

*Nollaig Shona agus Athbhliain faoi Mhaise Daoibh*

# POLLINIA



Vanda William Catherine

NEWSLETTER OF THE IRISH ORCHID SOCIETY  
*Cumann Magairlíní na hÉireann*

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THE IRISH  
ORCHID SOCIETY  
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## POLLINIA

(pol-LIN-ee-uh)

The compact packets of pollen found in orchid flowers. Plural of *Pollinium*.

Waxy pollen clumps or grains usually found in the anthers of most orchids; often yellow, distinct, and found under the pollen cap of the column.

Pollinia contain the male reproductive cells.

Latin *pollin-*, stem of pollen "fine flour, dust."



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(renewable in June of each year)

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- Family €30.00
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Cumann Magairlíne  
na hÉireann



## WHAT'S NEW FOR 2013?

With this edition of *Pollinia* you will have received a questionnaire asking how growing orchids is relevant to you. Please complete it and send it to us so that it may be included in a future *Pollinia* issue. It is very important for members to hear from others about their experiences and this is a way of getting you involved through our Newsletter.

The committee also cordially invites members who would be interested in presenting a talk at the monthly meetings at Glasnevin to contact us. Talks may be on any orchid theme and we will assist in whatever way we can to help in the production. Members outside of Dublin are especially welcome and the society will cover reasonable accommodation and traveling expenses.

There will be an Orchid feast for members who can attend the monthly meeting at Glasnevin in March. Members who have experience at internet orchid shopping have been set the challenge of seeking out a selection of unusual, interesting and above all easy to grow plants from their travels in cyberspace. The fruits of the labour of our intrepid collectors will be given away to members who participate in our traditional €3 raffle at the meeting. If you want to pick up a bargain this is the place to be. We anticipate having at least 20 plants to give away.

This year we have decided to shorten formal presentations to give members more time to interact. As always, please bring plants to the Glasnevin meetings, even a few specimens can vitalise an evening.

Finally, I am delighted to say that we have been accepted to join the European Orchid Council ([www.europeanorchidcouncil.eu](http://www.europeanorchidcouncil.eu)). This is a non-profit making organisation which is the confederation of European orchid societies. The purpose of the council is to communicate knowledge and promote orchid research as well as holding congresses, lectures and exhibitions.

Let us make it a resolution for Ireland to contribute and host a future event.

On behalf of the committee, **Athbhliain faoi Mhaise Daoibh!**



SHANE KERR

## ON SHOW

### *Irish Orchid Society Meetings* **September and October 2012**

It is always a delight to come to a meeting and have some nice, pretty, unusual and dramatic flowers to view. At the September and October meetings there have been some lovely plants shown and lots of discussion as to how members successfully cultivate and flower their treasures.

At the September meeting, Hylda Beckett brought along her *Paphiopedilum*, the plant that won Best in Show at the South County Dublin Horticultural Society show in August 2012. Hylda obtained the seedling from a generous fellow IOS member (one of the benefits of membership) and grows it in a cool conservatory. The plant is an unnamed hybrid and even without a name to be correctly called by, it is none the less stunning. Congratulations to Hylda on her win!

October brought plants out in full force with five members bringing plants to the table for view and discussion. *Vanda Rothschildiana*, owned and cosseted by Marina Andreeva, held its coveted blue flowers on a stem that arched from a fan of luxuriant, spotless, evenly green leaves. The root system flowed from a mesh basket and was in pristine condition. And why should it not be, when we heard of the daily spa treatment this plant gets. Three whole hours it spends immersed in a basin of water, occasionally with liquid feed added, on a daily basis. The remainder of the time it lolls about in bright sunshine in a relatively warm window.

Mary Bradshaw brought her *Phalaenopsis* Tinny Honey which is still in full flower, as it was in late April when she purchased it at the Dublin Orchid Fair. Her attraction to this plant was the picotee flowers, light pink petals and sepals, rimmed with a darker pink.

On the opposite end of the flamboyant scale were the demure, virginal white flowers of Mark Garvey's *Jumellea confusa*. Hailing from the forests of central Madagascar where it grows among mosses and lichens, it can flower more than once a year when happy. Mark's plant was obviously very happy, not solely indicated by the flowers but also the long healthy root system. Mark does not mist the plant regularly and the healthy root system was the result of ample humidity and a good weekly watering.

Keeping with the theme of naturally occurring species, we moved onto Todd Harvey's small but impressive *Epidendrum peperomia* from the American tropics. This was a purchase at the 2012 Dublin Orchid Fair and although small in stature held four flowers, quite large in size for such a small plant.



The next was a mystery *Oncidium* hybrid from Andrew Murray. A few names as to the possible parentage were suggested but it took the power of the World Wide Web to discover the plant to be *Oncidium* Katrin Zoch. This is a primary hybrid between *Oncidium schroederianum* and *O. sotoanum*, registered by Marko Holm in 2011. *O. sotoanum* may be more recognisable to members under its older name of *O. ornithorhynchum*, under which it rested until its segregation in 2010.

BRENDAN SAYERS



Andrew Murray - *Oncidium* Katrin Zoch



Marina Andreeva - *Vanda* Rothschildiana



Todd Harvey - *Epidendrum* peperomia



Hylde Beckett - *Paphiopedilum*

## RECENTLY IN FLOWER AT THE NATIONAL BOTANIC GARDENS

**Zygopetalum Hybrid**

The word Zygopetalum is derived from the greek *zygon* meaning yoke and *petalon* meaning petal or sepal, alluding to the thickened callus at the base of the lip which appears to hold together (or yoke) the petals. This genus (of approximately 40 species) was described by Sir William Hooker in 1827 and is mainly found in South America i.e. Brazil, Paraguay, Argentina, Peru and Bolivia.

It is described as a medium sized epiphytic plant with short, 2 to many-leaved pseudobulbs. The leaves are rigid and elongate, the flowers in this genus are large and showy.

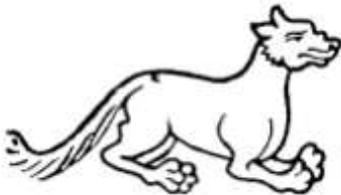
They like high light, 3000-4000 footcandles, similar to Cattleya and preferably morning or afternoon sun. Zygopetalums are considered intermediate-to-warm growing orchids with a daytime temperatures of 21°C to 27°C (70°F to 80°F) and a night-time drop by 12°C.

Water these orchids as they approach dryness. They are not very tolerant of drought, so make sure they have plenty of water while actively growing. They are unusually sensitive to salt buildup, so make sure you run plenty of water through the pot, or use distilled/filtered water, and go relatively easy on the fertilizer. Feed regularly all year long, i.e. 'weakly weekly'

Zygopetalums produce many thick roots so should be grown in good sized pots. They don't like to be pot bound, so repot when they start to fill the available space. A general rule is to repot every 2/3 years and always just after blooming.

Try to choose a pot which will allow approximately 2 inches of room in front of the lead growth. After repotting/dividing it is best to keep the plants cooler, dryer and under more shade than normal. This will help encourage the growth of new roots into the new medium. Pot the plants loosely to allow for good drainage and air flow around the roots.

MARIE HOURIGAN





*Zygopetalum Hybrid*

Photo by Marie Hourigan

## NORTHWEST FIELD TRIP

This year's field trip to the North West was dedicated to some of the more elusive species which had escaped us during previous outings because of their earlier flowering time and different habitat,.

On Saturday, June 23rd, a small group of enthusiastic orchid lovers, and Hesse, the dog, met at Lough Key Forest Park, County Roscommon.

Howard Frost led the way along the lakeshore into the forest, which is dominated by ancient beech trees. Up an embankment but only a few paces from the footpath, Howard pointed out a stand of about a dozen Bird's-nest Orchids (*Neottia nidus-avis*), which were in prime condition.

Because of their pale yellow-brown colour, these orchids are easily overlooked (and therefore are probably underreported).

Yet, looking at them for a while, they seem to glow with their own ghostly light against the backdrop of last autumn's dark brown leaf litter.

The Bird's-nest Orchid is the only Irish orchid which is wholly dependent on a microscopic fungus for all of its life. It has no chlorophyll for photosynthesis and is therefore unable to feed itself.

When conditions are unfavourable, this orchid can remain underground and can even flower and set seed there.

Next stop, about twenty minutes away by car, was the northeastern shore of Lough Gara. The shoreline all around this lake is a prime habitat for a wide variety of orchid species but we visited this particular site for its abundance of early Marsh Orchids, specifically the variety with a deeply purple-tinged stem, (*Dactylorhiza incarnata* var. *pulchella*).

Most of the site visited in previous years by some of us was flooded. This did not deter some brave souls from wading out to a small hummock, on which a particularly large pulchella of the deepest purple braved the elements. Luckily, the farmer owning the land directed us to a site on the lee side of this peninsula, which was mucky but at least above lake level, and where many examples of this beautiful species in various shades of pink to purple could be found. The icing on the cake was two white forms in excellent condition.

From Lough Gara another twenty-minute car journey brought us to a picturesque valley between the Keash Mountain and the Bricklieve Mountains in County Sligo.



At the lowest point in this valley is a turlough, a lake that usually disappears in summer, where the Small White Orchid (*Pseudorchis albida*) grows. Here this rare and endangered orchid may be found side by side with the equally rare Fen Violet (*Viola persicifolia*).

Unfortunately the relentless rain during this miserable summer had left this site completely submerged. Fortunately, Eamon Gaughan had discovered another place further up the eastern slope of Keash, which turned out to be a spectacular site for the Small White Orchid. The field had been grazed earlier in spring by sheep and the thin crust of turf over limestone is not fertile enough to allow more prolific grasses to recover quickly enough to overpower this small delicate orchid.

It did not take long to discover the first of these little gems, growing in little groups of three or four, but while any orchid lover would usually call him or herself lucky to discover one of these stands, on this slope dozens may be found with ease. We had counted already well over thirty plants when the heavens finally opened and a vicious wind drove the rain sideways. Within minutes all of us were soaked to the skin despite the raingear and we decided to run for the shelter of the cars. At the time of our hasty retreat we had covered only a section of the site and a thorough search of the entire field may have yielded dozens more of the charming Small White Orchid.

Wet and shivering but also very happy we ended our field trip munching fish and chips as comfort food and warming ourselves with tea and coffee. Considering that the summer of 2012 had been a non-event and most orchid sites were only a shadow of their usual splendour this year, we felt we did not do too badly.

We saw a dozen or so Bird's-nest Orchids in full flower, discovered two white forms of Early Marsh and saw more Small Whites in one place than most orchid lovers will ever see in a life time. Of course, while looking for these rare orchids, we also came across many of the usual suspects: Common twayblade (*Neottia ovata*), Heath Spotted and Common Spotted Orchid (*Dactylorhiza maculata* and *D. fuchsii*), and both Lesser and Greater Butterfly Ochids (*Platanthera bifolia* and *P. chlorantha*).

ULLI PEILER

**Photos:** Eamon Gaughan (Orchids) and Ika Peiler (Hesse)

### References:

**Ireland's Wild Orchids- a field guide.** Brendan Sayers and Susan Sex (2008) VS publishing, Portmarnock.

**Orchids of Europe, North Africa and the Middle East.** Pierre Delforge (2005) A&C Black, London.



Bird's-nest Orchid (Lough Key)



Early Marsh Orchid  
Lough Gara



Early Marsh Orchid (white pulchella)



Hesse does his famous imitation of  
*Bulbophyllum fletcherianum*



Small White Orchids (*Pseudorchis albida*)



Small White Orchids (*Pseudorchis albida*)

## CAESAR, THE ORCHID CHIEF

It turns out that the early Romans were wild about orchids. A careful study of ancient artifacts in Italy has pushed back the earliest documented appearance of the showy and highly symbolic flowers in Western art from Renaissance to Roman times. In fact, the researchers say, the orchid's popularity in public art appeared to wilt with the arrival of Christianity, perhaps because of its associations with sexuality.

The fanciful shapes and bright colors of orchids have long made them popular with flower fanciers, and today they support a multibillion-dollar global trade. The flowers also have a symbolic value that spans many cultures due to their resemblance to both male and female sexual organs; the flower's scientific name—*Orchis*—derives from a Greek word for testicles. But while the biology and ecology of orchids has gotten plenty of attention from researchers, there are few studies of its "phytoiconography," or how the flower has been used symbolically in art.

A few years ago, botanist Giulia Caneva of the University of Rome (Roma Tre) set out to change that. Working with several graduate students, she began assembling a database of Italian artifacts, including paintings, textiles, and stone carvings of subjects including vegetation.

Then, the team began the painstaking process of trying to identify the real plants the artists had copied.

One surprise was that depictions of

Italian orchids—there are about 100 species in all—showed up much earlier than expected. Although scholars had spotted the flowers in paintings from the 1400s, Caneva's team discovered that stone carvers were reproducing orchids as early as 46 B.C.E., when Julius Caesar erected the Temple of Venus Genetrix in Rome. And at least three orchids appear among dozens of other plants on the Ara Pacis, a massive stone altar erected by the emperor Augustus in 9 B.C.E., Caneva and colleagues reported last week in the *Journal of Cultural Heritage*. Artists probably chose the flowers to help emphasize the altar's theme of civic rebirth, fertility, and prosperity following a long period of conflict, Caneva says.

But orchids and other plants begin to fade from public art as Christianity began to gain influence in the 3rd and 4th centuries, she notes. "My idea is that they are eliminating pagan symbols, and [those] that are related to sexuality," she says. With the arrival of the Renaissance, however, orchids blossom anew in art, "but this time mostly as a symbol of beauty and elegance."

The new study is a reminder of "...just how much history is tied up with this flower. It shows up in all kinds of places you might not expect it," says Kristin Nicole Edrington, a jewelry specialist in Alexandria, Virginia. She recently completed a master's dissertation at the Corcoran College of Art + Design in Washington, D.C., that examined the rise of orchid imagery in high-end jewelry made in the late 19th and early 20th



centuries. The discovery that Roman artists also favored the flower, she says, just confirms that "orchid mania is nothing new, and was such a big thing even back in the day."

Orchids have fascinated humans since ancient times. Not only the particular morphology of their flowers and hypogean organs, but also their reproductive biology have inspired myths, legends and popular traditions in many cultures, all around the world. Despite these facts, their representations on ancient artefacts have never been described in the scientific literature. No clear data exist for Eastern culture, and in Western countries, the first certain representations of orchids in art date back to the 15th-16th century. This paper documents different identifications of orchids on Roman monuments changing the common belief that these plants first appeared in art more recently. Floral elements of *Cephalanthera* spp., *Spiranthes spiralis* (L.) Chevall, of *Orchis tridentata* Scop., and of other orchids were observed in different architectural elements (cornices and ceilings) throughout the Roman period, and in the external frieze of the Ara Pacis monument. These representations seem to refer to a symbolism of fertility and sexuality, and their absence in medieval time can be explained only considering religion influences.

**DAVID MALAKOFF**  
Sciencemag.org



*Flower power. The Ara Pacis, an altar erected in Rome by the Emperor Augustus in 9 B.C.E., includes one of the earliest documented depictions of an orchid (inset) in Western art.*

## EXPERTS WAITED 70 YEARS FOR THIS RARE ORCHID TO BLOOM

It may not look impressive to the average person, but this is one of the rarest plants in Britain, and until today, had not been seen for 70 years.

Despite its underwhelming appearance, horticulturalists marvelled at the blossoming of the unique Red helleborine flower.

The orchid was discovered in the 1940s but nearly became extinct in recent years. 30 of the flowers bloomed at a secret location where experts 'intensively' manage the plants by cutting down trees and improving the surrounding soil.



*The rare Red Helleborine flower blossomed for the first time in 70 years at a secret woodland location*

It has such difficulty blooming because the bees that pollinate it are not native to the UK.

National Trust ranger Tim Jenkins admitted he was baffled by how the flower manage to bloom.

'We don't fully understand how the plant reproduces here as the bee that usually pollinates it in Europe is not found in the UK,' he said.

'We have tried manually pollinating the orchid and even taking cuttings but we've not yet had any luck with it.

'Each year I get a real buzz when I come here to see how many plants have come up and I look forward to how many flowers we're going to get.'

The plant - Latin name *Cephalanthera rubra* - was first discovered in extremely small numbers at a secret Gloucestershire woodland in the 1940s.



It was threatened with extinction when numbers dropped to just three of the plants despite the best efforts of experts who kept new generations alive in the hope that one would bloom.

Rangers will only be able to admire the sight for a short time as the flowers typically open for just 10 days before they fade and fall off. ♦

*Despite the underwhelming appearance, ranger Tim Jenkins was delighted at the flower's blossoming*

*30 of the rare orchids flowered today, but despite the wait, they look less than impressive to the average person*



## FUNGI -FILLED FORESTS ARE CRITICAL IF ENDANGERED ORCHIDS ARE TO THRIVE

When it comes to conserving the world's orchids, not all forests are equal. In a paper to be published in March 2012 in the journal *Molecular Ecology*, Smithsonian ecologists reveal that an orchid's fate hinges on two factors: a forest's age and its fungi.

Roughly 10 percent of all plant species are orchids, making them the largest plant family on Earth. But habitat loss has rendered many threatened or endangered. This is partly due to their intimate relationship with the soil. Orchids depend entirely on microscopic fungi in the early stages of their lives. Without the nutrients orchids obtain by digesting these host fungi, their seeds often will not germinate and baby orchids will not grow. While researchers have known about the orchid-fungus relationship for years, very little is known about what the fungi need to survive.



*Flowers (right) and leaves (below) of the orchid Goodyera pubescens, commonly known as the downy rattlesnake orchid, endangered in Florida.*

Biologists based at the Smithsonian Environmental Research Center in Edgewater, Md., launched the first study to find out what helps the fungi flourish and what that means for orchids. Led by Melissa McCormick, the researchers looked at three orchid species, all endangered in one or more U.S. states.



After planting orchid seeds in dozens of experimental plots, they also added particular host fungi needed by each orchid to half of the plots. Then they followed the fate of the orchids and fungi in six study sites: three in younger forests (50 to 70 years old) and three in older forests (120 to 150 years old).

After four years they discovered orchid seeds germinated only where the fungi they needed were abundant—not merely present. In the case of one species, *Liparis liliifolia* (lily-leaved twayblade), seeds germinated only in plots where the team had added fungi. This suggests that this particular orchid could survive in many places, but the fungi they need do not exist in most areas of the forest.



*Image right: Leaf (left) of Tipularia discolor, the Crane-fly orchid, endangered in New York and Massachusetts, and threatened in Michigan and Florida*

Meanwhile, the fungi displayed a strong preference for older forests. Soil samples taken from older forest plots had host fungi that were five to 12 times more abundant compared to younger forests, even where the research team had not added them. They were more diverse as well. More mature plots averaged 3.6 different *Tulasnella* fungi species per soil sample (a group of fungi beneficial to these orchids), while the younger ones averaged only 1.3. Host fungi were also more abundant in plots where rotting wood was added. These host fungi, which are primarily decomposers, may grow better in places where decomposing wood or leaves are plentiful.

All this implies that to save endangered orchids, planting new forests may not be enough. If the forests are not old enough or do not have enough of the right fungi, lost orchids may take decades to return, if they return at all.

“This study, for the first time, ties orchid performance firmly to the abundance of their fungi,” McCormick says. “It reveals the way to determine what conditions host fungi need, so we can support recovery of the fungi needed by threatened and endangered orchids.”

KRISTEN MINOGUE

The University of Alaska Fairbanks and Purdue University also contributed to this study.

## THOREAU'S NOTES REVEAL HOW SPRING HAS CHANGED



*A violet growing in Concord, Mass. Unlike some other flowers in the town, violets are not shifting their flowering time in response to climate change. As a result, they have become much less common over the past 150 years than they were when the writer Henry David Thoreau monitored them.*

Springtime in Concord, Massachusetts, has changed since the town was home to Henry David Thoreau, and the writer himself has helped scientists figure out how.

So have other naturalists, whose written records of the plants and animals around them have helped researchers decipher how climate change has affected eastern Massachusetts and beyond.

Beginning in 1851, Thoreau scribbled records of the timing of the first spring flower blooms in his journals.

A century and a half later, Richard Primack, a professor of biology at Boston University, and his then-graduate student, Abe Miller-Rushing, followed in the writer's footsteps, observing the habits of the same species.

An analysis of Thoreau's observations, those of another 19th-century naturalist and their own modern records indicate the first flowering date for 43 of the most common species has moved up by an average of 10 days. What's more, species that aren't shifting their flowering times in response to warmer springs are disappearing.

"Even though the world around us has changed quite a bit we were able to do roughly the same fieldwork he did," said Miller-Rushing, who is now the science coordinator for the Schoodic Education and Research Center, Acadia National Park, in Maine. "He couldn't possibly have been thinking about the things we are using his data for today."

### **Looking back**

This research began with some historical detective work.

About 10 years ago, Primack decided to look for examples of how climate change



was affecting the plants and animals in Massachusetts. At the time, little work had taken place in the eastern U.S., he said.

There are two well-documented ways in which plants and animals respond to climate change: They can shift their ranges, moving farther up a mountain side, for example; and they can shift the timing of seasonal events (called phenology), like blooming, leafing or migrations. Primack was mainly interested in the latter, though to get any sense of real change he'd need decades or more of data.

"Scientists by and large don't have the records we need to understand how a lot of these things are changing," Miller-Rushing said. "The records dog walkers or bird watchers or fishermen have been collecting can really add a lot of important information."

So, Primack and his students went looking for them. The first record they analyzed and published came from Kathleen Anderson, an amateur naturalist who recorded what she saw on her farm in Middleborough, MA, for decades. Without knowing at the time, Anderson had documented progressively earlier spring activity in 22 of the 24 species as local average annual temperatures rose by 3.6 degrees Fahrenheit (2 degrees Celsius) over 30 years, the researchers estimate.

### **150 years in Concord**

Primack also tracked down an independent Thoreau scholar, Brad Dean, who had Thoreau's records of flowering dates in Concord.

"He said he was expecting a climate change biologist to contact him; he knew they were important," Primack said of the records, which given Thoreau's notoriously bad handwriting and his use of outdated plant names, required some deciphering.

They had also located similar records kept by the botanist Alfred Hosmer, who followed in Thoreau's footsteps by recording flowering times around the turn of the 20th century.

### **Moving on up**

The researchers looked at three years of their own data, ending in 2006, alongside Thoreau's and Hosmer's and found that 43 common species were flowering seven days earlier on average than they did in Thoreau's time. During this century and a half, Concord's average temperature warmed by 4.3° F (2.4° C).

Urban areas — like Boston's metropolitan area, to which Concord belongs — are warming faster than other places, thanks to the urban heat island effect, which

happens when artificial surfaces, such as pavement and sidewalks, absorb heat during the day.

More recently, the researchers added data from 2008, 2009 and 2010 to the analysis (2010 brought the warmest April on record to the Boston area). The new analysis, published in the February 2012 issue of the journal **BioScience**, indicated an additional three-day advance, so the flowers now bloom 10 days earlier on average.

Primack noted that the flowers are following changes in temperature, so they tend to bloom earlier in warm springs, like 2010, and later in cool springs, like 2003.

"The years are now, on average, just much warmer than in Thoreau's time," he said.

Observations made by volunteers tracking seasonal events for the USA National Phenological Network may corroborate some of Primack and Miller-Rushing's more recent results by suggesting trees in the region got their first leaves unusually early in 2010.

### **The consequences**

The average advancements for Concord's spring flowers are only averages. Not all species are responding the same way to warmer springs — some adjust their timing and some don't.

Primack, Miller-Rushing and colleagues from Harvard University found that the species with inflexible flowering times were disappearing from Concord. For instance, in Thoreau's time, 21 species of orchids grew wild in Concord, and today it's only possible to find about six, Primack said.

"What that result tells us is climate change is not only affecting flowering time but also affecting the abundance of species in Concord," he said. "Warming temperature is causing some species to be winners and some species to be losers."

WYNNE PARRY



## WEALTH OF ORCHID VARIETIES IS DOWN TO BUSY BEES AND HELPFUL FUNGI

Scientists have discovered why orchids are one of the most successful groups of flowering plants -- it is all down to their relationships with the bees that pollinate them and the fungi that nourish them. The study, published in the **American Naturalist**, is the culmination of a ten-year research project in South Africa involving researchers from Imperial College London, the Royal Botanic Gardens, Kew, and other international institutions.

The orchid family is one of the largest groups of flowering plants, with over 22,000 species worldwide. New research suggests that there is such a huge range of species because orchids are highly adaptable and individual species can interact with bees, and other pollinators, in different ways.

For example, when orchids *Pterygodium pentherianum* and *Pterygodium schelpei* live side by side, *Pterygodium pentherianum* puts its pollen on the bee's front legs, whereas *Pterygodium schelpei* puts it on the bee's abdomen, as in the photo above. This means that one bee can carry pollen from two distinct species without mixing it.

The study also shows how orchids are able to live harmoniously together, with different species working in partnership with different microscopic fungi in the soil, ensuring they do not compete with each other.

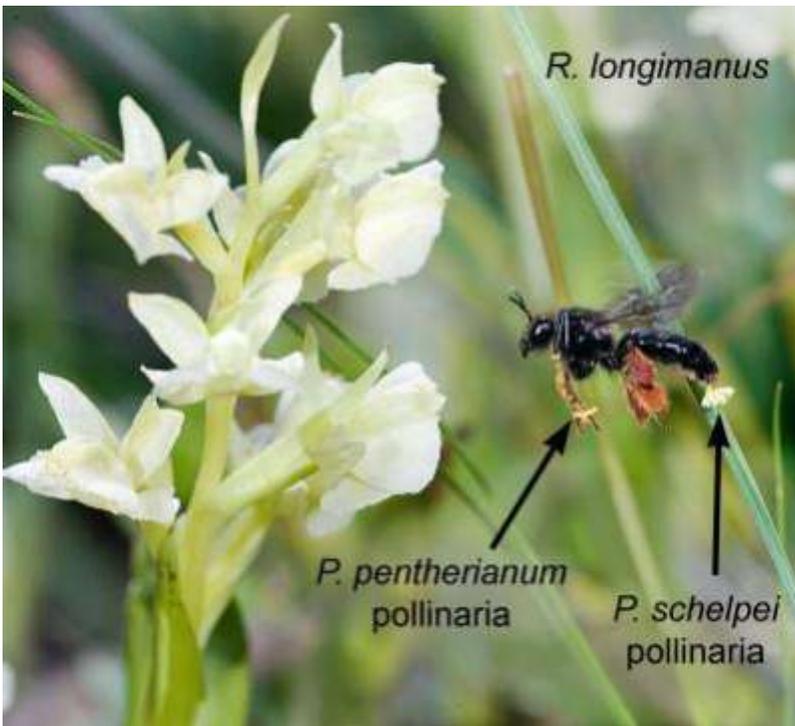
Prior to the new study, it was known that orchids have strong interactions with bees, which pollinate the flowers in return for food such as nectar or oils, and also with fungi, which supply minerals to the roots in return for sugars. These relationships are amongst the best examples of nature's system of 'mutual benefit' and are believed to have been important for enabling orchids to evolve into so many different species. However, the mechanisms by which these relationships affect the number of plant species, and these species' ability to coexist, had remained obscure.

Professor Tim Barraclough, from the Division of Biology at Imperial College London, co-led an international team of plant scientists to investigate how these interactions affect orchid diversity. "Orchids are hyper-diverse globally, particularly in South Africa, where they have diversified to a large extent, so we wanted to find out how lots of species are able to exist without competition," he said.

The group studied 52 orchid species in a small region of South Africa, which all secrete oil inside their flowers that female bees collect to feed to their larvae. In

order to investigate which pollinating bees were visiting the different species, they collected orchid pollen from the bees for DNA sequencing and analysis. They found strong evidence that when an orchid moved to a new geographical area it adapted to a different pollinating bee species, and interestingly, some competing orchid species were able to adapt by placing pollen on different body parts of the same bee.

"What is remarkable in these orchids is that diversity is generated not only through switches between bees, but also by switches between different body parts of the same bee, so two closely related orchids might place pollen on different segments of one bee's front leg," added Professor Barraclough. "It's given us a fundamental insight into how so many new species can originate, and once they originate how they are able to coexist without exchanging genes."



Several kinds of oil-secreting orchids share the same pollinator by placing pollen on different parts of the bee's body. Here the long-legged oil-collecting bee *Rediviva longimanus* inspects the oil-secreting orchid *Pterygodium pentherianum*. (Credit: A. Pauw) *ScienceDaily* (Jan. 31, 2011)

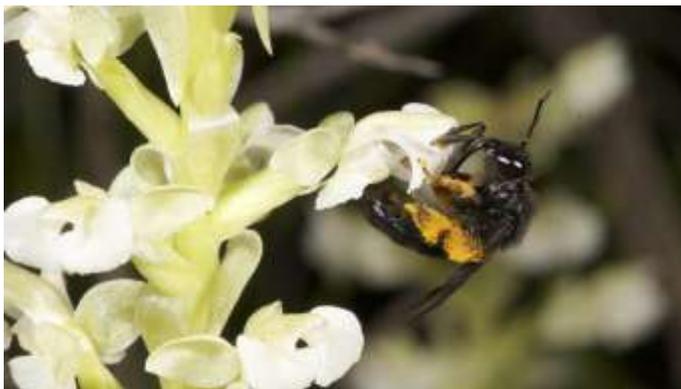
The researchers also studied the microscopic fungi living on the roots of the orchid, to see how this relationship was affecting plant diversity. Most flowering plants host microscopic fungi in their roots that help the plant take up nutrients from the soil. Until now it has been difficult to investigate this interaction, as most of the fungi belong to species that are difficult to culture. The researchers overcame this challenge by combining a molecular technique known as DNA barcoding with field experiments. In contrast to the bees, where co-occurring orchid species normally share the same insect pollinator, the plants needed to use different fungal partners in order to coexist in the same region.

"By tapping into different kinds of fungi, different plant species access different pools of nutrients and so the problem of living together without competing for the same resources is solved," said Professor Barraclough. However, the same fungal partners are found in different geographical areas and so orchid species that originate in different areas, by adapting to different pollinators, tend still to use the same fungi.

The team's fieldwork shows that shifts in pollination traits were important for bringing about new species and allowing coexistence in a diverse group of orchids, whereas shifts in fungal partner were important for coexistence but not for speciation. Many other groups of flowering plants enter into similar relationships with pollinators and fungi, and both the origins and the future survival of that diversity could depend critically on understanding these relationships.

Dr Richard Waterman, now at the University of Sheffield, who conducted the research as part of his PhD at Imperial College London and the Royal Botanic Gardens, Kew, commented on the next steps for the scientists: "We need a better understanding of these relationships if we are to predict and counter the effects of the worldwide decline in pollinators and soil quality."

The research was funded by NERC, NRF South Africa, Stellenbosch University, NSF IGERT and the Royal Botanic Gardens, Kew.



#### SCIENCE DAILY

The oil-collecting bee *Rediviva longimanus* on the orchid *Pterygodium schelppei* (Image: A. Pauw, Kew).

## NEOFINETIA FALCATA- THE SAMURAI ORCHID

*Neofinetia falcata* is a rather unassuming little epiphytic orchid endemic to the forests of Japan, Korea and the Ryukyu islands where it grows on moss-laden tree branches. It was the solitary species of its genus until 1996 when the similar looking *N richardsiana* was discovered followed by *N. xichangnensis* in 2006.

However *Neofinetia falcata* known in Japan as the “Fukiran” which translates from Japanese as “the noble orchid” is one of the most highly treasured of all orchid species. During medieval times, Japanese Emperors sent their novice Samurai on missions to collect the plants from the wild and bring them back as gifts for their masters. In those days it was forbidden for anyone else to possess these plants which were so venerated that specimens in cultivation were often covered with gold or silver nets when visitors came to view, and even then they were only allowed to breathe near them when wearing special paper face-masks known as a *kaishi*.

Although there are just three known *Neofinetia* species, *N. falcata* has hundreds of varieties with some of the rarer forms commanding enormous prices in Japan even until this day, some more than the price of a house!. There are Fukiran societies in many countries illustrating how this plant continues to captivate the imagination.

The plant looks like a miniature *Vanda* and is slow growing eventually forming a clump of fan-shaped (falcate) leaves. Indeed *Neofinetia* has been hybridised with Vandaceous orchids particularly *Ascocentrum* to form the inter-generic hybrid *Ascofinetia*.

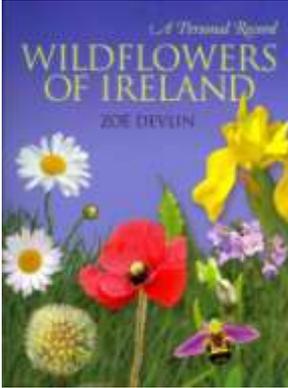
*N. falcata* has distinctive waxy white long-spurred flowers which produce an intense coconut-vanilla fragrance. *N. falcata* is undemanding to cultivate except that it requires a very open growing medium such as moss and is ideally contained within an open basket or pot to allow the roots to meander out into the air.

The orchid should be watered all year and is tolerant of cool temperatures. In Japan it is fashionable to grow the plant in a mound of moss set on top of a specially designed ornate pot. It likes plenty of light which from my experience seems important to initiate flowering.

I have grown this orchid for several years and can recommend it to the adventurous beginner. I may also add, to your relief, that the standard *Neofinetia falcata* is inexpensive to buy and readily obtainable from orchid nurseries.

SHANE KERR





**The Wildflowers Of Ireland**  
**A Personal Record** by Zoe Devlin  
 The Collins Press, €29.99

Any low-flying insect would be well advised to give the flower pictured on the left a very wide berth. With its spiky purple leaves it seems to offer a seductive stopping off point for passing bees, flies and insects. If they land, however, they may never take off again.

This is the Round-Leaved Sundew, a native Irish insect-eating plant. It may promise a sweet drink of nectar, but as soon as an insect lands, the purple spikes close over, trapping the visitor. Death is painful and slow, as the flower dissolves the captured body.

This exotic-looking plant may seem like something one would find only in the tropics. But it's Irish, an ancient native wildflower and just one of the 400 plants featured in a magnificent new coffee table book titled *The Wildflowers of Ireland -- A Personal Record*. The author is Dublin woman Zoe Devlin, not a professional botanist, but a very informed amateur who has had a lifelong interest in wildflowers and had been studying and photographing them for years.

The book was launched at the National Botanic Gardens recently by RTÉ weatherman Gerald Fleming, who said that his work "concerns nature at its least benign, whereas Devlin's work shows nature at its most benign". Well, yes, apart from the insect-eater mentioned above.

Ireland's countryside teems with wildflowers, each an intrinsic part of the landscape and of an ecosystem that supports birds, insects and other wildlife.

Perhaps because Devlin is not a professional botanist her book succeeds in presenting our wildflowers in a way that those without botanical knowledge can understand. Using this book, people will be able to identify our wildflowers and gain a greater understanding of the subject.

Devlin's interest in the subject began as a child when a relative showed her a wild orchid.

Her interest over the years has developed far beyond just learning the names of the wildflowers. In the book, the names, descriptions and photographs of the plants are embellished with literary references and related Irish folklore. It makes an endlessly

fascinating treasure trove of information. You never know what's going to pop up next.

The descriptions also include references to the herbal uses of many wildflowers, something we are rediscovering these days and learning to value again.

In all, more than 400 commonly found Irish wildflowers are covered in the book. It's a miracle of nature that so many still survive given the demands of modern agriculture, climate change, acid rain and so on.

"Conservation of our wildflowers is of the utmost importance as they are now facing threats on several different sides," Devlin says.

"But, through education and awareness of the diversity of our wildflowers, perhaps, just perhaps, the tide can be held back a little longer."

This book is an important step forward in that process.

SHARON O'NEILL

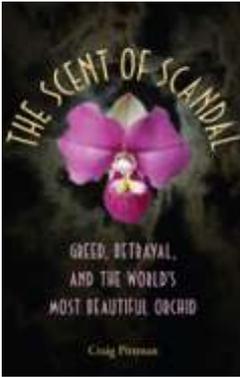
### The Independent



Common Name: Heath Spotted-orchid  
 Scientific Name: *Dactylorhiza maculata*  
 Irish Name: *Na circíní*

Did you know...

The Irish name for orchid is "Magairlín" (pronounced "moggerleen") which means testicle and refers to the suggestive shape of the tubers of the native Early Purple Orchid (*Orchis mascula*). "Orchis," the Greek word for the genus, has the same connotation.



***The Scent of Scandal: Greed, Betrayal, and the World's Most Beautiful Orchid***

By Craig Pittman

University Press of Florida, 256 pages, \$24.95

Some 400 years ago, in a time of fraught international politics and a sharp division between the haves and have-nots in the little country of Holland, a beautiful flowering plant named *Semper augustus* took Dutch society by storm. Only a dozen-odd specimens of the exotic thing had arrived in the country by way of the spice trade, and the wealthy

Amsterdam merchant who owned them quickly found an avid market, selling each one for twice the price that Rembrandt would earn for his contemporary painting *The Night Watch*.

The equivalent of a million smackers for a tulip? Stranger things have happened in this world, but not many.

The fad passed long ago, but the story of Holland's tulipmania remains a staple of economics textbooks as an early example of the kind of bubbles that we've recently endured in the housing and high-tech markets. In the context of *Tampa Bay Times* environmental reporter Craig Pittman's latest book, ***The Scent of Scandal***, it stands simply for what it is: proof of the crazy things people will do when it comes to flowers.

Think of the dotty aunt obsessed by roses, if you have one in your family, or perhaps your pop, forever amending the soil in the garden bed to bring up the perfect crocus. On a shadier note, think of the cactus rustlers who smuggle night-blooming cereus out of the desert to greenhouses in, of all places, New York and Paris.

Or think of the cautionary tale that Pittman, an eminently skilled reporter and storyteller, serves up, which is full of craziness all on its own. It's all about obsession — in this instance, with orchids, the creepy-to-some parasitic things that have been the be-all and end-all of many a botanical collection, including Sarasota's prized Marie Selby Botanical Gardens.

Devoted to science and beauty alike, those gardens occupy a prime spot in one of the country's most superbly scenic settings. To look at the place, you'd expect it to be a bastion of decorum and civilization — but that's not quite so. For, a decade ago, when a smart field biologist came on as the new executive director, some ugly institutional politics began to play out. The new director brought in big grants and

good press, but in her insistence that the Selby focus on ecology and conservation, she lost some of the old-timer growers and collectors whose personal encyclopaedias contained only the volume marked "O" for orchids.

And, yes, "O" for obsession. Amid the dissent and intrigue, enter one notable plant collector who had gotten a lead on a Peruvian orchid of a kind never before described scientifically and beautiful enough to drive an enthusiast mad. To get it out of South America legally, he had to — well, to put it politely, he had to forget he ever knew anything about strict laws about the importation of exotic species into the United States.

Enter as well a few players at the Selby, who, knowingly or not, acted as enablers and abettors in finding *Phragmipedium kovachii* — a name that is now being contested, for reasons that Pittman makes plain — a new home in this country.

Pittman tracks down and talks with collectors, growers, scientists, speculators, plant cops, all of whom play a role in the complex, often surprising story that unfolds.

It would be spoiling Pittman's carefully crafted tale to give too much of it away, except to remark that the case of *Phragmipedium kovachii* has proved to be a kind of King Tut's curse of the plant kingdom. The delicate flower has ruined careers, brought a noble institution into disrepute, threatened to put a few folks into the slammer and cost many a dollar, most of it going into the hands of lawyers. And that's just at the Selby.

But the orchid business goes on. As Pittman writes, the commerce adds up to a staggering \$44 billion a year worldwide, \$23 million in Florida alone. That's the licit, known trade. He adds, "On the illegal side, no one knows how much money black-market orchids are worth."

What we do know is that that little Peruvian slipper orchid has now become a hot item, even winning best in show at a recent competition in Wisconsin. We also know, thanks to Pittman's story, as carefully plotted as a police procedural, that it continues to be smuggled out of Peru, so much so that the small wild population stands in danger of being plucked to extinction. The flower is being grown in greenhouses as far afield as Taiwan, Canada and, yes, Holland.

Ironically, as bubbles will, all that cultivation and commerce have driven the price of the slipper orchid down; you can pick one up for far less than the price of a Rembrandt.

But Pittman's book will hold its value for years to come as an in-depth portrait of a weird, sometimes dangerous mania.





Gregory McNamee writes about geography, animal welfare and many other topics for the *Encyclopaedia Britannica*. His most recent book is *Aelian's "On the Nature of Animals"* (Trinity University Press).

Craig Pittman is an award-winning environmental journalist who is a staff writer for the *Tampa Bay Times*. He is the author of *Manatee Insanity: Inside the War Over Florida's Most Famous Endangered Species* co-author with Matthew Waite of *Paving Paradise: Florida's Vanishing Wetlands* and the *Failure of No Net Loss*, both published by the University Press of Florida.

This review was also published in our blog *Magairlini* in September 2012



*Phragmipedium kovachii* is a terrestrial orchid, growing in tufts. Its flowers are 11-15 cm wide and dark pink to royal purple. It has been categorized in the section **Schluckebieria** of the genus **Phragmipedium** .

## EDITOR'S NOTES

The Irish Orchid Society and *Pollinia* are pleased to welcome Stuart Dunlop as a new columnist beginning with the April 2013 issue. Stuart is remembered for his very much welcomed and appreciated talk on wildlife photography at the March 2012 IOS meeting. You may follow his regular postings about his local wildlife on <http://www.donegal-wildlife.blogspot.com>

Stuart, a computer technologist from Raphoe, Co. Donegal, is a passionate naturalist and a skilled photographer.

Members are reminded that Annual Membership subscriptions will be renewable in June 2013.

There will be a new contest on the *Magairlí* blog site after the New Year. *Magairlí* is our Members-Only blog: <http://www.pollinia.org/magairlini/>

### COVER: Vanda William Catherine

Vanda William Catherine (Vanda First and Last x Vanda Motes Toledo Blue) is a stunning free-flowering orchid hybrid. Each flowering spray can grow to 25 to 35 centimetres in length and bear up to 10 blooms. Each individual flower is approximately 7 to 8 centimetres across and features attractive white petals and sepals with purple red spots, complemented with an outstanding dark purple lip.

Named for The Duke of Cambridge and Her Royal Highness The Duchess of Cambridge on the occasion of their visit to the Singapore National Orchid Garden.

Peter Stiller has sent us information on spring 2013 Mae Tang Orchid tour to the Chiang Mai area of Thailand. Arrive on March 4th – Depart on March 19th.

Those interested will find additional information at: <http://goo.gl/2VFX3>

A comprehensive slide show of a typical tour at: <http://goo.gl/AC5Ht>

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31						

## January- No Meetings

### February 4th 7pm – Potting Workshop

How to repot or divide orchids is a frequently asked question. This evening there will be a practical demonstration and open discussion on the topic with examples of the types of growing media and containers used by hobbyists. Recommendations on where to obtain sundries will be given.

### March 4th 7pm – Orchid Bargain Hunt

Members with experience of internet shopping for orchids were previously given some money and set the challenge of seeking out bargain plants. At this evening's meeting these orchids will be offered to members who participate in our usual raffle. We expect to have at least 20 choice plants to give away!



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