

EFFECT OF MULTIPLE ADJOINING HABITATS  
ON AVIFAUNAL DIVERSITY IN AN AGRICULTURE-BASED  
WETLAND ADJACENT TO THE HOOGHLY RIVER,  
WEST BENGAL, INDIA

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ABSTRACT

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This study was conducted on four plots having a cluster of different combinations of forest, wetland, and agricultural land, as well as a single marshland habitat near the river Hooghly. We obtained 17,817 counts for 150 species in 32 days of year-round sampling. The wetland-agricultural land associated with forest had the highest species diversity (132 species, Shannon  $\bar{H}$  – 1.63), heterogeneity (Shannon  $J'$  – 0.773), and number of unique species (33 species), and the lowest dominance (Simpson Index  $1/D$  – 39.35), in contrast with the marsh, which had the lowest diversity (41 species, Shannon  $\bar{H}$  – 1.39), highest homogeneity (Shannon  $J'$  – 0.863), and a lack of uniqueness. The plot with secondary forest patches between an agricultural field and human settlements showed the highest species dominance (Simpson's Diversity  $1/D$  – 17.465). Species rarity ranged from 68.2% to 77.6% within the area under study. There were 25 species common to all plots, which formed six distinct groups based on their abundance. Carnivores were found to be the dominant foraging guild throughout the habitats. Thirty-two per cent of the species are migratory, with the families *Scolopacidae* and *Motacillidae* predominating. The Jaccard and Sorensen indices reveal the greatest species similarity between the wetlandpisciculture plot and the marshland. These indices together with the hierarchical cluster analysis indicate the uniqueness of the plot of open forest habitat adjoining the wetland, which offers the best living conditions for migratory species. Our study concludes that when a wetland is surrounded by agriculture rather than fisheries, avifaunal diversity increases, whereas forest-associated wetland-farmland maximizes species richness with minimum dominance and hence imparts greater stability to the overall community structure.

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