

**Zeitschrift:** Archives des sciences [2004-ff.]  
**Herausgeber:** Société de Physique et d'histoire Naturelle de Genève  
**Band:** 66 (2013)  
**Heft:** 1

**Artikel:** Laudatio of Alison M. R. Davies : winner of the de Candolle SPHN prize 2012  
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**DOI:** <https://doi.org/10.5169/seals-738475>

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# Laudatio of Alison M. R. Davies

## winner of the De Candolle SPHN prize 2012

Alain CHAUTEMS<sup>1</sup>

Dr. Alison Davies is a well-travelled person and early on she was well aware of the natural environment through her five senses. She was born in Belize (1973) and her earliest memory is the sound of palm leaves rattling in the on-shore breeze. Her early childhood was spent in Belize City, Belize. Then she lived for some 4 years in Mogadishu (Somalia) [1976 – 1980] where she remembers the sand, the camels, the donkey carts piled high to the sky with dried grass, and the coconut tree in the kindergarten. From 1980 – 1989 she lived in Rome (Italy), where her family lived at the top of a villa, level with upper branches of umbrella pines and next to a remnant of cork oak forest. Warm days arrived when the hoopoes and the bee orchids (*Ophrys apifera*) appeared, and autumn was on its way when the Fungi hunters came out in force. She went then to British boarding school in England for two years, then on to University in Edinburgh. The family home was in North Wales. Her interest in botany was more a background than a hobby, largely due to her mother, who would always name any plant encountered on walks by their Latin names as well.

### Academic career

In 1995, she earned a Bachelor degree at the University of Edinburgh, UK after completing a dissertation on “Taxonomic revision of *Avenula* (Gramineae)”, for which she was awarded the Dobbie Smith Prize. In 1997, the Universities of Reading & Birmingham, UK conferred her with an MPhil. Botanical Diversity: Classification, Conservation & Management. “A study of the effects of lightning-strike fire on the subtropical broadleaf rainforest of Belize (Central America)”, was supervised by Dr. D. Sutton (Natural History Museum, London) – and included a 3 months stay at the Las Cuevas Field Station in Belize. The



thesis project “Phenetic and Phylogenetic Analyses of the genus *Cicer* L.” was supervised by Dr. N. Maxted (Birmingham University). She moved to Munich, Germany, after getting married in 1998. She had the opportunity to start a PhD project in 2001 with Prof. Jürke Grau as principal advisor at the Ludwig-Maximilians Universität (LMU)/ Bayerische Botanische Staatssammlung/Munich Botanical Gardens. The project resulted in the monograph entitled “*The systematic revision of Chaetanthera Ruiz & Pav. and the reinstatement of Oriastrum Poepp. & Endl. (Asteraceae: Mutisieae)*”. The research was funded in part by holding down a part-time position at the National Bavarian Natural History Collections in the herbarium. She worked with the Asteraceae collection, creating one of the first digital imaging archives for Type material (and laterly with the

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African Plants Initiative funded by Mellon Foundation). She successfully defended her dissertation in 2010 “magna cum laude” at the Ludwig-Maximilians Universität (LMU), Munich, Germany.

### Field experience:

Alison’s 10 years of field experiences have taken her all over the world: from the lonely Ural Mountains in western Siberia to the heartland of crop evolution in Turkey, from the wet and windy summits of the Scottish Cairngorms to the subtropical rainforests of Central America. She has also seen firsthand the similarities between the mediterranean and the high elevation floras along the Pacific Rim in both North and South America.

### DC Prize

When A.-P. De Candolle created this prize in 1841, he intended it to serve as an encouragement to scientists at the start of their career, when support from a research institution is not always granted. This was the case with Alison: without receiving a research grant or occupying a fully paid position, she was able to complete her PhD and concomitantly gave birth to three children and raise them with great care. She has worked as a free-lance scientist, with some activities such as teaching or scientific assistant in the herbarium in Munich as well as doing proof-reading and translation of biological texts and manuscripts from German to English.

Dr. Davies, monograph met all the criteria adopted by the scientific committee of the DC Prize. Most of the possible approaches or techniques were used with detailed observation on morphology of habit, leaves and inflorescences, including anatomical data, pollen and chromosome studies. Some of these data were

analyzed with statistical methods (e.g. multivariate analysis). She was able to make two field trips in Chile and was able document at least 10 species. Morphological aspects are discussed in the context of their habitat and functional adaptation. Complete geographic distributions of the taxa are established. An excellent taxonomic treatment is included with all the usual items like nomenclatural data (names, synonymies, types), identification keys, descriptions, list of herbaria specimens examined, and illustrations, varying from excellent pictures, maps and drawings.

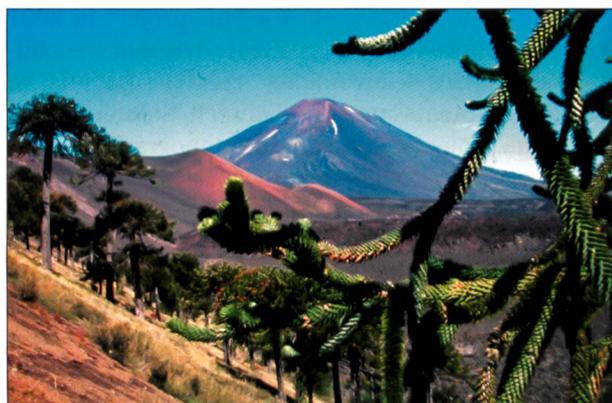
Among all the monographs received for the 2012 edition of the DC Prize, her work was selected as the best for combining many approaches and analyzing them in a biogeographic and evolutionary context. All the data are clearly and nicely presented and illustrated. The taxonomic conclusions are solid with a thorough discussion of the significance of the observed variation between and within the species.

Sometimes in 2007, Alison contacted me by email and inquired about the DC Prize. Her work was not ready for submitting for the 2008 edition of the Prize, but was well received for the 2012 edition. It is a great pleasure to award Dr. Davies fundamental with this Prize and to see that A.-P. de Candolle remains a reference for the modern taxonomists and that his heritage is still alive.

Dr. Alison Davies presented her work to the Société de Physique et d’Histoire Naturelle de Genève with a lively talk entitled “Hairy Anthers & Mountain Stars: the speciation of Andean Asteraceae as a response to geological and climate change.”

### Monograph abstract

*Chaetanthera* Ruiz & Pav. (30 species, 1 variety, 2 hybrid forms) and *Oriastrum* Poepp. & Endl. (18 species, 1 variety) are among the most species-rich Asteraceae genera of the Chilean Flora. Formerly combined under one name, the two genera have been extensively revised. *Chaetanthera* is found mainly in Chile, with one Peruvian species and several scattered populations of other species in Andean Argentina. *Oriastrum* inhabits the higher elevations of the Andes, spread over Chile, Argentina, Bolivia and Peru. Systematic studies focussing on morphological and anatomical variation of characters taken from habit, involucre bracts, and achenes, combined with published palynological and genetic (nr DNA) information are used to circumscribe *Chaetanthera* with two subgenera – *Chaetanthera* subgenus *Chaetanthera* and *Chaetanthera* subgenus *Tylloma* (D. Don) Less., and reinstate *Oriastrum* with two subgenera – *Oriastrum* sub-



Volcán Lonquimay and Araucaria woodland, Chile. February 2002.



Linking the past with the present. Botanists have recognized the variation in the *Chaetanthera* subgenus *Tylloma* group of Chilean taxa for nearly 200 years. Modern analysis has enabled the complexities of this group to be revealed. **A.** An image of nomenclatural type material held in Geneva of *Tylloma glabratum* DC. Collected in Chile by Macrae in 1825 and annotated by A.-P. De Candolle himself, who described it as a new species in 1838. **B.** A closely related species, *C. limbata*, first described in 1830. Here it is, photographed in La Silla, Coquimbo. **C.** A species new to science - *C. pubescens*. **D.** *C. frayjorgensis*, a new name for a commonly collected plant.

genus *Oriastrum* and *Oriastrum* subgenus *Egania* (J. Rémy) A.M.R. Davies. Character variation is discussed in the context of form, function and habitat, with emphasis on the evolutionary adaptiveness of character traits seen in the two allied genera. *Chaetanthera* appears to show primary adaptation to cold and several secondary adaptations to arid conditions, typical of modern Chilean landscapes. *Oriastrum* taxa appear well-adapted to the cold, high elevations of the Andes, and show secondary developments trending towards an insular syndrome. The collated bio-geographical information of the taxa is considered in terms of endemism, hotspots and species radiations. *Chaetanthera* taxa have 2 loci of diversity hotspots in Chile – in Coquimbo and in Santiago. Trichome diversity and capitula morphology trends are used as evidence of species radiations in *Chaetanthera*. *Oriastrum* taxa are notable for parallel radiations of morphologically similar species within particular Andean zones: i.e., Altoandino or Altiplano. Case studies concerning three groups of *Chaetanthera* taxa are presented. The first case highlights the

effect of the El Niño on the polymorphic *C. glabrata* along the Chilean Pacific coast. The second case deals with current active hybridisation between *C. linearis* and *C. albiflora* in the semi-arid Andean foothills. In the last example, incipient speciation and polymorphism between *C. chilensis* and *C. elegans* in southern Central Chile is discussed. Various statistical techniques for the analysis of hybridisation events are applied. All taxa are keyed out and described. Novel taxa are described and imaged or illustrated. Nomenclatural issues and lectotypification of 15 *Chaetanthera* names and 6 *Oriastrum* names are effected. *Chaetanthera* is described here with one novel species (*C. pubescens* A.M.R. Davies), one novel variety (*C. glandulosa* var. *glanditidis* A.M.R. Davies), a new name (*C. frayjorgensis* A.M.R. Davies), and three new combinations: *C. albiflora* (Phil.) A.M.R. Davies, *C. depauperata* (Hook. & Arn.) A.M.R. Davies, *C. taltalensis* (Cabrera) A.M.R. Davies. *Oriastrum* is described here with four new species and one new variety: *O. werdermannii* A.M.R. Davies, *O. famatinae* A.M.R. Davies,



The genus *Oriastrum* is found in the mid- to high elevation southern Andes, often scattered in remote locations. Thanks to the generosity of numerous photographers this research was able to use superb images of species to further understand the variation and evolution in these high-elevation dwarf Asteraceae from the Chilean and Argentinian Andes. **A.** *O. gnaphalioides* (Paso Agua Negra, Coquimbo). **B.** *O. abbreviatum* (Calchaquies, Tucumán, Argentina). **C.** *O. lycopodioides* (Valle Nevado, Santiago). **D.** *O. revolutum* (Paso de Jama, Antofagasta).

*O. tarapacensis* A.M.R. Davies, *O. tontalensis* A.M.R. Davies and *O. stuebelii* var. *cryptum* A.M.R. Davies respectively. Five novel combinations are presented: *O. abbreviatum* (Cabrera) A.M.R. Davies, *O. achenohirsutum* (Tombesi) A.M.R. Davies, *O. apiculatum* (J.Rémy) A.M.R. Davies, *O. revolutum* (Phil.) A.M.R. Davies and *O. stuebelii* (Hieron.) A.M.R. Davies var. *stuebelii*.

### Acknowledgements

Special mention goes to the following for allowing the use of their images - Thank you!: Michail Belov ([www.chileflora.com](http://www.chileflora.com)), Mauricio Bonifacino, Iréne Till-Bottraud (whose photos were taken on projects sponsored by grants from FONDECYT 1020956 and 7020956, and Ecos-France-Chile C01B03), Michael Dillon, María Terese Eyzaguirre (Fundación Philippi), Jürke Grau, Michel Grenon, Stephan Halloy, Mark Hershkovitz, Patricio Novoa (Jardín Botánico Nacional Viña del Mar), Campbell Stephenson, Mauricio Zuñiga.