



The Rhododendron

The Australian Rhododendron Society Inc.

Volume 59

2019

The
Rhododendron
Official Journal of the Australian Rhododendron Society

2019

Volume 59

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Front Cover: *Rhododendron* ‘Mum’ in the garden of Richard and Bronwyn Illman in the Adelaide Hills. See ‘Beauty comes from Great Challenges’, p. 40.

The Rhododendron, the journal of the Australian Rhododendron Society Inc., is published annually by the Society. Material for publication in *The Rhododendron* is welcomed and contributors are requested to note that the closing date for each issue is August 1. All articles in this publication are copyright. Written permission from the Secretary must be obtained prior to any republication of the whole or any part of an article. Readers should note that mention of proprietary products in articles carried in *The Rhododendron* does not imply their endorsement by the Society.



The Australian Rhododendron Society Inc.

Aims

The Society's objective is to encourage interest in and disseminate information and knowledge about the genus *Rhododendron* and to provide a medium by which all persons interested in the genus may communicate and co-operate with others of similar interest.

Membership

Membership of the Society is open to all persons interested in the objectives of the Society upon payment of the annual membership subscription. For further information contact Branch Secretaries or the National Secretary.

Subscriptions

Annual subscriptions cover the period 1 July to 30 June, and vary up to AUD\$25 (single member) and AUD\$35 (member & partner) depending on the Branch selected. (Branches set their own level, out of which an amount is paid to the national Society). The annual journal *The Rhododendron* is included as a benefit of membership. Overseas members may nominate for affiliation with any of the Branches. The base annual subscription for membership of the Victorian Branch is AUD\$35. This covers dispatch of *The Rhododendron* by airmail in the last quarter of the calendar year and other communications by email (if there is a preference for receipt of other communications in hard copy form, an additional subscription amount of AUD\$15 applies to cover airmail cost). The Victorian Branch accepts Visa or Mastercard payments. Overseas subscriptions to other Branches may vary from these rates and require to be paid by bank draft or cheque payable in Australian dollars. Contact the ARS National Secretary.

Contact details

Details of local Branches, along with Office Bearers of the Australian Rhododendron Society, are listed on the inside back cover.

Editorial

ANDREW ROUSE

As I write this in early January 2019, I have just received the terrible news that the Campbell Rhododendron Gardens in the Blue Mountains, NSW, has been extensively damaged by bushfire. The bushfires raging across Eastern Australia have devastated many communities, with months of bushfire season to come. It's a sobering reminder of the challenge of living in fire prone regions, and the challenge of maintaining the collections of species and hybrids across the public gardens we support.

During the year, we lost three members who, each in their own way, made a substantial and lasting contribution to the society and our knowledge of rhododendrons. Barry Stagoll was for many years the Editor of this journal, and prior to that, Secretary of National Council. With Gay, he developed the garden at 'Mirrabooka', their property at Park Orchards in the outer eastern suburbs of Melbourne. I have very fond memories of time spent with Barry in his garden, chatting about this plant and that, bemoaning Melbourne's brutal summers, and how to attract the next generation of rhododendron enthusiasts. As journal Editor, Barry used his extensive network of contacts and friends around the world to secure articles for the journal, a task he undertook for over 15 years.

We also celebrate the life of Lesley Gillanders, who with Ken, ran Woodbank, one of Australia's most celebrated nurseries. Woodbank stocked an extensive range of cool climate plants including many first introductions. Lesley and Ken travelled widely and during their travels, spoke at conferences about their trips, nursery and plant collection. Whilst the nursery has closed, it is pleasing so see that the new owners of Woodbank are plant enthusiasts and the garden continues as a focal point for the society in Southern Tasmania.

We also have a tribute for Dr George Argent who died suddenly on 24 April 2019. I first met George when he stayed with my parents in the early 1980s; he regaled our family with stories of his collecting in Africa and South-east Asia, and for the first time I could see how a career in botany could be exciting and rewarding. He was extraordinarily generous with his expertise and time, and spoke at our conferences and contributed to the journal.

We welcome back Robert Hatcher as a contributor with an article on a trip to Spain and the UK. We start a new series with an article on society members and their gardens; thank you to Maruta and Peter Boyd (Tas members) and Bronwyn and Richard Illmann (SA members) for kindly

agreeing to be interviewed by Denby Browning (President of Tamborine Mountain Botanic Gardens) for this story.

The status of rhododendrons in the Shingba Rhododendron Sanctuary is presented in an article from C. Purohit; few of us will have the opportunity to see Himalayan rhododendrons such as *R. lanatum*, *R. wallichii*, and *R. glaucophyllum* in the wild, and this article emphasises how rhododendrons can have small, isolated populations that are at risk from threats such as clearing or landslides.

Your National Council, with Emu Valley Rhododendron Garden are in the early stages of planning the next Australian Society Conference which will be at Emu Valley 5–7 November 2020. We very much look forward to a big gathering of our members and friends from other countries.

As always, I encourage feedback on the stories enclosed and the type of articles you'd like to read in the future. ❀

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Reports – Australian *Rhododendron* Groups

Emu Valley Rhododendron Garden

Emu Valley's vision "Is to be a world recognised woodland garden showcasing and protecting the *Rhododendron* genus." This will never change but the manner in which the garden is managed will continue to evolve to ensure we are, as much as possible, best practice and this is necessary to ensure our viability into the future.

Over the past couple of years Emu Valley's marketing strategy has been more aggressive and increased visitor numbers have resulted, as has the function side of the operation. Our membership and volunteer numbers have increased but we should not have our head in the sand thinking that a permanent Horticulture Manager and part time office assistant as paid personnel is the way forward.

Emu Valley is very, very fortunate to be hosting the 2020 Australian *Rhododendron* Conference and as we head into the new year our organising committee will be in full swing. We are looking forward to welcoming one and all and show casing our garden.

Last year, Curator Maurie Kupsch reported that 35 new species of *Rhododendron* would flower for the first time, and in due course they did. The first flowering is usually not indicative of what the mature flowers will look like but to see those buds burst forth was a real joy.

R. magniflorum was one such plant (Figure 1), which produced a large number of creamy white flowers, possibly the first flowering of this recently collected species. It flowers quite late for us being the end of January but a very worthwhile extension to our flowering season.

With increased volunteer numbers Horticulture Manager Juanita Wood has been able to tick off many items from the 'to do' list. This includes new maps which will give visitors the choice of long, medium and short walks. Likewise, the Infrastructure Team now has an ongoing maintenance program for all facilities and structures.

Plant labelling and an updated data base are an ongoing exercise. It is so important and with expertise assistance is progressing.

A grant from the Tasmanian Government allowed an automated irrigation system to be installed in part of the garden. With drier summers upon us, this upgrade system saves on water as well as Maurie's time and sanity. Hopefully funds will become available to look at the rest of the 11 hectares.

The strengthening of the Horticultural Team will ensure that plant health care and maintenance along with eradicating weeds will always be a high priority.



Figure 1: *R. magniflorum*, flowering for the first time in Australia. *R. polytrichum* also flowered for the first time and the new growth is exceptional – clothed in a myriad of white hairs.



Figure 2: Winter in North America at Emu Valley Rhododendron Garden.

South Australian Branch

The activities of the South Australian branch over the past 12 months have very much revolved around achieving the objectives of the Australian Rhododendron Society. One of our most important activities has been our annual plant sale which is a significant fundraiser, allows us to build our own personal rhododendron plant collections, and, in particular, interests new gardeners in the pursuit of rhododendron cultivation. Unfortunately, due to last minute restrictive directives relating to the logistics of conducting such event it was decided to cancel this event for 2019, presenting us with the challenge of pursuing alternatives so that we can continue to conduct our plant sale into the future.

The annual cutting and propagation day at Forest Lodge provides local plant material for the plant sale (along with interstate sourced wholesale rhododendrons), with each ensuing year the whole process becoming more refined and efficient. Members are also becoming more confident and effective with their propagating efforts. A greater emphasis on azalea propagation has been proposed on the basis that these plants have a greater chance of survival with new growers who will hopefully then be encouraged to continue on.

We are a very sociable group and over the past 12 months have enjoyed a range of activities including an afternoon of garden visits along Sturt Valley Road, culminating in afternoon tea at Wensleydale, and a couple of exclusive nursery visits to Tupelo Grove near Mylor and Raywood Nursery at Deep Creek. Both nursery visits providing opportunities to purchase plants as well as being interesting and informative. An annual highlight on the social calendar is the end of year luncheon which was held last year in the beautiful and devotedly established garden of Ian and Robyn Wall. The weather was favourable, the food was fabulous and the ambience and company of a strong representation from membership made for a suitably enjoyable and celebratory finale to the year's events.

Notwithstanding all of these organised events, our monthly meetings continue to be well attended, with members being able to enjoy convivial gatherings where they are being educated and entertained by a series of monthly guest speakers, some emanating from our own diverse membership. Meeting attendees are also able to purchase plants from the always alluring pot luck stall, enjoy a sumptuous supper and borrow from our very own well-managed library. Meeting highlights over the past 12 months have included travel stories, blooms presentations, scientific presentations from Neutrog's microbiology expert, Dr Uwe Stroehler, and Remko Leijs who spoke to us about the perilous plight of the green carpenter bee colonies on Kangaroo island. We have even had a historical focus courtesy of Jeff Jenkinson who gave a fascinating historical account of rhododendron cultivation in South Australia. Rob Hatcher and Stephen Kingdom followed this up with a

historical retrospective on the development of the Mount Lofty Botanical Gardens supported by an interesting archive of photographs.

Looking into the future, we are excited to be staging a Grant Memorial Lecture in September 2019 after a hiatus of several years, and eagerly anticipate the presentation by renowned landscape architect, Jim Fogarty. 2020 promises to be an eventful and exciting year with the option to attend a variety of conferences, ranging from the American Rhododendron Society conference in Portland-Vancouver, to the New Zealand conference in Timaru, then to be followed closely by the Australian conference in Tasmania. All of these internationally focused events serve to present the ideal opportunity for collaboration with rhododendron enthusiasts from other parts of the world and work together convivially to achieve rhododendron society objectives.

Belinda Cullum

President

South Australian Branch

Southern Tasmania Branch

Our year began in March with a propagation day at Woodbank Gardens. Always a popular activity and this year 12 eager visitors joined our gathering. It's a great opportunity to share cuttings brought by members, especially those rarer ones not found in nurseries these days.

In April our group gathered at Jenny Skinner's garden in Lucaston with an amazing view of the Huon Valley and an equally amazing garden. Small but very artistically presented. Jenny is a keen member and is currently continuing a regular article in our newsletter focusing on Woodbank Gardens. She has titled it 'In My Adopted Garden'. Our main discussion for the day was rhododendrons in general which included diseases, watering, soil preparation, potted plants etc.

For an Autumn display in May we visited two member's gardens in the Channel, this time with views over the D'Entrecasteaux Channel and Bruny Island. Jana Weiss's is a large garden sprawling to the water's edge and presented a spectacular display of maples. Richard and Gail Yellowley's garden is high on the hill looking down over the Channel. Whilst this garden is primarily roses, Gail's rhododendron collection is growing rapidly and we look forward to the next visit.

In the cooler months we tend towards indoor events and in June we had a presentation by Ken Gillanders featuring 'Woodbank Gardens' From the Beginning. This presentation held us in awe as Ken proceeded to show us how he and his family transformed virgin bushland into an incredible 'botanic' wonderland. It was all hands on deck with so many challenges along the way, including heavy snow falls and bush fires. What an achievement.

For something different, in September Ken gave us a fantastic

demonstration on how to make hypertufa pots. Ken has made hundreds over the years for the purpose of displaying his many treasured specialty bulbs and I believe he sold these pots at the nursery also. We all dream of having cyclamen displays like Ken and Lesley's.

October brought a new experience for many of us in the form of a plant fair held at Woodbank Gardens and hosted by the Rhododendron Society. What a fantastic weekend we had. Below is a report by Karina Harris on this very successful event.

Our final two garden visits for the year were both Member's garden. Our first was Fintan Downham's garden on Woodbridge Hill, also with a spectacular view of the Channel. This garden is rather steep and only the very fit tackle the descent. Still one gets a good overview from the main building and great to see how the garden has matured since our last visit, mainly due to the fact that Fintan has now fenced a large area and no longer shares it with the wildlife. We also had a demonstration by Joy on how to prepare rhododendron blooms for an upcoming show at the Town Hall. It was the Rose and Iris show and the first time that we have had a designated section for rhododendrons since our own show finished some years ago. We had a small but impressive display.

Our final garden visit for the year was at Peter and Maruta Boyd's in Kingston. A very large bush garden initially created by Peter's father and where he also ran a nursery. The garden had been neglected for many years and Peter and Maruta have embarked on a major restoration program. We were so impressed with their efforts thus far and look forward to future visits.

In May we were confronted with the very sad news that our dear friend and mentor, Lesley Gillanders, had passed away. Lesley was an inaugural member of the Society in 1979. Her knowledge of plants was nothing short of incredible and with her sharp memory we never needed a botanical encyclopedia. We miss her dearly.

Dorothy Lane

A plant fair was held at Woodbank Gardens. What a mega event it was! Organized by GCA, it was held over two days, with stalls selling plants or promoting their group's activities. Hundreds of patrons took advantage of this event. Longley has never seen such activity before! Rhododendrons were showcased with a well stocked display of blooms supplied by our members. Harry and Kerry Van den Berg, owners of Woodbank Gardens have decided that this will be an annual event to be held every October and offer free space for garden clubs and those smaller nurseries or other growers who would like to sell their special plants.

Karina Harris

Victorian Branch

This year has seen continued slow progress by the society toward developing the garden at Olinda, providing plants for members, the garden and the public and organising a few very successful events.

Our main activities revolved around continued improvements to the garden at Olinda, growing excellent nursery stock and documenting the plant material growing in the gardens. This work is carried out by a committed, loyal and friendly group who meet each Tuesday. We propagate and share plants, help-out in the garden and provide technical knowledge of the plant material in the garden. The core group has continued to work hard and achieve great results while at the same time enjoying themselves. Without this ongoing input from the society members, the rhododendron collection (the vireya collection in particular) would deteriorate rapidly and the garden would quickly diminish in importance. This group and the society in general works very successfully and cooperatively with Parks Victoria. This ongoing partnership is of great benefit to both parties and the garden.

During the year, we continued to fill the nursery with a very good range of rare rhododendrons. We have increasingly become an important source of desirable plant material for both members and the public. This year we sold plants at Ferny Creek events and at a special sales day at Olinda. The advertising for the Olinda sales day was very successful in attracting people to the garden specifically for the plant sale, which was just as well because the weather was very bad. We will conduct a similar sale day next year, hope for better weather and see how many more plants we sell. The increased profile gained by the society from these sales events is showing signs of increasing our recognition and growing our memberships numbers (albeit slowly).

Two well attended events run during the year were garden visits. In March ARS members visited the gardens of Peter and Irene Leonard and John and Alex Pottage in Toolangi and Kinglake. In October we had up to 40 members visit the gardens of Norm and Jill Brown, Francis and Prue Crome as well as Don and Sue Teese in The Patch and Ferny Creek. These garden visits are very popular and provide members with a great opportunity to interact with other members and at the same time see how others do their gardens. We have been very fortunate with the quality of the gardens we have seen over the last few years on these ARS garden visits and the committee's work will be cut out next year in finding gardens equally as good for the next garden visits.

The North Queensland project and the extension into the old golf course are projects that are still progressing but this year was a year of planning and slow consolidation. These projects will no doubt form a considerable part of next year's activities.

Sadly, we lost long standing member Barry Stagoll late this year. He had made a significant contribution to the society in a number of roles over the years. He will probably be best remembered for his long stint as the editor of *The Rhododendron*. A man of considerable knowledge and interest in plants.

John O'Hara
President, Victorian Branch

Barry Stagoll Tribute

ANDREW ROUSE

Barry was one of the quiet achievers in the Society, having served on National Council then taking on the role of Editor of this journal. As his replacement as Editor, I'm very much in awe that he performed this role unstintingly for 16 years, and it was only due to illness that he was unable to continue his service to the society.

Barry and Gay were foundation members of the Fern Society of Victoria and were on the FSV Show committee together for many years with Bill Taylor, a member of the Australian Rhododendron Society. In 1993, Barry and Gay joined the Rhododendron Society, quite possibly at the encouragement of Bill Taylor.

In 1994, during a conference associated with a National Council meeting, Barry was asked whether he'd take on the position of National Secretary to succeed Lionel Marshall, then National Secretary. Barry agreed and continued in that position, with distinction, from 1995 to 2002.

During that time, he rewrote the rules of the Society at the request of National Council. Later, Barry originated the Society's first National website: www.ausrhodo.asn.au which served the Society for many years.

In October 2000 Barry was Convenor of the ARS International Conference "Rhododendrons Down Under" organised for ARS by the Victorian Branch. Speakers included George Argent, Peter Cox, Peter Valder, Hilary O'Rourke and Jack O'Shanessey. It was a grand affair, though at the end of the era where everyone in Melbourne grew rhododendrons and, consequently, rhododendron nurseries abounded.

From 2000 to 2016 Barry was Editor of this journal, and it was during this time that I got to know Barry. He would in his quiet, polite way, suggest improvements to articles I had submitted – he was invariably on the mark – and sow the seeds of ideas for articles for future issues. During his time as Editor he sourced articles from within our Society and rhododendron and garden enthusiasts around the world, drawing on his extensive friends and connections globally.



With Gay, Barry developed a lovely garden at ‘Mirrabooka’ in Melbourne’s eastern suburbs. Gay and Barry opened ‘Mirrabooka’ for the society, and it was clear from a walk around the garden with him his depth of knowledge on plants and the breadth of his horticultural interest.

As I commence on the annual task of compiling the journal, I invariably start by seeking inspiration from past issues and particularly, Barry’s editorials. His editorials are a joy to read, and from them it’s clear his passion for the society, rhododendrons and gardening more broadly. From the 2009 Editorial, Barry writes “As I write this there’s plenty blooming going on in our garden – heartening in view of the stresses imposed on our rhododendrons, in common with many plants, by the continuing dry conditions and especially by the very hot, dry summers of the last several years in most parts of southern Australia.” Prescient words indeed given the devastating impact of this summer’s bushfires.

Barry’s contribution to the Australian Rhododendron Society was recognised in 2016 with the society awarding him the Society Medal and Life Membership. ❀

Vale Lesley Gillanders

horticulturist and botanical artist

Lesley was born in 1932 in Swan Hill, Victoria, and moved with husband Ken to Tasmania in 1975 to start a specialist plant nursery. She shared 37 years at Woodbank Nursery with Ken, where her love of horticulture was displayed working alongside him as true partners in life and in business.

Ken and Lesley travelled widely over 32 years, being known for attending and speaking at international conferences and collecting and introducing plants to the horticultural industry. Lesley also contributed greatly to seed distributions of the societies she was a member of worldwide.

Lesley travelled to every continent climbing mountains to see plants in their natural habitat and collecting seeds including the sub-Antarctic islands. Her travels encompassed unique places including climbing Mt Kilimanjaro, the glaciers in Tierra Del Fuego, camping in the highland steppe of Kyrgyzstan, the Andes and the Rockies, bamboo forests in Japan, Easter Island, Canada, USA, UK, Ireland, NZ, China, Chile, Equador, Egypt, Bolivia, Peru, Lesotho, Kenya, safari plains in South Africa and the Galapagos Islands.

Lesley was also a gifted artist, and her beautiful botanical and bird watercolour paintings have been enjoyed worldwide, and recognised in many displays and competitions. She shared much with plant enthusiasts as a respected and recognised regular writer in numerous Australian and international botanical magazines. Her last article was published in April 2019.

Lesley passed away very peacefully in May 2019, and is survived by her husband Ken, five children and a tribe of grandchildren and great grandchildren. ❀

Ken Gillanders





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rhododendron garden

SAVE THE
DATE



Rhododendrons Down Under Conference 2020

Emu Valley Rhododendron Garden, Burnie, Tasmania, 5–7 November 2020

The Australian Rhododendron Society and Emu Valley Rhododendron Garden are pleased to announce that the next society Conference will be held at Emu Valley Rhododendron Garden, 5–7 November 2020.

Our keynote speaker is David Millais. David is owner of Millais Nurseries, one of the UK's leading rhododendron nurseries. He is a former Chairman of the Royal Horticultural Society (RHS) Rhododendron, Camellia and Magnolia Group, a RHS Rhododendron Show judge, and breeder of late flowering rhododendron hybrids.

We will also have national and international speakers on a range of topics including rhododendron conservation including the role of botanic



gardens, the results of the Society's research project to recollect *R. lochia* and *R. viriosum* from the mountains of North Queensland, and much more.

There will be guided tours of Emu Valley Rhododendron Garden and on Saturday 7 November, we will visit notable local private gardens.

It's a great opportunity to meet or catch up with other members or the Australian Rhododendron Society and rhododendron enthusiasts from around the world.

An online booking website will open shortly, and notification will be provided through your Branch newsletter.

Please put 5–7 November 2020 in your diaries. For further information, please email Geoff Wood at geoffreywood@me.com.



Tribute to George Argent

1941–2019

ANDREW ROUSE

Dr George Argent was an unstinting supporter of the Australian Rhododendron Society for many decades and so news of his sudden death on 24 April 2019 was met with great sadness by many of its members.

George was a guest of the Society on two occasions. He was a keynote speaker at the fourth International Rhododendron Society Conference, organised by the Australian Rhododendron Society and held in October 1998 in Wollongong, where he gave a talk titled ‘Vireya Taxonomy in the Field and Laboratory’. He subsequently spoke at the Society Conference held in Victoria in October 2014 where he gave a talk on ‘South-east Asian vireyas – exploration and change over 35 years’.

George showed great interest in our Society endeavours. As well as presenting at our conferences, in 2012, he, along with Lyn Craven, supported the Society’s application to the Queensland Government to re-collect our native vireya rhododendrons from their mountain-top homes. Whilst this application was unsuccessful, it paved the way for the Society’s fruitful relationship with the Australian Tropical Herbarium and the project established with them that led to the recollecting of *R. viriosum* and *R. lochiaie* from most known locations. He supported the efforts of the Victorian Branch to refurbish the glasshouse at the National Rhododendron Gardens Olinda and was most helpful with advice regarding the provenance of material held and how best to display them.

On appointment as Tropical Botanist to the Royal Botanic Gardens Edinburgh (RBGE) in 1974, George commenced work on Ericaceae which includes the genus *Rhododendron*, and soon specialised in the vireya rhododendrons of south-east Asia.

The output of his 40 years of botanising and research is staggering; he described over 130 new species, published over 100 scientific papers, led or participated in over 50 collecting expeditions, and authored the definitive publication on vireyas, *Rhododendrons of subgenus Vireya*. His final vireya paper, co-authored with Michael Mambrasar, the description of the new species *Rhododendron widjajae*, was published after his death in July 2019.

Through the course of his expeditions he introduced many species into cultivation, and over time the glasshouse at RBGE held the most



Above: George amongst the species vireya collection at the Royal Botanic Gardens, Edinburgh.

Below: George opening the refurbished vireya house, Dandenong Ranges Botanic Garden.



comprehensive living collection of vireyas. These delightful species, many of which are threatened in the wild, are now safeguarded in cultivation largely due to George's efforts.

George officially retired in 2004, however continued his research and expeditions, with trips to New Guinea and the Philippines whilst also presenting at conferences.

George's RBGE colleague, Peter Wilkie, in his obituary he wrote of George published in *The Scotsman* (21 May 2019), eloquently describes George and his contribution to botany:

George was renowned for his kindness and generosity. He had a mischievous sense of humour and at times enjoyed testing institutional boundaries. He never seemed to lose his enthusiasm for foreign travel, and his expeditions to some of the remotest places on Earth (often carried out on a shoe-string) were a rich source of anecdotes which amused his contemporaries and inspired younger generations of researchers.

He is remembered with great fondness by the many botanists with whom he freely shared his immense taxonomic knowledge and by the numerous horticulturists who were given the opportunity to see species in their natural habitats.

He is also remembered by a succession of talented botanical artists whom he nurtured and secured funding for and who drew and painted some of the most interesting of his discoveries, both from living plants in the greenhouses, and dried specimens in the herbarium.

George was the quintessential botanist, with the wide variety of skills and knowledge needed to thrive in a botanic garden research community and with a range of experience that would be hard to repeat today. He significantly enhanced the global reputation of the Royal Botanic Garden Edinburgh as a world leader in plant research, cultivation and conservation.

Eastern Himalayan Endemic Rhododendrons in Shingba Rhododendron Wildlife Sanctuary, Sikkim – Status and GIS Mapping

C.S. PUROHIT

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Abstract

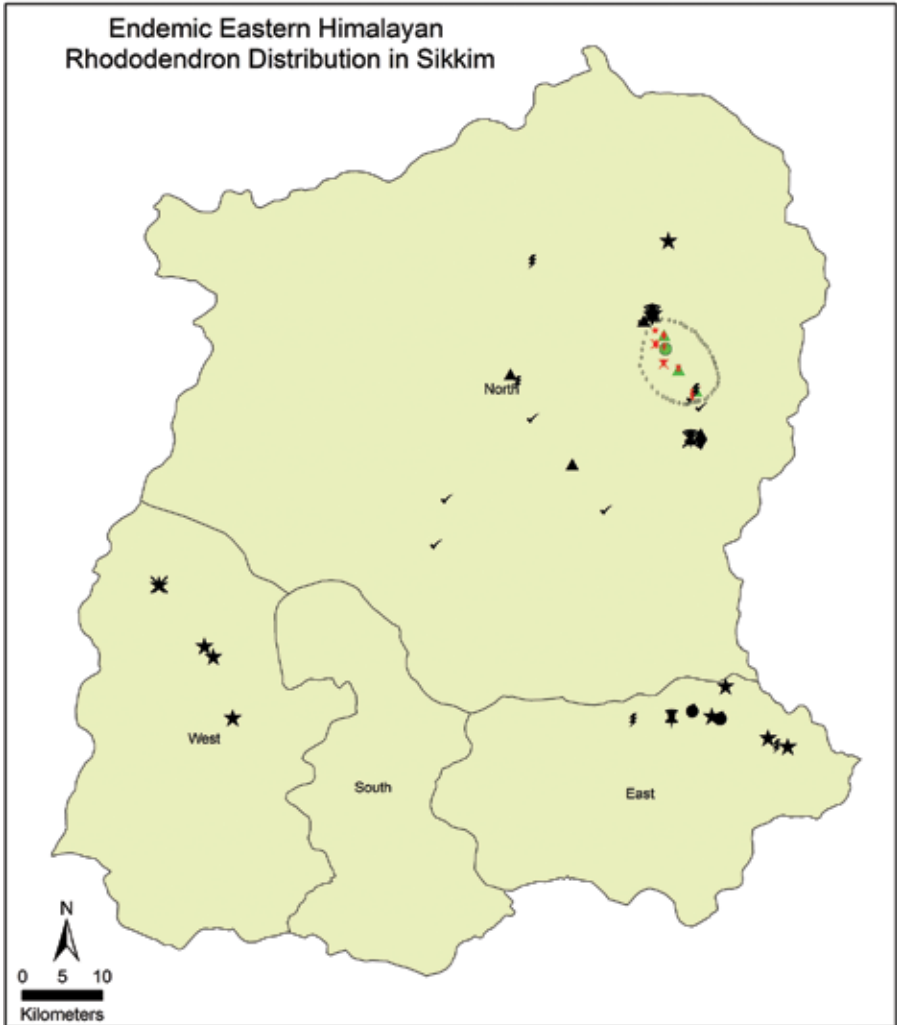
The study reveals present status and GIS mapping of eight species of endemic Eastern Himalayan *Rhododendrons* viz. *Rhododendron baileyi* Balf.f., *Rhododendron camelliiflorum* Hook.f., *Rhododendron ciliatum* Hook.f., *Rhododendron glaucophyllum* Rehder, *Rhododendron lanatum* Hook.f., *Rhododendron niveum* Hook.f., *Rhododendron wallichii* Hook.f. and *Rhododendron wightii* Hook.f. collected from Shingba Rhododendron Wildlife Sanctuary, North district, Sikkim. Taxonomic characters, distribution and present status of all the existing Eastern Himalayan endemic *Rhododendron* species of Shingba Rhododendron Wildlife Sanctuary, North district, Sikkim are provided here.

Keywords: *Rhododendron*, Status, GIS mapping, Sikkim.

Introduction

Rhododendron Linnaeus (1753:392) is one of the largest genera (c. 1,000 species; Frodin, 2004) of family Ericaceae mainly distributed in Asia, Europe, North America and Australia. Most of the species are concentrated in the temperate regions of Northern hemisphere especially Sino Himalayas (East Himalaya and West China). The genus is divided into nine subgenera (Mingyuan et al. 2005); 4 are represented in India viz. *Azaleastrum*, *Tsutsusi*, *Rhododendron* and *Hymenanthes*. In India there are c. 132 species reported so far of which 129 species (almost 97%) are from North-east India.

Hooker (1849) recorded 33 species of rhododendrons from Sikkim–Himalaya in *The Rhododendrons of Sikkim–Himalaya*. In India, greater concentration of rhododendrons is in North-east Himalayas at altitude of 500–3,500 m. In recent years Sastry & Hajra (1983), Pradhan & Lachungpa



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|---|--------------------------------|---|-------------------------------------|
| ★ | Rhododendron wightii PAST | ⚡ | Rhododendron glaucophyllum PAST |
| ★ | Rhododendron wightii PRESENT | ⚡ | Rhododendron glaucophyllum PRESENT |
| ♠ | Rhododendron wallichii PAST | ✓ | Rhododendron ciliatum PAST |
| ♦ | Rhododendron wallichii PRESENT | ✓ | Rhododendron ciliatum PRESENT |
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| × | Rhododendron lanatum PAST | ● | Rhododendron baileyi PAST |
| × | Rhododendron lanatum PRESENT | ● | Rhododendron baileyi PRESENT |

(1990), Mao (2010), Rai (2014), Mao et al. (2017), a total of 42 rhododendrons were added to the Sikkim Himalayan flora comprising 25 species, 11 subspecies and 6 varieties under 2 subgenera, 4 sections and 21 series respectively. Two new species, *Rhododendron sikkimense* (Pradhan & Lachungpa, 1990) and *R. abhayae* (Rai, 2014) have insufficient data and need further study (Mao et al. 2017), A new species *R. shingbae* (Purohit & Kumar, 2018) was described in 2018 and has only been recorded from Shingba Rhododendron Wildlife Sanctuary, Sikkim. Sastry & Hajra (1983) reported that 7 species, 2 subspecies and 3 varieties are endemic to India. Recently Mao et al. (2001) reported that around 12 species, 2 subspecies and 5 varieties are endemic to India.

Geographic Information System (GIS)

The geographical positions of localities were recorded using by GPS (Global Position System) from the Garmin Company Model – ETREX SUMMIT HC – with an accuracy of 5 to 10 m.

Field sampling and data analysis

During the monitoring and collecting of diaspore, we also collected other passport data, together with samples of plant species. Using locations inferred from digital elevation model maps, the Sanctuary was visited each year from 2012 to 2015 and a flora survey conducted. A GPS data point was made for each *Rhododendron* species found, material collected from all the specimens for identification purposes using the latest monograph, floras and available scientific studies (Hooker 1849; Pradhan & Lachungpa, 1990; Sanjappa & Sastry, 2014; Mao et al., 2017). Identification was made by matching the specimens with herbarium specimens held at Botanical Survey of India, Sikkim Himalayan Regional Centre (BSHC), Sikkim. Collected specimens were deposited in BSHC herbarium, Sikkim.

Data processing

A base map of plant was prepared using Geographical Information System (GIS) open source software Quantum GIS, SAGA. Landsat ETM+ and ASTER GDEM (Advanced Space borne Thermal Emission and Reflection Radiometer Global Digital Elevation Model) Satellite Data were used. By clipping Aster GDEM Data with district boundaries, a colour map with elevations was generated. GIS layers of area of occurrences for some angiosperm plants and elevation were added to this map. This, along with topographic sheets of 1:50000 were used for field traversing and ground truthing during the 2012–2015 expeditions. From the ground data, GPS data of longitude, latitude and altitude of each survey points were used in creating

GIS layers in a 3D elevation map, as well as plant distribution in four districts of Sikkim.

Distribution

Rhododendrons cover a vast section of southeastern Asia between the northwestern Himalaya through Nepal, Sikkim, eastern Tibet, Bhutan, Arunachal Pradesh, upper Burma and western and central China. More than 90% of the world's natural population of rhododendrons is from this region. On record, 98% of the Indian species is found in the Himalayan region, of which 40% is found in Sikkim. In the light of these facts, Sikkim may be considered as the most appropriate location for conservation and propagation of rhododendrons in India (Singh et al. 2003; Tiwari & Chauhan 2006; Singh 2009).

Result

During the field exploration of Shingba Rhododendron Wildlife Sanctuary, Sikkim, the samples of rhododendrons were collected along with other angiosperm and identified with the help of published literature and herbarium specimens housed in BSHC. The study has generated GIS maps with distribution and status of eight species of rhododendrons, viz. *R. baileyi* Balf.f., *R. camelliiflorum* Hook.f., *R. ciliatum* Hook.f., *R. glaucophyllum* Rehder, *R. lanatum* Hook.f., *R. niveum* Hook.f., *R. wallichii* Hook.f. and *R. wightii* Hook.f. All these species are endemic to Eastern Himalayas region. The specimens have been deposited in the herbarium of Botanical Survey of India, Sikkim Himalayan Regional Centre (BSHC).

Description of species collected in the Shingba Rhododendron Wildlife Sanctuary

Rhododendron baileyi Balf. f. in Notes Royal Bot. Gard. Edinb. 11: 23. 1919; Pradhan & Lachungpa, Sikkim–Himal. Rhodo. 69. 1990; Grierson & Long, Fl. Bhutan 2(1): 385. 1991; Mao et al. Rhodo. N. E. India 40. 2017. (**Plate 1**)

Taxonomic characters: Bushy shrub. 100–150 cm high. Leaves elliptic-oblong, 2–4.5 × 1–2 cm, cuneate at base, very densely often brownish, scaly on lower surface with closely overlapping scales, upper surface thinly to densely scaly; petioles 2–7 mm. Inflorescence 5–8-flowered; flower dark pink with small dark patched inside corolla; pedicels 1.5–2 cm. Calyx 5-lobed; lobes deltoid, 3–4 mm. Corolla campanulate, 1–1.5 cm, deep wine red or purple. Stamens 10; filaments pubescent towards base. Ovary scaly; style short, deflexed. Capsule shortly cylindric, 5–7 mm.

Plate I



***Rhododendron baileyi* Balf.f.- Natural Habitat & close-up of flower**



***Rhododendron ciliatum* Hook.f.- natural habitat & close-up of flower**



***R. glaucophyllum* Rehder**



***R. lanatum* Hook.f.**

Flowering and fruiting: April–May.

Status: Endemic to Eastern Himalayan and Threatened.

Distribution: Bhutan, India, Nepal, Tibet. **India:** Arunachal Pradesh and Sikkim (Changu Lake, Kyangnosla Alpine Sanctuary, Shingba Rhododendron Wildlife Sanctuary). (**see map**)

Specimen examined: Sikkim, North District, Shingba Rhododendron Wildlife Sanctuary, 27°47'24.4N & 88°42'29.3E, 14.09.2014, CS Purohit 38289.

Rhododendron camelliiflorum Hook.f., Rhod. Sikkim Himal. t. 28. 1849; Pradhan & Lachungpa, Sikkim–Himal. Rhod. 72. 1990; Grierson & Long, Fl. Bhutan, 2(1): 384. 1991; Mao et al. Rhodo. N. E. India 45. 2017.

Taxonomic characters: Epiphytic shrub up to 2 m high; young shoots scaly. Leaves elliptic or oblanceolate, 5–10 × 1.5–3 cm, acute, base rounded or broadly cuneate, subglabrous above, densely brown scaly beneath; petioles 5–10 mm. Inflorescence axillary, 1–2-flowered; pedicels 5–10 mm, stout, scaly. Calyx deeply, 5-lobed, lobes rounded, 5–7 mm, scaly at base. Corolla campanulate, 1.6–2.4 cm, fleshy, deeply 5-lobed, yellowish-white to deep rose, scaly on outside. Stamens 12–16; filaments hairy towards base. Ovary 5–10-locular, scaly; style glabrous. Capsule ovoid-oblong, 10–12 mm, scaly, on short thick pedicels.

Flowering and fruiting: April–May.

Status: Endemic to Eastern Himalaya.

Distribution: India, Nepal, Tibet. **India:** Arunachal Pradesh, Sikkim (Shingba Rhododendron Wildlife Sanctuary, Zema, Menisthang). (**see map**)

Specimen examined: Sikkim, North District, Shingba Rhododendron Wildlife Sanctuary: 27°47'24.4N & 88°42'29.3E, 20.07.2013, CS Purohit 37405; 27°43'36.6N & 88°45'08.5E, 22.07.2013, CS Purohit 37437 and 27°43'36.6N & 88°45'08.5E, 22.07.2013, CS Purohit 37464.

Rhododendron ciliatum Hook.f., Rhod. Sikkim Himal. t. 24. 1849; Pradhan & Lachungpa, Sikkim–Himal. Rhodo. 43. 1990; Grierson & Long, Fl. Bhutan 2(1): 380. 199; Mao et al. Rhodo. N.E. India 52. 2017. (**Plate 1**)

Taxonomic characters: Shrubs up to 2 m high; branchlets densely spreading-bristly and scaly. Leaves elliptic, acute, mucronate, base rounded, upper surface dark green, bristly at base of midrib and on margins, light beneath, scaly and thinly bristly, ciliate on margin, 4–7 × 2–4 cm; petioles 2–6 mm. Inflorescence 2–5-flowered; pedicels 7–12 mm, bristly; flower white or pinkish white. Calyx 5, unequally divided to base into ovate-elliptic lobes 6–10 mm, margin ciliate. Corolla 5, outer white with pink tinge and white beneath, 3–5 × 4–7 cm, campanulate. Stamens 10; anther lobe light brown,

1–3 mm, filament white, 2–3 cm. Ovary green, 4–5 mm; style 3–4 cm, white with pinkish tinge. Capsule shortly ovoid-oblong up to 1.5 cm.

Flowering and fruiting: April–May.

Status: Endemic to Eastern Himalaya.

Distribution: Bhutan, India, Nepal. **India:** Sikkim (Tholung, Kishong, Chungthang, Lachen, Shingba Rhododendron Wildlife Sanctuary). (see map)

Specimen examined: Sikkim, North District, Shingba Rhododendron Wildlife Sanctuary: 27°43'49.01N & 88°44'52.34E, 24.04.2014, CS Purohit 38083; 17–05–2011 and Sachin Punekar 35635 (Det. CS Purohit).

Rhododendron glaucophyllum Rehder, J. Arn. 26:73. 1945; Pradhan & Lachungpa, Sikkim–Himal. Rhodo. 62. 1990; Grierson & Long, Fl. Bhutan, 2(1): 384. 1991; Mao et al. Rhodo. N.E. India 79. 2017. (**Plate 1**)

Taxonomic characters: Small shrub, up to 1 m high; young shoots scaly. Leaves elliptic or oblanceolate, 4–6 × 1.3–2.2 cm, acute, base rounded or broadly cuneate, subglabrous above, white beneath and with a mixture of brown and yellow scales; petioles stout, 5–10 mm. Inflorescence 4–8-flowered; pedicels 1–2 cm, slender. Calyx deeply 5-lobed, lobes rounded, 5–7 mm, scaly at base. Corolla campanulate or tubular-campanulate, 1.6–3.4 cm, fleshy, deeply 5-lobed, pale to deep pink, rarely white. Stamens 10; filaments hairy towards base; Ovary 5-locular, scaly; style glabrous. Capsule ovoid-oblong, 10–12 mm, scaly, on short thick pedicels.

Flowering and fruiting: April–June.

Status: Endemic to Eastern Himalaya.

Distribution: Bhutan, India, Nepal, Tibet. **India:** Sikkim (Shingba Rhododendron Wildlife Sanctuary, Yumthang, Lachung, Lachen, Thangu, Karponang, Kyangnosla Alpine Sanctuary, Chhangu, Kupup). (see map)

Specimen examined: Sikkim, North District, Shingba Rhododendron Wildlife Sanctuary: 27°45'5.43N & 88°46'7.17E, 28.04.2014, CS Purohit 38147; 27°45'43.85N & 88°41'1.47E, 26.04.2014, CS Purohit 38120; 27°43'49.01N & 88°44'52.34E, 24.04.2014, CS Purohit 38088; 27°43'36.6N & 88°45'08.5E, 29.04.2014, CS Purohit 38153.

Rhododendron lanatum Hook.f., Rhod. Sikkim Himal. t. 16. 1851; Pradhan & Lachungpa, Sikkim–Himal. Rhodo. 93. 1990; Grierson & Long, Fl. Bhutan, 2(1): 374. 1991; Mao et al. Rhodo. N.E. India 96. 2017. '*Bhutle Gurans*'. (**Plate 1**)

Taxonomic characters: Shrub or small tree, up to 4 m high. Leaves coriaceous, obovate-elliptic, cuneate at the base, glabrous above, except for pale tomentum on midrib, thickly chocolate-brown tomentose beneath, 8–13 × 3–5 cm; petioles 0.8–1.5 cm, densely whitish tomentose. Inflorescence

5–7-flowered; pedicels 1–2 cm, tomentose. Calyx small, reduced to 5 irregular lobes. Corolla campanulate, pale sulphur-yellow flushed and spotted red and crimson, 4–5 × 5–7 cm. Stamens 10, filament unequal, 1.6–2.3 cm; anther lobe brown, 2–3 mm; filaments pubescent at base. Ovary cylindrical, red-brown, tomentose; style glabrous, light green, curved upwards; stigma 6-lobed. Capsule slightly curved, up to 2.5 × 0.8 cm.

Flowering and fruiting: May–June.

Status: Endemic to Eastern Himalayas. Its population gradually shrinking since last decades due to heavy rainfall and temperature fluctuation in flowering period fruits not set up or immature due to mostly flowers fall.

Distribution: Bhutan, India, Tibet. India: Arunachal Pradesh and Sikkim (Dzongri, Chholamu, Shingba *Rhododendron* Wildlife Sanctuary). (**see map**).

Specimen examined: Sikkim, North District, Shingba *Rhododendron* Wildlife Sanctuary: 27°43'54.42N & 88°45'14.64E, 27.04.2014, CS Purohit 38134 and 27°43'54.42N & 88°45'14.64E, 27.04.2014, CS Purohit 38131.

Rhododendron niveum Hook.f., *Rhod. Sikkim Himal.* 4. 1849; Pradhan & Lachungpa, *Sikkim–Himal. Rhodo.* 79. 1990; Grierson & Long, *Fl. Bhutan*, 2(1): 373, 1991; Mao et al. *Rhodo. N. E. India* 115. 2017. '*Hiun-pate Gurans*' (**Plate 2**)

Taxonomic characters: Shrub or small tree, up to 4 m high; young shoots puberulous to tomentose. Leaves oblanceolate, 10–12 × 3–4 cm, rounded, upper surface light green, white beneath, densely and softly white or fawn tomentose beneath. Inflorescence compact, 10–20-flowered, up to 6 cm long, purple color; pedicels 7–10 mm, tomentose. Calyx 1–2 mm, minutely 5-toothed. Corolla 5, tubular-campanulate, 3–4 × 7–10 cm, mauve or purple colour. Stamens 10; anther lobe dark brown, 1–2 mm. Ovary green, hairy, 5–7 mm; style white, pinkish tinge above, 3–4 cm.

Flowering and fruiting: April–May.

Status: Endemic to Eastern Himalaya. Its population has decreased during last three years at Shingba *Rhododendron* Wildlife Sanctuary due to land slide and its poor seed germination.

Distribution: Bhutan, India. **India:** Arunachal Pradesh and Sikkim (Kyangnosla Alpine Sanctuary, Shingba *Rhododendron* Wildlife Sanctuary) (**see map**)

Specimen examined: Sikkim, North District, Shingba *Rhododendron* Wildlife Sanctuary: 27°43'49.01N & 88°44'52.34E, 24.04.2014, CS Purohit 38082; 17.05.2011, Sachin Punekar 35633 (Det. CS Purohit) and 22.05.2011, Sachin Punekar 35764 (Det. CS Purohit).



***Rhododendron niveum* Hook.f.- Natural Habitat & close-up of flower**



***Rhododendron wallichii* Hook.f.- natural habitat & close-up of flower**



***Rhododendron wightii* Hook.f.- natural habitat & close-up of flower**

Rhododendron wallichii Hook.f., *Rhod. Sikkim Himal.* t. 5. 1849; Pradhan & Lachungpa, *Sikkim–Himal. Rhodo.* 90. 1990; Grierson & Long, *Fl. Bhutan* 2(1): 376. 1991; Mao et al. *Rhodo. N. E. India* 150. 2017. ‘Dr. Wallich ko Chimal’. (**Plate 2**)

Taxonomic characters: Large shrubs or small tree, up to 6 m tall; branchlets glabrous. Leaves more sparsely, dirty brown tomentose beneath with stiff, fasciculate hairs, becoming glabrous when older. Inflorescence 5–10-flowered; pedicels 1–2 cm, glabrous. Calyx up to 1 mm, glabrous. Corolla funnel-campanulate, 3–4 cm, 5-lobed, lilac or pinkish-mauve. Stamens 10; filaments glabrous or with a few hairs at base. Ovary glabrous. Capsules weakly curved, 2–2.5 × 0.5–0.7 cm.

Flowering and Fruiting: May–June.

Status: Endemic to Eastern Himalaya.

Distribution: Bhutan, India, Nepal. **India:** Sikkim (Shingba Rhododendron Wildlife Sanctuary) (**see map**)

Specimen examined: Sikkim, North District, Shingba Rhododendron Wildlife Sanctuary, 27°43′46.31N & 88°43′7.10E, 25.04.2014, CS Purohit 38103.

Rhododendron wightii Hook.f., *Rhod. Sikkim Himal.* t. 27. 1849; Grierson & Long, *Fl. Bhutan*, 2(1): 373. 1991; Mao et al. *Rhodo. N. E. India* 155. 2017. (**Plate 2**)

Taxonomic characters: Shrubs; stem much branched or puberulous, up to 5 m high. Leaves elliptic or obovate, 9–15 × 4–7 cm, broad, obtuse, mucronate, glabrous minutely rugose, dark bright green, above and covered by fawn or rusty or seldom grayish, uniformly adpressed felty hairs beneath; petioles 1–2 cm. Inflorescence 12–20-flowered, pendulous; pedicels 1.5–2 cm, tomentose. Calyx 5-lobed, minute. Corolla campanulate, pale or lemon yellow with reddish or brownish spots, 3–5 × 4–6 cm, broad at base, 5-lobed. Stamens 10; anther lobe light brown, 2–3 mm, filament white. Ovary green; style white with greenish tinge, glabrous. Capsule curved, 2.5–4 × 0.5–0.7 cm.

Flowering and fruiting: April–June.

Status: Endemic to Eastern Himalaya.

Distribution: Bhutan, India, Nepal, SE Tibet. **India:** Arunachal Pradesh and Sikkim (Yumthang, Yomesamdong, Shivmandir, Shingba Rhododendron Sanctuary, Mamaichu, Kupup, Chhangu, Andajheel, Tsoka, Dzungri, Yoksolum, Bakhim). (**see map**)

Specimen examined: Sikkim, North District, Shingba Rhododendron Wildlife Sanctuary: 27°46′16.23N & 88°45′55.50E, 02.05.2014, CS Purohit 38196; 17.05.2011, Sachin Puneekar 35631 (Det. CS Purohit).

Conclusion

Rhododendrons act as keystone species in the high altitudinal region of the Eastern Himalayas. The subalpine to alpine transition zone that includes the timberline is the most fragile ecosystem in the Sikkim Himalaya. The Himalayan ecosystem has been greatly affected due to various threats posed by nature as well as by human beings. Due to human interference the natural populations of rhododendrons in the Eastern Himalaya are gradually diminishing. The major threats to rhododendrons are deforestation and unsustainable extraction for incense and firewood by local people. Due to the various anthropogenic pressures, 43 species are becoming rare, threatened and endangered in India and 3 species viz. *Rhododendron baileyi* Balf.f., *R. edgeworthii* Hook.f. and *R. keysii* Nutt., from Sikkim (Sastry and Hajra, 1983). The species *R. baileyi* Balf.f., *R. camelliflorum* Hook.f., *R. ciliatum* Hook.f., *R. glaucophyllum* Rehder, *R. lanatum* Hook.f., *R. niveum* Hook.f., *R. wallichii* Hook.f. and *R. wightii* Hook.f. were collected and included in the present paper from Shingba Rhododendron Wildlife Sanctuary, North district, Sikkim, are endemic to Eastern Himalayas.

In this study, the goal was use of GIS to find out the distribution of habitats for rare species for which limited ecological information is available. High altitude area viz. 3,000m–3,500 m are considered as best suitable sites for rhododendrons conservation and their recovery. The knowledge obtained and the results can be used in studies of the effects of various factors and stresses in relation to biological diversity, on the updating of the state of biological diversity of wild plants in the Gangtok, Sikkim, as well as on promotional activities targeting problems of the environment, agriculture and other areas of concern.

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Rhododendron occidentale

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North Queensland project, an outstanding success!

ANDREW ROUSE

Since 2016, the Australian Rhododendron Society has partnered with the Australian Tropical Herbarium to re-collect our native rhododendrons from the mountain-tops in North Queensland, re-establish them in cultivation and fund molecular analysis to better understand the genetic diversity, within and between the two species, and their relationship with other vireya species in New Guinea.

From an Australian Rhododendron Society perspective, the ‘North Queensland’ project has four components:

- Re-establish in cultivation wild collected specimens of *R. viriosum* and *R. lochiaie* from each Queensland mountain-top;
- Undertake molecular analysis to advance our knowledge of their genetic diversity;
- Distribute specimens to other Botanic Gardens, to safeguard them in cultivation; and
- Establish a public display of the species at Dandenong Ranges Botanic Garden (DRBG).

Re-establish in cultivation wild collected specimens of *R. viriosum* and *R. lochiaie*

Between 2016–2018, 14 Society members participated in the trips to Queensland mountain-tops organised by the Australian Tropical Herbarium. It was a wonderful experience to access hard-to-get-to locations such as Windsor Tablelands, Mount Spurgeon and Mount Finnigan, to see the staggering diversity of plants in these montane forests and observe how the rhododendrons grow in the wild.

The Society has been hugely successful with re-establishing in cultivation *R. viriosum* and *R. lochiaie*. We now have in cultivation at the DRBG 42 different provenances of the species comprising the three known populations of *R. lochiaie* and *R. viriosum* from nine mountains. Where possible, cuttings were collected from 3–5 different plants at each population so that we had genetic diversity within populations as well as between them. Leaf samples were also collected for the molecular analysis.

The plants now held at DRBG are 2–3 years old and some are close to flowering age (Figure 1). We’re seeing distinct morphological characteristics that, pleasingly, align well with the findings of the molecular analysis (below).

For *R. viriosum*, plants from Windsor Tableland and the Main Range (Mount Spurgeon, Mount Lewis and Devil's Thumb) share morphological characteristics, as does *R. viriosum* from Mount Finnigan, Pieter Botte and Thornton Peak.

The Society has borrowed plant presses and is in the process of purchasing a dryer so that we can collect trusses as they come into flower. Herbarium specimens will be lodged with the Australian Tropical Herbarium and the Royal Botanic Gardens Melbourne.

Molecular analysis of R. viriosum, R. lochiaie and comparison with other vireya species from New Guinea.

In 2016 National Council of ARS Inc provided funding of NZ\$4,000 to Plant & Food Research NZ towards the DNA analysis of specimens of *R. viriosum* and *R. lochiaie* collected in North Queensland.

This work is an important component in advancing our understanding of the relationship between the populations within *R. viriosum* and *R. lochiaie*, and between the two species.

The genesis of this work dates back to 1996 when Lyn Craven and Bob Withers proposed splitting *R. lochiaie* into two species. Two species are now broadly accepted in the rhododendron world however the Australian Plant Census only recognises one species – *R. lochiaie*. This is important from a conservation perspective, as management decisions can be based on conservation status. For example, if treated as a single species, ex-situ conservation would likely require collection from fewer populations than if treated as two species. Similarly, the conservation status of a single species could be different from their assessment as two species. For example, as two species, *R. viriosum* has a conservation status of Least Concern, whereas *R. lochiaie* is Vulnerable. As a single species, it is possible that the conservation status would be Least Concern to reflect the wider distribution and larger populations of *R. viriosum*.

Leaf samples of *R. viriosum* and *R. lochiaie* were collected in the wild (from the same plants as cuttings for the living collection) and sent to Plant and Food Research NZ for molecular analysis. The analysis was undertaken to determine whether the differences we observe between *R. viriosum* and *R. lochiaie*, are also evident at the genomic level. Leaf samples were also collected from well-provenanced vireya species held in collections in Australia, NZ and UK. DNA was extracted from the leaf samples and the differences between them used to prepare a phylogenetic tree that shows the relatedness between the plants sampled.

The molecular analysis has been completed. Plant and Food NZ are working towards publishing the results in a refereed journal and they will subsequently be presented at the ARS Conference in November 2020.

Distribute specimens of R. viriosum and R. lochiaie to other Botanic Gardens

Currently the living collection is maintained as a potted collection held at DRBG. Parks Victoria and ARS-Vic has received approval from Australian Tropical Herbarium, under whose permit the plants were collected from the wild, to proceed with distribution of cuttings to other Botanic Gardens. This requires a Material Sharing Agreement between the gardens and preparation of a distribution plan. The Society will work with Parks Victoria to develop a distribution plan so that the entire collection is replicated across other botanic gardens.

Establishing a North Queensland bed at DRBG

A site has been selected in the recently acquired ‘golf course’ addition to the DRBG, and some of the materials required for the bed have been ordered. Infrastructure works such as plumbing and roads are required before the bed can be established. The Society is liaising closely with DRBG with the aim that the bed is completed in 2020. In the interim, ARS members are currently bulking up the plants collected in the wild for planting out in the bed.

Companion plants of the rhododendrons were collected in 2018 and 2019 and are being propagated by project partners including Royal Botanic Gardens Cranbourne. Parks Victoria and the Society are liaising with RBG Cranbourne regarding plants suitable for planting out in the North Queensland bed. We hoped to take possession of these plants during 2020.

The Society would like to thank the Ian Potter Foundation, and Simon & Marcia Begg for their financial support of the project. ❀



Figure 1: Potted collection of *R. viriosum* and *R. lochiaie* held at DRBG

Side trips to a Wedding

ROBERT HATCHER

When your niece decides to get married on the other side of the world from Australia and the counter decision to attend is made, the 'What else do we do while over there?' question arises.

Jacki and I have had a wish to visit Spain for a variety of reasons for many years. Exodus happened to be running a cultural tour of Andalucia that fitted the bill nicely.

We also had an invite to spend some time with a couple we met while trekking in West Bengal/Sikkim in 2015 in Pembrokeshire in Wales.

With these two main side trips in mind, we booked accordingly, and we set off on 8 September to the UK first up.

After a hairy trip to Worcestershire along narrow hedgerow-lined English roads the next day we set off to Pembrokeshire.

Why Pembrokeshire? Penny and John, our friends from Worcestershire had commented back in June while visiting us, and on a trip to Kangaroo Island, how reminiscent the coastline there is to Pembrokeshire. They'd extended an invitation, that if we were ever in the UK, to spend a few days down there.

While reminiscent in the sense of rugged coast and seal colonies, Pembrokeshire does have its own attractions that are unique. I can recommend that if you are ever in the vicinity of Milford Haven, Little Haven and Broad Haven, spend some time looking around.

Of course, the inevitable garden does get in the way ... in this case the National Botanic Garden Wales.

On our return journey to Heathrow to catch our plane to Spain we visited this relatively new Botanic Garden that lays claim to being the first national Botanic Garden to open in the 21st Century.

It is located at Llarnarthne, Carmarthanshire and has been built on the site of the Middleton Estate that dates back to the Regency period. The new garden still incorporates many of the feature of the landscape created back then so gives a sense of age that goes way beyond the year 2000 back into that era.

From my perspective as a horticulturist working for a botanic garden, the conservatory sparked greatest interest.

The flora chosen to be housed in this amazing structure are the Mediterranean regions of the world including our own Australian flora.

There are many other features to the garden including a representative of the indigenous plants of the UK most of which are shared with Europe in one

shape or other. Britain may exit the European Union but she will still share many of the plants that exist on the European continent as her native flora.

I can recommend a visit to this garden if in the vicinity.

The next phase of our European trip was the cultural tour of Andalucia and the inspiration for this for me was as a result of seeing Monty Don's *Round the World in 80 Gardens* TV program in the early 2000s.

In that, he featured the Alhambra in Granada, and there has always been a desire within me to go there. It is an experience I will certainly not forget while memory serves me. The water management system that still exists after centuries and many wars is, in my opinion, a wondrous thing. The mosaics that survive are still beautiful regardless of the areas that have been damaged by war and other ravages of time. Three hours whizzed by and, while getting the opportunity in that time to see it all, there were probably features that were missed.

The Real Alcázar in Seville was also on the bucket list and acted as curtain raiser to the Alhambra. Dating back to the time of Queen Isabella of Spain this palace garden incorporates the plants brought to Europe from the New World and has some of the largest *Magnolia grandiflora* specimens in the world.

The Real Alcázar in Seville.





Magnolia grandiflora at the Real Alcázar in Seville.

These two have again featured in the recent Monty Don production *Paradise Gardens*.

Of course, a trip to Spain would not be complete without a flamenco show and the jamon made from the acorn consuming black pigs of southern Spain.

There was also the chance to visit one of the national parks in an area known as the Atiquerra and we did see a little family of Spanish ibex. You also gain an appreciation of some of our pest plants when seeing them in their places of origin and how the introduction of our plants certainly can do the same. Plants such as *Cotoneaster* and *Crataegus* (hawthorn) to name a couple. Our *Eucalyptus* species introduced less than 100 years ago during Franco's era of rule have become an environmental disaster for Spain.

Were there any rhododendrons? Not that I can recall. What I can say though, is that regardless of not being rhododendron-infused, as a gardener it was an uplifting experience.

In between Spain and the wedding in the Netherlands we spent two days with a couple I have known for many years that live in Ivy Bridge near Plymouth. They are members of the National Trust and a garden called Coleton Fishacre was offered by them as a day visit while there.

Coleton Fishacre, Devon, home of the D'Oyly Carte family.



For those that know about this garden, what I write will not be news, but this is a gem of a garden, and it has so much history. The history is relatively recent and dates to the 1920s when the D'Oyly Carte family (of the Savoy Hotel and Opera company fame) bought the land for its location and built the house and created the garden.

The house was built from stone quarried on the site in 1923 and the garden started at the same time. The décor of the interior of the house is Art Deco. The house and garden was bought by the National trust in 1989 and the garden was open to the public from then. However the house went through a period of restoration and was not open to the public until 1999.

For anyone that knows anything about the introduction of plants into horticulture the period this garden started in was a boom time for gardens as far as new introductions becoming available. The connections the D'Oyly Carte family had to all the great gardens of the region meant they could plant at will and definitely they did. The *Liriodendron tulipifera* planted in 1926 still stands as a tribute to the early development there. Big leaf rhododendrons such as *R. falconeri* now are heading toward eight metres tall.

The Rill is an outstanding landscape feature and the way the garden leads down toward the small cove is absolutely stunning. A garden definitely worthy of spending a day if ever in Plymouth and going across by ferry in Falmouth was a great experience.

The final stage of the trip, the wedding in Holland, which was the ostensible reason for our journey was also an unforgettable occasion for many reasons but putting on paper does not do it justice as it needs some visual effects. ❀

Beauty comes from great challenges

DENBY BROWNING

Every gardener faces a range of challenges simply to develop a site of value – to themselves and to a wider community.

Maruta and Peter Boyd and Bronwyn and Richard Illman faced very different challenges in quite different circumstances, yet their shared love of rhododendrons has resulted in two beautiful gardens.

Peter grew up with parents who were avid gardeners on a 250-acre (100 hectare) property in Tasmania, near Kingston, about 15 minutes' drive south of Hobart. They created a garden of seven acres on the property filled with rhododendrons, azaleas and camellias. When his father died in 1995, Peter and Maruta were living in New Zealand with no immediate plans to return home so they rented the place.

“We decided to return after we retired nine years ago,” said Peter. “Unfortunately, the tenants were not gardeners at all and the weeds had taken over.”

The couple set to work clearing the huge garden and preparing it for new rhododendron plantings. The first major challenge was ponticum rhododendrons.

Rhododendron 'Susan Wells'.





A view from the Boyds' home. A dogwood, *Cornus capitata*, is in the middle of the photo and a *Stewartia pseudocamellia* to the right.

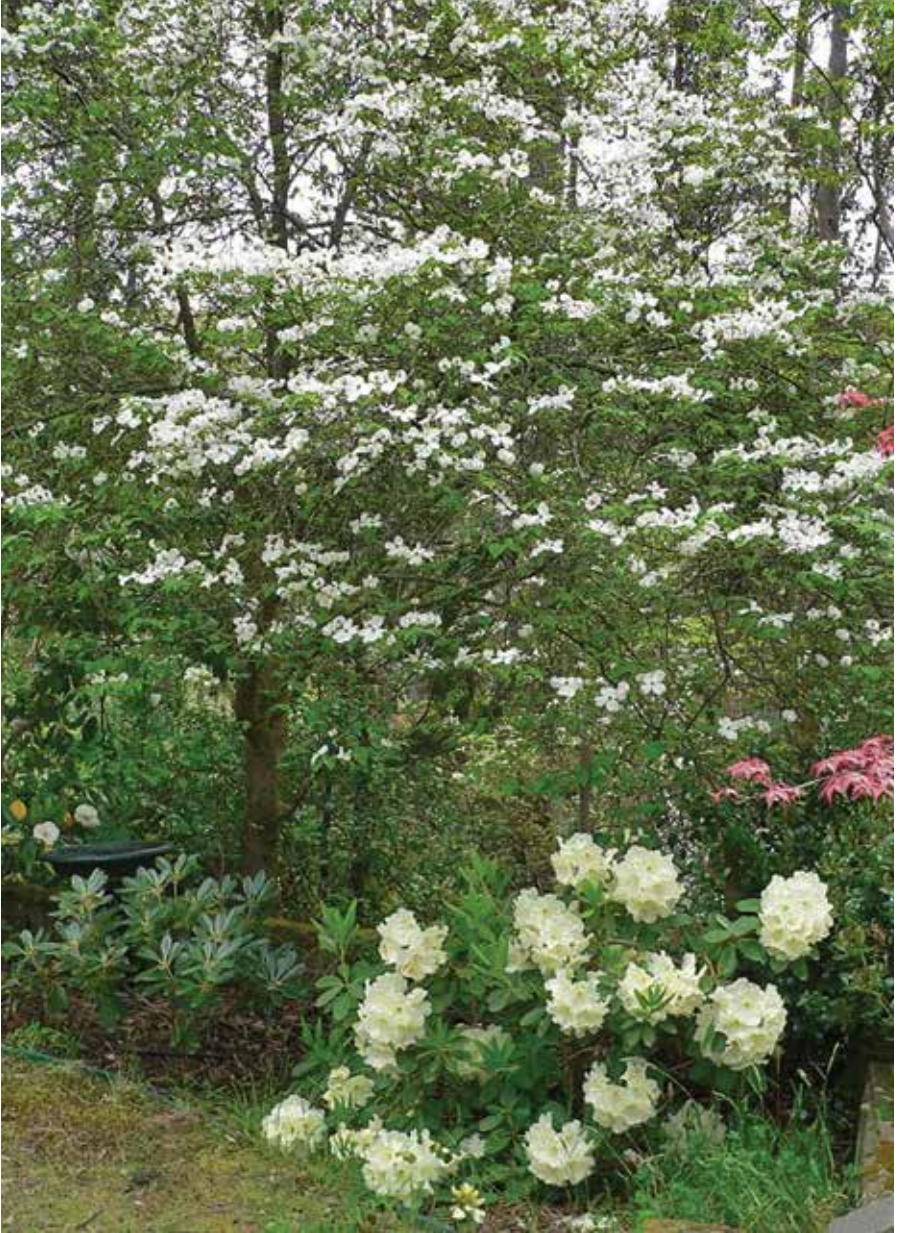
“Dad planted a lot of rhododendrons grafted onto ponticum rootstock,” said Peter.

According to inter-governmental agency the Centre for Agriculture and Bioscience International (CABI), ponticum rhododendron is now established in the UK and other parts of Europe “where it is threatening natural and semi-native habitats and the associated flora and fauna. In its native range, *R. ponticum* is also spreading and causing problems in the forests of Turkey where again it displaces native vegetation. It smothers the forest floor when it becomes established and shades out all other vegetation.”

There was no option but to dig out all the old plantings.

“It took about a year to completely dig out each one because they have very vigorous root growth so it was everywhere across the seven acres”, said Maruta. “We now have seven rhododendrons plants in the space once occupied by one ponticum!”

“Someone said that retirement is a seven-day weekend. For us it is seven days a week working in the garden!”



Rhododendron 'Lemon Lodge' and a dogwood tree above, in Maruta and Peter Boyd's garden near Hobart, Tasmania.



Rhododendron Lem's Monarch.

Azaleas in full flower in the Boyd garden.





A large rhododendron in an old part of the Boyd garden.

Maruta and Peter Boyd in front of their Christmas rhododendron.



Today Maruta and Peter's garden includes about 150 rhododendron plants with another 50 in a shade house.

"Peter grew up on this place so he selects the best," said Maruta. The collection includes 'Lem's Monarch', 'Susan Wells' and 'Lemon Lodge'.

They have also planted companion plants including *Aquilegia* and *Epimedium* and have planted 20 birches and created a flowering cherry walk along the banks of Brown's River that flows below the garden.

As if seven acres were not enough, Peter and Maruta are clearing scrub to create new garden beds.

"We have put in irrigation because, in spite of the fact we live in southern Tasmania, some areas of the garden don't get enough water," said Maruta. "Fortunately, we have mains water supply.

"Our great challenge is to know how long we will continue to have the energy to keep working in the garden."

Another challenge is wallabies that have a taste for rhododendrons "and just about everything else we plant", said Peter.

Rhododendron 'Lem's Monarch', in the Illman garden.





Rhododendron 'Anna', in the Illman garden.

For Richard and Bronwyn Illman, the challenge is the environment. In 1972 the couple bought three quarters of an acre (0.3 hectares) near Aldgate in the Adelaide Hills district of South Australia.

“We experience the Mediterranean climate of hot, dry summers and cold, wet winters,” said Richard. “We live in a small area – just a few square kilometres – of the Hills around Stirling and Aldgate where some rhododendron varieties grow well.”

Their property was covered in a stringybark forest.

“We had been brought up on the Adelaide plains and quickly discovered the problem of high rainfall on sloping ground,” said Richard. “So our first challenge was basic landscaping before we could begin planting.

“Bronwyn’s father was a friend of a prominent local nurseryman. In the ‘70s, nurseries in the Hills mainly stocked rhododendrons, azaleas and camellias. Hence our love of these plants developed into a rhododendron garden.”

A trip to the Dandenong Ranges in Victoria opened their eyes to the possibilities of rhododendrons and that trip soon became a regular pilgrimage.

Then in 1990 the couple travelled to Britain and discovered there was a lot more to a garden and gardening and so many plants they did not know.

They quickly joined the Royal Horticultural Society, mainly to access a seed list.

“We have become avid overseas conference goers,” said Richard. “Our focus is America, Scandinavia and Germany. The biggest we have attended was the American Rhododendron Society’s 2018 convention in Bremen in Germany.”



Double white *Rhododendron* 'Lady Anne'.

White with a lemon yellow eye, this is *Rhododendron* 'Mum'.





Personal photo display gardens: Richard and Bronwyn Illman in a garden during the American Rhododendron Society conference in Germany in 2018.

Richard and Bronwyn now propagate rhododendrons from seed bought by mail order mainly from overseas.

“We have lots of little plants on the go,” said Richard. “Why keep growing things that already exist?”

Their garden is not exclusively rhododendrons, however.

“Our interest has spread much wider to include as many companion plants as we can manage,” said Richard. “We have Japanese maples, magnolias, bulbs and woodland ground covers find a place. We have lots of clematis.

“Our garden is now at a stage where it is filling with plants of our own creation through propagation by seed, cuttings and grafting.

“Most of the original stringybarks have perished, replaced by deciduous trees that give a very different look.

“Our branch of the Australian Rhododendron Society is completely based in the small area where we live. With 40° days and hot north winds, special measures have to be taken to help the plants’ survival. Vireyas do well here and we grow a number epiphytically.”

Most gardeners believe that weeds are their greatest challenge. Yet the Boyds and Illmans have overcome greater obstacles to create colourful, vibrant gardens filled with many varieties of rhododendron and many companion plantings. ☘

New Registrations 2018–19

LESLEY EATON

The following is a listing of registrations submitted by the Australian Rhododendron Society Plant registrar, and approved by the Royal Horticultural Society during the year 2018–2019.

Colour numbers refer to the R.H.S. Colour Chart. Accompanying colour names are taken from *A Contribution Towards Standardization of Color Names in Horticulture*, R.D. Huse and K.L. Kelly, edited D.H. Voss (ARS 1984).

Parents of plants are reported in the conventional order – seed parent × pollen parent.

Abbreviations used: H hybridized by
G grown to first flower
S selected by
N named by
I introduced by
R registered by

Included in the description are broad colour definitions after the RHS Colour Chart numbers. This will enable members without access to the chart to have some idea of the colour of the flower.

For information on registration and registration forms, please contact Lesley Eaton, lesley.eaton@bigpond.com

‘Blooming Tasmania’ Elepidote hybrid of *R. fortunei* × *Unknown* H: *Unknown* G: Emu Valley Rhododendron Garden (1998) N: Blooming Tasmania not for profit organization (2013) I: Emu Valley Rhododendron Garden (2018) R: Juanita Wood (2018) Truss: simple umbel consisting of 10–14 tubular funnel-shaped flowers. Corolla: 90 mm × 110 mm. Lobes: 7 flat. Buds: 36A (flesh pink). Corolla: Inside 155A (creamy white). Outside: 155B (pale creamy white). Blotch 8B (yellow) in throat. Leaves: narrowly elliptic. Length: 195 mm × 60mm. Leaf margins: flat. Upper surface: matt. Height: 2.5–3 m × 2.5 m. Flowering time: Mid December. Fragrant. *Picture next page.*

‘Miss Maya’ Lepidote hybrid *R. edgeworthii* × *R. johnstoneanum*. H: Maurice Kupsch (2000) G: Maurice Kupsch (2010) N: Maurice Kupsch (2015) I: Emu Valley Rhododendron Garden (2015) R: Juanita Wood (2018) Truss: simple umbel consisting of 5–8 funnel-campanulate shaped flowers. Corolla: 55 mm × 75 mm. Lobes: 5 wavy. Buds: 48A (deep salmon pink). Corolla: Inside: 27D

(pale peach) with edges of 48C (salmon pink). Outside: 27D (pale peach fused with 48B (light red). Spots of 39A (dull red) on upper lobe. Leaves: Elliptic. Length: 60 mm × 25 mm. Leaf margins: flat. Height: 1 m × 1 m. Flowering time: Mid October. *Picture opposite page.*

‘Shell Bell’ Elepidote hybrid of ‘Alice’ × Unknown. H: Unknown. G: Emu Valley Rhododendron Garden (1984) N: Cynthia and Robert Stevens (2016) I: Emu Valley Rhododendron Garden (2000) R: Juanita Wood (2018) Truss: Open umbel consisting of 8–10 widely funnel-shaped flowers. Corolla: 70 mm × 110 mm. Lobes: 7 wavy. Buds: 67B (fuchsia pink). Corolla: Inside: 73A (deep rose pink). Outside: 73A (deep rose pink). Spots of 180B (mid tan) on upper lobe. Leaves: Oblong. Length: 180 mm × 70 mm. Margins: flat. Upper surface: Matt. Height: 2.5–3 m × 1.5 m. Flowering time: Early November. *Picture opposite page.*



R. ‘Blooming Tasmania’.



New Registrations 2018–2019: *R.* 'Miss Maya' (above) and *R.* 'Shell Bell' (below).



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