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## Ecological role of Indian robin (*Saxicoloides fulicatus*) in agricultural insect management

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### Abstract

In present study an effort has been made to document the Ecological role of a passerine bird the Indian Robin (*Saxicoloides fulicatus*). This bird species is member of Muscicapidae family. Indian Robin is a territorial and non-migratory bird, mostly found in scrub forests, rocky areas, open grasslands and near human habitation. The bird is often seen running on the ground for searching food and always perching on rooftops, shrubs, trees, and backyard of home for singing and territory marking. It is a common garden bird, and its foraging sites are mainly grassland, shrubs, and human associated places. Indian Robin is mostly an insectivorous species of bird but, it also feeds on food grains, rice, and pulses. The Indian Robin feeds on insects and could help in controlling the population of insects, minimizing the use of insecticides and pesticides in agriculture for insect control and help in conservation of innocence of the environmental aspects. The birds are good Indicators of environmental changes. This insectivorous species Indian Robin could play key role in agriculture for insect control. The bird could indirectly help human beings with stopover insect born disease. By feeding on insects, the bird favors the mankind to overcome health hazards in a positive manner. This research paper is based on authors' field observation, in which they observed the role of insectivorous bird Indian Robin in stabilizing agro-ecosystem in eco-friendly manner.

**Keywords:** Ecological, insectivorous, agro-ecosystem, eco-friendly, bio-indicator

### Introduction

The Indian Robin (*Saxicoloides fulicatus*) is a species of bird distributed throughout the country in all climatic zones. It is a wide spread resident bird in India and there exists some different subspecies on the basis of minor differences in size and colouration of back (Ali and Ripley 1987) <sup>[1]</sup>. They are commonly found in open scrub areas, grasslands and often seen running along the ground or perching on low thorny shrubs, rocks, and rooftops. The males of the Northern subspecies have brown backs while the males of the Southern subspecies having all black backs. The bird has long tail that is usually held up and exhibits the chestnut under tail coverts. This unique appearance makes them easily distinguishable from other birds. The Indian Robin is a sexually dimorphic bird. The male bird is mainly black with a white shoulder patch or stripe and has chestnut under tail coverts. These under tail coverts are visible as the bird raises the tail upright. The female bird is slightly different from male, have brownish upper part and greyish lower part but, no white stripe on shoulders. Below part of female body with the vent a paler shade of chestnut than the males. They are mainly found in dry habitats and are mostly absent from the thicker forest regions and high rainfall areas. All populations of these birds are non-migratory, territorial and resident. The species is often found near the human habitation. The Indian Robin is an insectivorous species which is a resident breed. We can call them fearless birds, as once they found food they become the regular visitors of our dining table. Mainly they are insectivorous in nature but we found that they also enjoy in taking food grains like cooked rice, and pulses (Das K *et al.* 2017) <sup>[3]</sup>.

### Research Methodology

The present study deals with Ecological role of insectivorous bird Indian Robin and is completely based on field observations. For the data collection daily field observations of 7 to 8 individuals were done with Olympus Binocular 10x50 and Canon EOS M50 Mark II Mirrorless Camera. Scan sampling, Focal sampling.

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All Occurrence sampling, One-Zero sampling, and Ad Libitum sampling were used during the observation of habitat selection, territory marking and feeding behaviour of the bird at two sites Gajner (27.9468° N, 73.0527° E) and Darbari (27.9758° N, 73.1068° E) in Bikaner (28.0229° N, 73.3119° E)

region of Thar Desert by regular field visits in the morning. Additionally, reports and research articles of previous authors were consulted, and their observations were compared with the present study for conclusion.



**Fig 1:** Female Indian Robin Feeding on Insect



**Fig 2:** Male Indian Robin Feeding on Insect



**Fig 3:** Male Indian Robin Feeding on Insect



**Fig 4:** Female Indian Robin Feeding on Insect



**Fig 5:** Male Robin Bird Feeding on Chapati



**Fig 6:** Female Robin and her Juvenile on Rice



**Fig 7:** Female Robin Bird Feeding on Grains



**Fig 8:** Male Robin Bird Drinking Water

### Study Area

#### Gajner (27.9468° N, 73.0527° E)

Gajner is an artificial lake, in the Gajner Wildlife Sanctuary located at a distance of about 32.0 km (19.9 mi) from Bikaner district of Rajasthan. It is an area that provides habitat to many animals as well as birds. At this site many water birds and other migratory and native birds can be seen.

#### Darbari (27.9758° N, 73.1068° E)

Darbari lake is also an artificial lake situated 33 km far away from Bikaner city. It has Rich Biodiversity. Many migratory

and non-migratory birds can be seen here. It is a Hotspot area for birding.

### Results and Discussion

Indian Robin is an insectivorous bird and resident breed. These birds were observed foraging on ground and feeds mainly on insects. Besides, some birds also took grains, rice and pieces of chapati. As per the data collected it was concluded that, 68% of birds were feed on insects, 16.5% of birds were feed on grains, rice, chapati, and 26.5% of birds were caught insects as well as took grains and rice etc. It

seems that this insectivorous species could help in controlling the population of insects by feeding on them and minimize the use of insecticides and pesticides in agricultural lands for killing insects. The insectivorous species are good bio-indicators in the agro-ecosystem and check the buildup of insect pest species and indirectly control their population. This sparrow sized bird also observed to feed on insects and other small invertebrates. According to some studies it was noted that they feed mostly on insects but are known to take frogs and lizards especially when feeding young at the nest. Some individuals of species were forage late in the evening to capture insects attracted to lights and some were observed flying tree to tree for eating insects. On the other hand, the bird could indirectly help human beings with stopover insect born disease and also saves agricultural yield from being destroy by insects. By feeding on insects the bird favors the mankind to overcome health hazards in positively manner.

### Conclusion

The insectivorous and predatory birds are pondered useful to agriculture and ecosystem since they play an important role in suppressing the population of insect and rodent pests, but there exists a dearth of studies to explore the role of birds in agriculture. The abundance and presence of insectivorous bird species is mainly associated with the vegetation structure or type and composition of an agro-ecosystem. Expansion of agriculture has resulted in the blooming of agro-ecosystem as more important and managed terrestrial ecosystem. Birds choose any habitats over others as the resources in the environment are not uniformly or constantly allocated. Variations in any habitat determines the richness of a species at one location and deficiency at another location. The ecological role of the bird is significant to the environment as the bird acts as natural indicator of rapid changes in surroundings. The bird is beneficial to ecosystem and agricultural needs and helps in maintaining and stabilizing the food chain. There are more possibilities such as eradication of insects by the bird, the population of insects will remain in control and mankind will obtain a healthy environment.

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