

Jalthal Forest

A Biodiversity Trove



डिभिजन वन कार्यालय, झापा



फरेष्टएक्सन नेपाल

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Introduction

Jalthal forest is a 6,100 ha highly biodiverse remnant of a once more widespread ancient moist tropical forest in the lowlands of south-east Nepal. Now surrounded by agricultural fields and settlements, this biodiversity-rich forest comprising several distinct ecosystems, provides a habitat for several threatened species of plants and animals. The forest is an important habitat of iconic, threatened and protected fauna and flora. In addition, the forest is also known for species composition which is different from other comparable forests of Nepal. Largest natural stand of *Artocarpus chama* occurs only in Jalthal, which makes this forest distinct from Nepal's other lowland forests.

The forest is an important source of ecosystem services- fresh water and forest products such as timber, firewood, fodder, wild edible fruits, leafy vegetables and mushrooms, for people living around it. The forest, currently managed by 22 Community Forest User Groups (CFUGs), is important to the livelihoods and culture for over 80,000 people living around the forest. CFUGs and other stakeholders are working to manage the forest, which has prevented forest encroachment, increased tree density, regulated forest product harvest and distribution, controlled forest fire and reduced otherwise pervasive wildlife hunting.

Despite community efforts, Jalthal forest has been subjected to multiple pressures, including biological invasion, human-wildlife conflict (particularly human-elephant), wildlife hunting. Forest's rich and threatened biodiversity is not well protected. Improper forest management including exotic tree species plantation and preferential protection of certain timber species has also threatened forest biodiversity. The conflict between infrastructure development and conservation has fragmented and perforated the forest patch.

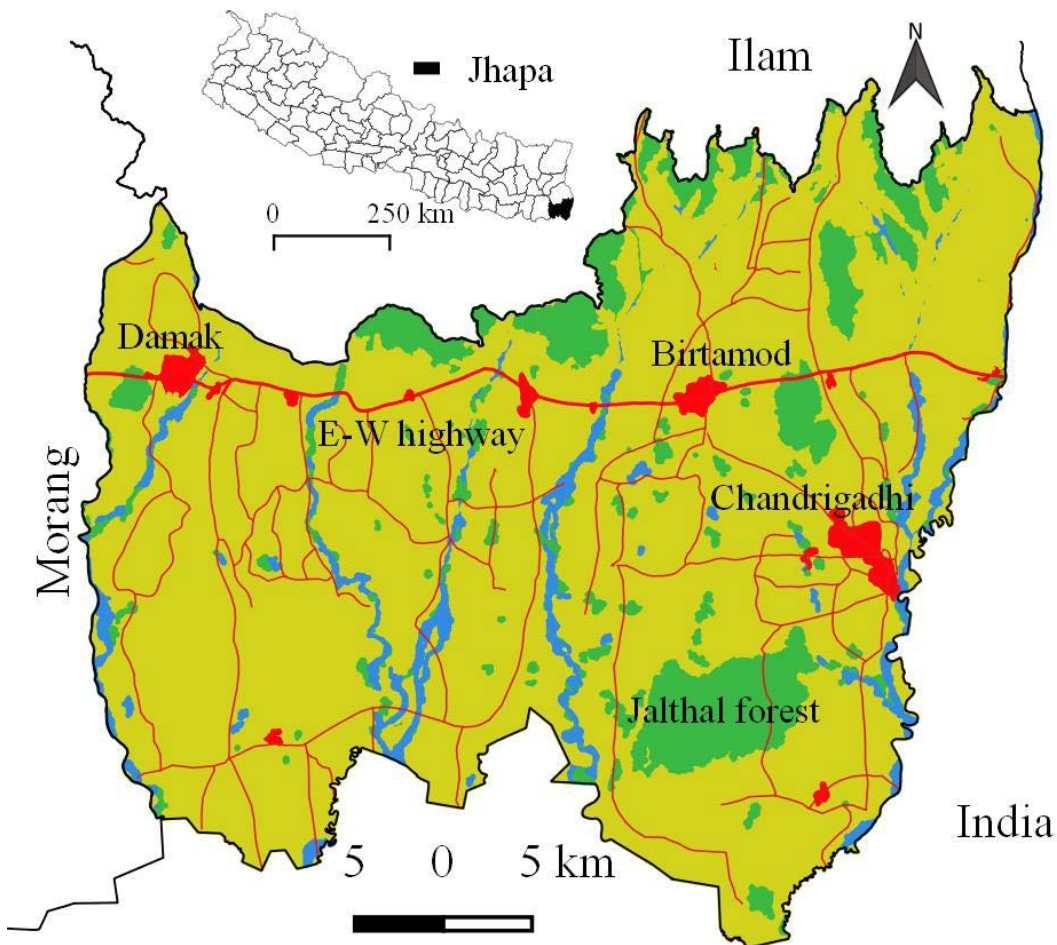
Jalthal Biodiversity project was implemented to conserve biological diversity in community forests through capacity enhancement of local stakeholders and evidence-based management. Incorporating biodiversity in forest management plans and restoring degraded forest are other priority activities of the project.

Understanding what and how about of biodiversity is a prerequisite for effective conservation planning and decision-making. Engaging locals in biodiversity documentation enhances locals' awareness and creates ownership in conservation. Realizing this, the project took a participatory approach for biodiversity survey and used tools of both natural and social sciences. Several survey techniques, including camera traps, were used to document the diversity of the forest. The survey result is the outcome of over 300 local people and a dozen of subject experts. The survey substantially enriched previous works and enhanced our understanding about biodiversity of the forest. Results of biodiversity survey as presented in this report, indeed built a scientific foundation for biodiversity conservation and forest management.

This biodiversity profile summarizes the results of various exploratory studies conducted in the forest between 2019 June and 2025 December. This profile provides brief overview of various facets of Jalthal forest biodiversity. And this document will be helpful to wider audience interested in research, conservation and management of forest biodiversity.

Geographic location and climate

Jalthal forest is a block of 6,100 hectare forest located in the south-eastern corner of Nepal in Jhapa district. It is an island in the populated landscape, surrounded by agricultural fields and settlements. It spans three rural municipalities (Haldibari, Barhadashi and Kachankawal) and Bhadrapur municipality. It is a remnant of the once dense, widespread and continuous *Charkoshe* forest of the southern lowlands of Nepal. The name Jalthal came from the boggy, waterlogged or marshy nature of the land, which has several wetlands. The forest spans between 26°26'52" N to 26°31'42" N latitude and 87°56'28" E to 88°03'17" E longitude. Despite being a forest of lowland plain, the forest has considerable habitat heterogeneity created by hillocks, gullies and streams. Bhadrapur Airport weather station is the nearest climate recording station, which has a mean annual temperature of about 25 degrees Celsius and mean annual precipitation of 2300 mm, with more than 80% rainfall occurring during the monsoon season (June to September).



Map: Location map of Jalthal forest in Jhapa district.

Socioeconomy

Diversity in terms of ethnicity, culture, language and religion is a defining feature of eastern lowland. Over 100,000 people from nearly 27,000 households live in four local government units around Jalthal forest. There are people from both Tarai indigenous groups and people who migrated from the Hills. The Tarai indigenous groups living around the forest mainly include Rajbanshi, Santhal and Meche. Meche people have primarily settled in Jhapa district, especially in Bhadrapur municipality and Haldibari rural municipality. The Meche, Santhal and Rajbanshi, each group of people, have their own languages and cultures. Historically, Rajbanshi and Santhal have settled in eastern Tarai of Nepal. Brahmin, Kshetri, Limbu, Rai, Gurung, Tamang and Magar are other caste/ethnic groups living in these four municipalities around the forest. In terms of population size, Brahmin is the largest group, followed by Rajbanshi, Kshetri and Limbu. People speak different languages as their mother tongue, Nepali is the main language of communication.

Most of the people living around practice subsistence farming. Livestock farming used to be common with agriculture, but these days livestock farming is decreasing. Rice is the most dominant staple crop followed by wheat and maize. People also grow lentils, mustard and seasonal vegetables. There are some tea gardens around the forest. Local people also generate cash income from wage laboring in tea gardens.

Table: Households and population of four local governments around Jalthal (wards where users of the forest live are only considered).

Local government unit	Total households	Population
Haldibari (3, 4, 5)	3,573	14,977
Bhadrapur (1, 2, 3, 4, 5, 7)	10,246	35,439
Kachankawal (1, 2, 3, 4, 6, 7)	8,824	36,585
Baradashi (1, 2, 3)	4,285	17,557
Total	26,928	104,558

Forest vegetation

In general, Jalthal forest is primarily a *Shorea robusta* (sal) forest, with both pure and mixed stands. The noticeable associates of sal in the top canopy layer are *Lagerstroemia parviflora*, *Terminalia bellirica*, *T. elliptica*, *Artocarpus chama*, *Syzygium cumini* and *Adina cordifolia*. *Mallotus philippensis*, *Careya arborea*, *Miliusa velutina* and *Dillenia pentagyna* are common associates in the second storey. Below this, the third storey has tall shrubs like *Leea* spp., *Mimosa himalayana*, *Catunaregam spinosa*, *Ardisia solanacea* and *Phlogacanthus thyriformis*. The most common species at the forest floor are *Clerodendrum infortunatum*, *C. japonicum*, *Flemingia strobilifera*, *Grona heterocarpos*, *Microstegium fasciculatum*, *Oplismenus compositus*, *Boesenbergia hamiltonii* and *Zingiber* spp. The most common native climbers include *Phanera (Bauhinia) vahlii* and *Spatholobus parviflorus*. Mixed sal forest is characterized by a lower abundance of sal trees with frequent occurrence of *Lagerstroemia parviflora*, *Terminalia bellirica*, *T. elliptica*, *Aphanamixis polystachya*, *Dysoxylum gotadhora* and *Adina cordifolia*. Naturally regenerating stands of *Artocarpus chama* can be found in moist and damp depressions.

Near moist gullies and along watercourses, small discontinuous patches or strips of tropical evergreen forest are found. This is the most important forest type in terms of tree species diversity. The major tree species of these evergreen forests are *Siphonodon celastrineus*, *Drypetes assamica*, *Gynocardia odorata*, *Camphora tenuipilis*, *Horsfieldia kingii*, *Ficus* spp., *Elaeocarpus tectorius*, *Aglaia spectabilis*, *Harpullia arborea*, *Syzygium formosum*, *Canarium strictum*, *Dalrympelea pomifera*, *Baccaurea ramiflora*, *Garcinia* spp., etc. On sandy soils and near riverbanks, riverine species are also seen.



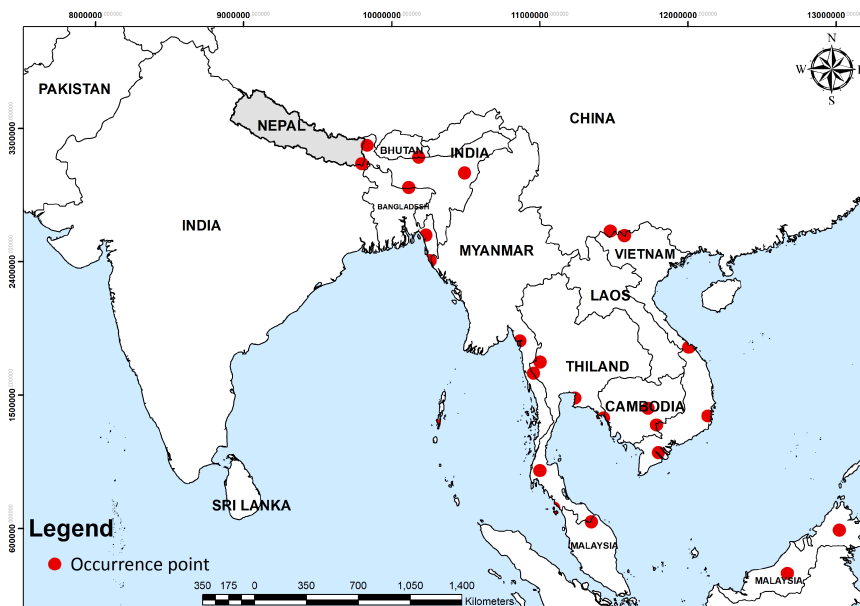
Photograph: Mixed sal forest of Jalthal.

Phytogeographical significance

Nepal, located in the central Himalaya, is the zone of confluence of several bordering floristic regions, and it is considered a crossroads of plant migration. The eastern subalpine and temperate flora of Nepal is influenced by Eastern Himalayan elements of the Sino-Japanese floristic region; the drier western part of Nepal is influenced by Western Himalayan elements of the Irano-Turanian floristic region; the northern drier alpine region is influenced by the Central Asiatic floristic region; and the southern part of the country is rich in elements from the Indian floristic region and influenced partly by the Indo-Chinese and Indo-Malayan floristic regions.

On the basis of distribution data, the tree flora of Jalthal forest shows higher affinity with Indo-Chinese, Sino-Japanese, Indian and Malesian floristic regions, suggesting that the Jalthal forest falls within the Indo-Malayan realm. Most of the species are distributed in more than one region. The tree flora of the forest is a repository of mainly Indo-Chinese elements, which are distributed mostly up to the Sino-Japanese region (particularly the E Himalayan) in the north and northeast, the Indian region (particularly the Gangetic Plain province) in the west, and the Malesian region in the south and southeast. Some important Indo-Chinese elements found in Jalthal forest are *Artocarpus chama*, *Cycas pectinata*, *Baccaurea ramiflora*, *Harpullia arborea*, *Siphonodon celastrinus*, *Drypetes assamica*, *Garcinia cowa*, *Garcinia xanthochymus*, *Horsfieldia kingii*, *Syzygium formosum*, *Bhesa robusta*, etc.

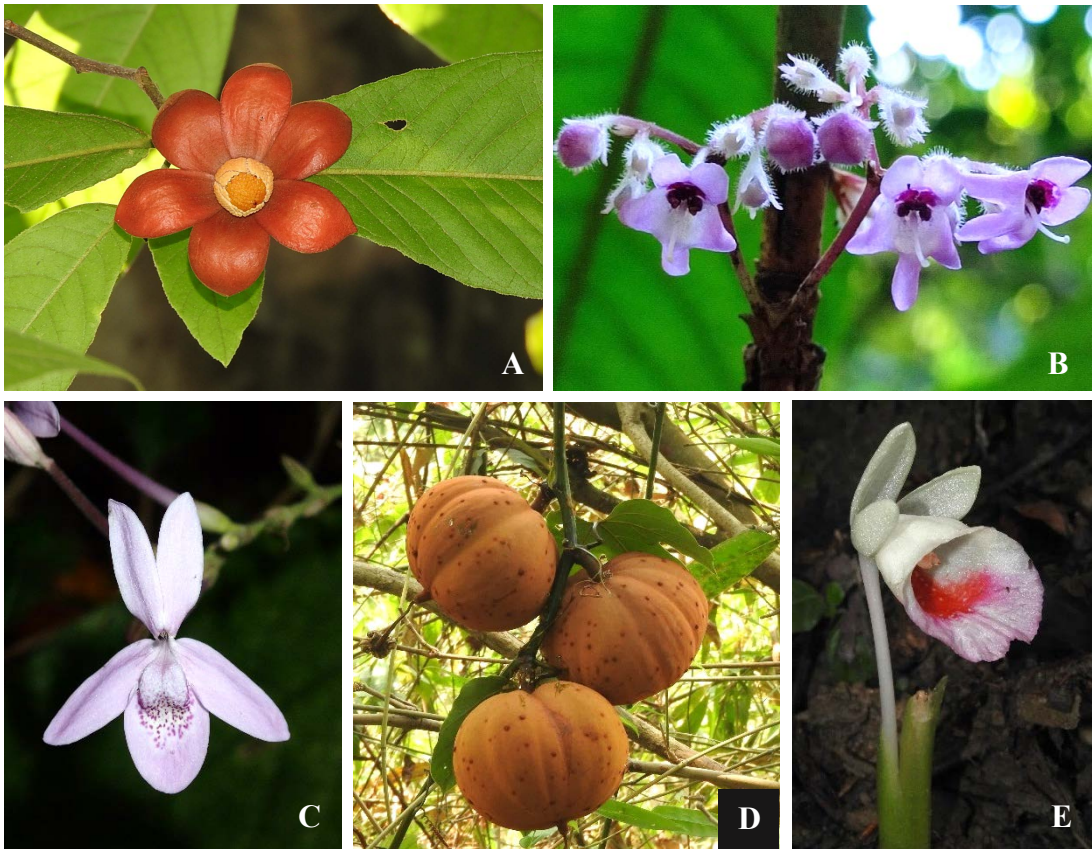
Out of 168 tree species found in Jalthal, 27 species are reported just from eastern Nepal, predominantly from Jhapa and its adjoining districts. Most of these species are Indo-Chinese elements having their north-western distribution limit in eastern Nepal, especially at Jalthal, making Jalthal a place of biogeographical significance.



Map: Global distribution map of *Artocarpus chama*. It stops in Eastern Nepal in its westbound.

Flora

Jalthal is known for its high diversity of seed plants, with a total of 565 taxa, including 564 species (one of which is represented by two subspecies), belonging to 377 genera and 106 families (Appendix 1). This account includes 562 species of angiosperms and two species of gymnosperm (i.e., *Cycas pectinata* and *Gnetum montanum*). This figure does not include the planted species (Appendix 10) and represents about 10% of the total seed plants of the country. Poaceae (51 spp.), Fabaceae (47 spp.), Cyperaceae (36 spp.), Rubiaceae (29 spp.), Asteraceae (21 spp.), Phyllanthaceae (21 spp.), Malvaceae (19 spp.), Lamiaceae (18 spp.), Moraceae (18 spp.) and Acanthaceae (17 spp.) were the top ten families. *Cyperus* is the most dominant genus with 20 species, followed by *Ficus* (15 spp.). The other three dominant genera were *Dioscorea* (8 spp.), *Fimbristylis* (7 spp.) and *Persicaria* (7 spp.). Out of 564 species of seed plants, 246 were herbs, 168 were trees, 80 were shrubs or subshrubs, 69 were climbers and one was bamboo. In addition to such a high diversity of seed plants, a total of 43 species of pteridophytes were also found in Jalthal (Appendix 2).



Photograph: A. *Uvaria hamiltonii*. B. *Rhynchotechum ellipticum*. C. *Pseuderanthemum latifolium*. D. *Hodgsonia heteroclita*. E. *Boesenbergia hamiltonii*.

Our floristic study on Jalthal forest documented 25 species, from grasses to trees, new to the flora of Nepal. This includes 14 trees, nine herbs, one shrub and one woody climber: *Acroceras munroanum*, *Acronychia pedunculata*, *Aglaiia spectabilis*, *Callicarpa longifolia*, *Canarium strictum*, *Casearia vareca*, *Cyrtococcum oxyphyllum*, *Discospermum abnorme*, *Drypetes assamica*, *Ficus lamponga*, *Ficus variegata*, *Glochidion zeylanicum* var. *tomentosum*, *Harpullia arborea*, *Hymenachne aurita*, *Ischaemum timorense*, *Limnophila aromatica*, *Lindernia rotundifolia*, *Oxyceros kunstleri*, *Picria fel-terrae*, *Pterygota alata*, *Sarcosperma arboreum*, *Siphonodon celastrineus*, *Vitex quinata*, *Zingiber ligulatum* and *Zingiber rubens*. Most of these species are locally rare and confined to moist habitats, particularly moist gullies.



Photograph: A. *Siphonodon celastrineus*. B. *Picria fel-terrae*. C. *Aglaiia spectabilis*. D. *Acronychia pedunculata*.

Trees

The exact number of tree species in Nepal varies across the literature, with records ranging from 650 to 700 species. Jalthal forest has remarkable tree diversity, with 168 species of trees under 116 genera and 53 families. So far, this number of trees have not been reported in other lowland forests in Nepal, making Jalthal one of the richest sites in terms of tree diversity. Moraceae is the largest family with 17 species, followed by Fabaceae and Phyllanthaceae with 15 and 13 species, respectively. *Ficus* is the largest genus with 14 species, followed by *Syzygium* with six species. *Shorea robusta* is the most dominant and structural tree of the forest, which has over 60% share in the total stem count above 5 cm DBH. The forest also has some of the tree species that generally grow in the midhills of Nepal, such as *Schima wallichii*, *Castanopsis indica*, *Engelhardia spicata*, etc.

The higher tree diversity of Jalthal forest can be explained by four different factors: higher habitat heterogeneity (created by hillocks, gullies, streams and wetlands), favourable regional climate and moisture, proximity of Jalthal forest to the tropical forest of Southeast Asia, and limited forest disturbance in the past (positive land use history). Despite increasing habitat degradation and forest disturbances, the forest still supports significant tree diversity and is a source of diverse ecosystem services.



Photograph: A. *Dillenia pentagyna*. B. *Gynocardia odorata*. C. *Harpullia arborea*. D. *Careya arborea*. E. *Miliusa dioeca*.

Rare trees of Jalthal

Rarity of a species refers to the state of an extant organism having a low population or a small geographical range. We used local population size and regeneration status to categorize whether a species is abundant (with number of mature individuals more than 100), common (with number of mature individuals between 50 and 100), rare (with number of mature individuals between 20 and 50), very rare (with number of mature individuals less than 20 and have satisfactory or good natural regeneration) or very rare and locally threatened (with number of mature individuals less than 20 and have poor or no natural regeneration) in Jalthal forest. Among 168 tree species recorded in Jalthal, 18 are abundant, 36 are common, 44 are rare, nine are very rare and 61 species are very rare and locally threatened. A total of 114 species are rare, of which 70 fall into the very rare category. This suggests that the tree diversity of Jalthal forest is primarily made up by a large number of rare species. This pattern resembles that of tropical forests, where diversity is actually contributed by the presence of many rare species.

Camphora tenuipilis, *Bhesa robusta*, *Baccaurea ramiflora*, *Magnolia champaca*, *Stereospermum chelonoides*, *Dillenia indica*, *Garcinia xanthochymus*, *G. cowa*, *Ougeinia oojeinensis*, *Prunus ceylanica*, *Pterygota alata*, *Tetrameles nudiflora*, *Horsfieldia kingii*, *Canarium strictum*, *Dalbergia latifolia*, *Phoenix loureiroi*, etc. are very rare trees of Jalthal. Most of these rare trees face one or another form of regeneration problem. Lack of fruit set, low germination rate, poor seedling survival, and problems in sapling growth are common regeneration problems among rare trees.



A



B

Photograph: A. *Camphora tenuipilis*. B. *Pterygota alata*.

Palms

Members of the monocot family Areaceae are commonly known as palms, and they are typical tropical plants. Betle nut, coconut and dates are commonly eaten palm species. Out of 12 species of native palms of Nepal, four species are found in Jalthal: *Calamus melanochaetes* (Bet), *Phoenix loureiroi* (Thakal), *Pinanga gracilis* and *Wallichia oblongifolia* (Khareto). The only tree palm of Jalthal, *Phoenix loureiroi*, is represented by the variety *pedunculata* (*P. loureiroi* var. *pedunculata*). *Wallichia oblongifolia* is used as thatching material and to prepare broom. Traditionally, the midrib of the leaf of this species was used to make a hair comb. Stems of *Calamus melanochaetes* are used to prepare walking sticks (*Bet ko lauri*). Similarly, *Phoenix loureiroi* and *Pinanga gracilis* are considered good food and fodder plants, respectively. *Pinanga gracilis* is quite rare in the forest, while *Calamus melanochaetes* is common along moist gullies. *W. oblongifolia* is occasionally seen along the slopes of gullies. *Phoenix loureiroi* used to be common in Jalthal in the past, but during the last three decades its number has declined sharply, and now it is represented by only a handful of individuals in a small area.



Photograph: A. *Phoenix loureiroi*. B. *Wallichia oblongifolia*. C. *Calamus jenkinsianus*. D. *Pinanga gracilis*.

Pteridophytes

There are altogether 583 taxa (550 species and 33 subspecies) of pteridophytes in Nepal, including three species endemic to Nepal. Jalthal forest is rich in pteridophytes diversity. So far, 43 pteridophytes species occur in Jalthal forest (Appendix 2). Most of the pteridophytes are terrestrial and prefer marshy and wet areas. *Salvinia natans*, *Azolla imbricata* and *Marsilea minuta* are aquatic species found in Jalthal. *Drynaria quercifolia* is the most common epiphyte of Jalthal forest and can be seen growing on the trunks of tall trees.

Diplazium esculentum (Pani Nyuro) is the most common fern of this forest. Local people collect young tender shoots and young apical portions of *D. esculentum* and use them as vegetables. Other vegetable ferns of Jalthal are *Ophioglossum reticulatum* (Jibre Saag), *Helminthostachys zeylanica* (Mayurkhutte), *Stenochlaena palustris* (Rato Nyuro/Niguro) and *Tectaria coadunata* (Kalo Nyuro/Niguro). *Microsorium punctatum*, *Pteris semipinnata* and *Drynaria quercifolia* are ornamental ferns found in Jalthal. Jalthal also provides habitats for several regionally rare and threatened ferns. Two attractive ferns, *Bolbitis costata* and *Lygodium microphyllum*, grow in moist gullies of Jalthal forest. A deadly poisonous fern, *Thelypteris arida*, is also common in the forest.



Photograph: A. *Diplazium esculentum*. B. *Helminthostachys zeylanica*. C. *Salvinia natans*.

Wild mushrooms

Nepal's wild mushrooms are a fascinating and important part of the country's biodiversity. The country has a total of 1,292 reported species of wild mushrooms, of which 85 species are found in the Jalthal area (Appendix 3). The wild mushrooms are an important part of the local ecosystem and are used by local communities. People of various castes and ethnic groups collect and consume mushrooms of the forest. A preliminary study in the Jalthal area found 13 species of edible mushrooms and one species of mushroom having medicinal value. *Termitomyces eurhizus*, *T. umkowaan*, *Scleroderma texense* and *Macrolepiota albuminosa* are the commonly used mushrooms for their food value, and *Pycnoporus cinnabarinus* is being used for its medicinal value by local communities. Indigenous people, mainly Meche and Santhal, show profound knowledge on mushrooms. Jalthal forest also has some poisonous mushrooms (for example, *Amanita subglobosa*).

In our recent study, *Ghaat Gaddhi* (stocked logs) is a very important reservoir of fungal germplasm and turned out to be an important site to document offseason fungal diversity. Old logs and stumps, which are important components of mushroom habitats, should not be moved haphazardly.



Photograph: A. *Amanita chepangiana*. B. *Microporus xanthopus*. C. *Pycnoporus cinnabarinus*. D. *Termitomyces umkowaan*.

Butterflies

Nepal has over 660 species of butterflies as the country has a varieties of Palearctic and Oriental species. Jalthal forest is home to 157 species of butterflies belonging to six families and 103 genera (Appendix 4). Nymphalidae is the largest family containing 54 species. Riodinidae is the least dominant family with a record of only two species. Similarly, Lycaenidae is the second largest family with a number of 48 species. The majority of the species are common, while some species can be considered rare in the area, which include *Euripus consimilis*, *Arhopala perimuta*, *Flos adriana*, *Hasora badra*, *Coladenia indrani*, *Gerosis bhagava*, *Halpe porus*, *Cupitha purreea*, *Pelopidas assamensis*, *Gandaca harina*, *Arhopala abseus*, *Arhopala eumolphus*, *Charaxes marmax* and *Lasippa viraja*. In terms of habitat, the majority (around 80 species) are forest-specific while other species can be found in a wide range of habitats, ranging from home gardens to forest areas. Degradation of habitat, such as the siltation of wetlands, forest fire, and invasions by invasive alien plant species, has threatened butterfly diversity in Jalthal forest.



Photograph: A. Yellow helen (*Papilio nephelus*). B. Common sailor (*Neptis hylas* subsp. *matuta*). C. Common bush brown (*Mycalesis perseus*). D. The Rustic (*Cupha erymanthis*).

Fishes

Nepal's diverse geography has created varied aquatic niches that support a high fish diversity. A total of 232 species of fishes are included in the book 'Ichthyology of Nepal'. Jalthal forest is in between the Deuniya River in the east and the Aduwa River in the west. Besides these rivers, the forest has several small rivers, streams, small natural and modified lakes, brooks and oxbows. These water resources support a total of 42 species of fishes in Jalthal (Appendix 5). Despite facing significant stress from activities such as electric fishing, water poisoning, and overexploitation during the winter season, the water bodies of the forest support one globally threatened species, the Vulnerable Asian Silurid Catfish (*Wallago attu*); one Near Threatened species, the Butter Catfish (*Ompok bimaculatus*); two Data Deficient species; and one species that is not yet evaluated by the IUCN assessment. The remaining 38 species are classified as Least Concern. In addition, five species of ornamental fish are also recorded from Jalthal forest areas. They are *Devario devario*, *Acanthocobitis botia*, *Xenentodon cancila*, *Parambassis baculis* and *Trichogaster lalius*. Stinging Catfish (*Heteropneustes nani*) is the new addition to Nepal's checklist of fishes, which is reported from the Jalthal from our survey.



Photograph: A. *Channa striata*. B. *Wallago attu*. C. *Ompok bimaculatus*. D. *Mystus tengara*.

Amphibians

Nepal is home to 57 species of amphibian fauna. Jalthal forest holds a disproportionately high diversity of amphibians, with a total of 14 species (Appendix 6). All the recorded species are of the order Anura, which are frogs and toads, belonging to five families: Bufonidae, Dicroglossidae, Microhylidae, Ranidae and Rhacophoridae. The Dicroglossidae contains the most species, with seven species in three genera, i.e., *Minervarya*, *Euphlyctis* and *Hoplobatrachus*, followed by Bufonidae, Microhylidae and Ranidae with two species each. The genus *Minervarya* is the largest genera of amphibians in Jalthal, with four species. Among frogs and toads, *Euphlyctis* spp. and *Hoplobatrachus* spp. are the most common species in Jalthal forest areas based on our encounter. As part of this update, Skittering Frog (*Euphlyctis adolfi*) and Cope's Assam Frog (*Hydrophylax leptoglossa*) have also been recorded from Jalthal forest, which are recently updated on Nepal's amphibians updated checklist. Similarly, one species, *Hoplobatrachus tigerinus*, occurring in Jalthal is listed in CITES Appendix II.



Photograph: A. *Hoplobatrachus tigerinus*. B. *Uperdon taprobanicus*. C. *Minervarya teraiensis*. D. *Polypedates maculatus*.

Reptiles

Nepal is home to more than 150 species of reptiles, of which about 23% (i.e., 34 spp.) are found in Jalthal. It includes 10 lizards, 21 serpents (snakes) and three testudines (turtles and tortoises) (Appendix 7). Yellow Monitor Lizard (*Varanus flavescens*), a nationally protected lizard in Nepal, is the only IUCN Red List Endangered lizard found in Jalthal. The testudines recorded from Jalthal are the threatened species: Elongated Tortoise (*Indotestudo elongata*, CR), Peacock Soft-shell Turtle (*Nilssonina hurum*, EN) and Indian Flap-shelled Turtle (*Lissemys punctata*, VU). However, opportunistic and deliberate collections of turtles were observed in June–October by locals in the Jalthal forest.

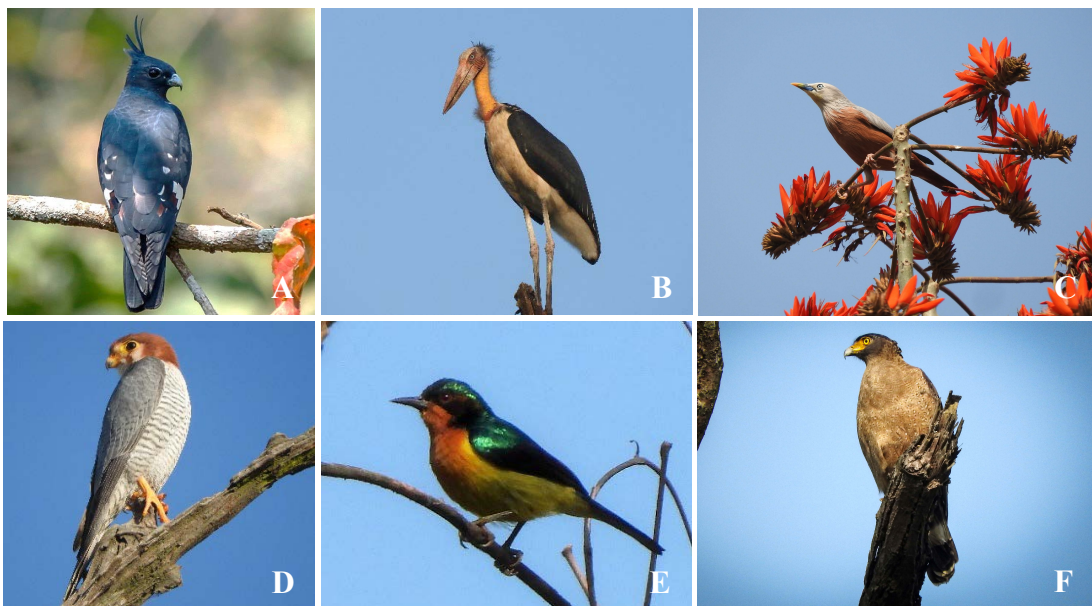
Colubridae and Elapidae are the largest snake families in Jalthal, with 10 and six species, respectively. The family Colubridae includes mild or non-venomous snakes, while Elapidae includes the most venomous snakes, whose bite can be lethal to humans. Common Krait (*Bungarus caeruleus*), Banded Krait (*Bungarus fasciatus*), Lesser Black Krait (*Bungarus lividus*), Spectacled Cobra (*Naja naja*), Monoceled Cobra (*Naja kaouthia*) and King Cobra (*Ophiophagus hannah*) are the venomous snakes of Elapidae recorded in Jalthal forest. Jalthal also houses two globally Threatened snakes: the Burmese Python (*Python bivittatus*, VU) and King Cobra (*Ophiophagus hannah*, VU). The Burmese Python (*Python bivittatus*) is also listed as a nationally protected species. Six out of 34 reptile species in Jalthal are globally threatened, underscoring the Jalthal forest area's conservation importance. Additionally, the Indian Peacock Soft-shelled Turtle is listed in CITES Appendix I, and 11 reptile species in Jalthal are included in CITES Appendix II.



Photograph: A. Burmese Python (*Python bivittatus*). B. Banded Krait (*Bungarus fasciatus*). C. Bengal Monitor Lizard (*Varanus bengalensis*). D. Yellow-headed Tortoise (*Indotestudo elongata*).

Birds

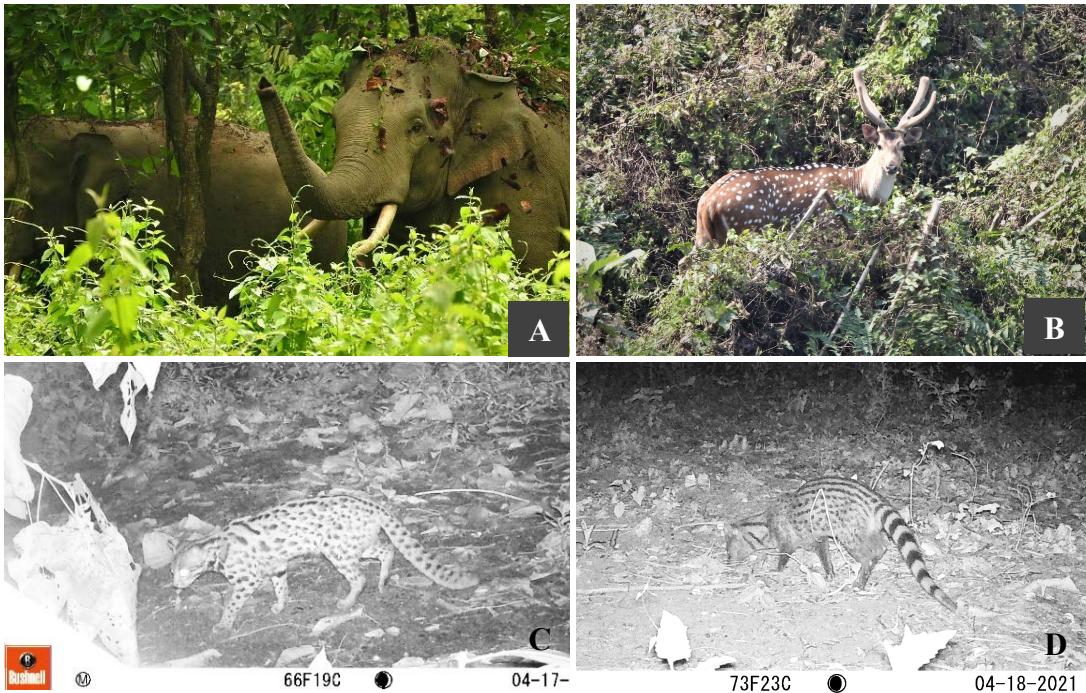
Nepal is the home of nearly 890 species of birds. Jalthal forest is also rich in terms of bird species, with 238 species of birds in 18 order and 64 families (Appendix 8). Passeriformes is the largest order with 109 species, followed by Charadriiformes and Accipitriformes with 19 and 16 species, respectively. The families Accipitridae and Muscicapidae have the highest species count, each comprising 15 species. The bird species in Jalthal represent a variety of habitats, with the majority being core forest-associated birds (92 species), followed by wetland species (77), edge species, and those associated with cultivable areas (69). According to the IUCN Red List, one species is categorized as Critically Endangered, ten species are listed as Near Threatened, 226 species are listed as Least Concern, and one species has not yet been evaluated. The Threatened and Near Threatened species are Yellow-breasted Bunting (*Emberiza aureola*, CR), Lesser Adjutant (*Leptoptilos javanicus*, NT), Red-headed Falcon (*Falco chicquera*, NT), Ferruginous Duck (*Aythya nyroca*, NT), Blyth's Kingfisher (*Alcedo hercules*, NT), Alexandrine Parakeet (*Psittacula eupatria*, NT), Blossom-headed Parakeet (*Psittacula roseata*, NT), Asian Woollyneck Stork (*Ciconia episcopus*, NT), Sikkim Wedge-billed Babbler (*Stachyris humei*, NT), River Lapwing (*Vanellus duvauceli*, NT) and Northern Lapwing (*Vanellus vanellus*, NT). Eighteen species are categorized as Threatened in the National Red Data Book. Among them, the Yellow-breasted Bunting (*Emberiza aureola*), Jerdon's Baza (*Aviceda jerdoni*), Malayan Night Heron (*Gorsachius melanolophus*) and Sikkim Wedge-billed Babbler (*Stachyris humei*) are listed as Critically Endangered, while the Ruby-cheeked Sunbird (*Chalcoparia singalensis*) is classified as Endangered at the national level, has also been recorded in Jalthal forest. Except for the Yellow-breasted Bunting, all these species are found exclusively in eastern Nepal.



Photograph: A. Black Baza. B. Lesser Adjutant. C. Chestnut-tailed Starling. D. Red-headed Falcon. E. Ruby-cheeked Sunbird. F. Crested Serpent Eagle.

Mammals

Nepal is rich in mammalian biodiversity, with a total of 208 mammal species including two species endemic to Nepal. Given its smaller size and isolated area, Jalthal forest is rich with 28 mammalian species (Appendix 9). Among them, Carnivora is the largest order with a total of nine species: Jungle Cat (*Felis chaus*), Leopard Cat (*Prionailurus bengalensis*), Indian Grey Mongoose (*Herpestes edwardsi*), Bengal Fox (*Vulpes bengalensis*), Golden Jackal (*Canis aureus*), Large Indian Civet (*Viverra zibetha*), Common Palm Civet (*Paradoxurus hermaphroditus*), Small Indian Civet (*Viverricula indica*) and Yellow-throated Marten (*Martes flavigula*). Similarly, Fulvous Fruit Bat (*Rousettus leschenaultii*), Indian Flying Fox (*Pteropus medius*) and Greater Short-nosed Fruit Bat (*Cynopterus sphinx*) are Chiropteran species. Amongst Jalthal's mammals, the Spotted Deer is the most abundant species, followed by the Indian Grey Mongoose, Rhesus Macaque and Small Indian Civet. Out of 28 species, 25 species are listed in the IUCN's Least Concern category, while one species each is listed in the Endangered, Critically Endangered and Near Threatened categories. The Chinese Pangolin (*Manis pentadactyla*) and Asian Wild Elephant (*Elephas maximus*) are categorized as Critically Endangered and Endangered species, respectively. Furthermore, five species are considered Vulnerable, two are Endangered, and one species each is listed as Near Threatened and Data Deficient in the National Red Data Book. According to the locals, the Indian Spotted Chevrotain (*Moschiola indica*) may still be present in Jalthal, and there have been sightings of the Common Leopard (*Panthera pardus*).



Photograph: A. Asiatic Elephant (*Elephas maximus*). B. Spotted Deer (*Axis axis*). C. Leopard Cat (*Prionailurus bengalensis*) D. Small Indian Civet (*Viverricula indica*).

Wild edible fruits

Wild edible fruits are collected and consumed by people living around the forest, and these forest products play an important role in the food security of rural poor. High floral diversity is the basis of diverse ecosystem services which is reflected in Jalthal forest. The forest has 63 species of wild edible fruit plants. *Aegle marmelos* (Bel), *Aporosa octandra* (Asare), *Artocarpus chama* (Latahar), *Baccaurea ramiflora* (Ranikusum), *Garcinia cowa* (Bansuntala), *Horsfieldia kingii* (Bansupari, Ramguwa), *Mangifera indica* (Jungali Aanp), *Spondias pinnata* (Amaro) and *Syzygium cumini* (Jaamun) are the major tree species with edible fruits from Jalthal. Some species, such as *Mangifera indica* (Aanp), *Phyllanthus emblica* (Amala) and *Ziziphus mauritiana* (Bayer), which have been widely domesticated for their delicious and nutritious edible fruits are also found in Jalthal. *Melastoma malabathricum* (Kali Angeri) and *Solanum torvum* (Behi) are the common shrubs, and *Uvaria hamiltonii* (Bandar Jhulla) and *Bridelia stipularis* (Lahare Gayo) are the woody climbers whose fruits are frequently eaten by the locals. The major consumers of wild fruits in Jalthal are people who frequently visit the forest to continue their daily activities such as fodder and firewood collection. Major wild edible fruits (Latahar, Asare, Aanp, Bansuntala, Ranikusum) ripe during the monsoon season. Most of the fruits are eaten raw, while some fruits, such as of *Tamilnadia uliginosa* (Pidar) and *Solanum torvum*, are cooked and eaten in the form of curry. Some fruits, for example *Artocarpus chama* and *Spondias pinnata*, are eaten in more than one form (as raw fruit, vegetable and pickles).



Photograph: A. *Horsfieldia kingii*. B. *Artocarpus chama*. C. *Baccaurea ramiflora*. D. *Garcinia cowa*. E. *Lepisanthes senegalensis*.

Medicinal plants

Plants are an important component of traditional health care systems around the world. Indigenous people have profound knowledge on the application and ecology of medicinal plants. Jalthal area has been settled by both the Tarai indigenous people and people who migrated from the Hills, providing the basis for knowledge and practices regarding the use of plant resources in traditional healing. Our study in Jalthal reported 43 vascular plant species (38 seed plants and five pteridophytes) having medicinal value. The most valuable medicinal plants found in the forest are *Etlingera linguiformis* (Madhu), *Centella asiatica* (Ghod Tapre), *Terminalia bellirica* (Barro), *Terminalia chebula* (Harro), *Cuscuta reflexa* (Paheli Lahara/Aakashe Beli), *Asparagus racemosus* (Kurilo), *Cassia fistula* (Rajbriksha), *Rauvolfia serpentina* (Sapragandha/Chand Maruwa), *Phlogacanthus thyriformis* (Chuwa, Tite), etc. Most of the people, especially those of Rajbanshi, Santhal and Meche communities, are still practicing the traditional healing therapies utilizing the available medicinal plants in the forest. The major collectors of the medicinal plants were the traditional healers and old people. Different parts of the plants, such as the roots, tubers, stems, barks, leaves, flowers and fruits, are used in different forms to treat different ailments of humans as well as livestock.



Photograph: A. *Phlogacanthus thyriformis* (flowers). B. *Rauvolfia serpentina*. C. *Etlingera linguiformis*. D. *Asparagus racemosus* (tubers).

Timber trees

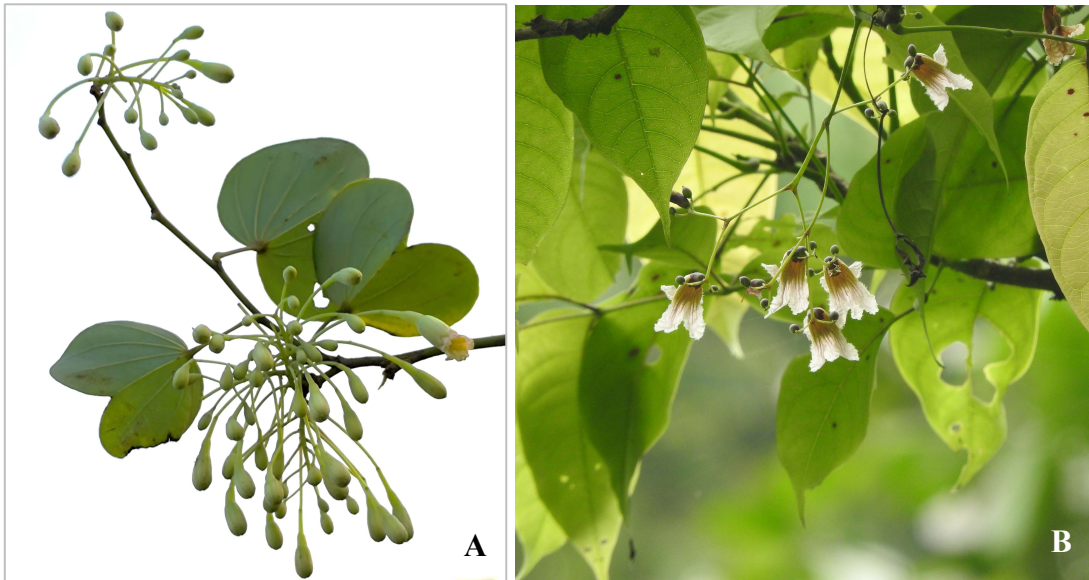
Timber is the most valued forest product. In Jalthal, there are 45 tree species that have been utilized by locals as timber. However, species other than *Shorea robusta* (Sal, Sakhuwa) were not prioritized for management by the Sal-centric forest management of Jalthal. Besides Sal, other important timber species of Jalthal are: *Terminalia elliptica* (Saj, Asna), *Adina cordifolia* (Karam, Karma), *Lagerstroemia parviflora* (Bot Dhayenro), *Artocarpus chama* (Latahar), *Bridelia retusa* (Rukhgaayo), *Homalium ceylanicum* (Anaukath, Surile), *Hymenodictyon orixense* (Lati Karam), *Schima wallichii* (Chilaune), *Lannea coromandelica* (Hallunde), *Stereospermum colais* (Padari), etc. The trees of *Homalium zeylanicum* and *Hymenodictyon orixense* are very few in number due to past exploitation. Timber is the single most source of income for the community forest user groups (CFUGs), and because of this, forest management in Jalthal is visibly timber-centric, particularly focused on Sal. Although the management is inclined towards timber, timber harvest is yet to be sustainable. The harvesting of the timber is managed by the user groups themselves and regulated by the Divisional Forest Office (DFO), Jhapa.



Photograph: Chilaune logs piled in a CF's Ghatgaddi (inset) and Sal and Saj tree.

Fodder plants

Forests are the major source of fodder for livestock. Livestock farming is one of the major occupations of the people of Jalthal. There was no practice of fodder lopping in the forest until about the 1960s but at present, people are heavily dependent on forest plants for fodder collection. People collect tree fodder, shrub fodder and grasses from the forest. A total of 97 plant species, mainly trees, are used by people for fodder. The collection intensity and pattern depend on the seasonality and availability of foraging grasslands. People are more dependent on the forest, especially during the dry season, when there is less availability of palatable grasses. The major tree species that are frequently lopped by people are *Ficus racemosa* (Seto Dumri), *Ficus hispida* (Khasreto, Thotne), *Piliostigma malabaricum* (Amil Tanki), *Streblus asper* (Bakhre Ghans), *Artocarpus lacucha* (Badahar), *Artocarpus chama* (Latahar), *Litsea monopetala* (Kutmero), *Terminalia elliptica* (Saj, Asna), *Stereospermum colais* (Padari) and *Garuga pinnata* (Dabdabe). *Spatholobus parviflorus* (Debre Lahara) and *Bridelia stipularis* (Laharegaayo) are common climbers lopped for fodder. Among others, the species of Moraceae are considered good fodder trees, and the populations of such species are relatively low. *Garcinia cowa* (Bansuntala), *Terminalia chebula* (Harro), *Ougeinia oojeinensis* (Sadan), *Grewia multiflora* (Kharighans), *Ficus semicordata* (Khanyu) and *Baccaurea ramiflora* (Ranikusum) are the most exploited species in the past for fodder. Because of overexploitation in the past, all these species are now very rare in Jalthal, and *Ougeinia oojeinensis* is on the verge of local extinction.



Photograph: A. *Piliostigma malabaricum*. B. *Stereospermum colais*.

Green leafy and tuberous vegetables

Wild leafy vegetables and tuber plants are among the most commonly collected forest products in Jalthal. Young leaves and tender shoots of 12 species of vascular plants (seven seed plants and five pteridophytes) are consumed by locals as green leafy vegetables. The most popularly consumed green leafy plants are *Diplazium esculentum* (Pani Niguro/Nyuro), *Lasia spinosa* (Morange), *Smilax* spp. (Kukurdiano) and *Cycas pectinata* (Thakal). *Diplazium esculentum* is the most common green leafy vegetable found in Jalthal forest and sometimes even sold in the market. Furthermore, this species has a surprisingly good demand in the local market and can be promoted for consumption. The availability of such green leafy vegetables in the forest is high during the rainy season. Tubers or corms of six species of wild plants: *Dioscorea bulbifera* (Gittha), *D. hamiltonii* (Ban Tarul), *D. pentaphylla* (Bhyakur), *Asparagus racemosus* (Kurilo), *Amorphophallus bulbifer* (Mane) and *Colocasia esculenta* (Karkalo) are eaten by people, usually on special occasions. The tubers of *Dioscorea* spp. are usually eaten boiled. In the Meche community, the tubers of *Amorphophallus bulbifer* are chopped into small pieces, mixed with garlic and chili paste, packed in a banana leaf, roasted, and then eaten.



Photograph: A. *Lasia spinosa*. B. *Diplazium esculentum*. C. *Helminthostachys zeylanica*. D. *Dioscorea hamiltonii*.

Other important NTFPs

In addition to several wild edible fruits, medicinal plants, fodder plants and green leafy and tuberous vegetables, Jalthal forest is a repository of many other important non-timber forest products (NTFPs). Important fiber plants include 11 different species. Ropes are made from the bark and stems of *Phanera vahlii* (Bhorla), *Thunbergia grandiflora* (Kali Lahara, Kalanse) and *Tetrastigma leucostaphylum* to carry fodder and firewood out of the forest. Bark fibers of *Sterculia villosa* (Odal), *Kydia calycina* (Kubhinde), *Ficus semicordata* (Khanyu) are used to make ropes and head straps (Namlo). The soft fruit fibers of *Bombax ceiba* (Simal) are used by people to fill pillows. Sponges from the fruits of *Luffa aegyptiaca* (Bannghirimlo) are commonly used by people for rubbing their bodies while bathing and sometimes used to fill pillows. *Saccharum spontaneum* (Kans), *Phoenix loureiroi* (Khajuri) and *Wallichia oblongifolia* (Khareto) are used to make ropes and several handicrafts. Altogether, 31 species of plants have religious and cultural importance. Examples of such plants are *Ficus religiosa* (Pipal), *Ficus benghalensis* (Bar), *Ficus altissima* (Labar), *Nyctanthes arbor-tristis* (Parijat), *Oroxylum indicum* (Tatelo), *Aegle marmelos* (Bel), etc. Leaves of some of the plants, such as *Shorea robusta* (Sal, Sakhua), *Bauhinia vahlii* (Bhorla), *Stachyphrynium placentarium* (Pasang), *Pterospermum acerifolium* (Hattipaile), etc., are commonly used to prepare plates for traditional feasts and festivals. The stems of *Calamus melanochaetes* (Bet) are used to make walking sticks. Similarly, the woody culms of *Dendrocalamus hamiltonii* (Bans) are used frequently in construction and fencing works. Some of the species, such as *Thysanolaena latifolia* (Amriso), *Chrysopogon zizanioides*, *Wallichia oblongifolia*, *Sida acuta* and *Sida rhombifolia*, are used to make various types of brooms. Bark or wood of *Senegalia catechu* (Khayar), *Litsea glutinosa* (Seto Kaulo), *Machilus macranthus* var. *glaucescens* (Kathe Kaulo) and *Sterculia villosa* (Odal) are used to make food additives. Furthermore, 14 plant species are used to make several household and agricultural implements, six species are used as dye plant and seven species are used to make several soft wood items.



Photograph: A. Fiber extracted from *Sterculia villosa* (Odal). B. Top branch of *Calamus melanochaetes*.

Threatened and protected plants of Jalthal

For effective conservation planning and resource allocation in conservation, one must know the status of plants present in any area. The IUCN Red List of threatened species and checklist of CITES listed flora, which are themselves the outcomes of rigorous assessments, are commonly used to easily know the threat status of plants. Jalthal forest also provides shelter for many globally threatened species of seed plants, such as the Endangered *Canarium strictum*, *Glochidion zeylanicum* var. *tomentosum* and *Prunus ceylanica*, and the Vulnerable *Cycas pectinata*, *Dalbergia latifolia*, *Memecylon grande* and *Meyna pubescens*. Except *Meyna pubescens* (a shrub), all other threatened species are trees and are the only IUCN Red List threatened tree species distributed in the Tarai region of Nepal. Three Near Threatened (NT) species, i.e., *Aegle marmelos*, *Dioscorea hamiltonii* and *Rauvolfia serpentina*, are also found in Jalthal.

Similarly, there are 19 species of seed plants (*Acampe praemorsa*, *Aerides multiflora*, *Aerides odorata*, *Bulbophyllum careyanum*, *Cycas pectinata*, *Cymbidium aloifolium*, *Dalbergia latifolia*, *Dalbergia sissoo*, *Dalbergia stipulacea*, *Dendrobium aphyllum*, *Dioscorea deltoidea*, *Eulophia picta*, *Gastrochilus* sp., *Nervilia* sp., *Peristylus* sp., *Rauvolfia serpentina*, *Rhynchosyilis retusa*, *Tropidia curculigoides* and *Zeuxine affinis*) that are listed in Appendix II of CITES and one species (*Gnetum montanum*) in Appendix III of CITES.

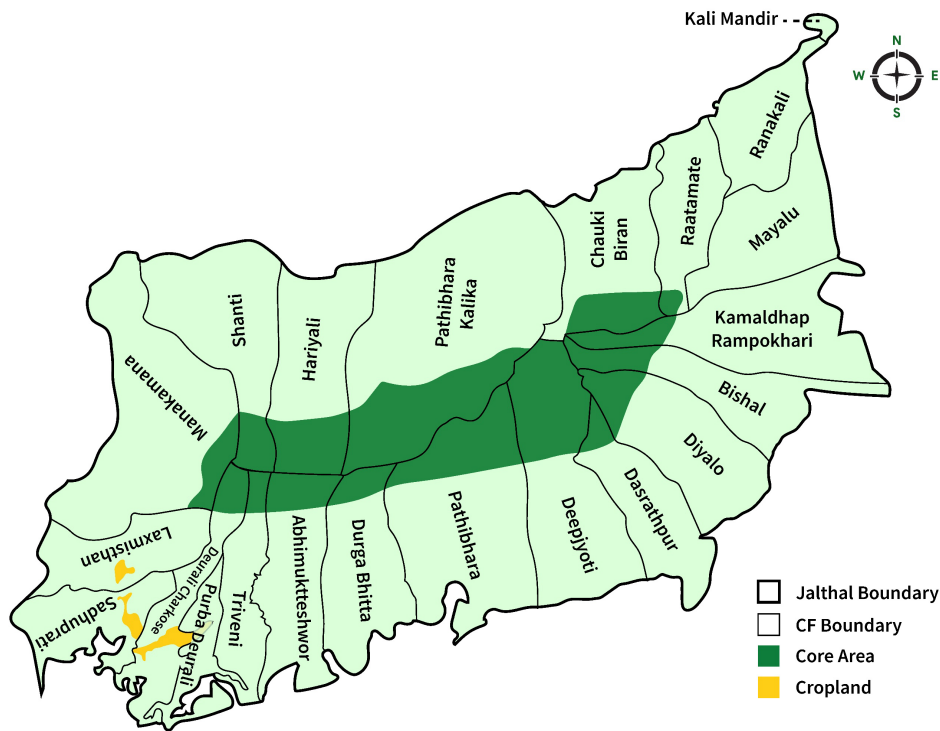


Photograph: A. *Gnetum montanum*. B. *Prunus ceylanica*. C. *Memecylon grande*. D. *Cycas pectinata*.

Forest management

Jalthal forest is part of National forest, before management by communities, it was under the direct control of the Department of Forests. Under the department's control, the forest was open access, and illegal felling of timber trees and hunting, continued, consequently causing the degradation of the forest. Tree felling was higher during the time of political instability and transition. Since 2009, the forest has been handed over to local communities as Community Forests (CFs). Currently, Jalthal forest has been managed by 22 Community Forest User Groups, representing over 80,000 local people living around the forest. Jalthal forest's interior of approximately 1,000 hectares has been designated as the 'core area', which has limited management interventions. Most of the CFs share their area with the core area.

CFUGs are playing a key role in the forest management. CFs have organized the forest users, regulated forest use, regulated collection and distribution of timber, controlled open grazing, prevented forest encroachment, reduced forest fire and illegal felling of trees and organized silvicultural activities. Sal regeneration has been protected, and the tree density has increased since the forest was managed as community forests. However, despite several positive outcomes, the forest management has not adequately addressed the rich biodiversity, unique ecological characteristics of the multifunctional forest and threats of biological invasion, and as a result the forest continues to experience degradation in one form or other.



Map: Jalthal forest showing 22 community forests and the core area.

Cultural sites

Jalthal forest has several places that are important cultural sites for local people and visitors from various parts of the country. Kichak Badh (a place where Kichak was killed) is a place connected with the Mahabharat story, which is located near the eastern corner of the forest and is an important cultural place of Jalthal. Dudha Kanya Devi temple, Pathibhara Kalika temple, Laxmasthan temple, Sakela Bhumesthan and Kiraat Manghing are other important religious and cultural places in Jalthal forest. Local people living around the forest visit these places to conduct religious activities in different occasions. Similarly, a joint religious site has been established in Prithbi Nagar where people from eleven different caste groups have their own shrines in one place. Many temples, shrines or religious places are used by more than one ethnic groups, reflecting religious harmony among people.



Photograph: A. Pathibhara Kalika temple. B. Dudha Kanya Devi temple. C. Sakela Bhumesthan. D. Meche people worshipping places.

Wetlands and water resources

The name Jalthal indicates marshy land. The forest is an important source of water for people living around the forest. Being in the low elevation, the forest and surrounding area is rich in wetlands, which include marshy lands, ponds, wet gullies, streams and river. Diversity of wetlands in Jalthal is reflected in local languages. Jhil, taal, pokhari, holi, sim, dhaap, khola, Kholsi all refer to one or other forms of wetlands. The forest is located between Deunia Khola in the east and Aduwa Khola in the west. Kajali and Bhusudi Khola pass through the northeastern part of the forest and mix into Deunia. Balubadi Khola is the main perennial stream draining the forest water southward. Jhadkan Khola, Baluwa Khola and Kutunu Khola are streams originating from the forest and flowing northward. Similarly, the forest has several wetlands, the southern side of the forest is particularly rich in wetlands. Jhilka Pokhari, Diyalo Pokhari, Tribeni Holi, Lotamari, Kamaldhap Rampokhari, Bishal, Durgabhitta and Sodagandhi are important wetland sites in the forest. Similarly, there are several small Jhils elsewhere in and around the forest. Rivers, streams and ponds are important cultural sites as well. During the Chhath festival, in the eastern Tarai, people of both Hindu and Muslim religions worship on the riverbanks. Wetlands are important sources of fishes for indigenous and local people living around the forest.



Photograph: Jhilka Pokhari located in Abhimukteshwar community forest.

Threats to forest biodiversity

Jalthal forest is diverse yet degraded due to several anthropogenic disturbances. The major threats to the forest and its biodiversity include biological invasion (discussed in later section), high pressure for biomass, timber-focused management, exotic species plantation, infrastructure development, habitat loss, forest fire and human-elephant conflict.

Local people are mostly farmers, practicing both animal husbandry and agriculture. They depend on forest for fuel wood, timber and fodder. Indiscriminate lopping of trees, cutting of saplings and felling of trees have affected diversity and abundance of trees. Trees like *Ougeinia oojeinensis*, *Grewia multiflora*, *Garcinia cowa*, *Ficus racemosa* and *Ficus semicordata* have been extensively cut for fodder.

The preferential protection of Sal has successfully conserved regeneration of Sal and in the meantime, it has promoted the selective clearing of non-timber and underutilized timber species resulting to less diverse and monodominant forest. Plantation of fast-growing exotic trees like *Tectona grandis*, *Eucalyptus* spp., etc. in the forest is not friendly for forest biodiversity. Unplanned road construction and tourism related constructions have fragmented, degraded and polluted the forest. Use of moist gullies mainly as a tractor route to transport timbers is threatening the existence of habitat-specific evergreen species that are restricted to such habitats.



Photograph: *Mikania micrantha* (Pyangri Lahara) invaded area.

Plantation in Jalthal

Tree plantation started in Jalthal since 1980s and it is still a major activity of forest management. There are many cases of sporadic and isolated plantations particularly along the forest margins. Altogether 44 species of trees belonging to 40 genera and 23 families have been planted in Jalthal forest (Appendix 10). This includes 26 native and 18 exotic tree species. Though the number of native species in plantation is higher than the exotic ones, the plantation stands are dominated by exotic species in terms of stem density. The most planted species in Jalthal is *Tectona grandis* (more than 90000 individuals) followed by *Eucalyptus camaldulensis* (about 60000 individuals). The plantation stands were largely either mixtures of exotic and native species or monodominant stands of exotic species. Stands composed of exclusively native species are rare. While the practice of planting popular exotic species like *Tectona grandis* and *Eucalyptus camaldulensis* has recently been stopped, new exotic species (such as *Cinnamomum verum*, *Lagerstroemia speciosa* and *Swietenia macrophylla*) and native but non-local species (such as *Cinnamomum tamala*) are appearing in plantations. Furthermore, in native species plantations, the seed provenances have been overlooked in Jalthal.

Although there is tremendous natural regeneration of native species in Jalthal, plantation has been adopted as the main strategy for forest restoration. In degraded forest like Jalthal where natural regeneration of native species is high and forest can restore back with minimal human assistance through natural regeneration protection and assisted natural regeneration, tree plantation is less effective and costly restoration strategy. Meanwhile, natural regeneration is beneficial in multipurpose forest like Jalthal where people depend on forest for wide range of ecosystem services.

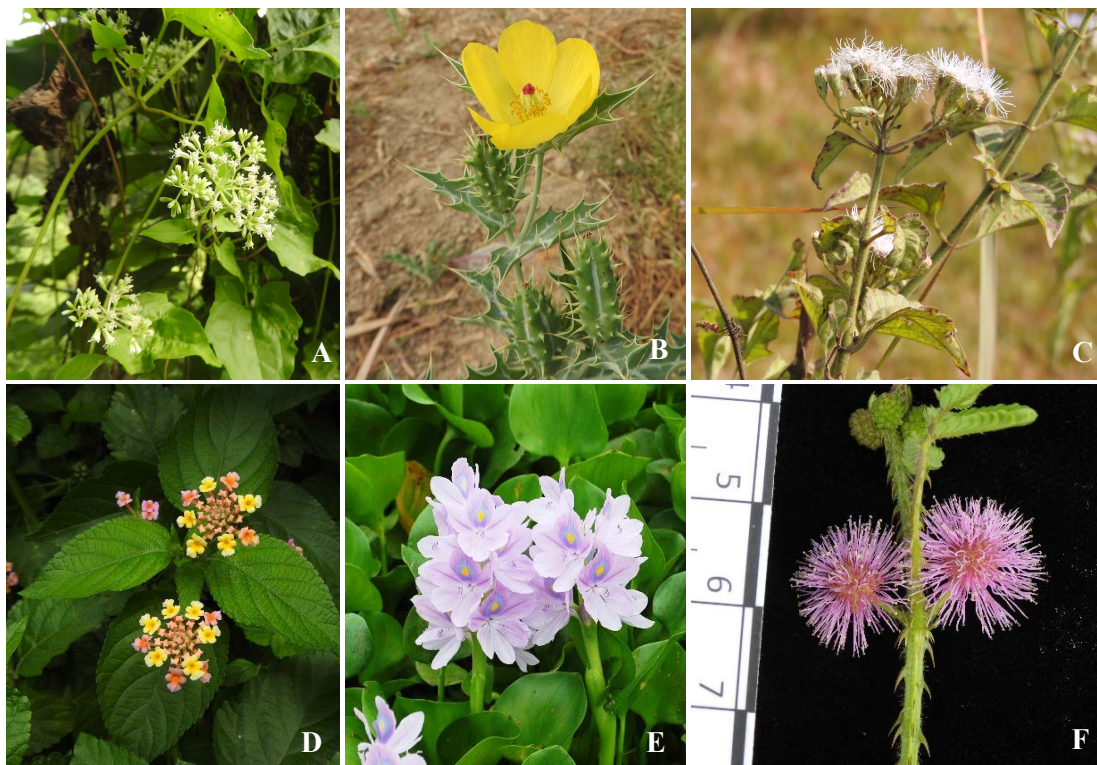


Photograph: Monodominant stand of *Eucalyptus camaldulensis* plantation in Jalthal.

Invasive Alien Plant Species (IAPS)

Biological invasion is a major and growing threat to biodiversity in Nepal. Jalthal forest, being an isolated patch in the human-dominated landscape, very near to open Indian border, is more prone to biological invasion. A recent study reported 21 species of IAPS from the forest and adjoining areas which includes 14 species from the forest (Appendix 11). The worst IAPS of the forest is *Mikania micrantha* (Pyangri Lahara). Other problematic species are *Chromolaena odorata* (Tite) and *Lantana camara* (Kande Bannmara). Out of the 21 IAPS of Jalthal and adjoining areas, *Chromolaena odorata*, *Lantana camara*, *Mikania micrantha* and *Pontederia crassipes* are among the 100 of the world's worst invasive alien species. These species are adversely affecting the ecosystems and restoration processes. Further, they are threatening the existence of native species which are rare, less plastic, poor competitors and have less stress tolerant capacity. Similarly, a recently reported species *Mimosa diplotricha*, which is at the initial stage of expansion is also spreading in and around the forest.

About half of the forest is facing the problem of invasive plant species invasion. The problem is severe in the marginal areas, areas with low tree canopy cover, open and moist areas. Comparatively, the eastern part of the forest is affected more than other parts, which is directly related to the land use history of the forest.



Photograph: A. *Mikania micrantha*. B. *Argemone mexicana*. C. *Chromolaena odorata*. D. *Lantana camara*. E. *Pontederia crassipes*. F. *Mimosa diplotricha*.

Appendix 1. Checklist of seed plants of Jalthal forest

S.N.	Habit/ Family	Botanical name	Local name	Distribution in Nepal*
Bamboo				
1	Poaceae	<i>Dendrocalamus hamiltonii</i> Nees & Arn. ex Munro	Bans	C & E (70-2000 m)
Herbs				
2	Acanthaceae	<i>Hygrophila difformis</i> (L.f.) Blume		E (70-200 m)
3	Acanthaceae	<i>Hygrophila polysperma</i> (Roxb.) T.Anderson		W, C & E (70-900 m)
4	Acanthaceae	<i>Hygrophila ringens</i> (L.) R.Br. ex Spreng.		W, C & E (70-1000 m)
5	Acanthaceae	<i>Lepidagathis incurva</i> Buch.-Ham. ex D.Don		W, C & E (70-2100 m)
6	Acanthaceae	<i>Nelsonia canescens</i> (Lam.) Spreng.		W, C & E (70-500 m)
7	Acanthaceae	<i>Phaulopsis dorsiflora</i> (Retz.) Santapau		E (70-900 m)
8	Acanthaceae	<i>Ruellia tuberosa</i> L.		W & E (70-200 m)
9	Acanthaceae	<i>Rungia pectinata</i> (L.) Nees		W, C & E (70-1800 m)
10	Acanthaceae	<i>Staurogyne humilis</i> (Nees) Kuntze		W, C & E (70-200 m)
11	Amaranthaceae	<i>Achyranthes bidentata</i> Blume		W, C & E (70-2600 m)
12	Amaranthaceae	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.		W, C & E (70-2500 m)
13	Amaranthaceae	<i>Celosia argentea</i> L.		W, C & E (70-1600 m)
14	Amaranthaceae	<i>Cyathula prostrata</i> (L.) Blume		C & E (70-1100 m)
15	Apiaceae	<i>Centella asiatica</i> (L.) Urb.	Ghodtapre	W, C & E (70-2600 m)
16	Araceae	<i>Alocasia fornicata</i> (Kunth) Schott		E (70-300 m)
17	Araceae	<i>Amorphophallus bulbifer</i> (Schott) Blume	Mane	W, C & E (70-1600 m)
18	Araceae	<i>Colocasia esculenta</i> (L.) Schott	Karkalo	W, C & E (70-1300 m)
19	Araceae	<i>Lasia spinosa</i> (L.) Thwaites	Morange	C & E (70-700 m)
20	Araliaceae	<i>Hydrocotyle sibthorpioides</i> Lam.		W, C & E (70-2500 m)
21	Asparagaceae	<i>Chlorophytum arundinaceum</i> Baker		W, C & E (70-3500 m)
22	Asparagaceae	<i>Chlorophytum tuberosum</i> (Roxb.) Baker		W, C & E (70-300 m)
23	Asteraceae	<i>Acilepis squarrosa</i> D.Don		W, C & E (70-1600 m)
24	Asteraceae	<i>Acmella uliginosa</i> (Sw.) Cass.		C & E (70-1200 m)
25	Asteraceae	<i>Adenostemma lavenia</i> (L.) Kuntze		W, C & E (70-3000 m)
26	Asteraceae	<i>Ageratum conyzoides</i> L.	Ilame, Seto Gandhe	W, C & E (70-2200 m)

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27	Asteraceae	<i>Ageratum houstonianum</i> Mill	Ilame, Nilo Gandhe	W, C & E (70-1600 m)
28	Asteraceae	<i>Bidens pilosa</i> L.		W, C & E (70-2930 m)
29	Asteraceae	<i>Blumea hirsuta</i> (Less.) M.R.Almeida		E (70 m)
30	Asteraceae	<i>Blumea lacera</i> (Burm.f.) DC.		C & E (70-1500 m)
31	Asteraceae	<i>Blumea sinuata</i> (Lour.) Merr.		W, C & E (70-1100 m)
32	Asteraceae	<i>Blumeopsis flava</i> (DC.) Gagnep.		W, C & E (70-1000 m)
33	Asteraceae	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Tite, Seto Banmara	W, C & E (70-2100 m)
34	Asteraceae	<i>Crassocephalum crepidioides</i> (Benth.) S.Moore	Dhendu Ful	C & E (70-2900 m)
35	Asteraceae	<i>Cyanthillium cinereum</i> (L.) H.Rob.		W, C & E (70-2300 m)
36	Asteraceae	<i>Eclipta prostrata</i> (L.) L.		W, C & E (70-1800 m)
37	Asteraceae	<i>Elephantopus scaber</i> L.		W, C & E (70-1500 m)
38	Asteraceae	<i>Emilia sonchifolia</i> (L.) DC.		W, C & E (70-1700 m)
39	Asteraceae	<i>Pluchea paniculata</i> (Willd.) Karthik. & Moorthy		C & E (70-1100 m)
40	Asteraceae	<i>Pseudognaphalium affine</i> (D.Don) Anderb.		W, C & E (70-3700 m)
41	Asteraceae	<i>Synedrella nodiflora</i> (L.) Gaertn.		C & E (70-2900 m)
42	Asteraceae	<i>Youngia japonica</i> (L.) DC.	Ban Mula	W, C & E (70-2900 m)
43	Begoniaceae	<i>Begonia ovatifolia</i> A.DC.	Magarkanchi	C & E (70-2600 m)
44	Begoniaceae	<i>Begonia roxburghii</i> (Miq.) A.DC.	Magarkanchi	E (70-600 m)
45	Campanulaceae	<i>Lobelia alsinoides</i> Lam.		W, C & E (70-1000 m)
46	Campanulaceae	<i>Lobelia zeylanica</i> L.		C & E (70-800 m)
47	Campanulaceae	<i>Wahlenbergia marginata</i> (Thunb.) A.DC.		W, C & E (70-1400 m)
48	Caryophyllaceae	<i>Drymaria diandra</i> Blume		W, C & E (70-3000 m)
49	Caryophyllaceae	<i>Stellaria wallichiana</i> Haines		E (70-150 m)
50	Cleomaceae	<i>Cleome viscosa</i> L.		W, C & E (70-2800 m)
51	Colchicaceae	<i>Gloriosa superba</i> L.		W, C & E (70-2200 m)
52	Commelinaceae	<i>Amisotolype hookeri</i> (Hassk.) H.Hara		E (70-1200 m)
53	Commelinaceae	<i>Commelina diffusa</i> Burm.f.	Kane Jhar	W, C & E (65-3500 m)
54	Commelinaceae	<i>Commelina paludosa</i> Blume		W, C & E (70-3500 m)
55	Commelinaceae	<i>Commelina suffruticosa</i> Blume		W, C & E (70-400 m)
56	Commelinaceae	<i>Cyanotis cristata</i> (L.) D.Don		W, C & E (70-2700 m)
57	Commelinaceae	<i>Floscopa scandens</i> Lour.		W, C & E (70-1800 m)

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58	Commelinaceae	<i>Murdannia japonica</i> (Thunb.) Faden		C & E (70-2100 m)
59	Commelinaceae	<i>Murdannia nudiflora</i> (L.) Brenan		W, C & E (70-2400 m)
60	Commelinaceae	<i>Murdannia vaginata</i> (L.) G.Brückn.		E (200 m)
61	Commelinaceae	<i>Pollia subumbellata</i> C.B.Clarke		E (70-1400 m)
62	Convolvulaceae	<i>Evolvulus nummularius</i> (L.) L.		C & E (65-1400 m)
63	Costaceae	<i>Hellenia speciosa</i> (J.Koenig) S.R.Dutta	Bet Lauri	W, C & E (70-2700 m)
64	Cyperaceae	<i>Bulbostylis barbata</i> (Rottb.) C.B.Clarke		W, C & E (70-1700 m)
65	Cyperaceae	<i>Carex stramentitia</i> Boott ex Boeckeler		C & E (70-2600 m)
66	Cyperaceae	<i>Cyperus brevifolius</i> (Rottb.) Hassk.		W, C & E (65-2500 m)
67	Cyperaceae	<i>Cyperus compactus</i> Retz.		W, C & E (70-300 m)
68	Cyperaceae	<i>Cyperus compressus</i> L.		W, C & E (70-2000 m)
69	Cyperaceae	<i>Cyperus cuspidatus</i> Kunth		W, C & E (70-2500 m)
70	Cyperaceae	<i>Cyperus cyperoides</i> (L.) Kuntze		W, C & E (70-2600 m)
71	Cyperaceae	<i>Cyperus difformis</i> L.		W, C & E (70-3000 m)
72	Cyperaceae	<i>Cyperus diffusus</i> Vahl		W, C & E (70-1600 m)
73	Cyperaceae	<i>Cyperus distans</i> L.f.		W, C & E (70-1500 m)
74	Cyperaceae	<i>Cyperus haspan</i> L.		C & E (70-1800 m)
75	Cyperaceae	<i>Cyperus iria</i> L.		W, C & E (70-2200 m)
76	Cyperaceae	<i>Cyperus microiria</i> Steud.		W & E (70-200 m)
77	Cyperaceae	<i>Cyperus mindorensis</i> (Steud.) Huygh		W, C & E (70-1300 m)
78	Cyperaceae	<i>Cyperus neochinensis</i> (Tang & F.T.Wang) Bauters		C & E (70-1400 m)
79	Cyperaceae	<i>Cyperus paniceus</i> (Rottb.) Boeckeler		C & E (70-1300 m)
80	Cyperaceae	<i>Cyperus pilosus</i> Vahl		W, C & E (65-1600 m)
81	Cyperaceae	<i>Cyperus pseudokyllingioides</i> Kük.		W, C & E (70-1900 m)
82	Cyperaceae	<i>Cyperus pulcherrimus</i> Willd. ex Kunth		W, C & E (70-182 m)
83	Cyperaceae	<i>Cyperus pumilus</i> L.		W, C & E (70-2300 m)
84	Cyperaceae	<i>Cyperus rotundus</i> L.		W, C & E (70-2400 m)
85	Cyperaceae	<i>Cyperus sanguinolentus</i> Vahl		W, C & E (70-3000 m)
86	Cyperaceae	<i>Eleocharis acutangula</i> (Roxb.) Schult.		C & E (70-100 m)

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87	Cyperaceae	<i>Eleocharis retroflexa</i> (Poir.) Urb. subsp. <i>chaetaria</i> (Roem. & Schult.) T.Koyama		C & E (70-700 m)
88	Cyperaceae	<i>Fimbristylis acuminata</i> Vahl		C & E (70-700 m)
89	Cyperaceae	<i>Fimbristylis aestivalis</i> (Retz.) Vahl		W, C & E (70-1600 m)
90	Cyperaceae	<i>Fimbristylis bisumbellata</i> (Forssk.) Bubani		W, C & E (70-1100 m)
91	Cyperaceae	<i>Fimbristylis dichotoma</i> (L.) Vahl subsp. <i>dichotoma</i>		W, C & E (70-3000 m)
92	Cyperaceae	<i>Fimbristylis dichotoma</i> (L.) Vahl subsp. <i>podocarpa</i> (Nees) T.Koyama		E (70-200 m)
93	Cyperaceae	<i>Fimbristylis littoralis</i> Gaudich.		W, C & E (70-1700 m)
94	Cyperaceae	<i>Fimbristylis schoenoides</i> (Retz.) Vahl		W, C & E (70-1800 m)
95	Cyperaceae	<i>Fimbristylis squarrosa</i> Vahl		W, C & E (70-1500 m)
96	Cyperaceae	<i>Fuirena ciliaris</i> (L.) Roxb.		C & E (70-200 m)
97	Cyperaceae	<i>Fuirena umbellata</i> Rottb.		E (70-150 m)
98	Cyperaceae	<i>Schoenoplectiella juncooides</i> (Roxb.) Lye		W, C & E (70-2700 m)
99	Cyperaceae	<i>Scleria levis</i> Retz.	Karaute	W, C & E (70-1900 m)
100	Cyperaceae	<i>Scleria parvula</i> Steud.		C & E (70-1700 m)
101	Eriocaulaceae	<i>Eriocaulon</i> sp. 1		
102	Eriocaulaceae	<i>Eriocaulon</i> sp. 2		
103	Euphorbiaceae	<i>Euphorbia hirta</i> L.		W, C & E (70-1500 m)
104	Euphorbiaceae	<i>Euphorbia thymifolia</i> L.		C & E (70-1500 m)
105	Fabaceae	<i>Grona heterophylla</i> (Willd.) H.Ohashi & K.Ohashi		E (70-300 m)
106	Fabaceae	<i>Grona triflora</i> (L.) H.Ohashi & K.Ohashi		W, C & E (70-2300 m)
107	Fabaceae	<i>Senna tora</i> (L.) Roxb.		W, C & E (70-1500 m)
108	Fabaceae	<i>Stylosanthes guianensis</i> (Aubl.) Sw.		E (70 m)
109	Gentianaceae	<i>Canscora alata</i> (Roth) Wall.		W, C & E (70-2300 m)
110	Hydrocharitaceae	<i>Ottelia alismoides</i> (L.) Pers.		W, C & E (70-400 m)
111	Hydroleaceae	<i>Hydrolea zeylanica</i> (L.) Vahl		W, C & E (70-1300 m)
112	Hypericaceae	<i>Hypericum japonicum</i> Thunb.		W, C & E (70-2600 m)
113	Hypoxidaceae	<i>Curculigo capitulata</i> (Lour.) Kuntze		W, C & E (70-2100 m)
114	Hypoxidaceae	<i>Curculigo orchiooides</i> Gaertn.		W, C & E (70-1700 m)

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115	Lamiaceae	<i>Anisomeles indica</i> (L.) Kuntze		W, C & E (70-2400 m)
116	Lamiaceae	<i>Leucas zeylanica</i> (L.) W.T.Aiton		C & E (70-2400 m)
117	Lamiaceae	<i>Mesosphaerum suaveolens</i> (L.) Kuntze		W, C & E (70-1700 m)
118	Lamiaceae	<i>Platostoma hispidum</i> (L.) A.J.Paton		W, C & E (70-1100 m)
119	Lamiaceae	<i>Pogostemon auricularius</i> (L.) Hassk.		C & E (70-1300 m)
120	Linderniaceae	<i>Bonnaya antipoda</i> (L.) Druce		W, C & E (70-2300 m)
121	Linderniaceae	<i>Bonnaya ciliata</i> (Colsm.) Spreng.		W, C & E (65-2100 m)
122	Linderniaceae	<i>Bonnaya oppositifolia</i> (Retz.) Spreng.		W & E (70-1400 m)
123	Linderniaceae	<i>Lindernia parviflora</i> (Roxb.) Haines		W, C & E (70-2400 m)
124	Linderniaceae	<i>Lindernia procumbens</i> (Krock.) Philcox		W, C & E (70-2500 m)
125	Linderniaceae	<i>Lindernia rotundifolia</i> (L.) Alston		E (70 m)
126	Linderniaceae	<i>Picria fel-terrae</i> Lour.		E (70-100 m)
127	Linderniaceae	<i>Torenia anagallis</i> (Burm.f.) Wannan, W.R.Barker & Y.S.Liang		W, C & E (70-1400 m)
128	Linderniaceae	<i>Torenia crustacea</i> (L.) Cham. & Schltld.		W, C & E (65-2400 m)
129	Linderniaceae	<i>Yamazakia pusilla</i> (Willd.) W.R.Barker, Y.S.Liang & Wannan		C & E (70-1500 m)
130	Linderniaceae	<i>Yamazakia viscosa</i> (Hornem.) W.R.Barker, Y.S.Liang & Wannan		C & E (70-900 m)
131	Loganiaceae	<i>Mitreola petiolata</i> (J.F.Gmel.) Torr. & A.Gray		W, C & E (70-1000 m)
132	Lythraceae	<i>Rotala rotundifolia</i> (Buch.-Ham. ex Roxb.) Koehne		W, C & E (70-2200 m)
133	Malvaceae	<i>Abelmoschus manihot</i> (L.) Medik.		W, C & E (70-2600 m)
134	Malvaceae	<i>Triumfetta rhomboidea</i> Jacq.		W, C & E (70-2000 m)
135	Marantaceae	<i>Stachyphrynium placentarium</i> (Lour.) Clausager & Borchs.	Paasang	E (70-1500 m)
136	Mazaceae	<i>Mazus pumilus</i> (Burm.f.) Steenis		W, C & E (70-3800 m)
137	Molluginaceae	<i>Glinus oppositifolius</i> (L.) Aug.DC.		E (70-200 m)
138	Molluginaceae	<i>Trigastrotheca stricta</i> (L.) Thulin		W, C & E (70-700 m)

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139	Onagraceae	<i>Ludwigia hyssopifolia</i> (G.Don) Exell		W, C & E (70-2900 m)
140	Onagraceae	<i>Ludwigia octovalvis</i> (Jacq.) P.H.Raven		W, C & E (70-2300 m)
141	Onagraceae	<i>Ludwigia prostrata</i> Roxb.		W, C & E (70-800 m)
142	Orchidaceae	<i>Acampe praemorsa</i> (Roxb.) Blatt. & McCann		C & E (70-1500 m)
143	Orchidaceae	<i>Aerides multiflora</i> Roxb.		W, C & E (70-1400 m)
144	Orchidaceae	<i>Aerides odorata</i> Lour.		W, C & E (70-1500 m)
145	Orchidaceae	<i>Bulbophyllum careyanum</i> (Hook.) Spreng.		C & E (70-2100 m)
146	Orchidaceae	<i>Cymbidium aloifolium</i> (L.) Sw.		W, C & E (70-1600 m)
147	Orchidaceae	<i>Dendrobium aphyllum</i> (Roxb.) C.E.C.Fisch		C & E (70-1500 m)
148	Orchidaceae	<i>Eulophia picta</i> (R.Br.) Ormerod		C & E (70-1400 m)
149	Orchidaceae	<i>Gastrochilus</i> sp.		
150	Orchidaceae	<i>Nervilia</i> sp.		
151	Orchidaceae	<i>Peristylus</i> sp.		
152	Orchidaceae	<i>Rhynchostylis retusa</i> (L.) Blume		W, C & E (70-1800 m)
153	Orchidaceae	<i>Tropidia curculigoides</i> Lindl.		C & E (70-1100 m)
154	Orchidaceae	<i>Zeuxine affinis</i> (Lindl.) Benth. ex Hook.f.		C & E (70-2200 m)
155	Orobanchaceae	<i>Striga asiatica</i> (L.) Kuntze		C & E (70-1900 m)
156	Oxalidaceae	<i>Biophytum sensitivum</i> (L.) DC.		W, C & E (70-1200 m)
157	Oxalidaceae	<i>Oxalis corniculata</i> L.	Chari Amilo	W, C & E (70-2900 m)
158	Papaveraceae	<i>Argemone mexicana</i> L.		W, C & E (65-1500)
159	Phyllanthaceae	<i>Phyllanthus urinaria</i> L.		W, C & E (70-2500 m)
160	Phyllanthaceae	<i>Phyllanthus virgatus</i> G.Forst.		C & E (70-1400 m)
161	Plantaginaceae	<i>Limnophila aromatica</i> (Lam.) Merr.		E (70-80 m)
162	Plantaginaceae	<i>Limnophila repens</i> (Benth.) Benth.		C & E (70-500 m)
163	Plantaginaceae	<i>Limnophila rugosa</i> (Roth) Merr.		C & E (70-1200 m)
164	Plantaginaceae	<i>Limnophila sessiliflora</i> (Vahl) Blume		C & E (70-600 m)
165	Plantaginaceae	<i>Mecardonia procumbens</i> (Mill.) Small		C & E (70-1300 m)
166	Plantaginaceae	<i>Scoparia dulcis</i> L.	Chini Jhar	W, C & E (70-1800 m)
167	Poaceae	<i>Acroceras munroanum</i> (Balansa) Henrard		E (70-91 m)

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168	Poaceae	<i>Arundinella bengalensis</i> (Spreng.) Druce		W, C & E (70-1600 m)
169	Poaceae	<i>Axonopus compressus</i> (Sw.) P.Beauv.		C & E (70-2000 m)
170	Poaceae	<i>Bothriochloa bladhii</i> (Retz.) S.T.Blake		W, C & E (70-2600 m)
171	Poaceae	<i>Capillipedium assimile</i> (Steud.) A.Camus		W, C & E (70-2200 m)
172	Poaceae	<i>Centotheca lappacea</i> (L.) Desv.		C & E (70-600 m)
173	Poaceae	<i>Chrysopogon aciculatus</i> (Retz.) Trin.		W, C & E (70-1800 m)
174	Poaceae	<i>Chrysopogon zizanioides</i> (L.) Roberty		W, C & E (70-1400 m)
175	Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	Dubo	W, C & E (70-3000 m)
176	Poaceae	<i>Cynodon radiatus</i> Roth		W, C & E (70-1600 m)
177	Poaceae	<i>Cyrtococcum oxyphyllum</i> Stapf		E (70-106 m)
178	Poaceae	<i>Dactyloctenium aegyptium</i> (L.) Willd.		W, C & E (70-1600 m)
179	Poaceae	<i>Desmostachya bipinnata</i> (L.) Stapf	Kush	W, C & E (70-700 m)
180	Poaceae	<i>Digitaria ciliaris</i> (Retz.) Koeler		W, C & E (70-2500 m)
181	Poaceae	<i>Digitaria violascens</i> Link		W, C & E (70-2500 m)
182	Poaceae	<i>Echinochloa crus-galli</i> (L.) P.Beauv.		W, C & E (70-2600 m)
183	Poaceae	<i>Eleusine indica</i> (L.) Gaertn.		W, C & E (70-2600 m)
184	Poaceae	<i>Eragrostis amabilis</i> (L.) Wight & Arn.		W, C & E (70-1500 m)
185	Poaceae	<i>Eragrostis atrovirens</i> (Desf.) Trin. ex Steud.		W, C & E (70-2000 m)
186	Poaceae	<i>Eragrostis coarctata</i> Stapf		C & E (70-600 m)
187	Poaceae	<i>Eragrostis unioides</i> (Retz.) Nees ex Steud.		W, C & E (70-2200 m)
188	Poaceae	<i>Eulalia leschenaultiana</i> (Decne.) Ohwi		C & E (70-700 m)
189	Poaceae	<i>Hygroryza aristata</i> (Retz.) Nees ex Wight & Arn.		C & E (70-200 m)
190	Poaceae	<i>Hymenachne aurita</i> (J. Presl ex Nees) Balansa		E (70-95 m)
191	Poaceae	<i>Imperata cylindrica</i> (L.) P.Beauv.	Siru	W, C & E (70-2400 m)
192	Poaceae	<i>Isachne globosa</i> (Thunb.) Kuntze		C & E (70-1500 m)
193	Poaceae	<i>Ischaemum timorense</i> Kunth		E (70-86 m)

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194	Poaceae	<i>Leersia hexandra</i> Sw.		W, C & E (70-1600 m)
195	Poaceae	<i>Microstegium fasciculatum</i> (L.) Henrard	Chitre Bansa	W, C & E (70-2100 m)
196	Poaceae	<i>Narenga porphyrocoma</i> (Hance) Bor		W, C & E (65-700 m)
197	Poaceae	<i>Oplismenus compositus</i> (L.) P.Beauv.		W, C & E (70-2800 m)
198	Poaceae	<i>Oryza meyeriana</i> (Zoll. & Moritzi) Baill.	Jungali Dhan	C & E (70-800 m)
199	Poaceae	<i>Panicum dichotomiflorum</i> Michx.		W, C & E (70-1200 m)
200	Poaceae	<i>Panicum humile</i> Steud.		C & E (70-1300 m)
201	Poaceae	<i>Panicum notatum</i> Retz.		C & E (70-1800 m)
202	Poaceae	<i>Paspalidium flavidum</i> (Retz.) A.Camus		W, C & E (70-1700 m)
203	Poaceae	<i>Paspalum conjugatum</i> P.J.Bergius		C & E (70-1000 m)
204	Poaceae	<i>Paspalum scrobiculatum</i> L.		W, C & E (65-2500 m)
205	Poaceae	<i>Phragmites karka</i> (Retz.) Trin. ex Steud.		W, C & E (70-2800 m)
206	Poaceae	<i>Pogonatherum crinitum</i> (Thunb.) Kunth		W, C & E (70-2800 m)
207	Poaceae	<i>Pogonatherum paniceum</i> (Lam.) Hack.		W, C & E (70-2600 m)
208	Poaceae	<i>Saccharum spontaneum</i> L.	Kans	W, C & E (70-2100 m)
209	Poaceae	<i>Sacciolepis indica</i> (L.) Chase		W, C & E (70-2600 m)
210	Poaceae	<i>Sacciolepis myosuroides</i> (R.Br.) Chase ex E.G.Camus & A.Camus		C & E (70-2100 m)
211	Poaceae	<i>Setaria palmifolia</i> (J.Koenig) Stapf		W, C & E (70-2800 m)
212	Poaceae	<i>Setaria pumila</i> (Poir.) Roem. & Schult.		W, C & E (70-2500 m)
213	Poaceae	<i>Sporobolus diandrus</i> (Retz.) P.Beauv.		W, C & E (65-2100 m)
214	Poaceae	<i>Thysanolaena latifolia</i> (Roxb. ex Hornem.) Honda	Amriso	W, C & E (70-2100 m)
215	Poaceae	<i>Urochloa distachyos</i> (L.) T.Q.Nguyen		W, C & E (70-1200 m)
216	Poaceae	<i>Urochloa kurzii</i> (Hook.f.) T.Q.Nguyen		C & E (70-1600 m)
217	Polygonaceae	<i>Persicaria barbata</i> (L.) H.Hara		W, C & E (65-1100 m)
218	Polygonaceae	<i>Persicaria chinensis</i> (L.) H.Gross		W, C & E (70-2700 m)
219	Polygonaceae	<i>Persicaria hydropiper</i> (L.) Delarbre		W, C & E (70-2300 m)

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220	Polygonaceae	<i>Persicaria maculosa</i> Gray		C & E (70-500 m)
221	Polygonaceae	<i>Persicaria minor</i> (Huds.) Opiz		W, C & E (70-2000 m)
222	Polygonaceae	<i>Persicaria pubescens</i> (Blume) H.Hara		W, C & E (70-2100 m)
223	Polygonaceae	<i>Persicaria strigosa</i> (R.Br.) H.Gross		C & E (70-2000 m)
224	Pontederiaceae	<i>Pontederia crassipes</i> Mart.	Jal Kumbhi	C & E (65-1500 m)
225	Pontederiaceae	<i>Pontederia hastata</i> L.		W, C & E (70-300 m)
226	Pontederiaceae	<i>Pontederia vaginalis</i> Burm.f.		W, C & E (70-2800 m)
227	Rubiaceae	<i>Debia ovatifolia</i> (Cav.) Neupane & N.Wikstr.		C & E (70-1200 m)
228	Rubiaceae	<i>Exallage ulmifolia</i> (Wall.) Bremek.		W, C & E (70-1800 m)
229	Rubiaceae	<i>Knoxia sumatrensis</i> (Retz.) DC.		W, C & E (70-1200 m)
230	Rubiaceae	<i>Mitracarpus hirtus</i> (L.) DC.		C & E (70-500 m)
231	Rubiaceae	<i>Ophiorrhiza rugosa</i> Wall.		W, C & E (70-2600 m)
232	Rubiaceae	<i>Scleromitron brachypodum</i> (DC.) T.C.Hsu		C & E (70 m)
233	Rubiaceae	<i>Scleromitron verticillatum</i> (L.) R.J.Wang		C & E (70-1800 m)
234	Rubiaceae	<i>Spermacoce alata</i> Aubl.	Aalu Pate	W, C & E (70-2500 m)
235	Rubiaceae	<i>Spermacoce exilis</i> (L.O.Williams) C.D.Adams ex W.C.Burger & C.M.Taylor		C & E (70-2100 m)
236	Solanaceae	<i>Physalis angulata</i> L.		W, C & E (70-1700 m)
237	Solanaceae	<i>Solanum nigrum</i> L.	Kali Gedi	W, C & E (70-2900 m)
238	Urticaceae	<i>Boehmeria clidemioides</i> Miq.		C & E (70-2700 m)
239	Urticaceae	<i>Pouzolzia zeylanica</i> (L.) Benn.		W, C & E (70-2400 m)
240	Zingiberaceae	<i>Alpinia roxburghii</i> Sweet		E (70-400 m)
241	Zingiberaceae	<i>Boesenbergia hamiltonii</i> Mood, S.Dey & L.M.Prince		E (70-1900 m)
242	Zingiberaceae	<i>Curcuma aromatica</i> Salisb.		W, C & E (70-2000 m)
243	Zingiberaceae	<i>Etingera linguiformis</i> (Roxb.) R.M.Sm.	Kanchi Madhu	E (70-150 m)
244	Zingiberaceae	<i>Globba clarkei</i> Baker		C & E (70-2300 m)
245	Zingiberaceae	<i>Hedychium thyrsoforme</i> Sm.		C & E (70-1600 m)
246	Zingiberaceae	<i>Zingiber chrysanthum</i> Roscoe		C & E (70-1600 m)
247	Zingiberaceae	<i>Zingiber ligulatum</i> Roxb.		E (70 m)
248	Zingiberaceae	<i>Zingiber rubens</i> Roxb.		E (70 m)

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Herbaceous climbers				
249	Araceae	<i>Scindapsus officinalis</i> (Roxb.) Schott	Kanchirno	W, C & E (70-1300 m)
250	Asparagaceae	<i>Asparagus racemosus</i> Willd.	Kurilo	W, C & E (70-3000 m)
251	Asteraceae	<i>Mikania micrantha</i> Kunth	Pyangri Lahara	W, C & E (70-1200 m)
252	Convolvulaceae	<i>Argyrea argentea</i> (Roxb.) Sweet		W & E (70-2400 m)
253	Convolvulaceae	<i>Camonea umbellata</i> (L.) A.R.Simões & Staples		C & E (70-500 m)
254	Convolvulaceae	<i>Camonea vitifolia</i> (Burm.f.) A.R.Simões & Staples		C & E (70-500 m)
255	Convolvulaceae	<i>Cuscuta reflexa</i> Roxb.	Aakashe Beli, Paheli Lahara	W, C & E (70-3400 m)
256	Convolvulaceae	<i>Merremia hederacea</i> (Burm.f.) Hallier f.		E (65-200 m)
257	Convolvulaceae	<i>Merremia hirta</i> (L.) Merr.		C & E (70-500 m)
258	Cucurbitaceae	<i>Cucumis maderaspatanus</i> L.		W, C & E (70-1600 m)
259	Cucurbitaceae	<i>Luffa aegyptiaca</i> Mill.	Banghiraula	E (70-1700 m)
260	Cucurbitaceae	<i>Solena heterophylla</i> Lour.		W, C & E (70-3200 m)
261	Cucurbitaceae	<i>Trichosanthes wallichiana</i> (Ser.) Wight		W, C & E (70-2700 m)
262	Cucurbitaceae	<i>Zehneria maysorensis</i> (Wight & Arn.) Arn.		C & E (70-2400 m)
263	Dioscoreaceae	<i>Dioscorea belophylla</i> (Prain) Voigt ex Haines		W, C & E (70-2400 m)
264	Dioscoreaceae	<i>Dioscorea bulbifera</i> L.	Gittha Tarul	W, C & E (70-2600 m)
265	Dioscoreaceae	<i>Dioscorea deltoidea</i> Wall. ex Griseb.		W, C & E (70-3900 m)
266	Dioscoreaceae	<i>Dioscorea hamiltonii</i> Hook.f.	Ban Tarul	W, C & E (70-2400 m)
267	Dioscoreaceae	<i>Dioscorea kamoonsensis</i> Kunth		W, C & E (70-2200 m)
268	Dioscoreaceae	<i>Dioscorea pentaphylla</i> L.	Bhyakur Tarul	W, C & E (70-2700 m)
269	Dioscoreaceae	<i>Dioscorea prazeri</i> Prain & Burkill		W, C & E (70-1600 m)
270	Dioscoreaceae	<i>Dioscorea pubera</i> Blume		W, C & E (70-1000 m)
271	Fabaceae	<i>Cajanus crassus</i> (Prain ex King) Maesen		W, C & E (70-1000 m)
272	Fabaceae	<i>Dysolobium pilosum</i> (J.G.Klein ex Willd.) Maréchal		E (70-500 m)
273	Fabaceae	<i>Neustanthus phaseoloides</i> (Roxb.) Benth.		C & E (70-1900 m)
274	Menispermaceae	<i>Stephania japonica</i> (Thunb.) Miers		C & E (70-2600 m)

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Shurbs				
275	Acanthaceae	<i>Phlogacanthus thyrsoformis</i> (Roxb. ex Hardw.) Mabb.	Tite, Chuwa, Chokmari	W, C & E (70-1400 m)
276	Acanthaceae	<i>Strobilanthes capitata</i> (Nees) T.Anderson		W, C & E (70-2400 m)
277	Apocynaceae	<i>Calotropis acia</i> Buch.-Ham.	Aank	E (70-300 m)
278	Apocynaceae	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Chand Maruwa	W, C & E (70-900 m)
279	Arecaceae	<i>Pinanga gracilis</i> Blume		E (70-500 m)
280	Arecaceae	<i>Wallichia oblongifolia</i> Griff.	Khareto	W, C & E (70-1400 m)
281	Elaeagnaceae	<i>Elaeagnus</i> sp.		
282	Euphorbiaceae	<i>Baliospermum solanifolium</i> (Burm.) Suresh	Patpate, Dudhe	W, C & E (70-1000 m)
283	Fabaceae	<i>Codariocalyx motorius</i> (Houtt.) H.Ohashi		W, C & E (70-2400 m)
284	Fabaceae	<i>Dendrolobium triangulare</i> (Retz.) Schindl.		C & E (70-300 m)
285	Fabaceae	<i>Flemingia macrophylla</i> (Willd.) Kuntze ex Merr.		W, C & E (70-1700 m)
286	Fabaceae	<i>Flemingia paniculata</i> Wall. ex Benth.		E (70-200 m)
287	Fabaceae	<i>Flemingia strobilifera</i> (L.) W.T.Aiton		W, C & E (70-2300 m)
288	Fabaceae	<i>Grona heterocarpos</i> (L.) H.Ohashi & K.Ohashi		W, C & E (70-2000 m)
289	Fabaceae	<i>Mimosa himalayana</i> Gamble	Arari/ Areli Kanda	W, C & E (70-1900 m)
290	Fabaceae	<i>Phyllodium pulchellum</i> (L.) Desv.		W, C & E (70-500 m)
291	Fabaceae	<i>Senna alata</i> (L.) Roxb.	Daaj Patte	C & E (70-300 m)
292	Fabaceae	<i>Sohmaea laxiflora</i> (DC.) H.Ohashi & K.Ohashi		W, C & E (70-2800 m)
293	Fabaceae	<i>Uraria rufescens</i> (DC.) Schindl.		W, C & E (70-1000 m)
294	Gesneriaceae	<i>Rhynchotechum ellipticum</i> (Wall. ex D.Dietr.) A.DC.		C & E (70-1000 m)
295	Lamiaceae	<i>Callicarpa longifolia</i> Lam.		E (70 m)
296	Lamiaceae	<i>Callicarpa macrophylla</i> Vahl		W, C & E (70-1500 m)
297	Lamiaceae	<i>Clerodendrum indicum</i> (L.) Kuntze		W, C & E (70-1400 m)
298	Lamiaceae	<i>Clerodendrum infortunatum</i> L.	Bhate	W, C & E (70-1500 m)
299	Lamiaceae	<i>Clerodendrum japonicum</i> (Thunb.) Sweet	Bhate	C & E (70-1600 m)

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300	Lamiaceae	<i>Pogostemon benghalensis</i> (Burm.f.) Kuntze	Rhudilo	W, C & E (70-1300 m)
301	Lamiaceae	<i>Premna</i> sp.	Gineri	
302	Lamiaceae	<i>Rothea serrata</i> (L.) Steane & Mabb.		W, C & E (70-1800 m)
303	Loranthaceae	<i>Dendrophthoe falcata</i> (L.f.) Ettingsh.	Sigane	W, C & E (70-2000 m)
304	Malvaceae	<i>Abutilon persicum</i> (Burm.f.) Merr.		C & E (70-800 m)
305	Malvaceae	<i>Azanza lampas</i> (Cav.) Alef.	Ban Kapas	W, C & E (70-2100 m)
306	Malvaceae	<i>Grewia hirsuta</i> Vahl		C & E (70-300 m)
307	Malvaceae	<i>Grewia serrulata</i> DC.		W & E (70-1000 m)
308	Melastomataceae	<i>Melastoma malabathricum</i> L.	Kali Angeri	C & E (70-1900 m)
309	Melastomataceae	<i>Osbeckia nepalensis</i> Hook.		C & E (70-2400 m)
310	Pandanaceae	<i>Pandanus odorifer</i> (Forssk.) Kuntze	Hatti Daar	C & E (70-100 m)
311	Phyllanthaceae	<i>Breynia vitis-idaea</i> (Burm.f.) C.E.C.Fisch.		W, C & E (70-1800 m)
312	Phyllanthaceae	<i>Glochidion multiloculare</i> (Roxb. ex Willd.) Voigt		C & E (70-500 m)
313	Phyllanthaceae	<i>Phyllanthus leschenaultii</i> Müll.Arg.		C & E (70-600 m)
314	Phyllanthaceae	<i>Phyllanthus reticulatus</i> Poir.		C & E (70-900 m)
315	Phyllanthaceae	<i>Phyllanthus sikkimensis</i> Müll.Arg.		C & E (70-1700 m)
316	Primulaceae	<i>Ardisia solanacea</i> Roxb.	Damai Fal	W, C & E (70-1300 m)
317	Primulaceae	<i>Maesa indica</i> (Roxb.) Sweet		C & E (70-1700 m)
318	Rubiaceae	<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	Maidale Kanda	W, C & E (70-1400 m)
319	Rubiaceae	<i>Coffea benghalensis</i> B.Heyne ex Roth		W, C & E (70-1300 m)
320	Rubiaceae	<i>Hyptianthera stricta</i> (Roxb. ex Schult.) Wight & Arn.		C & E (70-1500 m)
321	Rubiaceae	<i>Meyna pubescens</i> (Kurz) Robyns		W & E (70-800 m)
322	Rubiaceae	<i>Meyna spinosa</i> Roxb. ex Link		E (70-1500 m)
323	Rubiaceae	<i>Mussaenda roxburghii</i> Hook.f.		C & E (70-2100 m)
324	Rubiaceae	<i>Mussaenda</i> sp.		
325	Rutaceae	<i>Clausena excavata</i> Burm.f.		W, C & E (70-1100 m)
326	Rutaceae	<i>Clausena kanpurensis</i> Molino		W, C & E (70-1000 m)
327	Solanaceae	<i>Solanum torvum</i> Sw.	Bihi	W, C & E (70-3000 m)
328	Solanaceae	<i>Solanum violaceum</i> Ortega		W, C & E (70-1600 m)

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329	Verbenaceae	<i>Lantana camara</i> L.	Kande Banmara	W, C & E (70-1800 m)
330	Vitaceae	<i>Leea aequata</i> L.	Galeni	W, C & E (70-1000 m)
331	Vitaceae	<i>Leea alata</i> Edgew.	Galeni	C & E (70-1200 m)
332	Vitaceae	<i>Leea asiatica</i> (L.) Ridsdale	Galeni	W, C & E (70-1500 m)
333	Vitaceae	<i>Leea guineensis</i> G.Don	Galeni	W, C & E (70-1300 m)
334	Vitaceae	<i>Leea indica</i> (Burm.f.) Merr.	Galeni	W, C & E (70-1400 m)
335	Vitaceae	<i>Leea macrophylla</i> Roxb. ex Hornem.	Galeni	W, C & E (70-1700 m)
Subshrubs				
336	Acanthaceae	<i>Barleria cristata</i> L.		W, C & E (70-2300 m)
337	Acanthaceae	<i>Barleria strigosa</i> Willd.		W, C & E (70-700 m)
338	Acanthaceae	<i>Echinacanthus attenuatus</i> Nees		W, C & E (70-1700 m)
339	Acanthaceae	<i>Eranthemum pulchellum</i> Andrews	Aankhle	W, C & E (70-1700 m)
340	Acanthaceae	<i>Pseuderanthemum latifolium</i> (Vahl) B.Hansen		E (70-500 m)
341	Fabaceae	<i>Aeschynomene indica</i> L.		W, C & E (70-1600 m)
342	Fabaceae	<i>Crotalaria alata</i> Buch.-Ham. ex D.Don		W, C & E (70-1900 m)
343	Fabaceae	<i>Crotalaria pallida</i> Aiton		W, C & E (65-1800 m)
344	Fabaceae	<i>Mimosa diplotricha</i> C.Wright var. <i>diplotricha</i>	Ulte Kanda	E (70-200 m)
345	Fabaceae	<i>Mimosa pudica</i> L.	Lajje Jhar	W, C & E (70-1800 m)
346	Fabaceae	<i>Pleurolobus gangeticus</i> (L.) J.St.-Hil.		W, C & E (70-1200 m)
347	Fabaceae	<i>Tadehagi pseudotriquetrum</i> (DC.) H.Ohashi		W, C & E (70-2000 m)
348	Lamiaceae	<i>Gomphostemma ovatum</i> Wall. ex Benth.		C & E (70-900 m)
349	Malvaceae	<i>Melochia corchorifolia</i> L.		W, C & E (70-800 m)
350	Malvaceae	<i>Sida acuta</i> Burm.f.		W, C & E (70-2700 m)
351	Malvaceae	<i>Sida mysorensis</i> Wight & Arn.		E (70-2000 m)
352	Malvaceae	<i>Sida rhombifolia</i> L.		W, C & E (70-2200 m)
353	Malvaceae	<i>Urena lobata</i> L.	Bhede Kuro	W, C & E (70-2000 m)
354	Solanaceae	<i>Solanum aculeatissimum</i> Jacq.		W, C & E (65-2500 m)
Trees				
355	Achariaceae	<i>Gynocardia odorata</i> R.Br.	Gante	E (70-500 m)
356	Actinidiaceae	<i>Saurauia roxburghii</i> Wall.	Goganpate	E (70-1000 m)

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357	Anacardiaceae	<i>Lannea coromandelica</i> (Houtt.) Merr.	Hallunde, Singane, Jhyangraa	W, C & E (70-1400 m)
358	Anacardiaceae	<i>Mangifera indica</i> L.	Jungali Aanp	W, C & E (70-700 m)
359	Anacardiaceae	<i>Semecarpus anacardium</i> L.f.	Bhalayo	W, C & E (70-1200 m)
360	Anacardiaceae	<i>Spondias pinnata</i> (L.f.) Kurz	Amaro	W, C & E (70-1400 m)
361	Annonaceae	<i>Alphonsea ventricosa</i> (Roxb.) Hook.f. & Thomson	Dhendujhulla, Thekifal, Kathkera	C & E (70-200 m)
362	Annonaceae	<i>Miliusa dioeca</i> (Roxb.) Chaowasku & Kessler		E (70-400 m)
363	Annonaceae	<i>Miliusa velutina</i> (DC.) Hook.f. & Thomson	Kalikath	W, C & E (70-500 m)
364	Annonaceae	Unidentified sp.	Bhate, Lapchekath	
365	Apocynaceae	<i>Alstonia scholaris</i> (L.) R.Br.	Chhatiwan	W, C & E (70-1000 m)
366	Apocynaceae	<i>Holarrhena pubescens</i> Wall. ex G.Don	Dudhe khirro, Madheshi Khirro	W, C & E (70-2000 m)
367	Apocynaceae	<i>Wrightia arborea</i> (Dennst.) Mabb.	Raanikhirro	W, C & E (70-1000 m)
368	Aquifoliaceae	<i>Ilex godajam</i> Colebr. ex Hook.f.	Setikath, Kharane	C & E (70-600 m)
369	Araliaceae	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Chuletro	C & E (70-2500 m)
370	Arecaceae	<i>Phoenix loureiroi</i> Kunth var. <i>pedunculata</i> (Griff.) Govaerts	Khajuri, Sano Thakal	W, C & E (70-1500 m)
371	Bignoniaceae	<i>Oroxylum indicum</i> (L.) Kurz	Tatelo	W, C & E (70-1400 m)
372	Bignoniaceae	<i>Stereospermum chelonoides</i> (L.f.) DC.	Jhuse Padari	W, C & E (100-1000 m)
373	Bignoniaceae	<i>Stereospermum colais</i> (Buch.-Ham. ex Dillwyn) Mabb.	Padari	C & E (70-1100 m)
374	Burseraceae	<i>Canarium strictum</i> Roxb.	Gokul	E (70-200 m)
375	Burseraceae	<i>Garuga pinnata</i> Roxb.	Dabdabe	W, C & E (70-1200 m)
376	Cannabaceae	<i>Trema orientale</i> (L.) Blume	Kunyel	E (70-1200 m)
377	Celastraceae	<i>Cassine grossa</i> (Wall.) Kosterm.	Putalikath, Setikath	W, C & E (70-1600 m)
378	Celastraceae	<i>Siphonodon celastrineus</i> Griff.	Raanibel	C & E (70-250 m)
379	Centroplacaceae	<i>Bhesa robusta</i> (Roxb.) Ding Hou	Aampate	E (70-400 m)
380	Clusiaceae	<i>Garcinia cowa</i> Roxb. ex Choisy	Bansuntala	C & E (70-600 m)

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381	Clusiaceae	<i>Garcinia xanthochymus</i> Hook.f. ex T.Anderson	Chunyal	E (70-500 m)
382	Combretaceae	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Barro	W, C & E (70-1100 m)
383	Combretaceae	<i>Terminalia chebula</i> Retz.	Harro	W, C & E (70-1500 m)
384	Combretaceae	<i>Terminalia elliptica</i> Willd.	Saj, Asna	W, C & E (70-2000 m)
385	Cordiaceae	<i>Cordia dichotoma</i> G.Forst.	Bohori	W, C & E (70-1600 m)
386	Cordiaceae	<i>Cordia grandis</i> Roxb.	Seto Bohori	C & E (70-1000 m)
387	Cornaceae	<i>Alangium chinense</i> (Lour.) Harms	Kapaspate, Bhalupaile	W, C & E (70-2400 m)
388	Cornaceae	<i>Alangium salviifolium</i> (L.f.) Wangerin	Asare, Okal	C & E (70-400 m)
389	Cycadaceae	<i>Cycas pectinata</i> Buch.-Ham.	Thakal, Kalwal	C & E (70-700 m)
390	Dilleniaceae	<i>Dillenia indica</i> L.	Autenga, Panchfal	C & E (70-300 m)
391	Dilleniaceae	<i>Dillenia pentagyna</i> Roxb.	Tantari	W, C & E (70-1500 m)
392	Dipterocarpaceae	<i>Shorea robusta</i> C.F.Gaertn.	Sal, Sakhuwa	W, C & E (70-1400 m)
393	Ebenaceae	<i>Diospyros montana</i> Roxb.	Panhele, Haade	W, C & E (70-1300 m)
394	Ehretiaceae	<i>Ehretia acuminata</i> R.Br.	Kalo Bohori	W, C & E (70-2200 m)
395	Ehretiaceae	<i>Ehretia aspera</i> Willd.	Datrung	W, C & E (70-1100 m)
396	Elaeocarpaceae	<i>Elaeocarpus tectorius</i> (Lour.) Poir.	Aule Rudraksha	E (70-700 m)
397	Euphorbiaceae	<i>Croton persimilis</i> Müll.Arg.	Aule	C & E (70-800 m)
398	Euphorbiaceae	<i>Macaranga denticulata</i> (Blume) Müll.Arg.	Malato	W, C & E (70-1400 m)
399	Euphorbiaceae	<i>Mallotus nudiflorus</i> (L.) Kulju & Welzen	Pithari, Bhellar, Gotil	W, C & E (70-1800 m)
400	Euphorbiaceae	<i>Mallotus philippensis</i> (Lam.) Müll.Arg.	Sindure, Rohini	W, C & E (70-1800 m)
401	Euphorbiaceae	<i>Mallotus roxburghianus</i> Müll.Arg.	Fusre Malato	C & E (70-1300 m)
402	Fabaceae	<i>Albizia chinensis</i> (Osbeck) Merr.	Kalo Shirish, Guhiye Shirish	W, C & E (70-2200 m)
403	Fabaceae	<i>Albizia lebbeck</i> (L.) Benth.	Taate Shirish	W, C & E (70-1000 m)
404	Fabaceae	<i>Albizia lucida</i> (Jacques) Benth.	Padke Shirish	W, C & E (70-1300 m)
405	Fabaceae	<i>Albizia odoratissima</i> (L.f.) Benth.	Khankar	C & E (70-1200 m)
406	Fabaceae	<i>Albizia procera</i> (Roxb.) Benth.	Seto Shirish	C & E (60-1100 m)

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407	Fabaceae	<i>Archidendron clypearia</i> (Jack) I.C.Nielsen	Rato Shirish	E (70-500 m)
408	Fabaceae	<i>Butea monosperma</i> (Lam.) Kuntze	Palans	W, C & E (70-1200 m)
409	Fabaceae	<i>Cassia fistula</i> L.	Rajbrikshya	W, C & E (70-1400 m)
410	Fabaceae	<i>Dalbergia latifolia</i> Roxb.	Satisal	W, C & E (70-1000 m)
411	Fabaceae	<i>Dalbergia sissoo</i> Roxb. ex DC.	Sisau	W, C & E (70-1400 m)
412	Fabaceae	<i>Erythrina stricta</i> Roxb.	Phaledo	W, C & E (70-1600 m)
413	Fabaceae	<i>Ougeinia oojeinensis</i> (Roxb.) Hochr.	Sandan	W, C & E (70-1500 m)
414	Fabaceae	<i>Piliostigma malabaricum</i> (Roxb.) Benth.	Amil Tanki , Chukilo Koiralo	W, C & E (70-1300 m)
415	Fabaceae	<i>Senegalia catechu</i> (L.f.) P.J.H.Hurter & Mabb.	Khayar	W, C & E (70-1400 m)
416	Fabaceae	<i>Senegalia rugata</i> (Lam.) Britton & Rose	Arkhu Kanda, Sikakai	W, C & E (70-900 m)
417	Fagaceae	<i>Castanopsis indica</i> (Roxb. ex Lindl.) A.DC.	Dhalne Katus	W, C & E (65-2900 m)
418	Fagaceae	<i>Castanopsis lanceifolia</i> (Oerst.) Hickel & A.Camus	Aule Katus	E (70-1000 m)
419	Juglandaceae	<i>Engelhardia spicata</i> Lechen ex Blume var. <i>spicata</i>	Mauwa	W, C & E (70-1900 m)
420	Lamiaceae	<i>Callicarpa arborea</i> Roxb.	Gunyelo	W, C & E (70-2000 m)
421	Lamiaceae	<i>Gmelina arborea</i> Roxb. ex Sm.	Khamari	W, C & E (70-1100 m)
422	Lamiaceae	<i>Vitex peduncularis</i> Wall.	Bhaadukath, Tin pate	E (70-1200 m)
423	Lamiaceae	<i>Vitex quinata</i> (Lour.) F.N.Williams	Panchpate, Chindeghans, Sirupghans	C & E (70-800 m)
424	Lauraceae	<i>Actinodaphne angustifolia</i> (Blume) Nees	Panchpate, Runche	C & E (70-1100 m)
425	Lauraceae	<i>Actinodaphne obovata</i> (Nees) Blume	Thulo Panchpate	C & E (70-1600 m)
426	Lauraceae	<i>Camphora tenuipilis</i> (Kosterm.) Y.Yang, Bing Liu & Zhi Yang	Malagiri	W, C & E (70-2500 m)
427	Lauraceae	<i>Litsea glutinosa</i> (Lour.) C.B.Rob.	Seto Kaulo	C & E (70-1700 m)
428	Lauraceae	<i>Litsea monopetala</i> (Roxb.) Pers.	Kutmero	W, C & E (70-2100 m)
429	Lauraceae	<i>Machilus macranthus</i> Nees var. <i>glaucescens</i> (Nees) Chakrab., Ghoshal, Anand Kumar & V.K.Rawat	Kathe Kaulo	C & E (70-2400 m)

S.N.	Habit/ Family	Botanical name	Local name	Distribution in Nepal*
430	Lauraceae	<i>Phoebe lanceolata</i> (Nees) Nees	Jhankrikath	W, C & E (70-2900 m)
431	Lecythydaceae	<i>Barringtonia acutangula</i> (L.) Gaertn.	Madane	W, C & E (70-900 m)
432	Lecythydaceae	<i>Careya arborea</i> Roxb.	Kumbhi	W, C & E (70-800 m)
433	Lythraceae	<i>Duabanga grandiflora</i> (Roxb. ex DC.) Walp.	Laampate, Paani Saj	W, C & E (70-2000 m)
434	Lythraceae	<i>Lagerstroemia parviflora</i> Roxb.	Bot Dhayenro, Asit	W, C & E (70-1200 m)
435	Magnoliaceae	<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Aule Chanp	C & E (70-1900 m)
436	Malvaceae	<i>Bombax ceiba</i> L.	Simal	W, C & E (70-1400 m)
437	Malvaceae	<i>Firmiana fulgens</i> (Wall. ex Mast.) K.Schum.	Firfire	W, C & E (70-1500 m)
438	Malvaceae	<i>Grewia eriocarpa</i> Juss.	Shyalfusre	C & E (70-1500 m)
439	Malvaceae	<i>Grewia multiflora</i> Juss.	Kharighans	W, C & E (100-1200 m)
440	Malvaceae	<i>Kydia calycina</i> Roxb.	Kubhinde, Chiple	W, C & E (70-900 m)
441	Malvaceae	<i>Pterospermum acerifolium</i> (L.) Willd.	Hattipaile	C & E (70-800 m)
442	Malvaceae	<i>Pterygota alata</i> (Roxb.) R.Br.	Bannewaro, Bepari	E (70-200 m)
443	Malvaceae	<i>Sterculia villosa</i> Roxb. ex Sm.	Odal	W, C & E (70-1100 m)
444	Melastomataceae	<i>Memecylon grande</i> Retz.	Buttेशami	E (70-450 m)
445	Meliaceae	<i>Aglaia spectabilis</i> (Miq.) S.S.Jain & S.Bennet	Laali	E (70-200 m)
446	Meliaceae	<i>Aphanamixis polystachya</i> (Wall.) R.Parker	Lasune	C & E (70-300 m)
447	Meliaceae	<i>Chukrasia tabularis</i> A.Juss.	Chakrasi	W, C & E (70-900 m)
448	Meliaceae	<i>Dysoxylum gotadhora</i> (Buch.-Ham.) Mabb.	Seto Lasune, Bandardim	C & E (70-1400 m)
449	Meliaceae	<i>Heynea trijuga</i> Roxb. ex Sims	Aankhi Taruwa	W, C & E (70-2400 m)
450	Meliaceae	<i>Toona ciliata</i> M.Roem.	Tuni	W, C & E (70-1700 m)
451	Moraceae	<i>Artocarpus chama</i> Buch.-Ham.	Latahar	E (70-200 m)
452	Moraceae	<i>Artocarpus lacucha</i> Buch.-Ham.	Badahar	W, C & E (70-2200 m)
453	Moraceae	<i>Ficus altissima</i> Blume	Labar	C & E (70-200 m)
454	Moraceae	<i>Ficus auriculata</i> Lour.	Nibharo	W, C & E (70-2000 m)
455	Moraceae	<i>Ficus benghalensis</i> L.	Bar	W, C & E (70-1500 m)

S.N.	Habit/ Family	Botanical name	Local name	Distribution in Nepal*
456	Moraceae	<i>Ficus benjamina</i> L.	Shami	W, C & E (70-1200 m)
457	Moraceae	<i>Ficus curtipes</i> Corner	Sano Labar	E (70-700 m)
458	Moraceae	<i>Ficus drupacea</i> Thunb.	Jhuse Labar	C & E (70-1600 m)
459	Moraceae	<i>Ficus hispida</i> L.f.	Khasreto, Thotne	W, C & E (70-1900 m)
460	Moraceae	<i>Ficus lamponga</i> Miq.	Bhale Dumri	E (70-100 m)
461	Moraceae	<i>Ficus nervosa</i> Roth	Kalo Dumri	C & E (70-1100 m)
462	Moraceae	<i>Ficus racemosa</i> L.	Seto Dumri	W, C & E (70-1000 m)
463	Moraceae	<i>Ficus religiosa</i> L.	Pipal	W, C & E (70-1500 m)
464	Moraceae	<i>Ficus rumphii</i> Blume	Kathe Pipal, Paakhuri	W & E (70-1500 m)
465	Moraceae	<i>Ficus semicordata</i> Buch.-Ham. ex Sm.	Khanyu	W, C & E (70-1700 m)
466	Moraceae	<i>Ficus variegata</i> Blume	Thulo Dumri	E (70-100 m)
467	Moraceae	<i>Streblus asper</i> Lour.	Bhakre Ghans, Khaskipate	W, C & E (70-500 m)
468	Myristicaceae	<i>Horsfieldia kingii</i> (Hook.f.) Warb.	Bansupari, Ramguwa	C & E (70-1300 m)
469	Myrtaceae	<i>Syzygium cumini</i> (L.) Skeels	Jaamun, Fadir	W, C & E (70-1500 m)
470	Myrtaceae	<i>Syzygium formosum</i> (Wall.) Mason	Falame, Tinpate	E (70-400 m)
471	Myrtaceae	<i>Syzygium kurzii</i> (Duthie) N.P.Balacr.	Banambak	E (70-600 m)
472	Myrtaceae	<i>Syzygium nervosum</i> A.Cunn. ex DC.	Kyamuna	W, C & E (70-1400 m)
473	Myrtaceae	<i>Syzygium praecox</i> (Roxb.) Rathakr. & N.C.Nair	Ambake, Kaaligedi	C & E (70-1200 m)
474	Myrtaceae	<i>Syzygium</i> sp.		
475	Oleaceae	<i>Nyctanthes arbor-tristis</i> L.	Parijaat, Sinke	W, C & E (70-1400 m)
476	Phyllanthaceae	<i>Antidesma acidum</i> Retz.	Archal	W, C & E (70-1600 m)
477	Phyllanthaceae	<i>Antidesma bunius</i> (L.) Spreng.	Thulo Archal	C & E (70-1800 m)
478	Phyllanthaceae	<i>Antidesma ghaesembilla</i> Gaertn.	Sano Archal	C & E (70-500 m)
479	Phyllanthaceae	<i>Aporosa octandra</i> (Buch.-Ham. ex D.Don) Vickery	Asare	C & E (70-900 m)
480	Phyllanthaceae	<i>Baccaurea ramiflora</i> Lour.	Ranikusum	C & E (70-500 m)
481	Phyllanthaceae	<i>Bischofia javanica</i> Blume	Kainjal	W, C & E (70-1200 m)
482	Phyllanthaceae	<i>Bridelia retusa</i> (L.) A.Juss.	Rukhgaayo	W, C & E (70-1400 m)

S.N.	Habit/ Family	Botanical name	Local name	Distribution in Nepal*
483	Phyllanthaceae	<i>Bridelia tomentosa</i> Blume	Bakhregaayo, Musegaayo	E (70-700 m)
484	Phyllanthaceae	<i>Glochidion ellipticum</i> Wight	Jhiganpate	W, C & E (70-1200 m)
485	Phyllanthaceae	<i>Glochidion heyneanum</i> (Wight & Arn.) Wight	Sabune, Mauwa, Laatikath	W, C & E (70-1800 m)
486	Phyllanthaceae	<i>Glochidion lanceolarium</i> (Roxb.) Voigt	Bhale Asare, Ragate	C & E (70-1800 m)
487	Phyllanthaceae	<i>Glochidion zeylanicum</i> (Gaertn.) A.Juss. var. <i>tomentosum</i> (Dalzell) Trimen	Laatibairi	C & E (70-250 m)
488	Phyllanthaceae	<i>Phyllanthus emblica</i> L.	Amala	W, C & E (70-2000 m)
489	Putranjivaceae	<i>Drypetes assamica</i> (Hook.f.) Pax & K.Hoffm.	Kholasi Asare	C & E (70-200 m)
490	Rhamnaceae	<i>Ziziphus mauritiana</i> Lam.	Bayer	W, C & E (70-1400 m)
491	Rhamnaceae	<i>Ziziphus rugosa</i> Lam.	Jungali Bayer	W, C & E (70-800 m)
492	Rhizophoraceae	<i>Carallia cf. brachiata</i> (Lour.) Merr.	Baakli	
493	Rosaceae	<i>Prunus ceylanica</i> (Wight) Miq.	Anaukath, Bhatekath	C & E (70-500 m)
494	Rubiaceae	<i>Adina cordifolia</i> (Roxb.) Brandis	Karam, Karma, Haldu	W, C & E (70-1000 m)
495	Rubiaceae	<i>Canthiumera cf. siamensis</i> (K.Schum.) K.M.Wong		
496	Rubiaceae	<i>Discospermum abnorme</i> (Korth.) S.J.Ali & Robbr.	Hade Kath	E (70-100 m)
497	Rubiaceae	<i>Hymenodictyon orixense</i> (Roxb.) Mabb.	Lati Karam, Bahuni Karam, Bhurkut	W, C & E (70-900 m)
498	Rubiaceae	<i>Ixora undulata</i> Roxb. ex Sm.	Chillo Kainyo	C & E (70-900 m)
499	Rubiaceae	<i>Morinda angustifolia</i> Roxb.	Haldikath	C & E (70-1000 m)
500	Rubiaceae	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Kadam	W, C & E (70-800 m)
501	Rubiaceae	<i>Pavetta tomentosa</i> Roxb. ex Sm.	Jhuse Kainyo	W, C & E (70-1100 m)
502	Rubiaceae	<i>Tamilnadia uliginosa</i> (Retz.) Tirveng. & Sastre	Pidar	W, C & E (70-800 m)
503	Rubiaceae	<i>Wendlandia tinctoria</i> (Roxb.) DC.	Seto Kainyo	C & E (70-400 m)

S.N.	Habit/ Family	Botanical name	Local name	Distribution in Nepal*
504	Rutaceae	<i>Acronychia pedunculata</i> (L.) Miq.	Banmithai, Jungali Amala, Digau	E (70-250 m)
505	Rutaceae	<i>Aegle marmelos</i> (L.) Corrêa	Bel	W, C & E (70-1400 m)
506	Rutaceae	<i>Glycosmis pentaphylla</i> (Retz.) DC.	Ghutuhur	W, C & E (70-500 m)
507	Rutaceae	<i>Micromelum integerrimum</i> (Roxb. ex DC.) Wight & Arn. ex M.Roem.	Micromelum	C & E (70-1500 m)
508	Rutaceae	<i>Zanthoxylum rhetsa</i> DC.	Boke Timur	W, C & E (70-1100 m)
509	Sabiaceae	<i>Meliosma pinnata</i> (Roxb.) Maxim.	Dabdabepaate	C & E (70-2000 m)
510	Sabiaceae	<i>Meliosma simplicifolia</i> (Roxb.) Walp.	Patpate	C & E (70-2500 m)
511	Salicaceae	<i>Casearia graveolens</i> Dalzell	Pipiri, Badkamle	W, C & E (70-2200 m)
512	Salicaceae	<i>Casearia vareca</i> Roxb.	Karaunte Pipiri	E (70-100 m)
513	Salicaceae	<i>Flacourtia jangomas</i> (Lour.) Rausch.	Madifal	W, C & E (70-1200 m)
514	Salicaceae	<i>Homalium ceylanicum</i> (Gardner) Benth.	Anaukath, Surile	E (70-700 m)
515	Salicaceae	<i>Xylosma longifolia</i> Clos	Falamkanda	W, C & E (70-1200 m)
516	Sapindaceae	<i>Harpullia arborea</i> (Blanco) Radlk.	Chardane	E (70-200 m)
517	Sapindaceae	<i>Lepisanthes rubiginosa</i> (Roxb.) Leenh.	Jambu	C & E (70-1200 m)
518	Sapindaceae	<i>Lepisanthes senegalensis</i> (Poir.) Leenh.	Bankafal	C & E (70-800 m)
519	Sapotaceae	<i>Sarcosperma arboreum</i> Hook.f.	Kaalikath	C & E (70-1300 m)
520	Staphyleaceae	<i>Dalrympelea pomifera</i> Roxb.	Chaali	C & E (70-500 m)
521	Tetramelaceae	<i>Tetrameles nudiflora</i> R.Br.	Mainakath	E (70-500 m)
522	Theaceae	<i>Schima wallichii</i> (DC.) Korth.	Chilaune	C & E (70-2100 m)
Woody climbers				
523	Acanthaceae	<i>Thunbergia grandiflora</i> Roxb.	Kanaase, Kali Lahara	C & E (70-1300 m)
524	Annonaceae	<i>Desmos chinensis</i> Lour.		C & E (70-600 m)
525	Annonaceae	<i>Fissistigma bicolor</i> (Roxb.) Merr.		E (70-400 m)
526	Annonaceae	<i>Uvaria hamiltonii</i> Hook.f. & Thomson	Bandar Jhulla	C & E (70-600 m)
527	Apocynaceae	<i>Beaumontia grandiflora</i> Wall.	Swari Ful	C & E (70-1600 m)

S.N.	Habit/ Family	Botanical name	Local name	Distribution in Nepal*
528	Apocynaceae	<i>Chonemorpha fragrans</i> (Moon) Alston		W, C & E (70-1800 m)
529	Apocynaceae	<i>Cryptolepis buchananii</i> R.Br. ex Roem. & Schult.		W, C & E (70-1600 m)
530	Apocynaceae	<i>Cynanchum pulchellum</i> (Wall.) Liede & Khanum		C & E (70-1400 m)
531	Arecaceae	<i>Calamus melanochaetes</i> (Blume) Miq.	Bet	E (70 m)
532	Celastraceae	<i>Celastrus paniculatus</i> Willd.		W, C & E (70-1400 m)
533	Combretaceae	<i>Combretum punctatum</i> Blume		C & E (70-2300 m)
534	Combretaceae	<i>Combretum roxburghii</i> Spreng.	Thakyauli	W, C & E (70-1600 m)
535	Cucurbitaceae	<i>Hodgsonia heteroclita</i> (Roxb.) Hook.f. & Thomson	Ban Farsi	E (70-300 m)
536	Fabaceae	<i>Abrus melanospermus</i> Hassk.		W, C & E (70-1300 m)
537	Fabaceae	<i>Dalbergia stipulacea</i> Roxb.	Sirise	C & E (70-1300 m)
538	Fabaceae	<i>Mezoneuron cucullatum</i> (Roxb.) Wight & Arn.		W, C & E (70-1800 m)
539	Fabaceae	<i>Millettia extensa</i> Benth. ex Baker f.	Gaujo	W, C & E (70-1300 m)
540	Fabaceae	<i>Phanera scandens</i> (L.) Lour. ex Raf.	Naagbeli	C & E (70-700 m)
541	Fabaceae	<i>Phanera vahlii</i> Wight & Arn.	Bhorla	W, C & E (70-1500 m)
542	Fabaceae	<i>Spatholobus parviflorus</i> (Roxb. ex G.Don) Kuntze	Debre Lahara	W, C & E (70-2000 m)
543	Gnetaceae	<i>Gnetum montanum</i> Markgr.	Bhote Lahara	C & E (70-1800 m)
544	Malpighiaceae	<i>Hiptage benghalensis</i> (L.) Kurz	Charpate Lahara	W, C & E (70-1100 m)
545	Menispermaceae	<i>Tinospora sinensis</i> (Lour.) Merr.	Gurjo	W, C & E (70-800 m)
546	Moraceae	<i>Ficus hederacea</i> Roxb.	Dudhe Lahara	W, C & E (70-1400 m)
547	Phyllanthaceae	<i>Bridelia stipularis</i> (L.) Blume	Lahare Gayo	W, C & E (70-1500 m)
548	Piperaceae	<i>Piper hamiltonii</i> C.DC.		E (70 m)
549	Piperaceae	<i>Piper longum</i> L.	Pipla	W, C & E (70-800 m)
550	Resedaceae	<i>Stixis suaveolens</i> (Roxb.) Pierre		E (70-1500 m)
551	Rhamnaceae	<i>Gouania leptostachya</i> DC.		W, C & E (70-2000 m)
552	Rubiaceae	<i>Oxyceros kunstleri</i> (King & Gamble) Tirveng.		E (70-90 m)
553	Rubiaceae	<i>Paederia foetida</i> L.	Pade Lahara	C & E (65-2100 m)
554	Rubiaceae	<i>Uncaria sessilifructus</i> Roxb.	Bhaisi Kande	C & E (70-1000 m)
555	Rutaceae	<i>Paramignya monophylla</i> Wight		E (70-400 m)

S.N.	Habit/ Family	Botanical name	Local name	Distribution in Nepal*
556	Smilacaceae	<i>Smilax bockii</i> Warb.	Kukurdiano	E (70-200 m)
557	Smilacaceae	<i>Smilax odoratissima</i> Blume	Kukurdiano	E (2172 m)
558	Smilacaceae	<i>Smilax ovalifolia</i> Roxb. ex D.Don	Kukurdiano	W, C & E (70-2200 m)
559	Smilacaceae	<i>Smilax perfoliata</i> Lour.	Kukurdiano	W, C & E (70-3000 m)
560	Vitaceae	<i>Ampelocissus barbata</i> (Wall.) Planch.		E (70-1500 m)
561	Vitaceae	<i>Ampelocissus sikkimensis</i> Planch.		C & E (70-1900 m)
562	Vitaceae	<i>Cissus elongata</i> Roxb.		C & E (70-225 m)
563	Vitaceae	<i>Cissus repanda</i> Vahl		W, C & E (70-2000 m)
564	Vitaceae	<i>Cissus repens</i> Lam.		C & E (70-2000 m)
565	Vitaceae	<i>Tetrastigma leucostaphylum</i> (Dennst.) Alston	Charchare	W, C & E (70-1600 m)

*W = Western Nepal, C = Central Nepal, E = Eastern Nepal

Appendix 2. Checklist of pteridophytes of Jalthal

S. N.	Scientific name	Family	Local name	Distribution in Nepal*	IUCN category#
1	<i>Blechnum orientale</i> L.	Aspleniaceae		W, C & E	NE
2	<i>Diplazium esculentum</i> (Retz.) Sw.	Aspleniaceae	Pani Nyuro	W, C & E	LC
3	<i>Stenochlaena palustris</i> (Burm.f.) Bedd.	Aspleniaceae	Rato Nyuro	E	NE
4	<i>Thelypteris arida</i> (D.Don) C.V.Morton	Aspleniaceae		W, C & E	NE
5	<i>Thelypteris dentata</i> (Forssk.) E.P.St.John	Aspleniaceae		W, C & E	NE
6	<i>Thelypteris lebeufii</i> (Baker) Panigrahi	Aspleniaceae		W & E	NE
7	<i>Thelypteris nudata</i> (Roxb.) C.V.Morton	Aspleniaceae		W, C & E	NE
8	<i>Thelypteris procera</i> (D.Don) Fraser-Jenk.	Aspleniaceae	Chakpire Unyu	W, C & E	NE
9	<i>Thelypteris prolifera</i> (Retz.) C.F.Reed	Aspleniaceae		W, C & E	NE
10	<i>Microlepia speluncae</i> (L.) T.Moore	Dennstaedtiaceae		W, C & E	NE
11	<i>Dicranopteris lanigera</i> (D.Don) Fraser-Jenk.	Gleicheniaceae		W, C & E	NE
12	<i>Lindsaea ensifolia</i> Sw.	Lindsaeaceae		C & E	NE
13	<i>Lycopodiella cernua</i> (L.) Pic.Serm.	Lycopodiaceae		W, C & E	NE
14	<i>Angiopteris helferiana</i> C.Presl	Marattiaceae	Gaikhure	C & E	NE
15	<i>Marsilea minuta</i> L.	Marsileaceae		W, C & E	LC
16	<i>Helminthostachys zeylanica</i> (L.) Hook.	Ophioglossaceae	Mayurkhatte	W, C & E	NE
17	<i>Ophioglossum reticulatum</i> L.	Ophioglossaceae	Jibre Saag	W, C & E	LC
18	<i>Bolbitis costata</i> (C.Presl) Ching	Polypodiaceae		C & E	NE
19	<i>Drynaria quercifolia</i> (L.) J.Sm.	Polypodiaceae	Kammaree	C & E	NE
20	<i>Microsorium punctatum</i> (L.) Copel.	Polypodiaceae		C & E	NE
21	<i>Pyrrhosia adnascens</i> (Sw.) Ching	Polypodiaceae		C & E	NE
22	<i>Pyrrhosia lanceolata</i> (L.) Farw.	Polypodiaceae		W, C & E	NE
23	<i>Tectaria coadunata</i> (J.Sm.) C.Chr.	Polypodiaceae	Kalo Nyuro	W, C & E	NE
24	<i>Tectaria fuscipes</i> (Wall. ex Bedd.) C.Chr.	Polypodiaceae		C & E	NE

S. N.	Scientific name	Family	Local name	Distribution in Nepal*	IUCN category#
25	<i>Adiantum philippense</i> L. subsp. <i>philippense</i>	Pteridaceae		W, C & E	NE
26	<i>Ceratopteris thalictroides</i> (L.) Brongn. subsp. <i>gaudichaudii</i> (Brongn.) Fraser-Jenk. & Pariyar	Pteridaceae		W, C & E	NE
27	<i>Haplopteris zosterifolia</i> (Willd.) E.H.Crane	Pteridaceae		C & E	NE
28	<i>Hemionitis belangeri</i> (Bory) Christenh.	Pteridaceae		E	NE
29	<i>Hemionitis bicolor</i> (Roxb.) Christenh.	Pteridaceae	Rani Sinka	W, C & E	NE
30	<i>Hemionitis tenuifolia</i> (Burm.f.) Christenh.	Pteridaceae		W, C & E	NE
31	<i>Pityrogramma calomelanos</i> (L.) Link	Pteridaceae		W, C & E	NE
32	<i>Pteris biaurita</i> L.	Pteridaceae		W, C & E	NE
33	<i>Pteris longipinnula</i> Wall. ex J.Agardh	Pteridaceae		C & E	NE
34	<i>Pteris semipinnata</i> L.	Pteridaceae		C & E	NE
35	<i>Pteris venusta</i> Kunze subsp. <i>matsudae</i> (Masam.) Fraser-Jenk. & Kandel	Pteridaceae		W, C & E	NE
36	<i>Azolla imbricata</i> (Roxb.) Nakai	Salviniaceae		W, C & E	NE
37	<i>Salvinia natans</i> (L.) All.	Salviniaceae		E	LC
38	<i>Lygodium flexuosum</i> (L.) Sw.	Schizaeaceae	Janai Lahara, Bahun Lahara	W, C & E	NE
39	<i>Lygodium microphyllum</i> (Cav.) R.Br.	Schizaeaceae		E	LC
40	<i>Lygodium salicifolium</i> C.Presl	Schizaeaceae		C & E	NE
41	<i>Selaginella chrysorrhizos</i> Spring	Selaginellaceae		W, C & E	NE
42	<i>Selaginella ciliaris</i> (Retz.) Spring	Selaginellaceae		W, C & E	NE
43	<i>Selaginella semicordata</i> (Wall. ex Hook. & Grev.) Spring	Selaginellaceae		W, C & E	NE

*W = Western Nepal, C = Central Nepal, E = Eastern Nepal. #LC = Least Concern, NE = Not Evaluated

Appendix 3. Checklist of mushrooms of Jalthal

S. N.	Scientific name	Family
1	<i>Agaricus placomyces</i> Peck	Agaricaceae
2	<i>Lepiota cristata</i> (Bolton) P. Kumm	Agaricaceae
3	<i>Lepiota</i> sp.	Agaricaceae
4	<i>Leucocoprinus</i> sp.	Agaricaceae
5	<i>Macrolepiota albuminosa</i> (Berk.) Pegler	Agaricaceae
6	<i>Amanita chepangiana</i> Tulloss & Bhandary	Amanitaceae
7	<i>Amanita subglobosa</i> Zhu L. Yang	Amanitaceae
8	<i>Amanita vaginata</i> (Bull.) Lam	Amanitaceae
9	<i>Auricularia auricula-judae</i> (Bull.) Quél.	Auriculariaceae
10	<i>Auricularia polytricha</i> (Mont.) Sacc.	Auriculariaceae
11	<i>Boletellus</i> sp.	Boletaceae
12	<i>Boletus</i> sp. 1	Boletaceae
13	<i>Boletus</i> sp. 2	Boletaceae
14	<i>Crepidotus mollis</i> (Schaeff.) Staude	Crepidotaceae
15	<i>Calocera viscosa</i> (Pers.) Fr.	Dacrymycetaceae
16	<i>Dacryopinax spathularia</i> (Schwein.) G.W. Martin	Dacrymycetaceae
17	<i>Entoloma</i> sp.	Entolomataceae
18	<i>Daedalea quercina</i> (L.) Pers.	Fomitopsidaceae
19	<i>Fomitopsis pinicola</i> (Sw.) P.Karst.	Fomitopsidaceae
20	<i>Cantharellus</i> sp.	Hydnaceae
21	<i>Hydnum</i> sp.	Hydnaceae
22	<i>Laccaria laccata</i> (Scop.) Cooke	Hydnangiaceae
23	<i>Lichenomphalia umbellifera</i> (L.) Redhead, Lutzoni, Moncalvo & Vilgalys	Hygrophoraceae
24	<i>Coltricia cinnamomea</i> (Jacq.) Murrill	Hymenochaetaceae
25	<i>Hymenochaete</i> sp.	Hymenochaetaceae
26	<i>Inonotus</i> sp.	Hymenochaetaceae
27	<i>Phellinus</i> sp.	Hymenochaetaceae
28	<i>Daldinia concentrica</i> (Bolton) Ces. & De Not.	Hypoxylaceae
29	<i>Trichaptum abietinum</i> (Pers. ex J.F. Gmel.) Ryvarden	<i>incertae sedis</i>
30	<i>Trichaptum byssogenum</i> (Jungh.) Ryvarden	<i>incertae sedis</i>
31	<i>Inocybe</i> sp.	Inocybaceae
32	<i>Irpex</i> sp.	Irpicaceae
33	<i>Phaeolus schweinitzii</i> (Fr.) Pat.	Laetiporaceae
34	<i>Termitomyces eurrhizus</i> (Berk.) R.Heim	Lyophyllaceae
35	<i>Termitomyces</i> sp.	Lyophyllaceae

S. N.	Scientific name	Family
36	<i>Termitomyces umkowaan</i> (Cooke & Masee) D.A. Reid	Lyophyllaceae
37	<i>Phlebia</i> sp.	Meruliaceae
38	<i>Mycena</i> sp.	Mycenaceae
39	<i>Peziza</i> sp.	Pezizaceae
40	<i>Phallus rubicundus</i> (Bosc) Fr.	Phallaceae
41	<i>Phlebiopsis crassa</i> (Lév.) Floudas & Hibbett	Phanerochaetaceae
42	<i>Hymenopellis radicata</i> (Relhan) R.H. Petersen	Physalacriaceae
43	<i>Daedaleopsis confragosa</i> (Bolton) J. Schröt.	Polyporaceae
44	<i>Ganoderma lucidum</i> (Curtis) P.Karst.	Polyporaceae
45	<i>Hexagonia apiaria</i> Pers.	Polyporaceae
46	<i>Lentinus sajor-caju</i> (Fr.) Fr.	Polyporaceae
47	<i>Lenzites betulinus</i> (L.) Fr.	Polyporaceae
48	<i>Microporus affinis</i> (Blume & T. Nees) Kuntze	Polyporaceae
49	<i>Microporus</i> sp.	Polyporaceae
50	<i>Microporus xanthopus</i> (Fr.) Kuntze	Polyporaceae
51	<i>Polyporus badius</i> Jungh.	Polyporaceae
52	<i>Polyporus</i> sp.	Polyporaceae
53	<i>Polyporus</i> sp.	Polyporaceae
54	<i>Pycnoporus cinnabarinus</i> (Jacq.) P.Karst.	Polyporaceae
55	<i>Pycnoporus coccineus</i> (Fr.) Bondartsev & Singer	Polyporaceae
56	<i>Trametes hirsuta</i> (Wulfen) Lloyd	Polyporaceae
57	<i>Trametes versicolor</i> (L.) Lloyd	Polyporaceae
58	<i>Coprinellus disseminatus</i> (Pers.) J.E. Lange	Psathyrellaceae
59	<i>Coprinellus micaceus</i> (Bull.) Vilgalys, Hopple & Jacq. Johnson	Psathyrellaceae
60	<i>Coprinellus</i> sp.	Psathyrellaceae
61	<i>Psathyrella</i> sp.	Psathyrellaceae
62	<i>Lactarius volemus</i> (Fr.) Fr.	Russulaceae
63	<i>Russula chloroides</i> (Krombh.) Bres.	Russulaceae
64	<i>Russula emetica</i> (Schaeff.) Pers.	Russulaceae
65	<i>Russula</i> sp.	Russulaceae
66	<i>Russula</i> sp.	Russulaceae
67	<i>Russula virescens</i> (Schaeff.) Fr.	Russulaceae
68	<i>Schizophyllum commune</i> Fr.	Schizophyllaceae
69	<i>Scleroderma</i> sp.	Sclerodermataceae
70	<i>Scleroderma texense</i> Berk.	Sclerodermataceae
71	<i>Stereum hirsutum</i> (Willd.) Pers	Stereaceae
72	<i>Stereum</i> sp.	Stereaceae

S. N.	Scientific name	Family
73	<i>Stropharia</i> sp.	Strophariaceae
74	<i>Suillus</i> sp.	Suillaceae
75	<i>Thelephora palmata</i> (Scop.) Fr.	Thelephoraceae
76	<i>Thelephora</i> sp.	Thelephoraceae
77	<i>Clitocybe</i> sp.	Tricholomataceae
78	<i>Tricholoma</i> sp.	Tricholomataceae
79	<i>Xylaria filiformis</i> (Alb. & Schwein.) Fr.	Xylariaceae
80	<i>Xylaria hypoxylon</i> (L.) Grev.	Xylariaceae
81	<i>Xylaria polymorpha</i> (Pers.) Grev.	Xylariaceae
82	Unidentified sp.	
83	Unidentified sp.	
84	Unidentified sp. (Hathuki Maikhum)	
85	Unidentified sp. (Thoppa Maikhum)	

Appendix 4. Checklist of butterflies of Jalthal

S. N.	Scientific name	Family	Common name
1	<i>Badamia exclamationis</i> (Fabricius, 1775)	Hesperiidae	Brown Awl
2	<i>Borbo bevani</i> (Moore, 1878)	Hesperiidae	Bevan's Swift
3	<i>Celaenorrhinus leucocera</i> (Kollar, 1848)	Hesperiidae	Common Spotted Flat
4	<i>Coladenia indrani</i> (Moore, 1866)	Hesperiidae	Tricoloured Pied Flat
5	<i>Cupitha purrea</i> (Moore, 1877)	Hesperiidae	Wax Dart
6	<i>Gerosis bhagava</i> (Moore 1865)	Hesperiidae	Common Yellow-breasted Flat
7	<i>Halpe porus</i> (Mabille, 1876)	Hesperiidae	Moore's Ace
8	<i>Hasora badra</i> (Moore, 1857)	Hesperiidae	Common Awl
9	<i>Iambrix salsala</i> (Moore, 1865)	Hesperiidae	Chestnut Bob
10	<i>Matapa aria</i> (Moore, 1865)	Hesperiidae	Common Redeye
11	<i>Notocrypta curvifascia</i> (C.Felder & R.Felder, 1862)	Hesperiidae	Restricted Demon
12	<i>Parnara ganga</i> Evans, 1937	Hesperiidae	Continental Swift
13	<i>Parnara guttatus</i> (Bremer & Grey, 1853)	Hesperiidae	Straight Swift
14	<i>Pelopidas assamensis</i> (de Nicéville, 1882)	Hesperiidae	Great Swift
15	<i>Pelopidas sinensis</i> (Mabille, 1877)	Hesperiidae	Rice Swift
16	<i>Pelopidas subochracea</i> (Moore, 1878)	Hesperiidae	Small Branded Swift
17	<i>Sarangesa dasahara</i> (Moore, 1865)	Hesperiidae	Common Small Flat
18	<i>Tagiades japetus</i> (Stoll, 1781)	Hesperiidae	Common Snow Flat
19	<i>Tagiades litigiosa</i> Möschler, 1878	Hesperiidae	Water Snow Flat
20	<i>Telicota ancilla</i> (Herrich-Schäffer, 1869)	Hesperiidae	Dark Palm Dart
21	<i>Udaspes folus</i> (Cramer, 1775)	Hesperiidae	Grass Demon
22	<i>Acytolepis puspa</i> (Horsfield, 1828)	Lycaenidae	Common Hedge Blue
23	<i>Anthene emolus</i> (Godart, 1823)	Lycaenidae	Common Ciliate Blue
24	<i>Arhopala abseus</i> (Hewitson, 1862)	Lycaenidae	Aberrant Blushblue
25	<i>Arhopala amantes</i> (Hewitson, 1862)	Lycaenidae	Large Oakblue
26	<i>Arhopala atrax</i> (Hewitson, 1862)	Lycaenidae	Indian Oakblue
27	<i>Arhopala centaurus</i> (Fabricius, 1775)	Lycaenidae	Centaur Oakblue
28	<i>Arhopala eumolphus</i> (Cramer, 1782)	Lycaenidae	Green Oakblue
29	<i>Arhopala perimuta</i> (Moore, 1857)	Lycaenidae	Yellow-disc Tailless Oakblue
30	<i>Caleta elna</i> (Hewitson, 1876)	Lycaenidae	Elbowed Pierrot

S. N.	Scientific name	Family	Common name
31	<i>Castalius rosimon</i> (Fabricius, 1775)	Lycaenidae	Common Pierrot
32	<i>Catapaecilma major</i> (Druce, 1895)	Lycaenidae	Common Tinsel
33	<i>Catochrysops strabo</i> (Fabricius, 1793)	Lycaenidae	Forget-me-not
34	<i>Chilades laius</i> (Cramer, 1782)	Lycaenidae	Limeblue
35	<i>Chliaria othona</i> (Hewitson, 1865)	Lycaenidae	Orchid Tit
36	<i>Cigaritis elima</i> (Moore, 1877)	Lycaenidae	Scarce Shot Silverline
37	<i>Curetis thetis</i> (Drury, 1773)	Lycaenidae	Indian Sunbeam
38	<i>Euchrysops cnejus</i> (Fabricius, 1798)	Lycaenidae	Gram Blue
39	<i>Flos adriana</i> (de Nicéville, 1884)	Lycaenidae	Variiegated Plushblue
40	<i>Heliophorus indicus</i> (Fruhstorfer, 1908)	Lycaenidae	Indian Purple Sapphire
41	<i>Hypolycaena erylus</i> (Godart, 1823)	Lycaenidae	Common Tit
42	<i>Iraota timoleon</i> (Stoll, 1790)	Lycaenidae	Silverstreak Blue
43	<i>Jamides alecto</i> (Felder, 1860)	Lycaenidae	Metallic Cerulean
44	<i>Jamides bochus</i> (Stoll, 1782)	Lycaenidae	Dark Cerulean
45	<i>Jamides celeno</i> (Cramer, 1775)	Lycaenidae	Common Cerulean
46	<i>Lampides boeticus</i> (Linnaeus, 1767)	Lycaenidae	Pea Blue
47	<i>Leptotes plinius</i> (Fabricius, 1793)	Lycaenidae	Zebra Blue
48	<i>Loxura atymnus</i> (Cramer, 1782)	Lycaenidae	Yamfly
49	<i>Megisba malaya</i> (Horsfield, 1828)	Lycaenidae	Malayan
50	<i>Neopithecops zalmora</i> (Butler, 1870)	Lycaenidae	Quaker
51	<i>Pithecops corvus</i> (Fruhstorfer, 1919)	Lycaenidae	Forest Quaker
52	<i>Poritia hewitsoni</i> (Moore, 1865)	Lycaenidae	Common Gem
53	<i>Prosotas dubiosa</i> (Semper, 1879)	Lycaenidae	Tailless Lineblue
54	<i>Prosotas nora</i> (Felder, 1860)	Lycaenidae	Common Lineblue
55	<i>Pseudozizeeria maha</i> (Kollar, 1848)	Lycaenidae	Pale Grass Blue
56	<i>Rapala manea</i> (Hewitson, 1863)	Lycaenidae	Slate Flash
57	<i>Rapala pheretima</i> (Hewitson, 1863)	Lycaenidae	Copper Flash
58	<i>Rapala varuna</i> (Horsfield, 1829)	Lycaenidae	Indigo Flash
59	<i>Remelana jangala</i> (Horsfield, 1829)	Lycaenidae	Chocolate Royal
60	<i>Spalgis epeus</i> (Westwood, 1851)	Lycaenidae	Apefly
61	<i>Spindasis lohita</i> (Horsfield, 1829)	Lycaenidae	Long-branded Silverline
62	<i>Spindasis vulcanus</i> (Fabricius, 1775)	Lycaenidae	Common Silverline
63	<i>Surendra quercetorum</i> (Moore, 1857)	Lycaenidae	Common Acacia Blue
64	<i>Tarucus ananda</i> (de Nicéville, 1884)	Lycaenidae	Dark Pierrot

S. N.	Scientific name	Family	Common name
65	<i>Tarucus nara</i> (Kollar 1848)	Lycaenidae	Rounded Pierrot
66	<i>Tarucus waterstradti</i> (Druce, 1895)	Lycaenidae	Assam Pierrot
67	<i>Virachola isocrates</i> (Fabricius, 1793)	Lycaenidae	Guava Blue
68	<i>Zizeeria karsandra</i> (Moore, 1865)	Lycaenidae	Dark Grass Blue
69	<i>Zizina otis</i> (Fabricius, 1787)	Lycaenidae	Lesser Grass Blue
70	<i>Acraea violae</i> (Fabricius, 1775)	Nymphalidae	Tawny Coster
71	<i>Ariadne ariadne</i> (Linnaeus, 1763)	Nymphalidae	Angled Castor
72	<i>Ariadne merione</i> (Cramer, 1779)	Nymphalidae	Common Castor
73	<i>Cethosia cyane</i> (Drury, 1770)	Nymphalidae	Leopard Lacewing
74	<i>Charaxes marmax</i> (Westwood, 1848)	Nymphalidae	Yellow Rajah
75	<i>Charaxes psaphon</i> (Westwood, 1848)	Nymphalidae	Tawny Rajah
76	<i>Cirrochroa tyche</i> Felder, 1861	Nymphalidae	Common Yeoman
77	<i>Cupha erymanthis</i> (Drury, 1773)	Nymphalidae	Rustic
78	<i>Cyrestis thyodamas</i> (Boisduval, 1836)	Nymphalidae	Common Map
79	<i>Danaus chrysippus</i> (Linnaeus, 1758)	Nymphalidae	Plain Tiger
80	<i>Danaus genutia</i> (Cramer, 1779)	Nymphalidae	Striped Tiger
81	<i>Discophora sondaica</i> (Boisduval, 1836)	Nymphalidae	Common Duffer
82	<i>Doleschallia bisaltide</i> (Cramer, 1777)	Nymphalidae	Autumn Leaf
83	<i>Elymnias hypermnestra</i> (Linnaeus, 1763)	Nymphalidae	Common Palmfly
84	<i>Elymnias malelas</i> (Hewitson, 1863)	Nymphalidae	Spotted Palmfy
85	<i>Euploea algea</i> (Godart, 1819)	Nymphalidae	Long-branded Crow
86	<i>Euploea core</i> (Cramer, 1780)	Nymphalidae	Common Crow
87	<i>Euploea klugii</i> (Moore, 1858)	Nymphalidae	Brown King Crow
88	<i>Euploea mulciber</i> (Cramer, 1777)	Nymphalidae	Striped Blue Crow
89	<i>Euripus consimilis</i> (Westwood, 1850)	Nymphalidae	Painted Courtesan
90	<i>Euthalia aconthea</i> (Cramer, 1779)	Nymphalidae	Common Baron
91	<i>Euthalia lubentina</i> (Cramer, 1779)	Nymphalidae	Gaudy Baron
92	<i>Hypolimnas bolina</i> (Linnaeus, 1758)	Nymphalidae	Great Eggfly
93	<i>Junonia almana</i> (Linnaeus, 1758)	Nymphalidae	Peacock Pansy
94	<i>Junonia atlites</i> (Linnaeus, 1763)	Nymphalidae	Grey Pansy
95	<i>Junonia hierta</i> Fabricius, 1798	Nymphalidae	Yellow Pansy
96	<i>Junonia iphita</i> (Cramer, 1782)	Nymphalidae	Chocolate Pansy
97	<i>Junonia lemonias</i> (Linnaeus, 1758)	Nymphalidae	Lemon Pansy
98	<i>Junonia orithya</i> (Linnaeus, 1758)	Nymphalidae	Blue Pansy

S. N.	Scientific name	Family	Common name
99	<i>Lasippa viraja</i> (Moore, 1872)	Nymphalidae	Yellow Jack Sailor
100	<i>Lethe europa</i> (Fabricius, 1775)	Nymphalidae	Bamboo Treebrown
101	<i>Melanitis leda</i> (Linnaeus, 1758)	Nymphalidae	Common Evening Brown
102	<i>Melanitis phedima</i> (Cramer, 1782)	Nymphalidae	Dark Evening Brown
103	<i>Moduza procris</i> (Cramer, 1777)	Nymphalidae	Commander
104	<i>Mycalesis mineus</i> (Linnaeus, 1858)	Nymphalidae	Dark-Brand Bushbrown
105	<i>Mycalesis perseus</i> (Fabricius, 1775)	Nymphalidae	Common Bushbrown
106	<i>Mycalesis visala</i> (Moore, 1857)	Nymphalidae	Long Brand Bushbrown
107	<i>Neptis cartica</i> (Moore, 1872)	Nymphalidae	Plain Sailer
108	<i>Neptis clinia</i> (Moore, 1872)	Nymphalidae	Clear Sailor
109	<i>Neptis hylas</i> (Linnaeus, 1758)	Nymphalidae	Common Sailor
110	<i>Pantoporia hordonia</i> (Stoll, 1790)	Nymphalidae	Common Lascar
111	<i>Parantica aglea</i> (Stoll, 1782)	Nymphalidae	Glassy Tiger
112	<i>Parathyma nefte</i> (Cramer, 1782)	Nymphalidae	Colour Sergeant
113	<i>Parathyma perius</i> (Linnaeus, 1758)	Nymphalidae	Common Sergeant
114	<i>Parathyma selenophora</i> (Kollar, 1848)	Nymphalidae	Staff Sergeant
115	<i>Phaedyra columella</i> (Cramer, 1782)	Nymphalidae	Short-banded Sailor
116	<i>Phalanta phalantha</i> (Drury, 1773)	Nymphalidae	Common Leopard
117	<i>Symbrenthia hypselis</i> subsp. <i>assama</i> (Fruhstorfer, 1900)	Nymphalidae	Common Jester
118	<i>Tanaecia julii</i> (Bougainville, 1837)	Nymphalidae	Common Earl
119	<i>Tanaecia lepidea</i> (Butler, 1868)	Nymphalidae	Grey Count
120	<i>Tirumala limniace</i> (Cramer, 1775)	Nymphalidae	Blue Tiger
121	<i>Vagrans egista</i> (Cramer, 1780)	Nymphalidae	Vagrant
122	<i>Ypthima baldus</i> (Fabricius, 1775)	Nymphalidae	Common Five-ring
123	<i>Ypthima huebneri</i> (Kirby, 1871)	Nymphalidae	Common Four-ring
124	<i>Graphium agamemnon</i> (Linnaeus, 1758)	Papilionidae	Tailed Jay
125	<i>Graphium antiphates</i> (Cramer, 1775)	Papilionidae	Fivebar Swordtail
126	<i>Graphium doson</i> (Felder & Felder, 1864)	Papilionidae	Common Jay
127	<i>Graphium nomius</i> (Esper, 1798)	Papilionidae	Spot Swordtail
128	<i>Graphium sarpedon</i> (Linnaeus, 1758)	Papilionidae	Common Bluebottle
129	<i>Pachliopta aristolochiae</i> (Fabricius, 1775)	Papilionidae	Common Rose
130	<i>Papilio clytia</i> Linnaeus, 1758	Papilionidae	Common Mime
131	<i>Papilio demoleus</i> (Linnaeus, 1758)	Papilionidae	Lime Butterfly

S. N.	Scientific name	Family	Common name
132	<i>Papilio helenus</i> (Linnaeus, 1758)	Papilionidae	Red Helen
133	<i>Papilio memnon</i> (Linnaeus, 1758)	Papilionidae	Great Mormon
134	<i>Papilio nephelus</i> (Boisduval, 1836)	Papilionidae	Yellow Helen
135	<i>Papilio polymnestor</i> (Cramer, 1775)	Papilionidae	Blue Mormon
136	<i>Papilio polytes</i> (Linnaeus, 1758)	Papilionidae	Common Mormon
137	<i>Troides helena</i> (Linnaeus, 1758)	Papilionidae	Common Birdwing
138	<i>Appias indra</i> (Moore, 1858)	Pieridae	Plain Puffin
139	<i>Appias lycinda</i> (Cramer, 1779)	Pieridae	Chocolate Albatross
140	<i>Catopsilia pomona</i> (Fabricius, 1775)	Pieridae	Common Emigrant
141	<i>Catopsilia pyranthe</i> (Linnaeus, 1758)	Pieridae	Mottled Emigrant
142	<i>Cepora nadina</i> (Lucas, 1852)	Pieridae	Lesser Gull
143	<i>Colias fieldii</i> (Ménétrières, 1855)	Pieridae	Dark Clouded Yellow
144	<i>Delias descombesi</i> (Boisduval, 1836)	Pieridae	Red-spot Jezebel
145	<i>Delias eucharis</i> (Drury, 1773)	Pieridae	Common Jezebel
146	<i>Delias hyparete</i> (Linnaeus, 1758)	Pieridae	Painted Jezebel
147	<i>Delias pasithoe</i> (Linnaeus, 1758)	Pieridae	Red-base Jezebel
148	<i>Eurema andersoni</i> (Moore, 1886)	Pieridae	One-spot Grass Yellow
149	<i>Eurema blanda</i> (Boisduval, 1836)	Pieridae	Three Spot Grass Yellow
150	<i>Eurema hecabe</i> (Linnaeus, 1758)	Pieridae	Common Grass Yellow
151	<i>Gandaca harina</i> (Horsfield, 1829)	Pieridae	Tree Yellow
152	<i>Hebomoia glaucippe</i> (Linnaeus, 1758)	Pieridae	Great Orange Tip
153	<i>Leptosia nina</i> (Fabricius, 1793)	Pieridae	Psyche
154	<i>Pareronia avatar</i> (Moore, 1857)	Pieridae	Pale Wanderer
155	<i>Pieris canidia</i> (Sparman, 1768)	Pieridae	Indian Cabbage White
156	<i>Abisara bifasciata</i> (Moore, 1877)	Riodinidae	Double-banded Judy
157	<i>Zemeros flegyas</i> (Cramer, 1780)	Riodinidae	Punchinello

Appendix 5. Checklist of fishes of Jalthal

S.N.	Order/ Family/ Common name	Scientific name	IUCN Status [#]
BELONIFORMES			
Belonidae			
1	Freshwater Garfish, Asian Needlefish	<i>Xenentodon cancila</i> (Hamilton, 1822)	LC
CYPRINIFORMES			
Cobitidae			
2	Guntea Loach	<i>Lepidocephalichthys guntea</i> (Hamilton, 1822)	LC
3	Goira	<i>Lepidocephalus menoni</i> (Pillai & Yazdani, 1976)	DD
4	Spindle Loach	<i>Somileptes gongota</i> (Hamilton, 1822)	LC
Cyprinidae			
5	Mola Carplet	<i>Amblypharyngodon mola</i> (Hamilton, 1822)	LC
6	River Rohu/Gurdi	<i>Bangana dero</i> (Hamilton, 1822)	LC
7	Silver Barb	<i>Barbonymus gonionotus</i> (Bleeker, 1849)	LC
8	Jaya	<i>Cabdio jaya</i> (Hamilton, 1822)	LC
9	Reba Carp	<i>Cirrhinus reba</i> (Hamilton, 1822)	LC
10	Zebra Danio	<i>Danio rerio</i> (Hamilton, 1822)	LC
11	Bengal Danio	<i>Devario devario</i> (Hamilton, 1822)	LC
12	Flying Barb	<i>Esomus danrica</i> (Hamilton, 1822)	LC
13	Barna Baril	<i>Opsarius barna</i> (Hamilton, 1822)	LC
14	Spottedsail Barb	<i>Pethia phutunio</i> (Hamilton, 1822)	LC
15	Spotfin Swamp Barb	<i>Puntius sophore</i> (Hamilton, 1822)	LC
16	Onespot Barb	<i>Puntius terio</i> (Hamilton, 1822)	LC
17	River Minnow	<i>Raiamas bola</i> (Hamilton, 1822)	LC
18	Silver Razorbelly Minnow	<i>Salmostoma acinaces</i> (Valenciennes, 1844)	LC
19	Gangetic Latia	<i>Tariqilabeo latius</i> (Hamilton, 1822)	LC
Nemacheilidae			
20	Mottled Loach	<i>Acanthocobitis botia</i> (Hamilton, 1822)	LC

S.N.	Order/ Family/ Common name	Scientific name	IUCN Status [#]
CYPRINODONTIFORMES			
Aplocheilidae			
21	Panchax Minnow	<i>Aplocheilus panchax</i> (Hamilton, 1822)	LC
PERCIFORMES			
Ambassidae			
22	Himalayan Glassy Perchlet	<i>Parambassis baculis</i> (Hamilton, 1822)	LC
Anabantidae			
23	Climbing Perch	<i>Anabas cobojius</i> (Hamilton, 1822)	DD
24	Climbing Perch	<i>Anabas testudineus</i> (Bloch, 1792)	LC
Badidae			
25	Dwarf Chameleonfish	<i>Badis badis</i> (Hamilton, 1822)	LC
Channidae			
26	Dwarf Snakehead	<i>Channa gachua</i> (Hamilton, 1822)	LC
27	Spotted Snakehead	<i>Channa punctata</i> (Bloch, 1793)	LC
28	Assames Snakehead	<i>Channa stewartii</i> (Playfair, 1867)	LC
29	Banded Snakehead	<i>Channa striata</i> (Bloch, 1793)	LC
Gobiidae			
30	Tank Goby	<i>Glossogobius giuris</i> (Hamilton, 1822)	LC
Osphronemidae			
31	Dwarf Gourami	<i>Trichogaster lalius</i> (Hamilton, 1822)	LC
SILURIFORMES			
Bagridae			
32	Tengara Mystus	<i>Mystus tengara</i> (Hamilton, 1822)	LC
33	Striped Dwarf Catfish	<i>Mystus vittatus</i> (Bloch, 1794)	LC
Clarridae			
34	Walking Catfish	<i>Clarius batrachus</i> (Linnaeus, 1758)	LC
35	Asian Stinging Catfish	<i>Heteropneustes fossilis</i> (Bloch, 1794)	LC
36	Stinging Catfish	<i>Heteropneustes nani</i> (Hossain, Sarker, Sharifuzzaman & Chowdhury, 2013)	NE

S.N.	Order/ Family/ Common name	Scientific name	IUCN Status [#]
Siluridae			
37	Butter Catfish	<i>Ompok bimaculatus</i> (Bloch, 1794)	NT
38	Asian Silurid Catfish	<i>Wallago attu</i> (Bloch & Schneider, 1801)	VU
SYNBRANCHIFORMES			
Mastacembelidae			
39	Gainchi	<i>Macrogathus aral</i> (Bloch & Schneider, 1801)	LC
40	Kathgainchi	<i>Macrogathus pancalus</i> Hamilton, 1822	LC
41	Bamali	<i>Macrogathus zebrinus</i> (Blyth, 1858)	LC
Synbranchidae			
42	Gangetic Mud Eel	<i>Monopterusuchia</i> (Hamilton, 1822)	LC

[#]VU = Vulnerable, NT = Near Threatened, LC = Least Concern, DD = Data Deficient, NE = Not Evaluated

Appendix 6. Checklist of amphibians of Jalthal

S. N.	Order/ Family/ Common name	Scientific name	IUCN Status [#]
ANURA			
Bufonidae			
1	Southern Asian Toad	<i>Duttaphrynus melanostictus</i> (Schneider, 1799)	LC
2	Indus Valley Toad	<i>Duttaphrynus stomaticus</i> (Lütken, 1864)	LC
Dicroglossidae			
3	Indian Bullfrog	<i>Hoplobatrachus tigerinus</i> (Daudin, 1802)	LC
4	Jerdon's Bullfrog	<i>Hoplobatrachus crassus</i> (Jerdon, 1853)	LC
5	Skittering Frog	<i>Euphlyctis adolfi</i> (Gunther, 1860)	LC
6	Madhese Kithre Bhyaguto	<i>Minervarya teraiensis</i> (Dubois, 1984)	LC
7	Syhadra Frog	<i>Minervarya cf. syhadrensis</i> (Annandale, 1919)	LC
8	Nepal Cricket Frog	<i>Minervarya nepalensis</i> (Dubois, 1975)	LC
9	Pierre's Cricket Frog	<i>Minervarya pierrei</i> (Dubois, 1975)	LC
Microhylidae			
10	Narrow-mouth Frog	<i>Microhyla nilphamariensis</i> Howlader, Nair, Gopalan & Merilä, 2015	LC
11	Sri Lankan Bullfrog	<i>Uperodon taprobanicus</i> (Parker, 1934)	LC
Ranidae			
12	Cope's Assam Frog	<i>Hydrophylax leptoglossa</i> (Cope, 1868)	LC
13	Yellow-striped Frog	<i>Hylarana tytleri</i> (Theobald, 1868)	LC
Rhacophoridae			
14	Common Tree Frog	<i>Polypedates maculatus</i> (Gray, 1830)	LC

[#]LC = Least Concern

Appendix 7. Checklist of reptiles of Jalthal

Lizards

S. N.	Family/Common Name	Scientific Name	IUCN Status [#]
Agamidae			
1	Changeable Lizard	<i>Calotes vultuosus</i> (Harlan, 1825)	LC
Gekkonoidae			
2	Tokay	<i>Gekko gekko</i> (Linnaeus, 1758)	LC
3	Assam Greyish Brown Gecko	<i>Hemidactylus cf. garnotii</i> Duméril & Bibron, 1836	LC
4	Southasian Common House Gecko	<i>Hemidactylus frenatus</i> Duméril & Bibron, 1836	LC
Scincidae			
5	Brown Dwarf Skink	<i>Riopa albopunctata</i> (Gray, 1846)	LC
6	Kneeled Indian Mabuya/Common Skink	<i>Eutropis carinata</i> (Schneider, 1801)	LC
7	Three-banded Mabuya	<i>Eutropis trivittata</i> (Hardwicke & Gray, 1827)	LC
8	Bronze Grass Skink	<i>Eutropis macularia</i> (Blyth, 1853)	LC
Varanidae			
9	Bengal Monitor Lizard	<i>Varanus bengalensis</i> (Daudin, 1802)	NT
10	Yellow Monitor Lizard	<i>Varanus flavescens</i> (Hardwicke & Gray, 1827)	EN

Turtles and tortoises

S. N.	Family/Common Name	Scientific Name	IUCN Status [*]
Testudinidae			
1	Elongated Tortoise	<i>Indotestudo elongata</i> (Blyth, 1854)	CR
2	Indian Flap-shelled Turtle	<i>Lissemys punctata</i> (Bonnaterre, 1789)	VU
3	Peacock Soft-shelled Turtle	<i>Nilssonina hurum</i> (Gray, 1830)	EN

Snakes

S. N.	Family/Common Name	Scientific Name	IUCN Status*
Pythonidae			
1	Burmese Python	<i>Python bivittatus</i> (Kuhl, 1820)	VU
Erycidae			
2	Common Sand Boa	<i>Eryx conicus</i> (Schneider, 1801)	NT
Colubridae			
3	Common Wolf Snake	<i>Lycodon aulicus</i> (Linnaeus, 1758)	LC
4	Twin-spotted Wolfsnake	<i>Lycodon jara</i> (Shaw, 1802)	LC
5	Long-snout Vine Snake	<i>Ahaetulla longirostris</i> Mirza, Pattekar, Verma, Stuart, Purkayastha, Mohapatra, & Patel, 2024	NE
6	Ornate Flying Snake	<i>Chrysopelea ornata</i> (Shaw, 1802)	LC
7	Trinket Snake	<i>Coelognathus helena</i> (Daudin, 1803)	LC
8	Common Bronzedback Tree Snake	<i>Dendrelaphis tristis</i> (Daudin, 1803)	LC
9	Common Cat Snake	<i>Boiga trigonata</i> (Schneider, 1802)	LC
10	Siamese Cat Snake	<i>Boiga siamensis</i> (Nootphand, 1971)	LC
11	Indian Rat Snake	<i>Ptyas mucosa</i> (Linnaeus, 1758)	LC
12	Black Headed Royal Snake	<i>Spalerosophis atriceps</i> (Fischer, 1885)	LC
Natricidae			
13	Buff-striped Keelback	<i>Amphiesma stolatum</i> (Linnaeus, 1758)	LC
14	Checkered Keelback	<i>Fowlea piscator</i> Schneider, 1799	LC
Elapidae			
15	Common Krait	<i>Bungarus caeruleus</i> (Schneider, 1801)	LC
16	Banded Krait	<i>Bungarus fasciatus</i> (Schneider, 1801)	LC
17	Lesser Black Krait	<i>Bungarus lividus</i> (Cantor, 1839)	LC
18	Spectacled Cobra	<i>Naja naja</i> (Linnaeus, 1758)	LC
19	Monoceled Cobra	<i>Naja kaouthia</i> (Lesson, 1831)	LC
20	King Cobra	<i>Ophiophagus hannah</i> (Cantor, 1836)	VU
Viperidae			
21	Nepal Pit Viper	<i>Trimeresurus septentrionalis</i> (Kramer, 1977)	LC

*CR = Critically Endangered, EN= Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern.

Appendix 8. Checklist of birds of Jalthal

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
Accipitriformes					
1	Accipitridae	<i>Accipiter badius</i> (Gmelin, 1788)	Shikra	LC	E
2	Accipitridae	<i>Accipiter gentilis</i> (Linnaeus, 1758)	Northern Goshawk	LC	F
3	Accipitridae	<i>Accipiter nisus</i> (Linnaeus, 1758)	Eurasian Sparrowhawk	LC	E
4	Accipitridae	<i>Accipiter trivirgatus</i> (Temminck, 1824)	Crested Goshawk	LC	F
5	Accipitridae	<i>Accipiter virgatus</i> (Temminck, 1822)	Besra	LC	E
6	Accipitridae	<i>Aviceda jerdoni</i> (Blyth, 1842)	Jerdon's Baza	LC	F
7	Accipitridae	<i>Aviceda leuphotes</i> (Dumont, 1820)	Black Baza	LC	F
8	Accipitridae	<i>Buteo reffectus</i> (Portenko, 1935)	Himalayan Buzzard	LC	F
9	Accipitridae	<i>Circaetus gallicus</i> (Gmelin, 1788)	Short-toed Snake Eagle	LC	E
10	Accipitridae	<i>Circus aeruginosus</i> (Linnaeus, 1758)	Western Marsh Harrier	LC	F
11	Accipitridae	<i>Circus cyaneus</i> (Linnaeus, 1766)	Hen Harrier	LC	E
12	Accipitridae	<i>Elanus caeruleus</i> (Desfontaines, 1789)	Black-winged Kite	LC	E
13	Accipitridae	<i>Milvus migrans</i> (Boddaert, 1783)	Black Kite	LC	E
14	Accipitridae	<i>Pernis ptilorhynchus</i> (Temminck, 1821)	Oriental Honey-buzzard	LC	E
15	Accipitridae	<i>Spilornis cheela</i> (Latham, 1790)	Crested Serpent Eagle	LC	F
16	Pandionidae	<i>Pandion haliaetus</i> (Linnaeus, 1758)	Osprey	LC	E
Anseriformes					
17	Anatidae	<i>Anas crecca</i> (Linnaeus, 1758)	Common Teal	LC	W
18	Anatidae	<i>Anas platyrhynchos</i> (Linnaeus, 1758)	Mallard	LC	W
19	Anatidae	<i>Aythya nyroca</i> (Güldenstädt, 1770)	Ferruginous Duck	NT	W

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
20	Anatidae	<i>Dendrocygna bicolor</i> (Vieillot, 1816)	Fulvous Whistling-duck	LC	W
21	Anatidae	<i>Dendrocygna javanica</i> (Horsfield, 1821)	Lesser Whistling-duck	LC	W
22	Anatidae	<i>Mareca penelope</i> (Linnaeus, 1758)	Eurasian Wigeon	LC	W
23	Anatidae	<i>Nettapus coromandelianus</i> (J.F.Gmelin, 1789)	Cotton Pygmy-goose	LC	W
24	Anatidae	<i>Tadorna ferruginea</i> (Pallas, 1764)	Ruddy Shelduck	LC	W
Apodiformes					
25	Apodidae	<i>Apus nipalensis</i> (Hodgson, 1837)	House Swift	LC	E
Bucerotiformes					
26	Upupidae	<i>Upupa epops</i> (Linnaeus, 1758)	Common Hoopoe	LC	E
Charadriiformes					
27	Burhinidae	<i>Burhinus indicus</i> (Salvadori, 1866)	Indian Thick-Knee	LC	F
28	Charadriidae	<i>Charadrius alexandrinus</i> (Linnaeus, 1758)	Kentish Plover	LC	W
29	Charadriidae	<i>Charadrius dubius</i> (Scopoli, 1786)	Little Ringed Plover	LC	W
30	Charadriidae	<i>Vanellus cinereus</i> (Blyth, 1842)	Grey-headed Lapwing	LC	W
31	Charadriidae	<i>Vanellus duvaucelii</i> (R.Lesson, 1826)	River Lapwing	NT	W
32	Charadriidae	<i>Vanellus indicus</i> (Boddaert, 1783)	Red-wattled Lapwing	LC	W
33	Charadriidae	<i>Vanellus malabaricus</i> (Boddaert, 1783)	Yellow-wattled Lapwing	LC	W
34	Charadriidae	<i>Vanellus vanellus</i> (Linnaeus, 1758)	Northern Lapwing	NT	E
35	Glareolidae	<i>Glareola lactea</i> (Temminck, 1820)	Little Pratincole	LC	W
36	Jacanidae	<i>Metopidius indicus</i> (Latham, 1790)	Bronze-winged Jacana	LC	W
37	Recurvirostridae	<i>Calidris temminckii</i> (Leisler, 1812)	Temminck's Stint	LC	W
38	Rostratulidae	<i>Rostratula benghalensis</i> (Linnaeus, 1758)	Greater Painted Snipe	LC	W

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
39	Scolopacidae	<i>Actitis hypoleucos</i> (Linnaeus, 1758)	Common Sandpiper	LC	W
40	Scolopacidae	<i>Gallinago gallinago</i> (Linnaeus, 1758)	Common Snipe	LC	W
41	Scolopacidae	<i>Gallinago stenura</i> (Bonaparte, 1831)	Pin-tailed Snipe	LC	W
42	Scolopacidae	<i>Tringa nebularia</i> (Gunnerus, 1767)	Common Greenshank	LC	W
43	Scolopacidae	<i>Tringa ochropus</i> (Linnaeus, 1758)	Green Sandpiper	LC	W
44	Scolopacidae	<i>Tringa stagnatilis</i> (Bechstein, 1803)	Marsh Sandpiper	LC	W
45	Scolopacidae	<i>Tringa totanus</i> (Linnaeus, 1758)	Common Redshank	LC	W
Ciconiiformes					
46	Ciconiidae	<i>Ciconia episcopus</i> (Boddaert, 1783)	Asian Woollyneck Stork	NT	W
47	Ciconiidae	<i>Ciconia nigra</i> (Linnaeus, 1758)	Black Stork	LC	W
48	Ciconiidae	<i>Leptoptilos javanicus</i> (Horsfield, 1821)	Lesser Adjutant	NT	W
49	Ciconiidae	<i>Mycteria leucocephala</i> (Pennant, 1769)	Asian Openbill	LC	W
Columbiformes					
50	Columbidae	<i>Chalcophaps indica</i> (Linnaeus, 1758)	Grey-capped Emerald Dove	LC	F
51	Columbidae	<i>Columba livia</i> (J.F.Gmelin, 1789)	Common Pigeon (Feral)	LC	E
52	Columbidae	<i>Spilopelia suratensis</i> (Gmelin, 1789)	Western Spotted Dove	LC	E
53	Columbidae	<i>Streptopelia decaocto</i> (Frisvaldszky, 1838)	Eurasian Collared-dove	LC	E
54	Columbidae	<i>Streptopelia orientalis</i> (Latham, 1790)	Oriental Turtle-dove	LC	F
55	Columbidae	<i>Streptopelia tranquebarica</i> (Hermann, 1804)	Red Collared-dove	LC	F
56	Columbidae	<i>Treron phoenicopterus</i> (Latham, 1790)	Yellow-footed Green Pigeon	LC	F
Coraciiformes					
57	Alcedinidae	<i>Alcedo hercules</i> (Laubmann, 1917)	Blyth's Kingfisher	NT	W

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
58	Alcedinidae	<i>Ceryle rudis</i> (Linnaeus, 1758)	Pied Kingfisher	LC	W
59	Alcedinidae	<i>Halcyon smyrnensis</i> (Linnaeus, 1758)	White-throated Kingfisher	LC	W
60	Alcedinidae	<i>Pelargopsis capensis</i> (Linnaeus, 1766)	Stork-billed Kingfisher	LC	W
61	Bucerotidae	<i>Anthracoceros albirostris</i> (Shaw, 1808)	Oriental Pied Hornbill	LC	F
62	Bucerotidae	<i>Ocyrceros birostris</i> (Scopoli, 1786)	Indian Grey Hornbill	LC	E
63	Coraciidae	<i>Coracias affinis</i> (Horsfield, 1840)	Indochinese Roller	LC	E
64	Coraciidae	<i>Coracias benghalensis</i> (Linnaeus, 1758)	Indian Roller	LC	E
65	Meropidae	<i>Merops leschenaulti</i> (Vieillot, 1817)	Chestnut-headed Bee-eater	LC	E
66	Meropidae	<i>Merops orientalis</i> (Latham, 1801)	Green Bee-eater	LC	E
67	Meropidae	<i>Nyctyornis athertoni</i> (Jardine & Selby, 1828)	Blue-bearded Bee-eater	LC	F
Cuculiformes					
68	Cuculidae	<i>Centropus bengalensis</i> (Gmelin, 1788)	Lesser Coucal	LC	E
69	Cuculidae	<i>Centropus sinensis</i> (Stephens, 1815)	Greater Coucal	LC	E
70	Cuculidae	<i>Clamator jacobinus</i> (Boddaert, 1783)	Jacobin Cuckoo	LC	F
71	Cuculidae	<i>Cuculus canorus</i> (Linnaeus, 1758)	Common Cuckoo	LC	F
72	Cuculidae	<i>Cuculus micropterus</i> (Gould, 1838)	Indian Cuckoo	LC	F
73	Cuculidae	<i>Cuculus nisicolor</i> (Blyth, 1843)	Whistling Hawk-cuckoo	LC	F
74	Cuculidae	<i>Cuculus sparverioides</i> (Vigors, 1832)	Large Hawk-cuckoo	LC	F
75	Cuculidae	<i>Cuculus varius</i> (Vahl, 1797)	Common Hawk-cuckoo	LC	F
76	Cuculidae	<i>Eudynamis scolopaceus</i> (Linnaeus, 1758)	Asian Koel	LC	E
77	Cuculidae	<i>Rhopodytes tristis</i> (Lesson, 1830)	Green-billed Malkoha	LC	F

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
Falconiformes					
78	Falconidae	<i>Falco chicquera</i> (Daudin, 1800)	Red-headed Falcon	NT	F
79	Falconidae	<i>Falco peregrinus</i> (Tunstall, 1771)	Peregrine Falcon	LC	E
80	Falconidae	<i>Falco tinnunculus</i> (Linnaeus, 1758)	Common Kestrel	LC	F
81	Falconidae	<i>Microhierax caerulescens</i> (Linnaeus, 1758)	Collared Falconet	LC	F
Galliformes					
82	Phasianidae	<i>Francolinus francolinus</i> (Linnaeus, 1766)	Black Francolin	LC	F
83	Phasianidae	<i>Gallus gallus</i> (Linnaeus, 1758)	Red Junglefowl	LC	F
84	Phasianidae	<i>Lophura leucomelanos</i> (Latham, 1790)	Kalij Pheasant	LC	F
85	Phasianidae	<i>Pavo cristatus</i> (Linnaeus, 1758)	Indian Peafowl	LC	F
Gruiformes					
86	Rallidae	<i>Amaurornis phoenicurus</i> (Pennant, 1769)	White-breasted Waterhen	LC	W
87	Rallidae	<i>Fulica atra</i> (Linnaeus, 1758)	Eurasian Coot	LC	W
88	Rallidae	<i>Gallicrex cinerea</i> (Gmelin, 1789)	Watercock	LC	W
89	Rallidae	<i>Gallinula chloropus</i> (Linnaeus, 1758)	Common Moorhen	LC	W
90	Rallidae	<i>Gallinula chloropus</i> (Linnaeus, 1758)	Common Moorhen	LC	W
91	Rallidae	<i>Porphyrio porphyrio</i> (Linnaeus, 1758)	Purple Swamphen	LC	W
Passeriformes					
92	Acrocephalidae	<i>Acrocephalus dumetorum</i> (Blyth, 1849)	Blyths Reed-warbler	LC	W
93	Acrocephalidae	<i>Acrocephalus stentoreus</i> (Hemprich & Ehrenberg, 1833)	Calmorous Reed-warbler	LC	W
94	Acrocephalidae	<i>Iduna aedon</i> (Pallas, 1776)	Thick-billed Warbler	LC	W
95	Aegithinidae	<i>Aegithina tiphia</i> (Linnaeus, 1758)	Common Iora	LC	F
96	Alaudidae	<i>Alauda gulgula</i> (Franklin, 1831)	Oriental Skylark	LC	F

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
97	Alaudidae	<i>Calandrella raytal</i> (Blyth, 1845)	Sand Lark	LC	W
98	Alaudidae	<i>Eremopterix griseus</i> (Scopoli, 1786)	Ashy-crowned Sparrow Lark	LC	F
99	Alaudidae	<i>Mirafra assamica</i> (Horsfield, 1840)	Bengal Bush Lark	LC	W
100	Artamidae	<i>Artamus fuscus</i> (Vieillot, 1817)	Ashy Woodswallow	LC	E
101	Campephagidae	<i>Coracina macei</i> (Lesson, 1831)	Indian Cuckooshrike	LC	E
102	Campephagidae	<i>Coracina melanoptera</i> (Rüppell, 1839)	Black-headed Cuckooshrike	LC	E
103	Campephagidae	<i>Coracina melaschistos</i> (Hodgson, 1836)	Common Cuckooshrike	LC	E
104	Campephagidae	<i>Lanius cristatus</i> Linnaeus, 1758	Brown Shrike	LC	E
105	Campephagidae	<i>Pericrocotus cinnamomeus</i> (Linnaeus, 1766)	Small Minivet	LC	F
106	Campephagidae	<i>Pericrocotus roseus</i> (Vieillot, 1818)	Rosy Minivet	LC	F
107	Campephagidae	<i>Pericrocotus speciosus</i> (Latham, 1790)	Scarlet Minivet	LC	F
108	Chloropseidae	<i>Chloropsis aurifrons</i> (Temminck, 1829)	Golden-fronted Leafbird	LC	F
109	Cisticolidae	<i>Cisticola juncidis</i> (Rafinesque, 1810)	Zitting Cisticola	LC	W
110	Cisticolidae	<i>Orthotomus sutorius</i> (Pennant, 1769)	Common Tailorbird	LC	E
111	Cisticolidae	<i>Prinia gracilis</i> (Lichtenstein, 1823)	Graceful Prinia	LC	E
112	Cisticolidae	<i>Prinia inornata</i> (Sykes, 1832)	Plain Prinia	LC	W
113	Cisticolidae	<i>Prinia sylvatica</i> (Jerdon, 1840)	Jungle Prinia	LC	E
114	Corvidae	<i>Corvus macrorhynchos</i> (Wagler, 1827)	Large billed Crow	LC	E
115	Corvidae	<i>Corvus splendens</i> (Vieillot, 1817)	House Crow	LC	E
116	Corvidae	<i>Dendrocitta vagabunda</i> (Latham, 1790)	Rufous Treepie	LC	E
117	Dicruridae	<i>Dicrurus aeneus</i> (Vieillot, 1817)	Bronzed Drongo	LC	F

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
118	Dicruridae	<i>Dicrurus annectens</i> (Hodgson, 1836)	Crow-billed Drongo	LC	F
119	Dicruridae	<i>Dicrurus caerulescens</i> (Linnaeus, 1758)	White-bellied Drongo	LC	E
120	Dicruridae	<i>Dicrurus hottentottus</i> (Linnaeus, 1766)	Hair-crested Drongo	LC	F
121	Dicruridae	<i>Dicrurus leucophaeus</i> (Vieillot, 1817)	Ashy Drongo	LC	F
122	Dicruridae	<i>Dicrurus macrocercus</i> (Vieillot, 1817)	Black Drongo	LC	F
123	Dicruridae	<i>Dicrurus paradiseus</i> (Linnaeus, 1766)	Greater Racket-tailed Drongo	LC	F
124	Dicruridae	<i>Dicrurus remifer</i> (Temminck, 1823)	Lesser Racket-tailed Drongo	LC	F
125	Emberizidae	<i>Emberiza aureola</i> (Pallas, 1773)	Yellow-breasted Bunting	CR	E
126	Emberizidae	<i>Emberiza fucata</i> (Pallas, 1776)	Little Bunting	LC	E
127	Emberizidae	<i>Emberiza lathami</i> (J.E.Gray, 1831)	Crested Bunting	LC	F
128	Estrildidae	<i>Lonchura malacca</i> (Linnaeus, 1766)	Tricoloured Munia	LC	E
129	Estrildidae	<i>Lonchura punctulata</i> (Linnaeus, 1758)	Scaly-breasted Munia	LC	E
130	Hirundinidae	<i>Cecropis daurica</i> (Laxmann, 1769)	Red-rumped Swallow	LC	E
131	Hirundinidae	<i>Hirundo rustica</i> (Linnaeus, 1758)	Barn Swallow	LC	E
132	Hirundinidae	<i>Riparia chinensis</i> (J.E.Gray, 1830)	Gray-throated Martin	LC	E
133	Hirundinidae	<i>Riparia paludicola</i> (Vieillot, 1817)	Plain Martin	LC	E
134	Laniidae	<i>Lanius schach</i> Linnaeus, 1758	Long-tailed Shrike	LC	E
135	Laniidae	<i>Lanius tephronotus</i> (Vigors, 1831)	Grey-backed Shrike	LC	E
136	Laniidae	<i>Lanius vittatus</i> Valenciennes, 1826	Bay-backed Shrike	LC	E
137	Leiotrichidae	<i>Turdoides earlei</i> (Blyth, 1844)	Striated Babbler	LC	E
138	Locustellidae	<i>Megalurus palustris</i> (Horsfield, 1821)	Straited Grassbird	LC	W

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
139	Monarchidae	<i>Hypothymis azurea</i> (Boddaert, 1783)	Black-naped Monarch	LC	F
140	Monarchidae	<i>Terpsiphone paradisi</i> (Linnaeus, 1758)	Indian Paradise Flycatcher	LC	F
141	Motacillidae	<i>Anthus hodgsoni</i> (Richmond, 1907)	Olive-backed Pipit	LC	W
142	Motacillidae	<i>Anthus roseatus</i> (Blyth, 1847)	Rosy Pipit	LC	W
143	Motacillidae	<i>Anthus rufulus</i> (Vieillot, 1818)	Paddyfield Pipit	LC	W
144	Motacillidae	<i>Motacilla alba</i> (Linnaeus, 1758)	White Wagtail	LC	W
145	Motacillidae	<i>Motacilla cinerea</i> (Tunstall, 1771)	Grey Wagtail	LC	W
146	Motacillidae	<i>Motacilla citreola</i> (Pallas, 1776)	Citrine Wagtail	LC	W
147	Motacillidae	<i>Motacilla flava</i> (Linnaeus, 1758)	Yellow Wagtail	LC	W
148	Motacillidae	<i>Motacilla maderaspatensis</i> (Gmelin, 1789)	White-browed Wagtail	LC	W
149	Muscicapidae	<i>Copsychus saularis</i> (Linnaeus, 1758)	Oriental Magpie Robin	LC	E
150	Muscicapidae	<i>Culicicapa ceylonensis</i> (Swainson, 1820)	Grey-headed Canary Flycatcher	LC	E
151	Muscicapidae	<i>Eumyias thalassinus</i> (Swainson, 1838)	Verditer Flycatcher	LC	F
152	Muscicapidae	<i>Ficedula albicilla</i> (Pallas, 1811)	Taiga Flycatcher	LC	F
153	Muscicapidae	<i>Ficedula westermanni</i> (Sharpe, 1888)	Little Pied Flycatcher	LC	F
154	Muscicapidae	<i>Luscinia calliope</i> (Pallas, 1776)	Siberian Rubythroat	LC	F
155	Muscicapidae	<i>Luscinia svecica</i> (Linnaeus, 1758)	Bluethroat	LC	W
156	Muscicapidae	<i>Muscicapa muttui</i> (E.L.Layard, 1854)	Brown-brested Flycatcher	LC	F
157	Muscicapidae	<i>Muscicapa sibirica</i> Gmelin, 1789	Dark-sided Flycatcher	LC	F
158	Muscicapidae	<i>Myiomela leucura</i> (Hodgson, 1845)	White-tailed Blue Robin	LC	F
159	Muscicapidae	<i>Phoenicurus ochruros</i> (S.G.Gmelin, 1774)	Black Redstart	LC	W

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
160	Muscicapidae	<i>Saxicola caprata</i> (Linnaeus, 1766)	Pied Bushchat	LC	W
161	Muscicapidae	<i>Saxicola leucurus</i> (Blyth, 1847)	White Tailed Stonechat	LC	W
162	Muscicapidae	<i>Saxicola torquatus</i> (Linnaeus, 1766)	Siberian Stonechat	LC	W
163	Muscicapidae	<i>Tarsiger hyperythrus</i> (Blyth, 1847)	Rufous-brested Bush-robin	LC	F
164	Nectariniidae	<i>Aethopyga siparaja</i> (Raffles, 1822)	Crimson Sunbird	LC	F
165	Nectariniidae	<i>Chalcoparia singalensis</i> (Gmelin, 1789)	Ruby-cheeked Sunbird	LC	F
166	Nectariniidae	<i>Cinnyris asiaticus</i> (Latham, 1790)	Purple Sunbird	LC	F
167	Oriolidae	<i>Oriolus chinensis</i> (Linnaeus, 1766)	Black-hooded Oriole	LC	F
168	Oriolidae	<i>Oriolus kundoo</i> (Sykes, 1832)	Indian Golden Oriole	LC	F
169	Paridae	<i>Parus cinereus</i> (Vieillot, 1817)	Cinereous Tit	NE	F
170	Passeridae	<i>Passer domesticus</i> (Linnaeus, 1758)	House Sparrow	LC	E
171	Passeridae	<i>Passer montanus</i> (Linnaeus, 1758)	Eurasian Tree Sparrow	LC	E
172	Pellorneidae	<i>Malacocincla abbotti</i> (Blyth, 1845)	Abbott's Babbler	LC	F
173	Pellorneidae	<i>Pellorneum ruficeps</i> (Swainson, 1832)	Puff-throated Babbler	LC	f
174	Pellorneidae	<i>Turdoides striata</i> (Dumont, 1823)	Jungle Babbler	LC	E
175	Phylloscopidae	<i>Phylloscopus collybita</i> (Vieillot, 1817)	Common Chiffchaff	LC	W
176	Phylloscopidae	<i>Phylloscopus fuscatus</i> (Blyth, 1842)	Smoky Warbler	LC	E
177	Phylloscopidae	<i>Phylloscopus humei</i> (W.E.Brooks, 1878)	Hume's Leaf Warbler	LC	F
178	Phylloscopidae	<i>Phylloscopus trochiloides</i> (Sundevall, 1837)	Greenish Warbler	LC	F
179	Phylloscopidae	<i>Seicercus whistleri</i> (Ticehurst, 1925)	Whistler Warbler	LC	F
180	Ploceidae	<i>Ploceus philippinus</i> (Linnaeus, 1766)	Baya Weaver	LC	E

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type*
181	Pycnonotidae	<i>Pycnonotus cafer</i> (Linnaeus, 1766)	Red-vented Bulbul	LC	E
182	Pycnonotidae	<i>Pycnonotus flaviventris</i> (Tickell, 1833)	Black-crested Bulbul	LC	F
183	Pycnonotidae	<i>Pycnonotus jocosus</i> (Linnaeus, 1758)	Red-whiskered Bulbul	LC	F
184	Rhipiduridae	<i>Rhipidura albicollis</i> (Vieillot, 1818)	White-throated Fantail	LC	E
185	Sittidae	<i>Sitta cinnamoventris</i> (Blyth, 1842)	Chestnut-bellied Nuthatch	LC	F
186	Sittidae	<i>Sitta frontalis</i> (Swainson, 1820)	Velvet-fronted Nuthatch	LC	F
187	Sturnidae	<i>Acridotheres fuscus</i> (Wagler, 1827)	Jungle Myna	LC	E
188	Sturnidae	<i>Acridotheres ginginianus</i> (Latham, 1790)	Bank Myna	LC	E
189	Sturnidae	<i>Acridotheres grandis</i> (Moore, 1858)	Great Myna	LC	W
190	Sturnidae	<i>Acridotheres tristis</i> (Linnaeus, 1766)	Common Myna	LC	E
191	Sturnidae	<i>Gracula religiosa</i> (Linnaeus, 1758)	Common Hill Myna	LC	F
192	Sturnidae	<i>Gracupica contra</i> (Linnaeus, 1758)	Asian Pied Starling	LC	E
193	Sturnidae	<i>Sturnia malabarica</i> (Gmelin, 1789)	Chestnut-tailed Starling	LC	F
194	Sturnidae	<i>Sturnia pagodarum</i> (Gmelin, 1789)	Brahminy Starling	LC	F
195	Sylviidae	<i>Chrysomma sinense</i> (Gmelin, 1789)	Yellow-eyed Babbler	LC	E
196	Tephrodornithidae	<i>Tephrodornis pondicerianus</i> (Gmelin, 1789)	Common Woodshrike	LC	F
197	Timiliidae	<i>Mixornis gularis</i> (Horsfield, 1822)	Pin-striped Tit Babbler	LC	F
198	Timiliidae	<i>Stachyris humei</i> (Mandelli, 1873)	Sikkim Wedge-billed Babbler	NT	F
199	Turdidae	<i>Turdus boulboul</i> (Latham, 1790)	Grey-winged Blackbird	LC	E
200	Zosteropidae	<i>Zosterops palpebrosus</i> (Temminck, 1824)	Oriental White-eye	LC	E

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type*
Pelecaniformes					
201	Ardeidae	<i>Ardea cinerea</i> (Linnaeus, 1758)	Grey Heron	LC	W
202	Ardeidae	<i>Ardeola grayii</i> (Sykes, 1832)	Indian Pond Heron	LC	W
203	Ardeidae	<i>Bubulcus ibis</i> (Linnaeus, 1758)	Cattle Egret	LC	W
204	Ardeidae	<i>Butorides striata</i> (Linnaeus, 1758)	Green-backed Heron	LC	W
205	Ardeidae	<i>Casmerodius albus</i> (Linnaeus, 1758)	Great White Egret	LC	W
206	Ardeidae	<i>Egretta garzetta</i> (Linnaeus, 1766)	Little Egret	LC	W
207	Ardeidae	<i>Egretta intermedia</i> (Wagler, 1829)	Intermediate Egret	LC	W
208	Ardeidae	<i>Gorsachius melanolophus</i> (Raffles, 1822)	Malayan Night Heron	LC	W
209	Ardeidae	<i>Ixobrychus cinnamomeus</i> (Gmelin, 1789)	Cinnamon Bittern	LC	W
210	Ardeidae	<i>Ixobrychus sinensis</i> (Gmelin, 1789)	Yellow Bittern	LC	W
211	Ardeidae	<i>Nycticorax nycticorax</i> (Linnaeus, 1758)	Black Crowned Night Heron	LC	W
212	Threskiornithidae	<i>Pseudibis papillosa</i> (Temminck, 1824)	Red-naped Ibis	LC	W
213	Threskiornithidae	<i>Threskiornis melanocephalus</i> (Latham, 1790)	Black-headed Ibis	LC	W
Piciformes					
214	Megalaimidae	<i>Psilopogon asiaticus</i> (Latham, 1790)	Blue-throated Barbet	LC	E
215	Megalaimidae	<i>Psilopogon haemacephalus</i> (P.L.S.Müller, 1776)	Coppersmith Barbet	LC	E
216	Megalaimidae	<i>Psilopogon lineatus</i> (Vieillot, 1816)	Lineated Barbet	LC	F
217	Picidae	<i>Chrysocolaptes lucidus</i> (Scopoli, 1786)	Greater Flameback	LC	F
218	Picidae	<i>Chrysophlegma flavinucha</i> (Gould, 1834)	Greater Yellownappe	LC	F
219	Picidae	<i>Dendrocopos macei</i> (Vieillot, 1818)	Fulvous-breasted Woodpecker	LC	F
220	Picidae	<i>Dinopium benghalense</i> (Linnaeus, 1758)	Black-rumped Flameback	LC	F

S.N.	Order/ Family	Scientific Name	Common Name	IUCN Status [#]	Habitat Type [*]
221	Picidae	<i>Dinopium shorii</i> (Vigors, 1831)	Himalayan Flameback	LC	F
222	Picidae	<i>Jynx torquilla</i> (Linnaeus, 1758)	Eurasian Wryneck	LC	E
223	Picidae	<i>Picus chlorolophus</i> (Vieillot, 1818)	Lesser Yellownappe	LC	F
224	Picidae	<i>Yungipicus canicapillus</i> (Blyth, 1845)	Grey-capped Pygmy Woodpecker	LC	F
Psittaciformes					
225	Psittacidae	<i>Psittacula cyanocephala</i> (Linnaeus, 1766)	Plum-headed Parakeet	LC	F
226	Psittacidae	<i>Psittacula eupatria</i> (Linnaeus, 1766)	Alexandrine Parakeet	NT	F
227	Psittacidae	<i>Psittacula krameri</i> (Scopoli, 1769)	Rose-ringed Parakeet	LC	F
228	Psittacidae	<i>Psittacula roseata</i> (Biswas, 1951)	Blossom-headed Parakeet	NT	F
Strigiformes					
229	Strigidae	<i>Athene brama</i> (Temminck, 1821)	Spotted Owlet	LC	E
230	Strigidae	<i>Glaucidium cuculoides</i> (Vigors, 1831)	Asian Barred Owlet	LC	F
231	Strigidae	<i>Glaucidium radiatum</i> (Tickell, 1833)	Jungle Owlet	LC	F
232	Strigidae	<i>Ketupa zeylonensis</i> (J.F.Gmelin, 1788)	Brown Fish Owl	LC	F
233	Strigidae	<i>Ninox scutulata</i> (Raffles, 1822)	Brown Boobook	LC	F
234	Strigidae	<i>Otus bakkamoena</i> (Pennant, 1769)	Indian Scops-owl	LC	F
235	Strigidae	<i>Otus lettia</i> (Hodgson, 1836)	Collared Scops-owl	LC	F
236	Tytonidae	<i>Tyto alba</i> (Scopoli, 1769)	Common Barn-owl	LC	E
Suliformes					
237	Phalacrocoracidae	<i>Microcarbo niger</i> (Vieillot, 1817)	Little Cormorant	LC	W
238	Phalacrocoracidae	<i>Phalacrocorax carbo</i> (Linnaeus, 1758)	Great Cormorant	LC	W

[#]**IUCN status:** CR = Critically Endangered, NT = Near Threatened, LC = Least Concern, NE = Not Evaluated. ^{*}**Habitat:** E = Edge species, including those associated with cultivated areas, F = Forest-associated species, W = Wetland species.

Appendix 9. Checklist of mammals of Jalthal

S. N.	Order/ Family	Scientific name	Common name	IUCN status [#]	National status [#]
Artiodactyla					
1	Bovidae	<i>Boselaphus tragocamelus</i> (Pallas, 1766)	Nilgai	LC	VU
2	Cervidae	<i>Axis axis</i> (Erxleben, 1777)	Spotted Deer	LC	VU
3	Cervidae	<i>Muntiacus muntjak vaginalis</i> (Boddaert, 1785)	Barking Deer	LC	VU
4	Suidae	<i>Sus scrofa</i> (Linnaeus, 1758)	Wild Boar	LC	LC
Carnivora					
5	Canidae	<i>Canis aureus</i> (Linnaeus, 1758)	Golden Jackal	LC	LC
6	Canidae	<i>Vulpes bengalensis</i> (Shaw, 1800)	Bengal Fox	LC	VU
7	Felidae	<i>Felis chaus</i> (Schreber, 1777)	Jungle Cat	LC	LC
8	Felidae	<i>Prionailurus bengalensis</i> (Kerr, 1792)	Leopard Cat	LC	VU
9	Herpestidae	<i>Herpestes edwardsi</i> (É.Geoffroy Saint-Hilaire, 1818)	Indian Grey Mongoose	LC	LC
10	Mustelidae	<i>Martes flavigula</i> (Boddaert, 1785)	Yellow-throated Marten	LC	LC
11	Viverridae	<i>Paradoxurus hermaphroditus</i> (Pallas, 1777)	Common Palm Civet	LC	LC
12	Viverridae	<i>Viverra zibetha</i> (Linnaeus, 1758)	Large Indian Civet	LC	NT
13	Viverridae	<i>Viverricula indica</i> (É.Geoffroy Saint-Hilaire, 1803)	Small Indian Civet	LC	LC
Chiroptera					
14	Pteropodidae	<i>Cynopterus sphinx</i> (Vahl, 1797)	Greater Short-nosed Fruit Bat	LC	LC
15	Pteropodidae	<i>Pteropus medius</i> (Temminck, 1825)	Indian Flying Fox	LC	LC
16	Pteropodidae	<i>Rousettus leschenaultii</i> (Desmarest, 1820)	Fulvous Fruit Bat	LC	LC
Lagomorpha					
17	Leporidae	<i>Lepus nigricollis</i> (F.Cuvier, 1823)	Indian Hare	LC	LC
Pholidota					
18	Manidae	<i>Manis pentadactyla</i> (Linnaeus, 1758)	Chinese Pangolin	CR	EN
Primates					
19	Cercopithecidae	<i>Macaca mulatta</i> (Zimmermann, 1780)	Rhesus Macaque	LC	LC
20	Cercopithecidae	<i>Semnopithecus hector</i> (Pocock, 1928)	Terai Grey Langur	NT	LC

S. N.	Order/ Family	Scientific name	Common name	IUCN status [#]	National status [#]
Proboscidea					
21	Elephantidae	<i>Elephas maximus</i> (Linnaeus, 1758)	Asian Wild Elephant	EN	EN
Rodentia					
22	Hystricidae	<i>Hystrix brachyura</i> (Linnaeus, 1758)	Malayan Porcupine	LC	DD
23	Muridae	<i>Bandicota bengalensis</i> (Gray, 1835)	Lesser Bandicoot Rat	LC	LC
24	Muridae	<i>Golunda ellioti</i> (Gray, 1837)	Indian Bush Rat	LC	LC
25	Muridae	<i>Mus booduga</i> (Gray, 1837)	Little Indian Field Mouse	LC	LC
26	Muridae	<i>Mus musculus</i> (Linnaeus, 1758)	Eastern House Mouse	LC	LC
27	Sciuridae	<i>Funambulus pennantii</i> (Wroughton, 1905)	Northern Palm Squirrel	LC	LC
28	Spalacidae	<i>Cannomys badius</i> (Hodgson, 1841)	Bay Bamboo Rat	LC	LC

*CR = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern, DD = Data Deficient

Appendix 10. Checklist of planted tree species in Jalthal

S.N.	Origin/ Botanical name	Family	Common name
Exotic			
1	<i>Monoon longifolium</i> (Sonn.) B.Xue & R.M.K.Saunders	Annonaceae	Asoka
2	<i>Mesua ferrea</i> L.	Calophyllaceae	Nagkeshar
3	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Combretaceae	Arjuna
4	<i>Platyclusus orientalis</i> (L.) Franco	Cupressaceae	Dhupi
5	<i>Hevea brasiliensis</i> (Willd. ex A.Juss.) Müll.Arg.	Euphorbiaceae	Rubber
6	<i>Acacia auriculiformis</i> A.Cunn. ex Benth.	Fabaceae	Acacia
7	<i>Caesalpinia</i> sp.	Fabaceae	Caesimina
8	<i>Calliandra haematocephala</i> Hassk.	Fabaceae	Siris
9	<i>Delonix regia</i> (Bojer ex Hook.) Raf.	Fabaceae	Gulmohar
10	<i>Leucaena leucocephala</i> (Lam.) de Wit	Fabaceae	Ipilipil
11	<i>Tectona grandis</i> L.f.	Lamiaceae	Teak, Sagun
12	<i>Cinnamomum verum</i> J.Presl	Lauraceae	Tejpat
13	<i>Lagerstroemia speciosa</i> (L.) Martyn	Lythraceae	Jadul
14	<i>Swietenia macrophylla</i> King	Meliaceae	Malasian Sal
15	<i>Eucalyptus camaldulensis</i> Dehnh.	Myrtaceae	Masala
16	<i>Psidium guajava</i> L.	Myrtaceae	Amba
17	<i>Citrus × limon</i> (L.) Osbeck	Rutaceae	Kagati
18	<i>Litchi chinensis</i> Sonn.	Sapindaceae	Litchi
Native			
19	<i>Mangifera indica</i> L.	Anacardiaceae	Aanp
20	<i>Spondias pinnata</i> (L.f.) Kurz	Anacardiaceae	Amaro
21	<i>Areca catechu</i> L.	Arecaceae	Supari
22	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Barro
23	<i>Terminalia chebula</i> Retz.	Combretaceae	Harro
24	<i>Dillenia indica</i> L.	Dilleniaceae	Autanga
25	<i>Shorea robusta</i> C.F.Gaertn.	Dipterocarpaceae	Sal
26	<i>Elaeocarpus angustifolius</i> Blume	Elaeocarpaceae	Rudrakshya
27	<i>Bauhinia purpurea</i> L.	Fabaceae	Tanki
28	<i>Cassia fistula</i> L.	Fabaceae	Rajbrikshya
29	<i>Dalbergia latifolia</i> Roxb.	Fabaceae	Satisal
30	<i>Dalbergia sissoo</i> Roxb. ex DC.	Fabaceae	Sissoo
31	<i>Pterocarpus marsupium</i> Roxb.	Fabaceae	Bijay Sal

32	<i>Senegalia catechu</i> (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	Khayer
33	<i>Gmelina arborea</i> Roxb. ex Sm.	Lamiaceae	Khamari
34	<i>Cinnamomum tamala</i> (Buch.-Ham.) T.Nees & C.H.Eberm.	Lauraceae	Tejpat
35	<i>Duabanga grandiflora</i> (Roxb. ex DC.) Walp.	Lythraceae	Paani Saj
36	<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Magnoliaceae	Chanp
37	<i>Bombax ceiba</i> L.	Malvaceae	Simal
38	<i>Chukrasia tabularis</i> A.Juss.	Meliaceae	Chekrasi
39	<i>Melia azedarach</i> L.	Meliaceae	Bakaino
40	<i>Artocarpus chama</i> Buch.-Ham.	Moraceae	Latahar
41	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamuna
42	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Amala
43	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Rubiaceae	Kadam
44	<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	Bel

Appendix 11. Checklist of IAPS found in Jalthal and adjoining areas

S. N.	Botanical name	Family	Invaded area	Native range
1	<i>Alternanthera philoxeroides</i> (Mart.) Griseb.	Amaranthaceae	Adjoining area	South America
2	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Adjoining area	Tropical Americas
3	<i>Pistia stratiotes</i> L.	Araceae	Adjoining area	South America
4	<i>Ageratum conyzoides</i> L.	Asteraceae	Adjoining area	Central & South America
5	<i>Ageratum houstonianum</i> Mill	Asteraceae	Jalthal forest	Mexico & Central America
6	<i>Bidens pilosa</i> L.	Asteraceae	Jalthal forest	Tropical Americas
7	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Asteraceae	Jalthal forest	Mexico, Central & South America
8	<i>Galinsoga quadriradiata</i> Ruiz & Pav.	Asteraceae	Adjoining area	Mexico
9	<i>Mikania micrantha</i> Kunth	Asteraceae	Jalthal forest	Central & South America
10	<i>Parthenium hysterophorus</i> L.	Asteraceae	Adjoining area	Southern USA to South America
11	<i>Ipomoea carnea</i> Jacq. subsp. <i>fistulosa</i> (Mart. ex Choisy) D.F.Austin	Convolvulaceae	Adjoining area	Mexico, Central & South America
12	<i>Mimosa diplotricha</i> C.Wright var. <i>diplotricha</i>	Fabaceae	Jalthal forest	Mexico to South America
13	<i>Mimosa pudica</i> L.	Fabaceae	Jalthal forest	Mexico to South America
14	<i>Senna occidentalis</i> (L.) Link	Fabaceae	Adjoining area	Tropical Americas
15	<i>Senna tora</i> (L.) Roxb.	Fabaceae	Jalthal forest	South America
16	<i>Mesosphaerum suaveolens</i> (L.) Kuntze	Lamiaceae	Jalthal forest	Tropical Americas
17	<i>Argemone mexicana</i> L.	Papaveraceae	Jalthal forest	Tropical Americas
18	<i>Leersia hexandra</i> Sw.	Poaceae	Jalthal forest	Tropical Americas
19	<i>Pontederia crassipes</i> Mart.	Pontederiaceae	Jalthal forest	South America
20	<i>Spermacoce alata</i> Aubl.	Rubiaceae	Jalthal forest	West Indies and Tropical America
21	<i>Lantana camara</i> L.	Verbenaceae	Jalthal forest	Central & South America



Jalthal Biodiversity Project

The Jalthal Biodiversity project is a Darwin Initiative UK supported project implemented by the ForestAction Nepal in collaboration with the Royal Botanic Garden Edinburgh, UK (RBGE), the Kathmandu Forestry College (KAFCOL), the Federation of Community Forestry Users Nepal (FECOFUN, Jhapa) and the Division Forest Office Jhapa. The project aimed to conserve biodiversity in community forests of Nepal through field actions and capacity building of key stakeholders, i.e., community forest user groups (CFUGs). Jalthal forest has been the primary site to demonstrate practical models of biodiversity conservation and forest restoration while benefiting livelihood of forest dependent people. Jalthal forest, paradoxically, shows diversity and degradation simultaneously.

The project was designed to conserve the rich biodiversity and mitigate drivers of forest degradation. During the period of its implementation (July 2019 to December 2025) the project has identified key features of the forest biodiversity and highlighted the extraordinary socioecological significance of the forest. Through the biodiversity profile, the project has demonstrated that community forests have high biodiversity, which is often overlooked, and deserve immediate conservation attention. The project has developed simple yet effective models of degraded forest restoration through integrated site management. The project has demonstrated a new, simple yet effective method of invasive species management for better ecological outputs. The project has also successfully piloted the agroforestry and biomass management of invasive species for forest restoration for the benefit of both nature and people.



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