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Ophrys: the bee orchids of Europe, by Henrik Ærenlund Pedersen & Niels Faurholdt

Over the past 30 years a remarkable speciation seems to have occurred in European orchids. Sundermann's field guide of 1980 listed 102 species as native to Europe. This caused some dissent among specialists who felt that he had used too broad a concept of what constituted a species. Baumann and Kunkele's field guide, published in 1982 and treating 147 species, was considered by most specialists to be nearer the mark. Davies, Davies and Huxley's well-illustrated English-language field guide of 1983 was similar in its content and was widely used by English-speaking botanists for a few years. However, from the 1980s onwards, a growing number of European orchid enthusiasts have been describing new species in the specialist European orchid journals. Buttler's handy field guide appeared in 1990 and accepted 250 species. The trend continued and appeared to have reached its zenith with the publication in 1994 of Pierre Delforge's first French-language field guide where 400 species were recognised. Amazingly, the latest English edition of his guide, published in 2006, lists 529 species in the European and Mediterranean flora. A considerable percentage of the increase over earlier publications is due to the genus *Ophrys*, the well-known orchids whose labella mimic bees, wasps or flies. Sundermann recognised 17 species, whereas Delforge now accepts a remarkable 251 species.

A few years ago, on a wooded hillside in Rhodes, I was showing a group of friends some orchids and identified one as *Ophrys umbilicata*. Two French tourists nearby overheard my comments and butted in saying that I was wrong and we were examining *Ophrys rhodia*. On questioning them, it seemed that they had a copy of the recently published field-guide to European orchids by Pierre Delforge. I asked them to show me the page and then that of *O. umbilicata*. The photographs were, to my mind, almost identical but I could not shake their faith in Delforge's book. Since then several further editions of Delforge's book have been published, the latest in 2006. Consequently, the identification of *Ophrys* has never been more problematic.

The question has to be asked, is the increase in the number of orchid species the result of discovery of new taxa or of the tendency of some orchid specialists to recognise all taxa at specific rank that had been treated by others at varietal or subspecific level? It is undoubtedly the fashion to raise varieties and subspecies to specific rank based on the idea that pollination is highly species' specific, for example, that all *Ophrys* species are pollinated by a specific and different species of bee or wasp. This biological justification for splitting up *Ophrys* into numerous species is highly suspect. The detailed pollination biology studies of Kullenberg (1961, 1973) and Kullenberg and Bergström (1976) demonstrated that each orchid species is usually pollinated by a spectrum of species that can vary over its range, usually with one species dominating but others occasionally participating in the successful transfer of pollinaria from one flower to another.

The recent publication by Pedersen and Faurholdt (2007) provides a very different perspective on *Ophrys* systematics from that of Delforge, providing a different outlook from that prevalent in 'orchid twitching' circles. Their credentials are impeccable. Henrik Pedersen is Associate Professor of Botany

at the University of Copenhagen and a curator at its Botanical Garden and Natural History Museum. Niles Faurholdt, his co-author, teaches plant biology and runs a botanical consultancy firm. Pedersen has already published on species concepts in the difficult genus *Dactylorhiza* where polyploidy and hybridisation complicate the taxonomy. They favour Sundermann's approach and accept just 19 species and five named hybrid complexes in *Ophrys* as occurring in Europe.

The book comprises well-illustrated introductory chapters on the origin and systematic position of the genus; the structure of *Ophrys* plants, including a section on monstrous forms which are not uncommon in the genus (and in many other orchids); biology, ecology and distribution; and evolution, hybridisation and classification. The last will undoubtedly attract most readers, particularly the devotees of Delforge. Why have the authors adopted such a broad species concept, resurrecting the concepts of varieties and species that seem so out-of-fashion in European orchid circles? It is unusual for authors to discuss the philosophical basis of their systematic concepts, the last person to do so in detail, albeit opaquely was Erich Nelson (1962). First of all, the authors discuss the origins and nature of subspecies and varieties in *Ophrys*. Genetic drift in geographically isolated populations, hybridisation and polyploidy (in *O. fusca* and *O. omegaifera*) all play a role in the evolution of *Ophrys*. They also define the categories of species, subspecies and variety that they employ. Recent iso-enzyme and DNA studies support the close genetic identity of the subspecies in groups that have been studied to date. It would have been useful if a more detailed discussion of, for example, the work of Soliva, Bateman and Widmer (2001), had been included, since it largely supports the authors' views. Hybridisation undoubtedly occurs in *Ophrys*, particularly in disturbed habitats. However, I have seen several species growing and flowering together in many sites in Crete, Greece and Italy, with no evidence of any hybridisation. In my opinion, natural variation within a population is sometimes misinterpreted as hybridisation.

The main text comprises a systematic account of the species and hybrid complexes. Each species account includes a brief introduction on morphological variation and pollinator, notes on habitat, flowering time, distribution, nomenclature and synonymy, and a description. Keys are provided to distinguish species and subspecies (an unusual feature of modern field guides to European orchids). The accounts are well-illustrated by colour photographs and a distribution map, giving the broad range of the species in Europe, but not of each subspecies. Disappointingly, the account only covers European species. I would like to have seen the treatment extended to North Africa and the Middle East which both have extensive populations of several *Ophrys* species.

The systematic treatment is followed by two further chapters. The increasing number of horticulturists who grow hardy orchids will be delighted to find a chapter on their cultivation by Richard Manuel, who has extensive experience of growing the species in pot-culture and in the garden in England. The final chapter lists sites where *Ophrys* can be seen in the wild in Europe.

This well-produced book can also double as a field guide, being of pocket size and strongly bound in a flexible lightweight cover. I think that it is a timely reminder to European orchid enthusiasts that there are other views on species' delimitation than those currently promulgated in the most popular field guides. I like to think of *Ophrys* as comprising a number of well-defined species, such as *O. apifera*, *O. insectifera*, *O. bombyliflora* and *O. tenthredinifera*, and a number

of species complexes, such as those around *O. fuciflora*, *O. sphegodes* and *O. scolopax*. Whether the latter are considered groups of subspecies, or groups of 'micro-species' is partly a matter of understanding their biology and evolution and partly a matter of fashion. Currently, the pendulum of fashion has certainly swung far too far towards the splitters. I hope that this book will lead to a reassessment and a more sustainable and widely accepted taxonomy of this fascinating group.

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