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Diversity of lichen flora of Odisha, India- A review

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Abstract

Based on the compilation of literature on lichens of Odisha (India) and other specimens and preserved in herbaria, we estimate that 252 species of lichens, belonging to 81 genera and 35 families are known from the state. Graphidaceae with 49 species is the dominant family, followed by Arthoniaceae (21), Pyrenulaceae (19), Parmeliaceae (18), Trypetheliaceae (17), Physciaceae (15), Teloschistaceae (14), Lecanoraceae (13), Pertusariaceae (12), Ramalinaceae (11), Caliciaceae (11), Thelotremataceae (9) and Lecidiaceae (4). Among the lichen genera *Graphis* is dominant with 27 species, followed by *Pyrenula* (16), *Caloplaca* (14), *Pertusaria* (12), *Lecanora* (10), *Parmotrema* (9), *Cryptothecia* (9) and *Pyxine* (6). Accounts of lichens are only available from 13 out of 30 districts. Of these only cursory collections from 10 districts are available, whereas Mayurbhanj, Jharsuguda and Ganjam districts are well-explored for their lichen flora. The present enumeration of more than 250 species clearly indicates a rich diversity of lichens for the state. Further exploration in other unexplored districts will add more species to the lichen flora of the state.

Key words – Ganjam **–** Jharsuguda **–** Mayurbhanj **–** mycobiont **–** phycobiont

Introduction

Lichens are the most fascinating and are widely distributed organisms on earth. These are the plants representing a unique symbiotic consortium comprising a phycobiont (alga) and a mycobiont (fungus) forming a thallus that does not resemble either symbionts in the free living (non-lichenized) state (Awasthi, 2000). Due to the peculiar structure and physiology, lichens are tolerant to extreme abiotic condition, such as drought or cold and they are able to grow in the diverse geographical regions from temperate to tropical in the Earth (Satya et al 2013). Lichens are the vital components of the ecosystem, in terms of substrata, shelter, food, nutrient cycles and succession (Gradstein, 1992). Lichens are found in a wide range of habitats all over the world and dominate terrestrial ecosystems. As many as 20,000 species of lichens have been reported worldwide. The Indian subcontinent is reportedly a reservoir of 2,450 species of lichens, of which India alone possesses more than 2300 species (Singh & Sinha, 2010).

India as a mega-diversity country represents more than 10% of the total world species comprising about 2303 species under 305 genera and 74 families widely distributed in tropical, subtropical, temperate and alpine regions of India (Singh and Sinha, 2010).

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Odisha a coastal State at the eastern side of India located within the latitudes 17°78′ N & 22°.73′ N and longitudes 81°. 37′ E & 87°.53 ′ E. Geographically the state is bounded by the states of West Bengal on the North East, Jharkhand, on the North, Chhatisgarh on the West, and the Andhra Pradesh on the South, the Bay of Bengal on the east. The state has costal line of about 450 kms and extends over an area of 155,707 sq. kms.

Singh and Sinha (2010) listed 44 species of lichens from the state of Odisha, India; However except enumeration of 35 species of lichens from Jharsuguda district (Upreti 1996), 13 species from hill forests of south Odisha (Vasundhara, 2008), 141 species species from Similipal Biosphere Reserve in Mayurbhanj district (Singh & Kumar, 2012) and 12 species from Kapilash Reserve Forest in Dhenkanal district (Nayak et al, 2015) most regions have not been explored for their lichen species. The present review is prepared with an aim to understand the current status of distribution of lichens in different districts of the state. A clear idea of the diversity of lichens will be available once the hitherto unexplored or poorly explored areas are systematically studied for lichens.

Materials & Methods

The review is based on published literature on lichens of Odisha and specimens lodged in CSIR-NBRI herbarium (LWG) from the state. Almost all research papers, monographs, project reports, abstracts available on lichens of the state of Odisha were thoroughly screened and lichen species mentioned therein were listed. Herbaria of CSIR-National Botanical Research Institute, Lucknow (LWG) and P.G. Department of Botany, Utkal University, Bhubaneswar were consulted to find out lichen specimens collected from Odisha in the past. The accession number, date, locality, name of collector- were noted down for compilation. A comprehensive list of lichen species occurring in Odisha was compiled with district-wise distribution together with nomenclatural changes of different taxa.

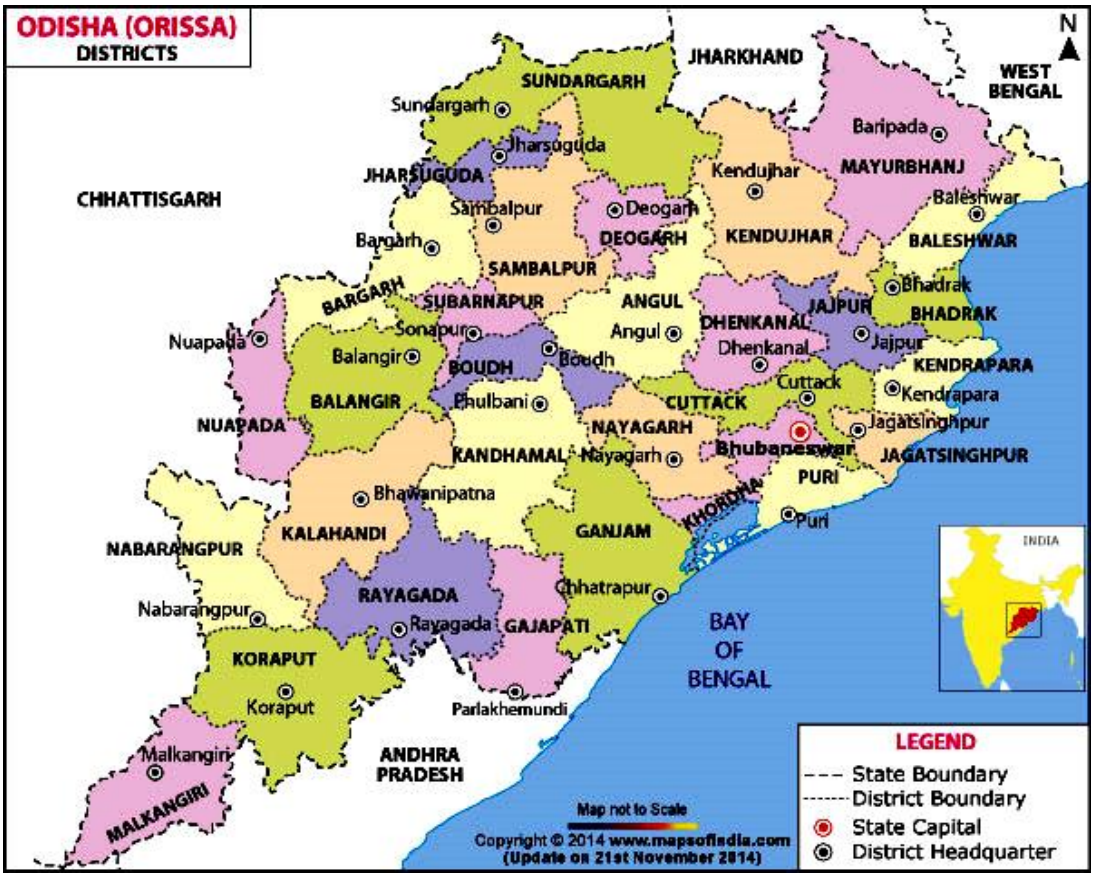

Fig.1 − Map of Odisha, India

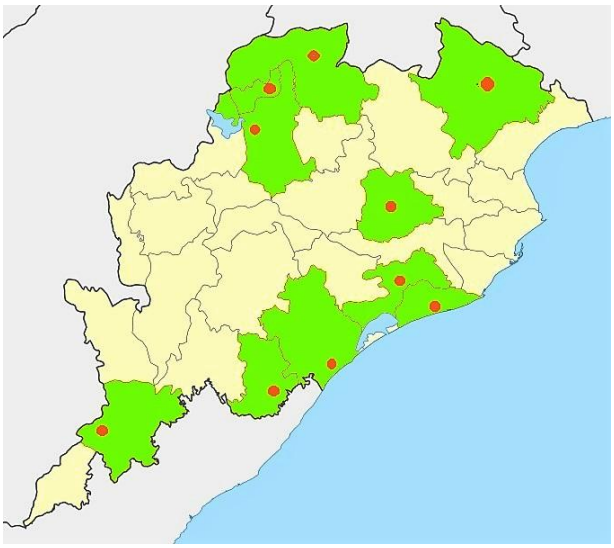

Fig. 2 − Sites from which lichen species are reported /collected in Odisha, India

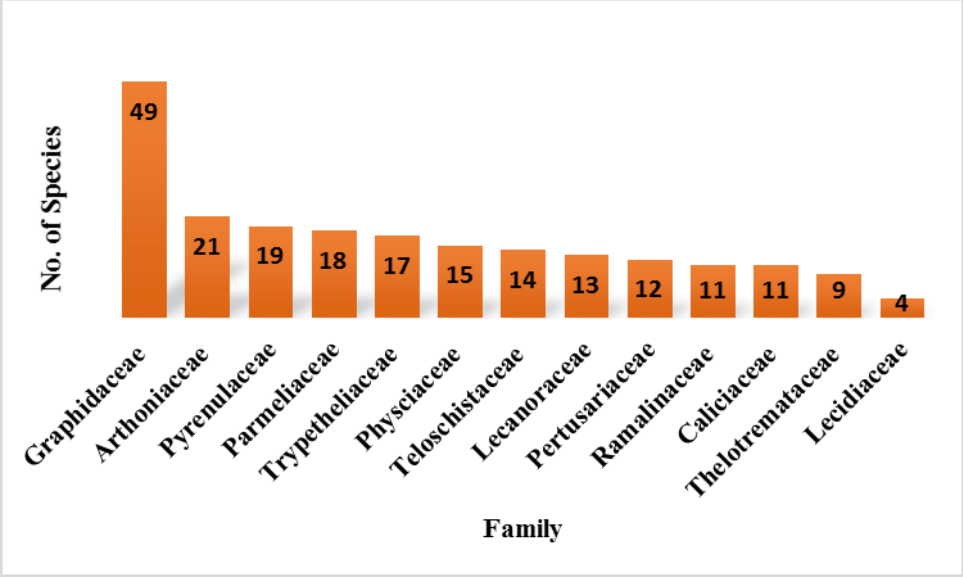

Fig. 3 − Family-wise distribution of lichen species in Odisha

Results and Discussion

The outcome of the work revealed the occurrence of 252 species of lichens belonging to 81 genera and 35 families in the state of Odisha (Table −1), Graphidaceae with 49 species is the dominant family followed by Arthoniaceae (21), Pyrenulaceae (19), Parmeliaceae (18), Trypetheliaceae (17), Physciaceae (15), Teloschistaceae (14), Lecanoraceae (12), Pertusariaceae (12), Ramalinaceae (11), Caliciaceae (11), Thelotremataceae (10) and Lecidiaceae (5). The lichen genus *Graphis* with 27 species dominates the state followed by *Pyrenula* (16), *Caloplaca* (14), *Pertusaria* (12), *Lecanora* (10), *Parmotrema* (9), *Cryptothecia* (9) and *Pyxine* (6). The Mayurbhanj district has the maximum diversity of lichens represented by141 species followed by Jharsuguda (31), Ganjam (21), Gajapati (7), Dhenkanal (5), Koraput (3), Khordha (3), Puri (1), Sambalpur (1) and Sundergarh (1). The distribution of lichens in different districts clearly indicates that only 10 districts were explored systematically for their lichen flora while the remaining 20 districts are completely unexplored for lichens. Occurrence of more than 250 species only form 10 districts indicates a rich diversity of lichens in the state. An extensive and intensive exploration of unexplored areas will definitely add many more lichen taxa to the lichen biota of the state.

Table 1 Distribution of Lichens in different districts of Odisha, India

Sl. No.	Name of Lichen	Family	Location	District/ State
1.	*Anisomeridium terminatum* (Nyl.) R.C. Harris 1995	Monoblastaceae	Similipal	Mayurbhanj
2.	*Anthracothecium pustuliferum* Ajay Singh	Pyrenulaceae	-	Odisha
3.	*Anthracothecium thwaitesii* (Leight) Müll. Arg.	Pyrenulaceae	Similipal	Mayurbhanj
4.	*Anthracothecium variolosium* (Pers.) Müll.Arg.	Pyrenulaceae	Similipal	Mayurbhanj
5.	*Arthonia medusula* (Pers.) Nyl.	Arthoniaceae	Similipal	Mayurbhanj
6.	**Arthonia* sp.	Arthoniaceae	Khordha	Khordha
7.	*Arthonia translucens* Stirt.	Arthoniaceae	Similipal	Mayurbhanj
8.	*Arthonia tumidula* (Ach.) Ach.	Arthoniaceae	Similipal	Mayurbhanj
9.	*Arthopyrenia terminata* (Nyl.) Mull. Arg.	Arthopyreniaceae	Kharubaba Ashram	Jharsuguda
10.	*Arthothelium albescens* Patw. & Makhija	Arthoniaceae	Similipal	Mayurbhanj
11.	*Arthothelium confertum* (A.L.Sm) Makhija & Patw.	Arthoniaceae	Similipal	Mayurbhanj
12.	*Arthothelium erumpens* Müll. Arg.	Arthoniaceae	Similipal	Mayurbhanj
13.	*Arthothelium pycnocarpoides* Müll. Arg.	Arthoniaceae	Similipal	Mayurbhanj
14.	**Aspicilia* sp.	Megasporaceae	Seranga	Ganjam
15.	*Bacidia alutacea* (Kremp.) Zahlbr.	Ramalinaceae	Similipal	Mayurbhanj
16.	*Bacidia convexula* (Müll. Arg.) Zahlbr.	Ramalinaceae	Similipal	Mayurbhanj
17.	*Bacidia medialis* (Tuck.ex Nyl.) Zahlbr.	Ramalinaceae	Similipal	Mayurbhanj
18.	*Bacidia millegrana* (Taylor) Müll. Arg.	Ramalinaceae	Bagdihi	Jharsuguda
19.	*Bacidia phaeolomoides* (Müll. Arg.) Zahlbr.	Ramalinaceae	Similipal	Mayurbhanj
20.	*Bacidia psorina* (Nyl. in Hue) Pant and Awasthi	Ramalinaceae	Bagdihi	Jharsuguda
21.	**Bacidia* sp.	Ramalinaceae	Mahendragiri	Ganjam
22.	*Bacidia submedialis* (Nyl.) Zahlbr.	Ramalinaceae	Bagdihi	Jharsuguda
23.	*Bacidiospora psorina* (Nyl.ex. Hue) Kalb.	Ramalinaceae	Similipal	Mayurbhanj
24.	*Bathelium benghalense* Müll. Arg.	Trypetheliaceae	Similipal	Mayurbhanj
25.	*Brigantiaea leucoxantha* (Spreng.) R.Sant. & Hal.in Haf & Bellem	Brigantiaceae	Belpahar	Jharsuguda
26.	*Buellia alboatrior* (Nyl.) Zahlbr	Caliciaceae	Similipal	Mayurbhanj
27.	*Buellia hemispherica* S.R. Singh & D.D. Awasthi	Buelliaceae	-	Odisha
28.	**Buellia* sp.	Caliciaceae	Gopalpur	Ganjam
29.	*Buellia stellulata* (Taylor) Mudd.	Caliciaceae	Similipal	Mayurbhanj
30.	*Buellia tincta* (Stein) Magnusson	Buelliaceae	Kharubaba Ashram	Jharsuguda
31.	*Bulbothrix isidiza* (Nyl.) Hale	Parmeliaceae	Similipal	Mayurbhanj
32.	*Byssoloma tricholomum* (Mont.) Zahlbr.	Pilocarpaceae	Similipal	Mayurbhanj
33.	*Calopedia puiggarii* (Müll. Arg.) Vezda	Ectolechiaceae	Similipal	Mayurbhanj
34.	*Caloplaca aurantia* (Pers.) Hellborn	Teloschistaceae	Similipal	Mayurbhanj
35.	*Caloplaca bassiae* (Willd.ex. Ach.) Zahlbr.	Teloschistaceae	Similipal	Mayurbhanj
36.	*Caloplaca biatorina* (A. Massal.) J. Steiner	Teloschistaceae	-	South Odisha
37.	*Caloplaca cinnabarina* (Ach.) Zahlbr. in Engl. & Prantl	Teloschistaceae	-	Odisha

Sl. No.	Name of Lichen	Family	Location	District/ State
38.	*Caloplaca cupulifera* (Vain.) Zahlbr.	Teloschistaceae	-	Odisha
39.	*Caloplaca encephalartii* (Kremp) Zahlbr.	Teloschistaceae	Similipal	Mayurbhanj
40.	*Caloplaca herbidella* (Nyl.ex. Hue) Magn.	Teloschistaceae	Similipal	Mayurbhanj
41.	*Caloplaca malaensis* (Rasanen) Awasthi	Teloschistaceae	Bagdihi	Jharsuguda
42.	*Caloplaca orissensis* (Räsänen) D.D. Awasthi	Teloschistaceae	-	Odisha
43.	*Caloplaca pollinii* (A. Massal.) Jatta	Teloschistaceae	-	Odisha
44.	**Caloplaca sipeana* Magn.	Teloschistaceae	Hirakud dam	Sambalpur
45.	**Caloplaca* sp.	Teloschistaceae	Seranga	Ganjam
46.	*Caloplaca subpoliotera* Y. Joshi & Upreti	Teloschistaceae	-	Odisha
47.	*Caloplaca vitellinula* (Nyl) H. Olivier	Teloschistaceae	Similipal	Mayurbhanj
48.	*Cetraria melaloma* Kremp. - Wei	Parmeliaceae	-	South Odisha
49.	*Cetraria olivetorum* Nyl.	Parmeliaceae	-	South Odisha
50.	*Chapsa pseudophlyctic* (Nyl.)A. Frisch	Theolotremataceae	Similipal	Mayurbhanj
51.	**Cococarpia palmicola* (Spreng.) Arvind & Gall	Coccocarpiaceae	Mahendragiri	Gajapati
52.	**Cococarpia pellita* (Arch.) Mull.Arg.R.Sanl.	Coccocarpiaceae	Mahendragiri	Gajapati
53.	**Collema* sp.	Collemataceae	Seranga	Ganjam
54.	*Conotrema lumbricoides* Sipman	Stictidaceae	Similipal	Mayurbhanj
55.	*Cryptothecia multipuntata* Jagdeesh & al.	Arthoniaceae	Similipal	Mayurbhanj
56.	*Cryptothecia bengalensis* Jagadeesh & al.	Arthoniaceae	Similipal	Mayurbhanj
57.	*Cryptothecia effusa* (Müll. Arg.) R. Sant.	Arthoniaceae	Similipal	Mayurbhanj
58.	*Cryptothecia involuta* Stirt.	Arthoniaceae	Similipal	Mayurbhanj
59.	*Cryptothecia lunulata* (Zahlbr.) Makhija & Patw	Arthoniaceae	Kapilash	Dhenkanal
60.	*Cryptothecia punctulata* Makh. & Patw.	Arthoniaceae	Kharubaba Ashram	Jharsuguda
61.	**Cryptothecia* sp.	Arthoniaceae	Khordha	Khordha
62.	*Cryptothecia subtecta* Stirt.	Arthoniaceae	Similipal	Mayurbhanj
63.	*Cryptothecia phlyctidiformis* (Müll. Arg.) D.D. Awasthi & Kr.P. Singh	Arthoniaceae	Kharubaba Ashram	Jharsuguda
64.	*Chrysothrix candelaris* (L.) Laundon	Chrysothricaceae	Bagdihi	Jharsuguda
65.	**Dermatocarpon miniatum* (L.) Mann.	Verrucariaceae	-	Ganjam
66.	*Diorygma hieroglyphicum* (Pers.) Kalb & al.	Graphidaceae	Similipal	Mayurbhanj
67.	*Diorygma junghuhnii* (Mont. & Bosch.) Kalb. & al.	Graphidaceae	Similipal	Mayurbhanj
68.	*Diorygma megasporrum* Kalb. & al.	Graphidaceae	Similipal	Mayurbhanj
69.	*Diorygma pruinnosum* (Eschw.) Kalb. Staiger	Graphidaceae	Similipal	Mayurbhanj
70.	*Diorygma radiatum* (Awasthi & S.R.Singh) Kr. P. Singh & Swarnalatha	Graphidaceae	Similipal	Mayurbhanj
71.	**Diploschistes candidissimus* (Kremp.) Zahlbr.	Theolotremataceae	-	Ganjam
72.	*Diploschistes muscorum* spp. *bartelttii* Lumbsch.	Theolotremataceae	Similipal	Mayurbhanj
73.	*Dirinaria aegialita* (Afz. In Ach.) Moore	Physciaceae	Bagdihi	Jharsuguda
74.	*Dirinaria applanata* D.D. Awasthi.	Physciaceae	Similipal	Mayurbhanj
75.	**Dirinaria confluens* (Fée) Awasthi	Physciaceae	-	Odisha
76.	*Dirinaria consimilis* (Stirt.) D.D. Awasthi.	Physciaceae	Similipal	Mayurbhanj
77.	**Dirinaria* sp.	Physciaceae	-	Ganjam

Sl. No.	Name of Lichen	Family	Location	District/ State
78.	*Drinaria papillulifera* (Nyl.) D.D. Awasthi	Physciaceae	-	Odisha
79.	*Dyplolabia afzelii* (Ach.) A. Massal	Graphidaceae	Similipal	Mayurbhanj
80.	*Glyphis cicatricosa* Ach.	Graphidaceae	Similipal	Mayurbhanj
81.	*Glyphis confluens* Zenker	Graphidaceae	-	Odisha
82.	*Glyphis duriuscula* Stirt.	Graphidaceae	Similipal	Mayurbhanj
83.	*Glyphis scyphulifera* (Ach.) Staiger	Graphidaceae	Similipal	Mayurbhanj
84.	*Graphis caesiella* Vain	Graphidaceae	Similipal	Mayurbhanj
85.	*Graphis cincta* (Pers) Aptroot	Graphidaceae	Similipal	Mayurbhanj
86.	*Graphis distincta* Makhija & Adaw	Graphidaceae	Similipal	Mayurbhanj
87.	*Graphis furcata* Fee	Graphidaceae	Similipal	Mayurbhanj
88.	*Graphis glaucescence* Fee	Graphidaceae	Similipal	Mayurbhanj
89.	*Graphis hiascens* (Fee) Archer	Graphidaceae	Similipal	Mayurbhanj
90.	*Graphis japonica* (Mull. Arg) A.W. Archer	Graphidaceae	Similipal	Mayurbhanj
91.	*Graphis agarekarii* Patw. & C.R.Kulk.	Graphidaceae	Similipal	Mayurbhanj
92.	*Graphis albidofarinaceae* Adaw. & Makhija	Graphidaceae	Similipal	Mayurbhanj
93.	*Graphis albissima* Müll. Arg	Graphidaceae	Similipal	Mayurbhanj
94.	*Graphis chloroalba* Makhija & Adaw.	Graphidaceae	Similipal	Mayurbhanj
95.	**Graphis elegans* (Borrer ex Sm.) Ach.	Graphidaceae	-	Ganjam
96.	*Graphis filiformis* Adaw. & Makhija	Graphidaceae	Similipal	Mayurbhanj
97.	*Graphis garoana* Nagarkar & Patw.	Graphidaceae	-	Odisha
98.	*Graphis handelii* Zahlbr	Graphidaceae	Similipal	Mayurbhanj
99.	*Graphis insulana* (Mull. Arg) Lucking	Graphidaceae	Similipal	Mayurbhanj
100.	*Graphis intermediella* Stirt.	Graphidaceae	-	Odisha
101.	*Graphis librata* C. Knight	Graphidaceae	Similipal	Mayurbhanj
102.	**Graphis nakanishiana* Patw. & Kaul.	Graphidaceae	-	Jharsuguda
103.	*Graphis perticosa* (Kremp.) A.W. Archer	Graphidaceae	Similipal	Mayurbhanj
104.	*Graphis pinicola* Zahlbr	Graphidaceae	Similipal	Mayurbhanj
105.	*Graphis platycarpa* Eschw	Graphidaceae	Similipal	Mayurbhanj
106.	*Graphis pyrrhocheiloides* Zahlbr	Graphidaceae	Similipal	Mayurbhanj
107.	*Graphis scripta* (L.) Ach.	Graphidaceae	Similipal	Mayurbhanj
108.	*Graphis streblocarpa* (Bel.) Nyl.	Graphidaceae	Similipal	Mayurbhanj
109.	*Graphis subasahinae* Nagarkar & Patw.	Graphidaceae	Similipal	Mayurbhanj
110.	*Graphis tenella* Ach.	Graphidaceae	Similipal	Mayurbhanj
111.	**Haematomma* sp.	Haematommataceae	Seranga	Ganjam
112.	*Haematomma wattii (*Stirt.) Zahlbr.	Haematommataceae	Similipal	Mayurbhanj
113.	*Hafellia curatellae* (Malme) Marbach	Caliciaceae	Similipal	Mayurbhanj
114.	**Heppia* sp.	Heppiaceae	Barkuda	Ganjam
115.	*Herpothallon isidiatum* Jagdeesh & al	Arthoniaceae	Similipal	Mayurbhanj
116.	*Heterodermia pseudospeciosa* (Kurok) Culb	Physciaceae	Similipal	Mayurbhanj
117.	*Heterodermia diademata* (Taylor) D.D. Awasthi	Physciaceae	-	South Odisha
118.	*Heterodermia obscurata* (Nyl.) Trevis	Physciaceae	Similipal	Mayurbhanj
119.	**Heterodermia* sp.	Physciaceae	Mahendragiri	Gajapati
120.	*Heterodermia speciosa* (Wulfen) Trevis	Physciaceae	Kapilash	Dhenkanal
121.	*Heterodermia albidiflava* (Kurok.) D.D. Awasthi	Physciaceae	Similipal	Mayurbhanj

Sl. No.	Name of Lichen	Family	Location	District/ State
122.	*Laurera tuberculosum* Makhija & Patw Harris	Trypetheliaceae	Similipal	Mayurbhanj
123.	*Laurera cumingii* (Mont) Zahlbr.	Trypetheliaceae	Similipal	Mayurbhanj
124.	*Laurera keralensis* Upreti & A. Singh	Trypetheliaceae	Similipal	Mayurbhanj
125.	*Laurera kundarensis* Upreti &A.Singh	Trypetheliaceae	Similipal	Mayurbhanj
126.	*Laurera vezdae* Makhija & Patw	Trypetheliaceae	Similipal	Mayurbhanj
127.	*Laurera aurantiaca* Makhija & Patw.	Trypetheliaceae	Similipal	Mayurbhanj
128.	**Lecanora* sp.	Lecanoraceae	Bhubaneswar	Khordha
129.	*Lecanora argentata* (Ach.) Digel.in Nilsson	Lecanoraceae	-	Odisha
130.	*Lecanora cinerofusca* var. cinerofusca H.Magn	Lecanoraceae	Similipal	Mayurbhanj
131.	**Lecanora helva* Stizenb. 1890	Lecanoraceae	Jharsuguda	Jharsuguda
132.	*Lecanora iseana* Räsänen	Lecanoraceae	Similipal	Mayurbhanj
133.	*Lecanora perplexa* Brodo	Lecanoraceae	-	Odisha
134.	*Lecanora pulicaris* (Pers.) Ach.	Lecanoraceae	Bagdihi	Jharsuguda
135.	*Lecanora rugosella* Zahlbr.	Lecanoraceae	-	Odisha
136.	*Lecanora subimmersa* (Fée) Vain.	Lecanoraceae	-	Odisha
137.	*Lecanora tropica* Zahlbr,	Lecanoraceae	-	Odisha
138.	*Lecidea lapicida* (Ach.) Ach.	Lecideaceae	Similipal	Mayurbhanj
139.	*Lecidea plana* (J. Lahm.) Nyl.	Lecideaceae	Similipal	Mayurbhanj
140.	*Lecidea secernes* H. Magn	Lecideaceae	Similipal	Mayurbhanj
141.	*Lecidea* sp.	Lecidiaceae	Bagdihi	Jharsuguda
142.	*Lecidella enteroleucella* (Nyl.) Hertel	Lecanoraceae	Similipal	Mayurbhanj
143.	*Leiorruma exaltatum* (Mont. &V.D. Bosch) Müll. Arg.	Graphidaceae	Similipal	Mayurbhanj
144.	**Lepraria* sp. 1	Stereocaulaceae	Jharsuguda	Jharsuguda
145.	*Lepraria lobificans* Nyl.	Stereocaulaceae	Kapilash	Dhenkanal
146.	**Lepraria* sp. 2	Stereocaulaceae	-	Odisha
147.	*Leptogium austro-americanum* (Malme) Dodge	Parmeliaceae	Bagdihi	Jharsuguda
148.	**Leptogium* sp.	Collemataceae	Chandragiri	Gajapati
149.	*Leptogium trichophorum* Müll. Arg. - Wei	Thelotremataceae	-	South Odisha
150.	*Letrouitia leprolyta* (Nyl.) Hafellner	Letrouitiaceae	Similipal	Mayurbhanj
151.	*Letrouitia domingenesis* Hafellner & Bellem	Letrouitiaceae	Similipal	Mayurbhanj
152.	**Letrouitia* sp.	Letrouitiaceae	Mahendragiri	Gajapati
153.	*Letrouitia transgrassa* (Malme) Hafellner & Bellem	Letrouitiaceae	Similipal	Mayurbhanj
154.	*Lobaria pulmonaria* (L.) Hoffm.	Lobariaceae	-	South Odisha
155.	**Malmidea granifera* (Ach.) Kalb, Rivas Plata & Lumbsch	Pilocarpaceae	-	Ganjam Mayurbhanj
156.	*Megalotremis biocellata* Aptroot	Trypetheliaceae	Similipal	Mayurbhanj
157.	*Mycomicrothelia conothelina* (Nyl.) Hawksw.	Arthopyreniaceae	Similipal	Mayurbhanj
158.	*Myelochroa xantholepis* (Mant. & Bosch.) Elix	Parmeliaceae	Similipal	Mayurbhanj
159.	**Myriotrema norstictideum* (Patw. & Nagarkar) D.D. Awasthi	Theolotremataceae	Similipal	Mayurbhanj

Sl. No.	Name of Lichen	Family	Location	District/ State
160.	*Ocellularia lankaensis* Hale	Theolotremataceae	Similipal	Mayurbhanj
161.	*Opegrapha rufescens* Pers	Rocellaceae	Similipal	Mayurbhanj
162.	*Opegrapha* sp.	Opegraphaceae	Kharubaba Ashram	Jharsuguda
163.	*Pallidogramme chrysenteron* (Mont.) Staiger & al.	Graphidaceae	Similipal	Mayurbhanj
164.	*Parmelia awasthii* (Hale & Patw) Awasthi	Parmeliaceae	Belpahar	Jharsuguda
165.	*Parmelia mesotropa* Müll. Arg	Parmeliaceae	Bagdihi	Jharsuguda
166.	**Parmelia* sp.	Parmeliaceae	Chandragiri	Gajapati
167.	*Parmeliella papillata* P.M. Jørg.	Parmeliaceae	-	Odisha
168.	*Parmotrema andium* (Müll. Arg.) Hale	Parmeliaceae	Similipal	Mayurbhanj
169.	*Parmotrema austrosinenese* (Zahlbr) Hale	Parmeliaceae	Kapilash	Dhenkanal
170.	*Parmotrema cristiferum* (Taylor) Hale	Parmeliaceae	-	Odisha
171.	*Parmotrema hababianum* (Gyeln.) Hale.	Parmeliaceae	-	Odisha
172.	*Parmotrema indicum* Hale	Parmeliaceae	-	Odisha
173.	*Parmotrema kamatii* Patw. & A.V. Prabhu	Parmeliaceae	-	Odisha
174.	*Parmotrema ravum* (Krog & Swinscow) Sèrus	Parmeliaceae	Similipal	Mayurbhanj
175.	*Parmotrema reticulatum* (Taylor) M. Choisy	Parmeliaceae	Kapilash	Dhenkanal
176.	*Parmotrema tinctorum* (Despr. ex. Nyl.) Hale	Parmeliaceae	Similipal	Mayurbhanj
177.	*Pertusaria albescens* (Huds.) Choisy &Wern. in Wem.	Pertusariaceae	Bagdihi	Jharsuguda
178.	*Pertusaria cinchonae* Müll. Arg	Pertusariaceae	Bagdihi	Jharsuguda
179.	*Pertusaria kodaikanalensis* Choisy	Pertusariaceae	Similipal	Mayurbhanj
180.	*Pertusaria leioplacella* Nyl.	Pertusariaceae	-	Odisha
181.	**Pertusaria leucosora* Nyl.	Pertusariaceae	Raisili	Koraput
182.	*Pertusaria leucostoma* (Bernh.) A. Massal.	Pertusariaceae	-	Odisha
183.	*Pertusaria melastomela* Nyl.	Pertusariaceae	Similipal	Mayurbhanj
184.	*Pertusaria multipuncta* (Turner) Nyl	Pertusariaceae	Similipal	Mayurbhanj
185.	*Pertusaria pertusa* (Weigel) Tuck.	Pertusariaceae	Bagdihi	Jharsuguda
186.	*Pertusaria quassiae* (Fẻe) Nyl.	Pertusariaceae	Similipal	Mayurbhanj
187.	**Pertusaria* sp.	Pertusariaceae	Raisili	Koraput
188.	*Pertusaria concinna* Erichsen	Pertusariaceae	Bagdihi	Jharsuguda
189.	*Phaeographina limbata* Müll. Arg	Graphidaceae	Kharubaba Ashram	Jharsuguda
190.	*Phaeographina pudica* var *platyloma* (Müll.) Arg. Redinger	Graphidaceae	Kharubaba Ashram	Jharsuguda
191.	*Phaeographina caesiopruinosa*. (Fée) Müll. Arg	Graphidaceae	Kharubaba Ashram	Jharsuguda
192.	*Phaeographis brasiliensis* (A.Massal.) Kalb. & Matthes-Leicht	Graphidaceae	Similipal	Mayurbhanj
193.	**Pheographis* sp.	Graphidaceae	Berhampur	Ganjam
194.	**Physcia phaea* (Tuck) Thomson	Physciaceae	Belpahar	Jharsuguda
195.	*Physcia cylindrophora* (Taylor) Nyl.	Physciaceae	Bagdihi	Jharsuguda
196.	*Platygramme platyloma* (Müll. Arg.) M. Nakan. & Kashiw.	Graphidaceae	-	Odisha
197.	**Platygramme pudica* (Ment. Etv.d.Basch) Zahlber	Graphidaceae	Jharsuguda	Jharsuguda
198.	*Platythecium grammitis* (Fée) Staiger	Graphidaceae	Similipal	Mayurbhanj

Sl. No.	Name of Lichen	Family	Location	District/ State
199.	*Pleurotrema filisporum* Patw.Makh. & Ranie	Physciaceae	Sundergarh	Sundergarh
200.	*Polymeridium proponens* (Nyl.) R.C. Harris	Trypetheliaceae	Similipal	Mayurbhanj
201.	*Porina tetracerae* (Afz.) Müll. Arg. in Engler	Porinaceae	-	Odisha
202.	*Pseudopyrenula pupula* (Ach.) Müll. Arg.	Trypetheliaceae	Similipal	Mayurbhanj
203.	*Pseudopyrenula subnudata* Müll. Arg.	Trypetheliaceae	Similipal	Mayurbhanj
204.	*Pseudopyrenula subvelata* Müll. Arg.	Trypetheliaceae	Similipal	Mayurbhanj
205.	*Pyrenula acutalis* R.C Harris	Pyrenulaceae	Similipal	Mayurbhanj
206.	*Pyrenula anomela* (Ach.) Vain.	Pyrenulaceae	Similipal	Mayurbhanj
207.	*Pyrenula brunnea* Vainio	Pyrenulaceae	Kharubaba Ashram	Jharsuguda
208.	*Pyrenula citriformis* R.C. Harris	Pyrenulaceae	Similipal	Mayurbhanj
209.	*Pyrenula introducta* (Nyl.) Zahlr.	Pyrenulaceae	Similipal	Mayurbhanj
210.	*Pyrenula kurzii* Ajay Singh & Upreti	Pyrenulaceae	-	Odisha
211.	*Pyrenula leucotrypa* (Nyl.) Upreti.	Pyrenulaceae	Similipal	Mayurbhanj
212.	*Pyrenula macularis* (Zahlbr.) R.C. Harris	Pyrenulaceae	-	Odisha
213.	*Pyrenula mamillana* (Ach.) Trevis.	Pyrenulaceae	Similipal	Mayurbhanj
214.	*Pyrenula nitens* Fėe	Pyrenulaceae	Similipal	Mayurbhanj
215.	*Pyrenula oculifera*Vain.	Pyrenulaceae	-	Odisha
216.	**Pyrenula* sp.	Pyrenulaceae	Seranga	Ganjam
217.	*Pyrenula subacutalis* Upreti	Pyrenulaceae	-	Odisha
218.	*Pyrenula sublaevigata* (Patw. & Makhija) Upreti	Pyrenulaceae	Similipal	Mayurbhanj
219.	*Pyrenula subnitida* (Nyl.) Müll. Arg.	Pyrenulaceae	Similipal	Mayurbhanj
220.	*Pyrenula thelomopha* Tuck.	Pyrenulaceae	Similipal	Mayurbhanj
221.	**Pyxine berteriana* (Fee) Fw	Caliciaceae	Jeypore	Koraput
222.	*Pyxine coccifera* (Fėe) Nyl.	Physciaceae	Similipal	Mayurbhanj
223.	*Pyxine cocoes* (Sw.) Nyl.	Caliciaceae	-	Odisha
224.	**Pyxine consocians* Vain	Caliciaceae	Barkuda	Ganjam
225.	**Pyxine* sp.	Caliciaceae	Taptapani	Ganjam
226.	**Pyxine subcinerea* Strit.	Caliciaceae	--	Ganjam
227.	*Ramalina leiodea* (Nyl.) Nyl.	Ramalinaceae	-	Odisha
228.	**Ramalina* sp.	Ramalinaceae	Taptapani	Ganjam
229.	*Ramboldia russula* (Ach.) Kalb., Lumbsch & Elix	Lecanoraceae	Similipal	Mayurbhanj
230.	*Ramboldia stuartii* (Hampe) Kantvilas & Elix	Lecanoraceae	-	Odisha
231.	*Reimnitzia sentensis* (Tuck.) Kalb.	Theolotremataceae	Similipal	Mayurbhanj
232.	*Rinodina oxydata* (A. Massal.) Massal.	Physciaceae	Similipal	Mayurbhanj
233.	**Roccella montagnei* Bél.	Roccellaceae	Berhampur	Ganjam
234.	**Roccella* sp.	Roccellaceae	Konark temple	Puri
235.	*Sarcographa tricosa* (Ach.) Mull. Arg.	Graphidaceae	Similipal	Mayurbhanj
236.	*Schistophoron tenue* Stirt.	Graphidaceae	-	Odisha
237.	*Sporopodium argillaceum* (Müll. Arg.) Zahlbr.	Ectolechiaceae	Similipal	Mayurbhanj
238.	*Staurothele drummondii* (Tuck.) Tuck.	Verrucariaceae	Similipal	Mayurbhanj
239.	*Stereocaulon* sp.	Steriocaulaceae	-	South Odisha
240.	*Sticta praetextata* (Ras.) D. D. Awasthi	Lobariaceae	-	South Odisha
241.	*Strigula complanata* (Fée) Mont.	Strigulaceae	Similipal	Mayurbhanj
242.	*Thelotrema albo-olivaceum* Vain.	Theolotremataceae	Similipal	Mayurbhanj
243.	**Thelotrema leucocheilum*	Theolotremataceae	Taptapani	Ganjam
244.	*Trypethelium eluterae* Spreng	Trypetheliaceae	Similipal	Mayurbhanj
245.	*Trypethelium endosulphureum* Makhija & Patw.	Trypetheliaceae	Similipal	Mayurbhanj

Sl. No.	Name of Lichen	Family	Location	District/ State
246.	*Trypethelium platystomum* Mont.	Trypetheliaceae	Similipal	Mayurbhanj
247.	*Trypethelium tropicum* (Ach.) Müll. Arg.	Trypetheliaceae	Similipal	Mayurbhanj
248.	**Trypthelium* sp.	Trypetheliaceae	-	Ganjam
249.	*Tylophoron moderatum* Nyl.	Arthoniaceae	-	Odisha
250.	*Tylophoron protrudens* Nyl.	Arthoniaceae	Similipal	Mayurbhanj
251.	**Tylophoron* sp.	Arthoniaceae	Chandragiri	Gajapati
252.	*Verrucaria rupestris* Schrad	Verrucariaceae	Similipal	Mayurbhanj

* Collected from Odisha and deposited in Herbarium of CSIR- National Botanical Research Institute, Lucknow (LWG), India.

Table 2 Doubtful taxa with possible nomenclature

Sl. No.	Doubtful taxa	Possible nomenclature
1.	*Anthracothecium pustuliferum* Ajay Singh	*Pyrenula duplicans* (Nyl.) Aptroot
2.	*Anthracothecium thwaitesii* (Leight) Müll. Arg.	*Pyrenula papillifera* (Nyl.) Aptroot
3.	*Anthracothecium variolosium* (Pers.) Müll.Arg.	*Pyrenula globifera* (Eschw.) Aptroot
4.	*Arthopyrenia terminata* (Nyl.) Mull. Arg.	*Anisomeridium terminatum* (Nyl.) R.C. Harris
5.	*Laurera tuberculosum* Makhija & Patw Harris	*Bathelium tuberculosum* (Makhija & Patw.) R.C. Harris
6.	*Bathelium benghalense* Müll.Arg.	*Marcelaria benguelensis* (Müll. Arg.) Aptroot, Nelsen & Parnmen
7.	*Graphis nakanishiana* Patw. & Kaul.	*Hemithecium nakanishianum (*Patw. & C.R. Kulk.) Makhija & Dube
8.	*Pleurotrema filisporum* Patw.Makh. & Ranie	*Lithothelium filisporum* (Patw., Makhija & D. Rane) Kr.P. Singh & G.P. Sinha
9.	*Pyrenula macularis* (Zahlbr.) R.C. Harris	*Pyrenula breutelii* (Müll. Arg.) Aptroot,
10.	*Sticta praetextata* (Ras.) D. D. Awasthi	*Dendriscosticta praetextata* (Räsänen) Moncada & Lücking

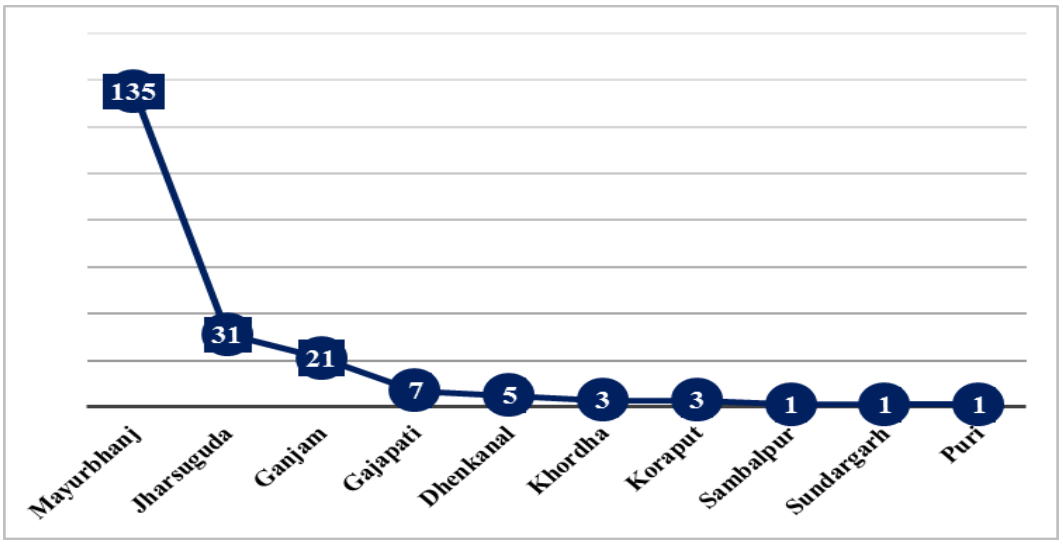

Fig. 4 – District-wise distribution of reported lichen species in Odisha

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