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RESEARCH ARTICLE

ROOSTING ECOLOGY OF GREY FRANCOLIN (*FRANCOLINUS PONDICERIANUS*) IN SALT RANGE, PUNJAB, PAKISTAN

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ABSTRACT

The roosting habit of Grey Francolin (*Francolinus pondicerianus*) was studied in cultivated as well as in forest habitats in Salt Range, Punjab, Pakistan. Roosting trees and shrub were identified in the study area, these includes *Acacia modesta*, *Acacia nilotica*, *Dilbergia sisso* as tree species and a shrub *Zizyus jujuba*. The study showed that grey francolin mostly roosts on *Acacia modesta* tree which indicates the association of this species with this tree. It usually roosts before the sunset and departure take place before sun rise. The time spent in roosting observed was lied between 6-10 hours depending upon sunset or sunrise. It was also observed that female grey francolin with chicks prefer low height tree for roosting as compared to female without chicks. Both male and female sited on same time and prefer same height of tree from ground for roosting and have habits to roosts in coveys or group form. Similarly no difference observed in departure time between male and female of this species.

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INTRODUCTION

Grey francolin (*Francolinus pondicerianus*), is a medium-sized game bird, found in open, dry and arid parts of the Asia (IUCN 2013; Roberts 1991): Pakistan, south-eastern Iran, India, Bangladesh and northern Sri Lanka. It is listed as Least Concern on IUCN Red List, one of the reason behind this is that it has a wider distribution range (del Hoyo 1994; Birdlife International 2012). In Pakistan, Grey francolin is distributed from the west of Indus valley to south of the foothills of Himalayas (Roberts 1991). It is rarely found above an elevation of 1200 m in Pakistan and usually found feeding on bare soil or low grass cover in open and scrub country (Rasmussen and Anderton 2005). It is an excellent game and delicious table bird, also used as a cage and fighting bird (Khan 1997). They are generally found in open farmlands as well as in small woodland forests where shrubs are dominant (IUCN 2013; Birdlife International 2012). It is also reported to inhabit wide array of arid habitats from semi-desert grasslands and thorny scrub to tropical thorn forests, sometimes also found in frequent cultivation areas and villages (de Hoyo et al. 1994). It is generally found below 610 m but occasionally as high as 1400 m (Roberts 1991). They may roost at night on low thorny branches of trees or shrubs in pairs or family groups called "coveys" and have camouflaging plumage to live in vegetation that is not so dense (Sharma 1983; Roberts 1991).

The Grey francolin is omnivorous in feeding habits (Chaudhary and Bhatti 1992). Grey francolins form a monogamous pair bond, but females do all the incubation. Both parents tend the chicks after hatching (Roberts 1991). Grey francolin as an indicator species for farmland ecosystems and decline in its population has been reported in the past (Chaudhary and Bhatti 1992; Islam 1999). Increased use of pesticides due to agriculture expansion and habitat degradation can be cited as main causes behind its decline. A rapid decline in its natural habitat has been reported by Roberts (1991), through its food loss, excessive predation, habitat destruction, intensification of agricultural practices and pressure on scrub forests for use as fodder, timber wood and fire wood needs. Keeping in view the declining trend in population of grey francolin, the current study was conducted in Salt Range, one of the major areas of its distribution in Pakistan. This study generated information about roosting habit of grey francolin in different habitat types in the Salt Range.

MATERIALS AND METHODS

Study Area

The study was conducted at Chumbi Surla Wildlife Sanctuary and Diljabba- Domeli Game Reserve located in the Salt Range. The Salt Range is an east-west trending thrust front about 175 km long in northern Punjab consisting of Jhelum, Chakwal, Khushab and Mianwali districts (King and Vincent 1993). It extends between 32°41' - 32°56' N and 71°50' to 74°E (Awan 1998).

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A reconnaissance survey was conducted to select the study sites (depending upon occurrence of Grey francolin and accessibility of area) within two study area of Chumbi Surla Wildlife Sanctuary and Diljabba- Domeli Game Reserve as representatives of the Salt Range.

Methodology

The study was conducted from 2011-2013. Rootings trees were identified when the grey francolin seen departure in early morning or climbed on the trees in late evening or by the presence of droppings under the tree or leaves / or feathers under the tree. Night surveys were done twice after sunset in a month with a torch light to observe the roosting behavior at night. Tree height was estimated directly with measuring tape and tree species selected for the roosting were recorded.

RESULTS

The roosting habit of Grey Francolin (*Francolinus pondicerianus*) was studied in cultivated as well as in forest habitats of Chumbi Surla Wildlife Sanctuary and Diljabba-Domeli Game Reserve in Salt Range. Roosting trees and shrub were identified in the study area. Tree species recorded during study were *Acacia modesta*, *Acacia nilotica*, *Dilbergia sisso* and a single shrub species used for roosting by grey francolin was *Zizypus jujuba* (Table 1).

It was also observed that female grey francolin with chicks prefer low height tree for roosting as compared to female without chicks. Both male and female sited on same time and prefer same height of tree from ground for roosting and have habits to roosts in coveys or group form (Fig. 1). Similarly no difference observed in departure time between male and female of this species. One of the interesting observation was made during study as one group consist of three grey francolin was found roosting along roadside instead of on any vegetation (Fig. 2).

DISCUSSION

Results of current study revealed the fact that Grey francolin roost at night, and during day time remains busy in feeding or doing rest. Grey francolin usually roosts before the sunset and departure take place before sun rise or slightly after sunrise. These findings are supported by Sharma (1983) and Roberts, (1991), who observed that grey francolin rests during the daylight, usually on the ground in dense vegetation consisting of reeds grass clumps; tamarisk thickets and cultivated crops (such as legumes, wheat, cotton, mustard, barley and sugarcane) near water and roosts at night. Tree species used for roosting were; *Acacia modesta*, *Acacia nilotica*, *Dilbergia sisso* and a shrub species used for roosting by grey francolin was *Zizypus jujuba*.

Table 1. Selected Sites for Study of Grey Francolin in Salt Range

Study Sites	Location	Habitat Type	Elevation	Coordinates		Number of Birds seen in roosting and Plant Species	Plant Species
CSWS	Dhok shela	Natural Forest	697m	32° 47.869 N	72°48.659 E	5	<i>Acacia modesta</i> , <i>Acacia nilotica</i> , <i>Zizipus jujuba</i>
	Subedara wali mori	Cultivated Field	708m	32° 47.775 N	72° 48.582 E	7	<i>Acacia modesta</i> , <i>Zizipus jujuba</i> <i>Dilbergia sisso</i>
DDGR	Pathial Pahar	Natural Forest	395m	32 °50.131 N	73 °16.053 E	6	<i>Acacia modesta</i> , <i>Zizipus jujuba</i>
	Nathoot	Cultivated Field	402m	32° 52.131 N	73 °13.163E	5	<i>Acacia modesta</i> , <i>Acacia nilotica</i> ,



Figure 1. Grey Francolin after departure from roosting in Salt Range

The study showed that grey francolin mostly roosts on *Acacia modesta* tree which indicates the association of this species with this tree. It usually roosts before the sunset and departure take place before sun rise. The time spent in roosting observed was lied between 6-10 hours depending upon sunset or sunrise.

It was also observed that female grey francolin with chicks prefer low height tree for roosting as compared to female without chicks. Both male and female sited on same time and prefer same height of tree from ground for roosting and have habits to roosts in coveys or group form.



Figure 2. Grey Francolin found in roosting along roadside in Salt Range

Similarly no difference observed in departure time between male and female of this species. According to Sharma (1983), grey partridge may roost at night on low thorny branches of trees or shrubs in pairs or family groups called “coveys” and have protective body color to live under less cover. It lives singly or in scattered pairs and parties of 3-5 individuals. Similarly, Sangha (1987), found in India that Grey partridge roost in groups in low thorny trees. At night roosts on small trees like *Dilbergia sisso* (shisham) and *Acacia nilotica* (babul). Study on roosting ecology of several birds shows that they prefer to live in gathering, particularly before and during breeding season to access the good quality and quantity of food (Mahabal 1993).

One of the interesting observation was made during present study, as one group consist of three grey francolin was found roosting along roadside on ground instead of on any vegetation. These results are supported by findings of Roberts (1991), who showed that Grey Francolins roost in shrubs and low trees, often on edge branches, occasionally roosting on the ground in areas with little or no tall vegetation. In conclusion, the results from this initial study could be the basis for a better understanding of roosting habit and habitat of grey francolin. This study emphasizes the need for further detailed research into the different aspect of Grey francolin for long term monitoring of declines at different scale so, that it would be helpful in conservation of this precious bird in Salt Range.

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