The Role of the Plant Propagator in the Conservation of New Zealand Plants

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In many countries nurseries have developed from small businesses run by plantsmen into organisations where the primary interest is in the production of a healthy bottom line on the bank statement. The need for plants has to a greater or lesser extent become a secondary consideration in a production-driven operation directed by people with relatively little plant knowledge.

The importance of plants and productivity has long been recognised. However, the nursery industry is in danger of being market-led to the extent that people neglect to conserve plants for use by future generations. This is evident from the trade lists that now have fewer of the more difficult to propagate and grow on plants than has been available in the past.

Throughout the world plants once considered common place are now becoming endangered. If we as propagators do not make a concerted effort to propagate and protect these plants, they will become increasingly threatened by extinction and be lost forever as a resource for future generations.

It is especially important that we do not limit the range of plants propagated to those in most demand at the present time as we cannot anticipate future interests or requirements with any real certainty. The extensive range of plants grown throughout the world makes it nearly impossible to describe how each may best be propagated. In spite of the enormity of the task it is still highly desirable that all relevant information of this type be collected and made available to others with similar interests such as within the I.P.P.S. and wider afield.

This information is important and may be lost if it remains only in the head of each propagator. Each plant species may have its own unique requirements for propagation by seed or by vegetative methods that has been discovered by empirical methods. Experience gained in this manner may often be usefully applied to other species, in both the easy and the more difficult plants to propagate.

Plant propagators hold the keys to both the preservation of many indigenous species and the commercial exploitation of economically important plants. Some of these plants (particularly some native plants) have gained a reputation of being difficult to propagate and grow, so they drift out of the market place and, if fortunate, are preserved by specialist propagators.

If you wish to help conserve some relatively rare plants in your area or just wish to propagate some plant you will need to determine an appropriate procedure. In the absence of specific information pertaining to a particular species or cultivar you may be forced to experiment. Many plants have specific propagation requirements and trial and error may be the only method of producing some plants until you have gained more experience.

Just how threatened are the plants of our world? It has been estimated that at present the global consumption of wood for fuel and building use sees an area the size of New Zealand is converted into a barren desert every four years. As a consequence many plant species have disappeared in the path of desertification in

the name of progress. A quarter of all the world's flowering plants may become extinct within the next 50 years. As an aside, millions of people depend on plants for their traditional medicine. Over 80% of all prescribed medicine is of plant origin, but only 5% of the plants in the world have been examined chemically or pharmacologically. If they become extinct their genetic potential may be irretrievable. In New Zealand we are not exempt from this problem, but are also contributing to it. Forest covered about 70% of New Zealand prior to occupation by people, this has now been reduced to 25% of the total land area. As a result many habitats of plants and animals have been threatened, without even considering the cost of soil erosion to the country. Unfortunately, our record is no better than many developing countries we might chide for careless destruction of their natural resources.

At present approximately 10% to 12% of the flora in New Zealand is in the threatened category (Wilson and Given, 1989). This means that a significant proportion of our flora falls somewhere between the rare and extinct categories used to classify endangered plants (Table 1). About 80% of our natural flora is endemic and therefore unique to the region. Therefore as propagators we have a national responsibility to help wherever possible to use our skills to help conserve our native flora for future generations.

Table 1. Categories of threat to endangered plants.

Rare:	A relatively small total number plants but not currently at risk.
Vulnerable:	A species that may move to the endangered group in the near future if pressures on numbers or habitat continue unabated.
Endangered:	Number of individuals in a plant population is below a critical level and survival is unlikely without intervention.
Extinct:	Where a species is no longer found in its natural habitat, but may be preserved in cultivation.

In today's post-modernist society we may draw sociological maps to identify those persons most interested in the environment and conservation issues. It is clear this is a major concern of a relatively small group in spite of the high profile in the popular press and the media. When we appreciate how small this group of people is, it should act as a springboard energising us to encourage others in our community to broaden their interests and concern for our precious flora.

It has been suggested that when populations of plants or animals fall below a critical number of between 50 to 100 individuals, a genetic crisis occurs. The species is destined for extinction unless direct intervention by people boosts the size of the population in order to ensure that the rate of mutation exceeds the rate of loss of genetic variation.

Further survival of a species or cultivar depends on many factors, including very basic knowledge. Some of this will include details of location and plant numbers to maintain viable gene pools in the wild. However, the ultimate success of any scheme to conserve plants is dependent on propagation and cultural information

which should be recorded systematically.

There has been considerable global interest in our indigenous flora. The value of domesticated plantings should not be underestimated in the preservation of a species. There is a classic story that tells of how *Sophora tomomiro* from Easter Island, following exploitation by the native people, was clawed back from extinction using plant material grown in Europe from seeds collected by Thor Heyerdahl on the Kontiki expedition. In New Zealand we can find similar examples. None would be known better than *Tecomanthe speciosa* where, from only one plant known to exist in the wild, propagation by enthusiasts has made this plant relatively common allowing it to be both widely appreciated and planted.

Even the giants of our forest (*Agathis australis*) require some protection from both our feet and axes. Our forefathers have been no better stewards of our land than the people of Brazil or Sarawak. A head start on forest clearing of perhaps 200 years in New Zealand doesn't make it any more acceptable or right.

How fast our flora develops towards extinction or away from it can be influenced by plant propagators. The future of many plants is in our hands and is our responsibility. At a recent I.P.P.S. conference Bruce Macdonald is reported as saying "native plants may be just as effective as expensively bred hybrids. The University of British Columbia's Botanic Garden Plant Introduction Scheme has released 14 new cultivars, in all over 5 million plants being sold to date (Sept, 1992). Four of these selections are native [to British Columbia] and are becoming increasingly important because of their adaptability for use on widely divergent sites."

From the preservation angle, some of our native plants present a major problem as they flower abundantly every few years, but not every year. The synchrony (with related plants in the northern hemisphere) and flowering of beeches in alternate years has long been known (Poole, 1949). Brockie (1988) reported several indigenous plants including *Phormium* exhibit a marked three year flowering cycle. Inevitably irregular seed supplies cast more dependence on vegetative propagation at the expense of genetic diversity.

The potential genetic resources of the New Zealand flora have been reviewed recently (Harris and Heenan, 1992; Haase, 1990). The horticultural merit of New Zealand native plant cultivars has been recognised internationally by the International Horticultural Congress who have endorsed the Royal New Zealand Institute of Horticulture as the International Registration Authority for *Coprosma*, *Hebe*, *Leptospermum*, *Phormium*, and *Pittosporum*. Examples like these confirm the willingness of plant propagators to select, multiply, and distribute within the nursery industry.

Many selections have been made because they were different, but not necessarily superior to the common form and may represent a complete anathema to the purist. The number of recorded cultivars of New Zealand plants is more than 350 (Metcalf, 1987) and is growing rapidly. This rapid increase in the introduction of new cultivars and variants may have arisen due to any combination of the following factors:

1) Consumer demand for something new at the expense of the simple species that may be too old or "common" for commerce.

2) Nursery people tend to name any variant without proper evaluation of its real merit for cultivation.

3) Plant breeders are becoming more active in working with non-crop plants.

Relatively little information has been documented on the germination requirements of New Zealand native plants (Fountain and Outred, 1991). The paucity of reports on germination requirements of many plants is reflected in the information available in varying detail for less than 5% (113) of all indigenous species. Much of this useful and essential information is already known, but resides only in the heads of experienced propagators, and is destined to be lost unless passed on or written down for future generations of propagators. Plant propagators should endeavour wherever possible to record information about the species they are growing so that the experience gained will not be wasted and require further trials.

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