

Tasmanian Native Orchids: Their Propagation and Culture

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INTRODUCTION

An orchid is a big spectacular delicate flower that grows in steaming jungles, it is rare and difficult to grow, and takes 7 years to flower and is surpassingly feminine. Not true.

An orchid is a tough, exceedingly common flower that will grow almost anywhere. It may be small and drab and can hardly be seen without a magnifying glass. It is one of the easiest plants to grow and produces flowers every year. Far from being feminine it is, in name at least, superlatively masculine. The ancient Greeks were the first to take botanical notice of these curious plants. Theophrastus, the father of botany, writing on the European ground orchids, gave the name *Orchis* to the plants from the resemblance of the paired underground tubers to masculine anatomy. This suggested to the Greeks and medieval herbalists that orchid roots may “provoke Venus” and eating them might influence the sex of unborn children (Marden, 1971).

The species of orchids found in Tasmania comprise one epiphyte, one lithophyte, and approximately 180 terrestrials. The majority of Tasmanian orchids can be grown in bush houses or cold glasshouses with a suitable environment.

EPIPHYTE

Orchids that grow on trees (epiphytes) take nothing from their host, it is somewhere to grow. Nourishment is gained from rain, dust, leaf litter, and bird/animal droppings. *Sarcochilus* is a genus of about 11 species found in Australia and *S. australis* is the southern most member of this genus extending from Tasmania through the Furneaux Group and Victoria as far north as Glen Innes in NSW (Curtis, 1979). Distribution in Tasmania ranges from the rainforests of the west and north west coasts to deep gullies on the east coast.

Sarcochilus australis grows on the branches and trunks of trees, often on small twigs in sheltered gullies near water, in tall open forests with dense understory, and in rainforests in heavy shade with only filtered sunlight. This species occurs at altitudes from sea level to 900 m (Upton, 1992). Numerous plants can be found on smooth-barked trees such as native olive (*Notelaea ligustrina*), thorny box (*Bursaria spinosa*), musk (*Olearia argophylla*), stinkwood (*Zieria arborescens*), and native laurel (*Anopterus glandulosus*).

Flowers are borne on pendulous racemes in colours of brown or green during October to January. Their location can often be found by the sweetly fragrant perfume they emit. Difficulties are often experienced with culture. Plants can be firmly mounted on a piece of wood and hung in a shade house with good ventilation (which is essential). Attachment to a living tree would probably provide the best chance of success as roots can extend for metres along branches and up and down the trunk. Plants grown in enclosed areas only seem to last 2 or 3 years due to the difficulty of providing a suitable microclimate and their susceptibility to scale.

Collecting plants from the wild is the only means of obtaining *S. australis* as orchid nurseries do not stock plants. Approximately 20 hybrids have been produced with *S. australis* in their parentage. Plant growth is midway between the parents with the pendulous raceme habit and flower shape of *S. australis* being dominant even in second generation hybrids. These hybrids can be grown in pots in a mix of radiata pine bark and gravel very successfully.

LITHOPHYTE

Dockrillia striolata [syn. *Dendrobium striolatum*] is found on the east coast of Tasmania, Furneaux Group, Victoria, and NSW (Curtis, 1979). In Tasmania it grows on granite outcrops from Orford to Bicheno. Roots attach themselves to the granite and the plant spreads by rhizomes with branched stems to form extensive mats. The flowers are pale or yellowish green with brown veins and appear in the spring.

Propagation is very easy using a branched stem with roots. Place a small pad of bush moss over the roots and tie the plant to a piece of granite using nylon fishing line. Place the rock on a shaded bench and ensure the plant receives adequate moisture to ensure maximum growth. Application of a high-nitrogen fertiliser regularly during spring and summer is beneficial. Any fertiliser used should be at less than half the recommended strength.

TERRESTRIALS

A terrestrial orchid grows in the ground. All Tasmanian terrestrials are deciduous. They grow from an underground organ called a tuberoid, which is a rounded or ovoid swollen root, resembling a tuber. Nutrients for terrestrial orchids is obtained from the soil or leaf litter via a symbiotic relationship with mycorrhizal fungi (Australasian Native Orchid Society, 1988).

Deciduous terrestrial orchids have a distinct annual growth cycle. At the beginning of the growing season a stem emerges from the tuberoid and grows to the surface where it produces leaves and/or flowers. Most terrestrial orchids form a new tuberoid to replace the old one by flowering time. Extra tuberoids may be produced at the end of stolon-like roots. Many of the *Pterostylis* produce extra tuberoids, these are colony-forming orchids. *Caladenia* produce only one tuberoid annually to replace the one that has withered away, these are solitary type orchids.

After flowering and seed production all above ground parts wither and dry out. The tuberoid becomes dormant and survives the summer buried underground before shooting again in the autumn. Solitary-type orchids can only be propagated naturally from seed, whereas colony-forming species can be propagated both vegetatively and from seed.

Some orchid species are leafless and rely totally on their association with mycorrhizae for nourishment, these are known as saprophytes. They are fleshy and can be pale coloured or darkly pigmented. Because of their total dependence on symbiotic fungi they are impossible to cultivate. Two examples are *Dipodium punctatum* (hyacinth orchid) and *Gastrodia sesamoides* (potato orchid).

Terrestrial orchids grow in a wide range of habitats from the sea shore to high in the mountains. Successful cultivation is more readily achieved by growing plants in pots rather than the garden. Conditions can be controlled and varied to suit different species.

In the wild terrestrial orchids grow in soils, the structure of which has been formed over thousands of years. If this soil is disturbed and placed in a pot the crumb

structure is changed and water no longer drains away to the subsoil. This generally results in the soil retaining too much water and the orchid failing to grow successfully (Australasian Native Orchid Society, 1988). The potting mix needs to imitate the soil structure so that it supplies the plants requirements, i.e., support, nutrients, water, and oxygen in the correct proportions.

A basic potting mix developed by growers (Australasian Native Orchid Society, 1988) over the years comprises:

- Coarse sand: 2 parts
- Rich loam: 1 part
- Buzzer chips: 1 part
- Leaf mould: 1 part
- Blood and bone: 1 dessertspoon per 9 litre bucket of mix
- Garden lime or dolomite: 1 dessertspoon per 9 litre bucket of mix

- **Coarse Sand** is 2 to 4 mm in diameter. Fine material should be sieved out. Beach sand is not suitable.
- **Rich Loam** is a friable nutrient-rich soil.
- **Buzzer Chips** vary from paper thin to 1 mm thick and up to 10 mm square. Sawdust must be sieved out. Hardwood or softwood is suitable. Softwood decomposes more quickly. Western red cedar, treated pine, or chipboard cannot be used because they contain toxic materials. Chips should be aged in moist conditions for 4 to 6 weeks to reduce phytotoxins which may effect plants. Composting of the chips further reduces the phytotoxins and prevents nitrogen draw down.
- **Leaf Mould** is the partially rotted down leaves found under trees raked up from the soil surface. Leaf litter from the forest is very suitable because of the fibrous structure.

Black plastic pots of a minimum 100 mm in diameter are recommended for growing of terrestrial orchids. Good drainage of the pot is essential with holes across the base and around the bottom edge. The potting mix must be damp when used, there should be no dust evident. The mix should feel barely damp and gritty but combined. If it is too dry it might not wet in the pot and if too wet will pack densely resulting in insufficient air space.

POTTING DORMANT TUBEROIDS

Prepare potting mix, consider any special requirements of the species being potted.

- Use a clean pot with sufficient holes.
- Place a circle of shade cloth in the bottom of the pot ensuring all holes are covered. This prevents slugs and slaters, etc. from entering the drainage holes and the dry mix running out in the dormant season.
- Fill two-thirds of the pot with mix and arrange tuberoids in the top of the mix with the growing eyes up. Cover the tuberoids with mix and lightly firm down. The tuberoids should be 30 mm below the level of the mix.
- Label pot, include name of species, locality collected if known, number of tuberoids, and date.
- Add chopped *Casuarina* sp. needles to top of pot. This stops water splashing over the leaves when watered and provides an airy

environment around the base of the plant at surface level, reducing the likelihood of rotting at that point, prevents the mix from drying out completely and aids in the germination of seeds.

POTTING PLANTS ALREADY GROWING

- Follow first four steps above.
- Position plant in pot so that the roots and portion of stem previously below ground are below the final level of the mix. Firm the mix down around the plant and water thoroughly. Check the level of the mix and adjust if necessary.
- Add a layer of *Casuarina* sp. needles to the top of the mix ensuring the plant leaves are on top of the needles.

Annual repotting is necessary to replace nutrients, improve drainage (which lessens with decomposition over time), and to remove excess tuberoids. Repotting is best done when tuberoids are dormant, i.e., at the end of the growing season. In Tasmania this is usually December. If repotting after January, when tuberoids have commenced shooting, care must be taken so as not to break the brittle new shoot.

Allow pots to dry out prior to repotting. Tip the contents of the pot out over a 6 mm sieve, most of the mix will fall through leaving coarse material and tuberoids. Remove tuberoids and return coarse material to old mix. Replace half of the old mix with fresh mix and thoroughly mix together. Follow procedure for potting dormant tuberoids. Excess tuberoids should be potted separately.

Dormant tuberoids may be successfully stored for several months provided they are kept dry and prevented from dehydrating. Tuberoids should be stored in either dry sand, dry potting mix, or dry tissue in a sealed plastic bag and placed in a cool dry place.

When a terrestrial orchid is growing it needs a constant supply of water. The mix must be moist throughout the growing season. Fill the pot to the top with water and allow to drain. Watering frequency will be dictated by the species of orchid, growing environment (e.g., whether the roof is solid or shade cloth, air movement, and temperature), and the structure of the potting mix. Watering should commence on a regular basis around March and cease when the leaves die and the tuberoids become dormant. A light spray once a week during dormancy is sufficient to prevent dehydration.

Lack of light results in poor growth and elongated and weak plant which are prone to fungal attack. Excessive light causes stunted growth, burning, and yellowing of leaves. Most orchids grow in areas of low humidity and good air movement. They should be grown in a well ventilated area. Moss on the top of pots, damping off, and rotting leaves are indications of poor ventilation. These are also indications of over watering or poor draining mixes.

To achieve the best results growing terrestrial orchids in a specially constructed structure. The walls should be open and covered in shade cloth to provide good ventilation with a roof of solid translucent material to protect the plants from excessive rain. Benches should be wire mesh and about waist high. Benches must be well built to carry the weight of wet mix when pots are watered. A specialised growing area allows for control of the factors determining the degree of success in cultivating these orchids.

PROPAGATION FROM SEED

Those orchids which only produce a replacement tuberoid each year can be propagated from seed. Seed is harvested as the seed pod turns brown and before it splits. The ripe seed pod is placed in a paper envelope and allowed to dry for another 2 days before storing. The paper envelope containing the seed should be placed in an air-tight container in the refrigerator, with a desiccant if possible, until sowing time (Australasian Native Orchid Society, 1988).

Seed is best sown at the beginning of the growing season around a parent plant of the same species as it is assumed that the parent plant is growing with the appropriate mycorrhizal fungus necessary to infect the seed. The *Casuarina* needles provide a protected area for the seedlings to develop and should emerge in about 2 months. Care must be taken when watering not to allow water to overflow the top of the pot and wash seed away. The first leaves will appear by spring and tuberoids at the end of the growing season. They should be left for another year to develop before repotting (Australasian Native Orchid Society, 1988).

Collection of orchids from the wild should not be encouraged unless an area is being cleared or developed. Specialised production may be necessary in the future so that plants can be returned to the wild.

LITERATURE CITED

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