Vireya Rhododendrons in the Wild©

G.C.G. Argent
Royal Botanic Garden, Edinburgh, EH3 5LR Scotland

INTRODUCTION

Vireyas (rhododendrons of section *Vireya*) are species with long-tailed seeds and tapering ovary to style junctions. They mostly occur as epiphytes in the mountains of the southeast Asian archipelago, distributed from southwest Thailand to the Himalayan region, along to southern China and Taiwan, south through the Philippines, to Queensland in Australia, and west to the Solomon Islands.

It is the largest section in the genus *Rhododendron* with just over 300 species (Argent, et al., 1988, Argent, et al., 1996) and more than half of these occur on the island of New Guinea, which on a recent count had 160 species (van Royen and Kores, 1982). They are mostly epiphytic plants of cool montane cloud forests but a few species occur down to sea level in the tropics and some grow in alpine situations up to nearly 4000 m (13,000 ft). These plants are extremely varied in flower colour and shape, although they lack anything near a true blue and do not possess the marked zygomorphic colour patterns found elsewhere in the genus.

ORIGIN OF BOTANICAL CHARACTERISTICS

Flowers. Flower variation is probably correlated with the wide spectrum of animal pollinators. Bats are thought to pollinate species such as *R. konori* and *R. leucogigas* with large strong flowers, often with additional parts which are usually powerfully and sweetly perfumed. Birds pollinate at higher altitudes (Stevens, 1976). Most bird-pollinated species have red or pink flowers with curved corollas but usually no scent, such species as *R. rarum* and *R. phaeochitum* are characteristic of bird-pollinated vireyas. Butterflies have been observed pollinating *R. macgregoriae* and *R. polyanthemum*, these species have prominently exposed stamens and yellow or orange flowers which are sometimes scented. Moths pollinate *R. jasmini florum* and *R. suaveolens*, and probably all the species in Professor Sleumer's subsection *Solenovireya* (Sleumer 1966), which is characterised by the flowers having long thin corolla tubes with relatively short lobes and white or pale pink coloration. Bees and wasps are more efficient at the higher temperatures found at lower altitudes and probably pollinate species such as *R. aurigeranum* and *R. stenophyllum*, plants with yellow and orange flowers and short broad tubes. In most years we find bumble bees learn to bite through the corollas of the narrow tubed species to steal the nectar without effecting pollination in the greenhouses in Edinburgh.

Scales. Being part of subgenus *Rhododendron*, vireyas have scales on the leaves and often other parts of the plants. These scales, for convenience, may be divided into four major structural types. Type "A" has a broad irregularly lobed flange and a small centre; Type "B" a highly dissected, dendroid flange and again a small centre; Type "C", a narrow, subcircular flange and a large swollen domed centre; and type "D" a large usually dark brown flange and a broad, domed centre.

The function of these scales undoubtedly varies from species to species and from organ to organ but little is known about their true value to the plants. Many high

alpine species are densely scaly, suggesting that the scales play a protective role against powerful ultra violet rays. *R. durionifolium*, one of the densely scaly species in section *Malayovireya*, has scales which are water absorbent on the upper sides of the leaves and water repellent on the lower sides. It is thought (Argent 1988) that this probably promotes cooling of the leaves in dry conditions when the dry scales become silvery and reflect light. Absorption of water, and particularly the trapping of water between scales and epidermis, aids transmission of light to the chlorophyll of the leaf as the leaf turns green on the upper side when wet. Scales on the undersides of the leaves, however, are water repellent which is undoubtedly important in keeping the stomata free from waterlogging and able to "breath".

Most of the species occupying shady habitats are much less scaly, some almost to the point of being without scales. In *R. suaveolens* the scales occupy only a tiny fraction of the leaf area, as in the ultimate deep-shade plant *R. lanceolatum*. These contrast with the species in subsections *Albovireya* and *Malayovireya* where the scales normally overlap and completely obscure the leaf underside.

Plant Size. Vireyas are extremely variable in size. The smallest is also the smallest rhododendron recorded, *R. caespitosum* (Argent et al., 1999), a tiny prostrate mat barely 1cm high, which grows on tree ferns. The largest, such as *R. mindanaense*, *R. buxifolium*, and *R. polyanthemum* can grow into substantial trees although they will flower in cultivation as small plants.

OPTIMUM ORIGINS OF VIREYAS FOR CULTIVATION

The best species for cultivation in temperate climates in general are those from moderate altitudes from 1000 to 2000 m (3000 to 6500 ft). Here the natural vegetation is usually of quite tall forest, often heavily clad with mosses which provide an open, acid, rooting substrate in the crooks of trees. Not only are these plants more easily accommodated to temperate conditions of temperature and light but because they are naturally epiphytes they will flower at small size. *Rhododendron acrophilum*, *R. apoanum*, and *R. curviflorum* are all recently introduced species from the cloud forest zone.

Species from lower altitudes are not inherently more difficult but do require more heat, which is costly. *Rhododendron longiflorum* and *R. lineare* are two of the species which we find grow better with a little more heat. Both are from low altitude and *R. longiflorum* is one of the few species which can occur at sea level in the tropics.

The high altitude species are the most difficult and, unlike most of the Chinese rhododendrons, vireyas do not become hardier the higher the altitude from which they are collected. This is because, although they may tolerate frost in the natural habitat, that frost is of fleeting duration during the night. Frosts on tropical mountains are associated with clear skies from which the sun rises to give rapid temperature increase and growing conditions within an hour or two. Temperate winters combine poor light with frosts over much longer periods which do not suit these highland plants.

High-altitude species tend to grow slowly in cultivation even when artificial light is given. *Rhododendron versteegii* struggles in the collection at RBG Edinburgh and I know of no records of it flowering in cultivation. *Rhododendron correoides* similarly is recorded in some American collections but it grows slowly and I have never seen it flower except in the wild.

Presently, well in excess of 100 species of this section of *Rhododendron* are in

cultivation. These encompass sufficient variation to suit most tastes, from the flamboyant and blousy such as *R. zoelleri* and many of the hybrids, to delicate alpine gems such as *R. rubineiflorum* and *R. anagalliflorum* and the extraordinary *R. saxifragoides* with its low tufted, "saxifrage-like" habit. Many are perfumed, some quite deliciously so, as mentioned with the bat- and moth-pollinated species but others have more unusual perfumes. *Rhododendron herzogii* and *R. inundatum* have resinously aromatic leaves in addition to the carnation-like perfume of the flowers and *R.maxwellii* probably has the most powerfully scented flowers in the whole genus but smells of cheap hair oil.

Like many other horticulturally attractive plants, vireyas should be collected with care. It is fortunate that so far none are CITES listed plants and on the whole with good reason as they have great powers of regeneration and can form large populations. Some species are, however, rare and threatened, usually more by habitat destruction than over-collecting.

Rhododendron taxifolium in the Philippines is only known from one mountain and on that only from a small strip of montane rain forest. This forest is dwindling as a result of fires in the subalpine grasslands above and incursions of cabbage growers from below. *Rhododendron taxifolium* was collected in 1992 and brought into cultivation for the first time. It was distributed noncommercially with the agreement of the National Museum in the Philippines soon afterwards so that there should be no need for any further collection from the wild. As far as we know this has been successful, at least this interesting species is well established in cultivation on several continents.

Other species populations seem to fluctuate wildly from year to year as many species are vunerable to El Nino droughts. *Rhododendron acuminatum* on Kinabalu appears very vunerable in this respect. *Rhododendron saxifragoides* is apparantly sucumbing to eco-tourism with the death of plants attributed to the introduction of soil borne *Phytophthora* on the boots of visitors on Mt. Giluwe in Papua New Guinea (Blumhardt, pers. comm.). Conservation can really be achieved only with protection of whole habitats but the species we have in cultivation we hold in trust for the horticultural and scientific fraternity. Recollection of species from the wild should be less of an ongoing process of collecting the same species over and over again but there is enormous scope for visiting isolated mountains with the potential of new and exciting species.

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