



A checklist of birds of prey (Raptors) sighted during vulture surveys in Udaipur district of Southern Rajasthan, India

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Abstract

Long-billed vulture (*Gyps indicus*) survey was conducted in Udaipur district of Southern Rajasthan from June 2019 to May 2022. During the survey, raptors and large bird counts were observed and a catalog of diversity of Birds of prey was prepared. Amidst the survey, nature and distribution of raptors in various microhabitats and surrounding areas of Udaipur was observed. This list gives a total of 27 species of birds of prey. Raptors are emblematic of the global biodiversity crisis. As apex predators, they are critically positioned in ecological food webs and their declining populations can undermine important ecosystem services ranging from pest control to disease mitigation.

Keywords: Raptors, birds of prey, microhabitats, ecosystem, bird counts

Introduction

Birds of prey are the flying creatures which are found at low densities in varied habitats like deserts, plains, forests, arid-zones, mountains, coastal areas, marshes, rivers, lakes, grounds and near human habitations. These diverse avian guilds may be resident or migratory species, distributed worldwide. They provide critical ecosystem services and are thus considered as the indicators of environmental health (Koskimies, 1989) ^[9].

Birds of prey are also known as 'Raptors'. The term raptor is derived from the Latin word *rapio*, meaning to seize, capture or take by force (Brown, 1997) ^[4]. Raptors have evolved ecologically to specialize and adapt to different habitats and food resources. They feed on animal flesh and are distinguished by the presence of a hooked bill and sharp talons. These are popular, iconic birds and are important ecologically.

In recent years, varieties of anthropogenic factors have threatened the majority of raptor species worldwide. These birds face a high risk of extinction due to numerous threats that occur in their breeding, migration and wintering areas. Their high trophic level and slow life history makes raptors more sensitive to anthropogenic threats (Sergio *et al.*, 2008) ^[13] and extinction. Birds of prey are an uncommon study model due to their low population density (Newton, 1979) ^[11] and turnover. Still they attract ornithologists as many species have been close to extinction and also because of their unique role in the ecosystem as apex predators and scavengers (O' Bryan *et al.*, 2018) ^[12].

Birds of Prey play a crucial role in the conservation of the ecosystems and are assumed as flagship species. The diurnal birds of prey are formally classified into five families:-

- **Accipitridae:** It includes hawks, eagles, buzzards, harriers, kites and Old World Vultures.
- **Pandionidae:** It includes the ospreys.
- **Sagittariidae:** It includes the secretary birds.
- **Falconidae:** It includes falcons.
- **Cathartidae:** It includes New World Vultures.

The nocturnal birds of prey-the owls are classified separately in order Strigiformes which includes:

- **Strigidae:** Typical owls
- **Tytonidae:** Barn owls

Vultures, the 'Kings of the sky' are the most versatile birds in nature. They are large obligate scavenging birds of prey or carrion eating Raptors (Arun & Azeez, 2004) ^[3]. They are the crown jewels of the avian world which act as sanitation engineers by scavenging the dead remains of animals (carrion) in urban and rural areas. Their presence or disappearance from an ecosystem may affect other species indirectly. Over the past four decades, vulture populations have declined in different parts of the world in general, and in the Indian sub-continent in the recent past (Garbett *et al.*, 2018) ^[5]; Mc Lure *et al.*, 2018) ^[10]. The 3 species of resident *Gyps* vultures viz. White-backed Vulture (*Gyps bengalensis*), Long-billed Vulture (*Gyps indicus*) and the Slender-billed Vulture (*Gyps tenuirostris*) have plummeted awfully in the past four decades and are listed as Critically Endangered by the International Union for Conservation of Nature and Natural Resources (IUCN) in 2000.

Long-billed Vulture (*Gyps indicus*) is a resident bird of prey found in Southern Rajasthan. It is majestic with its impressive wingspan and sharp beak. It is a true wonder of the animal kingdom that plays vital role in the ecosystem as clean-up crew. The present survey aimed to conduct road counts to collect data on the status of Long-billed Vulture (*Gyps indicus*) and other raptors or birds of prey species in the study area. The main objective of the study was to ascertain the nature and distribution of raptors in various microhabitats and surrounding areas of Udaipur.

Study area

Udaipur, also known as 'Venice of East' or 'City of lakes' is famous for its beautiful lakes, palaces, temples, gardens and fountains. It is located in the southernmost part of Rajasthan near Gujarat border. It is surrounded by the Aravalli Range

which separates it from the Thar Desert. Udaipur is located at 24.52°N and 73.67°E. The city is spread over an area of 64 km² and altitude is 598.00 m above sea level. Temperatures in the summer range from 23°C to 44°C, while in winter they range from 5°C to 30°C, thus Udaipur has a hot, semi-arid climate.

Materials and methods

Long-billed vulture (*Gyps indicus*) survey was undertaken in Udaipur district of Southern Rajasthan from June 2019 to May 2022. During the survey, raptors and large birds were observed and a catalog of diversity of Birds of prey was prepared. All raptors and large birds seen on both sides of the road were recorded. A series of road counts were implemented in the study area. Regular visits were made to different areas except rainy days. The study area was divided into appropriate zones for identification and observation of birds of prey.

Observations were done using Nikon 8 x 40 binoculars, Nikon Coolpix P900, Canon D-60, 150-600 Sigma lens. All identifications were based on Ali & Ripley (1983^[1], 1985)^[2], Grewal (1995)^[6], Grimmett *et al.*, (1999)^[7], Kazmierczak (2000)^[8] and Woodcock (1980)^[14]. In the paper, only those species are listed whose identification was confirmed. The species recorded during the study are presented in Table 1.

Results and discussion

The present investigation was carried out to survey distribution of vultures in various microhabitats and

Surrounding areas of Udaipur. Amidst the survey, a list of Birds of prey was prepared in Udaipur district of Southern Rajasthan to ascertain their nature and distribution. Total 27 species of birds of prey were recorded. Amongst 27 species, 0.29% are members of order Strigiformes, 62.96% are members of order Accipitriformes and the rest are members of order Falconiformes. Highest numbers of species were of the order Accipitriformes.

Among 27 species, 4 are Near Threatened, 2 species (*Neophron percnopterus*, *Aquila nipalensis*) are Endangered, 3 species (*Gyps indicus*, *Gyps bengalensis* & *Sarcogyps calvus*) are Critically Endangered and 1 species (*Aquila heliaca*) is Vulnerable. Rest 17 species are globally Least Concern.

It was revealed from the field study that rises in human population and urbanization cause negative effect on raptors. Both the number of species and population of birds of prey are decreasing because of habitat destruction, pollution, introduction of exotic species, climatic changes etc. Also Non-natural mortality caused by human activities is the main limiting factor for birds of prey populations.

Some necessary conservation steps should be taken to keep the natural habitat for the protection of not only the birds of prey but also for total wildlife fauna. Raptors are emblematic of the global biodiversity crisis. As apex predators, they are critically positioned in ecological food webs and their declining populations can undermine important ecosystem services ranging from pest control to disease mitigation.

Table 1: Birds of Prey in District Udaipur of Southern Rajasthan with their status

S. No.	English Name	Scientific Name	Order	Family	IUCN Status	R/M
1.	Shikra	<i>Accipiter badius</i>	Accipitriformes	Accipitridae	LC	R
2.	Black kite	<i>Milvus migrans</i>	Accipitriformes	Accipitridae	LC	R
3.	Black winged kite	<i>Elanus caeruleus</i>	Accipitriformes	Accipitridae	LC	R
4.	Crested serpent eagle	<i>Spilornis cheela</i>	Accipitriformes	Accipitridae	LC	R
5.	Egyptian vulture	<i>Neophron percnopterus</i>	Accipitriformes	Accipitridae	E	R
6.	Indian vulture	<i>Gyps indicus</i>	Accipitriformes	Accipitridae	CE	R
7.	Eurasian griffon vulture	<i>Gyps fulvus</i>	Accipitriformes	Accipitridae	LC	WM
8.	White-rumped Vulture	<i>Gyps bengalensis</i>	Accipitriformes	Accipitridae	CE	R
9.	Red-headed Vulture	<i>Sarcogyps calvus</i>	Accipitriformes	Accipitridae	CE	R
10.	Himalayan Vulture	<i>Gyps himalayensis</i>	Accipitriformes	Accipitridae	NT	WM
11.	Cinereous Vulture	<i>Aegypius monachus</i>	Accipitriformes	Accipitridae	NT	M
12.	Osprey	<i>Pandion haliaetus</i>	Accipitriformes	Pandionidae	LC	WM
13.	Tawny Eagle	<i>Aquila rapax</i>	Accipitriformes	Accipitridae	LC	R
14.	Steppe Eagle	<i>Aquila nipalensis</i>	Accipitriformes	Accipitridae	E	WM
15.	Eastern Imperial Eagle	<i>Aquila heliaca</i>	Accipitriformes	Accipitridae	Vul.	WM
16.	Brahminy Kite	<i>Haliastur indus</i>	Accipitriformes	Accipitridae	LC	R
17.	Eurasian buzzard	<i>Buteo buteo</i>	Accipitriformes	Accipitridae	LC	R
18.	Eurasian Kestrel	<i>Falco tinnunculus</i>	Falconiformes	Falconidae	LC	M
19.	Shaheen/ Peregrine falcon	<i>Falco peregrinus</i>	Falconiformes	Falconidae	NT	M
20.	Jungle owlet	<i>Glaucidium radiatum</i>	Strigiformes	Strigidae	LC	R
21.	Spotted owlet	<i>Athene brama</i>	Strigiformes	Strigidae	NT	R
22.	Eurasian Eagle Owl	<i>Bubo-bubo</i>	Strigiformes	Strigidae	LC	R
23.	DuskyEagle owl	<i>B. coromandus</i>	Strigiformes	Strigidae	LC	R
24.	Brown Fish Owl	<i>Ketupa zeylonensis</i>	Strigiformes	Strigidae	LC	WM
25.	Rock Eagle owl	<i>Bubo bengalensis</i>	Strigiformes	Strigidae	LC	R
26.	Eurasian Scops owl	<i>Otus scops</i>	Strigiformes	Strigidae	LC	R
27.	Common Barn owl	<i>Tyto alba</i>	Strigiformes	Tytonidae	LC	R

[IUCN Status: LC: Least Concern; NT: Near Threatened; CE: Critically Endangered; E: Endangered; Vul.: Vulnerable. Local Status: R: Resident; M: Migratory; WM: Winter Migratory]

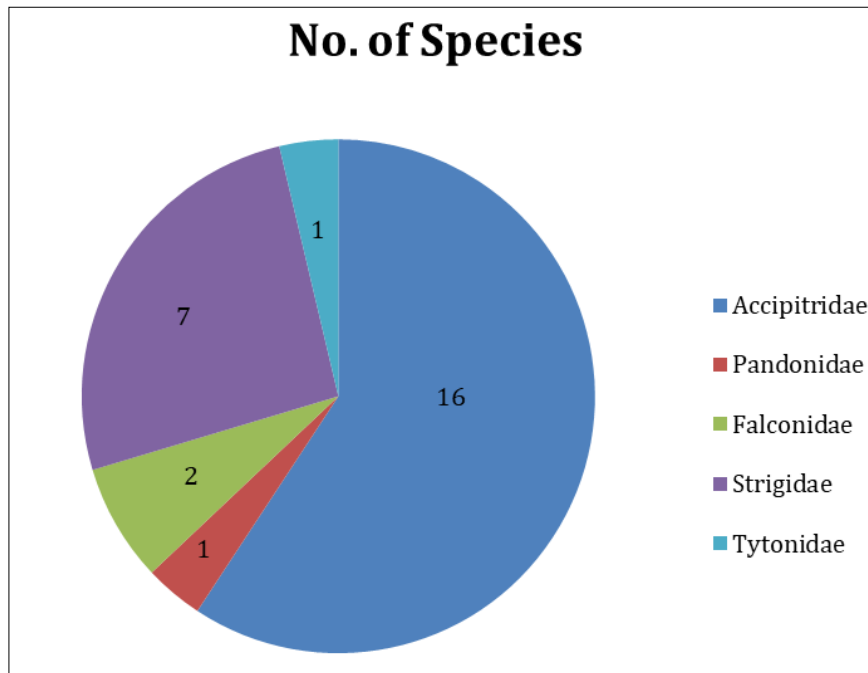


Fig 1

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