Biological Forum
an International Journal (SI-AAAS: CS March 21&22, 2025)
17(5a): 16-18(2025)
ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Role of Dairy Farm in Offering Foraging and Nesting Ground to Avian Species

Ishamjeet* and Tejdeep Kaur Kler
Department of Zoology, Punjab Agricultural University, Ludhiana (Punjab), India.

(Corresponding author: Ishamjeet)*
(Received: 30 March 2025; Accepted: 26 April 2025; Published online: 14 May 2025)
(Published by Research Trend)

ABSTRACT: Dairy farming is an important aspect of agriculture and have significant effect on environment. Present study was carried out in dairy farm of GADVASU, Ludhiana for two consecutive years from April 2022 to March 2024, to record the diversity, foraging and nesting activities of bird species. A total of 35 avian species belonging to 13 orders and 24 families were recorded during the study period. Order Passeriformes was the most dominant and diverse order representing 12 species and constitute 34.29% of the total observed species, followed by Pelecaniformes and Columbiformes which constitutes 11.43% each. Alexandrine Parakeet observed in present study has been categorized as 'near threatened' species according to Red Data Book of IUCN. Observed species represents six feeding guilds *viz*., Omnivores (28.57%), Insectivores (28.57%), Carnivores (17.14%), Granivores (14.29%), Frugivores (8.57%), and Nectarivores (2.86%) and were seen feeding on ground, around cattle fodder and cattle, and vegetation of dairy farm. Nesting activities of Cattle Egret, Common Myna, Purple Sunbird, Red-wattled Lapwing, and Rose-ringed Parakeet were recorded in the study area.

Keywords: Agriculture, Avian species, Dairy farm, Foraging, Nesting.

INTRODUCTION

Birds are one of the most crucial animal species for maintaining systems in balance (Joshi and Shrivastava 2012). At the present time, agriculture has an important impact on the environment because it contributes significantly to climate change, since milk production worldwide accounts for roughly 27% of the added value of the production of livestock, the dairy industry is crucial to the agricultural sector (Grassauer *et al.*, 2022). Biodiversity is necessary for agro ecosystems to work effectively, more biodiverse systems are thought to have a higher potential for absorbing and recovering from perturbation, which is known as resilience (Fischer *et al.*, 2006). Diverse ecosystems provide functions that are crucial to the production of commodities, including decomposition, nitrogen fixation, pest control, and pollination (Mondot *et al.*, 2007). In order to maintain human well-being on Earth, biodiversity which includes diversity among the species, across species, and of ecosystems is important (Methorst, 2024). The conservation of birds is seriously threatened by agricultural intensification. A variety of habitats that are beneficial to native birds foraging over generally simplified landscapes may be promoted by highly diverse agricultural systems that combine the production of crops and livestock (Smith *et al.*, 2020). Combining the production of crops and cattle is one agricultural diversification strategy that might benefit wild birds (Salek *et al.*, 2017). Present study was conducted to find the potential of dairy farm to support avian diversity and nesting.

MATERIAL AND METHOD

Present study was conducted in the dairy farm at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana for two consecutive years from April 2022 to March 2024, to record the diversity, foraging and nesting activities of bird species. Performa for conducting the research was approved by Directorate of Livestock Farm, GADVASU, Ludhiana under serial no. 1242 dated 29/06/2022. Relative abundance of bird species visiting the study area was recorded using point count method (Verner, 1985) and observed species were also photographed by Canon EOS 1200D. Avian species were identified using morphological characters as described by Ali (2002). Collected data was organized in three seasons i.e. summer (March-June), monsoon (July-October), and, winter (November-February). A list of the recorded avian species was prepared along with their appropriate classification by using checklist prepared by Praveen *et al.* (2016). The feeding and foraging habits of the visiting bird species was also investigated (Bell and Ford 1990).

RESULTS AND DISCUSSION

Dairy farming is an important part of agriculture in India. Wild birds may benefit from mixed livestock and crop production since it diversifies different kinds of habitat on the farm (Benton *et al.*, 2003). Present study

recorded 35 avian species belonging to 13 orders and 24 families in the study area during the period of the study. Order Passeriformes was the most dominant and diverse order representing 12 species and constitute 34.29% of the total observed species, followed by Pelecaniformes and Columbiformes which constitutes 11.43% each. Table 1 showing the list of observed avian species with their respective order, family, foraging and nesting activities. Statistically non-significant difference in relative abundance of bird species in the summer, rainy and winter season was recorded through one way-ANOVA. Maximum species were observed in monsoon season (28), followed by summer (25), and winter season (24). Study on use of ponds of dairy farms by avian species was conducted by Bélanger *et al*. (2021) and found 46 bird species in the study areas. 26 species of birds was reported by Grewal *et al.* (2023) from the cattle sheds of Ludhiana district (Punjab), most of the identified bird species were of grassland habitat. All the recorded species belongs to 'least concern' category except Alexandrine Parakeet which belongs to 'near threatened' category according to Red Data Book of IUCN. Recorded species belongs to six feeding guild i.e. Omnivores (28.57%), Insectivores (28.57%), Carnivores (17.14%), Grainivores (14.29%), Frugivores (8.57%), and Nectarivores (2.86%) and were seen feeding on ground, around cattle fodder and cattle, and vegetation of dairy farm (Fig. 1). Grain-based diets for livestock and fecal-associated insects are two additional sources of food that dairy farms offer (Evans *et al*., 2006; Carlson *et al.*, 2015). But there may be problems associated with cattle integration if it causes wild birds to change toward omnivores and granivores that harm crops or carry human intestinal infections that may contaminate fresh goods (Hald *et al.*, 2016; Dross *et al.*, 2018).

Table 1: Foraging and nesting activities of bird species observed in study area.

Order	Family	Species Name	Scientific name	Foraging activites	Nesting activites
Accipitriformes	Accipitridae	Black Kite	*Milvus migrans*	Perching on trees and soaring over the sky	-
		Shikra	*Accipiter badius*	Perching on trees	-
Bucerotiformes	Upupidae	Common Hoopoe	*Upupa epops*	Perching on wires to locate insects	-
	Bucerotidae	Indian Grey Hornbill	*Ocyceros birostris*	Use vegetation of dairy farm	-
Charadriiformes	Charadriidae	Red-wattled Lapwing	*Vanellus indicus*	Probing soil and use cattle fodder	Nesting observed on ground
Columbiformes	Columbidae	Eurasian Collared Dove	*Streptopelia decaocto*	Pecking at spilled grains, and cattle fodder	-
		Laughing Dove	*Streptopelia senegalensis*	Pecking at spilled grains	-
		Rock Pigeon	*Columba livia*	Pecking grains	-
		Yellow-legged Green Pigeon	*Treron phoenicopterus*	Foraging in trees and occasionally on spilled grains	-
Coraciiformes	Meropidae	Green Bee-eater	*Merops orientalis*	Perching on wires to capture insects	-
	Coraciidae	Indian Roller	Coracias benghalensis	Perching on wires to capture insects	-
Cuculiformes	Cuculidae	Greater Coucal	*Centropus sinensis*	Foraging on ground	-
Galliformes	Phasianidae	Indian Peafowl	*Pavo cristatus*	Foraging on ground	-
Gruiformes	Rallidae	White-breasted Waterhen	*Amaurornis phoenicurus*	Foraging on ground	-
Passeriformes	Cisticolidae	Plain Prinia	*Prinia inornata*	Foraging on trees	-
		Common Tailorbird	*Orthotomus sutorius*	Gleaning insects from the vegetation	-
	Corvidae	Rufous Treepie	*Dendrocitta vagabunda*	Use vegetation to capture insects	-
		House Crow	*Corvus splendens*	Ground feeding, use cattle fodder and vegetation. Also scavenging animals carcasses	-
	Dicruridae	Black Drongo	*Dicrurus macrocercus*	Perching on various sites of dairy farm to capture insects	-
	Leiothrichidae	Jungle Babbler	*Turdoides striata*	Foraging on ground	-
	Muscicapidae	Indian Robin	*Saxicoloides fulicatus*	Foraging on ground and trees	-
	Nectariniidae	Purple Sunbird	*Cinnyris asiaticus*	Use vegetation of dairy farm	Nesting observed on *Morus alba*
	Pycnonotidae	Red-vented Bulbul	*Pycnonotus cafer*	Use vegetation of dairy farm	-
	Sturnidae	Bank Myna	*Acridotheres ginginianus*	Foraging on ground and near cattle fodder	-
		Common Myna	*Acridotheres tristis*	Foraging on ground, near cattle fodder and use vegetation	Nesting observed on *Melia azedarach*
		Asian Pied Starling	*Gracupica contra*	Foraging on ground and vegetation	-
Pelecaniformes	Ardeidae	Cattle Egret	*Bubulcus ibis*	Foraging on ground, around cattle and cattle fodder to capture insects	Nesting heronry observed on *Ficus virens*
		Indian Pond Heron	*Ardeola grayii*	Ground feeding	-
		Little Cormorant	*Microcarbo niger*	Ground feeding	-
	Threskiornithidae	Indian Black Ibis	*Pseudibis papillosa*	Ground feeding	-
Piciformes	Ramphastidae	Brown-headed Barbet	*Psilopogon zeylanicus*	Consuming fruits from the vegetation of dairy farm	-
	Picidae	Lesser Golden-backed Woodpecker	*Dinopium benghalense*	Use trees to capture insects	-
Psittaciformes	Psittaculidae	Alexandrine Parakeet	*Psittacula eupatria*	Consuming fruits from the vegetation of dairy farm	-
		Rose-ringed Parakeet	*Psittacula krameri*	Consuming fruits from the vegetation of dairy farm and use cattle fodder	Nesting observed on *Melia azedarach*
Strigiformes	Strigidae	Spotted Owlet	*Athene brama*	Perching on trees	-

It also offers additional source of nesting to avian species (Hiron *et al*., 2013; Salek *et al*., 2017). Nests of Cattle Egret, Common Myna, Purple Sunbird, Red-wattled Lapwing, and Rose-ringed Parakeet were recorded in the dairy farm because the vegetation of the study area provides nesting sites to the birds. Recorded tree species in the present study were, *Alstonia scholaris* (Satpattiya), *Azadirachta Indica* (Neem), *Cassia fistula* (Amaltas), *Delonix regia* (Gulmohar), *Ficus benghalensis* (Banyan), *Ficus religiosa* (Peepal), *Ficus virens* (Pilkhan), *Grevillea robusta* (Silver Oak), *Mangifera indica* (Mango), *Melia azedarach* (Dhek), *Morus alba* (Mulberry), *Phyllanthus emblica* (Gooseberry), *Syzygium cumini* (Jamun), and *Terminalia arjuna* (Arjun).

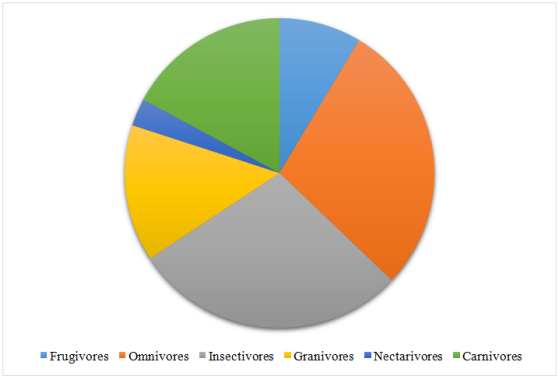

Fig. 1. Percentage of birds belonging to different feeding guild.

CONCLUSIONS

Present study concluded that dairy farm provides variety of food options to avian species as birds of different feeding guilds were recorded in dairy farm during the study period. Nesting of birds in the study area showed that the vegetation of the dairy farm also provide breeding opportunities to avian species.

FUTURE SCOPE

Further research is needed in rural areas of India to identify the potential of dairy farms in conservation of bird species.

REFERENCES

Ali, S. (ed) (2002). *The Book of Indian Birds*. Oxford University Press, New Delhi. pp 1-314.

Bélanger, L., Maisonneuve, C. and Rodrigue, J. (2021). Avian use of dairy farm ponds and landowners' perceptions of their management for wildlife conservation. *Birds*, *2*(4), 476-491.

Bell, H. L. & Ford, H. A. (1990). The influence of food shortage on inter-specific niche overlap and foraging behaviour of three species of Australian warblers (Acanthizidae). *Studies in Avian Biology*, *13***,** 381-388.

Benton, T. G., Vickery, J. A., & Wilson. J. D. (2003). Farmland biodiversity: is habitat heterogeneity the key? *Trends in Ecology and Evolution*, *18*, 182-188.

Carlson, J. C., Hyatt, D. R., Bentler, K., Mangan, A. M., Rus sell, M., Piaggio, A. J. and Linz. G. M. (2015). Molecular characterization of Salmonella enterica isolates associated with starling–livestock interactions. *Veterinary Microbiology*, *179*, 109-118.

Evans, D. M., Redpath, S. M., Evans, S. A., Elston, D. A., Gardner, C. J., Dennis, P. and Pakeman. R. J. (2006) Low intensity, mixed livestock grazing improves the breeding abundance of a common insectivorous passerine. *Biology Letters*, *2*, 636 638.

Grassauer, F., Herndl, M., Nemecek, T., Fritz, C., Guggenberger, T., Steinwidder, A. and Zollitsch, W. (2022). Assessing and improving eco-efficiency of multifunctional dairy farming: The need to address farms' diversity. *Journal of Cleaner Production*, *338*, 130627.

Grewal, H. K., Kler, T. K. and Sidhu, S. K. (2023). Exploring cattle sheds as complementary avifaunal habitat niches in rice dominated agricultural areas in Punjab, India. *Emirates Journal of Food and Agriculture*, *35*, 408-416.

Hald, B., Skov, M. N., Nielsen, E. M., Rahbek, C., Madsen, J. J., Wainø, M., Chriel, M., Nordentoft, S., Baggesen, D. L. and Madsen. M. (2016). Campylobacter jejuni and Campylobacter coli in wild birds on Danish livestock farms. *Acta Veterinaria Scandinavica*, *58*, 1-10.

Hiron, M., Berg, A., Eggers, S., Josefsson, J. and Part, T. (2013). Bird diversity relates to agri-environment schemes at local and landscape level in intensive farmland. *Agriculture, Ecosystems and Environment*, *176*, 9-16.

Joshi, P. and Shrivastava, V. K. (2012). Food habit and foraging behaviour of Cattle egret (*Bubulcus ibis ibis*) at Tawa Reservoir, Hoshangabad district (Madhya Pradesh). *International Journal of Environmental Biology*, *2*(4), 200-202.

Methorst, J. (2024). Positive relationship between bird diversity and human mental health: an analysis of repeated cross-sectional data. *The Lancet Planetary Health*, *8*(5), e285-e296.

Mondot, M., Blackwell, G. and Maegli, T. (2007). Baseline data on the diversity and abundance of selected bird species on conventional and converting organic dairy farms. In P*roceedings of the Conference-New Zealand Grassland Association*, 2007, New Zealand, 69, 245.

Praveen, J., Jayapal, R. and Pittie, A. (2016). A checklist of the birds of India. *Indian Birds*, *11*(5&6), 113-172.

Salek, M., Bazant, M. and Zmihorski. M. (2017). Active farm steads are year-round strongholds for farmland birds. *Journal of Applied Ecology*, *55*, 1908-1918.

Smith, O. M., Kennedy, C. M., Owen, J. P., Northfield, T. D., Latimer, C. E. and Snyder, W. E. (2020). Highly diversified crop–livestock farming systems reshape wild bird communities. *Ecological Applications*, *30*(2), e02031.

Verner, J. (1985). Assessment of counting techniques. In: *Current Ornithology*. Springer, Boston, MA. p 247-302.

How to cite this article: Ishamjeet and Tejdeep Kaur Kler (2025). Role of Dairy Farm in Offering Foraging and Nesting Ground to Avian Species. *Biological Forum*, *17*(5a): 16-18.