

Research in the Gesneriaceae has seen some major milestones over the last decades, with the proposition of a new formal classification by Burt and Wiehler in 1995, the last before molecular data became widely available, and the latest one in by Weber *et al.* in 2013 that aligned the classification largely along phylogenetic boundaries. Consequently, the classification has changed considerably, including a geographically Old World taxon to be classified with the New World tribe (*i.e.*, *Titanotrichum*) (Weber *et al.*, 2013).

In between the two formal classifications, many genera were re-established, redefined and synonymised, and this formed the basis at genus level for the latest classification in 2013. Since then further genera were established including from newly collected material or by segregation from existing genera (Weber *et al.* this issue).

This special issue has been assembled with the idea to provide a forum for information on the latest developments in Gesneriaceae research and is seen as an opportunity for cementing old and establishing new collaborations among researchers with interest in the family. As such we refrained from limiting the issue to a specific topic, and provided a platform for contributions from a range of themes of ongoing research in Gesneriaceae.

As a consequence, the issue includes 13 contributions with a wide range of topics, and contains an identification key across the family down to genus level, a genus revision with a new species, an evolutionary–developmental review, 1 additional notes contribution, another 5 new species descriptions, 3 new records at country level, and 1 checklist of New World Gesneriaceae names.

This special issue here represents a truly international effort. The contributions collated here have 38 authors (from Adhikari B. to Xin Z.B.), with associations to 24 institutions in 11 countries

from Austria to Vietnam (including Russia and the US).

The contributions deal with plants from 6 different countries, mainly in Asia (China, India, Indonesia, Nepal and Vietnam), and two are contributions of larger significance, one covering the New World part of Gesneriaceae, the other the entire family.

The contributions are framed by two useful resources for the entire family. A new identification key to the infrafamilial taxa and genera across the Gesneriaceae by Weber *et al.* (this issue) that is based on the new classification system (Weber *et al.*, 2013). It is a much needed identification tool especially for the newly defined genera that are often morphologically heterogeneous. It is a first ‘roll of the dice’ with the aim of achieving perfection over the years. This work includes a useful glossary for botanical terms specific to Gesneriaceae.

At the end is a checklist of all names with synonyms and illegitimate names for the New World taxa compiled by Clark *et al.* (this issue). The list is based on the World Checklist of Gesneriaceae that was until recently hosted at the Smithsonian Institution’s National Museum of Natural History and maintained by John Boggan and Larry Skog. In the near future the data will be housed at the Royal Botanic Garden Edinburgh as the RBGE Gesneriaceae Resource Centre.

The contribution by Nishii *et al.* (this issue) falls in the area of evolutionary development, or colloquially termed Evo-Devo, and is focussed on hormonal crosstalks in the meristem establishment and regulation in the African and Madagascan genus *Streptocarpus*. It enriches the special issue with a summary of studies on anisocotly, a feature that has baffled botanists and scientists since it was first observed and reported by Crocker in 1861[“1860”]. Here, the interplay of hormones and three meristems in a seedling is the underlying

mechanism by which anisocotly is regulated and the great morphological diversity found in *Streptocarpus* is achieved.

Two genera are disproportionately represented among the taxonomic contributions, *Henckelia* and *Didymocarpus*. Perhaps not surprising since these are, with *Aeschynanthus*, the largest genera in India, though not all contributions stem from this area, but also cover China, Nepal and Vietnam, illustrating the wide interest in the family in this geographic area.

The first is a revision of South Indian *Henckelia* by Janeesha and Nampy (this issue). It represents an important milestone in the taxonomy of this group of plants that have rather unique morphological features separating them from the other Indian taxa in the genus that are only shared with Sri Lankan taxa. The authors recognize and describe in detail fifteen species, including a new taxa.

Kanthraj *et al.* (this issue) add another species to genus *Henckelia* this time from Northeast India, bringing the total number of species to 71 species, and 37 in India at this point in time. However, these are likely to increase with an intensification of research and fieldwork not only in India but also in China, Myanmar and Thailand, where the genus has its centre of diversification. *Henckelia* is morphologically highly diverse (Weber *et al.*, 2011a; Möller *et al.*, 2017). To fully understand the evolution of the genus, it would be highly desirable to study the species in a concerted effort across its distribution range.

In another article, Bui *et al.* (this issue) report on a new record for a *Henckelia* species in Vietnam, *H. longisepala*. This finding results in changing the local conservation assessment status for the species from Critical (CR) (Yang *et al.*, 2014) and its listing as 'Plant Species with Extremely Small Populations (PSESP) at regional level in China, to Least Concern (LC) at global level.

There are several Gesneriaceae species sharing a distribution in Vietnam and China, such as *H. grandifolia* or *Didymocarpus purpureobracteatus* and

others. It is interesting that in another such instance, the apparently widespread species was found to be artificial, and in fact represented two species; in this case, the potential for molecular phylogenetic studies in supporting taxonomic decisions based on morphology was demonstrated in this study (Möller *et al.*, this issue) that used molecular data to confirm the split between material of *D. minutihamata* (Vietnam) and *D. cicatricosa* (China), that was previously proposed on morphology alone (Möller *et al.*, 2016).

Two of the three contributions dealing with *Didymocarpus* describe new species, one from Nepal (Adhikari & Möller, this issue), and one from China and India (Prasanna *et al.*, this issue). The second is a particularly interesting case of species with disjunct distribution, here described from western South China (Tengchung) and Northeast India (Nagaland), with Burma in the middle unexplored but surely harbouring this species too. The case is particularly interesting since two research teams collected and described the species independently in China and India. Only after submission to this issue it became apparent that the teams dealt with the same species and consequently joint their efforts and collaborated on the protolog. This is an excellent example of efficient cross-border taxonomy, a blueprint for future cases.

The other newly described *Didymocarpus* species from eastern Nepal is found allied to *D. cinereus* by Adhikari and Möller (this issue) but has clear morphological differences. These species are part of a group of species sharing similar morphologies, such as *D. albicalyx*, *D. aromaticus*, *D. oblongus*, *D. pedicellatus*, and *D. villosus*.

This is interesting since in another article Pandey *et al.* (this issue) report on new geographic records and rediscoveries of *Didymocarpus* species in India with strong link to those in Nepal. The authors give a first record for *D. cinereus* in Arunachal Pradesh, greatly extending the range of this species.

Another new record for India concerns the genus *Leptoboaea*. Until recently, the Nicobar and

Andaman Islands harboured 8 species in 5 genera of Gesneriaceae. The report of the *Leptoboea* taxon increases this tally to 9 and 6 respectively (Alappatt, this issue). It is an interesting group of island since it is situated between two major biodiversity hotspots, the Indian subcontinent and the Malaysian-Indonesian region (Malesia). As a consequence it contains floristic elements of the Indian, Myanmarese, Thai, and Malesian floras (Balakrishnan & Ellis, 1996).

China has one of the most diverse Old World Gesneriaceae flora (Möller, 2019) and for this issue Li *et al.* (this issue) describe a new species of *Petrocodon*. This genus has undergone a recent expansion in species number that greatly widened its morphological circumscription (Weber *et al.*, 2011b; Wen *et al.*, 2019). A new characteristic recently introduced in the genus was tetrandry, the presence of four fertile stamens, whereas before the genus only included species with 2 or 5 stamens. The new species here is diandrous.

In the one contribution covering Indonesia, Smith *et al.* (this issue) describe a new species of *Cyrtandra*. This is the most speciose genus in the family with over 800 species (Atkins *et al.*, 2013). The new species has a deep red corolla colour which is relatively rare in the genus.

For 21 species covered in the special issue, IUCN conservation assessments were provided, and for 5 of them DD was recorded suggesting that more fieldwork needs to be undertaken. The other assessments proposed categories from NT to CR as the most serious assessment for the South Indian species *Henckelia pradeepiana*, *H. wayanadensis*, and *H. wightii*. The latter being on the brink of extinction. Apart from these species, overall the assessments suggests a relatively low threat of extinction for most species covered here.

Some contributions on newly described species highlighting the need for an accelerated effort to catalogue the extant biodiversity before they become extinct. The South Indian *Henckelia wightii* might be such an example. Of particular interest is

the case of the disjunct distribution is a new *Didymocarpus* species, here described from western S China (Tengchung) and eastern N India (Prasanna *et al.*, this issue), with Burma in the middle unexplored but surely harbouring this species too. This case perhaps highlights the notion that not all species reportedly found only at the type locality, as often happens, and are sometimes distributed over larger areas perhaps across political borders. This highlights the need for collaboration, to make best use of resources to record our biodiversity particularly considering the impact of anthropogenic and climate change pressures on biodiversity loss.

This special Gesneriaceae issue illustrates may reflect an interest in the family that is increasing rather than diminishing and can be quantified for example by numbers for China where over the last 10 years, more than 60 authors have been involved in the description of new species alone, and an average of 17 new species being described each year.

We like to thank all colleagues who contributed to the issue, be it as authors or reviewers, or both. External reviewers in particular we like to thank for their time spent and the quality of their reviews:

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possible to get the issue completed and enabled its publication possible under very difficult conditions in these unprecedented and trying times.

Overall for us it was an interesting experience editing this special issue not just because of interfering global issues, but to see a small community of authors pulling together to create this issue but also to see the excellent and tight collaboration between authors here developing which bodes well for the future.

Thank you

Michael Möller & Santhosh Nampy

The Editors, Gesneriaceae Special issue

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