New Zealand botanic gardens and the Global Strategy for Plant Conservation

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Botanic gardens are remarkable places! We are institutions with a unique mix of skills and infrastructure, and our 'botanical gardeners' are much more than professional gardeners; potentially involved with a mix of horticultural displays, education, scientific research and conservation (Blackmore *et al*, 2011).

To successfully champion this esteemed title, botanic gardens need to be active in a wide range of plant-related issues – including plant conservation. Sir Ghillean Prance hit it on the head: "*A botanic garden that does not emphasize plant conservation in its mission programme… is not adequately responding to the challenges of today's world*" (Guerrant *et al* 2004).

The Global Strategy for Plant Conservation (GSPC) provides a framework for botanic gardens to participate in and can help shape how New Zealand meets its obligations to the Convention on Biological Diversity (CBD). A major initial call for the CBD to adopt a strategy for plant conservation came from the heads of several botanic gardens (Wyse Jackson, 2011) and now botanic gardens worldwide are embracing the GSPC to achieve conservation action actions at global, national and local levels.

The GSPC includes 16 targets grouped into five objectives to help guide plant conservation activities and there are five targets which New Zealand botanic gardens are in a position to really contribute toward – targets 3, 8, 14, 15, and 16.

New Zealand botanic gardens could adopt these GSPC targets into their work programmes to help fulfil our obligations to the CBD and work proactively together, and with others, to help conserve plants and halt the continuing loss of New Zealand's indigenous plant diversity. Not only do we have an obligation to contribute to the GSPC, but it's to our advantage to do so. Working toward the targets of the GSPC gives significance to our work and is a very meaningful contribution to our community.

We are lucky in New Zealand that the scale of the issue is reasonably apparent and well documented. We have a good understanding on what species are present and how many are threatened (de Lange *et al*, 2013). Currently New Zealand botanic gardens hold nearly 40% of New Zealand's indigenous vascular plant species that are considered to be threatened. This is on par with international averages for target 8 of the GSPC (Secretariat of the Convention on Biological Diversity, 2009). Having already achieved this percentage without a targeted attempt to do so places New Zealand botanic gardens in a very positive position.

So how do botanic gardens fit into conservation work in New Zealand? Most gardens are funded by a city or local authority (district or regional council). Many are relatively old by New Zealand standards, some even predate the start of centralised government, most predate events that have shaped how conservation work happens in New Zealand today such as the enactment of the Treaty of Waitangi Act 1975, the formation of the Department of Conservation (DoC) in 1987 and of Crown Research Institutes in 1992. However, there is no act of government that defines what a New Zealand botanic garden does, so we depend on our individual management plans.

With the setting up of the GSPC we have gained a valuable international tool. The GSPC sets a framework to work within. However there are some issues:

(1) Botanic gardens in New Zealand receive no contact at all from the GSPC national focal point. A situation that is also reflected in our national statement on the website of the Convention on

Biological Diversity (CBD): "*The Government's primary focus is on indigenous biodiversity, particularly endemic species, and for conservation work in situ rather than ex situ*." (Secretariat of the Convention on Biological Diversity), so botanic gardens, seen largely as *ex-situ* practitioners, are not supported;

(2) Our botanic garden management plans, while clearly stating our role in conservation, mostly do not include any mention of the GSPC or the CBD;

(3) The recent formation of Botanic Gardens Australia and New Zealand (BGANZ) has allowed much stronger networking and collaboration between botanic gardens, but BGANZ meetings in New Zealand generally do not address progress on the GSPC.

Practical steps we can take towards the GSPC are as follows:

- Contribute our living collection names to the national service, the New Zealand Organism Register (NZOR) and ensure that supporting herbarium voucher specimens are made where appropriate (target 1).

- Record and share horticultural and propagation methods; explore methods of publishing about our work; and explore a framework for assessing, enabling and sharing the results of research involving botanic garden-sourced plant material (target 3).

- Form partnerships to assist with germplasm storage; enable plant use for conservation – for example by sharing information about what we grow; make collection records accessible to DoC staff and appropriate researchers (target 8).

- Explore methods to record and share weediness data; participate in weed surveillance programmes; support sentinel plant research for pests and diseases (target 10).

- Explore appropriate and sensitive recording of plants with local customary use – for example, record only what is appropriate and supportive to local community use of plants; Work appropriately with the Treaty of Waitangi Act 1975 including the treaty claim WAI262 relating to indigenous flora and fauna (target 13).

- Explore the role of the BGANZ network in conservation; relationships with agencies such as the DoC, non-governmental organisations (such as the New Zealand Plant Conservation Network (NZPCN), and various ecosanctuaries), and with universities and crown research institutes; develop a relationship with BGCI that is more relevant to our national situation – in particular, encourage contact with the New Zealand member of the BGCI scientific advisory board; at present we receive no contact from this person (target 16).

Many of these changes require some persistent effort on the part of botanic gardens and enthusiastic individuals, as well as the support of partnerships. The beginning of such can perhaps be seen in some on-the-ground collaborations. The following example of from Wellington illustrates a willingness at the local level to work together:

Otari Native Botanic Garden (Otari) in Wellington has grown several local species in partnership with the DoC and the Wellington Regional Council. One such species that staff have been working with since 2009 is *Brachyglottis kirkii* var. *kirkii* (kohurangi, or Kirk's tree daisy).

Kohurangi is a forest-dwelling epiphytic daisy considered to be at risk and to be declining nationally; it is under critical threat in the Wellington region. Herbarium records and historic plant lists place it in the Wellington City area as late as 1908, but unfortunately it is now considered extinct in the Wellington City area. The DoC and the Regional Council have identified several sites

on their estate that kohurangi grows in the wider Wellington region, but this amounts to only a handful of plants in all.

The intention is to reintroduce kohurangi back into the forest next to the Otari Garden and two nearby areas to bring back a viable population to Wellington city. Once established, we can also begin to build the existing populations of plants *in-situ*.

Otari staff have taken both seed and cuttings from plants, but unfortunately seed has had a zero percent strike rate. Is it the technique used, or is the seed not viable? Possibly because of the small population sizes, between 1 to 10 plants depending on site, the seed is not viable. If the seed is not viable, what is the future of those plants out in the wild?

No matter what protection they are afforded, the likelihood of successful recovery of the small populations seems remote. Without the collaboration of the organisations involved and the use of *ex-situ* facilities, the future of this species in the wider Wellington area is undoubtedly bleak.

So what could the future look like for New Zealand botanic gardens involved in plant conservation? Here are several further opportunities to consider:

- The GSPC provides a great framework for us to participate in. Let's start incorporating the GSPC into our everyday business and culture. Put plant conservation on the agenda at meetings and conferences. When considering management plans, interpretation, education policy, or staff development plans, have them reflect the GSPC targets.

- Build your threatened species collections in a targeted, meaningful way. Find out what species you might be able to contribute to the survival of, and with whom. Build your collection and make it available for recovery programmes. (target 8)

- We need to partner with others to be successful in recovery programmes. National and local governments, universities, the New Zealand Plant Conservation Network (NZPCN) and the Royal Forest and Bird Society are good examples. Private landowners too, whether on a 1000-hectare farm or a quarter-acre section can be interested in biodiversity conservation on their properties. (target 16)

- One of the ways to build partnerships is to demonstrate success. It may be the case that people and organisations we might consider partnering with don't know what resources we have and what we are capable of. Show others that botanic gardens are valuable and we can really help them carry out conservation work.

- Build our capacity to work in this space. We have the facilities and knowledge at our disposal that makes us ideal candidates to help with plant conservation work, but conservation hasn't historically been our core business. We need to learn more about how *ex-situ* conservation can best support *in-situ* conservation. (target 15)

- Send staff to NZPCN conferences, network with your local Botanical Society and attend their field trips. The Royal Botanic Gardens Kew offers an International Diploma in Plant Conservation Strategies; the NZPCN offers two plant conservation-related courses that botanic gardens have perfect facilities to deliver: Introduction to Plant Life in New Zealand and Plant Nursery Management and Propagation. (target 15)

- Start recording what we do with threatened plant species, good propagation protocols, their phenology in cultivation, and their cultural requirements. (target 3)

- Share our knowledge, publish it in our newsletters and magazines, put in on our websites, and present our successes (and failures) to our colleagues, so that we increase our collective knowledge. (target 3)

- Develop visitor interpretation and educational messages that express the work we do and provoke thought about plant conservation. (target 14)

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