Vitt, D.H. 1983: The New Zealand species of the pantropical genus *Macromitrium* (Orthotrichaceae: Musci): taxonomy, phylogeny and phytogeography. *Journal of the Hattori Botanical Laboratory 54*: 1-94.
Wilcox, M. D. 2007: Observations on seaweeds at the Chatham Islands. *Auckland Botanical Society Journal 61*: 27-28.
Young, M. 2007: Field Trip: Chatham Islands. *Auckland Botanical Society Journal 61*: 10-23.

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*.

Nearby was a schist headland with a more sheltered inlet, with a fine array of green, brown and red algae. The coarse southern form of *Pachymenia lusoria* was seen here, together with *Cystophora scalaris*, *Splachnidium rugosum*, *Adenocystis utricularis*, *Colpomenia peregrina* and *Ulva* species 1. The curious *Gigartina lanceata*, with leafy, papillate fronds, was found on rocks adjoining sand.

Port Hutt

Port Hutt (Whangaroa Harbour) is comparatively sheltered, with abundant growth of intertidal seaweeds on the schist reefs. Species recorded were *Hormosira banksii*, *Scytothamnus australis*, *Champia novae-zelandiae*, *Colpomenia peregrina*, *Gigartina* spp., *Cystophora torulosa*, *Zonaria turneriana*, and *Ulva* spp.

Glory Bay and Flower Pot (Pitt Island)

The tide was well in at Glory during a brief visit. The upper tidal rocks had a covering of the limp, brownish skins of *Porphyra*. There was opportunity for just a brief look here at seaweeds near Flower Pot wharf, but here on rocks beside the sandy beach were *Halopteris paniculata*, *Sarcothalia lanceata* and *Gigartina decipiens*.

Te Whanga Lagoon

Two places were visited on the western shore of this enormous, shallow salt-water lagoon. The red alga *Gracilaria chilensis* was frequent, but the dominating growth was a mass of foetid blue-green algae (Cyanobacteria).

Waitangi Wharf reefs

The substrate here is volcanic tuff, and the reefs are sheltered. The water is clear though probably nutritionally-enriched by effluent from the fish factory. The dominant intertidal seaweed here is *Hormosira banksii*, and with it *Gigartina decipiens*, *Champia novae-zelandiae, Caulacanthus ustulatus*, *Ulva* spp., *Scytothamnus australis*, *Colpomenia peregrina*, *Leathesia difformis*, *Corallina officinalis*, *Codium fragile*, *Myriogloea intestinalis* and *Splachnidium rugosum*. The sublittoral fringe was dominated by *Carpophyllum maschalocarpum* and *C. plumosum*.

Waitangi Beach

The beach drift gave a glimpse of the composition of the sub-tidal algal forest in deeper water (Schiel, *et al.* 1995). Waitangi Beach had a good haul of wash-up brown seaweeds, those identified being *Durvillaea antarctica*, *D. chathamensis*, giant kelp (*Macrocystis pyrifera*), *Lessonia tholiformis*, *Carpophyllum* spp., *Cystophora* spp., *Landsburgia* spp. and *Marginariella urvilliana*. There were also numerous red algae in the drift, including a common, delicate pink one, and *Gigartina* spp.

References

de Lange PJ, Sawyer JWD, Ansell R 1999: Checklist of indigenous vascular plant species recorded from Chatham Islands. Department of Conservation, Wellington.

Hay, C.H. 1979: Nomenclature and taxonomy within the genus *Durvillaea* Bory (Phaeophyceae, Durvilleales Petrov.). *Phycologia 18*: 191-202.

Hay, C.H. 1989: *Lessonia tholiformis* sp. nov. (Phaeophyta:Laminariales) from the Chatham Islands, New Zealand. *New Zealand Journal of Botany 27*: 461-469.

Heesch, S.; Neill, K.; Farr, T.; Nelson, W.; Broom, J.; Dalen, J. 2007: Genetic diversity and possible origins of New Zealand populations of *Ulva*. *Biosecurity New Zealand Technical Paper* No. 2007/01

Morton, J. 2004: *Seashore Ecology of New Zealand and the Pacific*. David Bateman Ltd, Auckland.

Nelson, W.A.; Adams, N.M.; Hay, C.H. 1991: Marine algae of the Chatham Islands. *National Museum of New Zealand Misc. Series 23*: 1-58.

Nelson, W.A. 1994: Distribution of macroalgae in New Zealand – an archipelago in space and time. *Botanica Marina 37*: 221-233.

Knox, G.A. 1954: The intertidal flora and fauna of the Chatham Islands. *Nature 174*: 871-874.

Moore, L. B., 1949: The Marine Algal Provinces of New Zealand. *Trans. Roy. Soc. N.Z.*, *77*: 187–189.

Schiel, D. 1996: Marine life. In *The Chatham Islands. Heritage and Conservation*, pp. 62-73, Canterbury University Press.

Schiel, D.R.; Andrew, N.L.; Foster, M.S. 1995 : The structure of subtidal algal and invertebrate assemblages at the Chatham Islands, New Zealand. *Marine Biology 123*: 355-367.

Woelkerling, W.J.; Foster, M.S. 1989: A systematic and ecographic account of *Synarthrophyton schelianum* sp. nov. (Corallinaceae, Rhodophyta) from the Chatham Islands. *Phycologia 28*: 398-60.

Young, M. 2007: Field Trip: Chatham Islands. *Auckland Botanical Society Journal 61*: 10-23.

Notes on Chatham Island fungi and some plant pests

Ross E. Beever

The fungi of the Chatham Islands are relatively well known through the publications of Eric McKenzie and Peter Johnston, who made several visits to the islands since the 1980s and 1990s (McKenzie 1991a & b, McKenzie 1993, McKenzie & Johnston 1999, McKenzie & Johnston 2004). However, while these mycologists list over 200 species, with emphasis on plant pathogenic species, this is in reality only the tip of the iceberg and many more species await discovery. One of their more striking records was of the threatened rust fungus *Puccinia embergeria* (Fig. 1) found in the endangered Chatham Island sow thistle (*Embergeria grandifolia*), one of the spectacular megaherbs found on these islands. Intriguingly, inspection of the second Chatham Island megaherb, the endemic Chatham Island forget-me-not (*Myosotidium hortensia*), in the DoC nursery at Te One on the second full day of our visit revealed that this species