

ANNOTATED LIST OF LICHEN SPECIES IN BADLANDS NATIONAL PARK

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Includes: 1988 collections
1990 collections
1991-1994 collections

Species Name	Location	Substrate
<i>Acarospora arenacea</i> H. Magn.	A	si
^b <i>Acarospora badiofusca</i> (Nyl.) Th. Fr.	N	si
<i>Acarospora nevadensis</i> H. Magn.	M	si
<i>Acarospora californica</i> Zahlbr.	KMN	ss, si
^b <i>Acarospora glaucocarpa</i> (Ach.) Körber	B	ss
<i>Acarospora coloradiana</i> H. Magn.	C	ch ss
<i>Acarospora fuscescens</i> H. Magn.	B	ss
^{ab} <i>Acarospora schleicheri</i> (Ach.) A. Massal.	CK	ch ss
^b <i>Acarospora strigata</i> (Nyl.) Jatta	CM	ss, ch ss, m
<i>Acarospora veronensis</i> A. Massal.	AN	m
^{ab} <i>Agrestia hispida</i> (Mereschk.) Hale & Culb.	BM	g
^{ab} <i>Amandinea punctata</i> (Hoffm.) Coppins & Scheid.	BJN	ss, m, b, w(juniper)
^{ab} <i>Arthonia lapidicola</i> (Taylor) Branth & Rostrup	CEL	ch ss, t
^b <i>Aspicilia calcarea</i> (L.) Mudd	AGM	ch ss, si, sh, m
^a <i>Aspicilia contorta</i> (Hoffm.) Kremp.	L	m
<i>Aspicilia desertorum</i> (Kremp.) Mereschk.	ALMN	si, sh
^b <i>Aspicilia laevata</i> (Ach.) Arnold	M	sh
^{ab} <i>Bacidia bagliettoana</i> (Massal. & deNot.) Jatta	DJM	org
^b <i>Bacidia beckhausii</i> Körber	JN	b, w(juniper, box elder)
^b <i>Bacidia herbarum</i> (Stizenb.) Arnold	J	org
<i>Bacidia schweinitzii</i> (Fr. ex Michener) A. Schneider	B	b(sumac)
<i>Bacidia</i> sp. 2 of Harris (1978) - not published	J	b, w(poderosa pine)
^a <i>Buellia elegans</i> Poelt	MD	g
<i>Buellia cf rimulicola</i> Müll. Arg. - Lichenicolous on <i>Lecanora impudens</i> . Not published - not confirmed.	J	p: w(juniper)

Species Name	Location	Substrate
<i>Buellia schaeereri</i> DeNot.	J	w(juniper)
<i>Buellia turgescens</i> Tuck. (Det. Sheard)	BJ	w,b(juniper, ponderosa pine)
<i>Buelliella minimula</i> (Tuck.) Fink - Lichenicolous on <i>Caloplaca atroalba</i> and other crustose spp.	CDGK	p:ss,ch ss,m
^b <i>Caloplaca approximata</i> (Lynge) H. Magn.	KLM	ss,si,t,sh
^a <i>Caloplaca atroalba</i> (Tuck.) Zahlbr. (Det. Wetmore) The one bark specimen is very unusual for this species.	ABCDGJKLMN	ss,ch ss,si,t,m, b(cottonwood)
^{ab} <i>Caloplaca cerina</i> (Hedwig) Th. Fr.	BCMN	org,w,b(hardwoods, juniper)
<i>Caloplaca dakotensis</i> Wetmore (Det. Wetmore)	J	b(juniper)
^{ab} <i>Caloplaca decipiens</i> (Arnold) Blomb. & Forss.	CKLM	ss,ch ss,t,sh,m
^b <i>Caloplaca ferruginea</i> (Hudson) Th. Fr.	IK	b(cottonwood,willow)
^a <i>Caloplaca flavorubescens</i> (Hudson) J.R. Laundon	IJ	w,b(juniper,willow)
<i>Caloplaca fraudans</i> (Th. Fr.) H. Olivier	KLM	ss,t,sh
^{ab} <i>Caloplaca holocarpa</i> (Hoffm. ex Ach.) M. Wade	ABDIKMN	org,w,b(hardwoods, juniper,sage)
<i>Caloplaca cf invadens</i> gp., not <i>castellana</i> (Räsänen) Poelt. (Det. Poelt). - Lichenicolous on <i>Caloplaca trachyphylla</i> .	C	ch ss
<i>Caloplaca lactea</i> (Massal.) Zahlbr.	LM	t
^{ab} <i>Caloplaca microphyllina</i> (Tuck.) Hasse	BJMN	w,b(cottonwood,conifers)
^{ab} <i>Caloplaca saxicola</i> (Hoffm.) Nordin (Det. Wetmore) All specimens have a subsquamulose growth form and tan upper surface (possibly pruina) unusual for this species; one specimen on bark. Similar to <i>Caloplaca lobulata</i> (Flörke) de Lesd.	CKM	ss,ch ss,t,sh, b(juniper)
^a <i>Caloplaca trachyphylla</i> (Tuck.) Zahlbr.	CKM	ss,ch ss,sh
^{ab} <i>Caloplaca ulmorum</i> (Fink) Fink	F	b(juniper)
<i>Caloplaca</i> unknown sp. 1 #2326 (Det. Wetmore) - Not published.	M	g
<i>Caloplaca</i> unknown sp. 2 #2163 (Det. Wetmore) - Not published.	K	ss
^{ab} <i>Candelaria concolor</i> (Dickson) Stein	FJMN	b(hardwoods,juniper)
^{ab} <i>Candelariella aurella</i> (Hoffm.) Zahlbr.	ABCEFHKL	ss,ch ss,t,sh,m, w,b(juniper)

Species Name	Location	Substrate
^a <i>Candelariella deflexa</i> (Nyl.) Zahlbr.	BCDEFGHIJKMN	ss,ch ss,w,b (hardwoods,juniper,sage)
^a <i>Candelariella efflorescens</i> R.C. Harris & W.R. Buck	J	w,b(juniper)
^a <i>Candelariella subdeflexa</i> (Nyl.) Lettau	BFKMN	b(ash,cottonwood,juniper)
<i>Candelariella terrigena</i> Räsänen	J	g
^{ab} <i>Candelariella vitellina</i> (Hoffm.) Müll. Arg.	G	ch ss,m
<i>Catapyrenium compactum</i> (Massal.) R. Sant.	K	t
^b <i>Catapyrenium daedalum</i> (Krempelh.) Stein	L	g
^{ab} <i>Catapyrenium lachneum</i> (Ach.) R. Sant.	ADIKLMN	g
^{ab} <i>Catapyreneum plumbeum</i> (de Lesd.) J.W. Thomson	CDM	ch ss,sh,g
<i>Catapyrenium schaeferi</i> (Fr.) R. Sant.	LM	t,sh,m
^b <i>Catillaria chalybeia</i> (Borrer) A. Massal.	L	t
^a <i>Catillaria nigroclavata</i> (Nyl.) Schuler	FJM	w,b(conifers)
^{ab} <i>Cladonia chlorophaea</i> (Flörke ex Sommerf.) Sprengel	J	g
<i>Cladonia cryptochlorophaea</i> Asah.	J	g,w,b(juniper)
^{ab} <i>Cladonia fimbriata</i> (L.) Fr.	F	g
^{ab} <i>Cladonia macilenta</i> var. <i>bacillaris</i> (Genth) Schaerer	J	w,b(juniper)
<i>Cladonia merochlorophaea</i> Asah.	DFJM	g
<i>Cladonia pocillum</i> (Ach.) Grognot	KN	g
<i>Cladonia polycarpoides</i> Nyl.	J	g
^{ab} <i>Cladonia cf robbinsii</i> A. Evans (sterile)	D	g
^{ab} <i>Cladonia subulata</i> (L.) F. H. Wigg	J	g
^b <i>Cladonia sulphurina</i> (Michaux) Fr.	J	g
^{ab} <i>Collema cf coccophorum</i> Tuck. (sterile)	AHN	g
^{ab} <i>Collema furfuraceum</i> (Arnold) Du Rietz	J	w,b(juniper)
^b <i>Collema subflaccidum</i> Degel.	JN	w,b(cottonwood,juniper)
^{ab} <i>Collema tenax</i> (Swartz) Ach.	ABHIKL	g
^{ab} <i>Cyphelium notarisii</i> (Tul.) Blomb. & Forss.	JM	w,b(conifers)
<i>Dactylospora inquilina</i> (Tuck.) Hafellner - Lichenicolous on <i>Lecanora</i> sp.	J	p:w(juniper)
^{ab} <i>Diploschistes scruposus</i> (Schreber) Norman	DIJLN	org,w(juniper)

Species Name	Location	Substrate
<i>Diplotomma epipolium</i> (Ach.) Arnold	ACDGKMN	ss,ch ss,si,sh,m
^{ab} <i>Endocarpon pusillum</i> Hedwig	BKL	g
^{ab} <i>Flavopunctelia flaventior</i> (Stirton) Hale	HJMN	w,b(conifers)
^{ab} <i>Flavopunctelia soledica</i> (Nyl.) Hale	FHJMN	w,b(conifers)
^{ab} <i>Fulgensia bracteata</i> (Hoffm.) Räsänen	DHJKLN	g
^{ab} <i>Fulgensia fulgens</i> (Swartz) Elenkin	DIJKLN	g
^{ab} <i>Heppia lutosa</i> (Ach.) Nyl.	JKLMN	g
^a <i>Hyperphyscia adglutinata</i> (Flörke) Mayrh. & Poelt	FJKMN	w,b(juniper)
^b <i>Lecania dubitans</i> (Nyl.) A.L. Sm.	BN	b(cottonwood,elm)
^{ab} <i>Lecania erysibe</i> (Ach.) Mudd	ACN	ss,ch ss,si,m
^a <i>Lecania fuscella</i> (Schaerer) Körber	ADK	w(sage)
^{ab} <i>Lecanora chlarotera</i> Nyl.	HJM	b(juniper)
<i>Lecanora circumborealis</i> Brodo & Vitik.	JMN	w(conifers)
<i>Lecanora crenulata</i> Hook	ABDEGJKMN	ss,ch ss,si,sh,m
^{ab} <i>Lecanora dispersa</i> (Pers.) Sommerf.	JKN	ss,si,m
^{ab} <i>Lecanora hagenii</i> (Ach.) Ach.	BDFHIJKMN	w,b(conifers,hardwoods,sage)
^{ab} <i>Lecanora impudens</i> Degel.	JN	w,b(cottonwood,juniper)
<i>Lecanora meridionalis</i> H. Magn.	J	w,b(juniper)
^{ab} <i>Lecanora muralis</i> (Schreber) Rabenh.	N	si
^{ab} <i>Lecanora piniperda</i> Körber	BN	w,b(conifers,hardwoods)
<i>Lecanora salicicola</i> H. Magn.	J	w(juniper)
^b <i>Lecanora symmicta</i> (Ach.) Ach.	JN	w,b(ash,conifers)
^{ab} <i>Lecidella euphorea</i> (Flörke) Hertel	FHIJKMN	w,b(conifers,hardwoods)
^a <i>Lecidella patavina</i> (Lynge) Hertel & Leuck.	ACK	ss,ch ss,si,t,m
^(b) <i>Lempholemma</i> sp. (sterile)	DJ	g,org
<i>Lichinella minnesotensis</i> (Fink) Essl.	EK	ch ss,t
^{ab} <i>Lobothallia alphoplaca</i> (Wahlenb.) Hafellner	M	si
<i>Macentina dictyospora</i> Orange (det. Coppins) - New to North America	MN	b(juniper,elm,willow)
^{ab} <i>Megaspora verrucosa</i> (Ach.) Hafellner & V. Wirth	J	w,b(juniper)

Species Name	Location	Substrate
^b <i>Melanelia elegantula</i> (Zahlbr.) Essl.	J	w,b(conifers,hardwoods)
<i>Melanelia infumata</i> (Nyl.) Essl.	J	b(juniper)
^{ab} <i>Melanelia subargentifera</i> (Nyl.) Essl.	BDJ	org,w,b(juniper)
^a <i>Melanelia subolivacea</i> (Nyl.) Essl.	J	b(ponderosa pine)
<i>Melaspilea</i> sp. Lichenicolous. Probably a new species	N	p:w(juniper)
^b <i>Micarea peliocarpa</i> (Anzi) Coppins & R. Sant.	J	w(juniper)
<i>Ochrolechia androgyna</i> (Hoffm.) Arnold (sterile)	J	w(juniper)
^{ab} <i>Parmelia sulcata</i> Taylor	JN	w,b(juniper)
^b <i>Peccania arizonica</i> (Tuck.) Herre	N	g
^b <i>Peccania texana</i> (Tuck.) Wetmore	LN	g
^{ab} <i>Peltigera canina</i> (L.) Willd.	J	g
^b <i>Peltigera didactyla</i> (With.) J.R. Laundon	J	g
^{ab} <i>Peltigera rufescens</i> (Weiss) Humb.	FJ	g
^{ab} <i>Peltula patellata</i> (Bagl.) Swinscow & Krog	L	g
^{ab} <i>Pertusaria saximontana</i> Wetmore	J	w(juniper)
^a <i>Phaeophyscia cernohorskyi</i> (Nadv.) Essl.	BFJKMN	b(hardwoods,juniper)
^b <i>Phaeophyscia ciliata</i> (Hoffm.) Moberg	H	b(juniper)
^{ab} <i>Phaeophyscia nigricans</i> (Flörke) Moberg	IM	b(juniper,willow)
^{ab} <i>Phaeophyscia orbicularis</i> (Necker) Moberg	IK	b(cottonwood,willow)
<i>Phaeophyscia pusilloides</i> (Zahlbr.) Essl.	N	b(ash,juniper)
^{ab} <i>Physcia adscendens</i> (Fr.) H. Olivier	FIJKMN	b(hardwoods,juniper)
^{ab} <i>Physcia alpolia</i> (Ehrh. ex Humb.) Fürnr.	FKM	b(cherry,cottonwood)
^b <i>Physcia americana</i> G. Merr.	H	b(juniper)
^a <i>Physcia bizania</i> (Massal.) Zahlbr.	BJMN	org,w,b(conifers,hardwoods)
^{ab} <i>Physcia dimidiata</i> (Arnold) Nyl.	JN	w,b(conifers)
^a <i>Physciella chloantha</i> (Ach.) Essl.	FK	b(cottonwood,juniper)
^a <i>Physciella melanchra</i> (Hue) Essl.	FMN	b(hardwoods,juniper)
^b <i>Physconia enteroxantha</i> (Nyl.) Poelt (Det. Esslinger)	JN	w,b(juniper)
<i>Physconia perisidosa</i> (Erichsen) Moberg (Det. Esslinger)	FJ	w,b(juniper)
^b <i>Polychidium muscicola</i> (Sw.) S. Gray	J	org,b(juniper)

Species Name	Location	Substrate
^{ab} <i>Polysporina simplex</i> (Davies) Vezda	ACEJKLMN	ss,ch ss,si,t,sh,m
^{ab} <i>Psora decipiens</i> (Hedwig) Hoffm.	ADIJKLN	g
^b <i>Psorotichia schaereri</i> (Massal.) Arnold	JM	sh,m
<i>Pyrenopsis cf phaeococca</i> Tuck.	K	t
<i>Rinodina castanomela</i> (Nyl.) Arnold (Det. Sheard)	ACKLM	ss,ch ss,si,t,sh
^{ab} <i>Rinodina colobina</i> (Ach.) Th. Fr. (Det. Sheard)	N	b(juniper)
^a <i>Rinodina mucronatula</i> H. Magn. (Det. Sheard)	K	g
^{ab} <i>Rinodina pyrina</i> (Ach.) Arnold (Det. Sheard)	ABFIJKMN	w,b(conifers,hardwoods)
^a <i>Rinodina riparia</i> Sheard (Sheard 1998; Det. Sheard)	FN	b(cottonwood,juniper)
<i>Rinodina</i> unknown sp. 1 #2746 (Det. Sheard) - Not published.	N	b(juniper)
<i>Rinodina</i> unknown sp. 2 #2817 (Det. Sheard) - Not published.	J	w(juniper)
<i>Ropalospora chlorantha</i> (Tuck.) S. Ekman	J	w(juniper)
<i>Sarcogyne novomexicana</i> H. Magn.	LMN	ss,si,sh
^{ab} <i>Sarcogyne regularis</i> Körber	JKM	ss,ch ss,t,m
^a <i>Squamarina lentigera</i> (Weber) Poelt	DILN	g
^{ab} <i>Staurothele drummondii</i> (Tuck.) Tuck.	BCDGJKLMN	ss,ch ss,si,t,sh
^{ab} <i>Staurothele elenkinii</i> Oxner	CJKM	ss,ch ss,sh,m
^a <i>Staurothele monicae</i> (Zahlbr.) Wetmore	CDGJKM	ch ss,t,sh,m
<i>Stigmidium dispersum</i> (Lahm ex Körb.) D. Hawksw. (Cannon <i>et al.</i> 1985) - Lichenicolous on unidentified crustose lichens. Not published; not confirmed.	DG	p:ch ss
^b <i>Strangospora microhaema</i> (Norman) R. Anderson	I	b(willow)
^b <i>Strangospora cf moriformis</i> (Ach.) Stein	M	w(juniper)
<i>Strangospora ochrophora</i> (Nyl.) R. Anderson	B	b(cottonwood)
<i>Thelidium olivaceum</i> (Fr.) Körber	N	ss
^{ab} <i>Toninia sedifolia</i> (Scop.) Timdal	DJKL	g
^{ab} <i>Trapeliopsis granulosa</i> (Hoffm.) Lumbsch.	J	w,b(conifers)
^{ab} <i>Usnea hirta</i> (L.) F. H. Wigg.	FJ	w,b(conifers)
<i>Verrucaria calkinsiana</i> Servit	J	ss,ch ss,t,sh,m
<i>Verrucaria fuscella</i> (Turner) Winch.	CKLM	ch ss,sh

Species Name	Location	Substrate
^a <i>Verrucaria muralis</i> Ach.	KM	ss,sh
<i>Verrucaria cf. muralis</i> Ach.	MN	b(cottonwood,willow, juniper)
^b <i>Verrucaria nigrescens</i> Pers.	KM	ss,sh
<i>Xanthoparmelia cumberlandia</i> (Gyelnik) Hale	M	si,g
^b <i>Xanthoparmelia dierythra</i> (Hale) Hale	MN	si
^{ab} <i>Xanthoparmelia plintii</i> (Gyelnik) Hale	DJ	w(juniper)
^b <i>Xanthoparmelia subdeciens</i> (Vainio) Hale	N	si
^b <i>Xanthoria candelaria</i> (L.) Th. Fr.	J	org
^{ab} <i>Xanthoria elegans</i> (Link) Th. Fr.	ABMN	ss,ch ss,si,sh
^{ab} <i>Xanthoria fallax</i> (Hepp) Arnold	BFHJKMN	w,b(conifers,hardwoods)
^{ab} <i>Xanthoria polycarpa</i> (Hoffm.) Rieber	BIKN	b(hardwoods,juniper)
<i>Xanthoria ramulosa</i> (Tuck.) Herre	N	b(green ash)
This fungus resembles a lichen; it is neither lichenized nor lichenicolous:		
<i>Lecanidion atratum</i> (Hedw.) Rabenh. Ascomycete fungus.	D	w(juniper)

^aAlso reported by Wetmore, C.M. 1985. Lichens of Theodore Roosevelt National Park. *Mycotaxon* 23:241-249.

^bAlso reported from the Black Hills: Wetmore, C.M. 1967. *Lichens of the Black Hills of South Dakota and Wyoming*. Michigan State University, Publications of the Museum, Biological Series V.3 No.4, East Lansing, and Wetmore, C.M., personal communication.

Location Code - All sites are within Badlands National Park boundaries:

- A US 44 - neck of land connecting north part of park with Sheep Mountain.
- B Cliff Shelf Nature Trail area, Cedar Pass.
- C Old Wall road, 1/2 mi north of intersection with main road near east entrance.
- D Base of Sheep Mountain, near road.
- E Soft channel sandstones, Sheep Mountain road 1/2 mi W of main road.
- F Draw off edge of Sheep Mountain Table, N of fence, E of road.
- G Sandstones, shale nodules in Pierre Shale - near Yellow Mounds overlook.
- H Juniper stand above Early Life overlook.
- I Stream bed and flat 1/4 mi S of Conata picnic ground.
- J Cedar Butte southwest off Sheep Mountain.
- K Millard Ridge area, Cedar Pass.
- L Medicine Root Trail, eastern Castle Trail area.
- M Sage Creek campground area including gravel pavements on prairie above valley, wooded draws above creek, Chadron mudstone and Pierre shale outcrops, and creek bottom.
- N Fog Creek area, east of Cuny Table.

Substrate code:

- ss Sandstone: Most sandstone in BADL has calcareous cement which reacts HCl+.
- ch ss Hard channel sandstone, specifically. Reacts HCl+
- si Chalcedony or other silicious or granitic rocks (e.g. Medicine Root gravels) reacting HCl-.
- t Tufa layers, which react HCl+
- sh Pierre shale, which reacts weakly HCl+
- m Mudstone, which reacts HCl+.
- org Organic, non-woody substrates including moss, dead grass.
- w Wood: Species listed when known. See Bark, below.
- b Bark: Species of woody plants are listed. If three or more deciduous species, "hardwoods" is listed, except for Sage, which is always listed separately. If both Juniper or Eastern redcedar and Ponderosa pine, "conifers" was listed.
- g Soil.
- p Parasitic on lichens (lichenicolous). Substrate of host lichens is given.

Nomenclature:

Unless otherwise noted, all names are taken from:

Esslinger, T.L. and R.S. Egan. 1995. A sixth checklist of the lichen-forming, lichenicolous and allied fungi of the continental United States and Canada. *The Bryologist* 98:467-549.

Other citations:

Cannon, P.F., D.L. Hawksworth & M.A. Sherwood-Pike. 1985. *The British Ascomycotina. An annotated checklist*. Commonwealth Agricultural Bureaux, Slough, UK 302 pp.

Harris, R.C. 1978. *Lichens of the Straits counties, Michigan*. Published by the author, Herbarium, University of Michigan.

Sheard, J.W. 1998. *Rinodina riparia* (Lichenized Ascomycetes, Physciaceae), a new corticolous species from North America. *Mycotaxon*