750. PHRAGMIPEDIUM DALESSANDROI
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Phillip Cribb

Summary. *Phragmipedium dalessandroi* Dodson & Gruss, is illustrated. Its history is given, and its relationships with *P. bessae* and *P. bessae* var. *flavum* are discussed.

The frequent taxonomic conflict between botanists and horticulturists is well illustrated by this species, which is most satisfactorily treated botanically at varietal rank, whereas horticulturists prefer to treat it at species rank. Calaway Dodson & Olof Gruss (1996) based *Phragmipedium dalessandroi* on a specimen collected by Dennis D'Alessandro at between 900 and 1300 m elevation in the Cordillera del Condor on the upper Rio Bombuscarua between Zamora and Chinchipe in southern Ecuador. They distinguished it from the now well-known *P. besseae* by its more compact non-climbing habit, more villose branching inflorescence, apricot-coloured flowers, narrow, drooping petals, rhombic staminode and different chromosome number ($2n = 28$). *P. besseae* has a pubescent but not villose unbranched flower spike, red flowers, flat broad, spreading petals, and a chromosome number of $2n = 24$ (Wimber, 1994) At first glance these seem to be good distinguishing features. However, neither morphological nor chromosomal differences are perhaps quite as clear-cut as the above simple statement appears to show.

The status of *Phragmipedium dalessandroi* (Dodson & Gruss, 1996) was discussed in detail by Moon & Cribb (1998). Some of the early hybrids that were registered by the Eric Young Orchid Foundation and others with *P. besseae* named as one parent were made using the plant now considered by Dodson and Gruss to be *P. dalessandroi*, which was already in cultivation. New names were indeed published by the International Orchid Registrar, based at the Royal Horticultural Society, who accepted evidence from hybridisers that the hybrid progeny of *P. dalessandroi* looked different from those of *P. besseae*. Moon & Cribb (1998) suggested that before creating a lot of new hybrid grex names the evidence behind the establishment of *P. dalessandroi* as a species distinct from *P. besseae* should be examined, bearing in mind that growers were happy previously to accept that *P. besseae* occured as two variants, respectively called the Ecuadorian

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Plate 750 *Phragmipedium dalessandroi* CAROL WOODIN

and Peruvian forms. Indeed, we find Gruss (Dodson & Gruss, 1996) referring to the Ecuadorian form as *P. besseae* var. *dalessandroi*, a then unpublished combination.

There are in cultivation at least four morphologically distinct red-flowered types of *Phragmipedium*: *P. besseae* from Peru and southern Ecuador; *P. dalessandroi* from northern Ecuador; *P. besseae* (including cultivars such as 'Wössen', 'Wössener Feuer' and 'Elisabeth') possibly from central Ecuador; and *P. besseae* var. *flavum*, a yellow flowered variant probably from the same area as the 'Wössen' type.

The third of these is of particular interest because it is morphologically intermediate between *Phragmipedium besseae*, which has broad flat petals and a pubescent but not villose flower stalk, and *P. dalessandroi*. It has a chromosome number, $2n = 26$, that is likewise intermediate. If *P. dalessandroi* is considered distinct at specific rank from *P. besseae*, should not this also be recognised as a distinct species?

Only a single plant was originally collected of *Phragmipedium besseae* var. *flavum* and it is morphologically identical with typical *P. besseae*. It has been considered an albino variant. Seedlings from it have been raised and are now widely available. Counts of four colchicine-treated plants at the Eric Young Orchid Foundation revealed four different counts: $2n = 24$, 25, 26, 36, the last being a triploid (Moon & Cribb, 1998).

Variation in chromosome number has already been reported in a number of slipper orchids such as *Phragmipedium venustum*, *P. bullenianum*, *P. javanicum* and *P. dayanum* (Karasawa, 1979) and chromosome number alone is insufficient to recognise the cytological races as distinct at specific level. Furthermore, the count of $2n = 24$ for *P. besseae* was based upon a single plant, that of $2n = 28$ for *P. dalessandroi* on a number of plants from a single pod sent by Calaway Dodson to Don Wimber (pers. comm.).

On balance, it appears likely that the red-flowered phragmipediums represent a single species that is undergoing active evolution in the Andes. At its northern end the plants resemble *Phragmipedium dalessandroi*, at the southern end *P. besseae*, but those in between, and there may be many populations in valleys that have yet to be explored, are intermediate. Therefore, botanically there seems to be little to be gained by recognising *P. dalessandroi* at species rank but

horticulturally its status has been recognized for some years and I reluctantly follow that decision here.

CULTIVATION. *Phragmipedium dalessandroi* can be happily grown in a plastic pot with additional drainage holes cut around the base in an open, free-draining compost but with adequate moisture retentive components; it does not tolerate excessive drying out. A variety of media have been successfully used, including bark, rock wool, and sphagnum moss. The addition of perlite to retain moisture and charcoal to freshen the compost is recommended. A compost of nine parts fine redwood bark; three parts perlite or sponge rock, three parts fluffed peat or Pro-Mix HP (a sphagnum peat based mix) is one that has been successfully used. Bone meal is added as a fertiliser.

It is intolerant of poor quality water. Tap water with low dissolved solids is tolerated but rain-water or water produced by reverse osmosis or deionisation is much better. The pots should be flushed through every time they are watered and should never be allowed to stand in the run-off. It should be kept moist at all times.

It prefers to grow in a humid environment with the relative humidity above 50%. Growing plants on a gravel tray in which the gravel is kept moist at all times, but not the pot bases, is ideal. Humidity levels can be dropped a bit in winter when watering is reduced.

It thrives under medium light levels, such as those suitable for phalaenopsis. It grows well in an intermediate greenhouse with day-time temperatures in the mid to high 20°C and night-time temperatures between 15 and 18°C. It is a greedy feeder and can tolerate higher levels of fertilizer than paphiopedilums, half to quarter strength fertilizer containing micro-nutrients, with a thorough flushing of the compost with water every four or five feedings is recommended.

Although relatively pest free, it can suffer from spider mite infestation and should be treated with a suitable spray at the first sign of infestation. Slugs and snails can also be damaging, especially to the flowers and regular checking to reduce these pests is necessary.

Phragmipedium dalessandroi Dodson & Gruss, Die Orchidee 47, 4: 217 (1996). Type: Ecuador, Zamora-Chinchipe, *Dalessandro* 745A (holotype RPSC).

Phragmipedium besseae Dodson & Kuhn var. *dalessandroi* (Dodson & Gruss) A. Moon & P.J. Cribb in Orchid Rev. 105 (1216): 229 (1997).

DESCRIPTION. Lithophytic perennial *herb* with closely spaced growths; rhizomes short; roots striate. *Leaves* elliptic-oblong, minutely trifid and oblique at acute apex, 13–30 cm long, 2.2–5.0 cm wide, dull green, glabrous, midvein strongly keeled and pointed, margins revolute. *Inflorescence* racemose, usually branching, several-flowered, appearing in succession on each branch, up to 50 cm tall; peduncle brown, villose; sterile bracts 1–2, elliptic, apex minutely trifid, 4–5 cm long, 1.6 cm wide, lowest 5 cm from plant base; floral bracts widely ovate, apex minutely bifid or trifid, 2–3 cm long, 1.6–2.0 cm wide, shorter than ovary, glabrous, fused 0.7–1 cm from base. *Flowers* with orange-red or apricot-red sepals and petals, with yellow bases, and a yellow lip flushed red or orange in the apical part, the outer surfaces mostly velutinous, the inner surfaces mostly puberulous, the margins ciliate; ovary, including pedicel, 5–8 cm long, velutinous, green. *Dorsal sepal* ovate-elliptic, obtuse, 1.8–2.3 cm long, 0.7–1.3 cm wide, 15-nerved, margins ciliate; synsepal elliptic, obtuse, 2.0–2.2 cm long, 0.9–1.5 cm wide, yellow-green, margins ciliate. *Petals* decurved, oblong-elliptic, acuminate and usually recurved at tip, oblique, 2.2–3.0 cm long, 1–1.5 cm wide, nerves branching, inner surface puberulent, basal hairs arachnoid, margins ciliate. *Lip* ovoid-ellipsoidal, tapering to a rounded tip, 2.0–2.2 cm long, 1.0–1.4 cm wide at the widest point, transluscent areas on sides and back of lip between the veins; lip opening ovoid, tomentose, the apical rim scalloped, shallowly incurved, the lateral rim glabrous to tomentose; claw interior pubescent. *Column* yellow, pubescent; staminode obovate-rhombic, bilobed at tip, 0.6–0.7 cm long, 0.6–0.8 cm wide, entire surface puberulent, orange-red with yellow margins and mid-vein; apex acute, minutely emarginate; median stigmatic lobe conical. *Capsule* brown, velutinous, slightly curving apically. Chromosome number $2n = 28$.

DISTRIBUTION. S. Ecuador: Cordillera del Condor on the upper Rio Bombuscarua between Zamora and Chinchipe.

HABITAT. On moist, shaded cliffs, 900–1300 m.

ETYMOLOGY. This species was named for one of its discoverers, the American Denis D'Alessandro, a professional orchid collector.

POLLINATION AND PHENOLOGY. Not known, but possibly small bees.

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