



Checklist of indigenous vascular plant species recorded from Chatham Islands

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Peter J. de Lange¹, John W. D. Sawyer² and Rebecca Ansell³

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¹ Science & Research Unit,
Department of Conservation
Private Bag 68908
Newton, Auckland
pdelange@doc.govt.nz

² Department of Conservation
Wellington Conservancy
P.O. Box 5086
Wellington
jsawyer@doc.govt.nz

³ IBM Pacific Development Centre
8999 Nelson Way
Burnaby
British Columbia
Canada V5 4B5
ransell@ca.ibm.com

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Cover image: Montage of plants endemic to the Chatham Islands. Clockwise from top left: *Leptinella featherstonii* (Gillian Crowcroft), *Myosotidium hortensia* (photographer unknown), *Asplenium chathamense* (Jeremy Rolfe), *Hebe dieffenbachii* (Gillian Crowcroft), *Olearia chathamica* (Jeremy Rolfe), *Senecio radiolatus* (John Smith-Dodsworth), *Geranium traversii* (Peter de Lange). Centre: *Cyathodes robusta* (Jeremy Rolfe).

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¹ Herbarium acronyms explained on page 9.

Executive summary

A checklist is presented of indigenous vascular plant taxa recorded from the Chatham Islands. That list is based on collections resulting from a visit to Chatham (Rekohu) Island by P.J. de Lange & G. M. Crowcroft (February - March 1996) and information stored on the Wellington Conservancy Chatham Island flora database. That database holds extensive literature references and herbarium records gathered from the major New Zealand herbaria. It is intended that this checklist will update previous assessments of the island's flora written by von Mueller (1864), Cockayne (1902), Given & Williams (1984), and the unpublished work of Druce & Kelly (1973).

The flora comprises 388 indigenous plant taxa of which 47 (12%) are accepted here as endemic to the Chatham Islands. Forty-eight records of species observed by other botanists are believed to be erroneous and some suggestions are made about their probable identity. Sixteen indigenous species are excluded because they are regarded as either planted or naturalised following human introduction (Madden & Healy 1959; B. P. J. Molloy pers. comm., P. J. de Lange unpubl. data, A. Baird pers. comm., G. Walls pers. comm.)

Some recommendations are made about management of the islands to ensure protection of the plant species included in this checklist. Potential uses of this checklist are described and include:

- a baseline inventory of the richness of indigenous plant life on the Chatham Islands;
- a guide for visitors to the Chathams;
- a basis for the preparation of a Chatham Island Flora;
- a monitoring tool to detect changes over time in the number and diversity of plant species;
- a precursor to a strategic approach to protection and conservation management of the plant species of the Chathams;
- a tool for studies of the biogeography of the plants of the Chatham Islands;
- the basis for classification of the island's plant communities.

Introduction

The objective of this publication is to provide a checklist of indigenous vascular plant species that have been recorded from the Chatham Islands. The Chatham Islands are located about 860 kilometres east of Christchurch, New Zealand, at approximate latitude 44°S (Figure 1). They have a total land area of about 97,000 hectares spread amongst 40 different islands. Chatham Island (90,000 ha) and Pitt Island (6,190 ha) are the only islands permanently inhabited by people.

Much previous work has been undertaken recording indigenous and naturalised plants for the Chatham Islands (e. g., von Mueller 1864, Cockayne 1902, Richards 1952, Madden & Healy 1959). A large amount of information exists in national herbaria about plants collected on the Chatham Islands. Many plant checklists have also been compiled for areas in the Chatham Islands. One checklist of plants for the Chatham Islands was that prepared by A. P. Druce and G. Kelly in 1973 (Druce & Kelly 1973). More recently, Given and Williams (1984) discussed the conservation of the indigenous flora and vegetation and provided a plant checklist for the Chatham Islands. The present document was prepared to update past efforts to classify the flora of the Chatham Islands.

Uses of the checklist

This draft checklist may be used by visitors to the islands as a plant guide. The list has the potential to be used to monitor changes in the number and diversity of plant taxa of the Chatham Islands that may come about as a result of environmental change. It also has value as a taxonomic baseline for studies of the geographical distribution of each species, and in the description and classification of the plant communities of the Chatham Islands. The development of this checklist is a precursor to a strategic approach to management to protect the plant life of the Chatham Islands (see Recommendations).

Methods

All information about the flora of the Chatham Islands was collated and stored on one computer database held by the Department of Conservation in Wellington Conservancy. The database was established using Microsoft Access. A large number of collections of plant vouchers have been made from the Chatham Islands and they are held by the national herbaria of New Zealand which include: Auckland Museum (AK), Auckland University (AKU), Canterbury University (CANU), Lincoln (CHR), Forest Research Institute (NZFRDI), Waikato University (WAIK), Museum of New Zealand - Te Papa Tongarewa, Wellington (WELT) and Victoria University of Wellington (WELTU). All those records have been obtained and used in the compilation of this checklist. In addition to those records, species-specific searches were made at herbaria at Kew, England (K) and Munich, Germany (M). Some plant records were also provided from the von Mueller collection housed in the Melbourne Herbarium (MEL) in Australia. Herbarium acronyms follow those recommended by Holmgren *et al.* (1990).

Plant checklists for various sites in the Chatham Islands were also collated and stored on the Chatham Islands flora database and used to create the present plant checklist for the islands. Plant lists include those compiled by the Nelson Botanical Society (see Jane 1997), botanists and scientists working on the islands (see Taylor 1991), and staff of the Department of Conservation (see Chappell 1987). The Chatham Island flora database now holds over 9000 records of occurrences on the islands of all indigenous and naturalised plant species.

Plant records were regarded as verified if an indisputable herbarium specimen was seen or the species was sighted in the wild by the authors. The following plant checklist was then generated using standard groupings used previously in plant checklists (see for example Druce 1957). In the majority of cases, for each plant taxon, a representative herbarium voucher or a reference is provided.

FIGURE 1: THE LOCATION AND SPATIAL EXTENT OF THE CHATHAM ISLANDS.



Checklist of indigenous vascular plants

The following is an explanation of references used for plant species for which no herbarium specimen could be found, and the taxon concerned has not been sighted in the wild by the authors:

- (Cockayne 1902) = Plant recorded by Cockayne (1902) but not verified (1 record)
- (Druce & Kelly 1973) = Plant recorded by Druce & Kelly (1973) but not verified (1 record)
- (Jane 1997) = Plant reported by Jane (1997) but not verified (5 records)
- (Richards 1952) = Plant reported by Richards (1952) but not verified (2 records)

Abbreviations

- E = Endemic - or possibly (?E) - to the Chatham Islands (47 taxa)
- BPJM = Unaccessioned herbarium voucher collected by B. P. J. Molloy and stored in AK.
- Incl. = Including as synonyms the following name.
- Site record = taxon sighted in the wild by the authors.

PSILOPODS AND LYCOPODS (8)

<i>Huperzia australiana</i>	Site record
<i>H. varia</i>	AK 972
<i>Lycopodium fastigiatum</i>	WELT P3689
<i>L. scariosum</i>	WELT P3433
<i>L. volubile</i>	AK 150377
<i>Lycopodiella lateralis</i>	AK 227181
<i>Tmesipteris elongata</i>	AK 230462
<i>T. tannensis</i>	Site record

FERNS (83)

<i>Adiantum cunninghamii</i>		WELT P8285
<i>Arthropteris tenella</i>		CHR 3595
<i>Asplenium bulbiferum</i>		AK 170716
<i>A. chatbamense</i>	E	AK 174330
<i>A. colensoi</i>		AK 230465
<i>A. flaccidium</i>		AK 227706

<i>A. gracillimum</i>		Site record
<i>A. lyallii</i>		AK 227198
<i>A. oblongifolium</i>		AK 150119
<i>A. obtusatum</i> subsp. <i>obtusatum</i>		AK 114911
<i>A. polyodon</i>		AK 135787
<i>A. chatbamense</i> × <i>A. lyallii</i>		CHR 187401-2
<i>A. chatbamense</i> × <i>A. oblongifolium</i>		AK 172941
<i>A. gracillimum</i> × <i>A. lyallii</i>		BPJM
<i>Blechnum chambersii</i>		AK 150087
<i>B. colensoi</i>		CHR 403336A/B
<i>B. discolor</i>		AK 136082
<i>B. durum</i>		AK 136086
<i>B. fluviatile</i>		AK 150105
<i>B. montanum</i>		CHR 417663
<i>B. norfolkianum</i>		AK 136122
<i>B. novae-zelandiae</i>		AK 136122
<i>B. penna-marina</i>		AK 136159
<i>B. procerum</i>		CHR 403358
<i>B. vulcanicum</i>		CHR 420359
<i>B. aff. minus</i>		CHR 464782
<i>B. aff. novae-zelandiae</i>		AK 235913
<i>B. montanum</i> × <i>B. novae-zelandiae</i>		CHR 417654A-B
<i>Botrychium biforme</i>		WELT P3458
<i>Cardiomanes reniforme</i>		AK 141989
<i>Ctenopteris heterophylla</i>		AK 215031
<i>Cyathea cunninghamii</i>		AK 136250
<i>C. dealbata</i>		AK 136263
<i>C. medullaris</i>		CHR 496741
<i>C. smithii</i>		AK 496757
<i>Dicksonia squarrosa</i>		AK 137954
<i>D. aff. fibrosa</i>	?E	AK 227199
<i>Gleichenia dicarpa</i>		AK 150097
<i>Grammitis billardierei</i>		CHR 187373
<i>G. magellanica</i> subsp. <i>magellanica</i>		AK 230438
<i>G. patagonica</i>		Site record
<i>Histiopteris incisa</i>		AK 211080
<i>Hymenophyllum bivalve</i>		WELT P3472
<i>H. demissum</i>		AK 139898
<i>H. dilatatum</i>		AK 139907
<i>H. flabellatum</i>		WELT P3437
<i>H. flexuosum</i>		WELT P3668
<i>H. minimum</i>		AK 230436
<i>H. multifidum</i>		WELT P3472
<i>H. rarum</i>		CHR 403309
<i>H. scabrum</i>		WELT P3668
<i>H. villosum</i>		Site record
<i>Hypolepis ambigua</i>		AK 150116
<i>H. distans</i>		AK 136509
<i>H. lactea</i>		AK 172005
<i>H. rufobarbata</i>		CHR 288356

<i>Lastreopsis glabella</i>		AK 150090
<i>L. bispida</i>		AK 150103
<i>L. microsora</i> subsp. <i>pentangularis</i>		AK 137958
<i>Leptolepia novae-zelandiae</i>		CHR 187234A/B
<i>Leptopteris hymenophylloides</i>		AK 918
<i>Lindsaea linearis</i>		AK 142495
<i>Microsorium pustulatum</i> subsp. <i>pustulatum</i>		AK 840
<i>M. scandens</i>		AK 142506
<i>Ophioglossum coriaceum</i>		WELT P12507
<i>O. petiolatum</i>		AK 136596
<i>Paesia scaberula</i>		AK 211147
<i>Pellaea rotundifolia</i>		WELT P3674
<i>Pneumatopteris pennigera</i>		WELT P3701
<i>Polystichum richardii</i>		CHR 397620
<i>P. vestitum</i>		CHR 187026
<i>P. aff. vestitum</i>	E	AK 230427-8
<i>Pteridium esculentum</i>		AK 229974
<i>Pteris macilentata</i>		WELT P12521
<i>P. tremula</i>		CHR 496820
<i>Pyrrhosia eleagnifolia</i>		AK 853
<i>Rumobra adiantiformis</i>		AK 138065
<i>Schizaea</i> cf. <i>australis</i>		AK 888
<i>S. fistulosa</i>		AK 227189
<i>Trichomanes colensoi</i>		AK 229973
<i>T. endlicherianum</i>		AK 228204
<i>T. strictum</i>		AK 228203
<i>T. venosum</i>		AK 141999

MONOCOTYLEDONOUS TREES AND LIANES (2)

<i>Rhopalostylis</i> aff. <i>sapida</i>	E	AK 227148
<i>Ripogonum scandens</i>		AK 230473

DICOTYLEDONOUS TREES AND SHRUBS (39)

<i>Brachyglottis huntii</i>	E	AK 10701
<i>Coprosma acerosa</i>		AK 227207
<i>C. chatthamica</i>	E	AK 227158
<i>C. propinqua</i> var. <i>martini</i>	E	AK 227381
<i>C. propinqua</i> var. <i>propinqua</i>		AK 150469
<i>C. acerosa</i> × <i>C. propinqua</i> var. <i>martini</i>		AK 227381
<i>C. chatthamica</i> × <i>C. propinqua</i> var. <i>martini</i>		AK 230430
<i>Corokia macrocarpa</i>	E	AK 6737
<i>Cyathodes empetrifolia</i>		WELT 35243
<i>C. robusta</i>	E	AK 232319
<i>Discaria toumatou</i>		(Richards 1952)
<i>Dracophyllum arboreum</i>	E	AK 6994

<i>D. scoparium</i>		AK 6997
<i>Hebe barkeri</i>	E	WELT 16860
<i>H. chatbamica</i>	E	AK 7823
<i>H. dieffenbachii</i>	E	WELT 35210
<i>H. chatbamica</i> × <i>H. dieffenbachii</i>		CHR 399058
<i>H. elliptica</i> var. <i>elliptica</i>		WELT 5298
<i>Helichrysum lanceolatum</i>		CHR 3594
<i>Leucopogon</i> aff. <i>parviflorus</i>	?E	CHR 399144
<i>Macropiper excelsum</i> subsp. <i>excelsum</i>		AK 227167
<i>Melicytus chatbamicus</i>	E	AK 11410
<i>Myoporum laetum</i>		AK 170669
<i>Myrsine chatbamica</i>		AK 105671
<i>M. coxii</i>	E	AK 105670
<i>M. chatbamica</i> × <i>M. coxii</i>		AK 229134
<i>Olearia chatbamica</i>	E	AK 9426
<i>O. semidentata</i>	E	WELTU 16556
<i>O. traversii</i>	E	CHR 290054
<i>O. chatbamica</i> × <i>O. semidentata</i>		CHR 417547
<i>Pentachondra pumila</i>		Site record
<i>Pimelea arenaria</i> s.s.		CHR 112915
<i>Plagianthus chatbamicus</i>	E	AK 5206
<i>P. divaricatus</i>		CHR 288338
<i>P. chatbamicus</i> × <i>P. divaricatus</i>		AK 229928
<i>Pseudopanax chatbamicus</i>	E	AK 227195
<i>Solanum aviculare</i>		AK 170652
<i>S. lacinatum</i>		AK 227163
<i>Sophora chatbamica</i>		AK 227163

DICOTYLEDONOUS LIANES AND RELATED SCRAMBLING PLANTS (10)

<i>Calystegia sepium</i> agg.		Site record
<i>C. soldanella</i>		CHR 288405
<i>C. tuguriorum</i>		CHR 158299
<i>Disphyma australe</i> subsp. <i>australe</i>		AK 233104
<i>D. papillatum</i>	E	AK 227716
<i>Einadia triandra</i>		CHR 288449
<i>E. trigonos</i> subsp. <i>trigonos</i>		CHR 496770
<i>Muehlenbeckia australis</i>		AK 229929
<i>Tetragonia implexicoma</i>		AK 170693
<i>T. tetragonioides</i>		AK 230034

GRASSES (25)

<i>Austrofestuca littoralis</i>		CHR 288420
<i>Cortaderia turbaria</i>	E	AK 232570
<i>Deschampsia caespitosa</i> var. <i>macrantha</i>		AK 227735

<i>Deyeuxia avenoides</i>		CHR 82500
<i>D. quadriseta</i> agg.		AK 230458
<i>Dichelachne crinita</i>		CHR 96675
<i>Echinopogon ovatus</i>		CHR 436509
<i>Festuca coxii</i>	E	AK 2010
<i>Hierochloa fusca</i>		(Druce & Kelly 1973)
<i>H. redolens</i>		AK 227174
<i>Lachnagrostis billardierei</i>		AK 229942
<i>L. elata</i>		(Jane 1997)
<i>L. filiformis</i>		WELT 76281
<i>L. littoralis</i> subsp. <i>littoralis</i>		CHR 397609
<i>L. lyallii</i>		CHR 197342
<i>L. pilosa</i> subsp. <i>pilosa</i>		AK 227190
<i>Microlaena stipoides</i>		CHR 96655
<i>Poa cbathamica</i>	E	AK 223546
<i>P. imbecilla</i>		AK 1951
<i>Puccinellia walkeri</i> subsp. <i>cbathamica</i>	E	AK 227145
<i>Rytidosperma clavatum</i>		CHR 82046
<i>R. gracile</i>		AK 209130
<i>R. unarede</i>		CHR 397613
<i>Trisetum lepidum</i>		WELT 69097
<i>T. spicatum</i>		AK 228470

ORCHIDS (30)

<i>Acianthus sinclairii</i>		AK 170667
<i>Adenochilus gracilis</i>		Site record
<i>Aporostylis bifolia</i>		AK 170632
<i>Caladenia</i> sp.		Site record
<i>Chiloglottis cornuta</i>		AK 170684
<i>Corybas cheesemanii</i>		AK 229955
<i>C. oblongus</i>		AK 229951
<i>C. orbiculatus</i>		CHR 178504
<i>C. aff. macranthus</i>	?E	CHR 178471
<i>C. aff. trilobus</i>	?E	CHR 178505
<i>Drymoanthus adversus</i>		AK 230475
<i>Earina aestivalis</i>		AK 230474
<i>E. autumnalis</i>		Site record
<i>Gastrodia cunninghamii</i>		AK 3680
<i>Genoplesium nudum</i>		CHR 398162
<i>Microtis oligantha</i>		AK 227738
<i>M. unifolia</i>		AK 229132
<i>M. aff. oligantha</i>	?E	AK 227710
<i>Prasophyllum colensoi</i>		CHR 403134
<i>P. aff. patens</i>		CHR 508996
<i>Pterostylis banksii</i> var. <i>banksii</i>		AK 227197
<i>P. banksii</i> var. <i>silvicultrix</i>	E	AK 227380
<i>P. micromega</i>		CHR 288394
<i>P. montana</i> agg.		AK 170639-643

<i>Spiranthes novae-zelandiae</i>		Site record
<i>Thelymitra cyanea</i>		CHR 150832
<i>T. formosa</i>		AK 3438
<i>T. longifolia</i> s.l.		CHR 158351
<i>T. pulchella</i>		Site record
<i>Winika cunninghamii</i>		AK 229949

RUSHES AND ALLIED PLANTS (13)

<i>Apodasmia similis</i>		AK 170670
<i>Juncus antarcticus</i>		CHR 399090
<i>J. distegus</i>		CHR 187206
<i>J. gregiflorus</i>		CHR 187540
<i>J. holoschoenus</i> var. <i>multiflorus</i>		AK 228210
<i>J. krausii</i> var. <i>australiensis</i>		CHR 293191
<i>J. planifolius</i>		CHR 496882
<i>J. prismatocarpus</i>		AK 228078
<i>J. pusillus</i>		AK 231013
<i>J. sarophorus</i>		CHR 187536
<i>Luzula banksiana</i> var. <i>acra</i>		AK 230480
<i>Sporadanthus traversii</i>	E	MEL 15163 ²
<i>Triglochin striata</i>		CHR 178479

SEDGES (38)

<i>Baumea rubiginosa</i>		AK 170709
<i>B. tenax</i>		AK 229972
<i>Carex appressa</i>		AK 230426
<i>C. chathamica</i>	E	AK 228205
<i>C. flaviformis</i>		AK 228208
<i>C. pumila</i>		CHR 288764
<i>C. secta</i>		AK 236413
<i>C. sectoides</i>		AK 227175
<i>C. tenuiculmis</i>		CHR 399079
<i>C. ternaria</i>		AK 227196
<i>C. trifida</i>		AK 229971
<i>C. ventosa</i>	E	AK 228471
<i>C. virgata</i>		AK 227709
<i>C. appressa</i> × <i>C. virgata</i>		AK 227731
<i>Cyperus ustulatus</i>		CHR 187505
<i>Desmoschoenus spiralis</i>		AK 228462
<i>Eleocharis acuta</i>		AK 228462
<i>E. gracilis</i>		CHR 293309
<i>Isolepis aucklandica</i>		AK 232569

² See de Lange *et al.* 1999.

<i>I. cernua</i>		AK 228964
<i>I. distigmata</i>		AK 229971
<i>I. fluitans</i>		(Jane 1997)
<i>I. babra</i>		AK 227177
<i>I. nodosa</i>		AK 150291
<i>I. prolifer</i>		AK 230424
<i>I. reticularis</i>		AK 2131
<i>Lepidosperma australe</i>		AK 150292
<i>Schoenoplectus pungens</i>		AK 227701
<i>S. tabernaemontani</i>		AK 236684
<i>Schoenus apogon</i> var. <i>apogon</i>		AK 170662
<i>S. maschalinus</i>		CHR 221322
<i>S. nitens</i>		AK 230445
<i>S. pauciflorus</i>		AK 232568
<i>Uncinia clavata</i>		(Jane 1997)
<i>U. ferruginea</i>		(Jane 1997)
<i>U. rupestris</i>		AK 227178
<i>U. uncinata</i>		AK 230477
<i>U. zotovii</i>		CHR 294828

MONOCOTYLEDONOUS HERBS (OTHER THAN GRASSES, ORCHIDS AND SEDGES) (8)

<i>Astelia chatbamica</i>	E	CHR 269482
<i>Lemna minor</i>		Site record
<i>Lepilaena bilocularis</i>		AK 236536
<i>Libertia peregrinans</i>		AK 228468
<i>Phormium</i> aff. <i>tenax</i>	E	AK 170674
<i>Potamogeton cheesemanii</i>		Site record
<i>P. pectinatus</i>		AK 228077
<i>Ruppia polycarpa</i>		CHR 288382

DICOTYLEDONOUS COMPOSITE HERBS (30)

<i>Anaphalioides bellidioides</i>		CHR 288478
<i>Cotula australis</i>		CHR 178478
<i>C. coronopifolia</i>		CHR 399153
<i>Craspedia</i> aff. <i>minor</i>	E	AK 228074
<i>Embergeria grandifolia</i>	E	CHR 108784
<i>Euchiton audax</i>		CHR 415585
<i>E. gymnocephalus</i>		CHR 288474
<i>E. involucratus</i>		WELT 3336
<i>E. limosus</i>		CHR 403055
<i>E. ruahinicus</i>		CHR 415585
<i>E. sphaericus</i>		AK 231012
<i>Helichrysum filicaule</i>		CHR 97214
<i>Lagenifera petiolata</i>		CHR 269005

<i>L. pumila</i>		AK 230487
<i>Leptinella featherstonii</i>	E	AK 230487
<i>L. potentillina</i>		AK 228469
<i>L. squalida</i> s.s.		CHR 464786
<i>Picris burbidgei</i>		AK 227152
<i>Pseudognaphalium</i> aff. <i>luteoalbum</i> (a)		BPJM
<i>P.</i> aff. <i>luteoalbum</i> (b)		AK 227210
<i>P.</i> aff. <i>luteoalbum</i> (c)		AK 227153
<i>Senecio</i> aff. <i>glomeratus</i>	?E	AK 227154
(incl. <i>Erechtites quadridentatus</i> var. <i>traversii</i> WELT 33916)		
<i>S. hispidulus</i>		Site record
<i>S. lautus</i> var. <i>lautus</i>		AK 228200
<i>S. minimus</i>		Site record
<i>S. radiolatus</i> subsp. <i>radiolatus</i>	E	AK 177207
<i>S. scaberulus</i>		AK 228461
(incl. <i>Erechtites scaberula</i> var. <i>chathamica</i> WELT 32699 and 33957)		
<i>S. quadridentatus</i>		Site record
<i>Sonchus kirkii</i>		CHR 178478
<i>Taraxacum</i> aff. <i>magellanicum</i>		CHR 178769

DICOTYLEDONOUS HERBS (OTHER THAN COMPOSITES) (102)

<i>Acaena anserinifolia</i>		CHR 496842
<i>A. novae-zelandiae</i>		AK 170682
<i>A. pallida</i>		AK 228472
<i>A. novae-zelandiae</i> × <i>A. pallida</i>		AK 227733
<i>Aciphylla dieffenbachii</i>	E	AK 6552
<i>A. traversii</i>	E	CHR 97893
<i>Apium prostratum</i> var. <i>denticulatum</i>		AK 227721
<i>Atriplex billardierei</i> s.s.		CHR 288453
<i>A. buchananii</i>		CHR 496735
<i>Australina pusilla</i>		AK 230461
<i>Callitriche muelleri</i>		AK 230463
<i>C. petriei</i> subsp. <i>chathamensis</i>	E	AK 227162
<i>Cardamine</i> sp. ("Narrow Petal" of Pritchard 1957)		AK 227382
<i>C.</i> aff. <i>corymbosa</i>		CHR 496903
<i>Centella uniflora</i>		AK 150019
<i>Chenopodium glaucum</i> subsp. <i>ambiguum</i>		AK 229939
<i>Colobanthus apetalus</i>		CHR 496831
<i>C. muelleri</i>		AK 174279
<i>C. muscoides</i>		CANU 19811
<i>Crassula kirkii</i>		CHR 496769
<i>C. bunua</i>		AK 229937
<i>C. moschata</i>		CHR 496844
<i>Daucus glochidiatus</i>		CHR 288436
<i>Dichondra</i> aff. <i>brevifolia</i> (a)		AK 230471
<i>D.</i> aff. <i>brevifolia</i> (b)		CHR 496665
<i>D. repens</i>		AK 170706

<i>Epilobium alsinoides</i>		AK 5855
<i>E. atriplicifolium</i>		WELT 40936
<i>E. billardioreanum</i> subsp. <i>billardioreanum</i>		AK 230447
<i>E. brunnescens</i> s.s.		CHR 202938
<i>E. chionanthum</i>		AK 150429
<i>E. cinereum</i>		MEL 100311
<i>E. komarovianum</i>		AK 227695
<i>E. insulare</i>		AK 5722
<i>E. microphyllum</i>		BPJM
<i>E. nerterioides</i>		AK 150428
<i>E. nummulariifolium</i>		CHR 202930
<i>E. pallidiflorum</i>		CHR 202924
<i>E. pedunculare</i>		AK 150433
<i>E. pubens</i>		AK 228073
<i>E. rotundifolium</i>		AK 170708
<i>Euphorbia glauca</i>		CHR 288457
<i>Gentiana chatbamica</i>	E	AK 230422
<i>Geranium traversii</i>	E	AK 4980
<i>G. solanderi</i> ("large petals" of Gardner 1984)		AK 229936
<i>Glossostigma diandrum</i>		Site record
<i>G. elatinoides</i>		Site record
<i>Gonocarpus aggregatus</i>		CHR 197323
<i>G. micranthus</i> subsp. <i>micranthus</i>		Site record
<i>Gunnera monoica</i>		AK 227696
<i>Haloragis erecta</i> subsp. <i>erecta</i>		Site record
<i>Hydrocotyle heteromeria</i>		AK 229130
<i>H. microphylla</i>		CHR 468037
<i>H. moschata</i> s.s.		AK 6287
<i>H. aff. novae-zeelandiae</i> s.s.		AK 230418
<i>Lepidium aff. oleraceum</i> (a)	?E	AK 230459
<i>Lepidium aff. oleraceum</i> (b)		AK 208579
<i>Lilaeopsis novae-zelandiae</i>		CHR 159011
<i>Limosella lineata</i> agg.		Site record
<i>Linum monogynum</i> var. <i>chatbamicum</i>		AK 230459
<i>Lobelia anceps</i>		CHR 176553
<i>Mentha cunninghamii</i>		(Richards 1952)
<i>Montia fontana</i> subsp. <i>fontana</i>		CHR 496868
<i>Myosotidium hortensia</i>	E	AK 221067
<i>Myosotis spatbulata</i>		AK 7509
<i>Myriophyllum pedunculatum</i> subsp. <i>novae-zelandiae</i>		AK 230419
<i>M. triphyllum</i>		CHR 291244
<i>M. votschii</i>		AK 227694
<i>Nertera depressa</i>		CHR 97746
<i>N. villosa</i>		AK 228197
<i>Oreomyrrhis colensoi</i> var. <i>colensoi</i>		AK 227191
<i>Oxalis exilis</i>		CHR 158318
<i>O. magellanica</i>		Site record
<i>O. rubens</i>		BPJM
<i>Parietaria debilis</i>		AK 227205
<i>Pelargonium inodorum</i>		CHR 96652

<i>Persicaria decipiens</i>	AK 3888
<i>Plantago raoulii</i>	AK 231011
<i>P. triandra</i>	(Jane 1997)
<i>Potentilla anserinoides</i>	AK 4770
<i>Pratia arenaria</i>	AK 228464
<i>Ranunculus acaulis</i>	CHR 510515
<i>R. amphitrichus</i>	AK 227699
<i>R. glabrifolius</i>	Site record
<i>R. multiscapus</i>	Site record
<i>R. recens</i> s.s.	Site record
<i>R. reflexus</i>	AK 230466
<i>R. royi</i>	AK 232565
<i>Rorippa divaricata</i>	BPJM
<i>R. palustris</i>	CHR 464799
<i>Rumex neglectus</i>	AK 230446
<i>Samolus repens</i> var. <i>repens</i>	AK 150031
<i>Sarcornia quinqueflora</i> subsp. <i>quinqueflora</i>	CANU 19841
<i>Selliera radicans</i>	CHR 371572
<i>Solanum americanum</i> subsp. <i>nutans</i>	Site record
<i>Stellaria parviflora</i>	CHR 288392
<i>Urtica australis</i>	AK 3781
<i>Utricularia delicatula</i>	AK 230035
<i>U. novae-zelandiae</i>	(Cockayne 1902)
<i>Viola cunninghamii</i>	CANU 19827
<i>Wahlenbergia littoricola</i>	AK 226783
<i>W. ramosa</i>	AK 228201

TOTAL FLORA 388 TAXA

DOUBTFUL OR ERRONEOUS RECORDS (48)

Record	Probable Identity
<i>Aciphylla lyallii</i> (Buchanan 1875)	<i>Aciphylla traversii</i>
<i>A. monroi</i> (Buchanan 1875)	<i>Aciphylla traversii</i>
<i>Acaena profundeincisa</i> (Jane 1997)	<i>Acaena anserinifolia</i>
<i>Adiantum hispidulum</i> (Buchanan 1875)	?
<i>Agrostis magellanica</i> (Godley 1989)	?
<i>Astelia cunninghamii</i> (Buchanan 1875)	<i>Astelia chatthamica</i>
<i>Astelia grandis</i> (Buchanan 1875)	<i>Astelia chatthamica</i>
<i>Botrychium australe</i> (Richards 1952)	<i>Botrychium biforme</i>
<i>Brachyscome sinclairii</i> (Buchanan 1875)	<i>Lagenifera</i> sp.
<i>Carex forsteri</i> (Buchanan 1875, Cockayne 1902)	<i>Carex ventosa</i>
<i>Carex geminata</i> (Hamlin 1954)	<i>Carex ternaria</i>
<i>Carex lambertiana</i> (Buchanan 1875)	<i>Carex ventosa</i>
<i>Chionochoa conspicua</i> (Buchanan 1875, Cockayne 1902 and Cheeseman 1925 as <i>Arundo conspicua</i>)	<i>Cortaderia turbaria</i>
<i>Colobanthus crassifolius</i> (Richards 1952)	<i>Colobanthus muscoides</i>

<i>Coprosma propinqua</i> × <i>C. robusta</i> (Richards 1952)	<i>Coprosma chatbamica</i> × <i>C. propinqua</i> var. <i>martini</i>
<i>Coprosma foetidissima</i> (Kirk 1899, Richards 1952)	<i>Coprosma chatbamica</i>
<i>Corokia buddleioides</i> (Buchanan 1875)	<i>Corokia macrocarpa</i>
<i>Cotula asiatica</i> (Cockayne 1902)	<i>Cotula australis</i>
<i>Dicksonia antarctica</i> (Cockayne 1902)	<i>Dicksonia</i> aff. <i>fibrosa</i>
<i>Dracophyllum rosmarinifolium</i> (Buchanan 1875)	<i>Dracophyllum scoparium</i>
<i>Einadia allanii</i> (Richards 1952)	<i>Einadia trigonos</i> subsp. <i>trigonos</i>
<i>Empodisma minus</i> (Druce & Kelly 1973)	? <i>Sporadanthus traversii</i>
<i>Epilobium confertifolium</i> (Buchanan 1875)	?
<i>Hebe salicifolia</i> (Buchanan 1875 as <i>Veronica salicifolia</i>)	<i>Hebe barkeri</i>
<i>Isolepis inundata</i> (Jane 1997)	<i>Isolepis habra</i>
<i>Juncus novae-zelandiae</i> (Buchanan 1875)	<i>Juncus pusillus</i>
<i>Leptinella lanata</i> (Buchanan 1875 as <i>Cotula lanata</i>)	<i>Leptinella potentillina</i>
<i>Libertia ixiooides</i> (Buchanan 1875, Cockayne 1902, Cheeseman 1925)	<i>Libertia peregrinans</i>
<i>Luzula crinata</i> (Godley 1989)	?
<i>Luzula migrata</i> (Cheeseman 1925 as <i>L. compestris</i> var. <i>migrata</i>)	<i>Luzula banksiana</i> var. <i>acra</i>
<i>Luzula rufa</i> (Edgar 1966)	Recorded in error (E. Edgar and A. Wilton pers comm.)
<i>Lycopodium deuterodensum</i> (Buchanan 1975, and Cheeseman 1925 as <i>L. densum</i> , Richards 1952)	<i>Lycopodium fastigatum</i>
<i>Melicytus ramiflorus</i> (Richards 1952)	<i>Melicytus chatbamicus</i>
<i>Microseris scapigera</i> (Druce & Kelly 1973)	<i>Hypochoeris glabra</i>
<i>Myrsine nummularia</i> (Buchanan 1875)	<i>Myrsine coxii</i>
<i>Ophioglossum lusitanicum</i> (Crookes 1963)	Mixed collection of foreign material and <i>O. petiolatum</i> (Brownsey et al. 1985).
<i>Poa anceps</i> (Jane 1997)	<i>Poa chatbamica</i>
<i>Poa breviglumis</i> (Buchanan 1875, Godley 1989)	<i>Poa imbecillus</i>
<i>Poa foliosa</i> (Buchanan 1875)	<i>Poa chatbamica</i>
<i>Poa novae-zelandiae</i> (Buchanan 1875)	<i>Poa chatbamica</i>
<i>Polystichum cystostegia</i> (Crookes 1963)	?
<i>Pomaderris apetala</i> (Hector 1878)	
<i>Pratia macrodon</i> (Buchanan 1875)	<i>Pratia arenaria</i>
<i>Pseudopanax crassifolius</i> (Buchanan 1875 as <i>Panax crassifolia</i>)	<i>Pseudopanax chatbamicus</i>
<i>Pterostylis australis</i> (Hatch 1949)	<i>Pterostylis banksii</i> var.
<i>Pterostylis silvicultrix</i>	
<i>Sophora tetraptera</i> (Buchanan 1875 as <i>S. tetraptera</i> var. <i>grandiflora</i>)	<i>Sophora chatbamica</i>
<i>Stellaria decipiens</i> (Richards 1952)	<i>Stellaria parviflora</i>
<i>Uncinia caespitosa</i> (Cheeseman 1906, p 1154)	<i>Uncinia zotovii</i>

PLANT SPECIES INDIGENOUS TO NEW ZEALAND AND
INTRODUCED TO CHATHAM ISLANDS (16)

Record

Basis

<i>Clematis paniculata</i>	Naturalised (Wharekauri woolshed covenant) (Amanda Baird pers comm.)
<i>Coprosma repens</i>	Naturalised (Waitangi Wharf and elsewhere)
<i>C. robusta</i>	Naturalised (Limited to roadside between Waitangi & Owenga)
<i>Cordyline australis</i>	Naturalised (Geoff Walls pers comm.)
<i>Coriaria arborea</i>	Naturalised (Geoff Walls pers comm.)
<i>Cortaderia fulvida</i>	Planted (Northern Kaingaroa Beach)
<i>C. richardii</i>	Planted (In roadside garden)
<i>C. splendens</i>	Planted (Chathams Field Centre Gardens)
<i>Corynocarpus laevigatus</i>	Naturalised (B. P. J. Molloy pers comm.)
<i>Dodonaea viscosa</i>	Naturalised (Geoff Walls pers comm.)
<i>Fuchsia excorticata</i>	Naturalised (Madden & Healy 1959)
<i>Juncus pallidus</i>	Naturalised (Madden & Healy 1959)
<i>Leptospermum scoparium</i>	Naturalised (Madden & Healy 1959)
<i>Metrosideros excelsa</i>	Naturalised (Above Waitangi Wharf)
<i>Poa cita</i>	Naturalised (Madden & Healy 1959)
<i>Typha orientalis</i>	Naturalised (Madden & Healy 1959)

Discussion

Assessments of the numbers of endemic vascular plants on the Chathams vary. Given & Williams (1984) discussed the conservation status of endemic plant species in the Chatham Islands. Several taxa have been reported from time to time as endemic (e. g., Druce & Kelly 1973; Given & Williams 1984) and some of these await formal description. We comment on several of these here.

Blechnum* aff. *novae-zelandiae

Chambers & Farrant (1998) note that several collections of *B. novae-zelandiae* from Chatham Island could not be satisfactorily placed within their new species. They state (*loc. cit.* p.11) “There appears to be a distinctive form of *B. novae-zelandiae* in the Chatham Islands (e. g., WELT P1310, P1311). Judged from a limited number of specimens, these plants have the base of the sterile frond reduced to one or more pairs of leafy auricles; the fertile frond often has several sterile auricles and the lower half of the fertile region has distinctive bilobed auriculate bases to each of the fertile pinnae”. The same taxon is also represented by AK 235913!³

Although the implication is that this form is endemic to the Chathams Islands, it has also been collected from the North Island of New Zealand in the Waikato (WAIK 15348!). It is significant that Chambers & Farrant (1998) did not examine WAIK specimens for their *Blechnum* revision. Either way, further (and better) collections are needed to resolve the status of this taxon.

Corybas

At present it is unclear what the status is of forms of *Corybas* approaching *C. macranthus* and *C. trilobus*. The problem is further hampered by the lack of well preserved flowering specimens in New Zealand herbaria. Based on field evidence, we suggest that two forms are present on the islands, both possibly endemic and allied to *C. macranthus* and *C. trilobus*. Further specimens and live plants are needed to resolve this issue (B. P.J. Molloy pers. comm.).

Dicksonia* aff. *fibrosa

The specimens represented by AK 227199 suggest that a possibly endemic and undescribed form of *D. fibrosa* is present on the islands. This form chiefly differs from *D. fibrosa* s.s. through its dark glaucous, broader and more coarsely divided fronds, and greater trunk girth, and may warrant taxonomic recognition (M. F Large pers. comm.). Better specimens, including live plants, are needed to resolve its status.

Lepidium* *oleraceum

As reported by de Lange in Garnock-Jones & Norton (1995), there is at least one possibly undescribed form of *L. oleraceum* on the Chatham Islands. However, further field work on the island in 1996 elucidated that at least two forms are present.

³ Use of ! after herbarium specimen number indicates that the authors have sighted the specimen.

Lepidium aff. *oleraceum* (a) (AK 230459) may prove endemic and seems to be very uncommon (3 collections seen). It differs from *L. oleraceum* s.s. and *L. aff. oleraceum* (b) through the strictly procumbent habit, and narrowly spathulate, heavily toothed (sometimes lyrate-sinuate) leaves. Good flowering material has yet to be collected, but AK 233772 suggests that the petals are greenish-yellow. To resolve the status of both forms live material is needed.

Specimens exemplified by AK 208579, and referred to here as *L. aff. oleraceum* (b) differ from *L. oleraceum* s.s. through their procumbent to weakly ascending habit, spathulate to broadly elliptic leaves, with 1-3 apical serrations (sometimes fully entire), smaller, often apetalous flowers, and larger more turgid silicles. This form is not endemic to the islands, having been collected elsewhere, e.g., the Antipodes Islands, AK 233772.

Microtis

As with *Corybas* there appear to be a complex of forms centered on *M. oligantha*. One form, possibly endemic to the islands is chiefly distinguished by its greater stature when compared to New Zealand *M. oligantha*, and subtle differences in the labellum (B. P. J. Molloy pers. comm.) However, one collection, AK 227738, seems to represent *M. oligantha* s.s. Further specimens and live plants are needed to resolve this issue.

Muehlenbeckia australis

Treated by Druce & Kelly (1973) as a distinct, possibly endemic, as yet undescribed species. Although a critical study of the range of *M. australis* has yet to be conducted, a perusal of the variation within this species on New Zealand and Norfolk Islands suggests that the main characters distinguishing the Chatham form, viz larger size, and shiny leaf surface, are insufficient to warrant taxonomic recognition.

It may be significant that Chatham Island plants lack a distinct juvenile phase (P. J. de Lange unpubl. data). Further study into this matter is desired.

Polystichum* aff. *vestitum

A distinct form of *Polystichum vestitum*, possibly warranting species rank is apparently endemic to the Chatham Islands (Brownsey & Smith-Dodsworth 1989). However, whilst some populations are readily distinguished from *P. vestitum* with regard to their ciliate scales, and larger, bright green fronds, the presence of intermediates trending towards *P. vestitum* s.s. has tended to cloud the issue. Indeed, field work undertaken by one of us (PdL) found that the majority of *Polystichum* populations could not be readily separated into either taxon. Furthermore, the understandable tendency of people to collect morphological extremes has meant that, until recently, most New Zealand herbarium collections lacked objectivity. For this reason, further research into the complex, and indeed other allied forms on the subantarctic islands and in the general south Pacific is needed. Currently such a revision forms part of a research programme being conducted at Massey University (M. F. Large pers comm.).

Rhopalostylis* aff. *sapida

The Chatham Island form of *Rhopalostylis* has usually been treated as *R. sapida* s.s. (Moore & Edgar 1970), or as a distinct, apparently endemic, undescribed species

(*R.* “Chathams” (Cameron *et al.* 1995)). However a recent morphometric analysis of the genus *Rhopalostylis* (Storker 1998) suggests that the genus may best be considered to comprise one species, *R. baueri* (a Norfolk Island endemic) with a further three subspecies endemic to New Zealand. This action will necessitate two new combinations at the rank of subspecies for *R. sapida* and *R. cheesemanii*, and the formal description of the Chatham Island taxon. A paper detailing these changes is now in preparation (E. K. Cameron pers. comm.).

Pterostylis banksii* var. *silvicultrix

This distinctive endemic orchid, confused in the past with *P. australis* (Hatch 1949), is frequently sympatric with *P. banksii* var. *banksii*. It warrants species rank (B. P. J. Molloy pers. comm.).

Taraxacum* aff. *magellanicum

The taxonomic status of New Zealand *Taraxacum* requires serious revision. At least three names are currently available: *T. castellanum*, *T. magellanicum*, and *T. zelandicum* (Connor & Edgar 1987) but there is considerable doubt as to their correct application (Garnock-Jones 1988). Druce & Kelly (1973) list *Taraxacum* “Chatham Islands” as a possible endemic, which in CHR is represented by three collections (CHR 158308!, 178769!, 288481!). This form is probably not endemic to the islands as similar plants have been gathered from Campbell Island (CHR 49846!), and the Hunters Hills in South Canterbury (CHR 239442!).

Recommendations

- To update the present plant checklist for the Chatham Islands with new records of occurrences of other indigenous species as more information comes to hand⁴.
- To produce a checklist of the naturalised plant species of the Chatham Islands and incorporate those within the present checklist.
- To produce an illustrated Flora of vascular plant species of the Chatham Islands.
- To identify those indigenous plant species of the Chatham Islands which are: threatened with extinction from the islands; so uncommon on the Chatham Islands that their continued survival there is dependent on people; in need of regular inspections to monitor their status in the wild; already believed to have gone extinct on the Chatham Islands and may be considered worthy of restoration.
- To identify which plant species and which plant community types of the Chatham Islands are priorities for conservation management (e.g., protection or restoration to the islands).
- To develop management plans for sites supporting populations of threatened species and threatened plant communities.
- To resolve taxonomic uncertainties for some species (see Discussion).
- To prepare an illustrated popular publication on endemic plant species of the Chatham Islands.
- To map the distribution of each plant species with the aim of preparing a Chatham Island plant atlas.
- To produce a list of common names for species included in this checklist.

⁴ Specimens in the form of herbarium vouchers may be submitted to Auckland (AK), Christchurch (CHR) or Wellington (WELT) herbaria for verification of identity of new records. Information about those new records should also be sent to the Department of Conservation, Wellington Conservancy, P. O. Box 5086, Wellington so that this checklist can be updated.

The herbarium addresses to which vouchers may be submitted are:

AK Herbarium Curator
Auckland Museum
Private Bag 92018
AUCKLAND

CHR Herbarium Keeper
Herbarium (CHR)
Landcare Research
P. O. Box 69
Lincoln 8152
CANTERBURY

WELT Herbarium Curator
Botany Department
Museum of New Zealand
Cable St
P. O. Box 467
WELLINGTON

References

- Brownsey, P. J.; Given, D. R.; Lovis, J. D. 1985: A revised classification of New Zealand pteridophytes with a synonymic checklist of species. *New Zealand Journal of Botany* 23: 431-489.
- Brownsey, P. J.; Smith-Dodsworth, J. C. 1989: New Zealand ferns and allied plants. Auckland, David Bateman.
- Cameron, E. K.; deLange, P. J.; Given, D. R.; Johnson, P. N.; Ogle, C. C. 1995: Threatened and Local Plant Lists (1995 Revision). *New Zealand Botanical Society Newsletter* 39: 15-28.
- Chambers, T. C.; Farrant, P. A. 1998: The *Blechnum procerum* ("capense") (Blechnaceae) complex in New Zealand. *New Zealand Journal of Botany* 36: 1-20.
- Chappell, R. G. 1987: Motuhinahina Island. Unpublished list of plants and birds observed on the island. List held by the Department of Conservation, Wellington Conservancy
- Cheeseman, T. F. 1906: Manual of the New Zealand Flora. Wellington
- _____ 1925: Manual of the New Zealand Flora. Wellington
- Cockayne, L. 1902: A short account of the plant-covering of Chatham Island. *Transactions of the New Zealand Institute* 34: 243-325.
- Connor, H. E.; Edgar, E. 1987: Name changes in the indigenous New Zealand flora, 1960-1986 and Nomina Nova IV, 1983-1986. *New Zealand Journal of Botany* 25: 115-170.
- Crookes, M. E. 1963: New Zealand ferns, 6th ed. Incorporating illustrations and original work by H. B. Dobbie. Christchurch, Whitcombe & Tombs.
- de Lange, P. J.; Heenan, P. B.; Clarkson, B. D.; Clarkson, B. R. 1999: Taxonomy, ecology and conservation of *Sporadanthus* (Restionaceae) in New Zealand. *New Zealand Journal of Botany* 37(3): *In Press*.
- Druce, A. P. 1957: Botanical Survey of an Experimental Catchment, Taita, New Zealand. Department of Scientific and Industrial Research. Bulletin No. 121, Wellington, New Zealand.
- Druce, A. P.; Kelly, G. C. 1973: Check list of vascular plants on Chatham Islands (November 1987 Revision). Unpublished Checklist, Landcare Research Ltd, Lincoln.
- Edgar, E. 1966: *Luzula* in New Zealand. *New Zealand Journal of Botany*, 4: 159-184.
- Gardner, R. O. 1984: *Geranium solanderi* and allies in New Zealand. *New Zealand Journal of Botany*, 22: 127-134.
- Garnock-Jones, P. J. 1988: Asteraceae: Lactuceae. In: Webb, C. J.; Sykes, W. R.; Garnock-Jones, P. J. Flora of New Zealand. Vol IV. Christchurch, Botany Division, DSIR.
- Garnock-Jones, P. J.; Norton, D. A. 1995: *Lepidium naufragorum* (Brassicaceae), a new species from Westland, and notes on other New Zealand coastal species of *Lepidium*. *New Zealand Journal of Botany* 33: 43-52.
- Given, D. R.; Williams, P. A. 1984: Conservation of Chatham Island Flora and Vegetation (reprinted with amendments in March 1985). Department of Scientific and Industrial Research (DSIR). Christchurch.
- Glenny, D. 1997: A revision of the genus *Anaphalioides* (Asteraceae: Gnaphalieae). *New Zealand Journal of Botany* 35: 451-478.
- Godley, E. J. 1989: The flora of Antipodes Island. *New Zealand Journal of Botany* 27: 531-563.
- Hamlin, B. 1954: Studies in New Zealand Carices. 1. The Section Acutae Fries. *Transactions of the Royal Society of New Zealand*. 82: 49-64
- Hatch, E. D. 1949: *Transactions of the Royal Society of New Zealand*. Volume 77: 234-246.
- Hector, J. 1878: Notice of a new species of *Pomaderris* (*P. tainui*). *Transactions and Proceedings of the New Zealand Institute* 11: 428-429.
- Holmgren, P. K.; Holmgren, N. H.; Barrett, L. C. 1990: Index Herbariorum, ed. 8. *Regnum Vegetabile* 120: 1-693.
- Jane, G. T. (compil.) 1997: Nelson Botanical Society indigenous vascular plant checklists for 19 areas in the Chatham Islands. Unpublished plant lists held by Wellington Conservancy.
- Kirk, T. 1899: The Students' Flora of New Zealand and the Outlying Islands. Wellington
- Madden, E. A.; Healy, A. J. 1959: The adventive flora of the Chatham Islands. *Transactions of the Royal Society of New Zealand* 87: 221-228.
- Moore, L. B.; Edgar, E. 1970: Flora of New Zealand. Vol. II. Wellington, Government Printer.
- von Mueller, F. 1864: The vegetation of the Chatham-Islands - a flora of Chatham Island plants including descriptions of 129 indigenous species. Melbourne, Australia.
- Northcroft, E. F. 1975: Adventive flora of the Chatham Islands. *New Zealand Journal of Botany* 13: 123-129.

- Pritchard, G. G. 1957: Experimental Taxonomic studies on species of Cardamine Linn. in New Zealand. *Transactions of the Royal Society of New Zealand*, 85: 75-89.
- Richards, E. C. 1952: The Chatham Islands: their plants, birds and people. Simpson & Williams Limited, Chistchurch, New Zealand.
- Storker, F. 1998: A revision of the genus *Rhopalostylis* H.Wendl. et Drude (Areceae). Unpublished Msc thesis, The University of Auckland, Auckland, New Zealand.
- Taylor, G.A. 1991: Flora of South East Island. Appendix 3 of "Report on the Chatham Island taiko and Chatham Island petrel Recovery Programmes (1990/91)". Threatened Species Occasional Paper number 2.