Volume 96
Number 1
2009

Annals of the Missouri Botanical Garden

THIRD INTERNATIONAL RUBIACEAE CONFERENCE: INTRODUCTION[1]

Petra De Block,[2] *Charlotte M. Taylor,*[3] *and Suzy Huysmans*[4]

The family Rubiaceae is the fourth largest family of flowering plants in terms of the number of species known, with worldwide distribution, but most of its diversity is concentrated in the highly threatened and rapidly disappearing moist ecosystems of tropical and subtropical regions. Rubiaceae are badly in need of study by systematists, ecologists, and conservationists at a basic level, and their important role in these tropical ecosystems together with the active threat to the existence of so many species adds urgency to this work. The pace and intensity of this research are significantly increased by conferences specifically targeting this family.

The First International Rubiaceae Conference, held at the Missouri Botanical Garden in St. Louis in 1993, brought together students of Paleotropical and Neotropical groups for the first time; selected proceedings were published in 1995 in the *Annals of the Missouri Botanical Garden* (volume 82, issue 3, pp. 355–439). The Second International Rubiaceae Conference, held at the National Botanic Garden of Belgium in Meise in 1995, focused on Rubiaceae as part of the Gentianales (then a fairly new consensus classification for the family) and delimitation of subfamilies and problematic tribal and generic complexes; the full proceedings were published in 1996 in *Opera Botanica Belgica* (volume 7, pp. 1–432). For more than 10 years after that, no meeting was held until 2005, when a half-day symposium focused on Rubiaceae during the XVII International Botanical Congress in Vienna (no proceedings were published). This symposium clearly showed interest in and need for a longer meeting.

The Third International Rubiaceae Conference was subsequently co-organized by the Katholieke Uni-

[1] The editors of these proceedings express their gratitude to Victoria C. Hollowell, scientific editor and head of Missouri Botanical Garden Press; Beth Parada, managing editor; and Allison Brock, associate editor, for their collaboration in publishing the proceedings of the Third International Rubiaceae Conference in the *Annals of the Missouri Botanical Garden*. We thank additional members of the organizing and scientific committees for their help in organizing a successful conference: Birgitta Bremer, Helga Ochoterena, Elmar Robbrecht, Erik Smets, and Steven Dessein. The National Botanic Garden of Belgium is acknowledged for publishing the Programme and Abstracts book (Scripta Bot. Belg. 40). We thank the staff and students of the Laboratory of Plant Systematics, Katholieke Universiteit Leuven, for their enthusiastic assistance and hospitality during the conference. We are grateful to the authors and reviewers for their help in getting the papers in this volume published and acknowledge the following organizations for sponsoring the Third International Rubiaceae Conference: Research Foundation–Flanders (FWO), the Systematics Association, the National Botanic Garden of Belgium, Easyware Leuven, and the National Lottery Belgium.

[2] National Botanic Garden of Belgium, Domein van Bouchout BE-1860 Meise, Belgium. deblock@br.fgov.be.

[3] Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166, U.S.A. charlotte.taylor@mobot.org.

[4] Laboratory of Plant Systematics, Katholieke Universiteit Leuven, Kasteelpark Arenberg 31, P.O. Box 2437, BE-3001 Leuven, Belgium. suzy.huysmans@bio.kuleuven.be.

doi: 10.3417/2008118

versiteit Leuven and the National Botanic Garden of Belgium from 18 to 21 September 2006 (De Block et al., 2006) and held in Leuven. The conference aimed to provide a forum for all Rubiaceae and Gentianales researchers to present results achieved in the decade since the second conference, and a venue for discussions and networking. Six themes were scheduled: systematics at the family level, systematics at the subfamily and tribal level, biogeography of Rubiaceae, studies of other members of the Gentianales and the order as a whole, studies of particular genera, and Rubiaceae checklists. In addition, two keynote lectures reviewed very different but interconnected subjects. The present volume groups the two keynote lectures and 10 other presentations from this congress.

From the first keynote lecture (in order of presentation at the congress), Graham reviews the fossil record for Rubiaceae in detail, covering fossils of 125 taxa attributed to the family from deposits as old as the Late Cretaceous and Paleocene; this review concludes that the oldest "dependable" fossils (i.e., those useful for dating phylogenies) are from the middle and late Eocene and represent *Emmenopterys* Oliv., *Faramea* Aubl., *Guettarda* L., and *Canthium* Lam. From the other keynote lecture, Bremer here gives a historical overview of 15 years of molecular phylogenetic studies of Rubiaceae, covering a period that saw tremendous advances in our understanding of the phylogeny of the family.

The sessions addressing studies of the family, tribal, and genus levels were dominated by molecular contributions, but did include a few studies of morphological and chemical characters. This reflects the general recent trend in systematic work, lamented by some and applauded by others. This trend is clearly evident in the present volume, which includes nine papers from these sessions.

Addressing the tribal level, Razafimandimbison et al. provide new insights into the phylogeny of the large Paleotropical tribe Vanguerieae. Focusing on the dioecious taxa within this tribe, their results point to a single origin of functional dioecy from hermaphroditism followed by subsequent reversals back to the hermaphroditic condition in certain genera. Here also, Cortés-B. et al. confirm the monophyly of the Neotropical genus *Retiniphyllum* Bonpl., its placement in the monotypic tribe Retiniphylleae, and that this tribe is sister to the core members of subfamily Ixoroideae (i.e., tribes Coffeeae, Gardenieae, Ixoreae, Octotropideae, Pavetteae, and Vanguerieae). Also, Delprete discusses the taxonomic history, phylogenetic evidence, and reproductive biology of the Neotropical tribe Posoquerieae, and cites their unusual pollen catapult mechanism as the characteristic feature of both genera of this recently described tribe.

Addressing problems originally confined within tribes but that finally require tribal readjustments, Mouly et al. present a molecular phylogenetic analysis of the species-rich pantropical genus *Ixora* L., which they show to be polyphyletic. Broadening the circumscription of *Ixora* accordingly to encompass additional species also necessitates a redelimitation of the tribe Ixoreae, for which these authors adopt a narrow circumscription and describe two new tribes, Aleisantheae of Indomalaysia and Greeneeae of Southeast Asia. Also, Rova et al. present a molecular phylogeny of the large, morphologically variable Neotropical genus *Rondeletia* L., which they show to be polyphyletic. Delimiting monophyletic groups within this traditionally circumscribed genus leads the authors to divide *Rondeletia* s.l. and propose new delimitations of the tribes Rondeletieae and Guettardeae.

Considering problems that lie within tribes, Groeninckx et al. address the phylogenetic relationships within the herbaceous tribe Spermacoceae s.l. based on a broad sampling across the major lineages of this tribe. Along with some delimitations of problematic groups for future study, these authors stress the need for morphological data to support clades and relationships found in molecular analyses. Here also, Martínez-Cabrera et al. document the variation in leaf and petiole anatomical characters and evaluate their phylogenetic value within the Neotropical tribe Hamelieae.

Considering individual genera, Tosh et al. present a phylogenetic study of the Afro-Malagasy genus *Tricalysia* A. Rich. (Coffeeae) and conclude that its subgenus *Tricalysia* and subgenus *Empogona* (Hook. f.) Robbrecht do not form a monophyletic clade, leading them to restrict the genus circumscription to subgenus *Tricalysia* and return subgenus *Empogona* to generic rank. Here also, Cabral presents a revision of the Neotropical genus *Galianthe* Griseb., which comprises 39 species in two sections, with section *Laxae* E. L. Cabral newly described here.

Last but not least, Davis et al. analyze several aspects of the data available in the Royal Botanic Gardens, Kew World Checklist of Rubiaceae (<http://apps.kew.org/wcsp//home.do>). Many workers worldwide, both Rubiaceae specialists and others, regularly use this database for inquiries of synonymy, correct spelling, correct authorship, and place of publication of Rubiaceae names. However, the data compiled here also address distribution, diversity, and endemism of Rubiaceae and show the taxonomic efforts in this family. A notable analysis presented here shows that the number of new Rubiaceae species described each

year oscillates, but has not decreased markedly in recent years. Clearly, much remains to be discovered. Given the threat to many if not most of the species of Rubiaceae by destruction of their habitat, there is no time to waste filling in the gaps in our knowledge of this family. We are called upon to continue and, if possible, intensify our efforts to study the Rubiaceae, and to develop strong collaborations amongst ourselves as well as with specialists of other disciplines to preserve as much Rubiaceae diversity as possible.

Literature Cited

De Block, P., S. Dessein & E. Robbrecht (editors). 2006. Third International Rubiaceae Conference, Programme and Abstracts. Scripta Bot. Belg. 40: 1–92.