Rockhampton Orchid Society Inc.

PO Box 5949
Red Hill Rockhampton 4701

Founded 1955

www.rockhamptonorchidsociety.com.au

Rockhampton Orchid Society Inc

Newsletter – August 2023

Our midyear function held on Sunday 30th July was a resounding success, with over 70 members attending. The venue at Kershaw Gardens was great, with heaps of shaded areas for members to sit. The day was lovely and sunny, a sneaky cool breeze was blowing when we commenced at 10.00am but this warmed up and the day was amazing. Members enjoyed playing games with winners receiving beautiful flowering orchids. There were teams competing in the Trivia Competition with orchids and chocolates for prizes. Bob Jenkins won a gorgeous Vanda for winning the quoits competition, Jessica Clews won the bat and ball competition, and Deb Simpson won the boule competition. We were having so much fun that our balloon competition was not held due to the time factor.

Members bought delicious plates for morning tea, and they were so abundant that members enjoyed snacking for the remainder of the day. Robyn Dunlop Catering supplied an enjoyable offering of cold meats and salads for lunch followed by fruit bought by the Society. The day concluded with the drawing of the enormous multi draw raffle with almost $2,000 of prizes on offer, most of the orchids were advanced plants the Society purchased from Terry Dean's collection. There were also numerous lucky door prizes drawn as well. The afternoon concluded around 3.00pm. Photos from the day are following.

I was speaking to Paxia Lucke on Saturday at the Rocky Swap and asked where Laurie was. He had an operation on his leg for skin cancer and sadly this is not healing well. Laurie has been laid up in bed for the last fortnight. We wish him a good recovery and we are missing him. For any other members who are unwell we wish them all a speedy recovery.

Our July meeting saw an amazing number of orchids tabled for judging. There was that many that we ran out of numbers to put on the plants. The tables were overflowing and a discussion at our recent committee meeting talked about how the best way would be to organise the tables so that they are not too full in the various sections to allow a better display of the plants and to stop plant damage. I must admit I inadvertently knocked some buds off a beautiful Cattleya of Ken & Pam O'Brien, and I am sorry this happened. 9

Next growers group gathering will be held on **Saturday 19th August commencing at 2.00pm**, at the home of Sandra and Michael Rowcliffe **53 Constance Avenue Olive Estate Rockyview.**

Please bring plate for afternoon tea, chair, coffee/teacup, raffle money and possibly a prize of two to add to the raffle table.

Maxine is still looking for homes to visit later this year, if you can open your home and greenhouse for a members visit, please give Maxine a call on 0439 206 576 or speak to her at the meetings.

Sandra Rowcliffe - Editor.

Next Monthly Meeting: Saturday 26th August 2023.
Starts 1:30pm.

Notice to Members: Please assist if you can with cleaning the hall after the meeting.

Rockhampton Orchid Society Inc.

General Meeting Saturday 22nd July 2023 commencing 1.40pm

Attendance: As per register

Apologies: As per register

New Members: NIL

Visitors: NIL

Lucky Number: 50 – Bernard & Helen Hilse

Next General Meeting – Saturday 26th August 2023

Minutes of June 2023 monthly meeting as published in the newsletter were approved as correct and accurate.

Moved Shirley Kuhl **Seconded** Miriam Black **Carried**

CORRESPONDENCE FOR GENERAL MEETING OF R.O.S.I. ON SATURDAY 22ND JULY 2023

IN –

- Newsletters –Bribie Island Orchid Society, Bundaberg Orchid Society, Caloundra Orchid Society, Childers & Isis District Orchid Society, Gladstone Orchid & Foliage Society, Glasshouse Country Orchid Society, Gympie & District Orchid Society, Hervey Bay Orchid Society, Mackay and District Orchid Society, Townsville Orchid Society.
- Statement from Big Colour Works
- Email from Hervey Bay Orchid Society with Updates on upcoming STOCQ Conference and details on whale watching and other tours for anyone who may be interested.
- Invoice from the Australia Orchid Council Inc for club membership renewal of $100 for 2023 to 2024.
- Audit from OQI for 2022-2023
- Email from OQI with Notice for Annual General Meeting on 5th August at Buderim.
- Email with details of Glasshouse Country Orchid Show on 8th & 9th September including schedule & poster.
- Email from Nambour Orchid Society with their upcoming show details and schedule on 1st & 2nd September
- Email from Tara Monks with an updated ROSI Library List.
- Thank you card from Shirley Cantrell – Sandra read out her message.

OUT –

- Copies of various clubs' newsletters sent to members.
- Revised Membership List

Sandra Rowcliffe moves that Inwards correspondence acknowledged as received and outwards correspondence endorsed as sent.

Seconded Kerrie Clarke **Carried**

Treasurer's Report read and moved for adoption by Karen Carr.

Seconded Diane MacKenzie **Carried**

Growers Group:

Maxine spoke about the last grower's group gathering and thanks Robyn and John Bentley for their hospitality.

She is looking forward to the upcoming midyear function on the 30th of July.

The next grower's group gathering will be on Saturday 19th August commencing at 2.00pm at the Rowcliffe's home in Olive Estate Rockyview.

Business Arising from the last meeting: NIL

General Business:

- Midyear function – there are about 70 members attending. There will be competitions and trivia. The raffle will be large with about $1000-$1500 worth of plants. A lot of Terry Dean's mature plants will be amongst the prizes. There could be a bit of a problem with the toilets they are currently not working, but Jeff will be working with Neil Fisher on this, hoping it will be fixed by then. The area we are having the function is to the Left-Hand Side of the Carpark. Start will be 10.30am

with morning Tea, and a catered lunch at 12.00-12.30pm. Set up of marques will be around 9am. Bring something for morning tea, a plate for dessert and raffle donations if you wish to.

- There will be two meetings before our Spring Show on 30th September & 1st October.
- The September Meeting has been brought forward because of the STOCQ Orchidfest in Hervey Bay and will be on Saturday 16th September.
- Jeff will be in contact with Barry English with regards to the Orchid Stores for the next Show. He may not be available due to medical reasons, so the Society may need to organise a working bee to get ready. It is important that we have Orchid Equipment sales at the show due to negativity of it not being there for our Autumn Show.
- With the STOCQ coming up Jeff has worked out Individual Costs and asks members to come up to him so they know how much they must pay to the Society for the Motel Accommodation which will be paid by the Society in a lump sum.
- There will be a new system next meeting for the exhibitors draw. There will be a box at the door and if you are bringing plants you need to write your name on one piece of paper and put in the box for the draw.
- The Rockhampton Orchid Society Signage at the door was from Terry Dean, donated by Shirley Cantwell.
- No Proxy Plants are allowed at the meeting even if you are running late.
- Jenni Scott bought in the coils of tie wire for anyone interested to purchase.

Plant Commentary:

- Jeff Glover completed the commentary.
- Miriam Black says she loves the newsletters and asked questions on Alginox dosage.
- Jeff asked members what has been happening with their collections – Jenni Scott said it has been cold down her way. Some said their soft cane Dendrobiums are budding and some said they already have flowers. Winter has been very confusing for our orchids. Jeff spoke about Oncidium Twinkles and reckons they are now everywhere for sale, Bunnings, and Sunny Ridge Nursery near the Yeppen Roundabout. He also said Bifolia Cattleyas bloom well in winter.

Exhibitor's Raffle: Miriam Black

General Raffle: Bernard Hilse, Nat Lakey, Denise Philp, Sue Eggleshaw, Y'vonne Manning, Sandra Rowcliffe, Jana Bennett, Rod Green, Daphne Jenkinson, Jan Rawlings, Ray Bills, Terry Breingan.

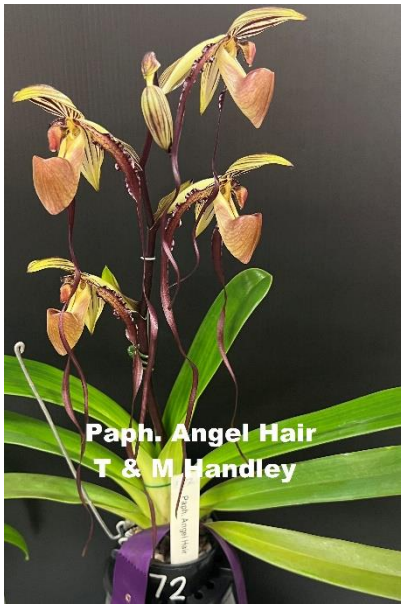
Meeting closed at 3.10pm for afternoon tea.

Next Committee meeting 6.30 pm on Tuesday 25th July at Jeff Bloxsom's Residence 12 Harden Street North Rockhampton. Bring a plate for supper.

Jeff Bloxsom
President

Sandra Rowcliffe
Secretary

Judges Choice Winners



Annual Competition – July 2023 Results

Judges Choice

Paph. Michael Koopowitz Phillipinensa	B & N Lakey
Paph. Angel Hair	T & M Handley
Rth. Free Horizon 'Kaye' AM/AOC	J & P Bennett

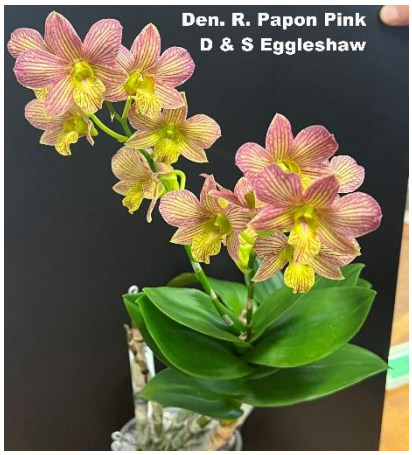
Popular Vote

Advanced (Plants Tabled: 97)

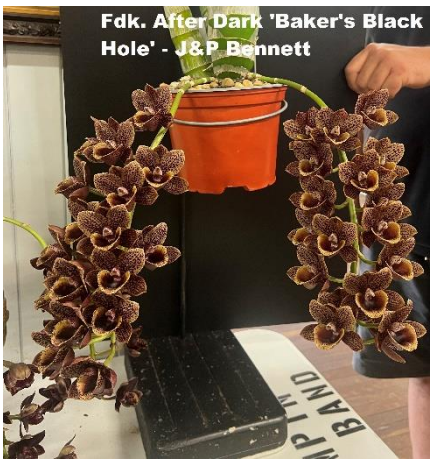
Cattleya up to 100mm	*Rth.* Free Horizon 'Kaye' AM/AOC	J & P Bennett
Cattleya over 100mm	*Rlc.* Dal's Horizon 'Kaye' x *Rlc.* Sedona's Golden Queen 'Alice'	J & P Bennett
Vandaceous up to 65mm	*Vanda* C Horchalgod x *Rhy.* gigantia Spots	B Jenkins
Vandaceous over 65mm	*Vanda* Kulwadee Fragrance	J Scott
Phalaenopsis	*Phal.* Lioulin Wild Cat 'Wild Cat'	J Bloxsom
Dendrobium	*Den.* Seree x *Den*. Tri Angel m/c	J Scott
Paphiopedilum	*Paph.* Michael Koopowitz Phillipinensa	B & N Lakey
Catasetinae	*Fdk.* After Dark 'Baker's Black Hole'	J & P Bennett
Oncidiinae	*Zed.* Eva's Himno A La Madrugada x *Onc.* Sotoanum	T & M Handley
Species	*Rhy. gigantea* 'Orange'	J Scott
Miscellaneous	*Phaiocalanthe* Kryptonite	B Jenkins

Novice (Plants Tabled: 24)

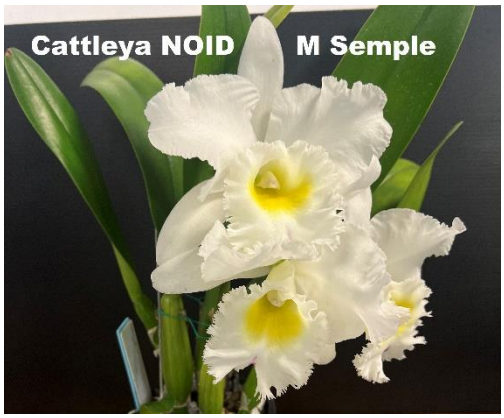
Cattleya up to 100mm	*Lc.* Tropical Trick 'Machado #3'	J & D Jenkinson
Cattleya over 100mm	*C.* Name Unknown	M Semple
Dendrobium	*Den.* R Papon Pink	D & S Eggleshaw
Miscellaneous	*Rhy. gigantea* 'Cartoon'	P Rankin


Den. R. Papon Pink
D & S Eggleshaw


Zed. Eva's Himno A La Madrugada x Onc. sotoanum - T & M Handley


Fdk. After Dark 'Baker's Black Hole' - J&P Bennett


Phaicalanthe Kryptonite
B Jenkins


Cattleya NOID
M Semple


Phal. Lioulin Wild Cat 'Wild Cat'
J&M Bloxsom


Rhy. gigantea 'Orange'
J Scott


V. C Horchalgod x Rhy. gigantea 'Spots'
B Jenkins


Rhy. gigantea 'Cartoon'
P Rankin


V. Kulwadee Fragrance
J Scott


Den. Seree x Den. Tri Angel
J Scott

Orchid of the month

For this month's newsletter I will cover *Angcm. sesquipedale*. A well grown plant was tabled at our July Meeting. This is a very interesting genera because the pollination of the flowers is completed by a moth, and not just a normal moth but one with a very long proboscis that enables it to draw the nectar at the end of the long flower spur.

Angraecum (Angcm.) sesquipedale

Source - Angraecum sesquipedale - Wikipedia

Angraecum sesquipedale /ˌsɛskwɪpɪˈdeɪliː/, also known as **Darwin's orchid**, **Christmas orchid**, **Star of Bethlehem orchid**, and **king of the Angraecums**, is an epiphytic orchid in the genus *Angraecum* endemic to Madagascar. The orchid was first discovered by the French botanist Louis-Marie Aubert du Petit-Thouars in 1798, but was not described until 1822. It is noteworthy for its long spur and its association with the naturalist Charles Darwin, who surmised that the flower was pollinated by a then undiscovered moth with a proboscis whose length was unprecedented at the time. Darwin's prediction went unverified for 21 years after his death, until just such a moth was discovered and his conjecture vindicated. The story of its postulated pollinator has come to be seen as one of the celebrated predictions of the theory of evolution.

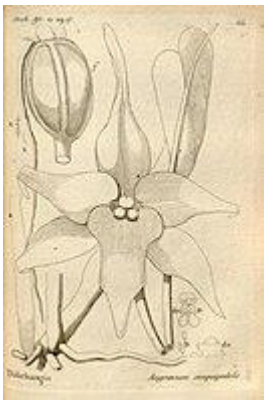
Angraecum sesquipedale is a monocot with monopodial growth and can grow to a height of 1 m (3.3 ft). Its growth habit is rather like species in the genus *Aerides*. The leaves are dark green with a bit of a greyish tone and leathery with a bilobed tip. They are usually around 20–40 centimetres (7.9–15.7 in) long and 6–8 cm (2.4–3.1 in) wide. The roots are dark grey, thick, and emerge from the orchid's stem. There tend to be few roots and they attach to the bark of the trees quite strongly. Each of the succulent roots can extend along the trunk of the tree for several meters.

There is also a variation of this species namely *A. sesquipedale* var. *angustifolium*. *A. sesquipedale* var. *angustifolium* tends to be smaller than *A. sesquipedale* and has narrower leaves. The chromosome number of *A. sesquipedale* is 2n=42. *A. sesquipedale* has also previously gone by the synonyms *Aeranthes sesquipedalis* Lindl. (1824),[*Macroplectrum sesquipedale* Pfitzer (1889), *Angorchis sesquepedalis* Kuntze (1891), and *Mystacidium sesquipedale* Rolfe (1904).

Habitat

It is often found in lowlands in Madagascar at altitudes below 400–500 feet (120–150 m), near the east coast of the island, and on trees that are at the edge of forests.[Usually it is attached to trees with fewer leaves and to areas of the branch or trunk that are driest. This allows the plant to obtain a great deal of light and air movement. Larger plants are usually found growing within 12–20 ft from the ground, whereas smaller plants are often found higher up in the canopy. Rarely *A. sesquipedale* is also found growing as a lithophyte and sometimes even as a semi-terrestrial. The orchid lives in an environment with heavy rainfall, up to 150 in (380 cm) per year.[There is no dry season so the growing season is continuous.

Flower



Original drawing included in first publication of *A. sesquipedale* by Thouars.

Star-like waxy flowers are produced on 30 cm (11.8 in) inflorescences arising from the stem from June to September in the wild with most flowers wilting by August. When cultivated in Europe however, the plant flowers between December and January. This flowering habit is what lends the orchid several of its common names, such as "comet orchid" due to the shape of its flower and "Christmas orchid" due to the timing of its flowering. Each flower opens with a green coloration, but eventually turns white with tones of light green. The amount of green in each flower can vary from plant to plant. It is claimed that the age-dependent colour change is more pronounced in wild *A. sesquipedale* than in greenhouse-grown plants. The sepals tend to stay green for a longer time than the petals. As the flower ages further, it goes from white to yellowish and then from orange to brown as it begins to wilt. As the wilting progresses the dorsal sepal bends down and then the lateral sepals bend inward with the lip remaining fairly stationary. Finally the entire flower closes in on itself. A distinctive feature of the flowers is that they have a long green spur attached. The spur of the flower is 27–43 cm (10.6–16.9 in) from its tip to the tip of the flower's lip. The specific epithet *sesquipedale* is Latin for "one-and-a-half-feet-long", referring to the distance between the end of the spur and the very top of the dorsal sepal. At the end of the spur is a small amount of nectar usually about 40–300 µl in volume. In general, longer spurs tend to have greater concentrations of nectar. This nectar fills the spur up to within 7 to 25 cm (2.8 to 9.8 in) from the bottom of the spur. The nectar has been found to contain the

sugars fructose, sucrose, glucose, and raffinose. The flowers produce an extremely intense spicy scent that can easily fill a room; this fragrance is only present during the night and is reminiscent of lily and some nocturnally flowering *Nicotiana* species. The scent has been found to be composed of approximately 39 different chemical constituents with its greatest concentration consisting of isovaleraldoxime, methyl benzoate, benzyl alcohol, isovaleronitrile, benzyl benzoate, phenylethyl alcohol, isovaleraldehyde, and phenylacetaldoxime. Usually, one to five flowers are produced at a time.

Reproduction

Coevolution model

Angraecum sesquipedale is best known within the botany community for its association with the naturalist Charles Darwin. After being sent several flowers of *A. sesquipedale* by James Bateman, Darwin noted the defining characteristic of the species, it's extremely long spur. From his observations, Darwin surmised, in his 1862 publication *On the Various Contrivances by Which British and Foreign Orchids Are Fertilized by Insects, and On the Good Effects of Intercrossing*, that there must be a pollinator moth with a proboscis long enough to reach the nectar at the end of the spur. He arrived at this conclusion after attempting in vain to remove the pollinia of the flower using needles and bristles. Only after placing a cylinder with a diameter of $^1/_{10}$ of an inch (2.5 mm) down the full length of the spur was he able to detach the pollinia upon retracting it. The viscidium attached to the cylinder as he removed it. Darwin surmised that during the moth's attempt at getting the nectar at the end of the spur, the moth would get the pollinarium attached to itself. The next orchid it visited would then be pollinated in the same manner.

For some time after this prediction the notion of a pollinator with a 35 cm long proboscis was ridiculed and generally not believed to exist. After Darwin's publication, George Campbell, 8th Duke of Argyll published a book in 1867 titled, *The Reign of Law*, in which he argued that the complexity of this species implied that it was created by a supernatural being. Alfred Russel Wallace replied in the same year with a paper he titled "Creation by Law", setting out in detail a sequence through which the moth and the flower could have coevolved with no guidance other than natural selection.

In 1903, such a moth was discovered in Madagascar by Walter Rothschild and Karl Jordan. This confirmed Darwin's prediction. The moth was named *Xanthopan morganii praedicta*. It is possible that the subspecific epithet *praedicta* was given in honour of the fact that Darwin predicted its existence, but there is no reference to Darwin in the paper that described the moth. A more conservative explanation is simply that the existence of the moth had been predicted and widely accepted before it was discovered.

In 1873 William Alexander Forbes wrote an article in the journal *Nature* asking readers if they knew of the moth predicted by Darwin. A reply to the question was first made that same year by Hermann Müller. He announced that his brother Fritz Müller had discovered a moth with a proboscis of 30–33 cm (11.8–13.0 in) long, but it was discovered in Brazil and so was not a candidate for pollinating *A. sesquipedale*. Although Darwin learned of Müller's finding he did not live to see the discovery of *Xanthopan morganii*. Even after the 1903 discovery however, news of *Xanthopan morganii praedicta* was not immediately disseminated. A second inquiry into the existence of the pollinator moth was made in the 30 January 1907 issue of the journal *Nature* by E. W. Swanton. Presumably still unaware of Rothschild and Jordan's discovery, Wallace responded stating that he didn't know of a suitable pollinator in Madagascar, but that he had heard of one from East Africa with a long enough proboscis.

Both Darwin and Alfred Russel Wallace had suggested that the evolutionary basis for how the odd relationship between the sphinx moth and *A. sesquipedale* evolved over time could be understood by considering one orchid with a long spur and another with a short spur. If a moth goes to fertilize a flower with a short spur its proboscis would easily reach all the way to the bottom of the spur, and it would get the nectar. However, since the proboscis of the moth is longer than the spur of the flower, the head of the moth would not touch the flower obtaining the pollinarium and so the flower would not be fertilized. The orchid with the longer spur on the other hand would be able to be fertilized since the entire length of the proboscis fits within the spur and thus allowing the head of the moth to touch the flower and become connected to the pollinarium. As a result, over time plants with longer spurs would be more likely to reproduce and so become more prevalent in the population. In this way *A. sesquipedale* has evolved to have a very long spur. The moth too would evolve to have a longer and longer proboscis in the following way. If a moth goes to fertilize an *A. sesquipedale* flower and the spur is longer than its proboscis, then it will not be able to reach all the nectar. As such, moths with too short of a proboscis would not be able to get as much food as those moths with a longer proboscis who could reach all the nectar. Due to this arrangement moths with longer proboscis would become more physically fit to reproduce due to their ability to get more nectar and so such moths would become more prevalent in the population. This can result in a seesawing effect by which both organisms produce a mechanism that leads the other to increase the others spur and proboscis. There are however certain properties that no doubt prevent this mechanism from continuing indefinitely. For example, the risk such a long proboscis poses to a moth could be a factor that would prevent the spur of *A. sesquipedale* from becoming indefinitely long. If moths with proboscises that were too cumbersomely long substantially risked their lives due to being easier prey, then such moths could only afford to evolve a proboscis to a certain length. This would in turn restrict the length of the orchid's spur, since moths would not want to visit flowers, whose spurs were too long since they would not be able to reach the nectar.

There was also another explanation why the spur of *A. sesquipedale* grew so long proposed by Thomas Belt in his 1874 book *The Naturalist in Nicaragua*. Belt suggested that the spur grew long in order to prevent other moths with shorter proboscises from drinking the nectar. Darwin took up this explanation briefly in a footnote of the second edition of his famous orchid book, explaining that although this explanation was no doubt true, it cannot account for the lengthening spur.

An illustration by Thomas William Wood, based on Alfred Russel Wallace's description, showing a moth pollinating *A. sesquipedale*. This was Wallace's conception of the event since it was drawn in 1867 before the moth was even discovered.

The fertilization of *A. sesquipedale* has been observed to proceed as follows. The moth approaches the flower to ascertain by scent whether it is the correct orchid species. Then the moth backs up over a foot and unrolls its proboscis, then flies forward, inserting it into a cleft in the rostellum which leads to the spur while gripping the labellum. After the moth has finished drinking the nectar, which usually takes about 6 seconds, it instinctively raises its head while removing its proboscis from the spur, and in doing so causes the viscidium to adhere to its proboscis usually about 4 to 9 mm (0.16 to 0.35 in) from its base. Attached to the viscidium via the caudicle is the pollinia. Upon removing its proboscis from the flower, the pollinarium stalk will be straight and parallel with the moth's proboscis. Then after leaving the orchid the caudicle will eventually dry out, causing its angle relative to the moth's proboscis to change by 90° so that it is at the correct angle to attach to the stigma of the next orchid the moth visits. The moth then repeats this process at another *A. sesquipedale* orchid and simultaneously fertilizes it. Once the flower has been fertilized, it quickly stops producing its powerful scent.

Pollinator shift model

An alternative path by which *A. sesquipedale* could have evolved that differed with Darwin and Wallace's explanation was proposed by Lutz Thilo Wasserthal in 1997. According to Wasserthal, hawk moths could have evolved long proboscises as a predatory avoidance strategy from heteropodid spiders. Since such spiders have been known to jump at hovering moths in an attempt at eating them, hawk moths would be at risk when visiting flowers if such a spider was nearby. Based on this reasoning moths with longer tongues would be less at risk when pollinating flowers since they would be farther away and thus a more challenging target for jumping spiders. As a result, nature would select for hawk moths with longer and longer proboscis. The flowers of *A. sesquipedale* on the other hand would be evolving longer spurs since flowers with longer spurs are more likely to become fertilized by long tongued moths. In other words, the flowers evolve long spurs to fit the pollinators and not the reverse. It has also been observed that the moths will swing side to side when feeding, presumably to evade jumping spiders. Possible problems with this hypothesis is that active predation by spiders on hawk moths visiting flowers has not been observed. It has also been suggested that flying predators such as bats and birds are the more likely predators to hawk moths. Whether or not the pollinator shift model or the coevolution model, or even a little bit of both is correct is currently the subject of debate.

Related species

In 2017, Netz and Renner provided molecular clock-dated phylogenies that include 62 of 144 *Angraecum* species on Madagascar and all nine Madagascan Sphinginae. Clock models using either rate- or fossil-based calibrations imply that the Madagascan subspecies *praedicta* and the African subspecies *morgani* diverged 7.4 ± 2.8 Mya, which overlaps the divergence of *A. sesquipedale* from its sister, *A. sororium*, namely 7.5 ± 5.2 Mya; since both these orchids have extremely long spurs, long spurs likely existed before that.

Cultivation

< *A. sesquipedale* in bud

Angraceum sesquipedale was first brought to the United Kingdom in 1855 to be grown outside of its natural environment by William Ellis. Subsequently, Ellis achieved the first flowering of the plant in cultivation in 1857. *Angraecum sesquipedale* has been attributed as having a nicer appearance when grown in cultivation than when found in the wild, since wild specimens appear as a long stem surrounded by a few struggling leaves. Additionally, *A. sesquipedale* is seldom grown in private collections, despite its enormous importance to Darwin's concept of coevolution and subsequently the fields of botany and evolutionary biology.

< *A. sesquipedale* flower

It is often recommended that *A. sesquipedale* be grown under warm to intermediate conditions and given as much light as possible without burning the leaves. The choice of growing the plant in intermediate or warm housing conditions can affect the timing of the flowering. To stimulate heavy flower production, it is important that the light intensity be greatest between September and November. The number of flower spikes present during flowering is dependent on the number of new leaf-pairs formed during the preceding spring and summer, since each newly formed leaf-pair produce one spike and rarely two. *Angraecum sesquipedale* is commonly found to have a slow growth habit, but the orchid can be expected to produce flowers even before it has reached an adult size. *Angraecum sesquipedale* is notorious for having sensitive roots. The roots of mature plants are best left undisturbed as much as possible and as a result it is prudent to be especially careful during repotting. Young plants however are less susceptible to such root problems. Disturbing the roots can cause the plant to sulk for two to four years or even to cause it to die. When a mature plant is disturbed, it frequently loses many of its lower leaves and reverts to only producing one or two flowers at a time. To avoid these problems, it is commonly advised that the orchid be planted in a coarse medium such as fir bark, crock, or charcoal to minimize disturbances to the roots. Also planting it in a basket or large pot is best since this allows the orchid to grow for many years before having to have its roots disturbed.

Hybrids

The first *Angraecum* hybrid was created by John Seden, an employee of Veitch Nurseries, and exhibited for the first time on 10 January 1899. It was named *A.* Veitchii, but it also commonly goes by the name *King of the Angraceum hybrids*. The cross was between *A. sesquipedale* and *A. eburneum*. The flowers somewhat resemble those of *A. leonis*. Additionally, the hybrid combines the traits controlling the flower's post-pollination changes. In the case of *A. eburneum* the flowers age such that the labellum curls inward with the sepals and lateral petals remaining mostly stationary whereas in the case of *A. sesquipedale* both the sepals and petals move except for the labellum. In the case of *A.* Veitchii both the petals, sepals, and labellum move inward. Another common cross involving *A. sesquipedale* is *A.* Crestwood, which is a cross between *A.* Veitchii and *A. sesquipedale*. (Photo is *Angraecum Crestwood 'Tomorrow Star'*)

Interspecific hybrids *(meaning arising or occurring between species – primary hybrid)*

- *Angraecum* Appalachian Star (*Angraecum sesquipedale* × *Angraecum praestans*
- *Angraecum* Crestwood (*Angraecum* Veitchii × *Angraecum sesquipedale*)
- *Angraecum* Dianne's Darling (*Angraecum sesquipedale* × *Angraecum* Alabaster)
- *Angraecum* Lemförde White Beauty (*Angraecum magdalenae* × *Angraecum sesquipedale*)
- *Angraecum* Longidale (*Angraecum sesquipedale* × *Angraecum longicalcar*)
- *Angraecum* Malagasy (*Angraecum sesquipedale* × *Angraecum sororium*)
- *Angraecum* Memoria Mark Aldridge (*Angraecum sesquipedale* × *Angraecum eburneum* subsp. *superbum*)
- *Angraecum* North Star (*Angraecum sesquipedale* × *Angraecum leonis*)
- *Angraecum* Ol Tukai (*Angraecum comorense* × *Angraecum sesquipedal)*
- *Angraecum* Orchidglade (*Angraecum sesquipedale* × *Angraecum giryamae*)
- *Angraecum* Rose Ann Carroll (*Angraecum eichlerianum* × *Angraecum sesquipedale*)
- *Angraecum* Sesquibert (*Angraecum sesquipedale* × *Angraecum humbertii*)
- *Angraecum* Sesquivig (*Angraecum viguieri* × *Angraecum sesquipedale*)[1]
- *Angraecum* Star Bright (*Angraecum sesquipedale* × *Angraecum didieri*)
- *Angraecum* Veitchii (*Angraecum eburneum* × *Angraecum sesquipedale*)
- *Angraecum* Wolterianum (*Angraecum sesquipedale* × *Angraecum eburneum*)

Intergeneric hybrids *(meaning something that occurs between or involving biological genera - hybrid)*

- *Angranthes* Grand Star (*Angraecum sesquipedale* × *Aeranthes* Grandiose)
- *Angranthes* Paille en Queue (*Angraecum sesquipedale* × *Aeranthes arachnites*)
- *Angranthes* Sesquimosa (*Aeranthes ramosa* × *Angraecum sesquipedale*)[i]
- *Angraeconopsis* Kaohsiung Dream (*Angraecum sesquipedale* × *Phalaenopsis* Ruey Lih Beauty)
- *Eurygraecum* Lydia (*Angraecum sesquipedale* × *Eurychone rothschildiana*)
- *Vandaecum* Enzomondo Amore (*Vanda* Rothschildiana × *Angraecum sesquipedale*)
- *Vandaecum* Prof. Burgeff (*Angraecum sesquipedale* × *Vanda sanderiana*)

Big Slippers to Fill

(Copy of Article Submitted by Jeff Glover to Orchids Australia August Magazine)

The genus Paphiopedilum has fascinated explorers, royalty, and humble collectors for hundreds of years since its existence was first known to the western world. Many of its species were first 'discovered' by European plant hunters, cum botanists in the late Nineteenth Century. Indeed, some Paphiopedilum species even have European regal names such as, *Paph. victoria regina* and *Paph.* Prince Edward Of York for instance which is one of the oldest registered orchid hybrids. Paphiopedilum species are widespread throughout the extremities of Asia, particularly SE Asia, from the Temperate to Tropical Zones in both lowland and montane areas. Not unsurprisingly, paphiopedilum species are still being discovered in contemporary times. Their connection to their mostly terrestrial and often ephemeral growing Northern Hemisphere relatives; the *genus Cypripedium* of North America and Europe, is obvious. This soon became apparent to the European orchid-collective and this familial closeness, now known as two branches/genera of the *Cypripedioideae* Sub-family, only served to heighten their desirability in late 19th Century Europe. Consequently, this ultimately led to decades of over collection and exploitation only lessening with the introduction of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) agreement in 1975 *(Cites. org).* Obviously, the determiner of their closeness with their northern cousins was of course the sharing of a slipper-shaped labellum, which gives all of them their allure and descriptive sobriquet, The Lady's Slipper Orchids.

Moreover, amongst the paphiopedilums there really are some big siblings, giants no less, in both foliage, physicality and in flowers numerically. For example, in, *The Paphiopedilum Grower's Manual, (Birk 2004*), one species *Paph. kolopakingii* is described in the annotated chick list as, 'Large to Very Large Growing'.

Pic 1 Paph. Kolopakingi **Source: Orchidee. de**

Indeed, it is second only to the aptly named *Paph, gigantifolium*. This article will explore this the second biggest of these monoliths, the more commonly grown and easier to cultivate*, Paph kolopakingii* and its most notable primary hybrid, Paph. Temptation (*Paph. kolopakingi x Paph. philippinense)*

Further described in *Orchid Digest Vol 82, Nov-Dec 2018 (Koopowitz, 2018)*, 'individual plant size of *Paph. kolopakingii, can exceed well over one metre wide and numbers of flowers can be upwards of 10 per* inflorescence, with leaves up to 70 cm long and up to 10 cm wide'. There are obvious connotations here for housing such a large growing orchid. However, there is an up-side as the plant readily grows well from divisions which will be discussed later when cultivation is addressed. To find out why it is such a big plant, it is necessary to consider its location and growing conditions. It comes from a very small habitat; it is endemic to central Kalimantan on the island of Borneo, Indonesia, which it shares with other notable Paphiopedilums, *Paph. rothschildianum and Paph sanderianum.* Hence, it grows in an Equatorial environment governed by the Monsoons where the only annual seasonal change is the slight variation in the amount of rain they bring. October to March sees the heaviest rains with the area experiencing continuous rain for days on end and almost total cloud cover. As a result, it receives the copious amounts of water required to produce the large leaves that are all-pervasive with this species. Consequently, the humidity level is very high and Winter as such, only witnesses a variation within 5 degrees Celsius. The growth habit is like many multifloral Paphiopedilums and is best described as semi-terrestrial which can find it growing in mosses and leafy detritus on stony slopes

of river gorges to the rainforest floor. With respect to the light it requires, it can be found in full shade, partial shade, but seldom in direct light. Its elevation is from 400 to 1000 metres which sees it more often in heavy cloud cover especially in the afternoons and has it experiencing periodic strong winds which produce air movement and a drying out effect: an important requirement for successful cultivation (Birk, 2004).

Pic. 2 Paph. kolopakingii Pic supplied by B. Mitchell

In cultivation, for any orchid to be successful the goal is to replicate as close to the orchid's endemic growing conditions as possible. In my experience, growing in a mix of large pine bark and medium size charcoal pieces has proved to be the most successful substrate, with a 3 bark to 1 charcoal being the best ratio. Some growers use bark exclusively. Watering frequently as in at least every second day in the height of Summer in my location of Central Queensland, with a 'rest' in Winter of twice weekly has proved to my best combination. Maintaining humidity can be the biggest challenge, and naturally it is less of a problem the further north; but artificial misting can address this necessity. However, the bane of all orchids growing then comes to the fore, maintaining the delicate balance of 'moist but not wet 'is ever present and getting it right is a personal journey with you and the conditions your growing situation creates. Like nearly all Paphiopedilums, Paph. *kolopakingii* resents drying out but appears to be one of the less resentful should this occur. It is a vigorous grower for a Paphiopedilum. Picture 2 is indicative of what can be achieved with a first flowering. This plant belongs to noted Paphiopedilum grower Barry Mitchel from Bowen in Nth Qld. These plants can flower from deflasking in 5- 7 years such as the one depicted that is displaying 8 flowers and 1 bud, which believe it or not is quite fast for a multifloral Paphiopedilum. In addition, for a Paphiopedilum, *Paph kolopakingii* is a moderate to heavy feeder and can tolerate weekly to twice weekly feeding in Summer of a high nitrogen-based fertilizer (Growth) if the watering regime is adhered to as well. Every second week with a lower nitrogen based (Flowering) fertilizer is what I have found works best in late Autumn through Winter as late Spring to early Summer is the flowering time for both this species and its foremost primary hybrid, *Paph* Temptation.

Pic 3 Paph. Temptation 'Green Tower Krisett' AM/AOC

Paph. Temptation is an artificially derived primary hybrid of *Paph kolopakingii* and *Paph. philippinense*. It could be argued that it is one of the best progenies of any hybrids of the multifloral group's species. The reasons being are, the hybrid vigour imparted is excellent in all respects, as both parents are robust growers given the right conditions, and will continue to grow, but maybe not thrive, even if the growing environment is not the optimum required. Another bonus is that it is somewhat reduced in size to *Paph kolopakingi* although still a big plant but a little more manageable space wise. Moreover, both parents grow in the same Equatorial conditions, obviously *Paph Philippines* is endemic to its namesake and found in The Philippines, a few thousand or so kilometres further east from Paph Kolopakingi's home in Borneo. While Paph. *Philippinense* is not as big structurally as Paph. *kolopakingii* it is by no means a small grower; however, it is a more prostrate grower and readily grows into large clumping specimens. Similarly, both parents are quick flowerers in consideration of Paphiopedilums as a genus that overall has a notorious reputation as being reluctant to flower in cultivation. An average flower count for Paph *kolopakingii* would be eight while for Paph. Temptation six is a usual outcome, hence, only a marginal reduction while keeping a similar size. Like most Paphiopedilums these species and their primary hybrids are not bothered by pests and diseases in comparison to other orchid genera. It cannot be stressed enough however, that sufficient air movement is imperative to combat their most destructive problem, that of bacterial rot forming in the lower leaf axils. As the leaves basically form a fan, water can remain between the leaf surfaces creating the right conditions for bacteria to grow. Unfortunately, once this condition takes hold destruction of the entire 'leaf fan' can rapidly take place and in worse case scenarios destruction of the entire plant occurs in a relatively short space of time, i.e., days. It is recognisable as a light brown / watery stain in the leaf with a pungent smell when closely inspected. I have tried several methods to combat this condition such as, cutting the infected margin of the leaf and impregnating it with anti-biotic powder to the entire removal of the section. Mostly, with very limited success and even if it has been partially successful such radical measures inevitably sets the plant back and makes it susceptible to future reoccurrence. This problem like most bacterial and fungal infections in plants is worst in Winter, so water these plants in the morning one to two times weekly if necessary, giving sufficient time to dry out before nightfall and three to four times in Summer.

Pic. 4 With a leaf-span of 75cm. *Paph.* Temptation is still a big plant.

As previously mentioned, space will be an issue in growing these giants of the paphiopedilum world. However, their saving grace is that they divide quite easily and

grow-on well allowing space/room-control to be manipulated by trading/selling divisions.

Like many orchid species both Paph *kolopakingii* and Paph. *philipinense* have alba varieties.

Use of these alba forms has resulted in lighter coloured cultivars of Paph Temptation which take on a green/yellow hue in combination of the browns and creams of their parents making them more desirable in some collectors' preferences. Overall, it is fair to conclude that if you have the space, Paph. *kolopakingii* and its primary hybrid *Paph.* Temptation is one of the easier and more rewarding for all the reasons listed above, multifloral paphiopedilums for collectors to grow.

References:

- Birk, Lance A. *The Paphiopedilum Grower's Manual,* 2004, Pisang Press Santa Barbara Ca. USA
- Koopowitz, H. *Orchid Digest, 'The Paphiopedilum Issue'*. Vol. 82, Dec. 2018 Ca. USA
- www. Orchidee .de (accessed 12/5/2023.)

Note: Photos unacknowledged belong to the author.

Weeds, Pests, Diseases Etc

One of our members has asked if I could cover Boisduval Scale in the Newsletter so this is this month's selected pest.

Source: aos.org/orchids/orchid-pests-diseases/scale.aspx

Scale – by Paul J. Johnson, PhD

Scale is probably the most important insect pest of cultivated orchids in northern climates. According to a Florida Department of Agriculture and Consumer Services publication, there are at least 27 species of scale identified from cultivated orchids. Fortunately, only the most common soft scale, usually referred to as brown scale or brown soft scale, regularly survives in the north on indoor or greenhouse plants. The soft brown scale (Coccus hesperidium), and possibly the similar elongate soft scale (Coccus longulus), seem to be the most observed species. Boisduval scale (Diaspis boisduvali), an armoured scale, can infect orchids in the greenhouse and the home, and should be guarded against.

The adult brown scale is recognised by light yellowish to dark brown oval to circular shells appearing on leaves, petals, sepals, petioles, pseudobulbs, and sometimes rhizomes and roots. Mature female Boisduval Scale are rounded, and light covered, while aggregations of males are identified by their cottony appearance, which may cause them to be confused with mealybugs if not examined closely. The immatures, or crawlers of all species are tiny and yellowish to pinkish, and not easily seen without a magnifier.

The most common way of acquiring scale is purchasing an infested plant. Scale is easily transmitted to clean plants when plants are crowded, and crawlers move from plant to plant. Colonisation by windblown crawlers may occur when outdoors, but this can also happen indoors and in greenhouses when crawlers float on currents from circulation and heater fans. This can produce pockets of infestation where air currents are weakest when crawlers settle on plants.

Life Cycle – Scales have three life stages: egg, larva (or nymph), adult. Eggs are laid under the female's shell and remain there after she dies. These hatch into mobile nymphs, called crawlers, that can move between plants. After finding a suitable place, crawlers settle to feed. The females then form a light yellowish protective scale covering, which enlarges as the insect grows and darkens to tan or brown as it matures. Male Boisduval Scale form an armoured scale while those of brown scales are small, winged creatures. The primary role of the males is to mate and die.

Scales have short life cycles but many cycle many times a year. Typically, a month or more is required for completion of a scale generation, but a mere two to three weeks is possible in favourable conditions. The overlapping generations create the biggest scall-management problem. All control methods are at their greatest effectiveness against crawlers. By the time the scale has matured the harden shell, it is too late to easily kill those adults with chemicals. Also, the largest dark brown coloured scales with a powder like substance inside are dead and the shells are often full of eggs.

Management – Scale management is usually a protracted and serious effort, and never fun. Light infestations restricted to one or a few plants can be treated with household products rather than concentrated insecticides. When possible, immediately isolate infested plants from others to prevent the crawlers from moving among them. The key to control is persistence. Management methods least toxic to people, pests and plants are the most time consuming and laborious. Chemical methods, including oils, soaps and synthetic insecticides are progressively more toxic and expensive, but less work. Regardless of method or chemical used, remain vigilant and expect to make at least two to three applications 10 to 16 days apart. Due to plant costs, owner's personal attachment to orchids, and many growers' desires to avoid insecticides, when possible, several effective home remedies for scale are available. However, non-insecticidal treatments may not be highly effective for elimination of scale – they should be viewed as controls, not eradicators. Also, many chemicals for home uses are toxic for humans, pets, and plants even in diluted forms, often proportionately more toxic than the feared insecticides.

Rubbing Alcohol – A popular home remedy is swabbing plants with isopropyl (rubbing) alcohol. Do not use other alcohols such as ethanol or methanol; they may penetrate the plant tissues and cause considerable damage. On hard-leaved plants, remove scale by gently rubbing with fingers or an infant's soft toothbrush, with or without alcohol. Afterwards, repeats the alcohol treatment to remove recently hatched crawlers. Pay particular attention to the mid rib, veins and leaf edges. (On soft-leaved orchids, such as some Oncidiinae, isopropyl may damage the leaves.) Another method is to spray alcohols with a misting bottle or small pump sprayer. When so applied, a few drops or a short quirt of liquid soap are added to the alcohol.

Some growers also like to add some horticultural oil, mineral oil, or neem oil to this solution. Use caution, as a detergent that is too strong or applied in excessive amounts, or use of an ammonia-based chemical cleaner, may damage your plants particularly buds and flowers. Also, alcohol sprays are not effective against eggs beneath scale hence physical removal by hand is suggested.

When air movement increases evaporative cooling, rapid evaporation of alcohol may over-cool plant tissues, creating zones of dead mesophyll cells that can become necrotic. On warm or breezy days, especially with low humidity, wipe residual alcohol with a tissue instead of allowing it to evaporate.

Repotting during an extreme infestation, scall may develop on roots and rhizomes. Consider replacing the potting medium, which can harbor eggs and crawlers. Dispose of it in a compost pile or in the garbage. When repotting, a close inspection, and, if necessary, a gentle clearing and spaying of the roots is essential.

Oils, Soaps and Sterilants - Horticultural, neem and mineral oils, and insecticidal soaps form the next stage of chemical Control. All of these solutions are generally considered safer for humans, pets and plants than insecticides. None provide absolute control over pests, but frequent applications reduce insect populations to below self-sustainable levels in small orchid collections.

Oil solutions smother insects, so complete coverage of all sprayed plants is essential. These oils are mixed with water and a plant-safe detergent for enhancing spreading and sticking. Never apply these solutions to plants on hot days (over 30 degrees C). Insecticidal soaps, while considered safe, may still damage some plants, particularly tender new tissues, and when the soaps are mixed with hard water. They can also cause allergies and respiratory problems for users.

Insecticides – Persistent or heavy scale infestations may require the use of synthetic insecticides. Few insecticides are tested on or specifically registered for use on orchids, but several common, inexpensive, home-and-and garden chemicals are labelled for ornamental plants.

Some of the more effective insecticides available to home growers or * Orthene (wettable powder), * Malathion (liquid), * Diazinon (liquid) and * Carbaryl (water-based emulsifiable concentrate). **Please note some of these brands may or may not be available in Australia, check with your local retailers to check what is available. **

Always follow label directions and never exceed the minimum recommended concentration given in mixing directions. Orchids are tough, but sensitive to many chemicals. While certain species may not react to a given formulation, others might, so advance testing is advised.

In the home, growers who must apply insecticides during inclement weather need special care for applications. If outdoor spraying is not an option, spray plant(s) inside a large plastic bag, remove the bag after the spray has settle, and let the plant (s) ventilate where fumes will not invade the home or work area.

Never apply any liquid pest treatment in direct sunlight or high heat. To prevent burning of tissues, always shade plants until the solution dries.

Growth Regulators and Chitin Inhibitors – Insect-growth regulators, such as * Enstar II, are Synthetic forms of insect hormones that interrupt normal development in insects, including scale. Where there is little reliable information on their use on orchids, there have been no plant health problems noted thus far. An increasing number of growers are reporting satisfactory results with * Enstar II.

Azadirachtin (Azatin and * Neemazad) is a plant-derived (neem tree) chemical or botanical insecticide. It inhibits development of chitin, a primary component in insects' exoskeletons, causing mortality. There is little information available on its use on orchids, but it is approved for a wide variety or ornamentals and is labelled for greenhouse applications.

Final Considerations - Heavy infestations of scale may require other control methods, In such situations, a synthetic insecticide may be useful. On the extreme side, for a plant showing signs of decline from scale, consider whether the low likelihood of rejuvenating the plant justifies the expense and effort of continued treatments. After all, the destruction of a sick plant can be used to justify the purchase of a new and healthier one.

To minimize risks of developing a treatment-resistant pest population, change methods and chemicals occasionally; do not use the same chemical mix more than three or four times sequentially. For example, if an insecticide was used for previous treatments, switch to an oil, soap or different insecticide.

Never use an insecticide not labelled for ornamental plants, and do not use less than the minimum concentration of a mixture. Too little of a chemical enhances resistance, while too great a concentration may damage plants. Never use chemicals as a routine preventative, these wastes chemicals (and money) and allows resistant pests to develop. Continue manual removal of scales during treatment – removing egg-laying adults is as important as killing nymphs. Finally, always monitor the cycling of the scale populations to optimise spray effect and minimise total number of sprays.

Judging News

At the last July monthly meeting the judges present had the pleasure of assessing one of the tabled plants for an award. The plant was *Paphiopedilum* Michael Koopowitz belonging to Bob and Nat Lakey. The plant was awarded a Highly Commended Certificate scoring 78.6 points. Bob and Nat chose the cultivar name of 'Lola'. Their name now adds to the list I compiled of members who have received awards that was in last month's Newsletter.

There was a mistake in that list which I put down to the curse and compliment of auto-correction, 'Marsh' was listed instead of 'March', apologies to Tony, who indeed has had a plant of his awarded.

Congratulations Bob and Nat for your plant which will be known once ratified as *Paph.* Michael Koopowitz 'Lola' HCC/AOC

Jeff Glover
Assistant Registrar - STOCI Northern Panel

Photos Mid-Year Function




























2023 Show Dates

As Supplied by John Rees.

** ALL DATES SUBJECT TO CHANGE **

August

15th to 19th August – APOC in Singapore

September

1st & 2nd – Childers & IDOS show set up 31st.

1st & 2nd - September 2023 Nambour OS show

8th & 9th - Glasshouse Country OS show

14th to 16th -Maryborough OS set up 13th.

15th & 16th – Noosa DO&FS Show Cooroy Memorial Hall Maple Street set up 14th.

22nd to 24th - Orchidfest sponsored by Hervey Bay Orchid Society

30th September & 1st October – ROSI Spring Show set up 29th.

October

12th& 13th - Bribie IOS show, judging 12th.

November

11th Nambour Species Show Buderim Hall set up 10th.

December

9th - ROSI Christmas Awards Dinner

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Meetings are held on the fourth Saturday of each month (excluding December) at Fred Fox Band Hall, Cnr. Gladstone Road and William Street, Rockhampton. Meetings commence at 1:00pm and plants must be tabled by 12:30pm.

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