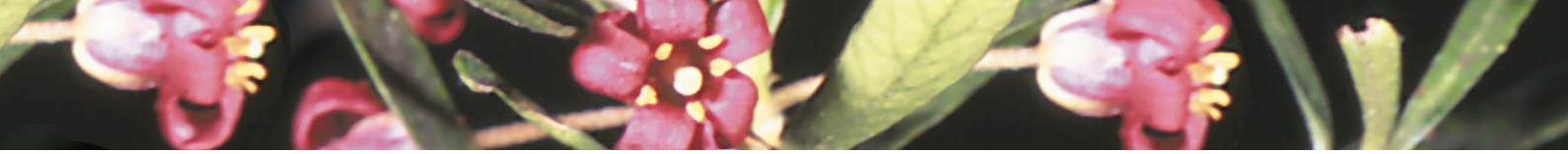

Pittosporum patulum recovery plan

1999 - 2009

THREATENED SPECIES RECOVERY PLAN 28

Department of Conservation
Te Papa Atawhai

Recovery plans

This plan is one of a series published by the Department of Conservation stating the Department's intentions for the conservation of particular plants and animals over a defined period. In focusing on goals and objectives for management, recovery plans serve to guide the Department in its allocation of resources, and to promote discussion amongst a wider section of the community.

After the preparation of a technical report which was refined by scientists and managers both within and outside the Department, a draft of this plan was sent to the New Zealand Conservation Authority, and relevant conservation boards for comment. After further refinement, this plan was formally approved by the Director-General of Conservation in 1999. A review of the plan is due after ten years, or sooner if new information leads to proposals for a significant change in direction. It will remain operative until a reviewed plan is in place.

The Department acknowledges the need to take account of the views of the tangata whenua and the application of their values in the conservation of natural resources. While the expression of these values may vary, the recovery planning process provides opportunities for consultation between the Department and the tangata whenua.. Departmental conservancy Kaupapa Atawhai Advisors are available to facilitate this dialogue.

A recovery group consisting of people with knowledge of *P. patulum* and an interest in its conservation has been established to review progress in the implementation of this plan, and to recommend to the Department any changes which may be required as management proceeds. Comments and suggestions relating to the conservation of *P. patulum* are welcome and should be directed to the recovery group via any office of the Department or to the Biodiversity Recovery Unit.

Pittosporum patulum recovery plan

1999 - 2009

THREATENED SPECIES RECOVERY PLAN 28

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Cover photo: Flowers and adult leaves of *Pittosporum patulum*, Tophouse Scenic Reserve.
Photo by A. J. Townsend.

Abstract

Pittosporum patulum is a shrub or small tree occurring in subalpine scrub and beech forest in the north-western and eastern South Island of New Zealand. It has undergone a significant decline throughout much of its range, and this is attributed to browse from possums, ungulates and rodents. Little is known about the ecology of this species, but as more information is collected through monitoring and survey, it is becoming evident that recovery is possible. This plan sets in place, the steps that will achieve this.

CONTENTS page

Introduction

Pittosporum patulum is a small tree that grows to about six metres in height, is heteroblastic, and has deep red flowers that appear in spring. Adults are apparently scarce in some regions and this is thought to be the result of browse by introduced mammals. *P. patulum* is given the IUCN rank of "Endangered" in Cameron *et al.* (1995), and is a "Category B" priority species for conservation action within the Department of Conservation (Molloy *et al.* 1994).

PAST/PRESENT DISTRIBUTION

P. patulum is endemic to South Island, found in north-west Nelson, and from eastern Nelson south to the head of Lake Hawea; Figure 1. It occurs in three conservancies: Nelson/Marlborough, Canterbury, and Otago.

SPECIES ECOLOGY AND BIOLOGY

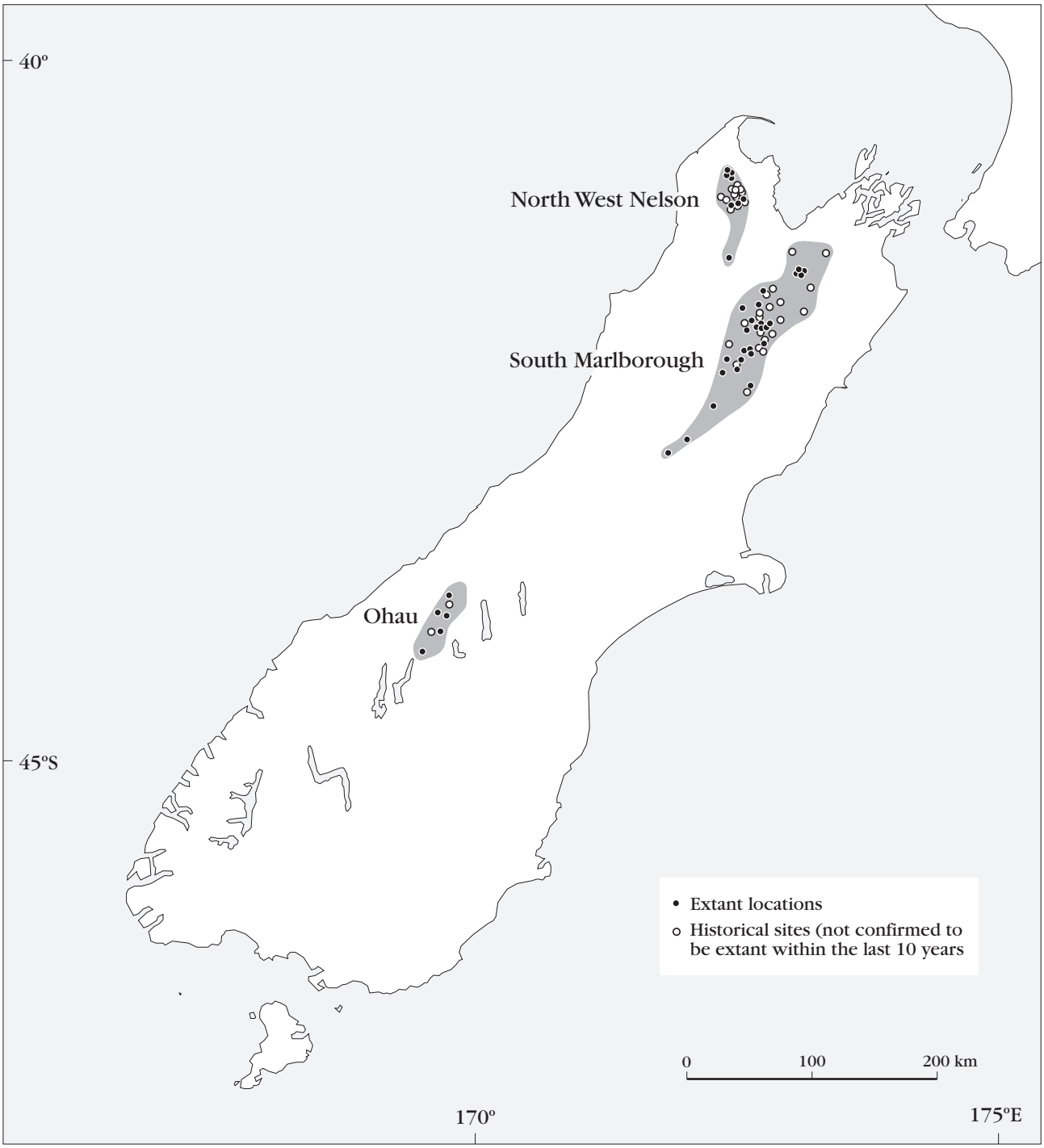
P. patulum occurs in subalpine scrub, and canopy gaps in mountain beech forest. It often occurs in sites that have undergone disturbance (e.g., avalanche chutes, fire induced scrub, and river margins), although it is not always required for regeneration. Strongholds of adults occur in subalpine scrub that are recruiting without disturbance, and bluffs in beech forest are similarly little-disturbed. Some populations are characterised by large numbers of juveniles and few adults; others are dominated by adults.

P. patulum is heteroblastic (i.e., having distinctly different juvenile and adult stages of growth): juveniles have a cryptic, single-stemmed growth form with dark coloured, linear leaves that are toothed along the margins (see cover photo), and adults form small trees with many spreading branches at their tops. Leaves on adult trees are mostly entire, linear, coriaceous, and broader than juveniles. Flowering occurs in late spring to mid summer, with the production of up to eight, deep red, scented flowers occurring in umbels (figure 2). Very little is known about what pollinates *P. patulum*. Trees are either male or female, although males may produce small quantities of seed. Like most other pittosporums, this species is dispersed by birds, although gravity (e.g., flooding) cannot be discounted.

CAUSES OF DECLINE AND THREATS

P. patulum is palatable. Ungulates eat juvenile foliage, and possums eat both the juvenile and adult foliage and flowers. Rodents predate seed in litter beneath adult trees, and insect browse can deform new growth. Natural disturbance has eliminated some populations.

FIGURE 1. DISTRIBUTION OF *PITTOSPORUM PATULUM*



PAST CONSERVATION EFFORT

Monitoring by the New Zealand Forest Service at Mount Patriarch, Richmond Range (Nelson/Marlborough Conservancy) commenced in February 1985, and has been continued to the present day. Three more locations (Lees Creek in the Wairau Valley; Rotoiti Mainland Island and Cobb Reservoir) are also being monitored in Nelson/ Marlborough Conservancy. Canterbury Conservancy followed up historical records, and set up monitoring at some populations in the Ohau and Temple catchments. Some adult and semi adult trees in the Huxley Valley have been banded with aluminium bands to protect them from possums and assess resilience, and *Novapipe*

Figure 2. Juvenile foliage of *Pittosporum patulum*. Photo: Andrew Townsend.

has been used to achieve the same effect in the Cobb Valley (Nelson/Marlborough Conservancy). A few plants are in cultivation at Motukarara Nursery (of Ohau provenance), and in Nelson at Simpson's Nurseries (provenance unknown, but most likely to be Cobb Valley). An exclosure plot is under construction on Mount Patriarch. It will variously exclude possums, deer and goats, to determine the effects that these browsers have.

Options for recovery

1 DO NOTHING

The consequences of this option are that the species may become extinct in some regions in the short to medium term. This will result in a significant reduction of the species range, and possibly genetic diversity. Doing nothing may also result in the species becoming extinct in the long term as the strongholds are weakened by the causes of decline occurring elsewhere.

2 PROTECT PLANTS AT A REPRESENTATIVE SUITE OF SITES

This option provides a cost effective solution for the recovery of *P. patulum*. It requires identification of the minimum number of sites that offer the best prospects for species recovery, and will enable *P. patulum* to continue to effectively function in the wild as a species throughout its range.

3 FULLY PROTECT ALL PLANTS FROM ALL THREATS AT ALL SITES

This option is not cost effective in that it requires a greater amount of resources than are available (both staff and finances).

The conservation strategy outlined in the remainder of this document rejects options 1 and 3, as even the local extinction of *P. patulum* is not acceptable, and the latter is not feasible.

Recovery strategy

VISION

Self-sustaining populations of P. patulum *occur in the wild, throughout the natural range of the species.*

GOALS FOR THE TERM OF THIS PLAN

The following Goals are based upon the assumption that Option 2 (above) is selected.

Goal 1

Promote public and iwi interest and involvement in the recovery of P. patulum.

Goal 2

Determine more precisely the distribution, abundance and agents of threat of P. patulum.

Goal 3

Promote adaptive management and research that address the information deficiencies in species ecology and threats.

Goal 4

Mitigate threats at sites representative of the ecological range of the species.

Workplan

To meet each goal, the following actions are required:

Goal 1

Promote public and iwi interest and involvement in the recovery of P. patulum.

Explanation

By raising the public awareness of this species, more information about its distribution will become known, and a clearer picture of the ecology of the species will emerge.

Section 4 of the Conservation Act 1987 requires that iwi are closely involved in the development and implementation of this plan. Whether *P. patulum* is taonga, or has any rongoa properties is unknown, but requires investigation.

Actions required to meet this goal:

1 Identify relevant iwi by June 2001.

2 Establish working relationship by June 2001.

3 Develop two brochures:

A general brochure describing the species for the public, by June 2001.

A more detailed brochure for DOC staff by October 1999.

4 Determine the Whakapapa of *P. patulum* by June 2002. Determine the rongoa and taonga values of this species.

5 Prepare and publish a technical report that summarises the known ecology and conservation of *P. patulum* by June 2000.

Goal 2

Determine more precisely the distribution, abundance and agents of threat of P. patulum.

Explanation

As few locations with adult plants are known effort needs to be put into surveying for more, as they are the key to the survival of the species, and provide a reliable foundation for prioritising all recovery.

Actions required to meet this goal

1 Provide area offices with a list of relevant historical locations by June 2001.

2 Survey sites based on historical records by June 2003.

For example: Cox River valley (D. Norton, pers. comm.), grid square NZMS 260 S26 27- 30- (relocation of *CHR 11939*), Spencer Mountains (T. Kirk), and relevant plots from the Forest Survey database (NIVS).

Record relevant information about the location and the population, e.g., Grid reference and description of the location, health and abundance of *P. patulum*, its population structure, associated species, nature of threats occurring (if any), land tenure, etc.

3 Extend survey to a level that permits prioritisation of management effort:

Nelson Marlborough Conservancy

- Attempt to locate adults at (or near) sites where juveniles are currently known by 2004.

Canterbury Conservancy

- Complete preliminary survey in MacKenzie Basin.
- Attempt to fill in disjunctions in Rangitata and Rakaia catchments by 2006.

Otago Conservancy

- Authentication of historical records and survey of adjoining catchments by 2006.

4 Set up sufficient monitoring sites in each conservancy to determine local threats and population dynamics so that sites for management can be selected by 2002.

Goal 3

Promote adaptive management and research that address the information deficiencies in species ecology and threats.

Explanation

Efficient management of the species is hindered by knowledge deficiencies in reproductive biology, ecology, and threats. This requires prioritisation of the research topics, *P. patulum* populations and research by management to address these deficiencies.

Actions required to meet this goal

1 Set up a list of research topics on computer, to be managed by the Recovery Group Leader and updated as appropriate.

2 Prioritise research topics annually at the Recovery Group Meeting and make them available to potential research providers (e.g., SRU, CRI's, universities).

3 Determine population boundaries and prioritise them according to biogeographical significance, ecological significance, and population viability.

4 Investigate pest control methods for threats occurring in subalpine scrub and beech forest habitats.

Research questions that require investigation include:

Information about the plant

- What roles do gravity, water and animals play in the dispersal of *P. patulum* seed?
- What is the timing, regularity and magnitude of reproductive events?
- What impact do browsers have on these events?
- What are the optimum habitat and demographic requirements for reproduction?

Threats

- Does vulnerability to browse vary at different sites?
- How vulnerable to browse are the different life stages of *P. patulum*?
- What pests and diseases are associated with *P. patulum*, and how are they best controlled?

- What level of possum control is required to maintain healthy sustainable populations?
- What methods of pest control are most effective for maintaining healthy populations of *P. patulum*?

Goal 4

Mitigate threats at sites representative of the ecological range of the species.

Explanation

Evidence points to depleted adult populations throughout most of the range of *P. patulum*. Introduced browsers are suggested as the main cause.

Actions required to meet this goal

1 Identify sites that offer the best prospects for threat mitigation by June 2006.

2 Develop and implement threat mitigation plans for at least one site in each conservancy by June 2006.

Acknowledgements

The recovery group would like to thank: John Barkla, Shannel Courtney, Suzan Dopson, Peter de Lange, David Given, Graham Jane, Nick Head, Cathy Jones, Brian Molloy, Janice Molloy, David Norton, Geoff Rogers, and Hugh Wilson for reviewing the draft, and providing comments. Brian Molloy, Philip Simpson, Bob Penter (Ngäi Tahu Group Management), and Geoff Rogers also provided technical assistance; and Jeremy Rolfe for editing and formatting.

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Appendix 1: Published Recovery Plans

RECOVERY PLAN	#	COST	YEAR APPROVED
Weka	29	($15)	Approved 1999
Pittosporum patulum	28	($15)	Approved 1999
Cyclodina skinks	27	($15)	Approved 1999
Coastal cress	26	($15)	Approved 1999
Threatened weta	25	($15)	Approved 1998
Striped skink	24	($15)	Approved 1998
Fairy tern	23	($15)	Approved 1997
Blue duck	22	($15)	Approved 1997
Kakapo	21	($15)	Approved 1996
Stitchbird	20	($15)	Approved 1996
Brown teal	19	($15)	Approved 1996
Native frogs	18	($15)	Approved 1996
New Zealand (Hooker's) Sea Lion	17	($15)	Approved 1995
Dactylanthus taylorii	16	($15)	Approved 1995
Bat (Peka peka)	15	($15)	Approved 1995
Otago and grand skinks	14	($15)	Approved 1995
Giant land snail	13	($15)	Approved 1995
Takahe	12	($15)	Approved 1994
South Island saddleback	11	($15)	Approved 1994
New Zealand Dotterel	10	($15)	Approved 1993
Tuatara	9	($15)	Approved 1993
Kowhai ngutukaka	8	($15)	Approved 1993
Subantarctic teal	7	($15)	Approved 1993
Mohua (yellowhead)	6	($15)	Approved 1993
Chevron skink	5	($15)	Approved 1993
Black stilt	4	($15)	Approved 1993

Whitaker's and robust skinks	3	($15)	Approved 1992
Kiwi	2	($15)	Approved 1991
North Island kokako	1	($15)	Approved 1991
Yellow-eyed penguin*	–	*–	Approved 1991
Kakapo		Out of print	Approved 1989

* *Available: from Otago Conservancy, Department of Conservation, Dunedin*

Copies may be ordered from:

DOC Science Publications
Science & Research Division
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WELLINGTON, N.Z.