

## SPECIES DETAILS



Total  
263

Total number of species reported from this region



Migratory  
53

Total number of migratory bird species reported from this region



Threatened  
5

Number of bird species that are listed as globally threatened as per [IUCN](#)



High Priority  
14

Number of bird species that are listed as High Conservation Priority in [State of India's Birds](#)



Schedule I  
16

Number of bird species that are listed in Schedule 1 of the [Wild Life \(Protection\) Amendment Act \(WLPA\)](#)



Endemic  
0

Number of bird species that are endemic to India

### SolB Conservation Priority Species

|                   |    |
|-------------------|----|
| High Priority     | 14 |
| Moderate Priority | 72 |

### CITES Appendix Species

|             |    |
|-------------|----|
| Appendix I  | 1  |
| Appendix II | 19 |

### CMS Appendix Species

|             |     |
|-------------|-----|
| Appendix I  | 0   |
| Appendix II | 143 |

## IUCN RED LIST



Critically Endangered  
0



Endangered  
0



Vulnerable  
0



Near Threatened  
5

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

District: West Sikkim

Dates: 01/01/1900 – 31/05/2023

| IUCN RED LIST SPECIES                                       |                 |                        |
|-------------------------------------------------------------|-----------------|------------------------|
| Species                                                     | IUCN Status     | Frequency of Reporting |
| Himalayan Vulture<br><i>Gyps himalayensis</i>               | Near Threatened | 5%                     |
| Mountain Hawk Eagle<br><i>Nisaetus nipalensis</i>           | Near Threatened | 7%                     |
| Rufous-bellied Eagle<br><i>Lophotriorchis kienerii</i>      | Near Threatened | 2%                     |
| Yellow-rumped Honeyguide<br><i>Indicator xanthonotus</i>    | Near Threatened | 2%                     |
| Rufous-throated Wren Babbler<br><i>Spelaeorhis caudatus</i> | Near Threatened | <1%                    |

| ENDEMIC SPECIES                                              |                   |                        |
|--------------------------------------------------------------|-------------------|------------------------|
| Species                                                      | Endemic Region    | Frequency of Reporting |
| Hill Partridge<br><i>Arborophila torqueola</i>               | Himalayas         | 2%                     |
| Yellow-rumped Honeyguide<br><i>Indicator xanthonotus</i>     | Himalayas         | 2%                     |
| Black-headed Shrike-babbler<br><i>Pteruthius rufiventer</i>  | Eastern Himalayas | 5%                     |
| Himalayan Black-lored Tit<br><i>Machlolophus xanthogenys</i> | Himalayas         | <1%                    |
| Black-throated Prinia<br><i>Prinia atrogularis</i>           | Eastern Himalayas | 7%                     |
| Himalayan Bulbul<br><i>Pycnonotus leucogenys</i>             | Himalayas         | 7%                     |

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| ENDEMIC SPECIES                                                          |                   |                        |
|--------------------------------------------------------------------------|-------------------|------------------------|
| Species                                                                  | Endemic Region    | Frequency of Reporting |
| Yellow-vented Warbler<br><i>Phylloscopus cantator</i>                    | Eastern Himalayas | 2%                     |
| Grey-hooded Warbler<br><i>Phylloscopus xanthoschistos</i>                | Himalayas         | 24%                    |
| Broad-billed Warbler<br><i>Tickellia hodgsoni</i>                        | Eastern Himalayas | <1%                    |
| Hume's Bush Warbler<br><i>Horornis brunescens</i>                        | Himalayas         | 2%                     |
| White-naped Yuhina<br><i>Yuhina bakeri</i>                               | Eastern Himalayas | 2%                     |
| Rufous-vented Yuhina<br><i>Yuhina occipitalis</i>                        | Eastern Himalayas | 5%                     |
| Rufous-throated Wren Babbler<br><i>Spelaeorhis caudatus</i>              | Eastern Himalayas | <1%                    |
| Black-crowned Scimitar Babbler<br><i>Pomatorhinus ferruginosus</i>       | Eastern Himalayas | 2%                     |
| Striated Laughingthrush<br><i>Grammatoptila striata</i>                  | Himalayas         | 27%                    |
| Blue-winged Laughingthrush<br><i>Trochalopteron squamatum</i>            | Eastern Himalayas | 2%                     |
| Streaked Laughingthrush<br><i>Trochalopteron lineatum</i>                | Himalayas         | 2%                     |
| Chestnut-crowned Laughingthrush<br><i>Trochalopteron erythrocephalum</i> | Himalayas         | 10%                    |
| Rufous Sibia<br><i>Heterophasia capistrata</i>                           | Himalayas         | 41%                    |

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| ENDEMIC SPECIES                                                  |                     |                        |
|------------------------------------------------------------------|---------------------|------------------------|
| Species                                                          | Endemic Region      | Frequency of Reporting |
| Hoary-throated Barwing<br><i>Actinodura nipalensis</i>           | Eastern Himalayas   | 7%                     |
| Rusty-fronted Barwing<br><i>Actinodura egertoni</i>              | Eastern Himalayas   | 10%                    |
| Jungle Babbler<br><i>Argya striata</i>                           | Indian Subcontinent | 2%                     |
| Rufous-chinned Laughingthrush<br><i>Ianthocincla rufogularis</i> | Himalayas           | 2%                     |
| Spotted Laughingthrush<br><i>Ianthocincla ocellata</i>           | Eastern Himalayas   | 2%                     |
| Grey-sided Laughingthrush<br><i>Pterorhinus caerulatus</i>       | Eastern Himalayas   | 2%                     |
| White-tailed Nuthatch<br><i>Sitta himalayensis</i>               | Himalayas           | 29%                    |
| Rusty-flanked Treecreeper<br><i>Certhia nipalensis</i>           | Himalayas           | 5%                     |
| Sikkim Treecreeper<br><i>Certhia discolor</i>                    | Himalayas           | 10%                    |
| Long-billed Thrush<br><i>Zoothera monticola</i>                  | Himalayas           | 2%                     |
| Tickell's Thrush<br><i>Turdus unicolor</i>                       | Indian Subcontinent | 10%                    |
| White-collared Blackbird<br><i>Turdus albocinctus</i>            | Himalayas           | 2%                     |
| Rufous-breasted Bush Robin<br><i>Tarsiger hyperythrus</i>        | Himalayas           | 5%                     |



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|----------------------------------------------------------|---------------------|------------------------|
| Species                                                  | Endemic Region      | Frequency of Reporting |
| White-browed Wagtail<br><i>Motacilla maderaspatensis</i> | Indian Subcontinent | 2%                     |
| Yellow-breasted Greenfinch<br><i>Chloris spinoides</i>   | Himalayas           | 2%                     |

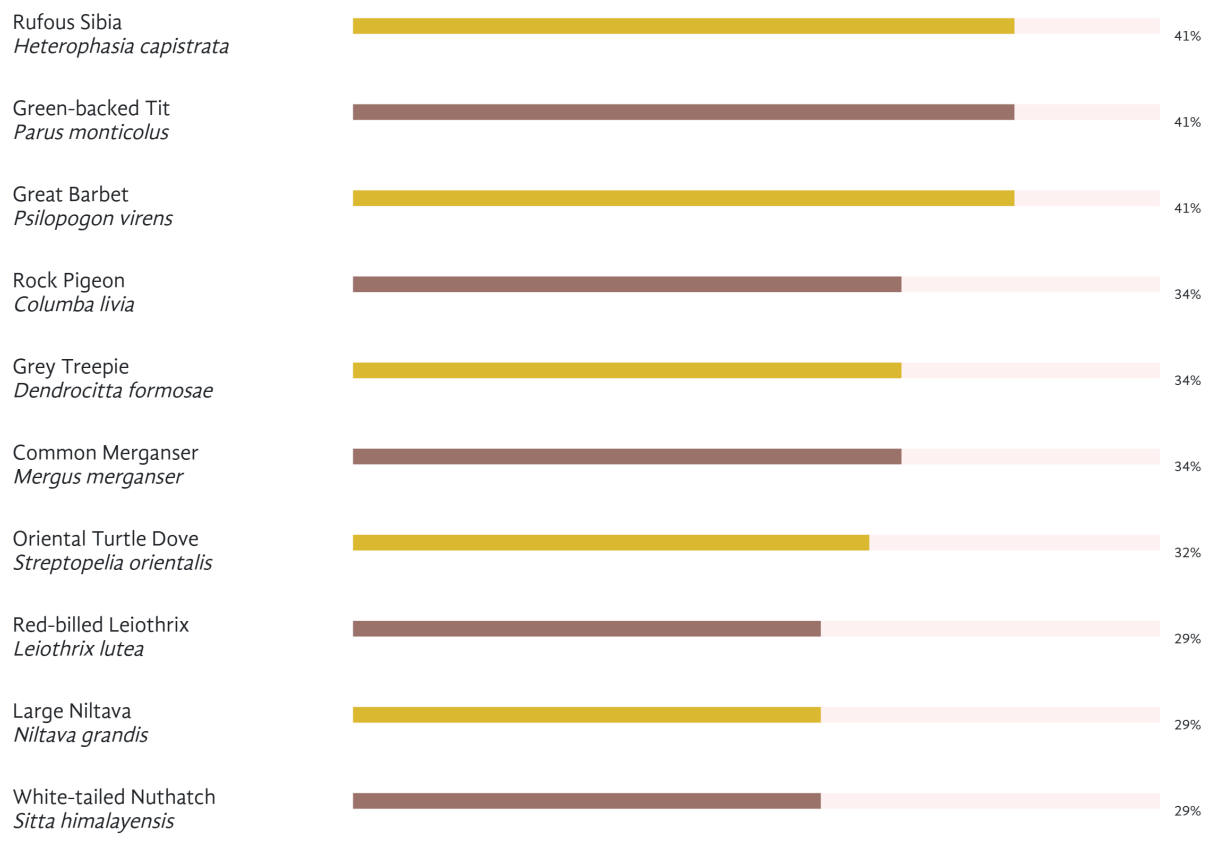
# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

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## MOST COMMON SPECIES

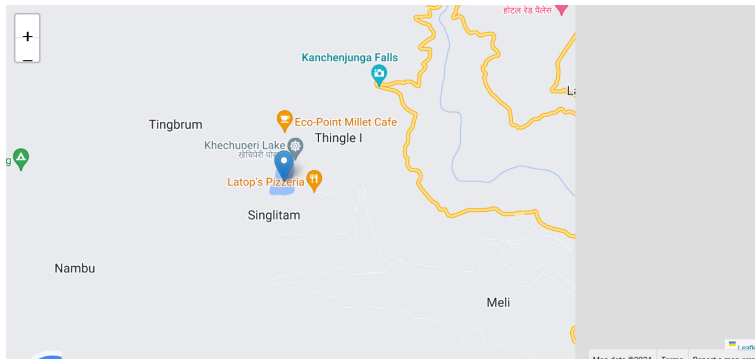


# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

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Dates: 01/01/1900 – 31/05/2023



| Top Hotspots      | No of Species |
|-------------------|---------------|
| Khecheopalri Lake | 263           |

| COMPLETE LIST OF SPECIES                                    |               |               |                |               |
|-------------------------------------------------------------|---------------|---------------|----------------|---------------|
| Species                                                     | SoIB Priority | IUCN          | Endemic Region | WLPA          |
| Eurasian Wigeon<br><i>Mareca penelope</i>                   | Moderate      | Least Concern | None           | Schedule-II   |
| Mallard<br><i>Anas platyrhynchos</i>                        | Low           | Least Concern | None           | Schedule-II   |
| Common Merganser<br><i>Mergus merganser</i>                 | High          | Least Concern | None           | Schedule-II   |
| Hill Partridge<br><i>Arborophila torqueola</i>              | Low           | Least Concern | Himalayas      | Schedule-II   |
| Rufous-throated Partridge<br><i>Arborophila rufogularis</i> | Low           | Least Concern | None           | Schedule-II   |
| Kalij Pheasant<br><i>Lophura leucomelanos</i>               | Low           | Least Concern | None           | Schedule-I    |
| Great Crested Grebe<br><i>Podiceps cristatus</i>            | High          | Least Concern | None           | Schedule-II   |
| Black-necked Grebe<br><i>Podiceps nigricollis</i>           | NA            | Least Concern | None           | Schedule-II   |
| Rock Pigeon<br><i>Columba livia</i>                         | Low           | Least Concern | None           | Not protected |
| Hill Pigeon<br><i>Columba rupestris</i>                     | Low           | Least Concern | None           | Schedule-II   |

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|-----------------------------------------------------------|---------------|----------------|----------------|-------------|
| Species                                                   | SoIB Priority | IUCN           | Endemic Region | WLPA        |
| Oriental Turtle Dove<br><i>Streptopelia orientalis</i>    | Low           | Least Concern  | None           | Schedule-II |
| Spotted Dove<br><i>Spilopelia chinensis</i>               | Low           | Least Concern  | None           | Schedule-II |
| Barred Cuckoo Dove<br><i>Macropygia unchall</i>           | Low           | Least Concern  | None           | Schedule-II |
| Asian Emerald Dove<br><i>Chalcophaps indica</i>           | Low           | Least Concern  | None           | Schedule-II |
| Wedge-tailed Green Pigeon<br><i>Treron sphenurus</i>      | Low           | Least Concern  | None           | Schedule-II |
| Asian Emerald Cuckoo<br><i>Chrysococcyx maculatus</i>     | Moderate      | Least Concern  | None           | Schedule-II |
| Large Hawk Cuckoo<br><i>Hierococcyx sparverioides</i>     | Low           | Least Concern  | None           | Schedule-II |
| Lesser Cuckoo<br><i>Cuculus poliocephalus</i>             | Low           | Least Concern  | None           | Schedule-II |
| Indian Cuckoo<br><i>Cuculus micropterus</i>               | Low           | Least Concern  | None           | Schedule-II |
| Himalayan Cuckoo<br><i>Cuculus saturatus</i>              | Low           | Least Concern  | None           | Schedule-II |
| Common Cuckoo<br><i>Cuculus canorus</i>                   | Low           | Least Concern  | None           | Schedule-II |
| White-throated Needletail<br><i>Hirundapus caudacutus</i> | NA            | Least Concern  | None           | Schedule-II |
| Himalayan Swiftlet<br><i>Aerodramus brevirostris</i>      | Moderate      | Least Concern  | None           | Schedule-II |
| Blyth's Swift<br><i>Apus leuconyx</i>                     | Moderate      | Not Recognised | None           | Schedule-II |
| White-breasted Waterhen<br><i>Amaurornis phoenicurus</i>  | Low           | Least Concern  | None           | Schedule-II |

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|--------------------------------------------------------|---------------|-----------------|----------------|-------------|
| Species                                                | SoIB Priority | IUCN            | Endemic Region | WLPA        |
| Black-tailed Crake<br><i>Zapornia bicolor</i>          | Moderate      | Least Concern   | None           | Schedule-II |
| Common Sandpiper<br><i>Actitis hypoleucos</i>          | Moderate      | Least Concern   | None           | Schedule-II |
| Great Cormorant<br><i>Phalacrocorax carbo</i>          | Low           | Least Concern   | None           | Schedule-II |
| Grey Heron<br><i>Ardea cinerea</i>                     | Low           | Least Concern   | None           | Schedule-II |
| Oriental Honey Buzzard<br><i>Pernis ptilorhynchus</i>  | Low           | Least Concern   | None           | Schedule-II |
| Jerdon's Baza<br><i>Aviceda jerdoni</i>                | Low           | Least Concern   | None           | Schedule-I  |
| Himalayan Vulture<br><i>Gyps himalayensis</i>          | Moderate      | Near Threatened | None           | Schedule-I  |
| Crested Serpent Eagle<br><i>Spilornis cheela</i>       | Low           | Least Concern   | None           | Schedule-I  |
| Short-toed Snake Eagle<br><i>Circaetus gallicus</i>    | High          | Least Concern   | None           | Schedule-I  |
| Mountain Hawk Eagle<br><i>Nisaetus nipalensis</i>      | Low           | Near Threatened | None           | Schedule-I  |
| Rufous-bellied Eagle<br><i>Lophotriorchis kienerii</i> | Low           | Near Threatened | None           | Schedule-I  |
| Black Eagle<br><i>Ictinaetus malaiensis</i>            | Low           | Least Concern   | None           | Schedule-I  |
| Hen Harrier<br><i>Circus cyaneus</i>                   | Moderate      | Least Concern   | None           | Schedule-I  |
| Crested Goshawk<br><i>Accipiter trivirgatus</i>        | Moderate      | Least Concern   | None           | Schedule-I  |
| Besra<br><i>Accipiter virgatus</i>                     | Low           | Least Concern   | None           | Schedule-I  |

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|----------------------------------------------------------------|---------------|-----------------|----------------|-------------|
| Species                                                        | SoIB Priority | IUCN            | Endemic Region | WLPA        |
| Eurasian Sparrowhawk<br><i>Accipiter nisus</i>                 | Low           | Least Concern   | None           | Schedule-I  |
| Northern Goshawk<br><i>Accipiter gentilis</i>                  | NA            | Least Concern   | None           | Schedule-I  |
| Black Kite<br><i>Milvus migrans</i>                            | Low           | Least Concern   | None           | Schedule-II |
| Mountain Scops Owl<br><i>Otus spilocephalus</i>                | NA            | Least Concern   | None           | Schedule-II |
| Asian Barred Owlet<br><i>Glaucidium cuculoides</i>             | Low           | Least Concern   | None           | Schedule-II |
| Brown Wood Owl<br><i>Strix leptogrammica</i>                   | NA            | Least Concern   | None           | Schedule-I  |
| Common Kingfisher<br><i>Alcedo atthis</i>                      | Low           | Least Concern   | None           | Schedule-II |
| White-throated Kingfisher<br><i>Halcyon smyrnensis</i>         | Low           | Least Concern   | None           | Schedule-II |
| Crested Kingfisher<br><i>Megaceryle lugubris</i>               | Moderate      | Least Concern   | None           | Schedule-II |
| Great Barbet<br><i>Psilopogon virens</i>                       | Low           | Least Concern   | None           | Schedule-II |
| Golden-throated Barbet<br><i>Psilopogon franklinii</i>         | Low           | Least Concern   | None           | Schedule-II |
| Blue-throated Barbet<br><i>Psilopogon asiaticus</i>            | Low           | Least Concern   | None           | Schedule-II |
| Yellow-rumped Honeyguide<br><i>Indicator xanthonotus</i>       | Moderate      | Near Threatened | Himalayas      | Schedule-II |
| Speckled Piculet<br><i>Picumnus innominatus</i>                | Low           | Least Concern   | None           | Schedule-II |
| Grey-capped Pygmy Woodpecker<br><i>Yungipicus canicapillus</i> | Low           | Least Concern   | None           | Schedule-II |

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|-------------------------------------------------------------|---------------|----------------|----------------|-------------|
| Species                                                     | SoIB Priority | IUCN           | Endemic Region | WLPA        |
| Rufous-bellied Woodpecker<br><i>Dendrocopos hyperythrus</i> | Low           | Least Concern  | None           | Schedule-II |
| Fulvous-breasted Woodpecker<br><i>Dendrocopos macei</i>     | Low           | Least Concern  | None           | Schedule-II |
| Crimson-breasted Woodpecker<br><i>Dryobates cathpharius</i> | Moderate      | Least Concern  | None           | Schedule-II |
| Bay Woodpecker<br><i>Blythipicus pyrrhotis</i>              | Low           | Least Concern  | None           | Schedule-II |
| Greater Flameback<br><i>Chrysocolaptes guttacristatus</i>   | Low           | Least Concern  | None           | Schedule-II |
| Lesser Yellownape<br><i>Picus chlorolophus</i>              | Low           | Least Concern  | None           | Schedule-II |
| Grey-headed Woodpecker<br><i>Picus canus</i>                | Low           | Least Concern  | None           | Schedule-II |
| Greater Yellownape<br><i>Chrysophlegma flavinucha</i>       | Low           | Least Concern  | None           | Schedule-II |
| Common Kestrel<br><i>Falco tinnunculus</i>                  | High          | Least Concern  | None           | Schedule-II |
| Peregrine Falcon<br><i>Falco peregrinus</i>                 | Low           | Least Concern  | None           | Schedule-I  |
| Long-tailed Broadbill<br><i>Psarisomus dalhousiae</i>       | Low           | Least Concern  | None           | Schedule-II |
| Grey-chinned Minivet<br><i>Pericrocotus solaris</i>         | NA            | Least Concern  | None           | Schedule-II |
| Short-billed Minivet<br><i>Pericrocotus brevirostris</i>    | Moderate      | Least Concern  | None           | Schedule-II |
| Long-tailed Minivet<br><i>Pericrocotus ethologus</i>        | Low           | Least Concern  | None           | Schedule-II |
| Scarlet Minivet<br><i>Pericrocotus speciosus</i>            | Low           | Not Recognised | None           | Schedule-II |

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|-------------------------------------------------------------|---------------|---------------|-------------------|-------------|
| Species                                                     | SoIB Priority | IUCN          | Endemic Region    | WLPA        |
| Black-winged Cuckooshrike<br><i>Lalage melaschistos</i>     | Low           | Least Concern | None              | Schedule-II |
| Black-headed Shrike-babbler<br><i>Pteruthius rufiventer</i> | Moderate      | Least Concern | Eastern Himalayas | Schedule-II |
| White-browed Shrike-babbler<br><i>Pteruthius aeralatus</i>  | Low           | Least Concern | None              | Schedule-II |
| Green Shrike-babbler<br><i>Pteruthius xanthochlorus</i>     | Low           | Least Concern | None              | Schedule-II |
| Black-eared Shrike-babbler<br><i>Pteruthius melanotis</i>   | Low           | Least Concern | None              | Schedule-II |
| Maroon Oriole<br><i>Oriolus traillii</i>                    | Low           | Least Concern | None              | Schedule-II |
| White-throated Fantail<br><i>Rhipidura albicollis</i>       | Low           | Least Concern | None              | Schedule-II |
| Black Drongo<br><i>Dicrurus macrocercus</i>                 | Low           | Least Concern | None              | Schedule-II |
| Ashy Drongo<br><i>Dicrurus leucophaeus</i>                  | Low           | Least Concern | None              | Schedule-II |
| Bronzed Drongo<br><i>Dicrurus aeneus</i>                    | Low           | Least Concern | None              | Schedule-II |
| Hair-crested Drongo<br><i>Dicrurus hottentottus</i>         | Moderate      | Least Concern | None              | Schedule-II |
| Brown Shrike<br><i>Lanius cristatus</i>                     | Low           | Least Concern | None              | Schedule-II |
| Long-tailed Shrike<br><i>Lanius schach</i>                  | Low           | Least Concern | None              | Schedule-II |
| Grey-backed Shrike<br><i>Lanius tephronotus</i>             | Low           | Least Concern | None              | Schedule-II |
| Common Green Magpie<br><i>Cissa chinensis</i>               | Low           | Least Concern | None              | Schedule-II |



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|----------------------------------------------------------------|---------------|---------------|-------------------|---------------|
| Species                                                        | SoIB Priority | IUCN          | Endemic Region    | WLPA          |
| Grey Treepie<br><i>Dendrocitta formosae</i>                    | Low           | Least Concern | None              | Schedule-II   |
| House Crow<br><i>Corvus splendens</i>                          | Low           | Least Concern | None              | Not protected |
| Large-billed Crow<br><i>Corvus macrorhynchos</i>               | Low           | Least Concern | None              | Schedule-II   |
| Yellow-bellied Fantail<br><i>Chelidorhynch hypoxanthus</i>     | Moderate      | Least Concern | None              | Schedule-II   |
| Grey-headed Canary-flycatcher<br><i>Culicicapa ceylonensis</i> | Moderate      | Least Concern | None              | Schedule-II   |
| Yellow-browed Tit<br><i>Sylviparus modestus</i>                | Moderate      | Least Concern | None              | Schedule-II   |
| Coal Tit<br><i>Periparus ater</i>                              | Low           | Least Concern | None              | Schedule-II   |
| Rufous-vented Tit<br><i>Periparus rubidiventris</i>            | High          | Least Concern | None              | Schedule-II   |
| Grey-crested Tit<br><i>Lophophanes dichrous</i>                | High          | Least Concern | None              | Schedule-II   |
| Green-backed Tit<br><i>Parus monticolus</i>                    | Low           | Least Concern | None              | Schedule-II   |
| Cinereous Tit<br><i>Parus cinereus</i>                         | Low           | Least Concern | None              | Schedule-II   |
| Himalayan Black-lored Tit<br><i>Machlolophus xanthogenys</i>   | Low           | Least Concern | Himalayas         | Schedule-II   |
| Yellow-cheeked Tit<br><i>Machlolophus spilonotus</i>           | Low           | Least Concern | None              | Schedule-II   |
| Common Tailorbird<br><i>Orthotomus sutorius</i>                | Low           | Least Concern | None              | Schedule-II   |
| Black-throated Prinia<br><i>Prinia atrogularis</i>             | Moderate      | Least Concern | Eastern Himalayas | Schedule-II   |

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|-----------------------------------------------------------|---------------|---------------|----------------|-------------|
| Species                                                   | SoIB Priority | IUCN          | Endemic Region | WLPA        |
| Thick-billed Warbler<br><i>Arundinax aedon</i>            | Moderate      | Least Concern | None           | Schedule-II |
| Russet Bush Warbler<br><i>Locustella mandelli</i>         | NA            | Least Concern | None           | Schedule-II |
| Scaly-breasted Wren Babbler<br><i>Pnoepyga albiventer</i> | Low           | Least Concern | None           | Schedule-II |
| Pygmy Wren Babbler<br><i>Pnoepyga pusilla</i>             | Low           | Least Concern | None           | Schedule-II |
| Barn Swallow<br><i>Hirundo rustica</i>                    | Moderate      | Least Concern | None           | Schedule-II |
| Red-rumped Swallow<br><i>Cecropis daurica</i>             | Low           | Least Concern | None           | Schedule-II |
| Asian House Martin<br><i>Delichon dasypus</i>             | Moderate      | Least Concern | None           | Schedule-II |
| Nepal House Martin<br><i>Delichon nipalense</i>           | Low           | Least Concern | None           | Schedule-II |
| Black-crested Bulbul<br><i>Rubigula flaviventris</i>      | Low           | Least Concern | None           | Schedule-II |
| Striated Bulbul<br><i>Alcurus striatus</i>                | Moderate      | Least Concern | None           | Schedule-II |
| Red-vented Bulbul<br><i>Pycnonotus cafer</i>              | Low           | Least Concern | None           | Schedule-II |
| Himalayan Bulbul<br><i>Pycnonotus leucogenys</i>          | Low           | Least Concern | Himalayas      | Schedule-II |
| Black Bulbul<br><i>Hypsipetes leucocephalus</i>           | Low           | Least Concern | None           | Schedule-II |
| Mountain Bulbul<br><i>Ixos mcclellandii</i>               | Moderate      | Least Concern | None           | Schedule-II |
| Ashy-throated Warbler<br><i>Phylloscopus maculipennis</i> | Moderate      | Least Concern | None           | Schedule-II |

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| COMPLETE LIST OF SPECIES                                      |               |               |                   |             |
|---------------------------------------------------------------|---------------|---------------|-------------------|-------------|
| Species                                                       | SoIB Priority | IUCN          | Endemic Region    | WLPA        |
| Buff-barred Warbler<br><i>Phylloscopus pulcher</i>            | Low           | Least Concern | None              | Schedule-II |
| Yellow-browed Warbler<br><i>Phylloscopus inornatus</i>        | Low           | Least Concern | None              | Schedule-II |
| Hume's Warbler<br><i>Phylloscopus humei</i>                   | Low           | Least Concern | None              | Schedule-II |
| Lemon-rumped Warbler<br><i>Phylloscopus chloronotus</i>       | Moderate      | Least Concern | None              | Schedule-II |
| Tickell's Leaf Warbler<br><i>Phylloscopus affinis</i>         | Low           | Least Concern | None              | Schedule-II |
| Grey-cheeked Warbler<br><i>Phylloscopus poliogenys</i>        | Low           | Least Concern | None              | Schedule-II |
| Green-crowned Warbler<br><i>Phylloscopus burkii</i>           | Moderate      | Least Concern | None              | Schedule-II |
| Whistler's Warbler<br><i>Phylloscopus whistleri</i>           | Low           | Least Concern | None              | Schedule-II |
| Greenish Warbler<br><i>Phylloscopus trochiloides</i>          | Low           | Least Concern | None              | Schedule-II |
| Large-billed Leaf Warbler<br><i>Phylloscopus magnirostris</i> | Moderate      | Least Concern | None              | Schedule-II |
| Chestnut-crowned Warbler<br><i>Phylloscopus castaniceps</i>   | Low           | Least Concern | None              | Schedule-II |
| Yellow-vented Warbler<br><i>Phylloscopus cantator</i>         | Low           | Least Concern | Eastern Himalayas | Schedule-II |
| Blyth's Leaf Warbler<br><i>Phylloscopus reguloides</i>        | Low           | Least Concern | None              | Schedule-II |
| Grey-hooded Warbler<br><i>Phylloscopus xanthoschistos</i>     | Low           | Least Concern | Himalayas         | Schedule-II |
| Grey-bellied Tesia<br><i>Tesia cyaniventer</i>                | Low           | Least Concern | None              | Schedule-II |

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

District: West Sikkim

Dates: 01/01/1900 – 31/05/2023

| COMPLETE LIST OF SPECIES                                  |               |               |                   |             |
|-----------------------------------------------------------|---------------|---------------|-------------------|-------------|
| Species                                                   | SoIB Priority | IUCN          | Endemic Region    | WLPA        |
| Slaty-bellied Tesia<br><i>Tesia olivea</i>                | Low           | Least Concern | None              | Schedule-II |
| Grey-sided Bush Warbler<br><i>Cettia brunnifrons</i>      | Low           | Least Concern | None              | Schedule-II |
| Chestnut-headed Tesia<br><i>Cettia castaneocoronata</i>   | Low           | Least Concern | None              | Schedule-II |
| Yellow-bellied Warbler<br><i>Abroscopus superciliaris</i> | Low           | Least Concern | None              | Schedule-II |
| Black-faced Warbler<br><i>Abroscopus schisticeps</i>      | Low           | Least Concern | None              | Schedule-II |
| Mountain Tailorbird<br><i>Phyllergates cucullatus</i>     | Low           | Least Concern | None              | Schedule-II |
| Broad-billed Warbler<br><i>Tickellia hodgsoni</i>         | Moderate      | Least Concern | Eastern Himalayas | Schedule-II |
| Brownish-flanked Bush Warbler<br><i>Horornis fortipes</i> | Low           | Least Concern | None              | Schedule-II |
| Hume's Bush Warbler<br><i>Horornis brunnescens</i>        | Moderate      | Least Concern | Himalayas         | Schedule-II |
| Aberrant Bush Warbler<br><i>Horornis flavolivaceus</i>    | Low           | Least Concern | None              | Schedule-II |
| Black-throated Tit<br><i>Aegithalos concinnus</i>         | Low           | Least Concern | None              | Schedule-II |
| Golden-breasted Fulvetta<br><i>Lioparus chrysotis</i>     | Moderate      | Least Concern | None              | Schedule-II |
| White-browed Fulvetta<br><i>Fulvetta vinipectus</i>       | Moderate      | Least Concern | None              | Schedule-II |
| Great Parrotbill<br><i>Conostoma aemodum</i>              | High          | Least Concern | None              | Schedule-II |
| Brown Parrotbill<br><i>Cholornis unicolor</i>             | Moderate      | Least Concern | None              | Schedule-II |

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

District: West Sikkim

Dates: 01/01/1900 – 31/05/2023

| COMPLETE LIST OF SPECIES                                             |               |                 |                   |             |
|----------------------------------------------------------------------|---------------|-----------------|-------------------|-------------|
| Species                                                              | SoIB Priority | IUCN            | Endemic Region    | WLPA        |
| Fulvous Parrotbill<br><i>Suthora fulvifrons</i>                      | High          | Least Concern   | None              | Schedule-II |
| Black-throated Parrotbill<br><i>Suthora nipalensis</i>               | Moderate      | Least Concern   | None              | Schedule-II |
| Black-chinned Yuhina<br><i>Yuhina nigrimenta</i>                     | Low           | Least Concern   | None              | Schedule-II |
| Whiskered Yuhina<br><i>Yuhina flavicollis</i>                        | Low           | Least Concern   | None              | Schedule-II |
| White-naped Yuhina<br><i>Yuhina bakeri</i>                           | Moderate      | Least Concern   | Eastern Himalayas | Schedule-II |
| Stripe-throated Yuhina<br><i>Yuhina gularis</i>                      | Moderate      | Least Concern   | None              | Schedule-II |
| Rufous-vented Yuhina<br><i>Yuhina occipitalis</i>                    | Moderate      | Least Concern   | Eastern Himalayas | Schedule-II |
| Indian White-eye<br><i>Zosterops palpebrosus</i>                     | Low           | Least Concern   | None              | Schedule-II |
| Pin-striped Tit Babbler<br><i>Mixornis gularis</i>                   | Low           | Least Concern   | None              | Schedule-II |
| Rufous-capped Babbler<br><i>Cyanoderma ruficeps</i>                  | Low           | Least Concern   | None              | Schedule-II |
| Rufous-throated Wren Babbler<br><i>Spelaeornis caudatus</i>          | Moderate      | Near Threatened | Eastern Himalayas | Schedule-II |
| Black-crowned Scimitar Babbler<br><i>Pomatorhinus ferruginosus</i>   | Moderate      | Least Concern   | Eastern Himalayas | Schedule-II |
| Slender-billed Scimitar Babbler<br><i>Pomatorhinus superciliaris</i> | Moderate      | Least Concern   | None              | Schedule-II |
| Streak-breasted Scimitar Babbler<br><i>Pomatorhinus ruficollis</i>   | Low           | Least Concern   | None              | Schedule-II |
| White-browed Scimitar Babbler<br><i>Pomatorhinus schisticeps</i>     | Low           | Least Concern   | None              | Schedule-II |

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

District: West Sikkim

Dates: 01/01/1900 – 31/05/2023

| COMPLETE LIST OF SPECIES                                                 |               |               |                   |             |
|--------------------------------------------------------------------------|---------------|---------------|-------------------|-------------|
| Species                                                                  | SoIB Priority | IUCN          | Endemic Region    | WLPA        |
| Grey-throated Babbler<br><i>Stachyris nigriceps</i>                      | Low           | Least Concern | None              | Schedule-II |
| Rufous-winged Fulvetta<br><i>Schoeniparus castaneiceps</i>               | Moderate      | Least Concern | None              | Schedule-II |
| Nepal Fulvetta<br><i>Alcippe nipalensis</i>                              | Low           | Least Concern | None              | Schedule-II |
| Striated Laughingthrush<br><i>Grammatoptila striata</i>                  | Low           | Least Concern | Himalayas         | Schedule-II |
| Himalayan Cutia<br><i>Cutia nipalensis</i>                               | Moderate      | Least Concern | None              | Schedule-II |
| Scaly Laughingthrush<br><i>Trochalopteron subunicolor</i>                | Moderate      | Least Concern | None              | Schedule-II |
| Blue-winged Laughingthrush<br><i>Trochalopteron squamatum</i>            | Moderate      | Least Concern | Eastern Himalayas | Schedule-II |
| Streaked Laughingthrush<br><i>Trochalopteron lineatum</i>                | Low           | Least Concern | Himalayas         | Schedule-II |
| Black-faced Laughingthrush<br><i>Trochalopteron affine</i>               | Moderate      | Least Concern | None              | Schedule-II |
| Chestnut-crowned Laughingthrush<br><i>Trochalopteron erythrocephalum</i> | Low           | Least Concern | Himalayas         | Schedule-II |
| Rufous Sibia<br><i>Heterophasia capistrata</i>                           | Low           | Least Concern | Himalayas         | Schedule-II |
| Hoary-throated Barwing<br><i>Actinodura nipalensis</i>                   | High          | Least Concern | Eastern Himalayas | Schedule-II |
| Blue-winged Minla<br><i>Actinodura cyanouroptera</i>                     | Low           | Least Concern | None              | Schedule-II |
| Chestnut-tailed Minla<br><i>Actinodura strigula</i>                      | Low           | Least Concern | None              | Schedule-II |
| Rusty-fronted Barwing<br><i>Actinodura egertoni</i>                      | Low           | Least Concern | Eastern Himalayas | Schedule-II |

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

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Dates: 01/01/1900 – 31/05/2023

| COMPLETE LIST OF SPECIES                                         |               |               |                     |             |
|------------------------------------------------------------------|---------------|---------------|---------------------|-------------|
| Species                                                          | SoIB Priority | IUCN          | Endemic Region      | WLPA        |
| Red-billed Leiothrix<br><i>Leiothrix lutea</i>                   | Low           | Least Concern | None                | Schedule-II |
| Red-tailed Minla<br><i>Minla ignotincta</i>                      | Low           | Least Concern | None                | Schedule-II |
| Red-faced Liocichla<br><i>Liocichla phoenicea</i>                | Low           | Least Concern | None                | Schedule-II |
| Jungle Babbler<br><i>Argya striata</i>                           | Low           | Least Concern | Indian Subcontinent | Schedule-II |
| White-crested Laughingthrush<br><i>Garrulax leucolophus</i>      | Low           | Least Concern | None                | Schedule-II |
| Rufous-chinned Laughingthrush<br><i>Ianthocincla rufogularis</i> | Moderate      | Least Concern | Himalayas           | Schedule-II |
| Spotted Laughingthrush<br><i>Ianthocincla ocellata</i>           | Moderate      | Least Concern | Eastern Himalayas   | Schedule-II |
| Rufous-necked Laughingthrush<br><i>Pterorhinus ruficollis</i>    | Moderate      | Least Concern | None                | Schedule-II |
| White-throated Laughingthrush<br><i>Pterorhinus albogularis</i>  | Low           | Least Concern | None                | Schedule-II |
| Grey-sided Laughingthrush<br><i>Pterorhinus caerulatus</i>       | Moderate      | Least Concern | Eastern Himalayas   | Schedule-I  |
| Chestnut-bellied Nuthatch<br><i>Sitta cinnamoventris</i>         | Low           | Least Concern | None                | Schedule-II |
| White-tailed Nuthatch<br><i>Sitta himalayensis</i>               | Low           | Least Concern | Himalayas           | Schedule-II |
| Velvet-fronted Nuthatch<br><i>Sitta frontalis</i>                | Moderate      | Least Concern | None                | Schedule-II |
| Rusty-flanked Treecreeper<br><i>Certhia nipalensis</i>           | Moderate      | Least Concern | Himalayas           | Schedule-II |
| Sikkim Treecreeper<br><i>Certhia discolor</i>                    | Moderate      | Least Concern | Himalayas           | Schedule-II |

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

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Dates: 01/01/1900 – 31/05/2023

| COMPLETE LIST OF SPECIES                              |               |               |                     |             |
|-------------------------------------------------------|---------------|---------------|---------------------|-------------|
| Species                                               | SoIB Priority | IUCN          | Endemic Region      | WLPA        |
| Eurasian Wren<br><i>Troglodytes troglodytes</i>       | Low           | Least Concern | None                | Schedule-II |
| Brown Dipper<br><i>Cinclus pallasii</i>               | High          | Least Concern | None                | Schedule-II |
| Chestnut-tailed Starling<br><i>Sturnia malabarica</i> | Low           | Least Concern | None                | Schedule-II |
| Common Myna<br><i>Acridotheres tristis</i>            | Low           | Least Concern | None                | Schedule-II |
| Long-tailed Thrush<br><i>Zoothera dixonii</i>         | NA            | Least Concern | None                | Schedule-II |
| Long-billed Thrush<br><i>Zoothera monticola</i>       | Moderate      | Least Concern | Himalayas           | Schedule-II |
| Scaly Thrush<br><i>Zoothera dauma</i>                 | Low           | Least Concern | None                | Schedule-II |
| Grey-winged Blackbird<br><i>Turdus boulboul</i>       | Low           | Least Concern | None                | Schedule-II |
| Tickell's Thrush<br><i>Turdus unicolor</i>            | Low           | Least Concern | Indian Subcontinent | Schedule-II |
| White-collared Blackbird<br><i>Turdus albocinctus</i> | Moderate      | Least Concern | Himalayas           | Schedule-II |
| Chestnut Thrush<br><i>Turdus rubrocanus</i>           | Low           | Least Concern | None                | Schedule-II |
| Black-throated Thrush<br><i>Turdus atrogularis</i>    | Low           | Least Concern | None                | Schedule-II |
| Dark-sided Flycatcher<br><i>Muscicapa sibirica</i>    | Low           | Least Concern | None                | Schedule-II |
| Ferruginous Flycatcher<br><i>Muscicapa ferruginea</i> | NA            | Least Concern | None                | Schedule-II |
| Asian Brown Flycatcher<br><i>Muscicapa dauurica</i>   | Low           | Least Concern | None                | Schedule-II |



# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

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| COMPLETE LIST OF SPECIES                                |               |               |                |             |
|---------------------------------------------------------|---------------|---------------|----------------|-------------|
| Species                                                 | SoIB Priority | IUCN          | Endemic Region | WLPA        |
| Oriental Magpie Robin<br><i>Copsychus saularis</i>      | Low           | Least Concern | None           | Schedule-II |
| White-gorgeted Flycatcher<br><i>Anthipes monileger</i>  | Moderate      | Least Concern | None           | Schedule-II |
| Pale Blue Flycatcher<br><i>Cyornis unicolor</i>         | NA            | Least Concern | None           | Schedule-II |
| Blue-throated Flycatcher<br><i>Cyornis rubeculoides</i> | Low           | Least Concern | None           | Schedule-II |
| Large Niltava<br><i>Niltava grandis</i>                 | Low           | Least Concern | None           | Schedule-II |
| Small Niltava<br><i>Niltava macgrigoriae</i>            | Low           | Least Concern | None           | Schedule-II |
| Rufous-bellied Niltava<br><i>Niltava sundara</i>        | Low           | Least Concern | None           | Schedule-II |
| Verditer Flycatcher<br><i>Eumyias thalassinus</i>       | Low           | Least Concern | None           | Schedule-II |
| Lesser Shortwing<br><i>Brachypteryx leucophris</i>      | Low           | Least Concern | None           | Schedule-II |
| Himalayan Shortwing<br><i>Brachypteryx cruralis</i>     | Moderate      | Least Concern | None           | Schedule-II |
| Blue Whistling Thrush<br><i>Myophonus caeruleus</i>     | Low           | Least Concern | None           | Schedule-II |
| Little Forktail<br><i>Enicurus scouleri</i>             | Moderate      | Least Concern | None           | Schedule-II |
| Spotted Forktail<br><i>Enicurus maculatus</i>           | Low           | Least Concern | None           | Schedule-II |
| Slaty-backed Forktail<br><i>Enicurus schistaceus</i>    | Moderate      | Least Concern | None           | Schedule-II |
| White-tailed Robin<br><i>Myiomela leucura</i>           | Low           | Least Concern | None           | Schedule-II |

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

District: West Sikkim

Dates: 01/01/1900 – 31/05/2023

| COMPLETE LIST OF SPECIES                                   |               |               |                |             |
|------------------------------------------------------------|---------------|---------------|----------------|-------------|
| Species                                                    | SoIB Priority | IUCN          | Endemic Region | WLPA        |
| Himalayan Bush Robin<br><i>Tarsiger rufilatus</i>          | Low           | Least Concern | None           | Schedule-II |
| Rufous-breasted Bush Robin<br><i>Tarsiger hyperythrus</i>  | Moderate      | Least Concern | Himalayas      | Schedule-II |
| White-browed Bush Robin<br><i>Tarsiger indicus</i>         | Moderate      | Least Concern | None           | Schedule-II |
| Golden Bush Robin<br><i>Tarsiger chrysaeus</i>             | Low           | Least Concern | None           | Schedule-II |
| Slaty-backed Flycatcher<br><i>Ficedula erithacus</i>       | NA            | Least Concern | None           | Schedule-II |
| Slaty-blue Flycatcher<br><i>Ficedula tricolor</i>          | Low           | Least Concern | None           | Schedule-II |
| Snowy-browed Flycatcher<br><i>Ficedula hyperythra</i>      | Low           | Least Concern | None           | Schedule-II |
| Pygmy Blue Flycatcher<br><i>Ficedula hodgsoni</i>          | Low           | Least Concern | None           | Schedule-II |
| Rufous-gorgeted Flycatcher<br><i>Ficedula strophliata</i>  | High          | Least Concern | None           | Schedule-II |
| Little Pied Flycatcher<br><i>Ficedula westermanni</i>      | Moderate      | Least Concern | None           | Schedule-II |
| Ultramarine Flycatcher<br><i>Ficedula supercilialis</i>    | Low           | Least Concern | None           | Schedule-II |
| Taiga Flycatcher<br><i>Ficedula albicilla</i>              | NA            | Least Concern | None           | Schedule-II |
| Blue-fronted Redstart<br><i>Phoenicurus frontalis</i>      | Moderate      | Least Concern | None           | Schedule-II |
| Plumbeous Water Redstart<br><i>Phoenicurus fuliginosus</i> | High          | Least Concern | None           | Schedule-II |
| White-capped Redstart<br><i>Phoenicurus leucocephalus</i>  | Moderate      | Least Concern | None           | Schedule-II |

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

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Dates: 01/01/1900 – 31/05/2023

| COMPLETE LIST OF SPECIES                                     |               |               |                |             |
|--------------------------------------------------------------|---------------|---------------|----------------|-------------|
| Species                                                      | SoIB Priority | IUCN          | Endemic Region | WLPA        |
| Hodgson's Redstart<br><i>Phoenicurus hodgsoni</i>            | Moderate      | Least Concern | None           | Schedule-II |
| Black Redstart<br><i>Phoenicurus ochruros</i>                | Moderate      | Least Concern | None           | Schedule-II |
| Chestnut-bellied Rock Thrush<br><i>Monticola rufiventris</i> | Moderate      | Least Concern | None           | Schedule-II |
| Blue-capped Rock Thrush<br><i>Monticola cinclorhyncha</i>    | High          | Least Concern | None           | Schedule-II |
| Siberian Stonechat<br><i>Saxicola maurus</i>                 | Low           | Least Concern | None           | Schedule-II |
| Grey Bushchat<br><i>Saxicola ferreus</i>                     | Low           | Least Concern | None           | Schedule-II |
| Yellow-bellied Flowerpecker<br><i>Dicaeum melanozanthum</i>  | NA            | Least Concern | None           | Schedule-II |
| Plain Flowerpecker<br><i>Dicaeum minullum</i>                | Low           | Least Concern | None           | Schedule-II |
| Fire-breasted Flowerpecker<br><i>Dicaeum ignipectus</i>      | Low           | Least Concern | None           | Schedule-II |
| Fire-tailed Sunbird<br><i>Aethopyga ignicauda</i>            | Low           | Least Concern | None           | Schedule-II |
| Black-throated Sunbird<br><i>Aethopyga saturata</i>          | Low           | Least Concern | None           | Schedule-II |
| Mrs Gould's Sunbird<br><i>Aethopyga gouldiae</i>             | Low           | Least Concern | None           | Schedule-II |
| Green-tailed Sunbird<br><i>Aethopyga nipalensis</i>          | Low           | Least Concern | None           | Schedule-II |
| Crimson Sunbird<br><i>Aethopyga siparaja</i>                 | Low           | Least Concern | None           | Schedule-II |
| Orange-bellied Leafbird<br><i>Chloropsis hardwickii</i>      | Moderate      | Least Concern | None           | Schedule-II |

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

District: West Sikkim

Dates: 01/01/1900 – 31/05/2023

| COMPLETE LIST OF SPECIES                                  |               |               |                     |             |
|-----------------------------------------------------------|---------------|---------------|---------------------|-------------|
| Species                                                   | SoIB Priority | IUCN          | Endemic Region      | WLPA        |
| Rufous-breasted Accentor<br><i>Prunella strophiatea</i>   | Moderate      | Least Concern | None                | Schedule-II |
| Russet Sparrow<br><i>Passer cinnamomeus</i>               | Low           | Least Concern | None                | Schedule-II |
| Eurasian Tree Sparrow<br><i>Passer montanus</i>           | Low           | Least Concern | None                | Schedule-II |
| Grey Wagtail<br><i>Motacilla cinerea</i>                  | Moderate      | Least Concern | None                | Schedule-II |
| White-browed Wagtail<br><i>Motacilla maderaspatensis</i>  | Low           | Least Concern | Indian Subcontinent | Schedule-II |
| Olive-backed Pipit<br><i>Anthus hodgsoni</i>              | High          | Least Concern | None                | Schedule-II |
| Spot-winged Grosbeak<br><i>Mycerobas melanozanthos</i>    | Low           | Least Concern | None                | Schedule-II |
| Common Rosefinch<br><i>Carpodacus erythrinus</i>          | Moderate      | Least Concern | None                | Schedule-II |
| Dark-breasted Rosefinch<br><i>Procarduelis nipalensis</i> | Low           | Least Concern | None                | Schedule-II |
| Plain Mountain Finch<br><i>Leucosticte nemoricola</i>     | Moderate      | Least Concern | None                | Schedule-II |
| Yellow-breasted Greenfinch<br><i>Chloris spinoides</i>    | Moderate      | Least Concern | Himalayas           | Schedule-II |
| Red Crossbill<br><i>Loxia curvirostra</i>                 | NA            | Least Concern | None                | Schedule-II |
| Little Bunting<br><i>Emberiza pusilla</i>                 | Low           | Least Concern | None                | Schedule-II |

# BIRDS OF KHECHEOPALRI LAKE AVIAN STATUS

State: Sikkim

District: West Sikkim

Dates: 01/01/1900 – 31/05/2023

| DATA CONTRIBUTIONS         |      |
|----------------------------|------|
| Number of Observations     | 1279 |
| Number of Lists            | 81   |
| Number of Unique Lists     | 66   |
| Number of Hours of Birding | 92   |
| Number of Observers        | 68   |

# INVENTORISATION OF FLORA OF KHECHEOPALRI LAKE AND ITS SURROUNDING FOREST

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## *A Scientific Report*

Submitted to  
Forest, Environment & Wildlife Management Department  
Government of Sikkim

Botanical Survey of India  
Sikkim Himalayan Regional Centre  
Gangtok - 737103



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Dated: 27.11.2017

Place: Gangtok

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# **INVENTORISATION OF FLORA OF KHECHEOPALRI LAKE AND ITS SURROUNDING FOREST**

## **A Scientific Report**

**Submitted to  
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**Dr. David L. Biate**  
Scientist-B

**Dr. D.K. Agrawala**  
Scientist-D & Head of Office

**Botanical Survey of India  
Sikkim Himalayan Regional Centre  
Gangtok - 737103**

## 1. Introduction

Khecheopalri lake [27°21' 10.13" N and 88°12' 25.23" E] is situated in West Sikkim at an elevation of 1820 m above sea level and 147 kilometres away from the capital town Gangtok. The lake is part of the sacred landscape of “Demazong,” a valley of rice that is often referred to as a land of hidden treasures (the local communities believe that the rice produced from this area can fulfil the food requirements of the people). Khecheopalri lake is considered as the most sacred among the one hundred and fifty lakes in Sikkim being worshipped both by the Buddhist and the Hindus. It is often referred to as the “wishing lake”. The lake water is considered sacred and is used for rites and rituals. It has been estimated that the lake is more than 3500 years old [Jain *et al.*, 2000; Rahaman, 2014; Uprety & Sharma, 2012].

The lake is popularly called Khecheopalri Lake as it is on the lap of the sacred Khecheopalri hill. However, the real name of the lake is ‘Sho Dzo Sho’ which means “Oh Lady, Sit Here”.

According to the sacred scriptures of Sikkimese Buddhism, the lake is believed to have started after the invasion of the medieval kingdom by the Nepali army in the 1780s, who destroyed the third palace of the Namgyal Dynasty at Rabdentse and desecrated the holy lake at Yoksum, West Sikkim.

Khecheopalri lake (Fig.1-2) is surrounded by the forested Ramam watershed (named after Ramam Mountain) and covers an area of 12 square kilometres. It is part of the southern boundary of the Khangchendzonga Biosphere Reserve (Buffer Zone IV), limiting on the reserved forest boundaries of Khecheopalri Village. It has an open water surface area of 3.79 hectares with a mean water depth of 7.2 meters (Jain *et al.* 2004). Two perennial and five seasonal inlets from the watershed drains in to the lake while two major perennial outlets drained out from the lake.

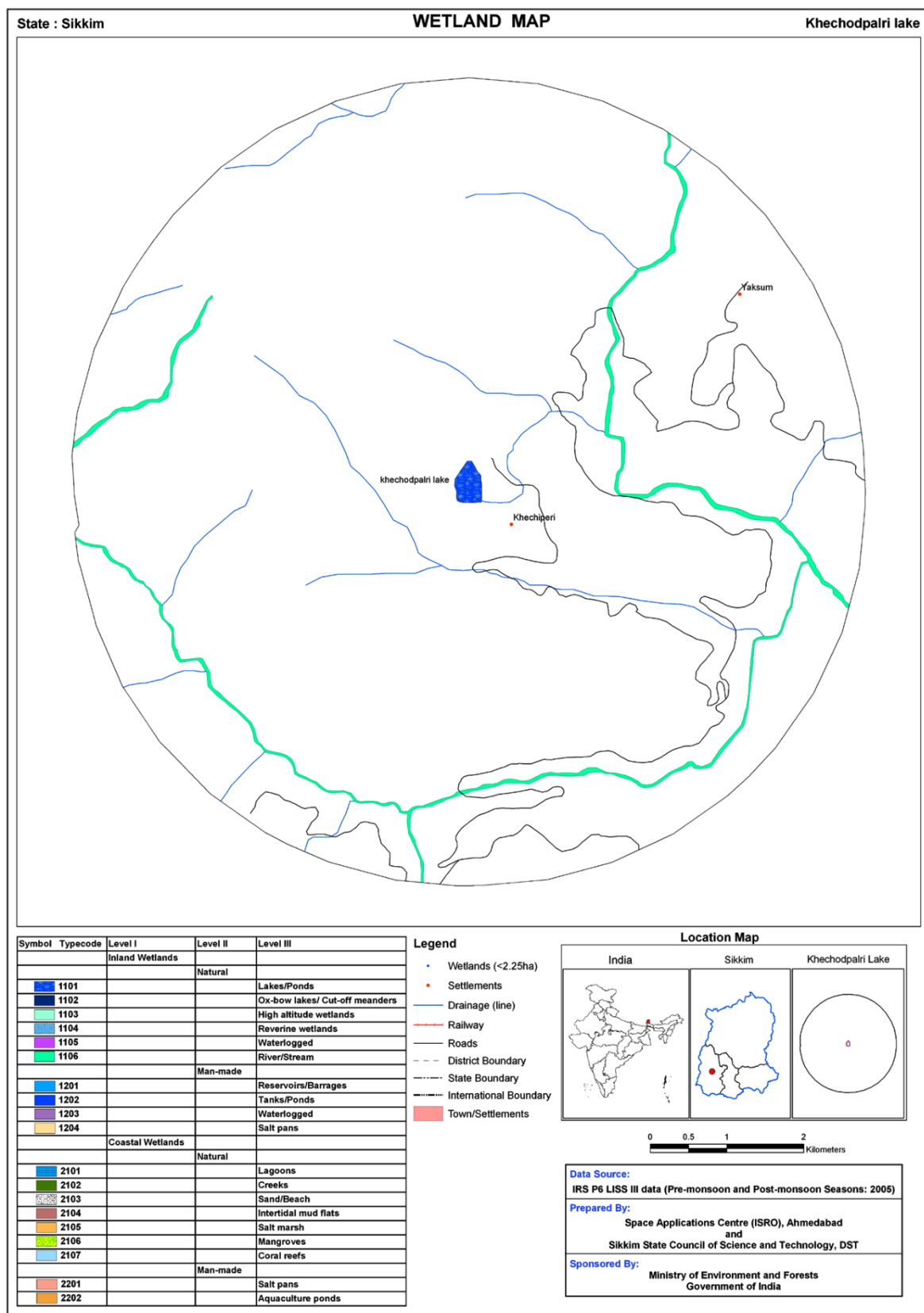
Due to its landscape, rich biodiversity and the sacred beliefs associated with it, large numbers of national and international tourists visit the lake throughout the year. As per 1998 record, more than 7,800 pilgrims from within the state and from neighbouring countries of Nepal and Bhutan visited the place to take part in the various festivals that are organised throughout the year. However, over the years the longevity and the aquatic

biodiversity of the lake is under severe threat due to anthropogenic activities of the catchment areas and the offerings of tourist in the lake.

Till date, no detailed floristic study of the area has been carried out to assess its rich floristic diversity and there are no published literature documenting the flora of the area. There are only two published records so far documenting the algal diversity of Khecheopalri lake. Das & Keshri (2013) first recorded 19 desmid taxa belonging to 6 genera from the lake. Out of these *Cosmarium cymatopleurum* Nordst. and *Gonatozygon monotaenium* var. *minutum* Cushman, were documented as new Indian records. Later, Das & Keshri (2016) reported 25 desmid taxa of 12 genera from the lake. But, there is no documentation of other algal groups so far from the lake. The present study was therefore, conducted to assess the floristic diversity of the lake area including the surrounding forested area.



**Fig.1.** A view of the lake and its surrounding forest.



**Fig.2:** Map of Khecheopalri including 5 km buffer area (Source – National Wetland Atlas, Sikkim).

## 2. Material and Methods

Detailed floristic survey of the lake and its surrounding area was carried out during the month of May and August (Fig.3). Collection, preservation and maintenance of specimens were carried out following the conventional herbarium technique as described in Jain and Rao (1977). Field notes and data for habit and habitat were recorded. Digital photographs of plants in their natural habitat were also captured. All collected specimens were processed and mounted on herbarium sheets and identified aided with relevant literatures. All specimens were deposited at herbarium of Botanical Survey of India, Sikkim Himalayan Regional Centre with acronym BSHC.

Algal samples were collected from five different sites, i.e. near the jetty and site of worship (S1), perennial water inlet 1 (S2), perennial water inlet 2 (S3), near the forest area (S4) and the water outlet of the lake (S5), during May 2017 (Fig. 4-5). Planktonic samples were collected using plankton net of 20  $\mu$ m pore size. Epilithic and other epiphytic samples were collected using tooth brush, forceps and scalpel. The collected samples were preserved with 4% formaldehyde solution. Microscopic observations and morphological studies were made with Nikon microscope Ni-11 fitted with Nikon Digital Camera DS-Ri1-U3 and operated by Nikon Imaging Software NIS-D+EDF. Identification of the algae was made following standard literatures.



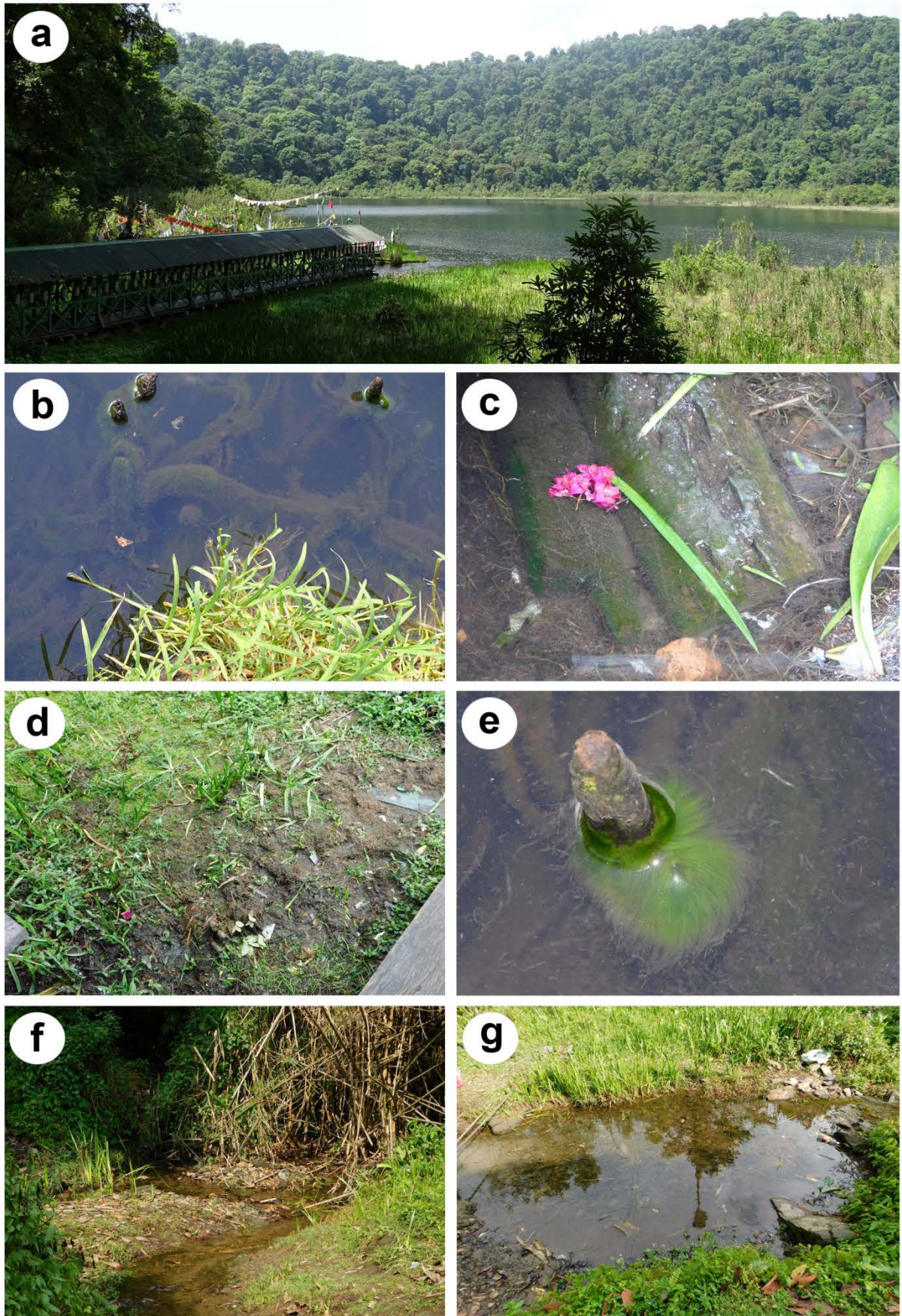


**Fig.3:** Survey and collection of plant specimens in forest surrounding Khecheopalri lake



**Fig. 4:** Collection sites of algal samples in Khecheopalri lake. S1 – Near the jetty and site of worship, S2 – Perennial water inlet 1, S3 – Perennial water inlet 2, S4 - Near the forest area and S5 – Water outlet of the lake.





**Fig. 5:** Collection sites and algal habitats of Khecheopalri lake.



### 3. Results and Discussion

#### 3a. Diversity of Algal flora

All together, 66 algal taxa belonging to 40 genera were documented from different habitats of Khecheopalri lake, which include 2 taxa of Cyanophyta/Cyanoprokaryota, 46 taxa of Chlorophyta and 18 taxa of Heterokontophyta (Fig. 6-7). A comprehensive list of all the algal taxa reported so far from the lake is presented in Table-1.

A differential diversity was observed in different collection sites, specifically near the jetty, which is also a site of worship for local people as well as tourists. Feeding to fishes is another source of nutrients to the lake water and sediment in this site leading to eutrophication of the lake which can be justified with the appearance of the bloom forming toxic alga *Microcystis aeruginosa*. Jain *et al.* (1999) had already mentioned about the degrading status of the lake at this site and suggested arrangements for restriction of offerings by tourists and debris into the lake water. The boggy area around the lake was also rich in inorganic nutrients and was moderately alkaline, thus providing a suitable ambience for the rich diversity of desmids.

Table 1: List of algal taxa reported so far from Khecheopalri lake, West Sikkim, Sikkim.

| Sl. No. | Algal taxa                                                                                                                                            | Das & Keshri 2013 | Das & Keshri 2016 | Present study |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|---------------|
|         | Phylum: Cyanophyta / Cyanoprokaryota<br>Class: Cyanophyceae<br>Order: Chroococcales<br>Family: Microcystaceae<br>Genus: Microcystis Kütz. ex Lemmerm. |                   |                   |               |
| 1       | <i>Microcystis aeruginosa</i> (Kütz.) Kütz.                                                                                                           | -                 | -                 | +             |
|         | Order: Nostocales<br>Family: Rivulariaceae<br>Genus: Calothrix C. Agardh ex Bornet & Flahault                                                         |                   |                   |               |
| 2       | <i>Calothrix fusca</i> Bornet & Flahault                                                                                                              | -                 | -                 | +             |
|         | Phylum: Chlorophyta<br>Class: Chlorophyceae<br>Order: Chlamydomonadales<br>Family: Hormotilaceae<br>Genus: Heleococcus Korš.                          |                   |                   |               |
| 3       | <i>Heleococcus polyvacuolatus</i> Fott                                                                                                                | -                 | -                 | +             |
|         | Order: Sphaeropleales<br>Family: Sphaeropleaceae<br>Genus: Ankistrodesmus Corda                                                                       |                   |                   |               |
| 4       | <i>Ankistrodesmus arcuatus</i> Koršikov                                                                                                               | -                 | -                 | +             |
|         | Family: Selenastraceae<br>Genus: Monoraphidium Kom.-Legn.                                                                                             |                   |                   |               |

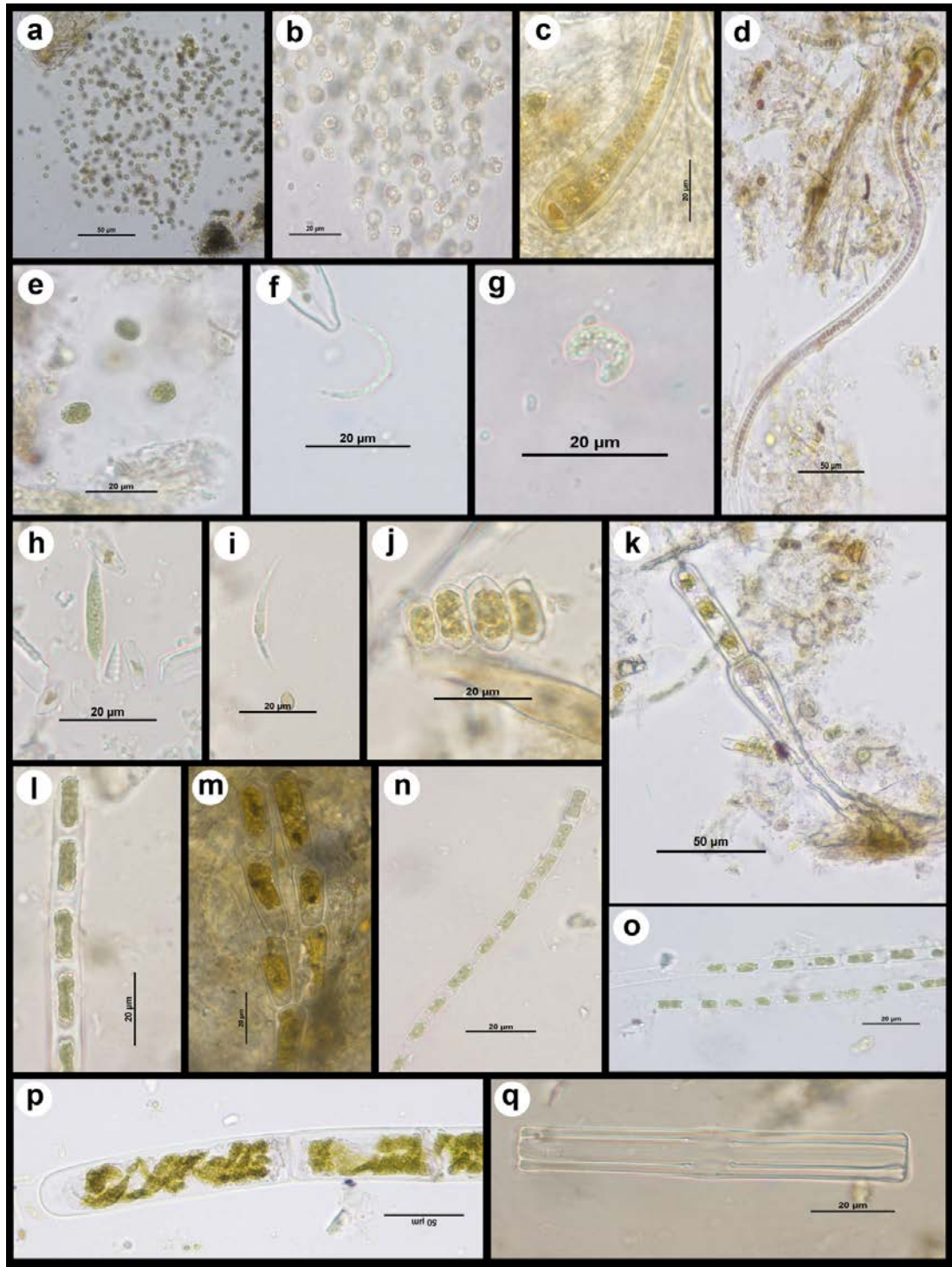


|    |                                                                                                     |   |   |   |
|----|-----------------------------------------------------------------------------------------------------|---|---|---|
| 5  | <i>Monoraphidium nanum</i> (Ettl) Hindák                                                            | - | - | + |
| 6  | <i>Monoraphidium pseudobraunii</i><br>(J.H.Belcher & Swale) Heynig                                  | - | - | + |
| 7  | <i>Monoraphidium tortile</i> (West & G.S.<br>West) Komárková-Legnerová                              | - | - | + |
|    | Family: Scenedesmaceae<br>Genus: Desmodesmus Hegewald &<br>Schnepf                                  |   |   |   |
| 8  | <i>Desmodesmus microspina</i> (Chodat)<br>Tsarenko                                                  | - | - | + |
|    | Order: Chaetophorales<br>Family: Uronemataceae<br>Genus: Uronema Lagerh.                            |   |   |   |
| 9  | <i>Uronema confervicola</i> Lagerheim                                                               | - | - | + |
|    | Family: Microsporaceae<br>Genus: Microspora Thuret                                                  |   |   |   |
| 10 | <i>Microspora amoena</i> (Kütz.) Rabenh.                                                            | - | - | + |
|    | Order: Oedogoniales<br>Family: Oedogoniaceae<br>Genus: Bulbochaete C. Agardh                        |   |   |   |
| 11 | <i>Bulbochaete sp.</i>                                                                              | - | - | + |
|    | Class: Trebouxiophyceae<br>Order: Chlorellales<br>Family: Oocystaceae<br>Genus: Nephrocytium Nägeli |   |   |   |
| 12 | <i>Nephrocytium varium</i> Hortobagyi                                                               | - | - | + |
|    | Order: Trebouxiales<br>Family: Botryococcaceae<br>Genus: Botryococcus Kütz.                         |   |   |   |
| 13 | <i>Botryococcus braunii</i> Kütz.                                                                   | - | - | + |
|    | Class: Ulvophyceae<br>Order: Ulotrichales<br>Family: Ulotrichaceae<br>Genus: Ulothrix Kütz.         |   |   |   |
| 14 | <i>Ulothrix limnetica</i> Lemmerm.                                                                  | - | - | + |
| 15 | <i>Ulothrix tenerrima</i> (Kütz.) Kütz.                                                             | - | - | + |
|    | Class: Zygnematophyceae<br>Order: Zygnematales<br>Family: Zygnemataceae<br>Genus: Spirogyra Link    |   |   |   |
| 16 | <i>Spirogyra rivularis</i> (Hassall) Rabenh.                                                        | - | - | + |
|    | Family: Mesotaeniaceae<br>Genus: Cylindrocystis Menegh. ex De<br>Bary                               |   |   |   |
| 17 | <i>Cylindrocystis brebissonii</i> (Ralfs) De Bary                                                   | + | + | - |
|    | Genus: Spirotaenia Bréb.                                                                            |   |   |   |
| 18 | <i>Spirotaenia condensata</i> Bréb.                                                                 | + | + | - |
|    | Genus: Netrium (Nägeli) Itzsohn &<br>Rothe                                                          |   |   |   |
| 19 | <i>Netrium oblongum</i> (De Bary) Lütkemüller                                                       | - | + | - |

|                                        |                                                                                                  |   |   |   |
|----------------------------------------|--------------------------------------------------------------------------------------------------|---|---|---|
| Order: Desmiales                       |                                                                                                  |   |   |   |
| Family: Closteriaceae                  |                                                                                                  |   |   |   |
| Genus: Closterium Nitzsch ex Ralfs     |                                                                                                  |   |   |   |
| 20                                     | <i>Closterium abruptum</i> West                                                                  | + | - | - |
| 21                                     | <i>Closterium arcuarium</i> Hughes                                                               | + | - | - |
| 22                                     | <i>Closterium cynthia</i> De Notaris                                                             | + | + | - |
| 23                                     | <i>Closterium ehrenbergii</i> Meneghini ex Ralfs var. <i>malinvernianum</i> (De Notaris) Rabenh. | - | + | - |
| 24                                     | <i>Closterium gracile</i> Bréb. ex Ralfs                                                         | - | + | - |
| 25                                     | <i>Closterium gracile</i> Bréb. ex Ralfs var. <i>tenue</i> (Lemmerm.) West & G.S. West           | - | + | - |
| 26                                     | <i>Closterium libellula</i> Focke ex Nordstedt                                                   | + | + | - |
| 27                                     | <i>Closterium striolatum</i> Ehrenb. ex Ralfs var. <i>subdirectum</i> (West) Krieger             | + | + | - |
| Family: Peniaceae                      |                                                                                                  |   |   |   |
| Genus: Penium Bréb. ex Ralfs           |                                                                                                  |   |   |   |
| 28                                     | <i>Penium exiguum</i> var. <i>glaberrimum</i> Grönblad                                           | - | + | - |
| Family: Desmidiaceae                   |                                                                                                  |   |   |   |
| Genus: Arthrodesmus Ehrenb. ex Ralfs   |                                                                                                  |   |   |   |
| 29                                     | <i>Arthrodesmus convergens</i> Ehrenb. ex Ralfs                                                  | + | + | - |
| Genus: Actinotaenium (Nägeli) Teiling  |                                                                                                  |   |   |   |
| 30                                     | <i>Actinotaenium cucurbita</i> (Bréb. ex Ralfs) f. <i>rotundatum</i> (Krieger) Teiling           | - | + | - |
| Genus: Cosmarium Corda ex Ralfs        |                                                                                                  |   |   |   |
| 31                                     | <i>Cosmarium biretum</i> Bréb. ex Ralfs                                                          | - | - | + |
| 32                                     | <i>Cosmarium connatum</i> Bréb. ex Ralfs                                                         | + | + | - |
| 33                                     | <i>Cosmarium cymatopleurum</i> Nordstedt                                                         | + | - | - |
| 34                                     | <i>Cosmarium cycladatum</i> Turner                                                               | - | + | - |
| 35                                     | <i>Cosmarium difficile</i> Lütkenmüller                                                          | - | - | + |
| 36                                     | <i>Cosmarium hammeri</i> Reinsch                                                                 | + | + | - |
| 37                                     | <i>Cosmarium laeve</i> Rabenh.                                                                   | - | - | + |
| 38                                     | <i>Cosmarium moniliforme</i> Ralfs                                                               | + | + | - |
| 39                                     | <i>Cosmarium phaseolus</i> Bréb. ex Ralfs f. <i>minus</i> Boldt                                  | + | - | - |
| 40                                     | <i>Cosmarium quadrum</i> Lundell                                                                 | + | + | - |
| 41                                     | <i>Cosmarium sinostegos</i> Schaarschmidt                                                        | - | + | - |
| Genus: Desmidium C. Agardh ex Ralfs    |                                                                                                  |   |   |   |
| 42                                     | <i>Desmidium aptogonum</i> Bréb. ex Archer                                                       | - | + | - |
| Genus: Xanthidium Ehrenb. ex Ralfs     |                                                                                                  |   |   |   |
| 43                                     | <i>Xanthidium acanthophorum</i> Nordstedt                                                        | - | + | - |
| Genus: Micrasterias C. Agardh ex Ralfs |                                                                                                  |   |   |   |
| 44                                     | <i>Micrasterias pinnatifida</i> Ralfs                                                            | - | + | - |
| Genus: Hyalotheca Ehrenb. ex Ralfs     |                                                                                                  |   |   |   |
| 45                                     | <i>Hyalotheca dissiliens</i> var. <i>hians</i> Wolle                                             | - | + | - |
| Family: Gonatozygaceae                 |                                                                                                  |   |   |   |
| Genus: Gonatozygon De Bary             |                                                                                                  |   |   |   |
| 46                                     | <i>Gonatozygon aculeatum</i> Hastings                                                            | + | + | - |

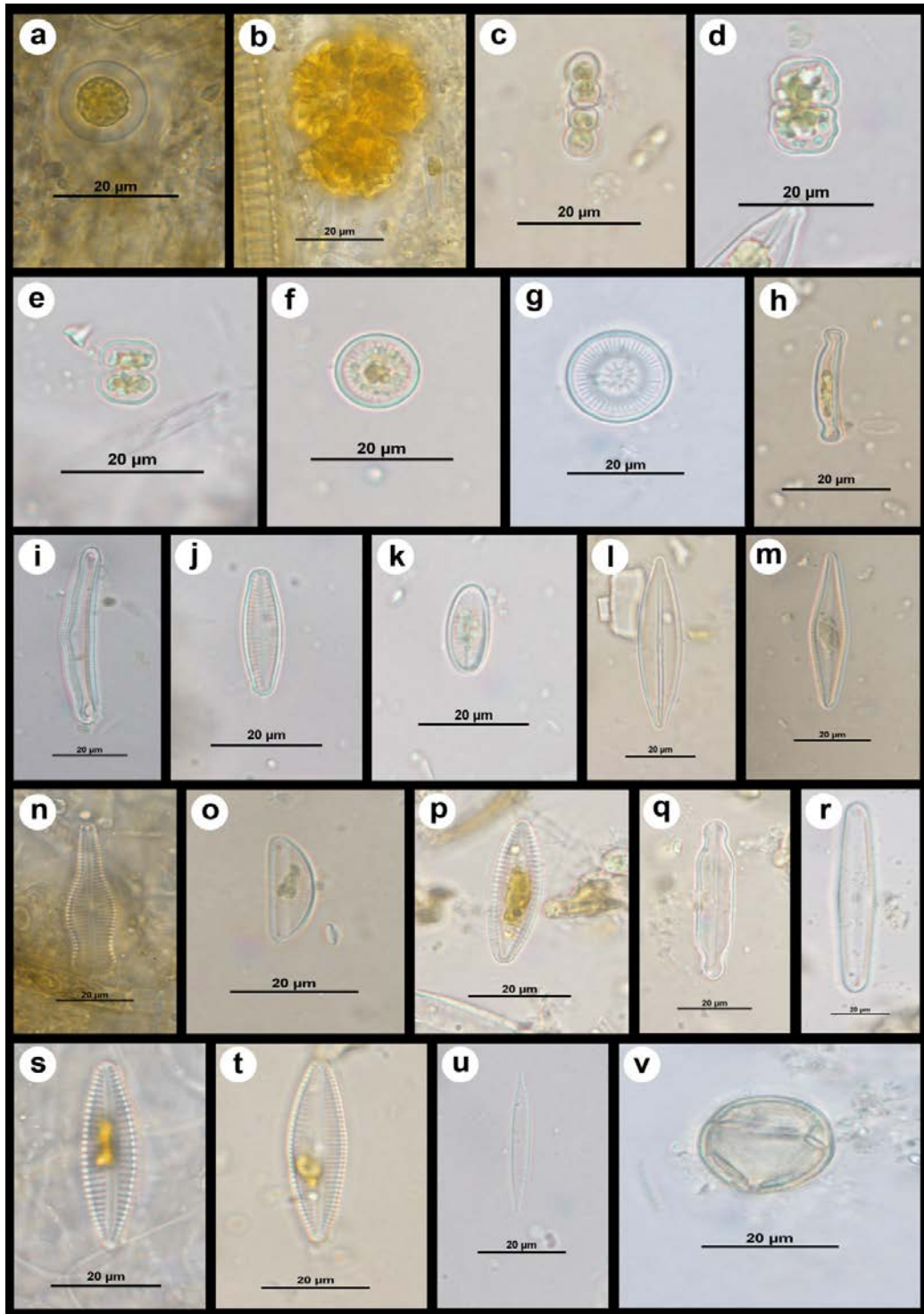
|                                                                                                                                            |                                                                    |   |   |   |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---|---|---|
| 47                                                                                                                                         | <i>Gonatozygon kinahani</i> (Archer) Rabenh.                       | - | + | - |
| 48                                                                                                                                         | <i>Gonatozygon monotaenium</i> De Bary var. <i>minutum</i> Cushman | + | + | - |
| Phylum: Heterokontophyta<br>Class: Mediophyceae<br>Order: Stephanodiscales<br>Family: Stephanodiscaceae<br>Genus: Cyclotella (Kütz.) Bréb. |                                                                    |   |   |   |
| 49                                                                                                                                         | <i>Cyclotella glomerata</i> H. Bachmann                            | - | - | + |
| Genus: Discostella Houk & Klee                                                                                                             |                                                                    |   |   |   |
| 50                                                                                                                                         | <i>Discostella stelligera</i> (Cleve & Grün.) Houk & Klee          | - | - | + |
| Class: Bacillariophyceae<br>Order: Tabellariales<br>Family: Tabellariaceae<br>Genus: Tabellaria Ehrenb. ex Kütz.                           |                                                                    |   |   |   |
| 51                                                                                                                                         | <i>Tabellaria flocculosa</i> (Roth) Kütz.                          | - | - | + |
| Order: Eunotiales<br>Family: Eunotiaceae<br>Genus: Eunotia Ehrenb.                                                                         |                                                                    |   |   |   |
| 52                                                                                                                                         | <i>Eunotia inflata</i> (Grün.) Norpel-Schempp & Lange-Bertalot     | - | - | + |
| 53                                                                                                                                         | <i>Eunotia praeupta</i> Ehrenb.                                    | - | - | + |
| Order: Cocconeidales<br>Family: Achnanthidiaceae<br>Genus: Eucocconeis Cleve ex F. Meister                                                 |                                                                    |   |   |   |
| 54                                                                                                                                         | <i>Eucocconeis laevis</i> (Østrup) Lange-Bertalot                  | - | - | + |
| Genus – Psammothidium Bukhtiyarova & Round                                                                                                 |                                                                    |   |   |   |
| 55                                                                                                                                         | <i>Psammothidium marginulatum</i> (Grün.) Bukhtiyarova & Round     | - | - | + |
| Order: Naviculales<br>Family: Amphipleuraceae<br>Genus: Frustulia Agardh                                                                   |                                                                    |   |   |   |
| 56                                                                                                                                         | <i>Frustulia rhomboides</i> (Ehrenb.) De Toni                      | - | - | + |
| Order: Cymbellales<br>Family: Gomphonemataceae<br>Genus: Gomphonema Ehrenb.                                                                |                                                                    |   |   |   |
| 57                                                                                                                                         | <i>Gomphonema affine</i> Kütz.                                     | - | - | + |
| 58                                                                                                                                         | <i>Gomphonema truncatum</i> Ehrenb.                                | - | - | + |
| Genus – Encyonema Kütz.                                                                                                                    |                                                                    |   |   |   |
| 59                                                                                                                                         | <i>Encyonema minutum</i> (Hilse) D.G. Mann                         | - | - | + |
| 60                                                                                                                                         | <i>Encyonema silesiacum</i> (Bleisch) D.G. Mann                    | - | - | + |
| Family: Pinnulariaceae<br>Genus: Pinnularia Ehrenb.                                                                                        |                                                                    |   |   |   |
| 61                                                                                                                                         | <i>Pinnularia appendiculata</i> (C. Agardh) Schaarschmidt          | - | - | + |
| 62                                                                                                                                         | <i>Pinnularia microstauron</i> (Ehrenb.) Cleve                     | - | - | + |

|    |                                                        |   |   |   |
|----|--------------------------------------------------------|---|---|---|
|    | Family: Cymbellaceae                                   |   |   |   |
|    | Genus: Cymbella Agardh                                 |   |   |   |
| 63 | <i>Cymbella orientalis</i> J.H. Lee                    | - | - | + |
|    | Genus: Kurtkammeria L. Bahls                           |   |   |   |
| 64 | <i>Kurtkammeria aequalis</i> (W. Sm.) L. Bahls         | - | - | + |
|    | Order: Bacillariales                                   |   |   |   |
|    | Family: Bacillariaceae                                 |   |   |   |
|    | Genus: Nitzschia Hassall                               |   |   |   |
| 65 | <i>Nitzschia paleacea</i> (Grün.) Grün.                | - | - | + |
|    | Class: Dinophyceae                                     |   |   |   |
|    | Order: Peridiniales                                    |   |   |   |
|    | Family: Peridiniopsidaceae                             |   |   |   |
|    | Genus: Peridiniopsis Lemmerm.                          |   |   |   |
| 66 | <i>Peridiniopsis spherioideum</i> (Christen) Bourrelly | - | - | + |



**Fig. 6:** a-b. *Microcystis aeruginosa*, c-d. *Calothrix fusca*, e. *Heleococcus polyvacuolatus*, f. *Ankistrodesmus arcuatus*, g. *Monoraphidium nanum*, h. *M. pseudobraunii*, i. *M. tortile*, j. *Desmodesmus microspina*, k. *Uronema confervicola*, l. *Microspora amoena*, m. *Bulbochaete* sp., n. *Ulothrix limnetica*, o. *U. tenerrima*, p. *Spirogyra rivularis*, q. *Tabellaria flocculosa*





**Fig. 7:** a. *Nephrocytium varium*, b. *Botryococcus braunii*, c. *Cosmarium biretum*, d. *C. difficile*, e. *C. laeve*, f. *Cyclotella glomerata*, g. *Discostella stelligera*, h. *Eunotia inflata*, i. *E. praerupta*, j. *Eucoconeis laevis*, k. *Psammothidium marginulatum*, l. *Frustulia rhomboides*, m. *Gomphonema affine*, n. *G. truncatum*, o. *Encyonema minutum*, p. *E. silesiacum*, q. *Pinnularia appendiculata*, r. *P. microstauron*, s. *Cymbella orientalis*, t. *Kurtkammeria aequalis*, u. *Nitzschia paleacea*, v. *Peridiniopsis spherioideum*

### 3b. Floristic diversity of the forest surrounding Khecheopalri Lake

A total of 387 species belonging to 113 families and 278 genera were recorded from the area during the present study (Table-2). This comprises of 185 shrubs/herbs, 69 tree/small tree, 29 epiphytes/climbers, 54 species of ferns, 19 species of fungi and 30 species of orchids (Fig. 9 - 23). The family Orchidaceae represented the maximum number of species (30), followed by Rubiaceae (18), Polypodiaceae (17), Rosaceae (16), Asteraceae (15), Polygonaceae (14), and Pteridaceae (11). The forest stand is dominated by species of *Lithocarpus*, *Castanopsis*, *Quercus*, *Symplocos* and *Eurya*. The lake is also surrounded by large area of bog made up of sphagnum moss (Fig. 8). Interestingly, shrubs and trees such as *Vaccinium dunalianum*, *Rhododendron griffithianum* and *Acer campbellii* were found growing in the bog area. Herbaceous plants like *Acorus calamus*, *Bidens pilosa*, *Galinsoga parviflora*, *Dichrocephala latifolia* and species of *Persicaria* dominated the open area, the transition line between the lake and the forest. Thirty-nine families were represented by only one genus and species.

Table 2: Floristic diversity of forest surrounding Khecheopalri Lake

| Sl. No. | Name of the species                             | Family          | Life form/Habit |
|---------|-------------------------------------------------|-----------------|-----------------|
| 1.      | <i>Polygonatum oppositifolium</i> (Wall.) Royle | Liliaceae       | Epiphyte        |
| 2.      | <i>Aeschynanthus micranthus</i> C.B.Clarke      | Gesneriaceae    | Epiphyte        |
| 3.      | <i>Cissampelos pareira</i> L.                   | Menispermaceae  | Climber/Vines   |
| 4.      | <i>Piper mullesua</i> Buch.-Ham. ex D. Don      | Piperaceae      | Climber         |
| 5.      | <i>Passiflora edulis</i> Sims                   | Passifloraceae  | Climber         |
| 6.      | <i>Holboellia latifolia</i> Wall.               | Lardizabalaceae | Climber         |
| 7.      | <i>Vaccinium vacciniaceum</i> (Roxb.) Sleumer   | Ericaceae       | Epiphyte        |
| 8.      | <i>Rhaphidophora decursiva</i> (Roxb.) Schott   | Araceae         | Epiphyte        |
| 9.      | <i>Stephania glabra</i> (Roxb.) Miers           | Menispermaceae  | Climber         |
| 10.     | <i>Gymnopetalum chinense</i> (Lour.) Merr.      | Cucurbitaceae   | Climber         |



|     |                                                        |                 |                 |
|-----|--------------------------------------------------------|-----------------|-----------------|
| 11. | <i>Tetrastigma rumicispermum</i> (M.A. Lawson) Planch. | Vitaceae        | Climber         |
| 12. | <i>Tetrastigma bractolatum</i> (Wall.) Planchen        | Vitaceae        | Climber         |
| 13. | <i>Piper suipigua</i> Buch.-Ham. ex D. Don             | Piperaceae      | Climber         |
| 14. | <i>Piper hamiltonii</i> C.D.C.                         | Piperaceae      | Climber         |
| 15. | <i>Parthenocissus himalayana</i> (Royle) Planch.       | Vitaceae        | Climber         |
| 16. | <i>Stephania elegans</i> Hook.f. & Th.                 | Menispermaceae  | Climber         |
| 17. | <i>Sabia campanulata</i> Wallich ex Roxb.              | Sabiaceae       | Climber         |
| 18. | <i>Aeschynanthus</i> sp.                               | Gesneriaceae    | Epiphyte        |
| 19. | <i>Hedychium gracile</i> Roxb.                         | Zingiberaceae   | Epiphyte        |
| 20. | <i>Medinilla rubicunda</i> (Jack) Blume                | Melastomataceae | Epiphyte        |
| 21. | <i>Thunbergia lutea</i> T. Anderson                    | Acanthaceae     | Epiphyte        |
| 22. | <i>Tetrastigma serrulatum</i> (Roxb.) Planch.          | Vitaceae        | Climber         |
| 23. | <i>Rubia manjith</i> Roxb. ex Fleming                  | Rubiaceae       | Climber         |
| 24. | <i>Dicentra scandens</i> (D.Don) Walp.                 | Papavaraceae    | Climber         |
| 25. | <i>Trichosanthes lepiniana</i> (Naudin) Cogn.          | Cucurbitaceae   | Climber         |
| 26. | <i>Rhaphidophora glauca</i> (Wall.) Schott             | Araceae         | Climber         |
| 27. | <i>Aeschynanthus hookeri</i> C.B.Clarke                | Gesneriaceae    | Epiphyte        |
| 28. | <i>Bauhinia vahlii</i> Wight & Arn                     | Leguminosae     | Shrubby climber |
| 29. | <i>Smilax rigida</i> Wall. Ex Kunth.                   | Smilacaceae     | Climber         |
| 30. | <i>Persicaria nepalensis</i> (Meisn.) Miyabe           | Polygonaceae    | Herb            |
| 31. | <i>Duchesnea indica</i> (Jacks.) Focke                 | Rosaceae        | Herb            |

|     |                                                             |               |       |
|-----|-------------------------------------------------------------|---------------|-------|
| 32. | <i>Bidens biternata</i> (Lour.) Merr. & Sherff              | Asteraceae    | Herb  |
| 33. | <i>Conyza canadensis</i> (L.) Crong.                        | Asteraceae    | Herb  |
| 34. | <i>Fagopyrum esculentum</i> Merr.                           | Polygonaceae  | Herb  |
| 35. | <i>Persicaria protermissa</i> (Hook.f.)                     | Polygonaceae  | Herb  |
| 36. | <i>Impatiens drepanophora</i> Hook.f.                       | Balsaminaceae | Herb  |
| 37. | <i>Hypericum dyeri</i> Render                               | Hypericaceae  | Herb  |
| 38. | <i>Erigeron karvinskianus</i> DC.                           | Asteraceae    | Herb  |
| 39. | <i>Prenanthes</i> sp.                                       | Asteraceae    | Herb  |
| 40. | <i>Lasianthus biermannii</i> King ex Hook.f.                | Rubiaceae     | Shrub |
| 41. | <i>Ranunculus diffusus</i> DC.                              | Ranunculaceae | Herb  |
| 42. | <i>Strobilanthes</i> sp.                                    | Acanthaceae   | Herb  |
| 43. | <i>Solanum viarum</i> L.                                    | Solanaceae    | Herb  |
| 44. | <i>Cestrum fasciculatum</i> (Schltdl.) Miers                | Solanaceae    | Shrub |
| 45. | <i>Persicaria runcinata</i> (Buch.-Ham. ex D. Don) H. Gross | Polygonaceae  | Herb  |
| 46. | <i>Hydrangea macrophylla</i> (Thunb.) Ser.                  | Hydrangeaceae |       |
| 47. | <i>Dichrocephala integrifolia</i> (L.f.) Kuntze             | Compositae    | Herb  |
| 48. | <i>Sporobolus diandrus</i> (Retz.) P.Beauv.                 | Poaceae       | Herb  |
| 49. | <i>Mazus surculosus</i> D. Don                              | Phrymaceae    | Herb  |
| 50. | <i>Geranium nepalense</i> Sweet                             | Geraniaceae   |       |
| 51. | <i>Persicaria capitata</i> (Buch.-Ham. ex D.Don) H.Gross    | Polygonaceae  | Herb  |
| 52. | <i>Poa annua</i> L.                                         | Poaceae       | Herb  |
| 53. | <i>Arisaema concinnum</i> Schott                            | Araceae       | Herb  |

|     |                                                    |                 |       |
|-----|----------------------------------------------------|-----------------|-------|
| 54. | <i>Potentilla mooniana</i> Wight                   | Rosaceae        | Herb  |
| 55. | <i>Ophiorrhiza fasciculata</i> D.Don               | Rubiaceae       | Herb  |
| 56. | <i>Centella asiatica</i> (L.) Urb.                 | Apiaceae        | Herb  |
| 57. | <i>Chassalia curviflora</i> (Wall.)<br>Thwaites    | Rubiaceae       | Shrub |
| 58. | <i>Persicaria dolichopoda</i> (Ohki)<br>Nakai      | Polygonaceae    | Herb  |
| 59. | <i>Oxalis corniculata</i> L.                       | Oxaladaceae     | Herb  |
| 60. | <i>Hypericum japonicum</i> Thunb.                  | Hypericaceae    | Herb  |
| 61. | <i>Cynodon dactylon</i> (L.) Pers.                 | Poaceae         | Herb  |
| 62. | <i>Cautleya gracilis</i> (Sm.) Dandy               | Zingiberaceae   | Herb  |
| 63. | <i>Drymaria villosa</i> Schltdl. &<br>Cham.        | Caryophyllaceae | Herb  |
| 64. | <i>Acorus calamus</i> L.                           | Acoraceae       | Herb  |
| 65. | <i>Juncus inflexus</i> L.                          | Juncaceae       | Herb  |
| 66. | <i>Eragrostis nutans</i> (Retz.) Nees ex<br>Steud. | Poaceae         | Herb  |
| 67. | <i>Maesa rugosa</i> C.B. Clarke                    | Primulaceae     | Shrub |
| 68. | <i>Elatostema reticulatum</i> Wedd.                | Urticaeae       | Herb  |
| 69. | <i>Lonicera magnibracteata</i><br>M.P.Naya & Giri  | Caprifoliaceae  | Shrub |
| 70. | <i>Berberis insignis</i> Hook.f.<br>&Thoms.        | Berberidaceae   | Shrub |
| 71. | <i>Digitaria cruciata</i> (Nees)<br>A.Camus        | Poaceae         | Herb  |
| 72. | <i>Carex eleusinoides</i> Turcz. ex<br>Kunth       | Cyperaceae      | Herb  |
| 73. | <i>Rubus paniculatus</i> Sm.                       | Rosaceae        | Shrub |
| 74. | <i>Aconogonum molle</i> (D. Don) H.<br>Hara        | Polygonaceae    | Shrub |
| 75. | <i>Potentilla peduncularis</i> D.Don               | Rosaceae        | Herb  |

|     |                                                               |               |          |
|-----|---------------------------------------------------------------|---------------|----------|
| 76. | <i>Knoxia sumatrensis</i> (Retz.) DC.                         | Rubiaceae     | Subshrub |
| 77. | <i>Vaccinium nummularia</i> Hook. f. & Thomson ex C.B. Clarke | Ericaceae     | Shrub    |
| 78. | <i>Ophiorrhiza treutleri</i> Hook.f.                          | Rubiaceae     | Herb     |
| 79. | <i>Elatostema sessile</i> J.R.Forst. & G.Forst.               | Urticaeae     | Herb     |
| 80. | <i>Streptopus simplex</i> D.Don                               | Liliaceae     | Herb     |
| 81. | <i>Nasturtium officinale</i> R.Br.                            | Brassicaceae  | Herb     |
| 82. | <i>Rubus indotibetanus</i> Koidz.                             | Rosaceae      | Shrub    |
| 83. | <i>Lysimachia laxa</i> Baudo                                  | Primulaceae   | Herb     |
| 84. | <i>Pouzolzia hirta</i> Blume ex Hassk.                        | Urticaceae    | Herb     |
| 85. | <i>Smilax perfoliata</i> Lour.                                | Smilacaceae   | Climber  |
| 86. | <i>Jasminum dispernum</i> Wall.                               | Oleaceae      | Shrub    |
| 87. | <i>Viola hamiltoniana</i> D. Don                              | Violaceae     | Herb     |
| 88. | <i>Agrostis triaristata</i> (Hook.f.) Bo                      | Poaceae       | Herb     |
| 89. | <i>Carex filicina</i> Nees                                    | Cyperaceae    | Herb     |
| 90. | <i>Indigofera tomentosa</i> Eckl. & Zeyh.                     | Leguminosae   | Shrub    |
| 91. | <i>Ajuga macrosperma</i> Wall. ex Benth.                      | Lamiaceae     | Herb     |
| 92. | <i>Zanthoxylum acanthopodium</i> DC.                          | Rutaceae      | Shrub    |
| 93. | <i>Elatostema platyphyllum</i> Wedd.                          | Urticaeae     | Herb     |
| 94. | <i>Camellia kissi</i> Wall.                                   | Theaceae      | Shrub    |
| 95. | <i>Kyllinga brevifolia</i> Rottb.                             | Cyperaceae    | Herb     |
| 96. | <i>Impatiens radiata</i> Hook.f.                              | Balsaminaceae | Herb     |
| 97. | <i>Begonia cathcartii</i> Hook .f.                            | Begoniaceae   | Herb     |
| 98. | <i>Hypoxis aurea</i> Lour.                                    | Hypoxidaceae  | Herb     |
| 99. | <i>Vicia hirsuta</i> (L.) Gray                                | Fabaceae      | Herb     |

|      |                                                                  |                  |          |
|------|------------------------------------------------------------------|------------------|----------|
| 100. | <i>Hemiphragma heterophyllum</i> Wall.                           | Scrophulariaceae | Herb     |
| 101. | <i>Solanum americanum</i> var. <i>nudiflorum</i> (Jacq.) Edmonds | Solanaceae       | Herb     |
| 102. | <i>Hoya fusca</i> Wall.                                          | Asclepiadaceae   | Subshrub |
| 103. | <i>Campylandra aurantiaca</i> Baker                              | Liliaceae        | Herb     |
| 104. | <i>Oenanthe thomsonii</i> C.B. Clarke                            | Apiaceae         | Herb     |
| 105. | <i>Cynoglossum zeylanicum</i> (Vahl) Brand                       | Boraginaceae     | Herb     |
| 106. | <i>Melissa axillaris</i> (Benth.) Bakh.f.                        | Lamiaceae        | Herb     |
| 107. | <i>Achyranthes bidentata</i> Blume                               | Amaranthaceae    | Herb     |
| 108. | <i>Hydrocotyle javanica</i> Thunb.                               | Apiaceae         | Herb     |
| 109. | <i>Carpesium cernuum</i> L.                                      | Asteraceae       | Herb     |
| 110. | <i>Sarcopyramis napalensis</i> Wall.                             | Melastomataceae  | Herb     |
| 111. | <i>Laportea terminalis</i> Wight                                 | Urticaeae        | Herb     |
| 112. | <i>Osbeckia stellata</i> Buch.-Ham. ex Ker Gawl.                 | Melastomataceae  | Shrub    |
| 113. | <i>Oxyspora paniculata</i> (D. Don) DC.                          | Melastomataceae  | Shrub    |
| 114. | <i>Dichroa febrifuga</i> Lour.                                   | Hydrangeaceae    | Shrub    |
| 115. | <i>Gonatanthus pumilus</i> (D.Don) Engl. & K.Krause              | Araceae          | Herb     |
| 116. | <i>Ophiorrhiza rugosa</i> Wall.                                  | Rubiaceae        | Herb     |
| 117. | <i>Sanicula elata</i> Buch.-Ham. ex D.Don                        | Apiaceae         | Herb     |
| 118. | <i>Galium elegans</i> Wall. ex Roxb.                             | Rubiaceae        | Herb     |
| 119. | <i>Impatiens arguta</i> Hook.f. & Thomson                        | Balsaminaceae    | Herb     |
| 120. | <i>Neillia thrysiflora</i> D.Don                                 | Rosaceae         | Shrub    |
| 121. | <i>Bridelia</i> sp.                                              | Euphorbiaceae    | Shrub    |

|      |                                                                     |                  |       |
|------|---------------------------------------------------------------------|------------------|-------|
| 122. | <i>Ophiorrhiza heterostyla</i> Dunn.                                | Rubiaceae        | Herb  |
| 123. | <i>Persicaria polystachya</i> Opiz                                  | Polygonaceae     | Herb  |
| 124. | <i>Ophiorrhiza fasciculata</i> D.Don                                | Rubiaceae        | Herb  |
| 125. | <i>Didymocarpus hookeri</i><br>C.B.Clarke                           | Gesneriaceae     | Herb  |
| 126. | <i>Pilea symmeris</i> Wedd.                                         | Urticaeae        | Herb  |
| 127. | <i>Mussaenda macrophylla</i> Wall.                                  | Rubiaceae        | Shrub |
| 128. | <i>Rubus rugosa</i> Smith.                                          | Rosaceae         | Shrub |
| 129. | <i>Rubus ellipticus</i> Sm.                                         | Rosaceae         | Shrub |
| 130. | <i>Chirita pumila</i> D.Don                                         | Gesneriaceae     | Herb  |
| 131. | <i>Crassocephalum crepidioides</i><br>(Benth.) S.Moore              | Asteraceae       | Herb  |
| 132. | <i>Phlomoides hamosa</i> (Benth.)<br>Mathiesen                      | Lamiaceae        | Herb  |
| 133. | <i>Agrimonia pilosa</i> Ledeb.                                      | Rosaceae         | Herb  |
| 134. | <i>Torenia violacea</i> (Azoala ex<br>Blaneo) Penell                | Scrophulariaceae | Herb  |
| 135. | <i>Lonicera glabrata</i> Wall.                                      | Caprifoliaceae   | Shrub |
| 136. | <i>Commelina paludosa</i> Blume                                     | Commelinaceae    | Herb  |
| 137. | <i>Neanotis gracilis</i> (Hook. f.)<br>Lewis                        | Rubiaceae        | Herb  |
| 138. | <i>Lecanthus peduncularis</i> (Wall. ex<br>Royle) Wedd.             | Urticaceae       | Herb  |
| 139. | <i>Maesa chisia</i> Buch.-Ham. ex D.<br>Don                         | Primulaceae      | Shrub |
| 140. | <i>Nicandra physalodes</i> (L.) Gaertn.                             | Solanaceae       | Herb  |
| 141. | <i>Dufrenoya granulata</i> (Hook.f. &<br>Thomson ex A.DC.) Stauffer | Santalaceae      | Shrub |
| 142. | <i>Scurrula parasitica</i> L.                                       | Loranthaceae     | Shrub |
| 143. | <i>Polygala arillata</i> Buch.-Ham ex<br>D.Don                      | Polygonaceae     | Shrub |

|      |                                                           |                 |            |
|------|-----------------------------------------------------------|-----------------|------------|
| 144. | <i>Hypericum hookerianum</i> Wight & Arnott.              | Hypericaceae    | Herb       |
| 145. | <i>Setaria pumila</i> (Poir.) Roem. & Schult.             | Poaceae         | Herb       |
| 146. | <i>Boenninghausenia albiflora</i> (Hook.) Rchb. ex Meisn. | Rutaceae        | Herb       |
| 147. | <i>Desmodium multiflorum</i> DC                           | Fabaceae        | Shrub      |
| 148. | <i>Indigofera dosua</i> Buch.-Hem. Ex D.Don               | Fabaceae        | Shrub      |
| 149. | <i>Swertia chirita</i> (Flem.) Karst                      | Gentianaceae    | Herb       |
| 150. | <i>Fagopyrum debotrys</i> (D.Don) Hara                    | Polygonaceae    | Herb       |
| 151. | <i>Desmodium podocarpum</i> DC.                           | Leguminosae     | Undershrub |
| 152. | <i>Plectranthus mollis</i> (Aiton.) Spreng                | Lamiaceae       | Herb       |
| 153. | <i>Peperomia reflexa</i> A.Dietr.                         | Piperaceae      | Herb       |
| 154. | <i>Persicaria rumemata</i> (Buch.-Ham. D.Don) H.Gross     | Polygonaceae    | Herb       |
| 155. | <i>Hypericum filicaule</i> (Dyer) N.Robson                | Hypericaceae    | Herb       |
| 156. | <i>Agapetes hookeri</i> (C.B.Clarke) Sleumer              | Ericaceae       | Shrub      |
| 157. | <i>Halenia elliptica</i> D.Don                            | Gentianaceae    | Herb       |
| 158. | <i>Chirita urticifolia</i> Buch.-Ham. ex D.Don            | Gesneriaceae    | Herb       |
| 159. | <i>Carlemannia congesta</i> Hook.f.                       | Carlemanniaceae | Herb       |
| 160. | <i>Hymenopogon parasiticus</i> Wall.                      | Rubiaceae       | Shrub      |
| 161. | <i>Hedyotis hispida</i> Retz.                             | Rubiaceae       | Herb       |
| 162. | <i>Clinopodium umbrosum</i> (M.Bieb.) Kuntze              | Lamiaceae       | Herb       |
| 163. | <i>Lysimachia ramosa</i> Wall.ex Duby                     | Primulaceae     | Herb       |
| 164. | <i>Potentilla lineata</i> Trev.                           | Rosaceae        | Herb       |



|      |                                                                                 |                |            |
|------|---------------------------------------------------------------------------------|----------------|------------|
| 165. | <i>Boehmeria clidemioides</i> Miq.                                              | Urticaceae     | Herb       |
| 166. | <i>Isachne albens</i> Trin.                                                     | Poaceae        | Herb       |
| 167. | <i>Carex insignis</i> Boott.                                                    | Cyperaceae     | Herb       |
| 168. | <i>Pouzolzia sanguinea</i> (Blume)<br>Merr.                                     | Urticaceae     | Herb       |
| 169. | <i>Ainsliea latifolia</i> Kuntze                                                | Asteraceae     | Herb       |
| 170. | <i>Tupistra nutans</i> Wall. ex Lindl.                                          | Liliaceae      | Herb       |
| 171. | <i>Persicaria tenella</i> (Blume) H.<br>Hara                                    | Polygonaceae   | Herb       |
| 172. | <i>Lobelia angulata</i> G.Forst.                                                | Lobeliaceae    | Herb       |
| 173. | <i>Synotis cappa</i> (Buch.-Ham. ex<br>D.Don) C.Jeffrey & Y.L.Chen              | Asteraceae     | Shrub      |
| 174. | <i>Ardisia macrophylla</i> Reinw. ex<br>Blume                                   | Myrsinaceae    | Shrub      |
| 175. | <i>Zephyranthes carinata</i> Herb.                                              | Amaryllidaceae | Herb       |
| 176. | <i>Procris cernata</i> C.B.Robinson                                             | Urticaceae     | Herb       |
| 177. | <i>Potentilla sundaica</i> (Blume)<br>Kuntz                                     | Rosaceae       | Herb       |
| 178. | <i>Fragaria indica</i> Andr.                                                    | Rosaceae       | Herb       |
| 179. | <i>Potentilla polyphylla</i> Wall. Ex<br>Lehm.                                  | Rosaceae       | Herb       |
| 180. | <i>Neillia rubiflora</i> D.Don                                                  | Rosaceae       | Shrub      |
| 181. | <i>Edgeworthia gardneri</i> (Wall.)<br>Meisn.                                   | Thymeliaceae   | Undershrub |
| 182. | <i>Brugmansia suaveolens</i> (Humb.<br>& Bonpl. ex Willd.) Bercht. &<br>J.Presl | Solanaceae     | Shrub      |
| 183. | <i>Cestrum nocturnum</i> L.                                                     | Solanaceae     | Shrub      |
| 184. | <i>Zanthoxylum oxyphyllum</i> Edgew.                                            | Rutaceae       | Shrub      |
| 185. | <i>Gnaphalium</i> sp.                                                           | Asteraceae     | Herb       |
| 186. | <i>Plantago major</i> L.                                                        | Plantaginaceae | Herb       |

|      |                                                                               |                |            |
|------|-------------------------------------------------------------------------------|----------------|------------|
| 187. | <i>Plantago erosa</i> Wall.                                                   | Plantaginaceae | Herb       |
| 188. | <i>Pilea scripta</i> (Buch.-Ham. ex D. Don) Wedd.                             | Urticaceae     | Herb       |
| 189. | <i>Pilea umbrosa</i> Blume                                                    | Urticaceae     | Herb       |
| 190. | <i>Bidens pilosa</i> L.                                                       | Asteraceae     | Herb       |
| 191. | <i>Ganlinsoga parviflora</i> Cav.                                             | Asteraceae     | Herb       |
| 192. | <i>Chamabainia cuspidata</i> Wight                                            | Urticaceae     | Herb       |
| 193. | <i>Persicaria hydropiper</i> (L.) Delarbre                                    | Polygonaceae   | Herb       |
| 194. | <i>Oplismenus compositus</i> (L.) P.Beauv.                                    | Poaceae        | Herb       |
| 195. | <i>Cyanotis vaga</i> (Lour.) Schult. & Schult.f.                              | Commelinaceae  | Herb       |
| 196. | <i>Notochaete hamosa</i> Benth.                                               | Lamiaceae      | Herb       |
| 197. | <i>Setaria palmifolia</i> (J.Koenig) Stapf                                    | Urticaceae     | Herb       |
| 198. | <i>Girardinia diversifolia</i> (Link) Friis                                   | Urticaceae     | Herb       |
| 199. | <i>Eupatorium adenophorum</i> Hort.Berol. ex Kunth                            | Asteraceae     | Shrub      |
| 200. | <i>Rumex nepalensis</i> Spreng.                                               | Polygonaceae   | Herb       |
| 201. | <i>Galium asprellum</i> Michx.                                                | Rubiaceae      | Herb       |
| 202. | <i>Lysimachia dubia</i> Aiton                                                 | Primulaceae    | Herb       |
| 203. | <i>Anaphalis contorta</i> (D.Don) Hook.f.                                     | Asteraceae     | Herb       |
| 204. | <i>Swertia bimaculata</i> (Siebold & Zucc.) Hook. f. & Thomson ex C.B. Clarke | Gentianaceae   | Herb       |
| 205. | <i>Artemisia nigricans</i> Filatova & Ladygina                                | Asteraceae     | Undershrub |
| 206. | <i>Berberis asiatica</i> Roxb. ex DC.                                         | Berberidaceae  | Shrub      |
| 207. | <i>Hydrangea heteromalla</i> D. Don                                           | Saxifragaceae  | Shrub      |

|      |                                                            |                |                  |
|------|------------------------------------------------------------|----------------|------------------|
| 208. | <i>Vaccinium dunalianum</i> Wight                          | Ericaceae      | Shrub            |
| 209. | <i>Paris formosana</i> Hayata                              | Melanthiaceae  | Herb             |
| 210. | <i>Eranthemum indicum</i> (Nees)<br>C.B.Clarke             | Acanthaceae    | Shrub            |
| 211. | <i>Chrysosplenium nepalense</i> D.Don                      | Saxifragaceae  | Herb             |
| 212. | <i>Pilea anisophylla</i> (Hook. f.)<br>Wedd.               | Urticaceae     | Herb             |
| 213. | <i>Hoya linearis</i> Wall. ex D.Don                        | Asclepidiaceae | Herb             |
| 214. | <i>Sambucus adnata</i> Wall. ex DC.                        | Adoxaceae      | Small tree       |
| 215. | <i>Sambucus canadensis</i> L.                              | Adoxaceae      | Small tree       |
| 216. | <i>Rhus chinensis</i> Miller.                              | Ancardiaceae   | Small tree       |
| 217. | <i>Sambucus wightiana</i> Wall. ex<br>Wight & Arn.         | Adoxaceae      | Small tree       |
| 218. | <i>Camellia sinensis</i> (L.) Kuntze                       | Theaceae       | Small tree       |
| 219. | <i>Glochidion khasicum</i> Hook.f.                         | Euphorbiaceae  | Small tree       |
| 220. | <i>Hydrangea aspera</i> D.Don                              | Hydrangiaceae  | Small tree       |
| 221. | <i>Rhododendron griffithianum</i><br>Wight.                | Ericaceae      | Small tree       |
| 222. | <i>Viburnum cylindricum</i> D. Don.                        | Caprifoliaceae | Shrub/small tree |
| 223. | <i>Rhododendron dalhousiae</i> Hook.<br>f.                 | Ericaceae      | Epiphytic/ shrub |
| 224. | <i>Viburnum erubescens</i> Wall.                           | Adoxaceae      | Small tree       |
| 225. | <i>Eurya acuminata</i> DC.                                 | Theaceae       | Small tree       |
| 226. | <i>Symplocos lucida</i> (Thunb.)<br>Siebold & Zucc.        | Symplocaceae   | Tree             |
| 227. | <i>Saurauia napaulensis</i> DC.                            | Saurariaceae   | Tree             |
| 228. | <i>Prunus cerasoides</i> D.Don                             | Rosaceae       | Tree             |
| 229. | <i>Castanopsis hystrix</i> Hook. f. &<br>Thomson ex A. DC. | Fagaceae       | Tree             |
| 230. | <i>Alnus nepalensis</i> D.Don                              | Betulaceae     | Tree             |

|      |                                                        |                |           |
|------|--------------------------------------------------------|----------------|-----------|
| 231. | <i>Tetradium fraxinifolium</i> (Hook. f.) T.G. Hartley | Rutaceae       | Tree      |
| 232. | <i>Cyathea spinulosa</i> Wall. ex Hook.                | Cyatheaceae    | Tree fern |
| 233. | <i>Cinnamomum bejolghota</i> (Buch.-Ham.) Sweet        | Lauraceae      | Tree      |
| 234. | <i>Morus indica</i> L.                                 | Moraceae       | Tree      |
| 235. | <i>Eurya japonica</i> Thunb.                           | Theaceae       | Tree      |
| 236. | <i>Acer campbellii</i> Hook.f. & Thomson ex Hiern      | Sapindaceae    | Tree      |
| 237. | <i>Acer sikkimense</i> Miq.                            | Sapindaceae    | Tree      |
| 238. | <i>Brassaiopsis hainla</i> (Buch.-Ham.) Seem.          | Araliaceae     | Tree      |
| 239. | <i>Engelhardtia spicata</i> Lechen ex Blume            | Juglandaceae   | Tree      |
| 240. | <i>Cryptomeria japonica</i> (Thunb. ex L.f.) D.Don     | Cupressaceae   | Tree      |
| 241. | <i>Exbucklandia populnea</i> (R.Br. ex Griff.) R.W.Br. | Hamamelidaceae | Tree      |
| 242. | <i>Schima wallichii</i> Choisy                         | Theaceae       | Tree      |
| 243. | <i>Rhus semiliata</i> Murray                           | Anacardiaceae  | Tree      |
| 244. | <i>Mallotus philippinensis</i> (Lam.) Mull. Arg.       | Euphorbiaceae  | Tree      |
| 245. | <i>Symplocos caudata</i> Wall. ex G. Don               | Symplocaceae   | Tree      |
| 246. | <i>Symplocos glomerata</i> King ex C.B. Clarke         | Symplocaceae   | Tree      |
| 247. | <i>Juglans regia</i> L.                                | Juglandaceae   | Tree      |
| 248. | <i>Eurya cerasifolia</i> (D.Don) Kobuski               | Theaceae       | Tree      |
| 249. | <i>Pyrularia edulis</i> (Wall.) A. DC.                 | Santalaceae    | Tree      |
| 250. | <i>Lyonia ovalifolia</i> (Wall.) Drude                 | Ericaceae      | Tree      |

|      |                                                            |                  |      |
|------|------------------------------------------------------------|------------------|------|
| 251. | <i>Quercus lineata</i> Blume                               | Fagaceae         | Tree |
| 252. | <i>Lithocarpus pachyphyllus</i> (Kurz) Rehder              | Fagaceae         | Tree |
| 253. | <i>Alcimandra cathcartii</i> (Hook.f. & Thomson) Dandy     | Magnoliaceae     | Tree |
| 254. | <i>Pentapanax fragrans</i> (D.Don) Ha                      | Araliaceae       | Tree |
| 255. | <i>Ehretia wallichiana</i> Hook.f. & Thomson ex C.B.Clarke | Boraginaceae     | Tree |
| 256. | <i>Nyssa javanica</i> (Blume) Wangerin                     | Nyssaceae        | Tree |
| 257. | <i>Magnolia campbellii</i> Hook.f. & Thomson               | Magnoliaceae     | Tree |
| 258. | <i>Rhododendron arboreum</i> Sm.                           | Ericaceae        | Tree |
| 259. | <i>Prunus nepalensis</i> Hook.f.                           | Rosaceae         | Tree |
| 260. | <i>Elaeocarpus lanceifolius</i> Roxb.                      | Elaeocarpaceae   | Tree |
| 261. | <i>Wightia speciosissima</i> (D. Don) Merrill              | Scrophulariaceae | Tree |
| 262. | <i>Ficus neriifolia</i> Sm.                                | Moraceae         | Tree |
| 263. | <i>Ficus roxburghii</i> Steud.                             | Moraceae         | Tree |
| 264. | <i>Persea fructifera</i> Kosterm.                          | Lauraceae        | Tree |
| 265. | <i>Betula alnoides</i> Buch.-Ham. ex D.Don                 | Betulaceae       | Tree |
| 266. | <i>Evodia fraxinifolia</i> (Hook.) Benth.                  | Rutaceae         | Tree |
| 267. | <i>Litsea citrata</i> Blume                                | Rutaceae         | Tree |
| 268. | <i>Machilus edulis</i> King ex Hook.f.                     | Lauraceae        | Tree |
| 269. | <i>Michelia doltsopa</i> Buch.-Ham. ex DC.                 | Magnoliaceae     | Tree |
| 270. | <i>Toona ciliata</i> M.Roem.                               | Meliaceae        | Tree |
| 271. | <i>Garuga floribunda</i> Decne.                            | Burseraceae      | Tree |
| 272. | <i>Ixora athroantha</i> Bremek.                            | Rubiaceae        | Tree |

|      |                                                       |               |                 |
|------|-------------------------------------------------------|---------------|-----------------|
| 273. | <i>Cinnamomum tamala</i> (Buch.-Ham.) T.Nees & Eberm. | Lauraceae     | Tree            |
| 274. | <i>Lithocarpus elegans</i> (Blume) Hatus. ex Soepadmo | Fagaceae      | Tree            |
| 275. | <i>Rhus succedanea</i> L.                             | Anacardiaceae | Tree            |
| 276. | <i>Rhus hookeri</i> K.C. Sahni & Bahadur              | Anacardiaceae | Tree            |
| 277. | <i>Acrocarpus fraxinifolius</i> Arn.                  | Fabaceae      | Tree            |
| 278. | <i>Symplocos dryophila</i> C.B. Clarke                | Symplocaceae  | Tree            |
| 279. | <i>Cinnamomum impressinervium</i> Meisn.              | Lauraceae     | Tree            |
| 280. | <i>Hymenodictyon flaccidum</i> Wall.                  | Rubiaceae     | Tree            |
| 281. | <i>Photinia integrifolia</i> Lindl.                   | Rosaceae      | Shrub/ Epiphyte |
| 282. | <i>Hymenodictyon</i> sp.                              | Rubiaceae     | Tree            |
| 283. | <i>Agrostophyllum callosum</i> Rchb.f.                | Orchidaceae   | Epiphyte        |
| 284. | <i>Bulbophyllum cauliflorum</i> Hook.f.               | Orchidaceae   | Epiphyte        |
| 285. | <i>Bulbophyllum leopardinum</i> (Wall.) Lindl.        | Orchidaceae   | Epiphyte        |
| 286. | <i>Bulbophyllum reptans</i> Lindl.                    | Orchidaceae   | Epiphyte        |
| 287. | <i>Calanthe alismifolia</i> Lindl.                    | Orchidaceae   | Terrestrial     |
| 288. | <i>Coelogyne corymbosa</i> Lindl.                     | Orchidaceae   | Epiphyte        |
| 289. | <i>Coelogyne cristata</i> Lindl.                      | Orchidaceae   | Epiphyte        |
| 290. | <i>Cryptochilus luteus</i> Lindl.                     | Orchidaceae   | Epiphyte        |
| 291. | <i>Cymbidium devonianum</i> Paxton                    | Orchidaceae   | Epiphyte        |
| 292. | <i>Cymbidium longifolium</i> D. Don                   | Orchidaceae   | Epiphyte        |
| 293. | <i>Dendrobium hookerianum</i> Lindl.                  | Orchidaceae   | Epiphyte        |
| 294. | <i>Dendrobium ochreatum</i> Lindl.                    | Orchidaceae   | Epiphyte        |
| 295. | <i>Eria coronaria</i> (Lindl.) Rchb.f.                | Orchidaceae   | Epiphyte        |

|      |                                                                |                  |             |
|------|----------------------------------------------------------------|------------------|-------------|
| 296. | <i>Eria excavata</i> Lindl.                                    | Orchidaceae      | Epiphyte    |
| 297. | <i>Galeola lindleyana</i> (Hook.f. & Thomson) Rchb.f.          | Orchidaceae      | Saprophytic |
| 298. | <i>Goodyera schlechtendaliana</i> Rchb.f.                      | Orchidaceae      | Terrestrial |
| 299. | <i>Liparis bootanensis</i> Griff.                              | Orchidaceae      | Epiphyte    |
| 300. | <i>Liparis resupinata</i> Ridl.                                | Orchidaceae      | Epiphyte    |
| 301. | <i>Phaelaenopsis taenialis</i> (Hook.f.) Christenson & Pradhan | Orchidaceae      | Epiphyte    |
| 302. | <i>Pleione praecox</i> (Sm.) D. Don                            | Orchidaceae      | Epiphyte    |
| 303. | <i>Spiranthes sinensis</i> (Pers.) Ames                        | Orchidaceae      | Terrestrial |
| 304. | <i>Tainia minor</i> Hook.f.                                    | Orchidaceae      | Epiphyte    |
| 305. | <i>Vandopsis undulata</i> (Lindl.) J.J. Sm.                    | Orchidaceae      | Epiphyte    |
| 306. | <i>Eria spicata</i> (D.Don) Hand.-Mazz.                        | Orchidaceae      | Epiphyte    |
| 307. | <i>Dendrobium longicornu</i> Lindl.                            | Orchidaceae      | Epiphyte    |
| 308. | <i>Pholidota pallida</i> Lindl.                                | Orchidaceae      | Epiphyte    |
| 309. | <i>Calanthe puberula</i> Lindl.                                | Orchidaceae      | Terrestrial |
| 310. | <i>Phaius tankervilleae</i> (Banks) Blume                      | Orchidaceae      | Terrestrial |
| 311. | <i>Anthogonium gracile</i> Wall. ex Lindl.                     | Orchidaceae      | Terrestrial |
| 312. | <i>Goodyera foliosa</i> (Lindl.) Benth. ex C.B. Clarke         | Orchidaceae      | Terrestrial |
| 313. | <i>Dennstaedtia scabra</i> (Wall.ex Hook.) Moore               | Dennstaedtiaceae | Fern        |
| 314. | <i>Hypolepis punctata</i> (Thunb.) Mett. ex Kuhn.              | Hypolepidaceae   | Fern        |
| 315. | <i>Plagiogyria pycnophylla</i> (Kunze) Mett.                   | Plagiogyriaceae  | Fern        |
| 316. | <i>Oleandra wallichii</i> (Hook.) C.                           | Oleandraceae     | Fern        |



Presl

|      |                                                                |                  |      |
|------|----------------------------------------------------------------|------------------|------|
| 317. | <i>Lindsaea odorata</i> Roxb.                                  | Lindsaeaceae     | Fern |
| 318. | <i>Sphenomeris chinensis</i> (L.)<br>Maxon                     | Lindsaeaceae     | Fern |
| 319. | <i>Odontosoria chinensis</i> (L.) J. Sm.                       | Lindsaeaceae     | Fern |
| 320. | <i>Pseudophegopteris aurita</i> (Hook.)<br>Ching               | Thelypteridaceae | Fern |
| 321. | <i>Lepisorus scolopendrium</i> (Ham.-<br>ex D.Don) Mehra & Bis | Polypodiaceae    | Fern |
| 322. | <i>Adiantum incisum</i> Forssk.                                | Adiantaceae      | Fern |
| 323. | <i>Asplenium normale</i> D. Don                                | Aspleniaceae     | Fern |
| 324. | <i>Thelypteris flaccida</i> (Blume)<br>Ching                   | Thelypteridaceae | Fern |
| 325. | <i>Asplenium gueinzianum</i> Mett.ex.<br>Kuhn                  | Aspleniaceae     | Fern |
| 326. | <i>Vittaria elongata</i> Sw.                                   | Pteridaceae      | Fern |
| 327. | <i>Nephrolepis cordifolia</i> (L.) C.<br>Presl                 | Nephrolepidaceae | Fern |
| 328. | <i>Polypodiodes hendersonii</i> S.G.<br>Lu                     | Polypodiaceae    | Fern |
| 329. | <i>Arthromeris wallichiana</i><br>(Spreng.) Ching              | Polypodiaceae    | Fern |
| 330. | <i>Microsorium membranaceum</i><br>(D.Don.) Ching              | Polypodiaceae    | Fern |
| 331. | <i>Polystichum lentum</i> (D. Don) T.<br>Moore                 | Dryopteridaceae  | Fern |
| 332. | <i>Pyrrosia heteractis</i> (Mett. Ex<br>Kuhn) Ching            | Polypodiaceae    | Fern |
| 333. | <i>Lepidogrammitis subrostrata</i><br>Ching                    | Polypodiaceae    | Fern |
| 334. | <i>Pteris spinescens</i> C.Presl.                              | Polypodiaceae    | Fern |
| 335. | <i>Lycopodium japonicum</i> Thunb.                             | Lycopodiaceae    | Fern |

|      |                                                           |                  |      |
|------|-----------------------------------------------------------|------------------|------|
| 336. | <i>Coniogramme procera</i> Fée                            | Pteridaceae      | Fern |
| 337. | <i>Peranema cyatheoides</i> D. Don                        | Dryopteridaceae  | Fern |
| 338. | <i>Polystichum lactum</i> C.Pres                          | Dryopteridaceae  | Fern |
| 339. | <i>Belvisia spicata</i> (L.f.) Mirbel ex Copel            | Polypodiaceae    | Fern |
| 340. | <i>Pteris vittata</i> L.                                  | Selaginellaceae  | Fern |
| 341. | <i>Equisetum diffusum</i> D. Don                          | Equisetaceae     | Fern |
| 342. | <i>Botrychium virginianum</i> (L.) Sw.                    | Ophioglossaceae  | Fern |
| 343. | <i>Gleichenia longissima</i> Blume                        | Gleicheniaceae   | Fern |
| 344. | <i>Vittaria flexuosa</i> Fee                              | Pteridaceae      | Fern |
| 345. | <i>Selaginella monospora</i> Spring                       | Selaginellaceae  | Fern |
| 346. | <i>Polypodales amoena</i> (Wall. Ex Mett.) Ching P.S.Chin | Polypodiaceae    | Fern |
| 347. | <i>Dicranopteris taiwansis</i> Ching & P. S. Chin         | Gleicheniaceae   | Fern |
| 348. | <i>Pyrrosia lingua</i> (Thumb.)Farwell.                   | Polypodiaceae    | Fern |
| 349. | <i>Diplazium javanicum</i> (Blume.) Makine                | Athyriaceae      | Fern |
| 350. | <i>Hymenophyllum badium</i> Hook.f.                       | Hymenophyllaceae | Fern |
| 351. | <i>Asplenium pellucidum</i> Lam                           | Aspleniaceae     | Fern |
| 352. | <i>Onychium cryptogrammoides</i> Christ.                  | Pteridaceae      | Fern |
| 353. | <i>Athyrium himalaicum</i> Ching ex Mehra & Bir.          | Athyriaceae      | Fern |
| 354. | <i>Diplazium doerleinii</i> (Luer) Mark                   | Athyriaceae      | Fern |
| 355. | <i>Arthromeris lachmanii</i> (Mett.) Ching                | Polypodiaceae    | Fern |
| 356. | <i>Polypodiodes lachnopus</i> (Wall. Ex Hook) Ching       | Polypodiaceae    | Fern |
| 357. | <i>Gleichenia gigantea</i> Wall. ex                       | Gleicheniaceae   | Fern |

|      |                                                             |                  |          |
|------|-------------------------------------------------------------|------------------|----------|
|      | Hook.                                                       |                  |          |
| 358. | <i>Elaphoglossum marginatum</i> (Wall. Ex Fee) T. Moore     | Dryopteridaceae  | Fern     |
| 359. | <i>Pteris biurata</i> L.                                    | Pteridaceae      | Fern     |
| 360. | <i>Belvisia henryi</i> (Hieron. ex C. Chr.) Raymond         | Polypodiaceae    | Fern     |
| 361. | <i>Lepisorus loriformis</i> (Wall. ex Mett.) Ching          | Polypodiaceae    | Fern     |
| 362. | <i>Pteris scabirigens</i> Frs. Jenk.                        | Polypodiaceae    | Fern     |
| 363. | <i>Lepisorus sublinearis</i> (Baker ex Takeda) Ching        | Polypodiaceae    | Fern     |
| 364. | <i>Arachniodes coniifolia</i> (T. Moore) Ching              | Dryopteridaceae  | Fern     |
| 365. | <i>Monachosorum henryi</i> H. Christ                        | Dennstaedtiaceae | Fern     |
| 366. | <i>Monachosorum subdigitatum</i> (Blume) Kuhn               | Dennstaedtiaceae | Fern     |
| 367. | <i>Lemmaphyllum rostratum</i> (Burm. f.) Tagawa             | Polypodiaceae    | Fern     |
| 368. | <i>Kuehneromyces mutabilis</i> (Schaeff.) Singer & A.H. Sm. | Strophariaceae   | Mushroom |
| 369. | <i>Mucidula mucida</i> (Schrad.) Pat.                       | Physalacriaceae  | Mushroom |
| 370. | <i>Coprinellus disseminatus</i> (Pers.) J.E. Lange          | Psathyrellaceae  | Mushroom |
| 371. | <i>Trichocoma paradoxa</i> Jungh.                           | Trichocomaceae   | Mushroom |
| 372. | <i>Paxillus</i> sp.                                         | Paxillaceae      | Mushroom |
| 373. | <i>Lactifluus piperatus</i> (L.) Roussel                    | Russulaceae      | Mushroom |
| 374. | <i>Lactifluus dissitus</i> Van de Putte, K. Das & Verbeken  | Russulaceae      | Mushroom |
| 375. | <i>Boletellus</i> sp.                                       | Boletaceae       | Mushroom |
| 376. | <i>Russula albonigra</i> (Krombh.) Fr.                      | Russulaceae      | Mushroom |
| 377. | <i>Russula nigricans</i> Fr.                                | Russulaceae      | Mushroom |
| 378. | <i>Russula dubdiana</i> K. Das, Atri & Buyck                | Russulaceae      | Mushroom |

|      |                                                     |                 |          |
|------|-----------------------------------------------------|-----------------|----------|
| 379. | <i>Russula senecis</i> S. Imai                      | Russulaceae     | Mushroom |
| 380. | <i>Flammulina velutipes</i> (Curtis) Singer         | Physalacriaceae | Mushroom |
| 381. | <i>Lycoperdon perlatum</i> Pers.                    | Agaricaceae     | Mushroom |
| 382. | <i>Helvella elastica</i> Bull.                      | Helvellaceae    | Mushroom |
| 383. | <i>Daldinia concentrica</i> (Bolton) Ces. & De Not. | Hypoxylaceae    | Mushroom |
| 384. | <i>Coprinellus</i> sp.                              | Psathyrellaceae | Mushroom |
| 385. | <i>Cortinarius</i> sp.                              | Cortinariaceae  | Mushroom |
| 386. | <i>Thelephora</i> sp.                               | Thelephoraceae  | Mushroom |
| 387. | <i>Oudemansiella mucida</i> (Schrad.) Hohn.         |                 | Mushroom |



**Fig. 8:** Sphagnum moss in the bog area of the lake



**Fig. 9:** a) *Castanopsis hystrix* Hook. f. & Thomson ex A. DC. b) *Engelhardtia spicata* Lechen ex Blume





**Fig. 10:** a) *Ficus roxburghii* Steud.

b) *Galeola lindleyana* (Hook.f. & Thoms.) Rchb.f.



**Fig. 11:** a) *Lyonia ovalifolia* (Wall.) Drude

b) *Schima wallichii* Choisy



**Fig.12:** a) *Agrimonia pilosa* Ledeb.;

b) *Laportea terminalis* Wight





**Fig. 13:** a) *Achyranthes bidentata* Blume

b) *Cynoglossum zeylanicum* (Vahl) Brand



**Fig. 14:** a) *Carex filicina* Nees

b) *Erigeron karvinskianus* DC.



**Fig. 15:** a) *Acorus calamus* L.

b) *Cyathea spinulosa* Wall. ex Hook.





**Fig. 16:** a) *Swertia chirayta* H. Karst.

b) *Fagopyrum debotrys* (D.Don) Hara



**Fig. 17:** a) *Hoya fusca* Wall.

b) *Neillia thrysiflora* D.Don



**Fig. 18:** a) *Agrostophyllum callosum* Rchb.f. b) *Anthogonium gracile* Wall. ex Lindl.





**Fig.19:** a) *Osbeckia stellata* Buch.-Ham. ex Ker-Gawl. b) *Oxyspora paniculata* (D.Don) DC.



**Fig. 20:** a) *Solanum viarum* L.

b) *Kyllinga brevifolia* Rottb.



**Fig. 21:** a) *Coprinellus* sp.

b) *Cortinarius* sp.





**Fig. 22:** a) *Lactifluus piperatus* (L.) Roussel

b) *Trichocoma paradoxa* Jungh.



**Fig. 23.** *Oudemansiella mucida* (Schrad.) Hohn.



## Conclusion

Khecheopalri lake is continuously being threatened by several natural and unchecked anthropogenic activities. Natural phenomenon includes landslide and soil erosion which are an indirect effect of agricultural practices, livestock grazing and timber collection in the watershed area are threatening the longevity of the lake (Jain *et al.* 2000). Towards the North West end, the forest is bisected by stand of *Alnus nepalensis*, as the secondary vegetation after earlier landslide in the area. *Alnus nepalensis* is known to be good colonizer on degraded land. The aquatic biodiversity of the lake is being negatively impacted by the offerings of pilgrims and tourists as evident by the presence of bloom forming algae in present study. The forest department has been to this effect, taking several pro-active measures to conserve the lake including construction of GI Wire Sausage Wall, Brush Wood Check Dam, Dry Fencing Wall and Check Dam using native species viz. *Brugmansia*, and *Viburnum* (Fig. 20) several walls inside the adjacent forest to check soil siltation into the lake.



**Fig. 24:** Conservation measures undertaken by the Forest Department of Sikkim.

## References

- Jain, S.K. and Rao, R.R. 1977. A Handbook of Field and Herbarium Methods. Today and Tomorrow's Printers and Publishers, New Delhi-110005.
- Jain, A., Rai, S.C, Pal, J., and Sharma, E. 1999. Hydrology and nutrient dynamics of a sacred lake in Sikkim Himalaya. *Hydrobiologia* 410: 13–22.
- Jain, A., Rai, S.C, and Sharma, E. 2000. Hydro-ecological analysis of a sacred lake watershed system in relation to landuse/cover change from Sikkim Himalaya. *Catena* 40: 263–78.
- Jain, A., Singh, H.B., Rai, S.C, and Sharma, E. 2004. Folklores of Sacred Khecheopalri Lake in the Sikkim Himalaya of India - A Plea for Conservation. *Asian Folklore Studies*, Volume 63: 291–302.
- Das, D. & Keshri, J.P. 2013. Desmids of Khechiperi lake, Sikkim Eastern Himalaya. *Algological Studies* 143: 27 – 42.
- Das, D. & Keshri, J.P. 2016. Desmids of Eastern Himalaya. *Bibliotheca Phycologica* 119: 1 – 260.
- Rahaman, H. 2014. An inside view of Khechopalri Lake in Sikkim: A sociological study. *Asian Journal of Multidisciplinary Studies* 2 (6): 35 – 43.
- Upreti, I.M. & Sharma, G. 2012. Cultural attributes, economic valuation and community conservation in holy Khecheopalri lake of Sikkim in the Eastern Himalaya. In: *Cultural landscapes – The basis for linking biodiversity conservation with the sustainable development* (Eds. Ramakrishnan, P.S., Saxena, K.G., Rao, K.S. & Sharma, G.), UNESCO, New Delhi, India, p. 187 – 202.