
INTRODUCTION

EVOLUTION, BIOGEOGRAPHY AND SYSTEMATICS OF THE *APIALES* (*ARALIACEAE* AND *APIACEAE*)

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The family *Apiaceae* (*Umbelliferae*) can be credited with two major landmarks in botanical history: the first systematic monographic treatment of any plant group (Morison, 1672), and the first international symposium dedicated to systematic research on a plant family (Heywood, 1971). The 1970 symposium on the *Biology and Chemistry of the Umbelliferae* held at the University of Reading, UK, resulted from the large body of research interest in the family around the world at that time, and helped to stimulate further work on the *Apiaceae*. It also provided a model for similar symposia on major plant groups in the years to follow, including *Asteraceae* (Heywood *et al.*, 1977), *Brassicaceae* (Vaughan *et al.*, 1976), *Lamiaceae* (Harley & Reynolds, 1992), *Solanaceae* (Hawkes *et al.*, 1979), and *Fabaceae* (Summerfield & Bunting, 1980; Polhill & Raven, 1981). Growing interest in umbellifers soon resulted in a second international symposium on the family held at the Centre Universitaire de Perpignan, France, in 1977 (Cauwet-Marc & Carbonnier, 1982). Although a large role of this second symposium was to review progress on a major co-operative research programme focused mainly on the tribe *Caucalideae*, participants with other interests were also involved, and wider developments in the systematics of the family were discussed.

More than two decades have elapsed since the closing of the second international symposium at Perpignan. Despite the progress made then, many major questions on the evolution and systematics of one of the largest and best-known families of angiosperms were left unanswered. In the following years the widespread application of objective methods of analysis based on characters from varied sources (e.g. morphological, anatomical and molecular data) has led to many advances in our understanding of this previously intractable group. Prime among these are the appreciation that *Apiaceae* cannot be properly understood apart from its 'sister' family *Araliaceae* (together comprising the order *Apiales*; Cronquist, 1988), and that the traditional suprageneric classification of both *Apiaceae* (based on Drude, 1898) and *Araliaceae*

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(based on Harms, 1897) are in urgent need of drastic revision. These provided the impulse for a General Symposium on the *Evolution, Biogeography and Systematics of Apiales (Araliaceae and Apiaceae)* at the XVIth International Botanical Congress, St Louis, USA. The symposium was co-organized and chaired by G. M. Plunkett and M. F. Watson, and held on 3 August 1999.

The following papers are derived from the oral and poster contributions presented at the *Apiales* general symposium, at other symposia, and during the poster sessions. Topics range from broad phylogenetic studies of the entire order (Henwood & Hart; Lowry *et al.*; Plunkett), to studies of specific families or subfamilies (Downie *et al.*; Watson*), tribes or groups of genera (Costello & Motley; Oskolski; Schlessman *et al.*; Spalik *et al.*; Wen; Van Wyk), or individual genera (Gitzendanner & Soltis; Ackerfield). Approaches varied from cladistic analysis of morphological and anatomical data (Henwood & Hart; Lowry *et al.*; Oskolski; Plunkett; Van Wyk.), or molecular data (Costello & Motley; Downie *et al.*; Gitzendanner & Soltis; Wen; Lowry *et al.*; Plunkett), to monographic and floristic studies (Ackerfield; Watson*). Those who made oral presentations at the congress have contributed the longer papers to this 'proceedings' publication, whereas the poster contributions are represented as shorter communications. Nearly all relevant presentations made at the congress are represented in this volume, with the notable exception of Vargas's poster on *Hedera*, which is published elsewhere (Vargas *et al.*, 1999). Eight additional abstracts for posters dealing with the *Apiaceae* were published in the *XVIth International Botanical Congress Book of Abstracts* (published in printed and CD-ROM format) but unfortunately the authors (who are all from Asian institutions) could not attend the meetings to present their posters. These abstracts further emphasize the current depth and breadth of umbellifer research as the topics covered embraced systematic serology, phenology, cytology, fruit and leaf anatomy, molecular data, and the use of databases for summarizing Asian umbellifer biodiversity. The contribution made by each adds greatly to the knowledge of *Apiaceae* evolution, biogeography, and systematics. Space limitations, however, preclude us from including these studies herein (for further information see poster numbers 327, 328, 329, 330, 331, 332, 333 and 2548 in the book of abstracts).

The goal of the *Apiales* General Symposium was to rekindle international interest in this intriguing but difficult group of plants. The organizers were delighted with the good attendance of the symposium, which brought together researchers young and old. In fact, today's slick modes of communication have facilitated remote collaboration to such an extent that for many long-term 'e-correspondents' this was the first time they had met each other face to face. It proved to be a very stimulating meeting, covering a wide range of topics and generating many fruitful debates. Some of these took place during the symposium itself, but discussions bubbled on in the poster sessions, in hallways and coffee lounges, over evening meals and in local bars.

* Because of space limitations, this paper has been deferred to the next issue. See:

Watson, M. F. (2001). The contribution of floristic and monographic studies to a comprehensive world umbellifer data set. *Edinb. J. Bot.* 58 (3): 1–14.

Old alliances were cemented and new collaborations born. We are greatly encouraged by the enthusiasm shown both at the meeting and in correspondence following on from it. One result is this publication, and another is the plan for a major international conference on *Apiales* to be held soon in Pretoria, South Africa. We hope that this publication does justice to the vitality of the St Louis meeting and will continue the high standards set by the now classic volumes of the previous two umbellifer symposia.

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