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ADDITIONS TO THE LICHEN FLORA OF TASMANIA II

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ABSTRACT

New lichen records for Tasmania from recent collections (31), collections of W.A. Weymouth (39) and publications (31) are made. The total number of lichen species in Tasmania is estimated to be 460. Numerical comparisons with other areas are made and Victoria is shown to have the greatest floral affinity with Tasmania.

INTRODUCTION

The lichen flora of Tasmania has previously been extended (Bratt and Cashin 1975) by 35 taxa from that published by Wetmore (1963) as 521 taxa. The present work gives a further extension of the Tasmanian records from three sources viz. -

(a) 31 taxa collected by the present authors, details of which are given in Table 1 .

(b) 39 taxa collected by W.A. Weymouth in the period 1891 - 1910 which are housed at the Herbarium of the University of Tasmania. Details of taxa, other than those already mentioned by Wetmore are listed in Table 2.

(c) 31 taxa recorded in recent literature or publications overlooked by Wetmore the details of which are set out in Table 3 .

Although Wetmore lists 521 taxa the present authors have estimated that by taking synonyms, misidentification, and trivial indistinguishable forms into account there are 324 valid taxa in the list. Hence it is presently estimated there are 460 taxa validly recorded in Tasmania, a number revisable downwards as nomenclatural problems are examined and upwards as a large number of crustose collections are identified. Numerical comparisons of floras via species density (Wetmore 1967) and Sörenson coefficients (Sheard 1962) have been made and are listed in Table 4 .

The numerical comparisons are crude and are made cruder by difficulties in nomenclature and the poor recording in some areas. It is expected that comparisons between Tasmania and other Australian States will be improved when unpublished work by various Australian authors becomes available.

Some interesting points emerge from the data of Table 4 and these are summarised below.

(a) For regions with areas of a similar magnitude (e.g. Tasmania, Victoria, New Zealand and Tenessee) the species density is also of similar magnitude. Since the N.Z. lichen flora is reasonably well established it is suggested that the closeness of the species density values for New Zealand and Tasmania indicates that a large proportion of the Tasmanian species have been recorded. The low species density values for regions such as Queensland which has been fairly well investigated (Shirley 1888, 1889) may be due to the relatively small climatic diversity of such a large region.

(b) The Sörenson coefficients show as expected that the closest geographical areas, Victoria and New South Wales have the closest floral affinities with Tasmania. The rather strong resemblance between Tasmanian and New Zealand floras is also apparent.

(c) The rather high value of the Sörenson coefficient for Tasmania and Tennessee

probably illustrates that in preliminary compilations of floras there are a large number of ubiquitous lichen species.
(d) The relatively high Sörenson coefficients for Victoria and Queensland compared with other Australian States may not result from climatological relationships but may reflect the extensive work in these States and Tasmania by Wilson (1892) and Shirley (1888, 1889) leading to marked increases in the number of species in common.

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TABLE 1

NEW LICHEN RECORDS FOR TASMANIA (RECENT COLLECTIONS)

Lichen	No. of Separate Collections	Altitude Range metres	Substrate	Typical Habitat	Typical Collection Locality (Division of State in Brackets)
Acarospora schleicheri (Ach.) Mass.	5	30-460	sandstone, dolerite, granite	exposed rock outcrops coastal & inland	Spring Bay (E)
Arthonia cinnabarina (D.C.) Wallr.	1	600	*Melaleuca* sp.	*Melaleuca* groves	Lemonthyme (N.W.)
Aspicilia alpina (Sommerf.) Arn.	3	760-1250	dolerite, quartzite	exposed mountain ridges	Mt. Snowy (S)
Buellia pulchella Tuckerm.	11	760-1280	dolerite & moss	crevices in mountain boulders	Mt. Wellington (S)
Cladonia bacillaris (Ach.) Nyl.	5	400-1070	doleritic soil	mountain moorland	Moors nr. Great Lake (C)
Cladonia didyma (Fee') Vain.	1	60	button grass soil	button grass plains	Picton Plains (S.W.)
Cladonia ecmocyna (Ach.) Nyl.	1	1520	doleritic soil	exposed mountain outcrops	Mt. Ossa (C)
Cladonia subdigitata Vain.	31	60-1520	soil and rotting logs	sheltered forests & open moorlands	Mt. Mawson (C)
Coccotrema curcubitula Müll. Arg.	24	60-1280	soil and rotting logs	mountain boulders lowland moors	Cradle Plateau (N.W.)
Ephebe fruticosa Henssen	18	120-1200	dolerite	mountain boulders or rocks in streams	Devil's Gullet (N.W.)
Lecanora badia (Hoffm.) Ach.	1	900	quartzite	mountain boulders	Mt. Arrowsmith (W)
Lecanora blanda Nyl.	12	60-1040	dead wood and rocks	rocks and logs in light timber	Mt. Faulkner (S)
Lecanora cenisea Ach.	9	2- 180	dolerite, sandstone limestone, soil	maritime rocks	Spring Beach (E)
Lecidea dicksonii (J.F. Gmel.) Ach.	5	460-1520	dolerite	mountain boulders	Ben Lomond (N.E.)
Lecidea friesii Ach. in Libjelbl.	9	460-1220	burnt and dead *Eucalyptus* logs	burnt areas on mountain sides	Sth. Wellington Gap (S)
Menegazzia aeneofusca (Müll. Arg.) Sant.	20	460-1340	dolerite, granite quartzite	mountain boulders	Mt. Marion (S)
Menegazzia globulifera Sant.	11	670-1220	*Nothofagus*, *Richea*, *Telopea* Sp.	*Nothofagus* forests	Mt. Rufus (C)
Neuropogon ciliatus v. *capillaris* Galloway	4	1040-1220	dolerite	rocky outcrops on mountain ridges.	Lake Augusta (C)

TABLE 1

(Continued)

NEW LICHEN RECORDS FOR TASMANIA (RECENT COLLECTIONS)

Lichen	No. of Separate Collections	Altitude Range metres	Substrate	Typical Habitat	Typical Collection Locality (Division of State in Brackets)
Parmelia cheelii Gyel.	12	80-1220	granite, quartzite sandstone, dolerite	open mountain slopes	Mt. Amos (E)
Parmelia dichotoma Müll. Arg.	9	3- 550	granite, sandstone dolerite	dry sclerophyll areas	Mt. Amos (E)
Parmelia furcata Müll. Arg.	9	3- 600	granite, sandstone dolerite	dry sclerophyll areas	Lake Leake (C)
Parmelia scabrosa Tayl.	15	3-1160	dolerite, basalt sandstone, granite	open forests	Table Mt. (C)
Parmelia subcaperata Kremp.	15	6- 600	dolerite, sandstone granite	rocks in light *Eucalyptus* forest	Grass Tree Hill (S)
Parmelia taractica Tayl.	14	15- 460	mudstone, sandstone dolerite, granite soil	rocks in light *Eucalyptus* forest	East Risdon (S)
Placopsis trachyderma v. clavifera (M. Lamb.) James	4	300- 600	mine spill	recently exposed rock	Mt. Bischoff (N.W.)
Pseudocyphellaria amphisticta (Knight)	9	300-1040	*Melaleuca* and *Nothofaqus* sp.	damp sheltered forests	Mt. Picton (S.W.)
Pseudocyphellaria australiensis H. Magn.	66	6- 900	dolerite, sandstone granite, quartzite	rocks in light *Eucalyptus* forest	Waterfall Bay (S)
Pseudocyphellaria intricata (Del.) Vain.	5	180- 900	*Acacia* and *Nothofagus* Sp.	damp sheltered forest	Western Bluff (N.W.)
Psoroma contextum Stirt.	21	300-1160	*Melaleuca* Sp. dead wood	damp sheltered	Wedge River (S.W.)
Psoroma paleaceum (Fr.) Nyl.	19	460-1220	soil and dead wood	mountain moors and light forests	Lake Dobson (C)
Siphula fragilis (Hook. *et* Tayl.) Murray in ed.	29	800-1620	doleritic soil, moss cushion plants	mountain moors	Cradle Plateau (C)

Notes on Table 1. - Divisions of State are - E = East; C = Central; S = South; N.W. = North West; S.W. = South West; W = West.

TABLE 2

NEW TASMANIAN LICHEN RECORDS FROM WEYMOUTH COLLECTIONS

Lichen	Collection No. (1)	Determination by	Collection Locality
Arthonia complanata Feé	723	2	Wellard Ck, Tasman Pen.
Arthonia propinqua Nyl.	730	"	Wellard Ck, Tasman Pen.
Arthonia radiata (Pers.) Ach.	643	"	"Carnarvon", Tasman Pen.
Arthopyrenia gemellipara (Kn. Müll. Arg.	834	3	Kermandie, nr. Geeveston
Arthothelium infuscatum Müll. Arg.	967	"	Strickland Ave, nr. Hobart
Arthothelium interveniens (Nyl.) Zahlbr.	968	"	Strickland Ave, nr. Hobart
Bacidia atrogrisea (De. apud Hepp.) Korb.	853	"	Strickland Ave, nr. Hobart
Bacidia buchani (Kn.) Hellb.	886	2	McRobies Gulley, nr. Hobart
Bacidia millegrana (Tayl.) Zahlbr.	286	"	Millhouse's Falls,Huon Rd,nr.Hobt.
Blastenia endochromoides (Nyl.) Müll. Arg.	106	"	St.Crispin's Well,Mt. Wellington
Catillaria melaclinea (Nyl.) Zahlbr.	286(C)	"	Millhouse's Falls,Huon Rd.nr.Hobt.
Graphina platycarpa Zahlbr.	606	"	Wellard Ck, Tasman Pen.
Graphis scripta Ach.	908	3	Catamaran
Lecanora atra (Huds.) Ach.	162	2	Longley
Lecanora cancriformis (Hoffm.) Vain.	309	"	Guy Fawke's Rivulet, nr. Hobart
Lecanora glaucoflavens Müll. Arg.	264	"	"Springfield", nr. Johnny's Ck.
Lecidea contigua (Hoffm.) Fries	340	"	Brisbane St., Hobart
Lecidea melancheima Tuck.	D.	"	Hobart Rivulet, Hobart
Lecidea leptoloma Müll. Arg.	729	"	Wellard Ck, Tasman Pen.
Lecidea pruinosula Müll. Arg.	674	"	Watchorn's Hill, nr. Hobart
Leptogium burgessii (Linn. apud Mum.) Mont. apud Webb	960	3	St. Patrick's Head
Leptogium molaccunum Vain.	957	"	Recherche Bay
Opegrapha atra Pers.	H.	?	"Carnarvon", Tasman Pen.
Opegrapha varia Pers.	764	3	"Carnarvon", Tasman Pen.
Opegrapha vulgata (Ach.) Ach.	685	"	"Carnarvon", Tasman Pen.
Parmelia concolor Sprgl.	70	"	Hobart
Parmelia prolixa v. subprolixa (Kremp.) Zahlbr.	784	4	Sugar Loaf Hill, nr. Lindisfarne
Parmentaria pyrenastroides (Kn.) Müll. Arg.	934	3	St. Mary's Pass
Pertusaria alpina Hepp. apud Ahles	953	"	Lenah Valley
Pertusaria cupularis Kn.	831	"	nr. Geeveston
Pertusaria laevis Kn.	945	"	Huon Valley

TABLE 2

(Continued)

NEW TASMANIAN LICHEN RECORDS FROM WEYMOUTH COLLECTIONS

Lichen	Collection No. (1)	Determination by	Collection Locality
Pertusaria multipunctata (Turn.) Nyl.	928	3	Blue Tier
Pertusaria nitidula Müll. Arg.	862	"	Strickland Ave, nr. Hobart
Phlyctella sordida (Kn.) Müll. Arg.	969	"	Strickland Ave, nr. Hobart
Phlyctella wilsonii Müll. Arg.	169	2	Guy Fawke's Rivulet, nr. Hobart
Pyrenula mamillana (Ach.) Trevis	707	"	Newmans Ck. Tasman Pen.
Pyrenula nitida f.elaeodes (Leight.) A.L. Sm.	708	3	Strickland Ave, nr. Hobart
Ramalina pollinaria v. rupestris Flk. apud Schaer.	897	3	Ramsgate
Thelotrema decorticans Müll. Arg.	725	2	Wellard Ck. Tasman Pen.

Notes on Table 2. (1) Collection numbers and letters used by W.A. Weymouth

Identifications by (2) F.R.M. Wilson

(3) R. Paulson

(4) A. Jatta

TABLE 3

NEW TASMANIAN LICHEN RECORDS FROM PUBLICATIONS

Lichen	Reference
Agyrophora subglabra (Nyl.) Llano	Blackman et al.1974
Anzia wilsonii Raes.	Bratt et al. 1976
Candellariella vitellina (Nyl.) A.L. Sm.	Cribb 1954[2]
Catillaria rimosa (Müll. Arg.) Zahlbr.	Cribb 1954[2]
Cetraria scutata (Wulf.) Poetsch	Weber 1975
Cladia fuliginosa R. Filson.	Filson 1970
Cladia sullivanii (Müll. Arg.) W. Martin	Martin 1965(b)
Cladonia "delicatula"[1]	Sutton 1928[3]
Cladonia "leptophylla"[1]	Sutton 1928[3]
Collema coccophorum Tuck.	Degelius 1974
Collema crispum (Huds.) Wigg	Degelius 1974
Collema durietzii Degel.	Degelius 1974
Collema glaucophthalmum v. glaucophtalmum Degel.	Degelius 1974
Collema laeve v senecionis (F. Wils.) Degel	Degelius 1974
Collema subconveniens Nyl.	Degelius 1974
Collema subflaccidum Degel.	Degelius 1974
Gymnoderma melacarpum Yoshimura	Yoshimura 1973
Lichina tasmanica Henssen.	Henssen 1969
Ochrolechia parella (L.) Mass.	Cribb 1954
Parmelia erumpens Kurok.	Kurokawa 1969
Parmelia notata Kurok.	Kurokawa et al. 1971
Ramalina geniculata v. compacta Müll. Arg.	Weber 1971
Ramalodium succulentum Nyl. Ex. Cromb.	Weber 1975
Rhizocarpon geographicum (L.) D.C.	Sutton 1928
Teloschistes spinosus (Hook. f. et Tayl.) J. Murray.	Filson 1969
Teloschistes spinosus f. subteres Filson.	Filson 1969

TABLE 3
(Continued)

NEW TASMANIAN LICHEN RECORDS FROM PUBLICATIONS

Lichen	Reference
Umbilicaria polyphylla (L.) Baumg.	Blackman et al 1974
Usnea capillacea Motyka	Weber 1969 & 1975
Usnea flexilis Stirt.	Weber 1969
Verrucaria microsporoides Nyl.	Cribb 1954
Xanthoria ectanea (Ach.) Raes ex Filson.	Filson 1969

Notes on Table 3. (1) These epithets have not been traced to date

(2) Identification by P. Bibby

(3) Identifications probably by L. Rodway

TABLE 4

NUMERICAL COMPARISON OF FLORAS

Region	Lat. Range	Long. Range	Total Species	Reference	Area ha x 10^6	Species Density (1)	No. Common Species (2)	Sörenson Coefficient (3)
Tasmania	41°-44°S	145°-148°E	460	Present work	6.8	67.8	460	100
Victoria	34°-39°S	141°-150°E	647	Weber & Wetmore 1972	22.8	28.4	182	32.88
New South Wales (incl. A.C.T.)	29°-34°S	141°-154°E	373	Weber & Wetmore 1972	80.4	4.6	104	24.96
Queensland	11°-34°S	138°-154°E	1010	Weber & Wetmore 1972	173.7	5.8	122	16.59
Western Australia	14°-35°S	113°-129°E	124	Weber & Wetmore 1972	252.8	0.5	48	16.44
South Aust. (incl. N.T.)	12°-38°S	129°-141°E	51	Weber & Wetmore 1972	234.1	0.2	28	10.96
Australian Mainland	11°-39°S	113°-154°E	1915	Weber & Wetmore 1972	763.5	2.5	278	23.41
New Zealand (both islands)	35°-47°S	167°-179°E	1296	Martin, 1965, 1966, 1968	26.9	48.2	210	23.92
Iles Kerguelen	48.5°-49.5°S	69°-70.5°E	118	Dodge 1948	0.7	181.5	6	2.08
Black Hills	43°-45°N	103°-105°W	404	Wetmore 1967	1.3	313.2	55	12.73
Tennessee	35°-36°N	82°- 90°W	463	Skorepa 1972	10.9	42.6	90	19.5

1. Species Density = number of species/10^6 hectare

2. No. of species in common with those in Tasmania

3. Sörenson Coefficient = $\frac{200 \times \text{number of species in common}}{\text{sp. in Area A + sp. in Area B}}$