Beannachtaí na Cásca oraibh

POLLINIA

Bombus praetorum - Bumblebee Queen

NEWSLETTER OF THE IRISH ORCHID SOCIETY

Cumann Magairlíní na hÉireann

Volume 13, Issue 3 An tEarrach April 2015

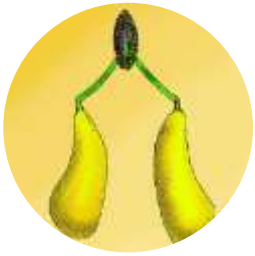
THE IRISH ORCHID SOCIETY

Chairman: Vacant
Treasurer : Mary Bradshaw
Secretary: Vacant
Editor: Laurence T. May
Committee:
Úna Breathnach
Marina Andreeva
Lisa Coffey
Deirdre McGrane
Laurence T. May

POLLINIA (POL-LIN-EE-UH)

A pollinium, (plural, pollinia) is the specific, pollen-bearing structure of Orchidaceae which is extracted by pollinators from a flower and transported for pollination to another flower.

It is a mass of pollen grains fused by means of their wavy texture or fine threads, It originate from a single anther. This mass sticks together and during pollination is transported as a single unit. Pollinia contain the male reproductive cells.



▲
A pair of pollinia. The typical pollen-bearing structure of the Asclepiadaceae and Orchidaceae families.

Copyrights for the photographers' and artists' images belong to their respective owners.

IOS MEMBERSHIP DETAILS

ANNUAL SUBSCRIPTIONS
(renewable in June of each year)

- ☐ Adult Single €20.00
- ☐ Family €30.00
- ☐ OAP/Student* €15.00

(*Confirmation of student status required)

Please make cheques or PO payable to:
Applications and other society communications should be made to the Secretary:

The Irish Orchid Society

Secretary
Irish Orchid Society
c/o National Botanic Gardens
Glasnevin, Dublin 9, Ireland

Front Cover: *Bombus praetorum*
Rear Cover: Noto, Sicily–Infiorita

EDITORIAL INFORMATION
The Editorial Staff reserve the right to edit and/or amend articles submitted to the IOS Newsletter.

The views or comments published within this Newsletter are not necessarily views shared by either the Editorial Staff or the Irish Orchid Society. © 2014-2015

Contributions of articles, pictures or comments should be sent by email to: *editor@pollinia.org* or by post to:

Laurence T. May,
Bellarush, Castlebaldwin,
Co. Sligo, Ireland

ISSN 1649-1173

Cumann Magairlíní na hÉireann

CALENDAR OF EVENTS

APR 6 2015

NO MEETING

APR 25-26 2015

APRIL 25TH AND 26TH - NATIONAL BOTANIC GARDENS ORCHID FAIR

The annual orchid fair organised by the National Botanic Gardens is to be held this weekend in the conservatory at the gardens in Glasnevin. This is the premier annual orchid event in Ireland with a large selection of species and hybrids for sale.

Burnham's and Ray Creek nurseries will be participating. Members are invited to bring their flowering specimens to the show for display and to enter our traditional competition. This is an important promotional showcase and fundraising event so please contribute in any way. We shall also hold our very popular raffle. Opening hours: 10 am – 5pm, Admission free.

MAY 11 2015

MARY ANNE HARRIS - LECTURE "Orchid Diversity in Dublin City Parks"
Monday, 11 May at 8pm—NBG

JUNE 8 2015

IRISH ORCHID SOCIETY AGM, Monday, 8 June, 8pm at the National Botanic Garden. ALL MEMBERS ARE INVITED.

JULY 6 2015

FIELD TRIP TO BULL ISLAND to experience and study some of our most showy native orchids. Monday, 6 July at 6.30pm

April 2015

Su	Mo	Tu	We	Th	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May 2015

Su	Mo	Tu	We	Th	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June 2015

Su	Mo	Tu	We	Th	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

April 5 Easter
April 6 Easter Monday

May 4 May Day
June 1 Bank Holiday

CLUES TO THE HISTORY OF BEES

The future of bees may depend on understanding their past.

Bees are in trouble, any entomologist will tell you.

Honeybee colonies in the United States have suffered devastating losses in recent years. But colony collapse disorder, as it's called, affects only the species kept in beehives — the European honeybee, *Apis mellifera.* There are almost 20,000 species of wild bees, and they aren't faring well, either.

Nearly a third of bumblebee species in the United States are declining. In the Netherlands, more than half of the country's 357 species of wild bees are endangered. Many species of plants, including crops, depend on wild bees to spread their pollen. When they lose their pollinators, they may suffer, too.

"It's essential to know what is causing those declines," said Jeroen Scheper, a graduate student at Alterra, a research institution at Wageningen University in the Netherlands.

But it is not enough to consider the many challenges — from pesticides to parasites — that wild bees face right now. "We need to go back in time," said Mr. Scheper.

Mr. Scheper and other scientists have tried to solve this puzzle by taking advantage of the patient — some might say obsessive — work of naturalists over the past 140 years. Through much of North America and Europe, these unsung heroes carefully tallied sightings of bees year after year. They caught bees, stuck them on pins, and stored their desiccated little bodies by the thousands in museum cabinets. Those impaled bees have been resting in their darkened drawers, waiting for scientists to pay them a visit. And now they have.

Recently, Ignasi Bartomeus, then a post-doctoral researcher at Rutgers University, and his colleagues tapped this vast supply to reconstruct the history of bees in the Northeast. They searched the bee collections at the American Museum of Natural History, the New York State Museum, and a number of university collections.

All told, they examined more than 40,000 wild bees. They whittled their survey down to just 30,000 specimens for which there was clear information about when and where they had been caught.

Studying the 438 species in their database, they found that the diversity of wild bumblebee species in the region declined by 30 percent between 1872 to 2011. (The diversity of the bees overall declined by a more moderate 15 percent.)

As scientists gain a better understanding of the history of bees, they are also starting to gather clues about what has been driving the changes they are documenting. In their new study, published this week in Proceedings of the National Academy of Sciences, Mr. Scheper and his colleagues analyzed detailed records about bees in the Netherlands to determine how their populations changed during the twentieth century.

Then the scientists looked for what the declining species had in common. They examined a number of possible factors — how common bee species were at the beginning of the century, for example, and how far they typically flew to find food, and how big they grew.

The scientists were even able to study what bees ate all those decades ago. Mr. Scheper and his colleagues visited seven Dutch museums, where they inspected the bee collections. When they peered closely at the insects, they could see pollen grains stuck to the legs of some them.

Placing the pollen grains under a microscope, the scientists identified the plants that the bees had visited.

As it turned out, the fate of the bees often was tied to that of the plants they depended on.

The growing intensity of farming in the Netherlands since the 1950s hit many wild plant species hard. “There were a lot more flowers in the landscape before,” said Mr. Scheper.

Dutch farmers cleared more land, used more toxic herbicides, and blanketed their farms with fertilizers.

Some wild plants were able to survive these challenges, but others became scarce. Mr. Scheper and his colleagues found that the bees that preferred declining plants also declined.

This link held true even for bees that collect pollen from dozens of plant species. The results suggest that without the preferred kind of pollen, the bee larvae suffered.

Mr. Scheper and his colleagues also found that big bees were at greater risk than small ones. He suspects that is because big bees need to eat more. If the plants they depend on get harder to find, they are more likely to suffer than smaller bees.

“The results are compelling and make a lot of sense,” said Dr. Bartomeus, who was not involved in the Dutch study. “If your food source is declining, your populations will suffer.”

Laura A. Burkle, an ecologist at Montana State University who also was not involved in the new study, cautioned that food might not be the only explanation for the results. The changes

in landscape that stripped away pollen might also have ruined bee nesting sites.

“We don’t have a solid understanding of which of these main resources is most limiting to bees,” said Dr. Burkle.

Mr. Scheper said that policies for restoring bees will have to take their preferred plants into account.

“If you want to slow down or reverse the decline of a species, you can’t suffice with general measures,” he said. “Bee species that need red clover are not helped with dandelions. I know that policy makers prefer a simple and quick answer — ‘Just do this and you’ll get this.’ — but it’s not that simple.”

Bombus sylvarum is a species of bee found across Europe.

CARL ZIMMER
NEW YORK TIMES

Cáisc shona duit - Coinín Chásca

ASSESSMENT OF GENETIC DIVERSITY AMONG ORCHIDS USING MORPHOLOGICAL CHARACTERS

Abstract

The present study was conducted to study the nature and magnitude of genetic diversity among twenty five orchids collected from different places of Mymensingh, Bangladesh. Based on genetic analysis phenotypic coefficients of variation was slightly higher than genotypic coefficients of variation. A wide range of variation was observed for the ten characters studied. Non -hierarchical clustering of twenty five orchids indicated five main groups or classes where orchids were placed according to their morphological traits resemblance. Group 3 had maximum number of orchids (9) followed by Group 2 (7). Clustering pattern revealed that geographical diversity was not associated with genetic diversity i.e., orchids collected from same location were grouped into different clusters or groups. The intra-group distance was highest in the group 2 and the minimum intra-group distance was observed in the group 3, which included nine orchids. The inter-group (D^2) values varied from 3.579 to 18.724 indicating wide diversity among orchids. The maximum inter-group distance was observed between groups 4 x 1 and that of minimum in between the groups 4 x 2. Considering cluster mean values the orchids of group 3 and 4 could be selected for yield and flower contributing characters.

Conclusion

Genetic variability among orchids was analyzed on the basis of morphological data which also showed variations among characters studied. analysis of the study revealed that the plant height, number of flowers per plant, leaf area, flower spread and the number of spikes per plant were the most important characters. Therefore, the results concluded that these characters are contributing traits and selection based on these traits would be most effective for plant breeders in developing new orchid varieties.

DR TANVEER FATIMA MIANO
Assistant Professor PhD
Department of Horticulture
Sindh Agriculture University, Tando Jam, Pakistan

[The complete research paper is available at:

http://www.pollinia.org/april2015/articles/miano.pdf]

A NEW ORCHID GENUS, DANXIAORCHIS, AND PHYLOGENETIC ANALYSIS OF THE TRIBE CALYPSOEAE

Orchids have numerous species, and their speciation rates are presumed to be exceptionally high, suggesting that orchids are continuously and actively evolving. The wide diversity of orchids has attracted the interest of evolutionary biologists. In this study, a new orchid was discovered on Danxia Mountain in Guangdong, China.

However, the phylogenetic clarification of this new orchid requires further molecular, morphological, and phytogeographic analyses

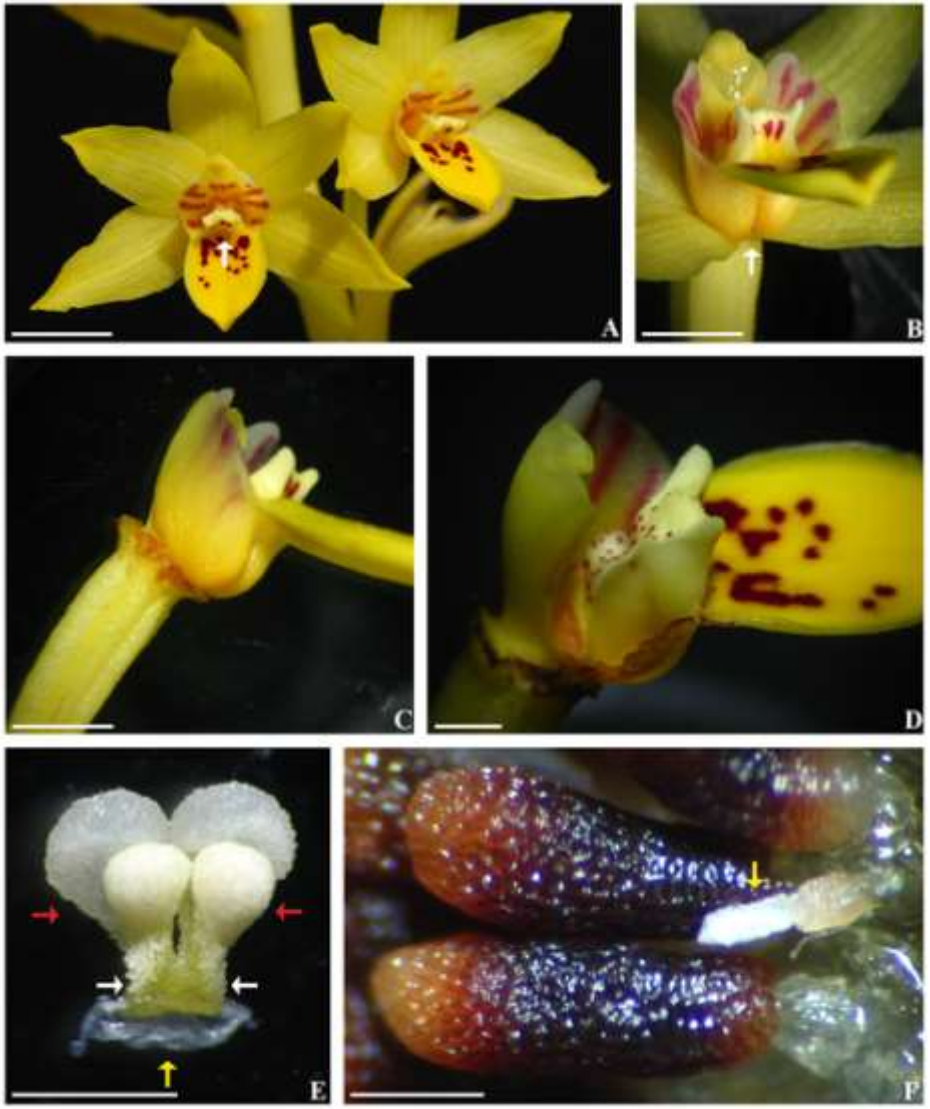
A new orchid possesses a labellum with a large Y-shaped callus and two sacs at the base, and cylindrical, fleshy seeds, which make it distinct from all known orchid genera. Phylogenetic methods were applied to a matrix of morphological and molecular characters based on the fragments of the nuclear internal transcribed spacer, chloroplast matK, and rbcL genes of Orchidaceae (74 genera) and Calypsoeae (13 genera). The strict consensus Bayesian inference phylogram strongly supports the division of the Calypsoeae alliance (not including Dactylostalix and Ephippianthus) into seven clades with 11 genera. The sequence data of each species and the morphological characters of each genus were combined into a single dataset.

The inferred Bayesian phylogram supports the division of the 13 genera of Calypsoeae into four clades with 13 subclades (genera). Based on the results of our phylogenetic analyses, Calypsoeae, under which the new orchid is classified, represents an independent lineage in the Epidendroideae subfamily.

Conclusions
Analyses of the combined datasets using Bayesian methods revealed strong evidence that Calypsoeae is a monophyletic tribe consisting of eight well-supported clades with 13 subclades (genera), which are all in agreement with the phytogeography of Calypsoeae. The Danxia orchid represents an independent lineage under the tribe Calypsoeae of the subfamily Epidendroideae. This lineage should be treated as a new genus, which we have named Danxiaorchis, that is parallel to Yoania. Both genera are placed under the subtribe Yoaniinae

Citation:
Zhai J-W, Zhang G-Q, Chen L-J, Xiao X-J, Liu K-W, et al. (2013) A New Orchid Genus, Danxiaorchis, and Phylogenetic Analysis of the Tribe Calypsoeae.

Figure 1: *Danxiaorchis singchiana* flowers and seeds. [**See Page 9**]
(A) Flowers with a Y-shaped appendage (arrow) on the labellum. Bar = 1 cm. (B) Labellum with two sacs (arrows) at the base. Bar = 4 mm. (C) Column and labellum, side view. Bar = 4 mm. (D). Appendage of the labellum, side view. Bar = 2 mm. (E) Pollinarium, front view, showing pollinia (red arrows), caudicles (white arrows), and viscidium (yellow arrow). Bar = 1 mm. (F) Mature Seeds, showing abortive seed (yellow arrow). Bar = 5 mm.



IRISH ORCHID SOCIETY
www.irishorchidsociety.org
•
POLLINIA
www.pollinia.org

Back issues of POLLINIA are available in PDF format on the website.

BEE ORCHID

COMMON NAME:	**Bee Orchid**
SCIENTIFIC NAME:	*Ophrys apifera*
IRISH NAME:	*Magairlín na mbeach*

This magnificent wildflower is such a delight to find. It shows its superb design and colours on dry, sandy soil, dunes and limestone pastures, in June and July. There is no problem identifying a Bee Orchid from all other orchids – its lovely gold and brown velvety lower lip is patterned to resemble the back-end of a visiting bumblebee, this in order to attract a similar insect and thereby assist in pollinating the plant. A perennial, this orchid grows to about 30–40 cm high with an erect stem which is clasped by two oblong, lanceolate leaves. Several other leaves form a basal rosette.

The amazing, unmistakable flowers are borne in spikes and have three spreading pink sepals, two short green upper petals and a large round lower petal which is deep brown and has gold markings. Two bright-yellow 'pollinia' can be seen above the opening of the flower. These two pollen masses have sticky pads which can adhere to visiting insects' heads thereby causing pollen to be transferred to the next flower the bee visits. This pretence whereby the bee is attracted to the flower by its impersonation of another bee is termed 'pseudocopulation'.

This flower cries out for a down-on-the-knees examination by hand lens and you will be well-rewarded by the stunning detail. It is a native plant and it belongs to the Orchidaceae family. Occasionally a white variety of this species, *Ophrys apifera* var. *chlorantha*, may be found. Without the colourful pink sepals, it still retains the bee-like furry pouch.

I first saw and photographed this wonderful plant near Arklow, County Wicklow in June 2009.

All wild plants are given some measure of protection in Northern Ireland under the Wildlife (NI) Order, 1985. The Bee Orchid, listed in Schedule 8, parts 1 and 2, is given special protection. ■

Zoë Devlin is a regular columnist on wild Irish orchids.

Zoë's website is "Wildflowers of Ireland"
http://www.wildflowersofireland.net/

Her book *'Wildflowers of Ireland - A personal Record'* is published by the Collins Press, Cork.

Ophrys apifera

RECENTLY IN FLOWER AT THE NATIONAL BOTANIC GARDENS

Guarianthe bowringiana

Synonyms: *Cattleya autumnalis* O'Brien 1888; *Cattleya skinneri Bateman* var. *bowringiana* (Veitch) Kraenzl. 1892; *Guarianthe bowringiana* (Veitch) Dressler & W.E. Higgins 2003

Common name; Bowring's Cattleya named after an ardent English amateur orchid enthusiast Mr. J. C. Bowring of Forest Farm. Introduced by Veitch in 1884, and first exhibited in London by its discoverer, James Veitch & Sons, on October 31, 1885. Veitch called the plant *Cattleya autumnalis.* It was described in the **Gardeners' Chronicle** on November 28, 1885 by the **Chronicle's** reviewer James O'Brien.

This robust epiphyte is closely allied to *Cattleya skinneri*, at one time being considered a variety of *C. skinneri*, but is readily distinguished by the small pseudobulb-like joint between the two leaves as well as by differences in the flowers.

G. bowringiana is a native of Belize and Guatemala. This medium to large sized, hot to warm growing lithophyte (growing on a rock) is found at elevations of 210m-900m on rocky cliffs near fast moving streams with a humid atmosphere.

G. bowringiana has tall cane like pseudobulbs covered with a thin papery sheathing, pseudobulbs can be 10-15in in height but can reach 20-30in when well grown. carrying 2/3 apical, narrowly oblong, leathery. dark green leaves, 6in-8in long. The terminal, erect or nodding, inflorescence (25 cm long) arises through 2 basal spathes each one carrying up to 15 flowers. With minimal care, this orchid can produce 8-16 flowers per spike, a specimen plant can produce more than 20 flowers per spike. The record of a plant with nine spikes bearing 195 flowers (almost 22 flowers per spike).

Flowers (non-fragrant) on average last 12-17 days, so well worth the effort.

Each flower has sepals and petals which are bright rose-purple in colour, with deeper veining, the petals much broader than the sepals and slightly wavy along the margins. The lip is narrowly tubular surrounding the column and similar in colour to the sepals and petals, the anterior portion of the lip flaring outward without distinct lobes, deep purple with a central crescent of maroon surrounding the white to yellowish throat.

After flowering *G. bowringiana* requires a short winter rest from water/ fertilizer. It is an ideal plant for the hobbyist as it grows rapidly indoors in strong, bright light in warm to intermediate temperatures. It is important to water once a week during the growing period with rain/untreated water, it is important not to over water. When the pseudobulbs have matured, watering should be reduced to avoid further growth of the plant and to induce formation of flowers. After flowering, the rest period commences and the plant should be left fairly dry, watering approximatively every 2-3 weeks. It should be kept damp but by no means wet for the winter period.

Plant in a loose cattleya mix preferable in a pot or basket. It likes to be confined in it's pot and can be re-potted every year when the new roots start to show from the base of the lead pseudobulb. When re-potting make sure to keep the base of the pseudobulb level with the potting medium, so as not to inhibit the new growth from the base of the bulb.

Prices can vary online but I did see one online for €30.00. There are many clones and varieties available online. There is no true alba although the typical *G. bowringiana* is a medium-rose lavender with a somewhat darker lip, there are also clones with dark, vibrant purple flowers. A variety of albescens forms range from light lavender to almost white, and *G. bowringiana* has some of the best coerulea or "blue" clones. Sir Jeremiah Coleman, who pioneered the development of coerulea hybrids in cattleyas, had some of his best results using the blue clones of *G. bowringiana* — the clones 'Lilacina', 'Coerulea' and 'Violacea'.

MARIE HOURIGAN

FIRST DIRECT OBSERVATIONS OF HOW ROOTS GROW

Researchers have found ways to watch the roots of plants as they grow

As scientists look at crops to find ways to help them deal with climate change stress and growing populations, a tool has emerged to give them a new perspective: the view from underground.

Plants are a lot like icebergs: A bulk of their mass is invisible to the naked eye, buried in their roots. Roots allow plants to compensate for their stationary role in life, hunting for nutrients and diving to mine for water in times of drought.

These are abilities food security researchers would like to be able to enhance to develop more durable crops, but laboratory conditions currently confine experiments to the first few days or weeks of a sprouting plant's life.

Alexander Bucksch, a computer scientist turned plant genetic mathematician, said he was driven to find a way to shed light on roots in his postdoctoral work at the Georgia Institute of Technology. He was struck by how little is known about their growth and how similar the scale, overlap and diversity of branching was to other systems he had created visual models for in his previous work.

"I had an immediate interest in going underground," he said. "We knew hardly anything about mature root systems, even less how to control traits. I realized I could take my technical side and apply it to biology, to get the best of both."

Bringing together specialists in root genetics, plant physiology and agro-ecology, Bucksch built a computer program that uses an algorithm to interpret digital images of mature roots extracted from the field. It allowed him to analyze enough root samples with a high degree of uniformity to allow statistically significant results. This could give future researchers the ability to manipulate traits of crops that have been concealed, explained Malcolm Bennett, a professor of plant sciences at the University of Nottingham in the United Kingdom.

"For 10,000 years we've selected for aerial traits directly, but we haven't directly been able to select for the hidden half, though we know roots can greatly impact the very things we're trying to select for," he said. "This is an impressive gain towards being able to do what we've wanted to for a long time."

Measuring the unseen in a standardized way

Understanding the challenges presented to root researchers is fairly easy, Bucksch explained. Current methods either grow seedlings in clay pots that can be analyzed using magnetic resonance imaging (MRI) or grow them in glass pots using a clear medium instead of soil. While these techniques are highly advanced, they observe only a small, unrepresentative portion of plant life, which restricts root study as many develop or are modified later in life.

"In maize [corn], you don't even see top roots grow within current studies," Bucksch said. "Before, the time scale people were working with was within a few weeks to a month at best; now we're talking about being able to see the growth of months, maybe even more."


Prop roots of Maize plant

Bennett explained that this limited how quickly researchers could process their samples, which with a living subject that continues to grow makes comparing data collected days apart tricky.

In the 1980s, image-based techniques were applied to the study of roots to better predict how they might grow, but this process still didn't allow the kind of certainty needed for genetic study and was very time-consuming.

In 2011, Jonathan Lynch from Pennsylvania State University, now part of Bucksch's team, helped create an alternative, a way to standardize root sampling and generate more precise results, which he called "shovelomics." It called for roots to be extracted, washed and then measured against a protractor board for classification in a specific manner.

But there were still subjective factors that remained a problem. "Each person brings with them different levels of expertise, field knowledge and training into their interpretation, making scores subjective," Bucksch said. "We wanted to take counting and measuring out of the researcher's hands altogether to avoid this."

Speaking the same language

The new method, published last week in **Plant Physiology**, has researchers photographing their root samples against a black background board alongside a circle to scale the image. This image is then uploaded to a computer that uses the algorithm to analyze fine and large-scale aspects of the samples. For many root systems, this was previously impossible given their high degree of complexity.

Within these additions also come the tools to match the visible traits of the plant with the genetic makeup of the trait. This was needed to unlock and explore root adaptive potential.

"What we can learn now is how plants change to meet their environment," Bucksch said. "What things have worked in the past for the plant is reflected in the angle, the branching and the dynamics of its root system."

Continued on Page 18

SICILIAN FLOWER FESTIVAL

Infiorata is an Italian tradition that sees the streets paved with flowers. The Sicilian city of Noto holds one of the most stunning Infiorata displays each year on the 3rd weekend in May. On Friday, artists begin preparing the street with soil and begin preparing their floral masterpieces. Individual artists display their talents on side streets and the public is invited to browse the "street gallery" on Saturday and Sunday. On Monday the children of the town are allowed to rampage through the flowers, destroying everything they can stomp beneath their little feet. It is a symbolic display of youth and renewal that is worth staying around an extra day to witness.

L' infiorata di Noto
15 - 17 May 2015

L' infiorata di Noto, Sicilia

L' infiorata di Noto, Sicilia

HOW ROOTS GROW (Continued from Page 14)

Bennett added that he admired the range of factors the team, from both Penn State and Georgia Tech, took into consideration when working on the technology, ensuring it would be simplistic enough for use in developing countries.

"Their process costs cents to process, requires no huge input expense and is fast enough to make possible sequencing and eventually genomic insight," he said. "That's a huge gain for the field and a step towards helping us finally chisel out and incorporate ideal phenotypes into future crops."

Bucksch, who is confident their method will offer all types of researchers a new way to observe elements of mature plant life, said he never really doubted they would be successful, even though many different specialists were needed to create the final product.

"Biology is all about processes, and that is exactly what algorithms describe; the two have just developed different languages because they have grown in isolation from one another," he said. "Breaking down this initial barrier was probably the most difficult part of the entire project, but once we had done it, we knew we had something we could all work with."

CLIMATEWIRE

THE 2015 EUROPEAN ORCHID SHOW AND CONFERENCE LONDON

17th European Orchid Show and Conference London

European Orchid Show - 9 –12 April 2015,

Conference opens 8 April when the Preview Evening will be held at the RHS Halls

The RHS London Orchid Show is delighted to welcome the prestigious European Orchid Conference to the heart of London; the event is the 17th, held in a different European city every three years. In 2015, not only can you admire and buy stunning orchids at the annual show, you also have the unique opportunity to learn more about this fabulous family of plants at the conference.

http://www.rhs.org.uk/shows-events/

DONEGAL WILDLIFE: ***A regularly updated pictorial narrative of the wildlife around Raphoe, Donegal***
http://www.donegal-wildlife.blogspot.com

THE WAY I'VE COME

It is now 12 years since I started blogging about the wildlife in my local patch, and I think it would be worthwhile to summarise the findings to date.

I began in 2003 with my first digital camera, a Fuji 2800z, and began to photograph and identify the local plants on a particular hedgerow here: ***http://homepage.eircom.net/~hedgerow***

My first discoveries were:

- that there were more plants than I anticipated (around 90 species).
- what I had previously thought was a single species was sometimes actually two, three, or more different species.

So in the first year, I discovered that I had a rich local environment but also that I had much to learn.

In the second year, I began to look at the insects as well as the plants, and I took notice of some of the larger fungi as well. I also began to extend the area of survey to include mixed woodland and a river system. I also got my second camera, a Fuji s7000, which enabled me to get much more detailed images of insects.

This extended geographic area is documented in:
http://homepage.eircom.net/~hedgerow2 and this blog ran until 2008, when I switched to the current format on blogspot:
http://www.donegal-wildlife.blogspot.com

My main discoveries during this time were:

- Different habitats contain different species
- Species interact in many different ways
- There is a lot we don't know about our wildlife
- Wildlife is important for our survival
- Documentation to assist with identifications can be out of date, incomplete or hard to find
- There is some uncertainty about the identity of some species
- Things are changing over time
- Soil type governs which species can be found in a particular place
- It's complex out there
- I could, and did, add species to the Irish list

Some of this all seems so trivial now, but during this time I was building up an understanding of the complex network of species that go to make up our wildlife. I also learned that this complexity is not widely understood, and that this lack of understanding is a serious problem for the survival of our wildlife, and ultimately for us as a species.

As a generalist recorder, I try to identify everything that I find. I was constantly told by specialists that I must find my niche and focus on particular groups, since nobody can do it all. But I find everything interesting, and if I ignore a particular group, then I'm leaving gaps in my knowledge. It is true that specialisation is the key to gaining full understanding of a group, but I like the fact that I can delve into flowering plants or wasps or fungi or spiders or whatever group as and when I like. I thrive on variety and switching my focus keeps things fresh for me. An additional benefit of my 'pan-group' recording is the overview that I get: specialists have a detailed view of their own group, but can be quite unaware of related events in others.

At first, I published my blogs as an information resource to show what was out there (a kind of scrapbook), but I quickly realised (or was forced to realise) that formal recording is important: we need to know what's out there. So I began to join various recording schemes and I submit data to these. (I am still creating retrospective formal records from the days before I started to make them, so older records will continue to surface as time permits). But I began to realise that my information was also being used as an educational resource, and I switched the emphasis of much of my text away from formal fact towards a more educational and instructive format.

The internet has been vital in a number of ways. First of all, it's a place to store my text and images in a place where anyone has access to them. Secondly, there are many on-line forums where experts gather together to discuss various groups. So it is relatively easy to find experts and get help with identifications. Thirdly, I can email images to people anywhere at the press of a button. Communication has never been easier. Central databases of national records are also available, and this lets us see distribution maps for species. This can be helpful in determining whether a potential identification is reasonable, or if further work (validation) needs to be done before a record would be acceptable.

Records are maintained in a single, central, database per country (I submit records to both Ireland and Northern Ireland) and submitted records need to be validated before being added to the reference database and being made publicly available. Validators are people who can assess the likelihood of a submitted record being correct, or whether further evidence (photograph or perhaps a specimen) is required. Validators tend to specialise in one or more groups, such as flies, fungi, bryophytes, flowering plants, spiders or beetles and basically act as filters to increase the reliability of data.

On a couple of occasions, I have contacted data centres to ask who the validator is for a particular group only to be told "actually, that would be you". It is almost frightening to realise that some of the top-level expertise is held by absolute amateurs like myself, but this is actually a reflection of the lack of investment (actually,

reduction in investment) by governments in professionals to hold positions where this expertise would naturally reside. This short-sightedness is another indicator that the importance of our wildlife is not understood.

I suppose one of the most surprising discoveries that I have made over the years is that there is still a degree of uncertainty no matter in which direction you choose to look. The vast majority of specimens can be readily identified from reasonably easy to obtain reference books, but I have found that when it comes to identification of some specimens I inevitably end up looking for an obscure paper from some journal or other. Once the paper has been secured, and I look for further advice or expertise, I can find that the number of people who can assist me further can be counted on the fingers of one hand. This is alarming, and might sound like a complaint, but it simply shows that we are walking a tightrope: our wildlife is complex and we don't have sufficient interest or resources to be competent enough to understand that complexity. Sometimes, we are left with 'opinions': an identification depends on who you decide to follow or believe.

So why the worry? Putting it simply, we are constantly making decisions about whether to build houses and businesses on green-field sites, brown-field sites, woodland, sites of special scientific interest, bog and so on and we are basing these decisions on incomplete information. We don't know enough about our wildlife, and we are certainly not competent enough to know that we are making the correct decisions. Pressure from industry, agriculture, building development and lack of understanding (or even basic interest) by politicians is putting us in a place that fills me with dread.

The simple fact is that our wildlife species interact with each other in complex, critical and fascinating ways. In turn, our wildlife interacts with us in complex and vital ways: we are just one species in the web. Until we fully understand our dependency on wildlife, we will continue to blunder down a badly-lit path towards something that frightens me.

So what can we do?

I intend to continue my research into the relationships between organisms: this is the area that interests me most. So I will continue to look at parasitica, fungi, leaf-miners and galls in particular. These are all good examples of species interactions, and are all areas which need further study.

I have very much enjoyed participating in the Heritage Council's Heritage in Schools program, which brings heritage experts into schools, exposing pupils to a wider range of information and, hopefully, stimulating long-term interest and involvement.

My intention is to share as much of my work as possible (budget and equipment permitting) and I aim to participate in as many field trips as I can squeeze into the workable part of the year. The winter months will be used for research and 'back-

office' work whilst our wildlife is hiding away.

I had no idea where I was going when I started to write this piece. But it seems this is where I ended up. Please keep looking in.

STUART DUNLOP

"So what's the image?" I hear you ask.

It's a moth which has been killed by the parasitic fungus *Cordyceps tuberculata*, which is an extremely rare species, on the RDB list as Vulnerable D2. This specimen was found in Co. Cork and is the first Irish record. There are only 23 other records in the Fungal Records database and they are mostly from the east of England. I rather suspect this is a continental species, since most records are coastal, and it's possible that the victims were migrants. This is, however, pure speculation on my part.

The Irish Red Data Book is a list of plant and animal species that are under threat and are legally protected. The lists of these protected species are available in PDF format on the National Parks and Wildlife Service (NPWS) website.

Creating the Red Data Book was inspired by the International Union for Conservation of Nature's (IUCN) global Red List of Threatened Species.

DE ×EPICATTLEYIS COMMENTATIONES I: VALID NAMES UNDER ×EPICATTLEYA ROLFE

After looking on the main orchid articles of the late 19th and early 20th century, it became clear that the nomenclature of the nothogenus formed between Epidendrum and Cattleya, from a taxonomist perspective, is really messy. Not only because the lack of distinction between taxonomical and horticultural usages at the time, but for the proliferation of informal names, aggravated by the hard-to-delimit genera present in the extremely difficult Orchidaceae family. Also, for the undeniable neglect the hybrids receive from traditional taxonomists. It's the aim of this brief article to communicate the correct names published for some few hybrids (to be found nowhere), and exclude the non-valid ones of the nothogenus ×Epicattleya.

The history of ×Epicattleya begun with *Cattleya guatemalensis* T. Moore, which, according to the author grew with *Cattleya skinerii* and *C. aurantiaca* on the same tree (Rolfe in Gard. Chron. 1889(1): 491 [1889]). There, he considered the latter as a member of the genus Epidendrum, and thus, based on the general aspect of the plant, intermediate between both species, created the concept ×Epicattleya and transferred *C. guatemalensis* to the nothogenus. This was an unfortunate deed, as both *C. skinerii* and *C. aurantiaca* proved to be cogeneric, and were transferred to the new genus Guarianthe Dressler & W.E. Higgins (**Lankesteriana** 7: 37 [2003]). *G. ×guatemalensis* was transferred by Higgins (**Orchid Digest** 68(1): 39 [2004]).

Anyway, nothogenera don't have types, and ×Epicattleya was validly published, indicating the parent genera, and persisting as a well-established concept until now.

As such, a lot of names of this species proliferated as hybridists made their labour in France, Germany and Great Britain; and sent their specimens that were published by an anonymous writer, known only as "*The Hybridist*", who was an alternative author each time. Fortunately, Rolfe and Hurst (1909) identified the authors of descriptions and diagnoses in their "Orchid Stud-Book". Some names were validly proposed, and are here presented, along with their parentage. Names considered invalid under the current code (not in Latin, composed with the unmodified specific epithet of the parents, published without a description or diagnose) are not included.

The literature consulted was made available through the Biodiversity Heritage Library and the **BibliOrchidea** of the Basilea University. All references were reviewed in order to verify their validity.

The complete article will be found at:
http://www.pollinia.org/april2015/articles/molinari.pdf

Eduardo Antonio Molinari-Novoa

"Augusto Weberbauer" Herbarium (MOL). Department of Biology Faculty of Sciences. La Molina National Agrarian University, Lima, Peru

GROWING EPIPACTIS GIGANTEA IN A BACKYARD

It is an unprepossessing orchid, the kind that's unlikely to win prizes at shows or elicit a double take from passers-by. But the giant stream orchid is an irresistible enigma to some Southern California plant enthusiasts and collectors who relish a challenge.

For one, it's elusive. You are unlikely to find it next to the common Phalaenopsis or Dendrobium at a grocery store or a garden center. Yet, if you hike into the local mountains during the spring and you look carefully, you just might spot *Epipactis gigantea* blooming mere steps from a stream. Look all you want, but don't take it with you.

Also called giant helleborine, this is one of a handful of orchids that are California natives. More prolific in the wild in the northern and central parts of the state, it is less common in Southern California. Sometimes, it shows up in the strangest places, such as the occasional drainage area next to a freeway. It usually starts blooming in the late spring and early summer, then goes dormant in the fall and winter.

The giant stream orchid grows up to 1 foot, with sword-like, long leaves and inch-wide yellow/chartreuse/brown flowers with purple veins. If you shake the stalk or if a fly tries to pollinate it, the flower's lower lip will quiver, thus earning this plant the charming moniker chatterbox orchid.

Ron Vanderhoff had been looking for the *Epipactis gigantea* in the wild for many years during his nature hikes in the hills and mountains of Orange County.

"I was drawn to *Epipactis gigantea* because they are a local native plant, but more particularly because they are an orchid, and most folks would not think of Southern California and orchids in the same context," said Vanderhoff, a board member and Orange County native plant field trip leader for the California Native Plant Society.

"*Epipactis gigantea* grow only in a few areas in Orange County, so their relative rareness also attracted me," he said. "Most serious horticulturists abhor common plants, since everyone else already has them and they are no longer special."

During one of his hikes in the Santa Ana Mountains, Vanderhoff made his way to a spring and spotted a lush plant with flowers blooming on a nearby cliff. He could not identify it, so he photographed it. Within days, that photo somehow made its way to Harold Koopowitz, a UC Irvine professor of ecology and orchid expert who identified the mystery plant as an *Epipactis gigantea.*

Vanderhoff didn't make the connection between his potted plant and the one in the wild because they bore little resemblance. Having seen the environment and moist natural conditions that the orchid thrived in, he sought to create the same for the one in his garden. It has since improved and flourished, spreading in clumps.

Roberta Fox, on the other hand, is a prolific connoisseur of orchids, with a private collection numbering between 1,800 and 1,900 that she amassed over two decades. Fox, who is co-chairwoman of the Fascination of Orchids show at South Coast Plaza Village next weekend, bought her two giant stream orchids at garden shows.

"It's one of my little projects," Fox said. "It's a learning process about what the plant wants and what you can give them, given the conditions and the constraints of what you have. You try to find the overlap."

Epipactis gigantea

One of the essential things she found was that the giant stream orchid grows best in soil, not on bark, unlike other orchids. "Treat the orchid like a wildflower, not like an orchid," she said.

LISA LIDDANE

AN ORCHID DISGUISED AS A WEED [Another helleborine species]

For those of us old enough to remember giving or receiving an orchid corsage, the concept of a "weed orchid" seems odd. First discovered in 1879 near Syracuse, New York, the helleborine (*Epipactis helleborine*) was first thought to be a new species of North American orchid. This caused quite a stir among 19th-century botanists and orchid enthusiasts, but the plant was later identified as a Eurasian native with a history dating to mid-16th-century herbal lore as a cure for gout.

Considering the rarity of our native orchids, and the near impossible task of transplanting them to gardens, it seems incredible that helleborine has become so well established. Quite simply, unlike our native orchids, this plant is happy with a wide range of soil conditions. It is also undaunted by some of the East's most aggressive plants, like English ivy or pachysandra; it frequently grows through dense beds of these plants. I have even seen it perform one of the incredible feats of urban plant-world mythology, as it pushed its way through asphalt, a feat generally ascribed to bamboo or phragmites. It is truly a weed orchid.

In just a little over a hundred years, *Epipactis helleborine* has spread from Atlantic Coast to Pacific Coast and almost all points between.

POLLINIA
January 2014

ANNA ATKINS: BRITISH SCIENTIST WHO PRODUCED THE FIRST PHOTOGRAPHIC BOOK

March 16th marked the birthday of Anna Atkins, a British botanist whose use of cyanotypes - or 'sunprints' - of plants and algae in botanical studies paved the way for the use of photography in scientific publishing.

Atkins was born in Tonbridge, Kent, United Kingdom in 1799. Her mother Hester Anne Children "didn't recover from the effects of childbirth" and died in 1800. Anna became close to her father John George Children, Anna "received an unusually scientific education for a woman of her time." Her detailed engravings of shells were used to illustrate her father's translation of **Lamarck's Genera of Shells**.

John George Children and John Pelly Atkins were friends of William Henry Fox Talbot. Anna Atkins learned directly from Talbot about two of his inventions related to photography: the "photogenic drawing" technique (in which an object is placed on light-sensitized paper which is exposed to the sun to produce an image) and calotypes.

Atkins was known to have had access to a camera by 1841. Some sources claim that Atkins was the first female photographer. Other sources name Constance Talbot, the wife of William Fox Talbot, as the first female photographer. As no camera-based photographs by Anna Atkins nor any photographs by Constance Talbot survive, the issue may never be resolved.

Sir John Herschel, a friend of Atkins and Children, invented the cyanotype photographic process in 1842. Within a year, Atkins applied the process to algae (specifically, seaweed) by making cyanotype photograms that were contact printed "by placing the unmounted dried-algae original directly on the cyanotype paper."

Atkins self-published her photograms in the first installment of Photographs of **British Algae: Cyanotype Impressions** in October 1843.[2] Although privately published, with a limited number of copies, and with handwritten text, **Photographs of British Algae: Cyanotype Impressions** is considered the first book illustrated with photographic images. Eight months later, in June 1844, the first fascicle of William Henry Fox Talbot's **The Pencil of Nature** was released; that book was the "first photographically illustrated book to be commercially published" or "the first commercially published book illustrated with photographs."

In the 1850s, Atkins collaborated with Anne Dixon (1799–1864), who was "like a

sister" to her, to produce at least three presentation albums of cyanotype photograms:

Cyanotypes of British and Foreign Ferns (1853),
Cyanotypes of British and Foreign Flowering Plants and Ferns (1854), disassembled pages of which are held by various museums and collectors;

An album inscribed to "**Captain Henry Dixon**," Anne Dixon's nephew (1861).

In addition, she published books with non-photographic work.

She died at Halstead Place in 1871 of "paralysis, rheumatism, and exhaustion" at the age of 72.

THE DUBLIN ORCHID FAIR

Saturday 25th and Sunday 26th April 2015
The Irish Orchid Society invites all to attend **Dublin's 2015 Orchid Fair**.

This annual event is hosted by the National Botanic Gardens, Glasnevin and will take place in the Teak House from 10-5pm on both days; there is no admission charge.

Burnham Nurseries and Ray Creek Orchids will have a huge variety of orchids available to purchase as well as various sundries such as potting materials and orchid food. Both suppliers will accept pre-orders – please see ***www.orchids.uk.com*** and ***www.raycreekorchids.com***

Members of the Irish Orchid Society who grow these plants in Irish conditions, will be present on both days to answer any questions and provide advice on how best to care for your orchids.

Please call to our stand for more information about the IOS, membership benefits and the chance to win an orchid. Free events will include talks and a tour:

Saturday 1.30pm *Potting Basics*
Sunday 1.30pm *Orchids for Beginners*
Sunday 3pm *Tour of the Orchid Collection of the National Botanic Gardens, Glasnevin*

SCIENTISTS COMPLETE THE FIRST ORCHID WHOLE GENOME SEQUENCING

As one of the most diverse plant family, orchid now has its first genome sequenced and the result is published at **Nature Genetics** as a cover article.

This study is an accomplishment of the Orchid Genome Project, an international collaboration led by Lai-Qiang Huang and Zhong-Jian Liu at Tsinghua University and National Orchid Conservation Center in Shenzhen China, with colleagues from different institutions, including Chengkong University in Taiwan, Ghent University in Belgium, and Institute of Botany of CAS in Beijing.

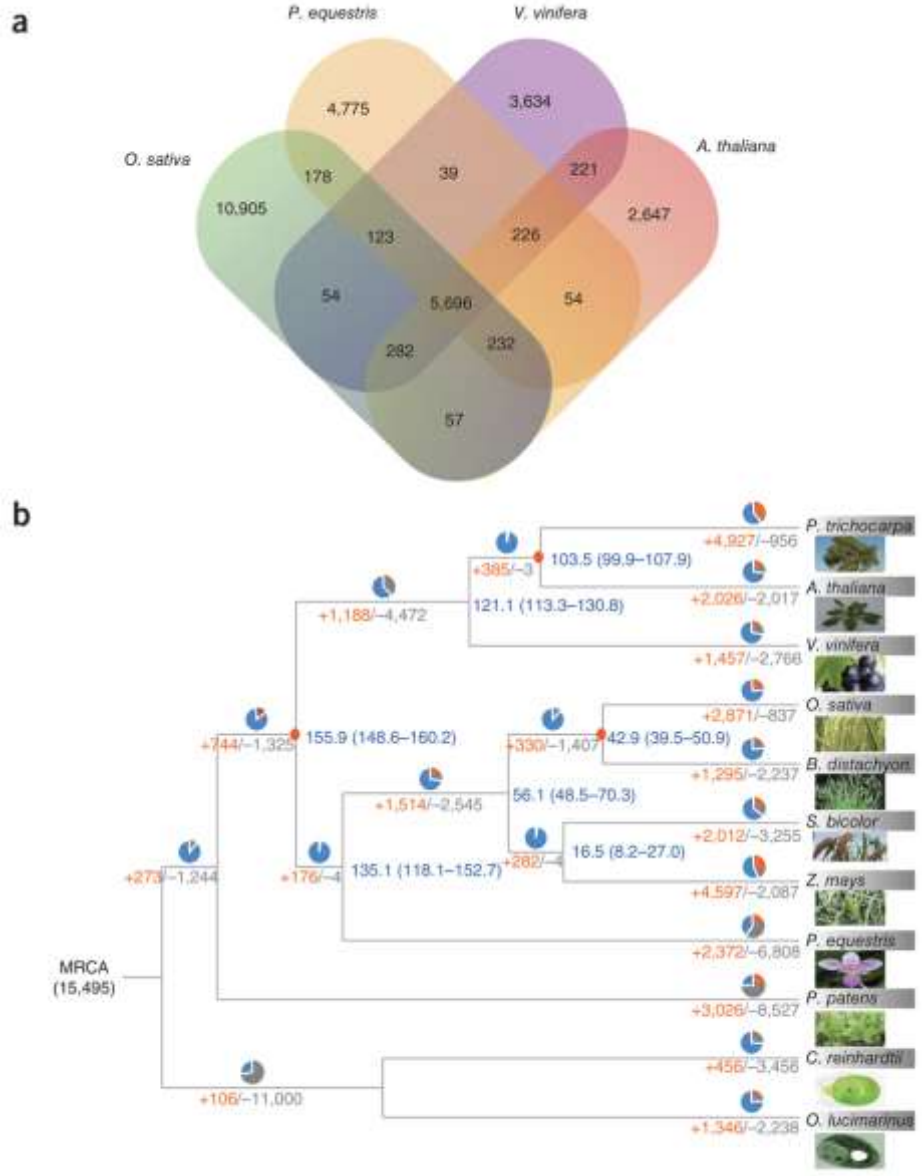
The team carried out whole genome sequencing on *Phalaenopsis equestris,* which is an important parental species for breeding of commercial phalaenopsis strains. *P. equestris* is also the first plant with Crassulacean Acid Metabolism (CAM) for which the genome has been sequenced. The assembled genome contains 29,431 predicted protein-coding genes. The average intron length is 2,922 base pairs, which is much longer than in any sequenced plant genomes. Further analysis indicate that transposable elements in introns are the major reason why orchid genes have so big introns.

As heterozygosity post great challenge for whole genome sequencing and assembly, the orchid genome is by no means an exception. In the orchid genome, they found that contigs likely to be under-assembled owing to heterozygosity, are enriched for genes that might be involved in self-incompatibility pathways. Those genes could be candidates for further research on the mechanism of self-incompatibility in orchid.

Like in many plant genomes, they also found evidence for an orchid-specific paleopolyploidy event that preceded the radiation of most orchid clades. This is possibly an important clue to why orchid developed into one of the largest plant families on earth.

By comparing with homolog genes in other plant genomes, they found gene duplication and loss in CAM genes along the lineage to orchid. This result suggests that gene duplication might have contributed to the evolution of CAM photosynthesis in *P. equestris*.

All around the world, orchids are highly endangered species because of illegal collection and habitat loss. The complete genome sequence of *P. equestris* will provide an important resource to explore orchid diversity and evolution at the genome level. The genome sequence will also be a key resource for the development of new concepts and techniques in genetic engineering, such as molecular marker–assisted breeding and the production of transgenic plants, which are necessary to increase the efficiency of orchid breeding and aid orchid horticulture research. ●



http://www.nature.com/ng/journal/v47/n1/full/ng.3149.html

SILENCE

There is the sudden silence of the crowd
above a player not moving on the field,
and the silence of the orchid.

The silence of the falling vase
before it strikes the floor,
the silence of the belt when it is not striking the child.

The stillness of the cup and the water in it,
the silence of the moon
and the quiet of the day far from the roar of the sun.

The silence when I hold you to my chest,
the silence of the window above us,
and the silence when you rise and turn away.

And there is the silence of this morning
which I have broken with my pen,
a silence that had piled up all night

like snow falling in the darkness of the house—
the silence before I wrote a word
and the poorer silence now.

BILLY COLLINS

FIRST SIGHT

Lambs that learn to walk in snow
When their bleating clouds the air
Meet a vast unwelcome, know
Nothing but a sunless glare.
Newly stumbling to and fro
All they find, outside the fold,
Is a wretched width of cold.

As they wait beside the ewe,
Her fleeces wetly caked, there lies
Hidden round them, waiting too,
Earth's immeasurable surprise.
They could not grasp it if they knew,
What so soon will wake and grow
Utterly unlike the snow.

Philip Larkin (1922 — 1985)

Advertisement

We are pleased to be regular visitors to the Dublin Orchid Fair!

Burnham Nurseries
ORCHID PARADISE

For a wide range of unusual species and popular hybrids please ask for our **colour brochure**.

For an even wider and more up to date list of plants, books, gifts, etc., please visit our website www.orchids.uk.com

We will be pleased to ship to Ireland, contact us for a quote or get together with your orchid friends to share the cost of delivery.

Forches Cross, Newton Abbot, Devon, England, TQ12 6PZ.
Tel: +44 1626 352233 mail@orchids.uk.com

ISSN 1649-1173