

RESEARCH ARTICLE

Studies on farmland avian diversity with special reference to importance of hedges in conserving farmland bird diversity.

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ABSTRACT

Agricultural ornithology aims at obtaining scientific information on birds in relation to agriculture and using this information for their management. Most of bird species play a useful role in agriculture by having a potent check on insect and rodent pests. The paper deals with the research work carried out in an Agricultural field near Akot city (Latitude 21°06'N, 77°06'E Longitude) of Maharashtra state. Birds were surveyed in the agricultural field and in the adjoining hedges with the help of binocular once in a week. Total 64 bird species were observed during the study span. The study revealed that there is a difference in bird richness and diversity between the habitats of agro-ecosystem in the study area. Hedges provide important nesting, feeding and sheltering sites for birds in agricultural areas.

Key Words - Agricultural ornithology, Hedges, Pest Control.

INTRODUCTION

Agricultural ornithology may be defined as the science of birds in relation to agriculture. Alternatively, it may be taken as ecology and management of birds in agro-ecosystems. Avian management includes both conservation of useful species and control of pest birds. Birds constitute an important component of agro-ecosystems. The dual role of birds in agriculture is very well known (Ali, 1949, 1971). Birds are the key species in an agricultural ecosystem for maintaining the ecological balance (Haslem and Bennett, 2008). Their positive and negative roles in agriculture production were very well illustrated (Ali, 1949 and 1971) Hedges are more than just lines of shrubs. They usually have some sort of herbaceous growth at or near the base and many contain mature trees. Hedgerows are important landscape elements for birds in agricultural areas by providing nesting sites, feeding resources and shelter (Hinsley and Bellamy, 2000). Research work had carried out in a Agricultural field of about four hector near Akot city (Latitude 21°06'N, 77°06'E Longitude) of Maharashtra state. Field had Jute and cotton crop which were separated by thick hedgerows.

MATERIAL AND METHODS

The farmland bird diversity was studied for a period of one year from 2012 to 2013. To study the avifaunal diversity 'Complete Census Method' (Whitworth *et al.*, 2007) was used. During study birds were observed weekly while walking in the field, with the help of binocular (Olympus 10x50) and identified up to species level using physical features with the aid of Keys Ali (1996); Ali and Reply (1987); Grimmett (2000). Birds just flying over were not included in the study. Birds were also recorded in hedges. The species of the birds encountered during each visit were enlisted and other details like abundance of the birds and their status was also recorded. Feeding habits of the birds were observed at different times of the day. In some cases individual birds were observed continuously from a vantage point to understand its' feeding mode. The abundance and the status of species are based on the Checklist of Birds of Maharashtra (Abdulali, 1972).

RESULT AND DISCUSSION

During the study span, 64 bird species belonging to 34 different families were observed. Their family-wise list depicting common as well as scientific names, status, and abundance and feeding habits is given in table1. Rose-ringed parakeet, blue rock pigeon and House crow were the tree most common species in the agricultural field. Most of the birds were recorded in or near hedges. Batary *et al.*, (2010) reported that increasing hedge length enhanced significantly the number of species. This study also shows that hedge length has a stronger effect on bird richness than management. Benton *et al.*, (2003) supported that the increasing length of hedges enhances birds in conventional fields too. Therefore, bird conservation in intensively used agricultural landscapes should concentrate on hedges or green lanes.

Many birds like Red-vented Bulbul (*Pycnonotus cafer*), Large Grey Babbler (*Turdoides malcolmi*), Jungle Babbler (*Turdoides striata*), Ashy Prinia (*Prinia socialis*), Common Tailorbird (*Orthotomus sutorius*), Oriental Magpie Robin (*Copsychus saularis*), Indian Robin (*Saxicoloides fulicatus*) found nesting in hedge rows during the study. There was also the occurrence of brood parasitism by Asian Koel (*Eudynamis scolopaceus*). Though hedges provide good nesting sites, farmland birds may also face higher nest predation due to higher nest densities. Similar opinion

was expressed by Newton, (1998). Preference for hedges can be explained by the higher resource availability for birds, such as nesting and sheltering sites and food in agricultural areas. Hinsley and Bellamy, (2000) also concluded the same.

Not all farmland species use hedges, like Red-wattled lapwing (*Vanellus indicus*), actively avoiding them as they prefer more open areas as they are ground nesters. Jute plantation was severely affected by Lepidopteron pest which was the food of many birds like Indian Roller (*Coracias benghalensis*), Red-vented Bulbul (*Pycnonotus cafer*), Large Grey Babbler (*Turdoides malcolmi*), Jungle Babbler (*Turdoides striata*), Ashy Prinia (*Prinia socialis*), Common Tailorbird (*Orthotomus sutorius*), Oriental Magpie Robin (*Copsychus saularis*), Indian Robin (*Saxicoloides fulicatus*). All these insectivorous birds played very useful role in controlling insect pest in Jute as well as Cotton crops. Presence huge number of birds in this agricultural field was found to be useful for controlling the crop pest as the crop was not food of any bird.

Cutting of hedge rows was done which dwindled the bird diversity in this field. Complete removal of hedges destroyed their roosting and nesting sites. Lack (1987), also noticed that hedge cutting has a severe effect on bird diversity. Kuchler and Walter (2007), has observed excessive hedge cutting and even complete removal in early spring in more than half of their studied landscapes.

CONCLUSION

It is concluded from the study that hedges provide important nesting, feeding and sheltering sites for birds in agricultural areas so that hedges are important in conserving avifaunal diversity of farmland. Hedge length had the strongest positive effect on bird diversity, so providing more hedgerows and carefully managing them, can significantly contribute to the conservation of farmland birds. Most of the birds looked for their food in the agricultural field and made the hedges their resting and breeding place. The highest diversity of birds was due to more diversity of plants which gives more choice for the food preference of the bird species. The considerable numbers of bushes and plants at the boundary of agricultural land accommodate the large number of bird's population. Thus planting trees in agricultural lands and well managed hedges can increase the bird diversity. Large scale cutting of hedges should be

avoided to maintain the avifauna of agricultural landscapes.

Rose-ringed parakeet is probably the only species that seems to be exclusively harmful to agriculture, particularly for horticulture. House crow and blue rock pigeon have also been considered to be harmful. House sparrow, Little Brown Dove and Baya weaver bird have a neutral status in relation to agriculture while a large majority of the species in the agricultural bird communities are useful. It is well known that insectivorous and predatory birds play a very useful role in controlling insect and rodent pests of crops. Presence huge number of birds in this agricultural field is eco-friendly and useful for controlling the pests on the crop so, hedgerows must be saved to conserve the farmland bird diversity. Hedges should be maintained properly and not allowed to become invasive thereby reducing the utilizable area of the field.

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