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Pollination at work: An *Eria densa* welcomes an Asiatic honeybee with a clump of pollinium. – Pic courtesy of Ong Poh Teck

Orchid chronicle

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Though well-distributed orchids are not all necessarily abundant. Researchers are trying to document them all – before it's too late.

By NATALIE HENG
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WE may not realise it but wild orchids are all around us. Some species, like *Eulophia graminea*, are already blooming in flower pots. Others, like the pigeon orchid (*Dendrobium crumenatum*), can be found scattered in a pretty sprinkle of small, delicate white flowers by roadsides.

When you think about it, orchids are the perfect candidates for hobbyists. Aside from tens of thousands of hybrid species created through cross breeding, there are at least 25,000 (and counting) wild species. Found throughout the world, over a thousand of these are thought to be present right here, in Peninsular Malaysia.

Although the exact number is debatable, (it has been about 20 years since the country's last publication of plant life, *Flora Of Peninsular Malaysia*, was revised), Orchidaceae is one of the largest plant families in the world. And it's members have conquered almost every niche imaginable.

Trying to spot them in the wild can be deceptive; many orchids look nothing like orchids at first glance and are only easy to distinguish once they have flowered. Some even resemble other plants. The *Apostasia*, for example, resembles a member of the Dracaenaceae plant family, and *Taeniophyllum* looks bedraggled, a bit dead.

These crafty life forms clamber up trees, appear amongst leaf litter, cling to minute footholds on treacherous rock crevices, or scramble over thickets of swamp plants. They can be terrestrial, or grow on other plants (epiphytic), or on rocks (lithophytic). Some even have strange, unexpected lifestyles: heteromycotrophs species such as *Cystorchis aphylla*, *Epipogium* and *Didymoplexiella* lack leaves, and the chlorophyll to photosynthesise. So they derive their nutrients from decomposed leaf litter, and as a result seem like underlings of what is usually a rather aesthetically extravagant plant family, appearing as shy, pale anaemic extensions rising up surreptitiously from the ground.

The wildly variant range of orchid forms, habitats and lifestyles, offers endless potential for the aspiring hobbyist.

Ong Poh Teck was bitten by the bug at the age of 15 when an orchid fancier uncle introduced him to a whole new world – his greenhouse. The young Ong soon developed an orchid collection of his own in his home in Kajang, Selangor.

Initially, it was filled with hybrids, which are commercial crosses between different orchid species and strains, generally bred for better flower forms, colours and blooming frequencies, and which tend to be easier to care for. But the more Ong learned about orchids, the more interested he became in wild ones.

The mysteries behind the insane amounts of variation not just between, but within species, aroused his curiosity: orchids that smell like rotting flesh; orchids with crafty trapping mechanisms that briefly imprison insects, releasing them once a precious blob of pollinium has been deposited; and orchids that indulge in pseudo-copulation, where a pollinating male insect is tricked into mistaking an orchid flower for its female counterpart.

Nurturing a passion

Ong's enthusiasm and thirst for knowledge about the secret lives of orchids eventually spilled over into a degree in horticultural science at Universiti Putra Malaysia. Once university was over, he landed his dream job at the Forest Research Institute Malaysia (FRIM), where he has been for the last four years under the Biodiversity Programme. Ong is responsible for maintaining FRIM's living orchid collection.

On this dewey morning, Ong guides us through his orchid house which is nestled amongst the hilly greenery of Bukit Lagong Forest Reserve in Kepong, Kuala Lumpur.

This is where Ong, 28, comes early every morning, to tend roughly 200 live orchids. There is always a tiny anticipation about what has, or will flower that day – wild orchids can sometimes be unpredictable.

The specimens were collected over the past four years during expeditions into peninsular forests by Ong and a team of researchers. The orchid project is part of a wider initiative that began in 2005, to update the *Flora of Peninsular Malaysia*. Ong was one of the key people who set up FRIM's first wild orchid nursery, which supplies samples for the institute's herbarium.

Taking care of the collection takes a lot of dedication, but Ong does not mind. Some plants only flower for a few hours at a time, and it can be days, weeks, months or even years before this happens – which is why it is crucial that he makes it to the nursery early every morning. Missing a flowering event would be a real bummer.

Despite the 700 specimens which have passed through the nursery since 2008, Ong thinks they still have a long road ahead, before a complete revision of local orchids can be completed. There is, after all, only a handful of individuals tracking down and documenting over a thousand orchids scattered over 132,090sqkm of land.

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Inside the nursery, orchids are everywhere. Stacks of shelving are lined with row after row of what, to the untrained eye, seem to be almost identical plants. As one looks around, something just does not seem right. Where are the flowers? There are no flashes of exotic colours, and none of the provocative lips and veiny pouches that make orchids so fascinating to look at. Instead, there are just rows after rows of unremarkable pots of leaves and stems.

Ong guides us to the far end of the nursery, where a singular, white flower juts out from a lonely corner of the room. He has been saving it for our visit, and its fate, we soon discover, lies with a pair of garden scissors. After being cut, the bloom will follow the same destiny as its contemporaries, now dried up or distilled in alcohol, and stored in the institute's herbarium for taxonomic classification and research purposes.

Recording for posterity

It seems such an irony that the living orchid collection in FRIM is so severe in its lack of colour. However, Ong and his plants are not here to look pretty; they are here for science. And as far as the orchid diversity of Peninsular Malaysia is concerned, the fields of taxonomy and molecular science are understudied.

Part of Ong's role is to be meticulous. Every flower that blooms is sacrificed in the name of international scientific protocol, which requires type specimens for each species to be processed and stored in a recognised herbarium, in line with the International Code of Botanical Nomenclature. The specimens will then be available for examination at any time, by scientists worldwide.

FRIM is building up a database on the orchid flora of the peninsula, and Ong is at the forefront of this. Each specimen is logged, replete with collection area, collector, collection dates, habitat and field notes. Spirit collections, now a standard practice that complements the more traditional method of keeping dried plants on flat sheets, allow scientists to view complex flower structures in 3D. This way, the finer details required to distinguish a species can be brought to life, under the microscope.

Revising the *Flora Of Peninsular Malaysia* will take years, which is why Ong and his colleagues have produced a beautifully illustrated, interim piece of work. *Wild Orchids of Peninsular Malaysia*, published by FRIM and co-authored by Ong, Peter O'Byrne, Wendy Yong Sze Yee and Saw Leng Guan, is more than a coffee table book.

"This book is targeted at the public, people who may not know anything about orchids but are interested to learn more," says Ong.

Aside from breathtaking photographs of orchids and details about their habitats and sex lives, the book tackles something most other books of it's kind do not. There are new (and to the scientist or orchid fancier, rather exciting) details drawn from the team's past four years of research, such as the pollination of orchids.

"In general, pollination is a whole new thing with respect to Peninsular Malaysia, and before this research, it was all a bit of a mystery," says Ong.

The book also explains why research on these plants is crucial, and what exactly it is that scientists do. For conservation efforts for Malaysia's rich orchid heritage to be effective, one needs to be able to identify the orchid species, where it occurs, how it is threatened and how it can be conserved. Unfortunately, Malaysia lacks researchers, taxonomists and botanists in this field.

On that note, the book discusses how scientists are in a race against time to record valuable orchid data before habitats are degraded or destroyed. The wide range of habitats orchids can be found in, he says, can be misleading. Being widespread does not necessarily mean orchids are abundant.

"Take *Corybas* and slipper orchids (*Cypripedium*). They can only be found in a small niche, in very specialised habitats. If that area is earmarked for development, there goes your entire population," he exclaims.

The book also prods orchid fanciers to do their part by not buying wild orchids. It explains ways to tell a wild-collected orchid apart from an artificially propagated one.

Another remarkable feature is the photographs on pollination. "The pollination mechanism of insects in the peninsula is still poorly known. Orchids are pollinated by bees, butterflies, moths, even blowflies. But it is very rare to actually witness a pollination event."

Catching a pollination event on camera is no easy feat. Some of Ong's photographs are the product of stealth and long hours of sitting with a camera in hand at his private orchid greenhouse in Kajang. "Trust me, you can just sit for one whole day and get nothing!"

■ *To order a copy of **Wild Orchids Of Peninsular Malaysia** online, go to www.frim.gov.my.*

The curse of beauty

FOR a wild flower, being desirable is a recipe for disaster. The seductiveness and allure of many orchid species have cost them, dearly.

Centuries of plunder have contributed to many species teetering on the brink of extinction. Many are endangered, and a good number have already been wiped off the planet.

Some rare species still exist, but only in the closely guarded sanctuaries of private

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collections or public botanic gardens. A combination of greed, rampant poaching and habitat destruction are blamed, and strong feelings swirl around in the festering circular argument of whether roving orchid collectors are "justified" in their rampant extraction of rare specimens, in a bid to "rescue" them from habitat destruction.

Either way, the world's passion for orchids clearly runs deep and some have resorted to illicit means to obtain specimens of the plant.

In 2004, the head of research and development at a drugs company in London was caught with an extraordinary consignment at Heathrow airport in England. Malaysia-born Dr Sian Lim was found in possession of a wildly valuable collection, which included 130 orchids, 126 of which were Asian slipper orchids, one of the rarest of all 750 orchid genera.

Some of these plants were so breathtakingly elusive that even specialists from the Royal Botanic Gardens at Kew, who were called into identify the plans, had never seen them before.

The collection included the legendary *Paphiopedilum rothschildianum*. One of the world's rarest, and which, after 100 years of searching, has only been located at a small number of sites on Mount Kinabalu in Sabah, it was found alongside a specimen of *Paphiopedilum gigantifolium*, which had previously been thought to be extinct.

Lim admitted to 13 charges of smuggling plants protected by the Convention on International Trade in Endangered Species (CITES) and was given a four-month jail sentence.

A pressing dilemma centres around how demand for valuable species like *Paphiopedilum* (slipper orchids), *Phalaenopsis* (moth orchids), *Renanthera*, *Vanda* and *Dendrobium* leads to indiscriminate bulb collection. According to *Wild Orchids Of Peninsular Malaysia*, the white-flowered *Paphiopedilum nievum* used to be abundant on limestone hills in northern Peninsular Malaysia. Today, most accessible places have been stripped bare of it.

In Malaysia, the law controls the collection of orchids (and other flora and fauna) from protected areas such as national parks, state parks or wildlife and forest reserves. Exports must comply with CITES, which states no wild-collected species listed under Appendix I, dead or alive, is allowed.

For species listed under Appendix II, trade controls, including import and export permits, are required for the protection of potentially threatened species.

Despite these regulations however, the illegal orchid trade plagues not just Malaysia, but orchid-rich countries all over the world. ***— Natalie Heng***

Rare shot: The book *Wild Orchids Of Peninsular Malaysia* contains rarely photographed pollination moments. Here, a blowfly is caught pollinating *Bulbophyllum virescens*.

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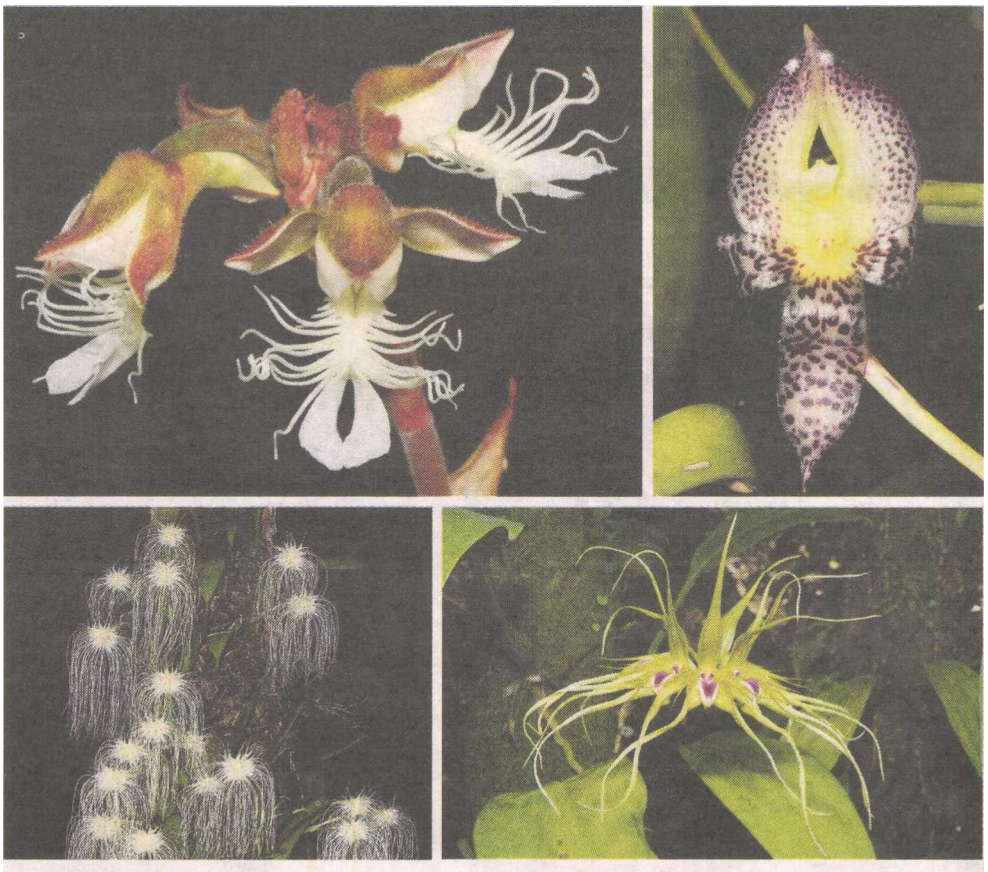
Researcher Ong Poh Teck scours the forest for wild orchids, which he then cultivates in the nursery at Forest Research Institute Malaysia.



Gorgeous blooms such as (clockwise from top left) *Anoectochilus reinwardtii*, *Bulbophyllum macranthum*, *Bulbophyllum virescens* and *Bulbophyllum medusae* are featured in the book *Wild Orchids Of Peninsular Malaysia*.