

Notes on the Pigeons and Doves (Family Columbidae) Occurring in the Gaza Strip – Palestine

Abdel Fattah N. Abd Rabou^{1*} and Mohammed A. Abd Rabou²

Abstract: Birds are the commonest terrestrial vertebrates among the fauna of the Gaza Strip. Hundreds of bird species have been recorded and more records are being added continually. Columbids (pigeon and doves), constitute a prominent component of birds, yet they have never been separately studied in the Gaza Strip. The current study aims at giving useful notes on the doves and pigeons occurring in the Gaza Strip. Field visits, observations, photography, and discussions with stakeholders were carried out to reach the goals of the study. Seven species of pigeons and doves were recorded in the Gaza Strip. The Rock Pigeon (*Columba livia*) was found to be the commonest while the African Collared Dove (*Streptopelia roseogrisea*) was the rarest. Different plumage colors of the Barbary Dove (*Streptopelia risoria*) are easily reared and traded in local zoos and pet shops. All pigeon and dove species are subject to poaching and hunting for different purposes including meat and pet trade. Finally, the study recommends raising ecological awareness among Gazans and the implementation of protection measures in order to sustainably conserve bird fauna in the Gaza Strip.

Keywords: Bird fauna, pigeons, doves, *Streptopelia*, hunting, Gaza Strip.

Introduction

Bird fauna are among the best known creatures characterized by biodiversity around the globe (Pomeroy, 1992 and Bibby *et al.*, 1998). In Palestine, which has a total

area of about 27,000 km², 540 avifaunal species are known to inhabit all types of landscapes and ecosystems (Perlman and Meyrav, 2009). The strategic geographic location of Palestine along with its major migration routes contributes to the diversity of bird fauna (UNEP, 2003). The arid to semi-arid Gaza Strip, which covers an area of about 365 km² (1.5% of the total area of Palestine), has a diversity of bird fauna occurring in its diverse ecosystems and habitats. Hundreds of bird species have been recorded, and new more records are being added continually (Project for the Conservation of Wetland and Coastal Ecosystems in the Mediterranean Region – MedWetCoast, 2002; Abd Rabou, 2005; Yassin *et al.*, 2006; Abd Rabou *et al.*, 2007 and Abd Rabou 2011a and b; 2019a and b). Urbanization constitutes a major threat to vertebrate fauna; particularly birds, in Palestine and hence the Gaza Strip (Qumsiyeh *et al.*, 2014). Different groups of bird fauna are commonly hunted and trapped for different purposes in the Gaza Strip (Abd Rabou 2005 and 2020). In the fall season of each year, many Gazans erect fishing nets along the Mediterranean coast in order to catch the Middle Eastern migratory Common Quail (*Coturnix coturnix*), because of its delicious meat (UNEP, 2003; Abd Rabou *et al.*, 2007 and Abd Rabou, 2011a and b; 2019a and b and Marwat *et al.*, 2014).

Columbidae is a worldwide family of birds containing pigeons and doves. It is the only family in the order Columbiformes. It is one of the most threatened bird families in the world (Walker, 2007). Pigeons and doves primarily feed on seeds, fruits, and plants (Gutiérrez-Galán and Alonso, 2016). Their nests are commonly built on trees, ledges, or on the ground, depending on the species. Several species of pigeons and doves are commonly trapped or shot to be used

* Corresponding author:

arabou@iugaza.edu.ps

¹Department of Biology, Department of Environmental and Earth Sciences, Islamic University of Gaza, Gaza Strip, Palestine.

² Department of Information Technology, University College of Applied Sciences, Gaza Strip, Palestine.

as food or game items. All members of the Columbidae family are monogamous in the sense that one male mates with one female and forms a pair bond (Gibbs *et al.*, 2001). The Rock Pigeon (*Columba livia*) has been domesticated as a food species for hundreds of years (Shapiro and Domyan, 2013). In the Gaza Strip, many studies have been carried out to survey the bird fauna of various ecosystems. The arid to semi-arid nature of the Gaza Strip contributed much to the occurrence of many pigeon and dove species. Hence, the current study aims at giving valuable notes on the pigeons and doves inhabiting the Gaza Strip, while highlighting all threats facing them as well.

Materials and Methods

The arid to semi-arid Gaza Strip (365 km²) is a coastal zone lying in the southern part of the Palestinian coast along the eastern shore of the Mediterranean Sea (Figure 1). It has five governorates: North Gaza, Gaza, Middle, Khan Younis, and Rafah. The local average annual rainfall is 300 mm. Sand dunes are the main feature of the western part of the Gaza Strip, while the clay and clayey lands predominate in the eastern part (Euroconsult and IWACO, 1994 and UNEP, 2003). Nowadays, the Gaza Strip has a population of about two million, with the population density reaching 5,500 inhabitants per square kilometer, making the Gaza Strip one of the most densely populated areas in the world (Abd Rabou, 2019b).

Procedures

The current study is descriptive in its style. Since 2002, frequent field visits and observations and discussions with local people have been carried out in order to determine the pigeon and dove species inhabiting the various ecosystems of the Gaza Strip. During the field visits, binoculars and digital cameras were mostly the common tools used for observation and documentation purposes. Animal markets, pet shops and zoological gardens (zoos) were commonly visited to study their bird content, with particular emphasis placed on columbids. Bird hunters,

university students, and even local people were good contributors to the success of this work through their specimen provisions. All local literature concerning bird fauna in the Gaza Strip has been reviewed for the sake of this study. A variety of local, regional and international guide books have been used for the identification of bird species (Baha El Din and Atta, 1990; Disi and Hatoug-Boran, 1990; Harrison and Greensmith, 1993; Porter *et al.*, 1996; Shirihai, 1996; Abu Shammalah and Baha El-Din, 1999; and Cottridge and Porter, 2000).



Figure 1. A map showing the geographic location of the Gaza Strip.

Results

The findings of the current study pointed out seven species of pigeons and doves occurring in the various environments including captivity places within the limits of the Gaza Strip (Table 1 and Figure 2). Most of the pigeons and doves seem to be resident and breeding. In general, doves and pigeons are considered to be game birds, while also many species are being hunted and used for food in Palestine.

Table 1. Pigeons and doves of the Gaza Strip

Family	Common Name	Scientific Name
Order Columbiformes		
Columbidae	Rock Pigeon or Dove	<i>Columba livia</i>
	Namaqua Pigeon or Dove	<i>Oena capensis</i>
	Laughing or Palm Dove	<i>Streptopelia senegalensis</i>
	European Turtle Dove	<i>Streptopelia turtur</i>
	Eurasian Collared Dove	<i>Streptopelia decaocto</i>
	African Collared Dove	<i>Streptopelia roseogrisea</i>
	Ringneck or Barbary Dove	<i>Streptopelia risoria</i>



Figure 2. Pigeons and doves of the Gaza Strip: (A) Rock Pigeon (*Columba livia*), (B) Namaqua Pigeon (*Oena capensis*), (C) Laughing Dove (*Streptopelia senegalensis*), (D) European Turtle Dove (*Streptopelia turtur*), (E) Eurasian Collared Dove (*Streptopelia decaocto*), (F) African Collared Dove (*Streptopelia roseogrisea*), and (G) Barbary or Ringneck Dove (*Streptopelia risoria*)

Many pigeon and dove species were sometimes seen trapped using the same mist nets used to catch Quails (*Coturnix coturnix*). The following paragraphs, display a description of each pigeon and dove species occurring in the wild and captivity places of the Gaza Strip.

Rock Pigeon or Dove (*Columba livia* Gmelin, 1789)

The Rock Dove is one of the most commonly seen birds throughout the year and everywhere in the Gaza Strip. The bird is often seen roosting or flying in flocks ranging from five to thirty members. The Rock Dove inhabits different places in the Gaza Strip ranging from terrains to urban, rural, and agricultural places. Generally speaking, the adults and young of Rock Doves, along with their eggs are at risk from feral and domestic cats and stray dogs. The various breeds of the Domestic Pigeon (*Columba livia domestica*), which are commonly reared by most Gazans and zoo and pet shop owners seem to be descended from the Rock Dove. In the scientific labs of the general biology and vertebrate zoology courses at the biology departments of local universities, live specimens of the Rock, Feral, and Domestic Doves are commonly brought to be used for dissection classes.

Namaqua Pigeon or Dove (*Oena capensis* Linnaeus, 1766)

The smallest of all dove and pigeon species occurring in the Gaza Strip is the Namaqua Dove (Long-tailed or Masked Dove). This species is characterized by having a very long black tapered tail, which reflects the bird's common name. The plumage has grey upperparts and a white belly. Males have a black face, throat, and breast. Despite its rarity, it is often encountered singly or in pairs in the southern and eastern parts of the Gaza Strip, which are not heavily urbanized. Locally, the bird is frequently kept as a pet in zoos and pet shops. Local bird hunters and traders claimed that the species can breed freely in captivity. The authors often observe cages containing the bird at pet shops and among the animals traded at Al-Yarmouk Market in the middle of the Gaza City.

Laughing Dove (*Streptopelia* or *Spilopelia senegalensis* Linnaeus, 1766)

The Laughing (Palm or Senegal or Little Brown) Dove is the commonest dove species that is often seen year round in the Gaza Strip. This resident breeder occurs everywhere locally including the wild, cultivations, rural areas, buildings and areas of human habitation. It is the meekest, most forgetful, and tamest bird in the Gaza Strip. Pairs or small parties of the species are often seen feeding on the ground or standing on electricity or telephone wires. The nests of the species, that usually contain two eggs, are commonly built on trees, shrubs, and even on top of buildings. Similar to other local dove and pigeon species, the eggs, fledgling, and adults of the Laughing Dove come under multiple threats including egg collection, nest destruction and the hunting of their adults for meat.

European Turtle Dove (*Streptopelia turtur* Linnaeus, 1758)

The European Turtle Dove is commonly seen throughout the year in the Gaza Strip. Similar to the Laughing Dove, this species is common in cultivated fields with open woods, clumps of trees, parks, and gardens. The species is commonly recognized by its browner color, and the black-and-white-striped patch appearing on the sides of the neck. The upperparts are distinctively mottled with chestnut and black. The bird seems to be in decline because of local poaching and shooting by Gazans for meat purposes.

Eurasian Collared Dove (*Streptopelia decaocto* Frivaldszky, 1838)

The Eurasian Collared Dove seems to be slightly larger than the aforementioned Turtle Dove. The overall color of this bird ranges from grey-buff to pinkish-grey. On the neck, the species has a black half-collar edged with white, from which it gets its name (Figure 2). Collared doves can become hand-tame in urban areas. As commonly observed in the Gaza Strip, the species often feeds on grains, seeds, and insects that are very close to human habitation and

agricultural fields. Similar to other doves, the species is also subject to hunting for meat purposes.

African Collared Dove (*Streptopelia roseogrisea* Sundevall, 1857)

Compared to the Eurasian Collared Dove, the African Collared Dove lives more in the wild and apart from human dwellings. Although both the Eurasian and African Collared Doves have a black collar on their hindneck, the Eurasian Collared Dove are generally darker in color overall (Figure 2). Locally, the two species are considered by birdwatchers and even pet animal traders as Collared Doves regardless of their specific characteristics. Regardless of its distribution and spread across Africa, the African Collared Dove is the rarest dove species recorded in the Gaza Strip. It is recorded in a very few numbers in the eastern and southern parts that are characterized by their aridity, low residential dwellings, and the spread of agricultural and grassy lands in addition to wastelands. In 2014, a pair of the species was seen caged for sale at Al-Yarmouk Market in the middle of the Gaza City.

Barbary or Ringneck Dove (*Streptopelia risoria* Linnaeus, 1758)

The Barbary Dove (sometimes known as Ringneck or Ringed Turtle or Ring Dove) is a domestic member of the dove family. Barbary Doves are easily kept and can live long in captivity, which explains why all local zoos, pet shops, and animal trade markets have cages of different sizes containing various light colors, with or without collars, of this domestic species. In fact, the frequent visits to zoos, pet shops, and animal trade markets demonstrated a mix of the aforementioned pigeon and dove species along with the Barbary Dove being caged together. Though it is doubtful for the species to occur or persist for long outside captivity in the Gaza Strip, a few numbers were encountered in the wild; particularly in the urbanized ecosystems. Many Gazans including birdwatchers ensured such occurrences of the species in many parks and agricultural fields as well.

Discussion

The diversity of wild animals; particularly bird fauna in Palestine; and hence the Gaza Strip, is highly attributed to the strategic location of Palestine at the meeting point of the three continents of Asia, Africa, and Europe, in addition to the climate, ecosystem and habitat diversities (Qumsiyeh, 1996 and UNEP, 2003). Palestine constitutes a stopover point for migratory bird fauna prior to continuing their annual migration from Eurasia to Africa and vice versa (UNEP, 2003). Columbids (order Columbiformes) form an important part of bird diversity in the Gaza Strip. The majority of the seven pigeon and dove species encountered throughout the current study (Table 1 and Figure 2) seem to occur everywhere in the Palestine environment; some of which have been encountered in the aviaries of pet shops, zoos and animal trade markets. The availability of nesting and breeding sites and feeding habits of pigeons and doves enhances their occurrence in large populations (Abd Rabou, 2005). The current species are said to be occurring in many ecosystems in Palestine and its neighboring countries to a varying extent (Evans *et al.*, 2005; Perlman and Meyrav, 2009; Khalilieh, 2016; Al-Oshoush and Al-Zoubi, 2017). No red lines concerning the hunting of birds are drawn and respected in the Gaza Strip (Abd Rabou, 2005; 2011a and b; 2019a and b). Even in the Mediterranean European countries, the illegal killing and taking of birds still occur in spite of the national legislations and international obligations (Brochet *et al.*, 2016). The easy hunting of pigeons and doves for different purposes by Gazans may be attributed partially to the feeding habit of columbids primarily at man-made sites and infrequently at natural sites.

The Rock Pigeon (*Columba livia*) is the commonest among the pigeon and dove species in the Gaza Strip. It is commonly recorded in flocks; sometimes containing various colors. The colored flocks of the Rock Pigeon, seen in the Gaza Strip, indicate their content of Feral Pigeons (*Columba livia domestica* Gmelin, 1789), which refer to the

pigeons that are derived from the Domestic Pigeon (*Columba livia domestica*) but have returned to the wild. The color of the Rock Dove is generally pale grey with two black bars on each wing, whereas the color of Domestic and Feral Pigeons has noticeable variations. It is worth mentioning that the wild, feral and domestic pigeons are all the same species and can readily interbreed. Feral Pigeons are now largely present with naturalized populations of the Rock Dove in Lebanon (Ramadan-Jaradi and Ramadan-Jaradi, 2012) and all over the world (Lever, 2005). The occurrence of feral populations (sometimes known as Street Pigeons in Europe) in and around cities and towns worldwide can be harmful to human health, agriculture, and properties (Haag-Wackernagel, 1995 and Buijs and Van Wijnen, 2001). Such an occurrence was attributed by Haag-Wackernagel (1995) to food resources and human buildings as key ecological factors. Although the damage of pigeons to agricultural crops have never been realized or estimated in the Gaza Strip, Johnston and Janiga (1995) attributed the pest nature of Feral Pigeons worldwide to the characteristics of pigeons, such as being a granivore, having an alimentary storage crop, high reproductive rate, colonial habits and group foraging. A great deal of bird fauna species, including the pigeon and dove species of the current study, are hunted in the Gaza Strip for meat, game, rearing, and trade purposes.

The hunting of bird fauna, including above all pigeons and doves, for similar purposes is not restricted to the Gaza Strip and was documented in many developing and developed countries worldwide (Yom-Tov, 2003; Eid *et al.*, 2011; CABS and LEM, 2013; Eid, 2013; Aloufi and Eid, 2014; Brochet *et al.*, 2016; Eason *et al.*, 2016; Raine *et al.*, 2016 and Eid and Handal, 2018). The Turtle Dove (*Streptopelia turtur*), which is recognized as a globally threatened species (Brochet *et al.*, 2016 and Dunn *et al.*, 2017), plays an important role as a game bird during the hunting seasons in Greece (Bakaloudis *et al.*, 2009). Also, Schulz *et al.*, (2013) confirmed the overharvest of the Mourning Dove (*Zenaida*

macroura) as an important game bird in the USA. The occurrence of the Namaqua Dove (*Oena capensis*) in the Gaza Strip, which is overcrowded and highly urbanized, seems to be described as low.

This could be attributed to its preference to more wild habitats in addition to its new occurrence and probable breeding in the Gaza Strip. According to Abd Rabou (2019b), the species was rarely encountered in Al-Mawasi ecosystem, which is a unique coastal ecosystem in southern Gaza Strip. Most of the observed Namaqua Doves throughout the current study came from zoos, pet shops, and animal trade markets. Similar results were revealed in Lebanon, where a few individuals of the species were seen in the wild and were thought to be possible escapees from cages (Ramadan-Jaradi and Ramadan-Jaradi, 2012). Even in the Middle East entities and countries, the reports dealing with the occurrence and breeding biology of the Namaqua Dove are new and sometimes not fully clear (Shirihai and Gellert, 1989; Jennings, 2000; Haraldsson, 2008; Salim, 2008 and Hering *et al.*, 2015).

Three out of the four species of the genus *Streptopelia* that occur in the natural, semi-natural and human-made ecosystems of the Gaza Strip (Table 1) were stated to occur in the northern governorates of Palestine (i.e. the West Bank) (Khalilieh, 2016). The exception here is the African Collared Dove (*Streptopelia roseogrisea*) which has some analogous features with the Eurasian Collared Dove (*Streptopelia decaocto*) to the extent that many Palestinians consider the two species as one species under the name of Collared Dove. The rare existence of the African Collared Dove in the southern governorates of Palestine (i.e. the Gaza Strip) can be attributed to the proximity of the Gaza Strip to Egypt and Africa. The African Collared Dove was recorded among the dove species of the Negev Desert of southern Palestine. Yosef *et al.* (2004) pointed out that a few individuals belonging to the African Collared Dove were identified in a big catch of the Eurasian Collared Dove in the Eilat area, in the south. The continuous records of doves in the Gaza Strip, which is very populated,

may be attributed to the fact that doves feed primarily at man-made sites and infrequently at natural sites. Such an explanation coincides with the findings of Bergier *et al.* (1999) and Browne and Aebischer (2003) concerning the ecology and foraging of many *Streptopelia* spp. in Morocco and Britain respectively.

The Barbary Dove (*Streptopelia risoria*) is a well-known dove species among bird fanciers in the Gaza Strip. They have bred them in a great variety of colors as can be seen in the cages or aviaries harboring them in local zoos, pet shops, and animal trade markets. Some of doves noted may carry a mutation that makes them completely white either with or without a black collar on the neck. The number of colors of the Barbary Dove can be attributed to the interbreeding of the species with the afore-mentioned Eurasian and/or African Collared Doves (*Streptopelia decaocto* and *Streptopelia roseogrisea*). It appears that it can hybridise freely with either species. A reasonable assumption could be that the Barbary Dove is a domesticated form of the Eurasian or African Collared Doves (Smith, 1987 and Grouw, 2018). Feral populations of Barbary Doves establish themselves readily as a result of escapes or releases from captivity. This may interpret the occurrence of the species in many urbanized or even agricultural ecosystems within the Gaza Strip. The species is a common caged and traded bird in many countries worldwide (Eid *et al.*, 2011 and Kabir, 2019). In Lebanon, the species was recorded in the Pine Forest and the campus of the American University of Beirut where it lives together with the Eurasian Collared Dove (Ramadan-Jaradi and Ramadan-Jaradi, 2012).

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