Observationson nesting pattern of different bird species around University road, Rajkot

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The dense vegetation near Saurashtra university circle provided a preferable avifaunal habitat (Trivedi & Vaghela, 2020). This helped in the study of Avifaunal nesting sites in the urban area of Rajkot (22°17'7.37"N, 70°44'53.88"E, 22°17'10.26"N 70°44'44.03"E, 22°17'2.38"N 70°44'45.14"E, 22°16'58.27"N 70°44'52.31"E), Gujarat. A 2hours study was conducted while exploring the area 2km away from my residence in the morning for a week in May 2021. Up to, 33 Avifaunal species and seven nesting sites were reported. The nesting sites reported during the survey were of Black Drongo (*Dicrurusmacrocercus*), Eurasian collared Dove (*Streptopeliadecaocto*), Indian Thick knee (*Burhinus indicus*), Shikra (*Accipiter badius*), Rufous Treepie (*Dendrocittavagabunda*), Red wattled Lapwing (*Vanellus indicus*), and Cattle egret (*Bubulcus ibis*).

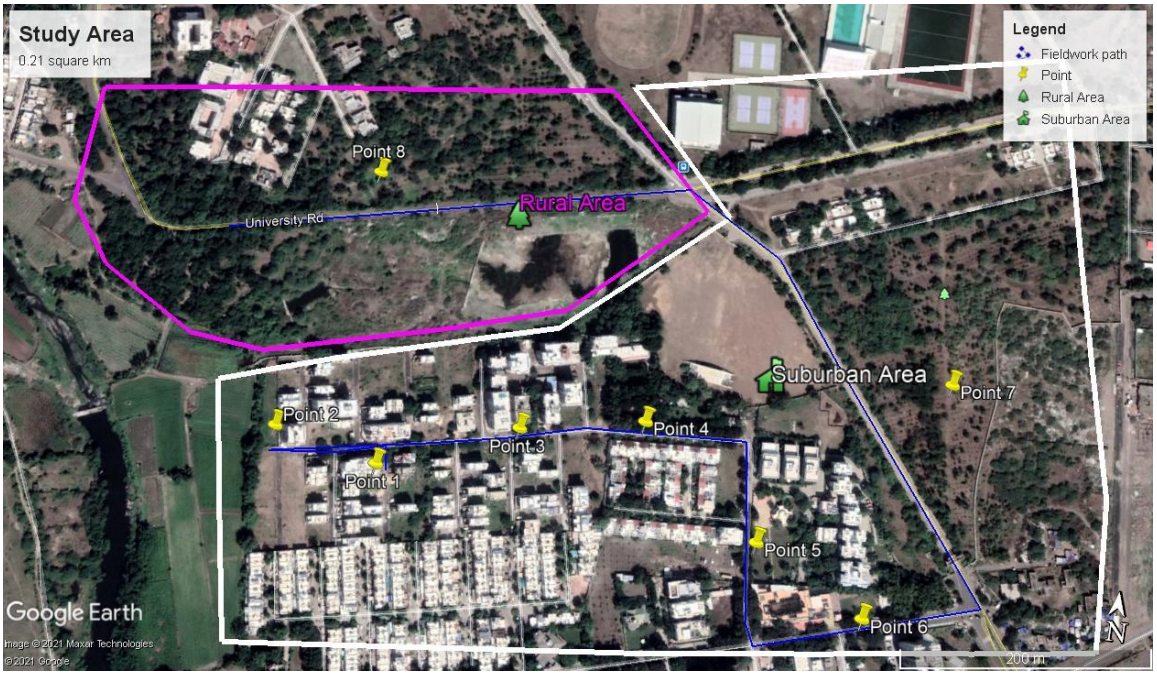

Figure 1. Detailed Map of Study area

Point1 from the above figure indicates my residence, where fieldwork was started. Based on vegetation and human disturbance, the study area was divided into two parts: Sub-urban Area and Rural Area. Point 7 and 8 indicates plantations done by the Saurashtra University. The line transect method was used for the field survey. Images were captured with the help of Canon 1200D, 55-250 mm lens.

Figure 2(a)

Figure 2(b)

Figure 2(c)

Figure 2(d)

Figure 2: Different photographs of saurashtra university plantation area (Study Area)

Black Drongo (*Dicrurusmacrocercus*):

The nesting season for Black Drongo is April to August, with 3-4eggs as clutch size and 14-15days incubation period. The nest of Black drongo was observed at Point 8 (22°17'7.37"N 70°44'53.88"E) in the plantation site of Saurashtra University. It is about 9 to 10 feet high from ground level and built with twigs, rootlets and threads. Drongo is known to be a protective parent and its mobbing behaviour towards Greater Coucal (*Centropus sinensis*), Rose-ringed Parakeet (*Alexandrinuskrameri*) and Asian Koel (*Eudynamysscolopaceus*) were

observed during the survey (Nijman, 2004). Interspecies interaction between Eurasian Collared-Dove and Black Drongo was observed during the survey and in previous studies (Jahan et al., 2018) as well, where two Eurasian collared Dove made nest near the nest of Black Drongo. Usually, birds like Dove do not cause any harm to Drongo. Feeding gills for both species is different as well (Ali, 2017, Grimmett*et al.,* 2011). Therefore, to protect their eggs from other predators, Dove makes their nest in the vicinity of Drongo's nest.

Figure 3 (a)

Figure 3 (b)

Figure 3: Photographs presenting nest of Black Drongo (*Dicrurusmacrocercus*)

Eurasian collared Dove (*Streptopeliadecaocto*):

The nesting season for Eurasian collared Dove is throughout the year. The nest was observed at Point 8 in the plantation site of Saurashtra University (22°17'7.37"N 70°44'53.88"E). It was made with twigs and rootlets at 8-9feet height. The clutch size is 1-2 (Robertson, 1990) and incubation period of eggs is 15-19 days. Within a distance of 3 meters, two nests of Eurasian collared Dove were found. Both nests were in the vicinity of Black Drongo's nest. It's a great example of species-species interaction. By making nests nearby aggressive Drongo's nests,

Figure 4: A photograph presenting the nest of Eurasian collared Dove (Streptopeliadecaocto) Detailed Map of Study area

Dove could gain protection from other predator species (Jahan et al., 2018).

Indian Thick-knee (*Burhinus indicus*):

Indian Thick-knee is also known as Indian Stone curlew. Its nest was found at Point 8 in the plantation site of Saurashtra University (22°17'7.37"N 70°44'53.88"E). The breeding season is from March to April. The nest was made on the ground surrounded by dead leaves and few twigs. The clutch size for stone curlew is two (Sharma & Sharma, 2015) with incubation period around 24 days. While exploring the study area, one egg and one hatchling were observed, which were wonderfully camouflaged with the colour of the ground. The egg was off-white coloured with random brown spots on it. At the end of May 2021, another egg was found broken. Both, male and female are involved in caring and protecting the hatchlings against predators (Sharma & Sharma, 2015).

Figure 5 (a) Nest with hatchling and egg

Figure 5 (b) Egg

Figure 5 (c) Hatchling

Figure 5 (d) Adult Indian Thick-knee

Figure 5: Different photographs of Indian Thick-knee (Burhinus indicus) presenting developmental stages

Shikra (*Accipiter badius*):

The nesting season for Shikra is March to June. Shikra's nest was found at Point 8 (22°17'10.26"N 70°44'44.03"E) in the plantation site of the Saurashtra University. The nest built with twigs and rootlets at 20feet height from ground level was observed on the tallest tree. The clutch size for the Shikra is 3 to 4 eggs with 18-21days incubation period. Usually, females hatch the eggs but in rare cases males hatch eggs as observed by Suryawanshi (2021). During the survey female Shikra was observed chasing Large-grey Babbler (*Argyamalcolmi*).

Figure 6: A photograph of Adult female Shikra (Accipiter badius) and her nest

Rufous Treepie (*Dendrocittavagabunda*):

The breeding season for Rufous Treepie is April to June and with clutch size 3-6eggs.

Figure 7: Adult Rufous treepie (Dendrocitta vagabunda) and her nest

At Point 8 of Saurashtra University plantation site (22°17'7.37"N 70°44'53.88"E) two to three individuals of Rufous Treepie were seen.

One of them was seen carrying food material while the other was collecting the nesting materials. A single nest of Rufous Treepie was observed and was built with twigs, dead leaves, threads, old clothing material, rootlets, and cotton. The nest was found at a height of approximately 20 feet. On May 16th, 2021 Rufous Treepie was seen feeding juvenile Koel. After a few days, another Rufous Treepie was found hatching the eggs.

Red-wattled Lapwing (*Vanellus indicus*):

Breeding season for Red-wattled Lapwing is April to June. The egg or nest was not part of the observation, however, a juvenile was observed at Point 3 of the Sub-urban area (22°17'2.38"N 70°44'45.14"E). A survey was conducted in May and the eggs might be laid during April. The clutch size is 3 to 4 with an incubation period of 28-30 days. The nesting of this bird has no protection strategies other than camouflaging the eggs with the surroundings to protect those (Balkhande et al., 2017).

Figure 8 (a) Juvenile Red-wattled Lapwing *Figure 8 (b) Adult Red-wattled Lapwing*

Figure 8: Photographic presentation of juvenile and adult Red-wattled Lapwing (Vanellus indicus)

Cattle Egret (*Bubulcus ibis*):

The breeding season for Cattle Egret is June to August. Between Point 5 and 6 (22°16'58.27"N 70°44'52.31"E), ten to twelve Cattle Egret nests were found and Egrets were observed in their breeding plumage. During their breeding season, adults develop orange buff plumage on the back, breast and crown area. Cattle Egrets from their nest in

colonies. Rootlets and twigs are used to build nests. Clutch size for Cattle Egret is 2-4 and the incubation period is between 22-28 days (Patankar et al., 2007).

Fig. 9 (a) *Fig. 9 (b)*

Figure 9: Cattle egrets (Bubulcus ibis) and their colony

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