

# Ecological Study of Grey Francolin (*Francolinus Pondicerianus*) in Churu District of Rajasthan, India

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**Abstract:** Grey francolin (*francolinus pondicerianus*) local name "Teetur" or "Bhoora" is widely distributed bird in India except in high Himalayas and in north east. Churu district lies in 28°18' N latitude and 74°58' E longitude in Rajasthan state of India. It is a part of Shekhawati region and most of it are Semi-arid zone. Grey francolin can be seen in the groups or pairs of male and female or solely during, morning and evening for foraging activities. Preferred habitat of grey francolin is bushy area, agricultural land boundaries and sand dunes with bushes. Seasonal variations in population density of this bird, is mainly due to availability of food. The main hazard to the grey francolin is hunting for meat, which results in decline of grey francolin in numbers.

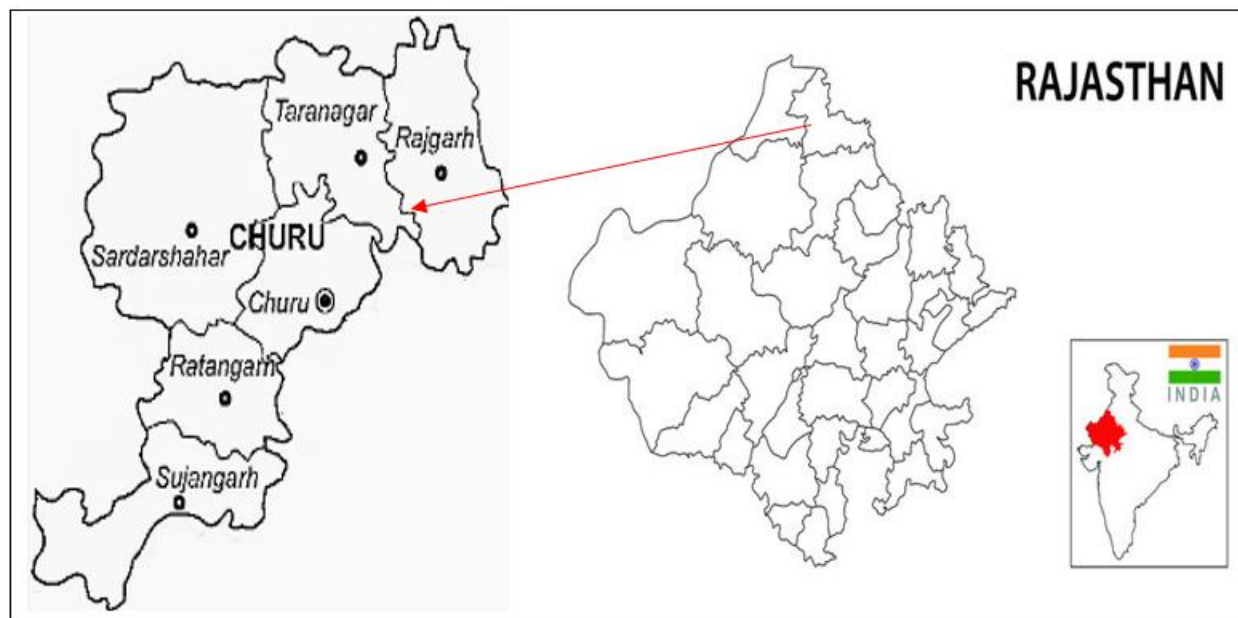
**Keywords:** Grey francolin, Churu region, Population, Habitat Foraging

## 1. Introduction

The Indian subcontinent has about 13% of the world's avian species, 1340 bird species reported from India (Ali and Ripley 1987). In India about 140 species of birds are threatened (Ali and futehally 2009) due to habitat destruction, unchecked growth in human population and excess use of pesticides in cultivated area. Rajasthan is a largest state, located in the north western part of India and physio graphically it has four divisions namely western desert (Thar desert), Eastern plain, Aravali Mountain range and south eastern plateau. Aravali controls precipitation patterns

on its eight sides, all these conditions made Rajasthan, a land with diverse ecosystems. The climate of Rajasthan is generally hot and dry and state has been divided into 10 agro-climatic zones on the basis of various climatic factors.

Churu district lies in 28°18' N latitude and 74°58' E longitude in Rajasthan state of India. It is part of Shekhawati region. The climate of Churu district is arid and temperature varies between -3°C to 50°C. Relative humidity is below 30% except during monsoon. Average rainfall is 328 mm. In this region two types of plants are found (1) Draught evading species (2) drought enduring species (Biswas and Rao 1953).



Map of Churu district in Rajasthan, India

Grey francolins (*francolinus pondicerianus*) are the member of family phasianidae of order galliformes, its local name is **Teetur** or **Bhoora**. It is larger than quails with stronger bills and feet. It is ground nesting omnivorous and non-migratory bird, shows worldwide distribution except Sahara Desert, the arctic and colder area (fuller et al.2000), in India it shows wide distribution except in high Himalaya and in north-east (India biodiversity portal 2021), francolins are small game

bird which inhabited in open cultivated area as well as scrub forest. It is highly sedentary bird, seldom moving far from where they hatch. When disturbed it prefers to run instead of fly but will fly short distance if necessary.

Francolins are gregarious and are diurnal but usually forage at dawn and dusk. It has average size 30-35 cm, with grey neck and chest feathers and rusty red head. It has short round

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wing and small bill, Wings and tail feathers are brown, rust whitening grey. Both sexes are almost similar but males are larger than females having dark brown U-shaped patch on their belly and sharp spur (Islam 1999). Diet of this birds

mostly seeds, from wide variety of plants such as grasses, seeds, leaves and insects (termites and ants), insect eggs and their larvae. It said to be omnivorous nature (hussain *et al.*2012).



Male Grey Francolin



Female Grey Francolin

Monogamous grey francolin forms pair before the breeding season. Nesting occurs mostly in spring, eggs are laid in March-April, however a few pairs also nest in September and October after monsoon (Roberts 1991). Both parents attend the young chicks after hatching (Roberts 1991).

Population decline of grey francolin has been well documented due to habitat destruction and increased use of pesticides (Roberts 1991). Grey francolin has under gone an overall 79% decline in last a decade but is listed as least concern in IUCN red list (IUCN 2015) due to its wide distribution range, only a few research studies have been carried out in Churu, Rajasthan. So, there is need to study with specific objective of gathering information on (1) Ecology (2) Breeding behavior (3) Nest structure (4) Clutch size (5) Incubation period and (6) hatching success of grey francolin in the natural habitat in Churu district of Rajasthan.

## 2. Literature Survey

The estimation about total no. of birds have been made by Mayer (1946), he estimated total 8600 bird species in world, according to him there are 146 families and 230 orders. Presently 8600-9016 species are found in world (anon 2004). Indian subcontinent contains 1300 species of birds which is the 13% of total species (Grimmette 1998), 48 birds families are present in subcontinent. According to Ali and Repely (1987) 176 species of birds are endemic (local) to the Indian subcontinent according to Grimmett (1998) Indian peninsula is the home of many bird families. Ali. S. (1945) observed ecology and ethology of grey francolins. Bump and Bump (1964) made study and review about grey and black francolins Choudhry and Bhatti (1992) studied biology of grey francolins in central Punjab plains. Five species of francolins are reported from India India (Ali and Ripely 1983,

Grimmette 2011; Rasmuesen and Andersion2012), Hilaluddin and Kaul. R (2007) observed reasons behind galliformes hunting.

Hussain I, Nisa and Khalil S (2012) observed population, ecology and ethology of grey francolins. Kalsi R S (2005) observed that habitat destruction and pesticide use impacts on population of grey francolins. Kalsi R S (2007) observed state, distribution and management of Galliformes in arid and semi-arid zones in India. Kalsi R. S. and Rana (2004) observed habitat prefers of breeding grey francolin in agricultural land scope. Khalil and Anwar M (2016) reported parameters about habitat preference in grey francolin. Deveshgadhvi (2020) observed seasonal variation in the grey francolins in habitat preference.

Rajasthan has 40% of the Indian avifauna. due to wide variety of habitats and geographical status state has 510 species of birds (Grimmette and Inskipp 2003) Devarshi (2004) reported total 496 bird species in state, which is about 40% of Indian avifauna (1254 species) In state 17 endemic species are present (Ali and Ripley 1987). Variety of bird species founds in this region (Rahmani 1987), various efforts made by researcher to study about avifauna that can be cited in following paragraphs. Ojha A. *et al.* (2008) observed data about ecology and conservation of Indian peafowl in Jhunjhunu district. Dubey-S. (2008) observed data about bird in sewage wetland of Jhunjhunu city. Sheoran (2009) reported total of 130 species belonging to 33 families and 15 orders in Jhunjhunu district. D. Keshar (2010) observed population data and ecology about Indian peafowl in Shekhawati region. Singh S. *et al.* (2015) observed parakeet diversity and its impact on ber (*Ziziphus moritiana*). They also made study about reproductive behavior of rose ringed parakeet (*Psittacula krameri*) Singh S. *et al.* (2020) observed



a good growth in the number of peafowl in Shekhawati region of Rajasthan.

### 3. Objective of Study

Churu district of Rajasthan has various habitats such as forest, scrub, wetlands, desert and agricultural land and rich with avifauna. Recently this region is ecologically transformed because of human activities such as deforestation, wastage of ground water, indiscriminate use of pesticides and due to global climatic changes. What impacts of these changes on the species will be studied by this research working. Grey francolin is a omnivorous and it also play a role of biological controller in nature, the occurrence, ecology and ethology of this bird is not studied vastly in Churu district so proposed research work will increase knowledge about the status of this bird in Churu district.

Grey francolin is a popular game bird and decline in population of this bird has well documented but it is listed as least concern in red data of IUCN due to its wide distribution, insufficient data exist about its population decline. There may several reasons for this population decline as habitat loss, Indiscriminate hunting by human for it meat, predation and indiscriminate use of pesticide in this area in cultivation/ agricultural land. All these reasons will be studied and observation and conclusion will help us to understand about the species and its conservational strategies.

### 4. Methodology

The Study area included semiarid zone of Churu district of Rajasthan, which located in the north western Rajasthan in



Group of Grey Francolins



Mother Francolin with her Chicks

c) **Foraging activity:** The bird grey francolin is Omnivorous. Diet Composition includes, cereals, leaves of variety of plants, Insects eggs and larvae of insects. Maximum foraging activities can be seen during morning

transitional plains of inland drainage climatic zone of state. The survey was conducted by random sampling method in which direct call of birds and sighting were recorded with the help of binocular, Nikon D7500 Game DSLR Camera and voice recorder. Data were also collected from local farmer, bird watcher and local tribal peoples popularly known as "Banbawaria" Inhabited near forest.

### 5. Result and Discussion

The collected data were analyzed and general assumption were made, which can be summarized as follows-

- Habitat Preference:** Majority of grey francolin observed in bushy area, Agricultural land boundaries and sand dunes with bushes. The preferred habitat helps in protection from predators as they can run and hide themselves in this area. The grey colour of grey francolin is similar to surrounding area so bird can Camouflage themselves with surrounding back grounds to escape predation and hunting. Variable agricultural area and cultivated area provides food and shelter to bird.
- Diet Composition:** The main food of bird is cereal's seeds from wide variety of plants such as grasses, insects, insect eggs and their larvae. Habitat preferred by bird fulfills dietary requirement also. Since semi-arid areas are rich in succulent plants so bird can fulfill their requirement of water.

The high density of birds presents in cropland due to availability of food and shelter. Bird builds their nest in grassy and bushy area on ground because grasses and bushes cover their nest from predators and temperature variations.

and evening. They forage in groups or solely or in pairs. During foraging they restricted their movements in area rich of crops, weeds, grains and seeds.

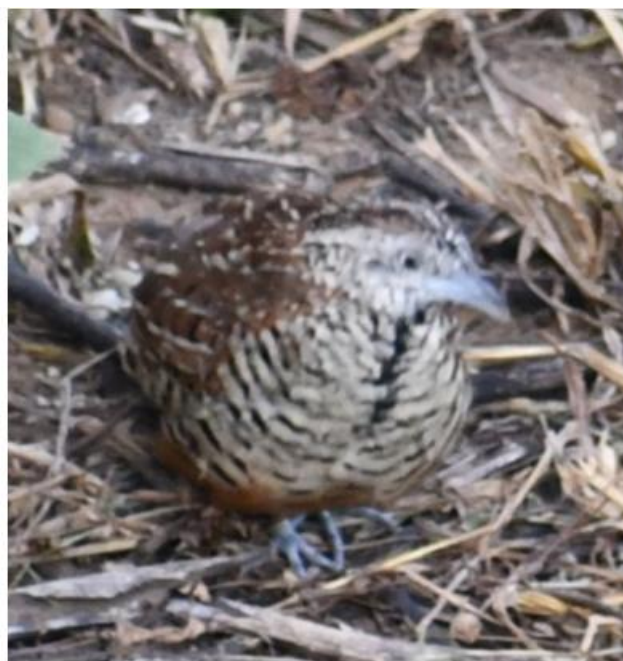


Grey Francolin during Foraging

- d) **Seasonal variations:** Due to shy nature of the grey francolin it can't see easily, grey color of body is similar to surrounding environment so it is difficult to observe this bird. In these circumstances calling of this bird is key feature to observe its presence. Calling of this bird are of two types mainly "Teu-Teu-Teu" and "kitila-kitila – kitila". On the basis of data of recorded calling and direct observation it is assumed that the grey francolin shows seasonal variations in its population. This seasonal variation is due to availability of food, water and shelter. In March-April and post monsoon season maximum
- population density can be seen as it is breeding season of grey francolin which also impacts on seasonal variations in numbers.
- e) **Breeding-**The breeding season is March-April and September-October. During breeding Seasons callings are increased in frequency and much lauded. Nest of grey francolin can be seen under bushes and are of crude type clutch size is 6 to 8 eggs. Eggs are whitish-grey in color. Chicks are dark grey in color and feeds actively in grasses area. A female with chicks can be seen easily during foraging.



Nest with hatched Egg



Chick of Grey Francolin

## 6. Conclusion

On the basis of various aspects, it can be assumed that occurrence of grey francolin in Churu district. It is due to its semi-arid nature, geographical structure and availability of food in this region. Poaching hazards, habitat destruction, increase use of pesticide make are major factors, which affects its population.

## 7. Future Scope

There are needs to more study about this bird in Churu district so that clear assumptions can be made.



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