

New records and range extensions in the North American lignicolous lichen flora

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Abstract — Based on recent intensive studies of wood-dwelling lichens especially in western North America, we report a series of new records and range extensions. Six species are reported as new to North America: *Arthonia ligniariella*, *Elixia flexella*, *Gyalideopsis helvetica*, *Lecidea scabridula*, *Lecidea symmicbella* and *Xyloschistes platytropa*. *Chaenothecopsis nigra* is again confirmed for North America. *Buellia arborea*, *B. chloroleuca*, *Catillaria erysiboides*, and *Lignoscripta atroalba* are new to Canada and *Lecidea pullata* and *Xylographa trunciseda* are new to eastern North America. We also provide range extensions for all four species of *Pycnora* known from North America. In all we include new records from Alaska, Arizona, British Columbia, Colorado, Idaho, Manitoba, Montana, New Brunswick, Newfoundland, North Dakota, Northwest Territories, Nunavut, Ontario, Québec, Washington and the Yukon.

Key words — calicioid, crustose lichens, floristics, Pacific Northwest, saproxylic, wood

Introduction

The study of crustose lichens in North America is enjoying something of a renaissance. In the last 10 years, hundreds of species of crustose lichens have been reported as new to science or new to North America as a result of projects such as the Sonoran Lichen Flora (Nash et al. 2002, 2004, 2007) and intensified inventory efforts in eastern North America (e.g., Harris & Lendemer 2005) and the Pacific Northwest/western Canada (e.g., Printzen & Tønsberg 1999, Spribille et al. 2008a). The fact that the rate of new descriptions and first records is not letting up belies the potential depth of the well of lichen diversity in North America.

As part of a broad-scale study of lignicolous lichens (Spribille et al. 2008b), we have accumulated a large number of records of previously unknown or poorly documented species, mainly from northwestern North America but also from other regions. While not every record reported here necessarily comes from wood, the general purpose of the present paper is to document a series of significant new records and range extensions of predominantly lignicolous lichens.

Materials and methods

Apothecia and thallus were investigated by light microscopy on hand-cut sections, mounted in water and/or 10% KOH (hereafter K), and stained with I_{Lugol} (Merck 1.09261; hereafter IKI) or lactophenol cotton blue (Merck 1.13741). A polarizing (POL) filter was used to detect birefringent crystals. Thin layer chromatography (TLC) was carried out according to the methods described by Culberson (1972) and Culberson & Johnson (1982).

Results and discussion

Arthonia ligniariella Coppins

Arthonia ligniariella was described from Scotland by Coppins (1989) and has been reported since apparently only from Sweden (Gustavsson 1995, Thor 2008). It was originally thought to be an obligate lignicole. In British Columbia, the species was found on bark of *Thuja plicata*, a habitat that often supports species that are otherwise lignicoles. Its occurrence here was briefly mentioned by Houde et al. (2007), who also provided a description of the broader habitat setting. *A. ligniariella* can be easily recognized on account of its non-amyloid hymenium, a trait that is rare in *Arthonia* and smaller ascospores than e.g. *A. ligniaria* (Coppins 1989). It is new to North America.

SPECIMEN EXAMINED: CANADA. British Columbia. Rocky Mountains, near border with Alberta, Albert River, 50°37.693'N, 115°32.973'W, in old-growth *Thuja plicata* forest, on underhang of *Thuja*, 1224 m, 30 Jul 2005, Spribille 16780 & Houde (hb. Spribille, ver. B. Coppins).

Arthonia spadicea Leight.

This species was originally described from Britain and has been reported from Germany and elsewhere in Europe as well as Japan (Kashiwadani & Thor 1995). In North America the species has been reported from the Great Lakes region (Hedrick & Lowe 1936, Thomson 1951, Wetmore 1981) and North Carolina (Schmitt & Slack 1990). In British Columbia the species was found on wood of a snag in old-growth *Tsuga heterophylla* forest. It may be genuinely rare here, as extensive collecting of this habitat in the inland rainforests of east-central British Columbia has so far yielded only this one specimen. *Arthonia spadicea*

is characterized by its 1-septate ascospores $9.5\text{--}11 \times 4\text{--}4.5 \mu\text{m}$ with unequal cells, presence of K+ violet hymenial pigments, and presence of *Trentepohlia* as photobiont. The British Columbia specimen compares well with European material; it is new to western North America.

SPECIMEN EXAMINED: CANADA. British Columbia. Selkirk Mountains, Incomappleux River drainage, Boyd Creek, $50^{\circ}51.830'N$, $117^{\circ}31.636'W$, 1185 m, lignicolous on soft snag in old-growth *Tsuga heterophylla* forest, 23 Aug 2005, Spribille 17810 & Pettitt (CANL).

Buellia arborea Coppins & Tønsberg

Buellia arborea was first reported for North America by Tønsberg & McCune (2001) and until now has been known only from this one published record, from western Montana. The species is, in fact, not uncommon on wood in dry, low elevation *Pinus ponderosa* forests of the inland Pacific Northwest and British Columbia but may evade detection because it can only be reliably identified using TLC. It can easily be confused with *Buellia griseovirens* and *Xylographa vitiligo* s.lat., but differs from both species in having more consistently concave soralia flecked in a 'salt-and-pepper' fashion with darker soredia and in the lack of stictic or norstictic acid (instead: atranorin and pseudoplacodiolic acid; Tønsberg 1992). We report it here as new to Canada and, in a significant southward range extension, from Arizona.

SPECIMENS EXAMINED: CANADA. British Columbia. East Kootenays, NE of Kimberley, Ta Ta Creek, $49^{\circ}50.823'N$, $115^{\circ}47.723'W$, 792 m, on decorticated log in open xeric *Pinus ponderosa* woodland, 4 Aug 2005, Spribille 17166 (hb. Spribille), 17167 (CANL, hb. Spribille); U.S.A. Arizona. Graham Co., Pinaleno Mountains, Shannon Campground, $32^{\circ}41'N$, $109^{\circ}51'W$, on decorticated tree, *Pseudotsuga* forest, 24 Sep 1977, Nash 14461 (ASU).

Buellia chloroleuca Körb.

Buellia chloroleuca is one of the most common fertile species of *Buellia* on logs in the northern Rocky Mountains. It was first reported for North America by Bungartz et al. (2007) after long having passed in North America literature under the name *Buellia zahlbruckneri* (for a discussion of the nomenclatural problems, see Bungartz et al. 2007). It is otherwise known from Europe (e.g., Nordin 2000). It can be recognized by its large *Callispora*-type ascospores which are $16\text{--}22 \times 7\text{--}9.5 \mu\text{m}$, and the presence of the xanthone 6-*O*-methylarthothelin, usually in concentrations sufficient to give a C+ orange reaction. Nordin (2004) placed it in the genus *Tetramelas*, but that genus has not been widely recognized. The predominantly lignicolous habit of *B. chloroleuca* in western North America and southern Europe contrasts with its corticolous habit in northern Europe (Nordin 2000), an ecological difference that deserves further investigation. We report it here as new to Canada (British Columbia, Yukon), Idaho, Montana and Washington.

REPRESENTATIVE SPECIMENS EXAMINED (>20 seen): CANADA. British Columbia. Rocky Mountains, NE of Canal Flats, Dry Creek, 50°15'19"N, 115°42'53"W, 1000–1100 m, on rotten log in 30–40 yr old clearcut, 26 Jul 2004, Spribille 14779 (hb. Spribille, det. A. Nordin, 2004, also !Bungartz); *ibid.*, E of Canal Flats, Moscow Road, 50°14.908'N, 115°30.020'W, 1182 m, 26 Jul 2005, Spribille 16507 (UPS); *ibid.*, Spribille 14779 (CANL); East Kootenays, NE of Kimberley, Ta Ta Creek, 49°50.823'N, 115°47.723'W, 792 m, on decorticated log in open xeric *Pinus ponderosa* woodland, 4 Aug 2005, Spribille 17165 (CANL); Yukon. Carpenter Lake, Wernecke Mountains, 64°30'N, 135°06'W, dwarf birch and willow communities, with scattered clumps of white spruce, 25 Jul 1972, Scotter 19376 (CANL, filed under *Xylographa abietina*); along Alaska Highway S of Johnson's Landing, near Teslin Lake, 60°28.641'N, 133°16.527'W, 719 m, on rotten log, 8 Oct 2007, Spribille 25076 (ALA); U.S.A. Idaho. Bonner Co., Selkirk Mountains, trail to Upper Priest Lake, 48°45'N, 116°51'W, on wood of conifer log, Jul 2006, Björk 13048 (UBC); Montana. Flathead Co., near confluence of Lime and Magnesia Creeks, Collins Ranch, 48°38.793'N, 114°53.180'W, 1011 m, on rotten log, edge of *Picea* swamp, 20 Jul 2006, Spribille 20313 & Pérez-Ortega (ALA, BG); Lincoln Co., W of Eureka, Black Butte, 48°52.151'N, 115°06.701'W, 974 m, on log, 31 Jul 2006, Spribille 21240 & Pérez-Ortega (hb. Spribille); *ibid.*, Salish Mountains, Weigel Creek, 48°28.676'N, 114°58.905'W, 1147 m, on wood, 10 Aug 2006, Spribille 21944 (BG); Washington. Douglas Co., Badger Mountain, 47°36'N, 120°08'W, on log of *Pinus ponderosa*, Aug 2005, Björk 12188 (UBC).

Catillaria erysiboides (Nyl.) Th. Fr.

This species was first reported for North America by Printzen & Tønsgberg (1999), based on the 19th century Wilhelm Suksdorf collection described by Willey (1887) as *Arthonia carneorufa*. There are no other published records for North America to our knowledge. We have found the species sporadically, primarily on the sides of rotten logs in dry forests, in areas where grass or herbs grow up around the logs, rarely on the tops of logs, other specimens have been gathered from vertical wood surfaces on snags and stumps, always near ground level. The species can easily be recognized by its combination of 1-septate ascospores with one cell larger than the other (likely why Willey assigned it to *Arthonia*), the presence of a well developed excipulum, and the 'Porpidia-type' ascus. We report it here as new to Canada.

SPECIMENS EXAMINED: CANADA. British Columbia. Rocky Mountains, E of Canal Flats, Moscow Road, 50°20.825'N, 115°35.886'W, 1069 m, 1 Aug 2005, Spribille 16938 (hb. Spribille); East Kootenays, E of Canal Flats, Kootenay River valley, Dry Creek, 50°15.120'N, 115°42.693'W, 1122 m, on decorticated log, 4 Aug 2005, Spribille 17206 (CANL); Thompson Plateau, Opax Mountain silvicultural study site, 20 km NW of Kamloops, 50°49'N, 120°28'W, on wood of snag near ground-level, Sep 2007, Björk 15094 (UBC).

Chaenothecopsis nigra Tibell

This species occurs on wood, over thalli of *Chaenotheca* species or on groups of free-living algae and has been reported from New Zealand (type locality), South America, Great Britain, Lithuania, Poland, Russia, Sweden and Japan

(Titov 2006). Rikkinen (2003) reported *Chaenothecopsis nigra* from Oregon with 'cf.' on account of deviations in ascospore size. It was also reported, with a question mark, by Harris & Lendemer (2005), although the two characters cited by the latter (dark ascospore septum, but dark greenish KOH- stalk) could also lead to other *Chaenothecopsis* species. Titov (2006) provided the first confirmed record from North America, from Mt. Cain on Vancouver Island. We report the first confirmed specimen here for the United States.

SPECIMEN EXAMINED: U.S.A. Idaho. North Fork Clearwater River drainage, Isabella Creek, 46°52'N, 115°37'W, on cubed cracked wood on leaning snag, 8 Jul 2001, Spribille 11543-B & Hauck (UPS, det. L. Tibell).

***Cladonia botrytes* (K.G. Hagen) Willd.**

Cladonia botrytes is one of the few obligately lignicolous macrolichens (Spribille et al. 2008b). Although the species is well known in the boreal zone of North America and has been reported from British Columbia and Alaska, it has been reported south of Canada in the west only from Montana (DeBolt & McCune 1993), where it is locally common in Flathead and Lincoln Counties. We report the species here as new to Washington.

SPECIMEN EXAMINED: U.S.A. Washington. Pend Oreille Co., Frater Lake, 48°39.266'N, 117°29.090'W, 968 m, on stump, 19 Aug 2005, Spribille 17479 (WTU).

***Elixia flexella* (Ach.) Lumbsch**

Elixia flexella was long treated within the genus *Lithographa* but was recognized as a distinct, monospecific genus by Lumbsch (1997). The species was described from France and subsequently reported from the United Kingdom (Hawksworth et al. 1980), Austria and Italy (Lumbsch 1997), eastern Europe (e.g., Miądlíkowska 1993), Scandinavia (Santesson et al. 2004), the Komi Republic, western Russia (Hermansson et al. 2006) and Japan (Kurokawa & Kashiwadani 2006). It can be recognized by the distinctive folded, involute exciple that often gives the mature apothecia a triangular or square shape, IKI+ reddish hymenium, and simple ascospores 6–8 × 3–4.5 µm. It is new for North America.

SPECIMENS EXAMINED: CANADA. British Columbia. Southern interior, Sicamous Creek Silvicultural Research Site, 50°49'N, 118°50'W, on snag, north-facing slope, subalpine forest of *Abies lasiocarpa* and *Picea engelmannii*, 27 Jul 1997, Goward 97-393 (UBC, det. G. Thor); Cariboo Mountains, Wells Gray Provincial Park, shortly S of the park road immediately north of Second Canyon Creek, 51°46.2'N, 120°0.6'W, weathered wood of a *Pseudotsuga* stump, 27 Feb 2006, Björk 12191 (UBC); U.S.A. Idaho. Shoshone Co., St. Maries River Valley, 47°3.5'N, 116°17.9'W, swamp forest shortly east of Hwy. 3 between Clarkia and Emerald Creek, on bark of *Thuja* trunk, 11 Apr 2008, Björk 15312 (UBC); Washington. Skamania Co., Columbia River Gorge, 45°42.9'N, 120°49.2'W, on wood of a *Pseudotsuga* snag, 19 Mar 2007, Björk 14088 (UBC).

Gyalideopsis helvetica van den Boom & Vězda

This distinctive species was first described from Austria by van den Boom & Vězda (2000), and remains one of the rarely reported lignicolous lichens, being known only from Switzerland, Germany and Austria (Hafellner et al. 2005) and Sweden (Hermansson et al. 2008). When sterile it is difficult to recognize as the thallus consists only of a thin film interrupted by patches of concave goniocystangia (van den Boom & Vězda 2000). Fertile specimens are more easily recognized by the translucent, 'gummy bear-like' apothecia and distinctive muriform ascospores. The species has only been found once during our field studies of lignicolous lichens, and, fortunately, it was fertile. It is new to North America.

SPECIMEN EXAMINED: CANADA. British Columbia. East Kootenays, E of Canal Flats, Kootenay River valley, Dry Creek, 50°15.125'N, 115°42.725'W, 1126 m, on decorticated log, 4 Aug 2005, Spribille 17193 (hb. Spribille, mixed with *Absoconditella lignicola*).

Hypocenomyce anthracophila (Nyl.) P. James & Gotth. Schneid.

This species is widely reported for the Great Lakes region, the American Southwest (e.g., Timdal 2002) and South Dakota (Wetmore 1967) and is also mapped for Alberta, Manitoba and California by Brodo et al. (2001). It was first reported for northwest North America by Goward et al. (1994) from British Columbia, but it appears to be rare in the northwest of the continent. We report it here as new to Washington.

SPECIMEN EXAMINED: U.S.A. Washington. Skamania Co., Columbia River Gorge, 45°42.9'N, 120°49.2'W, on wood of a *Pseudotsuga* snag, 100 m, 19 Mar 2007, Björk 14086 (UBC).

Lecidea pullata (Norman) Th. Fr.

Lecidea pullata was first reported for North America by Goward & Thor (1992) based on a specimen collected in coastal British Columbia. It occurs on a wide array of bark and wood substrates and is much more common than the few records would seem to indicate. We report *Lecidea pullata* as new to the United States (Colorado, Montana) and eastern Canada (Québec).

REPRESENTATIVE SPECIMENS EXAMINED (>20 seen): CANADA. Québec. Gaspé West Co., Mont Albert, La Potatière T.P., on decaying wood, 1971, Muhle s.n. (CANL, filed under *Xylographa abietina*); U.S.A. Colorado. Clear Creek Co., N face of Squaw Mountain along Squaw Pass Road, 39°41'30"N, 105°30'W, on wood, 16 Aug 1983, Nash 22134 (ASU, filed under *Xylographa parallela* and mixed with *Pycnora sorophora*); Montana. Lincoln Co., northern Salish Mountains, Cliff Creek, 48°35'30"N, 115°06'W, on *Populus balsamifera* bark, 17 Sep 1996, Spribille 6376 (BG, hb. Spribille; det. T. Tønsberg).

Lecidea scabridula Hedl., nom. illegit., non Müll. Arg.

Lecidea scabridula is known only from a set of type material collected by Johan Theodor Hedlund in Sweden (Hedlund 1892). Printzen (1995) reported

that the type material had been studied by Brian Coppins and tentatively assigned to the order *Agyriales* based on ascus characteristics. The species possesses a highly unique set of characteristics: the ascus is quite similar to the 'Agyriales-type' (but see Lumbsch et al. 2007), ascospores are simple, $7\text{--}12 \times 4\text{--}5 \mu\text{m}$ and the exciple and epihymenium are carbonized. However, unlike in *Ptychographa*, another genus with 'Agyrialean' ascus type and carbonized exciple, the apothecia are rounded, not lirellate. The systematic position of the species is the subject of an ongoing study (Spribille & Lumbsch, in prep.), in which a new name will be created to replace the currently illegitimate one. In the interim, we report it here as new to North America as a voucher for the inclusion of the species by Spribille et al. (2008b).

SPECIMENS EXAMINED: CANADA. British Columbia. East Kootenays, White River drainage, SE of Canal Flats, $50^{\circ}14.522'N$, $115^{\circ}29.283'W$, 1164 m, on decorticated log with *Placynthiella icmalea* and *Trapeliopsis flexuosa*, 28 Jul 2005, Spribille 16631 (hb. Spribille); *ibid.*, Kootenay River drainage NE of Canal Flats, $50^{\circ}15.159'N$, $115^{\circ}42.517'W$, 1069 m, on decorticated log with *Xylographa vitiligo*, *Ochrolechia gowardii*, *Lecidea rubrocastanea*, 5 Aug 2005, Spribille 17249 (hb. Spribille); Northwest Territories. Vicinity of Glacier (Brintnell) Lake, near camp, $62^{\circ}5'N$, $127^{\circ}35'W$, dead wood on ground, 18 Aug 1939, Raup 3557 (CANL, FH, both filed under *Xylographa parallela*); U.S.A. Washington. Okanogan Co., Okanogan National Forest, trail to Roger Lake, off Forest Service Rd. 39, $48^{\circ}39'30''N$, $119^{\circ}57'50''W$, ca. 1775 m, on conifer wood, 14 Oct 1993, Ryan 30733 (ASU, filed under *Xylographa abietina*).

Lecidea symmictella Nyl.

Lecidea symmictella is a widespread though seldom collected lignicolous species in northern (Foucard 2001) and central Europe (van den Boom 2002). Contrary to the suggestion of the name, the species bears little resemblance to *Lecanora symmicta*. *L. symmictella* is characterized by its small apothecia 0.1–0.3 mm diam., simple narrowly ellipsoid ascospores $3\text{--}8 \times 1.5\text{--}2.65 \mu\text{m}$, \pm *Micarea*-type ascus (not *Catillaria*-type as stated by Foucard 2001), and the presence of a POL+ granular epihymenium (Z. Palice, pers. comm.). In North America, the species may belong to a continental boreal element. It is new to North America (Montana and Ontario).

SPECIMENS EXAMINED: CANADA. Ontario. Thunder Bay District, Pine Portage, 23 miles N of Nipigon, $49^{\circ}20'N$, $88^{\circ}20'W$, boreal *Picea mariana*-*Abies* forest, on rotting log, 26 Aug 1965, Brodo 6137 (CANL, filed under *Xylographa abietina*); U.S.A. Montana. Flathead Co., Salish Mtns., near confluence of Lime and Magnesia Creeks, Collins Ranch, $48^{\circ}38.793'N$, $114^{\circ}53.180'W$, 1011 m, on hard decorticated log, 20 Jul 2006, Spribille 20251-A & Pérez-Ortega (hb. Spribille).

Lignoscripta atroalba B.D. Ryan & T.H. Nash

This lichen was described as a new genus and species by Ryan (2005), differing from *Xylographa* on account of its intense greenish, HNO_3 + reddish epihymenial pigments, pruinose exciple, and bacilliform conidia. At the time,

only a single specimen from Arizona was reported. We report it here as new to Canada (British Columbia) and the U.S. states of Montana and North Dakota.

SPECIMENS EXAMINED: CANADA. British Columbia. East Kootenays, W of Invermere, Toby Creek canyon, on wood of abandoned bridge, 20 Jul 2004, Spribille 15316 & Goward (hb. Spribille). U.S.A. Montana. Lincoln Co., 1 km N of Rexford, 48°54.683'N, 115°09.629'W, 800 m, on wood of old guard rail, 30 Jul 2006, Spribille 21011 (hb. Spribille); Teton Co., NW of Choteau, on decorticated *Pinus flexilis* branches, 26 Jul 2006, Spribille 20668 & Pérez-Ortega (F); North Dakota. Billings Co., Theodore Roosevelt National Park, South Unit, at Badlands Overlook (3.5 mi E of Medora); Sec. 20, T140N, R101W, on north facing slope with junipers, on juniper log, 25 Jul 1982, Wetmore 45080 (ASU); McKenzie Co., Theodore Roosevelt National Park, N Unit, on south side of Cedar Canyon (14 mi SSW of Watford City), Sec. 25, T148N, R100W [added in pencil: 47°36'45"N, 103°22'54"W]; on north facing slope with juniper and few ash, on juniper log, 20 Jul 1982, Wetmore 44812 (CANL).

***Micarea melaena* (Nyl.) Hedl.**

This is one of the most widely reported epiphytic species of *Micarea*, being known from Eurasia (Czarnota 2007), Japan (Kurokawa & Kashiwadani 2006) and eastern North America (e.g., Wetmore 1981, Harris & Lendemer 2006) and in the west from Alaska (Moser et al. 1979) and Wyoming (Eversman et al. 2002). Remarkably, the species has not been reported until now from the Pacific Northwest, though it is mapped for the Alberta Rockies by Thomson (1997); the latter specimen has not been seen by us. It is characterized by its darkly pigmented hypothecium, lack of K⁺ mauve epihymenial pigments and 3-septate ascospores (see illustrations in Czarnota 2007). It is new to British Columbia.

SPECIMEN EXAMINED: CANADA. British Columbia. Selkirk Mountains, E of Nakusp, Kuskanax River drainage, slope below Kimbol Lake, in old-growth *Tsuga heterophylla* forest, lignicolous on *Thuja plicata* wood, 9 Aug 2004, Spribille 15668, Pettitt & Wagner (hb. Spribille).

***Pycnora leucococca* (R. Sant.) R. Sant.**

This species is known only in the sterile state, but is highly distinctive on account of its lip-shaped soralia and presence of alectorialic acid. The species has rarely been reported for North America, but is common in moist areas of the west, where it was first reported for British Columbia by Moberg (1986, but unvouchered), Brodo (1991, as an associate of *Ochrolechia gowardii*) and Goward & Thor (1992). Brodo (1991) also reported it as an associate of his *Ochrolechia* sp. 8 in the Labrador-Québec border region of eastern Canada. It occurs on a wide array of bark and wood substrates. We report the species here from southern Nunavut, a substantial range extension halfway between the two currently known eastern and western ranges in North America; this specimen too was an incidental collection, an associate of *Xylographa opegraphella*

collected in a study by Kershaw in what was then still a part of northwestern Ontario. We also report it as new to the United States (Montana).

REPRESENTATIVE SPECIMENS EXAMINED (>40 seen): CANADA. Nunavut. East Pen Island, 56°45'N, 88°45'W, raised beach systems, on drift wood, Jul 1971, Kershaw s.n. (CANL.-38115, filed under *Xylographa opegraphella*). U.S.A. Montana. Lincoln Co., Yaak Valley, Can Creek, c. 48°44.899'N, 115°38.239'W, 1105 m, corticolous on *Abies lasiocarpa*, 7 Nov 2007, Spribille s.n. (hb. Spribille).

Pycnora praestabilis (Nyl.) Hafellner

This species is similar to *Pycnora xanthococca* but is more robust (in our material) and has longer conidia (Timdal 1984). A specimen has also been seen by us from Idaho (GZU) but has apparently been misplaced in that herbarium.

SPECIMEN EXAMINED: U.S.A. Montana. Ravalli Co., Bitterroot Range, summit of Ingomar Peak, 46°13'N, 114°25'W, 2590 m, 29 Aug 1982, McCune 12721 (hb. McCune).

Pycnora sorophora (Vain.) Hafellner

Like *Pycnora leucococca*, this species is often overlooked and rarely reported, and also as with that species, it is characterized the presence of alectorialic acid and develops a pinkish colour over time in the herbarium. Unlike *P. leucococca*, it develops terminal, not marginal soralia and the thallus often quickly completely disintegrates into soredia (Tønsberg 1992). It is widespread and occurs mostly on wood although it has been found on both wood and bark in western North America (Arizona: Timdal 2002; California: Williams & Sillett 2007; Montana: Hauck & Spribille 2005). We report the species here as new to Alaska, British Columbia, Colorado, Idaho, Manitoba, Nunavut and Washington.

REPRESENTATIVE SPECIMENS EXAMINED (>50 seen): CANADA. British Columbia. Thompson Plateau, 20 km NW of Kamloops, Opax Mountain Silvicultural Study Site, on wood of conifer snag 50°49'N, 120°28'W, Sep 2006, Björk 13420 (UBC); Manitoba. 5 miles S of Putahow Lake, 59°45'N, 100°43'W, in *Picea mariana-Cladina* stand on fallen black spruce, 18 Jun 1973, Wong 1006 (CANL, filed under *Xylographa abietina*); Nunavut. East Pen Island, 56°45'N, 88°45'W, raised beach systems, on drift wood, Jul 1971, Kershaw s.n. (CANL., filed under *Xylographa vitiligo*, mixed with *Pycnora leucococca*); U.S.A. Alaska. Skagway Fjord, west side of Taiya River, 59°32.568'N, 135°20.693'W, 25 m elev., corticolous on *Picea sitchensis* trunk, 6 Oct 2007, Spribille 24748 (hb. Klondike NHP); Colorado. Clear Creek Co., N face of Squaw Mountain along Squaw Pass Road, 39°41'30"N, 105°30'W, on wood, 16 Aug 1983, Nash 22134 (ASU, filed under *Xylographa parallela*); Idaho. Bonner Co., Cabinet Mountains, University of Idaho Experimental Forest, Antelope Lake, 48°8'N, 116°10'W, on wood of conifer snag, Björk 14229 (UBC); Washington. Pend Oreille Co., Frater Lake, 48°39.266'N, 117°29.090'W, 968 m, on snag, 19 Aug 2005, Spribille 17469 (WTU); Spokane Co., Riverside State Park, near the Bowl & Pitcher overlook, 47°42'N, 117°30'W, wood of *Pinus ponderosa* log on talus, Björk 14135 (UBC).

Pycnora xanthococca (Sommerf.) Hafellner

Pycnora xanthococca differs from the two previous species of *Pycnora* in being consistently fertile, but shares with them the characteristic presence of alecortic acid in the thallus. In northern Europe, *P. xanthococca* is considered to be an obligate lignicole (Spribille et al. 2008b), but we have found it in western North America also on bark of *Pseudotsuga menziesii*. It has otherwise been reported from California (Ryan & Nash 1991, Williams & Sillett 2007), South Dakota (Wetmore 1967), North Dakota (Wetmore 1985) and Wyoming (Eversman et al. 2002). We report *P. xanthococca* here as new to northwestern North America.

SPECIMENS EXAMINED: CANADA. British Columbia. Slocan Valley, Perry Ridge trail, corticolous on *Pseudotsuga*, 26 Jun 2004, Spribille 15173 (CANL); U.S.A. Idaho. Bonner Co., Priest River Experimental Forest, behind headquarters, 48°21.30'N, 116°50.19'W, 730 m, lignicolous on *Pseudotsuga* branches, 24 Jul 2004, Spribille 15342 (BG, hb. Spribille); Montana. Lincoln Co., northern Salish Mountains, bedrock meadow along Forest Service Rd. 494, 48°37.224'N, 115°04.037'W, 1491 m, on *Pseudotsuga* bark in island of trees in bedrock meadow, 2 Aug 2004, Spribille 15408 & Wagner (hb. Spribille); same locality, 23 Jul 2006, Spribille 20470 & Abrahamczyk (BG, CANL).

Xylographa trunciseda (Th. Fr.) Minks ex Redinger

This species has been previously reported in North America only from the Queen Charlotte Islands (Brodo 1995), but is in fact common in inland British Columbia (e.g., Bunnell et al. 2008) south to northwest Montana and northern Idaho in humid forests. The species can be easily recognized by the presence of regularly (American-) football-shaped apothecia produced in chains, with younger apothecia leading each chain and older apothecia often dying out, and the presence of the unknown substance referred to by Brodo (1992) as "Xhn-1" (in TLC producing a LW UV+ blue spot in Rf classes A1/2, B3, C2, yellowish after charring). The only described species with which it might be confused is *Xylographa hians* Willey, which has a nearly identical habit but possesses stictic acid (Brodo 1992). *Xylographa trunciseda* is a loyal obligate lignicole wherever it occurs. It is so far known from Europe and the previous report from British Columbia; we report it here as new to eastern North America (New Brunswick, Newfoundland) and the United States (Colorado, Idaho, Montana).

REPRESENTATIVE SPECIMENS EXAMINED (>20 seen): CANADA. New Brunswick. Kent Co., Kouchibouguac National Park, Rankin's Brook, 46°50'N, 64°59'W, steep bank to brook with *Tsuga canadensis* and *Pinus strobus*, on dead conifer stump, 23 Aug 1978, Egger 884 (CANL); Newfoundland. Gros Morne National Park: 3.2 km SW of St. Paul's (35 km N of Rocky Harbour), in black spruce island with black spruce, balsam fir, birch and alder, 24 Jun 1981, Wetmore 42781 (CANL, filed under *Xylographa vitiligo*); U.S.A. Colorado. Garfield Co. White River Natl. Forest NW of Meadow Lake Campground on E side of road, Hale, 39°48'N, 107°33'W, on wood, 24 Jun 1992, Nash 31936 (ASU); Idaho. Bonner Co., Canyon Creek Research Natural Area, 48°21.97'N, 116°47.96'W, 790 m, lignicolous on fallen wood, 24 Jul 2004, Spribille 15365 (hb. Spribille); Shoshone

Co., North Fork Coeur d'Alene River, 47°40'N, 115°59'W, wood of conifer log, 1000 m, May 2004, Björk 8643 (UBC); Montana. Lincoln Co., northern Salish Mountains, Gray Creek, 48°30.432'N, 114°57.048'W, 1168 m, on rotten log, 9 Aug 2006, Spribille 21821 (hb. Spribille).

Xyloschistes platytropa (Nyl.) Vain.

This species was described from Finland by Nylander (1868) as a *Xylographa* and assigned to the new monotypic genus by Vainio (1883), who added new records from Karelia and Lapland. It has rarely been reported since, e.g., from Spain (Etayo 1990, as a new variety; also Aragón et al. 2004), Mongolia (Biazrov et al. 1989) and the Russian Far East (Sikhote-Alin Mountains; Chabanenko 2002). The species is characterized by muriform ascospores 20–30 × 6–8 µm, 1 per ascus (rarely 2; Nylander 1868), and immersed thallus forming a whitish patch on wood. The systematic position of the genus is poorly studied but it is thought to have affinities to the *Ostropales*. It is new to North America.

SPECIMEN EXAMINED: CANADA. British Columbia. West Kootenay region, Mount Revelstoke National Park, Nelson Historic Site, 51°01'N, 118°12'W, 580 m, decorticated branch of *Pinus monticola* in rain forest, 2 Aug 2005, Goward 05-242 (UBC).

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