Revised key to species of the *C. ciliata-C. parviflora* complex

1	Hairs on young stems coarse, white, appressed	*C. decurva*
	Hairs on young stems fine, white or long and yellowish, not appressed	*2*
2	Leaf with evident darker veins, stipule triangular with a dark central denticle; drupe violet	*3*
	Leaf with obscure or transparent veins, stipule broadly triangular with lateral denticles; drupe white, orange or red	*4*
3	Lamina of young leaves densely short-ciliate beneath only; drupe sessile or shortly pedicellate	*C. parviflora*
	Lamina of young leaves glabrous; drupe distinctly pedicellate	*C. pedicellata*
4	Midrib and veins prominently raised beneath	*5*
	Midrib and veins level with leaf surface or depressed beneath	*6*
5	Midrib weakly visible to absent above, evident beneath, usually glabrous; veins glabrous	*C. pseudociliata*
	Midrib evident on both surfaces, long ciliate above; veins ciliate beneath	*C. ciliata*
6	Midrib clearly visible on both surfaces, stout, rapid tapering, becoming irregular and not reaching the leaf tip beneath; drupe translucent, white	*C. tayloriae*
	Midrib absent or very short above, fine, extending straight to leaf tip beneath; drupe red or orange, occasionally opaque-white	*C. dumosa*

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In a Tangle – the *Ruppia* species of Auckland

Bec Stanley

In 2004 I received a call from a Manukau City Council Parks Ranger about the submerged aquatic plant *Ruppia polycarpa* at Manurewa Farm Ponds at Mahia Park (on Wattle Farm Road). Because of the rarity of this species in the region I visited the site soon after with Phil Brown (DOC Biodiversity Ranger).

At Mahia Park there are two constructed freshwater ponds, one at least of which is intermittently flushed with seawater from the Waimahia Creek of the Manukau Harbour. They are mainly used for regattas run by model powerboat clubs. A range of birds also use the ponds as permanent habitat and as a seasonal feeding ground.

Ruppia polycarpa was identified in the reserve management plan which advocated control as the *Ruppia* is regarded as a weed which impedes the movement of the model boats by tangling around their keels (Champion 1990; Anon 1992). Parks staff believe *Ruppia polycarpa* was introduced to the ponds in the 1980s by a film production crew (Joseph Ormsby *pers. comm*.) further enhancing the belief it is "weedy". Despite control by herbicide and pond drainage it remains abundant. Interestingly in Australia *R. polycarpa* forms turions, or vegetative propagules (either a swelling at the leaf base or a swelling at the rhizome tip), in ephemeral habitats that survive drying (Jacobs & Brock 1982). No turions are recorded in permanent habitats in Australia. It would be interesting to determine whether *R. polycarpa* is regenerating at these ponds by turions because the ponds are sometimes drained possibly classifying this habitat as (artificially) ephemeral. To my knowledge turions have not been reported in NZ (Mason 1967), indeed, have not been recorded for species of *Ruppia* outside Australia (Brock 1982). Seed of *R. polycarpa* is also reported as remaining viable in dry sediment for some years in Australia (Brock 1982).

There are two *Ruppia* species (Ruppiaceae) or "horses manes" in New Zealand, both also found in Australia and both regarded as native to Auckland: *Ruppia polycarpa* and *R. megacarpa*. Both are listed as "Data deficient" in the Auckland regional threatened plants list (Stanley *et al.* 2005) as they are suspected to be regionally rare but there is not enough data to formally assess their rarity. Although possibly a naturally uncommon plant in Auckland, both *Ruppia* species may have decreased in range and abundance at natural sites though the decline in wetlands in the

region and also by competition with numerous aquatic plant invaders e.g. *Potamogeton crispus, Vallisneria gigantea, Lagarosiphon major, Elodea canadensis* and *Egeria densa.*

Ruppia are fully aquatic plants with thread-like long leaves (hence their common name "horses manes") that form dense grass like beds. *R. polycarpa* is most visible at flowering time when masses of floating pollen sacs can be seen on the water surface, where pollination occurs (Moore 1970), and after pollination when distinctive long coiled flower peduncles appear like a tangled mass just under the water surface. The peduncle coils downwards after pollination and the seeds develop under the water. Its white flower stalks also glisten in the sun under the water surface (Ewen Cameron *pers. comm.*).

Whereas the taxonomy has been studied in NZ, the ecology of *Ruppia* is based mainly on Australian research where *R. polycarpa* is an annual or perennial species found in temporary salt lakes and *R. megacarpa* is perennial and is found only in permanent waters. In Australia *R. megacarpa* mainly increases by vegetative spread of its rhizomes and by rooting of the stem nodes (Brock 1982). *Ruppia polycarpa* spreads asexually and sexually; it is a prolific seeder; has turions and also increases by the lateral spread of its rhizomes (Brock 1982).

Habitat, habit and number and colour of seeds can be used to distinguish the two species. *Ruppia polycarpa* has a wider habitat range growing in both brackish and freshwater e.g. ponds and streams, while *R. megacarpa* is a coastal species of brackish/saline water e.g. estuaries and lagoons. In terms of habit, *R. polycarpa* has short stems (never more than 50cm) rarely branching with uniform internode length with the height of the plant being determined by the length of the leaves (which are longer in deeper water). The height of *Ruppia megacarpa* is always due to the length of the stems with progressively shorter internodes and extensive branching (Mason 1967). *Ruppia megacarpa* typically has four olive green fruits per flower and *R. polycarpa* has six or more brown fruits (Coffey & Clayton 1988).

Ruppia polycarpa is found naturally in Auckland at Whatipu and Awhitu, and is possibly introduced to Manurewa Farm Ponds (though it may also have arrived naturally via waterfowl movement). It was once known at Miranda (Cranwell 1981) though there are no supporting specimens. *R. megacarpa* has not been located in the region since the 1800s when Thomas Cheeseman collected it on the Takapuna coast (near Lake Pupuke).

It may be that this species has simply been overlooked in freshwater and brackish habitats in Auckland or it may be genuinely rare. With only a handful of sites in the region, and until the origin of the *Ruppia polycarpa* at Mahia Park is known, this site is a significant one for this species in the region and should not be controlled.

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Appendix 1. Records of *Ruppia* species in Auckland

AK number	Location	Collector	Date	Habitat
Ruppia megacarpa				
1248 & 108143	Coast near Lake Takapuna (Pupuke)	T.F. Cheeseman	1884	
Ruppia polycarpa				
1247	Lake Pupuke	T.F. Cheeseman		
276059	Whatipu, north of Ninepin	E.K. Cameron	1986	In small freshwater pond at back of beach, pond c.80 cm deep
277315	Whatipu	J.E. Braggins	1988	In small lagoon near old wharf on sand dunes
279104	Whatipu	E.K. Cameron	1990	Knee deep water (55cm)
284815	Mauku, tributary of Mauku Stream	S.P. Benham	2004	Near waterfall; water c.40cm deep
294265	Mahia Park, Wattle Farm Road, Manurewa	R.J. Stanley & P.M. Brown	2004	Constructed ponds
295565	Lake Whatihu, Karioitahi Road, Awhitu	E.K. Cameron & P. A. Aspin	2006	Submerged in 20-30cm deep water, sandy bottom lake.

Two early members: Katie Mays (Kathleen Wood) and Joan Dingley

Alan E. Esler

The Botanical Society sadly records the passing of one of its very early members. Katie Mays (Kathleen Wood) 1915-2006 began amateur botanical observations in 1922 in Glen Eden. She is best known for a series of articles with sketches from the 1940s to 1979 in the *Weekly News*. The Botanical Society published her articles from 1950 to 1988. For two years, with Phyllis Hynes, she was stand-in botanist at the Auckland Museum with much involvement with the Cheeseman Shows. She was a very skilled painter of scenery and plant studies, and 1,280 specimens in the Museum herbarium testify to her field activities. See: Kathleen Wood: Botanist and Artist (Esler 1999).

Another early Bot Soc member celebrated her 90th birthday with horticulturalists, mycologists and botanists at the Botanic Gardens in May 2006 (Fig. 1) – Dr Joan Dingley was a graduate of Auckland University leaving with MSc on the ecology and morphology of *Dicksonia squarrosa*. She was appointed to DSIR at Mt Albert in 1941 to study the taxonomy of fungi and gained a world reputation. Joan has vast botanical knowledge with particular interests in horticulture. Those interests continue with considerable vigour. See: Tribute to pioneer plant pathologist and mycologist, Dr Joan Dingley (Thomson 1998).

Fig. 1. Dr Joan Dingley celebrating her 90th birthday at the Auckland Botanic Gardens, May 2006. Photo: Ross Beever.

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