

### 3.2 Biological Environment

The details of the biological environment including the survey method, habitat characteristics described in hear , list of species with their ecological parameters also have been given in hear.

#### Notes on study approach

Observations on biodiversity of the project area was done in line with recommended study framework by CEA as shown in Table 1 annex; with reference to the approach for cultivated lands and disturbed sites. During this rapid assessment event, Visual Encounter Survey (VES) method was used to document fauna and flora in different habitat types. There are three standard sampling designs for visual encounter surveys: opportunistic or randomized walk, transects, or a quadrat design (Crump and Scott, 1994), and the present survey was carried out through opportunistic or randomized walks in different uniform vegetation blocks. Visual encounter surveys can determine species richness; be applied in long term monitoring projects; provide information for compilation of a species list; and provide data used to estimate proportion of area surveyed that is occupied by target species. Photographic records were made to identify less familiar plants and animals, and standard taxonomic keys and other scientific literature mentioned in the list of references were used in the process of species identification. Enumeration of trees, tree saplings and tree seedlings vulnerable for clearance was done through direct measurements and counting within areas ear marked for clearance.

Table. 9. Detail biological survey method for each major fauna and floral group

Group	Direct Survey Method	Indirect method
Flora	Transects parallel to river bank including upper reaches of inundation area and lower area of Tailrace outlet,  Specimen identification on site, using guide books and comparison with specimens in National herbarium in Peradeniya.	Seasonally emerge plant species and medicinal species information collected by local people and local ayurvedic doctor
Mammals	Visual and auditory encounters during the transect survey	Foot prints, pug marks analysis of fecal matter.

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		Information from knowledgeable local people
Birds	Visual and auditory encounters during the transect survey	Random visual and auditory encounters during the field works
Reptiles	Capture and release after identification using guide books	Information from knowledgeable local people
Amphibians	Capture and release after identification using guide books	Auditory encounters for some species
Fish	Underwater observation, river bank survey and netting	Food fishery information from knowledgeable local people, past literature records
Butterflies	Visual encounters during the transect survey	Random sightings in project site
Dragonflies	Visual encounters during the transect survey	Random sightings in project site

### Existing habitats of flora and fauna

**Ecological setting:** Project influencing area is located in the wet zone mid country of Sri Lanka where altitude range between 330m and 590m. Characteristic to the wet zone climatic region, the rainfall is distinctly seasonal with two rainfall peaks in the year. The south western monsoon rains occurs from May to September. The northeast monsoon occurs from December to February. There are two distinct inter monsoon period. During these inter monsoon periods, namely, March to April and October to November, the rains are mainly due to convectional activity. Agro ecologically, the area is coming under WM1 (Wet zone Mid country 1) and there 75% expectancy of annual rainfall is >3125mm. The mean annual sunshine duration in the wet zone ranges from 4.9 to 6.4 hours per day depending on the location and the duration of sunshine is related to the cloud cover; therefore during rainy season, sunshine is very low. Out of 22 physiographic units in the wet zone of Sri Lanka, the project area is classified under unit 9 termed Undulating to rolling planation surface with isolated hillocks and low ridges/Ratnapura land system. (Somasiri and Nayakekorale, 1999, Somasiri,1999). According to Gunatilleke & Gunatilleke (1990), the site is coming under bio-region 4 where the tropical lowland wet evergreen forest best represents the climax vegetation of this bioregion. The climax forests of this bio-region are dominated by Dipterocarp species. Currently, they are highly degraded and a small patch semi natural rainforest with some Dipterocarps are located within the project site.

The project area is almost devoid of natural mature forests and whatever remaining ecosystems are highly influenced by human presence. The existing habitats show considerable micro-climatic differences within a relatively small spatial area of the project site. Most of the natural vegetation is highly exploited for human settlements, plantation agriculture and house hold agro forestry.

The project influencing area is characterized by presence of following main habitat types.

### **Riverine Forests:**

Riverine forests can be seen from inundation area to power house sites, and most are on steep lands. They are limited to a narrow belt of semi-natural riverine forest and are found along the banks of streams, and the distribution of this vegetation type is generally 5m-10m on either side of the banks. Vegetation height is about 15m-25m with stratified forest, and common species in different layers include; canopy (15m-25m); *Artocarpus nobilis*, *Barringtonia acutangula*, *Caryota urens*, *Celtis philippensis*, *Hydnocarpus venenata*, *Lagerstroemia speciosa* and *Mesua ferrea*.; shrubs/treelets (2m-10m) -*Turpinia malabarica*, *Allophylus cobbe*, *Clerodendron infortunatum*, *Fagrea obovata*, *Litsea gardneri*, *Pagiantha dichotoma* and *Symplocos cochinchinensis*; herbs (below 2m) - *Pandanus ceylanicus*, *Alocasia macrorrhiza*, *Angiopteris erecta*, *Axonopus affinis*, *Cirtococcum trigonum*, *Clidemia hirta*, *Commelina diffusa*, *Costus speciosus* and *Ludwigia decurrens*. This belt of forest is home to many surviving rainforest flora species. Riverine forests form the inter phase between stream and other terrestrial habitats. It is the frontline defense against stream bank erosion due to water currents. Riverine forests provide convenient resting sites for birds, bats, reptiles, amphibians etc.

### **Tea plantations**

Tea (*Camelia sinensis*) has occupied the major portion of lands in upper area of the project site. This monoculture plantation has a simple structure; just the tea bushes of 1m height occupying about 90% of the land cover of the plantation area. The rest of the area is mostly covered with small herbaceous weedy species, upto 50cm height, such as *Ageratum conizoides*, *Axonopus affinis*, *Bidens pilosa*, *Chrysopogon aciculatus*, *Cleome monophylla*, *Clidemia hirta*, *Conyza bonariensis*, *Crassocephalum crepidioides*, *Crotalaria pallida*, *Cyperus rotundus*, *Desmodium heterophyllum*, *Desmodium triflorum*, *Digitaria longiflora*, *Eleusine indica*, *Eleutheranthera raderalis*, *Emilia sonchifoila*, *Eragrostis spp.*, *Eupatorium riparia*, *Euphorbia hirta*, *Exallage auricularia*, *Gynura lycopersifolia*, *Ischaemum indicum*, *Mimosa pudica*, *Oplismenus compositus*, *Paspalum conjugatum*, *Phyllanthus niruri*, *Synedrella nodiflora*, *Tridax procumbens*, *Vernonia cinerea* and *Wedelia trilobata*. Scattered shade tree species like *Albizia falcataria* and *Gliricidia sepium* (5m-30m) occur in the tea landscape. Presence of weedy plants in unoccupied areas of tea lands is an advantage as far as considered soil and water conservation in these steep lands.

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### Home garden agro forests

Home garden agro forests for both commercial produces (spices, timber, fruits) and subsistence purpose (wood, vegetables, etc) are a significant agricultural system. The existing home garden agro forests in the project are poorly managed and does not have well developed structure that mimic a near natural forest. The community pay much of their attention on tea lands and not on developing home gardens.

The home garden vegetation is found immediately around homesteads, and is the result of long-term manipulations. Multipurpose trees, shrubs, herbs and climbers deliberately intermixed and managed for better yields e.g. Mango, Areca, Kithul, Coconut, Jak, Gliricidia, yams etc. The appearance varies depending on the farming practices employed. Generally, there are several poorly developed plant layers: a canopy (20 m), a sub canopy (15 m) and a shrub/herb layer (2 m). Many crop species are found in this habitat; *Alocasia cucullata* (ala), *Gliricidia sepium* (Nanchi), *Artocarpus heterophyllus* (Kos), *Musa paradisiaca* (Kesel), *Psidium guajava* (Pera), *Areca catechu* (Puwak), *Caryota urens* (Kithul), *Cocos nucifera* (Pol), *Bambusa vulgaris* (Una), *Citrus sinensis* (Dodan) and *Tectona grandis* (Teekka). The home garden is also an important faunal habitat providing animals with feeding and nesting sites. It provides people with fruits, spices, nuts, yams, flowers, vegetables, medicines, firewood, timber etc. throughout the year. Visibly, the home garden gradually mix with tea lands in the periphery. In that case, it takes the form of a mixed orchard - sometimes barely recognizable as a separate component from home gardens.

### Secondary Forest

The area half way down the penstock line is covered with partially developed secondary forests; result of abandoning tea cultivations. Also, the natural forests have heavily exploited over the years (some 5-10 years back). Under that circumstances the secondary forest have developed and currently they are still under human pressure. The forest structure is poorly developed and has three strata; canopy (18m), sub canopy (13m), shrubs and herbs (1m-3m). Common species include; Canopy - *Albizia falcataria*, *Alstonia macrophylla*, *Alstonia scholaris*, *Artocarpus heterophyllus*, *Mangifera indica*, *Melia dubia* and *Swietenia macrophylla*; Shrubs/treelets - *Ficus hispida*, *Lantana camara*, *Macaranga peltata*, *Mallotus tetraococcus*, *Manihot glaziovii*, *Neolitsea cassia*, *Pagiantha dichotoma*, *Symplocos cochinchinensis*, *Trema orientalis* and *Zizyphus oenoplia*; Herbs - *Axonopus affinis*, *Blechnum orientale*, *Chromolaena odorata*, *Clidemia hirta*, *Crassocephalum crepidioides*, *Dichranopteris linearis*, *Mikania cordata*, *Panicum maximum*, *Pennesetum polystachyon*, *Tripsacum laxum*, *Urena lobata* and *Wedelia trilobata*. The forests are transitional habitats developing into rainforests if left undisturbed for a long time.

### Semi-natural lowland rain forest patch

Around lower areas of the penstock line there is a semi natural patch of rain forest on steep lands with shallow soil layer on rock bed. The forest reach a height of 30m-35m and have unbroken canopy in less disturbed sites. It has the most diverse native species composition and the vertical structural arrangement (stratification) in relation to other habitats of the project area and is

composed of four vegetation layers or strata; emergent layer (30m-35m), canopy layer (20m-25m), sub canopy layer (15m-20m), shrub layer (2m-4m) and ground layer (below 1m). Heights of strata may vary slightly depending on site-specific environmental conditions. Taller trees include *Artocarpus heterophyllus*, *Artocarpus nobilis*, *Dipterocarpus zeylanicus*, *Horsfieldia iryagedhi*, *Myristica dactyloides* and *Pometia pinnata*. Below that common shrubs/treelets such as *Acronychia pedunculata*, *Anisophyllea cinnamomoides*, *Cinnamomum zeylanicum*, *Clausena indica*, *Ficus hispida*, *Glochidion mooni*, *Memecylon rostratum*, *Neolitsea cassia*, *Pagiantha dichotoma*, *Scolopia pusilla* and *Walsura trifoliolata*. The forest floor is covered with good litter cover and several organisms, including termites, cockroaches, beetles, centipedes, millipedes and earthworms, along with fungi, use the litter layer as a favored habitat. Moreover, the forests are teeming with climbing plants such as *Acacia caesia*, *Anamirta cocculus*, *Calamus thwaitesii*, *Derris canarensis*, *Derris scandens* and *Entada pusaetha*. These woody climbers are frequently found connecting the trees, ascending into the treetops and looping back down.

### **In stream habitats in the project area**

A number of important aquatic habitats were identified in the river within the project area. These main habitat types are formed by the interaction of underlying geological conditions with the river flow. These are important habitats for *Lutra lutra* (Otter), *Prionailurus viverrinus* (fishing cat), many amphibians, various damselfly and dragonfly species (see tables xx-xx) as well as some indigenous fish species.

**Deep pools :** A 2-3 deep pools about 3-5m deep were identified within the near the powerhouse location. The pool bottom is essentially muddy with some driftwood and rock boulders. The river current has deeply carved The sides of these pools, deeply carved by the river current, have sandy bottoms with a high water flow. The pools which oppose the main water current have a slower water momentum with a muddy/organic rich bottom. Fish such as *Garra ceylonensis* are found in this habitat.

**Shallow areas with high water flow:** These areas are located in narrow passes between large rocks. The bottom consists of medium to large rocky boulders (20- 100 cm diam.) *Garra* spp. are common in this area.

**Rocky torrential area:** The river flows in this area which has exposed bed rock, high rapids and sudden drops creating small falls. the water is well oxygenated, fast moving. Gobis and *Garra* spp. are the main fish species found in this habitat.

Table. 10. Summary of species recorded in the study area

Taxa	Endemic	National threatened list 2012			Global IUCN Red list			Protected under FFPO 2009		Total
		VU	EN	CR	VU	EN	CR	P	SP	
Amphibians	14	7	4	1	2	6	0	15	0	17
Birds	9	4	2	0	0	0	0	84	9	97
Butterflies	5	5	4	0	0	0	1	66	0	66
Reptiles	21	7	5	0	0	0	0	43	0	45
Mammals	9	4	8	1	4	3	0	23	7	34
Dragonflies	7	5	3	1	0	1	1	14	0	14
Fish	3	1	0	0	0	1	0	0	0	5
Flora	67	31	3		11	4	3	9		313

Tables 3 – 9 E= Endemic, Red Listed categories CR= Critically Endangered, EN=Endangered, VU= Vulnerable (IUCN, 2012), protected status under Fauna and Flora protection act P= protected SP= Strictly protected (2009 amendment)

Table.11 Plant species recorded during the study period

Family	Species	Status	NCS	GCS	Local name	FFPO	Commercial value
Acanthaceae	<i>Strobilanthes adenophora</i> Nees	E	VU		nelu		
Acanthaceae	<i>Strobilanthes lupulina</i> Nees		LC		nelu		
Acanthaceae	<i>Thunbergia fragrans</i> Roxb.		LC				
Achariaceae	<i>Hydnocarpus venenata</i> Gaertn.	E	LC		Makul		
Amaranthaceae	<i>Achyranthes aspera</i> L.		LC		karalsebo		
Amaranthaceae	<i>Alternanthera sessilis</i> (L.) DC.		LC	LC	mukunuwenna		food
Amaranthaceae	<i>Amaranthus tricolor</i> L.				thampala		
Anacardiaceae	<i>Anacardium occidentale</i> L.				kaju		food
Anacardiaceae	<i>Camposperma zeylanicum</i> Thw.	E	LC		aaridda		timber
Anacardiaceae	<i>Mangifera indica</i> L.	i	NE		Amba		fruit
Anacardiaceae	<i>Mangifera zeylanica</i> (Blume) Hook.f.	E	LC	VUi	Etamba		
Anacardiaceae	<i>Nothopegia beddomei</i> Gamble		LC		bala		
Anacardiaceae	<i>Semecarpus subpeltata</i> Thw.	E	VU	VUi	Maha badulla		
Anacardiaceae	<i>Semecarpus walkeri</i> Hook.f.	E	LC	VUi	badulla		
Anacardiaceae	<i>Spondias dulcis</i> Sol. ex Parkinson				embarella		

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Ancistrocladaceae	<i>Anisophyllea cinnamomoides</i> (Gardner & Champ.) Alston		NT		welipiyanna		
Annonaceae	<i>Annona squamosa</i> L.				anoda		fruit
Annonaceae	<i>Cyathocalyx zeylanica</i> Champ. ex Hook. f. & Thoms.		LC				
Annonaceae	<i>Uvaria semecarpifolia</i> Hook. f. & Thoms.	E	LC		karabambarawel		
Annonaceae	<i>Xylopiya parvifolia</i> (Wight) Hook. f. & Thoms.		LC		athuketiya		
Apiaceae	<i>Centella asiatica</i> (L.) Urban		LC		gotukola		
Apocyanaceae	<i>Allamanda cathartica</i> L. var. <i>nobilis</i> Bailey						
Apocyanaceae	<i>Alstonia macrophylla</i> Wall	i	NE		Astonia		timber
Apocyanaceae	<i>Alstonia scholaris</i> (L.) R.Br.		LC	LCi	Ruk-attana		
Apocyanaceae	<i>Anodendron paniculatum</i> A.DC.		VU				
Apocyanaceae	<i>Pagiantha dichotoma</i> (Roxb.) Markgraf		LC		Divi kaduru		
Araceae	<i>Alocasia cucullata</i> (Lour.) G. Don				kiriala		food
Araceae	<i>Alocasia macrorrhizos</i> (L.) G. Don.				habarala		
Araceae	<i>Amorphophallus paeoniifolius</i> var. <i>paeoniifolius</i>		DD		walkidaran		
Araceae	<i>Anthurium andraeanum</i> Andre				anthuriam		
Araceae	<i>Colocasia esculenta</i> (L.) Schott		LC	LC	kiriala		
Araceae	<i>Pothos scandens</i> L.		LC		Potawel		
Araliaceae	<i>Polyscias balfouriana</i> (André) L.H.Bailey						
Araliaceae	<i>Schefflera emarginata</i> (Moon) Harms	E	VU		Iththa		
Arecaceae	<i>Areca catechu</i> L.		NE		Puwak		cash crop
Arecaceae	<i>Calamus thwaitesii</i> Becc.		VU		wewel		Cane
Arecaceae	<i>Caryota urens</i> L.		LC		Kitul		cash crop
Arecaceae	<i>Cocos nucifera</i> L.	i	NE		Coconut		cash crop
Arecaceae	<i>Oncosperma fasciculatum</i> Thw.	E	VU		katukithul	Protected	
Aristolochiaceae	<i>Thottea siliquosa</i> (Lam.) Ding Hou		LC		thpasarabulath		
Asparagaceae	<i>Asparagus falcatus</i> L.		LC		hathawariya		
Asparagaceae	<i>Dracaena thwaitesii</i> Regel		NT				
Aspleniaceae	<i>Asplenium nidus</i> L.		NT		bird nest		
Asteraceae	<i>Ageratum conyzoides</i> L.				hulanthala		
Asteraceae	<i>Austroeupatorium inulifolium</i> (Kunth) King & Robinson						
Asteraceae	<i>Bidens pilosa</i> L.						
Asteraceae	<i>Chromolaena odorata</i> (L.) King & Robinson				Podisinnomaran		
Asteraceae	<i>Conyza bonariensis</i> (L.) Cronquist						
Asteraceae	<i>Elephantopus scaber</i> L.		LC		ethadi		
Asteraceae	<i>Eleutheranthera ruderalis</i> (Sw.) Sch. Bip.						
Asteraceae	<i>Emilia sonchifolia</i> (L.) DC.		LC				
Asteraceae	<i>Gynura lycopersicifolia</i> DC.		LC				
Asteraceae	<i>Mikania cordata</i> (Burm.) Robinson				Vatu palu		
Asteraceae	<i>Synedrella nodiflora</i> (L.) Gaertn.						
Asteraceae	<i>Tridax procumbens</i> L.						

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Asteraceae	<i>Vernonia cinerea</i> (L.) Less.		LC		monarakudumbiya		
Asteraceae	<i>Wedelia trilobata</i> (L.) A. Hitchc						
Begoniaceae	<i>Begonia malabarica</i> Lam.		NT		hakambala		
Blechnaceae	<i>Blechnum orientale</i> L.		LC		barukoku		
Bromeliaceae	<i>Ananas comosus</i> (L.) Merr.				annasi		fruit
Burseraceae	<i>Canarium zeylanicum</i> (Retz.) Blume	E	VU	Vui	kekuna		
Calophyllaceae	<i>Calophyllum bracteatum</i> Thw.	E	NT				
Calophyllaceae	<i>Mesua ferrea</i> L.		LC		naa		
Cannabaceae	<i>Celtis philippensis</i> Blanco		LC		medithala		
Cannabaceae	<i>Trema orientalis</i> (L.) Blume		LC		gedumba		
Caricaceae	<i>Carica papaya</i> L.				pepol		fruit
Celastraceae	<i>Euonymus walkeri</i> Wight	E	LC	VUi			
Centrocaceae	<i>Bhesa ceylanica</i> (Arn. ex Thw.) Ding Hou	E	LC	VUi	Ethheraliya		timber
Clusiaceae	<i>Garcinia morella</i> (Gaertn.) Desr.		NT				
Clusiaceae	<i>Garcinia quaesita</i> Pierre	E	LC		goraka		spice
Commelinaceae	<i>Commelina diffusa</i> Burm.f.		LC	LC	girapala		
Commelinaceae	<i>Commelina kurzii</i> Clarke		LC				
Connaraceae	<i>Rourea minor</i> (Gaertn.) Alston		LC				
Convolvulaceae	<i>Ipomoea batatas</i> (L.) Lam.				batala		
Costaceae	<i>Costus speciosus</i> (Koenig) Smith		LC		thebu		
Crypteroniaceae	<i>Axinandra zeylanica</i> Thw.	E	VU		polhunna		
Cyatheaceae	<i>Cyathea walkerae</i> Hook.	E	VU		treefern		
Cyperaceae	<i>Cyperus iria</i> L.		LC				
Cyperaceae	<i>Cyperus pilosus</i> Vahl		LC	LC			
Cyperaceae	<i>Cyperus rotundus</i> L.		LC	LC			
Cyperaceae	<i>Fimbristylis cinnamometorum</i> (Vahl) Kunth		LC				
Cyperaceae	<i>Fimbristylis falcata</i> (Vahl) Kunth		LC				
Cyperaceae	<i>Fimbristylis miliacea</i> (L.) Vahl		LC				
Cyperaceae	<i>Kylinga bulbosa</i> P. Beauv.						
Dennstaedtiaceae	<i>Pteridium aquilinum</i> (L.) Kuhn				brakenfern		
Dilleniaceae	<i>Dillenia retusa</i> Thunb.		LC				
Dilleniaceae	<i>Dillenia triquetra</i> (Rottb.) Gilg		LC	CRi	para		light timber
Dilleniaceae	<i>Tetracera sarmentosa</i> (L.) Vahl		LC		horawel		
Dioscoreaceae	<i>Dioscorea alata</i> L.				welala		food
Dioscoreaceae	<i>Dioscorea spicata</i> Roth		VU		katuala		
Dipterocarpaceae	<i>Dipterocarpus zeylanicus</i> Thw.	E	NT	ENi	Hora		timber
Dipterocarpaceae	<i>Hopea jucunda</i> Thw.	E	VU				
Dipterocarpaceae	<i>Shorea oblongifolia</i> Thw.	E	VU	CRi	yakahalu	Protected	timber
Dipterocarpaceae	<i>Stemonoporus acuminatus</i> (Thw.) Beddome	E	EN			Protected	
Dipterocarpaceae	<i>Vateria copallifera</i> (Retz.) Alston	E	VU	ENi	hal		
Elaeagnaceae	<i>Elaeagnus latifolia</i> L.		LC				



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Elaeocarpaceae	<i>Elaeocarpus glandulifer</i> (Hook.) Masters	E	VU	VUi	Malweralu		
Elaeocarpaceae	<i>Elaeocarpus serratus</i> L.		LC		Veralu		fruit
Euphorbiaceae	<i>Acalypha indica</i> L.		LC		kuppameniya		
Euphorbiaceae	<i>Agrostistachys coriacea</i> Alston	E	LC	VUi			
Euphorbiaceae	<i>Cleistanthus</i> sp.						
Euphorbiaceae	<i>Codiaeum variegatum</i> (L.) Juss.				croton		
Euphorbiaceae	<i>Euphorbia heterophylla</i> L.						
Euphorbiaceae	<i>Euphorbia hirta</i> L.		LC				
Euphorbiaceae	<i>Fahrenheitia zeylanica</i> (Thw.) Muell.Arg.		LC		utha		timber
Euphorbiaceae	<i>Hevea brasiliensis</i> (Willd. ex A.Juss.) Müll.Arg	i	NE		Rubber		cash crop
Euphorbiaceae	<i>Jatropha curcas</i> L.				wetaendaru		
Euphorbiaceae	<i>Macaranga indica</i> Wight		LC		Bukenda		
Euphorbiaceae	<i>Macaranga peltata</i> (Roxb.) Muell.Arg		LC		Kenda		
Euphorbiaceae	<i>Mallotus philippensis</i> (Lam.) Muell. Arg.		LC		hamperilla		
Euphorbiaceae	<i>Mallotus tetracoccus</i> (Roxb.) Kurz		LC		bookenda		
Euphorbiaceae	<i>Manihot esculenta</i> Crantz				mayokka		food
Euphorbiaceae	<i>Manihot glaziovii</i> Muell.-Arg.						
Euphorbiaceae	<i>Phyllanthus amarus</i> Schum.				pitawakka		
Fabaceae	<i>Acacia caesia</i> (L.) Willd.		LC		Diyahinguru		
Fabaceae	<i>Albizia falcataria</i> (L.) Fosberg				Albisia		light timber
Fabaceae	<i>Caesalpinia hymenocarpa</i> (Prain) Hattink		NT		godavavuletiya		
Fabaceae	<i>Centrosema pubescens</i> Benth.						
Fabaceae	<i>Clitoria ternatea</i> L.		LC				
Fabaceae	<i>Crotalaria juncea</i> L.		DD		andanaheeriya		
Fabaceae	<i>Crotalaria laburnifolia</i> L.		LC		andanaheeriya pohora		
Fabaceae	<i>Dalbergia pseudo-sissoo</i> Miq.		LC		Ratabambara		
Fabaceae	<i>Derris canarensis</i> (Dalz.) Baker		NT				
Fabaceae	<i>Derris scandens</i> (Roxb.) Benth.		LC		Kalawel		
Fabaceae	<i>Desmodium heterophyllum</i> (Willd.) DC.		LC		undupiyali		
Fabaceae	<i>Desmodium triflorum</i> (L.) DC.		LC		undupiyali		
Fabaceae	<i>Entada pusaetha</i> DC.		LC				
Fabaceae	<i>Erythrina variegata</i> L.		LC		eramudu		
Fabaceae	<i>Gliricidia sepium</i> (Jacq.) Kunth ex Walp.				wetahira		soil conservation
Fabaceae	<i>Humboldtia laurifolia</i> (Vahl) Vahl		LC		galkaranda		
Fabaceae	<i>Mimosa pudica</i> L.	i	NE		nidikumba		
Fabaceae	<i>Pueraria phaseoloides</i> (Roxb.) Benth.				pohorawel		Soil fertility
Gentianaceae	<i>Fagraea ceilanica</i> Thunb.		NT		etamuru		
Gleicheniaceae	<i>Dicranopteris lineairs</i> (Burm.f.) Underw. var. <i>montana</i>		DD				
Hydrocotylaceae	<i>Hydrocotyle javanica</i> Thunb.		NT				
Hypoxidaceae	<i>Curculigo orchoides</i> Gaertn.		LC				

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Icacinaceae	<i>Stemonurus apicalis</i> (Thw.) Miers	E	NT				
Lamiaceae	<i>Callicarpa tomentosa</i> (L.) Murr.		LC		Buseru		
Lamiaceae	<i>Clerodendrum infortunatum</i> L.		LC		pinna		
Lamiaceae	<i>Hyptis suaveolens</i> (L.) Poit.						
Lamiaceae	<i>Scutellaria violacea</i> Heyne ex Benth.		LC				
Lamiaceae	<i>Tectona grandis</i> L.f.				thekka		timber
Lamiaceae	<i>Vitex altissima</i> L.f.		NT		Milla		timber
Lauraceae	<i>Cinnamomum zeylanicum</i> Blume	E	VU		Kurundu		cash crop
Lauraceae	<i>Cryptocarya membranacea</i> Thw.	E	VU	ENi			
Lauraceae	<i>Cryptocarya wightiana</i> Thw.		NT	VUi			
Lauraceae	<i>Litsea gardneri</i> (Thw.) Meissner	E	VU	VUi	Rathkeliya		
Lauraceae	<i>Litsea glutinosa</i> (Lour.) C.B. Robinson		LC		Rathkeliya		
Lauraceae	<i>Litsea longifolia</i> (Nees) Trimen	E	LC	VUi	Rathkeliya		
Lauraceae	<i>Neolitsea cassia</i> (L.) Kosterm.		LC		Davulkurundu		
Lauraceae	<i>Persea amaricana</i> Miller	i	NE		alipera		fruit
Lecythidaceae	<i>Barringtonia racemosa</i> (L.) Spreng.		LC		Mudilla		
Lindernaceae	<i>Torenia cyanea</i> Alston	E	VU				
Loranthaceae	<i>Dendrophthoe neelgherrensis</i> (Wight & Arn.) Tieghem		LC		pilila		
Lygodiaceae	<i>Lygodium microphyllum</i> (Cav.) R. Br.		LC		pamba		
Magnoliaceae	<i>Michelia champaca</i> L.				hapu		light timber
Malpighiaceae	<i>Hiptage benghalensis</i> (L.) Kurz		LC		Puwakgediyawel		
Malvaceae	<i>Abutilon indicum</i> (L.) Sweet		LC				
Malvaceae	<i>Ceiba pentandra var pentandra</i> (L.) Gaertn.		LC		kotta		
Malvaceae	<i>Cullenia rosayroana</i> Kosterm.	E	LC	LCi		Protected	
Malvaceae	<i>Durio zibethinus</i> Murr.,	i	NE		durian		fruit
Malvaceae	<i>Grewia orientalis</i> L.		LC				
Malvaceae	<i>Hibiscus furcatus</i> Roxb.		LC		naapiriththa		
Malvaceae	<i>Hibiscus rosa-sinensis</i> L.				wadamal		
Malvaceae	<i>Microcos paniculata</i> L.		LC				
Malvaceae	<i>Pavonia odorata</i> Willd.		LC				
Malvaceae	<i>Sida acuta</i> Burm. f.		LC		bevila		
Malvaceae	<i>Urena lobata</i> L.		LC		pattaepala		
Marattiaceae	<i>Angiopteris evecta</i> (Forst.) Hoffm.		NT				
Melastomataceae	<i>Clidemia hirta</i> (L.) D. Don.	i	NE		nylon bowitiya		
Melastomataceae	<i>Lijndenia capitellata</i> (Arn.) Bremer	E	VU		pinibaru		
Melastomataceae	<i>Memecylon rivulare</i> Bremer	E	VU				
Melastomataceae	<i>Memecylon rostratum</i> Thw.	E	NT				
Melastomataceae	<i>Memecylon royenii</i> Blume	E	LC				
Melastomataceae	<i>Osbeckia aspera</i> (L.) Blume		NT		Bovitiya		
Melastomataceae	<i>Tibouchina urvilleana</i> (DC.) Cogn.		NE				
Meliaceae	<i>Chukrasia tabularis</i> A.Juss.		NT	LCi	hik		

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Meliaceae	<i>Dysoxylum championii</i> Hook. f. & Thoms. ex Thw.	E	VU				
Meliaceae	<i>Melia azedarach</i> L.				lunumidella		light timber
Meliaceae	<i>Swietenia macrophylla</i> King	i	NE		Mahogany		timber
Meliaceae	<i>Walsura trifoliolata</i> (A.Juss.) Harms		LC		Kirikon		
Menispermaceae	<i>Anamirta cocculus</i> (L.) Wight & Arn.		LC		Thiththawel		
Moraceae	<i>Artocarpus altilis</i> (Parkinson) Fosberg				Del		food
Moraceae	<i>Artocarpus gomezianus</i> Wall.		NT				
Moraceae	<i>Artocarpus heterophyllus</i> Lam.				kos		food & timber
Moraceae	<i>Artocarpus nobilis</i> Thw.	E	LC		Waldel		timber
Moraceae	<i>Ficus benghalensis</i> L.		LC		Nuga		
Moraceae	<i>Ficus exasperata</i> Vahl		LC		Budeliya		
Moraceae	<i>Ficus hispida</i> L.f.		LC		Kota dibula		
Moraceae	<i>Morus alba</i> L.						
Moraceae	<i>Plecosperrum spinosum</i> Trecul		VU		thingol		
Musaceae	<i>Musa balbisiana</i> L.A. Colla		EN		etikehel	Protected	
Musaceae	<i>Musa x paradisiaca</i> L.	i	NE		kesel		fruit
Myristicaceae	<i>Horsfieldia iryagedhi</i> (Gaertn.) Warb.	E	VU	CRi			
Myristicaceae	<i>Myristica dactyloides</i> Gaertn.		LC	LCi	Malaboda	Protected	
Myrtaceae	<i>Cleistocalyx operculatus</i> (Roxb.) Merr. & Perry	E	LC		batadamba		
Myrtaceae	<i>Psidium guajava</i> L.				ratapera		fruit
Myrtaceae	<i>Syzygium makul</i> Gaertn.				meedan		
Nephrolepidaceae	<i>Nephrolepis cordifolia</i> (L.) C.Presl		NT				
Nephrolepidaceae	<i>Nephrolepis falcata</i> (Cav.) C.Chr.		VU				
Ochnaceae	<i>Gomphia serrata</i> (Gaertn.) Kanis		LC				
Ochnaceae	<i>Ochna Jabotapita</i> L.	E	LC				
Olacaceae	<i>Olax zeylanica</i> L.		LC				
Olacaceae	<i>Strombosia ceylanica</i> Gardner		VU				
Onagraceae	<i>Ludwigia hyssopifolia</i> (G. Don) Exell		LC	LC	Wel karambu		
Opiliaceae	<i>Cansjera rheedii</i> J.Gmelin		LC				
Orchidaceae	<i>Arundina graminifolia</i> (D. Don) Hochr.					Protected	
Orchidaceae	<i>Dendrobium macrostachyum</i> Lindl.				posonorchid	Protected	
Orchidaceae	<i>Zeuxine regia</i> (Lindley) Trimen	E	EN		wanaraja	Protected	
Oxalidaceae	<i>Biophytum reinwardtii</i> (Zucc.) Klotzsch		LC				
Oxalidaceae	<i>Oxalis corniculata</i> L.				embulembiliya		
Pandanaceae	<i>Freycinetia walkeri</i> Solms	E	NT		Viyakeyya		
Pandanaceae	<i>Pandanus ceylanicus</i> Solms	E	VU		wiyakeyya		
Passifloraceae	<i>Adenia hondala</i> (Gaertn.) de Wilde		LC		hondala		
Phyllanthaceae	<i>Antidesma alexiteria</i> L.		LC				
Phyllanthaceae	<i>Aporusa acuminata</i> Thw.		LC				
Phyllanthaceae	<i>Breynia vitis-idaea</i> (Burm.f.) C.E.C. Fischer		LC				

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Phyllanthaceae	<i>Bridelia retusa</i> (L.) A. Juss.		LC		Ketakela		timber
Phyllanthaceae	<i>Glochidion mooni</i> Thw.	E	LC				
Phyllanthaceae	<i>Glochidion stellatum</i> (Retz.) Beddome	E	LC				
Phyllanthaceae	<i>Phyllanthus debilis</i> Klein ex Willd.		LC				
Phytolaccaceae	<i>Rivina humilis</i> L.				divibiju		
Piperaceae	<i>Piper betle</i> L.				bulath		cash crop
Piperaceae	<i>Piper nigrum</i> L.	i	NE		Gammiris		spice
Piperaceae	<i>Piper sylvestre</i> Lam.		LC		Walgammiris		
Poaceae	<i>Alloteropsis cimicina</i> (L.) Stapf		LC				
Poaceae	<i>Axonopus compressus</i> ( Sw.) P. Beauv.						
Poaceae	<i>Bambusa vulgaris</i> Schrader ex Wendl.		LC		Bamboo		
Poaceae	<i>Bothriochloa pertusa</i> (L.) A. Camus		LC				
Poaceae	<i>Chrysopogon aciculatus</i> (Retz.) Trin.		LC		thuththiri		
Poaceae	<i>Cymbopogon nardus</i> (L.) Rendle		LC		Pegiri mana		
Poaceae	<i>Cyrtococcum trigonum</i> (Retz.) A. Camus		LC				
Poaceae	<i>Dactyloctenium aegyptium</i> (L.) Willd.		LC				
Poaceae	<i>Digitaria ciliaris</i> (Retz.) Koeler		LC				
Poaceae	<i>Digitaria longiflora</i> (Retz.) Pers.		LC				
Poaceae	<i>Eleusine indica</i> (L.) Gaertn.		LC				
Poaceae	<i>Eragrostis japonica</i> (Thumb.) Trin.		LC		pus		
Poaceae	<i>Eragrostis unioides</i> (Retz.) Nees ex Steud.		LC				
Poaceae	<i>Isachne walkeri</i> (Arn. ex Steud.) Wight & Arn. ex Thw.		NT				
Poaceae	<i>Ischaemum muticum</i> L.		LC				
Poaceae	<i>Lophatherum gracile</i> Brongn.		LC				
Poaceae	<i>Ochlandra stridula</i> Moon ex Thw.	E	LC		Bata		
Poaceae	<i>Oplismenus compositus</i> (L.) P. Beauv.		LC				
Poaceae	<i>Panicum gardneri</i> Thw.		LC				
Poaceae	<i>Panicum maximum</i> Jacq.	i	NE		ratathanakola		
Poaceae	<i>Panicum repens</i> L.		LC		etora		
Poaceae	<i>Paspalum scrobiculatum</i> L.		LC				
Poaceae	<i>Pennisetum polystachyon</i> (L.) Schultes						
Poaceae	<i>Pennisetum purpureum</i> Schumach.				napierglass		
Poaceae	<i>Setaria barbata</i> (Lam.) Kunth.						
Poaceae	<i>Sporobolus diander</i> (Retz.) P. Beauv.		LC				
Poaceae	<i>Tripsacum laxum</i> Nash				gothamala		Soil fertility
Podostemaceae	<i>Farmeria metzgerioides</i> (Trimen) Willis ex Hook.f.	E	VU				
Polypodiaceae	<i>Drymoglossum piloselloides</i> (L.) C. Presl						
Polypodiaceae	<i>Drynaria quercifolia</i> (L.) J. Smith		LC		beduru		
Polypodiaceae	<i>Pyrrosia heterophylla</i> (L.) Price		LC				
Primulaceae	<i>Ardisia missionis</i> Wall. ex A. DC.		LC		baludan		

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Primulaceae	<i>Maesa indica</i> (Roxb.) A. DC.		LC		Metibembiya		
Pteridaceae	<i>Adiantum caudatum</i> L.		LC				
Pteridaceae	<i>Hemionitis arifolia</i> (Burm.) T.Moore		LC				
Pteridaceae	<i>Pteris biaurita</i> L.		LC				
Pteridaceae	<i>Pteris ensiformis</i> Burm.f.		LC				
Ranunculaceae	<i>Naravelia zeylanica</i> (L.) DC		NT				
Rhamnaceae	<i>Ziziphus napeca</i> (L.) Willd.	E	LC				
Rhamnaceae	<i>Ziziphus oenoplia</i> (L.) Miller		LC		eraminiya		
Rhizophoraceae	<i>Carallia brachiata</i> (Lour.) Merr.		NT		Dawata		
Rubiaceae	<i>Coffea arabica</i> L.	i	NE		Coffee		cash crop
Rubiaceae	<i>Hedyotis auricularia</i> L.						
Rubiaceae	<i>Hedyotis fruticosa</i> L.		LC		Weraniya		
Rubiaceae	<i>Lasianthus oliganthus</i> (Thw.) Thw.	E	LC				
Rubiaceae	<i>Mussaenda frondosa</i> L.		LC		Mussanda		
Rubiaceae	<i>Ophiorrhiza mungos</i> L.		LC				
Rubiaceae	<i>Pavetta indica</i> L.		LC				
Rubiaceae	<i>Psychotria gardneri</i> (Thw.) Hook. f.	E	NT	ENi			
Rubiaceae	<i>Psychotria sarmentosa</i> Blume		NT				
Rubiaceae	<i>Tarenna asiatica</i> (L.) Kuntze ex Schumann		LC		tharana		
Rubiaceae	<i>Timonius flavescens</i> (Jack) Baker		LC				
Rubiaceae	<i>Uncaria elliptica</i> R.Br. ex G.Don		LC				
Rubiaceae	<i>Uncaria elliptica</i> R.Br. ex G.Don		LC		aapassa		
Rubiaceae	<i>Wendlandia bicuspidata</i> Wight & Arn.	E	LC		Wanaidala		
Rutaceae	<i>Acronychia pedunculata</i> (L.) Miq.		LC		ankenda		
Rutaceae	<i>Citrus aurantifolia</i> (Christm.) Swingle				dehi		
Rutaceae	<i>Clausena indica</i> (Dalz.) Oliver		LC		Meegonkarapincha		
Rutaceae	<i>Murraya koenigii</i> (L.) Spreng.		LC		karapincha		spice
Rutaceae	<i>Toddalia asiatica</i> (L.) Lam.		LC		Kudumiris		
Salicaceae	<i>Homalium ceylanicum</i> (Gardner) Benth.		LC				
Salicaceae	<i>Scolopia pusilla</i> (Gaertn.) Willd.	E	LC		katukeeriya		
Sapindaceae	<i>Allophylus cobbe</i> (L.) Rausch.		LC		kobbe		
Sapindaceae	<i>Cardiospermum halicacabum</i> L.		LC		penela		
Sapindaceae	<i>Dimocarpus longan</i> Lour.		LC		Mora		
Sapindaceae	<i>Filicium decipiens</i> (Wight & Arn.) Thw.		LC		Pihimbiya		light timber
Sapindaceae	<i>Nephelium lappaceum</i> L.	i	NE		rambutan		
Sapindaceae	<i>Pometia pinnata</i> J.R. & G. Forst.		LC		naaimbul		light timber
Sapotaceae	<i>Palaquium hinmolpedda</i> van Royen	E	VU		meeriya		
Smilacaceae	<i>Smilax zeylanica</i> L.		LC		kabarossa		
Solanaceae	<i>Capsicum annum</i> L.						
Solanaceae	<i>Solanum indicum</i> L.						

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Solanaceae	<i>Solanum melongena</i> L. var. <i>melongena</i>				elabatu		
Staphyleaceae	<i>Turpinia malabarica</i> Gamble		LC		Gurenda		
Stemonuraceae	<i>Gomphandra coriacea</i> Wight		VU				
Symplocaceae	<i>Symplocos cochinchinensis</i> (Lour.) S.Moore		LC		Bombu		
Theaceae	<i>Camellia sinensis</i> (L.) Kuntze				Tea		cash crop
Thymelaeaceae	<i>Gyrinops walla</i> Gaertn.		VU		wallapatta		
Tiliaceae	<i>Grewia carpinifolia</i> Juss.				Boradamaniya		
Urticaceae	<i>Fleurya interrupta</i> (L.) Gaudich.						
Verbenaceae	<i>Lantana camara</i> L.				hinguru		
Verbenaceae	<i>Stachytarpheta jamaicensis</i> (L.) Vahl				balunaguta		
Verbenaceae	<i>Stachytarpheta urticaefolia</i> (Salisb.) Sims				balunaguta		
Vitaceae	<i>Cissus trilobata</i> Lam.		LC				
Vitaceae	<i>Leea indica</i> (Burm.f.) Merr.		LC		burulla		
Zingiberaceae	<i>Amomum echinocarpum</i> Alston	E	VU		kelaniya		
Zingiberaceae	<i>Zingiber officinale</i> Roscoe				inguru		spice
Zingiberaceae	<i>Zingiber zerumbet</i> (L.) J. E. Smith				harankaha		

**Faunal species recorded during the study period**

Table 12. Dragonflies recorded during the study period.

Family	Scientific Name	English	Endemic	NSG	GCS	Protected	DAM TO UPPER AREA	DAM TO LOWER AREA	LOWER FOREST	TANNEl PATH	POWER HOUS
Calopterygidae	<i>Neurobasis chinensis</i> (Linnaeus, 1758)	Oriental Green-wing		VU	LC	P	x	x			x
Calopterygidae	<i>Vestalis apicalis</i> Selys, 1873	Black-tipped Flashwing		VU	LC	P	x	x			x
Chlorocyphidae	<i>Libellago finalis</i> (Hagen in Selys, 1869)	Sri Lanka Ultima Gem	*	VU		P	x				x
Chlorocyphidae	<i>Libellago greeni</i> (Laidlaw, 1924)	Sri Lanka Green's Gem	*	EN		P		x			x
Euphaeidae	<i>Euphaea splendens</i>	E: Sri Lanka Shining Gossamerwing	*	NT		P	x	x			x

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Coenagrionidae	<i>Agriocnemis pygmaea</i> (Rambur, 1842)	E: Wandering Wisp		LC	LC	P					x
Platycnemididae	<i>Copera marginipes</i>	E: Yellow Featherleg		LC	LC	P				x	
Platystictidae	<i>Drepanosticta sp.</i>	E: Sri Lanka Dark Knob-tipped Shadowdamsel	*	CR	CR	P				x	
Protoneuridae	<i>Elattonaura caesia</i>	E: Sri Lanka Jungle Threadtail	*	VU	EN	P				x	
Protoneuridae	<i>Elattonaura tenax</i>	E: Sri Lanka Red- striped Threadtail	*	EN		P				x	
Gomphidae	<i>Paragomphus henryi</i> (Campion and Laidlaw, 1928)	E: Sri Lanka Brook Hooktail	*	EN	NT	P	x			x	
Corduliidae	<i>Epophthalmia vittata</i> Burmeister, 1839	E: Blue-eyed Pondcruiser		NT	LC	P					x
Libellulidae	<i>Orthetrum sabina</i> (Drury, 1770)	E: Green Skimmer		LC	LC	P				x	
Libellulidae	<i>Trithemis festiva</i> (Rambur, 1842)	E: Indigo Dropwing		VU	LC	P					x

Table.13. Butterflies recorded during the study period.

	Scientific Name	English Name	Endemic	NCS	GCS		DAM TO UPPER AREA	DAM TO LOWER AREA	LOWER FOREST	TANNEL PATH	POWER HOUS
Papilionidae	<i>Graphium agamemnon</i> Linnaeus, 1758	Tailed Jay		LC		P	H	H	H	H	H
Papilionidae	<i>Graphium antiphates</i> Cramer, 1775	Fivebar Swordtail		EN		P	H	H	H		
Papilionidae	<i>Graphium doson</i> Felder, 1864	Common Jay		LC		P	H	H	H	H	H
Papilionidae	<i>Graphium sarpedon</i>	Bluebottle		LC		P	X	X	X	X	X
Papilionidae	<i>Pachliopta aristolochiae</i>	Common Rose		LC		P	H	H	H	H	H
Papilionidae	<i>Pachliopta hector</i> Linnaeus, 1758	Crimson Rose		LC		P	H	H	H	H	H
Papilionidae	<i>Pachliopta jophon</i> Gray, 1852	Sri Lanka Rose	*	EN	CR*	P	H	H	H	H	

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Papilionidae	<i>Papilio clytia</i>	Mime		LC		P	H	H	H	H	H
Papilionidae	<i>Papilio crino</i>	Banded Peacock		VU		P	H	H	H	H	
Papilionidae	<i>Papilio helenus</i>	Red Helen		VU		P	X	X	H	H	H
Papilionidae	<i>Papilio polymnestor</i>	Blue Mormon		LC		P	X	X	X	X	X
Papilionidae	<i>Papilio polytes</i>	Common Mormon		LC		P	H	H	H	H	H
Papilionidae	<i>Troides darsius</i>	Sri Lanka Birdwing	*	LC		P	H	H	H	H	H
Pieridae	<i>Appias galene</i> Cramer, 1777	Sri Lanka Lesser Albatross	*	LC		P					
Pieridae	<i>Appias lycinda</i> Cramer, 1779	Chocolate Albatross		LC		P					
Pieridae	<i>Catopsilia pomona</i>	Lemon Emigrant		LC		P	H	H	H	H	H
Pieridae	<i>Catopsilia pyranthe</i>	Mottled Emigrant		LC		P	H	H	H	H	H
Pieridae	<i>Delias eucharis</i> Drury, 1773	Jezebel		LC		P	X	X	H	H	H
Pieridae	<i>Eurema blanda</i> Boisduval, 1836	Three-spot Grass Yellow		LC		P	X	X	X	X	X
Pieridae	<i>Eurema hecabe</i> Linnaeus, 1764	Common Grass Yellow		LC		P	X	X	X	H	H
Pieridae	<i>Leptosia nina</i> Fabricius, 1793	Psyche		LC		P	X	X		H	H
Nymphalidae	<i>Ariadne ariadne</i> Linnaeus, 1763	Angled Castor		LC		P					
Nymphalidae	<i>Ariadne merione</i> Cramer, 1777	Common Castor		VU		P					
Nymphalidae	<i>Cethosia nietneri</i> Felder, 1867	Ceylon Lace Wing		LC		P					
Nymphalidae	<i>Danaus genutia</i>	Common Tiger		LC		P	H	H	H	H	H
Nymphalidae	<i>Dophla evelina</i> Stoll, 1790	Redspot Duke		LC		P					
Nymphalidae	<i>Elymnias hypermnestra</i>	Common Palmfly		LC		P	H	H	H	H	H
Nymphalidae	<i>Euploea core</i> Cramer, 1779	Common Indian Crow		LC		P					
Nymphalidae	<i>Euploea klugii</i> Moore, 1888	Brown King Crow		LC		P					
Nymphalidae	<i>Euploea phaenareta</i> Schaller, 1758	The Great Crow		EN		P					
Nymphalidae	<i>Euthalia aconthea</i> Cramer, 1777	Baron		LC		P	H	H	H	H	H
Nymphalidae	<i>Idea iasonia</i>	Sri Lanka Tree Nymph	*	VU	NT	P	H	H	H	H	
Nymphalidae	<i>Ideopsis similis</i> Linnaeus, 1764	Blue Glassy Tiger		VU		P	H	H	H	H	H
Nymphalidae	<i>Junonia atlites</i> Linnaeus, 1758	Grey Pansy		LC		P	H	H	H	H	H
Nymphalidae	<i>Junonia iphita</i> Cramer, 1779	Chocolate Soldier		LC		P	X	X	H	H	H
Nymphalidae	<i>Junonia lemonias</i> Linnaeus, 1758	Lemon Pansy		LC		P	H	H	H	H	H
Nymphalidae	<i>Kallima philarchus</i>	Sri Lanka Blue Oakleaf	*	EN		P	H	H	H	H	H
Nymphalidae	<i>Kaniska canace</i>	Blue Admiral		LC		P	H	H	H	H	H
Nymphalidae	<i>Melanitis leda</i> Linnaeus, 1763	Common Evening Brown		LC		P	H	H	H	H	H
Nymphalidae	<i>Melanitis phedima</i> Cramer, 1780	Dark Evening Brown		NT		P	H	H	X	H	
Nymphalidae	<i>Moduza procris</i> Cramer, 1777	Commander		LC		P	H	H	H	H	H



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Nymphalidae	<i>Mycalesis patnia</i> Moore, 1857	Gladeye Bushbrown		LC		P	H	H	H	H	H
Nymphalidae	<i>Mycalesis perseus</i> Fabricius, 1775	Common Bushbrown		LC		P	H	H	H	H	H
Nymphalidae	<i>Neptis hylas</i> Linnaeus, 1758	Common Sailor		LC		P	H	H	H	H	H
Nymphalidae	<i>Neptis jumbah</i> Moore, 1857	Chestnut-streaked Sailor		LC		P	H	H	H	H	H
Nymphalidae	<i>Pantoporia hordonia</i> Stoll, 1790	Common Lascar		NT		P	H	H	H	H	H
Nymphalidae	<i>Parantica aglea</i> Stoll, 1782	Glassy Tiger		LC		P	H	H	H	X	X
Nymphalidae	<i>Parthenos sylvia</i>	Clipper		LC		P	H	H	H	H	H
Nymphalidae	<i>Phalanta phalantha</i> Drury, 1773	Leopard		LC		P	H	H	H	H	H
Nymphalidae	<i>Polyura athamas</i> Drury, 1770	Nawab		LC		P	H	H	H	H	H
Nymphalidae	<i>Vindula erota</i> Fabricius, 1793	Cruiser		NT		P	H	H	H	H	
Nymphalidae	<i>Ypthima ceylonica</i> Hewitson, 1864	White Four-ring		LC		P	X	X			X
Lycaenidae	<i>Loxura atymnus</i> Stoll, 1780	Yamfly		LC		P	H	H	H	H	H
Lycaenidae	<i>Rathinda amor</i> Fabricius, 1775	Monkey-puzzle		LC		P	H	H	H	H	H
Lycaenidae	<i>Spalgis epeus</i> Westwood, 1851	Apefly		LC		P	H	H	H	H	H
Lycaenidae	<i>Talicauda nyseus</i> Guérin-Méneville, 1843	Red Pierrot		LC		P	H	H	H	H	H
Lycaenidae	<i>Zizeeria karsandra</i> Moore, 1865	Dark Grass Blue		LC		P	H	H	H	H	H
Lycaenidae	<i>Zizina otis</i> Fabricius, 1787	Lesser Grass Blue		LC		P	H	H	H	H	H
Lycaenidae	<i>Zizula hylax</i> Fabricius, 1775	Tiny Grass Blue		LC		P	H	H	H	H	H
Riodinidae	<i>Abisara echerius</i> Stoll, 1790	Plum Judy		LC		P	H	H	X	H	H
Hesperiidae	<i>Cephrenes trichopepla</i> Lower, 1908	Yellow Palm Dart		LC		P	H	H	H	H	H
Hesperiidae	<i>Hasora chromus</i> Cramer, 1780	Common Banded Awl		LC		P	H	H	H	H	H
Hesperiidae	<i>Potanthus confuscus</i> C. & R. Felder, 1862	Tropic Dart		LC		P	H	H	H	H	H
Hesperiidae	<i>Spialia galba</i> Fabricius, 1793	Indian Skipper		LC		P	H	H	H	H	H
Hesperiidae	<i>Suastus gremius</i> Fabricius, 1798	Indian Palm Bob		LC		P	H	H	H	H	H
Hesperiidae	<i>Udaspes folus</i> Cramer, 1775	Grass Demon		LC		P	H	H	H	H	H

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Table 14. Fish recorded during the study period.

Family	Scientific Name	Common Name	Endemic	NCS	GCS	protected	DAM TO UPPER AREA	DAM TO LOWER AREA	LOWER FOREST	TANNEL PATH	POWER HOUS
Cyprinidae	<i>Dawkinsia singhala</i>	Sri Lanka Filament Barb	x	LC	LC						x
Cyprinidae	<i>Devario malabaricus</i>	Giant Danio		LC	LC						x
Cyprinidae	<i>Garra ceylonensis</i>	Sri Lanka Stone Sucker	x	VU	EN		x	x			x
Cyprinidae	<i>Rasbora dandiya</i>	Broad line Strip Rasbora		LC							x
Balitoridae	<i>Schistura notostigma</i>	Sri Lanka Banded Mountain Loach	x	NT							x

Table 15. Amphibians recorded during the study period.

Family	Scientific Name	Common Name	Endemic	NCS	GCS		DAM TO UPPER AREA	DAM TO LOWER AREA	LOWER FOREST	TANNEL PATH	POWER HOUS
Bufo	<i>Adenomus kelaartii</i> (Günther, 1858)	Kelaart's dwarf toad	*	VU	EN	P	X	X	X	H	H
Bufo	<i>Duttaphrynus melanostictus</i> Schneider, 1799	Common toad		LC			H	H	H	H	H
Microhylidae	<i>Ramanella obscura</i> (Günther, 1864)	Obscure ramanella	*	VU		P	H	H	H	H	H
Ranidae	<i>Euphlyctis cyanophlyctis</i> (Schneider, 1799)	E:Indian skipper frog; S:Uthpathana madiya		LC				H	H	H	H
Ranidae	<i>Fejervarya limnocharis</i> (Boie, 1835)	Common paddy field frog		LC			H	H	H	H	H
Ranidae	<i>Lankanectes corrugatus</i> (Peters, 1863)	Corrugated water frog	*	VU		P	H	H	H		
Ranidae	<i>Nannophrys ceylonensis</i> (Günther, 1868)	Sri Lankan rock frog	*	EN	VU	P	H	H	H	H	H
Ranidae	<i>Hylarana aurantiaca</i> Boulenger, 1904	E:Golden frog; S:Ranvan diya madiya		EN	VU	P	X	X	X	X	X

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Ranidae	<i>Hylarana temporalis</i> (Günther, 1864)	Bronzed frog	*	NT		P	X	H	H	H	X
Ranidae	<i>Pseudophilautus asankai</i> Manamendra-Arachchi & Pethiyagoda, 2005	Asanka's shrub frog	*	CR	EN	P	H	H	H	H	H
Ranidae	<i>Pseudophilautus fergusonianus</i> (Ahl, 1927)	Ferguson's shrub frog	*	VU		P	X	H	H	H	H
Ranidae	<i>Pseudophilautus folicola</i> Manamendra-Arachchi & Pethiyagoda, 2005	Leaf dwelling shrub frog	*	VU	EN	P	H	H	H	H	H
Ranidae	<i>Pseudophilautus popularis</i> Megaskumbura & Manamendra-Arachchi, 2005	Common shrub frog	*	NT	EN	P	H	H	H	H	H
Ranidae	<i>Pseudophilautus reticulatus</i> (Günther, 1864)	Reticulated thigh shrub frog	*	EN	EN	P	H	H	H	H	H
Ranidae	<i>Pseudophilautus sordidus</i> Manamendra-Arachchi & Pethiyagoda, 2005	Grubby shrub frog	*	VU		P	H	H	H	H	H
Ranidae	<i>Polypedates cruciger</i> Blyth, 1852	Common hourglass tree frog	*	LC		P	H	H	H	H	H
Ranidae	<i>Taruga longinasus</i> (Ahl, 1931)	Long-snouted tree frog	*	EN	EN	P	H	H	H	H	H
Ichthyophiidae	<i>Ichthyophis glutinosus</i> (Linnaeus, 1758)	Ceylon caecilian S: Kaha hiridanda	*	VU		P	H	H	H	H	H

Table16. Reptiles recorded during the study period.

Family	Scientific Name	English Name	Endemic	NCS	GCS	Protected	DAM TO UPPER AREA	DAM TO LOWER AREA	LOWER FOREST	TANNEL PATH	POWER HOUS
Agamidae	<i>Calotes calotes</i>	Green garden lizard		LC		P	H	X	H	X	H
Agamidae	<i>Calotes liolepis</i>	Whistling lizard / Forest lizard	*	NT		P	H	H	H	H	H
Agamidae	<i>Calotes versicolor</i>	Common garden lizard		LC		P		H			H
Agamidae	<i>Lyriocephalus scutatus</i>	Lyre head lizard / Hump snout lizard	*	VU	NT	P	H	H	H	H	X
Agamidae	<i>Otocryptis wiegmanni</i>	Sri Lankan kangaroo lizard	*	LC		P	H	H	X	X	H
Gekkonidae	<i>Gehyra mutilata</i>	Four-claw gecko		LC		P		H			H
Gekkonidae	<i>Hemidactylus depressus</i>	Kandyan gecko	*	LC	LC	P	H	H	H	H	H
Gekkonidae	<i>Hemidactylus frenatus</i>	Common house-gecko		LC	LC	P		H			H

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Scincidae	<i>Eutropis carinata</i>	Common skink		LC		P	H	H	H	H	H
Scincidae	<i>Eutropis macularia</i>	Bronzegreen little skink		LC		P	H	H	H	H	H
Scincidae	<i>Lankascincus fallax</i>	Common lankaskink	*	LC		P	H	X	X	X	H
Scincidae	<i>Lankascincus gansi</i>	Gans's lankaskink	*	VU		P	H	H	H	X	H
Scincidae	<i>Lankascincus greari</i>	Geer's lanka skink	*	EN		P	X	H	H	H	H
Scincidae	<i>Lygosoma punctatus</i>	Dotted skink		LC		P	H	H	H	H	H
Scincidae	<i>Nessia burtonii</i>	Threetoe Snakeskink	*	LC		P	H	H	H	H	H
Varanidae	<i>Varanus salvator</i>	Water monitor		LC	LC	P					H
Acrochordidae	<i>Acrochordus granulatus</i>	Wart snake		VU	LC	P					H
Pythonidae	<i>Python molurus</i>	Indian python		LC	LR/ nt	P	H	H	H	H	H
Cylindrophidae	<i>Cylindrophis maculata</i>	Pipe snake	*	NT		P	H	H	H	H	H
Natricidae	<i>Amphiesma stolatum</i>	Buff striped keelback		LC		P	H	H	H	H	H
Natricidae	<i>Aspidura guentheri</i>	Guenther's roughside	*	NT		P	H	H	H	H	H
Natricidae	<i>Atretium schistosum</i>	The Olive keelback water- snake		LC	NT	P	H	H	H	H	H
Natricidae	<i>Balanophis ceylonensis</i>	Sri Lanka keelback	*	EN		P	H	H	H	H	
Natricidae	<i>Xenochrophis asperrimus</i>	The checkered keelback	*	LC		P	H	H	H	H	H
Natricidae	<i>Xenochrophis piscator</i>	Checkered Keelback		LC		P	H	H	H	H	H
Colubridae	<i>Ahaetulla nasuta</i>	Green vine snake		LC		P	H	H	H	H	H
Colubridae	<i>Ahaetulla pulverulenta</i>	Brown vine snake		LC		P	H	H	H	H	H
Colubridae	<i>Boiga barnesii</i>	Barnes's cat snake,	*	VU		P	H	H	H	H	
Colubridae	<i>Boiga beddomei</i>	Beddoms cat snake		NT	DD	P	H	H	H		
Colubridae	<i>Boiga ceylonensis</i>	Sri Lanka cat snake		LC		P	H	H	H	H	H
Colubridae	<i>Boiga forsteni</i>	Forsten's cat snake		NT	LC	P	H	H	H		
Colubridae	<i>Chrysopelea ornata</i>	Ornate flying snake		VU		P		H	H	H	H
Colubridae	<i>Dendrelaphis bifrenalis</i>	Boulenger's bronze back	*	NT	LC	P	H	H	H	H	H
Colubridae	<i>Dendrelaphis caudolineolatus</i>	Gunther's bronze back		VU		P	H	H	H	H	H

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Colubridae	<i>Dendrelaphis schokari</i>	Schokari's bronze back	*	LC		P	H	H	H	H	H
Colubridae	<i>Lycodon aulicus</i>	Wolf snake, house snake		LC		P	H	H	H	H	H
Colubridae	<i>Oligodon calamarius</i>	Templeton's kukri snake	*	EN	DD	P	H	H	H	H	H
Colubridae	<i>Oligodon sublineatus</i>	Dumerul's kuki snake	*	LC	LC	P	H	H	H	H	H
Colubridae	<i>Ptyas mucosa</i>	Rat snake		LC		P	H	H	H	H	H
Elapidae	<i>Bungarus ceylonicus</i>	Sri Lanka krait / Ceylon krait	*	VU			H	H	H	H	
Uropeltidae	<i>Rhinophis homolepis</i>	Kelaarts earth snake	*	EN		P	H	X	X	H	H
Viperidae	<i>Daboia russelii</i>	Russell's viper		LC			H	H	H	H	H
Viperidae	<i>Hypnale hypnale</i>	The Merrem's Hump nose viper		LC		P				H	H
Viperidae	<i>Hypnale nepa</i>	Merrem's hump-nosed viper	*	EN	LC	P	H	H	H	H	H
Viperidae	<i>Trimeresurus trigonocephalus</i>	Green pit viper	*	LC		P	H		H		

Table 17. Birds recorded during the study period.

Family	Scientific Name	English Name	Endemic	National	Global		DAM TO UPPER AREA	DAM TO LOWER AREA	LOWER FOREST	TANNEL PATH	POWER HOUS
Phasianidae	<i>Galloperdix bicalcarata</i> (Forster, 1781)	Sri Lanka Spurfowl	*	NT	LC	SP	H	H	H		
Phasianidae	<i>Gallus lafayetii</i>	Sri Lanka Junglefowl	*	LC	LC	P	H	H	H	H	H
Phasianidae	<i>Pavo cristatus</i> Linnaeus, 1758	Indian Peafowl		LC	LC	P			H	H	H
Picidae	<i>Dendrocopos nanus</i> (Vigors, 1832)	Brown-capped Woodpecker		LC	LC	P	H	H	H	H	H
Picidae	<i>Picus chlorolophus</i>	Lesser Yellownappe		NT	LC	P	H	H	H	H	H
Picidae	<i>Dinopium benghalense</i>	Black-rumped Flameback		LC	LC	P	H	H	H	H	H
Picidae	<i>Chrysocolaptes lucidus</i>	Greater Flameback		LC		P	H	H	H	H	
Ramphastidae	<i>Megalaima zeylanica</i>	Brown-headed Barbet		LC	LC	P	H	H	H	H	H
Ramphastidae	<i>Megalaima flavifrons</i>	Sri Lanka Yellow-fronted Barbet	*	LC	LC	SP	X	X	H	H	H
Ramphastidae	<i>Megalaima rubricapillus</i>	Crimson-fronted Barbet		LC	LC	P	H	H	H	H	X
Bucerotidae	<i>Ocyrceros gingalensis</i>	Sri Lanka Grey Hornbill	*	LC	LC	SP	H	X	X	H	H
Trogonidae	<i>Harpactes fasciatus</i>	Malabar Trogon		NT	LC	P	H	H	H		
Coraciidae	<i>Eurystomus orientalis</i> (Linnaeus, 1766)	Asian Dollarbird		EN	LC	SP	H	H			

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Alcedinidae	<i>Ceyx erithaca</i>	Black-Backed Kingfisher(Three Toad Kingfisher)		NT	LC	P						H
Alcedinidae	<i>Halcyon smyrnensis</i>	White-Throated Kingfisher		LC	LC	P						H
Meropidae	<i>Merops philippinus</i>	Blue tailed Bee-eater				P		X	X	H	H	
Cuculidae	<i>Cuculus varius</i> Vahl, 1797	Common Hawk-cuckoo		EN	LC	SP	H	H	H	H	H	
Cuculidae	<i>Eudynamys scolopaceus</i>	Asian Koel		LC	LC	P						
Cuculidae	<i>Centropus sinensis</i>	Greater Coucal		LC	LC	P	H	H	H	H	H	
Psittacidae	<i>Loriculus beryllinus</i>	Sri Lanka Hanging Parrot	*	LC	LC	SP	X	X	X	X	X	
Psittacidae	<i>Psittacula eupatria</i>	Alexandrine Parakeet		LC	LC	P	H	X	H	H	H	
Psittacidae	<i>Psittacula krameri</i> (Scopoli, 1769)	Rose-ringed Parakeet		LC	LC							
Apodidae	<i>Collocalia unicolor</i>	Indian Swiftlet		LC	LC	P	X	X	X	X	X	
Tytonidae	<i>Otus bakkamoena</i> Pennant, 1769	Collared Scops-owl		LC	LC	P						
Tytonidae	<i>Bubo nipalensis</i> Hodgson, 1836	Spot-Bellied Eagle- owl		NT	LC	P						
Tytonidae	<i>Ketupa zeylonensis</i>	Brown Fish-owl		LC	LC	P	H	H	H	H	H	
Tytonidae	<i>Strix leptogrammica</i> Temminck, 1831	Brown Wood-owl		NT	LC	P	H	H	H	H	H	
Tytonidae	<i>Glaucidium castanonotum</i>	Sri Lanka Chestnut-backed Owlet		VU	NT	P						
Tytonidae	<i>Ninox scutulata</i> (Raffles, 1822)	Brown Hawk-owl		LC	LC	P						H
Podargidae	<i>Batrachostomus moniliger</i> Blyth, 1846	Frogmouth		LC	LC	P						
Columbidae	<i>Columba livia</i>	Rock Pigeon			LC	P		H	H	H	H	
Columbidae	<i>Stigmatopelia chinensis</i>	Spotted Dove		LC	LC	P	H	H	X	X	X	
Columbidae	<i>Chalcophaps indica</i>	Emerald Dove		LC	LC	P	H	X	H	H	H	
Columbidae	<i>Treron pompadora</i> (Gmelin, 1789) PE	Pompadour Green Pigeon		LC	LC	P						
Columbidae	<i>Ducula aenea</i> (Linnaeus, 1766)	Green Imperial-Pigeon		LC	LC	P						
Rallidae	<i>Amaurornis phoenicurus</i> (Pennant, 1769)	White-breasted Waterhen		LC	LC	P						
Accipitridae	<i>Pernis ptilorhyncus</i>	Oriental Honey-Buzzard		NT	LC	P	X	H	H	H	H	
Accipitridae	<i>Spilornis cheela</i>	Crested Serpent-eagle		LC	LC	P	X	X	H	H	H	
Accipitridae	<i>Accipiter trivirgatus</i>	Crested Goshawk		VU	LC	P						
Accipitridae	<i>Accipiter badius</i>	Shikra		LC	LC	P	H	H	H	H	H	

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Accipitridae	<i>Accipiter virgatus</i> (Temminck, 1822)	Besra		VU	LC	P	H	H	H	H	
Accipitridae	<i>Ictinaetus malayensis</i>	Black Eagle		NT	LC	P	H	H	H	H	H
Accipitridae	<i>Hieraaetus kienerii</i>	Rufous-bellied Eagle		NT		SP	X	H	H	H	H
Accipitridae	<i>Spizaetus cirrhatus</i>	Changeable Hawk-eagle		LC		P	H	H	H	H	H
Accipitridae	<i>Spizaetus nipalensis</i>	Mountain Hawk-eagle		VU		SP	H	H	H	H	H
Phalacrocoracidae	<i>Phalacrocorax niger</i>	Little Cormorant		LC	LC	P	H	X	H	H	H
Ardeidae	<i>Bubulcus ibis</i>	Cattle Egret		LC	LC	P		H	H	H	H
Ardeidae	<i>Ardeola grayii</i>	Indian Pond-heron		LC	LC	P		H	H	H	H
Chloropseidae	<i>Chloropsis jerdoni</i>	Jerdon's Leafbird		LC	LC	P	H	H	H	H	H
Chloropseidae	<i>Chloropsis aurifrons</i> (Temminck, 1829)	Golden Fronted Leafbird		LC	LC	P	H	H	H	H	H
Laniidae	<i>Lanius cristatus</i>	Brown Shrike				P	H	H	H	H	H
Corvidae	<i>Corvus splendens</i>	House Crow		LC	LC			H	H		H
Oriolidae	<i>Oriolus xanthornus</i>	Black Hooded Oriole		LC	LC	P	H	H	H	H	H
Campephagidae	<i>Coracina macei</i> (Lesson, 1831)	Large Cuckooshrike		LC	LC	P	H	H	H	H	H
Campephagidae	<i>Coracina melanoptera</i>	Black Headed Cuckooshrike		LC	LC	P	H	H	H	H	H
Campephagidae	<i>Pitta brachyura</i>	Indian Pitta				P	H	H	H	H	H
Campephagidae	<i>Pericrocotus cinnamomeus</i>	Small Minivet		LC	LC	P	H	H	H	H	H
Campephagidae	<i>Pericrocotus flammeus</i>	Scarlet Minivet		LC	LC	P	X	X	H	H	H
Campephagidae	<i>Hemipus picatus</i>	Bar Winged Flycatcher Shrike		LC	LC	P	X	X	X	H	H
Rhipiduridae	<i>Rhipidura aureola</i>	White Browed Fantail		LC	LC	P				H	H
Dicruridae	<i>Dicrurus caeruleus</i>	White Bellied Drongo		LC	LC	P	X	H	H	X	X
Monarchiidae	<i>Hypothymis azurea</i>	Black Naped Monarch		LC	LC	P	H	H	H	H	H
Monarchiidae	<i>Terpsiphone paradisi</i>	Asian Paradise Flycatcher		LC	LC	P	H	H	H	H	H
Aegithinidae	<i>Aegithina tiphia</i>	Common Iora		LC	LC	P	H	H	H	X	H
Muscicapidae	<i>Cyornis tickelliae</i>	Tickell's Blue Flycatcher		LC	LC	P	H	H	H	H	H
Muscicapidae	<i>Copsychus saularis</i>	Oriental Magpie Robin		LC	LC	P	H	X	H	H	X
Muscicapidae	<i>Saxicoloides fulicatus</i>	Indian Robin		LC	LC	P		H	H	H	H
Sturnidae	<i>Acridotheres tristis</i>	Common Myna		LC	LC	P		H	X	H	X
Sturnidae	<i>Gracula religiosa</i> Linnaeus, 1758	Hill Myna		LC	LC	P	H	H	H	H	H
Sittidae	<i>Sitta frontalis</i>	Velvet Fronted Nuthatch		LC	LC	P	H	H	H	H	H
Hirundinidae	<i>Hirundo hypertyra</i>	Sri Lanka swallow	*	LC		P	X	X	H	H	X
	<i>Hirundo rustica</i>	Barn Swallow				P	X	X	H	H	H

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Pycnonotidae	<i>Pycnonotus melanicterus</i> (Gmelin, 1789) PE	Black Crested Bulbul		LC	LC	P	H	H	H	H	H
Pycnonotidae	<i>Pycnonotus cafer</i>	Red Vented Bulbul		LC	LC	P	H	X	X	X	X
Pycnonotidae	<i>Pycnonotus luteolus</i> (Lesson, 1841)	White Browed Bulbul		LC	LC	P	H	H	H	H	H
Pycnonotidae	<i>Iole indica</i>	Yellow Browed Bulbul		LC	LC	P	H	H	H	H	H
Pycnonotidae	<i>Hypsipetes leucocephalus</i>	Asian Black Bulbul		LC	LC	P	H	H	H	H	H
Cisticolidae	<i>Prinia socialis</i>	Ashy Prinia		LC	LC	P		H			H
Zosteropidae	<i>Zosterops ceylonensis</i> Holdsworth, 1872	Sri Lanka White Eye	*	NT	LC	P	H	H	H	H	
Zosteropidae	<i>Zosterops palpebrosus</i>	Oriental White Eye		LC	LC	P	H	H	H	H	H
Sylviidae	<i>Phylloscopus nitidus</i>	Green Warbler				P	H	H	H	H	H
Sylviidae	<i>Phylloscopus magnirostris</i>	Large-billed Leaf Warbler				P	H	H	H	H	H
Sylviidae	<i>Orthotomus sutorius</i>	Common Tailorbird		LC	LC	P	H	H	H	H	H
Timaliidae	<i>Pellorneum fuscicapillus</i>	Sri Lanka Brown Capped Babbler	*	LC	LC	SP	H	H	H	H	
Timaliidae	<i>Pomatorhinus melanurus</i>	Sri Lanka Scimitar Babbler	*	LC	LC	P	H	H	H	H	
Timaliidae	<i>Dumetia hyperythra</i>	Tawny Bellied Babbler		LC	LC	P		H	H	H	H
Timaliidae	<i>Rhopocichla atriceps</i> (Jerdon, 1839)	Dark Fronted Babbler		LC	LC	P	H	H	H	H	H
Timaliidae	<i>Turdoides affinis</i>	Yellow Billed Babbler		LC	LC	P	H	X	H	H	X
Dicaeidae	<i>Dicaeum erythrorhynchos</i>	Pale Billed Flowerpecker		LC	LC	P	X	X	H	H	X
Nectariniidae	<i>Nectarinia zeylonica</i>	Purple Rumped Sunbird		LC	LC	P	X	X	H	H	H
Nectariniidae	<i>Nectarinia asiatica</i> (Latham, 1790)	Purple Sunbird		LC	LC	P	H	H	H	H	H
Nectariniidae	<i>Nectarinia lotenia</i>	Long Billed Sunbird		LC	LC	P	H	H	H	H	H
Passeridae	<i>Passer domesticus</i> (Linnaeus, 1758)	House Sparrow		LC		P		H			H
Motacillidae	<i>Dendronanthus indicus</i>	Forest Wagtail				P	H	H	H	H	H
Motacillidae	<i>Montacilla cinerea</i>	Grey Wagtail				P	X	X			X
Estrildidae	<i>Lonchura striata</i>	White Rumped Munia		LC	LC		H	X			H
Estrildidae	<i>Lonchura punctulata</i>	Scaly Breasted Munia		LC	LC		H	X			H



## PROPOSED UPPER KADURUGALDOLA MINI HYDROPOWER PROJECT

Table.18 Mammals recorded during the study period

Family	Scientific Name	English name	Endemic	NCS	GCS	Protected	DAM TO UPPER AREA	DAM TO LOWER AREA	LOWER FOREST	TANNEL PATH	POWER HOUS
Manidae	<i>Manis crassicaudata</i>	Pangolin		NT	NT	SP	P	P	P	P	
Soricidae	<i>Crocidura hikmiya</i>		*	CR		P	H	H	H	H	
Hipposideridae	<i>Hipposideros ater</i> Temleton, 1848	Bicolored leaf-nosed bat		LC	LC	P	H	H	H	H	H
Hipposideridae	<i>Hipposideros fulvus</i> Gray, 1838	Fulvous-leaf nosed bat		EN	LC	P	H	H	H	H	H
Hipposideridae	<i>Hipposideros galeritus</i> Cantor, 1846	Dekhan leaf-nosed bat		VU	LC	P	H	H	H	H	H
Hipposideridae	<i>Hipposideros speoris</i> (Schneider, 1800)	Schneider's leaf-nosed bat		LC	LC	P	H	H	H	H	H
Pteropodidae	<i>Cynopterus sphinx</i>	Short-nosed fruit bat		LC	LC	P	H	H	H	H	H
Pteropodidae	<i>Pteropus giganteus</i>	Flying fox		LC	LC	P	H	H	H	H	H
Rhinolophidae	<i>Rhinolophus rouxii</i> Temminck, 1835	Rufous horse-shoe bat		LC	LC	P	H	H	H	H	
Vespertilionidae	<i>Pipistrellus tenuis</i> (Temminck, 1840)	Pigmy pipistrel		LC	LC	P	H	H	H	H	H
Cercopithecidae	<i>Macaca sinica</i>	Sri Lanka toque monkey	*	LC	EN		X	X	X	H	H
Cercopithecidae	<i>Semnopithecus vetulus</i>	Sri Lanka Purple-faced langur	*	EN	EN	P	P	P	P	P	P
Lorisidae	<i>Loris tardigradus</i>	Sri Lanka red slender loris	*	VU	EN	SP	P	P	P	P	
Felidae	<i>Panthera pardus</i>	Leopard		EN	NT	SP	P	P			
Felidae	<i>Prionailurus viverrinus</i>	Fishing cat		EN	EN	SP	P	P			
Herpestidae	<i>Herpestes brachyurus</i>	Brown mongoose		LC		P	H	H	H	H	H
Mustelidae	<i>Lutra lutra</i>	Otter		VU	NT	SP	X	X	P	P	P
Viverridae	<i>Paradoxurus hermaphoditus</i>	Palm cat		LC	LC	P	P	P	P	P	P
Viverridae	<i>Paradoxurus aureus</i> Cuvier, 1822	Golden Palm Civet	*	EN		P	H	H	H		
Viverridae	<i>Paradoxurus montanus</i> Kelaart, 1852	Sri Lankan Brown Palm Civet	*	EN		P	H				
Viverridae	<i>Viverricula indica</i>	Ring-tailed civet		LC	LC	P	P	P	P	P	P
Cervidae	<i>Rusa unicolor</i>	Sambur		NT	VU	SP	P	P	P	P	P
Cervidae	<i>Muntiacus muntjak</i>	Barking deer		NT		SP	P	P	P	P	P
Suidae	<i>Sus scrofa</i>	Wild boar		LC	LC		P	P	P	P	P
Tragulidae	<i>Moschiola meminna</i>	Sri Lanka mouse-deer	*	LC	LC	P	P	P	P	P	P

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Hystricidae	<i>Hystrix indica</i>	Porcupine		LC	LC		P	P	P	P	P
Muridae	<i>Bandicota indica</i> (Bechstein, 1800)	Malabar bandicoot		LC	LC	P	P	P	P	P	P
Muridae	<i>Madromys blanfordi</i> (Thomas, 1881)	White-tailed rat		EN	LC	P	H	H	H	H	H
Muridae	<i>Mus mayori</i> (Thomas, 1915)	Sri Lanka spiny rat	*	EN	VU	P	H	H	H	H	H
Muridae	<i>Rattus rattus</i> (Linnaeus, 1758)	Common rat		LC			H	H	H	H	H
Sciuridae	<i>Funambulus layardi</i> (Blyth, 1849)	Sri Lanka flame-striped jungle squirrel	*	VU	VU	P	P	P	P	P	P
Sciuridae	<i>Funambulus palmarum</i>	Palm squirrel		LC	LC	P	H	H	H	H	H
Sciuridae	<i>Ratufa macroura</i>	Giant squirrel		LC	NT	P	P	P	P	P	P
Leporidae	<i>Lepus nigricollis</i>	Black-naped hare		LC	LC	P	P	P	P	P	P

### Important findings from the biological survey

The Biological survey recorded rich faunal and floral community in the area (See tables x-xx for more details).

Flora: The investigation of flora in and around the project influencing zone showed the presence of some 313 species with 36 were Nationally threatened (18 species globally threatened) and 67 species were endemics. Details have been given in Table xx.

Among the Dragonfly fauna, *Drepanosticta sp.* was recorded in stream bank habitats. Which need to further identify as species level. Collectively *Drepanosticta* is very sensitive group of damselfly which only occurring in good forest habitats.

### 3.3 Social Environment

- Provide information about land use along the headrace channel/ penstock path and path of transmission line. It is necessary to provide current land use along with the information of land ownership/ tenure pattern of the lands.
- Significant land use changes (if any) due to the construction of the project should be mentioned.

- Description of the current land use pattern within the project area should be supported by a map preferably 1:10,000 scale
- River users (bathing, drinking, agricultural requirements, transportation, commercial purposes and other
- Income generation sources and patterns
- Existing environmental consideration ,problems or issues prevailing in the area
- Cultural and archaeological aspects/ considerations
- Existing infrastructure facilities, transportation, communication, power supply etc....

#### Land use and likely land use change:

The project influencing area is characterized by having several land use types in this rural landscape. They are briefly as follows.

- a. **Built-up lands** consisting of residential houses, a segment of C grade national road (bituminous road) and dilapidated minor road (macadamized).
- b. **Agricultural lands** consisting of tea plantation and home gardens.
- c. **Forested lands** consisting of varying tree canopy cover ranging between 90% and 30%.
- d. **Water areas**; primarily Kadurugaldola stream and the small marshy area close to the weir site.

**Table. 19** Lanuse types of the area

Land use component	Location features	Land ownership/tenure
Residential houses	Only three occupied houses are located in the immediate vicinity of the penstock line of initial 50m.	Private lands
Segment of C grade national road.	Close to the power house site crossing the transmission line path.	Government lands
Minor road – macadamized & dilapidated.	Close to upper segment of penstock line.	Government lands
Tea plantations	Around the first 100m upper segment of	Private lands

	penstock line.	
Home gardens	In the immediate vicinity of the penstock line of initial 50m.	Private lands
Forested lands	Around the lower 100m segment of penstock line and the along the stream bank from wier site to power house site.	Stream bank forests are crown land government forest and the rests are private lands.
Water areas (Kadurugaldola stream).	Run across the entire project area.	Government lands

#### **Likely land use changes:**

Minor road is likely to be better constructed/repared for material transport to the project site.

The 5m strip of land flanking the penstock line will be devoid of tea plantation in upper areas, and in the middle- lower areas of penstock, forest cover of that 5m linear zone will be reduced.

The riverside forest patch marked for the power house site and switch yard will be cleared.

Water area of the stream, within the water abstracted zone, will be reduced/narrowed along with occupation of weedy vegetation cover in that narrow belt receding zone of stream bank.

#### **River use:**

The local river use practices are only for subsistence level community use, and there is no large scale river use in this rural set up. Key river uses include;

- Micro hydropower generation: There is a small scale microhydropower facility is currently available for 3 households below the dam site.

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- Bathing & washing: There are three bathing spots within this specific stream segment have identified; 300m above the weir, 50m below the weir and 15m below the power house site. About 12-15 local people use the stream for such needs and other use pipe born water. Recent developments in small scale community water supply schemes to house holds has discouraged people coming to river for bathing and washing.
  - Community managed pipe born water supply: Stream water is tapped above the weir site and then directly supplied as pipe born water for house hold uses such as drinking, cooking, bathing, washing and occasional watering of home garden plants in dry season. Total number of dependents include 19 people.

**Income generation sources and patterns:**

Currently, there are three residential houses in the vicinity of the project and one house is in abandoned state. Altogether, the population is 19 in this project relevant small community (5 males and 9 females above 18 years and 5 children). Adult males are the main earners of the community while 7 adult females also earn some money irregularly through labour works. Two adult females work as migrant workers in middle east to support the family. Families live as extended family members.

Tea sector is the dominant source of income of the locality; people earn from their own small holder tea harvest and also by providing labour inputs to nearby tea cultivations. On average monthly net income of male member is about Rs. 18,000/= per worker per month, but there are seasonal variations due to climate, market fluctuations and personal reasons. In addition, people engage in off-the-village periodic additional income generating activities such as carpenters, day labourers in gem pitss/tea estates/rubber estates, small time businessmen and construction laboures in Colombo and close by cities or townships. Moreover, there is a hidden economy that is hardly expressed by the community and only some visible evidences are available. They include earning income through such clandestine activities as toddy making, collection of Wallapatta (wood of *Gyrinops walla* tree), small scale gem mining and timber extraction from crown lands. Goraka, which is an important spice, is collected from wild and sold.

**Current environmental issues:**

Over the years, the Kadurugaldola hamlet has experienced some forms of natural resource depletion and environmental degradation. These include soil erosion, depletion and

degradation of forest cover and water resources, decline in land fertility and productivity, loss of state lands due to encroachments and pollution caused by modified agricultural practices. The main social causes of environmental degradation and resources depletion are (1) emphasis on rural agri production enhancement by farmers, neglecting environment (2) high rate of poverty (3) low educational levels, and (4) lack of information and awareness on environmental issues.

Examination of social issues associated with environmental degradation shows that this has happened mainly because of the following:

- Communities are generally reluctant to carry out environmental management activities, preferring to support social infrastructure projects and economic activities whenever possible;
- Technical support for environmental management by communities is limited, and technical service agencies lack resources to operate effectively and widely, and external support services are not sufficiently strong enough to fill the development vacuum at the local level;
- Access to funds for environmental projects is limited. The funding agencies (GO & NGO) emphasizes for production and enterprises oriented projects;
- Local institutions are not well established to promote environmental management; and
- Environmental education and awareness levels are limited at community level, exacerbated by low educational levels and the limitations to environmental management information delivery systems.

At the site level the socio ecological issues include;

- Minor gem mining in Kadurugaldola which has been an unsustainable practice and that has damaged some points of river banks. The foot path used by people and their very presence in riverine forest given rise to some visible evidence of soil erosion and degradation of riverine habitats.
- Heavy use of agrochemical by tea cultivators in upland areas results in loading of such toxin in stream ecosystem through drainage canals.
- Timber and firewood extraction from riverine forests and upland forests. Already the riverine forests are confined to a narrow belt due to clearing of lands for agricultural activities. All such human actions put stress on natural river ecosystem.

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### **Socio-cultural aspects and infrastructure facilities**

As expressed earlier, the immediate community numbering 19 (3 house hold units) is living below poverty line receiving government aid through Samurdhi programme. People are tea cultivators of low income category tea small holders. All the people living there, who are confined to the upper part of the project area, are Buddhists and they are generally cut off from urban centers and have a different kind of lifestyle. In addition to Buddhism they follow various forms of worships associated with local deities (Deviyos) in belief of protective roles. As expected in a rural setting, the area abounds with natural beauties; clear water streams, forests and the greenery of tea fields. The villagers pass a healthy and peaceful life. There is no smoke and noise as in towns; and they breathe fresh air. They lead a simple life and their desires are few. They manage tea their fields situated in the immediate vicinity. Apart from that direct selling of tea leaves they earn some money through labour works provided to others. It helps them to increase their meager income. None of them are employed as regular wage earners such as government servants. The community is socially bounded together. Their life is corporate and independent. They depend on each other for the supply of their daily wants. They always share the joys and sorrows of each other. They help each other in the time of need and they all combine as a single unit in times of troubles and obstacles. Their social sense is so strong that each one is familiar even with the family histories of the other one. But their life has some serious drawbacks. Their houses are inferior quality and people are less concerned about hygienic and orderly life style. However, people are not so 'ill-clad and ill fed' and have some limited assets like agricultural lands, jewelries, household electronic equipments, mobile phones etc. The community is less educated in general, but know at least to write their names. Bambarabotuwa village school some 3km away is the nearest educational establishment. People do not miss the schooling of younger children. Sometimes, their low level of education makes them superstitious and less progressive thinking. Majority of them are content with older methods of cultivation and mostly do not follow scientific methods. Rice is the staple food of these people and all are non-vegetarians. They do not have much food restrictions and eat bush meat if opportunity comes. Most of the male elders drink toddy, also they take bottled liquor. The community is connected to outside by a minor roads and foot paths. Minor road is only a jeep tract and is in a highly dilapidated state. There is no bus service plying through the settlement. Hence, the community is relatively isolated in the tea landscape. Houses can be approached along foot paths going through tea lands. Electricity is available for the houses from local level micro hydro power generation unit. Several private vehicles (tractors, three wheelers and tea transport tippers) are coming close to the settlement for transporting agricultural produce or attending the needs of businessmen, and people are used to hitch hiking in such vehicles to go to the main road. Private three wheels are hired as low cost vehicle, both for transporting people and agricultural produce. Majority of the elders own mobile phones and there is no land lines supplied to the houses. Key civic amenities outside the project area and people have to travel several kilometers for their needs; village hospital located at Gallella and Buddhist temple at Dehenakanda. Bambarabotuwa small township

is the area center having post office, Grama Nildari office, Divisional Secretarie's office, some grocery shops, shop for fertilizers and pesticides, buyers etc. The people depends on the main township of Ratnapura for their needs that are not available locally.

### **]Archeological aspects**

Careful observations and discussions with local people proved the absence of archeological resources in the project influencing area. Attention was paid to locate any place where physical remains (artifacts) of historical human activities exist; pre-historic human settlement like caves, chipped stone tools left by pre-historic hunters, rock art, cemeteries, stone monuments and remains of places of worship.