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A Study on Impact of Runoff Water Pesticides on Pied Wagtail Population and Behaviour in Charkhi Dadri Area

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ABSTRACT: This study highlights a concerning decline in pied wagtail abundance during winters, likely due to prey scarcity and environmental stressors. Despite their adaptability in foraging behavior, the population trend suggests underlying ecosystem issues. As bioindicators, pied wagtails can provide valuable insights into field ecosystem health. We recommend prey surveys, pesticide residue monitoring, stakeholder engagement, habitat management, and long-term monitoring to conserve wagtail populations and promote ecosystem health. This study serves as a foundation for further research and conservation efforts, emphasizing the importance of interdisciplinary approaches to environmental conservation.

KEYWORDS: Pied wagtail, Conservation measures for birds, Effect of runoff pesticides on population

I. INTRODUCTION

Most of migratory birds change their food according to the availability during winters. Like warblers (Sylviidae) and flycatchers (Muscicapidae) change their diet to include more vegetable matter than insects. There may be a corresponding change in social behavior of birds according to the change in availability of food.

The pied wagtail (Motocilla alba) is an insectivorous bird and a partial migrant. Some of them even goes too far South of India.

This study attempts to relate the effect of runoff pesticides on population density and social and Feeding behavior of experimental bird species. It is very easy to observe the bird because they frequent open country throughout the day. Prior studies have documenteda rapid shift between territory and flocking in response to food resource distribution.

II. MATERIAL AND METHOD

Study area: The study area was Shahid Bhagat Singh sports Ground of Charkhi Dadri, Dhani Village, Court campus and CCI area of Charkhi Dadri.

Wagtails were observed from November 2022 to March 2023, daily and also once a week in the coming years up to 2025. Observations were also made in the surrounding fields of Charkhi Dadri Haryana, India . (Latitude and Longitude 28.592062, 76.265289)

These areas were selected for study as these are considered to be the list, disturbed places and birds regularly visit them during winters for feeding.

Data collection:

Avian survey was conducted using the point count method. Abundance status, relies on sighting frequency. Conservation status aligned with IWPA (1972) and CITES (2012), while the red list of the IUCN(2022) guided assessment for conservation status, global population trend

Residential status -winter visitor

Local status -U C

Conservation status -IUCN red list-list concerned

iWPA- 4

CITES -NA

Global population trend -declining

An average of 600 birds per day were recorded in season 2021 -2022. In season 2022-2023, reporting per day was 468 birds.

We counted the birds at a fixed time at a particular spotting site and repeated it every week. Then calculate the average data per season per location.

III. DISCUSSION

The present study seems to be the first of its kind on bird pied wagtail. Although other researchers reported a stable status of this bird. The present data show clear steep decline in the population of this winter visitor in Haryana. Local people also support this observation that now only scattered groups of Wagtail are seen in feeding grounds whereas up to 2020. This number was more than 1000 per day.

Wagtail feed and fly in flocks. Basically, the prime food of Wagtail is insects, so many reasons are suggested for the decline in population of this bird. Like indiscriminate use of pesticides to kill the insects by farmers. Further, the increasing amount of these chemicals in runoff water indirectly kill the non-target animals like snails, fish, birds (Rishi and Grewal,1995).

This study is also used as an investigative report of wagtail responses to environmental factors like climate change and their potential use as bio indicators of environmental health. (Zahavi, 2008).

Our study also tried to explore the impact of environmental factors like temperature and rainfall. Further breeding success of this bird, including arrival and going back dates also gives us some informative data to correlate with change in habitat and availability of food. Change in pattern of rain fall and increasing temperature compel the bird to return back early and bird also change the feeding grounds.

Urbanization of feeding grounds also has a negative impact on the arrival and survival of this bird (Davies,1976).

Our study further indicates that lack of awareness among common people about the habit and habitat of common birds further increases the risk on this sensitive bird. We should aware the common people and develop their interest in bio diversity.

Research on pied wagtail can contribute to broader efforts to understand and monitor their responses to environmental change.

IV. CONCLUSIONS

The study highlights a concerning decline in pied wagtail abundance during winters, likely due to prey scarcity and environmental stressors. Despite their adaptability in foraging behavior, the population trend suggests underlying ecosystem issues. As bioindicators, pied wagtails can provide valuable insights into field ecosystem health, making conservation efforts crucial.

Recommended Actions:

1. Prey surveys and monitoring: Regular surveys can help identify key prey species, their abundance, and distribution. This information can inform habitat management and conservation strategies.
2. Pesticide residue monitoring: Monitoring pesticide residues in the environment can help understand their impact on wagtail populations and ecosystem health. This can also inform sustainable agricultural practices.
3. Stakeholder engagement and outreach: Collaborating with farmers, local communities, and other stakeholders can promote sustainable practices, raise awareness about wagtail conservation, and encourage community-led conservation initiatives.

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4. Habitat management: Preserving and restoring natural habitats, such as grasslands and wetlands, can help maintain prey populations and support wagtail conservation.
5. Long-term monitoring: Continuous monitoring of wagtail populations and ecosystem health can help track the effectiveness of conservation efforts and inform adaptive management strategies.

By implementing these actions, we can work towards conserving pied wagtail populations and promoting ecosystem health. This study serves as a foundation for further research and conservation efforts, highlighting the importance of interdisciplinary approaches to environmental conservation.

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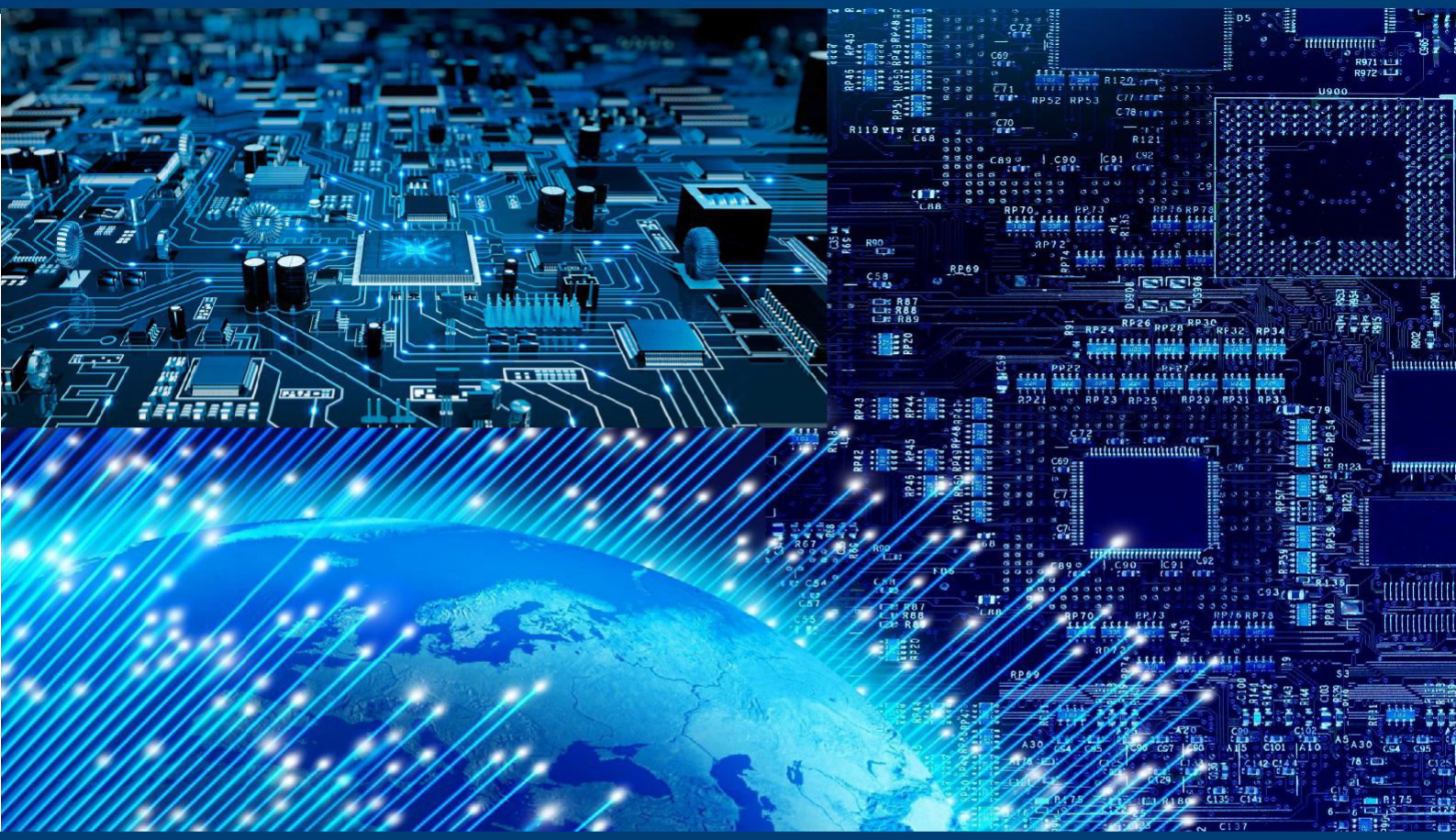

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