

# John Buchanan's Paper of 1875 and the 2003 Survey of the Wellington Botanic Garden Bush Remnants

Barbara Mitcalfe and  
Chris Horne

*A Botanical Survey of the Indigenous Forest Remnants in Wellington Botanic Garden, Glenmore Street, Wellington*, is a report on a survey commissioned in 2002 by Friends of the Wellington Botanic Garden Incorporated, and published in 2003. The purpose of the survey was "... to re-examine the health and present state of the bush remnants in the Botanic Garden ...." The report is available as a PDF at: [www.wellingtonbotsoc.wellington.net.nz](http://www.wellingtonbotsoc.wellington.net.nz)

## The Brief

A perceived decline in the health of the remnants was the reason for the Friends commissioning the report, and is its the main focus.

In a supplementary brief, the Friends sought information on:

"the present health of each remnant compared with earlier studies; the effects of possum poisoning; the need to deal with invasive species including some non-Wellington, indigenous species; the status of kaamahi; the regeneration of e.g. tiitoki, pukatea, hiinau, rewarewa, tootara, makomako, putaputaweetaa; the advisability of summer watering in e.g. Horseshoe Gully; the advisability of introducing the above species, northern rata and podocarps."

## The Remnants

The ecological and heritage values of the Wellington Botanic Garden remnants are intimately linked and have resulted in the registration of the Botanic Garden as an Historic Place.

## Definition of a Botanic Garden

The 1990 *Wellington Botanic Garden Management Plan* defines a botanic garden as "A collection of growing plants, the main purpose of which is the advancement and diffusion of botanical knowledge.... Different botanic gardens focus on different aspects; some on taxonomy, others (on) plant physiology and morphology and others on botanical education or teaching. But whatever the emphasis, *the aim is the advancement of botany as distinguished from horticulture.*" (Emphasis Horne and Mitcalfe). This seems to us to imply that education is the primary role, yet this has not been implemented in the case of the remnants.

## Literature Search

A literature search of Buchanan (1875), Shona C Myers (1985), and Helen Cranshaw (1992), produced background data.

From our reading of the 1993 WCC *Botanic Garden Native Forest Management Plan* we realised that its policies and their implementation had not succeeded in halting the decline of

these highly significant remnants.

### **The 2003 Survey**

We botanised the five remnants, using existing paths and ways, following stream beds and making numerous sidles off-track through the plant communities, separately listing all indigenous and adventive taxa for each. We made detailed observations of the composition and condition of each remnant, including any perceived threats.

## **FINDINGS**

### **Threats**

We found that factors adversely, or potentially adversely, affecting the remnants included:

their small area; low management priority and lack of publicity; lack of buffers; invasive plants including former plantings; encroachments; pest animals; lack of clear boundaries; tracks and drainage systems; trampling; litter and vandalism; fire risk; climate change.

### **Summary of evidence that past and present management has not halted the decline of the remnants:**

- Kaamahi and kootukutuku appear close to extinction in the Garden;
- a cohort of hiinau in the 20 - 25 cm d.b.h. range appears to be dying;
- podocarp regeneration is rare;
- no evidence of northern raataa regeneration was seen;
- tiitoki and kohekohe are being selectively browsed;
- species composition has generally reduced over the years, compared with Buchanan's findings;
- large exotic trees, especially conifers, appear to be impacting adversely on the remnants;
- there are many instances of serious invasion by exotic taxa, including non-Wellington indigenous taxa such as *Pittosporum ralphii*;
- karaka trees, saplings and seedlings from plantings along Upland Road, are dominating parts of Glen Slope;
- there is no strategy or on-site facility for propagating taxa which are threatened in the Garden;
- the remnant boundaries are not well enough defined to be useful for management.

### **Theory of Forest Decline**

Manion's *Theory of Forest Decline* (1981) holds that for forest decline to occur, there must

be:

- a predisposing factor, e.g. age, predisposing a stand to decline, but not in itself initiating the process;
- an initiating factor, e.g. drought, putting additional pressure on the predisposed tree or stand, initiating the decline;
- a contributing factor/s, e.g. insects or disease, driving the decline process to completion.

From our experience and observations, we believe Manion's theory offers a satisfactory explanation of what has been happening in the Botanic Garden forest remnants.

### Comparison with Buchanan's 1875 Study

Indigenous taxa *NOT* found in 2003 survey, compared with indigenous taxa found by Buchanan, 1875.

PLANT GROUP	2003		1875
Monocot trees	1	out of	2
Dicot trees and shrubs	14	out of	56
Dicot lianes	3	out of	14
Lycopods	1	out of	2
Ferns	14	out of	42
Orchids	10	out of	12
Grasses	6	out of	9
Sedges	7	out of	10
Rushes	3	out of	3
Other monocot herbs	1	out of	6
Dicot herbs including	23	out of	27
TOTALS:	83	out of	193

Indigenous taxa found in 2003 survey, but *NOT* found by Buchanan, 1875

PLANT GROUP	2003
Gymnosperm trees	1
Monocot trees	1
Dicot trees and shrubs	13
Monocot lianes	1
Ferns	11
Grasses	5
Sedges	3
Rushes	1
Other monocot herbs	2
Dicot herbs including composites	5
TOTAL:	43

### RECOMMENDATIONS

Recommendations throughout the text of the report are also listed separately in Appendix I of the full report.

## **Summary**

### *Staffing and funding*

A suitably qualified and experienced person, paid at an appropriate rate, to be appointed exclusively to manage the duties pertaining to the indigenous forest remnants. Funding to implement this to be allocated in successive Annual Plans.

### *Restoration*

Priority to be given to propagating northern rata, kootukutuku and kaamahi. Certain other listed species also to be propagated. Other listed species to be planted as buffers for each remnant.

### *Threat management*

All non-Wellington indigenous species and all exotic species to be progressively removed from the remnants. There be no more encroachments into the remnants by planted exotic species.

### *Boundary monitoring*

Weeds dumped by neighbours to be removed at their expense. Boundaries to be monitored regularly.

### *Pest animals*

Intensive, sustained, pest animal programmes to be implemented in the entire Botanic Garden.

### *Storm water*

Council to manage storm water to prevent further scouring.

### *Litter*

Litter to be removed from the remnants.

### *Salamanca Slope*

No view shafts to be cut through this remnant. A cable and standard barrier to be erected along Serpentine Way and The Dell to protect this remnant.

### *Fire protection*

Two or more hydrants to be located near each remnant.

### *Boundaries*

Salamanca Slope, Druid Hill/Stable Gully, Australian Garden/Play Area and Cable Car remnants to be extended.

Druid Hill and Stable Gully remnants to be managed as one ecological unit. Australian Garden and Play Area remnants to be managed as one ecological unit.

### *Interpretation and signage*

A self-guided "Remnants Walkway", with an accompanying pamphlet and signage, to be

developed.

NOTE: We look forward to working with the Friends and David Sole, Manager, Wellington Botanic Gardens, on the newly established sub-committee planning the restoration of the remnants.