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Research paper

Status of captive wild animals in safari park, Malakand, Dir (L), Khyber Pakhtunkhwa, Pakistan

Sultan ud Din Yousufzai [1], Ifat Ali[1], Bibi Rabia[1], Tania Bibi[1], Muhammad Usman Ali Hashmi[2] & Amtyaz Safi[2]*

[1]Department of Zoology, Govt. College Gulabad Dir (L), KPK, Pakistan
[2] Department of Zoology (Wildlife Section), University of Karachi, 75270, Pakistan
**Corresponding author E-mail: : amtyaz.safi@gmail.com*

Abstract

Captive breeding is the process of raising wild animals under controlled conditions in zoos and wildlife sanctuaries. In this study, the conditions of animals kept in wild park located in Dir lower District of Malakand were analyzed. The aim of this study is to evaluate the status of the vertebrate fauna and to identify important problems regarding its captive breeding, conservation and management. This study suggests that mitigation measures can be taken as planning for future conservation and development.
This study aims to investigate the status of different wild animals from November 2021 to September 2022 and understand the basics of conservation and management of Malakand Wildlife Park. The park covers 240 acres and is fenced. Animals are treated with good care and environment. Some of the species of animals protected in the park include leopard, urial, gray goral, monkey and pheasant which are included in the IUCN list of threatened or endangered species. The park also has a well-developed Kalij breeding Centre. This protected park also aims to promote tourism and raise the awareness of local communities to be directly involved in the management and protection of wildlife and the environment.

Keywords: *Wildlife; Management; Conservation; Protected Species; Mitigation Measures.*

1. Introduction

Captive breeding could play an important role in conserving some species that have no other viable options in the short term. However, it should not alter habitat and ecosystem protection and should not be invoked in the absence of efforts to control or restore forest populations (Synder et al., 1996; Khan et al., 2017).
Despite their prisoner like conditions and physical stress, captive animals are quite successful in reproducing in a short time. As a result, the population of endangered species reaches a size large enough for them to be reintroduced into the wild or transferred to other zoos. Wild animals have developed behaviors that are flexible and broad enough to cope with the diversity in their environment (Barash, 1977). Captive breeding in wildlife parks is one of the conservation techniques that protects the genetics of animals and human welfare (Khan et al., 2017).
The world's protected areas contain some of the most important ecosystems, habitats and species. Heritage is also a cultural space for people to think about and understand the natural world. (Deard et al., 2005).
However, the sustainable development and management of the country's important wildlife resources and their robust wildlife trade is a major concern as the country's wildlife is deteriorating further. Defining wildlife-based tourism is further complicated by the fact that most definitions of wildlife tourism are too broad to be used as a basis for statistical selection. Therefore, for the purpose of this study, the definition of wildlife-based tourism business can be derived from the definition of tourism. The United Nations and the World Trade Organization define tourism as: "Travel activities of people to places outside their natural environment for pleasure, business and other purposes and not exceeding one year" (Goodwin, H., 2007).
Since 1974, the Pakistani government has implemented many policies to save wildlife (Kyber Pakhtunkhwa Wildlife Department). The bond between humans and nature has a long history and is seen in stories, poetry, art, painting and religion (Şekercioğlu et al. 2006).
Protection of wildlife has gained importance due to the damage caused by human activities on wildlife.
There are two types of protection: ex-situ preservation and in situ preservation. Establishing protected areas such as wildlife parks, national parks, wildlife sanctuaries and wildlife sanctuaries is an important part of conservation.
Ex-situ conservation refers to the protection of animals in artificial or natural environments such as wildlife parks (zoos and safari parks), farmers and aviaries. (Khyber Pakhtunkhwa, Wildlife Department, 2008).
The "Safari Park" concept was created at the beginning of the 20th century when entertainment and conservation activities outside the zoo framework were suspended. Currently, new ideas, effective planning and scientific support are being explored to introduce the concept in many areas worldwide. The safari park concept is completely different from the zoo concept, where animals can move, live and breed freely in a natural and semi-natural environment. full of stress and poor conditions. Large and exotic animals and other games are important sources of entertainment in wildlife parks (Heming, 1953).

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2. Materials and methods

Safari Park Malakand in Chakdara Dir (L) has been selected as the current study area from November 2021 to September 2022. Observation was done with the help of cameras, videos and guides (Ali and Ripley, 1983; Grimmett et al., 2008; Khan). et al., 2017).
Important morphological features such as feather color, leg and beak shape have been recorded. Identification of these birds was made using taxonomic keys (Ali and Ripley 1987; Bibi et al. 2011). Monitor animals monthly and determine their numbers, general health, births and deaths.
Malakand Wildlife Park was established for the management and protection of animals that are in danger of extinction and threatened by many factors. If these animals are not protected, they will die in the future. The park was built in 2010 and is located in Perano village of Malakand, 3 kilometers from the GT highway in the east and west of the country. The land is 2,000-2,500 feet above sea level and is covered with subtropical large-story forests. The Wildlife Department created and maintains this park. The 240-acre park is protected, so hunting, shooting, trapping and trapping are prohibited. Agriculture or the use of fire is also prohibited in this particular area. Due to the beauty of the park, tourists love to visit it and admire its beauty and the animals living in it. Special opportunities are also being managed for tourists.

Fig. 1: Map Showing Area of Malakand Safari Park (Courtesy by Google).

3. Result

The purpose of the current study was to examine the survey of different Wildlife species protected at Malakand Safari Park during November 2021 to September 2022 in District Malakand, Khyber Pakhtunkhwa, Pakistan. Malakand Safari Park was founded in 2010 to preserve wild creatures that are in danger of extinction. This park is home to a variety of animals, including mammals, birds, and reptiles. In addition to the wildlife, it naturally includes wild plant species. Few animals have been introduced as the park is still in its early stages.
The park has a 240-acre size, and the installation of fencing around the park ensures that it is completely safe. The animals are well-managed and given meticulous care. The animals which are present in the park are local reptiles, Pheasants (Peafowls, Ring-necked, Silver pheasants), Chukar, Common Crane, Common leopards, Urial, Grey goral, Rhesus monkey. Result consists of their management and population of individual species with respect to male/female ratio at Park.
The main group of animals are Pheasants which have been conserved in this park in pheasantry. Since, pheasants are the most beautiful and colorful birds, therefore, they are more prone to hunting and predation. Malakand Safari Park in Khyber Pakhtunkhwa (KPK) province has been chosen to establish and maintain a Pheasantry for conservation, education, research, stocking and reintroduction. Khyber Pakhtunkhwa (KPK) is bestowed with diverse habitats of flora and fauna. This diverse habitat of the province refuge five pheasant's species which are one of the most beautiful but shy species of birds in the world, the Koklass, Monal, Western Tragopan, Khalij and the Cheer pheasant. Coveted for their brightly colored plumage, they have started to disappear from different parts of the world. In KPK province, these birds are found mostly in the remote northern areas.

3.1. Kalij (*lophura leucomelanos*)

Description: Female size: 50-60 cm and Male size: 65-73 cm. Both sexes are red facial skin and down curved tail. They are distributed in Himalayan foothills, Margala and Chitral. Breeding season is May-June. Female lays eggs 8-10. Habitat is Punjab and Kashmir mountainous areas at 400-3500 m. they mostly feed on small branches of trees, insects and small lizards. Kalijj breeding center also present at Safari Park Malakand where eggs are incubated. At Wildlife Safari Park Malakand kalij are protected at cages where suitable habitat is provided by managements. Their breeding season is July (Safi et al., 2023).

Fig. 2: Kalij at Wildlife Safari Park Malakand (Courtesy by Google).

Table 1: Number of Male, Female and Chicks of Kalij Pheasant at Safari Park Malakand

2020	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Male	3	3	2	2	2	2	2	2	2
Female	2	2	2	2	1	1	2	1	1
Chicks	0	0	0	0	0	0	0	9	9
Total	5	5	4	4	3	3	4	12	12

In the above table (Table 1) kalij pheasant present at Wildlife Safari Park are change in number in various months of 2022. In January, February they were five in number. In March and April their number decrease by one to four. In May and June, they were three in number. In July their number increase by one by adding one another female to park. In August and September, the number is decreased to three by the death of one female kalij.

3.2. Silver pheasant (lophura nycthemera)

Silver pheasant is a large bird from the family Phasianidae. They are ground birds. Male White Pipits are 120-125 cm long and weigh 1.3-2 kg. Females are 55-90 cm long and weigh 1.0-1.3 kg. The men are black and white, but they are tough on the guards and the chickens. Most women are brown. They breed from late February to early May. The female lays 6-9 eggs and the chicks usually hatch during the rainy season. It is mostly distributed in Southeast Asia and eastern and southern China. Its habitat is forest, mostly mountains. There are two cages in Malakand Safari Park (Safi et al., 2023).

Fig. 3: Silver Pheasant Protected at Wildlife Safari Park Malakand (Courtesy by Google).

Table 2: Male, Female Ratio and Chicks of Silver Pheasants

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Male	3	2	2	2	2	2	2	2	2
Female	7	6	6	5	5	5	6	6	6
Chicks	0	0	0	0	0	0	6	5	5
Total	10	8	8	7	7	7	14	13	13

The above table 2, explain the number of male and female of silver pheasants at Safari Park Malakand. In January they were ten, in February and march their number decreased to eight by shifting one pair to another breeding center. In April, May and June their number decreased to seven by shifting one pair to near breeding center. In July to September their number increased by one pair, due to breeding season they bought one pair to provide chances for more breeding. Their chicks were 6 in July and then decreased to 5.

3.3. Wood green pheasant (phasings versicolor)

Wood green pheasants are also known as Japanese green pheasants. They are mainly distributed at east, and south Asia, 600-3300 m height of mountains and forest. Wood green pheasants breed in May. Each female laid about 15 eggs per breeding season. At Wildlife Safari Park Malakand one male and four females are protected. They have 3 chicks (Wikipedia).

Fig. 4: Wood Green Pheasant at Wildlife Safari Park Malakand.

Table 3: Number of Male, Female and Chicks of Wood Green Pheasant

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Male	1	1	2	2	2	1	2	1	3
Female	2	3	3	3	4	4	4	4	7
Chicks	0	0	0	0	0	12	12	13	0
Total	3	4	5	5	6	17	17	18	10

In the above table 3, different number of male and female of wood green pheasant protected at Wildlife Safari Park Malakand had variation in their number. In January they were three in number,
in February their number increased by one female. In march to April they were five in number due to addition of one male silver pheasant. In May they were six in number. But from June to July their number increased to seventeen, due to breeding in June. In June-July they had twelve chicks, in August chick's population was increased by one (13). In September male/female ratio is 3:7, from chicks two were became adult to male and 3 were became adult to female while the other were vein to survive.

3.4. Indian blue peafowl (pavo cristatus)

Indian Blue Peafowl belongs to the Phasianidae family. Peacocks are brightly colored and peacocks are brown. It is the national bird of India. The male Indian peacock weighs 4-6 kg and the female weighs 2.5-4 kg. Male height is 100-115cm, female height is 95cm. It is distributed in the Indian subcontinent, Sri Lanka and Southeast Asia. They are mostly omnivorous; They feed on seeds, insects, fruits and small reptiles. Their lifespan in the wild is 15 years.
The Indian Blue Peacock reaches sexual maturity at the age of 2-3. Peacocks lay their eggs in small nests they dig from the ground. Female peacocks can lay up to 6 eggs but have a low hatchability (Wikipedia).

Fig. 5: Indian Blue Peafowl Protected at Wildlife Safari Park Malakand (Courtesy by Google).

Table 4: Ratio of Male, Female and Chicks of Indian Blue Peafowl

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Male	1	1	1	1	1	2	2	1	1
Female	1	1	2	2	2	2	2	2	2
Chicks	0	0	0	0	0	0	0	2	2
Total	2	2	3	3	3	4	4	5	5

The above table 4 indicate the male and female number of Indian blue peafowl protected at Safari park Malakand. In January and February, they were two. From March to May their number increased to three. In June and July one male was added by park management. They breed from April to August, their number increased by two in August 2022 as we observed.

3.5. Black shoulder peafowl

The black-shouldered peacock variety is a variant of the Indian blue peafowl. The black-shouldered peacock is the second most common peacock species in the UK. They are very different from the Indian Blue Peacock. The main difference between the Indian Blue Peacock and the Black-shouldered Peacock is that the Black-shouldered peacock has black wings with a greenish-blue iridescent sheen. The black-shouldered peacock's coloration is due to a recessive gene. Black Shouldered Peahens are cream colored and have a rusty color neck combined with metallic green coloration. The Black Shouldered Peachick is born yellow and within a day the wing tips have changed respectively (Safi et al., 2023; Wikipedia).

Fig. 6: Black Shoulder Peafowl Protected at Wildlife Safari Park Malakand.

Table 5: Number of Male, Female and Chicks of Black Shoulder

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Male	1	1	2	2	2	2	2	2	2
Female	4	4	4	5	5	5	4	4	4
Chicks	0	0	0	0	0	0	2	1	1
Total	5	5	6	7	7	7	8	7	7

The above table 5 represent monthly amount of black shoulder pheasants protected at Wildlife Safari park Malakand. Five black shoulder were present in January and February. In march their amount increased gradually, but in July male/female ratio was 2:4 due to dead of one female.
In July their chicks were two in number but in August it reduced to one and still same in September.

3.6. White peafowl

The white peacock is a mutant of the Indian blue peacock (Pavo cristatus) that has a rare genetic mutation called leukocytosis. "White peacocks can produce color but cannot transfer it to their feathers, so their eye color is blue-gray and their feathers are completely colorless." The breeding season varies depending on many factors, but should be between March and September. Females usually lay 6-8 eggs and the incubation period is 28 days. It is omnivorous; They feed mostly on seeds, insects, fruits, small animals, small snakes and reptiles (Wikipedia).

Fig. 7: White Peafowl Protected at Wildlife Safari Park Malakand.

Table 6: Monthly Record of White Peafowl at Safari Park Malakand

2022	Jan	Feb	Mar	April	May	June	July	Aug	Sept
Male	1	1	2	2	2	2	1	1	1
Female	4	4	4	4	3	3	3	3	3
Chicks	0	0	0	0	0	0	3	3	3
Total	5	5	6	6	5	5	7	7	7

The above table 6 represents, the variation in number of white peafowl species protected at Wildlife Safari Park Malakand. In January-February, they were five in number, in March and April their number increases by one. In May and June, they were five in number. In July

to September their number reduced to four due to sufficiency of cages one male was shifted to another breeding Centre. Three eggs were hatched in July. Total number of white peafowl were present at park seven including male, female and chicks (Wikipedia).

3.7. Ring-necked pheasant (phasianus colchicus)

Ring-necked Pheasant is also known as Surkhab. A long, pointed tail distinguishes pheasants from other chicken-like birds. Tail length 50 cm (male, adult), 20 cm (female, adult). The male always has a beautiful orange, gold and gray pattern; Its skin is red and there is a white ring around its neck. Females are brown-yellow with joints and fans. Its dimensions are 1.2kg (Male, adult), 900g (Sample, adult). It lives in fields, hedges and bushes. It is native to Asia and is now widely grown in Europe, North America and New Zealand. It feeds on leaves, grasses, seeds and worms. The breeding season is May and females lay 8-15 eggs per season. (Wikipedia).

Fig. 8: Ringed-Necked Present at Wildlife Safari Park Malakand (Courtesy by Google).

Table 7: Male, Female and Chicks Number of Ring-Necked Pheasants at Park

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Male	3	3	3	4	4	4	4	4	7
Female	8	9	9	9	9	9	9	9	17
Chicks	0	0	0	0	0	24	24	24	0
Total	11	12	12	13	13	37	37	37	24

The above table 7 highlights, the number of male and female Ringed necked protected at Wildlife Safari Park Malakand. They were eleven in January, twelve in February and march, from April-May thirteen (4 males, 9 females) are present. 20-24 eggs hatched from June to August. The total number of ring-necked protected at park were thirty-seven from June to August. In September 3 chicks became adult to male while 8 to females, remaining chicks were sold to another breeding Centre before maturity, as less availability of cages.

3.8. White tro (crossoptilon crossoptilon)

The white tro is sometimes born as a change from ring-necked birth. He has a rare genetic mutation called leukocytosis in his neck. The difference can be determined by looking at the eye color, which is usually black in white pheasants. And they're bigger than the nodes. Males weigh 2-3 kilos and females weigh 2 kilos. Eat a variety of birds, grains, fruits, sprouts and even insects. Their diet will include more seeds in the winter and eat more insects in the summer. White trout do not mate until they are two years old and then enter the big race at the end of April. Breeding continues until June. Females lay 30-40 eggs per year. The incubation period of eggs is 24-25 days (Wikipedia).

Fig. 9: White Tro Protected at Wildlife Safari Park Malakand.

Table 8: Ratio of Male/Female and Chicks Number of White Tro at Safari Park Malakand

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Male	1	1	1	1	1	1	1	1	1
Female	1	0	0	1	2	2	1	1	1
Chicks	0	0	0	0	0	0	4	4	4
Total	2	1	1	2	4	4	6	6	6

The above table 8 shows, monthly changes in number of male and female of white tro at Safari park Malakand. In January two tro were present but female became ill and death after some days. In April one female is introduced to park while in May and June another female was introduced for breeding purpose. In July to September one female was shifted to another breeding center due to its rare nature. Their number increased by four chicks in August.

3.9. Pied peafowl

Peacock vision is the result of a change in structure, not color. The silver-spotted peafowl came to the United States in 1992. The spotted Indian blue peacock is similar to the Indian blue peacock, but the spotted Indian blue peacock is different. “Mottled” means “white mark.” Peacocks are mostly colorful but have white coloring in many places. The majority of male silver-spotted peacocks are white, with 80% being white and 20% being colored. The color around the neck may be blue or green. Silver-spotted peacocks can have light or dark silver spots. The silver-spotted peacock is similar to the silver-spotted peacock but has a gray neck color. They are very beautiful peacocks. Silver spotted peaches are easily identified by the small gray spots on their necks or heads when they hatch (Wikipedia).

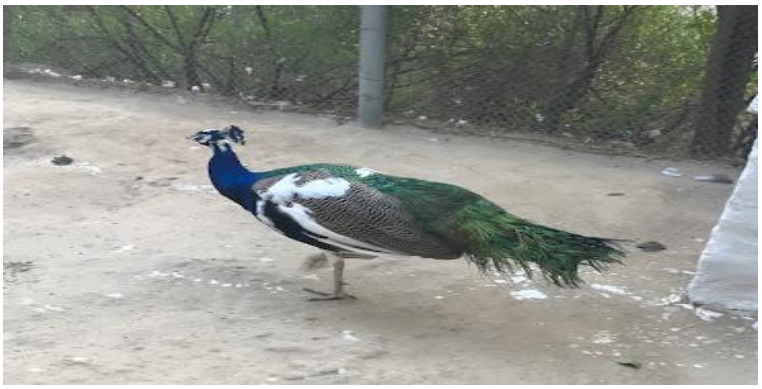

Fig. 10: Pied Peafowl Protected at Wildlife Safari Park Malakand.

Table 9: Pied Peafowl Male/Female Ratio and Their Chicks at Park

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Male	1	1	1	1	1	1	1	1	1
female	1	1	1	1	2	2	2	2	2
Chicks	0	0	0	0	0	0	0	3	3
Total	2	2	2	2	3	3	3	6	6

The above table 9 represent, that male and female of pied peafowl remained constant from January to April. In May another female or pied peahen was added to park for breeding. Their chicks were three in number in August. The total amount of pied more at park is six including male, female and chicks.

3.10. Chukar partridge (alectoris chukar)

The Chukar partridge (Alectoris chukar), or simply chukar/Chakor, is a Palearctic highland game bird from the family Phasianidae. Chukka is the national bird of Pakistan and Iraq. Sand Brown Chuka is a wild bird found in KPK (Swat, Upper Dir), Gilgit and Hunza. This red-billed bird of prey is decorated with dark stripes on both sides and bands around the head and neck. It feeds mostly on green leaves, insects and seeds. Females lay 12-20 eggs per year.

Fig. 11: Chukar Partridge Protected at Wildlife Safari Park Malakand (Courtesy by Google).

Table 10: Chukar Partridge Male/Female and Their Chick’s Population in 2022 at Park

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Male	5	5	6	6	5	5	6	10	10
Female	8	8	9	9	9	9	10	10	10
Chicks	0	0	0	0	0	0	0	20	20
Total	13	13	15	15	14	14	16	40	40

The above table 10 indicates the ratio of male and female Chaukur present at Safari Park Malakand. In January to February their male/female ratio is 5:8. In March-April their ratio is 6:9 by introducing one pair to park. From May-June their ratio is 5:9 due to death of one male (IB disease). In July one pair is introduced to park and their ratio became 6:10. They had 20 chicks (not differentiated to male or female) in August. Total number present at park is 40 including male, female and chicks.

3.11. Black partridge (melanoperdix Niger)

It is a small species with a black, thick beak, two gray legs and dark brown irises. The male's body is a distinct, glossy black color, while the female is mostly olive brown with a lighter underbelly. It lives in lowland forests and foothill forests, generally preferring moist areas. Most are silent. Most are born between April and June. The incubation period is 18-19 days. Males call loudly and can be aggressive during breeding season.

Fig. 12: Black Partridge Protected at Safari Park Malakand (Courtesy by Google).

From June to July 2022 they were six in number, their male/female ratio was 3:3. From August to September one male was died, male/female ratio became 2:3. They have eight chicks.

3.12. Crane (grus grus)

Cranes are generally divided into large birds, beautiful and medium-sized cranes. It is 100-130 cm (39-51 in) long and has a wingspan of 180-240 cm (71-94 in). Weight is 3-6.1 kg. Males are slightly heavier and larger than females; They show the greatest sexual body size dimorphism in body size. Cranes are omnivorous and their food includes insects, dragonflies, worms, crabs, spiders, centipedes, woodlice, amphibians, mice, birds, etc. is available. This species usually lays eggs in May. Cranes usually lay two eggs.

Fig. 13: Common Crane (Courtesy by Google).

In March common cranes were present at Park. Their male/female ratio was 1:2. After that they were transferred to Bannu breeding Centre as their favorable habitat were not provided.

Management and conservation: All birds in wildlife safari park are protected in cage. The management of the park ensures an adequate environment and shelter. They are kept in cages where they can lay eggs and rest. They provide good food which includes rice and corn. In parks, small birds will be given 80 grams of food, and large birds will be given 120 to 150 grams of food. Usually their feed contains feed 9 for normal growth while feed 13 is given to birds for laying eggs during the breeding season. They have plenty of water to drink.

Large birds such as peacocks are kept in a cage to protect them from competition for food and mates. Due to the large number of species, many cages can be used. To ensure competition, male and female birds live separately in each cage. There is also an incubation area in the park where Golden Horn eggs hatch.

To avoid electricity, there is an incubation room for natural eggs in the park. Chickens are usually raised in a brooder in the park and hatch from eggs of other species during the breeding season.

Different Mammals protected at Wildlife Safari Park Malakand

3.13. Common leopard (panthera pardus)

Leopards are large, agile members of the cat family known for their unique fur, climbing abilities and alertness instincts. Leopards are beautiful hunters who combine the strength and agility of big cats with the charm and flexibility of small cats. They have a long body, muscular, strong limbs and broad hands. Leopards are very adaptable and are distributed throughout Africa and southern Asia, sometimes living quietly near populated areas. Generally, India, Pakistan, Afghanistan, Tajikistan and Turkmenistan are the home of leopards. Leopards live in environments such as savannas, grasslands, open forests and deserts. The Malakand Safari Park's common leopard was transported from the Hazara division. Number five in the Malakand Safari Park (2 Male, 2 Females and 1 cub), weighting approximately 70-75 kg.

They are in-active in sunny days while active at low temperature as we observed on 21 July 2022 at rainy day.

Fig. 14: Common Leopard at Malakand Safari Park.

Description: Weight: 75-85 kg approx.
Number: five in number (2 Male, 2 Female, 1 female cub)
Management and conservation:
Two feeding cages and one breeding cage are used to keep leopards in close quarters at the Malakand Safari Park. The feeding cage measures 12 x 12 feet, while the raring cage measures 54 x 54 feet. Fresh meat is a part of their diet; each receives 2 kg per day in summer (in-active state), and they can typically consume 4 to 5 kg in winter (active state). It's time to eat at 2:00 pm. To serve them, there are two people on duty.

Table 11: Common Leopard Male/Female and Cub's Population in 2022

Years	Male	Female	Cub	Total
2020	1	3	0	4
2021	1	3	1	5
2022	2	3	0	5

The above table 11 shows that in 2020 male and female ratio is 1:3 while in 2021 they breed and produce one cub. Their cub is also a female, overall male and female ratio is five at park.

3.14. Grey goral (naemorhedus goral)

From the Himalayas in the north to North Korea and eastern Siberia, gorals are goat-like members of the family Bovidae. An adult goral has a shoulder height of about 70 centimeters (30 inches) and weighs about 30 kilograms (60 pounds). Its fur is coarse and dark brown or light yellow. Both females have small, thin foot horn rings that are slightly recessively curved. In the morning and evening, gorals go up the hill to eat in the bushes. Older bulls go alone, but groups of five to ten animals come together. When the goral is frightened, it makes a loud noise that is echoed by other animals in the group. Animals give birth six months after mating, in December or November.

Fig. 15: Goral Protected at Wildlife Safari Park Malakand.

Description: Weight: 30-40 kg
Number: Five in number
Management and Conservation:
The Goral are housed in cages, yet it doesn't seem like they even belong there. The cage is 400 x 400 feet. For the most part, green grasses are fed to the Goral. Wabasha and foliage (green leaves) (malt). They typically eat 10 kg of green food and 300 gm of Wabasha every day in the afternoon. They receive the required vaccinations each month or each season. In two years they didn't breed due to disturbance as irrigation activates were held around the park.

Table 12: Grey Goral Population at Park in 2022

Years	Male	Female	Fawn	Mortality	Total
2020	1	3	2	1	5
2021	1	3	1	0	5
2022	3	3	0	0	6

The above table 12 indicate, that the male/female ratio in 2020 was five, they breed and produced two fawns in which one fawn is died, remaining one fawn. In 2021 one female were shifted to Peshawar breeding centre while another fawn balance the number again. In 2022 one male was added to park from another sources, male/female ratio is 3:3 now at park.

3.15. Urial (ovis orientalis)

Urial (Ural), a medium-sized wild sheep, belongs to the goat-antelope subfamily and is called "shapo" or "arkhar". Urals tolerate unstable soil and grass, often under trees. It is found in the mountainous regions of northwestern India, Russia, Central Asia and the South Caucasus. Rams (males) can reach a height of 91 cm (36 in) at the withers and weigh up to 54 kg (120 lbs).
They are brown in color and available in many shades. The sheep's fur is very long and extends from its chest to its throat. Adult collars are black, but they turn gray as they get older. The ram's horns are long and symmetrical; It rises from the top of the head, curves widely outward, then turns inward and away from the head.

Fig. 16: Urial Protected at Safari Park Malakand (Courtesy by Google).

Management: In the Park 1 Urial is present and for the management of it two vouchers are present. It is kept in the cage, whose area is 400×400 ft. and feed grasses, bajra, tripolium. The generally feed 10kg per day accept the natural grasses. They have given proper vaccination monthly or season bases. The feeding time is 3:00 pm and has no calf. There is no breading of Urial in the park.

Table 13: Urial Adult and Fawn's Population at Park in 2022

Years	Male	Female	Total
2020	1	1	2
2021	1	0	1
2022	1	0	1

The above table explains that one male Urial was introduced in Malakand Safari park in 2020. In the same year female was transfer from Malakand wildlife Safari Park to Peshawar for breeding, as a suitable habitat was provided in Peshawar wildlife park than that of Malakand safari park. According to agreement the fawn of transferred Urial will be send to Malakand Safari park in future.

3.16. Monkey (macaca mulatta)

The fur on this little monkey's back is gray-brown, while the fur on its belly is slightly lighter. The hair on the head is very short. Adults have red face and body. The length of the animals varies between 45 and 64 cm. The tail adds another 19 to 32 cm to the total length. Males are slightly heavier than females, weighing between 6.5 and 12 kg. The average weight of females is only 5.5 kg. Mostly in Western Afghanistan, through India to Northern Thailand. These animals were originally present in large numbers in southern China and Tibet.
Macaques live in many habitats and are extremely adaptable. Some people live in the plains, while others live in the Himalayas in northern India and Pakistan at altitudes of up to 3,000 metres. These primates can adapt to a variety of climates, from hot, dry deserts to cold winters below freezing.

Fig. 17: Rhesus Monkey Protected at Safari Park Malakand.

Management: Monkeys in parks are kept safe in cages with adequate cover and hanging supplies. 2 kg Mix Fruits and 2 kg black gram (Channa) are supplied to them in diet. They regularly administer the right.

vaccinations each month or each season. Monkeys were introduced to park for the entertainment of tourist in 2022.

Table 14: Common Monkey's Population at Safari Park Malakand

Year	Male	Female	Infant	Total
2022	1	2	2	5

The above table 14 explains, that one male, 2 females were introduced to park from Malakand top, having two infants.

3.17. Natural animals

There are several wild species, which are found in this area and around the park or inside the park (Safi, et al. 2024). Some of the species names are given below in table 15.

Table 15: List of Natural Animals Present Around the Park

Name	Zoological name
Monitor lizard	*Varanus bengalensis*
Grey partridge	*Perdix perdix*
Jackal	*Canis aureus*
Fox	*Vulpes vulpes*
Jocko leopard	*Eublepharis macularius*
Hares	*Lepus timidus*
Lizard	*Hemidactylus brookii*
Lizard	*Hemidactylus flaviviridis*
Lizard	*Mediodactylus brachykolon*
Skink	*Ablepharus pannonicus*
Girgit	*Calotes versicolor*
Lizard	*Laudakia agrorensis*

The above species are not protected at Wildlife Safari Park Malakand. They are local animals near the park in which small animals like hares and reptiles like monitor lizard and snakes sometimes founded inside the park.

4. Discussion

The availability of food, feed, and shelter may be the most important factors for an animal's survival in the environment. The abundance of a species depends on the environment, food, water and habitat. The results of this study were compared with other studies from Pakistan, which showed how many different species protected in other safari parks were associated with the given environment. This study aims to measure the abundance of each species kept in wildlife parks and monitor their management.

Kalij belongs to the Phasianidae family, Phasianiformes order. There are 5 people (3 men, 2 women) guarding the Kaliki Pheasant in the Wildlife Safari Park in January and February. The number was reduced to 4 (2 men, 2 women) due to the death of one man from the disease (pneumonia) in March and April. From May to June, their number decreases from 1 female to 3 (2 males, 1 female). Females are sold by park rangers to purchase eggs for the breeding season. Another female was added to the park in July to lay her eggs, and in August–September their numbers were reduced by a male who moved to another breeding area to avoid fighting and protect his chicks. In 2017, there were a total of 33 adult Kaliki Pheasants and 106 chicks at Dhodial Pheasant in Khyber Pakhtunkhwa, Pakistan. Kalij pheasants represent a self-sustaining population with an annual survival rate of 37.4% (Saeed et al. 2017).

White tro pheasant belongs to the Phasianidae family. This study shows the male and female ratio of White Harriers in Malakand Wildlife Park in different months of 2022. While the number of White Harriers was 10 (3 males, 7 females) in January, this number decreased to 8 in February and March. (2 males, 6 females) and one pair was transferred to another breeding area. In April, May and June, their numbers are reduced to seven (2 males, 5 females) as the pair moves closer to the breeding area. From July to September, their numbers increase by one pair (2 males, 6 females) and due to the breeding season, a pair is purchased to provide more mating opportunities and bear children. There were 6 chicks in July, later this number decreased to 5. The total number of white figs in the park is 13, including males, females and chicks.

Other members of the Phasianidae family protected at Malakand Wildlife Safari include Indian Blue Peacock (*Pavo cristatus*), White Peacock (*Pavo cristatus*), Pied Peafowl (*Pavo cristatus*), Tree Pheasant (*Phasianus versicolor*), black-shouldered. Pheasants, peacocks (*Pavo cristatus negripennis*), ring-necked pheasants (*Phasianus colchicus*) and white pheasants are few in number in the park. After the Ranikhet virus (wild bird virus) in 2017 and 2018, this virus is rarely seen in Pakistan. During this time, hundreds of peacocks died. Muhammad Anwar said in 2016 that peacocks (250 birds), ring-necked pheasants (17 birds) and sand pheasants at Lahore Wildlife Breeding Center in Jallow Park are selective for many deadly diseases and insects. and 10 days. stale. Their numbers are rapidly decreasing and their numbers are decreasing in Pakistan (Maan et al. 2016).

According to our observations, there are five leopards in the park, three female and two males. Most breed every year. When the female becomes pregnant, she goes to the birth cage to protect her children, but the cage is not enough and the males fight, torture and kill the children. In 2013, a leopard escaped from its cage and was later killed by villagers.

The number of Gorals has increased and their numbers will reach by 2022, without fawns, since they cannot reproduce normally due to the affected environment, the fawns have been taken from other places, while the Urals have decreased by two times. In 2020, a female was sent to Peshawar Wildlife Park for breeding.

The monkeys were kept in 2022 for the entertainment of tourists, and there are five monkeys in the park, two females, one male and two babies (Taimur et al. 2014). Data collected for three years, 2007, 2010 and 2013, showed that Koza Gali brought back the highest number of M. mulatta (40.78) and Kundla recorded the lowest number (4.48) (Taimur, et al. 2014).

5. Conclusion

There is different wildlife species like many birds in Malakand division but now their numbers are decreasing due to habitat loss and illegal hunting. Wildlife is a very important thing that must be protected from the use of lethal weapons. Malakand Wildlife Park plays an important role in the management and conservation of these animals. As we all know wildlife park is the protected area where animals live so that we can protect the animals that are facing many threats. These animals are strictly monitored in safari parks in order to protect them and increase their numbers. Wildlife parks provide living spaces for wild animals. The establishment of the park provided local people with knowledge about wildlife management and conservation. Parks also benefit local businesses. The main reason why tourists cannot come to the park is that the park is not promoted and the public's awareness of the park is not high. Secondly, the infrastructure is not perfect and there is no room for tourists.

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Conflict of interest

Authors declared that there is no potential conflict of interest.

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