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of the
HARDY ORCHID SOCIETY**

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Cover Photographs

Front Cover: Chlorotic variety of White Helleborine (*Cephalanthera damasonium* var. *chlorotica*) photographed by Rosemary Webb. See article on page 62.
Back Cover: Coralroot Orchid (*Corallorhiza trifida*) by Karen Gregory. See page 50 for an article on its pollination by Jean Claessens & Jacques Kleynen.

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 2018 is the 25th anniversary of the Hardy Orchid Society we have included a brief history of the Society written by our Chairman Colin Scrutton. Elsewhere some of our regular contributors have new articles. Jean Claessens and Jacques Kleynen have what they think may be the last in their exceptional pollination series. Let's hope that they make some new discoveries that might generate future articles! Svante Malmgren has an article from what he described as his "Chamber of Curiosities" and describes the creation of an interesting orchid hybrid not found in nature. Phil Smith and family show us some more hybrids but from nature; the machair habitat of Scotland. Also, it is good to include another contribution from Rosemary Webb describing her successful quest for a chlorotic variant of the White Helleborine. I especially like Rosie's writing which manages to convey the spirit of orchid hunting and the reason that many of us so much enjoy these plants. Although we still have a healthy pool of submitted articles please do keep sending in new material as it is essential to maintain the quality of *JHOS*.

Chairman's Note
Colin Scrutton

I'm not sure whether you will read this before or after our Spring meeting celebrating the 25th anniversary of the founding of the Society. The programme looks varied and interesting, including a keynote lecture from our President Richard Bateman that promises to be stimulating and thought-provoking. The meeting will begin with the AGM which will see some changes in the committee membership. This is an opportunity for me to record a warm vote of thanks on behalf of us all for the friendly and efficient way the members of the committee, both those leaving and remaining, ensure the smooth running of the Society. It is a pleasure for me to work with them. I hope those of you who are going to or have been to Kidlington will enjoy or have enjoyed the meeting.

By the time you read this, the domestic orchid season will just be starting. I hope it will be a good one! Before we get to our local orchids, we have a couple of overseas trips organised to look for early flowering orchids. First was Turkey, which we visit fairly regularly as Angela's brother lives there permanently on the Mediterranean coast at Kalkan. It's a good centre for exploring the Lycian coastal strip and the hills inland which are still reasonably orchidiferous despite the ever present and ever hungry goats and the widespread practice of digging up orchid roots for salep. The area had a very dry winter, so flowering was not as good as usual. Still we photographed 12 species and enjoyed some warm sunshine.

Then a few weeks later, we will have returned to Lesbos. This will be our fourth and probably last trip to the island as we will then have covered more or less the whole of the flowering season there. The island is a delight and we have thoroughly enjoyed exploring it and photographing as many species as possible of its excellent orchid flora.

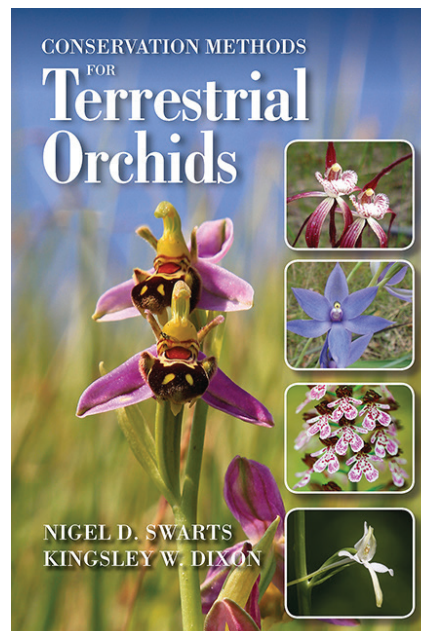
When you are out and about photographing orchids, either at home or abroad, consider the possibility of shooting video footage of the flowers that you see. If you are a grower, perhaps there is scope for a video of plants in your greenhouse. After a good start to the Video Competition at Leeds last year, we hope to have more entries for the competition this year. Videos can be on any topic relevant to hardy orchids, wild and/or cultivated. Whether or not you intend to attend the Leeds meeting (and we would like to see you there), you can submit an entry for the competition. Further information is in the box on page 48. Steve Pickersgill, who will be running the competition this year, will be posting reminders on the Forum. If you have any queries about a potential entry for the competition, Steve will be happy to help and give advice.

We have five field trips on offer this year, although I understand the trips to South Cumbria and Northumberland are already fully booked up! It's good to see some new localities included and it is not too late to offer additional trips which can be advertised on the website and through the Forum. If you are interested in doing that, please get in touch with our Field Meetings Co-ordinator Alan Bousfield (alan.bousfield@ukgateway.net).

The Society can obtain tickets for the Three Counties Show at Malvern 15th-17th June at a reduced price. This is an excellent show which we visited last year, with a superb display of orchids in the Malvern International Orchid Show as well as many other attractions. If you are interested, please see the box on page 8 of the January issue of the journal and contact Iain Wright as instructed ASAP.

Members may like to know that all issues of the *Pleione Review*, including *The National Pleione Report incorporating Hardy Orchids*, are now available on line at <http://www.pleione.info/pleione-review.html>. The magazine ran from 1988 to 2005 and Paul Cumbleton, who edited the last five issues, has organised the preparation of the pdf files. Happy orchid hunting!

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25 Years of the Hardy Orchid Society

Colin Scrutton



It seems appropriate on our 25th anniversary to look back at the history of the HOS. Tony Hughes published a previous account of the early years of the Society (Hughes, 2007) and this article, whilst drawing on that, is intended to bring our history up to date, to the vibrant and successful society we have today.

Back in 1984, a notice appeared in *The Orchid Review* proposing the establishment of a Native Orchid Trust, G.B. Its aims were to be the conservation and promotion of British orchid floras. Despite some support, it never got off the ground and was abandoned in 1989. However, the idea of a society dedicated to the interest, knowledge and conservation of hardy orchids persisted and in 1993 Norman Heywood drew up a set of rules to establish The Hardy Orchid Society with the inaugural meeting to be held on 26th June at the Newbury Horticultural Show. There were 32 members at that meeting with apologies from another 40. Joyce Stewart was elected the first Chairman. A second meeting later that year was held jointly at the British Orchid Congress with a programme of talks and a plant show. Membership steadily increased with time and passed 300 at the turn of the century, peaking at over 700 in 2011; it currently stands at just under 600.

Early meetings were held at a variety of venues, including joint meetings at Kew, one in Birmingham Botanic Gardens and at the Greswolde Arms Hotel near Solihull. From the outset the meetings featured quality talks on a wide range of topics from experts in their field. Then as now these included science, conservation, cultivation and reports of orchid-themed holidays. On one occasion a collective gasp went up from the audience as Norman Heywood tipped a *Dactylorhiza* plant out of its pot and waved the root system about. Few people there would have dared to do that with a hardy orchid! A pattern of 2 meetings per year became established and the College of Horticulture at Pershore, site of the first AGM in 1994, became a regular venue. Several other venues were used in the early years, including the Horticultural Research Institute at Wellesbourne near Warwick, the RHS Gardens at Wisley, and Capel Manor, Enfield. Pressure had been building among the membership for a more northerly meeting and the first was arranged at the RHS Gardens, Harlow Carr (Harrogate) for September 2003. The first Spring meeting to be held at Exeter Hall, Kidlington was in 2004 and this became the regular venue for the Autumn meeting as well in 2012, an arrangement that has continued to the present day. Meanwhile, in 2011, the Northern meeting moved to its current venue at St Chad's Parish Centre, Leeds.

In addition to a programme of talks, a plant show formed a major element in the meetings from the beginning and continues to be a core element of the Spring meeting. There are now three prizes to be awarded – a Best in Show Trophy, the RHS Banksian Medal for the most successful exhibitor and a Chairman’s Trophy, introduced in 2015, to be awarded at the discretion of the current Chairman. A photographic competition was added in November 1997, at first only with prints. Slides were added the following year and digital entries in 2009. In 2006 Maren Talbot gifted a trophy to the Society to be presented to the member whose picture was judged the best overall each year. The competition is an important part of the Autumn meeting at Kidlington. More recently, Scientific Show posters were formally introduced in 2016 following a dry run at the previous November meeting and a Video Competition was added to the Northern Autumn meeting in Leeds for the first time in 2017. Celia Wright has provided the Tony Hughes Video Competition Trophy to be presented to the producer of the best video each year.

To complement the indoor meetings, the Society has run field trips from the beginning, up to three per year at first, then increasing in numbers to peak at 14 field trips in 2014. In the early years the Society also organised a couple of orchid holidays to Mediterranean destinations, but then felt these were better left to specialist companies. The Society is always keen to encourage members to offer field trips to show off the orchids in their local area.

A seed bank has been maintained since the early days of the Society and the first manager was elected in 1996. In 2010, seed-sowing workshops were introduced, supported initially by a donation from the OPAL Grant Scheme, underwritten by the National Lottery. These have proved very popular and have recruited many new members to the Society. A Conservation sub-committee was elected at the first AGM, later replaced by a Conservation Officer. Conservation has been a major part of the Society’s activities throughout its history and the OPAL grant helped to support its work. It also paid for a new PA system for HOS meetings which is still in use.

That brings me to the development of communications in the Society. Originally articles, usually based on talks given at meetings, were published in “The National Pleione Report incorporating Hardy Orchids”. However, the need for a publication exclusive to HOS was soon realised and the first Newsletter was published in 1996. It was originally a set of duplicated A4 sheets, then from 1998 a stapled A5 booklet. The Newsletters are available on the website and it is worth looking at them for



Fig.1 Plant Show at a recent Spring Meeting.

Fig. 2: HOS members photographing *Dactylorhiza traunsteinerioides* on a Cumbrian HOS field trip.

Photos by Simon Tarrant (Fig. 1) & Alan Gendle (Fig. 2)

the excellent black and white drawings of orchids on the covers. The first black and white photograph was included in 1997. Rather than a close-up of an orchid, it was a picture of a lady member prone and photographing an unfortunately invisible prize specimen! Colour photographs were added in 2001. With the cost of publishing becoming more affordable, a journal was launched in 2003, the first issue as The Hardy Orchid Society Journal, but then changing in the next issue to the now familiar Journal of the Hardy Orchid Society. Two years later, the journal was switched to a new printer, resulting in a great improvement in the quality of the images. The size quickly standardized to 36 pages per issue and the contents, covering all aspects of orchidological interest and extending to temperate and Mediterranean environments world-wide, is the high-quality publication we have today. Mike Gasson has edited the Journal from the first volume.

A website was launched in 1999, set up and hosted by Tony Hughes. Bill Temple took it over in 2005 and has been updated several times over the years, most recently by Mike Gasson. It now contains a wealth of information on the Society, its activities and orchids in general, and is now recognised and respected internationally. In 2009, the online Forum was initiated, hosted by Yahoo and restricted to members of the Society, who can participate by invitation. It provides a closed email service and a secure site for members' photographs. It is moderated by Committee members and has proved a valuable means of communication within the Society. A lapel badge first appeared in 1994 featuring a stylised *Cypripedium* flower, which became the now familiar HOS logo. Publicity posters and membership leaflets were introduced in 2001 and distributed widely to encourage new members. Finally as a means of publicizing the Society and its activities in the modern era, a Facebook page, set up in 2012, attracts worldwide interest.

All this activity depends on the work of a committee, which over the years has gradually increased in size as the business of managing a large and successful Society became more demanding. Originally members were limited to a three-year term and a maximum of six years on the committee. However, although replacements seem to have been easier to recruit at first, it soon became apparent that some flexibility was needed and an amendment to the rules allowed the three-year term to be extended "in exceptional circumstances". It seems bizarre that as the membership increased substantially, so exceptional circumstances have become increasingly common! We



Fig. 3 John Hagggar demonstrating at the Seed Sowing Workshop.

Fig. 4: Part of the HOS display at Lullingstone Castle in Kent.

Fig. 5: Our President Professor Richard Bateman taking measurements of *Platyanthera bifolia* on a field trip.

Fig. 6: A pot of *Dactylorhiza* at a promotional event at Hatfield House.

Photos by Simon Tarrant (Figs. 4-6) & Tony Hughes (Fig. 3)

are in a situation today where members are less keen to offer their services to the committee. We must try to encourage a better turnover of committee members; it is vital to the continuing health of the Society.

The three year term also applied originally to the President. Although provision was made for a President and Vice-President in the original rules of the Society, it wasn't until 1998 that Paul Harcourt Davies was elected as our first President in recognition of his tireless contribution to promoting the HOS. In 2001 he stepped down and Richard Bateman was elected in his place. Richard retired in 2004 but was promptly re-elected in 2005 and "exceptional circumstances" have ruled ever since. In this case, I cannot think of anyone who would object to that amendment to the rules! We are fortunate to have a leading scientist active in all aspects of orchid research and exploration, and a frequent contributor to our Journal, as our President and long may he feel able to continue in that role.

Acknowledgements

I am very grateful to Nigel and Maureen Denman, who lent me a thick file of the Society's activities and meetings from its inauguration. Simon Tarrant made several very useful comments and additions to my original manuscript and Bill Temple provided information on the origin of the Society's website. Celia Wright also suggested improvements to the text.

Reference

Hughes, T. (2007) History of the HOS. *Journal of the Hardy Orchid Society* 4: 92-95.

HOS Video Competition

The HOS Video Competition will be held during the HOS Northern Meeting in September. Full details, including the 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 2018 entries must be sent in advance by August 1st to the Video Competition Organiser Steve Pickersgill, either by email (hosvc@hardyorchidsociety.org) 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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The Pollination of European Orchids

Part 7: Autogamy: *Neotinea maculata* and *Corallorhiza trifida* by Jean Claessens and Jacques Kleynen

Introduction

In this last part of our pollination series we will discuss the way autogamy or self-pollination is achieved in two species. Autogamy is thought to be disadvantageous, resulting in less vigorous offspring. Estimates of occurrence of autogamy in orchids range from five to 20% (Tremblay *et al.*, 2004). In Europe we found autogamy in 19 genera (Claessens and Kleynen, 2011); the genus *Epipactis* is notorious for its many self-pollinating species, making identification difficult.

Neotinea maculata

The Dense-flowered Orchid is a rather inconspicuous orchid with two or three oval, spotted or unspotted leaves. The inflorescence is short with many small, densely packed, whitish or pink-tinged flowers. The species has a faint vanilla scent. Sepals and petals form a hood, with the three-lobed lip sticking out. Davies, Davis & Huxley (1983) described the flower as "... a tiny man with an oversized helmet". At the flower base is a short, conical spur which according to some authors contains nectar. However, we never found any free nectar when inspecting over 100 flowers. The column is broad and the anther cells open wide, even before anthesis. The pollinia are connected to the viscidium by very slender caudicles. The two stigmatic lobes do not lie under the viscidium, as is the rule in many orchids, but instead they are placed left and right of the anther base. When the anther opens, the pollinaria can easily fall out of the wide open anther and then onto the nearby stigmatic lobe. They will almost inevitably stick into the stigmatic fluid, after which the massulae are soaked with stigmatic fluid and the pollen tubes start growing towards the ovary. Our observations showed, that this species is almost invariably self-pollinating. However, this species has scent production, a feature for attracting insects. Sometimes a pollinarium is missing, indicating the activities of insects. Indeed, there are scarce



Fig. 1: *Neotinea maculata* habitat.

Fig. 2: *Neotinea maculata*, showing the characteristic dense-flowered inflorescence.

Fig. 3: Column of *Neotinea maculata*. The stigmatic lobes (S) are left and right of the anther. One pollinarium has fallen out of the anther, an example of autogamous pollination.

Photos by Jean Claessens (Figs. 1 & 3) & Jacques Kleynen (Fig. 2)



reports of little bugs as pollinators (Berger, 2003; Wilcox, 2014). *N. maculata* is the only representative of the genus *Neotinea* which is autogamous; the other species of the genus, *N. ustulata*, *N. lactea* and *N. tridentata*, are allogamous and rely on pollinators for pollination. In *N. maculata* it is above all the wide opening of the anther and the very thin, flexible caudicle that enable a successful autogamous pollination.

Corallorhiza trifida

This small, whitish-green orchid has no leaves, just a few sheathing scales along the stem. The inflorescence is lax, carrying four to 12 pendant flowers. Median sepal and petals form a hood, the lateral sepals are spreading. The lip is white, marked with red spots at the base. There is a spur-like prolongation of the lip, called the mentum, visible as a knob on the ovary; it contains no nectar. The flowers produce a faint musk scent. The column is erect and slender. The anther contains four superposed pollinia that are connected by very thin caudicles to a knee-shaped outgrowth of the viscidium called the hamulus. Although the viscidium is functional, the species is autogamous.

The flowers attract various small insects, above all tiny Empid flies. We regularly saw them probing the flower for nectar. They were clearly attracted by the flowers. However, we never saw a removal of pollinaria by the Empid flies. In fact, removal is often impossible, because this orchid generally self-pollinates in an early stage of development, before the flower opens. The anther already opens while the flower is still in bud. As soon as the anther cap lifts, the pollinaria fall out of the anther. The caudicles prevent them from falling onto the ground, instead they guide them towards the stigma, which is right under the anther. The caudicles have exactly the right length, so that one or more pollinia invariably land onto the stigmatic surface (Claessens and Kleynen, 1998, 2012). In some rare cases we observed that one or more pollinaria were missing, but we couldn't find any traces of autogamous pollination. It is uncertain if the missing pollinaria were eaten or if they had just fallen onto the ground. The viscidium is functional, so there might be a chance that in some rare cases the pollinaria were removed by an insect, but that remains to be investigated. The very high fruit set is an indication of autogamy.

Fig. 4: A single flower of *Neotinea maculata*.
 Fig. 5: *Spermophagus sericeus*, a rare pollinator of *Neotinea maculata*.
 Figs. 6 & 7: Autogamous species generally show a very high fruit set, like these fruiting specimens of *Neotinea maculata* show.

Photos by Jean Claessens (Figs. 4, 6 & 7) & Yves Wilcox (Fig. 5)

Autogamy seems to be a dead end, because there is no exchange of genetic material. Yet this strategy can be beneficial because it enables species to conquer or to live in an environment in which hardly any insects are found. The plant is no longer dependent on insects for its pollination. For more information please visit our website www.europeanorchids.com or consult our book “*The flower of the European orchid – Form and function*”.

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Acknowledgements

We thank Yves Wilcox for providing a photograph of a pollinator and Mike Gasson for his help in correcting the manuscript

On the page opposite:

Fig. 8: *Corallorhiza trifida*, habitat.

Fig. 9: *Corallorhiza trifida*, inflorescence. In the two flowers on the right the pollinaria have already fallen out of the anther.

Fig. 10: Small Empidid flies inspecting the flowers of *Corallorhiza trifida*.

On the following page

Fig. 11: *Corallorhiza trifida*, column. S=stigma, C=caudicle, V=viscidium. The pollinia are superposed, the caudicle is thread thin.

Fig. 12: *Corallorhiza trifida*, column. The pollinaria have fallen out of the anther and are sticking onto the stigmatic surface.

Photos by Jean Claessens



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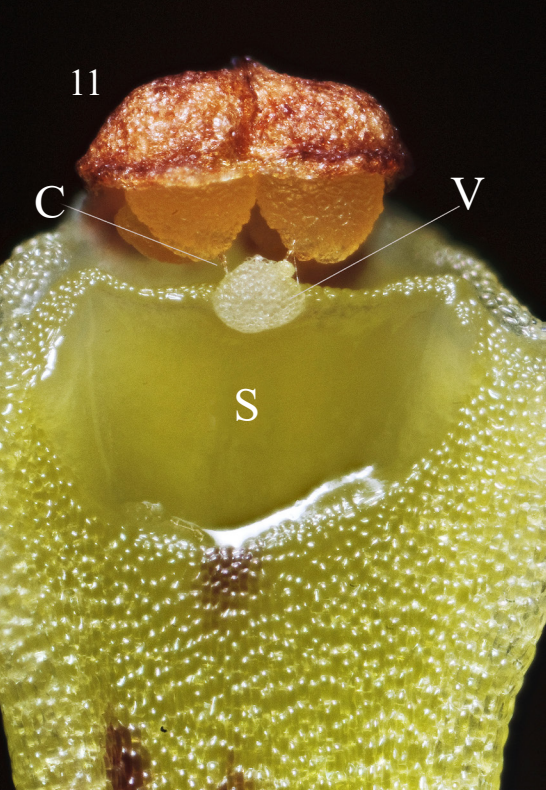
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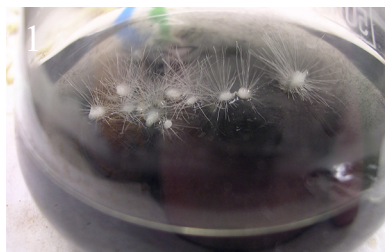
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A New *Himantoglossum* Hybrid, Raised From Seed.

Svante Malmgren

Having propagated orchids from seed for many decades, I have had the opportunity to observe some differences in the attitude amongst garden growers concerning their preferences for “pure” species or plant hybrids. This may be due partially to national character. Specialised nurseries that I supply would suggest that British growers have a preference for true species over garden hybrids when it comes to Cypripediums and other hardy orchid genera, whereas Germans and Scandinavians are more interested in the big and beautiful hybrids.



In Scene IV of Shakespeare’s “The Winter’s Tale”, Perdita and Polixenes discuss their own favourite choices between wild flowers and plant hybrids, respectively. Polixenes opines that nature cannot be improved, but that nature herself produces beautiful hybrids with the help of man – the artistic marriage of “a gentle scion to wildest stock”. Much of my own creativity has been directed down the long road of producing orchid hybrids from seed, just using what nature provides and marrying different species.

In the late summer of 2010, I received seed from orchid friends in Greece. They had pollinated a specimen of *Himantoglossum caprinum* with pollen from *Barlia robertiana*. In their area, the latter starts to flower in late January, and the former in April. They collected and saved *Barlia* flowers and stored them in the freezer. In April, the flowers were defrosted and the pollen used for the cross-fertilisation. Freezing of flowers/pollen in a domestic freezer is easily done and the pollen will usually retain its viability for up to a year.



Himantoglossum caprinum × *Barlia robertiana* hybrids

Fig. 1: January 2011 Fig. 2: September 2011

Fig. 3: First autumn in soil (2012), leaves still developing

Figs. 4 & 5 Flowering spikes Fig. 6: Strongly growing plants



Seed production was not great, but approximately 20 seeds germinated and all the protocorms grew on without any problems. *Barlia* seedlings behave a little differently on sterile media than do those of *Himantoglossum* species *sensu stricto*. Recent classifications now include *Barlia* in the genus *Himantoglossum* (Bateman 2017). It could be that the two (former) *Barlia* species, *B. robertiana* and *B. metlesicsiana* are adapted to a dryer and shorter period of vegetative growth, but whatever the reason, these species usually produce no more than a large protocorm and/or a very small tuber during their first year on medium. No leaves are formed. Then, during their second autumn *in vitro*, when temperatures fall, big leaves develop and large tubers are formed the following spring, 20-22 months after sowing. Lizard Orchids, in contrast, seem to need just one season on sterile media to produce long leaves and big tubers. Interestingly, the hybrid seedlings behaved just like the *Barlias*!



Fig. 7: After three years in soil (note the size difference)
Fig. 8: Tuber size in June 2017

All of the young plants survived and the dormant tubers were potted into soil early in the summer of 2012. Now in 2017, all the plants are still alive, but there is a great variability in growth, vigour and in the time taken to reach flowering size. The orchids have

broad, dark green leaves, and remain in leaf for a period of 8 to 9 months, from early September to late May the following year. Many of the plants produce extra tubers before they even reach flowering size.

I grow the hybrids side by side with lots of other Central European and Mediterranean orchid species under rather weak artificial light (36 or 58 W fluorescent tubes positioned 40 cms above the plants) from late October to about the middle of March. Outside these times their growth continues in my cool greenhouse. Perhaps surprisingly, they love to grow in a temperature of just 4 to 6 °C over the winter, producing new and longer leaves. When the flower spike begins to appear in the centre of the leaf rosette in February, the temperature is still just as low. At this time, those plants that are large enough to flower are moved to the greenhouse where the temperature is higher at 12 to 15°C, and the light intensity greater.

In late February 2016, the first plant produced a flower spike. This year, early in the spring of 2017 another five have flowered (plus, I hope, three other big plants that I gave to some experienced orchid growers in 2016). The plants flowering in 2017 are much taller and bigger than the first one from 2016 and they have produced astonishingly large tubers, 10 cm down at the bottom of the pots. The plants grow to 65 cm in height, and the individual flowers exhibit the red colour inherited from their *B. robertianum* parent. The shape of the flower, however, resembles much more that of the *Himantoglossum* mother plant and the length of the lip is 55-60 mm. It is infertile, as are more or less all hybrids. Fortunately, it has not inherited the scent of goat from the Lizard Orchids! As far as I know, the hybrid is not recorded as occurring naturally, probably because of the markedly different flowering times of the parents, so-called prezygotic isolation.

Nothing seems to last for ever in orchid nomenclature and as mentioned above, the genus *Himantoglossum* has been reorganised recently on the basis of morphology and DNA sequencing. The former genera *Barlia* and *Comperia* are now both included in the genus *Himantoglossum*, and some individual species names have also changed. So, what started life in 2010 at sowing time as *Himantoglossum caprinum* × *Barlia robertiana*, is now the beautiful hybrid *Himantoglossum jankae* × *robertianum*. Perhaps, in honour of Shakespeare's Polixenes' preference for hybrids – we could consider calling this new cross, *Himantoglossum* × *polixenes*!

Reference

Bateman R. M., Attila Molnár, V. & Gábor Sramkó (2017) *In situ* morphometric survey elucidates the evolutionary systematics of the Eurasian *Himantoglossum* clade (Orchidaceae: Orchidinae). *PeerJ* 5:e2893 <https://doi.org/10.7717/peerj.2893>



Fig. 9: Flowering spike of *Himantoglossum caprinum* × *Barlia robertiana* hybrid

Chlorotic Variety of White Helleborine
Cephalanthera damasonium* var. *chlorotica
Rosemary Webb

I was interested to read about the *Cephalanthera damasonium* var. *chlorotica* described by Bill Temple (Temple, 2016). I too found one in Hampshire and I had never seen it before either. In the autumn of 2015 a friend told me that he had found a shoot the previous spring that he thought was a curious, completely white *C. damasonium*. He said it had been eaten off so there were no flowers, only the stump of the plant with a couple of leaves. It was growing in a small copse with a good population of ordinary *C. damasonium*. Since then I have been excitedly looking forward to the possibility of it appearing again.

I returned from Crete where the winter and spring had been exceptionally warm and dry. It was a shock to find we were in a very cold spell here at the end of April. Even snow was forecast in places. The Green-winged Orchids (*Anacamptis morio*) on my lawn were not much further advanced than when I left and even the cherry tree was still in bud. It is always pleasant to find that when one returns from a Mediterranean orchid trip the British orchids are usually beginning their season. This year I am looking forward to perhaps something new!

Such are the vagaries of British weather, a week later at the beginning of May it turned sunny and much warmer. The buds of the Green-winged Orchids (*A. morio*) grew and came into flower in just a few days. Early-purple Orchids (*Orchis mascula*) in the woods were also bursting into bloom but out on the downland they were much more cautious. The great joy of the May flowering orchids are the Fly Orchids (*Ophrys insectifera*) and the Sword-leaved Helleborines (*Cephalanthera longifolia*) with the earliest flowers of White Helleborine also coming into bloom. Perhaps I would not have too long to wait before I could check the promise of the white plant.

After such a mild winter, it seemed possible that all those would be early although March had been cold and April was characterised by spells of cold weather. The later winter weather had also been rather dry and we had more sun than we often do. An early May trip out to the woods was somewhat of a surprise. The Fly Orchids were just developing their rosettes and the Cephalantheras were nowhere to be seen, not a single shoot yet. As May progressed, things started to happen. The Fly Orchids had buds by the end of the second week and the Sword-leaved Helleborines were putting up shoots. The White helleborine was just about showing itself but all of these orchids were somewhat later than they usually are. However, once they appear they tend to develop quickly. *C. damasonium* usually comes into flower just a little later than *C. longifolia* but they certainly overlap for most of the flowering season.

By now I was waiting anxiously to find out whether this special plant was going to appear. I received the call on the evening of the 16th May 2016; it was there again, just a shoot but definitely there. The next day, 17th May did not need any decisions about what to do. Photographic gear stowed in the car – don't get excited, drive carefully! The copse is part of a private estate but there is a permissive footpath nearby. It is bordered along two sides by a lovely meadow, gently rising to higher ground with two circular groups of trees forming other small copses – a very C18 pastoral landscape. The meadow was bathed in sunshine picking up that special vivid green colour that spring vegetation displays. It was covered with masses of tall branching meadow buttercups – an unspoilt place, it seemed to glow in the spring sun. It was sheer pleasure to be there.

As we walked towards the place my friend had indicated, it became apparent that the area was quite interesting. It is a wild area of mixed broadleaved woodland with a scattering of plants that are less often seen. The spikes of Toothwort (*Lathraea squamaria*) were all but over but would have been lovely when they were at the peak of flowering. A few plants of Solomon's Seal (*Polygonatum multiflorum*) were on the edge of the wood and Moschatel or Town-hall Clock (*Adoxa moschatellina*) was frequent. I like this little plant with its tiny heads of curious green flowers facing in all directions making the flower-head look square. There were some fine plants of Twayblade (*Neottia ovata*) in many areas along the path, picked-out in the dappled sunshine. Everywhere, low growing plants of Lords and Ladies (*Arum maculatum*) were in flower with masses of flowers, the spathes of which were a pale yellowish white.

Eventually we came to a stretch of woodland with a number of mature beech trees, some younger beech trees and some holly. Here there was a quantity of White Helleborine throughout the wood. Some were very small, others were a good size and some had buds showing. A little further on and there was the plant, solitary, in its own little patch of woodland floor. It was just a shoot really, about 6 inches high, white with a yellowish tinge and yes it was *Cephalanthera damasonium*. It is so exciting. It looked as though it might produce flowers when it had grown a bit. It was almost iridescent in its creamy whiteness, standing out against the bare brown leaves on the beechwood floor. Photographs had to be taken. Afterwards we set about trying to protect it from being eaten by deer or being knocked off by animals, its problem last year. There was quite a lot of brushwood about so we tried to make a sort of natural 'cage' to prevent it being damaged but leaving it open to develop. It was obviously going to grow and the cluster at the top suggested that it may be developing buds. The stem was sheathed in leaves, the lowest being short and almost round. Both looked almost translucent whereas the top of the spike with the developing leaves and growth had this wonderful opaque white and yellowish colour. We could see absolutely no trace of green in the plant at all.

Five days later 22nd May, we returned to see how the plant was progressing. It had nearly doubled in height, the leaves/bracts were separating and tucked inside each one was a bud. I counted four easily but believed there may be another which was still very small and tightly packed at the top. The bracts, stems and buds are all the same yellowish-white colour and actually look quite strange. They are difficult to photograph because there is no contrast or contours. The buds on ordinary *C. damasonium* are white with a patch of bright yellow colour at the throat showing through. Those on this plant are the same colour in all parts at the moment.

Things are getting difficult now. In 10 days time I am going to Scotland for two weeks. Will this plant develop and show its flowers before we go? There are so many questions. Will the flowers open sufficiently to see inside them? Will they have a deep yellow patch on the lip like the normal plant? How tall will the plant become? How long will it last? If it doesn't develop before we go, will it still be there when we come back? Will it set any seed?

Five days later on 27th May we made another visit. This time the plant was taller still. The buds were clearly there, projecting upwards from the creamy white bracts. They looked quite extraordinary because every part of the plant was still a creamy, yellowish white but the flowers themselves were just like a normal *C. damasonium*, cool white with a yellow patch in the throat. *C. damasonium* flowers often do not really open, these are tightly closed, would they open any more? Time was running out – only 5 days until we leave for Scotland.

Three days later on 30th May, we made our last visit before we leave the day after tomorrow. Would the flowers have developed any more? It was a lovely still day as we walked through the wood. Would the plant still be there? Would it have developed more? It was almost tantalising – the extraordinary colour is such a contrast with the dark beechwood floor. There is no hiding place for this plant. As we approached it was indeed still there. It was now clear to see how many flowers it was bearing – there were eight. The lower ones were more or less mature and they had opened slightly so that they looked like a miniature tulip. The top flowers were still developing but there were not enough mature ones to see that apart from the vegetative colour, the plant looked just like any other *C. damasonium*. I found the creamy white stems and bracts slightly unnerving. The plant had now grown to 47cm. high and it was bigger than many of the normal ones close by.



Fig. 1: *Cephalanthera damasonium* var. *chlorotica* on 17th May 2016

Fig. 2: *Cephalanthera damasonium* var. *chlorotica* on 22nd May 2016

Figs. 3 & 4: *Cephalanthera damasonium* var. *chlorotica* on 30th May 2016

Photos by Rosemary Webb

The lack of contrast makes it quite tricky to photograph so we settled in for quite a long time for the photography. After all, this was our last chance – the flowers would definitely be over by the time we return, even if the plant survives. Now it was taller, it was more difficult to protect or disguise with brushwood.

As soon as we returned from Scotland on 18th June we went up to the wood to see how the plant was faring. It was still there but the lowest leaves were a little damaged. The flowers were over but all of them appeared to be developing seed pods. This brings a new set of questions such as seed viability and whether they would grow into chlorotic plants too. We took a few photographs and made plans to come back at a later date to see how they would develop.

We returned in mid-July – cameras ready to take some shots of the seed pods. As we neared the site, we could see the plant was still there although it was looking a little bedraggled. The normal plants nearby were in much better condition and had strong seed pods forming. As we reached our chlorotic plant there were no seed pods to be seen on the spike at all, except for what would have been the top flower which had obviously not developed and was still very small. The remains of the other pods seemed to have aborted. Remnants of them were lying on the ground around the plant. A small slug was feeding on one of them but there was no evidence it had climbed the spike or had anything to do with the fallen seed pods. I felt a sense of disappointment, it has been interesting following this plant. However, somewhere within me I had half expected this.

The plant has given so much pleasure and interest. I have known of chlorotic *C. damasonium* for many years but this was the first time I had ever seen one. I was especially pleased that it had been such a fine specimen too. When my friend mentioned it last year I was so hoping that it would reappear and it did. I think it is possible that it has been there for several years, judging from its ultimate size and the number of flowers. We will all be looking out for it next year, of that I am certain.

On the 20th September, we made another visit to the wood to see if there were any interesting fungi to be found. As we approached the site of the chlorotic *C. damasonium* there was only a dried stalk and one brown, tattered leaf. The plant was totally unrecognisable. However, I could see a group of whitish ‘toadstools’

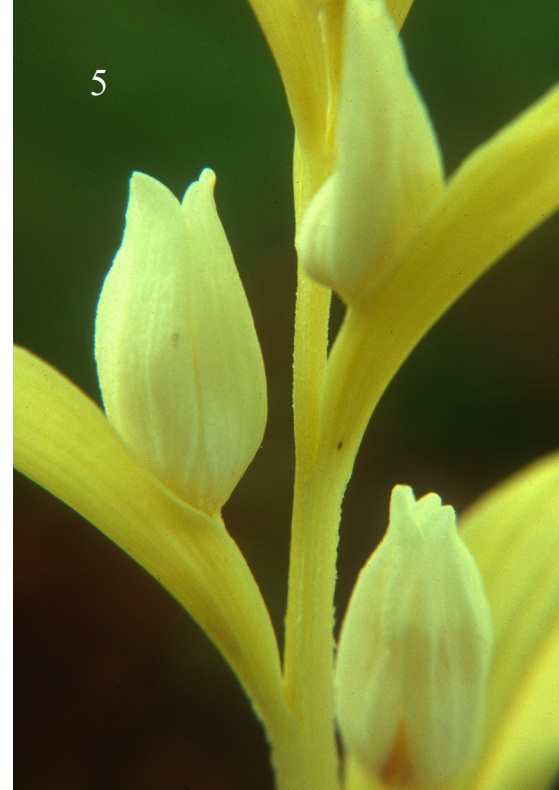


Fig. 5: *Cephalanthera damasonium* var. *chlorotica* on 30th May 2016

Fig. 6: *Cephalanthera damasonium* var. *chlorotica* on 18th June 2016

Fig. 7: *Amanita echinocephala*

Photos by Rosemary Webb

beside the path. I was amazed to find that they were the wonderful, rare *Amanita echinocephala*. This is a medium-sized mushroom (toadstool) with a white or sometimes faintly greenish or coffee-coloured cap, which is covered in pyramidal spike-like scales. The stipe (stem) ends in a swollen base, encircled by rows of similar scales. It is quite unmistakable. To find this growing close to the special *C. damasonium* adds to the excitement of the place. There is no known relationship between the two except rarity. This is only the third time that I have found *Amanita echinocephala* in more than forty years. How rewarding it is to have found it in the same place as *Cephalanthera damasonium* var. *chlorotica*.

Reference

Temple, B. (2006) Chlorophyll free plants of White Helleborine. *Journal of the Hardy Orchid Society* 13:107,-108.

Hybrids From Mainland Scotland Machair Habitat Phil, Elinor & Adam Smith

Our 2017 summer holiday found us in the far North-West of the Scottish mainland. The botanically-rich machair grasslands were at their flowering peak in late July (Fig. 1) and we encountered enormous numbers of orchids. *Dactylorhiza viridis*, *Neottia ovata*, *Dactylorhiza purpurella*, *Gymnadenia densiflora* and *Dactylorhiza fuchsii* var. *alpina* were particularly abundant, although this varied between sites.

Machair is one of the rarest habitats in Europe, being restricted to the north and west of Britain and Ireland. In Scotland it is found on the islands of the Inner and Outer Hebrides, Shetland and Orkney, as well as at a few mainland sites. Machair forms when sand, with a high shell content, is blown inshore from beaches and sand dunes to cover grassland, marshes and lochs (Love, 2003). Our orchid hunting focussed on two sites on the Scottish mainland, Oldshoremore on the West Coast and Faraid Head on the North Coast.

Given the abundance of orchids occurring in mixed populations across the two sites, it was unsurprising that a bit of searching revealed some putative hybrids. Firstly, we noticed a plant resembling *G. densiflora* but closer inspection revealed a larger lip with faint markings and lightly spotted leaves (Figs. 2 & 3). This inter-generic hybrid with *D. fuchsii* var. *alpina* was growing on a bank in close proximity to the parent species.

Fig. 1: Machair habitat at Faraid Head with *Dactylorhiza purpurella* prominent
Figs. 2 & 3: The hybrid between *Dactylorhiza fuchsii* var. *alpina* and
Gymnadenia densiflora
Photos by Phil Smith



Next, we found four intra-generic hybrids between *D. viridis* and *D. purpurella* growing amongst mixed populations of the parent species. Superficially resembling *D. purpurella*, the hybrid flowers were a subtly more pink (as opposed to purple) colour with the leaves more yellow-green (Figs. 4 & 5).

Our third hybrid was that between *D. fuchsii* var. *alpina* and *D. viridis*; two plants of this intra-generic hybrid being found in separate areas, both close to the parent species. The plants were of similar small stature as *D. viridis* and whilst one was fairly richly coloured the other was paler. Although neither had spotted leaves, we concluded in all probability they were hybrids with *D. fuchsii* var. *alpina* (Figs. 6 & 7). We are very grateful to Richard Bateman for confirming our identifications.

Reference

Love, J. (2003) *Machair: Scotland's living landscapes*. Scottish Natural Heritage Publication.

Figs. 4 & 5: A hybrid between *Dactylorhiza purpurella* and *Dactylorhiza viridis*.
 Figs. 6 & 7: Hybrids between *Dactylorhiza fuchsii* var. *alpina* and *Dactylorhiza viridis*.
 Photos by Phil Smith



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