

Acknowledgements

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References

A reference list bringing together those from all parts of this series will be published in due course. A list for this part is available on request (J.C.).

Boundary Creek Conservation Area, North Canterbury over the years

Michelle Lambert

On the 10th of December 2022, a group of intrepid botanists travelled to North Canterbury to investigate the plant species of the Boundary Creek Conservation Area. Boundary Creek Conservation Area is in coastal hill country on either side of the Glendhu Road about 6 km east of the turnoff from the Motunau Beach Road. It consists of a block of 55.54 ha on the northern side of the road and a block of 19.25 ha on the southern side.

We explored the southern block considering the underlying geology of the area where the creek has cut down through faulted tertiary deposits of sandstone, mudstone, and gravels (Rattenbury et al. 2012, Edbrooke et al. 2014, Heron 2020) that provide for interesting combinations of vegetation types. Owing to the time of year, we also focused on recording the presence of orchids in the *Fuscospora solandri* (black beech) forest.

Dr Brian Molloy of the then DSIR Botany Division made several visits to the area in the late 1970s and reported on the 3,000 ka Coringa Farm Settlement that extends northeast from Motunau Beach towards Glendhu Road. He published a species list for Coringa and reported on the areas of indigenous vegetation worth considering for protection, including Upper Boundary Creek on either side of Glendhu Road, the lower reaches of Cranky Tom Stream (a tributary of Boundary Creek), and the vegetation at the mouth of Boundary Creek (Molloy 1986).

On our visit we had two species lists others had compiled for areas in the catchment above and below our study area: the more recent was from a Canterbury Botanical Society trip in 2002 to the Upper Boundary Creek north of Glendhu Road (CBS 2002), and one Brian

Molloy had compiled for the lower reaches of Cranky Tom Stream and the mouth of Boundary Creek.

Brian Molloy's report (Molloy 1986) provided notable comments about the vegetation on the continuum between the lower Cranky Tom Stream and the mouth of Boundary Creek on the coast:

1. "The mixed beech/coastal plant communities at the mouth of Boundary Creek are unique in Canterbury.
2. The beech forest occupies an incised meander, cut through the uplifted Motunau Plain, with older and younger surfaces semi covered with native, woody vegetation.
3. Past fires have converted most of the original forest to rough shrub, including gorse (*Ulex europaeus*), and broom (*Cytisus scoparius*).
4. Vegetation types present consist of kānuka (*Kunzea robusta*) stands, mixed kānuka and hardwood trees, stands of beech which are unusual for this part of Canterbury, and only known in the Motunau area, plus coastal forest of ngaio (*Myoporum laetum*), akeake (*Dodonaea viscosa*) with associated shrubs and herbs, and coastal lagoon habitats."

102 native species were identified and six exotic, including European broom, Montpellier broom (*Genista monspessulana*) and gorse (Molloy 1986).

From the 2002 Botanical Society trip to Boundary Creek, notable species included *Teucrium parvifolium* (At Risk - Declining), *Prumnopitys taxifolia* (mataī/black pine), exotic *Hieracium* sp. and exotic male fern (*Dryopteris filix-mas*), and one individual of Old Man's beard (*Clematis vitalba*) that was promptly removed.

Our Botanical Society trip in December 2022 set out to determine if *Teucrium parvifolium* was still present and to identify orchids. Only one orchid (*Corybas macranthus*) had been recorded on the 2002 Botanical Society trip, but Molloy listed five orchid species in both 1981 and 1986 (though a different range of species) so we were hopeful some would be found in our part of the Upper Boundary Creek Conservation Area.

Teucrium parvifolium was quickly spotted not far into the trip and was in flower. It has young orange-brown stems that are square in cross section and finely hairy (de Lange 2023). Leaves are in opposite pairs, round, and dull green or brown-green. Flowers are small (8 mm in diameter) and white (Figure 1, p. 86).

We chose to walk down Boundary Creek to survey the area. It felt like we had been transported to the West Coast of the South Island as we walked past the damp, fern-covered cliffs, very different from Canterbury's usual dry climate (Figure 2, p. 86).

We headed up to the beech forest and identified eight species of orchid including green hooded (*Pterostylis*), sun (*Thelymitra*), and spider (*Corybas* and *Caladenia*) orchids (Figure 3, p. 94).

The final list of 162 species was compiled by Miles Giller with help from the other botanists on the trip. There was a considerable increase in the number of species identified at the location from the 1986 and 2002 lists (108 and 126, respectively). There is unfortunately a significant increase in the number of exotic species including a range of adventive grasses, and *Clematis vitalba* has now firmly established itself. We also found Monterey pine (*Pinus radiata*), and a record of common polypody fern (*Polypodium vulgare*) that was absent from the 2002 list.



Figure 1. Close up of *Teucrium parvifolium* flowers showing (left) the finely hairy brown stems, and (right) the habit of *T. parvifolium*. Photos: Michelle Lambert



Figure 2. Botanists in action, Boundary Creek Reserve, southern block.

It is promising to see the continued presence of *Teucrium parvifolium* despite the invasion of weedy species into the Conservation Area. Thirty-three species of ferns were identified including the filmy ferns *Hymenophyllum cupressiforme* and *Hymenophyllum minimum*. The presence of both filmy ferns further illustrates the dampness of the habitat, again something not usually associated with the Canterbury region.

For further information on the species found in 2022 and in earlier visits see the lists below (Table 1, p. 88) or look out for some member observations on iNaturalist.

Acknowledgements

Thank you to Miles Giller and the Canterbury Botanical Society for putting together the 2022 and 2002 species lists. Thank you to Alice Shanks for organising the trip and providing background the geology of the area. Thanks to Jane Gosden for editorial advice. Thanks also goes to the keen eyes of the Botanical Society trip 2022 participants.

References

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Table 1. Plant species lists for Boundary Creek Conservation Area compiled by Brian Molloy (1986) and by members of the Canterbury Botanical Society in 2002 (2 February) and 2022 (10 December). Lists: 1986 – Lower reaches of Cranky Tom Stream and at the mouth of Boundary Creek; 2002 – Upper Boundary Creek northern block; 2022 – Upper Boundary Creek Southern Block; ✓ = present; * = exotic.

Species name	Name(s) as published (year)	1986	2002	2022
GYMNOSPERMS				
<i>Pinus radiata</i> *				✓
<i>Podocarpus totara</i>			✓	✓
<i>Prumnopitys taxifolia</i>			✓	
ANGIOSPERM DICOTS				
<i>Acaena anserinifolia</i>		✓	✓	✓
<i>Acaena anserinifolia f. viridior</i>			✓	
<i>Anisotome filifolia</i>				✓
<i>Aristotelia serrata</i>		✓	✓	✓
<i>Calystegia tuguriorum</i>		✓	✓	✓
<i>Cardamine debilis</i>		✓	✓	
<i>Cardamine sp.</i>				✓
<i>Carmichaelia australis</i>	<i>C. robusta</i> (1986)	✓	✓	✓
<i>Carpodetus serratus</i>		✓	✓	✓
<i>Cerastium fontanum</i> *				✓
<i>Cirsium arvense</i> *				✓
<i>Clematis afoliata</i>			✓	✓
<i>Clematis paniculata</i>		✓	✓	✓
<i>Clematis vitalba</i> *			✓	✓
<i>Conium maculatum</i> *				✓
<i>Coprosma crassifolia</i>			✓	✓
<i>Coprosma xcunninghamii</i>			✓	✓
<i>Coprosma dumosa</i>				✓
<i>Coprosma linariifolia</i>			✓	
<i>Coprosma lucida</i>		✓	✓	✓
<i>Coprosma microcarpa</i>			✓	✓
<i>Coprosma aff. parviflora</i>		✓		
<i>Coprosma propinqua</i>			✓	
<i>Coprosma rhamnoides</i>		✓	✓	✓
<i>Coprosma rigida</i>				✓
<i>Coprosma robusta</i>		✓	✓	✓
<i>Coprosma rotundifolia</i>		✓	✓	
<i>Coriaria arborea</i>		✓	✓	
<i>Crepis capillaris</i> *				✓

<i>Cytisus scoparius*</i>		✓	✓	✓
<i>Dichondra repens</i>		✓	✓	✓
<i>Discaria toumatou</i>		✓	✓	
<i>Disphyma australe</i>		✓		
<i>Dodonaea viscosa</i>		✓		
<i>Epilobium billardioreanum</i> subsp. <i>cinereum</i>			✓	
<i>Epilobium nummulariifolium</i>				✓
<i>Epilobium pedunculare</i>			✓	✓
<i>Epilobium rotundifolium</i>		✓	✓	
<i>Euchiton ?limosus</i>			✓	
<i>Euchiton paludosus</i>	<i>Gnaphalium paludosum</i> (1986)	✓		
<i>Fuchsia excorticata</i>			✓	✓
<i>Fuchsia x colensoi</i>	<i>F. perscandens</i> x <i>F. excorticata</i> (2002)		✓	✓
<i>Fuscospora solandri</i>	<i>Nothofagus solandri</i> (1986, 2002)	✓	✓	✓
<i>Gaultheria antipoda</i>				✓
<i>Genista monspessulana*</i>	<i>Cytisus monspessulanus</i> (1986)	✓		
<i>Geranium microphyllum</i>		✓	✓	
<i>Geranium molle*</i>				✓
<i>Griselinia littoralis</i>		✓	✓	✓
<i>Haloragis erecta</i>		✓	✓	✓
<i>Hebe salicifolia</i>		✓	✓	✓
<i>Hedera helix*</i>				✓
<i>Helichrysum lanceolatum</i>	<i>H. aggregatum</i> (1986)	✓	✓	✓
<i>Hieraceum sp.*</i>			✓	
<i>Hydrocotyle heteromeria</i>			✓	✓
<i>Hydrocotyle moschata</i>		✓	✓	✓
<i>Hydrocotyle sp.</i>				✓
<i>Ileostylus micranthus</i>		✓		
<i>Kunzea ericoides s.l.</i>		✓	✓	✓
<i>Lagenophora strangulata</i>	<i>Lagenifera strangulata</i> (1986)	✓	✓	✓
<i>Leptecophylla juniperina</i>	<i>Cyathodes juniperina</i> (1986)	✓	✓	✓
<i>Leptinella dioica</i>	<i>Cotula dioica</i> (1986)	✓		
<i>Leptinella pusilla</i>	<i>Leptinella perpusilla</i> (2002)		✓	
<i>Leptinella squalida</i>	<i>Cotula squalida</i> (1986)	✓		✓
<i>Leptospermum scoparium</i>		✓	✓	✓

<i>Leucopogon fasciculatus</i>	<i>Cyathodes fasciculata</i> (1986)	✓	✓	✓
<i>Lobelia angulata</i>	<i>Pratia angulata</i> (1986, 2002)	✓	✓	✓
<i>Lophomyrtus obcordata</i>			✓	✓
<i>Melicytus ramiflorus</i>		✓	✓	✓
<i>Melissa officinalis</i> *				✓
<i>Muehlenbeckia australis</i>		✓	✓	✓
<i>Muehlenbeckia axillaris</i> x <i>complexa</i>				✓
<i>Muehlenbeckia complexa</i>		✓	✓	✓
<i>Myoporum laetum</i>		✓	✓	✓
<i>Myosotis laxa</i> ssp. <i>caespitosa</i> *				✓
<i>Myrsine australis</i>		✓	✓	✓
<i>Navarretia squarrosa</i> *				✓
<i>Olearia avicenniifolia</i>	<i>O. avicenniaefolia</i> (1986)	✓	✓	✓
<i>Olearia paniculata</i>		✓		
<i>Oxalis exilis</i>			✓	✓
<i>Oxalis magellanica</i>				✓
<i>Ozothamnus leptophyllus</i>			✓	
<i>Parietaria debilis</i>		✓		
<i>Parsonsia capsularis</i>		✓		✓
<i>Parsonsia heterophylla</i>		✓		✓
<i>Parsonsia</i> sp.			✓	
<i>Pennantia corymbosa</i>		✓		
<i>Piper excelsum</i>	<i>Macropiper excelsum</i> (1986)	✓		
<i>Pittosporum eugenioides</i>			✓	
<i>Pittosporum tenuifolium</i>		✓	✓	✓
<i>Plantago raoulii</i>			✓	
<i>Prunella vulgaris</i> *				✓
<i>Prunus cerasifera</i> *				✓
<i>Pseudognaphalium luteoalbum</i>	<i>Gnaphalium luteoalbum</i> (1986)	✓		✓
<i>Pseudopanax arboreus</i>		✓	✓	✓
<i>Pseudopanax crassifolius</i>			✓	✓
<i>Ranunculus reflexus</i>	<i>Ranunculus hirtus</i> (1986)	✓	✓	
<i>Ranunculus repens</i> *				✓
<i>Ranunculus</i> sp.				✓
<i>Rorippa nasturtium-aquaticum</i> *				✓
<i>Rubus cissoides</i>			✓	✓

<i>Rubus fruticosus</i> agg.*		✓	✓	✓
<i>Rubus schmidelioides</i>		✓	✓	✓
<i>Rubus squarrosus</i>		✓	✓	✓
<i>Sagina procumbens</i> *				✓
<i>Salix xfragilis</i> *				✓
<i>Senecio glomeratus</i>			✓	
<i>Senecio hispidulus</i>				✓
<i>Senecio minimus</i>		✓		✓
<i>Senecio quadridentatus</i>		✓	✓	
<i>Senecio</i> sp.		✓		
<i>Sisymbrium officinale</i> *				✓
<i>Sophora microphylla</i>		✓	✓	✓
<i>Stellaria graminea</i> *				✓
<i>Stellaria media</i> *				✓
<i>Stellaria parviflora</i>		✓	✓	✓
<i>Teucrium parvifolium</i>			✓	✓
<i>Trifolium repens</i> *				✓
<i>Ulex europaeus</i> *		✓	✓	✓
<i>Vicia sativa</i> *				✓
<i>Wahlenbergia</i> (undet. radicate)			✓	
<i>Wahlenbergia violacea</i>	<i>Wahlenbergia gracilis</i> (1986)	✓		✓
MONOCOTS				
<i>Agrostis capillaris</i> *				✓
<i>Aira caryophyllea</i> *				✓
<i>Anthosachne rectiseta</i> *	<i>Elymus rectisetus</i> (1986, 2002)	✓	✓	
<i>Anthoxanthum odoratum</i> *				✓
<i>Arrhenanthum elatius</i> *				✓
<i>Arthropodium candidum</i>		✓	✓	✓
<i>Astelia fragrans</i>		✓	✓	✓
<i>Austroderia richardii</i>	<i>Cortaderia richardii</i> (1986, 2002)	✓	✓	✓
<i>Carex</i> sp.				✓
<i>Carex</i> sp.	<i>Uncinia</i> type			✓
<i>Carex uncinata</i>	<i>Uncinia uncinata</i> (2002)		✓	
<i>Carex coriacea</i>		✓	✓	
<i>Carex cyanea</i>	<i>Uncinia leptostachya</i> (1986, 2002)	✓	✓	
<i>Carex dissita</i>			✓	
<i>Carex edura</i>	<i>Uncinia divaricata</i> (1986)	✓		

<i>Carex flagellifera</i>		✓	✓	
<i>Carex forsteri</i>		✓	✓	✓
<i>Carex geminata</i>				✓
<i>Carex secta</i>			✓	✓
<i>Carex solandri</i>				✓
<i>Carex virgata</i>		✓	✓	✓
<i>Cordyline australis</i>		✓	✓	✓
<i>Cynosurus cristatus*</i>				✓
<i>Cynosurus echinatus*</i>				✓
<i>Dactylis glomerata*</i>				✓
<i>Dianella nigra</i>			✓	✓
<i>Echinopogon ovatus</i>		✓	✓	
<i>Eleocharis acuta</i>		✓		
<i>Isolepis habra</i>			✓	
<i>Juncus edgariae</i>			✓	✓
<i>Juncus gregiflorus*</i>		✓		
<i>Juncus sp.</i>				✓
<i>Libertia ixioides</i>		✓	✓	
<i>Lolium arundinaceum*</i>				✓
<i>Lolium perenne*</i>				✓
<i>Luzula picta</i>		✓	✓	✓
<i>Microlaena avenacea</i>				✓
<i>Microlaena stipoides</i>		✓	✓	✓
<i>Pentapogon crinitus</i>	<i>Dichelachne crinita</i> (1986, 2002)	✓	✓	
<i>Phormium tenax</i>		✓	✓	✓
<i>Poa breviglumis</i>		✓	✓	✓
<i>Poa cita</i>		✓	✓	
<i>Poa imbecilla</i>				✓
<i>Poa trivialis*</i>				✓
<i>Rytidosperma gracile</i>		✓	✓	
<i>Rytidosperma clavatum</i>		✓		
<i>Uncinia sp.</i>			✓	
ORCHIDS				
<i>Caladenia minor</i>				✓
<i>Chiloglottis cornuta</i>				✓
<i>Corybas cheesemanii</i>				✓
<i>Corybas macranthus</i>		✓	✓	
<i>Corybas trilobus</i>		✓		✓
<i>Microtis unifolia</i>		✓		
<i>Pterostylis alobula</i>		✓		✓

<i>Pterostylis graminea</i>				✓
<i>Thelymitra</i> “pupureo-fusca”				✓
<i>Thelymitra longifolia</i>		✓		
<i>Thelymitra</i> sp. ? <i>longifolia</i>				✓
FERNS & FERN ALLIES				
<i>Adiantum cunninghamii</i>		✓	✓	✓
<i>Asplenium appendiculatum</i>	<i>A. terrestre</i> (1986)	✓	✓	✓
<i>Asplenium bulbiferum</i>			✓	
<i>Asplenium flabellifolium</i>		✓	✓	✓
<i>Asplenium flaccidum</i>			✓	✓
<i>Asplenium gracillimum</i>		✓	✓	✓
<i>Asplenium hookerianum</i>		✓	✓	✓
<i>Asplenium lyallii</i>				✓
<i>Blechnum</i> “Green Bay”		✓		
<i>Blechnum chambersii</i>		✓	✓	✓
<i>Blechnum deltoides</i>				✓
<i>Blechnum fluviatile</i>			✓	✓
<i>Blechnum minus</i>			✓	✓
<i>Blechnum novae-zelandiae</i>	incl <i>B. minus</i> (2002)		✓	✓
<i>Blechnum penna-marina</i>			✓	✓
<i>Blechnum procerum</i>			✓	✓
<i>Cheilanthes distans</i>		✓	✓	
<i>Cheilanthes sieberi</i>		✓		
<i>Dicksonia squarrosa</i>		✓		
<i>Dryopteris filix-mas</i> *			✓	✓
<i>Histiopteris incisa</i>				✓
<i>Hymenophyllum cupressiforme</i>				✓
<i>Hymenophyllum minimum</i>				✓
<i>Hymenophyllum multifidum</i>			✓	
<i>Hypolepis ambigua</i>		✓	✓	✓
<i>Hypolepis rufobarbata</i>				✓
<i>Lecanopteris pustulata</i>	<i>Microsorium pustulatum</i> (2002, 2022) <i>Phymatosorus</i> <i>diversifolius</i> (1986)	✓	✓	✓
<i>Lycopodium volubile</i>				✓
<i>Notogrammitis billardiarei</i>			✓	✓
<i>Notogrammitis</i> aff. <i>ciliata</i> ‘ <i>crenulata</i> ’				✓
<i>Notogrammitis heterophylla</i>				✓
<i>Paesia scaberula</i>				✓

<i>Pakau pennigera</i>	<i>Pneumatopteris pennigera</i> (1986, 2022)	✓		✓
<i>Pellaea rotundifolia</i>		✓	✓	✓
<i>Polypodium vulgare*</i>				✓
<i>Polystichum neozelandicum</i>	<i>P. neozelandicum</i> subsp. <i>zerophyllum</i> (2022)			✓
<i>Polystichum oculatum</i>				✓
<i>Polystichum richardii</i>	(1986, 2002)	✓	✓	
<i>Polystichum vestitum</i>			✓	✓
<i>Pteridium esculentum</i>			✓	✓
<i>Pyrrosia elaeagnifolia</i>		✓	✓	
<i>Pyrrosia serpens</i>		✓		



Figure 3. *Caladenia* species. Photo: Michelle Lambert