirita cynostyla* B.L. Burt = *Primulina cynostyla* (B.L. Burt) Mich. Möller & A. Weber
- Chirita cyrtocarpa* D. Fang & L. Zeng = *Primulina cyrtocarpa* (D. Fang & L. Zeng) Mich. Möller & A. Weber
- Chirita dalzielii* W.W. Sm. = *Opithandra dalzielii* (W.W. Sm.) B.L. Burt (see Wood, 1974; Wang & al., 1998)
- Chirita demissa* (Hance) W.T. Wang = *Primulina demissa* (Hance) Mich. Möller & A. Weber
- Chirita depressa* Hook. f. = *Primulina depressa* (Hook. f.) Mich. Möller & A. Weber
- Chirita diaphana* Royle, nom. nud. = *Henckelia pumila* (D. Don) A. Dietr.
- Chirita dibangensis* B.L. Burt, S.K. Srivastava & Mehrotra = *Henckelia dibangensis* (B.L. Burt, S.K. Srivastava & Mehrotra) D.J. Middleton & Mich. Möller
- Chirita dielsii* (Borza) B.L. Burt = *Henckelia dielsii* (Borza) D.J. Middleton & Mich. Möller
- Chirita dimidiata* Wall. ex C.B. Clarke = *Henckelia dimidiata* (Wall. ex C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita dissimilis* Hilliard = *Liebigia dissimilis* (Hilliard) Mich. Möller & A. Weber
- Chirita drakei* B.L. Burt = *Primulina drakei* (B.L. Burt) Mich. Möller & A. Weber
- Chirita dryas* Dunn = *Primulina dryas* (Dunn) Mich. Möller & A. Weber
- Chirita eberhardtii* Pellegr. = *Primulina eberhardtii* (Pellegr.) Mich. Möller & A. Weber
- Chirita eburnea* Hance = *Primulina eburnea* (Hance) Y.Z. Wang
- Chirita edgeworthii* A. DC. = *Henckelia pumila* (D. Don) A. Dietr.
- Chirita elata* Ridl. = *Codonoboea elata* (Ridl.) Rafidah
- Chirita elphinstonia* Craib = *Microchirita elphinstonia* (Craib) A. Weber & D.J. Middleton
- Chirita fangii* W.T. Wang = *Primulina fangii* (W.T. Wang) Mich. Möller & A. Weber

Appendix 1. Continued.

- Chirita fasciculiflora* W.T. Wang = *Henckelia fasciculiflora* (W.T. Wang) D.J. Middleton & Mich. Möller
- Chirita fauriei* Franch. = *Primulina eburnea* (Hance) Y.Z. Wang
- Chirita fimbrisejala* Hand.-Mazz. = *Primulina fimbrisejala* (Hand.-Mazz.) Y.Z. Wang
- Chirita fimbrisejala* Hand.-Mazz. var. *mollis* W.T. Wang = *Primulina fimbrisejala* var. *mollis* (W.T. Wang) Mich. Möller & A. Weber
- Chirita flava* Wall. ex R. Br., nom. superfl. = *Henckelia pumila* (D. Don) A. Dietr.
- Chirita flava* Steud., nom. nud. = *Henckelia pumila* (D. Don) A. Dietr.
- Chirita flavimaculata* W.T. Wang = *Primulina flavimaculata* (W.T. Wang) Mich. Möller & A. Weber
- Chirita floribunda* W.T. Wang = *Primulina floribunda* (W.T. Wang) Mich. Möller & A. Weber
- Chirita forbesii* S. Moore = *Liebigia speciosa* (Blume) Endl.
- Chirita forbesii* Ridl., nom. illeg. = *Liebigia speciosa* (Blume) Endl.
- Chirita fordii* (Hemsl.) D. Wood = *Primulina fordii* (Hemsl.) Y.Z. Wang
- Chirita fordii* (Hemsl.) D. Wood var. *dolichotricha* (W.T. Wang) W.T. Wang = *Primulina fordii* var. *dolichotricha* (W.T. Wang) Mich. Möller & A. Weber
- Chirita forrestii* J. Anthony = *Henckelia forrestii* (J. Anthony) D.J. Middleton & Mich. Möller
- Chirita forrestii* J. Anthony var. *acutidentata* W.T. Wang = *Henckelia forrestii* (J. Anthony) D.J. Middleton & Mich. Möller
- Chirita fruticosa* H.W. Li = *Henckelia fruticosa* (H.W. Li) D.J. Middleton & Mich. Möller
- Chirita fulva* Barnett = *Damrongia fulva* (Barnett) D.J. Middleton & A. Weber
- Chirita fusca* C.B. Clarke = *Microchirita caliginosa* (C.B. Clarke) Y.Z. Wang
- Chirita gemella* D. Wood = *Primulina gemella* (D. Wood) Y.Z. Wang
- Chirita geoffrayi* Pellegr. = *Microchirita involucrata* (Craib) Y.Z. Wang
- Chirita glabra* Miq. = *Liebigia glabra* (Miq.) Mich. Möller & A. Weber
- ?*Chirita glabra* Miq. var. *intermedia* Ridl. = *Liebigia polyneura* (Miq.) Mich. Möller & A. Weber
- Chirita glabrescens* W.T. Wang & D.Y. Chen = *Primulina glabrescens* (W.T. Wang & D.Y. Chen) Mich. Möller & A. Weber
- Chiritopsis glandulosa* D. Fang, L. Zeng & D.H. Qin = *Primulina glandulosa* (D. Fang, L. Zeng & D.H. Qin) Y.Z. Wang
- Chiritopsis glandulosa* D. Fang, L. Zeng & D.H. Qin var. *yangshuoensis* F. Wen, Yue Wang & Q.X. Zhang = *Primulina glandulosa* var. *yangshuoensis* (F. Wen, Yue Wang & Q.X. Zhang) Mich. Möller & A. Weber
- Chirita glasgovii* Ridl. = *Microchirita rupestris* (Ridl.) A. Weber & Rafidah
- Chirita grandibracteata* J.M. Li & Mich. Möller = *Primulina grandibracteata* (J.M. Li & Mich. Möller) Mich. Möller & A. Weber
- Chirita grandidentata* W.T. Wang = *Didymocarpus grandidentatus* (W.T. Wang) W.T. Wang (see Wang & al., 1998)
- Chirita grandiflora* Wall. = *Henckelia urticifolia* (D. Don.) A. Dietr.
- Chirita griffithii* Hook. f. & Thomson ex C.B. Clarke = *Didymocarpus griffithii* Wight = *Loxostigma griffithii* (Wight) C.B. Clarke (see Wood, 1974; Wang & al., 1998)
- Chirita guangxiensis* S.Z. Huang = *Pseudochirita guangxiensis* (S.Z. Huang) W.T. Wang (see Wang, 1983a; Wang & al., 1998)
- Chirita gueilinensis* W.T. Wang = *Primulina gueilinensis* (W.T. Wang) Y.Z. Wang
- Chirita gueilinensis* W.T. Wang var. *brachycarpa* W.T. Wang = *Primulina juliae* (Hance) Mich. Möller & A. Weber
- Chirita gueilinensis* W.T. Wang var. *dolichotricha* = W.T. Wang *Primulina fordii* var. *dolichotricha* (W.T. Wang) Mich. Möller & A. Weber
- Chirita guihaiensis* Y.G. Wei, B. Pan & W.X. Tang = *Primulina guihaiensis* (Y.G. Wei, B. Pan & W.X. Tang) Mich. Möller & A. Weber
- Chirita halongensis* Kiew & T.H. Nguyễn = *Primulina halongensis* (Kiew & T.H. Nguyễn) Mich. Möller & A. Weber
- Chirita hamosa* R. Br. = *Microchirita hamosa* (R. Br.) Y.Z. Wang
- Chirita hamosa* var. *finlaysonia* C.B. Clarke = *Microchirita hamosa* (R. Br.) Y.Z. Wang
- Chirita hamosa* R. Br. var. *unifolia* C.B. Clarke = *Microchirita hamosa* (R. Br.) Y.Z. Wang
- Chirita hedyotideae* (Chun) W.T. Wang = *Primulina hedyotideae* (Chun) Y.Z. Wang
- Chirita heterostigma* B.L. Burt = *Henckelia heterostigma* (B.L. Burt) D.J. Middleton & Mich. Möller
- Chirita heterotricha* Merr. = *Primulina heterotricha* (Merr.) Y.Z. Wang
- Chirita heucherifolia* (Hand.-Mazz.) D. Wood (1972, 1974) placed the species in *Chirita*, while Wang & al. (1998) left it in *Didymocarpus*.
- Chirita hiepii* Kiew = *Primulina hiepii* (Kiew) Mich. Möller & A. Weber
- Chirita hochiensis* C.C. Huang & X.X. Chen = *Primulina hochiensis* (C.C. Huang & X.X. Chen) Mich. Möller & A. Weber
- Chirita hookeri* C.B. Clarke = *Henckelia hookeri* (C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita horsfieldii* R. Br. = *Liebigia horsfieldii* (R. Br.) Mich. Möller & A. Weber
- Chirita horsfieldii* R. Br. var. *scaberrima* (R. Br.) C.B. Clarke = *Liebigia horsfieldii* (R. Br.) Mich. Möller & A. Weber
- Chirita humilis* Miq., Fl. Ned. Ind. 2: 729. 1858 = *Codonoboea humilis* (Miq.) A. Weber, **comb. nov.**
- Chirita infundibuliformis* W.T. Wang = *Henckelia infundibuliformis* (W.T. Wang) D.J. Middleton & Mich. Möller
- Chirita insignis* C.B. Clarke = *Henckelia insignis* (C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita integra* Barnett = *Damrongia integra* (Barnett) D.J. Middleton & A. Weber
- Chirita involuclata* Craib = *Microchirita involuclata* (Craib) Y.Z. Wang
- Chirita involucrata* Craib = *Microchirita involucrata* (Craib) Y.Z. Wang
- Chirita juwanshanica* W.T. Wang = *Primulina juwanshanica* (W.T. Wang) Y.Z. Wang
- Chirita juliae* Hance = *Primulina juliae* (Hance) Mich. Möller & A. Weber
- Chirita kerrii* Craib = *Microchirita rupestris* (Ridl.) A. Weber & Rafidah
- Chirita kurzii* C.B. Clarke = *Briggsia kurzii* (C.B. Clarke) W.E. Evans (see Wood, 1974; Wang & al., 1998)
- Chirita lacei* (W.W. Sm.) B.L. Burt = *Henckelia lacei* (W.W. Sm.) D.J. Middleton & Mich. Möller
- Chirita lachenensis* C.B. Clarke = *Henckelia lachenensis* (C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita lacunosa* (Hook. f.) B.L. Burt = *Damrongia lacunosa* (Hook. f.) D.J. Middleton & A. Weber
- Chirita laifengensis* W.T. Wang = *Primulina obtusidentata* (W.T. Wang) Mich. Möller & A. Weber
- Chirita langshanica* W.T. Wang = *Primulina langshanica* (W.T. Wang) Y.Z. Wang
- Chirita latinervis* W.T. Wang = *Primulina latinervis* (W.T. Wang) Mich. Möller & A. Weber
- Chirita lavandulacea* Stapf = *Microchirita lavandulacea* (Stapf) Y.Z. Wang
- Chirita laxiflora* W.T. Wang = *Primulina laxiflora* (W.T. Wang) Y.Z. Wang
- Chirita leeii* F. Wen, Yue Wang & Q.X. Zhang = *Primulina leeii* (F. Wen, Yue Wang & Q.X. Zhang) Mich. Möller & A. Weber
- Chirita leiophylla* W.T. Wang = *Primulina leiophylla* (W.T. Wang) Y.Z. Wang
- Chirita leuserensis* Hilliard = *Liebigia leuserensis* (Hilliard) Mich. Möller & A. Weber
- Chirita liboensis* W.T. Wang & D.Y. Chen = *Primulina liboensis* (W.T. Wang & D.Y. Chen) Mich. Möller & A. Weber
- Chirita lienxienensis* W.T. Wang = *Primulina lienxienensis* (W.T. Wang) Mich. Möller & A. Weber
- Chirita liguliformis* W.T. Wang = *Primulina liguliformis* (W.T. Wang) Mich. Möller & A. Weber
- Chirita lilacina* Lem. = *Monopyle* sp. (see Wood, 1974)
- Chirita limans* (Miq.) B.L. Burt = *Liebigia limans* (Miq.) Mich. Möller & A. Weber
- Chirita linearifolia* W.T. Wang = *Primulina linearifolia* (W.T. Wang) Y.Z. Wang
- Chiritopsis lingchuanensis* Yan Liu & Y.G. Wei = *Primulina lingchuanensis* (Yan Liu & Y.G. Wei) Mich. Möller & A. Weber
- Chirita linglingensis* W.T. Wang = *Primulina linglingensis* (W.T. Wang) Mich. Möller & A. Weber
- Chirita liujiangensis* = *Primulina liujiangensis* D. Fang & D.H. Qin
- Chiritopsis lobulata* W.T. Wang = *Primulina lobulata* (W.T. Wang) Mich. Möller & A. Weber
- Chirita longgangensis* W.T. Wang = *Primulina longgangensis* (W.T. Wang) Y.Z. Wang
- Chirita longgangensis* W.T. Wang var. *hongyao* S.Z. Huang = *Primulina longgangensis* var. *hongyao* (S.Z. Huang) Mich. Möller & A. Weber
- Chirita longicalyx* J.M. Li & Yin Z. Wang = *Primulina longicalyx* (J.M. Li & Y.Z. Wang) Mich. Möller & A. Weber

Appendix 1. Continued.

- Chirita longii* Z. Yu Li = *Primulina longii* (Z. Yu Li) Y.Z. Wang
Chirita longipedicellata B.L. Burt = *Henckelia longipedicellata* (B.L. Burt) D.J. Middleton & Mich. Möller
Chirita longipedunculata W.T. Wang = *Lysionotus longipedunculatus* (W.T. Wang) W.T. Wang (see Wang, 1983b; Wang & al., 1998)
Hemiboeopsis longisepala (H.W. Li) W.T. Wang = *Henckelia longisepala* (H.W. Li) D.J. Middleton & Mich. Möller
Chirita longistyla W.T. Wang = *Primulina fordii* (Hemsl.) Y.Z. Wang
Wentsaiboea luochengensis Yan Liu & W.B. Xu = *Primulina luochengensis* (Yan Liu & W.B. Xu) Mich. Möller & A. Weber
Chirita lunglinensis W.T. Wang = *Primulina lunglinensis* (W.T. Wang) Mich. Möller & A. Weber
Chirita lunglinensis W.T. Wang var. *amblyosepala* W.T. Wang = *Primulina lunglinensis* var. *amblyosepala* (W.T. Wang) Mich. Möller & A. Weber
Chirita lungzhouensis W.T. Wang = *Primulina lungzhouensis* (W.T. Wang) Mich. Möller & A. Weber
Chirita lutea Yan Liu & Y.G. Wei = *Primulina lutea* (Yan Liu & Y.G. Wei) Mich. Möller & A. Weber
Chirita luzhaiensis Yan Liu, Y.S. Huang & W.B. Xu = *Primulina luzhaiensis* (Yan Liu, Y.S. Huang & W.B. Xu) Mich. Möller & A. Weber
Chirita macrodonta D. Fang & D.H. Qin = *Primulina macrodonta* (D. Fang & D.H. Qin) Mich. Möller & A. Weber
Chirita macrophylla Wall. = *Henckelia grandifolia* A. Dietr.
Chirita macrophylla Wall. var. *trapensis* Panigrahi = *Henckelia grandifolia* A. Dietr.
Chirita macrorrhiza D. Fang & D.H. Qin = *Primulina macrorrhiza* (D. Fang & D.H. Qin) Mich. Möller & A. Weber
Chirita macrosiphon Hance = *Raphiocarpus macrosiphon* (Hance) B.L. Burt (see Weber & Burt, 1998)
Chirita maguanensis Z. Yu Li, H. Jiang & H. Xu = *Primulina maguanensis* (Z. Yu Li, H. Jiang & H. Xu) Mich. Möller & A. Weber
Chirita mangshanensis W.T. Wang = *Primulina juliae* (Hance) Mich. Möller & A. Weber
Chirita mangshanensis W.T. Wang var. *lasiandra* W.T. Wang = *Primulina juliae* (Hance) Mich. Möller & A. Weber
Chirita marcanii Craib = *Microchirita marcanii* (Craib) A. Weber & D.J. Middleton
Chirita medica D. Fang = *Primulina medica* (D. Fang) Y.Z. Wang
Chirita micromusa B.L. Burt = *Microchirita micromusa* (B.L. Burt) A. Weber & D.J. Middleton
Chirita minutihamata D. Wood = *Primulina minutihamata* (D. Wood) Mich. Möller & A. Weber
Chirita minutimaculata D. Fang & W.T. Wang = *Primulina minutimaculata* (D. Fang & W.T. Wang) Y.Z. Wang
Chirita minutiserrulata Hayata = *Henckelia anachoreta* (Hance) D.J. Middleton & Mich. Möller
Chirita mirabilis (Pamp.) Jafri, error for *Christolea mirabilis* (Pamp.) Jafri (Brassicaceae) (see Skog & Boggan, 2007)
Chirita mishmiensis Debbarm. ex Biswas = *Henckelia mishmiensis* (Debbarm. ex Biswas) D.J. Middleton & Mich. Möller
Chirita modesta Kiew & T.H. Nguyễn = *Primulina modesta* (Kiew & T.H. Nguyễn) Mich. Möller & A. Weber
Chirita mollifolia D. Fang, Y.G. Wei & J. Murata = *Primulina weii* Mich. Möller & A. Weber
Chiritopsis mollifolia D. Fang & W.T. Wang = *Primulina mollifolia* (D. Fang & W.T. Wang) Y.Z. Wang
Chirita mollis Miq. = *Codonoboea* sp. — There is a note by Olive Hilliard on the isotype in Leiden saying this is a *Henckelia* (sensu Weber & Burt, 1998). This must now be treated as a species of *Codonoboea* as will be explained in a forthcoming paper.
Chirita mollissima Ridl. = *Microchirita mollissima* (Ridl.) A. Weber & D.J. Middleton
Chirita monantha W.T. Wang = *Henckelia monantha* (W.T. Wang) D.J. Middleton & Mich. Möller
Chirita monophylla C.B. Clarke = *Henckelia monophylla* (C.B. Clarke) D.J. Middleton & Mich. Möller
Chirita moonii Gardner = *Henckelia moonii* (Gardner) D.J. Middleton & Mich. Möller
Chirita nandanensis S.X. Huang, Y.G. Wei & W.H. Luo = *Primulina nandanensis* (S.X. Huang, Y.G. Wei & W.H. Luo) Mich. Möller & A. Weber
Chirita napoensis Z. Yu Li = *Primulina napoensis* (Z. Yu Li) Mich. Möller & A. Weber
Chirita neoforbesii Hilliard = *Liebigia neoforbesii* (Hilliard) Mich. Möller & A. Weber
Chirita oblongifolia (Roxb.) J. Sinclair = *Henckelia oblongifolia* (Roxb.) D.J. Middleton & Mich. Möller
Chirita oblongifolia (Roxb.) B.L. Burt, comb. superfl. = *Henckelia oblongifolia* (Roxb.) D.J. Middleton & Mich. Möller
Chirita obtusa C.B. Clarke = *Didymostigma obtusum* (C.B. Clarke) W.T. Wang (see Wang, 1984, Wang & al., 1998)
Chirita obtusidentata W.T. Wang = *Primulina obtusidentata* (W.T. Wang) Mich. Möller & A. Weber
Chirita obtusidentata W.T. Wang var. *mollipes* W.T. Wang = *Primulina obtusidentata* var. *mollipes* (W.T. Wang) Mich. Möller & A. Weber
Chirita oculata Craib = *Microchirita oculata* (Craib) A. Weber & D.J. Middleton
Chirita ophiopogoides D. Fang & W.T. Wang = *Primulina ophiopogoides* (D. Fang & W.T. Wang) Y.Z. Wang
Chirita orbicularis W.W. Sm. = *Henckelia dielsii* (Borza) D.J. Middleton & Mich. Möller
Chirita orthandra W.T. Wang = *Primulina orthandra* (W.T. Wang) Mich. Möller & A. Weber
Chirita parvifolia W.T. Wang = *Primulina parvifolia* (W.T. Wang) Y.Z. Wang
Chirita parvula Ridl. = *Microchirita caliginosa* (C.B. Clarke) Y.Z. Wang
Chirita peduncularis B.L. Burt = *Henckelia peduncularis* (B.L. Burt) D.J. Middleton & Mich. Möller
Chirita pellegriniana B.L. Burt = *Primulina swinglei* (Merr.) Mich. Möller & A. Weber
Chirita pinnata W.T. Wang = *Primulina pinnata* (W.T. Wang) Y.Z. Wang
Chirita pinnatifida (Hand.-Mazz.) B.L. Burt = *Primulina pinnatifida* (Hand.-Mazz.) Y.Z. Wang
Chirita poilanei Pellegr. = *Primulina poilanei* (Pellegr.) Mich. Möller & A. Weber
Chirita polycarpa Steud. = *Lysionotus serratus* D. Don (see Wood, 1974)
Chirita polycephala (Chun) W.T. Wang = *Primulina polycephala* (Chun) Mich. Möller & A. Weber
Chirita polyneura Miq. = *Liebigia polyneura* (Miq.) Mich. Möller & A. Weber
Chirita polyneura Miq. var. *albiflora* Miq. = *Liebigia polyneura* (Miq.) Mich. Möller & A. Weber
Chirita polyneura Miq. var. *amabilis* C.B. Clarke = *Henckelia dimidiata* (Wall. ex C.B. Clarke) D.J. Middleton & Mich. Möller
Chirita polyneura Miq. var. *thomsonii* C.B. Clarke = *Henckelia pumila* (D. Don) A. Dietr.
Chirita praeterita Hilliard = *Liebigia praeterita* (Hilliard) Mich. Möller & A. Weber
Chirita primulacea C.B. Clarke = *Henckelia primulacea* (C.B. Clarke) D.J. Middleton & Mich. Möller
Chirita primuloides (Miq.) Ohwi = *Opithandra primuloides* (Miq.) B.L. Burt (see Wood, 1974)
Chirita pseudoeburnea D. Fang & W.T. Wang = *Primulina pseudoeburnea* (D. Fang & W.T. Wang) Mich. Möller & A. Weber
Chirita pseudoheterotricha T.J. Zhou, B. Pan & W.B. Xu = *Primulina pseudoheterotricha* (T.J. Zhou, B. Pan & W.B. Xu) Mich. Möller & A. Weber
Chirita pteropoda W.T. Wang = *Primulina pteropoda* (W.T. Wang) Y.Z. Wang
Chirita puerensis Y.Y. Qian = *Henckelia puerensis* (Y.Y. Qian) D.J. Middleton & Mich. Möller
Chirita pumila D. Don = *Henckelia pumila* (D. Don) A. Dietr.
Chirita pungentisepala W.T. Wang = *Primulina pungentisepala* (W.T. Wang) Mich. Möller & A. Weber
Chirita purpureolineata (Kerr ex Craib) D. Wood = *Damrongia purpureolineata* Kerr ex Craib
Chirita pycnantha W.T. Wang = *Henckelia pycnantha* (W.T. Wang) D.J. Middleton & Mich. Möller
Chirita quercifolia D. Wood = *Primulina pinnatifida* (Hand.-Mazz.) Y.Z. Wang
Wentsaiboea renifolia D. Fang & D.H. Qin = *Primulina renifolia* (D. Fang & D.H. Qin) Y.Z. Wang
Chiritopsis repanda W.T. Wang = *Primulina repanda* (W.T. Wang) Y.Z. Wang
Chiritopsis repanda var. *gulinensis* W.T. Wang = *Primulina repanda* var. *gulinensis* (W.T. Wang) Mich. Möller & A. Weber

Appendix 1. Continued.

- Chirita reptans* B.L. Burt & Panigrahi = *Henckelia burtii* D.J. Middleton & Mich. Möller
- Chirita ridleyana* S. Moore = *Liebigia speciosa* (Blume) Endl.
- Chirita ronganensis* D. Fang & Y.G. Wei = *Primulina ronganensis* (D. Fang & Y.G. Wei) Mich. Möller & A. Weber
- Chirita roseoalba* W.T. Wang = *Primulina roseoalba* (W.T. Wang) Mich. Möller & A. Weber
- Chirita rotundata* Barnett = *Henckelia rotundata* (Barnett) D.J. Middleton & Mich. Möller
- Chirita rotundifolia* (Hemsl.) D. Wood = *Primulina rotundifolia* (Hemsl.) Mich. Möller & A. Weber
- Chirita rupestris* Ridl. = *Microchirita rupestris* (Ridl.) A. Weber & Rafidah
- Chirita sahyadriensis* Punekar & Lakshmin. = *Microchirita sahyadriensis* (Punekar & Lakshmin.) A. Weber & D.J. Middleton
- Chirita scaberrima* R. Br. = *Liebigia horsfieldii* (R. Br.) Mich. Möller & A. Weber
- Chirita scabra* Royle ex C.B. Clarke, nom. illeg. pro syn. = *Henckelia bifolia* (D. Don) A. Dietr.
- Chirita sclerophylla* W.T. Wang = *Primulina sclerophylla* (W.T. Wang) Y.Z. Wang
- Chirita secundiflora* (Chun) W.T. Wang = *Primulina secundiflora* (Chun) Mich. Möller & A. Weber,
- Chirita semicontorta* Pellegr. = *Primulina semicontorta* (Pellegr.) Mich. Möller & A. Weber
- Chirita sericea* Ridl. = *Microchirita sericea* (Ridl.) A. Weber & Rafidah
- Chirita sericea* H. Lévl. & Vaniot, nom. illeg. = *Oreocharis auricula* (S. Moore) C.B. Clarke var. *auricula* (see Wang & al., 1998)
- Chirita sericea* var. *scortechinii* Ridl. = *Microchirita sericea* (Ridl.) A. Weber & Rafidah
- Chirita shennungjiaensis* W.T. Wang = *Primulina tenuituba* (W.T. Wang) Y.Z. Wang
- Chirita shouchengensis* Z. Yu Li = *Primulina shouchengensis* (Z. Yu Li) Y.Z. Wang
- Chirita shuii* Z. Yu Li = *Henckelia shuii* (Z. Yu Li) D.J. Middleton & Mich. Möller
- Chirita sichuanensis* W.T. Wang = *Primulina sichuanensis* (W.T. Wang) Mich. Möller & A. Weber
- Chirita sinensis* Lindl. = *Primulina sinensis* (Lindl.) Y.Z. Wang, nom. illeg. = *Primulina dryas* (Dunn) Mich. Möller & A. Weber
- Chirita sinensis* var. *angustifolia* Dunn = *Primulina dryas* (Dunn) Mich. Möller & A. Weber
- Chirita sinensis* var. *bodinieri* H. Lévl. = *Primulina dryas* (Dunn) Mich. Möller & A. Weber
- Primulina sinensis* Hook. f., nom. illeg. = *Primulina tabacum* Hance
- Chirita skogiana* Z. Yu Li = *Primulina skogiana* (Z.Y. Li) Mich. Möller & A. Weber
- Chirita smitinandii* B.L. Burt = *Henckelia smitinandii* (B.L. Burt) D.J. Middleton & Mich. Möller
- Chirita spadiciformis* W.T. Wang = *Primulina spadiciformis* (W.T. Wang) Mich. Möller & A. Weber
- Chirita speciosa* Kurz = *Henckelia speciosa* (Kurz) D.J. Middleton & Mich. Möller
- Chirita spectabilis* Miq. = *Liebigia speciosa* (Blume) Endl.
- Chirita spectabilis* Var. B? *pedicellata* C.B. Clarke = *Liebigia polyneura* (Miq.) Mich. Möller & A. Weber
- Chirita speluncae* (Hand.-Mazz.) D. Wood = *Primulina speluncae* (Hand.-Mazz.) Mich. Möller & A. Weber
- Chirita sphagnicola* H. Lévl. & Vaniot = *Henckelia pumila* (D. Don) A. Dietr.
- Chirita spinulosa* D. Fang & W.T. Wang = *Primulina spinulosa* (D. Fang & W.T. Wang) Y.Z. Wang
- Chirita stolonifera* C.E.C. Fisch. & Kaul = *Henckelia lachenensis* (C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita subacaulis* (Hand.-Mazz.) B.L. Burt = *Hemiboea subacaulis* Hand.-Mazz. (see Wood, 1974, Wang & al., 1998)
- Chirita subrhomboidea* W.T. Wang = *Primulina subrhomboidea* (W.T. Wang) Y.Z. Wang
- Chiritopsis subulata* W.T. Wang = *Primulina subulata* (W.T. Wang) Mich. Möller & A. Weber
- Chiritopsis subulata* var. *yangchunensis* W.T. Wang = *Primulina subulata* var. *yangchunensis* (W.T. Wang) Mich. Möller & A. Weber
- Chirita subulatisepala* W.T. Wang = *Primulina subulatisepala* (W.T. Wang) Mich. Möller & A. Weber
- Chirita swinglei* (Merr.) W.T. Wang = *Primulina swinglei* (Merr.) Mich. Möller & A. Weber
- Primulina tabacum* Hance
- Chirita tamiana* B.L. Burt = *Primulina tamiana* (B.L. Burt) Mich. Möller & A. Weber
- Chirita tenuifolia* W.T. Wang = *Primulina tenuifolia* (W.T. Wang) Y.Z. Wang
- Chirita tenuipes* Hilliard = *Liebigia tenuipes* (Hilliard) Mich. Möller & A. Weber
- Chirita tenuituba* (W.T. Wang) W.T. Wang = *Primulina tenuituba* (W.T. Wang) Y.Z. Wang
- Chirita ternifolia* Buch.-Ham. ex D. Don = *Lysionotus serratus* D. Don (see Wood, 1974)
- Chirita tibetica* (Franch.) B.L. Burt = *Henckelia tibetica* (Franch.) D.J. Middleton & Mich. Möller
- Chirita tobaensis* Hilliard = *Liebigia tobaensis* (Hilliard) Mich. Möller & A. Weber
- Chirita trailiana* Forrest & W.W. Sm. = *Henckelia speciosa* (Kurz) D.J. Middleton & Mich. Möller
- Chirita tribracteata* W.T. Wang = *Primulina tribracteata* (W.T. Wang) Mich. Möller & A. Weber
- Chirita tribracteata* W.T. Wang var. *zhuana* Z. Yu Li, Q. Xing & Yuan B. Li = *Primulina tribracteata* var. *zhuana* (Z. Yu Li, Q. Xing & Yuan B. Li) Mich. Möller & A. Weber
- Chirita trisekala* Barnett = *Damrongia trisekala* (Barnett) D.J. Middleton & A. Weber
- Chirita tubulosa* Craib = *Microchirita tubulosa* (Craib) A. Weber & D.J. Middleton
- Chirita umbricola* W.W. Sm. = *Henckelia lachenensis* (C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita umbrophila* C.Y. Wu ex H.W. Li: generic placement uncertain (see Wang & al., 1998: 311)
- Chirita uniflora* Ridl.: excluded from *Chirita* in the revision of Wood (1974) and referred to “*Didymocarpus*”. From its locality and flower description it is most likely a *Codonoboea*, probably the species currently called *Henckelia hirta* (Ridl.) A. Weber.
- Chirita urticifolia* Buch.-Ham. ex D. Don = *Henckelia urticifolia* (D. Don.) A. Dietr.
- Chirita varicolor* D. Fang & D.H. Qin = *Primulina varicolor* (D. Fang & D.H. Qin) Y.Z. Wang
- Chirita verecunda* (Chun) W.T. Wang = *Primulina verecunda* (Chun) Mich. Möller & A. Weber
- Chirita vestita* D. Wood = *Primulina vestita* (D. Wood) Mich. Möller & A. Weber
- Chirita villosissima* W.T. Wang = *Primulina villosissima* (W.T. Wang) Mich. Möller & A. Weber
- Chirita viola* Ridl. = *Microchirita viola* (Ridl.) A. Weber & Rafidah
- Chirita violoides* (Wall.) M.R. Almeida = *Platystemma violoides* Wall.
- Chirita vulgaris* Morren, nom. nud. = *Henckelia communis* (Gardner) D.J. Middleton & Mich. Möller
- Chirita walkerae* Gardner = *Henckelia walkerae* (Gardner) D.J. Middleton & Mich. Möller
- Chirita walkerae* Gardner var. *parviflora* C.B. Clarke = *Henckelia walkerae* (Gardner) D.J. Middleton & Mich. Möller
- Chirita walkerae* Gardner subsp. *parviflora* (C.B. Clarke) W.L. Theob. & Grupe = *Henckelia walkerae* (Gardner) D.J. Middleton & Mich. Möller
- Chirita wangiana* = *Primulina wangiana* (Z.Y. Li) Mich. Möller & A. Weber
- Chirita wentsaii* D. Fang & L. Zeng = *Primulina wentsaii* (D. Fang & L. Zeng) Y.Z. Wang
- Chirita xinningensis* W.T. Wang = *Primulina xinningensis* (W.T. Wang) Mich. Möller & A. Weber
- Chiritopsis xiuningensis* X.L. Liu & X.H. Guo = *Primulina xiuningensis* (X.L. Liu & X.H. Guo) Mich. Möller & A. Weber
- Chirita yungfuensis* W.T. Wang = *Primulina yungfuensis* (W.T. Wang) Mich. Möller & A. Weber
- Chirita zeylanica* Hook. = *Henckelia communis* (Gardner) D.J. Middleton & Mich. Möller
- Chirita zeylanica* Hook. var. *angusta* C.B. Clarke = *Henckelia angusta* (C.B. Clarke) D.J. Middleton & Mich. Möller
- Chirita zollingeri* C.B. Clarke = *Microchirita caerulea* (R. Br.) Y.Z. Wang