

## Kaukapakapa Estuary Scientific Reserve, 22 March 2014

David Wilson

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The Kaukapakapa Estuary Scientific Reserve is located approximately 4.5 km north of Helensville, on the northern side of the Kaukapakapa River, close to the southern end of the Kaipara Harbour. The land was gazetted as a scientific reserve in 1972, after being purchased by the Crown in 1968 following a generous offer from the West Family; Arthur West had by then been endeavouring for some time to have the forest transferred to a public agency as a reserve. This was partly on the recommendation of Dr Lucy Moore, who had walked through the area and suggested it be reserved for the study of regenerating kauri (*Agathis australis*) forest.

The owner prior to the West Family had been the Tung Oil Company, which unsuccessfully attempted to grow tung oil trees (*Aleurites fordii*) for oil extraction. Earlier owners of the forest had used it for timber extraction, and had logged virtually all kauri suitable for milling in what is now the reserve.

The foregoing account of the reserve's history is summarised from unpublished information provided by Moore and West ca. 1988, and held on file at the Department of Conservation, Warkworth.

The Auckland Botanical Society (ABS) first visited the area in 1966 (Horsman 1966). ABS made another visit in 1985, and compiled an extensive



**Fig. 1.** *Machaerina tenax*, upper part of a culm showing spikes with yellowish nuts, each with a dark stalk at the base and brown 'beak' at the tip. Photo: David Wilson, 22 March 2014. Scale: the finger ring is 10 mm in diam.



**Fig. 2.** Two *Gleichenia* species: *G. microphylla* (above) has larger, brighter green terminal lamina segments than *G. dicarpa*, (below). Photo: Bev Davidson, 22 March 2014.



**Fig. 3.** Two climbing ferns: *Loxogramme dictyopteris* (smaller, undivided, rather limp fronds) amongst *Microsorium scandens* on a tree fern trunk. Photo: David Wilson, 22 March 2014.



**Fig. 4. *Coprosma spathulata* showing spatulate leaves with black, winged rachis and indented tips, The drupes are the usual black. Photo: David Wilson, 22 March 2014.**

species list (Bellingham & Cameron 1986, see Appendix). Following a further ABS outing to the reserve in 1995, Fran Hintz wrote in her summary of the trip that the variety of vegetation in the reserve still made for "an exciting prospect for the adventurous botanist".

We entered the reserve from West Road, close to the highest point of the reserve (156m asl). The road cutting here presents an uninviting blend of predominantly exotic species such as *Aristea ecklonii*, two hakea species (*Hakea salicifolia* and *H. sericea*), gorse (*Ulex europaeus*) and pine (*Pinus radiata*) seedlings. On climbing the fence, we found ourselves skirting an area of gumland vegetation under a canopy of kanuka (*Kunzea ericoides*), with *Coprosma rhamnoides*, *C. lucida*, *Geniostoma ligustrifolium*, *Leucopogon fasciculatus* and *Myrsine australis* prominent in the understory. Other native shrubs present included *Pomaderris kumeraho*, *P. amoena*, *Pittosporum tenuifolium* and terrestrial *Pittosporum cornifolium*. Gorse was present, but appeared not to be making headway against other vegetation, and the two *Hakea* species referred to above also had a presence here. Several large pines formed an 'emergent' layer above the canopy.

Monocots formed a large component of the ground cover, with *Schoenus tendo*, *Lepidosperma australe*, *Machaerina tenax* (Fig. 1) and *Cordyline pumilio* all being noted. *Schoenus maschalinus* was found on some more open patches. *Gahnia* was represented by four species: *G. xanthocarpa*, *G. pauciflora*, *G. setifolia* and *G. lacera*. A new species for our list here was the native *Rytidosperma gracile*. Dicot herbs included occasional *Nertera dichondrifolia* and *Gonocarpus incanus*.

A dense tangle of fern covered the ground in parts, the species being *Gleichenia microphylla* and *G. dicarpa*, allowing us to make a close comparison between them where they grew beside each other (Fig. 2). A few *Sticherus cunninghamii* and *Lindsaea linearis* were among the other ferns noted.



**Fig. 5. *Coprosma spathulata* with red drupes flecked with black. Photo: David Wilson, 22 March 2014. Figs. 4 & 5 Scale: Ring is 10 mm diam.**

To our left as we moved down this ridge was a steep slope with a canopy of tanekaha (*Phyllocladus trichomanoides*). We descended via a different route, moving down into forest dominated by nikau (*Rhopalostylis sapida*) and the tree fern *Cyathea dealbata*, with broadleaf trees such as puriri (*Vitex lucens*), taraire (*Beilschmiedia tarairi*), tawa (*B. tawa*) and white maire (*Nestegis lanceolata*) also present. Emergent kahikatea (*Dacrycarpus dacrydioides*) were seen to be heavily laden with seeds, with 2014 evidently being a good 'fruiting' year for this species.

The forest interior in this area was for the most part relatively open. This may in part be explained by the impact of browsing animals, as evidenced by large deer prints, particularly around a muddy wallow, and signs of browse on some of the vegetation. Patches of parataniwha (*Elatostema rugosum*) and the fern *Asplenium lamprophyllum* were present, and after smelling the distinctive odour when a stipe of this fern is abraded slightly, some of us wondered if the chemical compounds responsible



**Fig. 6. Ventral surface of the lamina of *Trichomanes elongatum*. The stout bristle protruding from each indusium is the remains of a column of sporangia. The sporangia, having shed their spores, drop off as the column continuously elongates, culminating in the bristly underside of the frond. Photo: David Wilson, 22 March 2014.**



**Fig. 7. Empty nymphal exoskeleton of the dragonfly *Uropetala carovei*, following the emergence of the adult insect, on the trunk of a nikau palm. Length: 50 mm. Photo: Ewen Cameron, 22 March 2014.**



**Fig. 8. A thalloid liverwort (*Symphyogyna hymenophyllum*) on the damp forest floor. Fronds approx. 10-15 mm across. Photo: David Wilson, 22 March 2014.**

made it less palatable to deer. *Lastreopsis hispida* was another common fern on the ground, while on the tree trunks some of our group were able to familiarise themselves with *Loxogramme dictyopteris* (Fig. 3), along with other climbing species.

*Rhabdothamnus solandri* was present on the south-facing slope here, and *Coprosma spathulata* was one of the commoner understorey shrubs we found. Many of the latter were bearing fruit, and we were able to view the range in colour of the drupes, with some being orange, but more often black, or an intermediate shade of red-black (Figs. 4, 5).

The furthest extent of our walk was near a stream, in tall podocarp-broadleaf forest, and the sides of a small ditch nearby had *Trichomanes elongatum*, a new addition for our species list. The underside of the fronds showed the bristly appearance which results from each of the indusia having a coarse hair protruding from it (Fig. 6). We also found the broken egg of a New Zealand pigeon (*Hemiphaga novaeseelandiae*) on the ground, which had presumably fallen from a nest somewhere above.

From here we retraced our steps back to the road. A highlight on the way was a nikau palm trunk on which were five empty nymphal exoskeletons of the large forest dragonfly *Uropetala carovei* (Fig. 7). The lowest had climbed only a few centimetres up the trunk before splitting open for the adult insect to emerge, but the highest had reached 1.7 m above the ground. At the foot of the climb back to the gumland area we paused again to examine a liverwort, *Symphyogyna hymenophyllum*, our attention having been drawn by its frond-like appearance, superficially like that of a small filmy fern (Fig. 8). Nearby was a small specimen of *Carex solandri*, another addition to our species list, from a genus which we had otherwise not seen during our visit.

We had an enjoyable time botanising the reserve, this being a more pleasant day than the previous Saturday on which the trip had been originally scheduled (a day which had coincided with the arrival in New Zealand of the remnants of Tropical Cyclone Luci, for which the trip was postponed). It was clear that we had made only a minor inroad into the reserve, not having reached the estuarine area where the forest meets the Kaukapakapa River, or any of the kauri ricker stands which are evident when the area is viewed from a distance. This still leaves much room for the "exciting prospect" of further botanical exploration of this reserve.

#### References

- Bellingham, P.J.; Cameron, E.K. 1986: Vascular Flora of Kaukapakapa Scientific Reserve (Provisional). *Auckland Botanical Society Journal* 41: 6-8.
- Hintz, Fran 1995: Botanical Society trip – Kaukapakapa Scientific Reserve. *Auckland Botanical Society Journal* 50: 22.
- Horsman, John 1966: September: Kaukapakapa, West's Bush. *Auckland Botanical Society Journal* 23: 14.
- Moore, E.S.; West, R.B. (ca. 1988): *Whakatiwai Scientific Reserve*. Unpublished information, Department of Conservation, Warkworth.

## Appendix: List of Vascular Plant Species in Kaukapakapa Estuary Scientific Reserve.

Base list from Bellingham & Cameron (1986) from an Auckland Botanical Society (ABS) trip on 21 September 1985. Additions from ABS trip on 22 March 2014.

- \* = exotic, naturalised species  
 + = species recorded by ABS on 22 March 2014  
 ● = Additional species seen on 22 March 2014 that are not on original 1985 list.  
 A = from adjacent land – not found in reserve

- H = addition from a herbarium specimen in AK, collected in 1987  
 ● DW = addition from pers. obs. on the tidal flats on 24 Feb 2014  
 S = from saltmarsh outside the reserve

	Found outside reserve	ABS March 2014		
<b>Fern Allies</b>			<i>Microsorium scandens</i>	+
<i>Lycopodium deuterodensum</i>			<i>Notogrammitis ciliata</i>	
<i>Lycopodium volubile</i>		+●	<i>Notogrammitis heterophylla</i>	
<i>Phlegmariurus varius</i>		+	<i>Paesia scaberula</i>	
<i>Tmesipteris elongata</i>		+	<i>Pellaea rotundifolia</i>	
<i>Tmesipteris lanceolata</i>		+	<i>Pneumatopteris pennigera</i>	+
<i>Tmesipteris tannensis</i>		+	<i>Polystichum richardii</i>	
<b>Ferns</b>			<i>Pteridium esculentum</i>	+
<i>Adiantum cunninghamii</i>			<i>Pteris macilentata</i>	+
<i>Adiantum fulvum</i>		+	<i>Pteris tremula</i>	
<i>Adiantum hispidulum</i>			<i>Pyrrosia eleagnifolia</i>	+
<i>Asplenium flaccidum</i>		+	<i>Schizaea bifida</i>	
<i>Asplenium lamprophyllum</i>		+	<i>Trichomanes elongatum</i>	+●
<i>Asplenium oblongifolium</i>		+	<i>Trichomanes endlicherianum</i>	
<i>Asplenium polyodon</i>		+	<i>Trichomanes venosum</i>	+●
<i>Blechnum discolor</i>		+	<b>Gymnosperms</b>	
<i>Blechnum filiforme</i>		+	<i>Agathis australis</i>	+
<i>Blechnum fraseri</i>		+	<i>Dacrycarpus dacrydioides</i>	+
<i>Blechnum membranaceum</i>		+	<i>Dacrydium cupressinum</i>	+
<i>Blechnum novae-zelandiae</i>		+	<i>Phyllocladus trichomanoides</i>	+
<i>Cardiomanes reniforme</i>			<i>Pinus radiata</i> *	+
<i>Cyathea dealbata</i>		+	<i>Podocarpus cunninghamii</i>	+
<i>Cyathea medullaris</i>		+	<i>Podocarpus totara</i>	+
<i>Doodia australis</i>			<i>Prumnopitys ferruginea</i>	+
<i>Gleichenia dicarpa</i>		+	<i>Prumnopitys taxifolia</i>	A
<i>Gleichenia microphylla</i>		+	<b>Dicotyledons</b>	
<i>Grammitis ciliata</i>			<i>Acaena anserinifolia</i>	A
<i>Hymenophyllum dilatatum</i>			<i>Alectryon excelsus</i>	+
<i>Hymenophyllum flabellatum</i>		+	<i>Alseuosmia macrophylla</i>	+
<i>Hymenophyllum sanguinolentum</i>		+	<i>Alseuosmia quercifolia</i>	+
<i>Lastreopsis glabella</i>			<i>Anagallis arvensis</i> *	
<i>Lastreopsis hispida</i>		+	<i>Apium filiforme</i>	
<i>Lastreopsis microsora</i>			<i>Avicennia marina</i>	
<i>Lastreopsis velutina</i>			<i>Beilschmiedia tarairi</i>	+
<i>Lindsaea linearis</i>		+	<i>Beilschmiedia tawa</i>	+
<i>Lindsaea trichomanoides</i>		+	<i>Berberis glaucocarpa</i> *	+
<i>Loxogramme dictyopteris</i>		+	<i>Brachyglottis repanda</i>	+
<i>Lygodium articulatum</i>		+	<i>Brachyglottis kirkii</i>	
<i>Microsorium pustulatum</i>		+	<i>Calystegia sepium</i>	
			<i>Cardamine debilis</i> agg.	
			<i>Carmichaelia australis</i>	

<i>Carpodetus serratus</i>	+		<i>Metrosideros fulgens</i>	+
<i>Centaurium erythraea</i> *			<i>Metrosideros perforata</i>	+
<i>Centella uniflora</i>			<i>Muehlenbeckia complexa</i>	
<i>Chrysanthemum leucanthemum</i> *			<i>Myrsine australis</i>	+
<i>Cirsium vulgare</i> *			<i>Myrsine salicina</i>	
<i>Clematis cunninghamii</i>			<i>Nertera dichondrifolia</i>	+
<i>Clematis paniculata</i>	+		<i>Nestegis lanceolata</i>	+
<i>Conyza sumatrensis</i> *	+		<i>Olearia furfuracea</i>	+
<i>Coprosma arborea</i>	+		<i>Olearia rani</i>	+
<i>Coprosma areolata</i>	+		<i>Olearia solandri</i>	
<i>Coprosma grandifolia</i>	+		<i>Parsonsia</i> sp.	
<i>Coprosma lucida</i>	+		<i>Passiflora tetrandra</i>	
<i>Coprosma propinqua</i>			<i>Piper excelsum</i>	
<i>Coprosma rhamnoides</i>	+		<i>Pittosporum tenuifolium</i>	+
<i>Coprosma robusta</i>			<i>Pittosporum cornifolium</i>	+●
<i>Coprosma spathulata</i>	+		<i>Plagianthus divaricatus</i>	
<i>Corokia buddleioides</i>	+		<i>Plantago australis</i> *	
<i>Corynocarpus laevigatus</i>	+		<i>Plantago major</i> *	
<i>Dichondra repens</i>			<i>Pomaderris kumeraho</i>	+
<i>Dodonaea viscosa</i>			<i>Pomaderris amoena</i>	+
<i>Drosera auriculata</i>			<i>Prunella vulgaris</i> *	
<i>Dysoxylum spectabile</i>	+		<i>Pseudopanax arboreus</i>	
<i>Elaeocarpus dentatus</i>			<i>Pseudopanax crassifolius</i>	+
<i>Elatostema rugosum</i>	+		<i>Ranunculus muricatus</i> *	S
<i>Epilobium rotundifolium</i>			<i>Ranunculus reflexus</i>	
<i>Euchiton japonicus</i>			<i>Ranunculus repens</i> *	
<i>Galium aparine</i> *			<i>Ranunculus sardous</i> *	S
<i>Gaultheria antipoda</i>			<i>Rhabdothamnus solandri</i>	+
<i>Geniostoma ligustrifolium</i>	+		<i>Rubus australis</i>	+
<i>Gonocarpus incanus</i>	+		<i>Rubus cissoides</i>	+
<i>Griselinia lucida</i>	+		<i>Rumex obtusifolius</i> *	
<i>Haloragis erecta</i>	+		<i>Samolus repens</i>	
<i>Hakea salicifolia</i> *	+		<i>Sarcocornia quinqueflora</i>	
<i>Hakea sericea</i> *	+		<i>Schefflera digitata</i>	+●
<i>Hebe stricta</i>			<i>Selliera radicans</i>	
<i>Hedycarya arborea</i>	+		<i>Senecio hispidulus</i>	
<i>Hypochaeris radicata</i> *			<i>Sison amomum</i> *	
<i>Knightia excelsa</i>	+		<i>Sophora chathamica</i>	
<i>Kunzea robusta</i>	+		<i>Streblus heterophyllus</i>	+
<i>Laurelia novae-zelandiae</i>			<i>Toronia toru</i>	
<i>Leionema nudum</i>			<i>Trifolium repens</i> *	
<i>Leontodon saxatilis</i> *			<i>Ulex europaeus</i> *	+
<i>Leptinella tenella</i>		● DW	<i>Vitex lucens</i>	+
<i>Leptospermum scoparium</i>	+		<i>Weinmannia silvicola</i>	
<i>Leucopogon fasciculatus</i>	+		<b>Monocotyledons</b>	
<i>Lotus pedunculatus</i> *			<i>Acianthus sinclairii</i>	
<i>Melicope simplex</i>			<i>Anthoxanthum odoratum</i> *	
<i>Melicytus macrophyllus</i>			<i>Aristea ecklonii</i> *	+
<i>Melicytus ramiflorus</i>	+		<i>Apodasmia similis</i>	
<i>Metrosideros carmine</i>			<i>Astelia solandri</i>	+
<i>Metrosideros diffusa</i>	+		<i>Astelia trinervia</i>	+

<i>Austrostipa stipoides</i>				<i>Juncus effusus</i> *		
<i>Axonopus fissifolius</i> *				<i>Juncus maritimus</i>	S	
<i>Bulbophyllum pygmaeum</i>				<i>Juncus pallidus</i>	S	
<i>Carex lambertiana</i>				<i>Machaerina tenax</i>		+●
<i>Carex lessoniana</i>				<i>Machaerina teretifolia</i>		
<i>Carex litorosa</i>	●	H		<i>Microlaena stipoides</i>		
<i>Carex solandri</i>			+●	<i>Oplismenus hirtellus</i>		+
<i>Carex testacea</i>				<i>Phormium ? cookianum</i>		
<i>Carex virgata</i>				<i>Phormium tenax</i>		
<i>Cenchrus clandestinus</i> *				<i>Poa anceps</i>		
<i>Colospermum hastatum</i>			+	<i>Pterostylis alobula</i>		
<i>Cordyline australis</i>			+	<i>Pterostylis banksii</i>		
<i>Cortaderia selloana</i>		A		<i>Pterostylis graminea</i>		
<i>Cortaderia banksii</i>			+	<i>Pterostylis trullifolia</i>		
<i>Cortaderia pumilio</i>			+	<i>Rhopalostylis sapida</i>		+
<i>Corunastylis pumila</i>				<i>Ripogonum scandens</i>		+
<i>Corybas cheesemani</i>				<i>Rytidosperma biannulare</i>		
<i>Corybas oblongus</i>				<i>Rytidosperma gracile</i>		+●
<i>Corybas trilobus</i>				<i>Rytidosperma racemosum</i> *		
<i>Cyperus ustulatus</i>		S		<i>Schedonorus arundinaceus</i> *		
<i>Dactylis glomerata</i> *				<i>Schoenus apogon</i>		
<i>Dianella nigra</i>			+	<i>Schoenus maschalinus</i> +		+
<i>Earina mucronata</i>			+●	<i>Schoenus tendo</i> +		+
<i>Eragrostis brownie</i> *				<i>Simpliglottis cornuta</i>		
<i>Freycinetia banksii</i>			+	<i>Sporobolus africanus</i> *		
<i>Gahnia lacera</i>			+	? <i>Tetraria capillaris</i>		
<i>Gahnia pauciflora</i>			+	<i>Thelymitra longifolia</i>		
<i>Gahnia setifolia</i>			+	<i>Uncinia banksii</i> +		+
<i>Gahnia xanthocarpa</i>			+	<i>Uncinia uncinata</i> +		+
<i>Holcus lanatus</i> *				<i>Uncinia zotovii</i>		
<i>Isolepis reticularis</i>		A				

## Field trip to Rototoa Scenic Reserve (Lake Ototoa), south Kaipara Peninsula, 17 May 2014

**David Wilson**

**Participants:** John Ayres, Bruce Calvert, Lisa Clapperton, Geoff Davidson, Ed Donald, Natalie Donald, Nicola Donald, Helen Frampton, Harley Gray, Margaret Gray, Anne Griffiths, Bill Griffiths, Leslie Haines, Barbara Harvey, David Harvey, Wendy John, Juliet Richmond, Vijay Soma, Adrienne Stanton, David Wilson (leader), Alison Wesley, Angelina Young, Maureen Young.

Rototoa Lake lies near the northern end of the South Kaipara Peninsula. It is the largest and deepest of a row of lakes on the Peninsula, behind

and roughly parallel with Muriwai Beach. The lakes have filled depressions between sand dunes that formed during the last two million years, as eroded sand (some originating from the North Island's volcanic eruptions) was transported north along the coast by a combination of wind, ocean currents and the rise in sea level following the last ice age. The dunes are now stabilised by vegetation, principally pine (*Pinus radiata*) plantation, kanuka (*Kunzea* sp.) forest and pasture. The lakes, while still valuable habitat for a range of aquatic species, are subject to ecological impacts from human-induced algal