

ECOLOGY AND POPULATION DYNAMICS OF TERRESTRIAL ORCHIDS: AN INTRODUCTION

Orchidaceae with approximately 18,500 species (DRESSLER 1981) is considered as one of the largest families in the plant kingdom. From an ecological perspective, orchids are interesting because of their complex life cycle, involving among others a vast array of pollination mechanisms and ubiquitous yet poorly understood interactions with mycorrhiza. It is therefore not surprising that they receive a large amount of attention. Orchids are also important from a biodiversity perspective because of the extremely large variety of life strategies among the species. They contribute large amounts of biodiversity to many ecosystems and many species are recognized to be threatened or endangered. Although most orchids occur in the tropics as epiphytes, terrestrial species are widespread from the subtropics to the arctic and they occur on all landmasses.

In 1990, a series of workshops was initiated to bring together both the scientific information on aspects of orchid biology and conservation, and the experts who have assembled it, and to discuss future research, management and conservation of orchids. To date, three workshops have been held, in 1990, 2001 and 2004, and the scientific information presented at these meetings has been published in WELLS & WILLEMS (1991) and KINDLMANN et al. (2002). Two other recent milestones in understanding the ecology and conservation of orchids were the First Orchid Conservation Congress – Perth 2001, and a volume of papers written by experts on a variety of topics relevant to orchid conservation (DIXON et al. 2003). The set of papers assembled here presents results from the most recent International Orchid Workshop, which was held in 2004 in Haapsalu, Estonia. A wide range of topics on orchid biology was addressed.

The contributions in this special issue are devoted to three general themes of the papers, which we consider to belong among the critical issues in contemporary orchid biology. Pfeifer & Jetsche and Pellegrino et al. studied genetic diversity and gene flow in orchids using AFLP markers and microsatellites. Three papers (Cintron-Berdecía & Tremblay, Jersáková et al. and Kindlmann & Jersáková) were devoted to another important topic, pollination ecology. Finally, population ecology was represented by three papers, authored by Shefferson et al., Light & MacConaill and by Rivera Gómez et al. Each of these eight papers contributes to our understanding of orchid biology, evolution of their life histories and/or population dynamics.

We hope that studies like the ones reported in this special issue and other papers from the Haapsalu workshop that will be published in *Biological Conservation* will contribute to the preservation of orchids, which are not only flagship species for nature conservation organizations, but also are indicative of environmental qualities. We also hope that the studies of individual species such as those presented here will encourage future investigations of the ecology of this fascinating group of plants, with a long-term goal of compiling much needed

global information that will be needed to assist in future conservation efforts. As additional information on the ecology of orchids is obtained, it is also our hope that there will be opportunities to examine broader issues related to evolution of orchids and other organisms that they depend on as well as provide resources for.

REFERENCES

- DRESSLER R. (1981): *The orchids – natural history and classification*. Harvard University Press, Cambridge.
- DIXON K.W., KELL S.P., BARRETT R.L. & CRIBB P.J. (2003): *Orchid conservation*. Natural History Publications, Kota Kinahalu.
- KINDLMANN P., WILLEMS J.H. & WHIGHAM D.F. (2002): *Trends and fluctuations and underlying mechanisms in terrestrial orchid populations*. Backhuys Publishers, Leiden.
- WELLS T.C.E. & WILLEMS J.H. (1991): *Population ecology of terrestrial orchids*. SPB Academic Publishing, The Hague.

Pavel Kindlmann^{1,2)}, Tiiu Kull³⁾, Dennis Whigham⁴⁾ & Jo Willems⁵⁾

1) *Department of Theoretical Ecology, Institute of Systems Biology and Ecology AS CR and Faculty of Biological Sciences, University of South Bohemia, Branišovská 31, CZ-370 05 České Budějovice, Czech Republic*

2) *Agrocampus Rennes, 65 rue de St. Brieuc, F-35042 Rennes Cedex, France*

3) *Institute of Zoology and Botany, Estonian Agricultural University, Riia 181, Tartu 51014, Estonia*

4) *Smithsonian Environmental Research Center, PO Box 28, Edgewater, Maryland 21037, USA*

5) *Department of Plant Biology, University of Utrecht, P.B. 800.84, NL-3508 TB Utrecht, The Netherlands*