

**Journal
of the
HARDY ORCHID SOCIETY**



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The Hardy Orchid Society Committee

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Cover Photographs

Front Cover: *Thelymitra villosa* Custard Orchid (Flower width 38mm) photographed by Colin Scrutton. (See Sun Orchid article on page 81).
Back Cover: Swallowtail butterfly on a Marsh Orchid at Catfield Fen photographed by RSPB's Matt Wilkinson during the annual Fen Orchid survey

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 Members' Handbook, website www.hardyorchidsociety.org.uk, or contact the Editor). Views expressed in journal articles are those of their author(s) and may not reflect those of HOS.

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Editorial Note

Mike Gasson

In the first *JHOS* with our newly elected Chairman, Colin Scrutton, it is fitting to include his article on Australian Sun Orchids. He has also given us a nice front cover! On that note I should explain the back cover image. Several members will have visited Norfolk to see Fen Orchids and some intriguing Marsh Orchids at the Sutton Fen open days kindly organised for HOS by RSPB. One of the bonuses has been the prospect of seeing Swallowtail butterflies but so far we have had rather dull weather. In contrast, this year I helped to count the large Fen Orchid population at Butterfly Conservation's Catfield Fen on a really hot sunny day. One of the RSPB wardens, Matt Wilkinson, managed to photograph a Swallowtail visiting a Marsh Orchid whilst doing the count – hence the nice rear cover! I hope to include more on the status and conservation of the East Anglian Fen Orchids in a future issue. Lastly, another apology if you are waiting for a submitted article to appear in *JHOS*. The delay is due to the healthy pool of material in hand and the limited space available.

Chairman's Note

Colin Scrutton

As your new Chairman I feel I should introduce myself. My professional field is geology and my main research area was ancient corals and reefs. When we both retired, for various reasons I could not continue with my research and in any case, it was not an area that particularly appealed to Angela. I had travelled extensively in connection with my research, whilst Angela was stuck at home teaching, so now we had an opportunity to explore places together that had particularly appealed to me – and, first of all, that meant Australia.

Our first trip in 2002 was a combination of basic tourism and catching up with friends in Brisbane, Sydney and Canberra from my previous visits. A great trip as far as it went but cut short by a bizarre accident in the Namadgi National Park south of Canberra when I broke the bottom of both bones in my right leg (those of you who were at Kidlington might think that I am accident-prone)!

The second visit in 2004 included an extensive trip across NSW and Tasmania with our Sydney friends, both expert botanists. The Australian flora delighted us and, inevitably, we saw our first orchid. I have to admit to my shame that prior to that I would not have recognised an orchid had I tripped over one! That trip fuelled our interest in the flora in general, although our ultimate focus had not yet hit us.



Caladenia arenicola (Carousel Spider Orchid), King's Park, Perth, WA.
Photo by Colin Scrutton

Our third trip in 2006 started in the west and we took the opportunity to explore King's Park in Perth with its Botanical Garden and acres of bushland (highly recommended!). That's when the orchid bug really bit! We found several different species including the local spider orchid which we identified from among a few potted orchids in the bookshop on site as the Carousel Spider Orchid. We also found there the magnificent guide to Australia's native orchids by David Jones, which we had to have, although I got the shop to weigh it before we bought it to see if we could bring it home in our luggage! By the end of that trip, we were committed orchid enthusiasts.

So, we had a beginner's appreciation of Australian orchids before we knew if Britain even had any! Needless-to-say, we quickly put that right. Our previous home in the north-east had the advantage of the overlap of the northernmost range of several southern orchids and the southernmost range of some Scottish species. Northumberland, Durham and Cumbria have around 35 species altogether. Our recent move to Gloucestershire has opened up a whole new area to explore. With that and a few trips wider afield, we are now pretty well up to speed on British orchid species and are now chasing down hybrids and varieties. We continue our love affair with Australia, have enjoyed several trips to South Africa and have also explored many sites in Europe and Turkey. So orchids have well and truly taken over our retirement!

I look forward to seeing as many of you as possible at our next indoor meeting in Leeds on September 2nd. In addition to the usual programme we will have a new item, the Tony Hughes Video Competition to whet your appetite (see page 94). The booking form is enclosed with this journal. In the meantime, I hope you are all enjoying the orchid home season and that the field trips are proving successful and well supported. Happy hunting!

Reference

Jones, D.L. (2006) *A complete guide to native orchids of Australia including the island territories*. Reed New Holland, Sydney.

Results of HOS Plant Show 2017

Class 1: Three pots native British orchids, distinct varieties

1st Barry Tattersall: *Orchis anthropophora*; *Orchis simia*; *Anacamptis laxiflora*

Class 2: Three pots native European (not native to Britain) orchids, distinct varieties

1st Barry Tattersall: *Ophrys ferrum-equinum*; *Anacamptis papilionacea* ssp. *heroica* (Fig. 2); *Orchis brancifortii*

2nd Stephen Clements: *Ophrys fusca*; *Serapias* × *godferyi*; *Orchis italica*

Class 3: Three pots non-European hardy orchids, distinct varieties

1st Barry Tattersall: *Myrmechila truncata*; *Cypripedium formosanum*; *Ophrys kotschyi* (Fig. 4)

2nd Mike Powell: *Cypripedium formosanum*; *Pterostylis curta*; *Cymbidium goeringii*

Class 4: Three pots hardy orchids, distinct varieties, any country of origin

1st Barry Tattersall: *Ophrys cretensis*; *Anacamptis longicornu*; *Serapias lingua* × *neglecta*

Class 5: One pot native British orchid

1st Neil Hubbard: *Anacamptis morio*

Class 6: One pot native European (not native to Britain) orchid

1st Barry Tattersall: *Ophrys speculum*

2nd Neil Hubbard: *Orchis italica*

Class 7: One pot non-European orchid

1st Barry Tattersall: *Pterostylis nutans*

2nd Mike Powell: *Cymbidium goeringii*

Class 8: One pot *Dactylorhiza*

1st Barry Tattersall: *Dactylorhiza romana*

Class 9: One pot *Orchis*, *Anacamptis* or *Neotinea*

1st Neil Hubbard: *Anacamptis morio*

2nd Barry Tattersall: *Orchis italica*

3rd Neil Hubbard: *Orchis italica*

Class 10: One pot *Ophrys*

1st Barry Tattersall: *Ophrys vernixia* (Fig. 5)

2nd Neil Evans: *Ophrys oestrifera* ssp. *dodekanensis*

3rd Neil Hubbard: *Orchis italica*

Class 11: One pot *Serapias*

1st Barry Tattersall: *Serapias carica*

Class 12: One pot *Cypripedium*

1st Mike Powell: *Cypripedium formosanum* (Fig. 3)

2nd Malcolm Brownsword: *Cypripedium formosanum*

Class 15: One plant or pan of plants raised from seed by the grower

1st John Haggar: *Ophrys reinholdii* × *morisii*

2nd John Haggar: *Ophrys tenthredinifera* × *speculum*

Winner of Best in Show Trophy:

Barry Tattersall for *Myrmechila truncata* in Class 3

Winner of Chairman's Trophy:

Barry Tattersall for *Pterostylis nutans* in Class 7 (Fig. 1)

Most Points & Winner of RHS Banksian Medal:

Barry Tattersall

Thanks to Nick Fry for judging the Plant Show

Fig. 1: *Pterostylis nutans* (Barry Tattersall in Class 7)

Fig. 2: *Anacamptis papilionacea* ssp. *heroica* (Barry Tattersall in Class 2)

Fig. 3: *Cypripedium formosanum* (Mike Powell in Class 12)

Fig 4: *Ophrys kotschyi* (Barry Tattersall in class 3)

Fig. 5: *Ophrys vernixia* (Barry Tattersall in class 10)

Photos by Mike Gasson

1



2



3



Australian Sun Orchids Colin & Angela Scrutton

Among the glorious terrestrial orchid flora of Australia, the Sun Orchids are rather unusual. The most notable feature is the labellum, which shows little or no differentiation from the other tepals. This gives the flower a radial appearance, so that pollination in some species is achieved by mimicking co-occurring lilies and irises. Thus these orchids don't immediately catch your eye as most orchids do; that is until you look closely at the very distinctive column with its modified post-anther lobe and column arms. During our various trips, we've seen a good cross-section of Sun Orchid species, including a group of three very rare plants reckoned to be the most beautiful orchids in Western Australia.

Sun Orchids are species of the genus *Thelymitra*, restricted to southeast Asia and Australasia. They are an important component of the Australian orchid flora with around 110 named species and several more yet to be named. Most open widely only in hot sun (hence their common name), some reluctantly on very hot days or not at all in a cool year. Almost all close at night. Although some are cross-pollinated by mimicry, many others are self-pollinating and these are generally the species that are most reluctant to open and in dull seasons are pollinated in the bud.

About two-thirds of Sun Orchids have blue flowers. The Scented Sun Orchid, *T. macrophylla*, is typical (Figure 1). It grows up to a metre tall with up to 20 flowers on the spike and, as in all Sun Orchids, a single leaf, in this case thick and rather leathery. The median sepal is broader and the labellum more slender than the other tepals but the radial effect, reinforced by a matching scent, is sufficiently convincing to kid small bees that they are visiting the pollen rewarding lily *Orthrosanthus laxus*! The column is formed into a hood, enclosing the pollinia and stigma. The enlargement gives a better view into the hood, showing the bases of the pollinia, the spherical viscidium and the twin stigmas, a slightly lighter blue. The column has a smooth, tubular post-anther lobe, the entrance coated with yellow pseudopollen, and a pair of column arms extending forward tipped with a dense mass of white filaments.

The Blue Lady Orchid, *Thelymitra crinita*, is a shorter plant with a short, stem-clasping leaf just above the base of the spike and up to 15 flowers. It has a more complex post-anther lobe (Figure 2). The tubular structure with its yellow-rimmed arched entrance is buried in a thick cluster of yellow-tipped black glands, the whole effect suggestive of the presence of pollen. Column arms extend forward bearing a froth of pink to mauve filaments. It is pollinated by bees that visit the same lily (*O. laxus*) and the Scented Sun Orchid.

4



5



The Bell Sun Orchid, *T. campanulata* (Figure 3), has rather densely packed flowers on a spike up to 500mm tall with a long narrow, stiffly held leaf. It is distinguished by a pair of large elongate pads of pseudopollen on the post-anther lobe. The flowers are cup-shaped, with strongly marked petals, and the radial symmetry is almost perfect.

Roughly three-quarters of all Sun Orchids have a column structure that is a variation on these themes, around half with a smooth post-anther lobe. The structure of the column is by far the most important feature for distinguishing species. Occasionally, the column develops quite bizarre structures, such as in the Veined Sun Orchid, *T. cyanea* (Figure 4), which also has a more strongly differentiated labellum. It is largely self-pollinating.

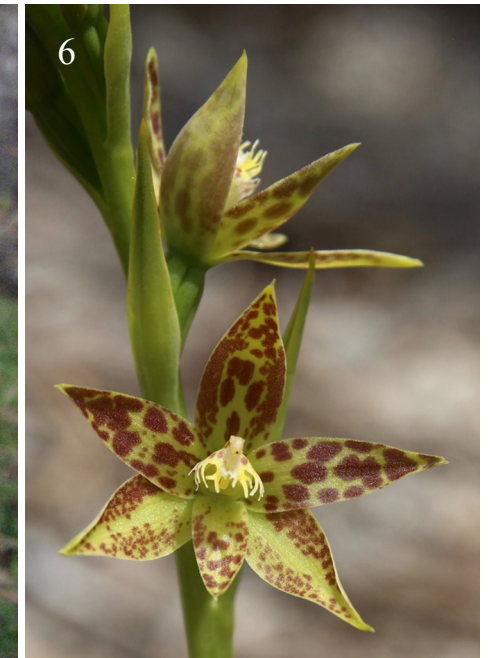


Figure 1: *Thelymitra macrophylla* Scented Sun Orchid (33mm)
 Figure 2: *Thelymitra crinita* Blue Lady Orchid (38mm)
 Figure 3: *Thelymitra campanulata* Bell Sun Orchid (16mm)
 Figure 4: *Thelymitra cyanea* Veined Sun Orchid (27mm)
 Figure 5: *Thelymitra antennifera* Lemon-scented Sun Orchid (34mm)
 Figure 6: *Thelymitra benthamiana* Leopard Orchid (27mm)

Flower width in brackets
 Photos by Colin Scrutton

The next most common colours in Sun Orchids are shades of orange, yellow and brown. The Lemon-scented Sun Orchid, *T. antennifera* (Figure 5), is a common colony-forming species in South Australia, Victoria, Tasmania and Western Australia. It has a characteristically zig-zagged stem with up to three flowers and a long thin leaf. The post-anther lobe has a smooth-brown crest and dark-brown column arms held above the column, giving this orchid the alternative common name of Rabbit Ears. The Leopard Orchid, *T. benthamiana* (Figure 6), was a target on our last trip to Australia in 2016. The Spring in Western Australia had been unusually cold, delaying flowering and we thought at one stage that we would fail to see it in flower. Much to our delight, we finally found a couple of spikes in two different localities with two or three flowers open. It has a stem-clasping lanceolate leaf and may have up to 10 flowers on the spike when fully open. It's a particularly beautiful orchid with the column arms deeply fringed and looking like a rather straggly moustache! The Custard Orchid (*T. villosa*) has bright yellow flowers with brown blotches on the petals and labellum, variably developed on the sepals as well (front cover). It is unusual in two respects. Firstly it has a dense cluster of off-white to pinkish filamentous glands on the post-anther lobe and a thick mass of yellowy-orange, sometimes brown-tipped, hairs on the co-joined column arms. Secondly, it is the only Sun Orchid with a hairy leaf. The leaf is short, broad and stem-clasping with rows of very fine white hairs.

White, pink and mauve Sun Orchids also occur but are represented by only a handful of species. Most are relatively rare and localised.

Finally to the *pièce de résistance* of the Sun Orchids, the Queen of Sheba group. These orchids belong to the Spiral-leaved Sun Orchids, so named for the single main leaf that spirals round the lower part of the stem (Figure 7), or sometimes diverges out to the side. There are eight species in this group, all but one in Western Australia. The three species of the Queen of Sheba group are restricted to a few scattered localities in south-west Western Australia and are very rare. The Northern Queen of Sheba *T. pulcherrima* (Figures 7, 9) was the first of the three we found and you can imagine the thrill when we discovered the first plant, one of eventually six spikes widely scattered in fairly dense low bush! Our friend in Perth, the orchid expert Andrew Brown, kindly gave us locality details for all three species and we are sure we would

Figure 7: *Thelymitra pulcherrima*, Northern Queen of Sheba (220mm high)

Figure 8: *Thelymitra variegata* Queen of Sheba (38mm)

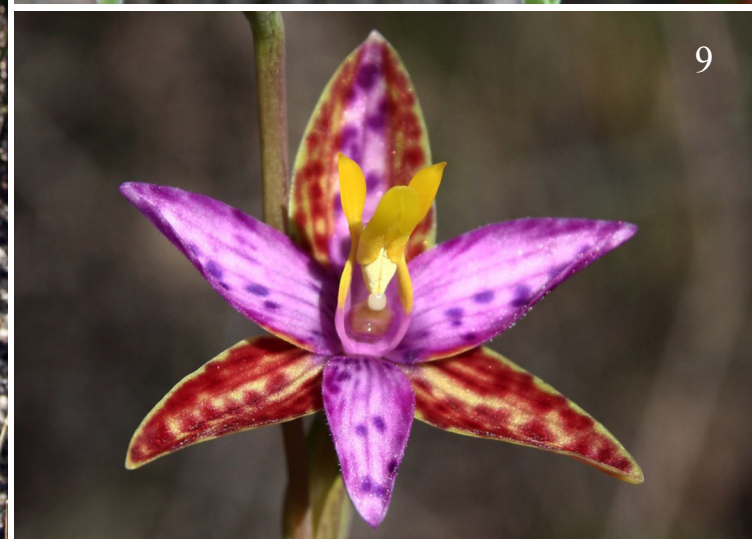
Figure 9: *Thelymitra pulcherrima* Northern Queen of Sheba (32mm)

Figure 10: *Calectasia grandiflora* Blue Tinsel Lily (35mm)

Figure 11: *Thelymitra speciosa* Eastern Queen of Sheba (37mm)

Flower width in brackets (spike height for Fig. 7)

Photos by Colin Scrutton



never have found the Queen of Sheba, *T. variegata*, itself (Figure 8) without his help on the spot. It is the rarest and most difficult of the three species to find and is listed as Priority flora in the Western Australia orchid conservation initiative (Storey, *et al.* 2013). The Eastern Queen of Sheba, *T. speciosa* (Figure 11), we eventually saw in two separate localities, at one of which we also found the Blue Tinsel Lily, *Calectasia grandiflora* (Figure 10), which it mimics. All three species have a yellow, finely papillate bi-lobed post-anther lobe with the column arms somewhat leaf-like and held above the column. The tepals are brightly coloured and readily distinguish the three species, although all three show some variation in colour and width of the sepals and petals from plant to plant. The Eastern Queen of Sheba usually has only a single flower, whereas the other two species may have up to five flowers on the spike and all three are insect pollinated. These truly are the most attractive orchids in Western Australia!

References

- Brown, A., Dixon, K., French, C. & Brockman, G. (2013) *Field Guide to the orchids of Western Australia*. Simon Nevill Publications, Perth, WA.
- Jones, D.L. (2006) *A complete guide to native orchids of Australia including the island territories*. Reed New Holland, Sydney.
- Storey, J., Brown, A., Tiong, G. & Cootes, J. 2013. Orchid conservation initiatives in Western Australia: the adopt an orchid project (ADORP). *Journal of the Hardy Orchid Society*, 10: 95-103.

HOS Photographic Competition 2017

Entry details for the competition at Kidlington, November 19th 2017

Send notification of entries for print classes to Steve Pickersgill by 6th November 2017 at photocomp@hardyorchidsociety.org. For entrants who are unable to attend the meeting Steve will accept postal entries by the same date, SAE if return of pictures is required. Please email Steve for the address for postal entries.

E-mail digital entries by 16th October 2017 to Neil Evans at neilevans@hardyorchidsociety.org.

NOTE the Schedule of Classes and Rules have been amended and can be found on the website:

<http://www.hardyorchidsociety.org.uk/HOS%201012/PhotoCompIntro.html>

Field Trips – Your Help Required!

Alan Bousfield

I try to arrange about ten field trips each year to various locations across the country. From the low attendances to some 2017 field trips, I can only assume members are looking for new and different locations. So if you know of a suitable location for a field trip in 2018 and are willing to organise one, please contact me: alan.bousfield@ukgateway.net. In addition, suggestions are welcome on where members might like to go and what they would like to see on a field trip.

Greenwings

Wildlife Holidays

2017 Holidays

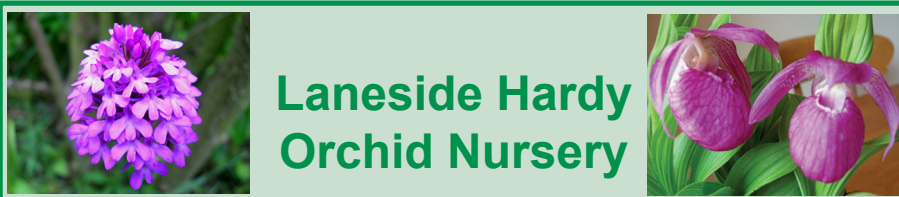
Bulgaria, 29 July - 6 Sept
Catalonia, 15-22 Sept
Peru, 15-30 Oct

2018 Holidays

Northern Greece, April
South Africa, April
Panama, May
The Spanish Pyrenees, May
The French Pyrenees, May
Southern Greece, June
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Bulgaria, June
Macedonia, July
the French Alps, July
Estonia, July



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The Orchids of Blackpool and Beanrig Mosses, Selkirkshire Richard Hogg

At the end of May and early June 2016, my wife Geraldine and I spent a week in the Borders of Scotland near Selkirk. Close to our holiday cottage were the Whitlaw Mosses SSSI which is comprised of Blackpool, Beanrig, Murder, and Nether Whitlaw Mosses. These formed during the last ice-age as scooped-out basins. After the ice melted the basins became lakes, which slowly filled with peat. The first three of these mosses, are fed with lime-rich water from groundwater passing through calcareous shales. Each Moss has an interesting flora, with areas of sedge fen, open water, mosses, reeds, herb meadows, lime-rich sedge flushes, and willow carr.



A view of Blackpool Moss with willows, reeds and damp meadow. One Coralroot Orchid was found under the willows to the left. The meadow in the foreground was home to a number of *Dactylorhizas* which were hidden in the vegetation.

Photo by Richard Hogg

Blackpool Moss and Beanrig Moss are about five minutes' walk from the holiday cottage, so during our week in Scotland several brief visits were made to Blackpool Moss, with a very short visit to Beanrig Moss at the end of the week. Both mosses host a small number of orchid species, but the primary reason for the visits was to look for Coralroot Orchids (*Corallorhiza trifida*), which are parasitic on the fungi of



willow and birch roots. Searching under the willows for these orchids can be very difficult, as you have to dodge the many low branches and very boggy areas. On the first visit to Blackpool Moss, I found one Coralroot Orchid, which was unfortunately still in bud. This was found in a slightly drier shady area, with less vegetation for competition. By the end of the week, only one flower had opened. The plant was 9cm high, and the flower was 4.5mm across.

No doubt there were more Coralroot Orchids to be found at Blackpool Moss, but I only found the one mentioned previously. On the last day of our holiday the SSSI sites were being monitored by three people who informed me that Beanrig Moss was a better place to find these orchids. I spent about ten minutes looking at Beanrig and quickly found four flowering plants close to the board-walk which goes through the middle of the site. These were under willows, and were raised well above the water-level and were surrounded by moss, and other vegetation.

In addition to the Coralroots, the other interesting orchids were the *Dactylorhiza* species and hybrids in the meadows of both Blackpool and Beanrig Mosses. One possible Common or Heath Spotted-orchid was found in a shady area of Blackpool Moss but as it wasn't in flower, it couldn't be ascertained whether it was a Common-spotted, Heath-spotted, or even a hybrid. Flowering Northern Marsh-orchids (*D. purpurella*), and a number of hybrids, were found in an area of Blackpool Moss where the reeds had been cut down. Some of the hybrids with Northern Marsh-orchid had faintly spotted leaves while others had Early Marsh-orchid characteristics. However, no Early Marsh-orchids or Common/Heath Spotted-orchids could be seen in this area.

Another much damper meadow area of Blackpool Moss had flowering Early Marsh-orchids (*Dactylorhiza incarnata*) plus some hybrids. Two Early Marsh-orchid subspecies were represented; *incarnata* and *coccinea*. The latter richly-coloured subspecies is normally found in coastal dune slacks, but was found here in a flush. The hybrids appeared to be with Northern Marsh-orchid. One particular hybrid plant certainly resembled a cross between Northern Marsh-orchid and the Early Marsh subspecies *coccinea*. Another interesting plant of possible hybrid origin, had many purple flowers, along with a few smaller creamy-white flowers with purple markings.

Fig. 2: Coralroot Orchid close-up, Blackpool Moss. The flower is 4.5mm across.
 Fig. 3: Coralroot Orchid, Beanrig Moss.
 Fig. 4: Early Marsh-orchid *Dactylorhiza incarnata* subsp. *coccinea*, Blackpool Moss.
 Fig. 5: Possible hybrid *Dactylorhiza* with mostly purple coloured lips, and with two smaller flowers with creamy white lips.

Photos by Richard Hogg

The two visited Whitlaw Mosses certainly had an interesting orchid flora, albeit with just a few species. One conclusion that can be taken from the visits is that the *Dactylorhiza* species and hybrids, in the main, grew in the damp meadows and in flushes, whilst the Coralroot Orchids preferred a damp but better drained habitat.

Reference

Scottish Natural Heritage, (2010) Whitlaw Mosses - Site of Special Scientific Interest, Site Management Statement.

Submitting Entries to the Photographic Competition Jon Evans

In 2006 I was asked to judge the Photographic Competition for the Hardy Orchid Society, and afterwards was asked to produce an article for the journal about the competition, and the selection and preparation of entries for show. More recently, I have been invited back again to judge in 2015 and 2016; as a result I have produced a revised version of that article, which is now posted on the HOS website, where many of the points raised are illustrated with examples. My greatest concern in the last two competitions has been the number of excellent images which have been ruled out because they do not meet the requirements of the class. The full length article provides a more detailed discussion of desirable criteria for each class, and goes on to discuss composition, lighting and digital processing, together with some observations on how to present or submit your images.

What is the subject of the photograph?

It is important that the main subject of your photograph matches the subject required for the class you put it in; if it doesn't, the photograph will not do as well as it should. Pay attention to any rules specific to the class, in particular the requirement that a group of or single orchid plant image should show the whole plant(s).

Landscape or habitat showing orchids in their natural environment

The key criterion here is that the photograph should illustrate the conditions or habitat under which specific orchids grow in the wild. There is always a difficult judgement to make about what constitutes sufficient 'habitat', and some images flirt with danger in this respect. The image should not be dominated by large orchids in the foreground; nevertheless, orchids should be a significant element of the image. The best entries in this class showed a habitat with orchids in the foreground, leading away to a wider landscape view in the background.

A Group of orchids

In this class a group of orchids in the foreground of the image should be dominant, and form the main subject of the photograph. There is no need for extensive habitat around this group. Some images are ruled out in this class because they do not show

the whole of the plants. Difficulties also occurred because of the requirement for three separate orchid plants; some groups of orchid spikes may be deemed a single plant. The best images in this class focused on a compact, coherent group of orchids, with space around them, rather than showing orchids scattered all over the image.

Single orchid plant

The rules for 2016 specified that the main subject of the photograph should be the whole of a single, possibly multiple-stemmed, plant. Some images showing plants with multiple spikes were rejected as being a group and not a single plant. A change to the rules for the forthcoming competition, to focus on the number of spikes rather than the number of plants, should make the distinction between this and the previous class clearer for both the exhibitors and the judge. In this class, the main subject should be in focus from front to back; by contrast, the background should be blurred and out of focus if possible, to prevent background elements detracting from the image.

Close-up of an orchid plant

It is important to recognise that the class for a close-up of an orchid plant has now been split into two, with separate classes for close-ups showing the entire inflorescence (flower-spike), and for close-ups showing just part of the inflorescence. Several excellent close-up images were ruled-out because they were put in the wrong class; if an image includes part of a lower flower it is clearly not the whole spike. Whilst it is tempting to use pictures which show insects visiting the flowers, in many cases the butterfly, bee or bug dominates the image and becomes the main subject.

Creative manipulation of a hardy orchid subject

This is a relatively new class in the competition. Many things are possible using Photoshop and similar photo-editing packages. When I was judging this class I was looking for two main things:

- treatments which enhanced the appeal or interest of the image.
- treatments which showed some creativity and imagination, and which went beyond simple use of standard filters and treatments built into Photoshop or other packages.

As in 2006, I would like to thank the stewards for their kindness and hard work, guiding me through the process of judging this large array of images, and to congratulate again all the exhibitors for producing such a magnificent display, in particular the prize winners in each class for producing such fine photographs.

HOS Video Competition
Celia Wright

The HOS Video Competition will be held annually during the HOS Autumn Northern Meeting from 2017 onwards. Full details including a list of Video Show Rules are available on the HOS website via a link on the Home Page.

The Tony Hughes Trophy will be awarded to the best video. The trophy may be held for one year, and must then be returned. Judging will be by audience vote. In the event of too many entries for a one hour session, committee members will view the material and reduce the entry to the required number. If time permits, all entries will be shown at the Autumn Northern Meeting. The winning video will also be shown at the following Autumn Southern Meeting.

For 2017 entries must be sent in advance by August 1st to the Video Competition Organiser John Temporal, either by email (john.temporal@btinternet.com) or for larger files, using one of the free transfer services such as WeTransfer or Dropbox. The Video Competition Organiser will supply instructions for using WeTransfer on request.



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Orchid Prospecting: From the Birth of the Tetrad to the Google Era

Richard Bateman

I suspect that few HOS members travel in spring or summer without first having given some thought to which orchids might be seen at their chosen destinations. Certainly, the HOS Discussion Forum is heavily populated with pleas for site information, the requests ranging in geographical scope from single localities to entire countries. HOS policy is that such requests are fulfilled at an inter-personal level, whereas equivalent organisations in other countries (for example, the German Arbeitskreise Heimische Orchideen, AHO) routinely publish full locality details in their brace of specialist journals. Irrespective of self-imposed constraints, it is clear that there exists a widespread thirst for prior knowledge of orchid localities.

Like most of us, I have benefited considerably through the years from access to prior knowledge, both published and unpublished. But (in common with many HOS members, I have no doubt), I have also contributed to various biogeographic databases details of a fair number of previously unrecorded orchid sites. Here, I review selected tools now available to us, and discuss recent experiences that have caused me to rethink how best to approach such prospecting for temperate orchids.

The birth of the tetrad (or soon after)

My first major (teenaged!) research project involving orchids was a three-year (1977–79) field survey of the family in my then home county, Hertfordshire. Initially, my primary source of prior knowledge was the *Flora of Hertfordshire*, published in 1967 by John Dony. Fortunately for me, John was a pioneer of biological recording using the now familiar tetrads (2 × 2km squares). Thus, I spent much preparation time relating orchid records made in the 1960s to the relevant grid squares on 1 : 25,000 Ordnance Survey maps, seeking likely habitats. Thus armed, I mounted my motorcycle and set off to ground-truth my prior map-based guesstimates of credible orchid localities.

Of course, success was by no means guaranteed. On one occasion, my motorcycle literally fell to pieces after I kicked it off its stand at an *Epipactis phyllanthes* site, only to discover that various key components had been removed by persons subsequently described by the police as “the local toe-rags”. And on another occasion, an unwise attempt to cross a tall barbed-wire fence cost me an entire trouser leg, leaving me with a memorable ride home in the manner of Lady Godiva. More commonly, my high hopes of triumphing at pre-selected sites were dashed on arrival by discovering that the marsh in question had recently been drained, the meadow sprayed with herbicide, or the wood felled and coniferised.

But I digress; more pertinent to my present argument is the fact that the proctors of the (then local government-funded – those were the days!) Hertfordshire Records Centre soon took pity on me and kindly gave me unfettered access to their active record ‘database’, which in the late 1970s consisted of six-figure grid references meticulously inked onto 5” × 3” record cards. Naturally, I felt obliged to check out all those recent six-figure grid references found by others – a much easier task than trying to guess where a previously known orchid population might reside within a 4 km² tetrad. Only gradually did I realise that my own discovery rate of genuinely new orchid records had *decreased* as a result of my increased knowledge regarding what was already known. I had thoughtlessly adopted a lazier search strategy, and so was forced to revise my approach.

Looking back, it is suggestive that when my Hertfordshire survey was eventually published (Bateman, 1981), my greatest success in terms of increasing the percentage of site records was for *Epipactis purpurata* – a species that not only flowers especially late in the season but also rarely grows alongside other orchids, and thus requires particular effort to track down. In his recent replacement *New flora of Hertfordshire*, Trevor James (2009) attributed my success to temporarily increased rainfall during the period of my survey. I will continue to believe that it was down to the shoe leather that I lost (in addition to the occasional trouser leg!) and the fact that I’d learned through experience to target the preferred habitat of *E. purpurata* – dense woodlands on mildly acidic clay-rich soils.

The popularisation of GPS and childhood of online databases

If tetrads were the child of the 1960s, GPS (the Global Positioning System) was the child of the 1970s. This geosynchronous satellite network was first popularised by Arthur C. Clarke and developed primarily by the Americans for celestial espionage. The road to open access (admittedly at artificially low resolution) was sketched out in 1983 by none other than Ronald Reagan, though it was not until 2000 that the full, “non-degraded” signal was made available to the public. Resolution has since improved further following the provision of additional satellites. In the meantime, the miniaturisation of GPS receivers had progressed rapidly while the cost had declined, in tandem with that of mobile phones. GPS devices were thereby transmogrified from the playthings of technophiles to popular accessories for field biologists.

Thus, the *ca* 100 m accuracy for records that I could achieve using my large-scale maps of Hertfordshire in 1980 was, as a result of GPS, improved by an order of magnitude by 1990 and almost two orders of magnitude by 2010 (see the recent review and advice by McIntosh, 2016). Today, we need not settle for merely mapping the centre of the orchid population – on a good day we can map individual plants! But what best to do with the resulting flood of locality data?

Developing alongside GPS technology were various distributional databases, the most relevant for the purposes of the present discussion being the sequence of computerised databases maintained by the Botanical Society of Britain and Ireland (BSBI). Databases devised in the 1990s and early 2000s would allow only crude searching, but online interrogation of today’s BSBI Distribution Database (DDb: 36 million records thus far) can follow far more sophisticated search pathways. For example, I needed only ten minutes to compile from DDb the customised, monad-based (1 × 1 km square), dated and up-to-date map of *Op. sphegodes* in East Kent that constitutes Fig. 1.

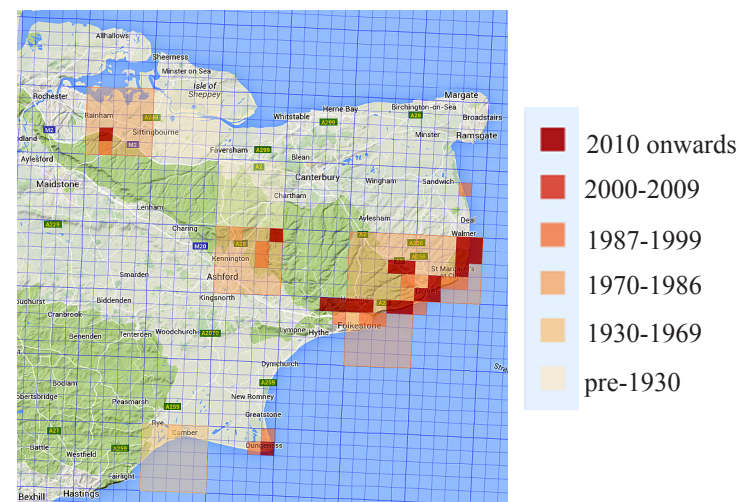


Fig. 1: Distribution through time of *Ophrys sphegodes* in East Kent plotted on a bespoke map – up-to-date but static – generated by interrogating BSBI’s Distribution Database.

Admittedly, specific permission is required from DDb’s database managers to obtain information at a resolution greater than ... surprise, surprise! ... our old friend the tetrad. Penetrating that security filter reveals that the recording standard has in recent years shifted grid references from six figures (i.e. ±100 m) to eight (±10 m) and increasingly to ten (±1 m). Unfortunately, it also demonstrates that the same few well-known orchid hot-spots, particularly those accommodating rarer species, receive orders of magnitude more botanical visits than the remainder. We might, at this point, ask whether encouraging *input* as eight or ten-figure grid references but providing a basic *output* resolution of tetrads only (i.e., half the resolution of four-figure grid references) simply encourages people to revisit well-known localities rather than prospecting more widely.

Switching geographical emphasis from the British Isles across the Channel to France, orchid recording by the Société française d'Orchidophilie (SFO) must surely benefit from the fact that it has established an administrative system resembling the vice-counties long used by the BSBI. Specifically, each of *ca* 90 French administrative Départements has been assigned its own orchidological cartographer. But unlike BSBI recorders, who tackle all vascular plant families, those of SFO are responsible for orchid species only. This framework must surely have aided development of the innovative interactive mapping scheme that they present on their 'Orchisauvage' website (www.orchisauvage.fr). This offers rapidly changing, almost real-time orchid observations, each dot showing the approximate number of plants found and approximate date of each observation within the current flowering season. Thus, anyone able to access the internet can monitor the gradual migration of that species' flowering period on their computer, tablet or smartphone, helping them to target fieldwork not only on specific areas but also on approximate dates (Fig. 2 shows the 'dynamic map' for *Ophrys sphegodes* in 2016, as portrayed on 13th June).

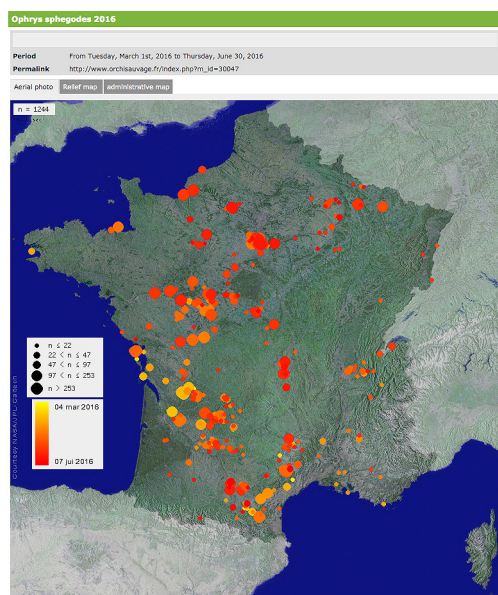


Fig. 2: Dynamic 'real-time' map of reports of *Op. sphegodes* from French localities during spring 2016, categorised according to both flowering time and population size. Derived from the SFO's 'Orchisauvage' website.

Google Earth as an analogue of remote sensing

Continuing the French theme, a recent experience of mine forced me to return temporarily to orchid prospecting at the tetrad scale or worse, and so encouraged me to explore a contrasting approach to fieldwork preparation – one that relied not on databases but rather on a very different suite of online resources, and took as its inspiration satellite-based remote sensing. Specialist satellite images have long been used by professional ecologists to distinguish contrasting biomes and habitats without actually visiting them. My thesis here is that the universally available Google Earth

(the well-known package that was built commercially on an original CIA platform and only released to the public in 2005) has now achieved sufficiently fine image resolution to act as a crude form of remote sensing.

In spring 2016 I decided to resuscitate a modest, ten year-old research project designed to use a combination of morphometric and population genetic approaches to infer the number of times, and location(s) at which, *Op. sphegodes* migrated to England from Continental Europe following the last glaciation. A decade earlier we had gathered the relevant morphometric data from its three centres of distribution along the south coast of England (West Dorset, East Sussex, East Kent) – now it was high time to gather corresponding data from the equally sparse populations (cf. Fig. 2) of Early Spider-orchid along the north coast of France in Normandy and the Pas de Calais. BSBI kindly offered a small research grant to subsidise the necessary fieldwork.

Unfortunately, the (of necessity rather hasty) decision to resurrect the project left me with worryingly little time to gather site data before flowering times dictated that the 2016 fieldwork should begin, and most of the last-minute pleas for information that I did issue fell on deaf ears – the only fairly precise prior locality in Normandy being provided by HOS Conservation Officer Bill Temple. Admittedly, this paucity of site information would not have mattered if I had obtained ready access to databases of the quality of BSBI's DDb. Also, French orchid floras tend to be constructed on a framework of administrative units rather than regular grid squares. The premier French orchid flora (Bournérias & Prat, 2005) mapped native orchids on the basis of Départements (areas averaging a diameter of *ca* 75 km), whereas the recent orchid atlas of Normandy (Chodin *et al.*, 2015) mapped on the rather quaint basis of parishes (their average diameter of *ca* 2 km means that they roughly equate in area with the tetrad grid system routinely employed for county-scale floras in the UK). Chodin *et al.* also helpfully highlighted those parishes that had yielded post-2000 records. But even at that resolution, prospecting in the field under considerable time constraints remains a serious challenge.

At this point, I decided to survey each parish that had yielded post-2000 records for *Op. sphegodes* online using Google Earth. I did so in the hope of substantially reducing the area that would require ground-truthing following arrival in the parish. This approach proved to be rather more successful than I had hoped. I found it easy to identify, and thereby eliminate from my enquiries, terrains that were residential, industrial or arable. Doing so could perhaps be described as negative targeting. But given the resolution now available in Google Earth for many areas of the world, positive targeting is also feasible for anyone possessing a basic understanding of orchid habitats. In the case of *Op. sphegodes s.s.*, short unimproved calcareous turf is optimal, and this habitat type proved to be in surprisingly short supply in Normandy.

More importantly, by the end of the trip we had demonstrated that attempting to identify the few viable patches of such habitat via Google Earth had given a good percentage of successful finds per prior site.

Success can be further improved if Google Earth images are supplemented with observations made through ‘virtual tours’ of promising areas using Google Street View. Even distant Street View perspectives provide valuable information on topography, which is the category of information most difficult to extract from Google Earth (though as an added bonus, I have found altitude estimates taken from Google Earth to be more accurate than those I can obtain from either GPS or conventional maps). Where the habitat of interest is closer to the road, the vegetation type can be broadly assessed. And where the habitat of interest actually *is* the roadside verge, it is even possible to spot individual orchids via Street View, provided that the road had been surveyed by Google at the appropriate time of year (though I admit that image resolution is inadequate to identify most *Ophrys* species!). By combining these two freely available (and thus near-ubiquitous) Google packages, I identified 12 locations in Normandy that appeared to offer greatest promise, and then linked them to form a week-long circular tour of Normandy. Spending one to two hours at each of the 12 sites revealed *Op. sphegodes* populations in four – not a triumph, but more importantly, not the disaster that the trip could have been in the absence of prior prospecting via Google.

In order to give an explicit illustration of this approach based on one coastal site in Normandy, Fig. 3 shows a Google Earth image of an entire parish from which *Op. sphegodes* had been recorded in Chodin *et al.* (2015). A five-minute virtual survey was sufficient to show that most of the terrain in this parish was unsuitable for the orchid. In this case, Google Earth unsurprisingly directed my focus of interest to a local park, the central region of which is illustrated in closer aerial view in Fig. 4. Ground-truthing the site soon led to investigation of the only area still actively grazed (Fig. 5), which in turn led to our discovery of two modest but measurable subpopulations of *Op. sphegodes*; one of short plants growing within the grazed area, the other of more robust individuals (Figs. 6 and 7) occupying the roof of a WWII bunker (it transpired that all three coastal localities that we found of *Op. sphegodes* in Normandy occurred on, or immediately adjacent to, WWII bunkers).

Prospecting

Fig. 3: Google Earth overview of a Normandy Parish within which *Op. sphegodes* is known to have been recorded since 2000 (scale bar = 500 m). Most of the parish is clearly unsuitable to host the species.

Fig. 4: Enlarged Google Earth image within the parish showing the rough pasture that was identified through virtual prospecting as being the area most likely to yield *Op. sphegodes* (scale bar = 50 m). Inset: Enlargement of the concrete bunker featured in Fig. 5.





Figure 5 features a 1m-diameter circular void that was once crowned with a gun turret. Even that small aperture is easily identified on the Google Earth image (Fig. 4, inset), and thereby pinned down to a latitude/longitude resolution of ± 2 m and altitudinal resolution of ± 1 m. Thus, a plant record can be located at least as precisely using Google Earth after returning home from fieldwork as it can when standing by the orchid in question using a GPS device (cf. McIntosh, 2016). I subsequently discovered through experimentation that given (a) a habitat image taken when present at the site that shows a few diverse middle-distance objects exceeding 1m in size and (b) the name of the nearest town, the locality in question can generally be pinpointed using Google Earth within half an hour.

Concluding remarks

It is possible to see almost all European orchid species without going to the lengths I have described above, simply by focusing on well-known sites visited each season by many orchid enthusiasts. Given sufficient lead-in time(!), site lists are not difficult to acquire for many regions across Europe, particularly for well-known biodiversity hot-spots such as Crete, Sicily and Cyprus. But it is more constructive (certainly from a conservation perspective), and often more exciting, to visit lesser known sites – or better still, to seek wholly new ones, and then report them to the most appropriate organisation(s) maintaining publicly available records. With this goal in mind, virtual prospecting via Google Earth and Google Street View constitutes a freely available and easily used preliminary tool that can considerably enhance the efficiency and eventual productivity of subsequent field exploration.

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Ground-truthing

Fig. 5: Population of *Op. sphegodes* found on the roof of the concrete bunker arrowed in Fig. 4.

Figs. 6 and 7: Typical plant subjected to morphometric measurement within the bunker population.

North West Greece 2012 Part 2

Alan Gendle

Having had a successful trip to NW Greece in 2011 we decided to return in 2012. This time we explored the area to the East of the Pindus range some five weeks later than our earlier visit. Armed with some information kindly given to us by Bill Temple we set off for Greece on 9th June, flying from Manchester to Thessalonica. We picked up a 4x4 and drove to Metsovo along near deserted motorways and stayed at Hotel Bitouni for the next four nights. After dinner we wandered up the hill from the hotel, and saw *Ophrys macedonica*, *Cephalanthera rubra* and *Cephalanthera damasonium*.



Dactylorhiza kalopissii (top)
Dactylorhiza pindica (bottom)
Photos by Alan Gendle

On Sunday 10th June we drove on the Metsovo to Milia road, heading towards Milia. After about 5km in an area of damp meadow above the road we found *Dactylorhiza viridis*, *Dactylorhiza kalopissii*, *Anacamptis coriophora*, *Orchis ovalis*, *Anacamptis laxiflora*, and *Neottia ovata*. In a wet gully by the bend in the road, there were lots of *Dactylorhiza*, including *D. saccifera* and *D. pindica*, as well as possible hybrids. We carried on past some ski club huts and parked where the road started to climb. Here on the hillsides we found *Anacamptis morio*, *O. ovalis* and *Gymnadenia conopsea*. Further on, some 12km from Metsovo, we stopped at the top of a bank by some light scrubby woodland, where we found both red & yellow *Dactylorhiza sambucina*, *A. morio*, *Neottia nidis-avis* and *C. damasonium*. Driving down the dirt road back towards Metsovo (4x4 required), we spotted *Orchis pinetorum* and *Platanthera chlorantha* in the pine woods after about 0.5 km. Further down the dirt road, we found an area covered with hundreds of *A. morio* and *D. sambucina*. Before reaching Metsovo we turned off towards Aoo Lake. A wet section of gullies produced more *D. pindica* with lots of problematic hybrids. On a drier area of grassland, *A. coriophora* and *A. morio* were seen.

We left Metsovo on 11th June and turned onto the Milia road, stopping at a little church on the roadside. Growing by the side of a path in the churchyard were *Ophrys helenae* and *Ophrys negadensis*. In the area around the church there were lots of



Dactylorhiza baumanniana
(top)
White form of *Limodorum abortivum* (bottom)
Photos by Alan Gendle

C. damasonium. We carried on to Milia, drove through the village, and after passing through a woodyard took a dirt track heading upwards into woodlands. We stopped at various locations and found *P. chlorantha*, *N. nidis-avis*, *Neotinea tridentata* and *Epipactis atrorubens* ssp. *subclausa* in bud.

Another stop produced some nice *Orchis purpurea*. At a point some 5 km from Milia we came upon a very wet bank side full of *Dactylorhiza*, including *D. kalopissii*, *Dactylorhiza baumanniana*. Some were pure white and of course there were hybrids. A local joined us at the site and gave a demonstration on how to pull up orchids to make salep. Naturally we replanted the orchids as soon as he had gone. We returned to Milia and headed towards Karnia, stopping at a bend in the road some 5 km further on. Exploring a wooded valley next to the road we found *P. chlorantha*, *C. rubra* and *Limodorum abortivum*, including its pure white form.

On 12th June we went along the E92, turning off at the junction for Pironia. At this point we should have found an area of grassland supporting about 14 different orchid species but the area had been ploughed up and planted with a cereal crop. A further 1.6 km from the junction we saw *Ophrys apifera* on an area of open grassland and *Ophrys oestriifera* in the surrounding scrubby woodland. Further on there were lots of *C. rubra* growing on bank-sides and *Epipactis helleborine* in bud by the riverside.

On the return there was a small population of *A. laxiflora* in meadows between the road

and the river north of Milia. We turned off the E92 and went down to the man made Aaos Lake, parking under pine trees above the lake. In the surrounding area and down to the lakeside we found *A. morio*, *C. damasonium*, *D. sambucina*, *Orchis pinetorum* (plus var. *alba*), *N. ovata*, *Op. negadensis*, *Ophrys leucophthalma*, *O. purpurea* and *G. conopsea*. In a wet gully further along the lakeside road there were



C. damasonium, *C. longifolia*, *Dactylorhiza fuchsii*, *O. pinetorum* and *G. conopsea*. Stopping on the south side of the lake after crossing the dam and the water works we found the Pindus endemic *Dactylorhiza smolikana*.

Another stop by a wet gully brought more *Dactylorhiza*, one with fantastic leaf markings. All of the plants seemed to have a blue/violet colouring and most likely were *D. kalopissii*. Final stop for the day was by a grassy verge clear of the lakeshore where we found more *A. coriophora*.

On 13th June we transferred from Metsovo to Kastoria, a lakeside town to the northeast of the Pindus area, staying in Hotel Nostos for three nights. It was a nice hotel with friendly, helpful staff. On route we detoured to Neapoli and Tsoili, then on to Omali. After passing Omali, we explored a sandy hillock, finding *Anacamptis pyramidalis*, *Op. apifera*, *Ophrys epirotica* and the hypochromic variety of *Op. oestriifera*.

We continued on and turned off to Anthoussa, passing through a village to an area of light oak woods and open ground. Here we found *Op. apifera* and *O. oestriifera* and 14 spikes of *Himantoglossum caprinum* (now *Himantoglossum jankae*). We had gone to this area looking for an *Orchis spitzelii* site, later to find there are many villages with the same Anthoussa name on our map!



Orchis pinetorum (top)
Dactylorhiza smolikana
(bottom)
Photos by Alan Gendle



From Kastoria we headed towards Mt Vitsiand and 2.7 km after the turn off to Polykeraso, parked on the edge of a dirt road. Going ahead into wet grassland we followed streams uphill under the electric power lines. Here we found *Gymnadenia frivaldii*, one of the reasons for the visit to this area, and also *Dactylorhiza cordigera* with hybrids between the two. *L. ovata* was present and *Anacamptis papilionacea* on the slopes opposite. Carrying on up the road to where it emerges from the woodland, an area of grassland produced some fine specimens of *D. sambucina*, both red & yellow forms. Driving on towards Drospigi, at a point 3 km south of the village, the bank sides where the road crosses a stream gave us *G. conopsea*, *Platanthera bifolia* and *A. papilionacea*.



From Kastoria we headed west and 0.6 km before Hrysi on the roadside there was a wet marshy area with grassland behind. Here we found pink & white colour varieties of *Dactylorhiza incarnata* with *D. fuchsii* in the wetter areas. In grassland above we found *G. conopsea*, *D. fuchsii* and *Anacamptis coriophora* ssp. *fragrans*.

Passing on through Hrysi and 4.2 km further on led us to an area of pasture situated between the road and river with *A. pyramidalis* and *Ophrys sepioides*. Another 5.7 km down the road exploring a wet area of rushes gave us *A. pyramidalis*, and *A. laxiflora*. In a wooded area higher up the hillside we found *H. jankae*, *C. rubra* and *Op. oestriifera*.

Dactylorhiza cordigera (top)
Hybrid between *D. cordigera*
and *Gymnadenia frivaldii*
(bottom)
Photos by Alan Gendle

We returned to Kastoria for the journey back home the next day. Over two trips to NW Greece we had seen over 55 different orchid species in flower, excluding hybrids.

