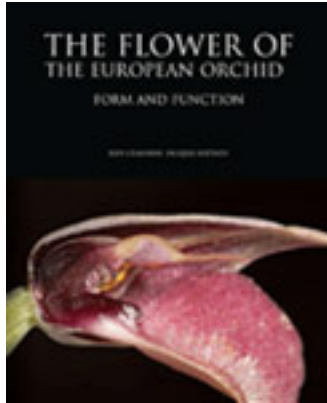


Claessens, J. and Kleynen, J. 2011. *The Flower of the European Orchid. Form and Function*. Published by Jean Claessens and Jacques Kleynen. 439 pp. + 829 colour photos + 106 microscopic sections + 125 SEM photos. ISBN/EAN 978-90-9025556-9. EUR 72.50 (to order this book, visit www.europeanorchids.com).



When introducing his legendary work -- *On the Various Contrivances by which British and Foreign Orchids are Fertilised by Insects, and on the Good Effects of Intercrossing* -- Charles Darwin, in 1862, made the following statement: "I have been led to publish this little treatise separately, as it has become inconveniently large to be incorporated with the rest of the discussion on the same subject. And I have thought, that, as Orchids are universally acknowledged to rank amongst the most singular and most modified forms in the vegetable kingdom, the facts to be presently given might lead some observers to look more curiously into the habits of our several native species. An examination of their many beautiful contrivances will exalt the whole vegetable kingdom in most persons' estimation. I fear, however, that the necessary details will be too minute and complex for any one who has not a strong taste for Natural History". I am convinced that, if Darwin had been given the chance to see *The Flower of the European Orchid. Form and Function*, he would have been exalted by Claessens and Kleynen's curious scrutiny of the floral adaptations of native European orchids -- and especially by how conspicuously the authors have managed to expose the minute and complex details by means of macrophotography.

The Flower of the European Orchid is a hard-covered volume in large format and jacket, and with high-quality print. Following a foreword by Richard Bateman, a

preface and acknowledgements, the book continues with a "General account" (c. 25 pages) and a "Systematic account" (c. 330 pages). The "General account" includes a section on "Orchid biology", outlining the form and function of both vegetative and floral organs, and a section on "Pollination biology" that introduces the main concepts relating to both allogamic and autogamic modes of reproduction. The entire "General account" is thoroughly illustrated by macrophotos where lettering often usefully indicates specific details. Apart from brief introductory sections on systematics, histology/microscopy, and palynology (presenting adopted standards and methods), the "Systematic account" consists of 30 sections dealing with individual genera -- all delimited according to *Genera Orchidacearum*. Each genus account starts with a thorough morphological description that also includes information on chromosome numbers and geographic distribution. This is followed by subsections on "Morphological adaptations", "Pollination" and "Observations", to be completed by a few literature references under the heading "Further reading". All generic accounts are illustrated by macrophotos, microscopic sections, and SEM photos.

The scientific core of this volume is the thorough descriptions and photographic documentation of the morphological adaptations of European orchid flowers to their individual insect pollinators or to their specific mechanisms of self-pollination. A multitude of such adaptations are explained and demonstrated in the generic accounts. In most cases, they have already been described by earlier authors. But for the first time the very diverse and scattered literature is thoroughly reviewed (a few, significantly less exhaustive reviews by other authors do exist). Furthermore, in several cases the macrophotos provided by Claessens and Kleynen represent the first photographic documentation of observations previously reported by others. On top of this, the observations and superb macrophotos of the present authors give testimony to previously unrecognized (or widely questioned) orchid/pollinator interactions. In this context, I particularly wish to emphasize Claessens and Kleynen's original observations documenting the existence of both consistently autogamous and partially allogamous populations of *Limodorum abortivum*, bumblebee pollination in *Epipogium aphyllum*, and twilight pollination by fungus gnats in *Malaxis monophyllos*. Anyone who has ever studied pollination biology in orchids will acknowledge that a vast number of observation hours, combined with the patience of a saint, must underlie the numerous original observations and pollinator photos included.

The main text is followed by a glossary and five useful appendices, mainly based on observations previously reported in the literature. The first two appendices list the pollinators and natural fruit set of individual species, respectively. Appendix 3 is a list of autogamous orchid taxa, with the pollination mechanism specified for each. Appendix 4 gives the seed number per capsule for all hitherto examined species, and Appendix 5 gives the caudicle bending times. The book ends with a comprehensive list of references and an index.

This is a cleverly thought-out book that provides an unprecedented overview of the floral biology and pollination adaptations of the orchids of Europe, based not only on information from the literature but also on original observations that are in some cases quite remarkable. A high degree of stylistic consistency across the generic accounts, both with regard to text and illustrations, adds to the overall impression of an unusually well-edited volume. Last, but not least, the comprehensive selection of macrophotos that are both of impressive technical and aesthetic quality elevates this book to the level of excellence. *The Flower of the European Orchid* simply sets a new

standard for photographic illustration of orchid books. No book is perfect, and even in this volume you will encounter errors and mistakes - but they are very few and of very little significance. In conclusion, I wholeheartedly recommend this magnificent book to anyone who has just the slightest interest in the orchids of Europe, or in the pollination biology of orchids in general.

Henrik Æ. Pedersen