



## APPENDICES

## Appendix-I:

## Checklist of lichens of central Western Ghats of Karnataka

Species name	Species code	Family	Substrate	Status
<i>Bulbothrix isidiza</i> (Nyl.) Hale	Bulbisid	Parmeliaceae	Cortico/Sax	A
<i>Candelaria concolor</i> (Dicks.)B.Stein	Candconc	Candelariaceae	Corticolous	R
<i>Canoparmelia</i> sp Elix &Hale	Canospec	Parmeliaceae	Corticolous	R
<i>Canoparmelia texana</i> (Tuck.)Elix & Hale	Canotexa	Parmeliaceae	Corticolous	C
<i>Cetraria</i> sp Ach.	Cetspec	Parmeliaceae	Terricolous	VR
<i>Cladonia</i> sp Hill ex P.Browne	Cladspec	Cladoniaceae	Terricolous	R
<i>Cladonia ramulosa</i> (With.) J. Laundon	Cladramu	Cladoniaceae	Terricolous	C
<i>Coccocarpia palmicola</i> (Spreng.) Arvid. & D. Gall.	Coccpalm	Coccocarpiaceae	Corticolous	C
<i>Coccocarpia erythroxyli</i> (Spreng.) Swinsc. & Krog.	Cocceryt	Coccocarpiaceae	Corti/Saxi	A
<i>Collema</i> sp Webber ex wigg.	Collspec	Collemaataceae	Corticolous	C
<i>Collema leptaleum</i> var. <i>biliolum</i> (Mont.) Degel	Collept	Collemaataceae	Corticolous	R
<i>Dirinaria aegialita</i> Afz. In Ach.) Moore	Diriaegi	Physciaceae	Corticolous	R
<i>Dirinaria applanata</i> (Fee) D.Awasthi	Diriappl	Physciaceae	Corticolous	C
<i>Dirinaria</i> sp Tuck.	Dirispe	Physciaceae	Corticolous	C
<i>Dirinaria consimilis</i> (Stirton) D.Awasthi	Diricons	Physciaceae	Corticolous	R
<i>Dirinaria</i> sp2 Tuck.	Dirispe2	Physciaceae	Corticolous	R
<i>Endocarpon</i> spHedwing	Endospec	Verrucariaceae	Saxicolous	VR
<i>Endocarpon Pusillum</i> Hedwing	Endopusi	Verrucariaceae	Saxicolous	R

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<i>Everniastrum nepalense</i> (Taylor) Hale ex Sipman	Evernep	Parmeliaceae	Cort/Teri	C
<i>Everniastrum cirrhatum</i> (Fr.)Hale ex Sipman	Evercirr	Parmeliaceae	Corticolous	R
<i>Flavoparmelia</i> sp Hale	Flavspec	Parmeliaceae	Corti/Saxi	R
<i>Heterodermia albidiflava</i> (Kurok.) D.Awasthi	Hetealbi	Physciaceae	Corticolous	C
<i>Heterodermia angustiloba</i> (Mull.Arg.)D.Awasthi	Heteangu	Physciaceae	Saxicolous	C
<i>Heterodermia comosa</i> (Eschw.) Follman and Redon	Hetecomo	Physciaceae	Corticolous	R
<i>Heterodermia dendritica</i> (Pers.)Poelt	Hetedend	Physciaceae	Corticolous	C
<i>Heterodermia diademata</i> (Taylor) D.D.Awasthi	Hetediad	Physciaceae	Corti/ Saxi	C
<i>Heterodermia dissecta</i> (Kurok.) D.D.Awasthi	Hetediss	Physciaceae	Corticolous	C
<i>Heterodermia firmula</i> (Nyl.) Trevis.	Hetefirm	Physciaceae	Terricolous	R
<i>Heterodermia hypocaesia</i> (Yasuda) D.Awasthi	Hetehypo	Physciaceae	Corticolous	VR
<i>Heterodermia incana</i> (Stirton) D.Awasthi	Heteinca	Physciaceae	Cortic/Saxi	R
<i>Heterodermia japonica</i> (Sato) Swinsc. And Krog	Hetejapo	Physciaceae	Corticolous	R
<i>Heterodermia microphylla</i> (Kurok.) Skorepa	Hetemicr	Physciaceae	Corticolous	C
<i>Heterodermia obscurata</i> (Nyl.)Trevis.	Heteobsc	Physciaceae	Corticolous	R
<i>Heterodermia pseudospeciosa</i> (Kurok.) W. Culb.	Hetepseu	Physciaceae	Corticolous	R
<i>H. Leucomela</i> (L.) Poelt	Heteleu	Physciaceae	Corticolous	R
<i>Heterodermia speciosa</i> (Wulf.) Trevis.	Hetespec	Physciaceae	Corticolous	R
<i>Heterodermia tremulans</i> (Mull. Arg.) W. Culb	Hetetrem	Physciaceae	Terricolous	C
<i>Hyperphyscia adglutinata</i> (Florke) Mayerh. and Poelt	Hypeadgl	Physciaceae	Corticolous	R
<i>Hypotrachyna</i> sp (Vainio) Hale	Hypospec	Parmeliaceae	Corticolous	R

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<i>Hypotrachyna infirma</i> (Kurok.) Hale	Hypoinfi	Parmeliaceae	Corticolous	C
<i>Hypotrachyna boquetensis</i> (Hale) Hale	Hypoboqu	Parmeliaceae	Corticolous	R
<i>Hypotrachyna crenata</i> (Kurok.) Hale	Hypocren	Parmeliaceae	Corticolous	R
<i>Leptogium aurstroamericanum</i> (Malme) Dodge	Leptaurs	Collemtaceae	Corticolous	C
<i>Leptogium burnetiae</i> Dodge	Leptburn	Collemtaceae	Corti/ Saxi/Ter	C
<i>Leptogium chloromelum</i> (Sw.) Nyl.	Leptchlo	Collemtaceae	Corticolous	C
<i>Leptogium cochleatum</i> (Dikson) P. M. Jorg. and James	Leptcoch	Collemtaceae	Corticolous	R
<i>Leptogium denticulatum</i> Nyl.	Leptdent	Collemtaceae	Corticolous/Ter	R
<i>Leptogium indicum</i> D.D.Awasthi and Akhtar	Leptindi	Collemtaceae	Corticolous	R
<i>Leptogium pichneum</i> (Ach.) Malme	Leptpich	Collemtaceae	Corticolous	R
<i>Leptogium ulvaceum</i> (Pers.) Vain.	Leptulva	Collemtaceae	Corticolous	C
<i>Nephroma</i> sp Ach.	Nephspec	Nephromataceae	Corticolous	VR
<i>Myelochroa xantholepis</i> (Mont. & Bosch)Elix & Hale	Myelxant	Parmeliaceae	Corti/Saxi	R
<i>Parmelia</i> sp Ach. S. str.	Parmmell	Parmeliaceae	Corticolous	R
<i>Parmelinopsia</i> sp Elix &Hale	Parmspec	Parmeliaceae	Corticolous	C
<i>Parmelinella wallichiana</i> (Taylor) Elix & Hale	Parmwall	Parmeliaceae	Corti/Saxi	VC
<i>Parmotrema austrosinense</i> (Zahlbr.) Hale	Parmaust	Parmeliaceae	Corticolous	C
<i>Parmotrema crinitum</i> (Ach.)Choisy	Parmcrin	Parmeliaceae	Corticolous	C
<i>Parmotrema cristiferum</i> (Taylor)Hale	Parmcris	Parmeliaceae	Corticolous	VC
<i>Parmotrema grayanum</i> (Hue)Hale	Parmgray	Parmeliaceae	Saxicolous	C
<i>Parmotrema hababianum</i> (Gyeln.)Hale	Parmhaba	Parmeliaceae	Corticolous	C
<i>Parmotrema mellisii</i> (Dodge) Hale	Pammell	Parmeliaceae	Corticolous	R
<i>Parmotrema praesorediosum</i> (Nyl.) Hale	Parmprae	Parmeliaceae	Saxicolous	C
<i>Parmotrema reticulata</i> (Taylor) Hale	Parmreti	Parmeliaceae	Corticolous	VC

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<i>Parmotrema stuppeum</i> (Taylor) Hale	Parmstup	Parmeliaceae	Corti/Saxi	VC
<i>Parmotrema tinctorum</i> (Nyl.) Hale	Parmtinc	Parmeliaceae	Corti/Saxi	VC
<i>Parmotrema vartakii</i> Hale	Parmvart	Parmeliaceae	Corticolous	VR
<i>Phaeophyscia orbicularis</i> (Neck.) Moberg	Phaeorbi	Physciaceae	Corticolous	C
<i>Phaeophyscia sciastra</i> (Ach.)Moberg		Physciaceae	Saxicolous	R
<i>Phyllopsora buettneri</i> (Mull. Arg.) Zahlbr.	Phylbuet	Biotraceae	Corticolous	VC
<i>Phyllopsora corallina</i> (Eschw.) Mull.Arg.	Phylcora	Biotraceae	Corticolous	R
<i>Phyllopsora haemophaea</i> (Pers.) Mull. Arg.	Phylhaem	Biotraceae	Corticolous	C
<i>Phyllopsora manipurensis</i> (Pers.) Mull. Arg.	Phylmani	Biotraceae	Corticolous	C
<i>Phyllopsora parvifolia</i> (Pers.) Mull. Arg.	Phylparv	Biotraceae	Corticolous	C
<i>Physcia dilatata</i> Nyl.	Physdila	Physciaceae	Corticolous	VC
<i>Physcia tribacia</i> (Ach.) Nyl.	Phystrib	Physciaceae	Corticolous	R
<i>Physma byrsaeum</i> (Ach.) Tuck.	Physbyrs	Collemaaceae	Corticolous	R
<i>Pseudocyphellaria aurata</i> (Sm.ex Ach.)Vain.	Pseuaura	Lobariaceae	Corticolous	C
<i>Punctelia</i> sp Krog.	Puncspec	Parmeliaceae	Corticolous	R
<i>Pyxine coccifera</i> (Fee) Nyl.	Pyxicocc	Physciaceae	Corticolous	VC
<i>Pyxine cocoes</i> (Sw.) Nyl.	Pyxicoco	Physciaceae	Corticolous	VC
<i>Pyxine minuta</i> Vain.	Pyximinu	Physciaceae	Corticolous	VC
<i>Pyxine petricola</i> Nyl. In Crombie	Pyxipetr	Physciaceae	Corticolous	R
<i>Pyxine reticulata</i> (Vainio) Vainio	Pyxireti	Physciaceae	Corticolous	C
<i>Pyxine sorediata</i> (Ach.) Mont. In Sagra	Pyxisore	Physciaceae	Corticolous/Sax	R
<i>Ramalina</i> sp Ach.	Ramaspec	Ramalinaceae	Corticolous	C
<i>Ramalina conduplicans</i> Vainio	Ramacond	Ramalinaceae	Corticolous	VC
<i>Ramalina hossei</i> Vainio	Ramahoss	Ramalinaceae	Corticolous	C
<i>Ramalina hossei</i> var. <i>divericata</i> H.Magn. & G. Awasthi	Ramahoss	Ramalinaceae	Corticolous	VC

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<i>Ramalina nervulosa</i> (Mull. Arg.) Abbeyes	Ramaner	Ramalinaceae	Corticolous	R
<i>Ramalina pacifica</i> Asahina	Ramapaci	Ramalinaceae	Corticolous	C
<i>Ramalina pollinaria</i> (Westr.) Ach.	Ramapoll	Ramalinaceae	Corticolous	VR
<i>Ramalina taitensis</i> Nyl.		Ramalinaceae	Corticolous	C
<i>Relicina abstruse</i> (Vainio) Hale	Reliabst	Parmeliaceae	Corticolous	R
<i>Roccella montagnei</i> Bel.em. D.D.Awasthi	Rocemont	Roccellaceae	Corticolous	R
<i>Teloschistes flavicans</i> (Sw.) Norm.	Teloflav	Teloschistaceae	Corticolous	C
<i>Usnea</i> sp Dill. Ex Adans	Usnespec	Parmeliaceae	Corticolous	C
<i>Usnea aciculifera</i> Vainio	Usneacic	Parmeliaceae	Corticolous	R
<i>Usnea eumitrioides</i> Mot.	Usneeumi	Parmeliaceae	Corticolous	C
<i>Usnea galbinifera</i> Asahina	Usnegalb	Parmeliaceae	Corticolous	R
<i>Usnea ghattensis</i> G.Awasthi	Usneghat	Parmeliaceae	Corticolous	R
<i>Usnea picta</i> (J. Steiner) Mot.	Usnepict	Parmeliaceae	Corticolous	VR
<i>Usnea pictoides</i> G.Awasthi	Usnepict	Parmeliaceae	Corticolous	R
<i>Usnea stigmatoides</i> G.Awasthi	Usnestig	Parmeliaceae	Corticolous	R
<i>Usnea undulate</i> Stirton	Usneundu	Parmeliaceae	Corticolous	C
<i>Usnea vegae</i> Mot.	Usnevega	Parmeliaceae	Corticolous	R
<i>Xanthoparmelia</i> sp (Vainio) Hale	Xantspec	Parmeliaceae	Saxicolous	R
<i>Xanthoparmelia congensis</i> (Stein) Hale	Xantcong	Parmeliaceae	Saxicolous	C

R - rare, C - common, VR - very rare, VC - very common, A - Abundance

**Appendix-II :**

Tree host species studied for lichen growth specificity

Host species	Code	Bark Texture	Bark peeling
<i>Acacia</i> sp	65	2	1
<i>Albezia</i> sp	61	2	1
<i>Alstonia scholaris</i> (L.) R.Br.	1	2	0
<i>Anogeissus latifolia</i> (Roxb. ex DC.) Wall. ex Guill. and Perr.	2	1	2
<i>Aporosa lindleyana</i> L.	3	2	0
<i>Artocarpus integrifolius</i> auct. Non L. f.	4	2	1
<i>Bauhinia malabarica</i> Roxb.	5	1	0
<i>Buknania lonzan</i>	6	2	0
<i>Butea monosperma</i> (Lam.) Taub.	7	2	0
<i>Callicarpa tomentosa</i>	63	1	0
<i>Canarium strictum</i> Roxb.	8	2	0
<i>Canthium</i> sp.	9	2	0
<i>Careya arborea</i>	62	2	0
<i>Cassia siamea</i> Lamk.	10	1	0
<i>Cassine glauca</i> (Rottb.) Kuntze	11	2	0
<i>Cinnamomum malabartrum</i> (Burn. f.) Bl.	12	2	0
<i>Dalbergia latifolia</i> Roxb.	13	1	0
<i>Delonix regia</i> (Bojer ex Hook.) Raf.	14	1	0
<i>Democarpus longani</i>	15	2	0
<i>Dillenia pentagyna</i> Roxb.	16	1	0
<i>Diospyros melanoxylon</i> Roxb.	17	3	0
<i>Diospyros montana</i> Roxb.	18	1	1
<i>Elaeocarpus</i> sp.	19	2	0
<i>Embelica officinalis</i> Gaertn.	20	2	1
<i>Eucaluptus</i> sp.	64	1	2
<i>Ficus bengaliyensis</i>	21	1	0
<i>Ficus racemosa</i> L.	22	1	0
<i>Flacourtina montana</i> Graham	23	2	0
<i>Garcinia gummifera</i> L.f.	24	2	0
<i>Gmelina arborea</i> Roxb.	25	1	0
<i>Grewia tiliifolia</i> Vahl.	26	1	0
<i>Holerrhina antidysentirica</i>	67	1	1
<i>Holigarna arnottiana</i> Talbot	27	2	0

Contd...

<i>Hopea parviflora</i> Bedd.	28	2	0
<i>Humboldtia brunonis</i> Wall.	29	2	0
<i>Ixora</i> sp	70	1	0
<i>Kigelia</i> sp.	30	2	0
<i>Lagerstroemia microcarpa</i> Wight	31	1	2
<i>Litsea floribunda</i> (Bl.) Gamble	32	2	0
<i>Lopopetalum whitiani</i>	33	2	1
<i>Madhuca latifolia</i> (Roxb.) Macbride	34	1	0
<i>Mangifera indica</i>	35	2	1
<i>Michelia champaca</i> L.	36	1	0
<i>Mimusops elengi</i> L.	37	2	0
<i>Miristica</i> sp.	38	2	0
<i>Neolitsea zeylanica</i> (Nees) Merr., Philip.	39	2	0
<i>Olea diocia</i> Roxb.	40	2	0
<i>Peltophorum pterocarpus</i>	69	1	0
<i>Polyalthia cerasoides</i> (Roxb.) Bedd.	41	2	0
<i>Polyalthia longifolia</i> (Sonn.) Thw.	42	1	0
<i>Pterocarpus marsupium</i> Roxb.	43	2	0
<i>Radermachera xylocarpa</i> (Roxb.) K. Schum.	44	3	0
<i>Randia dumetorum</i> (Retz.) Poir.	45	2	1
<i>Santalum album</i> L.	46	2	0
<i>Schefflera oleosa</i> (Lour.) Oken.	47	3	1
<i>Semicarpus anacardium</i>	68	2	0
<i>Simplocus</i> sp.	66	2	0
<i>Syzygium cumini</i> (L.) Skeels	48	2	0
<i>Tabernaemontana heyneana</i> Wall.	49	1	0
<i>Tectona grandis</i> L. f.	50	1	1
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	51	2	0
<i>Terminalia paniculata</i> Roth	52	2	0
<i>Terminalia tomentosa</i> (Roxb. ex DC.) Wight and Arn.	53	3	1
<i>Trichilia connaroides</i> (Wight and Arn.) Bentevelzen	54	2	1
<i>Vateria indica</i> L.	55	2	1
<i>Vitex altissima</i>	56	1	0
<i>Wrightia tinctoria</i>	57	1	1
<i>Xylia xylocarpa</i> (Roxb.) Taub.	58	1	0
<i>Ziziphus rugosa</i> Lam.	59	2	0
<i>Ziziphus xylopyrus</i> (Retz.) Willd.	60	2	0

(Bark texture: 0-smooth, 1- moderate, 2-hard, 3-extremely hard; Bark peeling: 0- no peeling, 1- partially peeling, 2- fully peeling)



### Appendix-III : Glossary

Apothecium	A disc or cup-shaped fruiting body involved in sexual reproduction in lichens. It produces fungal spores. They are used in the identification of lichens. Apothecium, singular; Apothecia, plural. In conversation lichenologists often refer to them as 'the appts'.
Ascospore	A spore formed in the ascus within the apothecia.
Ascus	The sac or bag-like structure in the apothecium that holds spores. It is indicative of the <i>Phylum Ascomycota</i> in the fungi.
Conidium	An asexual fungal spore. Conidia (plural).
Cortex	The outermost layers of a thallus. It consists of tightly woven fungal hyphae. It is sometimes used in chemical tests to verify lichen identification.
Corticolous	A term used to describe lichens that grow on bark.
Crustose	A type of lichen body in which it is impossible to remove the lichen from its substrate without damaging it significantly. This classification is used in the identification of lichens.
Cyanobacterium	A bacterium that can photosynthesise, consequently producing sugars. The old term for these bacteria was <i>blue-green algae</i> . It is recommended that the old term is not used.
Disc	This refers to the surface of the apothecia. The disc can be various colours and be flat, convex or concave. These characteristics are used in the identification of a lichen.
Epithecium	An ill defined region comprising the upper part of hymenium
Foliose	A lichen body shape which is leaf-like with a distinct upper and lower surface. Foliose lichens are usually easily separated from the substrate.
Fruiting body	A term used to describe the sexual reproductive parts of a lichen such as the apothecia or perithecia.
Granular	A term used to describe the thallus which has a sugar-like appearance due to the presence of <i>soredia</i> . Soredia may be used to identify a lichen.
Hyphae	A filament of cells or nuclei in a tube. They make up the bulk of the body of fungi and lichens.
Hymenium	Part of the fruit body comprising the asci and paraphyses
Leprose	A term used to describe a thallus that is wholly made up of <b>soredia</b> .
Lirellate	Long narrow apothecium

Medulla	The loosely woven central internal section of a thallus that is home to photobiont cells.
Mycobiont	The fungal partner of lichen.
Photobiont	The photosynthesising partner in a lichen. It can be algae or a cyanobacteria.
Pseudocyphella, pl. pseudocyphellae	A circular or elongated depression in the cortex (upper or lower) that opens into the light coloured medulla. It is seen under a hand lens as dots or lines and is frequently used to aid in lichen identification.
Rhizine	A root-like structure made from a single hyphal filament that grows from the underside of the thallus. It functions to hold the lichen to the substrate and to absorb nutrients.
Saxicolous	A term used to describe lichens that grow on rocks.
Soredium	A tiny growth (often spherical) of hyphae that holds a few algal cells. It is dispersed by the lichen as a method of vegetative reproduction.
Spore	A sexual reproductive cell produced by the fungal partner of the lichen.
Squamule	A small leaf-like or scale-like structure typically found in the Cladonia group. It lacks rhizines.
Symbiosis	A relationship between two organisms that is usually long term with the following two possibilities: (i) both partners in the symbiosis benefit (mutualistic symbiotic relationship) or (ii) just one partner will benefit at the expense of the other (parasitic symbiotic relationship).
Terricolous	Describes lichens that grow on soil.
Thalline margin	Describes the margin of an apothecium that is continuous with the thallus and is usually the same colour as the thallus.
Thallus	The main vegetative body of the lichen. It is composed of fungal hyphae and a photobiont (algae or cyanobacteria).
Trebouxia	A common green algae found in lichens.
Trentepohlia	A filamentous green algae found as the photobiont in some lichen species. It is often seen growing on bark without its fungal partner (especially on birch) and looks orange in colour.
UV Test	A test to help identify lichens in which ultra violet light is used to show the presence/absence of specific lichen substances.