

## A CONTRIBUTION TO AN INVENTORY OF LICHENS FROM SOUTH SISTER, NORTHEASTERN TASMANIA

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(with five plates and one appendix)

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A lichen survey at South Sister, northeastern Tasmania, has yielded 234 taxa. The following 16 are recorded from Tasmania for the first time: *Acarospora veronensis* A. Massal., *Arthothelium macounii* (G. Merr.) W.J. Noble, *Austrolecia antarctica* Hertel, *Bacidia wellingtonii* (Stirt.) D.J. Galloway, *Buellia griseovirens* (Turner & Borrer ex Sm.) Almb., *Coccocarpia pellita* (Ach.) Müll. Arg., *Hafellia subcrassata* Pusswald, *H. xanthonica* Elix, *Hypocenomyce scalaris* (Ach.) M. Choisy, *Illosporium carneum* Fr., *Lecidella pruinosula* (Müll. Arg.) Kantvilas & Elix comb. nov., *Lecidella sublapicida* (Knight) Hertel, *Lepraria eburnea* J.R. Laundon, *Micarea denigrata* (Fr.) Hedl., *Mycoblastus campbellianus* (Nyl.) Zahlbr. and *Mycoporum antecellens* (Nyl.) R.C. Harris. The survey represents the first of its kind for any dolerite peak in Tasmania, and serves as a benchmark for future studies. Aspects of the distribution and ecology of the flora, the occurrence of rare, threatened or otherwise unusual species, and significant range extensions are discussed. The effect of metal-rich run-off from galvanised structures is identified as a potential threat to the flora values of the site.

**Key Words:** biodiversity, dolerite, flora, *Lecidella*, lichenised fungi.

### INTRODUCTION

South Sister (41°32'S 148°10'E) is a small dolerite pinnacle about 800 m a.s.l. in northeast Tasmania, overlooking the settlement of St Marys. Located within State Forest, the peak is a popular vantage point for bushwalkers, rock-climbers and naturalists, as well as being the site for several telecommunications installations. A proposal (in 2005) to harvest timber from a coupe on its southern slopes generated intense interest in the area, as well as considerable opposition from members of the local community. The campaign against logging led to the compilation of extensive data on various aspects of the area, including its natural history. The history of the campaign and much of this information is available at <http://www.southsister.org>.

As part of the study of the natural history of South Sister, a survey of lichens was conducted, revealing a diverse and interesting flora, rich in seldom-encountered species. In view of the paucity of sound inventory data for lichens for much of Tasmania, we present our results here to serve as a benchmark for future lichen surveys of Tasmania's peaks, and as a permanent record of the many significant species recorded.

### METHODS

Fieldwork was conducted by GK and JAE on 10–11 November 2004, and by GK and SJJ on 31 August 2006 and 22 November 2007. The proposed logging coupe was examined although most effort was concentrated on the pinnacle and its immediate environs. Work was conducted within a broad band from the car park at 750 m a.s.l., along the walking track to the pinnacle, on the scree slopes of the pinnacle itself, and along the small rock-climbers' tracks on the slopes that lead to numerous rocky tors. A preliminary overview identified the following major lichen habitats: wet scrub, rock scree, large cliffs and tors, eucalypt woodland and

relict rainforest (pls 1–2). The subsequent lichen survey was structured around this classification.

Collections were made of all species for identification or confirmation of identification in the laboratory. Identification involved morphological examination, anatomical examination using high-power microscopy, chemical analyses using standard methods (Orange *et al.* 2001) and comparison with reliably identified herbarium reference specimens. Vouchers of all species recorded are housed at the Tasmanian Herbarium (HO), with some additional material at the Centre for Plant Biodiversity Research in Canberra (CANB). For taxa not identified to species rank, a reference specimen number (e.g., GK 300/06) is provided in parentheses in appendix 1.

Species nomenclature follows McCarthy (2008). Nomenclature of ascus types follows Hafellner (1984).

### RESULTS

#### Overview of the vegetation

The upper slopes of South Sister carry open forest dominated by *Eucalyptus delegatensis* R. Baker. The eucalypts become shorter and more widely dispersed towards the pinnacle and the taller understorey shrubs and trees become increasingly prominent, and dominate where the eucalypts are absent. The most common of these species are *Bedfordia salicina* (Labill.) DC., *Tasmannia lanceolata* (Poiret) A.C. Smith, *Novelaea ligustrina* Vent. and *Pittosporum bicolor* Hook. Several smaller shrubs, including *Cyathodes glauca* Labill., *Oxylobium ellipticum* (Labill.) R. Br. and *Olearia stellulata* (Labill.) DC., are also common. Ferns, mainly *Polystichum proliferum* (R. Br.) C. Presl and *Microsorium pustulatum* (Forst.f.) Copel. on the pinnacle itself, occur below the small trees and shrubs, or in sheltered spots among the rocks. Grasses are locally common in open areas. One very small patch of relict rainforest, dominated by a few trees of *Atherosperma*

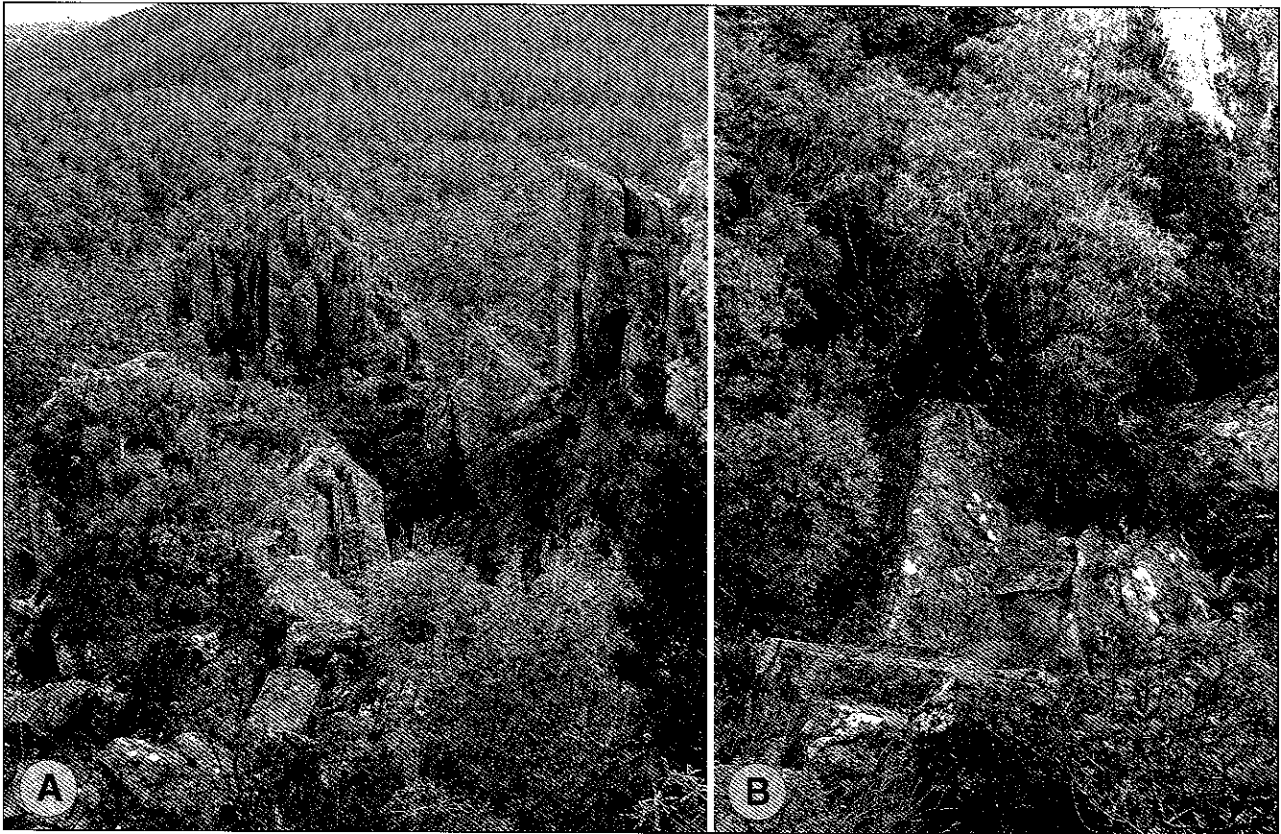


PLATE 1

*Vegetation of South Sister. (A) Dolerite tors emergent from wet scrub, with open eucalypt forest on the lower slopes (background). (B) Dense wet scrub on a scree of large dolerite boulders.*

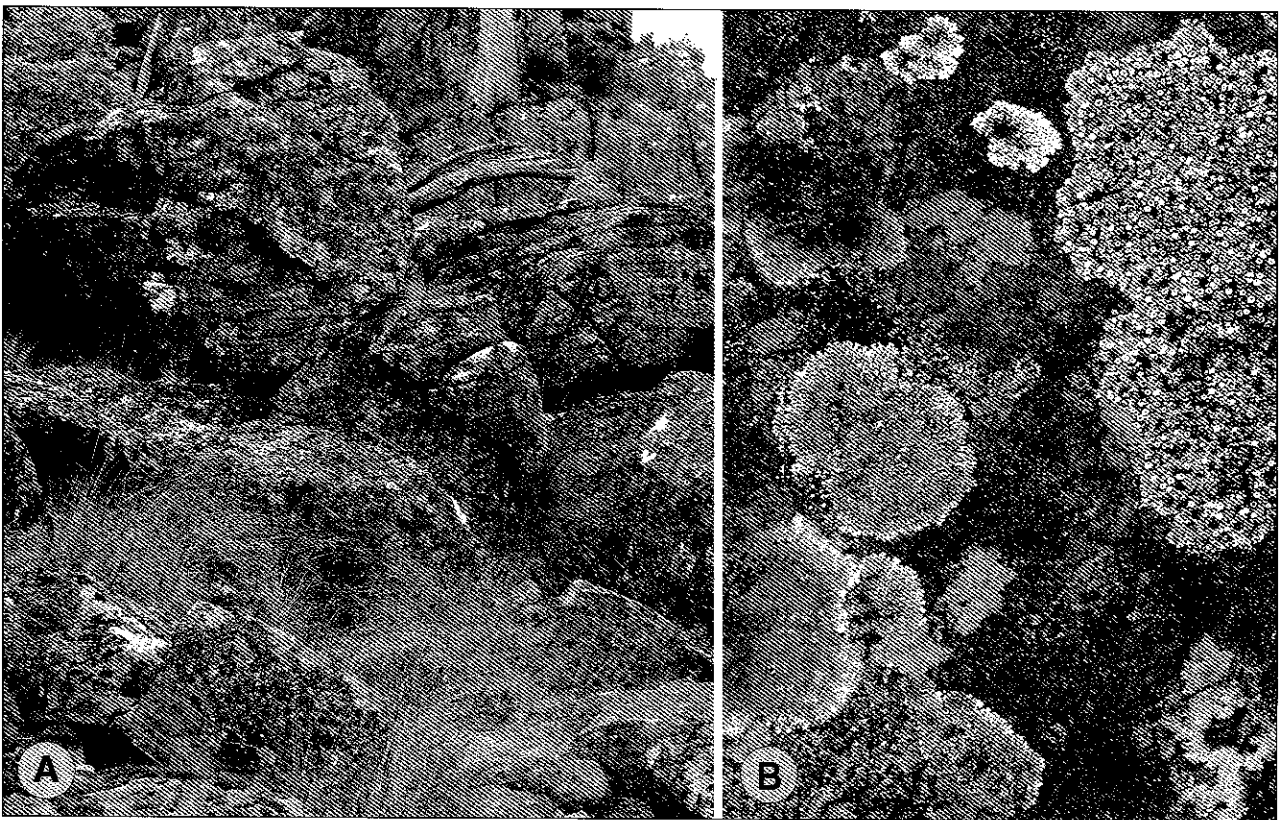


PLATE 2

*(A) Dolerite boulders, colonised by a highly diverse lichen flora. (B) Detail of lichen mosaics on dolerite; the dominant species shown here belong to the genus Placopsis.*

*moschatum* Labill., occurs in a relatively fire-protected area on the south side of the pinnacle.

Everywhere on and around the pinnacle the land surface is rocky, limiting the extent and density of the woody plant layer and ensuring plenty of light reaches the ground surface. In more sheltered situations, below overhanging rocks or under a sparse vegetation canopy, the surfaces of rocks, soil and living stems carry a rich flora of mosses, liverworts and lichens, creating an image of lush abundance. Even in exposed sites, on the brightly lit, sloping or vertical rock surfaces where conditions are unfavourable for many bryophytes, the diversity and abundance of lichens remain high.

### Lichen inventory

In all, 234 lichen taxa were recorded (appendix 1). This figure includes 16 species that are recorded for Tasmania for the first time; diagnoses, notes and lists of reference specimens for these are given below. Two species new to science were discovered during the survey and have been published elsewhere: *Punctelia transtasmanica* Elix & Kantvilas, also known from Flinders Island and New Zealand (Elix & Kantvilas 2005), and *Trapelia lilacea* Kantvilas & Elix, widespread on dolerite in the Tasmanian highlands (Kantvilas & Elix 2007); the latter has since been recorded in New Zealand (D.J. Galloway, pers. comm.). Additional new species are likely to be present amongst the, as yet, not fully identified material, but await future study.

### New records

#### *Acarospora veronensis* A. Massal., *Ric. Auton.* *Lich. Crost.*: 29 (1852)

Thallus areolate, reddish brown; areoles plane to convex to somewhat bullate, dispersed or contiguous, 0.5–1 mm wide, rounded to ± rhomboid; apothecia 1–3 per areole, 0.1–0.5 mm wide, rather sunken and crater-like, with a concave, reddish or blackish brown disc; hymenium 60–100 µm thick; ascospores very numerous in the ascus, 3–5 × 1.5–2 µm. Containing no substances detectable by t.l.c. See Purvis & James (1922) for more details.

At South Sister, this species occurred very abundantly on dolerite rock plates where zinc-rich run-off from galvanised sheds and fences has cleared the rock surface of almost all "naturally-occurring" lichens. In this unusual habitat, it is associated with *Candelariella vitellina* and *Lecanora polytropa*. Elsewhere in Tasmania, it has been found in nutrient-enriched sites (from human urine) such as occur around shelter huts in bushwalking areas.

Specimens examined: TASMANIA: South Sister near summit, 41°32'S 148°10'E, 800 m alt., 31.viii.2006, *G. Kantvilas 339/06* (HO); Rodway Range at Tarn Shelf hut, 42°41'S 146°34'E, 1250 m alt., 28.x.2007, *G. Kantvilas 324/07* (HO).

#### *Arthothelium macounii* (G. Merr.) W.J. Noble, *Mycotaxon* 28: 91 (1987)

Thallus immersed to absent; fruiting bodies arthonioid, 0.2–0.5 mm wide, roundish, convex, basally constricted; hymenium orange-yellow with numerous reddish brown granules, K+ vivid magenta; ascospores broadly ellipsoid, at first hyaline, soon becoming grey-brown, 29–32 × 11–15 µm, macrocephalic, with a prominent terminal, undivided cell and a muriform "tail" having 3–5 transverse and 0–2 longitudinal

septa. See Coppins & James (1979) as *Arthothelium ilicinum* var. *reagens* (= *A. macounii*) for further details.

The Tasmanian specimens are from sheltered underhangs on dolerite in wet scrub. The discovery in Tasmania of this uncommon species, previously known only from western Scotland and British Columbia, represents a remarkable range extension. Superficially the Tasmanian specimens differ from typical material by their saxicolous habitat (elsewhere this species is an epiphyte) and the rather convex, almost subglobose fruiting bodies (normally these are flat and adnate); however, the latter feature may be interpreted as a function of the habitat. Anatomically, the similarity of the Tasmanian specimens to northern hemisphere material is unequivocal. There is another, as yet undescribed *Arthothelium* species in Tasmania that also displays an identical K+ magenta reaction in the fruiting bodies, but this differs by having larger ascospores (38–43 × 18–20 µm) that are ellipsoid and muriform throughout.

Specimens examined: TASMANIA: South Sister, 41°32'S 148°10'E, 750 m alt., 10.xi.2004, *G. Kantvilas 431/04* & *J.A. Elix* (HO); Hartz Mountains, iii.1963, *P.W. James* (HO).

#### *Austrolecia antarctica* Hertel, *Beih. Nova Hedwigia* 79: 453 (1984)

Thallus crustose, bullate-areolate, white-grey to cream-white; areoles to 3 mm wide, mostly with a minutely roughened surface; apothecia lecideine, black, irregularly to 1.5 mm wide, broadly adnate, sometimes nestled deeply amongst the areoles; epihymenium green, unchanged in K; hypothecium purple-brown, unchanged in K; asci approximating the *Catillaria*-type (*sensu* Hafellner 1984), with a well-developed amyloid tholus lacking discernible internal structures; paraphyses very robust, 3–4 µm wide, simple or occasionally bifurcate or anastomosing, with apices unpigmented and not markedly expanded; ascospores hyaline, ellipsoid to ± oblong, simple to 1-septate, 11–19 × 4–7 µm. Containing atranorin (±), norstictic and connorstictic acids; microscope preparations of the thallus produce red, needle-like crystals with the addition of KOH. See Rambold (1989) for further details.

This saxicolous species is also known from the Antarctic Peninsula, South Shetland Islands and mainland Australia (Rambold 1989, Øvstedal & Lewis-Smith 2001). With its conspicuous thallus of bullate areoles, it is easily detected in the field, although there are some, as yet unidentified, superficially similar species growing in identical habitats in the Tasmanian flora. Anatomically it is best identified by its *Catillaria*-type asci and 0–1-septate ascospores. It grows on exposed boulders and is likely to be more widespread in alpine areas but rarely collected.

Specimens examined: TASMANIA: South Sister, 41°32'S 148°10'E, 780 m alt., 22.xi.2007, *G. Kantvilas 357/07* (HO); The Knuckle, 1400 m alt., 8.iv.1996, *G. Kantvilas 4/96* (HO).

#### *Bacidia wellingtonii* (Stirt.) D.J. Galloway, *New Zealand J. Bot.* 21: 192 (1983)

Thallus crustose, effuse, whitish or greenish grey; apothecia basally constricted, superficial, mostly to 0.6 mm wide, with a black, plane disc and pale red-brown margin; epihymenium green, ± unchanged in K, N+ vivid lilac; ascospores very tightly coiled in the ascus, filiform, tapering towards one end, 50–60 × 3–4 µm, up to 15-septate. See Galloway (1985) for full description.

The genus *Bacidia* is well represented in Tasmania but most species remain unidentified pending a detailed study of

the group. *Bacidia wellingtonii* is characterised by the green epithecium and the tightly coiled ascospores. In Tasmania, it occurs on smooth bark in shade in wet forest. It is also known from New Zealand.

Specimens examined: TASMANIA: South Sister, 41°32'S 148°10'E, 750 m alt., 31.viii.2006, *G. Kantvilas 313/06* (HO); Simons Road near Ben Nevis, 830 m alt., 7.xii.1981, *G. Kantvilas 1084/81* (BM, HO).

*Buellia griseovirens* (Turner & Borrer ex Sm.)  
Almb., *Bot. Not.* 1952: 247 (1952)

Thallus crustose, greyish white, sorediate; soralia discrete and roundish, to 0.7 mm wide, sometimes becoming confluent, concolorous with the thallus or pale to dark greenish grey; apothecia black, lecideine, to 1 mm wide, with disc mostly plane and margin persistent; hymenium lacking oil droplets; asci 8-spored; ascospores grey-brown to dark brown, ellipsoid, 18–26 × 10–12 µm, submuriform, with 1–3 transverse and 0–1 longitudinal septa. Containing atranorin and norstictic acid; thallus P+ orange, K+ yellow red. See Orange *et al.* (1992) and Nordin (2000) for further descriptions.

This is a cosmopolitan temperate species that is relatively common in Tasmania in open woodlands where it occurs on bark or wood. Understorey trees such as *Banksia marginata* Cav. are a particularly favoured host. When fertile, the brown, submuriform ascospores are diagnostic. Sterile specimens can be determined by their chemical composition. Superficially similar, sorediate species include *Trapeliopsis flexuosa* (which is C+ red) and *Catillochroma pulverea* (which is K–, P+ red).

Specimens examined: TASMANIA: E of Lake Leake, 42°01'S 147°55'E, 400 m alt., 24.iv.1996, *G. Kantvilas s.n.* (HO); South Sister, 41°32'S 148°10'E, 750 m alt., 10.xi.2004, *G. Kantvilas 287/04 & J.A. Elix* (HO); W of New Norfolk along Glenora Road, 42°47'S 147°02'E, 90 m alt., 19.ii.1997, *G. Kantvilas 54/97* (HO); 1 km N of Lake Ironstone, 41°42'S 146°28'E, 1190 m alt., 20.xi.2005, *G. Kantvilas 335/05* (HO); 2 km N of Stonehurst Sugarloaf, 42°31'S 147°48'E, 350 m alt., 17.vi.2003, *G. Kantvilas 348/03* (HO).

*Coccocarpia pellita* (Ach.) Müll. Arg. *emend.* R.  
Sant., *Symb. Bot. Upsal.* 12(1): 420 (1952)

Thallus foliose, lead-grey, with lobes flabellate, broadly rounded, 1–5 mm wide; isidia flattened to squamulose, laminal and marginal; underside pale brown, with dense, pale to dark brown rhizines; apothecia lecideine, black, plane to undulate, to 3 mm wide. See Arvidsson (1983) for full description.

This is a widespread tropical to subtropical species. In Tasmania, its most southerly occurrence, it occurs on rocks in sclerophyll forest. The morphology of the isidia readily distinguishes this species from two other, superficially similar members of the genus present in Tasmania; that is, the common *C. palmicola* (with terete isidia) and the rare *C. erythroxyli* (lacking isidia).

Specimens examined: TASMANIA: Mt Cameron, 40°59'S 147°56'E, 350 m alt., 22.iv.1997, *G. Kantvilas 126/97 & J.A. Elix* (HO); Little Beach, 41°38'S 148°19'E, 10 m alt., 19.ii.2001, *G. Kantvilas 312/01* (HO); South Sister, 41°32'S 148°10'E, 800 m alt., 10.xi.2004, *G. Kantvilas 308/04 & J.A. Elix* (HO); St Patricks Head, 41°35'S 148°14'E, 7.vii.1973, *G.C. Bratt 73/660* (HO); c. 1 km NE of Coles Bay, 42°07'S 148°17'E, 100–110 m alt., 23.iv.2007, *G. Kantvilas 182/07* (HO).

*Hafellia subcrassata* Pusswald in Marbach,  
*Biblioth. Lich.* 74: 284 (2000)

Thallus crustose, greyish white; apothecia black, lecideine, mostly to 1 mm wide, with disc plane to somewhat convex and margin persistent; epithecium brown, unchanged in KOH; hymenium interspersed with oil droplets; asci 8-spored; ascospores brown to grey-brown, ellipsoid, 1-septate, 28–36 × 12–14 µm, with relatively weak apical, subapical and septal thickenings and a ± minutely roughened outer wall. Containing norstictic acid with traces of 4, 5-dichlorolichexanthone; microscope preparations of the thallus often develop red, needle-like crystals with the addition of KOH. See Marbach (2000) for further details.

The genus *Hafellia* is well represented but rather poorly known in Tasmania, and much of the literature (e.g., Marbach 2000, Etayo & Marbach 2003) makes scant reference to Tasmanian collections. The Tasmanian specimen is epiphytic on the bark of *Cyathodes glauca*. It grew together with the related *H. babiliana* (Malme) Sheard, which is far more common and widespread in Tasmania, and has an identical thallus chemistry. That species differs from *H. subcrassata* chiefly by the presence of "sedifolia-grey" pigment (see Meyer & Printzen 2000) in the epithecium; this pigment reacts C+, K+ violet (Sheard 1992, Marbach 2000).

Specimen examined: TASMANIA: South Sister, 41°32'S 148°10'E, 750 m alt., 10.xi.2004, *G. Kantvilas 367/04 & J.A. Elix* (HO).

*Hafellia xanthonica* Elix, *Australas. Lichenol.* 59: 36 (2006)

Thallus crustose, pale grey to yellowish grey; apothecia black, lecideine, mostly to 1.5 mm wide, with disc plane to somewhat convex and margin persistent; epithecium brown, unchanged in KOH; hymenium interspersed with oil droplets; asci 8-spored, but sometimes with up to six ascospores aborted; ascospores brown to grey-brown, ellipsoid, 1-septate, 14–30(–35) × 6–13(–15) µm, with apical and subapical thickenings. Containing 4, 5-dichlorolichexanthone. See Elix (2006) for further details.

Specimen examined: TASMANIA: southern slope of South Sister, 41°32'S 148°10'E, 640 m alt., 10.xi.2004, *J.A. Elix 28694 & G. Kantvilas* (CANB).

*Hypocenomyce scalaris* (Ach.) M. Choisy, *Bull. Mens. Soc. Linn. Soc. Bot. Lyon* 22: 103 (1953)

Thallus squamulose; squamules to 1.5 mm wide, pale beige to yellowish, discrete, scattered or imbricate, with margins incised or crenulate, usually somewhat upturned, sorediate; apothecia mostly to c. 1 mm wide, brown to black, sometimes slightly bluish pruinose, with plane or undulate disc and persistent, flexuose margin. Containing lecanoric acid; squamules C+ red. See Timdal (1984) for full description.

This species is widespread in temperate areas in both hemispheres, and has been recorded throughout the Australian mainland (McCarthy 2008). Like other members of the genus, it is typically found on eucalypt wood or bark. The presence of soredia distinguishes it from the closely related, very common *H. australis* that occurs in identical habitats.

Specimens examined: TASMANIA: southern slope of South Sister, 41°32'S 148°10'E, 640 m alt., 10.xi.2004, *G. Kantvilas 381/04 & J.A. Elix* (HO); E of Lake Leake, 42°01'S 147°55'E, 400 m alt., 24.iv.1996, *G. Kantvilas s.n.* (HO); W of New Norfolk along Glenora Road, 42°47'S 147°02'E, 90 m alt., 19.ii.1997, *G. Kantvilas 49/97* (HO);

The Hazards near Wineglass Bay Lookout, 42°09'S 148°17'E, 180 m alt., 19.vii.2005, *G. Kantvilas* 180/05 (HO); W of Tahune Bridge, 43°06'S 146°41'E, 120 m alt., 2.v.2006, *G. Kantvilas* 212/06 (HO).

*Illosporium carneum* Fr., *Syst. Mycol.* 3: 259 (1822)

This is a lichenicolous fungus growing on the thallus of *Peltigera* species, recognised by its bright orange conidiomata to c. 0.5 mm wide. See Hawksworth (1981) for further data.

Specimen examined: TASMANIA: South Sister, 41°32'S 148°10'E, 640 m alt., 10.xi.2004, *G. Kantvilas* 390/04 & *J.A. Elix* (CANB, GZU, HO).

*Lecidella pruinosula* (Müll. Arg.) Kantvilas & Elix comb. nov.

Basionym: *Lecidea pruinosula* Müll. Arg., *Flora* 65: 486 (1882).

Type: Australia: New South Wales, corticola ad Twofold Bay, *T. White* (holotype: G!).

= *Lecidea cerarufa* (Shirley) Zahlbr., *Cat. Lich. Univ.* 3: 746 (1925); *Biatora cerarufa* Shirley, *Pap. & Proc. Roy. Soc. Tasmania* 1893: 217 (1894). Type: Australia: Tasmania, on bark, Bower Track, Mt Wellington, *W.A. Weymouth* 141 (holotype: BRI!).

Thallus crustose, creamish white, thin, smooth or somewhat scurfy, often rather patchy, diffuse; apothecia lecideine, 0.3–1 mm diam., with disc pale pink, orange or reddish brown, usually whitish grey-pruinose, at least when young, typically persistently plane and only rarely becoming convex with age; margin persistent, typically elevated above the level of the disc, with the rim pale orange to brown and the sides usually much paler, in section composed of radiating hyphae interspersed with crystals that fluoresce in polarised light but do not dissolve in KOH; hypothecium (30–)80–110 µm thick, colourless to pale yellowish; hymenium 80–110 µm thick, colourless, with a red-brown epithelial layer composed of granules that do not dissolve in KOH; asci 8-spored, 55–70 × 14–24 µm, of the *Lecanora*-type but with the masse axiale ± barrel-shaped; paraphyses 1.5–2 µm thick, wavy, simple to very sparingly branched, rather coherent in water, not capitate; ascospores hyaline, broadly ellipsoid, ovate to sometimes almost subglobose, (12–)14–18(–20) × (8–)10–14 µm. Chemistry: pannarin (± minor), dechloropannarin (± minor), norpannarin (± trace), 3-*O*-methylthiophanic acid (± major), 2,5,7-trichloro-3-*O*-methylnorlichexanthone (minor or major), 5,7-dichloro-3-*O*-methylnorlichexanthone (± minor), thiophanic acid (± minor), isoarthothelin (± minor), 3-*O*-methylthiophanic acid (± trace). See also Kantvilas (1988).

This is a common and widespread species in wet eucalypt forest, rainforest and wet scrub where it occurs on trunks and twigs with smooth bark, including the dead canopy twigs of eucalypts. The concentration of chemical substances in this lichen is rather variable. For example, the occurrence of pannarin, which is often a diagnostic substance easily detected by spot tests (it reacts P+ orange), is very patchy, and is often best detected in the whitish pruina of young apothecia. Although relatively infrequently collected, this species is likely to be widespread in eastern Australia.

Selected specimens examined: TASMANIA: South Sister near summit, 41°32'S 148°10'E, 800 m alt., 10.xi.2004, *J.A. Elix* 28633 & *G. Kantvilas* (CANB, HO); Pelion Plains, 41°50'S 146°03'E, 850 m alt., 13.iii.1992, *G. Kantvilas* 169/92 (HO); Anthony Road, 41°49'S 145°38'E, 480 m alt., 30.iv.1993, *G. Kantvilas* 221/93 (HO); Yarrington Tier,

42°32'S 147°18'E, 620 m alt., 28.x.1987, *G. Kantvilas* 143/87 (HO); West of Tahune Bridge in the Warra SST, 43°06'S 146°41'E, 180 m alt., 23.v.2006, *G. Kantvilas* 245/06 (HO); Dee Lagoon, 42°16'S 146°36'E, 690 m alt., 15.xi.1964, *G.C. Bratt* 1801 & *J.A. Cashin* (HO); Florentine Road, 42°28'S 146°30'E, 240 m alt., 10.xi.2005, *G. Kantvilas* 310/05 (HO); Lonnavaile, 42°51'S 146°47'E, 70 m alt., 28.vi.1964, *G.C. Bratt* 1359b & *J.A. Cashin* (HO); Sandspit River, 42°42'S 147°50'E, 180 m alt., 30.x.1988, *A. Moscal* 16846 (HO); Kangaroo (Lenah) Valley, 9.xi.1899, *W.A. Weymouth* 952 (HO). Warchorns Hill, Huon Road, 1600 ft alt., 25.i.1899, *W.A. Weymouth* 674 (HO).

*Lecidella sublapicida* (Knight) Hertel, *Mitt. Bot. Staatssamml. München* 199: 444–445 (1983)

Thallus areolate, whitish to cream-white to olive-grey; apothecia scattered, basally constricted, black, mostly to 0.5 mm wide; hymenium colourless, with epihymenium greenish, unchanged in K, N+ red; hypothecium orange-brown, intensifying orange in K and N; ascospores ellipsoid, 8.5–15 × 5–8 µm. Containing vicanicin and several xanthenes; thallus C+ orange. See Rambold (1989) and Knoph (1990) for further descriptions.

Although the genus *Lecidella* remains poorly known in Tasmania, this widespread Australasian species is well-characterised by the presence of vicanicin. It occurs on a variety of rock types, mostly in lowland, open sites in heathland and open eucalypt forest.

Specimens examined: TASMANIA: South Sister, lower slope near car park, 41°32'S 148°10'E, 750 m alt., 10.xi.2004, *G. Kantvilas* 419/04 & *J.A. Elix* (HO); near Temma, 41°13'S 144°42'E, 21.xi.2001, *G. Kantvilas* 1200/01 (HO); Huon Road, 42°54'S 147°17'E, 240 m alt., 30.xii.2000, *G. Kantvilas* 570/00 (HO); Couta Rocks, 41°10'S 144°41'E, 9.xii.1993, *G. Kantvilas* 304/93 & *J.A. Elix* (HO).

*Lepraria eburnea* J.R. Laundon, *Lichenologist* 24: 331 (1992)

Thallus leprose, whitish, greenish to somewhat yellowish, lacking marginal lobes. Containing alectorialic acid, atranorin (±) and barbatolic acid (±); thallus K-, KC+ fleeting reddish, C-, P+ yellow to orange. See Laundon (1992) for further data.

This is a widespread, pan-temperate species that occurs in shaded underhangs, usually over bryophytes or directly on bark or rock. It is characterised unequivocally by its chemistry.

Specimens examined: TASMANIA: southern slope of South Sister, 41°32'S 148°10'E, 640 m alt., 31.viii.2006, *G. Kantvilas* 322/06 & 325/06 (HO); Weindorfers Forest, 41°38'S 145°56'E, 820 m alt., 28.iii.1988, *G. Kantvilas* 61/88 (BM, HO).

*Micarea denigrata* (Fr.) Hedl., *Bih. K. Svenska Vetensk.-Akad. Handl.* III, 18(3): 78, 89 (1892)

Thallus areolate or, more commonly, endoxylic and inapparent; apothecia convex to subglobose, to 0.5 mm wide, immarginate, dark grey to black, C+ red in section; upper part of hymenium with an olivaceous or greyish, C+ violet, K+ violet pigment; ascospores ellipsoid, sometimes curved, (0–)1-septate, 9–16 × 3–4 µm. See Coppins (1983) for full description.

This species is widespread in the temperate northern hemisphere (Coppins 1992a) and occurs on wood, including

milled timber. The genus *Micarea* is very diverse in Tasmania, and contains many undescribed or unrecorded species. Spore morphology and the combination of reactions in C and K distinguish this species from other superficially similar Tasmanian taxa.

Specimens examined: TASMANIA: southern slope of South Sister, 41°32'S 148°10'E, 640 m alt., 10.xi.2004, *G. Kantvilas 389/04* & J.A. Elix (E, HO); Daley Property, at the "camp ground", 42°21'S 147°48'E, 210 m alt., 24.x.1004, *G. Kantvilas 248/04* (E, HO).

*Mycoblastus campbellianus* (Nyl.) Zahlbr., *Catal. Lich. Univ.* 4: 3 (1926)

Thallus crustose, whitish, cream or greyish, sorediate; soralia white, 0.2–0.5(–1.2) mm wide, initially discrete, speck-like or sometimes tuberculate, soon becoming diffuse or confluent and spreading unevenly across the thallus; apothecia 0.3–0.5(–0.7) mm diam., scattered, ± superficial, basally constricted, strongly convex and top-shaped when well developed, glossy black to blue-black, rarely dark reddish brown or piebald, immarginate; in section with bright cinereorufa-green pigment (*sensu* Meyer & Printzen 2000), ± unchanged in KOH, N+ crimson, in the excipulum and upper part of hymenium; asci 2(–4)-spored; ascospores ovate to broadly ellipsoid, 27–51(–56) × 17–29(–32) µm, 0(–1)-septate. Containing perlatolic acid, virensic acid, hyperperlatolic acid and protocetraric acid (±); medulla and soralia K-, C-, KC-, P+ orange-red, UV+ white. See Galloway (1985) for full description.

The genus *Mycoblastus* in the southern hemisphere is currently under revision and will be treated in detail elsewhere (Kantvilas, unpubl.). *Mycoblastus campbellianus* is a particularly distinctive species, characterised by the combination of a sorediate thallus containing virensic acid (P+ orange-red), and apothecia with blue-green, "cinereorufa-green" pigment. It is widespread in cool to cold parts of the southern hemisphere, including New Zealand, Tasmania, Campbell Island, Staten Island, Tierra del Fuego and southern Chile, usually as an epiphyte in wet scrub or forest.

Selected specimens examined: TASMANIA: South Sister, 41°32'S 148°10'E, 760 m alt., 22.xi.2007, *G. Kantvilas 369/07* (HO); Little Fisher River, 41°45'S 146°20'E, 880 m alt., *G. Kantvilas 437/84* & P.W. James (BM, HO); Lake Dobson, 42°41'S 146°35'E, 1030 m alt., 13.viii.1981, *G. Kantvilas 652/81* & P.W. James (BM, HO); Blue Peaks, 41°43'S 146°23'E, 1290 m alt., 20.xi.2006, *G. Kantvilas 416/06* (HO); Long Tarns, 41°47'S 146°21'E, 1270 m alt., 24.xi.2006, *G. Kantvilas 405/06* (HO).

*Mycoporum antecellens* (Nyl.) R.C. Harris, *More Florida Lichens*: 67 (1995)

Thallus crustose, thin, often whitish, UV-; perithecia abundant, black, 0.2–0.4 mm wide, unilocular, with wall brown, intensifying yellow-brown in KOH; ostiole central; asci 8-spored; pseudoparaphyses highly branched and anastomosing; ascospores relatively large, 27–40 × 8–14 µm, ellipsoid, 1(–3)-septate, hyaline but turning brownish with age. See Coppins (1992b) (as *Arthopyrenia*) for further data.

This species is widespread on smooth bark in the temperate woodlands of Europe and North America (Coppins 1992b) and has also been recorded from New Guinea (Aptroot *et al.* 1997). In Tasmania, it has been recorded from trees with smooth bark (*Nothofagus cunninghamii*, *Pittosporum bicolor*,

*Banksia marginata*, *Atherosperma moschatum* and *Tasmannia lanceolata*) in sclerophyll forest, wet scrub and rainforest. It may well be quite widespread but is small, inconspicuous and therefore easily overlooked.

Specimens examined: TASMANIA: Meetus Falls, 41°57'S 147°53'E, 510 m alt., 16.v.1989, *G. Kantvilas 188/89* (HO); E of Lake Leake, 42°01'S 147°55'E, 400 m alt., 24.iv.1996, *G. Kantvilas s.n.* (HO); Savage River Pipeline at 11.5 mile peg, 41°20'S, 145°16'E, 440 m alt., 9.xii.1993, *G. Kantvilas 287/93* & J.A. Elix (HO); South Sister, 41°32'S 148°10'E, 800 m alt., 10.xi.2004, *G. Kantvilas 395/04* & J.A. Elix (HO).

## DISCUSSION

### Diversity and flora values

The lichen floras of Tasmania's mountains have been sampled and studied in a cursory and opportunistic way, especially in the past 25 years, leading to the discovery and description of many species new to science, and the identification of many new records for Tasmania (for example, see various publications by the authors, cited by McCarthy (2008)). However, very few locations have been subjected to rigorous study and analysis. Exceptions include an account of the alpine flora of southwest Tasmania (Kantvilas 1995), and a survey of Mount Sprent, a Precambrian peak in southwest Tasmania, by Kantvilas & Jarman (1991). No inventory data exist for any dolerite peaks in Tasmania, nor for any area in northeast Tasmania, and thus the results presented here are very much a pioneering benchmark.

With 234 taxa, in comparison to 141 at Mount Sprent (Kantvilas & Jarman 1991) and 981 in the whole of Tasmania (McCarthy 2008), the diversity of lichens at South Sister is undeniably impressive. The significant numbers of new records for Tasmania also suggest the area is "special". However, these findings need to be considered against the backdrop of only limited information from elsewhere, that many of the new records are of highly cryptic taxa not easily detected without very thorough searching, or represent species that were already known to the authors from other sites but not formally recorded in the literature for various reasons. Nevertheless, these considerations should not detract from the fact the site supports several very unusual, uncommon and highly restricted lichens.

Noteworthy components of the lichen flora fall into two broad categories. Firstly, there are species that constitute significant range extensions of otherwise not uncommon species. These include *Sagenidium molle*, which is almost exclusively a species of closed rainforest and occurs mainly on old *Nothofagus* trees; its presence at South Sister, in sheltered rock crevices, is highly unusual. There are also three primarily alpine species present: *Arthroraphis citrinella* var. *citrinella*, *Ochrolechia androgyna* and *Pertusaria flavoexpansa*. Although these lichens are common in alpine areas of Tasmania, their occurrence at South Sister represents a considerable extension of range. Like *S. molle*, these species probably represent relicts from a time when the vegetation and microclimate were considerably moister and cooler.

The second category of noteworthy records comprises genuinely rare species. Three of these, *Coccocarpia erythroxyli*, *C. pellita* and *Xanthoparmelia canobolasensis*, were nominated for inclusion on the register of rare and threatened flora under the *Tasmanian Threatened Species Protection Act 1995*

and, although meeting all the criteria set down under the guidelines, were not listed (see <http://www.southsister.org>).

*Coccocarpia erythroxyli*: This species is widespread in tropical areas of the world (Arvidsson 1983) and Tasmania represents its southernmost geographical penetration. It is found mostly in remnant wet scrubby forest dominated by *Notelaea ligustrina*, usually surrounded by dry sclerophyll vegetation, and as such is typically at high risk from fire. At most sites, it is represented by only a few tiny, scattered thalli, sometimes confined to a single host tree. It is locally very abundant at South Sister (pl. 3).

*Coccocarpia pellita*: This species is widely distributed in tropical and subtropical regions of the world (Arvidsson 1983) and, like the preceding species, its discovery in Tasmania represents the most southerly occurrence of this species in the world. It grows on rocks in sclerophyll forests but is never common, being represented at best by a few isolated thalli.

*Lecanactis* sp.: This is almost certainly a new species, closely related to the common rainforest epiphyte, *L. abietina* (Ach.) Körber, but differing by its yellowish leprose thallus containing schizopeltic, lecanoric and porphyritic acids. It grows on rocks in sheltered crevices and underhangs, and has also been collected at Den Hill, southeastern Tasmania. It is clearly a very rare species, not treated in the revision of the genus for Tasmania by Kantvilas (2004).

*Pertusaria barbatica*: This is a very distinctive, epiphytic, isidiate, crustose lichen, known from only one other locality in Tasmania (in a remnant *Melaleuca ericifolia* swamp in the North-West). It also occurs on the southeastern Australian mainland (Archer 1997).

*Pertusaria subdactylina*: This bipolar species is known in Australasia only from Tasmania, where it has been recorded previously only twice: from Cape Barren Island and Mt Cameron (Kantvilas & Elix 2008). Both of these records are from granite; the South Sister collection is the first from living bark (of *Cyathodes glauca*).

*Punctelia transtasmanica*: This very uncommon species was not recorded during a statewide survey of the family (Kantvilas *et al.* 2002) and is known elsewhere only from Flinders Island (where it is locally common) and a single locality in New Zealand.

*Xanthoparmelia canobolasensis*: This species is very rare on the Australian mainland, being known only from the Orange area of New South Wales. It was the focus of a conservation study there (D. Eldridge, unpubl.) and has been listed under the *NSW Threatened Species Conservation Act 1995*. In Tasmania, it has also been recorded near Falmouth. Specific searches for further populations have not been successful.

## Threats

Threats to lichens in a Tasmanian context have been discussed by Brown *et al.* (1994) and Kantvilas (2000), highlighting habitat destruction (through clearing and other changes in land management) and fire as being of greatest importance in the natural environment. For non-vascular plants, fragmentation of continuous tracts of natural vegetation is also an important factor that has been widely recognised and quantified, particularly in Europe (Coppins & Coppins 2002). The broad-scale environment of South Sister, although natural, has been subjected to human activity and fire for a considerable period of time, and so can hardly be considered



PLATE 3

*Coccocarpia erythroxyli*, an epiphytic species locally abundant in wet scrub.

“virgin”. However, localised parts of the site, such as the rock scree, tors and pockets of wet scrub, where no useable forest products occur and where fire protection is greatest, are for all intents and purposes “pristine”. These are the microhabitats where most of the lichens of greatest scientific or conservation interest are to be found.

One noteworthy but previously undocumented threat in the natural Tasmanian landscape, and one that is dramatically evident at South Sister, is the impact of toxic metals leaching from galvanised structures. This effect was first brought to our attention by Tim Rudman (pers. comm.) who observed it at Devils Gullet (northern Tasmania). The impact on the lichen flora can be dramatic, not least at South Sister. At the smallest scale, such as under pipes and fences, the result can be the total elimination of all lichens (pl. 4). On a larger scale, such as around buildings, there is a wholesale replacement of the natural lichen associations, dominated by species of the Parmeliaceae and crustose lichens such as *Ramboldia petraeoides* and *Lecanora farinacea*, by associations generally connected with pollution and nutrient enrichment. Here the dominant species are *Acarospora veronensis* and *Lecanora polytropia*. Given the patchy occurrence of many of the more interesting and rarer lichen species, the impact of galvanised structures and the resultant metal pollution on the flora values of the site could be critical.

## Epilogue: the bushfire of December 2006

The South Sister area was burnt by a severe and extensive bushfire in early December 2006 (see <http://www.southsister.org/articles7/fire3.htm> for images and details). The study site was revisited in November 2007 to ascertain the impact of the fire on the lichen flora.

In general, fires affect the lichen flora by either causing loss or damage to lichen macrohabitat (e.g., vegetation

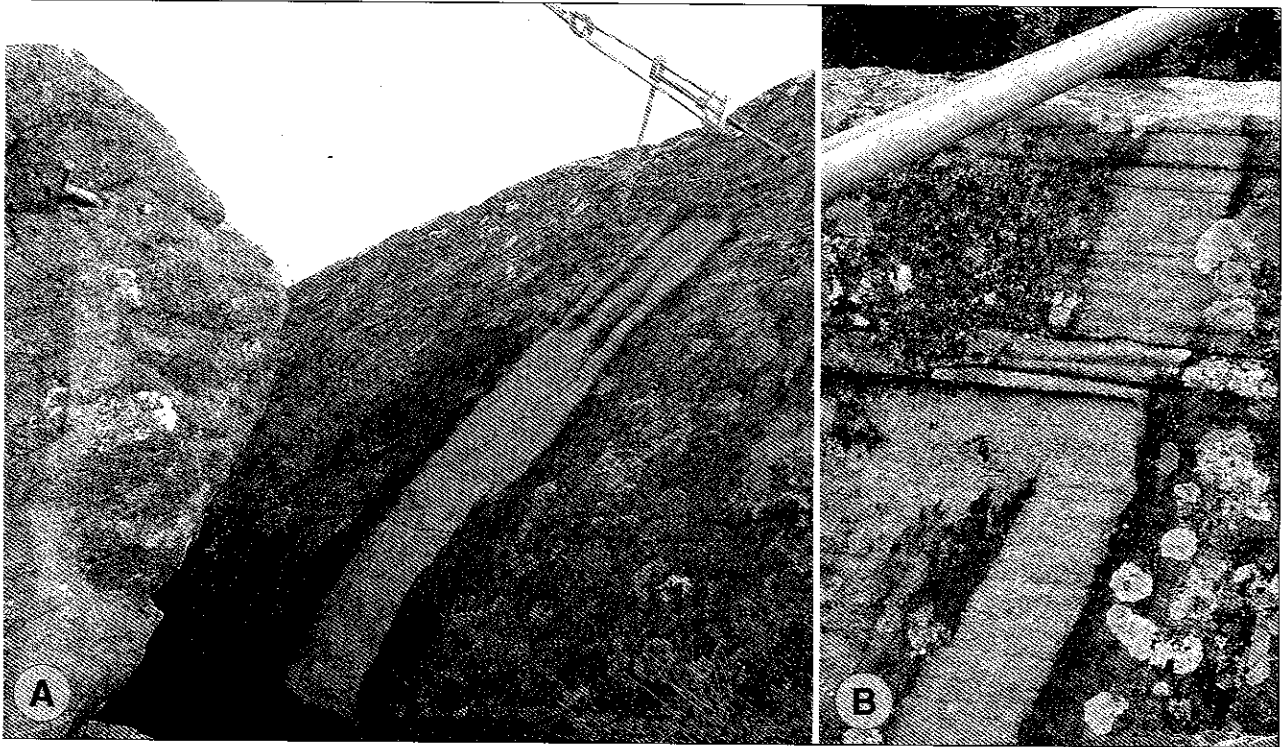


PLATE 4

*The impact of galvanised steel on lichens. (A) Band of lichen death in the drip zone and run-off beneath a cable (right) and even beneath a small bolt (left). (B) Detail of the band of lichen death beneath a galvanised pipe.*

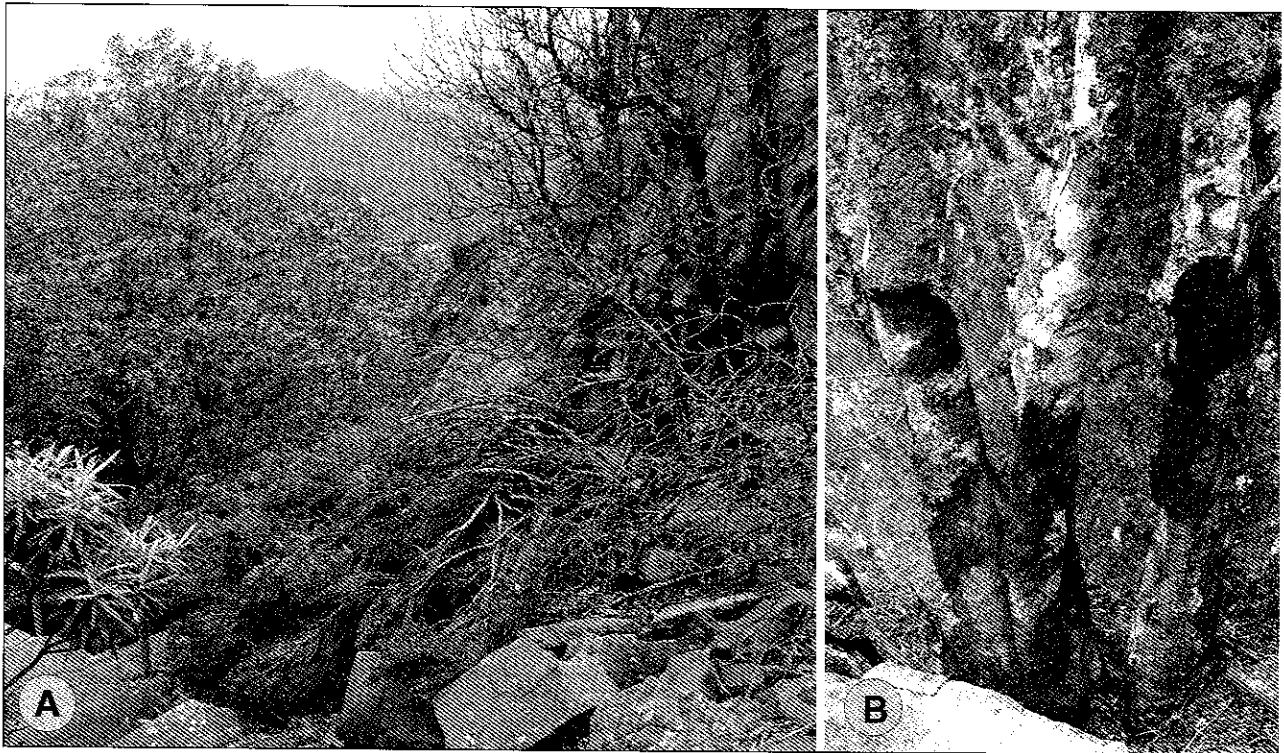


PLATE 5

*Effects of the 2006 bushfire. (A) Adjacent patches of burnt (right) and unburnt (left) scrub on rock scree. (B) Mosaic of burnt and unburnt epiphytic lichens and mosses on a single multi-stemmed tree. The intense black patches on the stems are charcoal residues.*



communities), by causing loss or damage to lichen substrates (e.g., particular trees and shrubs) or by direct incineration of the lichens themselves. The South Sister fire, at least in the environs of the pinnacle itself, appears to have been relatively patchy. The eucalypt forest on the lower slopes has been extensively burnt, but this vegetation probably supported the least number of lichens. Damage to the rock scree and tors has been minimal, and the flames seemingly "trickled" through the scrub patches, burning some and scorching others, but also leaving areas untouched (pl. 5). The long-term effect on this scrub, which supported a very significant proportion of the lichen flora, is that it will be even more fragmented than before, more prone to drying out, and therefore also more vulnerable to future fires. Some of the impacts on the lichens only become evident over a longer period of time. Our experience elsewhere indicates that following even a patchy fire, attrition of some lichen species continues as they gradually respond to increased exposure to light and dryness, to smoke or heat damage, or to damage to their host. However, given that extensive unburnt lichen habitat remains at South Sister, and that all the main habitat types are still well represented, it is highly likely that the composition of the lichen flora, as recorded before the fire, remains unaltered, and that the special flora values conveyed by the lichens are intact, albeit in a more fragmentary and vulnerable state.

Two of the rarest species, *Coccocarpia pellita* and *Xanthoparmelia canobolasensis*, were not located after the fire. These species had been recorded on the drier, more exposed northern slopes of the peak where the fire was most severe.

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## APPENDIX 1

Inventory of lichens from South Sister (numbers in parentheses refer to the unique collection number of a reference specimen in HO).

\* indicates a new record

+ indicates a lichenicolous fungus.

- Acarospora* sp. (GK 300/06)  
 \**A. veronensis* A. Massal.  
*Arthonia ilicina* Taylor  
*Arthothelium ampliatum* (C. Knight & Mitten) Müll. Arg.  
 \**A. macounii* (G. Merr.) W.J. Noble  
*Arthroraphis citrinella* (Ach.) Poelt var. *citrinella*  
 \**Austrolecia antarctica* Hertel  
*Bacidia* sp. (GK 377/04B)  
 \**B. wellingtonii* (Stirt.) D.J. Galloway  
*Baeomyces heteromorphus* Nyl. ex C. Bab. & Mitten  
*Belonia uncinata* P.M. McCarthy & Kantvilas  
*Buellia* sp. (GK 354/07)  
 \**B. griseovirens* (Turner & Borrer ex Sm.) Almb.  
*Bullatina microcarpa* (Vezda) Brusse  
*Bunodophoron insigne* (Laurer) Wedin  
*B. patagonicum* (C.W. Dodge) Wedin  
*Calicium adpersum* Pers. subsp. *australe* Tibell  
*C. tricolor* F. Wilson  
*Caloplaca* sp. (GK 301/06)  
*Candelariella vitellina* (Hoffm.) Müll. Arg.  
*Catillaria* sp. (GK 314/06)  
*C. tasmanica* Räsänen  
*Catillochroma pulvereae* (Borrer) Kalb  
*Chaenothecopsis savonica* (Räsänen) Tibell  
*Chiodecton colensoi* (A. Massal.) Müll. Arg.  
*C. montanum* Thor  
*Chrysothrix sulphurella* (Räsänen) Kantvilas & Elix  
*Cladia aggregata* (Sw.) Nyl.  
*C. inflata* (F. Wilson) D.J. Galloway  
*C. schizopora* (Nyl.) Nyl.  
*Cladonia chlorophaea* (Flörke ex Sommerf.) Spreng.  
*C. confusa* R. Sant.  
*C. corniculata* Ahti & Kashiw.  
*C. gracilis* (L.) Willd. subsp. *tenerrima* Ahti  
*C. cf. macilenta* Hoffm.  
*C. merochlorophaea* Asahina  
*C. ochrochlora* Flörke  
*C. pleurota* (Flörke) Schaer.  
*C. pyxidata* (L.) Hoffm.  
*C. ramulosa* (With.) J.R. Laundon  
*C. rigida* (Hook.f. & Taylor) Hampe var. *rigida*  
*C. sarmentosa* (Hook.f. & Taylor) C.W. Dodge  
*C. scabriuscula* (Delise) Nyl.  
*C. subsubulata* Nyl.  
*C. sulcata* A.W. Archer var. *wilsonii* (A.W. Archer) A.W. Archer  
*C. verticillata* (Hoffm.) Schaer.  
*Coccocarpia erythroxyli* (Spreng.) Swinscow & Krog  
 \**C. pellita* (Ach.) Müll. Arg.  
*Cocotrema cucurbitula* (Mont.) Müll. Arg.  
*C. porinopsis* (Nyl.) Imshaug ex Yoshimura  
*Coenogonium luteum* (Dicks.) Kalb & Lücking  
*Collema durietzii* Degel.  
*C. fasciculare* (L.) Weber ex F.H. Wigg. var. *microcarpum* (Müll. Arg.) Degel.  
*C. flaccidum* (Ach.) Ach.  
*C. glaucophthalmum* Nyl. var. *glaucophthalmum*  
*C. leucocarpum* Hook.f. & Taylor  
*C. quadriloculare* F. Wilson var. *tasmaniae* F. Wilson  
*C. subconveniens* Nyl.  
*Cresponea plurilocularis* (Nyl.) Egea & Torrente  
*Cystocoleus ebeneus* (Dillwyn) Thwaites  
*Degelia gayana* (Mont.) Arv. & D.J. Galloway  
*Dibaeis arcuata* (Stirt.) Kalb & Gierl  
*Dictyonema sericeum* (Sw.) Berk.  
*Diploschistes scruposus* (Schreber) Norman  
*Flavoparmelia haysomii* (C.W. Dodge) Hale

- Fuscidea australis* Kantvilas var. *australis*  
*F. australis* var. *montana* Kantvilas  
*F. lightfootii* (Sm.) Coppins & James  
*Hafellia bahiana* (Malme) Sheard  
*\*H. subcrassata* Pusswald  
*\*H. xanthonica* Elix  
*Hertelidea eucalypti* Kantvilas & Printzen  
*H. pseudobotryosa* R.C. Harris, Ladd & Printzen  
*Hypocenomyce australis* Timdal  
*H. foveata* Timdal  
*\*H. scalaris* (Ach.) M. Choisy  
*Hypogymnia lugubris* (Pers.) Krog  
*H. mundata* (Nyl.) Oxner ex Rass.  
*H. pulverata* (Nyl.) Elix  
*H. subphysodes* (Kremp.) Filson var. *subphysodes*  
*H. tasmanica* Elix  
*Hypotrachyna revoluta* (Flörke) Hale  
*H. sinuosa* (Sm.) Hale  
*?Icmadophila* sp. (GK 261/04)  
*\*+Illosporium carneum* Fr.  
*Imshaugia aleurites* (Ach.) S.F. Meyer  
*Lecanactis* sp. (GK 324/06)  
*Lecanora farinacea* Fée  
*L. lugubris* (C.W. Dodge) D.J. Galloway  
*L. polytropa* (Ehrh.) Rabenh.  
*Lecidella* sp. A (GK 283/04)  
*Lecidella* sp. B (GK 376/07)  
*\*L. pruinosa* (Müll. Arg.) Kantvilas & Elix  
*\*L. sublapicida* (Knight) Hertel  
*Leifidium tenerum* (Laurer) Wedin  
*Leioderma pycnophorum* Nyl.  
*Lepraria coriensis* (Hue) Sipman  
*\*L. eburnea* J.R. Laundon  
*L. lobificans* Nyl.  
*Leptogium tasmanicum* F. Wilson  
*L. victorianum* F. Wilson  
*Loxospora solenospora* (Müll. Arg.) Kantvilas  
*Maronea constans* (Nyl.) Hepp  
*Megalaria* sp. (GK 377/04A)  
*M. grossa* (Pers. ex Nyl.) Hafellner  
*Megaloblastenia marginiflexa* (Hook.f. & Taylor) Sipman  
*Melanelia subglabra* (Räsänen) Esslinger  
*Menegazzia aeneofusca* (Müll. Arg.) R. Sant.  
*M. confusa* P. James  
*M. myriotrema* (Müll. Arg.) P. James  
*M. nothofagi* (Zahlbr.) P. James & D.J. Galloway  
*M. pertransita* (Stirt.) R. Sant.  
*M. subpertusa* P. James & D.J. Galloway  
*Micarea* sp. A (GK 316/06)  
*Micarea* sp. B (GK 361/07)  
*\*M. denigrata* (Fr.) Hedl.  
*M. intersociella* (Stirt.) Coppins  
*M. micrococca* (Körb.) Gams ex Coppins  
*M. mutabilis* Coppins & Kantvilas  
*Mycoblastus* sp. A (GK 356/04)  
*Mycoblastus* sp. B (GK 334/06)  
*\*M. campbellianus* (Nyl.) Zahlbr.  
*\*Mycoporum antecellens* (Nyl.) R.C. Harris  
*Neophyllis melacarpa* (F. Wilson) F. Wilson  
*Nephroma australe* Richard  
*N. cellulsum* (Sm. ex Ach.) Ach.  
*N. rufum* (C. Bab.) P. James  
*Ochrolechia* sp. (GK 332/04)  
*O. androgyna* (Hoffm.) Arn.  
*Opegrapha* sp. (GK 394/04)  
*Opegrapha viridis* Pers. ex Ach.  
*Pannaria* sp. (GK 379/04)  
*P. elixii* P.M. Jørg. & D.J. Galloway  
*Pannaria farinosa* Elvebakk & J. Fritt. Rasm.  
*P. microphyllizans* (Nyl.) P.M. Jørg.  
*Pannoparmelia wilsonii* (Räsänen) D.J. Galloway  
*Paraporphidia leptocarpa* (C. Bab. & Mitt.) Rambold & Hertel  
*Parmelia cunninghamii* Crombie  
*P. protosignifera* Elix & J. Johnst.  
*P. protosulcata* Hale  
*P. signifera* Nyl.  
*P. tenuirima* Hook.f. & Taylor  
*Parmeliella nigrocincta* (Mont.) Müll. Arg.  
*P. thysanota* (Stirt.) Zahlbr.  
*Parmelina labrosa* (Zahlbr.) Elix & J. Johnst.  
*P. pseudorelicina* (Jatta) Kantvilas & Elix  
*Parmelinopsis afrorevoluta* (Krog & Swinscow) Elix & Hale  
*P. subfatiszens* (Kurok.) Elix & Hale  
*Parmotrema perlatum* (Huds.) M. Choisy  
*P. reticulatum* (Taylor) M. Choisy  
*Peltigera dolichorrhiza* (Nyl.) Nyl.  
*P. polydactyla* (Neck.) Hoffm.  
*Pertusaria barbatica* A.W. Archer & Elix  
*P. flavoexpansa* Kantvilas & Elix  
*P. lophocarpa* Körber  
*P. novaezealandiae* Szatala  
*P. pertractata* Stirt.  
*P. subdactylina* Nyl.  
*Phaeographis mucronata* (Stirt.) Zahlbr.  
*Phycitis subuncinata* Stirt.  
*Placopsis cribellans* (Nyl.) Räsänen  
*P. parellina* (Nyl.) I.M. Lamb  
*P. perrugosa* (Nyl.) Nyl.  
*Placynthiella icmalea* (Ach.) Coppins & P. James  
*Poeltiaria coromandelica* (Zahlbr.) Hertel & Rambold  
*Polychidium contortum* Henssen  
*Porina constrictospora* P.M. McCarthy & Kantvilas  
*P. decrescens* P.M. McCarthy & Kantvilas  
*Porpidia* s. lat. sp. (GK 417/04)  
*Pseudocyphellaria billardieri* (Delise) Räsänen  
*P. crocata* (L.) Vain.  
*P. gilva* (Ach.) Malme  
*P. glabra* (Hook.f. & Taylor) C.W. Dodge  
*P. multifida* (Nyl.) D.J. Galloway & P. James  
*P. neglecta* (Müll. Arg.) H. Magn.  
*P. rubella* (Hook.f. & Taylor) D.J. Galloway & P. James  
*Psoroma hypnorum* (Vahl) S.F. Gray  
*P. pholidotoides* (Nyl.) Trevis.  
*P. soccatum* R. Br. ex Cromb.  
*Psoromidium aleuroides* (Stirt.) D.J. Galloway  
*Punctelia borreri* (Sm.) Krog  
*P. subrudecta* (Nyl.) Krog  
*P. transtasmanica* Elix & Kantvilas  
*Pyrenula occulta* (C. Knight) Müll. Arg.  
*Racodium rupestre* Pers.  
*Ramboldia blastidiata* Kantvilas & Elix  
*R. brunneocarpa* Kantvilas & Elix  
*R. laeta* (Stirton) Kalb, Lumbsch & Elix  
*R. petraeoides* (Nyl.) Kantvilas & Elix  
*R. plicatula* (Müll. Arg.) Kantvilas & Elix  
*R. stuartii* (Hampe) Kantvilas & Elix  
*Rhizocarpon* sp. (GK 416/04)  
*R. geographicum* (L.) DC.

- Rinodina subcrustacea* (Müll. Arg.) Zahlbr.  
*R. thiomela* (Nyl.) Müll. Arg.  
*Sagenidium molle* Stirt.  
*Siphula fastigiata* (Nyl.) Nyl.  
*Stereocaulon corticatulum* Nyl.  
*S. ramulosum* (Sw.) Räsusch.  
*Sticta limbata* (Sm.) Ach.  
*Tasmodella variabilis* Kantvilas, Hafellner & Elix var.  
*variabilis*  
*Tephromela atra* (Huds.) Hafellner  
*T. sorediata* Kalb & Elix  
*Thelotrema lepadinum* (Ach.) Ach.  
*Thysanothecium scutellatum* (Fr.) D.J. Galloway  
*Topeliopsis* sp. (GK 422/04)  
*T. muscigena* (Stiz.) Kalb  
*Trapelia coarctata* (Sm.) M. Choisy  
*T. involuta* (Taylor) Hertel  
*T. lilacea* Kantvilas & Elix  
*Trapeliopsis colensoi* (C. Bab.) G. Schneid.  
*T. flexuosa* (Fr.) Coppins & P. James  
*Usnea inermis* Motyka  
*U. oncodes* Stirt.  
*U. rubrotincta* Stirt.
- U. torulosa* (Müll. Arg.) Zahlbr.  
*Xanthoparmelia amplexula* (Stirt.) Elix & J. Johnst.  
*X. australasica* D.J. Galloway  
*X. canobolasensis* Elix  
*X. congesta* (Kurok. & Filson) Elix & Hale  
*X. dichotoma* (Müll. Arg.) Hale  
*X. digitiformis* (Elix & P. Armstr.) Filson  
*X. epheboides* (Zahlbr.) O. Blanco, A. Crespo, Elix, D.  
 Hawksw. & Lumbsch  
*X. isidiotegeta* Elix & Kantvilas  
*X. loxodella* (Esslinger) O. Blanco, A. Crespo, Elix, D.  
 Hawksw. & Lumbsch  
*X. microcephala* Elix & Kantvilas  
*X. mougeotina* (Nyl.) D.J. Galloway  
*X. neotinctina* (Elix) Elix & Johnst.  
*X. notata* (Kurok.) Hale  
*X. scabrosa* (Taylor) Hale  
*X. segregata* Elix & J. Johnst.  
*X. subprolixa* (Nyl. ex Kremp.) O. Blanco, A. Crespo,  
 Elix, D. Hawksw. & Lumbsch  
*X. tasmanica* (Hook.f. & Taylor) Hale  
*X. tegeta* Elix & J. Johnst.