

ARAHAKI LAGOON REVISITED

Paul Cashmore

Following the Botanical Society/Forest and Bird trip to Arahaki Lagoon in Whirinaki Forest Park in March 2005 an article was published (Cashmore 2005) detailing the botanical discoveries of that trip and an associated species list published. In the following summer Department of Conservation staff (namely myself, Peter de Lange, Gareth Boyt) assisted by John Hobbs, made several trips to the lagoon to survey and monitor threatened flora. On these trips we have made some further significant discoveries, while at the same time adding an astonishing number of new species to the list compiled last year and have removed a few doubtful records. These significant discoveries and a revised plant species list are presented here.

The major discovery this year at the lagoon was *Amphibromus fluitans* (Acutely Threatened - Nationally Endangered). This is only the 2nd population known in the BOP after the discovery of a large population at Lake Rerewhakaaitu by Sarah Beadel on last years Botanical Society trip (Beadel 2005) and one of the few known populations in the North Island. Initially only a few plants were noticed growing in water in the middle of the lagoon and around the edges. Few seed heads were present making some plants difficult to identify. By the end of the day we had found many plants around the southern margins of the lagoon and like the Rerewhakaaitu *Amphibromus* population it is estimated at over 1000 plants.

Surprisingly for such a large population this species was not found the previous year by Botsoc members but it appears many members (including the author) have only recently become familiar with this species following the Rerewhakaaitu discovery and it was probably misidentified. On the follow-up visit the original patch of *Amphibromus* seen in the middle of the lagoon appeared to have been browsed by deer which confirms that it is palatable to browsing animals.

On the second visit with Peter de Lange there was a more intensive botanical survey of the turf communities present around the margins. Unfortunately on both visits there was still a moderate amount of water present in the lagoon, at similar levels to that experienced on the 2005 trip. An entire day was spent at the lagoon focusing on areas which had probably not been investigated in detail such as the kahikatea margins and some smaller wetland/clearings at the northern end of the lagoon. As a result 109 vascular plant species were added to the list published in the RBS Newsletter in 2005 (Jane & Donaghy 2005) although it should be noted that some of these species have been previously recorded at the lagoon in broader unpublished species lists for Whirinaki Forest Park (Courtney, Bellingham, & Bellingham, 1985; Ecroyd *et al.*, 1983).

Of the ‘rediscoveries’ probably the most significant is sneezeweed (*Centipeda minima* subsp. *minima* (Acutely Threatened –Nationally Critical). Despite several searches in recent years for this it was only on the second visit that we relocated it. A few tiny plants were noted protruding from fresh mud where water had recently receded – not particularly inspiring! However, upon investigating wetlands at the northern end of the lagoon a very healthy and well established population of approximately 1.5m x 1m in area was located in an old, dry deer wallow. This was reassuring to know that this very rare species was still present in the area since Chris Ecroyd first collected it as a herbarium voucher from the lagoon in the 1980’s.

It was also interesting to note how the flora of the lagoon changes from season to season and year to year, influenced so drastically by the ever-changing water levels as there is no natural outlet. These changes could be seen in species such as *Nitella leptostachys* which was extremely common in the lagoon last summer but despite searching could not be located this year, as was the case with the elusive *Isolepis fluitans*.

Unfortunately several new weed species were noted. Action has been taken to control paspalum (*Paspalum dilatatum*) which was found in turfs where the track enters the lagoon. This appears to have spread on walkers socks from the carpark where it is

present. DoC has removed all the plants known from the lagoon as they were present in a small area of turf and could be dug out relatively easily. DoC has also controlled the larger paspalum plants around the carpark to reduce further instances of people spreading seeds into the lagoon. Some plants of *Glyceria declinata* and *Glyceria fluitans* were noted this year and were removed by hand. Other exotic grass species relatively common in most wetlands today such as Yorkshire fog (*Holcus lanatus*) are still scarce in Arahaki Lagoon.

The number of threatened plant species now known from Arahaki Lagoon reflects its rarity as a habitat type and its relative pristine nature with minimal modification. It is certainly becoming a more significant site for threatened plant conservation in the Bay of Plenty.

REFERENCES

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- Ecroyd, C.E.; Clarkson, B.D.; Clarkson B.R. and N.N.Kennedy, 1983. Vascular plants of the Oriuwaka Ecological Area – Whirinaki State Forest. Unpublished.
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ARAHAKI LAGOON PLANT SPECIES LIST

Map MZMS 260 V18 2828500 / 6273700

Area covered: lagoon and kahikatea forest margins and small clearing/wetland at northern end of lagoon

Author: G. Jane, G. Donaghy
Additions: JFF Hobbs, P Cashmore, G Boyt
Additions: P. de Lange, JFF Hobbs, P Cashmore, G Boyt
Additions: NZFRI Herbarium records

Visit Date: 05/03/05

Visit Date: 01/03/06

Visit Date: 15/03/06

Algae

Nitella leptostachys

Ferns

<i>Asplenium flaccidum</i>	Hanging spleenwort	15/03/2006
<i>Asplenium polyodon</i>	Sickle spleenwort	15/03/2006
<i>Blechnum fluviatile</i>	Kiwakiwa; kiwikiwi	
<i>Blechnum minus</i>	Swamp kiokio	15/03/2006
<i>Blechnum novae-zelandiae</i>	Kiokio	
<i>Blechnum penna-marina</i> subsp. <i>alpina</i>	Little hard fern	15/03/2006
<i>Ctenopteris heterophylla</i>		
<i>Dicksonia fibrosa</i>	Wheki-ponga	15/03/2006
<i>Dicksonia squarrosa</i>	Wheki	15/03/2006
<i>Histiopteris incisa</i>	Water fern	15/03/2006
<i>Hymenophyllum flabellatum</i>	Filmy fern	15/03/2006
<i>Hymenophyllum rarum</i>	Wire-stemmed filmy fern	
<i>Hymenophyllum sanguinolentum</i>	Piripiri	
<i>Hypolepis ambigua</i> NZFRI 14112	Pig fern	15/03/2006
<i>Hypolepis ambigua</i> × <i>H. rufobarbata</i>		15/03/2006
<i>Hypolepis distans</i>	Brown hypolepis	15/03/2006
<i>Hypolepis rufobarbata</i>		15/03/2006
<i>Microsorium pustulatum</i>	Hounds tongue; kowaowao	
<i>Ophioglossum coriaceum</i> NZFRI 13459	Adder's tongue	
<i>Ophioglossum petiolatum</i> WAIK 17495	Adder's tongue	15/03/2006
<i>Pyrrosia eleagnifolia</i>	Leather-leaf fern	

Gymnosperm

<i>Dacrycarpus dacrydioides</i>	Kahikatea, white pine	
<i>Dacrydium cupressinum</i>	Rimu	15/03/2006

Dicotyledonous trees and shrubs

<i>Alseuosmia pusilla</i>	Karapapa; mountain honeysuckle	
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<i>Aristotelia serrata</i>	Wineberry	15/03/2006
<i>Beilschmiedia tawa</i>	Tawa	
<i>Carpodetus serratus</i>	Putaputaweta	15/03/2006
<i>Coprosma lucida</i>	Karamu; shining karamu	
<i>Coprosma propinqua</i> × <i>C. robusta</i>		
<i>Coprosma propinqua</i>	Mingimingi	
<i>Coprosma rigida</i>		
<i>Coprosma robusta</i>	Karamu	
<i>Coprosma rotundifolia</i>	Round-leaved coprosma	
<i>Coprosma tayloriae</i>		15/03/2006
<i>Coprosma tenuifolia</i>		15/03/2006
<i>Coprosma tenuicaulis</i>	Swamp coprosma	15/03/2006
<i>Elaeocarpus dentatus</i>	Hinau	15/03/2006
<i>Elaeocarpus hookerianus</i>	Pokaka	
<i>Kunzea</i> aff. <i>ericoides</i> (b)	Kanuka	15/03/2006
<i>Kunzea</i> aff. <i>ericoides</i> (c)	Kanuka	15/03/2006
<i>Leptospermum scoparium</i> s.s.	Kahikatoa/Manuka	
<i>Melicope simplex</i>	Poataniwha	
<i>Myrsine australis</i>	Mapou	15/03/2006
<i>Myrsine salicina</i>	Toro	15/03/2006
<i>Neomyrtus pedunculata</i>	Rohutu	
<i>Nestegis lanceolata</i>	White maire	15/03/2006
<i>Pennantia corymbosa</i>	Kaikomako	
<i>Pseudowintera axillaris</i>	Lowland horopito	15/03/2006
<i>Pseudowintera colorata</i>	Pepperwood; mountain horopito	
<i>Raukawa anomalus</i>	Whauwhaupaku	
<i>Weinmannia racemosa</i>	Kamahi; Towai; tawhero	

Dicotyledonous lianes

<i>Clematis foetida</i>		15/03/2006
<i>Clematis paniculata</i>		15/03/2006
<i>Metrosideros diffusa</i>	White rata vine	15/03/2006
<i>Muehlenbeckia australis</i>	Pohuehue	15/03/2006
<i>Parsonsia capillaris</i>	NZ jasmine	15/03/2006
<i>Rubus schmidelioides</i> var. <i>schmidelioides</i>	Bush lawyer	15/03/2006

Dicotyledonous herbs

<i>Acaena anserinifolia</i>	Piripiri	15/03/2006
* <i>Anagallis arvensis</i> subsp. <i>arvensis</i> var. <i>arvensis</i>	Scarlet pimpernel	1/03/2006
<i>Australina pusilla</i>		15/03/2006
<i>Callitriche muelleri</i>		15/03/2006
<i>Callitriche petriei</i> var. <i>petriei</i>		15/03/2006
<i>Callitriche stagnalis</i>	Starwort	15/03/2006
<i>Cardamine</i> "Narrow Petal" (of Pritchard 1957; <i>C. debilis</i> agg)		

<i>Cardamine</i> aff. <i>corymbosa</i>		15/03/2006
* <i>Centaureum erythraea</i>	Centaury	1/03/2006
* <i>Centaureum tenuiflorum</i>	Centaury	15/03/2006
<i>Centella uniflora</i>	Centella	
<i>Centipeda minima</i> subsp. <i>minima</i> NZFRI 13453	Sneezeweed	15/03/2006
* <i>Cirsium vulgare</i>	Scotch thistle	
* <i>Conyza albida</i>	Fleabane	15/03/2006
* <i>Digitalis purpurea</i>	Foxglove	
* <i>Epilobium ciliatum</i>	Willow-herb	15/03/2006
<i>Epilobium cinereum</i>	Willow-herb	
<i>Epilobium pedunculare</i>		15/03/2006
<i>Euchiton audax</i>	Cudweed	15/03/2006
<i>Euchiton delicatus</i> NZFRI 13469	Cudweed	15/03/2006
<i>Euchiton gymnocephalus</i>	Cudweed	15/03/2006
<i>Euchiton involucratus</i>	Cudweed	15/03/2006
<i>Euchiton limosus</i>	Creeping cudweed	
<i>Euchiton ruahinicus</i>	Cudweed	15/03/2006
<i>Euchiton sphaericus</i>	Cudweed	15/03/2006
* <i>Galium palustre</i> NZFRI 13464	Marsh bedstraw	
<i>Gamochaeta coarctata</i>	Cudweed	15/03/2006
<i>Glossostigma diandrum</i>		15/03/2006
<i>Glossostigma elatinoides</i>		15/03/2006
<i>Gonocarpus micranthus</i> subsp. <i>micranthus</i>		15/03/2006
<i>Gratiola sexdentata</i> NZFRI 13450		
<i>Hydrocotyle heteromeria</i>	Wax weed	
<i>Hydrocotyle hydrophila</i> NZFRI 13454	Hydrocotyle	1/03/2006
<i>Hydrocotyle microphylla</i>		15/03/2006
<i>Hydrocotyle novae-zelandiae</i> s.s. NZFRI 13474		15/03/2006
<i>Hydrocotyle pterocarpa</i>	Hydrocotyle	
<i>Hydrocotyle sulcata</i> NZFRI 13448		15/03/2006
<i>Hypericum</i> aff. <i>japonicum</i> (cmn sp, non <i>H. japonicum</i> Murray) NZFRI 13452		15/03/2006
<i>Hypochoeris glabra</i>		15/03/2006
* <i>Hypochoeris radicata</i>	Catsear	15/03/2006
<i>Hypsela rivalis</i> NZFRI 13425		
* <i>Lactuca ?virosa</i>	Acrid lettuce	15/03/2006
<i>Leontodon taraxacoides</i>	Hawkbit	15/03/2006
<i>Leptostigma setulosum</i>		15/03/2006
<i>Lilaeopsis novae-zelandiae</i>		1/03/2006
<i>Lilaeopsis ruthiana</i> NZFRI 10303		15/03/2006
* <i>Lotus pedunculatus</i>	Lotus	15/03/2006
* <i>Ludwigia palustris</i>	Water purslane	1/03/2006
* <i>Mentha pulegium</i>	Pennyroyal	1/03/2006
* <i>Mycelis muralis</i>	Wall lettuce	15/03/2006

* <i>Myosotis laxa</i> ssp. <i>caespitosa</i>	Water forget-me-not	
<i>Myriophyllum pedunculatum</i> ssp. <i>novae-zealandiae</i> NZFRI 13470		
<i>Myriophyllum propinquum</i>	Water milfoil	1/03/2006
<i>Nertera depressa</i>		15/03/2006
<i>Nertera ciliata</i>		15/03/2006
<i>Nertera villosa</i>		15/03/2006
<i>Oxalis exilis</i>	Yellow oxalis; creeping oxalis	
* <i>Parentucellia viscosa</i>	Tarweed	1/03/2006
<i>Plantago australis</i>	Swamp plantain	15/03/2006
<i>Plantago raoulii</i>		15/03/2006
<i>Potentilla anserinoides</i>		1/03/2006
<i>Pratia angulata</i>	Panakenake	
<i>Pratia perpusilla</i> NZFRI 14221		
<i>Ranunculus amphitrichus</i>	Waoriki	
<i>Ranunculus glabrifolius</i>		15/03/2006
* <i>Ranunculus flammula</i>	Spearwort	
<i>Ranunculus limosella</i>		15/03/2006
<i>Ranunculus reflexus</i>	Maruru; hairy buttercup	
* <i>Ranunculus repens</i>	Creeping buttercup	
<i>Rorippa palustris</i>	Marsh yellow cress	1/03/2006
* <i>Senecio jacobaea</i>	Ragwort	15/03/2006
<i>Senecio minimus</i>	Fireweed	15/03/2006
<i>Senecio rufiglandulosus</i>	Thistle-leaved groundsel	
<i>Sonchus oleraceus</i>	Sow thistle	15/03/2006
<i>Stellaria parviflora</i>	Native chickweed	
<i>Urtica incisa</i>	Nettle	1/03/2006
<i>Viola cunninghamii</i>	White violet; haka	
<i>Viola lyallii</i>		15/03/2006

Monocotyledonous trees and Lianes

<i>Cordyline australis</i>	Cabbage tree; ti-kouka	
<i>Ripogonum scandens</i>	Supplejack	15/03/2006

Orchids

<i>Earina autumnalis</i>		15/03/2006
<i>Earina mucronata</i>		15/03/2006

Grasses

* <i>Agrostis capillaris</i>	Browntop	15/03/2006
<i>Agrostis personata</i>		15/03/2006
<i>Amphibromus fluitans</i> NZFRI 26156		1/03/2006
* <i>Anthoxanthum odoratum</i>	Sweet vernal	15/03/2006
<i>Cortaderia fulvida</i>	Kakaho; toetoe	
* <i>Digitaria sanguinalis</i> NZFRI 13451	Summer grass	

* <i>Eragrostis brownii</i>	Bay grass	15/03/2006
* <i>Glyceria declinata</i>	Floating sweet grass	1/03/2006
* <i>Glyceria fluitans</i>	Floating sweet grass	1/03/2006
* <i>Holcus lanatus</i>	Yorkshire fog	15/03/2006
<i>Lachnagrostis elata</i>		
<i>Lachnagrostis filiformis</i>	NZ wind grass	15/03/2006
<i>Lachnagrostis striata</i> NZFRI 14104		15/03/2006
<i>Microlaena avenacea</i>	Bush rice grass	15/03/2006
<i>Microlaena stipoides</i>	Meadow rice grass	15/03/2006
* <i>Paspalum dilatatum</i>	Paspalum	

Sedges

<i>Baumea arthropphylla</i> NZFRI 14102		15/03/2006
<i>Bolboschoenus medianus</i>		15/03/2006
<i>Carex dipsacea</i>		
<i>Carex maorica</i> NZFRI 13476		
<i>Carex secta</i>	Niggerhead; pukio	
<i>Carex solandri</i>	Solander's sedge	
<i>Carex virgata</i>	Swamp sedge	
<i>Eleocharis acuta</i>	Spike rush	
<i>Eleocharis gracilis</i>	Slender spike-sedge	
<i>Eleocharis pusilla</i>		
<i>Isolepis fluitans</i> NZFRI 26206		15/03/2006
<i>Isolepis inundata</i>		
<i>Isolepis pottsii</i> NZFRI 13475		15/03/2006
<i>Schoenus apogon</i>		
<i>Schoenus maschalinus</i>	Dwarf bog-rush	
<i>Uncinia distans</i>		
<i>Uncinia ferruginea</i>		
<i>Uncinia laxiflora</i>		
<i>Uncinia scabra</i>		
<i>Uncinia uncinata</i>	Watu or Kamu?	

Rushes and allied plants

* <i>Juncus acutiflorus</i>		
<i>Juncus acuminatus</i>	Sharp-fruited rush	15/03/2006
* <i>Juncus articulatus</i>	Jointed rush	
<i>Juncus distegus</i>	Leafless rush	
* <i>Juncus effusus</i>	Leafless rush	15/03/2006
<i>Juncus edgariae</i>	Wiwi	
<i>Juncus planifolius</i>	Flat-leaved rush	
<i>Lyzula subclavata</i>	Woodrush	

Remaining Monocotyledonous herbs

<i>Astelia fragrans</i>	Bush flax	15/03/2006
<i>Astelia solandri</i>	Kowharawhara	
<i>Collospermum microspermum</i>		15/03/2006
<i>Potamogeton cheesemani</i>	Red pondweed	

Other Interesting Plants

<i>Sphagnum</i> sp		1/03/2006
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Plants removed from published list (Jane & Donaghy (2005))

<i>Coprosma rhamnoides</i> agg.	Thorny coprosma	
<i>Galium trilobum</i>		
<i>Baumea rubiginosa</i>		
* <i>Agrostis stolonifera</i> !	Creeping bent	
<i>Carex tahoata</i>		

! Note : - it is probable that this species was erroneously identified and is in fact *Amphibromus fluitans*.