

Wilding conifer project report, July 2007:

Objective 1 (mapping/risk assessment)

Progress update from H. North & P. Bartie (Landcare Research) and N. Ledgard (Ensis)

Aim for 2006/07 year (Objective 1 Milestones 1 and 2)

Produce a listing of current databases/maps of conifer locations and control operations by contacting/visiting South Island wilding conifer database holders (e.g., DOC, Regional and District Councils, etc.). Assemble this information into a GIS map of major South Island wilding conifer spread areas (with species, age and density information where possible) and control operations, and check this map by field work.

Funding and support

A large part of the work in Milestones 1 and 2 has been funded by LINZ via a contract to Landcare Research (and sub-contract to Ensis), with LINZ then contributing the outcomes of the work in-kind to the SFF project. Specific maps, statistics and a report focusing on the High Country portion of the South Island are being produced for LINZ under this contract, while the full South Island area is needed for the SFF project.

Data on wilding conifer locations and control operations have been generously contributed by Department of Conservation, Forest Owners (City Forests, Wenita, PF Olsen), Environment Canterbury, Marlborough District Council, Forest & Bird, Ensis and Queenstown Lakes District Council.

Progress to date

Nick Ledgard and Heather North visited data owners during a “road trip” in September 2006. The data owners then sent information in multiple formats ranging from hard copy maps to GIS coverages to hand drawings. We listed these datasets in a database specifying their source, ownership, date of acquisition, format and content. The metadata listing accompanies this report.

We used the exotic conifer polygons from Landcover Database version 2 (dated 2001/02) as the base layer for the South Island conifer map. The contributed datasets were typically more detailed than LCDB2 but usually covered only small extents, so were laid over the top to take precedence over LCDB2. Those datasets that were already in GIS form were straightforward to combine. Those datasets that consisted of hand drawn maps or similar were digitised on screen against a topographical base map to create GIS layers that could be merged with the other layers. The information included in the contributed datasets varied widely, so we wrote a number of routines to convert this information into the standard categories of density, age, species and origin (planted/seeded vs wilding) used in this project.

The resulting maps, as at 30 July 2007, accompany this report. Some estimate of density (trees more or less than 30% cover) and age (coning age or immature) is known for almost all conifer areas. However, over 10% of the area is currently mapped as “unknown species”.

Stand data contributed by forestry companies has been designated “secure” which means that only the researchers are able to see the full dataset including species and age information, and only a generalised version of the data is shown in publicly available maps. The generalisation removes the internal stand boundaries so that age and species information cannot be attributed to specific stands.

In addition to the conifer location data, we have mapped the areas that have received wilding control over the last 30 years. Some of this control work is complete, but much of it is partial (e.g., just mature trees or a single species was removed, or no follow-up control was undertaken).

The assembly of this South Island-wide map is a significant step, since it is the first time this multi-format, multi-agency data has been brought together into a single dataset. We consider these maps dated 30 July 2007 to summarise currently-existing conifer data (knowledge to date). However, we know that it will be possible to refine this map over the course of the project. In the next few months, we will send the current map out to contributors and other SFF project members as a base for local checking and additions. We had initially planned to carry out field work in the 2006/07 financial year, but now consider it would be more beneficial to go through a checking process by project members first, and then carry out field verification alongside field work required for testing the Decision Support System (Milestone 3). WCMG members can expect an updated map to be available later this calendar year.

Some statistics (derived from map version dated 30 July 2007)

The total area in the South Island mapped as having some conifer cover is just over 760,000 ha. This ranges from dense plantations through to sparse wilding areas that may have only 1-10 trees per hectare. Almost 580,000 ha of the area is mapped as intentionally planted or seeded, 145,000 ha as wilding, and the remainder unknown. Of the total conifer area, just under 50,000 ha is mapped as having received some form of control in the last 30 years. In addition to the mapped conifers, there is another almost 660,000 ha mapped as having been controlled where we have no conifers mapped – these were probably extremely sparse “wilding-affected” areas (possibly having less than 1 tree per hectare), and many will still have a few trees scattered within them. The total wilding-affected areas (including these extremely sparse controlled areas) is therefore mapped as almost 805,000 ha in the South Island.

The extents in Tables 1, 2 and 3 include the data from the “secure” areas, even though this is not displayed on the maps.

Table 1 South Island conifers categorised by density and origin, specifying total area (ha) of conifers in each category, and (in brackets) the part of that total that has received control (C).

	Planted/seeded	Wildings	Unknown origin	TOTAL
Dense (over 30% cover)	579,600 (C 8,800)	13,300 (C 5,700)	26,100 (C 2,100)	619,000 (C 17,600)
Sparse (less than 30% cover)		129,800 (C 28,400)	200	130,000 (C 28,400)
Unknown density		1,800 (C 500)	10,000 (C 3,200)	11,800 (C 3,700)
TOTAL	579,600 (C 8,800)	144,900 (C 34,600)	36,300 (C 5,300)	760,800 (C 48,700)
Plus area controlled where no wildings have been mapped		(C 658,900)		

Table 2 South Island conifers categorised by species and origin, specifying total area (ha) of conifers in each category, and (in brackets) the part of that total that has received control (C).

	Planted/seeded	Wildings	Unknown origin	TOTAL
Radiata pine	374,100 (C 5,100)	800 (C 100)	14,100 (C 600)	389,000 (C 5,800)
Douglas-fir	29,800 (C 700)	100	4,900	34,800 (C 700)
Other/mixed conifer species	73,200 (C 2,100)	79,000 (C 8,900)	11,900 (C 4,600)	164,100 (C 15,600)
Unknown conifer species	19,300 (C 500)	65,000 (C 25,600)	1,800 (C 100)	86,100 (C 26,200)
Harvested forest	47,400 (C 400)		1,500	48,900 (C 400)
Young plantations	35,800		2,100	37,900
TOTAL	579,600 (C 8,800)	144,900 (C 34,600)	36,300 (C 5,300)	760,800 (C 48,700)

Table 3 South Island conifers categorised by age and origin, specifying total area (ha) of conifers in each category, and (in brackets) the part of that total that has received control (C).

	Planted/seeded	Wildings	Unknown origin	TOTAL
Mature (coning)	553,200 (C 5,800)	100,100 (C 13,600)	31,900 (C 2,100)	685,200 (C 21,500)
Immature	17,700 (C 400)	37,200 (C 18,300)	100	55,000 (C 18,700)
Unknown age	8,700 (C 2,600)	7,600 (C 2,700)	4,300 (C 3,200)	20,600 (C 8,500)
TOTAL	579,600 (C 8,800)	144,900 (C 34,600)	36,300 (C 5,300)	760,800 (C 48,700)