

NORTHCROSS URBAN FOREST ecological functioning in the landscape and species list.

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The Northcross urban forest patch includes Northcross Reserve and the forest in the grounds of Northcross Intermediate and Sherwood Primary Schools.

FUNCTIONAL PATCH SIZE

This urban forest patch is 4.4ha in total. Northcross Reserve is 1.82ha, the schools' urban forest is 2.56ha which includes 1.76ha urban forest proposed for development. This area of urban forest that is proposed for development (1.76ha) is 40% of the existing 4.4ha urban forest area. The urban forest patch of 4.4ha is close to an ecologically functioning urban forest patch (Meurk & Hall 2006; Janssen 2004).

ECOLOGICAL CONNECTIVITY

Urban forest patches of around 5ha or more function ecologically in the landscape (e.g. bird and seed movement) when they are within 2km of each other (Janssen 2004; Meurk & Hall 2006), and have corridors or smaller patches of vegetation between them, that act as stepping stones between patches. This urban patch is strategically placed at approximately 1.5-2km distance from Hooton Reserve to the west, and from the east coast, and from a similar sized urban forest patch (Stedwick Reserve) in the north and the 12ha urban forest patch (Speedy Bush/Penguin Drive Reserve) in the south. Between each of these reserves there are smaller stepping stones of urban forest. Therefore this 4.4ha urban forest patch in Northcross can be considered important as an ecologically functional link in this landscape, as part of the North-West Wildlink (<http://www.aucklandcouncil.govt.nz/EN/environmentwaste/naturalenvironment/Pages/biodiversityrestoration.aspx>).

BOTANICAL IMPORTANCE

This urban forest patch in Northcross has been naturally regenerating since around the 1940s and 1950s. The eastern edge of the patch adjacent to Sherwood Primary School had begun regenerating slightly later than the rest, as indicated by the Auckland Council 1959 historical aerial photos (<http://maps.aucklandcouncil.govt.nz/aucklandcouncilviewer/>).

The number of species within the different components of the urban bush are indicative of the stage of succession since last disturbance. The Northcross Reserve has the greatest number of native species (51) and of weedy species (31) with more than 60% of the species being natives. Northcross Intermediate and Sherwood Primary bush areas have smaller numbers of native species (21 and 16 respectively), and a smaller number of exotic species (19 and 10 respectively). The slightly younger status of the eastern area is also obvious in the species lists attached, with fewer native species and pioneer species than the remainder of the area. As time goes on the younger component of the reserve will be colonised by more native species and become a rich naturally regenerating similar to Northcross Reserve.

NATURALLY REGENERATING

The Northcross Reserve area has a predominance of naturally occurring native species with a few weedy canopy and edge species, while the school areas which have been regenerating for a shorter time still retain a canopy dominated by pioneer exotics (e.g. wattles) but have a healthy understorey of native seral species. The value of this entire urban forest patch is that it is naturally regenerating and is more complex and more natural than the revegetation programmes will be able to achieve

over the same or longer time period. Most exotic species are pioneers and will not regenerate under the existing closed cover. Management of pests (weeds, possums and rodents) in this urban forest would enhance its naturalness and allow it to develop into an increasingly valuable ecological urban forest. In a decade or so, these areas will be increase in native regenerating species, especially where exotics weedy species are incrementally removed.

SUMMARY

1. The total Northcross urban forest patch size (4.4ha) is ecologically functional in the landscape but would be significantly less value if reduced to 60% of its size.
2. The urban forest patch is strategic for ecological connectivity in the landscape and if reduced would become another smaller stepping stone rather than a patch. Keeping the entire urban forest helps achieve the goals of North-West Wildlink.
3. The area is naturally regenerating, which means it has more complexity and naturalness than alternative planted areas.
4. As the forest matures, native species will outnumber weed species, and dominate.
5. Exotic species can be reduced to manageable levels due to the native vegetative cover suppressing pioneer re-establishment, if disturbance is minimal.

Janssen, H., 2004. Bush Vitality: a visual assessment kit

Meurk C.D. and Hall, G.M.J., 2006. Options for enhancing forest biodiversity across New Zealand's managed landscapes based on ecosystem modelling and spatial design. *New Zealand Journal of Ecology* 30(1): 131-146

Species of Northcross Reserve and associated urban forest within Northcross Intermediate and Sherwood Primary Schools

NATIVE SPECIES / present naturally * appear planted

Botanical name	Common name	Northcross Intermediate	Sherwood Primary	Northcross Reserve
<i>Agathis australis</i>	kauri			*
<i>Alectryon excelsus</i>	titoki			/
<i>Asplenium flaccidum</i>	hanging spleenwort			/
<i>Asplenium oblongifolium</i>	shining spleenwort	/		
<i>Asplenium polyodon</i>	sickle spleenwort			/
<i>Blechnum nova-zelandiae</i>	kiokio			/
<i>Carex lambertiana</i>				/
<i>Carpodetus serratus</i>	putaputaweta			/
<i>Centella uniflora</i>				/
<i>Coprosma macrocarpa</i>			/	/
<i>Coprosma repens</i>	taupata	*		
<i>Coprosma rhamnoides</i>		/	/	/
<i>Coprosma robusta</i>	karamu	/	/	/
<i>Cordyline australis</i>	cabbage tree	/		/
<i>Cyathea dealbata</i>	silver tree fern	/	/	/
<i>Cyathea medullaris</i>	mamaku			/
<i>Dacrydium cupressinum</i>	rimu			*
<i>Darycarpus dacrydioides</i>	kahikatea			/
<i>Dianella nigra</i>	turutu, blueberry			/
<i>Dracophyllum sinclairii</i>				/
<i>Dysoxylum spectabile</i>	kohekohe			/
<i>Geniostoma rupestre</i>	hangehange	/	/	/
<i>Ghania setifolia</i>				/
<i>Gleichenia microphylla</i>	waewaekaka			/
<i>Hedycarya arborea</i>	pigeonwood	/	/	/
<i>Hoheria populnea</i>	houhere			/
<i>Kunzea ericoides</i>	kanuka	/		/
<i>Leptospermum scoparium</i>	manuka	/	/	/
<i>Leucopogon fasciculatus</i>	mingimingi	/		/
<i>Lycopodium deuterodensum</i>	puakarimu			/
<i>Melicytus ramiflorus</i>	mahoe	/	/	/
<i>Metrosideros kermadecensis</i>	Kermadec Island pohutukawa	*	*	
<i>Myrsine australis</i>	red matipo	/	/	/
<i>Olearia furfuracea</i>	akepiro		/	/
<i>Oplismenus hirtellus</i> ssp. <i>imbecillis</i>		/		/
<i>Paesia scaberula</i>	hardfern			/
<i>Parsonsia heterophylla</i>	kaihua			/
<i>Phyllocladus trichomanoides</i>	tanekaha			/

<i>Pittosporum crassifolium</i>	karo	/	/	/
<i>Pittosporum tenuifolium</i>	kohuhu	*		
<i>Pneumatopteris pennigera</i>	gully fern			/
<i>Podocarpus totara</i>	totara	/	/	/
<i>Pomaderris kumeraho</i>	kumarahou			/
<i>Pseudopanax arboreus</i>	five finger			/
<i>Pseudopanax hybrid</i>		/		/
<i>Pseudopanax lessonii</i>	houpara	/	/	/
<i>Pteridium esculentum</i>	bracken fern	/		/
<i>Pteris tremula</i>	shaking brake		/	/
<i>Rhopalostylis sapida</i>	nikau			/
<i>Rubus cissoides</i>				/
<i>Schefflera digitata</i>	pate			/
<i>Schoenus tendo</i>			/	/
<i>Sophora chathamica</i>	kowhai			/
<i>Tmesipteris tannensis</i>				/
<i>Uncinia uncinata</i>				/
		21	16	51

EXOTIC SPECIES

Botanical Name	Common Name	Norcross Intermediate	Sherwood Primary	Norcross Reserve
<i>Acacia longifolia</i>	Sydney golden wattle	/	/	/
<i>Acmena smithii</i>	monkey apple	/	/	/
<i>Actinidia deliciosa</i>	kiwifruit			/
<i>Agapanthus praecox</i>	agapanthus			/
<i>Asparagus scandens</i>	climbing asparagus	/		/
<i>Cestrum nocturnum</i>	queen of the night			/
<i>Cortaderia selloana</i>	pampas	/	/	/
<i>Cotoneaster</i> sp.	cotoneaster			/
<i>Crocasmia Xcrocsmiifolia</i>	montbretia	/	/	/
<i>Cyperus erogrostis</i>	nutgrass			/
<i>Erigeron karvinskianus</i>	Mexican daisy			/
<i>Eriobotrya japonica</i>	loquat			/
<i>Eucalyptus</i> sp.	gum tree	/		
<i>Fatsia japonica</i>	fatsia	/		/
<i>Hakea salicifolia</i>	willow-leaved hakea			/
<i>Hakea sericea</i>	prickly hakea	/		/
<i>Hedera helix</i>	ivy			/
<i>Hedychium gardnerianum</i>	wild ginger	/	/	/
<i>Impatiens sodenii</i>	bush balsam			/
<i>Jasminum polyanthum</i>	jasmine			/
<i>Ligustrum lucidum</i>	tree privet	/		
<i>Ligustrum sinensis</i>	Chinese privet	/		/
<i>Nephrolepis cordifolia</i>	ladder fern		/	
<i>Paraserianthes lophantha</i>	brush wattle	/	/	/
<i>Passiflora</i> sp.	passionvine	/		
<i>Pinus pinaster</i>	maritime pine	/	/	
<i>Pinus radiata</i>	Monterey pine	/	/	/
<i>Plectranthus</i> sp.				/
<i>Prunus serrulata</i>	flowering cherry			/
<i>Rubus fruticosus</i>	blackberry	/		/
<i>Selaginella kraussiana</i>	African clubmoss			/
<i>Senecio mikanioides</i>	German ivy			/
<i>Solanum mauritianum</i>	woolly nightshade	/		/
<i>Tradescantia fluminensis</i>	wandering jew	/	/	/
<i>Ulex europaeus</i>	gorse	/		/
<i>Zantedeschia aethiopica</i> 'Green Goddess'	arum lily			/
		19	10	31