



TOSKAR NEWSLETTER

A Quarterly Newsletter of the Orchid Society of Karnataka (TOSKAR)
Vol. No. 4; Issue: i; 2017



THE ORCHID SOCIETY OF KARNATAKA
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TOSKAR NEWSLETTER

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(Vide Circular No. TOSKAR/2016
Dated 20th May 2016)

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Front cover – Dendrobium ovatum
(L.) Kraenzl. by Dr K. S.
Shashidhar

From the Editor's Desk

21st March 2017

At the outset, I wish all the readers a very Happy New Year. With the beginning of 2017, the mantle of editing the Society's newsletter has been passed on to me. Dr. Vani Hardev, had done a wonderful job amidst all the difficulties she was facing whether it is the poor response of our members in penning the articles or the constraints in the technology she was facing. I wish to express my personal gratitude and thanks to Dr. Vani Hardev for holding the fort in spite of the problems.

With the winter passing off (if you call it a winter in Bangalore!!), we all look forward to the fresh growth of the orchids and before that those species which have taken 'rest' during winter have started coming out with dazzling beautiful flowers. I, for one have a leaning towards species probably because it is nature's creation compared to the manmade hybrids. Well, the species have started blooming which could be seen from the recently concluded Bi Monthly Meeting where several species and hybrids in blooms were at display. It is time for new growths in your orchids, nurture them well with lots of water and nutrition so that it produces wonderful blooms. Those which have completed flowering, if require, do repot them and not those which are about to bloom (repotting is generally done after flowering). The next 7 months is the best growing period take care of your orchids.

Coming to the activities of the society, we had two bi monthly meetings during the period one in December, 2016 and the other one in March 2017. The Society just had its eleventh AGM on 18, March 2017 along with BMM. Very glad to see the improved attendance for AGM and the BMM. Definitely the attendance is on the increase and also in every meeting few new members joining the society. I welcome them to the 'addicting' world of Orchids.

This issue of the NL, has some interesting articles with few new writers contributing (but not new to growing orchids). Sri Agni Mitra a career forester from A & N islands shares his experience of orchid growing with some wonderful pictures from the islands and his own collection. An orchid enthusiast Ms. Shruthi Chari shares her experience of bouncing back to growing orchids after some initial hiccoughs. Dr. Hegde has penned an article on his favorite issue of conservation and he has elaborated the status in India. For a better growing in Bangalore conditions, Sriram Kumar explains the importance of humidity and how to ensure minimum humidity for orchids. Sri. Shankar Hegde from Sirsi,

Karnataka, shares his experience of growing orchids in an interview with Mr. Kansur. With lots of import of orchids going on, I thought it was appropriate to bring out briefly some information on CITES and orchids.

Among the news and events, there has been an initiative from the Government of Karnataka, under the project, Poornachandra Tejaswi Biodiversity Center, has taken up a program to establish an Orchidarium in Kottigehara, Mudigere Taluk of Chikkamagalur district. Needless to say, the society will volunteer to help in its establishment with technical guidance. A really good initiative.

“If I see an orchid that's fantastically expensive, I'll buy it. It's worth it, for no other reason than it gives me pleasure.”

-- Lee Radziwill

Dr. K. S. Shashidhar
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Photographs by Mandeep Kundan, Canada

AN ORCHID JOURNEY THROUGH THE ANDAMAN & NICOBAR ISLANDS

Agni Mitra

It was a day in July 2011 when I got to know that I will be joining the Andaman & Nicobar's Forest Department shortly. Happy and excited, I eagerly awaited the end of last few weeks of our training at the Academy in Dehradun. Soon I found myself in the emerald isles in Sept, 2011 and was posted off to the Middle Andamans for few months of field duties. We went to the dense tropical forests often, and I could see many orchids in bloom. Although I already had a healthy interest in gardening, - I had never looked at orchids with any particular interest. But these fantastic blooms on strange epiphytic plants completely enamoured me with their complicated symmetry and unusual plant habit! I found out that these were mostly species of *Dendrobium* and *Vanda*, notably *D. formosum* (Pic 1) and *V. teres*, blooming in the wild at the Andaman group of islands.

Andaman & Nicobar Islands – Treasure Trove of Tropical Orchids :

Found on all continents of the world except Antarctica, orchids attain their highest degree of diversity in the tropics. India, sporting a diverse range of habitats from the sea coasts to the Himalayas, is home to 1331 species of orchids belonging to 184 genera, - which consists 9% of her floristic diversity. Regions within the country displaying high orchid diversity are the Himalayas, Western Ghats, North Eastern states and Andaman & Nicobar Islands.

Andaman & Nicobar Islands, blessed with a hot and humid tropical climate and a forest cover well over 80%, - is a pristine haven for tropical orchids. The islands receive 3000 mm to 3800 mm of rainfall each year, with average temperatures ranging from 22°C to 32 °C. Due to the insular nature of these islands and their isolation from mainland India, the flora of these islands is quite unique, and the orchid species display affinity to Mynamar, Malaysian and Indonesian flora rather than that of mainland India. (*A Review of the Orchid Diversity of Andaman & Nicobar Islands, India. K. Karthigeyan, J. Jayanthi, R. Sumathi & J. S. Jalal. Richardiana, 2014.*)

The large variety of habitats available in these islands support a wide array of orchid species growing abundantly in the forests. A total of 143 species are reported till date, with 98 epiphytic species and 45 terrestrials. 23 of these 143 species (16%) are endemic to these islands (not found anywhere else). The orchid diversity shown by the Andaman group of Islands is higher than that of the Nicobar Group, and the Genera *Dendrobium* and *Bulbophyllum* shows the highest diversity

My interest in orchids grew with my next posting in the Nicobar Islands, which is even more

tropical and harbours some of the most pristine and unexplored dense tropical wet forests in the



Pic 1 *Den formosum* blooming in the wild at the Andaman group of islands.

country. I disembarked on the verdant shores of Great Nicobar Island in May 2012, and immediately fell in love with that place. There were stunning beaches displaying the whitest of sands that flanked crystal clear deep blue waters. The waters were alive with amazing coral reefs where we could dive a few times. The rainforests were dense, cool, moist, and there was not a single tree in sight which did not have some form of epiphytic life in mosses, ferns, climbers and orchids swathing its trunk and branches. (Pic 2 – Rainforests of Great Nicobar, - ideal orchid habitat.) I saw many orchid species in bloom, each glorious in its own way. But the one that took my breath away was the amazing *Phalaenopsis tetraspis*! Come monsoon and the species was in profuse bloom, - and I had many an occasion to “fill up my senses” with paradisiacal visions of wild specimens high up in the trees. The large plants held swarms of red and white blossoms above their leaves and it stood in brilliant contrast to the wet, greenish darkness of the rain-splashed forests in the backdrop, - a sight to forever remember. (Pic 3 – *Phalaenopsis tetraspis* blooming in the wild at Great Nicobar Island.)



Pic 2 – Rainforests of Great Nicobar, - ideal orchid habitat.



Pic 3 – *Phalaenopsis tetraspis* blooming in the wild at Great Nicobar Island.

Thankfully orchids were still abundant in the forests and unlike North Eastern India there was absolutely no targeted removal of these species from the habitat for trade and export.

Still, I felt a need to establish a basic facility for culture, study and public display of these plants before it is too late. It so happened that scientists of Jawaharlal Nehru Tropical Botanical Garden & Research Institute (JNTBGRI), Trivandrum were carrying out a study on the orchid diversity of Nicobar Islands, and when they visited I could get in touch with them for culture and taxonomic information. I could also visit JNTBGRI later to experience first-hand the excellent culture of their large collection.

Endemic Orchids of Andaman & Nicobar Islands :

23 species of orchids are endemic to Andaman & Nicobar Islands and not found anywhere else in the world. Out of these 23 species, 15 are strictly endemic to the Andaman Group of Islands while 7 are strictly endemic to the Nicobar Group of Islands. *Aerides emericii* is the only endemic species occurring in both the groups. Displaying this high degree of endemism, the fragile ecosystems of these islands are globally recognized as a conservation priority. Efforts by the Department of Environment & Forests are afoot for both in-situ and ex-situ conservation of orchids.

The large variety of habitats available in these islands support a wide array of orchid species growing abundantly in the forests. A total of 143 species are reported till date, with 98 epiphytic species and 45 terrestrials. 23 of these 143 species (16%) are endemic to these islands (not found anywhere else). The orchid diversity shown by the Andaman group of Islands is higher than that of the Nicobar Group, and the Genera *Dendrobium* and *Bulbophyllum* shows the highest diversity. (*A Review of the Orchid Diversity of Andaman & Nicobar Islands, India. K. Karthigeyan, J. Jayanthi, R. Sumathi & J. S. Jalal. Richardiana, 2014.*)

With all this information, I designed a 5000 sq ft orchidarium as part of the Interpretation Centre of Great Nicobar Biosphere Reserve and set out to execute it. Keeping in mind the extreme remoteness of the place (500 km from Port Blair as the crow flies which takes 2 to 3 days of ship journey) and unavailability of any sophisticated items, the design was kept simple and used locally available materials. Plants were also gathered and kept in a temporary facility where the staff were trained in their culture. Keeping in mind that this will be a public display, tropical hybrids were also procured to have a year round flowering display. The work was about 80% complete when I got transferred and handed over the charge of Nicobar Forest Division. The orchidarium was completed in the next few months and inaugurated thereafter. The centre can display more than 2000 epiphytic and terrestrial plants and has 02 artificial waterfalls circulating water through a central water tank complete with an extensive biological filtering system. (Pic 4 – The orchidarium at Great Nicobar Island).

Within a few months of landing at Port Blair, I got charge of Forest Silviculture Division. I found out that the Division had a collection of native orchids in an orchidarium but the facility needed upgradation and the staff needed training for their culture. These were put in place over the next few months. The collection of native species was also augmented through exploration in

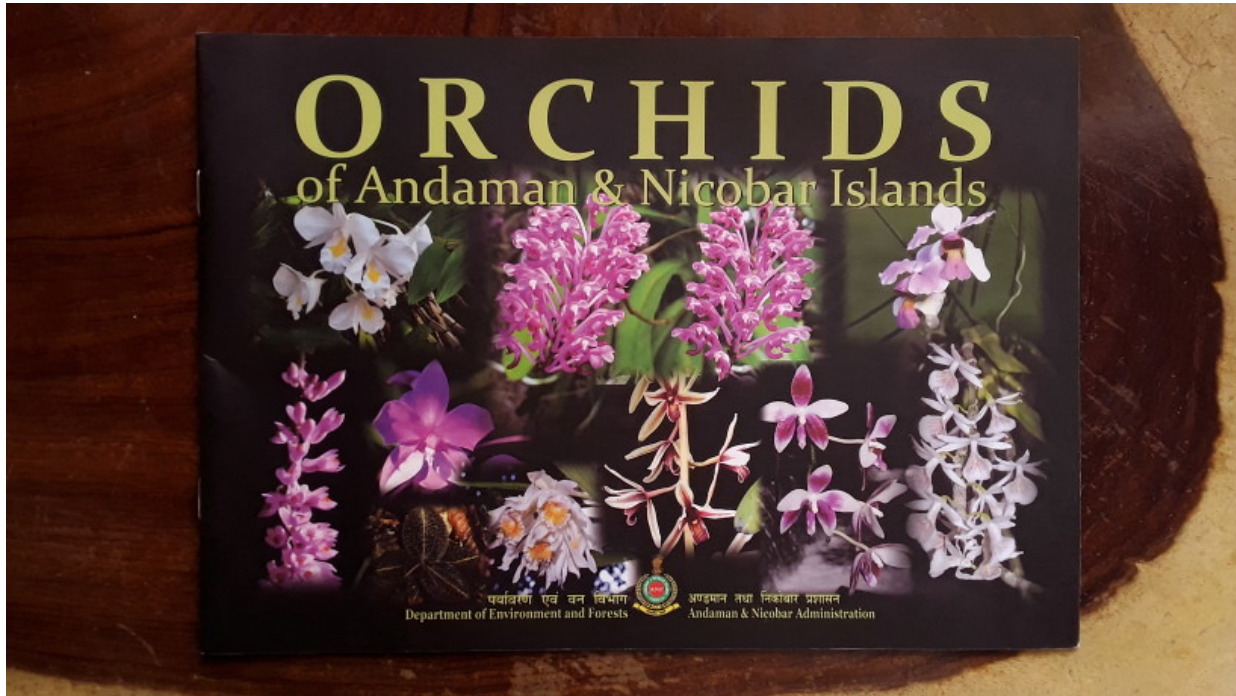
different habitats (Pic 5: *Phal deliciosa* in the wild at Andaman Group of Islands) and an appropriate care regime was put in place. To spread awareness about the native species of the islands, a colourful booklet was brought out along with a desktop calendar for 2016. (Pic 6: Orchid booklet and the 2016 calendar)



Pic 4 – The orchidarium at Great Nicobar Island.



Pic 5- *Phal deliciosa* in the wild at Andaman Group of Islands.



Pic 6 : Orchid booklet and the 2016 calendar

Further, the Andaman & Nicobar Administration decided upon establishing a Botanical Garden and Nature Interpretation Centre at Port Blair, and yours truly got the opportunity to design the same. The main attraction in this tourist facility will be a 10,000 sqft enclosed Butterfly conservatory with circulating waterways and a large waterfall. An orchidarium also features prominently along with a Shade Garden and Grass lawns. Plants for these were also procured and kept in the Silviculture Orchidarium to orient the staff regarding culture of the same. Once open for public visit, this centre will also spread the message of orchid conservation and culture to numerous visitors every day. The work for the project is ongoing.

On this fantastic orchid journey spanning over 05 years I believe that some interest could be sparked in the local inhabitants and government agencies regarding the amazing orchid wealth of Andaman & Nicobar Islands. Even looking at commercial ventures for tropical hybrids, given that South East Asian countries like Indonesia and Malaysia is just across a small span of ocean and have the exact same climatic conditions, - there is nothing that stops these islands from doing equally well in tropical orchid cultivation and export.

Agni Mitra, Indian Forest Service. The writer served in the Andaman & Nicobar Forest Department for 05 years from 2011 to 2016. He is currently on deputation with the Ministry of Environment, Forests & Climate Change, Govt of India.

My Experience of growing Orchids

Shruthi Chari

Hello, I am Shruthi Chari, a young engineer, just graduated from PESIT as a Comp Science Engineer. My mother Rekha Chari is a recent TOSKAR member. We are novices at Orchid growing and I would like to share our experiences till now.

Orchids have fascinated me immensely, for as long as I can remember. It was a visit to the Botanical garden in Singapore about 13 years ago, that kindled the interest in Orchid growing in me. On returning to Bangalore, I wanted to try my hand at growing an orchid, and so I consulted my mother and we zeroed in on buying a plant from Indo American Hybrids. We were both novices and we hardly knew how to nurture the plant, so eventually the plant withered and died in a few months. This dismal incident swayed me away from growing orchids for a while, and made me believe that they are not suited for a non-tropical surrounding.

A couple of years later, my mother regained the confidence and decided to order some Orchid plants online from a vendor who was giving home - grown saplings. Our garden was doing rather well because of the in-house compost, and we were willing to take the risk and venture out into untested waters. We bought a couple of Dendrobiums, and they came with a charcoal medium. It is then that we started reading up on the perfect medium for Orchids, and we realised that since orchids are inherently epiphytes they don't require a traditional soil medium (unless they are terrestrial). We were thrilled to see the first blooms, and we wanted to learn more about this unique art of growing orchids. A friend briefed about us about the existence of the TOSKAR community, where all orchid lovers meet and share their knowledge and experiences about growing orchids. We were excited and we attended one of the bi-monthly meets in August 2016, this proved to be an eye-opener for both of us.

It was the first time that we were exposed to the innovations, improvisations and techniques that Bangaloreans are adopting to recreate the perfect environment conducive for orchid growth. The large display of flowering orchid plants of various hybrids and species, instilled in us hope that our endeavour is not misguided and far-fetched. Subsequently, my mother enrolled as a TOSKAR member, and we have been using the inputs from the Newsletter, mailing and Facebook groups to provide good care to our orchids. Today we are proud owners of 16 orchid plants, consisting of Dendrobiums, Oncidiums, Cattleyas and Vandas. I believe that Orchids can be likened to pets, and they are unlike other plants and require special attention and growth conditions. Due to the varied water and sunlight conditions in the forests that they are native to, most orchid species have developed different needs and resistances to suit their environments. I have found immense solace and I have been able to handle work stress much better, because of this green hobby I have slowly started to develop.

My mornings feel incomplete if I haven't watered my orchids and inspected the condition of the roots, checked the leaves for ticks, or looked around for a new shoot or a bud. Having had the opportunity of witnessing a few blooms, I am now more confident in planting an orchid. We have almost found the perfect balance in the medium that is sufficient for most species, we use a combination of charcoal + compost + coconut fibres depending on the orchid plant. I have also learnt to digest the fact that certain orchids do not need a heavy medium, and so it is imperative that the roots be exposed to air; I use a minimal coconut fibre packing in such cases. Our orchids are as dear to me, as any other family member and I get really worried and I always try to find a solution when I see some of the plants drying up, getting discoloured or developing spots. Orchid cultivation has taught me a lot of qualities like patience and perseverance, and the journey has just begun and I look forward to collecting and nurturing a large variety of orchids. I hope to pick up an orchid native to a region, on every trip that I undertake; I would like to mark and remember my travels by these versatile green gems.

STATUS OF ORCHID CONSERVATION IN INDIA PART – II: Endemism, Threat Status & Causes of Threat

Sadananda Hegde

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Endemism: It is interesting to note, as many as 404 out of 1350 species of orchids are endemic to India exhibiting high degree of endemism to the extent of 30%, especially in Northeast Himalayas and Western Ghats regions. If the new species described in the recent years are included, the percentage of endemism goes up to 35% in India (Chowdhery 2013). As can be seen in Table – 1 out of 404 species 209 species are endemic in Northeast Region and 155 species in Western Ghats. Andaman & Nicobar Islands also exhibits high endemism with 30 species as endemic, while Western Himalayas and Eastern Ghats show 5 species each. It is pertinent to note that Northeast Himalayan region is young and rich in biodiversity, actively involved in speciation as compared to Western Ghats ranges which is an older land mass with lesser biodiversity restricted to certain specialized ecological niche within Western Ghats. Whenever such specialized niches deteriorate and get disturbed and destroyed due to various natural and manmade causes, many endemic species face the threat of their existence and attain different degrees of endangered status (Rao & Sridhar, 2007). Orchids, in the course of evolution have attained epiphytism and tree canopy is important for their existence. Unfortunately, tree cover is diminishing day by day destroying the habitat of orchids which is of great concern to conserve them. It is pertinent to mention here that 65% of orchids known in India are epiphytes and the rest of the species are terrestrials growing under forest floor, in open grass land or on moss covered rocks either as leafy terrestrials, saprophytes (mycotrophs) or lithophytes.

Threat Status: Over the last half a century, with the increasing survey and floristic works by the Botanical Survey of India and the Botanists from the Universities and Research Institutions, there has been alarming reports of loss of natural habitats and missing species of orchids from across the country. In order to facilitate works on conserving the dwindling flora, Jain & Sastry (1983) for the first time brought out “A Catalogue of Threatened Plants of India” in which 34 species of Orchids have been listed in tune with IUCN Plants Campaign Program in India. This is followed by another publication listing the distribution of 690 species belonging to 128 genera adding 17 new species of Orchids of Northeast India and Sikkim (Kataki, *et al* 1984). Besides, the list also includes 230 rare, endemic and threatened species out of 925 species recorded till then in India. In the same year, Kataki, Jain & Sastry (1984) brought out another publication, “Threatened & Endemic Orchids of North-eastern India” under the Project on Study, Survey and Conservation of Endangered Species of India, with detailed illustrations /drawing of species, notes on their habitat distribution and threatened status of 120 orchid species. Based on the IUCN guidelines, Nayar & Sastry (1987) published the first volume of Red Data Book of Indian

Plants (Vol-I) in which 42 species of rare, endangered and threatened orchids have been described suggesting conservation measures. Subsequent work on status analysis has revealed as many as 105 species in 46 genera as falling under various categories of threat (ENVIS 2003). Further works in this direction have thrown light on the threatened status of various orchids distributed in various states and Union Territories of India (ENVIS 2013). Based on these reports and on critical examination and analysis of distribution of threatened species in various States, threat status of various species has been presented in Table -1. Accordingly, as many as 415 species fall under rare (91), endangered (67), threatened (109), Indeterminate (102), vulnerable (46) and Extinct or near extinct (24) category (Table - 1). However, further intensive scientific survey and study might throw light on the actual status of these species. It is alarming to note that as many as 24 species of orchids are on the verge of becoming extinct or nearly extinct. However, intensive survey for these species is required to come to final conclusion.

Besides, Botanical Survey of India has also brought out a Red list of 65 species (ENVIS 2013) that require immediate attention and conservation measures *in situ* or *ex situ* in sanctuaries and gardens (Table – 2).

Table- 2: Red listed Orchid species of India with State of occurrence and endangered Status.

| S. No. | Name of Species | State of occurrence | Endangered Status |
|--------|--|-------------------------------|--------------------------|
| 1. | <i>Anoectochilus nicobaricus</i> Balakr. et P. Chakarab. | Great Nicobar Island | E |
| 2. | <i>Anoectochilus rotundifolius</i> (Blatt.) Balakr. | Tamil Nadu | E or Possibly Extinct |
| 3. | <i>Anoectochilus tetrapteris</i> Hook. f. | Manipur | V or Possibly Endangered |
| 4. | <i>Aphyllorchis gollani</i> Duthie | Uttar Pradesh (Tehri Garhwal) | E or Possibly Extinct |
| 5. | <i>Aphyllorchis parviflora</i> King & Pantl. | Uttar Pradesh (Garhwal) | R |
| 6. | <i>Archineottia microglottis</i> (Duthie) Chen | Uttar Pradesh (Garhwal) | R |
| 7. | <i>Bulbophyllum acutiflorum</i> A. Rich. | Tamil Nadu | R |
| 8. | <i>Bulbophyllum albidum</i> Hook. f. | Tamil Nadu | R |
| 9. | <i>Bulbophyllum aureum</i> (Hook. f.) J.J. Sm. | Kerala | R |
| 10. | <i>Bulbophyllum elegantulum</i> (Rolfe) J.J. Sm. | Karnataka | V |
| 11. | <i>Bulbophyllum kaitiense</i> (Wight) Reichb. f. Duthie | Nilgiris | V |

| | | | |
|-----|--|--|---------------------------|
| 12. | <i>Bulleyia yunnanensis</i> Schltr. | Arunachal Pradesh, West Bengal | R |
| 13. | <i>Calanthe alpina</i> Hook. f. ex Lindl. | Uttar Pradesh (Garhwal) | R |
| 14. | <i>Calanthe anthropophora</i> Ridley | Meghalaya | E |
| 15. | <i>Calanthe mannii</i> Hook. f. | Arunachal Pradesh, Uttar Pradesh (Garhwal), Sikkim | R |
| 16. | <i>Calanthe pachystalix</i> Reichb. f. ex Hook. f. | Himachal Pradesh, Uttar Pradesh (Mussoorie) | E |
| 17. | <i>Chrysoglossum hallbergii</i> Blatt. | Peninsular India (Tamil Nadu) | I or Insufficiently Known |
| 18. | <i>Coelogyne mossiae</i> Rolfe | Peninsular India | V |
| 19. | <i>Coelogyne rossiana</i> Reichb. f. | Assam, Mizoram | V |
| 20. | <i>Coelogyne treutleri</i> Hook. f. | Sikkim | Possibly Extinct |
| 21. | <i>Corybus purpureus</i> Joseph et Yog. | Meghalaya | R |
| 22. | <i>Corymborkis veratifolia</i> (Reinw.) Bl. | Tamil Nadu | R |
| 23. | <i>Cymbidium eburneum</i> Lindl. | Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim | V |
| 24. | <i>Cymbidium hookerianum</i> Reichb. f. | Uttar Pradesh (Kumaon), Arunachal Pradesh, Sikkim | V |
| 25. | <i>Cymbidium tigrinum</i> Parish | Nagaland | R |
| 26. | <i>Cymbidium whiteae</i> King & Pantl. | N.E. Himalaya, Sikkim | E |
| 27. | <i>Cypripedium cordigerum</i> D. Don | Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh (Garhwal) | R |
| 28. | <i>Cypripedium elegans</i> Reichb. f. | Sikkim, Uttar Pradesh (Garhwal) | R |
| 29. | <i>Cypripedium himalaicum</i> Rolfe | Sikkim, Uttar Pradesh (Garhwal, Kumaon) | R |
| 30. | <i>Dendrobium arachnites</i> Reichb. f. | India | V |
| 31. | <i>Dendrobium aurantiacum</i> Reichb. f. | Assam | E |

| | | | |
|-----|--|-------------------------------------|-----------------------|
| 32. | <i>Dendrobium tenuicaule</i> Hook. f. | Middle Andaman Island | E |
| 33. | <i>Didickea cunninghamii</i> King et Prain ex King et Pantl. | Sikkim, Uttar Pradesh (Garhwal) | E |
| 34. | <i>Diplomeris hirsuta</i> (Lindl.) Lindl. | Uttar Pradesh (Kumaon), West Bengal | V |
| 35. | <i>Diplomeris pulchella</i> D. Don | Meghalaya, Arunachal Pradesh | V |
| 36. | <i>Eria albiflora</i> Rolfe | Tamil Nadu, Kerala, Karnataka | R |
| 37. | <i>Eria occidentalis</i> Seid. | Uttar Pradesh (Kumaon) | R |
| 38. | <i>Eulophia mackinnonii</i> Duthie | Uttar Pradesh, Madhya Pradesh | R |
| 39. | <i>Eulophia nicobarica</i> Balakr. & N.G. Nair | Nicobar Islands | E |
| 40. | <i>Flickingeria hesperis</i> Seid. | Uttar Pradesh (Kumaon) | E |
| 41. | <i>Habenaria andamanica</i> Hook. f. | South Andaman Island | R |
| 42. | <i>Habenaria barnesii</i> Summerh. | Tamil Nadu, Kerala | R |
| 43. | <i>Habenaria panchgeniensis</i> Sant. & Kapad. | Maharashtra | R |
| 44. | <i>Ipea malabarica</i> (Reichb. f.) Hook. f. | Kerala | E |
| 45. | <i>Liparis biloba</i> Wight | Tamil Nadu | V |
| 46. | <i>Malleola andamanica</i> Balakr. & Bhargava | Andaman Islands | E |
| 47. | <i>Neottia inayatii</i> (Duthie) Beauv. | Jammu & Kashmir | R |
| 48. | <i>Oberonia brachyphylla</i> Blatt. & McCann | Karnataka, Kerala | R |
| 49. | <i>Paphiopedilum druryi</i> (Bedd.) Stein | Kerala | E or Possibly Extinct |
| 50. | <i>Paphiopedilum fairrieianum</i> (Lindl.) Stein | Sikkim, Arunachal Pradesh | E |
| 51. | <i>Paphiopedilum hirsutissimum</i> (Lindl. ex Hook.) Stein | Meghalaya | R |
| 52. | <i>Paphiopedilum insigne</i> (Wall. ex Lindl.) Pfitz. | Meghalaya | V |
| 53. | <i>Paphiopedilum specerianum</i> (Reichb. f.) Pfitz. | Manipur | V |

| | | | |
|-----|---|----------------------------|-----------------------|
| 54. | <i>Paphiopedilum venustum</i> (Wall. ex Sims.) Pfitz. | Meghalaya, Sikkim | V |
| 55. | <i>Paphiopedilum villosum</i> (Lindl.) Stein | Mizoram | V |
| 56. | <i>Paphiopedilum wardii</i> Summerh. | Arunachal Pradesh | E |
| 57. | <i>Phalaenopsis speciosa</i> Reichb. f. | Andaman & Nicobar Islands | E |
| 58. | <i>Pholidota wattii</i> King et Pantl. | Arunachal Pradesh, Assam | R |
| 59. | <i>Pleione lagenaria</i> Lindl. | Meghalaya | Presumed Extinct |
| 60. | <i>Renanthera imschootiana</i> Rolfe | Manipur, Nagaland, Mizoram | E |
| 61. | <i>Taeniophyllum andamanicum</i> Balakr. & Bhargava | Andaman Islands | E |
| 62. | <i>Vanda coerulea</i> Griff. ex Lindl. | North East India | R |
| 63. | <i>Vanda wightii</i> Reichb. f. | Tamil Nadu | Possibly Extinct |
| 64. | <i>Vanilla wightiana</i> Lindl. | Tamil Nadu, Kerala | R |
| 65. | <i>Zeuxine pulchra</i> King et Pantl. | Sikkim, Meghalaya | E or Possibly Extinct |

According to this list, out 65 species Red Listed, 27 species are rare, 16 endangered, 14 vulnerable, 7 possibly extinct and 1 indeterminate which need immediate retrieval and conservation measures.

Causes of Threat: Although IUCN's Threatened Plant Committee has listed about 23 causes of threat, in the Indian context, following are the main Threat to the survival and proliferation of Orchids:

- a) Over exploitation of Ornamental /medicinal /botanical orchids
- b) Forestry practices
- c) Traditional Agricultural practices
- d) Agriculture, Horticulture & Plantation crop expansion
- e) New settlements & Urbanizations
- f) Road Building
- g) Construction of Dams and Hydropower projects,
- h) Industrial Expansion
- i) Natural Calamities: Forest Fire, Flood, Climate change etc
- j) Grazing

- k) Mining
- l) Lack of Pollinators

Among the above causes, over exploitation of ornamental /medicinal /botanical orchids has taken a toll of large number of species, even destroying the original habitats of some the species. Although our country has about 1350 species of orchids occurring naturally, only about 200 species are ornamental having commercial value. Others are mostly botanical curiosities contributing to bio-diversity of the region. Important among them are those belonging to the genera *Cymbidium*, *Dendrobium*, *Paphiopedilum* and *Vanda*, besides *Aerides*, *Aoectochilus*, *Arachnis*, *Ascocentrum*, *Calanthe*, *Coelogyne*, *Eria*, *Gastrochilus* *Goodyera*, *Phalaenopsis*, *Pleione*, *Renanthera*, *Spathoglottis*, amongst others. For the past one century, large numbers of these native species have been traded with other countries – especially U.K. and Europe from Sikkim, Kalimpong, Shillong and other centers in India which has contributed to the erosion of our valuable germplasm and at the same time contributed to the development of several new hybrids of commerce elsewhere in the world.

Clearance of forest for timber extraction and subsequent mono culture of commercial timber species has taken large chunk of virgin forests, destroying not only orchid resources, but also other biodiversity including pollinators. Forest fire, natural and manmade, also has significantly contributed to the loss of germplasm of orchids throughout the country. In the North-eastern States, traditional jhum or slash & burn agriculture system has mostly impacted some of the important orchid habitats. Further, in the recent years, due to increase in population and urbanization and reduction in the jhum cycle, have deteriorated the natural habitat of many species. Plantation crops like tea, coffee, rubber, etc, besides mining, hydroelectric and irrigation dams, roads have aggravated the situation throughout the country.

Thus, our precious heritage is dwindling in nature day by day with the multifarious developmental activities and indiscriminate collection for trade, giving no heed for conservation. The blue and red Vandas that adored the forests of NE India in the past, and collected in head loads, by the earlier Botanists like J. D. Hooker in the 18th century, are today hardly found in the wild and are listed under threatened category of Wildlife Conservation Act. So also, the curious *Paphiopedilums* – the lady slipper orchids like *Paphiopedilum wardii* and *P. druryii* are under threat and on the verge of extinction.

***This is the second part of the paper presented at the World Orchid Conference 2014 in Johannesburg, South Africa. First part of the paper has been published in the Orchid Newsletter, issue no. 3 & 4, dated 23rd December, 2016.**

Relative Humidity and Its Importance in Orchid Culture

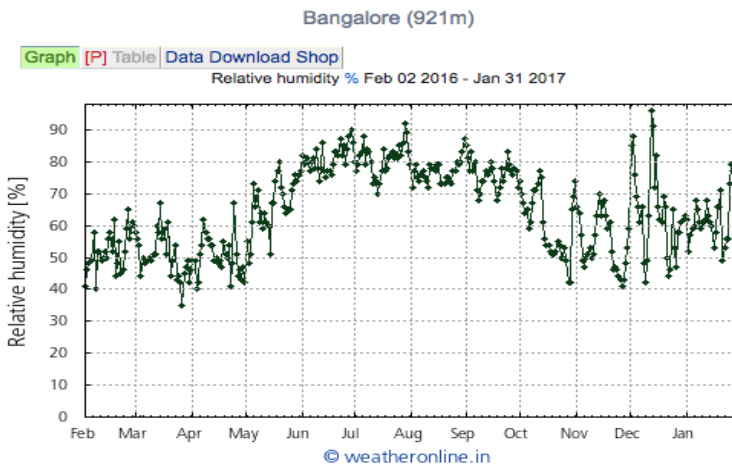
Sriram Kumar

Relative Humidity is the amount of water vapor in the air, expressed as a percentage of the maximum amount that the air could hold at the given temperature. Most of the orchids from tropics and sub tropics where high relative humidity is a norm. All orchids do their best when relative humidity (%) ranges from 50-80%.

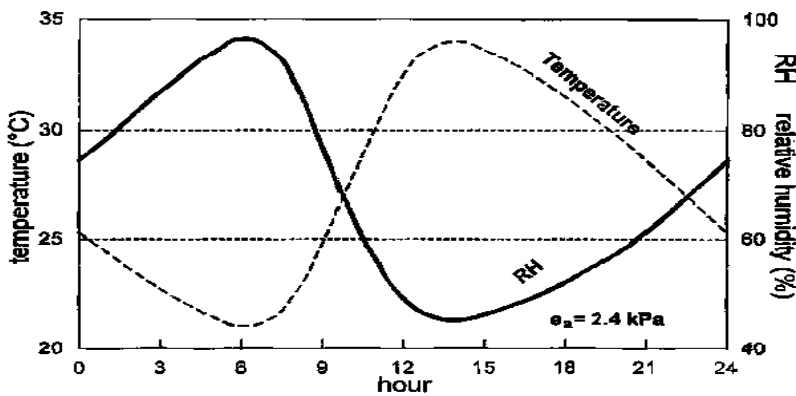
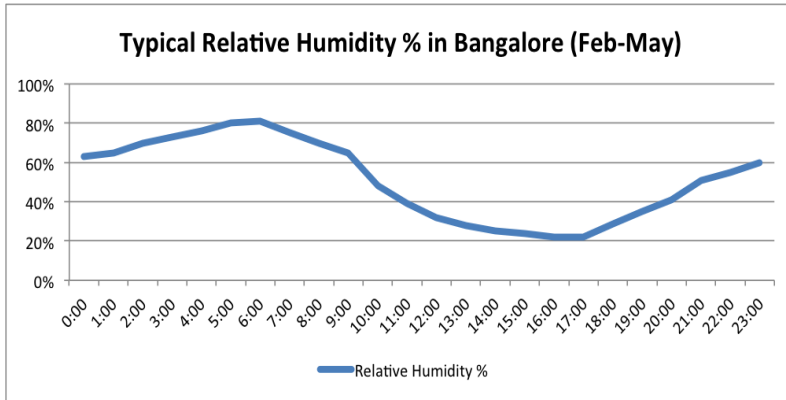
Through their pores (stomata), orchids in take Carbon dioxide and give out water (transpiration). If the relative humidity is low, they give out more water. If rate of root absorption of water were lower than rate of transpiration then the plant would become dehydrated soon. Shriveling of pseudobulbs/canes/leaves/roots are symptoms of higher levels of water loss.

In general, maintaining a humidity of 40% during the daytime and 60% during night would be ideal. Investing in a small humidity gauge is a necessity to understand the seasonal changes in the humidity levels in your grow area and it would help you indicate on when to supplement additional humidity.

Relative Humidity Fluctuation in Bangalore



Period of February to end of May is a period of relatively low humidity in Bangalore. Some of the days, humidity can drop to under 20% and could impact the health of orchids if not cared for.



Relative Humidity % and temperature are inversely related. Increase in temperature reduces Relative Humidity % and vice versa. Misting/watering around the time of low humidity would help the plants to recover from loss of water. Watering the surrounding or misting would be best benefited between 12 hours to 16 hours.

Ways to Increase Humidity

Increasing humidity in an open area is very difficult and relatively easier to increase humidity in an enclosed area. There are a number of ways to increase humidity in your grow area.

- a) Companion Plants
- b) Humidity trays
- c) Humidifiers/Misting/Fogging units

Companion Plants

Keeping the orchids together is one of the best ways to preserve the relative humidity. Adding a few companion plants (Anthuriums / ferns / Other plants) would also help in adding an extra bit of relative humidity. Each plant gives off humidity through transpiration. Co-locating plants creates good humidity around the plants.

Misting Multiple Times a day

Hosing watering manually multiple times a day would benefit during period of low humidity. If the orchid collection is relatively large then could become too much of manual work.

Hosing the floor/gravel or laying gunny bags on the floor and wetting them thoroughly would help retain moisture for a longer duration.

Humidity Trays

Water holding trays filled with small size gravel are filled with water just below the surface. Pots are kept on the gravel and are not in direct touch with the water. Though this way, relative humidity does increase significantly but root zone would benefit from extra relative humidity

Humidifiers/Misting/Fogging units

Installing overhead misters and controlling them through a thermostat or a timer would be a better way to control the humidity in large outdoor grow areas. Timers can be controlled to switch on and switch off up to 30 seconds-1 minute precision.

CITES and ORCHIDS

K S Shashidhar

Orchids occupy a special position amongst the flowering plants. Its unique flowers with varying shapes, sizes, fragrance and longevity is unparalleled in the plant world. The natural habitats of epiphytes and terrestrials are also exclusive in the way that most of the epiphytes have the tropical forests as their native habitat, while most of the terrestrials thrive on grasslands. Looking back, the pressure on the forests has resulted in their degradation and fragmentation in tropical areas and has caused a havoc on the population of numerous orchids. In addition, the attractive orchids have to face the brunt of the collectors rage and the commercial people. All these have resulted in pushing many orchids to various degree of threats in their native habitats ranging from threatened to endangered categories. With the awareness about orchids role not only from the plants and the flowers, but as an indicator of health of the ecosystem, various efforts have been made to conserve these unique species in its natural habitats world over.

With passage of time, the fancy and liking for orchids world over has been on the rise aided by hybridization and intervention of technology like micropropagation, orchids are all set to take over the industry with billions of dollars' trade. Despite these efforts to conserve and create awareness, there has been still demand for wild orchids world over and with commanding huge prices and often resulting in illegal collection and trade.

With this background, CITES, the convention on International Trade in Endangered species of wild flora and fauna, is an International agreement between different parties (Governments). The main aim is to ensure that International Trade in species of wild animals and plants do not threaten their survival in wild. In 1960's when the idea of CITES were first formed, it was done keeping in view the future prospects. With the annual trade in the International scenario in wild flora and fauna estimated to be worth billions of dollars with wide array of plants and animals and its products being traded, the objective was to ensure that flora and fauna survives world over in its natural habitat. On one hand, habitat loss, its fragmentation is already depleting the populations of flora and fauna in addition to the high volume of trade in some of the plants and animals resulted in over exploitation. Although many of the plants and animal species traded are not endangered but to ensure its survival and sustainability a restraint is essentials of the trade agreement. CITES also protects about 35, 000 species of animals and plants in varying degrees and both in the form of live specimen or dead or dried herbs. CITES is an international agreement to which the countries who have signed voluntarily will adhere to this and all parties (countries) concerned will respect the agreement and will adopt a legislation to ensure CITES is implemented at National levels also.

In this article in the next few paragraphs, I have tried briefly to bring out the provisions of CITES in brief directly related to plants including the hybrids and flasketed seedlings.

How Does CITES works....

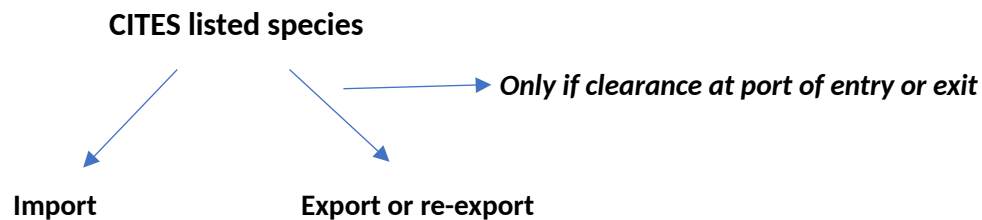
CITES works by exercising control on the international trade of selected species of flora and fauna. All imports, export and re-export are channelized through a system managed by the designated authorities in the country. For example, for plants and animals, Ministry of Environment & Forests and Climate Change have designated Additional Inspector General of Forests (Wildlife) and the Deputy Directors of Wildlife as the authorities to inspect the material. Different species are covered under the Appendices in CITES depending on the protection they require.

Appendix I: Includes species threatened with extinct, trade is only allowed in exceptional circumstances

Appendix II: Species not really threatened with extinction but restricted in trade to ensure better survival.

A set of biological and trade criteria will help in determining whether a species should go under Appendix I or II. The parties (countries) will submit proposals based on the criteria for amendment of these two Appendices.

Appendix III: Includes species that are protected in at least one country and has asked the other parties for their help in controlling the trade.



Regulation of Plants in Trade (Conf 11.11)

Clause 2. Determines that the term ‘artificially propagated’ shall be interpreted to refer the plant specimen.

- Artificially propagated refers to those specimen...
 - Grown under controlled conditions
 - Grown from seeds, cuttings, divisions, callus tissues, or other plant tissues, spores or other propagules that are either exempt from the provisions of the Convention or have been derived from cultivated parental stock.
- Plants grown from cuttings or divisions are considered to be artificially propagated only if the traded specimen do not contain any material collected from the wild.
- Exceptions are granted from above in cases of long gestation period plants such as tree species

Regarding Hybrids....

6. Determines that

(a) hybrids shall be subjected to the provisions of the Convention even though not specifically included in the Appendices if one or both their parents are of taxa included in the Appendices, unless the hybrids are excluded from CITES controls by a specific annotation in Appendix I or II.

Regarding flaked seedlings...

All orchid species are included in Appendix I or II of CITES.

8. Recommends that flaked seedlings of orchid species included in Appendix I obtained *in vitro*, in solid or liquid media, and transported in sterile containers be interpreted as being exempt from CITES control only if they have been artificially propagated in accordance with the definition provided above, considering the provisions of article VII para 4 and Article I, para (b)(iii) and agreeing to a derogation for resolution conference 9.6 (RV. CoP 16) from this exemption.

Few examples of checklist of species under CITES

Paphiopedilum charlesworthii - App I - Seedling or tissue culture obtained is *in vitro*, in solid or liquid media and transported in sterile containers are not subject to provisions of the convention only if the specimen meet the definition of artificially propagated agreement by conference of parties in resolution Conf. 11.11

Indian species Of *Paphiopedilum*s which are in Appendix I are

Paphiopedilum fairrieanum

Paphiopedilum venustum

Paphiopedilum insigne

Others are, *Paphioepdilum rothschildianum* and *Vanda coerulea*

Enforcement of CITES for orchids involves control at various levels. Within the exporting country it is generally carried out by inspecting the nurseries, traders, markets and of the plats at the time of exporting. Inspection within the importing country starts with controls at the time of import and afterwards.

There is a need for enforcement teams to be well trained to identify the specimen which are check listed in CITES. The procedure should involve checking the documentation as well as plants. But mostly, the custom officials will check the documentation. Generally, a scientific

authority in the form of Government Department representatives will be experts on orchids and they should be drafted for this work. There is a need to be conversant in distinguishing between wild and artificially propagated plants. Generally wild collected ones carry marks while growing in its natural habitat and also carry insect attack marks, often with dead and physically damaged leaves which are desiccated. The roots are also broken, dead and often cut off with new roots emerging from the damaged areas. Roots also often carry substrate material where they have been growing. Contrary to this, artificially propagated are of uniform size and are neat and clean and easily identifiable.

A small effort is made to create awareness about CITES objectives and provisions here in a brief manner.

References

- 1) www.cites.org
- 2) CITES and Slipper Orchids, www.kew.org/sites/default/files/EnglishCITESlipperOrchids1.ppt
- 3) <https://cites.unia.es>

Shankar Hegde - A Betel-nut Farmer becomes an Ardent Orchid Grower

K. R. Kansur
Siddapur, Uttara Kannda district.

Western Ghats of Karnataka is endowed with rich biodiversity – both wild and cultivated. Hilly terrain of this area crisscrossed by number of rivers, rivulets and streams draining down the valleys supports both forests on hills and agriculture & plantations on the sloppy terrain & valleys. In Uttara Kannada District the valleys are normally used for growing Areca/betel nut and to some extent paddy & other minor crops like banana, pepper and cardamom, etc. to supplement their economy. The villages in these areas are very small with only few houses here & there on the slopes of the valley. Areca nut is the main commercial crop. During rainy season from June to September, most of the villages are cut off due to torrential rains.

Forests around the villages support number of timber & minor forest produces, which support the villages for their fuel, fodder, leaf mulch, wild fruits and medicinal plants for minor ailments. These forests, normally referred to as “Betta & Bena” which abound with wild flowering herbs & shrubs which are used during Poojas & festivals. One of the precious flowers that this forest abounds is that of Orchids which people adore as “Seete dande” or “Seetale” during flowering time. However, commercially these are not exploited, nor grown as ornamental, by the local inhabitants.

Shankar Hegde is an agriculturist hailing from a remote village, Vanalli of Sirsi Taluk, Uttara Kannada District. After high School education, he started assisting his parents in agriculture and evinced interest in applying the scientific innovations in areca nut plantations and allied sector like floriculture as supplemental crop. This won him many awards and appreciation. Under the sponsorship of Government, he received an exposure training in Israel. Orchids are his latest passion which he has mastered from nursery to market.

In the second week of December 2016, I called up Shankar Hegde I happened to visit his place to see his orchids for which has become famous in the whole of Uttara Kannada District and adjacent areas. So, both my wife and I visited orchid farm at Vanalli, a remote village, about 25 K.M. from Sirsi town deep inside the forested area. Surprisingly, the village consisted of only two houses – one Shankar’s and the other his cousins with a total population of about 12 -14! Shankar Hegde was just waiting for us outside his house and welcomed us. After exchanging preliminary niceties and receiving warm hospitality, I started enquiring about his Orchids. He smilingly took us out of the house to find ourselves in an evergreen environment of hills of Western Ghats, overlooking the green plantations of Areca nut palms gently swinging their crown with red & green mature bunches of nuts.

Down below on one side of foot-hills, we could notice greenhouses – Orchid houses. Shankar Hegde lead us through a narrow path along the slope towards his orchid house commenting on various issues of agriculture/floriculture, particularly orchids and answering

queries that I have been making in between. Following is the gist of our conversations that I would like share with you.

KRK: What made you and inspired you to take up Orchid cultivation?

Shankar_Hegde: Basically, I am an arecanut grower. I grow betelnuts, pepper, banana etc. in a small land. In 2001- 2002, arecanut price had fallen deeply and I was in search of an alternative crop to support & supplement my earning. At that time, “KANFLORA” (North Kanara District Flower Growers Association) held a Seminar on Orchid Cultivation, which I attended. The seminar gave me scientific information about its cultivation.

This acted as an eye-opener and decided to take up Orchid Growing in addition to traditional agriculture. You know, I studied only up to S.S.L.C.

KRK: How did you build poly house? What is the purpose of it?

Shankar Hegde: Orchids cannot be grown in the open field; poly-house is necessary to maintain humidity and temperature for the plants. It also protects from ants and insects. In the beginning I have undergone a training at Indian Institute of Horticulture Research, Bangalore. This gave an idea of constructing poly-house. Along with my friends from “KANFLOA”, it was possible build & fix more than 25 poly-houses in Sirsi, Siddapur, and Yallapur to spread the sweet smell of Orchid cultivation.

KRK: What is the size of your Poly-House and how many orchids can be cultivated?

Shankar Hegde: 50x20 sq. ft. (1000 sq. ft.) is the standard size to grow 1000 plants in pots. I have two such units.

KRK: What is the purpose of orchid growing and what species & hybrids you grow?

Shankar Hegde: It is mainly for commercial purpose to produce cut-flowers and pot plants. So, commercial cut-flower hybrid varieties of Dendrobium ‘Sonia’, Bicolor, White Mutation, Changmayee Pink, Singapore Red, Karen No.4, Changmai Gold(Yellow), etc., are grown in large numbers; besides Phalaenopsis, Mokara and Vanda Hybrid varieties. I grow some anthuriums and succulents also.

KRK: Have you received any government help?

Shankar Hegde: Yes, course! I have received subsidy and Co-operation from time to time by agriculture and horticulture department. I have taken guidance from Dr. Sadananda Hegde whom I never forget.

KRK: Where do you market your cut-flowers? And at what price?

Shankar Hegde: In India there is a huge demand for Orchid flowers. And it has export potential also. I dispatch Cut-flowers to Bangalore, Mangalore, and Goa. Usually I get Rs. 2 per flower.

KRK: If you don't mind, may I ask you income derived per-annum from this cultivation?

Shankar Hegde: Why not. Only Rs 10,000/- from flowers but Rs 35,000/- by selling flower plants after deducting all costs of maintenance & production. I participated 6 times, at Lalbagh flower show and I am thankful to Dr. V. S. Hittalamani who arranged staying facilities.

KRK: Do you have you a labour problem?

Shankar Hegde: No not at all. Since my unit is small measuring 50x20'(1000 sq. ft.) and 45x25'(1,125 sq. ft.) totalling 2125 sq. ft. in size only, my family members – parents, wife & children manage my unit happily.

KRK: How many farmers cultivate orchids in your area?

Shankar Hegde: Ass many as 65 farmers have been cultivating cut- flower Dendrobiums successfully for about five year. But, I am very sorry to say now that though government is supporting and there is profit in it, except me all others have left orchid cultivation, mainly because of good price for arecanut. Besides, there are constraints in commercial orchid growing such as availability of quality planting material at reasonable rates, marketing facilities, and low price for the cut-flower products. Government s attention is required in this direction to sort of these problems.

KRK: Have you received any awards for your achievements?

Shankar Hegde: Yes. In 2006 “National Orchid Show and Seminar held at Punjab University, Chandigarh, I got 2nd prize for my Orchid flowers and in 2007 in Allahabad, UP, Orchid Society of India conducted the same type of national level Seminar and Orchid Show in which I received “The best Orchid Grower “Award. I am also, happy because I was honored at my native High School and Gram Panchayat. I also received Dr. Marigowda Award in 2010 by ex. Chief Minister, Yadiyurappa, in Bangalore.

KRK: Do you have visitors to your Orchid unit?

Shankar Hegde: Of course yes. Generally, 10-15 visitors are there per month. Sometimes, School children come for picnic. Some distinguished visitors are: Mr. Ritesh Kundoor Singh, D.C Karwar who visited twice and Dr. A. A. Patil, from Agriculture University Dharawad, who appreciated my hard work and devotion in growing orchids.

KRK: What is your message to the youths of today?

Shankar Hegde: Villages in the Western Ghats area are suitable in growing varieties of orchids. A coordinated effort is required to achieve growth of this sector. Secondly, I think one can achieve anything and everything channelizing one’s talent and attitude by residing in village area instead of migrating to cities. Today, information and technology have reached every nook and corner of the World. It does not matter where one lives but what he does for himself and to the society around him is more important. Isn’t it?

KRK: Yes. Thank You and I agree with you. You are a role model to the younger generation. “GOOD LUCK”.



Shankar Hegde inside his orchid house at Vanalli



Inside view of poly house with varieties Dendrobium clones in bloom

KARNATAKA GOVERNMENT PLANS ORCHIDARIUM AT KOTTIGEHAARA, MUDIGERE, CHIKKAMAGALURU DISTRICT.

Karnataka government, under the project “**Poornachandra Tejaswi Jeeva vaividhya Kendra**” (Poornachandra Tejaswi Biodiversity Center) has planned to develop an Orchidarium to conserve, propagate, educate and create awareness on orchid conservation and growing them as a supplemental crop by the local inhabitants, as per Mr. Eshwara Prasad, an NGO from **Parisara** - Environment Protection Organization, based in Bangalore. The Center is being developed in fond memory of late Poornachandra Tejaswi a popular kannada writer known for his love for wildlife – flora and fauna, especially for the amazing diversity of orchids and insects in Western Ghats.

Presently, District Commissioner is the chairman of the project implementation committee of the proposed “Poornachandra Tejaswi Biodiversity Center at Kottigehaara and Technical and research works are coordinated by the Horticulture Research Center of GKVK, Mudigere. The proposed center is in one hectare area on an undulating hill top with a picturesque view of the ever-green landscape along the Mudigere – Mangalore Highway. Already the administrative block building has come up on the site. The admirers of late Poornachandra Tejaswi of Karnataka and Tejaswi’s wife Rajeshwari are keen to see that the Center comes up well and should become a place of learning, conservation of biodiversity – Orchids, insects and rare & endangered species of Western Ghats of Karnataka. Local leader, Mr. B. L Shankar has also taken keen interest in developing this center and as advised by him, a team of experts have been constituted consisting of Dr. M. Sanjappa, Ex. Director, BSI, Mr. Ramakrishna, ex-Director, ZSI, Dr. K. S. Shashidhar, IFS(retired), Ex PCCF, Nagaland and Dr. Sadananda Hegde, ex- Director, FRI, & Orchidologist, Itanagar, Arunachal Pradesh and coordinated by Mr. Eshwara Prasad from Parisara, Bangalore

Accordingly, first batch of experts from the team consisting of Dr. M. Sanjappa. Dr. Sadananda Hegde and Mr. Eshwara Prasad visited the site recently and found it ideally suited for the development of Biodiversity Center with the main component of Orchidarium, insectarium, fernery and Botanical Garden. The research team from the Horticulture Research Center, Mudigere joined on that occasion and informed that they have prepared a tentative list of orchid species and rare plants of Chikkamagaluru District for introduction. They were advised to first prepare a baseline data report of proposed area and utilize the voluntary services of the students as a part of the project work in their studies to prepare the baseline report and development model.

It is hoped that biodiversity of the Western Ghats – especially orchids, rare ferns and endangered species of the region will be conserved at this center for the future generations to enjoy and appreciate the nature’s marvels.

- Dr. Sadananda Hegde.

New Initiatives Of TOSKAR: Award of Ribbon & Merit Certificate for The Best Display of Orchids In BMM

Aim is to recognize and reward the best orchids brought and displayed in the Bi-Monthly Meetings

1. Entries are free and open to members of The Orchid Society of Karnataka only.
2. Plants must be benched before the start of the Bimonthly meeting. Late entries are liable to be rejected
3. All plants must be in show bench condition, free from pests and diseases, clearly labelled (species level or Hybrid) and preferably owned for a minimum of six (6) months. Responsibility for correct labelling of plants rests with the exhibitor and plants without labels will not be accepted for benching.
4. Staking Rules – tying of inflorescence may be made up to but not above the pedicle or ovary.
5. A flower or flowers missing from an inflorescence will disqualify only that inflorescence, provided that the missing flower or flowers is tabled in the pot with the plant. Plants, which flower progressively, may have flowers missing.
6. A pollinated, dead or dying flower or flowers on a plant or inflorescence shall not disqualify that plant or inflorescence but shall detract from the merit of the plant.
7. A minimum of 50% of buds on an inflorescence must be fully opened before it is eligible to be judged unless the plant has habit of progressively flowering.

Voting Procedure

1. Species and Hybrids are segregated into different areas
2. Each member is given 2 stickers.
3. Each member observes all orchids in display
4. He/She puts a sticker against the one species orchid and one hybrid he/she likes the best and suited for an award
5. Once all members finish the voting, total is tallied and orchids with maximum votes are awarded 1st, 2nd and 3rd place merit certificates
6. End of the year, consistent performer gets award for the best grower.

Members Display (Species)



Dendrobium hercoglossum
var. *Semi alba*
Owner: Shashidhar Sastry



Dendrobium primulinum
Owner: Suresh Babu Donthi



Dendrobium primulinum
Owner: Suresh Babu Donthi



Eulophia andamanensis
Owner: Sanjeev dharwal



Paphiopedilum rothschildianum

Owner: Sriram Kumar



Dendrobium alexandrae

Owner: Sriram Kumar



Prosthechea cochleata
Owner: K S Shashidhar



Oncidium ampliatum
Owner: Dr.Parvathi



Phalaenopsis manni
Owner: Nageshwar



Dendrobium chrysotoxum
Owner: Shashidhar Sastry



Paphiopedilum philippinense
Owner: Ramkumar



Paphiopedilum druyri
Owner: Ramkumar



Paphiopedilum primulinum
Owner: Lakshmi Jagadeesh



Paphiopedilum moquettianum
Owner: Lakshmi Jagadeesh



Paphiopedilum niveum
Owner: Shashidhar Sastry



Eulophia andamansis
Owner: Shashidhar Sastry

Most Voted Species

- 1) *Paphiopedilum rothschildianum* – Sriram Kumar
- 2) *Paphiopedilum philippinense* – Ram Kumar
- 3) *Dendrobium chrysotoxum* – Shashidhar Sastry

Members Display (Hybrids)



Cymbidium Chen's Ruby
Owner: Suresh Babu Donthi



Cymbidium Valarie Albasanova
Owner: Nageshwar



Dendrobium Oriental Smile

Owner: Shashidhar Sastry



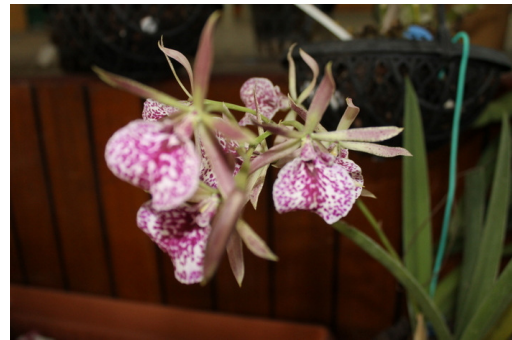
Dendrobium Red Emperor Smile

Owner: Shashidhar Sastry



Cattleya NOID

Owner: Anil Kuber



Brassavola x Enyclia (Kirchara Jairak Kiss)

Owner: Anil Kuber



Vanda tessellata x lamletta x luzonica

Owner: Shashidhar Sastry



Vanda merillii x denisoniana

Owner: Shashidhar Sastry



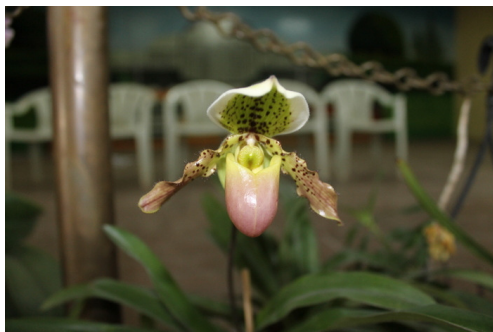
Cattleya NOID

Owner: Nageshwar



Paphiopedilum concolor x armeniacum

Owner: Shashidhar Sastry



Paphiopedilum exul x leimianum

Owner: Ramkumar



Dendrobium x usitae

Owner: Lakshmi Jagdeesh



Paphiopedilum stonei x Michael Koopowitz

Owner: Ramkumar



Paphiopedilum Prince Edward of York

Owner: Ramkumar



Epidendrum NOID

Owner: Nageshwar



Zygopetelum NOID

Owner: Lakshmi Jagdeesh

Most Voted Hybrids

- 1) *Cymbidium* Chen's Ruby – Suresh Babu Donthi
- 2) *Zygopetalum* NOID – Lakshmi Jagadeesh
- 3) *Paphiopedilum* stonei x Michael Koopowitz



Best Grower 2016 – Chameli Hegde Rolling Shield
Lakshmi Jagdeesh



Seed to success – Presentation by Shashidhar Sastry



Guest from Germany – Alexander Bazing

Photo Feature
Select Photographs from Collection of Mandeep Kundan, Canada



Alicearea: Abbreviated as Alcra. It is an intergeneric hybrid between *Brassia* x *Miltonia* x *Oncidium*. *Alicearea Hilo Ablaze* is an intergeneric cross of *Bratonia Olmec* (*Brassia Rex* x *Miltonia Minas Gerais*) and *Gomesa Mantinii* (*Gomesa forbesii* x *Gomesa marshalliana*). These plants need low to medium indirect light and intermediate to warm temperature. Good aeration is a must.



Blc SusanStreamsland x Pot. Rebecca Meakel

Blc – Susan Streamsland x Pot Rebecca Meakel



Cymbidium Super Freak

Cymbidium Super Freak: This is a hybrid of Cymbidium 'Golden Elf' as seed parent and *Cymbidium tracyanum* as pollen parent



Milton Mario Van Peebles

Miltonopsis Mario Van Peebles: It is a cross between Miltonopsis Goodhope Bay x Miltonopsis Hajime Ono. Flowers are slightly fragrant.



Tolumnea Di Ciompo Giuseppe

Tolumnea Di Ciommo Giuseppe: Tolumnia Jairak rainbow as seed parent x Tolumnia Catherine Wilson as Pollen parent.



Zelemia Midas 'Pelori'

Zelemnia Midas Pelori: It is cross between Tolumnia Red Belt x Zelenkoa onusta

