Mosses recorded on the Auckland Botanical Society visit to the Chatham Islands, January 2007

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Leaving New Zealand behind us, we headed east out into the vastness of the southern Pacific Ocean, as so many have done before. Excitement buzzed through the cabin, just as it must have along the waka, as Wharekauri/Rekohu, the largest of the Chatham Islands, finally came into view. Extensive scrubland, coastal cliffs, sand dunes and a myriad of lakes – from the air it all looked interesting terrain for botanical exploration. We landed neatly, on the airstrip jutting out into Te Whanga Lagoon.

This article is confined to the bryophytes, particularly the mosses, seen during 3 days exploration of the Chatham Islands, 2 days on Wharekauri (Chatham Island) and one day on Rangiauria (Pitt Island). Accounts of the vascular flora, algae and fungi are given in the accompanying articles (Wilcox 2007, Young 2007).

Seventy-six taxa of mosses were recorded (see list below). These include the only known Chatham Island endemic moss, *Macromitrium ramsayae*, found growing as an epiphyte on the trunks of several tree species, including kopi (*Corynocarpus laevigatus*) and swamp mapou (*Myrsine coxii),* as well as on schist near the coast at Kaiangaroa. This species was described by Vitt (1983) and is rather similar to *Macromitrium longirostre,* which is also found on the Chatham Islands. A simple distinguishing feature Vitt notes is that *M. ramsayae* lacks the distinctive chestnut colour of the old leaves shown by *M. longirostre.*

In Hapupu National Historic Reserve fruiting material of moss of the genus *Racopilum* was present on the buttress roots of large kopi, as well as on rotting wood. Species names in this genus have long been a source of confusion for New Zealand bryologists, but a recent paper (van Zanten 2006) at last provides clarification. Capsules are needed to distinguish between our two very similar species, *R. strumiferum* (Müll.Hal.) Mitt. and *R. cuspidigerum* var. *convolutaceum* (Müll.Hal.) Zanten & L.J.Dijkstra. The Hapupu Reserve plant has thick setae, strongly curved and strumose capsules, and bell-shaped calyptrae with several short slits, all characters of *R. strumiferum* (referred to in the species list below as '*Racopilum strumiferum* s. str.*).*

A number of mosses were recorded in a short visit to the Department of Conservation (DoC) plant nursery at Te One. Two species of *Bryum* with specialized vegetative propagules were found in the nursery: *Bryum dichotomum* which disperses readily by leafy bulbils produced in the axils of the upper leaves, and a species with underground tubers, tentatively identified as *Bryum radiculosum*. The latter moss was growing in sand accumulated on a wooden glasshouse bench, in association with the common glasshouse weed, *Funaria hygrometrica. F. hygrometrica* was also present growing in gravel on the ground.
A robust thallose liverwort, *Marchantia polymorpha*, was collected in the DoC nursery. This species is an aggressive introduced liverwort (John Braggins *pers. comm.*), which was noted on the Chatham Islands only in this nursery. It was well established on the potting mix surface around native vascular plants. This invasive liverwort should be eradicated from the nursery and special care taken that it is not released into the wild. Large sheets of *Marchantia*, several square metres in extent, were also seen on the disturbed peat surfaces of vehicle tracks through farmland in the southern part of Wharekauri. John Braggins was able to reassure me that samples taken from there were the native *M. berteroana,* and not *M. polymorpha* already run amok.

The Chatham Islands have a diversity of landscapes showing evidence of the determination of humans to wrest productive farmland from native vegetation, and the converse, evidence of attempts to restore native vegetation in sites that had in the past been highly modified by farming practices. A common moss in disturbed habitats was *Kindbergia praelonga*. This species may be introduced to New Zealand (Fife 1995). Common in grassland, it appears to be hanging on as a survivor in fenced-off patches reverting to forest, such as we observed in Hapupu National Historic Reserve, where it was growing in the remaining open glades. I was surprised to also find it on the bases of tree species, such as *Coprosma chathamica*, in forest being degraded by cattle – in this case the moss evidently being an early invader from adjacent pasture. Thus it may be a useful indicator species of vegetation disturbance.

Species list

Moss names follow Fife (1995), with some recently used alternative names in brackets. 'W' indicates a record on Wharekauri, and 'R' a record on Rangiauria. Vouchers for each are lodged in the herbarium of the Auckland Museum (AK). For taxa identified to genus level only, and for tentative identifications, AK accession numbers are given.

Mosses

Achropyllum dentatum R
Barbula calycina W
Barbula convoluta W
Barbula unguiculata W
Brachythecium albicans W
Bryobeckettia bartlettii R
Bryum billardierei var. *platyloma* W
Bryum blandum W
Bryum caespiticium W
Bryum campylothecium W
Bryum capillare W
Bryum dichotomum W
Bryum sp. (AK 299216) W
Bryum laevigatum W
Bryum ?*radiculosum* (AK 299214) W
Bryum sauteri W, R
Calomnion complanatum W
Calyptopogon mnioides W, R
Camptochaete deflexa (*C. ramulosa*) W
Campylopus acuminatus var. *kirkii* W
Campylopus introflexus W
Campylopus pyriformis W
Ceratodon purpureus W, R
Cratoneuropsis relaxa W
Cyathophorum bulbosum W
Dicranoloma billardierei W
Dicranoloma menziesii W
Didymodon australasiae (*Trichostomiopsis australasiae*) W
Didymodon torquatus (*Barbula torquata*) W
Distichophyllum crispulum W
Distichophyllum rotundifolium W
Ditrichum difficile W
Drepanocladus aduncus W
Echinodium hispidum R
Fallaciella gracilis (*Camptochaete gracilis*) W
Fissidens curvatus var. *curvatus* (*F. pungens*) R
Fissidens leptocladus R
Fissidens rigidulus W
Fissidens tenellus var. *australiensis* R
Fissidens tenellus var. *tenellus* R
Funaria hygrometrica W
Grimmia sp (AK 299213) W
Hymenodon pilifer W
Hypnodendron marginatum W
Hypnodendron ?*spininervium* (AK 298901) W
Hypnum chrysogaster W
Hypnum cupressiforme W
Kindbergia praelonga (*Eurhynchium praelongum*) W, R
Leptobryum pyriforme R
Leptodon smithii W
Leptostomum macrocarpon W
Macromitrium gracile W
Macromitrium longirostre R
Macromitrium ramsayae W, R
Philonotis tenuis W
Pohlia wahlenbergii W
Polytrichadelphus magellanicus W
Ptychomnion aciculare W, R
Pyrrhobryum bifarium W, R
Racopilum strumiferum s. str. W
Rhychostegium laxatum W, R
Rhynchostegium tenuifolium R
Sphagnum cristatum W
Sphagnum falcatulum W
Syntrichia antarctica (*Tortula princeps*) W
Syntrichia papillosa (*Tortula papillosa*) W, R
Tayloria ?*octoblepharum* (AK 299217) W
Thamnobryum pandum W
Thuidium furfurosum W
Tridontium tasmanicum W
Triquetrella papillata W
Warnstorfia fluitans (*Drepanocladus fluitans*) W
Weissia sp. (AK 299215) R
Weymouthia cochlearifolia W
Zygodon intermedius W
Zygodon menziesii W

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Observations on seaweeds at the Chatham Islands

Mike D. Wilcox

The Chatham Islands lie 850 km east of Banks Peninsula on the Subtropical Convergence in the sweep of cool sub-antarctic water which flows up past the east coast of the South Island and also in the current of warm subtropical water which flows down past the east coast of the North Island. It is therefore not surprising that the intertidal fauna and flora of these islands includes an odd mixture of species characteristic of both the northern and southern parts of New Zealand (Moore 1959, Knox 1954, Nelson 1994, Nelson *et al* 1991, Schiel 1996, Morton 2004).

Some 235 species of seaweeds (algae) have been recorded from the Chatham Islands (Nelson *et al*. 1991). During the ABS trip to the Chatham Islands, (Young 2007), I had the opportunity to briefly examine intertidal algae at seven sites of varying substrate: Chatham (Rekohu) Island (Kaiangaroa (schist), Owenga (basalt boulders), Ohira Bay (columnar basalt and schist), Port Hutt (schist), Te Whanga Lagoon margin and Waitangi Wharf (tuff)) and Pitt Island (Glory Bay (basalt) and Flower Pot (tuff)). Additionally there were seaweeds washed ashore in abundance on Waitangi Beach.

To the visitor from Auckland the obvious first impressions of the Chatham seashore is the clarity of the water, the prominence of intertidal green algae — *Ulva*, *Bryopsis*, *Codium*, *Cladophora* — the diversity of brown algae particularly in the sublittoral fringe, including some surprisingly familiar ones like *Carpophyllum maschalocarpum*, *C. flexuosum* and *C. plumosum*, and the impressive bull kelps (*Durvillaea antarctica* and the endemic *D. chathamensis*), and the abundance of several red algae of the genera *Gigartina* (including *Sarcothalia*), and also *Ceramium* and *Champia*. One prominent New Zealand brown seaweed missing from the Chathams is the common kelp, *Ecklonia radiata*. Sea lettuce (*Ulva*) is very abundant in the Chathams, and according to a recent study (Heesch et al. 2007) the species there are *Ulva linza*, *U. intestinalis*, *U. compressa*, *U. pertusa*, *U. procera*, *U.* species 1 and *U.* species 2. *Ulva* species 1 was particularly evident at all the sites visited.

As with the terrestrial vascular plant flora (de Lange *et al* 1999) the marine seaweed flora of the Chathams has several endemic species, seemingly absent from the shores of the New Zealand mainland (Hay 1979, 1989, Nelson, 1994, Woelkerling & Foster 1989). These include *Durvillaea chathamica*, *Lessonia tholiformis*, *Landsburgia myricifolia*, *Grateloupia prolifera*, and *Synarthrophyton schelianum* (a deep-water coralline red alga).

Kaiangaroa

Kaiangaroa is a fishing settlement in the far north-east of Chatham Island. It has extensive intertidal reefs and platforms of schist, ranging from moderate to severe exposure. The upper shore has a sprinkling of the dark, erect, bushy red seaweed, *Apophlaea lyallii*. When uncovered it becomes hard and brittle, but softens up again when the tide comes in. Intertidal algae here include *Codium convolutum*, *Codium fragile* subsp. *novaezelandiae*, *Cladophora* spp., *Bryopsis vestita*, *Leathesia difformis*, *Corallina officinalis*, *Splachnidium rugosum*, *Adenocystis utricularis*, *Catenellopsis oligartha, Laurencia thyrsifera*, *Capreolia implexa, Hormosira banksii*, *Carpophyllum plumosum,* and *Ulva* species 1. Kaiangaroa is the type locality for a delicate, crimson-coloured red alga, *Ceramium chathamense*. The lower shore has abundant *Xiphophora gladiata*, together with *Carpophyllum maschalocarpum*, *C. flexuosum*, *Cystophora scalaris*, *C. distenta*, *C. torulosa*, *Pachymenia lusoria* and *Lessonia tholiformis*, giving way below to the bull kelps, *Durvillaea antarctica* and *D. chathamensis*. The bull kelps occupy almost exclusively the shallow subtidal fringe of wave-lashed exposed shores and are conspicuously emergent on the Chatham Islands at low tide. The main intertidal grazers on the rocks are the gastropod molluscs, *Cellana strigilis chathamensis* (the endemic and only large limpet found on the Chathams) and the topshell, *Melagraphia aethiops*, whilst subtidally are found Cook's turban shell (*Cookia sulcata*) and paua (*Haliotis iris*) in abundance.

Owenga

The substrate here was mostly basaltic lava boulders. It was a good place to see the extensive stands of *Durvillaea chathamica* lining the shore. Deep intertidal rock pools had the large red endemic alga, *Grateloupia proliferus* growing with *Ulva* species 1. *Adenocystis utricularis* and *Capreolia implexa* were prominent on rock surfaces, but *Apophlaea lyallii* was only sparse. There were numerous blue mussels (*Mytilus edulis aoteanus*).

Ohira Bay

The main attraction at this place was the spectacular basaltic columns. The shore was fringed with the usual pair of bull kelps, *Durvillaea antarctica* and *D. chathamensis*, with *Ulva* prominent everywhere. *Apophlaea sinclairii* was common on vertical basalt surfaces, often with yellowish, limp thalli of *Porphyra*.