An enumeration of lichens from Shimla district, Himachal Pradesh

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Srivastava, R., Yadav, V., Upreti D.K., & Nayaka, S. 2004. An enumeration of lichens from Shimla district, Himachal Pradesh. *Geophytology* **33** (1&2): 29-34.

Fourteen localities of nine forest sites in Shimla district of Himachal Pradesh, surveyed for collection of lichens, show presence of 192 species of (58 genera) of lichens. The Narkanda (Hatu Peak, Kotegarh) and Rohru (Sungri, Tikkri and Chirgaon) areas located between the altitudes of 1700-3300 m exhibit maximum number of lichens represented by 86 and 85 species respectively. Bark inhabiting lichens showed clear dominance with 138 species (74%) over rock and soil-inhabiting lichens represented by 85 and 10 species respectively. The forest sites with less human activity harbor more diverse lichen species. The foliose forms of lichens are dominating in the district. The lichens in the area exhibit preference for *Pinus* trees to grow. A total of 54 species are added to the earlier known lichen flora of Himachal Pradesh.

Key-words-Lichens, Shimla District, Himachal Pradesh.

INTRODUCTION

THE Shimla district of Himachal Pradesh lies in the humid subtemperate zone. The natural vegetation of the area is comprised of *Cedrus deodara* and *Pinus roxburghii* with a rare mixture of *Rhododendron, Abies, Quercus leucotrichophora, Quercus semecarpifolia* and *Elianthus*. Artificial vegetation comprises of orchards of apple and peach.

The collection of lichens was made from base to chest height of the tree trunk and from other substratum (rocks & soil/mosses) at forest floor from fourteen localities of nine forest sites (Table 1). About 1000 specimens were collected along with relevant details, dried and preserved in the Lichen Herbarium of National Batanical Research Institute (LWG), Lucknow. The specimens were identified by studying the morphology, anatomy and chemistry. The procedure of Awasthi (1991, 1998, 2000), Divakar (2001) were followed for identification of most of the parmelioid taxa. The morphology of the taxa was studied under stereo-zoom binocular microscope. The anatomical details of fruiting bodies were studied in free hand sections with water as mounting medium under compound microscope. The chemistry of the specimens was carried out following Walker & James (1980). The colour spot tests were carried out on cortex and medulla with usual chemical reagents such as aqueous Potassium Hydroxide, Steiner's stable paraphyenylenediamine and aqueous Calcium hypochlorite. Thin layer chromatography was performed for authentic identification of the lichen substances in solvent system A (Toluene 180: 1-4 dioxane: Acetic acid 8).

OBSERVATION

A total of 1000 specimens collected from the Shimla District resulted in the occurrence of 192 species (Table 2) belonging to 58 genera which is about 64% of the earlier known lichens from whole of the Himachal Pradesh (Upreti and Nayaka, 2000). Narkanda and Rohru sites exhibit maximum number of lichen species represented by 86 and 85 species respectively followed by Rampur and Jubbal with 60 and 57 species respectively. The dominance of undisturbed forest patches and more or less low tourist activity in the area leads to the luxuriant growth of lichens in the sites. Nerva, Chaupal and Kasumpti areas have more or less scarce growth of lichens represented by 20, 24 and 30 species respectively. The reason for scarce growth of lichens in the areas may probably be the disturbed condition of forest by the human activity. In the Kufri and Theog area most of the forest are removed for orchard and agriculture

Table 1. Showing altitude and vegetation of localities surveyed for collection of lichens

Site	Sub-locality	Altitude	Dominant Vegetation
Nerva	Ranakayar	2000 m	*Pinus roxburghii, Ellanthus*
Chaupal	Ghaddal	2328 m	*Cedrus deodara*
Theog	Chhaila	2510 m	*Cedrus deodara, Pinus roxburghii*
Kufri	Chini Bunglow	2500 m	*Cedrus deodara, Quercus semecarpifolia, Abies pindrow*
Kasumpti	Sargin	2200 m	*Cedrus deodara, Pinus roxburghii*
	Kotegarh	2000 m	*Cedrus deodara, Pinus roxburghii*
Narkanda	Hatu Peak	2800-3360 m	*Quercus, Rhododendron, Abies pindrow*
	Sarhan	2000 m	*Cedrus deodara, Pinus roxburghii*
Rampur	Gaura	1800 m	*Cedrus deodara, Quercus leucotrichophora*
	Sungri	2600 m	*Cedrus deodara, Abies pindrow*
Rohru	Chirgaon	1700 m	*Pinus roxburghii*
	Tikkri	1700 m	*Pinus roxburghii*, Apple orchard
	Sandali nala	1650 m	*Pinus roxburghii, Cedrus deodara, Abies pindrow*
Jubbal	Kharapathar	2500 m	*Pinus roxburghii, Cedrus deodara*

Table 2. Distribution of lichens in various localities of Shimla District along with their availability on various substrates (*shows new records from Himachal Pradesh)

Serial No.	Taxa	Nerva	Chaupal	Theog	Kufri	Kasumpti	Narkanda	Rampur	Rohru	Jubbal	Substrate type	Lichen	Tree type	
1	*Arthonia arctata* Stirton*	-	-	-	-	-	+	-	-	-	C	Cr	Ced	R
2	*Aspicilia almorensis* Räs.	-	-	-	-	-	+	+	+	-	S	Cr	-	C
3	*Aspicilia caesiocinerea* (Nyl. ex Malbr) Arnold	-	-	-	-	+	-	+	-	-	S	Cr	-	R
4	*Aspicilia calcarea* (L.) Mudd.	-	-	-	+	-	-	-	-	-	S	Cr	-	R
5	*Aspicilia praeradiosa* (Nyl.) Poelt & Leuk.	-	+	-	-	-	+	-	-	-	S	Cr	-	R
6	*Awasthiella indica* K. Singh	+	-	-	-	-	-	-	-	-	S	Cr	-	R
7	*Bacidia alutacea* (Krempelh.) Zahlbr.	-	-	-	-	-	-	-	+	-	C	Cr	Pin	R
8	*Bacidia medialis* (Tuck. in Nyl.) Zahlbr.	-	-	-	-	-	-	-	+	-	C	Cr	Pin	R
9	*Bacidia millegrana* (Taylor) Müll. Arg.	-	-	-	-	-	-	-	+	-	C	Cr	-	R
10	*Bacidia psorina* (Nyl. in Hue.) Pant & Awas.	-	-	-	-	-	-						Ced	
11	*Bacidia rosella* (Pers.) de Not.	-	-	-	-	-	-	-	+	-	C	Cr	-	R
12	*Bacidia rubella* (Hoffm.) Massal.	-	-	-	-	-	-	+	-	-	C	Cr	Pin	R
13	*Bacidia submedialis* (Nyl.) Zahlbr.	-	-	-	-	-	-	-	+	-	C	Cr	Pin	R
14	*Buellia disciformis* (Fr.) Mudd.	-	+	+	+	-	-	-	+	-	C	Cr	Pin, Ables, Ced	C
15	*Buellia discors* (Stiz.) Magn.	-	-	-	-	-	-	-	-	+	C	Cr	Pin	R
16	*Buellia indica* S. Singh & Awasthi*	-	-	-	-	-	+	-	-	-	S	Cr	-	R
17	*Buellia montana* Magnusson	-	-	-	-	+	-	+	-	-	C, S	Cr	Ced	R
18	*Buellia punctata* Magn.	+	-	-	-	+	+	-	+	-	C	Cr	Ced, Abies	C
19	*Bulbothrix bulbochaeta* (Hale) Hale*	-	-	-	-	-	-	+	-	-	S	F	Pin, Ced, Quer	R
20	*Bulbothrix meizospora* (Nyl.) Hale	-	-	+	+	+	+	+	-	-	C, S	F	Pin, Pea, Ced	C
21	*Calicium abientinum* Pers.	-	-	-	+	-	+	-	-	-	C	Cr	Ables	R
22	*Calicium adspersum* Pers.	-	-	-	+	-	-	-	-	-	C	Cr	Ables	R
23	*Caloplaca biatorina* (Massal.) Steiner*	-	-	-	-	-	-	-	+	-	S	Cr	-	R
24	*Caloplaca ferruginea* (Huds.) Th.Fr.	-	-	+	-	-	-	-	-	-	C	Cr	Pin, Ced	R
25	*Caloplaca flavorubescens* (Huds.) Laundon	-	+	+	+	+	+	+	+	-	C,S	Cr	Abies,Ced,Pin, Quer	A
26	*Caloplaca holocharpa* (Hoffm.) Wade	-	-	+	-	-	-	-	-	+	C	Cr	Pin	R
27	*Caloplaca homologa* Nyl.*	-	-	-	-	-	-	-	+	-	C	Cr	-	R
28	*Caloplaca insularis* (Poelt)	-	-	-	-	-	+	-	-	-	S	Cr	-	R
29	*Caloplaca malaensis* (Räs) Awas.	-	-	-	-	-	+	-	-	-	C	Cr	-	R
30	*Caloplaca saxicola* (Hoffm.) Nordin	-	-	-	-	-	+	+	+	+	S	Cr	-	C

31	*Candelaria concolor* (Dicks) B. Stein	-	-	-	-	-	-	-	-	+	C	Cr	-	R
32	*Canomaculina subtinctoria* (Zahlbr.) Elix*	-	-	-	-	-	+	+	+	-	C,S	F	Ced, Pin	C
33	*Canoparmelia aptata* (Kremph) Elix & Hale	-	-	-	-	-	+	-	-	-	C	F	Pin	R
34	*Canoparmelia crozalsiana* (B. de Lesd) Elix & Hale*	-	-	-	-	-	-	-	-	+	C	F	Pin	R
35	*Canoparmelia texana* (Tuck.) Elix & Hale	-	-	-	-	+	-	-	+	+	C	F	-	C
36	*Catellaria* sps	-	-	-	-	-	-	-	-	+	S	Cr	-	R
37	*Cetraria potaninii* Oxner*	-	-	-	-	-	-	-	-	+	S	F	-	R
38	*Cetraria pallescens* Schaerer in Moritzi	-	-	-	-	-	+	-	-	-	C	F	Pin	R
39	*Cetraria laeteflava* Zahlbr.*	-	-	-	-	-	-	-	-	+	C	F	-	R
40	*Cetraria wallichiana* (Taylor) Müll. Arg.*	-	-	-	-	-	+	-	-	-	C	Cr	-	R
41	*Cetrelia braunsiana* (Müll. Arg.) Culb. & C. Culb	-	-	-	-	-	-	-	-	+	S	F	-	R
42	*Cetrelia cetrarioides* (Delisi ex Duby) Culb & C. Culb.	-	-	-	-	-	-	-	+	-	S	F	-	R
43	*Cetrelia olivetorum* (Nyl.) Culb. & C. Culb.	-	-	-	-	-	+|	-	+	-	C	F	-	R
44	*Cetrelia pseudolivetorum* (Asah.) Culb. & C. Culb.	-	-	-	-	-	-	-	+	-	C	F	-	R
45	*Chaenotheca chrysocephala* (Turner ex. Ach.) Th. Fr.*	-	-	-	-	-	-	-	+	-	C	Cr	-	R
46	*Chrysothrix candelaris* (L.) Laundon	-	-	-	+	+	+	+	+	+	C,S	Cr	Ced, Pin	A
47	*Chrysothrix chlorina* (Ach.) Laundon	+	+	-	-	-	-	+	+	+	C	Cr	Pin, Ced	C
48	*Cladionia coniocraea* (Flörke) Spreng.	-	-	-	-	-	-	+	+	+	C	Fr	Pin, Ced	C
49	*Cladonia awasthiana* Ahti & Upreti*	-	-	-	-	-	-	+	+	+	T	Fr	-	C
50	*Cladonia cartilagenea* Müll. Arg.	-	-	-	-	-	-	+	-	-	T	Fr	-	R
51	*Cladonia corniculata* Ahti & Kashiwadani	-	-	-	-	-	+	-	-	-	C	Fr	DW	R
52	*Cladonia fenestralis* Mumo*	-	-	-	-	-	-	+	-	-	C	Fr	DW	R
53	*Cladonia ochrochlora* Flörke*	-	-	-	-	-	+	-	-	-	C	Fr	Quer	R
54	*Cladonia pocillum* (Ach.) Grognot*	-	-	-	-	-	+	-	-	-	C	Fr	Ques	R
55	*Cladonia pyxidata* (L.) Hoffm.*	-	-	-	-	-	+	-	-	-	C	Fr	-	R
56	*Cladonia ramulosa* (With.) Laundon*	-	-	-	-	-	-	-	-	+	C	Fr	-	R
57	*Collema auriforme* (With.) Coppins & Laundon	-	+	-	+	-	+	+	+	-	S, C	F	Quer, Ced	C
58	*Collema* sps	-	-	-	-	-	+	+	-	+	C	F	Pin	C
59	*Collema subflaccidum* Degel.	-	-	-	-	-	+	+	-	+	C	F	Pin	C
60	*Collema tenax* (Swartz.) Ach. emend.Degel.	+	-	-	-	-	-	-	-	-	C	F	Eli	R
61	*Dernatocarpon miniatum* (L.)Mann	-	-	+	+	-	+	+	+	+	S	F	-	R
62	*Dermatocarpon vellereum* Zschacke	+	-	-	-	-	+	+	-	-	S	F	-	A
63	*Dimelaena oreina* (Ach.) Norman	-	-	+	-	-	-	-	+	-	C	Cr	Ced	R
64	*Diploschistes scruposus* (Schreber) Norman	-	-	-	-	-	-	+	-	-	S	Cr	-	R
65	*Endocarpon subrosettum* A. Singh & Upreti	-	-	+	-	-	-	+	+	-	S,T	Cr	-	C
66	*Everniastrum cirrhatum* (E. Fries) Hale	-	+	+	+	+	+	+	+	+	C, S	F	Pin, Ced, Ab	A
67	*Everniastrum nepalense* (Taylor) Hale	-	-	-	-	-	-	+	+	-	C	F	Pin	R
68	*Flavoparmelia caperata* (L.) Hale	+	+	+	+	+	+	+	+	+	C, S	F	Ced, Pin, Ab, Pea, Quer	A
69	*Flavopunctelia flaventior* (Stirton) Hale	+	+	+	+	-	+	+	+	+	C, S	F	Mella, Ced, Pea, Pin, Ab, Quer	A
70	*Graphis stenospora* Müll.Arg.*	-	-	-	-	-	+	-	-	-	C	Cr	Quer	R
71	*Graphis supertecta* Müll.Arg.*	-	-	-	+	-	+	-	+	-	C	Cr	Quer	C
72	*Heterodermia albidiflava* (Kurok.) Awasthi	-	-	-	-	-	-	-	+	-	C	F	-	R
73	*Heterodermia augustiloba* (Müll.Arg.) Awasthi	-	-	-	-	+	-	+	+	-	C, S	F	Pin	C
74	*Heterodermia coronata* (Kurok.) Awasthi	-	-	-	-	-	+	-	-	-	C	Cr	Quer	R
75	*Heterodermia diademata* (Taylor) Awasthi	-	+	-	-	+	-	-	+	+	C, S	F	Ced	C
76	*Heterodermia dissecta* (Kurok.) Awasthi	+	-	+	-	-	-	+	+	+	C, S	F	Ced, Pin, Quer	C
77	*Heterodermia himalayensis* (Awasthi) Awasthi	-	-	-	-	-	+	-	-	-	C	F	Quer	R
78	*Heterodermia firmula* (Nyl.) Trevisan	-	-	-	-	-	-	-	+	-	S	F	-	R
79	*Heterodermia hypocaesia* (Yasuda.) Awasthi	-	+	-	+	-	+	+	+	+	S, T, C	F	Ced, Pin, Quer	A

80	*Heterodermia incana* (Stirton) Awasthi	-	+	-	-	+	+	-	+	+	C	F	Ced, Pin	C
81	*Heterodermia isidiophora* (Vainio) Awasthi*	-	-	-	-	-	+	-	-	-	C	F	Abies, Pin	R
82	*Heterodermia japonica* (Stato) Swinsc. & Krog*	-	-	-	-	-	+	-	-	+	S, C	F	Pin, Ced	R
83	*Heterodermia leucomela* (L.) Poelt	-	+	-	+	-	+	-	-	-	C	F	Quer, Pin, Ced	C
84	*Heterodermia obscurata* (Nyl.) Trevisan	-	-	-	-	+	+	-	+	-	S, C	F	Pin, Ced	C
85	*Heterodermia pellucida* (Awas.) Awasthi*	-	-	-	+	-	+	-	-	-	C	F	Ced	R
86	*Heterodermia pseudospeciosa* (Kurok.) Culb.	-	-	-	-	+	-	-	+	-	C	F	Ced	R
87	*Heterodermia rubescens* (Räs) Awasthi	-	-	-	-	-	-	+	+	+	C, S	F	Pin	C
88	*Heterodermia speciosa* (Wulfen) Trevisan	-	-	-	-	-	-	+	-	-	S	F	-	R
89	*Hyperphyscia adglutinata* (Flörke) Mayrh. & Poelt	+	-	-	-	-	-	-	-	-	C	F	-	R
90	*Lecanora achroa* Nyl.	-	-	-	+	+	-	-	-	-	C	Cr	Pin, Quer	R
91	*Lecanora alba* Lumbsch	-	-	-	-	-	-	-	-	+	C	Cr	Ced	R
92	*Lecanora austrointumescens* Lumbsch & Elix*	-	-	-	-	-	+	-	-	-	S	Cr	-	R
93	*Lecanora caesiorubella* Ach.	-	-	+	-	-	-	+	-	-	S	Cr	-	R
94	*Lecanora flavidofusca* Müll.Arg.	-	-	+	-	+	-	-	-	+	C	Cr	Pin	C
95	*Lecanora flavomarginata* B. de Lesd*	-	-	+	-	-	-	-	-	-	C	Cr	Pin	R
96	*Lecanora helva* Stiizenb.	-	-	-	-	-	+	-	+	-	C	Cr,	Pin Dw	R
97	*Lecanora interjecta* Müll.Arg.	-	+	-	-	-	-	-	-	+	C	Cr	Pin	R
98	*Lecanora leprosa* Fée	-	-	-	-	-	+	-	-	-	C	Cr	Quer	R
99	*Lecanora muralis* (Schreb.) Rabneh.	-	-	+	+	-	-	+	+	-	S	Cr	-	C
100	*Lecanora muralis* var. *dubyi* (Müll.Arg.) Poelt	-	-	-	-	-	+	+	-	-	S	Cr	-	R
101	*Lecanora muralis* var. *muralis* (Schreber) Rabneh.	-	+	-	-	-	-	-	-	-	S	Cr	-	R
102	*Lecanora pseudodistera* Nyl.	-	-	+	-	-	-	-	-	-	S	Cr	-	R
103	*Lecanora pseudoargrentata* Lumbsch*	-	-	-	+	-	-	-	-	-	C	Cr	Ced	R
104	*Lecanora queenslandica* C. Knight in F.M.Bailey	-	-	-	-	-	-	+	+	-	S	Cr	-	R
105	*Lecanora saligna* (Schard.) Zahlbr.*	-	-	+	-	-	-	-	-	-	S	Cr	-	R
106	*Lecanora subimmersa* (Fée) Vainio	-	-	-	+	-	-	-	-	-	S	Cr	-	R
107	*Lecidella alaiensis* (Vainio) Hertel*	-	-	-	-	-	-	+	-	-	S	Cr	-	R
108	*Lecidella elaeochroma* (Ach.) M. Choisy	-	-	-	-	-	-	-	+	-	S	Cr	-	R
109	*Leptogium austro-americanum* (Malme) Dodge	-	-	-	-	-	-	-	-	+	C	F	-	R
110	*Leptogium burnetiae* Dodge	-	-	-	-	-	-	+	+	-	S	F	-	R
111	*Leptogium papilliosum* (B. de. Lesd) Dodge	+	+	-	+	-	+	+	+	+	C, S	F	Quer	A
112	*Leptogium pedicillatum* P. Jørg.	-	-	-	+	-	+	-	+	-	C, S	F	Quer	C
113	*Leptogium saturnium* (Dickson) Nyl.	-	-	-	-	-	+	-	+	-	C, S	F	Quer	R
114	*Lobaria retigera* (Bory.) Trevisan	-	-	-	-	-	+	-	+	-	C, S	F	Ced	R
115	*Menegazzia terebrata* (Hoffm.) Massal	-	+	-	-	-	-	-	-	-	C	F	Ced	R
116	*Myelochroa aurulenta* (Tuck.) Elix & Hale	+	+	-	+	+	+	+	+	+	C	F	Ced	A
117	*Myelochroa denegens* (Nyl.) Elix & Hale*	-	-	-	-	-	+	-	-	-	S	F	-	R
118	*Myelochroa irrugens* (Nyl.) Elix & Hale*	-	-	-	+	-	-	-	-	-	C	F	Abies	R
119	*Myelochroa macrogalbanica* Divakar, Upreti & Elix*	-	-	-	-	-	-	-	-	+	C	F	Pin	R
120	*Myelochroa upretii* Divakar & Elix*	-	-	-	-	-	-	-	+	-	S	F	-	R
121	*Ochrolechia pallescens* (L.) Massal.*	-	-	-	-	-	+	-	-	-	C	F	Quer	R
122	*Ochrolechia rosella* (Müll.Arg.) Vers.	-	-	-	-	-	+	-	+	+	C	F	Quer	C
123	*Parmelia meiophora* Nyl.	-	-	-	-	-	+	-	-	-	C	F	Quer, Ced, Ab	R
124	*Parmelinella wallichiana* (Taylor) Elix and Hale	-	-	-	+	-	+	-	-	+	C	F	Ced, Pin	C
125	*Parmelaria subthomsonii* (Stirton) Awasthi*	-	-	-	+	-	+	-	+	+	C	F	DW	C
126	*Parmotrema andinum* (Müll.Arg.) Hale	+	-	-	-	+	-	-	-	-	C	F	-	R
127	*Parmotrema austrosinense* (Zahlbr.) Hale.	+	-	-	-	-	+	+	-	-	C, S	F	Pea,	C
128	*Parmotrema melanothrix* (Mont.) Hale	-	-	-	-	-	+	-	-	-	C, T	F	Quer	R
129	*Parmotrema nilgherrense* (Nyl.) Hale	-	-	-	-	-	+	-	-	-	C	F	Abies DW	R
130	*Parmotrema pseudoniegherrense* (Asahina.) Hale	-	-	-	-	-	+	-	-	-	C	F	Ab	R
131	*Parmotrema rampoddense* (Nyl.) Hale*	-	-	-	-	-	-	-	+	-	C	F	Ced	R
132	*Parmotrema tinctorum* (Nyl.) Hale	-	-	-	-	+	+	+	-	-	C, S	F	Ced, Pin	C
133	*Peltigera didactyla* (With.) Laundon*	-	-	-	-	-	-	-	+	-	T	F	-	R
134	*Peltigera dolichorhiza* (Nyl.) Nyl.	-	-	-	-	-	-	-	+	-	T	F	-	R

135	*Peltigera microphylla* (Anders.) Gyelnik	-	-	-	-	-	-	-	-	+	T	F	-	R
136	*Peltigera praetextata* (Flörke ex Sommerf) Zopf	-	-	-	+	-	+	-	+	+	S, T, C	F	Ced	C
137	*Peltigera rufescens* (Weis.) Humb.	-	-	-	-	-	-	-	+	-	T	F	-	R
138	*Pertusaria albescens* (Huds.) Choisy & Wern in Wern	-	-	-	-	-	+	-	+	+	C	Cr	Abies, Ced, Pin	C
139	*Pertusaria concinna* Erichsen	-	-	-	-	-	+	-	-	-	C	Cr	-	R
140	*Pertusaria leucosora* Nyl.*	-	-	-	-	-	-	+	-	-	S	Cr	-	R
141	*Pertusaria leucosorodes* Nyl.*	-	-	-	-	-	+	-	-	-	S	Cr	-	R
142	*Pertusaria multipunctata* (Turner) Nyl.	-	-	-	-	-	-	-	+	-	C	Cr	-	R
143	*Pertusaria pallidula* Stirton	-	-	-	-	-	-	-	+	-	C	Cr	-	R
144	*Pertusaria pertusa* (Weigel) Tuck.	-	-	-	-	-	+	-	-	-	C	Cr	Quer, Abies	R
145	*Pertusaria pustulata* (Ach.) Duby*	-	-	-	-	-	-	-	-	+	C	Cr	Pin	R
146	*Pertusaria rigida* Müll.Arg.*	-	-	+	-	-	+	-	-	-	C	Cr	Pin	R
147	*Pertusaria subdepressa* Müll.Arg.*	-	-	-	-	-	-	-	+	-	C	Cr	-	R
148	*Pertusaria velata* (Turner) Nyl.	-	-	-	-	-	+	-	+	-	C	Cr	Rhodo DW	R
149	*Phaeophyscia ciliata* (Hoffm.) Moberg*	-	-	-	+	+	-	-	+	-	C, S	F	Quer	C
150	*Phaeophyscia hispidula* (Ach.) Essl.	+	+	+	+	-	+	+	+	+	S, T, C	F	Quer, Elia	A
151	*Phyaeophyscia orbicularis* (Necker) Moberg	-	-	-	-	-	-	-	+	-	S	F	-	R
152	*Physcia abuensis* Awsathi & S. Singh	+	-	-	-	-	-	-	-	-	C	F	Elia	R
153	*Physcia adscendens* (Fr.) Oliver*	+	-	-	-	-	-	-	-	-	C	F	Ced	R
154	*Physica aipolia* (Ehrh in Humb.) Furner	-	-	-	-	+	-	-	-	-	C	F	Ced	R
155	*Physcia alba* (Fée) Müll.Arg.*	-	-	-	-	-	-	-	-	+	C	F	Pin	R
156	*Physcia dilatata* Nyl.	+	-	+	-	+	-	-	+	-	C, S	F	Pin, Elia, Ced	C
157	*Physcia dubia* (Hoffm.) Lett. emend. Lynge*	-	-	-	-	-	-	+	+	+	S,T	F	Pin	C
158	*Physcia phea* (Tuck.) Thomson*	-	-	-	-	-	-	+	-	-	S	F	-	R
159	*Physconia enteroxantha* (Nyl.) Poelt	-	-	-	-	+	+	-	-	-	S,C	F	Pin	R
160	*Physconia mucigens* (Ach.) Poelt	-	-	-	-	-	-	+	-	-	S	F	-	R
161	*Porpida albocoerulescens* (Wulfen) Hertel & Knoph in Hertel	-	-	-	+	-	+	+	+	-	S	C	-	C
162	*Porpidia crustulata* (Ach.) Hertel Knoph in Hertel*	-	+	-	-	-	+	-	+	+	S	Cr	-	C
163	*Porpidia macrocarpa* (DC.) Hertel & Schwab in Hertel	-	-	-	-	-	+	-	-	-	S	Cr	-	R
164	*Psilolechia lucida* (Ach.) Choisy*	-	-	-	+	-	-	-	-	-	C	Cr	Quer	R
165	*Punctelia borrreri* (Sm.) Krog	+	_	+	-	-	-	+	+	+	C, S	F	Pin, Elia, Ced	C
166	*Punctelia neutralis* (Hale) Krog*	-	-	+	-	+	+	+	+	+	C, S	F	Pin	A
167	*Punctelia rudecta* (Ach.) Krog	-	-	-	-	+	+	+	+	+	C, S	F	-	C
168	*Punctelia subrudecta* (Nyl.) Krog	-	-	-	-	+	-	-	-	-	C	F	-	R
169	*Pyxine berteriana* Awasthi	-	-	-	-	-	-	+	-	-	C, S	F	Pin	R
170	*Pyxine phillipina* Vainio*	-	-	-	-	-	-	-	+	-	C	F	-	R
171	*Ramalina angulosa* Laurer in Th. Fr.	-	-	-	-	-	-	+	-	-	S	Fr	-	R
172	*Ramalina celastri* (Sprengel) Krog & Swinsc.	-	-	-	-	+	-	-	-	-	C	Fr	Pin	R
173	*Ramalina pacifica* Asah.	-	-	-	-	+	-	-	-	-	C	Fr	-	R
174	*Ramalina roesleri* (Hoschst in Schaerer) Hue	-	-	-	-	-	+	-	-	-	C	Fr	-	R
175	*Ramalina sinensis* Jatta	-	-	+	+	-	+	+	+	+	C, S	Fr	Pin, Ced	A
176	*Ramalina* sp	-	+	-	-	+	+	-	+	-	C	Fr	Ced, Pin	C
177	*Ramalina conduplicans* Vainio.*	-	+	+	+	-	+	+	+	+	C, S	Fr	Pin	A
178	*Rimelia reticulata* (Taylor) Hale & Fletcher	-	-	+	-	+	+	+	+	+	C, S	F	Pin	A
179	*Rinodina megaspora* (Awasthi & Agarwal) Awasthi*	-	-	-	-	-	+	-	-	-	C	Cr	Pin	R
180	*Rinodina sophodes* (Ach.) Massal	-	-	-	-	-	-	+	-	-	C	Cr	Pin	R
181	*Sphinctrina gomphilloides* Nyl.*	-	-	-	-	-	-	-	-	+	C	Cr	Pin	R
182	*Sterocaulon foliolosum* Nyl.	-	-	-	-	-	-	+	-	+	S	Fr	-	R
183	*Umbilicaria indica* Frey.	+	-	-	-	-	-	-	-	-	S	C	-	R
184	*Usnea aciculifera* Vainio	-	+	-	-	-	-	-	-	-	C	Fr	Pin	R

185	*Usnea orientalis* Mot.	-	-	-	+	-	-	-	-	+	C	Fr	-	R
186	*Usnea subfloridana* Stirton	-	-	-	-	-	+	-	-	-	C	Cr	-	R
187	*Usnea subflorida* (Zahlbr.) Mot.*	-	-	-	-	-	+	-	-	-	C	Cr	-	R
188	*Usnea thomsoni* Stirton	-	+	-	-	-	-	-	-	+	C	Fr	-	R
189	*Verrucaria acrotella* Ach.	-	-	-	+	-	-	-	-	-	S	C	-	R
190	*Xanthoparmelia australasica* D. Galloway	-	-	+	-	-	-	+	+	-	S	F	-	C
191	*Xanthoria candelaria* (L.) Th. Fr..	+	-	+	-	-	+	+	+	+	C, S	F	-	A
192	*Xanthoria elegans* (Link.) Th. Fr.	-	-	+	-	+	+	-	+	-	S	F	-	C

S-Saxicolous, C-Corticolous, T-Terricolous, DW- Deadwood; C-Crustose, F-Foliose, Fr-Fruticose; Ced-*Cedrus*, Pin-*Pinus*, Quer-*Quercus*, Ab-*Abies*, Eli-*Elianthus*, Meli-*Melia*, Pea-Peach; R-Rare, C-Common, A-Abundant

practice and hence have moderate lichen growth, represented by 36 and 31 species respectively. Foliose lichens were most abundant represented by 91 species over crustose and fruitcose forms represented by 85 and19 species respectively. Epiphytic lichens grow luxuriantly and represent dominance with 138 species over rock growing and soil growing lichens representing 85 and 10 species respectively. Among 7 most common trees of the area; *Pinus* represented by 61 species followed by *Cedrus, Quercus* and *Abies* with 42, 24 and 20 species respectively. *Rimelia reticulata* (Taylor) Hale & Fletcher, *Phaeophyscia hispidula* (Ach.) Essl., *Flavopunctelia flaventior* (Stirton) Hale, *Myelochroa auroulenta* (Tuck.) Elix and Hale, *Everniastrum cirrhatum* (E.Fries) Hale, *Flavoparmelia caperata* (L.) Hale, *Ramalina conduplicans* Vainio, *Leptogium papilliosum* (B. de. Lesd) Dodge, *Caloplaca flavorubescens* (Huds.) Laundon, were most commonly occurring lichens in the study area.

It is clear from the above observations that Shimla district provides few suitable habitats for a variety of lichens to grow. The fast pace of urbanization and replacement of forest for development of orchards and for other purposes will definitely change the diversity of the lichen flora in future. The present inventory of lichens will be a record to know the exent of change in the microclimatic and environment conditions of the area.

ACKNOWLEDGEMENT

We are thankful to Director, National Botanical Research Institute, Lucknow for providing necessary laboratory facilities and to the Ministry of Environment and Forest, Government of India for financial support. To the authoriteis of Forest Department for providing Guest Houses and other necessary permission and to all fellow workers of Lichenology Laboratory for thier kind co-operation.

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