



## POPULATION STRUCTURE AND HUNTING OF DEMOISELLE CRANES IN DISTRICT BANNU, KHYBER PAKHTUNKHWA, PAKISTAN

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### Abstract

The crane is a large, beautiful animal with long necks, legs, and life expectancy. Like a few other wild wildlife, this group of birds has the potential to lift people's emotions. The current study was carried out from September 2019 to June 2022 in District Bannu Khyber Pakhtunkhwa, Pakistan to check the hunting rate of Demoiselle crane. Different sites were visited and the data was collected in the form of questionnaires. The entire hunting area was visited, along with the rivers Kurram and Kashu, and the hunters were observed and interviewed during that time. The River Kurram, River Kashu, and River Gambilla, which are located in the Bannu and Lakky Marwat Districts, respectively, are the well-known locations for hunting in Khyber Pakhtoonkhwa. Out of the seventy-one hunter groups, group 1 (comprising sixty-three people) reported that there were sixty-five hunting sites along the Kurram River; group 2, comprising thirty-seven members, reported that there were fifty-two hunting sites along the same river. The majority of hunters (70%) felt that early spring (March) was the ideal time to hunt. Majority of hunters (80%; 56/70) found that late night was the optimum time to hunt Demoiselle cranes, with the remaining 10% hunting in the early morning (07/70 and daytime 5.7% (04/70). When hunting Demoiselle cranes, the majority of hunters employed both soya and gun shooting (54/70; 77%), followed by twenty percent (14/70) who used only soya, and three percent (one out of seventy) who exclusively employed gunfire. The selected area is one of the better significant places for Demoiselle crane, which is significantly impacted by a number of risk factors that are in charge of the species' limited migration and population. The best methods for conservation are legislative protection through prohibitions on gaming and rearing, where it is removed from the Red List of Endangered Species.

**Keywords:** Conservation, hunting, demoiselle crane, threatened, endangered

## INTRODUCTION

A diverse range of birds is vital to the health of the ecosystem since they are involved in seed dispersal, flower pollination, food chain formation, and seed dormancy breaking [1]. Pakistan is home to 650–700 resident and migratory bird species due to its diverse range of environments [2]. Additionally, the country provides perfect migration paths and migratory bird staging areas [3, 4]. Among them, cranes are the most significant [5]. There are fifteen species of cranes worldwide; eight of them are located in Asia; only four of them are found in Pakistan, based on seasonal variation [6, 7]. Although the severe and unsuitable climates on the continents of Antarctica and South America prevent the presence of crane species [8]. While Siberian and Sarus are virtually extinct today, demoiselle and Eurasian cranes continue to pass through Pakistan [9]. Even though they still visit Pakistan in large numbers, demoiselle [10] and Eurasian cranes are vulnerable to a number of risks [11]. Shooting, live trapping, habitat damage, and disruption are some examples of such risks. [12, 13].

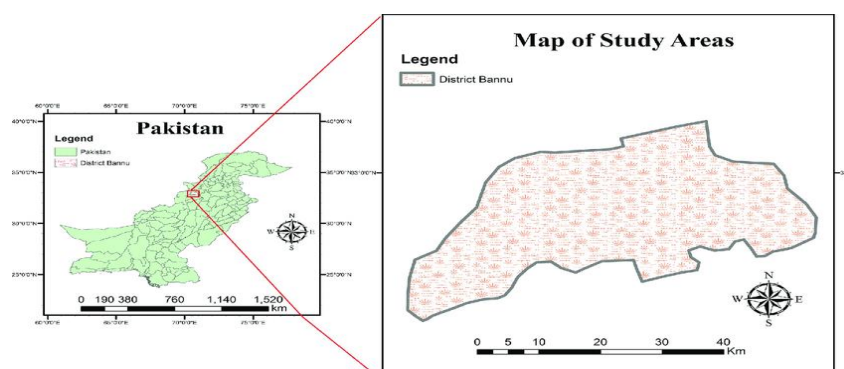
## Crane

The crane is a large, beautiful animal with long necks, legs, and life expectancy [14]. Like a few other wild wildlife, this group of birds has the potential to lift people's emotions [15-17]. Red-crowned cranes are a lovely symbol of good fortune, love, longevity, and marital devotion throughout Asia. [18]. Owing to the variety of small insects and rodents they eat, they might also aid in the control of pest populations [19]. They are also important fields for research and study [20, 21]. Cranes are mostly bisexual. Most of them probably begin establishing pairs in their 3rd or 2nd year of life [22]. Male primarily responsible for defence, whereas the woman is more engaged in social issues [23]. Cranes often mate for several weeks before to laying, at any time [24].

## MATERIALS AND METHODS

### Study area

The area selected for this research was District Bannu KPK, Pakistan. 32.9298° N, 70.6693° E is the latitude and longitude of Bannu District and situated within Pakistan's Khyber Pakhtoonkhwa region and covering an area of roughly 1227 square kilometres. It shares boundaries with South Waziristan to the southwest, Lakki Marwat and Bettani to the southeast, Karak to the northeast, and North Waziristan to the northwest. Even though there are rocky, arid mountains all around Bannu, it is an abundant location, often described as a "paradise" by early English explorers. The Kurrum, Gambila, and Tochi rivers, which have their source in Waziristan's hills, drain the district into Abasin. The Bannu Valley proper is 60 miles (97 km) long and 40 miles (64 km) wide, forming an irregular oval with the foot of the frontier hills in the middle [10]. Situated at a height of 1165.22 feet, or 355.16 metres, above sea level, the climate in Bannu is humid subtropical with no dry season. The district experiences 17.97°C (64.35°F) annually, which is -2.92% colder than the national average for Pakistan. Bannu experiences 133.34 wet days (36.53% of the total) and 120.66 millimetres (4.75 inches) of precipitation on average per year [25].



**Figure:1.** Map of study area (District Bannu)

### **Research duration and data collection**

The current research study, which is based on a demographic questionnaire, was carried out from September 2019 to June 2022. After being fully informed about the research, each person duly signed a written agreement form.

### **Characterization of Hunting Sites**

The entire hunting area was visited, along with the rivers Kurram and Kashu, and the hunters were observed and interviewed during that time.

### **Evaluation of Best location of Hunting**

Visits, official interviews, and discussions with all of the hunters were used to determine which location site was the greatest overall for hunting.

### **Evaluation of Hunting Seasons in the study area**

Within District Bannu, the several seasons that are conducive to Demoiselle crane hunting throughout the year were assessed, and the optimal hunting season was determined by means of in-person observations and interview questions.

### **Evaluation of Best time for hunting**

The complete hunting location, where the hunter resides, was visited, and the hunting behaviour was assessed year-round in case of timing.

### **Analysis of number of Hunters at each Hunting Site**

For every Demoiselle crane capture site, the total number of members of the hunting group was recorded.

### **Observation of Crane Capturing Methods**

By using cranes as a decoy, hunters in Kurram Valley are able to draw in wild cranes with their sounds and presence, ultimately leading to their capture. The cranes that the hunters keep in captivity are trained to call when the owner gives a signal. According to Ahmed and Jan (1995) and Farooq (1992), training takes two to five years[26]. In the camp, the hunters stay for over a month. They often hunt from sunset until after dark then idly in the early morning. Some of the group take responsibility of decoying cranes to get flocks of wild cranes to cross the hunting area, attracting over flying cranes with their calls.

### **Data analysis**

After entering all of the gathered data into MS Excel, the desired qualities were assessed, and the information was shown using graphs and tables.

## **RESULTS**

According to hunters and keepers of Demoiselle cranes, the current study found that during the last five years (2017–2022), the population of Demoiselle cranes in District Bannu has decreased by 18%.

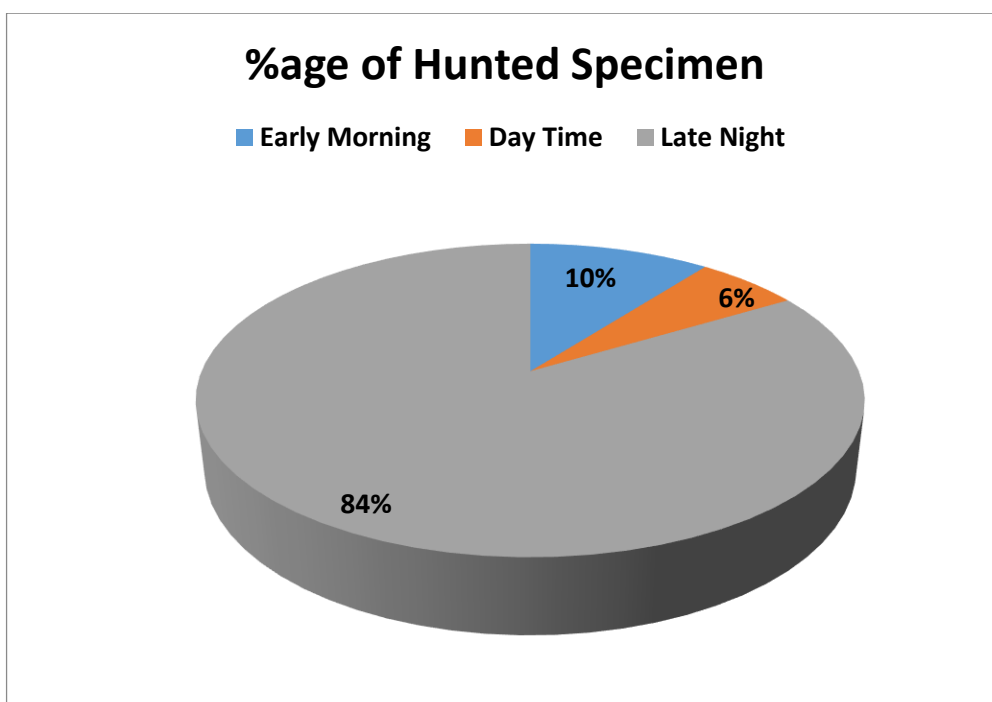
### **Hunting sides**

The literature indicates that Pakistan's Khyber Pakhtunkhwa and Balochistan Provinces are the best and most significant hunting grounds for Demoiselles cranes. The River Kurram, River Kashu, and River Gambilla, which are located in the Bannu and Lakky Marwat Districts, respectively, are the well-known locations for hunting in Khyber Pakhtoonkhwa.

### **Best hunting time**

According to the present survey, majority of hunters observed that best hunting time is late night or night was the optimum time to hunt Demoiselle cranes that is (84%; 56/70, followed by early morning

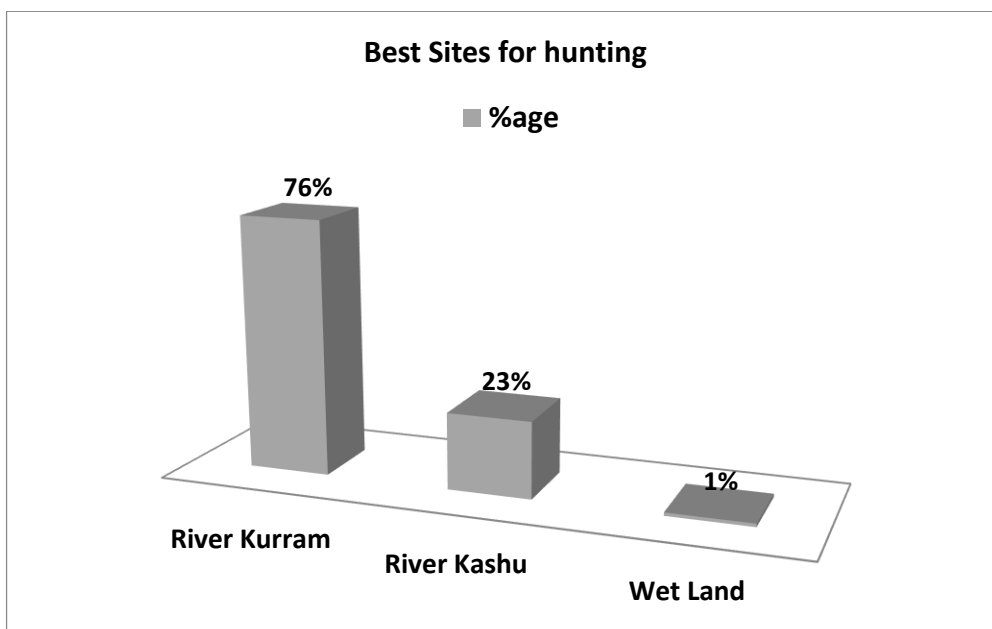
(10%); (07/70), and (5.7%); (04/70), was resulted in daytime (Figure 2).



**Figure:2.** Best hunting time during the current research

### Best Sites for hunting

According to hunters, the River Kurram (76%) is the best place to trap demoiselle cranes, followed by River Kashu (23%) is the finest place to trap and Wet Land (1%). This information was discovered during the research project.



**Figure:3** Best Sites for hunting during the current research

### Hunting methods

The aforementioned study found that, when hunting Demoiselle cranes, the majority of hunters employed gun and soya (77%; 54/70), followed by soya (20%); (14/70) and (3%); (02/70) through gun shooting (Figure 4).

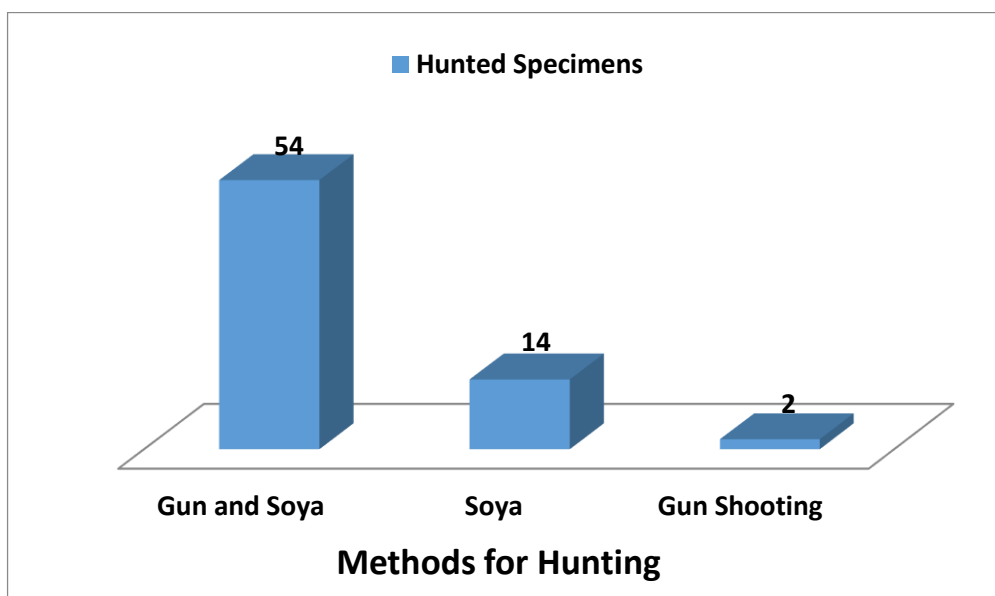


Figure:4. Hunting methods used by hunters

### Hunting purpose

According to of hunters in this study, hunting is done for fun (93%), while 4.25% of respondents said that they hunt demoiselle cranes to keep as pets (Figure 5).



Figure:5. Hunting Purpose

### DISCUSSION

Pakistan is home to 650–700 resident and migratory bird species due [13]to its diverse range of environments. Among them, cranes are the most significant [27]. While Siberian and Sarus are now all but gone, demoiselle and Eurasian cranes continue to pass through Pakistan[28, 29]. Even though they still visit Pakistan in large numbers, demoiselle and Eurasian cranes are vulnerable to a number of dangers [30]. These include of shooting, live trapping, disturbing the habitat, and fragmenting it [31]. Over 520,000 individuals of the Demoiselle crane are thought to exist worldwide [32]. Live trapping and hunting for sustenance, sport, sale, and captive breeding along the flyway in Pakistan and Afghanistan[33].

The present research was carried out in Pakistan's Bannu districts of Khyber Pakhtunkhwa [34]. The hunting of demoiselles with cranes is a long-standing custom in Pakistan's Baluchistan and Khyber Pakhtunkhwa provinces [35]. Every year, some 20,000 cranes travel eastward through Zaro-Anam

Bostan (Baluchistan) in the autumn [36]. This route was used to entrance 700 cranes in the spring of 1989 [37]. Farooq et al. (1993) reported that over 50,000 cranes travel over the Pakistan route [38]. One third of the 12,000 captive and breeding cranes in Kurram Valley are utilised as decoys to hunt and trap other migratory cranes throughout the migration season [29, 39, 40]. The most personal relationship between humans and cranes has historically been seen in the breeding and confinement of cranes [41].

**Conclusions:** The current study came to the conclusion that District Bannu is one of the best and most significant places for Demoiselle crane migration, which is significantly impacted by a number of risk factors that are in charge of the species' limited migration and population. The best methods for conservation are legislative protection through prohibitions on gaming and rearing.

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