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REPORT OF FIVE INTERESTING AVIAN SPECIES FROM DURGAPUR ECOREGION, WEST BENGAL, INDIA BY CITIZEN SCIENCE EFFORT

Sagar Adhurya & Shantanu Bhandary

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REPORT OF FIVE INTERESTING AVIAN SPECIES FROM DURGAPUR ECOREGION, WEST BENGAL, INDIA BY CITIZEN SCIENCE EFFORT

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Abstract: This study aimed to report a few lesser known species from Durgapur ecoregion, West Bengal, India. In spite of the anthropogenic pressure, Durgapur supports a high avian diversity. So far, 257 avian species belonging to 59 families were recorded with a citizen science effort during a period of more than five years (2013–present). Out of these, five species discussed here, are either not recorded previously or have few records: Hume's Lark and Graceful Prinia were recorded from riverine habitat; and Lesser Racket-tailed Drongo, White-rumped Shama, and Indian Blue-Robin were recorded from woodland habitat. More extensive exploration of this region with involvement of citizen scientists in this study will enrich our knowledge about bird diversity, their migration and distribution pattern in this region.

Keywords: Anthropogenic activity, birds, drongo, lark, prinia, robin, shama.

Bengali abstract: এই প্রতিবেদনটির লক্ষ্য হলো ভারতের পশ্চিমবঙ্গ রাজ্যে অবস্থিত দুর্গাপুর জৈব-ভৌগোলিক অঞ্চলের কিছু তুলনামূলক ভাবে বিরল প্রজাতির পাখির উপর আলোকপাত করা। এই অঞ্চলে নগরায়নের জন্য দৈনন্দিন ভিত্তিতে প্রাকৃতিক সম্পদের ধ্বংস চলতে থাকলেও, দুর্গাপুরে পাখির বৈচিত্র্য এখনও বেশ ভালো। ২০১৩ সাল থেকে এখনও পর্যন্ত 'নাগরিক বিজ্ঞান' পদ্ধতিতে চলতে থাকা আমাদের সমীক্ষা অনুযায়ী দুর্গাপুরে মোট ৫৯-টি গোত্রের ২৫৭-টি প্রজাতির পাখি পাওয়া গেছে। পর্যবেক্ষিত পাখিগুলির মধ্যে, এখানে আলোচিত পাঁচটি পাখির এই অঞ্চলে উপস্থিতি সম্পর্কে ইতিপূর্বে খুব একটা ধারণা ছিলোনা। ছোট বাগেরী (হিউম্‌স লার্ক) ও মেছো ফুটকি (গ্রেসফুল প্রিনিয়া) নদীর অববাহিকা অঞ্চল থেকে; এবং ছোট ভীমরাজ (লেসার র্যাকেট-টেইলড ড্রঙ্গো), শ্যামা (হোয়াইট-রাম্পড শামা), নীল শ্যামা (ইন্ডিয়ান ব্লু রবিন) জঙ্গলাকীর্ণ অঞ্চল থেকে পাওয়া গেছে। ভবিষ্যতে আরও বিশদ গবেষণা এবং পক্ষিগবেষণায় আরও নাগরিক-বিজ্ঞানীদের যোগদান, এই অঞ্চলের পাখিদের সম্পর্কে আমাদের জ্ঞানভাণ্ডারকে আরও সমৃদ্ধ করবে।

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Author contribution: SA wrote the paper and performed all of the analysis. Both authors collected field data.

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INTRODUCTION

Durgapur is an industrial city in West Bengal, India. Geographically, it lies in the transitional zone between two ecoregions, Chotanagpur Plateau and Gangetic Plains. Complementing its unique geographical location, this region harbours exceptional biodiversity, having species from both the ecoregions mentioned earlier. Mention may be made that the Common Babbler *Argya caudata* and Striated Babbler *Argya earlei* are species of Chotanagpur Plateau and Gangetic Plains respectively, but then, the present study revealed that both these species are found in this ecoregion.

Avifaunal diversity of this region has been studied by various researchers, however, most of their studies focused on Damodar Valley (Gauntlett 1971, 1985; Chakraborty 2011; Hossain & Aditya 2016). Thus, it was felt necessary to undertake a holistic study to get an idea about the avifaunal diversity of the entire city and its outskirts. This was the primary motivation behind the present work where, for the first time, the whole area of Durgapur was taken into consideration for studying avifaunal diversity. We started a citizen science program namely 'Birding Durgapur' in 2013 to accomplish our job. With increasing citizen science involvement, we increased our area of work to the whole Paschim Bardhaman District in April 2017. In recent days, the citizen science program has become a potential tool for biodiversity monitoring (Cohn 2008; Silvertown 2009; Devictor et al. 2010; Theobald et al. 2015). Several web-based popular programs (such as eBird, CBMI, MigrantWatch etc.) rely on the power of citizen scientists. The volunteer citizen scientists minimize the difficulties of researchers to study a large region. Increase in a number of observers in an area, in turn, increases the frequency of sampling, resulting in better coverage and public awareness.

In present days, finding a bird outside of its range is not uncommon. It may occur due to three possible reasons. First, increase in the number of birds beyond carrying capacity, forcing excess individuals to go beyond the range to find suitable resources for their survival. Second, an increase in the number of observers helps to fill the gap in knowledge about the bird distribution pattern. Third, disturbances (possibly driven by unpredictable climate patterns and anthropogenic habitat alteration) beyond the tolerance limit in its range forcing the species to shift.

This article aims to report the five-interesting avifauna from Durgapur ecoregion, which are either not recorded or very little recorded from this geographical area.

MATERIALS AND METHODS

Study area

The present study was carried out in Durgapur subdivision (23.48°N, 87.32°E) of Paschim Bardhaman District, West Bengal, India and adjoining Damodar Valley (Fig. 1). Durgapur is the 77th most populated city in India with 566,517 people (as per 2011 census of Government of India) and covers an area of about 154km². This industrial city is at approximately 65m above sea level and located in the transitional zone between the Chotanagpur Plateau and the Gangetic Plains. This ecoregion is surrounded by the river Damodar in the south and the river Ajoy in the north. Soil, in this region, is red laterite type. About 100 years ago, the total area was covered by dense Sal *Shorea robusta* forest, which was cleared gradually from the late 1950s to establish India's second planned city (Chakrabarti 1989).

Data collection

A citizen science program, 'Biodiversity of Paschim Bardhaman' (formerly known as 'Birding Durgapur') has been running since 2013 to create interest among the citizens of Durgapur and adjoining areas for nature watching by Durgapur Wildlife Information and Nature Guide Society. Nature-watchers use digital cameras for photography and field binoculars for birdwatching. Nature watchers regularly post their efforts (eBird checklists, photographs and call recordings) with date and place in the Facebook group. All observations are verified by the group experts. Species were identified by using suitable field guides (Grimmett et al. 2011; Ali 2012; Grewal et al. 2016) while suitable field guides (Grimmett et al. 2011; Baidya et al. 2017), online range maps and databases (eBird 2017) and publications (Gauntlett 1971, 1985; Chakraborty 2011; Hossain & Aditya 2014) on this region were followed to find out the distribution and occurrence of various bird species. A checklist of birds of Durgapur subdivision is continuously maintained by group members.

RESULTS

Since 2013, 257 species belonging to 59 families have been recorded with the cumulative effort of citizen scientists in Durgapur subdivision. Out of these, eight species did not have any previous records from this ecoregion before 2013. Of these, three species were reported recently (Gupta et al. 2013; Nayak et al. 2015; Maulick & Adhurya 2017). The remaining five avian

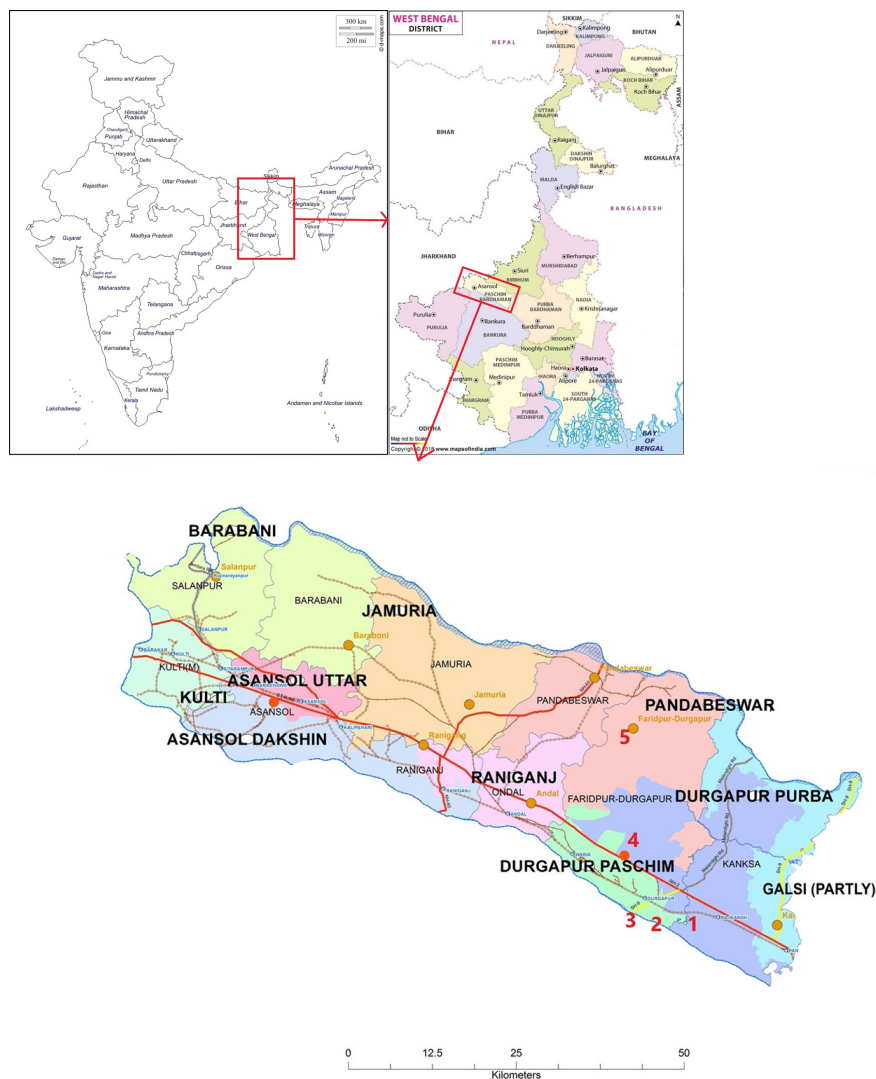


Figure 1. Location of the study sites in India, West Bengal and Paschim Bardhaman respectively. In the Paschim Bardhaman map (below): Beharpur marked as '1'; Krishnanagar marked as '2'; Durgapur Barrage marked as '3'; Kumar Mangalam Park marked as '4' and Tilabani forest marked as '5'. The map of Paschim Bardhaman district is modified from Assembly Constituency map downloaded from https://www.paschimbardhaman.co.in/for_citizen/maps.php on 23 January 2019.

species are discussed below (Table 1).

Family Alaudidae

1. Hume's Lark *Calandrella acutirostris*: This species was recorded three times: the first record from Beharpur (23.466°N, 87.347°E) on 10 February 2017, the second record from Krishna Nagar Village (23.460°N, 87.328°E) on 26 March 2017, and the third record from Durgapur Barrage (23.476°N, 87.308°E) on 25 December 2017. This species was identified by its typical call pattern and its dark lore, pale ear coverts, yellowish bill with a dark spot at culmen, pale crescent below the eye and lightly streaked upperparts. Habitat was riverside agricultural land (Image 1).

Family Cisticolidae

2. Graceful Prinia *Prinia gracilis stevensi*: This species has been recorded regularly at Durgapur Barrage (23.468°N, 87.306°E) since 16 April 2017. This is a smaller prinia compared to other similar looking grassland prinia of this region. It is separated from other prinias by streaked upperparts and cross-barred tail with white tip. The dark grey brown upperparts indicated the subspecies *P. g. stevensi*. In addition, this species can be identified with its typical *zr-zr-zr* call which was heard during the field work. Habitat was river sand bed with sarpat grass (Image 2).

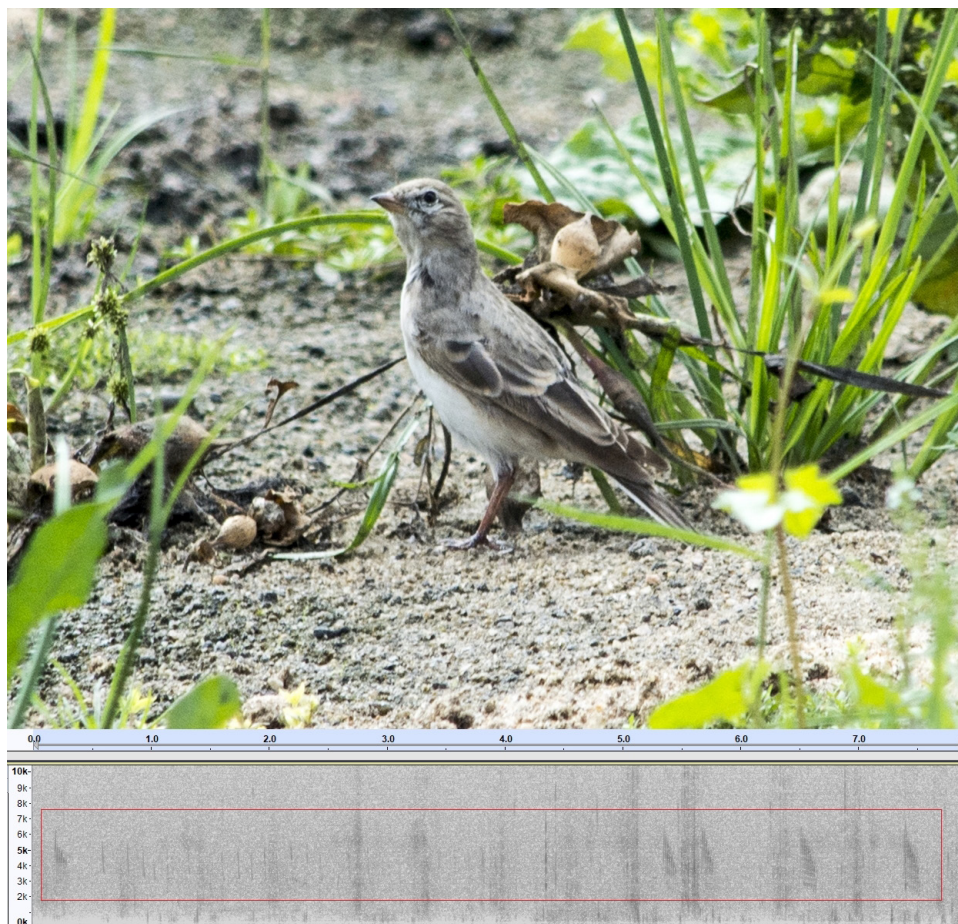


Image 1. Photograph and sonogram of Hume's Lark recorded on 10 February 2017 at Krishnanagar Village. © Sagar Adhurya.



Image 2. Photograph and sonogram of Graceful Prinia recorded on 16 April 2017 at Durgapur Barrage. © Sagar Adhurya.

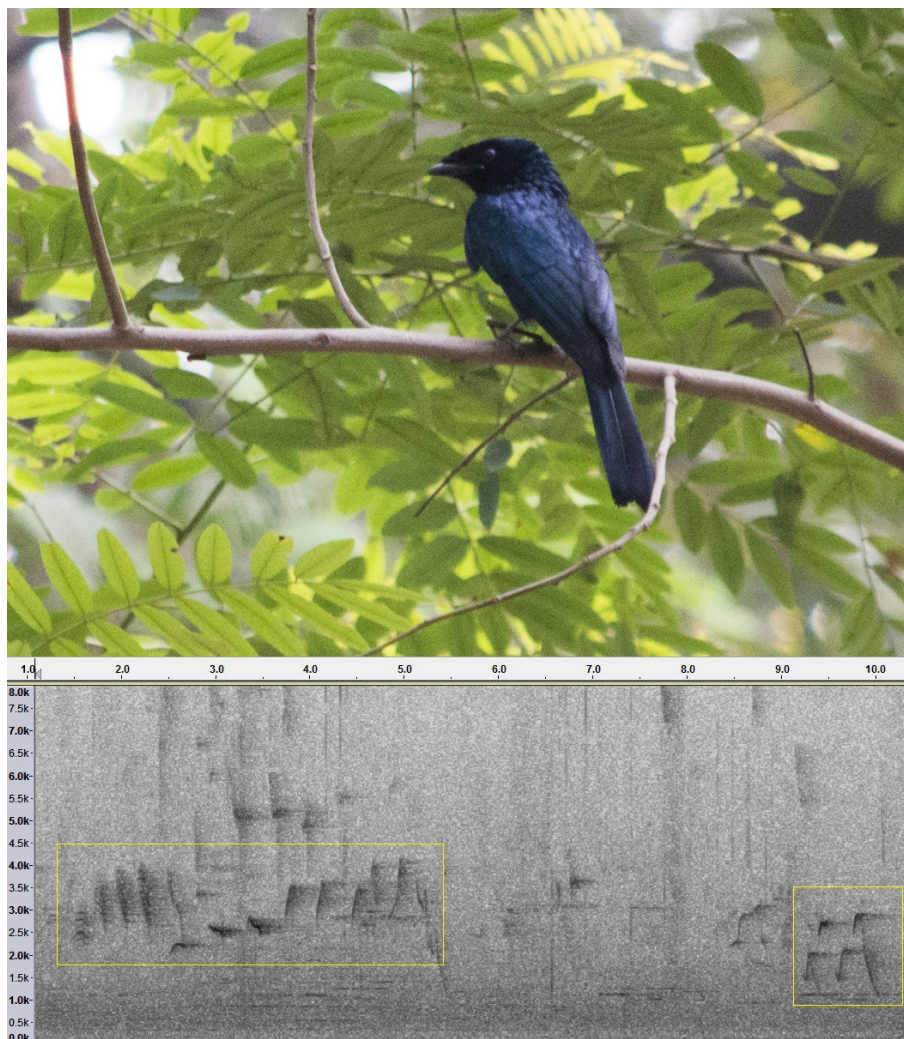


Image 3. Photograph and sonogram of Lesser Racket-tailed Drongo recorded on 10 November 2016 at Kumar Mangalam Park. © Sagar Adhurya.

Family Dicruridae

3. Lesser Racket-tailed Drongo *Dicrurus remifer*: One immature individual was spotted at Kumar Mangalam Park (23.563°N, 87.303°E) on 10 November 2016. The immature individual was differentiated from a similar looking species *D. aeneus* (Bronzed Drongo) by the lesser forked tail and shorter bill. The sound was variable, loud and musical. Habitat was woodland (Image 3).

Family Muscipidae

4. White-rumped Shama *Copsychus malabaricus*: One female was found at Kumar Mangalam Park (23.563°N, 87.303°E) on 10 November 2016. The female was identified from similar-looking abundant *C. saularis* (Oriental Magpie-Robin) by its white rump, and orangish breast and whitish belly. Habitat was woodland (Image 4).

Table 1. Tabular presentation of five species and their occurrence pattern.

	Scientific name	Common name	Period of occurrence
1	<i>Calandrella acutirostris</i>	Hume's Lark	February, March, December
2	<i>Prinia gracilis stevensi</i>	Graceful Prinia	Throughout the year
3	<i>Dicrurus remifer</i>	Lesser Racket-tailed Drongo	November
4	<i>Copsychus malabaricus</i>	White-rumped Shama	November
5	<i>Larvivora brunnea</i>	Indian Blue-Robin	April

5. Indian Blue-Robin *Larvivora brunnea*: A male was observed at Tilabani forest (23.657°N, 87.283°E) on 19 April 2017. It was identified by bold white supercilium, black lore and cheek, bluish upperparts, chestnut throat, breast and flanks, white vent and undertail covert and short tail. Habitat was forest floor (Image 5).



Image 4. White-rumped Shama on 10 November 2016 at Kumar Mangalam Park. © Sagar Adhurya.



Image 5. Indian Blue-Robin on 19 April 2017 at Tilaboni Forest. © Shantanu Bhandary.

DISCUSSION

All of the above-mentioned species are mostly unknown from Durgapur ecoregion and some of them have been only recently included in the literature (Baidya et al. 2017). The Hume's Lark and Lesser Racket-tailed Drongo may be the first record from the Paschim Bardhaman and adjoining Bankura District. The Hume's Lark mainly has distribution in northern West Bengal; up to upper edges of Birbhum District. Though the species has been recorded from Damodar Valley (Chakraborty et al. 2011), the location of the finding is unclear. In addition, Chakraborty (2011) marked the species as resident, while it is a well-known winter migrant (Grimmett et al. 2011; Grewal et al. 2016; Baidya et al. 2017). The Graceful

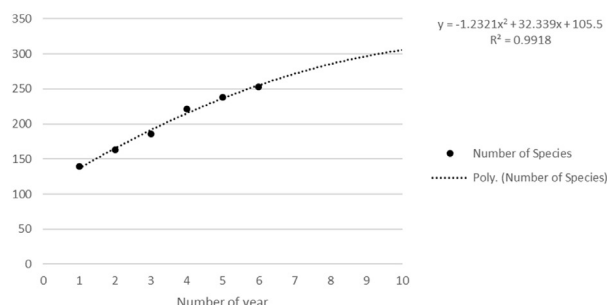


Figure 2. Species Accumulation Curve with a forecast using polynomial regression fit. [In the curve, year 1 = 2013].

Prinia is mainly found in the northern part of West Bengal up to the upper part of Birbhum District in the south. Recently, it has been also recorded at Damodar Valley of Asansol subdivision of Paschim Bardhaman District and Bardhaman, Purba Bardhaman district (Baidya et al. 2017), but no records have been made in between these two regions so far. The multiple record of Graceful Prinia between Asansol and Bardhaman suggests that the bird may have distribution throughout the Damodar Valley which was previously unknown. The Lesser Racket-tailed Drongo has distribution mainly in the Himalayan foothills of West Bengal (Darjeeling, Jalpaiguri and Alipurduar districts). But recently it has been recorded as a rare winter migrant to the Gangetic plains of West Bengal (Khan 2005; Roy et al. 2016; Baidya et al. 2017). In addition to these records, our record suggests that this species may also have a wintering range to Damodar Valley at the west. As Baidya et al. (2017) concluded in their book, there needs further investigation about the wintering activity of this bird. The White-rumped Shama is distributed up to the hilly region of the western part of West Midnapur, Purulia and Paschim Bardhaman

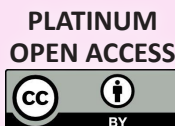
district to the east (Baidya et al. 2017). But it has no earlier record from Durgapur ecoregion, which is not a hilly area. The present record suggests that this bird sometime visits the far east to plateau-plains transition areas like Durgapur. As per Baidya et al. (2017), the Indian Blue Robin is a passage migrant to the whole of West Bengal except the extreme eastern corner. This is actually a lesser-known bird from this region.

The number of avifaunal species in Durgapur subdivision is increasing day by day with increasing citizen involvement and more extensive exploration. At the end of 2013, 2014, 2015, 2016, 2017, and 2018 the total number of avifaunal species at Durgapur subdivision was 139, 163, 186, 221, 238, and 253, respectively (Adhurya, unpublished work) (Fig. 2). With the increasing number of avian species, finding of unreported avian species is also increasing due to the interesting geographical position. Records of these species are important because there are very few records of these species from this ecoregion in both existing range maps and literature. But most of the places in this region are still unexplored and need more citizen scientist involvement as a cost-effective method, which will help us to understand in more detail the spatial and temporal occurrence of different avian species.

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