



Journal
of the
HARDY ORCHID SOCIETY

Vol. 5 No. 1 (47) January 2008

The Hardy Orchid Society

Our aim is to promote interest in the study of Native European Orchids and those from similar temperate climates throughout the world. We cover such varied aspects as field study, cultivation and propagation, photography, taxonomy and systematics, and practical conservation. We welcome articles relating to any of these subjects, which will be considered for publication by the editorial committee. Please send your submissions to the Editor, and please structure your text according to the "Advice to Authors" (see website, January 2004 Journal or contact the Editor).

The Hardy Orchid Society Committee

President: Prof. Richard Bateman, Jodrell Laboratory, Royal Botanic Gardens Kew, Richmond, Surrey, TW9 3DS, r.bateman@rbgkew.org.uk

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Treasurer: Iain Wright, The Windmill, Vennington, Westbury, Shrewsbury, Shropshire, SY5 9RG, iaincwright@tiscali.co.uk

Membership Secretary: Celia Wright, The Windmill, Vennington, Westbury, Shrewsbury, Shropshire, SY5 9RG, celia.wright@tiscali.co.uk

Show Secretary: *currently vacant*

Journal Editor: Mike Gasson, Moor End Cottage, Moor End, Stibbard, Norfolk, NR21 0EJ, moorend@globalnet.co.uk

Meetings Secretary: Maren Talbot, 4 Hazel Close, Marlow, Bucks., SL7 3PW, mtalbot@onetel.com

Publicity Officer: Maren Talbot, 4 Hazel Close, Marlow, Bucks., SL7 3PW, mtalbot@onetel.com

Seed & Fungus Banker: Philip Seaton, 52 Shrubbery Street, Kidderminster, Worcs., DY10 2QY, philip@seatonorchids.freeseerve.co.uk

Newsletter Distributor: Barry Tattersall, 262 Staines Road, Twickenham, Middx., TW2 5AR, barry.tattersall@tiscali.co.uk

Conservation and Website: Bill Temple, Primrose Cottage, Hanney Road, Steventon, Oxon., OX13 6AP, bill@billtemple.f9.co.uk

Ordinary Member: *currently vacant*

Front Cover Photograph

Cephalanthera longifolia in Gloucestershire, photographed by John Spencer, and the winner of Class 7 in the 2007 Photographic Competition (see page 7).

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Editorial Note

The first issue for 2008 carries interesting articles by new and occasional contributors as well as from frequently published orchidologists. It is a special pleasure to welcome Karel Kreutz to the HOS, and to include his update on British orchids. It is also good to see Richard Bateman's analysis of member's efforts in measuring *Platanthera* spurs, and to see that the results are so useful. I have included a selection of winning photographs from the Photographic Competition, and more will be featured in the next Journal. I am still missing a few 1st and 2nd place images, so do send them if you want them included!

Report from the Chairman

David Hughes

The HOS year ended with a splendid, well attended meeting at Wisley. Bill Temple started off with "A Holiday in a Long Thin Country", which turned out to be Chile. He took us on an extended tour showing beautiful pictures of scenery and flowers, including many hardy orchids, all very different from those with which we are familiar in Europe. Mike Gasson followed with an account of *Ophrys* hybrids. Richard Bateman rounded off the morning with his professorial presentations on research with which he is involved. He showed us a morphological comparison of the two British *Platanthera* species, demonstrating how HOS members are capable of collecting accurate field data and justifying their involvement in research. He then led us further into the maze of *Ophrys* species distinction.

After lunch we were taken through the judging of the photographic competition by Dr Brian Most. We are grateful to Brian for judging so sympathetically, and to Tony Hughes for coming out of retirement to run the competition. The Wright's wound up the day. Iain gave a fascinating demonstration on GPS and charting readings on Google Earth. Celia took the floor with an excellent account of the orchids of Karpathos, and I am sure tempting many of us to include this island in our travel plans.

It was notable that all presentations were in digital format using a variety of hardware, but all excellent. The HOS can feel itself at the forefront in adopting modern projection techniques. There were excellent plant tables, and the organisation was perfect, thanks to Maren Talbot.

The Field Meetings were largely well attended this year, covering a good part of Britain and the flowering season of our favourite plant family. We will hope to achieve the same next year. Do contact me if you would like to lead a trip in your own locality; it's a great way of getting to know members. The more experienced are happy to share their knowledge, so do let me have ideas of where you might like to go on field trips.

This brings me to perhaps the most important meeting of the year; Kidlington which is booked for Sunday 20th April, and organised by Maren Talbot. We have a fine programme of speakers, and details will be published in the April edition of the Journal. This is the time for HOS growers to demonstrate their skills. Yes we have some very talented growers, but don't let that deter the less experienced. We want all your plants on the show benches to demonstrate that the society is as much about cultivation as field work. This year Malcolm Brownsword is running the plant competition, and the Classes are slightly different; see the HOS website or the April Journal for details.

Kidlington is also important because it includes our AGM, and here is your chance to elect your committee or to be elected yourself. We continue to lack a Vice Chairman, which is an important position without portfolio, but giving the incumbent the chance to learn the ropes. Recently, the Vice Chairman has arranged the field meetings, a task not without self interest because the choice of locality and date is your own. Malcolm Brownsword has kindly taken the task of Plant Show Secretary, but we still need a member to run the photographic show. Posts falling vacant this year are Secretary and Newsletter Distributor; Richard Manuel and Barry Tattersall can tell you more about those posts than I can. Each of these posts does require some input, but they bring the benefit of deep involvement in the society with subsequent close acquaintance with long established and expert members. Please contact me or other committee members to volunteer. Don't be put off if you

feel inexperienced. Those who know me will tell you I am one of the most ignorant about orchids, but I get lots of help from others on the committee and it is fun! Remember, your society needs you.

HOS Meetings 2008

Sunday 20th April: Spring Meeting (including AGM and Plant Show) at Exeter Hall, Kidlington. Contact Maren Talbot.

Saturday 30th August: Northern Meeting at Harlow Carr, Harrogate. Contact David Hughes.

Sunday 2nd November: Autumn Meeting (including Photographic Competition) at RHS Wisley. Contact Maren Talbot.

HOS Field Trips 2008

David Hughes

The field trip programme covers the country south to north through the year. Most meetings are restricted to 15 people, so do contact the organiser in good time to avoid being disappointed. Field trips usually involve some rough walking; wear suitable footwear and clothing. Any general questions to David Hughes (contact details inside front cover). The following field trips have been organised for 2008:

Monday 5th May: Samphire Hoe, Kent for the artificial chalk spit with numerous *Ophrys sphegodes*, possibly including albinos.

Contact Mike Parsons - mike@parsons30.fsnet.co.uk

Sunday 11th May: Derbyshire Dales for massed *Orchis mascula* and unusual limestone flora.

Contact Martin Jackson - mpjarmadillo@yahoo.co.uk

Saturday 24th May: Chappett's Wood, Hampshire for profuse populations of *Cephalanthera longifolia*.

Contact Nigel Johnson - nigel@johnson9995.freeserve.co.uk

Sunday 15th June: Fontmell Down, Dorset for another chance to visit this extensive chalk downland with excellent populations of *Ophrys apifera* and *Platanthera chloantha*.

Contact Norman Heywood - nandaatngf@supanet.com

Sunday 22nd June: Porton Down, Wiltshire for a rare opportunity to visit this MOD protected land with a fine range of undisturbed downland orchids. This meeting is subject to MOD regulations, so please book at least one month in advance.

Contact David Hughes - cchughes1@onetel.com

Saturday 28th June: Ainsdale and Birkdale Dunes, Lancashire for a variety of *Epipactis* species and *Dactylorhiza* hybrids.

Contact Alan Gendle - alan@gendle.plus.com

Photographic Competition 2007

Tony Hughes

With 25 exhibitors, 100 prints and nearly 40 slides, this year's show fully reinforced our Society's reputation for photographic excellence. The minor changes to the rules and schedule of classes had not phased the exhibitors, and our Judge, Brian Most, was greatly impressed by the superb quality of many of the images, including lots that didn't win prizes. Indeed, we are greatly indebted to Brian, not only for judging the competition so meticulously, but also for sharing with us so many encouraging thoughts about our pictures.

The "strength in depth" of our society's photographers was amply illustrated by the 13 classes producing no fewer than 11 different First Prize winners, with Mike Gasson and Simon Andrew managing to win two classes each. It was also encouraging that our "Novice" class brought in some fine images from the 5 competitors.

The "Best in Show" award was keenly contested, the judge taking considerable time to weigh up the relative merits of several worthy exhibits. Finally the Maren Talbot Award went to Nigel Johnson for his magnificent close-up slide of *Cypripedium parviflorum* (Class 12), taken in Alberta. As a bonus, and thanks to the generosity of Mike Powell, Nigel was also presented with a luscious rich fruit cake! Will this become a HOS tradition?

Photographic Competition Winners

Class 1. An orchidaceous landscape, print size up to 7x5 inches (11 entries)

- 1st Simon Andrew - *Anacamptis (Orchis) morio* (Somerset)
- 2nd Patrick Marks - *Orchis italica* (Sicily)
- 3rd Bill Temple - *Codonorchis lessoni* (Central Chile)

Class 2. A group of orchid plants, print size up to 7x5 inches (10 entries)

- 1st Pietro Roseo - *Serapias vomeracea* (Samos)
- 2nd Patrick Marks - *Epipactis atrorubens* (Saareme Island)
- 3rd Mike Gasson - *Epipogium aphyllum* (S. Germany)

Class 3. A single orchid plant, print size up to 7x5 inches (12 entries)

- 1st Tony Hughes - *Orchis quadripunctata* (Mt. Hiemetos, Greece)
- 2nd John Spencer - *Epipactis phyllanthes* (Gloucestershire)
- 3rd Patrick Marks - *Ophrys lacaitae* (Sicily)

Class 4. A close-up, print size up to 7x5 inches (18 entries)

- 1st Christine Hughes - *Ophrys apifera* (Dorset)
- 2nd Sue & Dave Truby - *Dactylorhiza maculata*
- 3rd Patrick Marks - *Ophrys sabulosa* (S.E. Sicily)

Class 5. An orchidaceous landscape, print size up to A4 (8 entries)

- 1st Sean Cole - *Epipactis palustris* (Northumberland)
2nd Patrick Marks - *Gymnadenia borealis* (Fife)
3rd Tony Hughes - *Gymnadenia conopsea* (St. Anton, Switzerland)

Class 6. A group of orchid plants, print size up to A4 (10 entries)

- 1st Mike Gasson - *Epipogium aphyllum* (S. Germany)
2nd Don Tait - *Serapias vomeracea*
3rd Patrick Marks - *Anacamptis (Orchis) papilionacea* (S. Sicily)

Class 7. A single orchid plant, print size up to A4 (13 entries)

- 1st John Spencer - *Cephalanthera longifolia* (Gloucestershire)
2nd Patrick Marks - *Anacamptis (Orchis) papilionacea* (Sicily)
3rd Matti Niissalo - *Pseudorchis straminea* (Lapland)

Class 8. A close-up, print size up to A4 (16 entries)

- 1st Patrick Marks - *Ophrys pallida* (Ficuzza Forest, Sicily)
2nd Martin Halley - *Dactylorhiza fuchsii*
3rd Mike Gasson - *Orchis simia* (Drome, France)

Class 9. An orchidaceous landscape, 35 mm colour slide (7 entries)

- 1st Simon Andrew - *Himantoglossum hircinum*
2nd Tony Hughes - *Gymnadenia conopsea* (St. Anton, Switzerland)
3rd Rosemary Webb - *Platanthera bifolia* (New Forest)

Class 10. A group of orchid plants, 35 mm colour slide (9 entries)

- 1st Richard Manuel - *Orchis militaris* (Col du Prayet, France)
2nd Rosemary Webb - *Cypripedium calceolus*
3rd Tony Hughes - *Orchis quadripunctata* (Greece)

Class 11. A single orchid plant, 35 mm colour slide (11 entries)

- 1st Mike Gasson - *Orchis militaris*
2nd Tony Hughes - *Orchis (Aceras) anthropophora* (Greece)
3rd Nigel Johnson - *Calypto bulbosa* (Banff)

Class 12. A close-up, 35 mm colour slide (14 entries)

- 1st Nigel Johnson - *Cypripedium parviflorum* (Alberta)
2nd Rosemary Webb - *Ophrys regis-ferdinandii*
3rd Richard Manuel - *Thelymitra* hybrid (in cultivation)

Class 13. Novice Class: a hardy orchid picture, print size up to A4 (5 entries)

- 1st Matti Niissalo - *Epipogium aphyllum* (N. Norway)
2nd Pietro Roseo - *Ophrys herae* (Cyprus)
3rd Diana Hughes - *Anacamptis (Orchis) papilionacea* (Greece)

A selection of winning photographs is shown on the following pages. The images are identified by a number that is equivalent to the class, followed by the place. For example, in Class 5 first place is 5-1 and second place is 5-2. More winning photographs will be featured in the next Journal. The front cover of this issue shows the winner of Class 7.







1-1



5-1



9-1



5-2

Update on British Orchids

C. A. J. Kreutz

Introduction

In 2006 and 2007, I visited the UK for the 12th time to study and photograph British orchids for my forthcoming work “*The Orchids of Europe, North Africa and Asia Minor*”, which is going to be published by the end of 2008.

In northern England, I was pleased to see Young’s Helleborine, *Epipactis helleborine* var. *youngiana*, and the Green-flowered Helleborine, *Epipactis phyllanthes* var. *pendula*. I was also particularly interested to compare the coastal dune form of the Dune Helleborine, *Epipactis dunensis* [subsp. *dunensis*], with both the inland form of this orchid (the “Tyne Helleborine”) and the closely related Lindisfarne Helleborine, *Epipactis sancta*, endemic to Holy Island. As a result of these comparisons, I subsequently published a formal description of the Tyne Helleborine under the name *Epipactis dunensis* subsp. *tynensis*; I also concluded that, since the “Lindisfarne Helleborine” differs only slightly from the coastal form of *Epipactis dunensis*, it was more appropriate to consider it as a subspecies, namely *Epipactis dunensis* subsp. *sancta*, rather than as a distinct species (Kreutz 2007).

In south-east England, I visited a number of sites to see other varieties of *Epipactis phyllanthes* as well as the Narrow-lipped Helleborine, *Epipactis leptochila*. One of my visits was to see an unusual form of *Epipactis leptochila*, which had been discovered at Princes Risborough in the Chilterns (Buckinghamshire), a photograph of which had been recently published as *Epipactis leptochila* subsp. *neglecta* (Baumann *et al.* 2006). However, after detailed study and consultation, I concluded that it is not *Epipactis leptochila* subsp. *neglecta* but could be considered to be the little-known British taxa *Epipactis leptochila* var. *cordata*.

In 2006, despite the very dry conditions, I was able to inspect the various forms of *Epipactis helleborine* in Kenfig NNR growing on open dunes, all of which seemed to me identical to the Dutch Helleborine, *Epipactis helleborine* subsp. *neerlandica*. I also visited the large colony of *Epipactis phyllanthes* var. *pendula* in woodland bordering the dunes found by HOS member Mike Clark in 2005. In 2007, I returned to Kenfig to photograph its two rarities, the western form of Fen Orchid, *Liparis loeselii* var. *ovata* and the recently re-discovered *Epipactis phyllanthes* var. *cambrensis*, neither of which was in flower when I was there in 2006. While at Kenfig, I observed that the Fragrant Orchids with a dense, inflorescence growing in the dunes were not identical with the Marsh Fragrant Orchid, *Gymnadenia conopsea* var. *densiflora*, as previously supposed, but were in fact *Gymnadenia conopsea* var. *friesica*, a variety previously known only from the North Sea coast and its islands off Germany and the Netherlands.

Then in South Wales, I took the opportunity of seeing *Epipactis leptochila* at its most westerly recorded location, just north of Cardiff. When I was back in South England I saw other orchid species, including *Epipactis phyllanthes* var. *phyllanthes*, *Epipactis phyllanthes* var. *vectensis* and *Epipactis phyllanthes* var. *pendula*.

***Epipactis dunensis* (T. & T. A. Stephenson) Godfrey subsp. *tynensis* Kreutz**

As apparent from its name, “Tyne Helleborine” is best known from the Tyne valley, more especially the South Tyne Valley in Northumberland, where it grows on river-side sites polluted with heavy metals from old mine workings. However, it is also found in Cumbria (where it was seen by a HOS field trip in July 2007), north-west Yorkshire and southern Scotland (Midlothian, West Lothian and Lanarkshire). Initially it was identified as a form of Narrow-lipped Helleborine, *Epipactis leptochila*, but detailed molecular genetic studies have established that, although it shows characteristics of that species, it is in fact a form of *Epipactis dunensis* (Squirrel *et al.* 2002). Nevertheless, it is distinguished from the coastal form of Dune Helleborine, *Epipactis dunensis* [subsp. *dunensis*], by its taller, more delicate growth, looser inflorescence, more widely open, light green or greenish-white flowers devoid of any pink colouration, and longer, narrower, green-tipped epichile.

In view of these morphological differences, and following discussions with Richard Bateman and Peter Hollingsworth (pers. comm. 2007), I concluded that the Tyne Helleborine was sufficiently distinct from the coastal form of Dune Orchid to be described as a separate subspecies, *Epipactis dunensis* subsp. *tynensis* (Kreutz 2007).

***Epipactis leptochila* (Godfrey) Godfrey var. *cordata* Brooke**

In 2002, HOS members Barry Tattersall and Michael Lowe discovered a small population of unusual *Epipactis* growing on a chalky roadside bank at Princes Risborough in the Chilterns. A photograph of this is included in the book “*Orchids of the British Isles*” (Foley & Clarke 2005) with the caption: “A potentially confusing *Epipactis leptochila* with labellum slightly broader than normal. Other key characters confirm its identity as this species.” However, a photograph from Princes Risborough of what appears to be the same plant is included in the German language book “*Orchideen Europas mit angrenzenden Gebieten*” (Baumann *et al* 2006) as *Epipactis leptochila* subsp. *neglecta*. This is a rather variable autogamous (self-fertilising) taxon which was first identified in Germany but has subsequently been

Plate 1: *Epipactis dunensis* subsp. *sancta* at Holy Island, Northumberland on 13th July 2006. Plate 2: *Epipactis dunensis* subsp. *tynensis* at Slaggyford, Northumberland on 31st July 1991. Plate 3: *Epipactis leptochila* subsp. *leptochila* at Glamorgan, Wales on 29th July 2007. Plate 4: *Epipactis leptochila* var. *cordata* at Princess Risborough, Buckinghamshire on 27th July 2007.

Photos by C. A. J. Kreutz



recorded in other countries between Hungary and Croatia in the east to Belgium in the west. It has a broad, whitish-pink epichile with its distal end curved back and a characteristic narrow slot (“keyhole”) between the epichile and hypochile. Although the Princes Risborough plants possess these characteristics, they flower much later (late July, early August) than the relatively early-flowering *Epipactis leptochila* subsp. *neglecta*, and a detailed study has revealed that the flowers have features intermediate between the fully autogamous *Epipactis leptochila* subsp. *neglecta* and the allogamous (cross-pollinating) Broad-leaved Helleborine, *Epipactis helleborine*. In particular, they possess a column capable of cross-pollination which is identical to that of *Epipactis helleborine*, but the base of the pedicel is not violet-purple, which indicates that the plants belong to the *Epipactis leptochila* group.

Günther Blaich, a German orchidophile whose excellent website (www.guenther-blaich.de) will be familiar to many HOS members, has suggested that the Princes Risborough plants might be *Epipactis leptochila* var. *cordata*. This little known variety was described by Jocelyn Brooke in her monograph “*The Wild Orchids of Britain*” (Brooke & Bone, 1950), as follows: “lip more broadly acuminate, sepals less spreading. Lower leaves elliptico-lanceolate.” She also states that these plants are also distinguished by their shorter and more delicate growth and their rather smaller, bell-shaped flowers. Brooke & Bone did not deposit a herbarium specimen of this variety and the only published photograph of which I am aware is that in “*Illustrations of British and Irish Orchids*” (Ettlinger 1998) which shows a flower from Horsley, Surrey (1984) which, like the Princes Risborough plants, has a pinkish white, turned-under epichile. Unfortunately, the Horsley plants are no longer extant as both they and their habit were destroyed by habitat degradation following the 1988 “hurricane” (Parsons pers. comm. 2007).

It is therefore problematic whether the Princes Risborough plants accord with Brooke’s *Epipactis leptochila* var. *cordata*. However, since they would appear to possess the characteristics referred to her admittedly vague description, it would appear, at least for the present, convenient to consider them to be that variety rather than to describe them under a new name. Analysis DNA of samples taken by Richard Bateman in 2007 may further clarify matters in due course.

***Gymnadenia conopsea* (L) R. Brown var. *friesica* Schlechter**

It is generally considered that in the UK there are only three varieties of Fragrant Orchid, *Gymnadenia conopsea* var. *conopsea*, namely the Common (or Chalk) Fragrant Orchid, *Gymnadenia conopsea* var. *borealis*, the Heath Fragrant Orchid and *Gymnadenia conopsea* var. *densiflora*, the Marsh Fragrant Orchid. However, other varieties have been described from mainland Europe, including *Gymnadenia conopsea* var. *friesica* (Schlechter 1919, 1928) which is fully described and illustrated in “*Die orchideeën van Nederland*” (Kreutz & Dekker 1999). As its name

implies, this variety is found on the Friesian islands and neighbouring mainland coasts of Germany and the Netherlands. It grows in coastal dunes accompanied by Dwarf Willow (*Salix repens*) and Marsh Helleborine, *Epipactis palustris*. In appearance, it is intermediate between *Gymnadenia conopsea* var. *densiflora* and *Gymnadenia conopsea* var. *borealis*, although frequently identified as the former. However, *Gymnadenia conopsea* var. *densiflora* is not to be confused with that variety. Thus, *Gymnadenia conopsea* var. *friesica* is a slender, delicate plant with a dense, thin, cylindrical inflorescence of relatively small flowers coloured intense purple with a white fleck at the base of the lip. In contrast, *Gymnadenia conopsea* var. *densiflora* is a much more robust plant (up to 1.5 m high) with larger, paler flowers forming a longer, wider and looser inflorescence. In addition, whereas *Gymnadenia conopsea* var. *densiflora* normally flowers in early July, *Gymnadenia conopsea* var. *friesica* flowers several weeks later in late July/early August by which time the *Epipactis palustris* growing with it is almost over. The densely-inflorescenced Fragrant Orchids which I found flowering in the dunes at Kenfig in late July had the same morphology as the Friesian plants, which I had studied in the Netherlands and were similarly growing with *Salix repens* and *Epipactis helleborine* subsp. *neerlandica* in an almost identical coastal dune habitat. I was able to conclude that these plants were indeed *Gymnadenia conopsea* var. *friesica* and not *Gymnadenia conopsea* var. *densiflora* as had been previously supposed.

As in the case of all European, North African and Asia Minor species, subspecies and vari-



Plates 5 & 6 : *Gymnadenia conopsea* var. *friesica* at Kenfig NNR, Wales on 29th July 2007
Photos by C. A. J. Kreutz

eties, a full description of, and notes on, the above orchids, each illustrated by six photographs and a distribution map, will be included in “*The Orchids of Europe North Africa and Asia Minor*”.

Acknowledgements

I am grateful to HOS members Graham Giles, Mike Parsons, Mike and Diane Clark, John Spencer, Barry Chambers, Kath Barrett and Mike Stone for their hospitality and assistance in visiting orchid sites during my visits to Britain. I would also like to thank Jürgen Reinhardt for his advice on the differences between the *Epipactis leptochila* at Princes Risborough and *Epipactis leptochila* subsp. *neglecta*, and Les Lewis for assistance in writing this article.

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American Native Orchid Conference, Oregon 2006

Mike Parsons

During 2006 I combined a two week orchid holiday with the fifth North American Native Orchid Conference, which was held in Ashland, Oregon. My trip started on the 5th June with a flight to San Francisco together with fellow HOS members Maria-José Friedlander and Graham Giles. We collected a hire car and headed north on Freeway 101 over the Golden Gate Bridge, stopping in a motel overnight. The next morning was warm and sunny, and we were soon on our way to look for orchids. The first stop was the Jug Handle State Preserve on Highway 1, next to the

Pacific Ocean. Here we found terrific views of the sea with drifts of Californian poppy and Indian Paintbrush, as well as some interesting birds, including osprey. Heading into the woods, we found *Corallorrhiza mertensiana*, the Western Coralroot Orchid, sitting regally beside the path. Other plants which caught our eye included a patch of the delightful *Clintonia andrewsiana*, its spectacular bright red flowers seeming out of place under the conifers. The invasive European *Epipactis helleborine* is common in North America, but this was the only place where we saw it. We found the rosettes of *Goodyera oblongifolia*, which were to become a regular find on our travels, and one scrawny Northwestern Twayblade, *Listera caurina* (sometimes known as *L. banksiana*). As we were leaving Highway 1 and rejoining route 101 we found a colony of *Piperia elongata* in bud beside the road. We tried desperately to find one in bloom but had to give up as the light was fading.

The next day we stopped at two more sites on the road to Eureka. The first stop was at Standish-Hickey State Park, where *Piperia candida* was in bloom. On an isolated road near Dinsmore some tracks led us into a remote spot where we found *Piperia unalascensis*, a reasonably common orchid, and made our first sighting of *Calypso bulbosa* var. *occidentalis*. These were past their best, but there were also emerging shoots of *Cephalanthera austinae* and *Corallorrhiza maculata* var. *occidentalis*. After we had enjoyed a good afternoon botanising we headed to Crescent City on the coast for a



Cephalanthera austinae
Photo by Graham Giles

good night's sleep. It was a lovely to be near the shore with great views of the sea. At breakfast we watched sea lions basking on the piers, and shouting noisily to each other. Soon afterwards we set off inland looking for *Cypripedium californicum*, the Californian Lady's Slipper, which we did eventually encounter near a *Darlingtonia* bog at Gasquet, just before the Oregon border. They were already over, but it was a pleasing moment to find just one in flower.

We made our way to Ashland, where the conference was being held, meeting up with Simon Andrew. Next day we set out on a field trip to the Illinois Valley. At Althouse we were introduced to *Cypripedium montanum*, the Mountain Lady's Slipper. It was wonderful to see so many on the side of a small hill, just hiding behind some bushes in the shade of trees above. These majestic plants were nearly two feet high with spectacular large white oval lips and even longer purplish twisted petals. Further on, amongst the serpentine rocks of Whiskey Creek, there was an amazing sight of the small yellow and white *Cypripedium californicum*, which is only found in Oregon



Cypripedium montanum
Photo by Graham Giles



Cypripedium californicum
Photo by Graham Giles

and California. It grew in large clumps, spearheading the streams which ran down the hillside, and there was one spectacular stem with 18 'slippers'. In the streams below was our first sighting of the drab green orchids of *Platanthera sparsiflora*, which occupied the lower parts of the slope in great profusion. This plant is tall and slender with flower spikes sometimes nearly two feet high. Further down the main valley was our first encounter with *Epipactis gigantea*, a large plant known as the Giant Helleborine, and the only *Epipactis* native to North America. Typically it liked growing in running water. In this area, cypripediums were reasonably common, and from that point on we discovered even more alongside parallel roads and ditches.

Two days of talks followed this excursion, with 15 speakers covering varied topics, and featuring species of *Cypripedium*, *Piperia*, *Spiranthes* and *Platanthera*. Our own Simon Andrew provided a European flavour with a talk on *Cephalanthera* species.

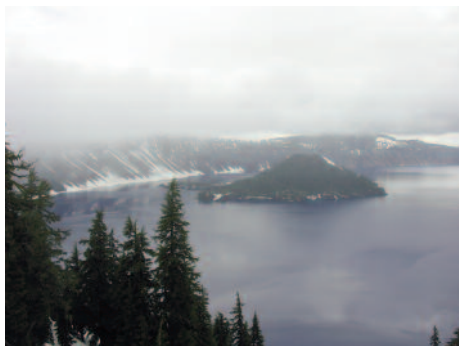
After the conference we were ready for the second field trip, heading back down into California to visit Happy Valley, where we hoped to find the Clustered Lady's Slipper, *Cypripedium fasciculatum*. In the Klamath National Forest we walked the Grider Creek Trailhead and, trooping along a small path where there were several of the plants, but flowering was over. However, we did find our first *Cephalanthera austinae* by No Name Creek, but it was a poor small specimen. There were the usual *Corallorhiza* and the rosettes of *Goodyera* to keep us all

happy. It was quite enlightening to see the Californian Lilac (*Ceanothus* of English gardens) growing in the wild. Later in the day we discovered the road leading to the famous Oregon Caves, where two extremely good plants of *Cephalanthera austinae*

were sitting in full bloom above a ditch. This is the only *Cephalanthera* in North America and the only “saprophytic” *Cephalanthera* that exists. It is quite rare, and only found in coniferous forests of the west coast. It has no basal or cauline leaves, and totally lacks chlorophyll. The epichile ridges are pale yellow, but all other parts of the plant are creamish white. Known as the Phantom Orchid, it stands out like a beacon in the dark and shady woods. It was quite different, but interesting to compare it with the familiar European species.



Cephalanthera austinae
Photo by Graham Giles



Crater Lake, Oregon
Photo by Jyotsna Sharma

visited Crater Lake, which at 1,800 feet. is the deepest fresh water lake in the USA. It is a big landmark some 8,000 feet high in the Rocky Mountains where there was still snow on the roadsides, with drifts higher than our car. The area was one of amazing beauty, and the air so clear. On route to this famous attraction we found *Corallorhiza mertensiana*, *Corallorhiza maculata* and *Neottia caurina*.

Before we left Oregon there was one more target species to see, and that was *Spiranthes porrifolia*. We were told it should be in bloom near Agness, although others had failed to find it. After a journey over the mountains, with interesting flora on the way and a long search, Maria-José found this rare orchid in a ditch by the roadside. It looked very different to others we were to find later in California, and it is currently the subject of closer study. Near the ski slopes of Mount Ashland we met friends taking pictures of freshly opened *Calypso bulbosa* var. *occidentalis*. This species of the familiar *Calypso* has brown spotting on the lip instead of the normal purple, and it is only found west of the Rockies.

For the return journey we headed south, back into California. On the way we passed the enormous peak of Mount Shasta, over 14,000 feet high, and had a very pleasant walk alongside Shasta Lake. Eventually we reached Quincy, via the gorge of Route 70, and set out to look for more plants. It was a very interesting area, and we found *C. californicum* in a dwarf form. There were lots more *E. giganteum*, including some *ochroleuca*-types that lacked the nice redness of normal plants. We looked hard, but again could not locate any *C. fasciculatum* in flower. However, we were very pleased to find an area in the Butterfly Valley Reserve of the Plumas Forest where there were two superb *C. austinae* in full bloom. Also, we had our first sighting of *Platanthera dilatata* var. *leucostachys*, and both types of *C. maculata*. Finally heading back toward San Francisco, there was one more site to see en route. This was for the Californian version of *Spiranthes porrifolia*, which we found established in seeps along the roadside near Downieville. There were a few in bloom, and this made a perfect climax before heading back to the airport.

Ongoing HOS *Platanthera* Spur-Length Survey, a Great Success **Richard Bateman and Roy Sexton**

Background

As described in an earlier *JHOS* article (Bateman & Sexton 2007), this highly collaborative “membership participation” project was conceived by us in order to extend the geographical coverage of our own efforts to obtain measurements in general, and spur lengths in particular, from across the geographical and habitat ranges of the two European butterfly-orchids; *Platanthera bifolia* (Lesser Butterfly-orchid) and *P. chlorantha* (Greater Butterfly-orchid). Our interest in these two species was driven by their remarkable genetic similarity, the limited but clear-cut morphological differences that distinguish them, and uncertainty over the occurrence in the British Isles of hybrids between them (Bateman 2005). In particular, we wished to explore the presumed critical contribution of spur length towards ensuring different pollinators for the two species, as outlined in some classic studies of orchid–pollinator co-evolution (e.g. Nilsson 1983; Maad & Nilsson 2004). We provided detailed instructions to HOS members describing how best to measure spur length, aiming to maximize consistency among inexperienced analysts (Bateman & Sexton 2007).

Results

By the close of the 2007 field season, our combined database of spur lengths contained 120 datasets (49 for *P. bifolia*) totalling 1876 individual plants (625 for *P. bifolia*). Datasets ranged in sample size from a single plant to 118 plants. Of these 120 datasets, 33 were generated by Bateman, 26 (many as large samples) by Sexton and the remaining 61 by 17 other HOS members – most notably two datasets from southern England and five from Austria by Tony Hughes, four from southern England by Katherine Stott and David Pearce, 11 from Cumbria by Alan Gendle, a

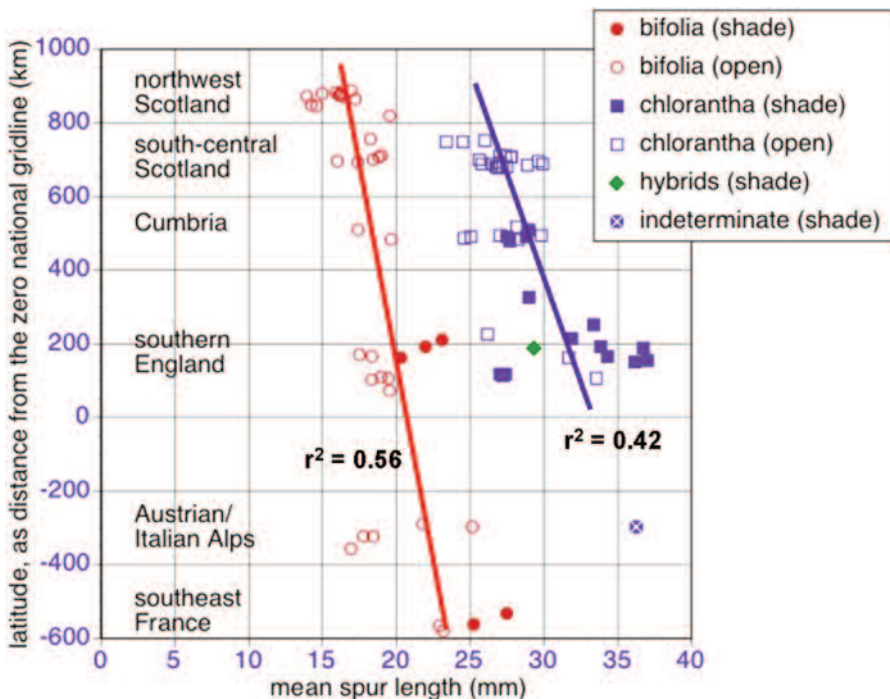


Figure 1. Mean spur length plotted against latitude for populations of *Platanthera bifolia* (left) and *P. chlorantha* (right).

further four from Cumbria by James Fenton, seven from west-central Scotland by Sarah Longrigg, and a further 15 from Scotland by David and Christine Hughes. The net result was clustering of sampled populations in the Vercors, the Alps, southern England, Cumbria, southern Scotland and northwestern Scotland, reflecting concentrations of these species.

Rigour of the results

Before discussing the broader implications of the results, we would like to congratulate several HOS members on voluntarily developing, within the broad context of this study, their own sub-projects. Some of these sub-projects helped to demonstrate the reliability of the data collected during the survey, while others offered additional biological insights. Dave Stott plus Kathy Pearce, James Fenton and Roy Sexton chose to reanalyze particular populations during the same flowering season, demonstrating that there were no significant differences in the measurements. Other sites were visited, in some cases deliberately and in other cases accidentally, by different analysts in the same year (Dave Stott and Kathy Pearce, Alan Gendle and James Fenton) or in different years (Richard Bateman and Tony Hughes). All but one of

these duplicated visits again yielded no statistically significant difference in mean spur lengths.

In contrast, repeat visits to several sites in successive years by Roy Sexton revealed significant differences in spur length in half of the case-studies, suggesting that environmental (presumably climatic) differences between years can influence average spur length. Tony Hughes demonstrated that spur length was acceptably consistent across individual inflorescences. However, Richard Bateman compared spur lengths in flowers that were fully open with those in the same inflorescence that were just about to open, and surprisingly found a 25% difference between the two groups, showing that spurs continue to lengthen even as the flowers open. The overall message of these experiments was clear and positive – the results of the spur-length survey were acceptably accurate and reproducible.

Interpretation

So what has the survey actually shown so far? The recorded lengths of both species contradict those given in most floras and monographs, and convincing hybrids, apparently introgressing (back-crossing with their parents), were recognized in Oxfordshire, Gloucestershire and probably Cornwall. The remaining results, which will soon be published in greater detail elsewhere (Bateman & Sexton in press), are summarised here in Figure 1. They challenge the widely held assumption that adaptation to proboscis length of pollinating moths is the dominant factor controlling spur length. Instead, at any particular latitude, *P. bifolia* has spurs approximately two-thirds the length of those of *P. chlorantha*. Interestingly, both species show latitudinal gradients, spur length increasing by an average of 2.2% per 100 km from north to south. This gradation of spur size could simply reflect greater resourcing of plants in lower latitudes, perhaps permitted by the greater availability of light. However, summer day-length is actually greater at *higher* latitudes. Also, at any particular latitude, populations growing in shady habitats (especially those of *P. bifolia*) tend to have somewhat longer spurs than those growing in the open (Figure 1), suggesting that the resourcing and vigour of the plants may be more strongly controlled by warmth and soil moisture than by light.

The next step – please can you help?

Given the considerable excitement aroused by the 2007 results, we plan to extend this survey into 2008 (and most likely beyond). Firstly, there are obvious gaps in our geographical coverage. Within the British Isles, we lack data from Ireland or Wales, and have little from East Anglia, the Midlands or northeast England (or from northern Scotland for *P. chlorantha*). Our data from Continental Europe are much more sparse; thus far, we have information only from *P. bifolia*, and then only from the Alps and southern France. Also, it is desirable that, without making data collection too complicated or time consuming, we attempt to test our new hypothesis that the

latitudinal variation in spur length reflects resourcing. In order to achieve this goal, we plan to begin to measure the width and number of expanded leaves of each plant, which together should allow us to assess how much light can be trapped by that plant. **Leaf number** should be easy to record, since most plants produce only two expanded leaves (excluding bract-like leaves sometimes found higher up the flowering stem) and almost all of the remaining plants have only one such leaf. Similarly, **leaf width** is simple to measure because the leaf can, while still attached to the plant, be flattened against the recommended 15 cm-long steel rule and then measured at its widest point to the nearest millimetre. When combined with the measurement of **spur length** from its tip to the back of the lateral sepals (full instructions were given by Bateman & Sexton 2007), these straightforward measurements should allow us to determine whether there is a strong positive correlation between spur length and energy generated by the plant. In the meantime, it remains for us to thank HOS members for their already excellent contribution to this ongoing, and thoroughly rewarding, project.

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Are the Nippers Badgers or Birds?

Derek Larter

I was interested to read Alan Blackman's report of the Kent field trip on 27th May 2007, particularly his comments on the activities of Muntjac Deer (*JHOS* 4: 139). It seems illogical somehow that if deer find *O. purpurea* to their taste (unlike *Neottia* species) they should simply nip off the spikes, and leave them on the ground. I recognise the site from Alan's description, and visited it regularly from 1981 to 1990, when I moved from the area. The nipping off of flower spikes has been going on since I first visited the site, and I remember meeting Dot Whittaker (KTNC now

KWT) who, although she had little interest in orchids, was an extremely keen badger watcher. She certainly gave the impression that these animals were the culprits, and possibly just one individual! Is there anyone in the HOS who lives locally who would be prepared to carry out some observations at the appropriate time to establish the facts?

In our garden, unless the plants are netted, greenfinches nip off every primrose flower they can find and leave them strewn around the plants, having sometimes displayed them to other greenfinches. Perhaps something similar is happening at this site, but a different bird is involved. Does anyone have any other theories?

This site is indeed particularly rich in *O. purpurea* colour variation. Looking back at my records, there are counts that my wife and I carried out over several years (on a not particularly scientific basis), together with comments from our diaries at the time. It clearly shows how the site has developed with the number of flowering plants increasing as what was a young beech plantation became a more mature woodland.

Our first record for early June 1981 was five flowering plants. On 23rd May 1982 there were 25, on 29th May 1984 there were 120, and on 2nd June 1986 we counted 530. However, this last year we noted that 150 spikes were eaten off, and recorded 5 “*alba*” varieties. On 31st May 1987 there were 622 flowering plants, with very few eaten off. The following year on 26th May 1988 we counted 1,236, but quite a lot were eaten off again, particularly near to a badger’s sett. Visiting on 20th May 1989 we found they were too numerous to count, but lots were eaten off again. Our last record is for 20th May 1990 and it reads “would have been masses but loads and loads eaten off”.



Lady Orchids at the Kent wood;
close-up of an albino (top), and
normal and albino plants (bottom)

Photos by Mike Gasson

West Country inbreeding: the Avon *Ophrys apifera* var. *trollii* John Spencer

The Avon Gorge is famous for its concentration of rare plants, due, perhaps in part, to a micro climate a couple of degrees warmer than the surrounding, less sheltered land. The "Flora of the Bristol Region" describes the unusual *Ophrys apifera* in the Gorge as *trollii*, but the plants in question are noticeably different to the *trollii* I am familiar with in Gloucestershire and Warwickshire.

The Gloucestershire *trollii* have a flattish lip, which usually has three lobes. The lip markings are obscure and the tip of the lip points downwards. The lip markings are such that a photo can appear out of focus even when needle sharp.



Ophrys apifera var. *trollii*, Cleeve
Common, Glosire, 26.6.07
Photo by John Spencer

The Avon Gorge *trollii* that I have seen on the Somerset side, have a severely recurved lip giving a pinched, narrow appearance. The lip is five lobed, as with a standard *apifera*, and the tip is usually drawn back at an angle of ninety degrees. The dark brown lip markings are clearly defined. The plants are similar to the French *trollii* illustrated in Delforge.

Apifera in Britain are usually self pollinated and this state of affairs has allowed these two forms of *trollii* to persist within thirty miles of each other. This does raise the possibility that there are British *trollii* which are distinct from both of the above forms. In an ideal World, The Avon Gorge would be protected from human interference, but, in the



Ophrys apifera var. *trollii*, Avon
Gorge, 6.6.07

Photo by John Spencer

real World, there is a busy road along the North bank and a railway line along the South. A few years ago, work on the railway wiped out the major *trollii* colony, in a quarry, on the South side. Thankfully, elsewhere, a smaller colony still survives.

An Unusual Floral Mutant of the Common Spotted-orchid Stan Jordan



The mutant *Dactylorhiza fuchsii*
in its natural habitat.
Photo by Stan Jordan



A closer view of the mutant spike.
Photo by Stan Jordan

Like most HOS members, during our short flowering season I travel around the British Isles searching for interesting or unusual orchids. Yet sometimes we forget to look for the unusual on our own doorstep. Close to where I live in West Birmingham the orchid-related highlights are three sites that I visit every year; two country parks and a roadside verge in a nearby village. It is the roadside verge that produced this year's surprise.

Six years ago the road through the village was resurfaced, and a substantial amount of limestone chippings was put down. The chippings inevitably migrated to the roadside verge, where there already existed a strong population of Common Spotted-orchid, *Dactylorhiza fuchsii*, that included a few white-flowered plants. Since that day there has been a substantial increase in the number of orchids growing at the site. In particular, the subsequent arrival of the Bee Orchid, *Ophrys apifera*, caused a stir in the local community.

Last year the Bee Orchids did not appear, so on the 11th June this year, I decided to re-examine the site. I was pleased to find four Bee Orchids in flower, with around 20 non-flowering plants. Close to two white-flowered *Dactylorhiza fuchsii* was this year's biggest surprise, an apparently peloric *Dactylorhiza fuchsii*. I immediately photographed the plant and, upon my arrival home, downloaded the camera, and studied the flower head on the orchid more carefully. Each bud appeared to consist of three or more flower heads, all crowded together with insufficient room to open.

I contacted Richard Bateman, who asked me to provide samples of the flowers for study. This I did, having sought appropriate permission from the landowner. A few days later I received an e-mail from Richard, which together with subsequent discussions suggested the following interpretation of the plant.

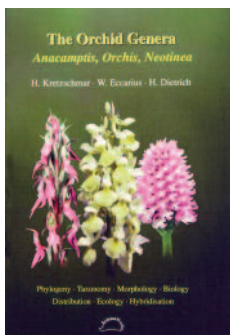
The genetic mechanism that instructs an orchid to stop generating a spike and start producing individual flowers (termed determinate growth) appears to have failed. Consequently, each flower resembles a miniature condensed spike, producing many sepals, petals and reproductive organs in a tight whorl. And instead of the spike fizzling out at the apex of the stem, an unusually large flower appeared to grace the top in the mutant. Such structures, called pseudanthia, occur commonly in some other groups of plants, but are very rare in the orchid family. Richard had seen only one similar plant, in that case a specimen of the Fly Orchid, *Ophrys insectifera*. Together, these two mutants nicely illustrate how important determinate growth is for generating a recognisable orchid flower. I thank Richard Bateman for advice on drafting this article, and for the use of his close-up image of the mutant flower.



An enlargement of an individual 'flower', showing the many whorled petals that signal its attempt to become a spike.

Photo by Richard Bateman

The Orchid Genera *Anacamptis*, *Orchis* and *Neotinea* Book Review by Richard Manuel



The Orchid Genera *Anacamptis*, *Orchis* and *Neotinea* Phylogeny, Taxonomy, Morphology, Biology, Distribution, Ecology and Hybridisation by H. Kretzschmar, W. Eccarius, H. Dietrich. (2007) EchinoMedia, Germany. 544pp ISBN 978-3-937107-12-7. Available from www.echinomedia.de for 98 Euros or from Summerfield Books for £65.00 (plus P&P).

This is the BIG ORCHIS book that has been threatened ever since our President, Prof. Richard Bateman, and the rest of the DNA mafia started to carve up the genus at the end of last century. It is rather a shame that it was not produced in this country, but perhaps that is sympto-

matic of the pusillanimous and money-oriented state of scientific publishers here. This is a sumptuous production, on nice heavy paper (240 x 170mm, and weighing in at 1.4kg), and with excellent colour illustrations throughout. My main bone of contention is that, although laudably the authors (who are also largely responsible for the publication) saw fit to make an English translation from the original German, this leaves much to be desired. This is especially true of the somewhat irritating quirky punctuation and unnecessarily loose translation of certain terms (e.g. *find place* = location, *settles* instead of grows or inhabits, and *bright* = pale or light [colour] and *bright* = open [habitat, e.g. woodland]).

The Foreword, written by our own President, Richard Bateman, is well worth reading as an introduction to the purpose and function of the book. The scientific reasons for the new classification are laid out, but not always clearly, in the introductory chapters. It is interesting to compare this with the recent article by Richard Bateman in the *Orchid Review* (Bateman 2007). The introductory text is followed by the meat of the book, the species definitions and descriptions, which are interspersed with rather tedious keys. The text for each species is preceded by, glory be, a synonymy! In any similar work on zoology (my own subject) a full synonymy would be mandatory in a revision of this type, but few modern orchid authors seem to bother with this essential part of a species definition: perhaps it would be too embarrassing! In addition there are adequate, but not always satisfactory, sections on biology, ecology, distribution and conservation status. The illustrations include at least several photographs of each plant, both in close up and in habitat, a distribution map, and SEM (Scanning Electron Microscopy) pictures of pollinia and seed.

The new classification has been achieved without too many changes in the nomenclature that has become familiar in recent years, although there are one or two surprises, such as those in the section on the *Anacamptis palustris/laxiflora* complex, and the subjugation of the many traditional forms of *An. morio* (*longicornu*, *champagneuxii*, *syriaca*, *picta*, and a new one *caucasica*) to subspecies or even non-existence. Those who believe in them will be disappointed by the disappearance of a couple of local forms of *Orchis mascula* (*pinetorum* and *tenera*), and the nomenclatural change from *O. langei* to *O. mascula* subsp. *laxifloraeformis*. Despite the removal of all the anacamptises and neotineas, there is still a substantial number of species left in *Orchis* itself, as recognised in this book. A number of currently recognised species have reverted to older names (e.g. *O. prisca* is now *O. nitidifolia* again).

The final, and extremely interesting, section of the book is a thorough assessment of all described hybrids involving the three genera (including those fascinating crosses of *Anacamptis* with *Serapias*), together with excellent illustrations of nearly all those available. The scientific world is already beginning to accept the new definitions of

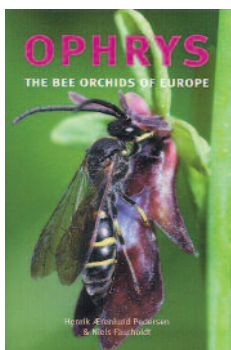
Orchis, and its two not-very-closely related segregates. However, within the “popular” orchid scene acceptance may take a little longer, as the new scheme upsets the views of many “experts” and their published classifications. This book will become an essential volume in the library of any serious orchidophile, despite its cost.

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An Enduring Obsession With Sex

Book Review by Richard Bateman



Ophrys: the Bee Orchids of Europe by Henrik Pedersen & Niels Faurholdt (2007), Kew Publishing, Royal Botanic Gardens Kew. ISBN 978 1 84246 152 5. 295 pp. RRP £33.00.

The two genera most characteristic of the Mediterranean orchid flora, *Serapias* and *Ophrys*, have many other features in common. Each genus is readily distinguished from all others using either the appearance of its flowers or the sequence of bases in its DNA but, in contrast, attempting to separate putative species within these genera can rapidly lead to insanity in even the most experienced field orchidologist. Both genera also hoodwink insects into pollinating their flowers, but here they diverge significantly in their chosen approach – *Serapias* offers only temporary accommodation to the insect, whereas *Ophrys* pulls out all the stops in its determination to deceive naïve male insects into attempting to mate with its flowers (pseudo-copulation). An approaching insect is stimulated first by smell, specifically a cocktail of sexual attractants (pheromones), then by sight, via the kaleidoscopic colours and variably reflective surfaces of the complex, three dimensional labellum, and finally by touch, when alighting on the equally complex topography and surface textures of the labelum. These highly sophisticated and complex features inadvertently conspire to render *Ophrys* the most charismatic of all European orchid genera, leaving *Serapias* deep in its shadow.

Thus, there could only be one possible cover for this new popular monograph of the bee orchids by Pedersen & Faurholdt – an enlarged view of a pollinator visiting an *Ophrys* flower. The obvious first question to ask is whether we actually need a new treatment of *Ophrys* – surely, there is nothing new left to say about this heavily researched genus? Well, although it contributes substantially more than half of

Delforge's (2006) European orchid flora, one has to look back to Danesch & Danesch (1972) and, before that, Nelson (1962) in order to find exclusive monographic treatments of *Ophrys*. And a great deal has been learned about the biology, evolution, ecology and biogeography of this extraordinary genus since then – information that can, at least in theory, be channelled into a much more rigorous classification. Thus, the question becomes not whether Pedersen & Faurholdt's new book is needed, but how well it achieves its intended aims. In my opinion, the answer is, in most cases, pretty well.

First, the generalisations. As a marketing concept, Kew Publishing have made this book a compromise between all possible user groups. It would not cause embarrassment if left on the coffee table or on a professional botanist's bookshelf. And it is just about small enough (a little larger than A5) and light enough (295 high-quality pages) to command a place in the field pack, though whether the softback binding will survive repeated field use remains to be seen. The layout is attractive and the paper high quality, allowing good reproduction of the approximately 200 colour images and many aggregated line drawings by Jimmy Lassen that together illuminate the text. These illustrations, which are of high but not outstanding quality, have been chosen well to illustrate specific points, not least the various habitats that support rich colonies of bee orchids.

This user-friendliness and aesthetic appeal extends to the text, which is generally well-written and easy to read. The authors have made a determined effort to minimise the use of complex scientific terminology, though in a few cases the resulting colloquialisms cause amusement (for example, I had not previously perceived the lateral petals of *Ophrys argolica* as being "shaggy"). Reasonable efforts are made to explain terms and concepts in both text and line drawings, though I do believe that the book would have benefited from both a glossary and a subject index.

There is a nice balance to the spread of chapter topics, as one might hope from a committed collaboration between a respected systematic botanist and an enthusiastic field orchidologist. Short chapters cover the origin and structure of the *Ophrys* plant; biology, ecology and distribution; evolution, hybridisation and classification; and conservation. These chapters are pithy and well-informed, consistently highlighting the key points in a wide range of interesting topics. The approach chosen to referencing is decidedly quirky, but the resulting bibliography of *ca* 350 titles is relatively thorough (even if it does lack a few of my favourite works, most notably those exploring the often-overlooked mycorrhizal partners of European orchids). Discussions in these chapters cover such important topics as the likely flaws underlying the much-cited studies of *Ophrys* pollination by Paulus and colleagues, the under-estimated value of controlled breeding experiments, and the various contributions of recent DNA-based research (e.g. Soliva & Widmer 2003), though here the

authors are handicapped by the fact that key molecular studies from the research groups of Bateman (Devey *et al.* in press) and Tyteca had not been published when the book was completed.

To these biologically oriented chapters are appended a balanced and readable account of *Ophrys* cultivation (by Richard Manuel) and a welcome compendium of “recommended *Ophrys* excursions”, listed from west to east. These summaries of *Ophrys* hot-spots are a valuable addition to the book, though they focus very heavily on the Mediterranean coasts and, even then, they are likely to prompt some energetic debates regarding the omission of other areas potentially worthy of inclusion (e.g. among the Aegean islands, are Samos and Lesbos truly superior to Chios?).

In the above context, the author’s treatment of geography is a strength, but in other important contexts it is the greatest weakness of this book. In particular, the volume cannot be described as a fully-fledged monograph because it does not encompass the entire range of the genus; excluded from consideration are the taxonomically limited but potentially informative *Ophrys* floras of the Macaronesian islands and North Africa and, more extraordinarily, the rich and justly popular terrains of Cyprus, Turkey and Palaestine. This omission is especially unfortunate, as subsequent DNA studies have shown a fascinating divide separating the *Ophrys* floras of Asia Minor from those occurring further west (Devey *et al.* in press). In addition, the distribution maps presented for individual species are based on traditional range margins rather than modern grids, thereby effectively side-lining three decades of industrious field mapping in aid of, for example, the Europe-wide Optima project.

But the meat of the book (fully 60% of its length) is the formal systematic treatment of species, infraspecific taxa and hybrid aggregates. This strikingly conservative treatment is highly provocative. Firstly, Pedersen & Faurholdt have wisely decided to prioritise the familiarity of particular species epithets over strict application of the law of nomenclatural priority (e.g. *fuciflora* is preferred to *holoserice(e)a*). Secondly, and more critically, not since Sundermann (1980) has such extreme taxonomic conservatism been shown when circumscribing species boundaries. The remarkable morphology diversity encompassed by the genus prompted recognition of 251 species by Delforge (2006), but here it is here reduced to a mere 19 species, 65 subspecies and five hybrid aggregates (making the related dichotomous keys startlingly simple).

This radical departure from the recent taxonomic norm must, to some degree, rest or fall on the quality of definitions offered for the ranks of species and subspecies, and those advanced by the authors are hardly foolproof. Definitions of the two ranks here rely on the presence of both morphological distinctions and some form of barrier to reproduction. These definitions are reinforced by a statement that species should be

morphologically identifiable with a success rate exceeding 90% and subspecies with a success rate exceeding 85% (p. 55)! These distinctions are too subtle for my taste, especially as no independent method of recognising a “successful” identification is advanced by the authors.

For me, the obvious recourse was to compare the taxonomic groups recognised by Pedersen & Faurholdt with those that we have been able to circumscribe in recent years by accessing three different kinds of DNA-based data and conducting a morphometric overview of the genus (Devey *et al.* in press and unpublished). I’m pleased to report that the work of Pedersen & Faurholdt stands up well to such determined cross-questioning. Even our most resolved molecular dataset identifies within *Ophrys* only ten groups that could be recognised with even 67% likelihood using DNA. Predictably, most of these (e.g. *insectifera*, *speculum*, *bombyliflora*, *tenthredinifera*, *apifera*) are easily identified using morphology alone. Additionally, there are some differences between the two classifications, but interestingly, these differences make Pedersen & Faurholdt appear to be “splitters” rather than “lumpers”!

With DNA we could tease no strong structures out of the *fusca*–*lutea* mélange, whereas Pedersen & Faurholdt separate out *lutea* from *fusca*, and then further divide *fusca* into *fusca s.s.*, *omegaiifera* and *atlantica* (surprisingly, they prefer this taxon to *iricolor*). Our data agree with Pedersen & Faurholdt in recognising groups based on *umblicata*, *scolopax* and *fuciflora*, but the range of Delforgean epithets included within these groups differs substantially between their treatment and our own. For example, the DNA-delimited *umblicata* group is much broader than Pedersen & Faurholdt’s morphological *umblicata*, the former encompassing the majority of the *Ophrys* species from Cyprus and Turkey (areas admittedly not treated by Pedersen & Faurholdt). In contrast, our *scolopax* group is substantially narrower than that of Pedersen & Faurholdt; DNA data show that many of the supposed “*scolopax*” taxa actually belong in *fuciflora* (west) or *umblicata* (east) – in other words, prominent labellar “horns” have proven to be poor indicators of evolutionary relationship.

The disparity between Faurholdt & Pedersen’s classification and our DNA data is greatest in the *sphogodes* aggregate; the single group indicated by DNA data encompasses seven species presented in the Pedersen & Faurholdt classification (well, six actually, since *O. kotschyi* is better placed in our *umblicata*): these are *argolica*, *ferum-equinum*, *bertolonii*, *sphogodes s.s.*, *lunulata* (a surprising choice for species status, given its narrow geographical distribution and the hints of hybridity in its appearance), *reinholdii* and *kotschyi*. Most of these epithets immediately prompt clear and distinct mental images and reflect broad geographical distributions, thereby asking a seriously challenging question regarding the most appropriate status to award taxa that appear reasonably morphologically distinct but lack genetic evidence of reproductive isolation.

Even more perplexing are the putative stabilised hybrid complexes innovatively presented by Pedersen & Faurholdt. Genetic data reveal extensive gene flow among many putative *Ophrys* species (Soliva & Widmer 2003), sometimes apparently without morphological evidence that gene-flow has taken place (Devey *et al.* in press). So Pedersen & Faurholdt are certainly right to invoke widespread hybridity among *Ophrys*, but are the taxa that they assign to the hybrid complexes really more guilty of promiscuous behaviour than the supposedly pure species? The truth is that, given present data, we simply do not know. But the occurrence of some of Pedersen & Faurholdt's putative hybrid complexes up to 600 km beyond the range of one of their presumed parents is somewhat disconcerting. The possibility that we are often dealing with gradual, clinal variation between entities that never formed distinct species (and so could not have generated *bona fide* hybrids) at least merits consideration. Indeed, this is suggested by Pedersen & Faurholdt for certain variants in the *umbilicata* group, underlining the importance of realising that some erstwhile species disappear via gradual re-assimilation into their parental lineage(s) while others never truly separate from their parents in the first place.

Given these observations, it is entirely appropriate that, when discussing the validity of one particular example of their “stabilized hybrid complexes”, Pedersen & Faurholdt state (p. 59) that “we are uncertain whether this statement is correct, just as we question the validity of our decisions in several other especially tricky cases. Under all circumstances, we are convinced that the most useful solution to such complicated problems will not be a continued splitting of the bee orchids into still narrower species, but rather accumulation of more rigorous data.” This is the language of both science and of common sense, epitomising why this deliberately provocative, attractive and competitively priced benchmark volume merits a place on the bookshelf of every European orchid enthusiast.

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Threats to the Aberdeenshire Coast

Bill Temple

A serious conservation issue has developed on the Aberdeenshire coast involving a tremendous untouched sand dune system (an SSSI), adjacent to the Forvie National Nature Reserve. The US property tycoon Donald Trump is attempting to develop Menie Estate by building two golf courses and 1,500 homes that are unlikely to be affordable by local people. The Aberdeenshire Council's infrastructure committee bravely rejected the proposals early in December on grounds of environmental concerns, and issues with the scale of the housing development. Since then, significant pressure has been brought to bear in an apparent attempt to get the decision overturned. Members are invited to give support to the local conservationists and to help protect this important site. It will only take a few minutes to sign the petition, by visiting: <http://petitions.pm.gov.uk/trumpoff/>

A new book on the orchids of Turkey will be published soon, but in the Turkish language. It is totally updated with almost 900 pages. For now, the old version is being sold for EUR 49. The book can be ordered from: www.kreutz.info or direct <http://meijsnatuurboeken.com/details.aspx?id=257>

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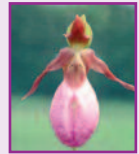
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