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COMMUNICATION

URBAN BIODIVERSITY: AN INSIGHT INTO THE TERRESTRIAL VERTEBRATE DIVERSITY OF GUWAHATI, INDIA

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Urban biodiversity: an insight into the terrestrial vertebrate diversity of Guwahati, India

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Abstract: This study focuses on the assessment of the terrestrial vertebrate diversity of Guwahati. Twenty-six species of amphibians, 57 species of reptiles, 214 species of birds, and 36 species of mammals were recorded during the study period. Thirty-three species were found to be threatened with extinction and another 62 species need evaluation. A single species of turtle was found to be categorized as Extinct in the Wild under the IUCN Red List of Threatened Species.

Keywords: Assam, Biodiversity, city, Deepor Beel, Guwahati, urban, vertebrate.

Abbreviations: EW: Extinct in the Wild; CR: Critically Endangered; EN: Endangered; VU: Vulnerable; NT: Near Threatened, LC: Least Concern; DD: Data Deficient; NE: Not Evaluated; NS: Non Scheduled, I: Schedule I of Indian Wildlife Protection Act, 1972; II: Schedule II of Indian Wildlife Protection Act, 1972; III: Schedule III of Indian Wildlife Protection Act, 1972; IV: Schedule IV of Indian Wildlife Protection Act, 1972; V: Schedule V of Indian Wildlife Protection Act, 1972; *: Introduced Species.
INTRODUCTION

It has been estimated that the urban population of developing countries is growing at the rate of five million people per month. Roughly 70% of the global population is expected to be urban by 2050, and the total urban area is expected to triple between 2000 and 2030 (U-Habitat 2013). Recent studies have focussed on the biodiversity of urban areas. A study in Hyderabad documented 1,305 vascular plant species, 30 odonates, 42 spiders, 141 butterflies, 60 fish, 16 amphibians, 41 reptiles, 314 birds and 58 mammal species (Srinivasulu & Srinivasulu 2012). A study at National Environmental Engineering Research Institute campus at Nagpur, Maharashtra recorded 135 vascular plants including 16 monocots and 119 dicots, belonging to 115 genera and 53 families (Gupta et al. 2008). A rapid assessment survey at the campus of Indian Institute of Technology, Madras recorded 298 plant species, 50 butterflies, eight amphibians, 13 reptiles, 51 birds and 12 mammal species (Care Earth 2006). Sudha & Ravindranath (2000) recorded 374 species of plants in Bangalore, where a study of street trees identified 108 species belonging to 33 families (Nagendra & Gopal 2010). A similar study in Delhi found 125 tree species (Bhalla & Bhattacharya 2015). A study in Chennai metropolitan city revealed the presence of 45 species of plants representing 21 families (Muthulingam & Thangavel 2012).

During the past 50 years the population of India has grown 2.5-fold and the urban population five-fold (Taubenböck et al. 2009). Analyses suggest that 8% of terrestrial vertebrate species on the IUCN Red List are imperiled largely because of urban development (McDonald et al. 2008), and 13% of endemics are in ecoregions that are under threat from urban expansion (McDonald et al. 2018). Thus, it is important to take research and conservation efforts regarding urban biodiversity more seriously. In urban landscapes the participation of inhabitants is a must for conservation, where effort must be invested in sensitising the community about the benefits of conserving urban biodiversity. Some of the services provided by urban biodiversity are improvement of air quality and regulation of microclimate by urban parks and vegetation. Tree cover and vegetation also helps in proper percolation of rain water to soil, adding to ground water and reducing floods while improving quality of life by adding aesthetic and recreational value. It has been estimated that a ten percent increase in canopy cover can reduce local temperature by 3–4 °C (Gill et al. 2007; Middel et al. 2015).

Guwahati (26.144°N & 91.736°E), the capital of Assam, is the biggest urbanized centre of northeastern India. The city falls within the Indo-Burma Biodiversity Hotspot, situated between the southern bank of the Brahmaputra River and the foothills of the Shillong plateau. It is spread over 216.79km² area, and has a population of around a million with a density of 2695.43 humans per sq.km. The city is situated on undulating plain with varying altitude of 49.5–55.5 m. The city is surrounded by 18 hills. Guwahati has eight reserve forests (South Kalapahar RF, Fatisil RF, Jalukbari RF, Gotanagar RF, Hengrabi RF, Sarnai Hill RF, Garbhanga RF, Rani RF) and two wildlife sanctuaries (Deepor beel WLS and Anchang WLS) along with an internationally acclaimed wetland and Ramsar Site, the Deepor Beel, within the city limits. Deepor Beel Wildlife Sanctuary (WS) is a part (4.01km²) of the Ramsar site which is 40km² in area. The mighty Brahmaputra River flows through the city for about 25km dividing it into northern and southern areas (Devi & Bhattacharyya 2015).

Guwahati has a tropical monsoon climate and receives about 1,600mm annual rainfall with an average annual temperature of 23°C. Certain patches of forest still exist within the city (Fig. 1). The overall habitat type in the study area mainly comprises of forest patches, scrublands, grasslands, plantations, wetlands, agricultural lands, human settlements and commercial areas. The forest patches are of moist deciduous type (Purkayastha 2012, 2015).

Due to urbanization and anthropogenic pressure, the biodiversity of the city is under stress. Cutting of hills, illegal felling of trees and degradation of wetlands is having an immense adverse effect on the biodiversity of the city. The hills of the city are used for illegal settlements most of which are reserve forest lands raising serious ecological concern. In the hills within Guwahati Municipal Area, there are 65,894 households of which 10,208 are within reserve forests (Devi & Bhattacharyya 2015). Importantly, a large part of Guwahati has been developed by filling of wetlands and the process of filling and degradation of wetlands still continues. Owing to this, Guwahati is seeing a rise of the artificial flood in the low lying city centers.

Due to factors cited above, an assessment of biodiversity of Guwahati becomes important for the formulation of long-term conservation policies. It is a fact that Guwahati has lost a big chunk of its biodiversity, but quantification of the same is not possible as we do not have data on its biodiversity from the past to compare with the present status of biodiversity. This paper provides an inventory of terrestrial vertebrate
biodiversity occurring in the city limits of Guwahati.

MATERIALS AND METHODS

This study was conducted between the year 2011 and 2016 spanning over a period of six years with survey emphasizing on terrestrial vertebrates. The study site was the Guwahati city (26.1859°N, 91.7477°E), the biggest metropolis of northeastern India and the economic hub of the region (Fig. 1). Since the main goal of the study was to create a checklist, visual encounter survey (Crump & Scott 1994) employing randomized walk (Lambert 1984) was conducted. Active search (Rolfe & McKenzie 2000) was employed specifically for herpetofaunal survey. For herpetofaunal survey, six man hours were invested per survey, with an approximate of six surveys per month from April to October each year between 2011 and 2016. Most of these surveys were undertaken in the evening and early night which also covered observations on nocturnal birds and mammals. Bird surveys were conducted round the year, with more survey efforts being invested during the winters (November–March). We used Olympus 10X50 DPS binocular for the survey. Twelve man hours were generally invested per survey with most conducted in early morning or evening. Mammal survey was conducted in association with bird survey. Records of rescued animal with locality details by Assam State Zoo were also taken into account while creating the checklist. In most cases animals were photographed and identified using literature (Smith 1931, 1935, 1943; Ahmed et al. 2009; Grimmett et al. 2011; Purkayastha 2012; Menon 2014).

RESULTS

During this study a total of 332 species of terrestrial vertebrates were recorded. Birds were found to be the most diverse group accounting for 214 species, followed by reptiles (57 species), mammals (36 species) and amphibians (25 species).

Amphibia: A total of 26 species of amphibians representing seven families were encountered. Among these, a single species is Vulnerable, four species are Data Deficient and 21 species are Least Concern (IUCN 2017). Of these, 11 species are included in Schedule IV of Indian Wildlife Protection Act, 1972 (IWPA) and rest were non-scheduled species (Table 1; Images 1–16).

Reptilia: A total of 53 species of reptiles representing eleven families were encountered from Guwahati City during the present study. Among these, a single species is Extinct in the Wild (Black Softshell Turtle), two species are Endangered, five are Vulnerable, 31 species are Not Evaluated and 14 species are Least Concern as per the

Figure 1. A map showing different zonation within Guwahati city, Assam
Terrestrial vertebrates of Guwahati

Lack of interest: Urban biodiversity conservation gets the least priority in the conservation arena in the region. In fact, the term urban biodiversity is alien to many policy makers. Thus very few efforts are taken in the region for research and conservation of urban biodiversity.

DISCUSSION

Cities form less than 3% of the terrestrial surface of the Earth, but they are responsible for 78% of carbon emissions, 60% of residential water use, and 76% of the wood used for various industrial purposes (Grimm et al. 2008). On the other hand, urban trees absorb pollutants to improve air quality and reduce the effects of greenhouse gases and, in some cases, they may do so three times more effectively than adjacent exurban forests (Akbari 2002). Since urban ecosystem is a human modified one, human induced habitat alteration makes the ecosystem susceptible to invasion of non-native species (Aggarwal & Butsch 2012). In this study, we also found an invasive reptile, *Hemidactylus flaviviridis* Rüppell, 1835, which was initially restricted to the commercial area but now has started spreading to residential areas and having a negative effect on native gecko populations (Das et al. 2011). The gecko made its way to the city through the interstate transportation system. Similarly, introduction of exotic trees is a threat not only to native trees but...
also the biodiversity dependent on these native trees. A decline in bird diversity was seen with the increase in exotic plant species in Delhi (Khera et al. 2009). It is a myth that cities cannot be rich in biodiversity. Infact, with proper management plan and peoples participation cities can serve as a hub of biodiversity. A study of 61 gardens in the city of Sheffield, UK, found 4,000 species of invertebrates, 80 species of lichen, more than 1,000 species of plants (McDonald et al. 2008). One of the most developed cities in the world, Singapore still has a wealth of biodiversity. Among the native species recorded are 2,145 vascular plants, 52 mammals, 364 birds, 301 butterflies, 127 dragonflies, 103 reptiles, 400 spiders, 66 freshwater fishes, and 255 hard corals. Between 2000 and 2010, intensive surveys found more than 500 species of plants and animals new to Singapore, of which more than 100 were new to science (Cities & Biodiversity Outlook 2012). All of this points to the potentially huge scope of urban biodiversity research.

Since most of the studies in terms of biodiversity are conducted within protected areas (Brandon & Wells 1992; Scott et al. 2001; Rodrigues et al. 2004), human aspect in the framework of biodiversity is not well studied. India’s population is currently about 30% urban and is expected to become 50% urban by about 2044 (Cities & Biodiversity Outlook 2012). All these point to the fact that our country will have more urbanized space than ever before with more proportion of biodiversity occupying these urbanized spaces. Thus we are in need of better understanding of the multidimensional aspect of urban biodiversity taking in consideration, the human aspect for formulating long term research and conservation policies.

Recommendations

1. Afforestation effort is to be hastened, but the selection of plant species is an important aspect. Often fast growing trees, usually exotic, are selected for the purpose rather than suitable trees, such as fruiting trees and trees which the birds generally prefer for building nests.

2. Artificial living space, more specifically for birds has to be created by installing nesting boxes and bird feeders. Not only shall it help birds but shall also help generate interest amongst masses regarding conservation of urban biodiversity.

3. Children’s urban biodiversity tour is another important aspect that would help create awareness and conserve the biodiversity of Guwahati. These tours can be a part of schools ecological club program; can also be conducted through district administration. We can only save things we love and can only love things that we have seen, thus these tours shall serve the purpose of conservation in long run.

4. Deepor Beel is one of the most sensitive spots in terms of wetland birds, with 104 species of wetland birds recorded by us in the year 2016 including the endangered Greater Adjutant Stork which has a population of around 240 in the wetland. Unfortunately, this wetland is facing dual problems. The wetland is degrading mainly due to anthropogenic activity, and there is a tug of war between the community and an administration unable to find common ground. The current need to secure the future of the wetland is to adopt an approach that includes water quality improvement of the wetland via bioremediation (bacterial treatment) and a study of the socioeconomic structure of community living around the wetland to provide alternative sources of livelihood to the community who are primarily fishermen (this may include promotion of local handicraft, skill development programme for handicraft using water hyacinth, ecotourism, development of fisheries in government land, etc.). The selective incentive can be provided to the fishermen to encourage “no-fishing” in breeding seasons to help increase the productivity of the wetland.

5. Turtles are one of the most vulnerable groups of vertebrates with about half of the species threatened with extinction (Turtle Conservation Coalition 2011). Thus, through captive breeding programme with the stock in the temple ponds, and subsequently through release of the hatched turtles to the wild, we can boost the wild population of these threatened animals. The temple ponds can thus serve the role of a breeding, conservation and education centers in terms of turtles.

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| Family             | Common name                     | Scientific name                  | IUCN/RL | IWPSA |
|--------------------|---------------------------------|----------------------------------|---------|-------|
| Bufonidae          | Common Asian Toad               | Duttaphrynus melanostictus       | LC      | NS    |
|                    | Marbled Toad                    | Duttaphrynus stomaticus          | LC      | NS    |
| Megophryidae       | Red-eyed Frog                   | Leptobrachium smithi             | LC      | NS    |
|                    | White-lipped Horned Toad        | Megophrys major                  | LC      | NS    |
|                    | Concave-crowned Horned Toad     | Megophrys parvus                 | LC      | NS    |
| Microhylidae       | Ornate Narrow-mouthed Frog      | Microhyla ornata                 | LC      | NS    |
|                    | Berdmore’s Narrow-mouthed Frog  | Microhyla berdmorei              | LC      | NS    |
| Rhacophoridae      | Goro Hills Bush Frog            | Philautus goro                   | VU      | NS    |
|                    | Six-lined Tree Frog             | Polypedates teraiensis           | LC      | NS    |
|                    | Double-spotted Tree Frog        | Rhacophorus bipunctatus          | LC      | NS    |
|                    | Annandale’s Pigmy Tree Frog     | Chiromantis simus                | LC      | NS    |
| Dicroglossidae     | Nepal Cricket Frog              | Fejervarya nepalensis            | LC      | IV    |
|                    | Pierre’s Cricket Frog           | Fejervarya pierrei               | LC      | IV    |
|                    | Small Cricket Frog              | Fejervarya syndactris            | LC      | IV    |
|                    | Terai Cricket Frog              | Fejervarya teraiensis            | LC      | IV    |
|                    | Skittering Frog                 | Euphlyctis cyanophlyctis         | LC      | IV    |
|                    | Indian Bull frog                | Hoplobatrachus tigrinus          | LC      | IV    |
|                    | Khasi Wart Frog                 | Limnonectes khasianus            | DD      | IV    |
| Ranidae            | Assam Hills Frog                | Clinotarsus alticola             | LC      | IV    |
|                    | Theobald's Rand Frogs           | Hylarana tyleri                  | LC      | IV    |
|                    | Bhamo Frog                      | Humerana humeralis               | LC      | IV    |
|                    | Cope’s Assam Frog               | Hydrophylax leptoglossa          | LC      | IV    |
|                    | Sengupta’s Cascade Frog         | Amolops assamensis               | DD      | IV    |
|                    | Gerbil Stream Frog              | Amolops gerbillus                | LC      | IV    |
| Ichthyophidae      | Goro Hills Caecilian            | Ichthyophis goroensis            | DD      | NS    |
|                    | Manipur Moustached Ichthyophis  | Ichthyophis moustakis            | DD      | NS    |

**Table 1. Checklist of amphibian diversity of Guwahati**

Image 1. *Duttaphrynus melanostictus*  
Image 2. *Megophrys parvus*  
Image 3. *Leptobrachium smithi*  
Image 4. *Microhyla ornata*  
Image 5. *Limnonectes khasianus*  
Image 6. *Fejervarya nepalensis*
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Image 7. Fejervarya teraiensis

Image 8. Hoplobatrachus tigerinus

Image 9. Clinotarsus alticola

Image 10. Humerana humeralis

Image 11. Hydrophylax leptoglossa

Image 12. Hylarana tytleri

Image 13. Amolops assamensis

Image 14. Philautus garo

Image 15. Rhacophorus bipunctatus

Image 16. Ichthyophis moustakius
| Family          | Common name                        | Scientific name                      | IUCN/RL | IWPAS |
|-----------------|-----------------------------------|--------------------------------------|---------|-------|
| Agamidae        | Common Garden Lizard              | Calotes versicolor (Daudin, 1802)    | NE      | NS    |
|                 | Blue-throated Lizard              | Ptyctolaemus guarius (Peters, 1864) | NE      | NS    |
| Gekkonidae      | Common House Gecko                | Hemidactylus frenatus (Duméril & Bibron, 1836) | LC     | NS    |
|                 | Brook's House Gecko               | Hemidactylus brookii (Gray, 1845)    | NE      | NS    |
|                 | Garnot's House Gecko              | Hemidactylus garnoti (Duméril & Bibron, 1836) | NE     | NS    |
|                 | Flat-tailed House Gecko           | Hemidactylus platyurus (Scheider, 1792) | NE     | NS    |
|                 | Yellow-bellied Gecko              | Hemidactylus flaviviridis (Rüppell, 1835) | NE     | NS    |
|                 | Northern House Gecko              | Hemidactylus aquilonius (McMahan & Zug, 2007) | NE     | NS    |
|                 | Tokay Gecko                       | Gekko gecko (Linnaeus, 1758)         | NE      | IV    |
|                 | Assamese Day Gecko                | Cnemaspis assamensis (Das & Sengupta, 2000) | NE     | NS    |
|                 | Flat-tailed Skink                  | Eutropis multifasciata (Kuhl, 1820) | NE      | NS    |
|                 | Bronze Skink                      | Eutropis macularis (Blyth, 1853)     | NE      | NS    |
|                 | Spotted Forest Skink               | Sphenomorphus maculates (Blyth, 1853) | NE      | NS    |
|                 | White-spotted Supple Skink         | Lycoglossa albopunctata (Gray, 1846) | NE      | NS    |
| Varanidae       | Bengal Monitor Lizard             | Varanus bengalensis (Daudin, 1802)   | LC      | I     |
|                 | Yellow Monitor Lizard             | Varanus flavescens (Gray, 1827)      | LC      | I     |
| Typhlopidae     | Brahminy Blindsnake               | Indotyphlops braminus (Daudin, 1803) | NE      | IV    |
|                 | Diard's Blindsnake                | Argyrophis diardii (Schlegel, 1839)  | LC      | IV    |
| Pythonidae      | Burmese Python                    | Python bivittatus (Kuhl, 1820)       | VU      | I     |
| Colubridae      | Rainbow Water Snake               | Enhydris enhydris (Schneider, 1799)  | LC      | IV    |
|                 | Common Wolf Snake                 | Lycoodon aulicus (Linnaeus, 1758)    | NE      | IV    |
|                 | Zaw's Wolf Snake                  | Lycoodon zawi (Pawar, Win, Thin, Gyi, Oo & Tun, 2001) | LC     | IV    |
|                 | Indo-Chinese Rat Snake            | Ptyas mucosa (Linnaeus, 1758)        | NE      | II    |
|                 | Red-necked Keelback               | Rhabdophis subminiatus (Schlegel, 1837) | LC     | IV    |
|                 | Painted Bronzeback                | Dendrelaphis sp. (Wall, 1909)        | NE      | IV    |
|                 | White-barred Kukri Snake          | Oligodon albocinctus (Cantor, 1839)  | NE      | IV    |
|                 | Günther's Kukri Snake             | Oligodon cinereus (Günther, 1864)    | LC      | IV    |
|                 | Buff Striped Keelback             | Amphisemus stolatum (Linnaeus, 1758) | NE      | IV    |
|                 | Eastern Cat Snake                 | Boiga gokool (Gray, 1835)            | NE      | IV    |
|                 | Green Cat Snake                   | Boiga cyanea (Duméril, Bibron & Duméril, 1854) | NE     | IV    |
|                 | Assamese Cat Snake                | Boiga quinquinica (Wall, 1908)       | NE      | IV    |
|                 | Checkered Keelback                | Xenochrohis piscator (Schneider, 1799) | NE     | II    |
|                 | Bar-necked Keelback               | Xenochrohis schnurrenbergeri (Kramer, 1977) | NE   | IV    |
|                 | Painted Keelback                  | Xenochrohis cerasogaster (Cantor, 1839) | NE    | IV    |
|                 | Common Mock Viper                 | Psammodynastes pulversulentus (Boie, 1827) | NE     | IV    |
|                 | Copper-headed Trinket Snake       | Coelognathus radiatus (Schlegel, 1837) | LC     | IV    |
|                 | Trinket Snake                     | Coelognathus helena (Daudin, 1803)   | NE      | IV    |
|                 | Long-nosed Whip Snake             | Ahaetulla nasuta (Lačépede, 1789)   | NE      | IV    |
|                 | Ornate Flying Snake               | Chrysopelea ornata (Shaw, 1802)      | NE      | IV    |
| Elapidae        | Monocled Cobra                    | Naja kaouthia (Lesson, 1831)         | LC      | II    |
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| Family       | Common name                      | Scientific name                        | IUCN/RL | IWPAS |
|--------------|----------------------------------|----------------------------------------|---------|-------|
| Viperidae    | Banded Krait                     | Bungarus fasciatus (Schneider, 1801)   | LC      | IV    |
|              | Greater Black Krait              | Bungarus niger Wall, 1908              | NE      | IV    |
|              | Gumprecht's Green Pit Viper      | Trimeresurus sp.                       | IV      |       |
| Trionychidae | Ganges Soft-shelled Turtle       | Nilssonia gangetica (Cuvier, 1825)    | VU      | I     |
|              | Indian Flap-shelled Turtle       | Lissemys punctata (Bonnaterre, 1789)  | LC      | I     |
|              | Indian Narrow-headed Softshell Turtle | Chitra indica (Gray, 1831)         | EN      | IV    |
| Geoemydidae  | Assam Roofed Turtle              | Pangshura sylhetensis (Jerdon, 1870)  | EN      | NS    |
|              | Indian Tent Turtle               | Pangshura tentoria (Gray, 1834)       | LC      | NS    |
|              | Indian Roofed Turtle             | Pangshura tecta (Gray, 1831)          | LC      | NS    |
|              | Indian Eyed Turtle               | Morenia petersi (Anderson, 1879)      | VU      | NS    |
|              | Spotted Pond Turtle              | Geoclemys hamiltonii (Gray, 1831)     | VU      | I     |

![Image 17. Ptyctolaemus gularis](https://example.com/image17.png)

![Image 18. Calotes versicolor](https://example.com/image18.png)

![Image 19. Sphenomorphus maculatus](https://example.com/image19.png)

![Image 20. Lygosoma albopunctata](https://example.com/image20.png)

![Image 19. Eutropis carinata](https://example.com/image19.png)

![Image 22. Gekko gecko](https://example.com/image22.png)

![Image 23. Hemidactylus brookii](https://example.com/image23.png)

![Image 24. Pangshura sylhetensis](https://example.com/image24.png)

![Image 25. Cuora amboinensis](https://example.com/image25.png)

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Table 3. Checklist of avian diversity of Guwahati

| Family          | Common name                  | Scientific name                          | IUCN/RL | IWPAS |
|-----------------|------------------------------|------------------------------------------|---------|-------|
| Anatidae        | Fulvous Whistling Duck       | Dendrocygna bicolor (Vieillot, 1816)     | LC      | I     |
|                 | Lesser Whistling Duck        | Dendrocygna javanica (Horsfield, 1821)   | LC      | IV    |
|                 | Graylag Goose                | Anser anser (Linnaeus, 1758)             | LC      | IV    |
|                 | Bar-headed Goose             | Anser indicus (Latham, 1790)             | LC      | IV    |
|                 | Ruddy Shelduck               | Tadorna ferruginea (Pallas, 1764)        | LC      | IV    |
|                 | Common Shelduck              | Tadorna tadorna (Linnaeus, 1758)         | LC      | IV    |
|                 | Cotton Pygmy Goose           | Nettapus coromandelianus (Gmelin, 1789)  | LC      | IV    |
|                 | Gadwall                      | Mareca strepera (Linnaeus, 1758)         | LC      | IV    |
|                 | Eurasian Wigeon              | Mareca penelope (Linnaeus, 1758)         | LC      | IV    |
|                 | Mallard                      | Anas platyrhynchos Linnaeus, 1758        | LC      | IV    |
|                 | Northern Shoveler            | Spatula clypeata (Linnaeus, 1758)        | LC      | IV    |
|                 | Northern Pintail             | Anas acuta Linnaeus, 1758                | LC      | IV    |
|                 | Garganey                     | Spatula querquedula (Linnaeus, 1758)     | LC      | IV    |
|                 | Common Teal                  | Anas crecco Linnaeus, 1758               | LC      | IV    |
|                 | Red-Crested Pochard          | Netta rufina (Pallas, 1773)              | LC      | IV    |
|                 | Common Pochard               | Aythya ferina (Linnaeus, 1758)           | VU      | IV    |
|                 | Baer's Pochard               | Aythya baeri (Radde, 1863)               | CR      | IV    |
|                 | Ferruginous Duck             | Aythya nyroca (Güldenstädt, 1770)        | NT      | IV    |
| Podicipedidae   | Little Grebe                 | Tachybaptus ruficollis (Pallas, 1764)    | LC      | IV    |
|                 | Great Crested Grebe          | Podiceps cristatus (Linnaeus, 1758)      | LC      | IV    |
|                 | Black-necked Grebe           | Podiceps nigricollis Brehm, 1831         | LC      | IV    |
| Ciconiidae      | Asian Openbill               | Anastomus oscitans (Boddaert, 1783)     | LC      | IV    |
|                 | Black-necked Stork           | Ephippiorhynchos asiaticus (Latham, 1790)| NT      | IV    |
|                 | Lesser Adjutant              | Leptoptilos javanicus (Horsfield, 1821)  | VU      | IV    |
|                 | Greater Adjutant             | Leptoptilos dubius (Gmelin, 1789)        | EN      | IV    |
| Phalacrocoracida| Indian Cormorant             | Phalacrocorax fuscicollis Stephens, 1826 | LC      | IV    |
|                 | Great Cormorant              | Phalacrocorax carbo (Linnaeus, 1758)     | LC      | IV    |
|                 | Little Cormorant             | Microcarbo niger (Vieillot, 1817)        | LC      | IV    |
| Anhingidae      | Orinetal Darter              | Anhinga melanogaster Pennant, 1769       | NT      | IV    |
|                 | Great White Pelican          | Pelecanus onocrotalus Linnaeus, 1758     | LC      | IV    |
|                 | Spot-billed Pelican          | Pelecanus philippensis Gmelin, 1789      | NT      | IV    |
| Ardeidae        | Gray Heron                   | Ardea cinerea Linnaeus, 1758              | LC      | IV    |
|                 | Purple Heron                 | Ardea purpurea Linnaeus, 1766             | LC      | IV    |
|                 | Great Egret                  | Ardea alba Linnaeus, 1758                 | LC      | IV    |
| Family         | Common name                      | Scientific name                        | IUCN/RL | IWPAS |
|----------------|----------------------------------|----------------------------------------|---------|-------|
|               | Intermediate Egret               | *Ardea intermedia* Wagler, 1829         | LC      | IV    |
|               | Little Egret                     | *Egretta garzetta* (Linnaeus, 1766)    | LC      | IV    |
|               | Cattle Egret                     | *Bubulcus ibis* (Linnaeus, 1758)       | LC      | IV    |
|               | Indian Pond Heron                | *Ardeola grayii* (Sykes, 1832)         | LC      | IV    |
|               | Striated Heron                   | *Butorides striata* (Linnaeus, 1758)   | LC      | IV    |
|               | Black-crowned Night Heron        | *Nycticorax nycticorax* (Linnaeus, 1758) | LC      | IV    |
| Ardeidae      | Black-headed Ibis                | *Threskiornis melanocephalus* (Latham, 1790) | NT      | IV    |
|               | Glossy Ibis                      | *Plegadis falcinellus* (Linnaeus, 1766) | LC      | IV    |
| Pandionidae   | Osprey                           | *Pandion haliaetus* (Linnaeus, 1758)   | LC      | I     |
| Accipitridae  | Black-shouldered Kite            | *Elanus axillaris* (Latham, 1801)      | LC      | IV    |
|               | Cinereous Vulture                | *Aegypius monachus* (Linnaeus, 1766)   | NT      | IV    |
|               | Himalayan Griffon                | *Gyps himalayensis* Hume, 1869         | NT      | IV    |
|               | Crested Serpent Eagle            | *Spilornis cheela* (Latham, 1790)      | LC      | IV    |
|               | Changeable Hawk-eagle            | *Nisaetus cirrhatus* (Gmelin, 1788)    | LC      | IV    |
|               | Lesser Spotted Eagle             | *Clanga pomarina* Brehm, 1831          | LC      | IV    |
|               | Steppe Eagle                     | *Aquila nipalensis* Hodgson, 1833      | EN      | IV    |
|               | Grey-headed Fish Eagle           | *Ichthyophaga ichthyaeetus* (Horsfield, 1821) | NT      | IV    |
|               | Pied Harrier                     | *Circus melanoleucos* (Pennant, 1769)  | LC      | IV    |
|               | Shikra                           | *Accipiter badius* (Gmelin, 1788)      | LC      | IV    |
|               | Black Kite                       | *Milvus migrans* (Boddaert, 1783)      | LC      | IV    |
|               | Grey-headed Fish Eagle           | *Ichthyophaga ichthyaeetus* (Horsfield, 1821) | NT      | IV    |
|               | Long-legged Buzzard              | *Butea rufina* (Cretzschmar, 1827)     | LC      | IV    |
| Rallidae      | White-breasted Waterhen          | *Amaurornis phoenicurus* (Pennant, 1769) | LC      | IV    |
|               | Purple Swamphen                  | *Porphyrio porphyrio* (Linnaeus, 1758)  | LC      | IV    |
|               | Eurasian Moorhen                 | *Gallinula chloropus* (Linnaeus, 1758) | LC      | IV    |
|               | Eurasian Coot                    | *Fulica atra* Linnaeus, 1758            | LC      | IV    |
| Recurvirostridae | Black-winged Stilt         | *Himantopus himantopus* (Linnaeus, 1758) | LC      | IV    |
|               | Pied Avocet                      | *Recurvirostra avosetta* Linnaeus, 1758 | LC      | IV    |
| Charadriidae  | Northern Lapwing                 | *Vanellus vanellus* (Linnaeus, 1758)   | NT      | IV    |
|               | Gray-headed Lapwing              | *Vanellus cinereus* (Blyth, 1842)      | LC      | IV    |
|               | Red-wattled Lapwing              | *Vanellus indicus* (Boddaert, 1783)    | LC      | IV    |
|               | Little Ringed Lapwing            | *Charadrius dubius* Scopoli, 1786       | LC      | IV    |
| Jacanidae     | Pheasant-tailed Jacana           | *Hydrophasianus chirugus* (Scopoli, 1786) | LC      | IV    |
|               | Bronze-winged Jacana             | *Metopidius indicus* (Latham, 1790)    | LC      | IV    |
| Scolopacidae  | Common Sandpiper                 | *Achti hypoleucos* Linnaeus, 1758       | LC      | IV    |
|               | Wood Sandpiper                   | *Tringa glareola* Linnaeus, 1758        | LC      | IV    |
|               | Marsh Sandpiper                  | *Tringa stagnatilis* (Bechstein, 1803) | LC      | IV    |
|               | Spotted Redshank                 | *Tringa erythropus* (Pallas, 1764)     | LC      | IV    |
|               | Black-tailed Godwit              | *Limosa limosa* Linnaeus, 1758          | NT      | IV    |
|               | Temminck’s Stint                 | *Calidris temminckii* (Leisler, 1812)  | LC      | IV    |
|               | Common Snipe                     | *Gallinago gallinago* Linnaeus, 1758    | LC      | IV    |
| Glareolidae   | Small Pratincole                 | *Glareola lactea* Temminck, 1820        | LC      | IV    |
| Laridae       | Brown-Headed Gull                | *Larus brunnicephalus* Jerdon, 1840    | LC      | IV    |
|               | Black-headed Gull                | *Larus ridibundus* Linnaeus, 1766       | LC      | IV    |
|               | Pallas’s Gull                    | *Larus ichtyaetus* Pallas, 1773         | LC      | IV    |
|               | Whiskered Tern                   | *Chlidonias hybrid* (Pallas, 1811)     | LC      | IV    |
| Family     | Common name            | Scientific name                      | IUCN/RL | IWAPAS |
|------------|------------------------|---------------------------------------|---------|--------|
|            | River Tern             | Sterna aurantia Gray, 1831            | NT      | IV     |
| Columbidae | Rock Pigeon            | Columba livia Gmelin, 1789            | LC      | IV     |
|            | Oriental Turtle Dove   | Streptopelia orientalis (Latham, 1790)| LC      | IV     |
|            | Eurasian Collared Dove | Streptopelia decaocto Frivaldszky, 1838| LC      | IV     |
|            | Red-collared Dove      | Streptopelia tranquebarica (Herrmann, 1804)| LC     | IV     |
|            | Western Spotted Dove   | Spilopelia saturata (Gmelin, 1789)   | LC      | IV     |
|            | Grey-capped Emerald Dove| Chalcophaps indica (Linnaeus, 1758) | LC      | IV     |
|            | Yellow-footed Pigeon   | Treron phoenicopterus (Latham, 1790)| LC      | IV     |
|            | Green Imperial Pigeon  | Ducula aenea (Linnaeus, 1766)        | LC      | IV     |
| Cuculidae  | Pied Cuckoo            | Clamator jacobinus (Boddaert, 1783) | LC      | IV     |
|            | Large Hawk Cuckoo      | Hierococcyx sparverioides (Vigors, 1831)| LC     | IV     |
|            | Common Hawk Cuckoo     | Hierococcyx varius (Vahl, 1797)      | LC      | IV     |
|            | Plaintive Cuckoo       | Cacomantis merulinus (Scopoli, 1786) | LC      | IV     |
|            | Asian Koel             | Eudynamys scolopaceus (Linnaeus, 1758)| LC     | IV     |
|            | Green-billed Malkoha   | Phoenicophaeus tristis (Lesson, 1830)| LC      | IV     |
|            | Greater Coucal         | Centropus sinensis (Stephens, 1815)  | LC      | IV     |
| Tytonidae  | Barn Owl               | Tyto alba (Scopoli, 1769)            | LC      | IV     |
| Strigidae  | Oriental Scops-owl     | Otus sunio (Hodgson, 1836)            | LC      | IV     |
|            | Brown Hawk-owl         | Ninax scutulata (Raffles, 1822)      | LC      | IV     |
|            | Brown Fish-owl         | Ketupa zeylonensis (Gmelin, 1788)    | LC      | IV     |
|            | Tawny Fish-owl         | Ketupa flavipes (Hodgson, 1836)      | LC      | IV     |
|            | Collared Owlet         | Glaucidium broderi (Burton, 1836)    | LC      | IV     |
|            | Asian Barred Owlet     | Glaucidium cuculoides (Vigors, 1831) | LC      | IV     |
|            | Jungle Owlet           | Glaucidium radiatum (Tickell, 1833)  | LC      | IV     |
|            | Spotted Owlet          | Athene brama (Temminck, 1821)        | LC      | IV     |
|            | Brown Hawk Owl         | Ninax scutulata (Raffles, 1822)      | LC      | IV     |
| Caprimulgidae | Long-tailed Nightjar    | Caprimulgus climacurus Vieillot, 1825| LC     | IV     |
| Apodidae   | House Swift            | Apus nipalensis (Hodgson, 1836)      | LC      | IV     |
|            | Asian Palm Swift       | Cypsiurus balasiensis (Gray, 1829)   | LC      | IV     |
| Alcedinidae| Common Kingfisher      | Alcedo atthis (Linnaeus, 1758)       | LC      | IV     |
|            | Stork-billed Kingfisher| Pelargopsis capensis (Linnaeus, 1766)| LC      | IV     |
|            | White-throated Kingfisher| Halcyon smyrnensis (Linnaeus, 1758)| LC      | IV     |
|            | Pied Kingfisher        | Ceryle rudis (Linnaeus, 1758)        | LC      | IV     |
| Meropidae  | Blue-bearded Bee-eater | Nyctyornis athertoni (Jardine & Selby, 1830)| LC     | IV     |
|            | Green Bee-eater        | Merops orientalis Latham, 1802        | LC      | IV     |
|            | Chestnut-headed Bee-eater| Merops leschenaulti Vieillot, 1817 | LC      | IV     |
|            | Blue-tailed Bee-eater  | Merops philippinus Linnaeus, 1766    | LC      | IV     |
| Coraciidae | Indian Roller          | Coracias benghalensis (Linnaeus, 1758)| LC     | IV     |
|            | Dollarbird             | Eurypteryx orientalis (Linnaeus, 1766)| LC      | IV     |
| Bucerotidae| Oriental Pied Hornbill | Anthracoceros albirostris (Shaw & Nodder, 1807)| LC     | IV     |
| Megalaimidae | Coppersmith Barbet    | Psilopogon haemacephalus (Müller, 1776)| LC     | IV     |
|            | Great Barbet           | Psilopogon vires (Boddaert, 1783)    | LC      | IV     |
|            | Lineated barbet        | Psilopogon lineatus (Vieillot, 1816) | LC      | IV     |
|            | Blue-throated Barbet   | Psilopogon asiaticus (Latham, 1790)  | LC      | IV     |
| Picidae    | Fulvous-breasted Woodpecker | Dendrocopos macul (Vieillot, 1818) | LC      | IV     |
|            | Stripe-breasted Woodpecker | Dendrocopos atratus (Blyth, 1849) | LC      | IV     |
| Family        | Common name        | Scientific name                      | IUCN/RL | IWPAS |
|---------------|--------------------|--------------------------------------|---------|-------|
|               | Lesser Yellownape  | Picus chlorolophus Vieillot, 1818    | LC      | IV    |
|               | Greater Yellownape | Chrysophlegma flavinucha (Gould, 1834) | LC      | IV    |
|               | Gray-headed Woodpecker | Picus canus Gmelin, 1788    | LC      | IV    |
|               | Common Flameback   | Dinopium javanense (Sijungh, 1979)  | LC      | IV    |
|               | Black-rumped Flameback | Dinopium benghalense (Linneaus, 1758) | LC      | IV    |
|               | Greater Flameback  | Chrysocolaptes guttacristatus (Tickell, 1833) | LC      | IV    |
| Falconidae    | Common Kestrel     | Falco tinnunculus Linneaus, 1758     | LC      | IV    |
|               | Red-necked Kestrel | Falco chicquera Daudin, 1800         | NT      | IV    |
|               | Oriental Hobby     | Falco severus Horsfield, 1821        | LC      | IV    |
|               | Peregrine Falcon   | Falco peregrinus Tunstall, 1771      | LC      | IV    |
| Psittacidae   | Rose-ringed Parakeet | Psittacula krameri (Scopoli, 1769)  | LC      | IV    |
|               | Blossom-headed Parakeet | Psittacula rossata Biswas, 1951    | NT      | IV    |
|               | Red-breasted Parakeet | Psittacula alexandri (Linneaus, 1758) | NT      | IV    |
| Vangidae      | Large Wood-shrike  | Tephrodornis virgatus (Temminck, 1824) | LC      | IV    |
|               | Common Woodshrike  | Tephrodornis pondicerianus (Gmelin, 1789) | LC      | IV    |
| Artamidae     | Ashy Woodswallow   | Artamus fuscus Vieillot, 1817        | LC      | IV    |
| Aegithinidae  | Common Iora        | Aegithina tithi (Linneaus, 1758)     | LC      | IV    |
| Campephagidae | Short-billed Minivet | Pericrocotus brevirostris (Vigors, 1831) | LC      | IV    |
|               | Scarlet Minivet    | Pericrocotus flameus (Forster, 1781) | LC      | IV    |
|               | Large Cuckoo-shrike| Coracina macei (Lesson, 1831)        | LC      | IV    |
| Laniidae      | Brown Shrike       | Lanius cristatus Linneaus, 1758      | LC      | IV    |
|               | Long-tailed Shrike | Lanius schach Linneaus, 1758         | LC      | IV    |
|               | Gray-backed Shrike | Lanius tephronotus (Vigors, 1831)    | LC      | IV    |
| Oriolidae     | Balck-hooded Oriole | Oriolus xanthornus (Linneaus, 1758) | LC      | IV    |
| Dieruridae    | Black Drongo       | Dicrurus macrocerus Vieillot, 1817    | LC      | IV    |
|               | Ashy Drongo        | Dicrurus leucophaeus Vieillot, 1817  | LC      | IV    |
|               | Bronzed Drongo     | Dicrurus aeneus Vieillot, 1817        | LC      | IV    |
|               | Hair-crested Drongo | Dicrurus hettontottus (Linneaus, 1766) | LC      | IV    |
|               | Greater Racket-tailed Drongo | Dicrurus paradiseus (Linneaus, 1766) | LC      | IV    |
| Monarchidae   | Black-naped Monarch | Hypothymis azureo (Boddaert, 1783)  | LC      | IV    |
| Corvidae      | Common Green Magpie | Cissa chinesis (Boddaert, 1783)     | LC      | IV    |
|               | Rufous Treepie     | Dendrocitta vagabunda (Latham, 1790) | LC      | IV    |
|               | House Crow         | Corvus splendens Vieillot, 1817      | LC      | V     |
| Hirundinidae  | Barn Swallow       | Hirundo rustica Linneaus, 1758        | LC      | IV    |
|               | Asian Plain Martin | Riparia chinensis (Gray, 1830)       | LC      | IV    |
|               | Collared Sand Martin | Riparia riparia (Linneaus, 1758)    | LC      | IV    |
| Stenostiridae | Gray-headed Canary Flycatcher | Culicicapa ceylonensis (Swainson, 1820) | LC      | IV    |
| Paradae       | Great Tit          | Parus major Linneaus, 1758            | LC      | IV    |
| Pyconotidae   | Black-crested Bulbul | Pycnonotus flaviventeris (Tickell, 1833) | LC      | IV    |
|               | Red-vented Bulbul  | Pycnonotus cafer (Linneaus, 1766)     | LC      | IV    |
|               | Red-Whiskered Bulbul | Pycnonotus jocosus (Linneaus, 1758)  | LC      | IV    |
| Phylloscopidae| Tickell's Leaf Warbler | Phylloscopus affinis (Tickell, 1833) | LC      | IV    |
|               | Greenish Warbler    | Phylloscopus trochiloides (Sundevall, 1837) | LC      | IV    |
| Locustellidae | Striated Grassbird | Megalurus palustris Horsfield, 1821   | LC      | IV    |
| Cisticolidae  | Zitting Cisticola  | Cisticola juncidis (Rafinesque, 1810) | LC      | IV    |
| Family          | Common name           | Scientific name                        | IUCN/RL | IWPAS |
|-----------------|-----------------------|----------------------------------------|---------|-------|
|                 | Common Tailorbird     | Orthotomus sutorius (Pennant, 1769)    | LC      | IV    |
|                 | Dark-necked Tailorbird| Orthotomus atrogularis/Temminck, 1836  | LC      | IV    |
|                 | Jungle Prinia         | Prinia sylvatica Jerdon, 1840          | LC      | IV    |
|                 | Plain Prinia          | Prinia inornata Sykes, 1832            | LC      | IV    |
|                 | Zosteropidae          | Eumorphops zantholeuca (Blyth, 1844)   | LC      | IV    |
|                 | Orinetal White-eye    | Zosterops palpebrosus (Temminck, 1824) | LC      | IV    |
| Leiothrichidae  | Striated Babbler      | Argya earlei (Blyth, 1844)             | LC      | IV    |
|                 | Jungle Babbler        | Turdoides striata (Dumont, 1823)       | LC      | IV    |
| Irenidae        | Asian Fairy Bluebird  | Irena puella (Latham, 1790)            | LC      | IV    |
|                 | Oriental Magpie Robin | Capyschus saularis (Linnaeus, 1758)    | LC      | IV    |
| Muscicapidae    | White-rumped Shama    | Kittacinola malabarica (Scopoli, 1788) | LC      | IV    |
|                 | Blue Whistling Thrush | Myophonus coerulescens (Scopoli, 1786)| LC      | IV    |
|                 | Black-backed Forktail | Enicurus immaculatus (Hodgson, 1836)   | LC      | IV    |
|                 | Taiga Flycatcher      | Ficedula albicilla (Pallas, 1811)      | LC      | IV    |
|                 | Black Redstart        | Phoenicurus ochruros (Gmelin, 1774)    | LC      | IV    |
|                 | Blue rock Thrush      | Monticola solitaria (Linnaeus, 1758)   | LC      | IV    |
|                 | Common Stonechat      | Saxicola torquatus (Linnaeus, 1766)    | LC      | IV    |
| Turdidae        | Black-throated thrush | Turdus atrogularis Jarocki, 1819       | LC      | IV    |
| Sturniidae      | Common Hill Myna      | Gracula religiosa Linnaeus, 1758       | LC      | IV    |
|                 | Jungle Myna           | Acroderes fuscus (Wagler, 1827)        | LC      | IV    |
|                 | Bank Myna             | Acroderes ginnianus (Latham, 1790)     | LC      | IV    |
|                 | Common Myna           | Acroderes tristis (Linnaeus, 1766)     | LC      | IV    |
|                 | Asian Pied Starling   | Gracupica contra (Linnaeus, 1758)      | LC      | IV    |
|                 | Chestnut-Tailed Starling| Sturnia malabarica (Gmelin, 1789)    | LC      | IV    |
| Chloropseidae   | Golden-Fronted Leafbird| Chloropsis aurifrons (Temminck, 1829)| LC      | IV    |
| Dicaeidae       | Scarlet-backed Flowerpecker | Dicaeum cruentatum (Linnaeus, 1758)| LC      | IV    |
| Nectariniidae   | Purple Sunbird        | Cinnyris asiaticus (Latham, 1790)      | LC      | IV    |
|                 | Crimson Sunbird       | Aethopyga siparaja (Raffles, 1822)     | LC      | IV    |
|                 | Little spiderhunter   | Arachnothera longirostra (Latham, 1790)| LC      | IV    |
| Motacillidae    | Citrine Wagtail       | Motacilla citreola Pallas, 1776        | LC      | IV    |
|                 | Gray Wagtail          | Motacilla cinerea Tunstall, 1771       | LC      | IV    |
|                 | White Wagtail         | Motacilla albo Linnaeus, 1758          | LC      | IV    |
|                 | Paddyfield Pipit      | Anthus rubicollis Vieillot, 1818       | LC      | IV    |
|                 | Rosy Pipit            | Anthus roseatus Blyth, 1847            | LC      | IV    |
|                 | Olive-Backed Pipit    | Anthus hodgsoni Richmond, 1907         | LC      | IV    |
| Passeridae      | House Sparrow         | Passer domesticus (Linnaeus, 1758)     | LC      | IV    |
|                 | Eurasian Tree Sparrow | Passer montanus (Linnaeus, 1758)       | LC      | IV    |
| Estrildidae     | White-rumped Munia    | Lanchira striata (Linnaeus, 1766)      | LC      | IV    |
|                 | Scaly-breasted Munia  | Lanchira punctulatae(Linnaeus, 1758)   | LC      | IV    |
|                 | Tricolored Munia      | Lanchira malacca (Linnaeus, 1766)      | LC      | IV    |
| Ploceidae       | Black-breasted weaver | Ploceus benghalensis(Linnaeus, 1758)   | LC      | IV    |
|                 | Baya weaver           | Ploceus philippinus (Linnaeus, 1766)   | LC      | IV    |
Terrestrial vertebrates of Guwahati

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Image 44. Greylag Goose

Image 45. Little Cormorant

Image 46. Oriental Darter

Image 47. Small Pratincole

Image 48. Citrine Wagtail

Image 49. Greater Adjutant

Image 50. White-rumped Shama

Image 51. Black-hooded Oriole

Image 52. Green Bee-eater

Image 53. Indian Roller

Image 54. Grey-headed Canary-flycatcher

Image 55. Hoopoe

Image 56. House Sparrow

Image 57. Oriental Pied Hornbill

Image 58. Spotted Owlet
Table 4. Checklist of mammalian diversity of Guwahati

| Family          | Common name                  | Scientific name                      | IUCN/RL | IWPAS |
|-----------------|------------------------------|-------------------------------------|---------|-------|
| Cercopithecidae | Capped Langur                | Trachypithecus pileatus (Blyth, 1843) | VU      | I     |
|                 | *Gee’s Golden Langur         | Trachypithecus geei Khajuria, 1956   | EN      | I     |
|                 | Assamese Macaque             | Macaca assamensis McClelland, 1840  | NT      | II    |
|                 | Rhesus Macaque               | Macaca mulatta (Zimmermann, 1780)   | LC      | II    |
| Hylabatidae     | Western Hoolock Gibbon       | Hoolock hoolock (Harlan, 1834)      | VU      | I     |
| Lorisisdæ       | Bengal Slow Loris            | Nycticebus bengalensis (Lacépède, 1800) | EN      | I     |
| Elephasidae     | Asian Elephant               | Elephas maximus Linnaeus, 1758      | EN      | I     |
| Bovidae         | Gaur                         | Boas gaurus Smith, 1827             | VU      | I     |
| Suidae          | Wild Boar                    | Sus scrofa Linnaeus, 1758           | LC      | III   |
| Cervidae        | Barking Deer                 | Muntiacus muntjak (Zimmermann, 1780) | LC      | III   |
|                 | Sambar                       | Rasu unicolar (Kerr, 1792)         | VU      | III   |
| Haploperidae    | Hog Deer                     | Axis porcinus (Zimmermann, 1780)   | EN      | III   |
| Felidae         | Leopard                      | Panthera pardus (Linnaeus, 1758)   | VU      | I     |
|                 | Jungle Cat                   | Felis chaus Schreber, 1777          | LC      | II    |
| Canidae         | Golden Jackal                | Canis aureus Linnaeus, 1758         | LC      | II    |
|                 | Bengal Fox                   | Vulpes bengalensis (Shaw, 1800)    | LC      | II    |
|                 | Dhole                        | Cuon alpinus (Pallas, 1811)         | EN      | II    |
| Herpestidae     | Indian Mongoose              | Herpestes javanicus (Hilaire, 1818) | LC      | III   |
| Viveridae       | Large Indian Civet           | Viveria zibetha Linnaeus, 1758      | LC      | II    |
|                 | Small Indian Civet           | Viverinocula indica (Hilaire, 1803) | LC      | II    |
|                 | Common Palm Civet            | Paradaricus hermaphroditus (Pallas, 1777) | LC      | II    |
| Mustelidae      | Smooth-coated Otter          | Lutrogale perspicillata (Hilaire, 1826) | VU      | II    |
| Leporidae       | Indian Hare                  | Lepus nigricollis Cuvier, 1823      | LC      | IV    |
| Manidae         | Chinese Pangolin             | Manis pentadactyla Linnaeus, 1758   | CR      | I     |
| Soricidae       | Asian House Shrew            | Suncus musculus Linnaeus, 1766      | LC      | NS    |
| Hystricidae     | Himalayan Crestless Porcupine | Hystrix brachyura Linnaeus, 1758    | LC      | II    |
| Sciuridae       | Himalayan Hoarybellied Squirrel | Callosciurus pygerythrus (Hilaire, 1832) | LC      | II    |
|                 | Particolored Flying Squirrel | Hylopesetis alboniger (Hodgson, 1836) | LC      | II    |
| Muridae         | Black Rat                    | Rattus rattus (Linnaeus, 1758)      | LC      | V     |
|                 | House Mouse                  | Mus musculus Linnaeus, 1758         | LC      | V     |
|                 | Lesser Bandicoot Rat         | Bandicota bengalensis (Gray, 1835)  | LC      | V     |
| Pteropodidae    | Indian Flying Fox            | Pteropus giganteus (Brünich, 1872)  | LC      | V     |
|                 | Greater Short-nosed Fruit Bat| Cynopterus sphinx (Vahl, 1797)      | LC      | V     |
| Vesperptilionida| Indian Pipistrelle           | Pipistrellus coromandralis (Gray, 1838) | LC      | NS    |
| Platanistidae   | Ganges River Dolphin         | Platanista gangetica (Roxburgh, 1801) | EN      | I     |

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Image 59. Fruit Bat
Image 60. Rhesus Macaque
Image 61. Golden Jackal
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