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Distribution of *Streptopelia decaocto* (Eurasian collared dove) in Sindh, Pakistan

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Abstract

Streptopelia decaocto (Eurasian collared dove) expands so rapidly, competes with other birds species efficiently, feeds heavily on variety of crops, and carries circovirus, thus its existence sometimes results in negative impacts on balanced ecosystem. In this context, present study was proposed to explore Sindh province (140,914 km²) to record morphology and existence of *S. decaocto* with emphasis on its preferred habitats, localization of nests and observation of fledglings. Field surveys were carried out randomly from January to December 2018 in 16 study areas within Sindh where habitats of four different types: cropland, scrubland, suburban and urban was explored. Distribution of Eurasian collared dove was observed in all 14 study areas at extensive level. The habitats from where *S. decaocto* was found recurrently and profusely was cropland, however availability of species was observed very rare in urban and suburban habitats.

Keywords: Eurasian collared dove, distribution, habitats, Sindh, Pakistan

Introduction

Some species of class Aves cause a significant threat to global biodiversity and damage ecological and evolutionary processes of variety of other inhabitant bird species of same area which is infeasible and potentially effective [1].

Eurasian Collared-Dove or collared dove (*Streptopelia decaocto*) is a dove species that spreads across a broad geographic region where their invasion and spread remains sharply ongoing, such spread may cause ecological disturbances in future if not controlled [2]. Their establishment and distribution may be facilitated by and the environmental features that may be facilitating population spread and establishment [2-3]. *S. decaocto* is widely hunted in some parts of world where its population is found over abundant that results in negative effect on the other bird species by invading the entire area [1]. In United States this species is a popularly hunted due to its status as an introduced species, it is not protected and hunting is generally encouraged [4]. Hunting may decrease the population of *S. decaocto* in rural areas but suburban populations will remain unaffected. In Britain *S. decaocto* is considered as a pest species and therefore, legal protection to this bird species had been removed [4].

S. decaocto is a distinct dove species that had once a limited range of spread as it was native to subtropical and warm temperate areas only [10-11]. Further it was introduced to some regions such as to North America where population of this species expended extensively and spread from Southeast Asia through to Western Europe [5]. There are some areas in world where populations of collared dove are under process of expansion [5]. *S. decaocto* is strongly dispersive, but doesn't exhibit migration. This species has been regarded as one of the recognized colonizer birds worldwide due to its travelling far away from its native range, becoming a permanent resident in several other non-native regions [5]. Its original native places include warm temperate and subtropical Asia from Turkey east to southern China through India to Sri Lanka [6], later it was reported in Bulgaria [7], but not until the 20th century, it expanded across the Europe and then spreading rapidly northwest, reaching Germany, Great Britain, Ireland and the Faroe Islands (Campbell and Donald 2000). In the east of its range, it has also spread northeast to most of central and northern China, and Japan [7-9].

Collared dove is closely related to some other collard dove species such as island collared dove found in Southeast Asia and African collared dove of sub-Saharan Africa [6]. It is recorded that *S. decaocto* is further grouped into subspecies including *Streptopelia decaocto decaocto* (that has white skin around the eyes) and

Streptopelia decaocto xanthocyclus (having yellow skin around the eye). Earlier species is spread at broader range, however later in the southeast of the range from Burma east to southern China [7]. *S. decaocto* is said to have grouped into two other subspecies: *Streptopelia decaocto stoliczkae* and *Streptopelia decaocto intercedens* which are found from Turkestan in central Asia and southern India as well as in Sri Lanka [7-8].

S. decaocto is successful invader capable of phenomenal range expansion despite geographic barriers. It expands so rapidly that sometimes results in negative impacts including competition with other birds and may transmit potential viral disease as it is carrier of circovirus which causes illness and possible mortality in the pigeons [8-9].

In this context, present study was proposed to explore Sindh to study the morphological characteristics of *S. decaocto* and also to confirm its existence with focus on preference of habitats in different parts of Sindh. This study also motivated on record localization of nests and observation of fledglings of *S. decaocto* to confirm whether they have broad expansion rate there in different parts of Sindh or not.

Materials and methods

The population of *Streptopelia decaocto* was observed by making a systematic transect walk during which the observers with knowledge of the species across the selected study areas together with local people collected the data on the sightings of bird species in question (Figure 1).



Fig 1: Study areas of Sindh province

The surveys were conducted either during the morning or evening, thus survey in morning was conducted from 06:00–10:00hr or survey in evening was carried out between 17:00–20:00 hr; when the maximum bird sighting was expected. The

data was collected from the study areas within Sindh province consisting of cropland, scrubland, urban and suburban habitats (Table 1).

Table 1: Study areas within boundaries of Sindh province

S. No.	Sub areas of Sindh province	Area (km ²)	Coordinates	Number of surveys count
1	Badin	6,726	24.6605° N, 68.7155° E	12
2	Dadu	7,866	26.6383° N, 67.5709° E	15
3	Ghotki	6,083	27.7635° N, 69.5738° E	12
4	Hyderabad	217	25.3016° N, 68.4770° E	10
5	Jamshoro	11,517	25.4304° N, 68.2809° E	15
6	Jacobabad	2,686	28.3274° N, 68.6201° E	10
7	Karachi	3,780	24.8607° N, 67.0011° E	10
8	Larkana	7,423	27.5570° N, 68.2028° E	15
9	Mirpur Khas	3,319	25°33'02"N 069°00'11"E	12
10	Naushehroferoz	2,945	26°50'0N 68°7'0E	09
11	Shaheed Benazirabad	4,502	26.2988° N, 68.2385° E	10
12	Sanghar	10,608	25.8577° N, 69.4785° E	15
13	Shikarpur	2,640	27.9709° N, 68.6201° E	12
14	Sukkur	5,165	27.4954° N, 69.0016° E	12
15	Tando mohd. Khan	1,734	26.8058° N, 68.0478° E	10
16	Thatta	979,817	24.5457° N, 67.9524° E	15

Information from local people and collaborators was collected about presence of *S. decacocto* in a specific locality, its distribution, extent of its colonization and the type/types of habitats of their occurrence. A thorough investigation was made for indications of localization of nests, observation of fledglings, etc. of *S. decacocto* and for this regular search of birds' nests, based on a follow-up study was also carried out. It was also aimed to check their density estimated by observations and direct counting, and by estimating the area occupied by the species in question.

Taxonomic sources of this study [6-9] helped in determining the morphological parameters such as coloration of dorsal feathers, tectrix such as upper wing coverts, under wing coverts, upper tail coverts, under tail coverts; black collar behind the neck, coloration of legs, toes and iris. Small area of skin surrounding eyes was also observed along with body weight, body length, and wing span.

Results and discussion

Streptopelia decacocto (Frivaldszky, 1838) which has a synonym as *Columba risoria decacocto* with common English names: collared dove, Eurasian collared-dove, Indian ring-dove was surveyed in variety of habitats (scrubland, cropland, urban and suburban areas) in an extensive area of Sindh province for the first time. While in field, it was observed that *S. decacocto* that is a popular game bird prefers to occur mainly in the cropland and scrub/shrublands as their abundance was observed there. However low population was recorded in suburban and urban habitats, that was contrary to some studies show that it is frequently found in urban and suburban area as well [4]. It was also observed that some extensively wide areas do not embrace *S. decacocto* (Table 2).

Table 2: Localities and availability of *Streptopelia decacocto* in Sindh

S. No.	Sub areas of Sindh province	Availability of <i>Streptopelia decacocto</i>	Type of habitats
1	Badin	High	Cropland, scrubland, suburban and urban
2	Dadu	Very low	scrubland, suburban
3	Ghotki	Very low	Cropland
4	Hyderabad	Low	Cropland, suburban and urban
5	Jamshoro	Low	scrubland, suburban
6	Jacobabad	Low	Cropland
7	Karachi	Low	Cropland, scrubland
8	Larkana	High	Cropland
9	Mirpur Khas	Very high	Cropland
10	Naushehroferoz	Low	Cropland
11	Shaheed Benazirabad	Nil	Nil
12	Sanghar	High	Cropland, scrubland
13	Shikarpur	Low	Cropland
14	Sukkur	Nil	Nil
15	Tando mohd. Khan	Very high	Cropland, scrubland, suburban and urban
16	Thatta	Low	Cropland

Most of the population of *S. decacocto* was observed in cropland where this species found roosting in long trees indicative of the studies that describe this species preferring open and wide habitats such as open woodland, scrubland and deserts [4]. However *S. decacocto* was observed avoiding intense agricultural and heavily forested areas due to lake and/or absence of suitable roosting, nesting or feeding sites available there.

In different countries, *S. decacocto* exhibits different behavior as in India that is original range, Eurasian collared-doves are found in open fields of agricultural areas but meanwhile they are equally found in towns and villages as well where man population exists profoundly [4]. Whereas in Europe and North America, they are found where substantial quantity of grains is present even those areas where human are heavily populated [4].

Present study observed very few nests of *S. decacocto* in croplands only, with total disappearance in scrubland or other habitats like urban and suburban types of habitats, though some studies suggest that they make nests typically in areas of man-made structures or buildings and also in coniferous and deciduous trees [4]. The fledglings found there into nests were very scarce in number suggesting existence of low population rate of *S. decacocto*.

It was observed that *S. decacocto* is a stocky, medium sized silimmer and long tailed species of dove with an average length of 32 cm (13 in) from tip of beak to tip of tail. The weight of this species was recorded between 125–240 g, while

wingspan ranged from 47 cm to 55 cm. Adult Eurasian collared dove was observed as grey to pinkish-grey, whereas its tail feathers were grey- buff overhead and dark grey underneath with white tips. *S. decacocto* was observed to possess pinkish breast and narrow black half-collar located on the hind neck lined with white. Its wings beared a gray band across the coverts and primaries which were dark brown. The under tail coverts were gray, with a black and white pattern, and a broad, white terminal edge. Other characteristics of this bird included dark red legs, slender black beak, narrow rim of reddish-brown or deep red iris, however due to larger black pupil round the iris, eyes appeared to be black from a distance. Eyes of *S. decacocto* were observed as surrounded by a small area of bare skin, which was either white or yellow in different specimens. The juveniles exhibited some morphological variation from adults in having a poorly developed collar and brown iris. It was observed that their wings possessed a grey band across the coverts, while primary wing feathers were found dark brown or pinkish brown. Under tail coverts were grey with a pattern of black and white and a white terminal edge was observed in under tail coverts. The vast distribution of the Eurasian collared-dove is thought to disturb a normal ecological niche of other bird species as their presence result in competition with other bird species including mourning dove and turtledove [3]. Eurasian collared-dove feeds heavily on grains and therefore it is considered as crop pest in Pakistan [3-4]. *S. decacocto* establishes and spreads very rapidly [3] and same was observed in the Sindh province,

where its rich occurrence was recorded. *S. decaocto* being crop pest, heavily feeds on seeds and cereal grains along with variety of fruits, plants, small invertebrates and also feeds on elevated bird feeders and berries on bushes and trees, therefore its presence in an area causes great damage to crops [4]. In this perspective, the considerable distribution of *S. decaocto* in Sindh province may not be appropriate to environment.

S. decaocto have been recognized as amplifying species that lives in areas of ample ornithophilic mosquitoes and can act as a carrier of the pigeon circovirus which causes illness and mortality in the Columbiformes family [7]. In this viewpoint, *S. decaocto* has exhibited a systematic way of dispersal and expansion in its population as its original ranges encompassed Southern Bulgaria, Northern Greece, Iraq, Syria and Turkey until 1930 [2-4]. However, within next fifteen years it was found populated in Austria, Czechoslovakia, Germany, Hungary, Southern Romania and Yugoslavia, later on, it established abundantly throughout the British Isles, Scandinavia and Western Europe [7]. Present investigation recorded abundant distribution of *S. decaocto* which is of concern as it may affect the status of ecological process relating to avifauna of the study area.

Conclusion

Present investigation revealed the distribution of *Streptopelia decaocto* in Sindh province for the first time and it was thoroughly determined that the species in question exhibited conspicuously richer occurrence in agricultural areas as compared to urban and suburban areas. This study may contribute to valuable knowledge regarding existence of “*S. decaocto*” which may cause a significant threat to ecological and evolutionary processes of variety of avian diversity of same area.

References

1. Sala OE, Armesto JJ, Berlow E, Bloomfield J. Global biodiversity scenarios for the year 2100. *Science*. 2000; 287:1770-1774.
2. McKinney ML, La Sorte FA. Invasiveness and homogenization: Synergism of wide dispersal and high local abundance. *Global Ecology and Biogeography*. 2007; 16:394-400.
3. Sax DF, Stachowicz JJ, Brown JH, Bruno JF, Dawson MN. Ecological and evolutionary insights from species invasions. *Trends in Ecology and Evolution*. 2007; 22:465-471.
4. Romagosa, Christina M. Eurasian Collared-Dove (*Streptopelia decaocto*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the *Birds of North America Online*: <http://bna.birds.cornell.edu/bna/species/630>, 2002.
5. Scheidt SN, Hurlbert AH. Range Expansion and Population Dynamics of an Invasive Species: The Eurasian Collared-Dove (*Streptopelia decaocto*). *PLoS One*. 2014; 9:15-19.
6. Snow DW, Perrins CM. *The Birds of the Western Palearctic* (Concise ed.). Oxford: Oxford University Press. ISBN 0-19-854099-X. 1998, 25-35.
7. Hoyo J. *Handbook of the Birds of the World*, vol. 4. Barcelona: Lynx Edicions. ISBN 84-87334-22-9. 1997, 150-155.
8. Campbell, Donald. Collared Dove. *The Encyclopedia of*

British Birds. Bath: Parragon. ISBN 0752541595. 2000, 95.

9. Jobling, James A. *The Helm Dictionary of Scientific Bird Names*. London: Christopher Helm. ISBN 978-1-4081-2501-4, 2010, 131-367.
10. Cramp S. *The Birds of the Western Palearctic*. ISBN 978-0-19-857507-8. 1985; 4:340-353.
11. Juhasz L. Population dynamics of the Collared Dove *Streptopelia decaocto* in Hungary. *Congress of the International Union of Game Biologist*. Hungary, 1991.