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The lichen flora of Macquarie Island:
introduction and an annotated checklist of species

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NOTES
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CONTENTS

THE LICHEN FLORA OF MACQUARIE ISLAND: INTRODUCTION AND AN ANNOTATED CHECKLIST OF SPECIES

by

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ABSTRACT

This annotated checklist and bibliography of the lichen flora of subantarctic Macquarie Island provides the first comprehensive introduction to the literature on the island's lichen flora. Names of 141 taxa in 76 genera are enumerated. No taxonomic revisions or verification of identifications are attempted but the currently accepted name for each taxon is given. Forty-one taxa, including six which have been reduced to synonymy, are based on types collected from Macquarie Island.

1. INTRODUCTION

Macquarie Island (54°30'S, 158°57'E) is an isolated subantarctic island 34 km in length, 2.5-5.5 km in width, and about 120 km^2 in area. Its long axis trends N 15° E along the general line of the submarine ridge of which it and its outlying islands, Judge and Clerk 14 km to the north and Bishop and Clerk 33 km to the south, are uplifted fragments.

The island was discovered on 11 July 1810 by the *Perseverance* while en route from Sydney to Campbell Island. The early expeditions were concerned solely with exploitation of natural resources – fur seal pelts, elephant seal oil and, subsequently, penguin oil.

The main island consists essentially of an undulating plateau 240-250 m in altitude with peaks to 370 m in the northern part, and at about 300 m with peaks to 433 m in the southern part. The plateau surface bears numerous lakes, tarns and streams and is bounded by scarps which fall steeply to a narrow, low-lying coastal fringe. The plateau scarps are steep, generally at angles of 40-45°, but up to 80° in places. The west coast is more rugged than the east and is indented with small bays and coves and fringed with residual sea stacks and reefs.

Coastal terrace, formed from a previous wave-cut platform now elevated above sea level, occurs along parts of the coastline and is best developed in the north-west part of the coastline near Handspike Point, where it reaches over 1 km in width and up to 15 m above sea level. Relict sea stacks are scattered along the terrace which extends nearly 10 km southward from Handspike Point, reappearing in a few places further south. The coastal terrace occurs intermittently in narrow strips on the east coast.

The low flat-topped mass of Wireless Hill, about 90 m above sea level, is joined to the southern mass of the island by a narrow, low-lying isthmus. The permanently occupied Australian research station is located towards the northern end of The Isthmus.

The island's climate is cool, moist and windy. The vast mass of the surrounding Southern Ocean ensures a remarkably uniform climate. Wind, cloud cover, precipitation and relative humidity vary little throughout the year. There is, however, a marked annual cycle of daylength ranging from about 7 hours in winter to 17 hours in summer. A monthly climatic summary is given in Selkirk *et al.* (1990, Table 3.1). Mean annual figures are: maximum temperature +6.3°C, minimum temperature +2.9°C, precipitation 895 mm, relative humidity 89%, daily sunshine hours 2.2 hr, wind speed 9.3 m.sec^{-1}.

Macquarie Island is unique among the subantarctic islands in its geological origin. 'Its origins owe nothing to large-scale sedimentation as do South Georgia and the Kerguelen Archipelago. Nor is it an island on which there has been subaerial volcanic activity leading to further island-building as on the Prince Edward Islands, Heard and Macdonald Islands and Îles Crozet' (Selkirk *et al.* 1990). The island is an emergent portion of the crest of the Macquarie Ridge, part of a complex of ridges and trenches – the Macquarie Ridge Complex, of extremely complicated origin (Hayes and Talwani 1972). The Macquarie Ridge is discontinuous, being interrupted by transverse passages of deep water. At its northern end, it is bounded to the west by the Puysegur Trench which is continuous for over 300 km at depths in excess of 4500 m. To the east, the Solander Trough separates the Macquarie Ridge from the Campbell Plateau on which lie the Auckland, Campbell and Stewart Islands south of New Zealand.

The geological history and general geology of the island have been summarised in Selkirk *et al.* (1990, Chapter 4). The rocks of the island were formed by crustal accretion during sea floor spreading. The volcanic and sedimentary sequence exposed on Macquarie Island is basically comprised of three components: pillow basalts and basalt flows, volcaniclastic sediments, and sediments of marine origin deposited in the interstices of the volcanic and volcaniclastic rocks. By

far the majority of the island is made up of pillow basalts with associated sediments and interspersed with massive basalt flows. The volcanic and sedimentary sequence makes up most of the southern two thirds of the island and isolated Wireless Hill.

The geology of the northern third of the island is comparatively complex and has been discussed by Christodoulou *et al.* (1984), Duncan and Varne (1988) and summarised by Selkirk *et al.* (1990, Charter 4). Different mineralisation in this region may possibly impinge on the floristic composition, particularly of saxicolous species. Small exposures of Harzburgite on the plateau are serpentinised and have been shown by chemical analysis to be nickel-rich. At least the vascular flora of such outcrops is impoverished compared to surrounding areas of differing lithologies.

2. VEGETATION

As a result of the scientific investigations carried out by H. Hamilton during the Australasian Antarctic Expedition of 1911-13 a detailed taxonomic treatment of the vascular flora of the island was published by Cheeseman (1919). Thirty-six species were then known for the island. Hamilton subsequently published his ecological notes and illustrations of the island's vegetation (Hamilton 1926). A comprehensive study of the vegetation and soils (Taylor 1955) was the first major floristic treatment. However, the vegetation formations described by Taylor do not describe adequately the present day vegetation, nor were type localities defined. As vegetation communities are subject to change, a zonal approach to the island's vegetation was adopted by Selkirk *et al.* (1990).

The high mean wind velocity and frequent storms ensure a steady deposition of aerosol salt spray over the coastal areas. The composition and structure of the near-shore communities are determined by a number of factors: topography, as it affects the degree of exposure to waves and wind; proximity to the sea; presence or absence of a beach and its structure; substrate stability and composition; surrounding vegetation; animal disturbance. Elevated beach terraces support a variety of vegetation types, the nature of which is governed by the influx of run-off water from the coastal slopes behind, drainage of underlying peats and rainfall. The island's plateau rises steeply from the fringing beaches or raised coastal terraces and the coastal slopes are frequently covered by tall *Poa foliosa* tussock grassland, often mixed with the broad-leaved *Stilbocarpa polaris*. Short herb communities may also be mixed with the tall tussock, particularly covering former land slips or areas heavily grazed by introduced rabbits. Short herb communities, dominated by grass and sedge species, small herbs and forbs, replaces the tall grassland on the upper slopes. The plateau uplands support extensive short herb communities in more sheltered sites with open fellfield in higher or more wind-exposed areas. These plateau herbfields have similar species composition to coastal slope communities but often contain the rosette-forming *Pleurophyllum hookeri*, while lacking *Stilbocarpa*. Fellfield typically covers about 45% of the plateau uplands.

Lichens form a conspicuous part of the intertidal flora in the supralittoral zone. Species of *Verrucaria, Xanthoria, Caloplaca, Turgidosculum* and *Lecanora* are common. These lichens are also common on stones on stable beach slopes and on coastal remnant sea mounts. On rocky headlands, sea mounts and coastal cliffs species of *Rinodina, Parmelia, Buellia, Opegrapha, Pseudocyphellaria, Menegazzia, Cladonia*, and *Ramalina*, together with numerous other lichens, are abundant. Abundance of lichens in herbfield on elevated beach terraces is governed largely by substrate moisture. In well-drained herbfield, *Cladonia, Usnea, Hypogymnia, Pseudocyphellaria, Sphaerophorus* and *Usnea*, together with a variety of other species, are common. A closed canopy in the tall tussock grassland effectively precludes lichens from that habitat. Short herbfield on coastal slopes and on the plateau uplands supports a variety of lichens, including species of *Cladonia, Usnea, Psoroma, Pseudocyphellaria, Peltigera* and *Siphulastrum*. The plateau fellfield and fellfield-short herb ecotone areas support a wide variety of species on peats, growing on vegetation, and on stones or rock. *Pertusaria, Pseudocyphellaria, Hypogymnia, Sphaerophorus* and *Usnea* are abundant on or amongst the low vegetation. On stones and rock are a variety of lichens including species of *Neofuscelia, Buellia, Lecidea, Rhizocarpon, Placopsis, Stereocaulon* and *Peltularia*.

3. BOTANICAL EXPLORATION

The first botanical collections from Macquarie Island, eight species of vascular plants, were forwarded to W.J. Hooker at Kew Gardens in 1830. A few mosses were attached to these plants. The first scientific expedition was that of J.H. Scott, of Otago in New Zealand, in 1880. Lichens were noted as colonists of the cushions of *Azorella* in upland fellfield areas. Seven lichen species were cited in the report of the expedition (Scott 1883). In 1894, A. Hamilton, also of Otago, made botanical collections on the island but most of the moss and lichen specimens were effectively destroyed in transit.

During the Australasian Antarctic Expedition (AAE) of 1911-12, H. Hamilton was employed as the expedition's biologist in the Macquarie Island shore party. A few lichen collections were sent to C.W. Dodge and the determinations of the five species collected were ultimately included in published reports of the British, Australian and New Zealand Antarctic Research Expedition (BANZARE) (Dodge 1948). The bulk of the AAE collections were forwarded to the British Museum, London, and subsequently destroyed in the 1939-45 World War. Thirty-seven species of lichens were collected by the BANZAR Expedition (Dodge 1948).

In 1948, the Australian National Antarctic Research Expedition (ANARE) established a permanent station at the northern end of The Isthmus. Several early opportunistic collections of vascular plants, bryophytes and lichens were made by various ANARE members (N.R. Laird in 1948; N.M. Haysom in 1949; B.W. Taylor in 1950; D.A. Brown in 1956). Lichens were sent to Dodge for determination, resulting in 24 new species and five additional records (Dodge and Rudolph 1955; Dodge 1968, 1970). Recent collections of lichens have included those made by R.B. Filson in 1963-64, K.S. Simpson in 1964-66, R.J. Hnatiuk in 1971-72, and R.D. Seppelt in 1979-86. D.S. Horning made collections of lichens during the Australian Museum Expedition to the island in 1977-78 and these specimens were determined by D.J. Galloway with a further 28 species records (Lowry *et al.* 1978). The early history of lichenological exploration on the island has been outlined by Filson (1981a).

In general, systematic accounts of the specimens collected by these recent collectors have not been published, although several of their collections have been studied and cited in recent papers on the lichens of the island. These include new records of crustose lecideoid lichens (Hertel 1985, 1987, 1989), regional accounts of the genera *Parmelia, Hypogymnia, Menegazzia* and *Pseudocyphellaria* (Filson 1981b), *Sphaerophorus* (Filson 1986), *Cladonia* and *Cladia* (Filson and Archer 1986), new species and new records in the genera *Thelenella* (Mayrhofer and McCarthy 1991), *Thelidium* and *Verrucaria* (McCarthy 1991a, b), and a new species of *Peltularia* (Jørgensen and Galloway 1984). In addition, some collections from Macquarie Island have been cited in monographs of the genera *Microthelia* (Hawksworth 1985), *Hypogymnia* (Elix 1979), *Parmelia* (Hale 1987), *Ramalina* (Stevens 1987), *Stereocaulon* (Lamb 1977), *Usnea* subgen. *Neuropogon* (Walker 1985) and *Xanthoparmelia* (Elix *et al.* 1986). General ecological accounts of the lichen flora have been given by Filson (1981a) and Seppelt (1984).

4. CHECKLIST AND BIBLIOGRAPHY OF THE SPECIES

Explanatory note
This annotated checklist and bibliography of the lichen flora of Macquarie Island provides a comprehensive introduction to the literature on the island's lichens. No taxonomic revisions, nor any review of the accuracy of identifications have been attempted and, at this stage, all species records have been accepted. We have, however, reviewed species nomenclature to provide only the currently accepted name for each taxon. Lists of synonyms are limited to those which have been recorded from the island. Names based on a type specimen from Macquarie Island are indicated by an asterisk (*). Note that many of the cited references are of a secondary nature, reiterating already published data without an examination of any additional collections.

Acarospora sp.
Lowry *et al.* (1978); Selkirk *et al.* (1990).

Argopsis megalospora Th.Fr., *Nova Acta R. Soc. Scient. upsal.* ser. 3, 2: 335 (1858).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

**Arthopyrenia macquariensis* Dodge, *Nova Hedwigia* 19: 454 (1970).
Dodge (1970).

**Bacidia macquariensis* Dodge, *Nova Hedwigia* 15: 288 (1968).
Dodge (1968).

Baeomyces sp.
Filson (1981a); Seppelt (1984).

Biatorella desmaspora (Knight) Hellbom, *Bihang K. Sv. Vet.-Akad. Handl.* 21(3) 13: 110 (1896). - *Sporostatia desmaspora* (Knight) Dodge, *Nova Hedwigia* 19: 482 (1970).
Dodge (1970); Selkirk *et al.* (1990).

**Blastenia macquariensis* Dodge, *Nova Hedwigia* 15: 294 (1968).
Dodge (1968); Selkirk *et al.* (1990).
See discussion under *Gasparrinia macquariensis*.

Buellia atroflavella (Nyl.) Müll. Arg., *Bull. Herb. Boissier* 2 (app. 1): 70 (1894).
Dodge (1970).

Buellia mawsonii Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 243 (1948).
Dodge (1948); Dodge and Rudolph (1955); Selkirk *et al.* (1990).

Buellia subbadioatra (Knight), Müll. Arg., *Bull. Soc. r. Bot. Belg.* 31: 33 (1892). - *Rinodina subbadioatra* (Knight) Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 256 (1948).
Dodge (1948); Selkirk *et al.* (1990).

Caloplaca inclinans (Stirton) Hellbom, *Bihang K. Sv. Vet.-Akad. Handl.* 21(3) 13: 68 (1896). - *Pyrenodesmia inclinans* (Stirton) Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 230 (1948). - *Pyrenodesmia subpyracea* (Nyl.) Dodge, *B.A.N.Z.A.R.E. Repts.* ser. B, 7: 231 (1948).
Dodge (1948); Selkirk *et al.* (1990).
The genus *Pyrenodesmia* is not generally accepted today (Kärnefelt 1989) and is included within the genus *Caloplaca*. The two species names given above are both based on collections from New Zealand and have been synonymised by Galloway (1985).

**Caloplaca macquariensis* Dodge, *Nova Hedwigia* 15: 295 (1968).
Dodge (1968); Selkirk *et al.* (1990).

Canoparmelia texana (Tuck.) Elix and Hale, *Mycotaxon* 27: 279 (1986). *-Parmelia texana* Tuck., *Amer. J. Sci. Arts* ser. 2, 25: 424 (1858).
Filson (1981b); Selkirk *et al.* (1990).

Carbonea phaeostoma (Nyl.) Hertel, *Lecideac. Exs.* no. 104 (1984).
Hertel (1985); Hertel (1987); Hertel (1989).

**Catillaria rudolphi* Dodge, *Ann. Mo. Bot. Gard.* 42: 139 (1955).
Dodge and Rudolph (1955).

**Chiodecton acarosporoides* Dodge, *Nova Hedwigia* 19: 441 (1970).
Dodge (1970); Selkirk *et al.* (1990).

**Chiodecton macquariense* Dodge *Nova Hedwigia* 19: 442 (1970).
Dodge (1970); Selkirk *et al.* (1990).

Cladia aggregata (Sw.) Nyl., *C. r. hebd. Séanc. Acad. Sci. Paris* 83: 88 (1876).
- *Cladonia aggregata* (Sw.) Ach., *K. Svenska Vetensk Akad. Handl.* 16: 68 (1795).
- *Cladia taylori* Dodge, *Nova Hedwigia* 19: 480 (1970).
Dodge (1948); Lowry *et al* .(1978); Ashton and Gill (1965); Filson and Archer (1986); Dodge and Rudolph (1955); Dodge (1970); Seppelt (1980); Galloway (1976); Selkirk *et al.* (1990).

Cladonia cariosa (Ach.) Sprengel in L., *Syst. Veget.* 4: 272 (1827).
Scott (1883).
This taxon is not reported by Filson and Archer (1986) in their account of the genus *Cladonia* on Macquarie Island and the record is doubtful.

**Cladonia cervicornis* ssp. *mawsonii* (Dodge) Stenroos and Ahti, *Ann. Bot. Fennici* 27: 320 (1990). - **Cladonia mawsonii* Dodge, *B.A.N.Z.A.R.E. Repts* ser. B,7: 128 (1948).
Dodge (1948); Dodge and Rudolph (1955); Stenroos and Ahti (1990).
Cladonia mawsonii was considered a synonym of *C. cervicornis* ssp. *verticillata* by Filson and Archer (1986) but these authors did not examine Dodge's type specimen. Stenroos and Ahti (1990) have resurrected Dodge's taxon to account for subtle morphological differences observed in some populations from Macquarie Island and Tierra del Fuego.

Cladonia cervicornis ssp. *verticillata* (Hoffm.) Ahti, *Lichenologist* 12: 126 (1980).
Filson and Archer (1986); Selkirk *et al.* (1990) as *C. cervicornis* (Ach.) Flotow.

Cladonia chlorophaea (Flörke.) Sprengel in L., *Syst. orb. veg.* ed. 16, 4: 273 (1827).
- **Cladonia floriformis* Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 134 (1948).
Dodge (1948); Filson and Archer (1986); Selkirk *et al.* (1990); Dodge and Rudolph (1955).

Cladonia coniocraea auct.
Dodge (1948); Filson and Archer (1986): Selkirk *et al.* (1990); Dodge (1948) and Dodge and Rudolph (1955) as *C. sarmentosa* (Taylor) Dodge (see Filson and Archer 1986: 222).

Cladonia corniculata Ahti and Kashiwadani in Inoue, *Studies on Cryptogams of Southern Chile* : 136 (1984).
Filson and Archer (1986); Selkirk *et al.* (1990).

Cladonia cornuta (L.) Hoffm., *Descr. adumbr. Pl. Lich.* 1: tab. 25 (1791).
Lowry *et al.* (1978); Filson and Archer (1986); Seppelt (1980); Selkirk *et al.* (1990).

Cladonia ecmocyna Leighton, *Ann. Mag. Nat. Hist.* ser. 3, 18: 406 (1866).
Filson and Archer (1986); Selkirk *et al.* (1990).

Cladonia fimbriata (L.) Fr., *Lich. Europ.* : 222 (1831).
Lowry *et al.* (1978); Ashton and Gill (1965); Seppelt (1980).
This taxon is not recorded by Filson and Archer (1986) in their treatment of the genus for Macquarie Island.

Cladonia furcata (Huds.) Schrader, *Spic. fl. Germ.*: 107 (1794).
Filson and Archer (1986); Selkirk *et al.* (1990).

Cladonia gracilis ssp. *tenerrima* Ahti, *Ann. Bot. Fennici* 17: 208 (1980).
Filson and Archer (1986); Selkirk *et al.* (1990) as *C. gracilis*.

Cladonia pleurota (Flörke) Schaerer, *Enum. lich. eur.* : 186 (1850).
Filson and Archer (1986); Selkirk *et al.* (1990).

Cladonia pyxidata (L.) Hoffm. *Dtsch. Fl.* 2: 121 (1796).
Scott (1883); Filson and Archer (1986); Selkirk *et al.* (1990).

Cladonia scabriuscula (Delise) Leighton, *Lich. Fl. Br.* : 61 (1879).
Filson and Archer (1986); Selkirk *et al.* (1990).

**Cladonia subantarctica* Filson and Archer, *Muelleria* 6: 230 (1986).
Filson and Archer (1986); Selkirk *et al.* (1990).

Cladonia subdigitata Vainio, *Acta Soc. Faun. Fl. fenn.* 4: 180 (1887).
Filson and Archer (1986); Selkirk *et al.* (1990).

**Cladonia subdigitata* var. *albinea* Dodge, *B.A.N.Z.A.R.E. Repts.* ser. B, 7: 124 (1948).
Dodge (1948).
Filson and Archer (1986) consider this name a synonym of *C. subdigitata* but in view of the fact that they have not examined the type specimen, Dodge's taxon is retained pending further study.

Cladonia subsubulata Nyl. *C. r. hebd. Séanc. Acad. Sci. Paris* 83: 88 (1876).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990), all as *C. aueri*.
Archer and Bartlett (1986) synonymised *C. aueri* Räsänen, described from Tierra del Fuego, with *C. subsubulata* Nyl., described from Campbell Island, although Stenroos and Ahti (1990) consider the two taxa distinct. Pending further study, the above records of *C. aueri* from Macquarie Island are included here under *C. subsubulata*.

Cladonia sulcata var. *wilsonii* (A.W. Archer) A.W. Archer, *N.Z. Jl. Bot.* 24: 583 (1986).
- *C. wilsonii* A.W. Archer, *Muelleria* 5: 274 (1984).
Filson and Archer (1986).
The doubtful record of *C. foliacea* (Huds.) Willd., a northern hemisphere species, by Lowry *et al.* (1978) and Seppelt (1980) is likely to refer to *C. sulcata* var. *wilsonii*, as both taxa occur frequently as mats of well-developed squamules lacking podetia.

Coccocarpia kerguelensis Dodge, *B.A.N.Z.A.R.E. Repts.* ser. B, 7: 75 (1948).
Dodge (1948); Selkirk *et al.* (1990).
This taxon is discussed by Arvidsson (1982) who was unable to locate any relevant Dodge specimens. On the basis of the original description and habitat notes, Arvidsson (*loc. cit.*) doubts whether the taxon is a species of *Coccocarpia* .

Coenogonium implexum Nyl., *Annls Sci. nat. Bot.* sér. 4, 16: 92 (1862).
- *C. subtorulosum* Müll. Arg., *J. Linn. Soc. Lond.(Bot.)* 32: 207 (1896).
Dodge (1948); Dodge and Rudolph (1955); Selkirk *et al.* (1990).
Although Galloway (1985) synonymised *C. subtorulosum* with *C. implexum*, a common corticolous Australasian species, Dodge's (1948) description of the Macquarie Island collections does not appear to accord with typical forms of the species, neither in terms of morphology nor habitat.

Endocoena informis Crombie, *J. Linn. Soc. Lond. Bot.* 15: 226 (1876).
Lowry *et al.* (1978); Seppelt (1980).

Endococcus rugulosus Nyl., *Mém Soc. Imp. Sci. Nat. Cherbourg* 3: 193 (1855).
-**Microthelia macquariensis* Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 48 (1948).
Dodge (1948); Dodge and Rudolph (1955); Selkirk *et al.* (1990); Hawksworth (1985).
This taxon represents a widespread lichenicolous fungus (Hawksworth 1979).

**Flavoparmelia haysomii* (Dodge) Hale, *Mycotaxon* 25: 605 (1986).
-**Parmelia haysomii* Dodge, *Nova Hedwigia* 15: 293 (1968).
Dodge (1968); Filson (1981b); Selkirk *et al.* (1990); Seppelt (1980) and Lowry *et al.* (1978) as *Pseudoparmelia caperata.*

Fuscidea absolodes (Nyl.) Hertel and V. Wirth, *Beih. Nova Hedwigia* 79: 443 (1984).
Hertel (1985); Hertel (1987); Hertel (1989).

**Gasparrinia macquariensis* Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 234 (1948).
Dodge (1948); Dodge and Rudolph (1955); Selkirk *et al.* (1990).
Recent studies on the systematics and phylogeny of the Teloschistaceae (Kärnefelt 1989) do not accept several of the generic names used by Dodge in his various publications, e.g. *Blastenia, Gasparrinia, Kuttlingeria* and *Pyrenodesmia.* Instead those genera are now referred to the large genus *Caloplaca.* None of the species in these genera described by Dodge from Macquarie Island have been studied by contemporary specialists. However, if their names survive revisionary work, then nomenclatural changes will be necessary because the specific epithet "macquariensis" has been used by Dodge in the genera *Blastenia, Gasparrinia* and *Kuttlingeria*, as well as in *Caloplaca* itself.

Graphis sp.
Filson (1981a); Seppelt (1984); Selkirk *et al.* (1990).
These records probably refer to a species of *Opegrapha.*

Hypogymnia lugubris (Pers.) Krog var. *lugubris, Norsk. Polarinst. Skr.* 144: 99 (1968).
Lowry *et al.* (1978); Filson (1981b); Seppelt (1980); Selkirk *et al.* (1990).

Hypogymnia lugubris (Pers.) Krog var. *compactior* (Zahlbr.) Elix, *Brunonia* 2: 203 (1979).
Elix (1979); Filson (1981b) as *H. lugubris* var. *compacta* (Müll. Arg.) Dodge, a name synonymous with *H. enteromorphoides* Elix (J.A. Elix pers. comm.).

Hypogymnia lugubris var. *sublugubris* (Müll. Arg.) Elix, *Brunonia* 2: 207 (1979).
-*Parmelia sublugubris* (Müll. Arg.) Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 188 (1948).
Dodge (1948); Dodge and Rudolph (1955); Ashton and Gill (1965); Elix (1979); Filson (1981b).

Hypogymnia turgidula (Bitter) Elix, *Brunonia* 2: 238 (1979). - *Parmelia turgidula* Bitter, *Hedwigia* 40: 246 (1901).
Dodge and Rudolph (1955).
This record is considered doubtful as the species is not recorded for Macquarie Island by either Elix (1979) or Filson (1981b).

Hypotrachyna brevirhiza (Kurok.) Hale, *Smithson. Contr. Bot.* 25: 26 (1975). - *Parmelia brevirhiza* Kurok., *Contr. U.S. natnl Herb.* 36: 166 (1964).
Filson (1981b); Selkirk *et al.* (1990).

Hypotrachyna sinuosa (Sm.) Hale, *Smithson. Contr. Bot.* 25: 63 (1975).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

**Kuttlingeria macquariensis* Dodge, *Nova Hedwigia* 19: 451 (1970).
Dodge (1970); Selkirk *et al.* (1990).
See discussion under *Gasparrinia* (above). Galloway (1985) notes that New Zealand records of this species refer to *Caloplaca cribrosa* (Hue) Zahlbr., and it is possible that the same applies to the Macquarie Island records. *C. cribrosa* is a characteristic coastal species of the Southern Ocean, known from Tasmania, New Zealand and nearby islands (Poelt and Pelleter 1984) and may well occur on Macquarie Island.

**Lecania johnstoni* Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 180 (1948).
Dodge (1948); Selkirk *et al.* (1990).

Lecanora broccha Nyl. in Crombie, *J. Linn. Soc. Lond. Bot.* 15: 185 (1876). - *L. parmelina* Zahlbr., *Denkschr. Akad. Wiss. Wien math. - naturwiss. Kl.* 104: 341 (1941).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

**Lecanora brownii* Dodge, *Nova Hedwigia* 19: 455 (1970).
Dodge (1970); Selkirk *et al.* (1990).

**Lecanora prolifera* Dodge, *Nova Hedwigia* 15: 290 (1968).
Dodge (1970); Selkirk *et al.* (1990).

**Lecidea haysomi* Dodge, *Nova Hedwigia* 15: 287 (1968).
Dodge (1968); Selkirk *et al.* (1990).
According to Hertel (1984), the type material of this species could not be found in Dodge's herbarium.

Lecidea lygomma Nyl. in Crombie, *J. Bot.* 13: 334 (1875).
Hertel (1987); Hertel (1989).

**Lecidea macquariensis* Dodge, *Nova Hedwigia* 19: 444 (1970).
Dodge (1970); Selkirk *et al.* (1990).
According to Hertel (1984), the type material of this species could not be found in Dodge's herbarium.

Lecidella elaeochroma (Ach.) M. Choisy, *Bull. mens. Soc. linn. Lyon* 19: 19 (1950).
Hertel (1989).

Lepraria sp.
Selkirk *et al.* (1990).

Megalospora sp.
Ashton and Gill (1965).

Menegazzia castanea P. James and D. Galloway, *N.Z. Jl. Bot.* 21: 194 (1983).
Selkirk *et al.* (1990).

Menegazzia sanguinascens (Räsänen) R. Sant., *Ark. Bot.* 30A: 28 (1942).
Filson (1981b); Dodge (1948) and Dodge and Rudolph (1955) as *M. circumsorediata* R. Sant.

Menegazzia subpertusa P. James and D. Galloway, *N.Z. Jl. Bot.* 21: 195 (1983).
Selkirk *et al.* (1990).

Mycoblastus campbellianus (Nyl.) Zahlbr., *Catal. lich. univ.* 4: 3 (1926).
Dodge (1948); Dodge (1970); Selkirk *et al.* (1990).

Neofuscelia glabrans (Nyl.) Essl., *Mycotaxon* 7: 50 (1978).
Selkirk *et al.* (1990).

Neofuscelia waiporiensis (Hillm.) Essl., *Mycotaxon* 7: 53 (1978). - *Parmelia waiporiensis* Hillm., *Feddes Repert.* 45: 173 (1938).
Esslinger (1977); Filson (1981b); Selkirk *et al.* (1990).

Ochrolechia parella (L.) Massal., *Ric. Lich. crost.* : 32 (1852). - *Lecanora parella* (L.) Ach., *Lichenogr. Univ.* : 370 (1810).
Scott (1883).

**Omphalodina macquariensis* Dodge, *Nova Hedwigia* 19: 448 (1970).
Dodge (1970); Selkirk *et al.* (1990).
Omphalodina is a genus in the Lecanoraceae (Hafellner 1984) and is currently regarded as a synonym of *Rhizoplaca*. The correct affinities of Dodge's taxon are unknown.

**Opegrapha macquariensis* Dodge, *Nova Hedwigia* 19: 439 (1970).
Dodge (1970); Selkirk *et al.* (1990).
Galloway (1985) synonymised this species with *Opegrapha diaphoriza* Nyl. from New Zealand, but it is unclear whether this decision is based on a comparison of type material, other herbarium specimens, or on published descriptions alone.

Pannaria sp.
Dodge (1948); Selkirk *et al.* (1990).

Parmelia cunninghamii Crombie, *J. Linn. Soc. Lond. Bot.* 15: 228 (1876).
-**Parmelia brownii* Dodge, *Nova Hedwigia* 19: 449 (1970).
Dodge (1970); Hale (1987); Seppelt (1980); Selkirk *et al.* (1990); Lowry *et al.* (1978).

**Parmelia lusitaniensis* R. Filson, *Muelleria* 4: 323 (1981).
Filson (1981b); Selkirk *et al.* (1990).
This species is referable to the genus *Hypotrachyna* (J. Elix, personal communication). Taxonomic relationships with other species of the genus recorded from the island have yet to be established.

Parmelia signifera Nyl., *Lich. Nov. Zel.* : 25 (1888).
Seppelt (1980); Filson (1981b); Hale (1987); Selkirk *et al.* (1990); Lowry *et al.* (1978).

Parmelia sulcata Taylor, *Fl. hibern.* 2: 145 (1836).
Filson (1981b); Selkirk *et al.* (1990).

Although *P. sulcata* is a very widespread species, occurring as far south as South Georgia (Lindsay 1973), it is possible that Filson's (1981b) records [also reported by Selkirk *et al.* (1990)] refer to *P. cunninghamii*. Filson (1981b) synonymised *P. brownii* Dodge with *P. sulcata*, whereas Hale (1987) regarded this taxon from Macquarie Island as a synonym of *P. cunninghamii*.

Parmelia tenuirima J.D. Hook and Taylor, *Hook. Lond. J. Bot.* 3: 645 (1844).
Dodge (1948); Dodge and Rudolph (1955).

Parmeliella neozelandica (Dodge) D. Galloway and P. James *Lichenologist* 16: 90 (1984).
-*Steinera neozelandica* Dodge, *Nova Hedwigia* 19: 461 (1970).
Dodge (1970); Selkirk *et al.* (1990).
This species is now considered to belong in the genus *Degelia* (P.M. Jørgensen and D. Galloway, in prep.).

Parmelina labrosa (Zahlbr.) Elix and Johnson, *Brunonia* 9: 160 (1986). - *Parmelia labrosa* (Zahlbr.) Hale, *J. Jap. Bot.* 43: 325 (1968).
Filson (1981b); Selkirk *et al.* (1990).

Peltigera horizontalis (Hudson) Baumg., *Fl. Lips.* : 562 (1790).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

**Peltigera lairdii* Dodge and Rudolph, *Ann. Mo. Bot. Gard.* 42: 138 (1955).
Dodge and Rudolph (1955).

Peltigera polydactyla (Necker) Hoffm., *Descr. adumb. Lich.* 1: 19 (1790).
Ashton and Gill (1965).
This species name has been misapplied widely in the Southern Hemisphere to several other species. It is possible that the record refers to *P. dolichorhiza* (Nyl.) Nyl. or one of the other species already reported from Macquarie Island.

Peltigera rufescens (Weis.) Humb., *Fl. Friburg. Spec.*: 2 (1793).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

Peltularia crassa P.M. Jørg. and D. Galloway, *Lichenologist* 16: 189 (1984).
Jørgensen and Galloway (1984); Selkirk *et al.* (1990); Filson (1981a) as *Erioderma* sp.

Pertusaria dactylina (Ach.) Nyl., *Acta Soc. Sci. fenn.* 7: 447 (1863).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

Pertusaria tyloplaca Nyl., *C. r. hebd. Séanc. Acad. Sci. Paris* 83: 90 (1876).
Dodge (1948); Dodge and Rudolph (1955); Ashton and Gill (1965); Selkirk *et al.* (1990).

**Phlyctis macquariensis* Dodge, *Nova Hedwigia* 15: 292 (1968).
Dodge (1968); Selkirk *et al.* (1990).

**Phyllopyrenia macquariensis* Dodge, *Nova Hedwigia* 15: 286 (1968).
Dodge (1968); Selkirk *et al.* (1990).

Physcia adscendens (Fr.) Oliver, *Fl. anal. dichot. Lichens de l'Orne* : 79 (1882).
Selkirk *et al.* (1990).

**Physcia macquariensis* Dodge, *Nova Hedwigia* 15: 296 (1968).
Dodge (1968); Selkirk *et al.* (1990).

Placopsis perrugosa (Nyl.) Nyl., *Lich. Nov. Zel.* : 57 (1888).
Dodge and Rudolph (1955).

**Porina macquariensis* Dodge, *Nova Hedwigia* 15: 285 (1968).
Dodge (1968); Selkirk *et al.* (1990).
This taxon is referable to another genus, possibly in the Arthopyreniaceae (P.M. McCarthy *in litt.*).

Porpidia crustulata (Ach.) Hertel and Knoph, *Beih. Nova Hedwigia* 79: 435 (1984).
-Lecidea subglobulata Knight, *Trans. N. Z. Inst.* 8: 314 (1876).
Dodge and Rudolph (1955).

Porpidia stephanodes (Stirton) Hertel, *Beih. Nova Hedwigia* 79: 436 (1984).
Hertel (1987); Hertel (1989).

Pseudocyphellaria glabra (J.D. Hook. and Taylor) Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 79 (1948). - *Pseudocyphellaria delisea* (Fée) D. Galloway and P. James, *Lichenologist* 12: 297 (1980).
Dodge (1948); Ashton and Gill (1965); Dodge and Rudolph (1955); Seppelt (1980); Filson (1981b); Selkirk *et al.* (1990).

Psoroma hypnorum (Vahl) S.F. Gray, *Nat. Arr. Br. Pl.* 1: 445 (1821).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

**Psoroma macquariense* Dodge, *Nova Hedwigia* 19: 443 (1970).
Dodge (1970); Selkirk *et al.* (1990).

Psoromidium versicolor (J.D. Hook. and Taylor) D. Galloway, *N.Z. Jl. Bot.* 21: 196 (1983).
-Psoroma versicolor (J.D. Hook. and Taylor) Müll. Arg., *Flora* 71: 534 (1888).
Dodge (1948); Ashton and Gill (1965); Dodge and Rudolph (1955); Selkirk *et al.* (1990).

**Ramalina banzarensis* Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 217 (1948).
Dodge (1948); Selkirk et al. (1990).

Ramalina farinacea (L.) Ach., *Lichenogr. Univ.*: 606 (1810).
Selkirk *et al.* (1990).

Ramalina geniculata J.D. Hook. and Taylor, *Hook. Lond. J. Bot.* 3: 665 (1844).
Dodge and Rudolph (1955).
Stevens (1987) discusses briefly the possible synonymy of *R. geniculata* (described from New Zealand) and *R. inflata* (from Auckland Island). Pending further work, she maintained the two taxa as distinct, as did Galloway (1985). Material from Macquarie Island has been ascribed to either taxon by different authors and further study of the collections is needed to assess which taxa are actually represented.

Ramalina inflata (J.D. Hook. and Taylor) J.D. Hook. and Taylor, *Flora Antarctica* 1: 194 (1845).
-Fistulariella inflata (J.D. Hook. and Taylor) Bowler and Rundel, *Mycotaxon* 6: 195 (1977).
Dodge (1948); Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).
See also *R. geniculata* (above).

Ramalina unilateralis F. Wilson, *Victorian Nat.* 6: 69 (1889).
Selkirk *et al.* (1990); Stevens (1987).

Rhizocarpon sp.
Filson (1981a).

Rimelia reticulata (Taylor) Hale and Fletcher, *Bryologist* 93: 28 (1990).
-**Parmelia macquariensis* Dodge, *Nova Hedwigia* 19: 450 (1970).
Dodge (1970); Filson (1981b); Selkirk *et al.* (1990).
The synonymy is based on the unpublished observations of relevant specimens by J.A. Elix (pers. comm).

Rimularia psephota (Tuck.) Hertel and Rambold, *Mitt. Bot. Staatss. München* 23: 334 (1987).
Hertel (1987).

Rinodina peloleuca (Nyl.) Müll. Arg., *Nuova G. bot. ital.* 23: 125 (1891).
Dodge (1948); Selkirk *et al.* (1990).

**Siphulastrum cladinoides* Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 69 (1948).
Dodge (1948); Selkirk *et al.* (1990).

Siphulastrum mamillatum (J.D. Hook. and Taylor) D. Galloway, *N.Z. Jl. Bot.* 21: 197 (1983).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

**Siphulastrum usneoides* Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 69 (1948).
Dodge (1948); Selkirk *et al.* (1990).

Sphaerophorus globosus (Hudson) Vainio, *Result Voyage S.Y. Belgica, Bot.*: 35 (1903).
-*S. coralloides* Pers., *Neue Annal. der Botan.* 1: 23 (1794).
Lowry *et al*. (1978); Scott (1883); Seppelt (1980); Selkirk *et al.* (1990).

Sphaerophorus melanocarpus (Sw.) DC. in Lamy and DC., *Fl. Fr.* ed. 2, 6: 178 (1805).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

Sphaerophorus ramulifer Lamb, *Farlowia* 4: 426 (1955).
Lowry *et al.* (1978); Filson (1986); Seppelt (1980); Selkirk *et al.* (1990).

Sphaerophorus tener Laurer, *Linnaea* 2: 45 (1827). - *S. curtus* J.D. Hook. and Taylor, *Hook. Lond. J. Bot.* 3: 654 (1844).
Ashton and Gill (1965); Dodge (1970); Filson (1986); Selkirk *et al.* (1990).

**Squamarina haysomii* Dodge, *Nova Hedwigia* 19: 447 (1970).
Dodge (1970); Selkirk *et al.* (1990).

Stereocaulon argus J.D. Hook. and Taylor, *Hook. Lond. J. Bot.* 3: 653 (1844).
-*S. argodes* Nyl., *C. r. hebd. Séanc. Acad. Sci. Paris* 83: 87 (1876).
Dodge and Rudolph (1955); Lamb (1977); Galloway (1980); Seppelt (1980); Selkirk *et al.* (1990); Lowry *et al.* (1978).

Stereocaulon corticatulum Nyl., *Flora* 41: 117 (1859). - *S. leptaleum* Nyl., *Syn. Meth. Lich.* 2: 251 (1860).
Smith and Øvstedal (1991); Seppelt (1980); Selkirk *et al.* (1990); Lowry *et al.* (1978); Dodge (1948).

Stereocaulon ramulosum (Sw.) Räuschel, *Nomencl. Bot.*: 328 (1797).
-**S. macquariense* Dodge, *Nova Hedwigia* 15: 289 (1968). - *S. ramulosum* var. *pulvinare* (Dodge) Lamb, *Journ. Hattori Bot Lab.* 43: 283 (1977). - *S. pulvinare* Dodge, *B.A.N.Z.A.R.E. Repts* ser. B, 7: 139 (1948). - *S. submollescens* Nyl., *C. r. hebd.*

Séanc. Acad. Sci. Paris 83: 88 (1876). - *S. ramulosum* var. *submollescens* (Nyl.) Lamb, *Journ. Hattori Bot. Lab.* 43: 285 (1977).

Scott (1883); Dodge (1948); Dodge and Rudolph (1955); Dodge (1968); Lamb (1977); Seppelt (1980); Lowry *et al.* (1978); Smith and Øvstedal (1991); Selkirk *et al.* (1990).

Stereocaulon ramulosum is a cosmopolitan, highly variable species and many infraspecific taxa have been described to accommodate its extreme morphological variants (see Lamb 1977). The most recent relevant regional treatment (Galloway 1980) recognises only one variable taxon in the Australasian region.

Sticta martinii D. Galloway, *N.Z. Jl. Bot.* 21: 198 (1983).
Selkirk *et al.* (1990).

Tephromela atra (Huds.) Hafellner, *Lich. Neotrop.*, fasc. VII: 297 (1983).
Hertel (1987).

**Thamnolecania macquariensis* Dodge and Rudolph, *Ann. Mo. Bot. Gard.* 42: 141 (1955).
Dodge and Rudolph (1955).

Thamnolia vermicularis (Sw.) Ach. ex Schaerer, *Enum. lich. eur.*: 243 (1850).
Lowry *et al.* (1978); Seppelt (1980); Selkirk *et al.* (1990).

Thelenella mawsonii (Dodge) Mayrh. and McCarthy, *Muelleria* 7: 337 (1991).
Mayrhofer and McCarthy (1991).

Thelidea sp.
Dodge (1948); Selkirk *et al.* (1990).

Thelidium praevalescens (Nyl.) Zahlbr., *Deutsche Sudpolar Exp. 1901-1903* 8: 51 (1906).
McCarthy (1991b)

Trapelia coarctata (Turn.) Choisy, *Bull. Soc. Sci. nat. Maroc.* 12: 160 (1932).
-*Lecidea coarctata* (Turn.) Nyl., *Act. Soc. Linn. Bordeaux* 21: 358 (1857).
Scott (1883).

Turgidosculum complicatulum (Nyl.) J. Kohlmeyer and E. Kohlmeyer, *Marine Mycology: The Higher Fungi:* 361 (1979). - *Mastodia tessellata auct.* - **M. macquariensis* Dodge, *Nova Hedwigia* 19: 439 (1970).

Dodge (1948) as *Mastodia* sp.; Dodge (1970); Lowry *et al* .(1978); Seppelt (1980); Seppelt (1984); Selkirk *et al.* (1990).

Although the type material of Dodge's taxon, *M. macquariensis*, has not been seen, it seems certain that this name is synonymous with *Turgidosculum complicatulum.* Minor variations in anatomical characteristics have led to an unfortunate proliferation of species named by Dodge. Of relevance is a comment by Dodge (1948) under *Mastodia borealis* (Reed) Dodge that "...perhaps this species should be treated as a variety of *M. complicatula* (Nyl.) Dodge as the only differences in the published descriptions seem to lie in the smaller dimensions of asci and ascospores..."

Usnea antarctica Du Rietz, *Svensk. bot. Tidskr.* 20: 93 (1926). - *Neuropogon antarcticus* (Du Rietz) Lamb, *J. Linn. Soc. Bot.* 52: 210 (1939).

Walker (1985); Seppelt (1980); Lowry *et al.* (1978); Selkirk *et al.* (1990).

Records of *Usnea laxissima* Dodge by Filson (1981), Lowry *et al.* (1978), Seppelt (1980) and Selkirk *et al.*(1990) are also referable to *U. antarctica* (Walker 1985), although the actual name *U. laxissima* is a synonym of *U. sphacelata* R. Br., a species not present on Macquarie Island according to Walker (1985).

Usnea arida Motyka, *Lich. Gen. Usnea Stud. Monogr.* 2: 492 (1937).
Selkirk *et al.*(1990).

**Usnea arida* var. *muscicola* Dodge, *B.A.N.Z.A.R.E. Repts* ser B, 7: 207 (1948).
Dodge (1948); Dodge and Rudolph (1955).

Usnea articulata Hoffm., *Deutsch. Flora:* 133 (1796). - *U. contexta* Motyka, *Lich. Gen. Usnea Stud. Monogr.* 2: 436 (1937).
Dodge (1948); Dodge and Rudolph (1955); Ashton and Gill (1965); Seppelt (1980); Lowry *et al.* (1978); Selkirk *et al.* (1990).

Usnea torulosa (Müll. Arg.) Zahlbr., *Catal. lich. univers.* 6: 594 (1930).
- *U. glomerata* Motyka, *Lich. Gen. Usnea Stud. Monogr.* 2: 315 (1937).
Dodge (1948); Dodge and Rudolph (1955); Seppelt (1980); Lowry *et al.* (1978); Selkirk *et al.* (1990).

Usnea xanthopoga Nyl., *C. r. hebd. Séanc. Acad. Sci. Paris* 83: 89 (1876).
Dodge (1948); Selkirk *et al.* (1990).

**Verrucaria bubalina* McCarthy, *Muelleria* 7: 344 (1991).
McCarthy (1991b).

Verrucaria durietzii Lamb, *Lilloa* 14: 205 (1948).
Selkirk *et al.* (1990); McCarthy (1991b).

Verrucaria maura Wahlenb. in Ach., *Meth. Lich.*: 19 (1803).
McCarthy (1991b).

Verrucaria subdiscreta McCarthy, *Muelleria* 7: 327 (1991).
McCarthy (1991a); McCarthy (1991b).

Verrucaria tessellatula Nyl. in Crombie, *J. Bot., Lond.* 13: 335 (1875).
McCarthy (1991b).

**Xanthoparmelia phillipsiana* (R. Filson) Elix and Johnston, *Bull. Br. Mus. nat. Hist. (Bot.)* 15: 307 (1986). - **Parmelia phillipsiana* R. Filson, *Muelleria* 4: 324 (1981).
Filson (1981b); Elix *et al.* (1986); Selkirk *et al.* (1990).

Xanthoria elegans (Link) Th. Fr., *Lich. arctoi:* 69 (1860).
Seppelt (1980); Lowry *et al.* (1978); Selkirk *et al.* (1990).

Xanthoria parietina (L.) Th. Fr., *Lich. arctoi*: 67 (1860). - *Parmelia parietina* (L.) Ach., *Meth. Lich.*: 213 (1803).
Scott (1883).

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