

New species and new problems in the taxonomy of *Vireya*

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Thank you very much ladies and gentlemen, it's very nice to be in Australia again. A country I find most hospitable, very attractive, and I've always had a very good time whenever I've visited. I've not been quite as often as Barry might have implied in his introduction, but I'm very grateful to the Rhododendron Society for inviting me to talk again, and I'm very grateful to Barry and Gay too for their hospitality in putting me and other speakers up. I know what an enormous effort it is to put together a thing like this, and I do appreciate all the hard work that's gone into it.

I'm coming to this conference from a different angle to most other people, because (I don't say I'm not keen on rhododendrons - I do appreciate them as attractive plants), and I say from the outset that, although I'm studying wild plants (which essentially means species) that doesn't mean to say I'm "anti-hybrid", or "anti-hybridizer." I make that very clear to start with, because a lot of people get the idea that, because I'm a "species man", I'm somehow thumbing my nose at hybrids and hybridizers. Far from it. I can appreciate a pretty plant, and the product of years of careful work, as much as anybody else. But it's not my field. My field's taxonomy, and this is very much misunderstood. It has a very poor press I think.

When I was an undergraduate, I was always encouraged by our professor (who was a very eminent taxonomist). He always said: "you're not a taxonomist, you're not a physiologist, you're a botanist, and you study plants in a general sense." And I'm coming from the point of view where I want to understand the relationships of plants. I want to understand how they interrelate. A lot of people think that taxonomy is all about describing new species. As a matter of fact, we're "sinking" just about as many of the vireyas now as we're describing. The number is remaining remarkably static at the present time. And in understanding relationships, I think this is bound to

happen. Describing new species is also not the "be-all-and-end-all" in the sense that when you describe a new species, you very often have very limited material. It's the start of the process, of understanding biology. We want to know as much as we possibly can about the species, their inter-relations, how they vary, and all sorts of things.

Vireyas are often billed as the poor relations in *Rhododendron*, despite the fact that they're the largest section. Before coming here, I got to read Professor Sleumer's notes for a lecture he gave to the Portland Chapter of the American Rhododendron Society some time ago. I was interested in his opening remark, to the effect that "vireyas are not much different from other rhododendrons." I thought that this was a splendid way to start.

The main feature of vireyas that distinguishes them is their long-tailed seeds. But with just about everything you can say about vireyas, you can find exceptions. This is *R. lowii* seed, with exceptionally long tails at both ends, but some of the high-level vireyas don't have tails at all. *R. abietifolium* has absolutely no tails on its seeds whatsoever, and *R. retusum* has precious little. The tails are very much associated with the epiphytic mode of habit. This is *R. christi*, growing naturally in New Guinea. (In Indonesian New Guinea, formerly Irian Jaya - I think they're now calling it something else). *R. christi* is illustrated growing epiphytically on a moss-covered log, and just to prove it grows epiphytically, this slide shows it growing (artificially) epiphytically at the RBG on an artificial tree on cork bark.

The vireyas are almost circumscribed geographically. I apologize that this (table) is slightly out-of-date. You all know that we've got two species here in Australia, due to Lyn (Craven's) careful work. The numbers here give a rough approximation - the Philippines is up a bit; Borneo is up a bit; I don't know that we've got anything new for New Guinea at the present time. The mainland species are not described. But it's a group which essentially covers the South East Asian archipelago, mostly in the islands, and New Guinea is by far the richest area in species at the present time.

This slide proves that I was up on Mount Wilhelm as well as Graham (Smith). And it's just to underline the point that Graham Snell has always objected to these plants being called "tropical rhododendrons." This was not very far from

where the rhododendrons were growing. This is only about 6 degrees south of the Equator. In actual fact, I never got to the top of Mount Wilhelm ... I've never got to the top of quite a number of the mountains that I've climbed ... mostly it's because I get too distracted with the plants and run out of time. On this occasion, I couldn't stand my guide in bare feet walking in the snow. Once we got above the snowline, I said: "Look, we'll take your picture, and then we'll go down." I had thick socks and boots, and he was in bare feet. But the fact is, the rhododendrons on Mount Wilhelm and a number of other places do, from time to time, get frosted; they do (occasionally) get heavy snow lying on them. And I've always said that I've never ever been so cold as I have been when camped on a tropical mountain.

So, that's just to reinforce that they're not plants that love great heat, for the most part. Another characteristic of vireyas - which, again, has exceptions, is this tapering ovary-style junction. Barbara Palser in America gave an elegant presentation where she showed that the ovule disposition varies in vireyas from other rhododendrons. I know of no vireya which has a sharp actual layer to separate the style and the ovary, although some of the junctions are physically very abrupt.

Section *Vireya* is part of sub-genus *Rhododendron* - the scaly rhododendrons - and this is the back of *R himantodes*, just to show the scales. But, again, it's to point up that vireyas have a lot of what I would call "negative characteristics" - things which occur in other parts of the genus *Rhododendron* which don't occur in *Vireya*. We don't have spots of colour - actual pigment colour - in any of the vireyas as far as I'm aware. There can be a certain amount of patterning, but we don't have this pattern of spots which occurs in so many other things. The only patterns we get, as with *R himantodes*, is patches of scales.

In other respects too, the flower buds are never deeply sulcate - they're never deeply grooved - in the way that lots of other rhododendrons are. And all these characteristics give an "impression" of the vireya, so that it's usually instantly and easily recognisable.

Another thing I've heard people mention already is the aim to produce a nice, rounded truss of flowers as one of the breeding attributes. One of the

characteristics of vireyas is that they don't have a central peduncle, which is developed in many other rhododendrons. The pedicels all come directly from the top of the stem, and form a rounded truss, and it is essentially a true umbel and not a raceme, as occurs in many others. You can see this in *R zoelleri* - this flat-topped sort of inflorescence, which as I say some breeders are objecting to, and trying to get over. But it does reflect the structure of the inflorescence - which I regard as quite advanced. I regard the more primitive inflorescence structure as having a peduncle as well as pedicels.

They're an extraordinarily varied group, the three hundred or so species that we've got. And, to a large extent, this is very much because they've exploited pollinators in a way that other rhododendrons - other groups of plants even - perhaps haven't. Many of the montane species have this red colouration and curved tubes, as with *R alticolum*, employing birds as pollinators. We think these *R konori* types - including *leucogigas*, *superbum* - these big, strong flowers with an increase in number of parts ... they've usually got multiples of 6 or 7 and this increases the number of stamens; very, very large anthers; enormous amounts of pollen; and the beautiful scent. The implication is that these are "bat-flowers" - that they're bat-pollinated, but I know of nobody who's sat up and observed bats actually visiting these things.

Delicate little alpine plants, like *R. anagalliflorum*, which the breeders have used to tremendous effect. Virtually everything you can say about vireyas you can find exceptions to. But, as I've said, they're essentially epiphytic, which correlates with those long-tailed seeds, which enables the seeds to float about from tree to tree in not-terribly-strong winds. But wherever you get to open situations, they grow perfectly happily on the ground. This is *R. buxifolium*, on Mount Kinabalu, up at 3000-plus metres. A beautiful plant, extremely interesting. We still don't really know how its pollination syndrome works because it's much visited by birds. But these are birds that I'm told have no sense of smell, yet it's a beautifully scented species with red flowers, which is a very unusual combination.

I've come to the understanding of the relationships and the groupings. It's part of sub-genus *Rhododendron* - the scaly rhododendrons. Scales are a subject that I find very confusing, and I hope I won't confuse you too much. Seen

through a scanning electron microscope on the underside of the leaf, you can see the little stomata around the scale - the central thing - which is a multi-cellular trichome, technically it's a multi-cellular hair. It's a big structure, usually with a stalk, and varying in structure. Some have a large dome and a small flange. (This particular slide) shows one of the Section Malayovireyas, with densely overlapping scales in this case, a large centre but a very large flange. (Another) shows a large flange but a small centre in one of the Subsection Vireya types, and again the stomata - the breathing pores of the leaf - can be seen around it. And in the Phaeovireya type - the dendroid scales, sit on epidermal tubercles - like little mountains on the underside. The scales were very much used by Professor Sleumer in the taxonomy. We usually view them, from the point of view of standardisation, from the underside of the leaf, where they're best preserved. But they occur almost all over the plants. Their distribution is quite variable, and they vary quite considerably in their properties.

Sleumer also used corolla shapes to divide his subsections, and Solenovireya was described as having these "hypocrateriform" (long, thin, tubular) corollas - essentially a moth-pollinated syndrome. Usually beautifully-scented with pale colours - white or pink. But defined as having the lobes less than a quarter the length of the tube, as in *R. jasminiflorum*.

Siphonovireya was also characterised by a similar sort of flower tube, but this interested me because it has an unusual scale type. It has the domed scales with a narrow flange, similar to those of Pseudovireya, and as Graham (Smith) mentioned, it seems to be chemically different because the two species that we have in colour both have this aromatic foliage when they're crushed, which is a very pleasant characteristic. And they both have papillae on the underside of the leaves, which is also unusual.

So Professor Sleumer in his classic account for Flora Malesiana, which came out in 1966, had divided the vireyas into seven subsections, the order of which I've reversed here. Essentially what he did (which is what most taxonomists do) was to take out the most distinctive groups first. So if you look at the numbers in those groups, you'll see "Euvireya" (which is a term I shouldn't really still use, but I find it very convenient - it just means the

"genuine" vireya, and it should really be just "Subsection Vireya", without the "Eu") you'll see that has 139 species, and all the others are very much smaller numbers. This essentially means that this was the "junk-heap" where everything was put together, and the other groups were very much better defined. Essentially, he then divided the Subsection Vireya into two groups on leaf size - not a very natural approach to classification. So I've been looking at the rhododendrons, and trying to improve on this situation, over quite a long period of time. In the "Rhododendrons of Sabah" book, I created a new series Dendrolepidon for plants that have dendroid scales, but do not sit on epidermal tubercles. Some dendroid scales sit flat on the leaf surface, as opposed to the New Guinea Phaeovireyas where the scales virtually always sit on protuberances, for example *R phaeochitum*.

Having the benefit of a large living collection in Edinburgh, as well as doing quite a lot of fieldwork, it's very nice to try and look at as many different characters as possible. One of the things that struck me, and I realised that I wasn't the first person to observe it by any means, was that (in some of the vireyas) before the fruit splits an outer layer of skin peels off. For instance, in *R leucogigas* the fruits take a remarkably long time to come to maturity - ours took 14 months to ripen from hand-pollination - and an outer velvet-like skin peels back before the fruit actually splits. But with a number of the vireyas this doesn't happen. Also flower-bud characteristics I also found very useful in that it was very obvious that buds were very different from one species to another, and from one group to another. If you look at a flower bud of *R malayanum* you can see the bud-scales - for which I prefer the term "bract"- the covering leaf-like appendages over the flower, are fringed with simple white hairs. In some of the vireyas this occurs, but not others. (Sleumer used the term "perulae" for what I have termed a "bract", but his term has been used differently by Cullen & Chamberlain, and could give rise to confusion). In *R lanceolatum* there's a very different sort of morphology, with the edge of the bracts covered with scales typical of the leaves, stuck on the edges almost like stamp hinges. And when I looked at the scales I wanted to divide them. Professor Sleumer had four types of scale (refer table), although there's a lot of variation. I divided the scales essentially into two - those that had small

centres, and those that had large centres. And this was the situation I presented for the (1988) Wollongong Conference - essentially dividing *Vireya* into two. You could do that on looking at the scales; the fruits that had an outer layer that peeled before they split against those that didn't; and the indumentum on the edge of the bracts - the typical scale-type as against simple white hairs.

Siphonovireya, exemplified by *R herzogii*, didn't fit this pattern. I hadn't observed all these things by the time of Wollongong and one of the groups where I hadn't observed sufficient of the fruits or the flowerbuds were the Siphonovireyas. Then we had only *R herzogii*, which combines essentially a Siphonovireya type corolla with a Pseudovireya type scale but it has other characteristics which set them off. This is true of the two species we know - *R herzogii* and *R inundatum*. So this didn't fit. The outer skin of the fruit peeled, but it was otherwise like Pseudovireya. The other one which was a bit of an oddity was *R santapau*, collected on one of Peter Cox's expeditions, and just about the most northwestern of the vireya species. It's got very short flowers characteristic of the group I would like to term as the "mainland" vireyas; short, bucket-shaped, "campanulate" flowers, similar to *R vaccinioides*, *R taiwanianum*, *R emarginatum*. And when I first came across *R taiwanianum* I didn't want to include it in *Vireya* at all, and I gave it across to James Cullen at Edinburgh, and I said, "I don't want to include these in *Vireya*, you've got to deal with these." But he said, "No, these are definitely vireya - you've got to deal with them." But they've always been difficult as they don't fit well. But of course from having criticised Sleumer for having used a combination of flower shape and scales in defining his subsections - I thought he ought to be able to do it entirely on scales - I'm thrown back if I want to divide this group on flower shape as there's not much else to use. In fact *R santapau* is the exception amongst the "bracts" groups as it has incompletely glabrous bracts, and so from that point-of-view you can't group it with anything else.

So we ended up, fairly recently, with *Vireya* divided into three sections. I kept the Siphonovireya separate. But (very similar to the grouping at the time of Wollongong) I grouped by correlation of the indumentum on the bracts; the

fruits; and the scale types. So I divided Sleumer's model basically into three rather than two and otherwise kept his series reasonably intact.

We set up molecular labs in Edinburgh some time ago, and I was advocating that they ought to do something to see what relationships were from a molecular point-of-view. I said I was too old to get into it, but I'd help anyone who did. Our new Director agrees that rhododendron research must proceed, and we've got to do that. A pilot study has been done on about 20 species, and we latched on to some work that Roger Hyam had done for a PhD on molecular work to use "outgroups." The interesting thing was that it completely wrecked my interpretation, in that the grouping I wanted of *R herzogii* and *inundatum*, as *Siphonovireya*, came out embedded between *R konori*, *R lochiaie*, and the *Phaeovireyas* from New Guinea: *R. leptanthum* and *R phaeochitum*. So it became firmly embedded in another group. And when one looked at these other groupings, the *R quadrasianum*, *R rushforthii*, the *Pseudovireyas* of Sleumer; *R rugosum* an oddity standing out; the *Solenovireyas*: *R jasminiflorum*, *R suaveolens*, *R stapfianum* coming together as a nice group (a grouping that I didn't really want to see because I didn't like that corolla shape being used). *R. zollingeri* and *javanicum* a bit of an odd pair coming together there. *R apoanum* and *R himantodes*, the *Malayovireyas*, came out nicely. *R aequabile* and *Albovireyas* came out nicely. From this original work there seemed to be very good indications of support for Sleumer's groupings rather than my groupings! One of the things I realised when we'd done this was that we had done so few species, I had sampled *R jasminiflorum*, *R suaveolens*, *R stapfianum* - three essentially Bornean species - to sample *Solenovireyas*, which of course come from New Guinea. This was therefore a bad sample. What you got was a geographical climb from west to east - *R ponticum*, *R groenlandicum*, *R ferrugineum* way up in the north, the Himalaya, and then into the "out-groups", and then the *vireyas*. *R quadrasianum* was probably sampled from the Philippines. And then you've got the northwestern *R emarginatum*, *rushforthii*, and they trend very nicely, ending with New Guinea and Australia.

So then I wanted them to do a few additional. They were reluctant in view of the cost. But I said that one of the things I would like to test was *R*

jasminiflorum, because we had this from Sumatra, Malay Peninsula, Borneo, and the Philippines. One of the plants they tested came out with *R santapau*, so I said that must be a mistake - they agreed that there may have been some contamination so they're going to run that again. But the interesting thing we got was that the Sumatran *R jasminiflorum* (which Sleumer called var. *heusseri*) and which I've always thought was quite distinctive, and very different from all the other *jasminiflorum*s, does come out very differently - and sufficiently so to support my idea that it could be regarded as a separate species. *R jasminiflorum* var. *heusseri* differs not only very considerably in indumentum characters but it never has more than three flowers in a truss. The umbel is usually one, two or three-flowered, whereas all the other *jasminiflorum*s have a much bigger inflorescence. It also differs in leaf shape. So that's the state of things at the present time. And there is a lot more to be done. This is only very provisional stuff, and I have the hope that more of my groupings will be supported when more molecular work is done.

So let's move on to some other species. This (slide) is Mount Mantalingajan, on Palawan in the southern Philippines. I was keen to go up - it had recorded at that time three endemic species. One is *R acrophilum* (meaning "summit-loving"), described as having "dirty white flowers." We collected this species - I didn't think the flowers were a particularly "dirty" white. In cultivation the flowers were anything but dirty white, and when we keyed this out, it didn't key out to *R acrophilum* at all, and we described this as *R madulidii*, a beautiful new species, unfortunately no scent, but very distinctive. What we also collected was this orange-flowered species (which I didn't see in flower whilst we were on the mountain). We collected cuttings, and the local people - who were very helpful - said that they knew the species and it had red flowers, a close enough approximation. When I came to key this species out, it keyed out perfectly to *R acrophilum*, and I compared it with the type specimen - first a scruffy one at Kew, then I found a beautiful one at the Natural History Museum in London and it's an absolutely perfect match except it doesn't have dirty white flowers and it doesn't come from the summit. The collectors had been caught out doing all their labelling after the event, and they obviously

collected *R madulidii* near the summit and they must have lost the specimens, and they also obviously collected this other plant.

One of the species I was looking for up there, and we didn't find at the time, was *R edanoi*, another of the Solenovireyas, and we got this on a subsequent expedition on another mountain in Palawan just a little bit further north and this interested me enormously. Again we had the advantage of having garden backup, we only saw this vegetatively, we brought cuttings back and we grew it and flowered it, and as soon we flowered it, I realized that it keyed out to *R edanoi* but it also looked extremely like *R pneumonanthum* from Borneo. And of course, Palawan is the island that points towards Borneo, and is very close to Borneo. And the differences between the two species are absolutely minute - if you go to Sleumer and his key it's a question as to whether the corolla tube tapers abruptly, or less abruptly. I think this is very much a case where one "species" gets sunk, the newer name, and we can actually link two species very satisfactorily. *R leytense*, recollected for the first time for some time. We've got this in cultivation (picture taken in the wild) - very close to the *brookeanum/javanicum* complex, only differing in very minor details, and we've got to sort that one out. *R rousei*, described in honour of John Rouse, for all the magnificent work that he's done on rhododendron research - beautiful clean white flowers. And the stamens clustered deeply in the mouth of the corolla tube. I'm responsible for creating confusion, because when I collected this species on Sibuyan Island in the Philippines, I keyed it out in Sleumer to *R vidalii*, which I hadn't seen or collected at that time. It was only a subsequent expedition when I actually saw *R vidalii*, and I realised they're as different as chalk from cheese. We then had to describe the previous one as *R rousei*, a new species. I had distributed this, unfortunately, as *R vidalii*, and so if any if you got *R vidalii* from me from the early days it's probably *rousei* - which is actually a much nicer species. *R vidalii* has these much more translucent flowers and much paler, thinner leaves, and has these extraordinarily long stamens, as long as the corolla lobes.

The *brookeanum/javanicum* complex still bewilders me. How to divide it up satisfactorily? I notice that a lot of people are still using the name *brookeanum*, despite the fact that in "Rhododendrons of Sabah" I sank

brookeanum into *javanicum*. There are small details which can divide it up, but I think most people seeing this illustration who know this area would instantly say, "Ah, this is *R brookeanum*, or *R javanicum* ssp. *brookeanum* var. *kinabaluense* - it was collected on Palawan in the Philippines, and is totally unlike any of the other Philippine ones. It's very close to the Kinabalu form, but not exactly the same. As to another of the forms, when I first produced that book on the rhododendrons of Sabah, a man called K.M. Wong, a very astute botanist in Malaysia, wrote me a very nice letter suggesting that I hadn't got things quite right. He knew about this plant in the *brookeanum/javanicum* complex, and I went back and did some more field work, and this is an extraordinary thing - behaving as quite a separate species. It's a very interesting thing because it's not epiphytic at all; it's terrestrial in the peat swamps and it has some very distinctive, but relatively minor and easily-overlooked characteristics. Things like a grooved petiole - a character which you can only see really in living material. It's impossible to tell from dried herbarium material.

R. vanderbiltianum is another interesting one. This was first collected, as far as I know, for cultivation by Dave Binney when he went up Gunung (Mt.) Kemiri, and he very kindly sent us material, and I got to know it quite well. It still hasn't flowered at all for us in Edinburgh. When I covered the same ground about a year later, I looked at this thing and thought, "Good Heavens - that's not a vireya." I was struck with Peter Cox's picture of a plant of *R lutescens*, which has a similar sort of flower with the stamens protruding forward and up-turned like a hay rake, in a disposition which I don't know in any of the vireyas. It's a novel disposition. It was only when I walked around, and I saw plants which were not in flower, and I recognised them as *R vanderbiltianum*. And then I went back to it, and I looked at it again, and found that there's a very poor picture of it in Sleumer. I'm very interested as to how this fits in, because I'm deeply suspicious that it's not a vireya at all, although it is presently grouped amongst them. The stamen disposition, the bud-scales, particularly those on vegetative buds (non-floral buds) are totally unlike anything else I know, and I'm very interested to know where that is going to fit into the scheme of things.

This is a beautiful species, *R. flavoviride*, first collected by Leonard Brass on one of his expeditions to Irian Jaya. I went on an expedition there with several other staff members quite a number of years ago. Most of the cutting material didn't survive, and most of the species that we got from what we collected have come from seed. One of our party, Paul Smith, climbed a twenty-foot tree to get old-fruit capsules, and about 12 seeds were obtained from one of these. We eventually grew these on and about 10 years later flowered it for the first time. It's a delightful species, quite novel, a beautiful delicate, almost apple kind of scent; a curious disposition of stamens on the lower side of the corolla; a curved corolla tube similar in many respects to *R. hellwigii* but the flower a delicate pale-green colour.

Another beautiful species that we've got and flowered for the first time in cultivation last year is *R. curviflorum* - we're hoping to distribute seed of this when we can get pure seed. None of the original flowering set seed. As far as I'm aware this is the first time it's been brought into cultivation.

A lot of people ask me, "Where should I go, to collect new species of rhododendron?" Most of the accessible places have been pretty well worked. Kinabalu, probably the richest single site for vireyas, has probably been better worked than anywhere else. And yet, just a few years ago, on Kinabalu an American botanist Todd Barkman was doing ecological work on the Serpentine flora, and he discovered in this very inhospitable, extremely steep and unstable area a rhododendron species. He sent it to me and he said, "I'm really not very sure what this is - it doesn't key out in your book." And, lo and behold, he was perfectly right. I was very suspicious that this thing - with very small, thick leathery leaves, in the wild with absolutely black stems growing in this miserable place on this landslip, usually enveloped in cloud and mist - when we got it into cultivation I quite expected that it would grow big leaves and turn into something that I could actually name. But it didn't - the leaves stayed small, they're very thick and fleshy. We still haven't flowered it.

Pictures of *R. tuhanensis* taken by Todd Barkman in the wild. It's an extraordinary species, and it's a brand new species, from Kinabalu, and only about 15 minutes climb (or scramble) off the main trail.

Another species, which is coming out in the same publication as what we're going to call *R tuhanensis*, the Dusun word for landslip, we're calling *R lamrialianum*. In the "Rhododendrons of Sabah" book it's called "*R variolosum*." I was always unhappy about this. *R variolosum* was described by Beccari way back in the 1800s, and he collected *R variolosum* from Mount Poi in southern Sarawak, south of Kuching - a very long way away from where this plant is known. This one was only known from Trus Madi and Kinabalu. Prof. Sleumer had seen these plants and he put the name *variolosum* on them - he linked them to the Beccari plants, but they differed. The Beccari plants were pure red, not bi-coloured (although the flower colour is not the greatest of characteristics to separate species on). The leaves were about three times as long and the scales were rather different. I looked at the type specimens and there were three expeditions - two of them mounted by Dave Binney, and one by ourselves - to go to the old Beccari locality to relocate *R variolosum*. And we all failed. Dave Binney probably got the closest to it - he got something which more or less resembled it, but which we still haven't flowered. But what interested me when I went up there was that there were masses of *R malayanum*, masses of *R jasminiflorum*, and it didn't take a great leap of imagination to realize that Beccari's plant was a hybrid between *jasminiflorum* and *malayanum* - the pink colour coming through from *malayanum*, and the long flowers and leaves coming through from *jasminiflorum*. And this Kinabalu thing, which had masqueraded as *variolosum* all this time was, in fact, quite a distinct and new species. It's now being described (as *R. lamrialianum*).

One of the species I was very determined to find. I described this species a number of years ago, *R. alborugosum*, with long tubular, lovely scented flowers, varies from white to pink. I was very determined that we should get this into cultivation. A curious opportunity arose to do this. I'm always toiling to get paid field work to actually look at rhododendrons - more and more I'm paid to do other things rather than look at rhododendrons. We did a contract on lowland rain forest in Kalimantan and they sent a BBC film crew out to film us. They weren't really very interested in our "saving the rainforest" project, but they were very interested in "Oh, can't you collect a rhododendron? - we want

to show you collecting a rhododendron." So I said: "Well, I know where there's a rhododendron that I want to collect - which is really, not too far away." (We were in Central Kalimantan, and the plant was in South Kalimantan - it was actually quite a long way). So they said, "Right, we'll go. We'll pay for you." And they didn't half curse, but we cursed as well. They filmed me collecting this thing, and me bringing it back into cultivation, and I remember it so vividly, because I had to climb up a slimy wet log at about a 45 degree angle at least six times, saying: "Wow, this is it!" And each time they said, "That really wasn't good enough." But they had to make do with it. And nevertheless, we got the thing back, courtesy of the BBC paying for us to go on that trip. We got that back and we've distributed it quite widely. I don't know whether it's in Australia yet. (Graham Snell indicated in responses that he has it). It's fairly widespread in cultivation now.

R notiale - I mentioned my slide was out of date. Lyn Craven very astutely separated this from *R lochiae*. And we've got into awful turmoil - and I'm very sympathetic with him on this - over the naming. I won't presume to say anything about this. They're very distinctive in this grouping of the stamens on one side of the flower. I do think that stamen grouping is really quite a good characteristic. Some of them are a bit indiscriminate, but if stamens are grouped on the upper side, the lower side, or around the flower, grouping can be a very useful character. And (in this case) the beautiful curvature on the corolla, as opposed to the straight corolla (of *lochiae*).

R rhodopus - this came in courtesy of Keith Adams. With us for the first time, an elegant species from Sulawesi. And (not to be outdone) - everybody seemed to be going to Sulawesi, so we organized an expedition to Sulawesi, which we got the Royal Horticultural Society to sponsor for us, since the Botanic Garden wouldn't. And I was interested in what Peter (Cox) was saying about horses, because it was the first time we used horses on an expedition, and it proved quite a mixed blessing. We hired the horses one afternoon after an incredibly elaborate negotiation - my Indonesian is not the best, and their English was non-existent. We spent three hours negotiating a price that would seem reasonable for the horses, and it was largely because we turned up in a mini-bus, and they thought we wanted to take everything from the mini-bus,

and I think that they had four horses. In the end, when they realized that it was only our rucksacks and a few other pots and pans and things there was no problem whatsoever. But we set off very late in the day, and we ended up walking down a very narrow track in the dark, where they showed the horses where to go by torchlight, and we had to stumble along behind. And as we were stumbling on, one of the horses fell off a bridge, and I heard it just crash off, and whinny and neigh, and I thought: "Oh, my goodness me." I'm afraid to admit that my sympathies were not with the horse; I just thought, "Oh, we're going to be in this village negotiating legal compensation for the horse, and we're never going to get up the mountain now. But they unstrapped the horse - took everything off it - pulled it out of the ditch; put it back on the track, put everything back on its back, and the horse walked away with not even a limp. Not my experience with horses as far as my daughter is concerned.

Anyway, we went up three mountains in Sulawesi. (One was) Mount Bawakarang, which we found very poor. We didn't find anything new on it whatsoever. But we did find a number of new things elsewhere. It was interesting to go to a new island and see new things. This was one of the relatively common roadside plants, we didn't have to walk at all to collect this. This is *R zollingeri*, and in fact Sleumer indicates that he wasn't entirely happy with the *R zollingeri* collected on Sulawesi. And as it happens we are growing *zollingeri* from Seram (which flowered for the first time last year). This (slide) is *zollingeri* as per Sleumer, growing from the roadside on Sulawesi, and the two things are very, very different. And I think we've probably got to find a new name for this entity as well.

Another one which was growing along the roadside we are calling *R leptobrachion* at the present time. It doesn't fit the descriptions terribly well, and we're hoping that we've got living material coming away so that we can do something more with it.

My favourite species, the species I was absolutely determined to get, was *R eymae*. I think I'm right in saying the only Phaeovireya to occur outside New Guinea. It's got this beautiful brown stellate indumentum, and these delicate little flowers. What doesn't show up in the slide is that these delicate primrose flowers have the most delightful hint of a violet flush on them. It's a most

beautiful effect. We got both seeds and cuttings back - whether we'll be able to grow it or not I don't know. It comes from the summit of Mount Rantemario which is the highest point on Sulawesi, and it's a pretty inhospitable place. A few other quick things to follow. I'll just put up a slide of *R. lineare*, just to point to the fact that Sarawak has put up draconian new laws against people illegally collecting. You get two years' jail now for illegally collecting a vireya in Sarawak but the fact is that they've introduced this for quite a bizarre collection of different plants. Unfortunately vireyas are included in this, and the Philippines - where we've been doing an awful lot of work - has also introduced (again) some really quite bizarre legislation, where they've given local people absolute power to arrest people if they collect plants on their land without their knowledge and permission. And this is all very well, but it's not always easy to establish whose land you're on, and if you transfer from one group to another, it's very easy to come foul of this. And in fact, Domingo Madulid that *R. madulidii* was named after (the chief of the Division of Botany at the National Museum) - only a few months after this legislation was introduced - was arrested by the local people and spent a night in the local clink before he could manage to get himself out. So it's not just foreigners who fall foul of these things. But it is becoming more and more difficult to get permission and to legitimately collect these things.

I'll finish with *R. taxifolium*. Graham (Smith) showed a slide of this yesterday. It is a beautiful species, and this is one of the species which is on the brink of extinction. Not through rhododendron collecting - as far as we know we were only about the third (maybe fourth) people to collect it at all. The previous collectors had only collected herbarium specimens, we collected living material. It grows very easily - splendidly in fact - as demonstrated by a picture taken in the wild compared with one growing in the Royal Botanic Gardens where it grows and flowers. We've distributed both seed and cuttings, with, I might add, permission from the Philippines Government. Most of our plants are now collected with quite stringent conditions attached. But we got special permission to distribute this plant, because, as I said, you really don't want people running up and down collecting and re-collecting this material. We only saw three plants on the one mountain, and it's only known

from the one mountain. And in actual fact it's the vegetation which is under threat, and it could well go. And so they said, "Yes, we understand." So this species is fairly widely grown now.

I hope that's given you some idea of what I'm trying to do. The variation and the beauty of vireya rhododendrons, and the fact that I think they stand up perfectly well against the rest of the genus, and I would just like to say while I've got the floor that we are having an international rhododendron conference in Edinburgh in the year 2002 and it would be nice if a number of you could come to that. Thank you very much.

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