

**Journal
of the
HARDY ORCHID SOCIETY**

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Front Cover Photograph

Pollinator on Marsh Helleborine (*Epipactis palustris*) by Bill Temple. See article on page 118.

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

As with the last JHOS we have important information about alternatives to the events we have had to cancel due to Coronavirus restrictions. I am grateful to several people, including some new contributors, for sending in articles and keeping the journal supplied with material. It is a vital contribution to the Society and especially welcome with the current limitations on travel. We have some interesting home-based reports. Steve Tandy describes a favourite reserve, Minera Quarry, and we have a Cumbrian Bog Orchid quest from our Chairman, Carol Armstrong, together with her husband Andrew and video competition winner Alan Gendle. Bill Temple followed a variety of pollinators of the Marsh Helleborine in his garden and Rosemary Webb shares another memory, giving us an overseas adventure with the Lady's-slipper Orchid in Switzerland. Not forgetting our cultivators, and continuing an overseas theme, Moira Tarrant has extended her talks to the USA and reports on interviews with Doug Martin a well-known and very successful orchid grower and exhibitor.

Chairman's Note

Carol Armstrong

Welcome to the Autumn edition of the *Journal of the Hardy Orchid Society*. I hope that you have kept safe and well, and although the initial lockdown seriously curtailed individual outdoor movement, I hope that you had some opportunity to enjoy orchidaceous activities. The loss of our Society's planned activities requiring group social interaction and cancellation of external flower shows were acutely felt by all of us. The Society is presently exploring new means of communication with its members after a season of losing some of our most defining activities – those being our indoor meetings, field meetings, seed sowing workshop and having to postpone new ventures in orchid conservation too.

We ran a well-received replacement for the Leeds September meeting. This was an online meeting where members gave presentations about recent orchid encounters, just before and during lockdown, which was delivered via our website. Thanks are due to our Speakers Secretary, Celia Wright and Webmaster, Mike Gasson. The annual video competition was similarly run on the website and the winner voted for via the forum. Congratulations to Alan Gendle for his video describing *Dactydenia* found in Cumbria. Thanks to Steve Pickersgill for organising this.

We hope to provide you with similar virtual meetings next year if necessary. Presentations would be welcome, it really isn't that hard and help will be given. If you are able to contribute to future events please contact Celia or myself.

Unfortunately, the Kidlington meeting in November has had to be cancelled. Please see the announcement in this journal for further details. We are planning a virtual meeting "Kidlington Online 2020" as a replacement for the cancelled Autumn Meeting on November 8th. This meeting also hosts our photographic competition and we have made arrangements already for this to be presented online, using the forum and website (entry details were included in the Summer 2020 *JHOS*: 17[3] page 79). In addition, we intend to make the Informative Photographic Display (formerly Scientific Show) an online event. Details of this are in this *JHOS* on page 135.

As the situation remains very fluid, we may have to change our programmes at short notice, so please check the website. Meanwhile our Journal remains a linchpin, reaching all our members four times a year, and I am grateful for the sterling work by our Editor to achieve this.

Due to forthcoming retirements we need new members on our Committee to succeed our retiring Secretary, Vice-Chairman and Plant Show Secretary. The roles are defined in the Members Handbook, and you are welcome to contact me for a chat if

you are interested. These are important roles which we must fill if the Society is to function effectively. If you can, please do consider volunteering. Stay safe and all the best for the New Year.

Kidlington Autumn Meeting

Unfortunately the ongoing restrictions due to the Coronavirus pandemic makes it impossible to hold the next planned meeting at Kidlington on 8th November 2020. We are planning to run an online event similar to 'Leeds Online 2020'. Alternative arrangements are already in place for an online version of the 2020 Photographic Competition (entry details were in the Summer 2020 *JHOS*: 17[3] page 97 and also they are on the website: www.hardyorchidsociety.org.uk and www.hardyorchidsociety.org.uk/photocomp).

Similarly, we plan to maintain the Informative Photographic Display (previously Scientific Show). Submission details are on page 135 of this *JHOS* and also on the website: www.hardyorchidsociety.org.uk/informative-display.

So far Celia Wright has received three offers of contributions for 'Kidlington Online 2020' but needs more to build a good and varied programme. Talks on any hardy orchid topic lasting from 5 minutes up to 30-40 minutes are welcome. It would be especially good to have contributions covering aspects of orchid culture or conservation as neither of these areas was covered in 'Leeds Online 2020'.

Details of how to produce such a talk were provided by Celia in the Summer 2020 *JHOS*: 17[3] pages 78-79. The website has further information as well as some helpful resources at www.hardyorchidsociety.org.uk/virtual-meetings. Celia would welcome contact at celia.wright@windmill.me.uk if you think you might be able to help or would like personal advice on preparing a presentation.

One difference from the online Leeds event is that we plan to make 'Kidlington Online 2020' a password protected event so that it is for the exclusive benefit of HOS members. Thus in order to access the meeting presentations, Photographic Competition entries and Informative Photographic Display you will need the password which is prominently printed at the end of this panel.

'Kidlington Online 2020' PASSWORD: Ophrys2020

once saw a solitary specimen of this plant in a meadow at Aspatia.—(W. Hodgson.) Near Skiddaw.—(Rev. R. Wood.)

wood, pretty plentiful.—(R. Whis.) Native.

ood, and in the marl close near Brigstone woods.

(J. Wilson.) Middlebarrow Wood, Arnside. Also

Arnside Knot.—(T. W. Gissing.)

L. Plumpton Woods near Ulverstone.—(T. J. Wood-sides and fields about Grange-over-Sands.

—(J. Sidebotham.) Hagg Hills near Dalton in Fur

Roudsea Wood, Haverthwaite.—(Aiton, Miss Hodgs

1063. *Malaxis paludosa*, Sw. Native. British Range 1.

C. One plant at Wastwater, July 1868.—(Miss E. Lodore.—(C. Lyell.) Spongy bog at the foot of C

—(W. B. Waterfall.)

W. Swindale Moors, over Hawes Water

Swamp between Sölva How and Easedale.—(J

L. Between Rusland Chapel and Thwaite (Wright.)

idge.—(Rev. Mr. Jackson.) about twenty

—(W. Hodgson.)

Said to be at Middlebarrow and in the north-west of High Furness.



Historical Records Come Good Alan Gendle, Carol & Andrew Armstrong

In 1887 JG Baker published “The Flora of the Lake District”. He accumulated records from botanists and used this information as a basis for his book. Carol managed to get hold of a copy of this book and we analyzed the orchidaceous section. An interesting entry was from a Mr Freeman Clarke Samuel Roper of an observation in 1885 of *Malaxis paludosa* which we now know as *Hammarbya paludosa*, the Bog Orchid. It was stated to grow between Easedale and Sölva How. This is over a mile as the crow flies but with over 200 metres difference in altitude. A known site between these locations was Blind Moss. If this was Roper’s site why mention Sölva How? Now we know this peak as Silver How, a popular Wainwright tourist destination.



Fig. 1: Baker’s 1887 Lakeland flora information.
 Fig. 2: Blind Moss Bog Orchids.
 Fig. 3: Blind Moss search party.
 Fig. 4: Brigstone Moss first Bog Orchid.
 Fig. 5 (above): Brigstone Moss.
 Photos by Carol & Andrew Armstrong



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Looking at the OS map for the area indicated that Brigstone Moss was at the foot of Silver How; could this be the bog orchid site referred to? We set off in late July from Grasmere and headed initially to Blind Moss to confirm that Bog Orchids were actually in flower. Searching the runnel that flows into Black Moss Beck we located 37 flowering spikes.

We then climbed the hill between Blind Moss Beck and Brigstone Moss. Looking down from the ridge there seemed to be lots of small streams draining from the moss into Wray Gill. All the streams were fed from flat boggy areas. Following these streams back to their source the streams reduced to runnels draining the bogs. Eventually, after half an hour of searching we found a runnel with a single bog orchid. The plant was large at 4cm tall with a strong yellow/green colour which had caught our eye. A thorough search of the runnel then started and eventually ten flowering plants were observed. At an altitude of 329m this site is high for Cumbrian Bog Orchid locations. Further runnels were searched but without success. We felt vindicated that our detective work had been successful. There are no modern records for *Hammarbya paludosa* in this area. After a 135-year gap were we the first to set eyes on these plants since 1885?

After the successful trip to find Baker's 1885 site we set off a week later to try and locate another of his sites, Boredale Hause. This is an area of high ground east of Ullswater. We climbed the long pass out of Boredale to the summit area, the Hause. It soon became apparent that changes had taken place since the original find by Roper. The area was overgrown with rushes, with very little sign of sphagnum moss or runnels. There was evidence of water engineering work, pipeline air vent points and cast iron valve covers. We later found out a water pipeline had been built from nearby Hayeswater, which must have destroyed the original bogs. Searching the head of Boredale also proved fruitless. Well you can't win them all!



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Fig. 6: Searching Blind Moss area.
 Fig.7: Bog Orchid runnel at Blind Moss Beck.
 Photos by Carol & Andrew Armstrong (Fig. 6) & David Benham (Fig. 7)

Marsh Helleborine (*Epipactis palustris*)

Bill Temple

This is an interesting and I think rather attractive species that normally inhabits alkaline fens or dune slacks, in or close to flowing water. It will not tolerate stagnant water. I have seen it growing in the New Forest in the company of Heath Spotted-orchid (*Dactylorhiza maculata*) and Lesser Butterfly-orchid (*Platanthera bifolia*) in a wet area. Presumably this was an area that was neutral rather than the normal acidic ground found in the forest.

It is however a good garden plant provided it is not allowed to dry out and it multiplies rapidly if happy, particularly if it is given a little fertilizer. The method of spreading and multiplication in a garden is similar to that of Couch grass, although at a slower rate of about three or four shoots for every shoot the previous year. I grow mine, the original one came from the late Norman Heywood, in a raised bed which is watered from below. If you put highly moisture-retentive compost at the bottom and gradually change to highly drained compost at the top the rhizomes will select their ideal depth and change their depth year on year as the compost ages.

It does exhibit some odd behaviour though. A colony is normally in flower for a month or more but pollinators do not appear throughout the month. They appear mainly in one day, with an odd one or two the next day then there are no pollinators for at least a week and then another burst of pollination activity. The actual pollinators are very varied suggesting some sort of reward is produced that has an almost universal appeal. This is consistent with the comments by Claessens & Kleynen (2011) that the Marsh Helleborine is a reward plant in which the inside of the lip has an orange centre where nectar is secreted. The lip itself is hinged so it can close behind a small pollinator, pressing the pollinator against the anther. Some of the larger pollinators really have to struggle in order to enter and escape the flowers. However this does not prevent them from going to another flower even though the pollinia are stuck in what seems to me to be an awkward position.

The Honey Bee (*Apis mellifera*) was a known pollinator in Darwin's time. Claessens & Kleynen (2011) list 163 pollinator reports for the Marsh Helleborine, although about twenty of these are listed as genus so could be duplicates of an already named species. There are still more than a hundred pollinators listed, although the actual numerical breakdown is 14 Coleoptera, 62 Diptera, 85 Hymenoptera, 1 Lepidoptera and 1 Orthoptera. Here are some photographs of the pollinators in my garden.

Reference

Claessens, J & Kleynen, J (2011) "*The Flower of the European Orchid*". Self-published



I Will Have to Come Back Next Year 3: *Cypripedium calceolus* in Switzerland Rosemary Webb

Perhaps the most famous wild orchid in Europe is the Lady's-slipper Orchid – *Cypripedium calceolus*. For many orchid enthusiasts, myself included, it really is the one we want to see most of all. I knew I was never going to be able to see the heavily protected plants at the only remaining native site in Northern England. It seemed that there was only a possibility of finding it if one went to Europe. It was the focus for my very first visit to Switzerland over 20 years ago now. I could only go at the end of May and many local people told me that would be too early. However, I had to try.

I was based in Kandersteg in the Bernese Oberland. I had no idea where to start looking. I had worked-out from a photograph in a book that I might find it in a far valley beneath the Jungfrau massif. The little railway up to Wengen and then eventually Kleine Scheidegg started from Lauterbrunnen which is about an hour's drive from Kandersteg. I drove off early and was on the early train. I studied a very detailed map of the area and thought I should leave the train at Wengenalp.

I took a route heading down to a valley, down a steep rocky path, through woods and on to another distant valley. There were a lot of limestone outcrops here, covered in *Primula auricula* and *Dryas octopetala*. We seemed to be very close to the Jungfrau massif. It was a wonderful, wild, atmospheric valley. It seemed as if some of the snow on the mountains touched the ground but in fact there was another very deep valley between us which channelled the melt-water from the glaciers. I disturbed some chamois which disappeared over a ridge. I looked around, it felt quite cold, the air was capturing the ice from the mountains, I think.

It was a beautiful place and the searching around was enjoyable. The air was calm and the light in these high places has a special quality. As I had never seen *C. calceolus* I had no idea what specific type of habitat I should be looking for. The picture showed it in open ground with snow in the background on the mountainside. There were bushes of Alpenrose (*Rhododendron hirsutum*) in flower and a waterfall at the far end of the valley. The Eiger could be seen, pointing skyward and monumental behind the cliff.



Fig. 1: *Cypripedium calceolus* in tight bud
Fig. 2: *Cypripedium calceolus* promising yellow flowers
Fig. 3: A fine plant of *Orchis mascula*
Fig. 4: *Cypripedium calceolus* in Switzerland
Photos by Rosemary Webb

Then I saw what I was looking for! Growing in the grass amongst a large patch of *Dryas octapetala* were unmistakable groups of *Cypripedium calceolus* but they were all in tight bud. They were certainly not going to be out while I was here in Switzerland, another two weeks at least I would guess. To make matters worse, one plant was plainly going to have yellow flowers. The sepals covering the bud were yellow-green not the dark brown-purple of the others. I do like to see variations; they add so much interest to a photographic collection. It is cool up here at this height – people were right, it was too early. I will have to come back next year.

I returned to Switzerland the following year. It was a much warmer spring and I had high hopes of finding Lady's-slipper. If the weather forecasts were good, then it might just possibly be out. All I need is one flower I was telling myself tentatively. The weather was not good in the high places. The peaks were continuously shrouded in cloud. I consoled myself with the thought that if I had to wait a few days it increased the chances that the orchid would be out. I spent much of the time exploring the various valleys around Kandersteg.

One afternoon I was photographing a rather fine plant of *Orchis mascula* which was growing beside the road in the Gasterntal. A local man, seeing what I was doing, approached and asked me to follow him. He took me up hill on a forest track and into an area of steep slopes, fallen rocks and spruce trees. We walked carefully into the wood and there, before us, were some wonderful groups of *Cypripedium calceolus* in full flower. There were plants throughout the wood, I had never seen anything in pictures that were so spectacular. They were big and impressive. I can understand why they have been decimated in so many places. They are obvious candidates for human interference. I would never have found them without this kind, local man. I was so pleased that he felt he could trust me.

I have been back to Switzerland many times since and have found them in many places around Kandersteg. They even grow beside the path following the course of the Oschibach Stream which flows from the Oeschinensee eventually down to the river Kander. This lake is very much a recreational attraction for both local people and visitors and the path is well used. It is remarkable how well camouflaged these spectacular plants are in their environment. Even though I know they are there, I have to look for them. Here, no-one would think of damaging, uprooting or picking them.



Figs. 5-7: *Cypripedium calceolus* in Switzerland
Photos by Rosemary Webb

I have spent some enjoyable hours photographing them – they are truly stunning. Some spikes have two flowers on them, some form clumps or groups of plants resulting in many flowers which are breathtakingly beautiful. As I discovered, Kandersteg is rich in places where they can be found. They are, of course, protected plants and this is taken very seriously here. The results give the opportunity for us all to see, photograph and admire one of nature’s true wonders. In this case having to ‘come back next year’ has led to years of coming back and a never ending sense of admiration.

Growing Hardy Orchids – 6 Moira Tarrant talks to Doug Martin

As I have worked on this series I have been concerned that all of the excellent growers that I have interviewed have lived in the relatively balmy South-East of England. HOS has members all around the world, many of whom are growing their plants in far more challenging situations. So this interview is with an expert grower who manages to overcome these difficulties.



Fig.1: *Himantoglossum robertianum* ‘Wintergreen’
CBR/AOS
Photo by Doug Martin

Doug Martin is not a name which will be familiar to some members as he lives and grows his plants near Kansas City in the USA. But his skill in growing is recognised by the number of awards he has received from AOS (American Orchid Society). Six of them were for *Cypripedium*, two of which were for culture, as well as cultural awards for *Calopogon* and *Pogonia*. The range of hardy orchids that Doug grows is surprising as it encompasses many European genera including *Dactylorhiza*, *Anacamptis*, *Himantoglossum*, *Orchis* and *Ophrys* as well as North American species. He has received almost a third of all AOS awards given to winter-green Mediterranean orchids but modestly points out that not many Americans grow or show these plants. Many other orchid growers and enthusiasts will know him through his posts about his own plants and those he has travelled to see in the wild. These feature on his own Facebook page, on the Hardy Terrestrial Orchids site and on

the Terrestrial Orchid Propagation & Cultivation page. On all he patiently answers questions about his cultivation which gave me the courage to ask him for this interview, conducted virtually and maintaining a social distance of over 4,000 miles.

Kansas City, being not just inland, but also high at nearly 1,000ft, has very cold winters and very hot summers. Average summer temperatures at over 30°C, sometimes up to 40°C, are comparable with those in Athens or Madrid. Mid-winter temperatures compare with Frankfurt and northern Scotland and are nearly as cold as Copenhagen. Spring and autumn are the most benign for plants in the open air so Doug’s growing areas allow him to move his plants according to their cultural needs and what the season’s weather is providing. Out of doors Doug has benches sited so



Fig. 2: Doug & Beth Martin
Photo by Stacy Studebaker

that they receive varying amounts of shade from overhanging tree branches or on the side of a lathe screen (wide-slatted trellis) – full sun until early afternoon on the east side or all day on the south side. Indoors he has a light-room in the basement which has lights controlled by timers on for 14 hours a day. Cooling is by an exhaust fan which blows out of the window and brings in cool air from a larger basement area. The lights are on at night so reducing the build-up of heat. This area also has an under-bench misting system controlled by a humidistat. At the back of his garage he has another growing area also under lights on a timer. For both areas he is currently using T5 fluorescents which invariably raise the temperature by a few degrees so there is a tension between the number of plants he can grow and the lighting needed for them. He has tried LEDs but doesn’t currently find them bright enough.

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Doug had told me which genera he feels very confident about growing and as these are summer-green we started looking in detail at these. Most are grown in ‘artificial bogs’ – plastic containers with drainage holes about a quarter of the way up the side, not in the bottom, or regular pots sitting in trays of water. For *Cypripedium* he uses plastic storage crates 40.6 × 29 × 18 cm high (16” × 11½” × 7” high). Most *Cypripedium* hybrids and species are grown in a mix of 3 parts Perlite, 1 part quartz (1cm) gravel, 1 part Coir, 1 part loam or molehill and about ¼ part crushed oyster shell. He adds a handful of oyster shell in the Spring each year and re-pots every 2-3 years. His original argument for the wide containers is that he observed *Cypripedium* roots running very wide, probably 2-3ft in all directions but usually very shallow. More recently he has noted the roots of his plants growing downwards but finds that the large reservoir in the big crates enables him to easily keep his plants moist – as he has said ‘if they dry, they die’. To fertilise (he uses Michigan State University Reverse Osmosis fertiliser for all the orchids – Akerne Rainmix is based on this formula) he gives the *Cypripedium* a heavy dose in early spring before they start growing then 25ppm Nitrogen (½ tsp/US gallon or 0.83 Imperial) once a month. Using their origin and his experience as a guide, Southern American species usually stay outside all summer in the dappled shade of trees. Northern and Asian species and some hybrids move to the basement for the hottest months. The late Holger Perner wrote that 25°C is the maximum for Asian *Cypripedium* and Doug finds it challenging to keep the basement below that temperature. He has found *C. Gisela* (*macranthos* × *parviflorum*) and *C. Philipp* (*macranthos* × *kentuckiense*) are fine outside but maybe a bit better being cooler. *C. Ulla* Silkens (*reginae* × *flavum*) clearly did better out of the heat.

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His *Platanthera* (North American species) are either in plastic containers of a similar size to the *Cypripedium* (*P. flava* and *P. integrilabia*) or in a deeper crate – 30cm (12”) (*P. ciliaris* and *P. blephariglottis*). He admits that *Platanthera* could easily be grown in tall pots as they need the depth of root-run but don’t spread sideways; 15 to 20 plants fit into one of the *Cypripedium*-sized crates. They are grown in peat (below the drainage holes) and sphagnum moss above to simulate the bogs where *P. ciliaris* grows in the northern part of its range. The *Platanthera* are not fertilised but are never allowed to dry out. As sphagnum compresses over time they need re-potting at least every two years.

Fig. 3: *Cypripedium* Gisela ‘Beth Martin’ HCC/AOS

Fig. 4: *Platanthera ciliaris*

Fig. 5: *Calopogon tuberosus*

Photos by Doug Martin

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I was much interested to learn how he grows *Calopogon* and *Pogonia ophioglossoides*, neither of which I know much about. He has two forms of *C. tuberosus*, both the normal pink form and f. *alba*. With flowers that are about 5cm across and top to bottom it is impressive even though the flowers open sequentially with 2-3 open at a time. Other species in the genus are smaller and paler in colour. He also has the hybrid *C. Fluffy* (*tuberosus* × *multiflorus*) which is smaller but can open 7-8 flowers at a time. All are grown in a mix of 3 parts gravel and 2 parts peat. They get light fertiliser once a month. He notes that they don't seem to be fussy about pH, growing in both calcareous fen and bogs with carnivorous plants. He now grows them in large pots sitting in a water tray. He finds tuber numbers increase by 50-100% each year. He re-pots every 2-3 years by turning them out in autumn and cleaning them up. He then puts them in a plastic tub in the refrigerator until he re-pots in spring.

Pogonia ophioglossoides is grown in the same gravel/peat mix in a pot (the bigger, the better) standing in water. Some growers prefer to grow in wet sphagnum. The trick is to avoid even the suggestion of dryness. He doesn't fertilise them and re-pots only when absolutely necessary as the rhizomes and roots are very, very thin and delicate. His plant, which grew to have 120 stems, was in an 11" (28cm) pot sitting in a bowl of water.

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Continuing with the summer-green orchids we next looked at *Bletilla*. These are also in pots standing in shallow trays of water in a compost of a commercial peat-based potting-medium with 50% added Perlite. They are heavily fed with 100ppm nitrogen at most waterings. He views his *Spiranthes* (acquired as *S. cernua*) as almost weed-like in its behaviour. It multiplies vegetatively by making sprouts from its root-tips. It also apparently pops up in other pots from seed (the way *Dactylorhiza* do in my garden). It too is potted in the 50/50 mix of commercial peat-based potting mix and Perlite but he doesn't find it is fussy about its compost. Both *Calopogon* and *Pogonia* can cope with spending the summer on the south side of the lathe-house but *Bletilla* need the protection of the east side so only get sun in the morning. *Spiranthes* can take the full sun but as there is limited space it usually sits on the shadier east side. We then talked about his Mediterranean orchids which he feels are doing well in spite of challenges. As a check he weighs the tubers each year as he re-pots to ensure that they are thriving. These plants are peripatetic starting their growth season in the autumn in the open air. As soon as weather turns cold they are moved to the back of his garage where they are under lights. The pots are kept together packed into crates to protect them from mice who also live in the garage. He puts a layer of sponge-

Fig. 6: Summer-green orchids grown in crates with mesh to protect them
 Fig. 5: Dormant summer-green orchids protected by deep mulch in winter
 Photos by Doug Martin

rock (like very coarse Perlite) and then a layer of grating over that so that there is no danger of the pots sitting in water after they are watered. He currently uses 4” round plastic pots but has realised that if he switches to square pots with the same capacity he can reduce the growing area and so the number of lights/amount of heat generated. In the spring the pots move outside whenever the weather permits. At the bottom of each pot he puts a thin layer of sphagnum moss to serve both as crocking but also to keep in a bit of moisture. He is using a compost which is 80% inorganic: 2 parts Perlite, 1 part quartz gravel, 1 part Turface, a bit of crushed oyster shell and 20% organic: equal parts of calcareous molehill or forest loam, black peat and partially rotted wood. *Serapias* get the same ingredients but a 70/30 mix. I asked him about Turface – Seramis is a European equivalent with slightly larger particle size. Alternatively, non-clumping cat-litter as recommended by John Haggar is finer. I also asked about the partially rotted wood. He gathers this from woodland on his property and it is mainly oak/hickory with some elm. He told me that he would be very happy to use the composted bark fines sold in the UK by Melcourt. There is not, apparently, the same concern about peat-use in the US as there is in the UK. He starts watering when the rosette forms and continues until the leaves turn brown, watering when the top inch or so of the compost is dry. He is still experimenting with feed. He has been using 25ppm Nitrogen with every watering but following conversations with some other HOS growers he may increase the dose particularly in winter and spring when flower spikes and replacement tubers are forming. He is still experimenting with a fresh range of challenges, notably *Dactylorhiza*, *Epipactis* and *Gymnadenia*.

I asked him some general questions about his growing starting with watering. He has the great good fortune to have a 1,000 US gallon (833 Imperial gallon or 3,800l) water cistern under the house dating from when the house was built beyond the range of the mains water supply. He collects rainwater in it then moves it into dustbins from where it can be pumped to the orchid growing areas.

Winter protection for the summer-green orchids varies according to their needs. For the fully hardy he builds a frame out of boards under the low eaves of the house to give a height of 11” (28cm). He puts the containers into this then covers them with a layer of the cheapest mulch available. *Platanthera*, *Calopogon* and *Epipactis* are kept on the garage floor next to the door as there is insufficient space for them in the mulch frames. *Bletilla* are also in the garage but further away from the door as they aren’t hardy, with the exception of *B. striata* which can stand the cold but suffers if temperatures drop below -20°C. Everything except *Bletilla* and *Calopogon* are kept damp when dormant as their roots survive over this time. Inevitably there are the wild unseasonable fluctuations in spring and autumn temperatures that we see in Europe and he tells me that it takes half an hour for him and Beth, his wife, to move all the outdoor orchids to the protection of the garage. (Get him to sing his song about it if you meet him!).



Fig. 8: Award-winning display of hardy & tropical orchids by Doug & Beth
Photo by Doug Martin

I asked about pests and diseases. He tells me that he has not, to date, (touch wood) suffered with disease or small insect pests but larger ones; caterpillars, grasshoppers, deer, raccoons, squirrels and chipmunks have to be actively deterred. The summer-green orchids out of doors are kept in cages made with PVC frames covered in 1” (2.5cm) mesh. In the winter orchids in the frames have plastic grate cut to fit inside each pot on top of the medium as raccoons dig into the mulch. Similar tight fitting mesh is put onto the winter-green orchid pots in the garage as mice eat the tubers.

Doug’s wife Beth kindly answered my question about how they show the orchids, particularly the *Cypripedium* and others in their crates. Orchid Shows in their part of the US usually consist of groupings of plants arranged to create a scene or effect. The exhibit is judged as a whole and as individual plants (similar to the system of Shows in Europe but more usually by whole Societies rather than individuals).

So she disguises the containers to fit the design. Just as much work for her as for European exhibitors is safely packing the plants for a 3 or 4 hour drive particularly as *Cypripedium* flowers bruise very easily.

Finally I asked Doug how he got into growing hardy orchids, particularly European ones. It was observing his native orchids in the wild that attracted him with the challenge undoubtedly being part of the lure. Then he met an Englishman at an orchid society meeting who recommended a book of European orchids which Doug duly bought. That prompted the visits he and Beth have made in the company of friends from HOS both to the UK and Europe to do what he most firmly believes in – seeing the orchids in the wild to inform how best to grow them.

Book Review: “*Britain’s Orchids*”

Mike Gasson



Britain's Orchids: A Field Guide to the Orchids of Great Britain and Ireland

by Sean Cole and Mike Waller

Artwork by Sarah Stribbling

Princeton University Press 2020; 288 pages;

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RRP: £19.99 – currently available from:

NHBS (£15.99); Summerfield Books (£14.95);

Pemberley Books (£15); Amazon (£16.05)

Recent British and Irish orchid publications have focussed either on specific regions (*Wild Orchids of Bedfordshire*, *Wild Orchids of Somerset* & *Wild Orchids of Wales*, reviewed in *JHOS* 12:4 2015 & *JHOS* 14:1 2017) or examples of what I call new nature writing with information wrapped up in readable personal accounts (*The Orchid Hunter* & *Orchid Summer*, reviewed in *JHOS* 15:1 2018 & *JHOS* 16:1 2019). So here we have something quite different – a full on, comprehensive field guide that the authors intend to “help those interested in orchids to find and identify these beautiful plants”. This role has been admirably fulfilled by Anne & Simon Harrap’s “*Orchids of Britain and Ireland: A Field and Site Guide*” for many years and in one of its forms probably remains the go-to field identification guide for most people. So the real question with the new Cole & Waller book is, does it add anything worthwhile? The short answer is yes as comprehensively explained by the authors in their recent contribution to the HOS digital event *Leeds Online 2020*, still available at <http://www.hardyorchidsociety.org.uk/britainso orchids.html>. It is abundantly clear

that the authors have thought long and hard about what would aid people in the field and indeed they have drawn well on a collective wealth of experience that goes beyond just orchids.

As with all guides of this type there is a core section that takes us through the 50 or so species with individual treatments of each. This takes up marginally more than half of the book, leaving some 142 pages for other matters. Therein lies part of the answer to what extra is added, but more of that later. The individual species accounts are concise, generally involving a two page spread with key identification features, habitat descriptions, distribution maps based on supplemented BSBI data, phenology, confusion species, cross references to other parts of the book and of course illustrations. With respect to the latter we have the best of both worlds with good photography and really attractive artwork from Sarah Stribbling. This is a nice touch and overall the book includes nearly 100 hand-drawn plates as well as over 1000 photographs.

Artwork instead of, or as well as, photography is something that has been very successful in the entomological world, notably with Richard Lewington’s beautiful illustrations of moths, butterflies and bees. Here the advantages of a clean white backcloth to the orchids and faithful rendering of colour subtleties shine through. As well as their inclusion as part of the individual species accounts, these illustrations are used to very good effect elsewhere to portray orchids in bud and as a guide to form and colour where accurate scale comparisons are provided. The illustration of pink anthropomorphic *Orchis* species is a fine example, with Lady Orchid towering above Burnt Orchid, included for its visual similarity rather than for its taxonomic relationship. Military Orchid and Monkey Orchid sit between with the scale maintained. The Spotted, Marsh, Green-winged and Early-purple Orchids are treated as another visually similar group, whilst Helleborines and Fragrant-orchids receive their own useful comparative presentation. For some more difficult groups, including *Epipactis*, *Gymnadenia* and *Dactylorhiza*, the species accounts are supplemented with a more detailed and comprehensive group treatment designed to sort the wood from the trees. In this the book succeeds admirably and will be of great help to the many who struggle to put a name to these often confusing orchids. An important feature here and elsewhere in the book is the effort made to address individual variation within a species, something covered both with text and ample illustrations.

Thoughtful and innovative touches appear throughout the book. Especially, I like the fact that phenology data goes beyond the standard flowering dates and covers both in-leaf and mature seed stages. This is presented in easy to follow, colour coded charts. Also, the non-flowering stages are fully addressed in their own sections so that the field guide is genuinely comprehensive with comparative data for both leaves and buds. Known hybrids are covered, and usefully, photographs are included

with the hybrid flanked by its two parent species. Elsewhere there are sections on orchid habitats, pollination and taxonomy. Taxonomy is up to date with where the science is, especially that based on DNA analysis. The authors explain the choices they have made regarding the use of trinomials (subspecies, variety and forma), plus their decision not to use formal names for colour variants involving such things as the amounts of anthocyanin pigment or chlorophyll. All this is well explained, although I am sure there will be some who still like to use the established names that are avoided here. Whilst they have chosen not to use them, the authors actually do make reference to many of these.

The adoption of forma exclusively for some Bee Orchid variants, such as *trollii*, but not for others, such as *chloantha*, is interesting. The logic of regarding the latter as a mere colour variant of lesser note is explained but a classic *chloantha* is surely just as persistent and notable as a Wasp Orchid. In any case the detailed form of *trollii* is probably just as variable as anthocyanin deficient *chloantha*, as has been discussed in past *JHOS* articles (e.g. Spencer *JHOS* 5: 25 2008). Scientific precision is generally good throughout the book, although one consequence of its focus on field identification is limited space for more detailed discussion. For example, having opened up the subject, it would have been good to read a more complete description of the persistence of Bee Orchid variants, be they forma, varieties or unnamed colour variants. The role of self-pollination is introduced but there is an important distinction between the generation of mutations and their visibility and persistence as variant forms. Self-pollination should not impact on mutation frequency but undoubtedly it drives the appearance and subsequent persistence of variant forms.

With such a well thought out and well presented book it is hard to find much to criticize. The book provides something genuinely useful for anyone wanting to put a name to an orchid. The different aspects covered and the comprehensive approaches to identification in some ways complicate navigating to where you want to be but that is an inevitable consequence of such a thorough and in many ways innovative approach. Bottom line is that here is a most valuable addition to the British and Irish orchid literature and an excellent new field guide that really does do exactly what it says on the cover. I will not have addressed all of the aspects of the book here or all of the thinking behind it. The video mentioned at the start of this piece is well worth a look if you want an in depth overview and we will keep it on the website at least until the forthcoming Kidlington Online 2020 digital event. As it says on the website link "this book does look like a big step up in terms of UK orchid guides" and it is destined to become a classic. It may not completely oust Harrap & Harrap but it will certainly be an invaluable addition to the armoury of the orchid enthusiast.

Informative Photographic Display for 2020

For this year please enter the display with up to four A4 pages in a digital form (ideally landscape as pdf) by sending them to Neil Evans (hosphc@hardyorchidsociety.org) by 3rd November 2020. This will be staged on the website as a password protected digital event for members as part of Kidlington Online 2020.

The purpose of this event is for members to share their gems of information, gleaned or identified, about the fascinating world of orchids and their biology. Each display should consist of one or more images and a description or explanation of these. Examples of suitable images may include but are not restricted to:

- An ultra-close image showing features not readily seen by the human eye
- A pollinator visiting a flower
- A predator consuming a pollinator
- A herbivore consuming a plant
- Mycorrhizal fungi infecting orchid roots
- Seeds and seedlings; germinating seeds, pollen
- Anatomical sections

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The Orchid Season at Minera Quarry Steve Tandy

Minera Quarry is a huge limestone quarry just west of Wrexham in North Wales. From the entrance to the furthest limit is a distance of well over 1 km, while the workings extend to 0.7 km across. Add to that all the acreage of pasture around the periphery and there is a lot of ground to cover looking for orchids. It is estimated that over 300,000 tons of limestone were extracted during its working life, much of it used for lime production. The remains of one of the three huge Hoffmann kilns built in the U.K. can still be seen. The Minera Lime Company ran the site from 1852 and while lime production ceased in 1972, there was still blasting for road construction aggregate until 1993. The Minera Quarry Trust was formed in 2005 to ensure safe public access to the site and in 2017 Tarmac sold the site to the North Wales Wildlife Trust for £1 making it the 36th Wildlife Reserve in North Wales. While the site is home to a 'lot of nature', for me it is the orchids growing there that are of interest.



Fig. 1 (above): The grassy slope, which is home to many of the Marsh-orchids, looking down in 2007 towards the entrance with Wrexham town in the distance.

Figs. 2 & 3: Early flowering *Dactylorhiza viridis* May 2019

Figs. 4 & 5: The putative Welsh Marsh Orchids

Photos by Steve Tandy



In fact there is something new to see every month from April through to September, and I count myself lucky to have this on my doorstep; a lifeline in the dark days of the strict Covid lockdown.

The Orchid Season at Minera starts with the Early-purple Orchids, *Orchis mascula*. I first saw these not in the quarry, but in the fields above the northern rim of the quarry back in the mid 1980s. There was quite a group of them at the time, but somehow they have diminished over the years. However, nowadays the best place to see them in late April is to the west of the Hoffmann kiln accessed via the rather new wooden stairway from the car park. This area is also home to some rather small and largely unpigmented Frog Orchids, *Dactylorhiza viridis*, in May (Figures 2 and 3). They are not easy to find as you will have gathered from my description, but this year (2020) we counted some 30 specimens in this part of the quarry. I had seen some of these three decades ago above the quarry, but have not been able to relocate them in recent years.

June heralds the *Dactylorhizas* and more, and the focus of attention switches to the large swathe of grassland spreading upwards beyond the little pond in the centre of the old workings (Figure 1). Here you can see Common Twayblades, *Neottia ovata*, and if you are lucky some Bee Orchids, *Ophrys apifera*. The latter apparently grow in better numbers in grassland at the furthest reach of the reserve, and I hope to see these in 2021. Northern Marsh-orchids, *Dactylorhiza purpurella*, Southern Marsh-orchids, *Dactylorhiza praetermissa*, and Common Spotted-orchids grow here, and naturally so do their hybrids. What fun can be had trying to identify a particularly robust specimen. *Dactylorhiza* × *venusta*, the Northern Marsh and Common Spotted hybrid predominates these, however my interest is caught by a population of *Dactylorhiza* that is remarkably consistent in appearance (Figures 4 & 5). They have a broad labellum, background colour ranging from a mid purple shade through to a pale pinkish purple. These are quite heavily marked with bright magenta pink, often in curling continuous lines, with another inside running parallel. The labellum can be said to be three-lobed with the central one being rather small; there may be a sinus between them. The leaves are usually well spotted, and the plants are often of a good size. It seems all too easy to throw all those plants that do not fit easily into typical species into a bucket labelled ‘venustas’, but these flowers are really too consistent and too numerous to represent part of a hybrid swarm. What they do fit is the description, in the Harraps’ *Orchids of Britain and Ireland*, of the Welsh Marsh Orchid, *D. purpurella* ssp. *cambrensis*. Those are said to inhabit coastal dunes, but



Figs. 6-8: Common Spotted-orchid × Marsh Fragrant-orchid hybrids
 Fig. 9: The full-sun form of *Epipactis helleborine*
 Photos by Steve Tandy

we once thought that the Dune Helleborine was restricted to that same environment. I do realise that I could be making something out of nothing, but no-one has been able to convince me otherwise yet. I have seen two plants that could have been Heath Spotted-orchids, *Dactylorhiza maculata*, and others, beside myself, have reported plants resembling Narrow-leaved Marsh-orchids, *Dactylorhiza traunsteineroides*, here. However, with these well out of their usual habitats, they are perhaps best treated as aberrations of the more typical species seen in the quarry.

July is the 'pink month' at Minera. You can find Common Spotted-orchids everywhere and they can be just run of the mill, but when you see thousands all in flower in the grassland to the north of the 'big hole', where the last limestone extraction took place, you cannot fail to be impressed. Both Pyramidal Orchids, *Anacamptis pyramidalis*, and Marsh Fragrant-orchids, *Gymnadenia densiflora*, can be found everywhere, often growing together and with the 'Common Spotted'. Where the silver birch grows you can find the 'Marsh Fragrants'. See if you can find the steep wooded footpath that leads to Gwynfryn where you can sit overlooking the quarry on a fine day, surrounded by these three species. Take a picnic even. Sometimes the spicy scent of the Marsh Fragrant-orchids lingers in the air. I once found a

pure white example of this species back in 2016, but not in subsequent years (Figure 10). However, you can also chance upon examples which are perhaps twice the size of the typical Marsh Fragrant-orchids. Are these perhaps polyploids, with double the number of chromosomes per cell?

A recent speciality of Minera has been the discovery of Common Spotted and Marsh Fragrant-orchid hybrids, which I believe they have been designated *Dactyloдения* ×*major* (Figures 6-8). One was found in 2019 near the Hoffmann kiln and two more this year above the big hole. This hybrid is considered fairly uncommon, but with the sheer numbers

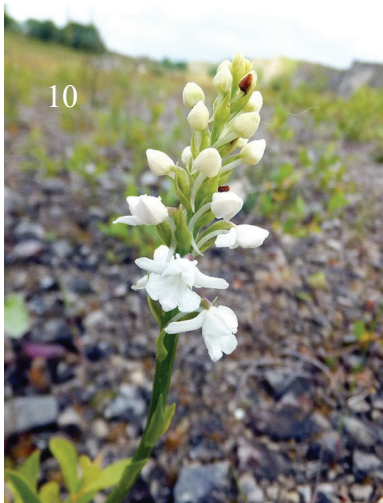


Fig. 10 (above): *Gymnadenia densiflora* var. *albiflora*.

Fig. 11: The full-sun form of *Epipactis helleborine*.

Figs. 12 & 13: Two examples of the late summer flowering *Dactylorhiza viridis*.

Fig. 14: 'The Bullfrog Orchid'.

Photos by Steve Tandy

of parent species here perhaps the odds on finding more are much reduced. Does the difference in appearance in the flowers suggest that these had different species for the pollen donor?

August brings closure to the orchid season. Many Broad-leaved Helleborines, *Epipactis helleborine*, can be found under the rock face to the right of the metallised vehicular access to the quarry, and in the wooded area near the gate leading up to Eistedfodd Farm. What strikes me is the difference in form between those in the open and those under the canopy. The shaded plants are quite typical, with large oval, bright green leaves, whilst those of the plants growing in full sun are paler or yellowish green, clustered around the base, and pointed upwards (Figures 9 & 11). Comparisons could be made with *E. helleborine* var. *neerlandica* and stimulate some debate. There were also new discoveries made in August 2020. Above the quarry, in rough pasture, were more Frog Orchids. These late flowerers are small, up to 7 cm tall, and variously pigmented like those I have seen flowering late in the season in Hampshire and Wiltshire (Figures 12 & 13). I can draw comparisons between these and the Burnt Orchid, *Neotinea ustulata*, which has different sub-species flowering at different times. Despite this, the big talking point of 2020 was a single Frog Orchid that reached 30 cm in height. Not only that, but it was deeply pigmented too (Figure 14). It should be nicknamed 'The Bullfrog Orchid'. The flowers are typical Frog Orchid in form, so a hybrid origin can be ruled out. Could it be a polyploid having more of everything than normal? Interestingly, there used to be a small group of equally large Frog Orchids growing in a similar habitat at Eryrys, some 10 miles distant. However, these were large examples of the unpigmented early flowering type.

Until someone finds Autumn Lady's-tresses growing at Minera (I really have looked for them) that is it at Minera until the next spring. Would this area be rich in orchids if the quarry never existed? The presence of many of the species growing just outside and above the actual workings suggests that it might have been, but quarrying must have created new habitats for orchid colonisation and new opportunities to spread. Both the Marsh Fragrant-orchids and Broad-leaved Helleborines have increased their range here since I first visited on a regular basis. I am sure Minera Quarry has not revealed all its secrets and there is more to come. I wonder what it will be like in 50 years?

HOS Forum Update

The forum is now running well with over 340 members signed up. Please refer back to the Summer issue for how to join and some guidelines on etiquette and use. If you want to discuss or comment on an orchid issue or a *JHOS* article, this is the place to do it. As a quick reminder, if you would like to join please drop a very short email (from the email we hold for you) to main+subscribe@HardyOrchidSociety.groups.io and include your membership number.

Please remember that the forum is moderated, so your message is checked by a human before it is sent on to all subscribers. Please be patient as this is done by volunteers – it will always take some minutes, but may take several hours on occasion. If your message is meant for an individual, please use the “reply to sender” option at the bottom of the email.

The Committee may use the Forum to inform members of urgent business during the pandemic.



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