

# On the Poaching of and the Threats Facing the Chukar Partridge (*Alectoris Chukar* J.E. Gray, 1830) in Palestine

**Abdel Fattah N Abd Rabou\***

Department of Biology, Faculty of Science, Islamic University of Gaza, Gaza Strip, Palestine

\*Corresponding author: Abdel Fattah N Abd Rabou, Department of Biology, Faculty of Science, Islamic University of Gaza, Gaza Strip, Palestine



## ARTICLE INFO

**Received:** 📅 October 11, 2022

**Published:** 📅 October 21, 2022

**Citation:** Abdel Fattah N Abd Rabou. On the Poaching of and the Threats Facing the Chukar Partridge (*Alectoris Chukar* J.E. Gray, 1830) in Palestine. Biomed J Sci & Tech Res 46(5)-2022. BJSTR. MS.ID.007403.

## ABSTRACT

Palestine (27,000 km<sup>2</sup>) is home to three species of partridge belonging to the family Phasianidae, the majority of which is the Chukar partridge (*Alectoris chukar* J.E. Gray, 1830), which is a popular game bird. It is one of the most important features of wildlife in Palestine, and is considered part of the Palestinian cultural heritage. In recent years, the number of Chukar partridge in Palestine has significantly decreased, and it is on the verge of extinction. The current study aims at highlighting the poaching of and the threats facing the Chukar partridge in Palestine (West Bank and Gaza Strip). This 5-year descriptive and cumulative study from 2018 to 2022 was based on field visits, direct observations, frequent meetings and discussions with stakeholders, follow-up of news and social media, as well as photography for documentary and confirmatory purposes. All field visits, meetings and social networking sites confirmed that the Chukar partridge was spread in large numbers in Palestine two decades ago, but now it has become rare. The study showed that the Chukar partridge is trapped on a large scale in the West Bank and the Gaza Strip for several purposes, including obtaining its delicious meat, the beauty of its appearance and colors, and its high prices, where the pair can be sold for the equivalent of \$100, in addition to the desire of amateurs and breeders to acquire eggs and chicks and establish their own breeding projects. At least, three methods of hunting Chukar partridge predominate in the West Bank and the Gaza Strip, including nets, metal traps, and guns. Added to this is the seizure of chicks and eggs from the ground nests of the bird. The threats facing Chukar partridges in Palestine include overhunting, extensive use of chemical pesticides, predation by Wild Boars (*Sus scrofa*) in the West Bank, urbanization and encroachment of Israeli settlements on the expense of Palestinian natural and agricultural lands, and lack of enforcement of Palestinian environmental laws and legislations. Nevertheless, many interested parties have proposed and implemented initiatives to improve the state of Chukar partridges in Palestine, especially the West Bank.

**Keywords:** Chukar Partridge; *Alectoris Chukar*; Game Bird; Poaching And Trapping; Threats West Bank; Gaza Strip; Palestine

## Introduction

Palestine (27,000 km<sup>2</sup>) is home to more than 550 species of bird species covering all ecosystems from north to south and east to west [1-3]. Of this large number, only three species of partridge belonging to the family Phasianidae and to the order Galliformes are known to inhabit Palestine (Table 1), the majority of which is the Chukar partridge (*Alectoris chukar* J.E. Gray, 1830), which is a popular game bird that occurs along a steep eco-geographic gradient extending from the Mediterranean regions in the north to the desert-steppe regions in the south [4]. The Chukar partridge, which was represented in ancient Roman and Hellenistic mosaics, is one of the most important game birds in the world. The original distribution range of this species extends from the Balkans to East Asia [5,6]. In recent years, the number of Chukar partridge in Palestine has significantly decreased, and it is on the verge of extinction. Increasing pressures such as habitat loss, rapid land use changes and severe hunting pressure represent the most relevant threats to Chukars in Palestine [7]. The Common Quail (*Coturnix coturnix* Linnaeus, 1758) is the fourth member of the family Phasianidae occurring in Palestine. This bird migrates to Palestine each autumn and is subject to intensive hunting; especially along the Mediterranean coast of the Gaza Strip [8-14]. The Chukar partridge (*Alectoris chukar* J.E. Gray, 1830) is one of the most beautiful and game Palearctic birds worldwide [15] and in Palestine [10,16]. It is a one species of three partridge species inhabiting Palestine with a length of 30-35 cm. The Chukar partridge has well marked black and white bars on the flanks and a black band that extends from the forehead across the eye and passes under the head to form a pendant or necklace surrounding a white throat (Figure 1) [17-19]. The Chukar partridge is one of the most important features of wildlife in Palestine, and is considered part of the Palestinian cultural heritage, as it was mentioned in many stories, proverbs and folk songs in Palestine [20].



**Figure 1:** The Chukar partridge (*Alectoris chukar*) in the West Bank of Palestine [Photo: Mohammad Daraghme, December 17, 2018].

**Table 1:** The three partridge species occurring in Palestine.

Order Galliformes		
Family	Scientific Name	Common Name
Phasianidae	<i>Alectoris chukar</i>	Chukar Partridge
	<i>Ammoperdix heyi</i>	Sand Partridge
	<i>Francolinus francolinus</i>	Black Francolin

Although the Chukar is native to Asia, it has been introduced to and settled in many regions of the world. Feral populations of this game bird have become established in some region of the world including the USA [15,21]. This Chukar partridge is common in some parts of the Middle East including Palestine as stated before (Table 1). In some parts of southern Europe, the release of captive stock of Chukar partridge (*Alectoris chukar*) could threaten indigenous populations of Common Rock partridge (*Alectoris graeca*) and Red-legged partridge (*Alectoris rufa*) with which they may cross [22-25]. Chukar partridge usually prefers to run than fly, but if it senses danger, it will fly away. The bird and its chicks have a great ability to hide and camouflage between the rocks and the bushes, helped by their colors that harmonize with the color of the surrounding environment [26]. Mahmoud et al. [27] summarized some aspects of the Chukar partridge breeding ecology. The nesting material consists of dry weed leaves, twigs of small bushes, and fine feathers. The depth of the nest ranged between 5 and 10 cm. The clutch size ranged between 8-20 eggs while the incubation period ranged between 22-24 days. Despite the fact that many morphological Chukar partridge lineages live in the Middle East, studies of the species in Middle Eastern countries seem to escalate day by day. Most of the in-depth studies of the bird are due to Turkish, Iranian and Israeli scientists, who focused on genetic, behavioral and ecological aspects. In Turkey, a lot of work regarding the Chukar partridge was done [25,28-31]. In Israel, much work was surveyed [4,32-44]. In Iran, promising studies were escalating as well [45-49]. The Chukar partridge was also mentioned in scattered studies carried out in some Middle East countries such as Jordan [50,51], Iraq [52,53], etc.

In Palestine, there are no specialized studies on Chukars except for Al-Safadi [26] who studied the unusual camouflaging behavior of Chukar partridge chicks in the Gaza Strip. As long as the matter is in the Gaza Strip, there are many studies that indicated the presence of Chukar partridges in various environments, such as the Wadi Gaza Nature Reserve [8,9,12,13,54], the coastal ecosystem of Al-Mawasi [10], and the northern Gaza Strip [55]. Mummified samples of the Chukar partridge were found in exhibitions of taxidermy animals in Gazan universities [56,57]. Live specimens were encountered in private zoos [9] and shops selling pet birds [58]. In the West Bank, the Chukar partridge was mentioned among the surveyed fauna in

different ecosystem and animal markets as well [1,59,60]. Most of the ecological and biological studies conducted, whether in the Gaza Strip or in the West Bank, indicated a decrease in the number of Chukar partridges due to poaching, hunting, and habitat destruction or alteration. The present work aims to shed light on poaching and the threats facing the Chukar partridge (*Alectoris chukar* J.E. Gray, 1830) in Palestine. This is the first study in Palestine (West Bank and Gaza Strip) that examines this important topic that serves the preservation of Palestinian nature.

## Materials and Methods

### The Study Area (West Bank and Gaza Strip)



**Figure 2:** Palestine includes three political masses: The West Bank, the Gaza Strip and the rest of the Palestinian lands occupied by Israel since 1948.

Palestine (27,000 km<sup>2</sup>) is a geographic region in Western Asia usually considered to include three political masses: The West Bank, the Gaza Strip and the rest of the Palestinian lands occupied by Israel since 1948 (Figure 2). The West Bank (5,655 km<sup>2</sup>), which represents about 21% of the total area of Palestine, is bordered by Jordan and the Dead Sea to the east and by the Palestinian lands occupied by Israel since 1948 to the south, west and north. It is composed of 11 governorates: Nablus, Qalqilya, Tubas, Salfit,

Tulkarm, Jenin, Jericho and the Jordan Valley, Ramallah and Al-Bireh, Bethlehem, Hebron, and Al-Quds (Jerusalem). The population of the West Bank is estimated to be more than 3.2 million people. The West Bank is nowadays studded with Israeli settlements into which Israeli law is pipelined. The Gaza Strip (365 km<sup>2</sup>), which represents about 1.5% of the total area of Palestine, is an arid to semi-arid coastal area located in the southern part of the Palestinian coast along the eastern shore of the Mediterranean Sea (Figure 2). It is composed of five governorates: North Gaza, Gaza, Middle, Khan Yunis, and Rafah. Sand dunes are the main feature of the western part of the Gaza Strip, while silt and clay lands predominate in the eastern part. The population of the Gaza Strip is estimated to be more than 2.2 million people, and the population density reaches more than 6,000 people per square kilometer, making the Gaza Strip one of the most densely populated areas in the world. Unlike the West Bank, which is littered with Israeli settlements, today the Gaza Strip is free of Israeli settlements, after their irreversible uprooting in late 2005. The climate of Palestine is similar to that of the Mediterranean region, which is characterized by four months of hot, dry summers and short winters with rainfall from November to March. The main water resources in Palestine include groundwater, rivers, lakes, ponds, springs, and harvested rainwater. The Jordan River, one of the main rivers in Palestine, has a length of about 260 km and drains a total area of 18,300 km<sup>2</sup> [61].

### Procedure

The current study, which lasted for five years (2018-2022), was based on several procedures. A lot of field visits were carried out to different Gazan ecosystems including open lands, sand dunes and agricultural orchards in the morning hours before noon to investigate bird hunting; particularly Chukar partridge. These ecosystems distribute in the Gaza Strip from north to south and from east to west. Special focus was made on the eastern belts of the Gaza Strip, which is proximate to the Green Line or Armistice Line which politically isolates the Gaza Strip from the rest of the Palestinian territories that were occupied by Israel since 1948 (Figure 2). When needed, binoculars and digital cameras were used for monitoring and documentation. Animal markets, pet stores, zoos and sometime the small pens of some Palestinian homes were visited to study their content of Chukars and other bird species. Like most Gazans, the researcher does not find a way to reach the West Bank and Al-Quds Al-Sharif (Jerusalem) due to the complex Israeli occupation procedures and the difficulty of obtaining permits to enter the West Bank and the rest of the Palestinian Territories occupied by Israel since 1948. On the contrary, many discussions were held with various stakeholders in both the West Bank and Gaza Strip via mobile phones or social media such as Facebook, WhatsApp, etc. Stakeholders usually included bird hunters, breeders, as well as pet store and zoo keepers to get more

information about the Chukar partridge's ecology, trapping and trade. The researcher also relied actively on following up the news and social networking sites that are always full of local news related to Chukar partridges in Palestine.

## Results

### Past and Current Status of Chukar Partridge in Palestine



**Figure 3:** The state of Chukar partridges (*Alectoris chukar*) in the Gaza Strip:

- (A) The researcher displays a hunted and confined Chukar partridge inside a barn in a house in the Gaza Strip.
- (B) Caught Chukar partridges.
- (C) A Chukar partridge in a zoo.
- (D) Several Chukar partridges raised with Domestic Pigeons (*Columba livia domestica*) in one of the houses of the Gaza Strip.
- (E & F) Mummified samples of Chukar partridge in Gazanuniversities.

Bird hunters, farmers and normal citizens of the West Bank and Gaza Strip confirmed that the Chukar partridge was spread in huge numbers in Palestine two decades ago and was breeding among the mountains, plains and sand dunes in areas rich in weeds, herbaceous plants, shrubs and orchards. But the hunters pursued the bird in every nook and corner, and set nets and traps for it, and shot it with their guns, until its numbers began to decline dramatically two decades ago (Figures 3 & 4). Nowadays, Palestinians began to wonder: Where are the days of the beautiful time when we used to see the flocks of Chukar partridge fleeing before us and hear their familiar voices? Most of the Palestinian met also indicated that large numbers of the Chukar partridge left the West Bank and Gaza Strip due to overhunting and perpetual persecution, fleeing to Jordan, the Sinai Peninsula, or to the inside

of the Green Line (the Palestinian areas occupied by Israel since 1948), where hunting wildlife is prohibited and perpetrators of hunting are fined with heavy fines and imprisonment. They also showed that the remaining numbers of Chukar partridges are facing the threat of extinction unless the Palestinian authorities in the West Bank and Gaza Strip take certain measures to preserve this species along with other forms of wildlife.



**Figure 4:** The state of Chukar partridges (*Alectoris chukar*) in the West Bank:

- (A, B, C and D) Free-ranging Chukar partridges in different environments in the West Bank,
- (D) A ground nest full of eggs on which the Chukar partridge mother lies.
- (F) A Palestinian from the West Bank displays some Chukar partridges before releasing them to nature.

### Why do the Palestinians Scramble to Hunt Chukar Partridges?

- a) **Eating:** The Chukar partridge is a member of the family Phasianidae which includes along with partridges, the pheasants, junglefowl, chickens, turkeys, quails, and peafowl. Therefore one of the goals that make these beautiful birds a destination for poaching and trapping is to obtain their delicious meat, which according to experimenters; its meat is more delicious than chicken (*Gallus gallus domesticus*) meat that is sold in the markets. It is worth noting that the size of the Chukar partridge is relatively large and is close to the size of a small chicken that the Palestinians used to rise at homes or barns.
- b) **Exquisite Beauty:** The Chukar partridge has a stunning

beauty due to its beautiful and harmonious colors and elegant size. That is why some Palestinians are looking forward to owning it inside or on the roofs of their houses in large or medium-sized cages, hoping to enjoy the aesthetic value that God has endowed for this meek bird.

c) High prices: Due to the scarcity of Chukar partridges in nature and in popular bird markets as well, their prices began to rise to the point that the price of a pair of them exceeds 350 Israeli shekels (that is, approximately \$100), and therefore whoever catches this bird will sell it at high prices in light of the poverty and unemployment that Palestinians live in, especially in the Gaza Strip, where its people have been suffering from an Israeli siege since 2006. Photos of some Chukar partridges are placed on pages specialized in selling birds on social networking sites such as Facebook, so that something like an electronic auction takes place. Sometimes, one individual of Chukar partridges is sold for more than 200 Israeli shekels (that is, approximately \$60). In one of his visits to the Yarmouk Market, which is located in the center of Gaza City, the researcher noticed a young man displaying a number of partridges in a cage for sale. The amateurs surrounded the young man, asking him to reduce the price of these birds until they were sold at a price of 170 Israeli shekels (equivalent to \$50) per bird.

d) Amateurs and breeders desire: Many of those interviewed or telephoned explained that the fondness of amateurs and breeders for Chukar partridge put it in the ranks of the rare and most beautiful birds in Palestine, and some began setting up their own breeding projects, designing houses in a way that mimics its original environment, in order to stimulate it to breed in greed for its precious eggs. Some hobbyists breed Chukar partridges in captivity using hatcheries or by laying eggs under reared chickens (*Gallus gallus domesticus*). A Gazan bird hunter mentioned that several years ago he had caught two pairs of Chukar partridges. He raised the birds in his home and obtained during the spring of each year fertilized eggs from them to put under a domestic chicken. Once the eggs hatch, the hen takes care of the chicks, and thus the hunter kept the Chukar partridge multiplying in his house to enjoy its beautiful appearance, especially since he loves this beautiful bird since his childhood.

### Trapping of Chukars in Palestine

The Chukar partridge is considered one of the most preferred birds by Palestinian hunters, and for this reason, they go on hunting trips individually and in groups, using all possible tricks and ways to catch the bird. In the West Bank and Gaza Strip, there are several ways to catch Chukar partridges as follows:

a) Netting: It is the most common method used to trap Chukar partridges. The tactic used here is to put special nets in specific places and then quietly chase the birds, forcing them to go to the area of the nets, and then be chased suddenly, to fall into the nets during the birds' attempts to escape from pursuit.

b) Gunning or shooting (use of guns): Various types of guns are used to hunt wild birds and hares, or to kill some animals that attack crops and property, whether in the West Bank or Gaza Strip. The Gazans were able to smuggle types of dangerous and deadly hunting rifles from Egypt to the Gaza Strip through underground tunnels during the past 15 years. These guns are locally called "spray guns" that emit dozens of small projectiles at a time. Therefore, a single shot is capable of injuring and killing a large number of Chukar partridges and others from a long distance. Some Gazan hunters claimed that Chukar partridges caught with these guns in one year are comparable to what the hunters caught in a decade or more. They added that these dangerous «spray guns» contributed to the rapid and drastic decrease in the number of Chukar partridges in the Gaza Strip.

c) Metal traps: Hunters set up some types of small metal traps, especially in places frequented by Chukar partridges. It should be noted that this method may harm the birds and cause their legs to break, and possibly their certain death if they remain in the trap for a long time.

### Confiscation of Chukar Partridge Eggs and Chicks

The Chukar partridge is a bird residing in Palestine and not one of the migratory birds. In the Palestinian environment, the nests of Chukar partridges are typically hidden under rocks, inside herbs and wild plants or among bushes and shrubs such as European Olives (*Olea europaea*), Common Fig (*Ficus carica*), Common Grapes (*Vitis vinifera*), etc. The number of eggs that a female Chukar partridge lays in her ground nest in March or April ranges from 10 to 20 pale yellow-brown eggs. Locally, the nest of this bird is called «Miha'a». The incubation period of eggs ranges from 22 to 24 days and is carried out by the female. Shortly after hatching, the young leave the nest. It was found that bird hunters and even normal people are not satisfied with hunting the adult Chukar partridges, but they confiscate their eggs or chicks from the nests, and they deliberately hunt the Chukar mothers during the breeding season in the spring. One of the touching stories told by Palestinians in the West Bank is that with the beginning of the Corona epidemic (COVID-19) crisis in 2020 and the imposition of a complete closure on Palestinian cities and towns, a person who is interested in protecting nature and preserving Chukar partridges in Hebron encountered a shepherd who was carrying a bag filled with 18 Chukar partridge eggs. The person asked the shepherd about the source of the eggs? The

shepherd told him conservatively: «I brought these eggs from the wilderness, and I wanted to make a meal from them to satisfy my hunger.» At that time, the person tried to retrieve the eggs by any means. In conclusion, the person offered him one hundred Israeli shekels (\$30), and the shepherd agreed [20].

### Threats facing Chukar Partridges in Palestine

Chukar partridges as breeding birds in the Palestine environment (West Bank and Gaza Strip) face several threats, which are:

- a) Overhunting is considered one of the most important risks facing wildlife, especially Chukar partridges in Palestine. Nets, traps and guns are used in hunting the bird, as mentioned before. The theft or “hunting” of Chukar partridge eggs during mating and breeding in the spring is very common. In general, Palestinian bird hunters used to hunt males, females, mothers, chicks and eggs of Chukar partridge for meat, eggs, as well as trading it through hatcheries. This human behavior has caused increased pressure on the Chukar partridge populations over the past years and led to a severe decrease in their numbers in Palestine.
- b) Since agriculture is the backbone of the Palestinian economy in the West Bank and Gaza Strip, the extensive and intensive use and spraying of agrochemicals such as chemical pesticides and chemical fertilizers threatens wildlife, including Chukar partridges, with death, delays in reproduction, thinning of bird eggshells, etc. It should be noted that some of the chemical pesticides used in the Palestinian environment may be dangerous, persistent, internationally prohibited, or expired and smuggled through Israeli settlements, especially in the West Bank, where smuggling is facilitated due to the overlapping of Israeli settlements and their penetration into West Bank lands.
- c) Predation of Wild Boars (*Sus scrofa*) as artiodactylan mammals, although vegetarian, on eggs and chicks of Chukar partridges. It should be noted that these animals are found in the West Bank and the rest of Palestine, but they are not found in the Gaza Strip. These fierce animals pose a threat to humans, agricultural crops, domestic animals and some forms of wildlife. They attack the ground nests of birds, including Chukar partridges, devouring their eggs and chicks. Other predators may include foxes, wild cats, and birds of prey.
- d) Urbanization and encroachment of the Palestinians dwellings and buildings at the expense of the natural and agricultural environments in the West Bank and Gaza Strip, which constitutes a clear threat to the natural habitats of

wildlife, including Chukar partridges.

- e) The encroachment of Israeli settlements and Apartheid Isolation Wall in the West Bank on the Palestinian natural and agricultural lands contributes to threatening wildlife, including the rare Chukar partridges. These Israeli constructions on the lands of the West Bank cause the fragmentation of ecosystems and ecological habitats and curb communication between wildlife populations, especially the Chukar partridge because it is poor in flight as it prefers running over flying when it is pursued. In the Gaza Strip, the newly constructed security wall seems to have similar impacts on the bird in question.
- f) Absence of oversight and lack of enforcement of the Palestinian law criminalizing the practices of poaching and hunting wildlife in general and Chukar partridges in particular. There are no red lines towards hunting wildlife in Palestine, and accordingly, every person can hunt whatever wildlife he wants in the numbers he wants and at the time he wants without concern from the official governmental bodies in Palestine, which constitutes a clear threat to the Palestinian nature and its biological content.

### Initiatives to Save Chukar Partridges from Extinction

Over the years, many personal or institutional initiatives have emerged to protect the Chukar partridge from disappearance or extinction (Figure 5). A Palestinian citizen (50 years old) from Hebron, in the southern West Bank, has been continually buying Chukar partridge eggs from the market since 2019 and hatching those using special devices, and after hatching he works to take care of the chicks for a period of time reaching 10 months, then he returns them as strong birds to nature. This citizen says that two decades ago, the Chukar partridge was widely spread among the mountains, plains and orchards of the West Bank, while its numbers are very few nowadays due to overhunting, collecting eggs from their nests and selling them in the markets. There is a great demand to buy the eggs as Palestinians eat them like chicken eggs, and this is of course threatens the populations of Chukar partridges in nature. In conclusion, he added that he loves wildlife and believes that the release of birds in nature is a culture that must be circulated in Palestine so that such rare and beautiful species do not become extinct. The biggest campaign in the West Bank was through the story of the electronic Quraiya page which says: Isn't it better to let the Chukar partridge (the beauty queen of the mountains of Palestine) decorate the wilderness of Palestine, instead of stealing its eggs, and eating its meat. Leave the bird in peace.



**Figure 5:** Personal initiatives to protect Chukar partridges from extinction

- (A) Eggs of Chukar partridge prior to collection.  
 (B) Chukar partridge chicks hatch from eggs in a special incubator.  
 (C) Chukar partridge egg incubator.  
 (D) A Palestinian from Hebron takes care of Chukar partridge chicks after they hatch to release them later in nature.

## Discussion

The widespread spread of the Chukar partridge in Palestine (West Bank and Gaza Strip) two decades ago may be attributed to the abundance of ecosystems and habitats frequented by these birds and poor urbanization compared to these days, in addition to the availability of job opportunities for Palestinians and the lack of advanced hunting methods, especially the lack of guns, which are nowadays widely used for hunting. As far as urbanization is concerned, Qumsiyeh et al. [1] showed a significant decrease in vertebrate biodiversity; especially for birds, in the Bethlehem Governorate area of the West Bank due to increased urbanization accompanied by an increase in temperature and a decrease in annual precipitation over the past decades. Likewise, the rapid urbanization of the Israeli landscape threatens to disrupt the unique and possibly essential genetic links among the Chukar partridge populations [4]. The mountains, plains, sand dunes, and deserts contain various and attractive forms of vegetation, represented in herbs, grasses, trees, shrubs and orchards, which in turn represent feeding, hiding, camouflaging, nesting and breeding factors for Chukar partridges and other birds. In the Gaza Strip, for example,

during field visits, flocks of Chukar partridges were observed in the valleys of the Gaza Strip, especially Wadi Gaza, which was declared a nature reserve in 2000 [8,13] and has considerable vegetation [62], in the coastal area of Al-Mawasi, which is dominated by sand dunes [10], and in the eastern and northern regions of the Gaza Strip, as well as the areas in the far southeast of the Gaza Strip, which contain the remains of the old Gaza International Airport. All of these areas are teeming with an enormous botanical diversity, both natural and agricultural, which support the occurrence and breeding of Chukar partridges [10,12] and concealment and camouflage of their chicks as well [26].

In the Hebron region of the West Bank, the Chukar partridge is a common breeding bird in and near the Wadi Al-Quff Protected Area due to the abundance of vegetation [59]. In Pakistan, Shahwar et al. [63] described the vegetation that occurs in the areas of the Chukar partridge and is not very different from that found in Palestine, especially the European olive (*Olea europaea*) and some species of acacia which were great examples. The poaching of the Chukar partridge and the gathering of its young and eggs has made its rare occurrence in the Palestinian Territories a major issue [64,65]. Accordingly, the claim of some Palestinians that a mass departure of the Chukar partridge from the West Bank and Gaza Strip to other areas within Palestine or neighboring countries may be justified, although the partridge is a bird that usually prefers to run over flight during escape from enemies because its flight property is limited [18]. There are many reasons, despite their convergence, in countries that are active in hunting wild birds. In developing countries such as Algeria, Egypt, Jordan, Saudi Arabia, UAE, Lebanon and others [51,66-77], most of the hunting harvest, whether legal or illegal, goes to food, breeding or trade in pet stores and markets to earn money; especially since a great section of citizens of these countries suffer from difficult living conditions. The results of the current study showed somewhat similar scenarios concerning of the trapping of Chukar partridges. Such conditions push people to extensively hunt everything that their nets and trapping means reach. Although hunting wild animals for food or other purposes in Israel is a taboo punishable by law, Thai workers and sometimes others illegally hunt many forms of wildlife for the purpose of eating, including the three partridge species previously mentioned in Table 1 [78,79]. The situation in the Palestinian Territories (West Bank and Gaza Strip) is completely different, and can never be compared to the safe situation for wildlife in Israel.

Chukar partridges and other forms of wildlife are illegally poached and trapped [8,58,60,61] without any concern from the Palestinian governments. Environmental laws and legislations are weak, and criminality against the Palestine environment and ecology is increasing violently. One of the bright sides of the Palestinians in the West Bank and Gaza Strip is that some of them

volunteer and even like to buy with their own money the trapped Chukar partridges and sometimes their chicks to return them to the wild or nature again in order to protect this beautiful bird from extinction (Figure 4E). During some visits to the Yarmouk Market, in the center of Gaza City, the researcher saw a few Gazans buying some birds, including Chukar partridges, with their money at reasonable prices in order to return them to nature. It is said that partridge eggs, if removed from their nest, are difficult to hatch, and that is why some Palestinians in the West Bank, as the results of the study showed, used to buy Chukar partridge eggs, collect them and put them in incubators and hatcheries until numbers of them hatch (Figure 5). Some of those with experience continue raising chicks until they are mature and then return them to the wild. Some claimed that the eggs of the purchased Chukar partridge can be placed under a Domestic Hen (*Gallus gallus domesticus*) to lie on them until they hatch, and the hen takes care of the chicks until they grow up and then release them into the wild. In Turkey, artificial breeding of Chukar partridge is a common phenomenon which has given good results [30,80]. Partridge is the species most adapted for commercial production and breeding is mostly done to provide birds for hunting in Turkey [81]. In the Balochistan of Pakistan, Chukar partridge farming is an emerging cottage industry established to breed partridges on a commercial scale. It was found that the Chukar partridge and its eggs of farm origin were found in pet stores and markets for the purpose of sale in the country as well [82]. However, a recent study indicated that the use of mechanical incubators to hatch pheasant eggs and artificial mothers for intensive breeding of birds could have consequences for these birds' behavior, well-being and survival after release into the wild.

Conversely, native custodial mothers appear to have a positive effect on the behavior of pheasant chicks, reducing fear and improving the ability to perceive threats [83,84]. As far as Chukar partridge trapping methods are concerned, they have been limited to the use of nets, metal traps, and guns. Other types of nets or traps may exist, but they are used on a very small scale. Several videos that the researcher has seen of Chukar partridge hunting operations in other Arab countries differ from what is common in Palestine (Personal Observations). Throughout the geographical distribution of the Chukar partridge in the Middle East, several forms of nets have been used. Because of the low socio-economic status of most bird hunters in the Gaza Strip, they depend on exhausted fishing nets that Gazan fishermen may dispense with. Some of the worn-out fishing nets are currently used in the Gaza Strip to catch the Common Quail (*Coturnix coturnix*), which are erected at varying heights along the sea shore and at a distance of 100-200 meters from the coastline [11]. Some of the nets were found new with bird hunters, as they may have been imported or smuggled to the Gaza Strip through the underground tunnels linking the Gaza Strip and the Sinai Peninsula (Egypt) as a reflection of the Israeli blockade

or siege imposed on the Gaza Strip since 2006. The process of obtaining hunting nets in the West Bank is, of course, easier and perhaps cheaper, as there is no blockade and the movement of the crossings from the West Bank to the world and vice versa is freer than the crossings of the Gaza Strip. Rifles and cartridges are abundant in the Gaza Strip, and most of them were smuggled from the Sinai Peninsula to the Gaza Strip through underground tunnels. This method is considered the most dangerous in hunting wildlife, including the Chukar partridge, because it leads to mass hunting, as a single shot from the «spray guns» can injure or kill several birds at the same time due to the fragmentation of the shot into small projectiles, especially since the Chukar partridge is social and lives in pairs or in groups ranging from 10-20 birds [8,10,12,26].

The Chukar partridge is listed as a Least Concern species in many locations throughout the world. However, habitat destruction, alteration and modification and overexploitation negatively affect some parts of the bird's range [85,86]. The results of the current study indicated a number of threats facing Chukar partridges and other forms of wildlife in the Palestinian territories (West Bank and Gaza Strip). Such threats may be similar and may increase or decrease depend on the specificity of the countries in which the Chukar partridge is hunted. For example, threats in Pakistan are manifold to include habitat destruction, overgrazing, logging, landslides, poaching, shootings, mines, explosives, road construction, etc. [63]. In Iran and Turkey, excessive hunting and poaching, habitat degradation, migration, indiscriminate use of agrochemicals (chemical pesticides and fertilizers) and human-mediated hybridization are considered as main threat factors of Chukar partridges in recent years [45,80,87]. In fact, hunting, as a threatening factor, was granted for game birds in certain protected areas in Turkey with the exception of partridges and other game birds that have a shrinking habitat under high hunting pressure [88]. In conclusion, the Chukar partridge is considered one of the most beautiful birds in Palestine, and its numbers have decreased due to several threats including poaching and excessive hunting. Therefore, the study recommends the necessity of activating the Palestinian law and increasing ecological awareness among Palestinians to stop poaching the Chukar partridge and other forms of wildlife in the hope of improving their populations and not being absent from the Palestinian wilderness.

### Acknowledgement

My thanks go to all the bird hunters, farmers, pet store owners, and other stakeholders I met in the Gaza Strip or telephoned in the West Bank during the succeeding stations of the study and who provided me with valuable information that enriched this modest study. I cannot fail to express my special thanks to Mr. Bashar Jarayseh, Mr. Mohammad Daraghme, Mr. Hamza Rashed, Mr. Basem Musa, Mr. Ahmad Jbaren, Mr. Nedal Jbaren, Mr. Mohammed



Al-Shoabi, Mr. Abdullah Amara, Mr. Mohammed Abd Rabou, Mrs. Sinaa Ababsah, Ms. Eqbal Radwan and their colleagues for launching my study with many photos and technical support.

## References

1. Qumsiyeh M, Zavala S, Amr Z (2014) Decline in vertebrate biodiversity in Bethlehem Area (Occupied Palestinian Territories). *Jordan Jour Bio Sci*; 7(2): 101-107.
2. Meiri S, Belmaker A, Berkowic D, Kazes K, Maza E, et al. (2019) A checklist of Israeli land vertebrates. *Israel Jour Eco Evolu*; 65: 43-70.
3. Perlman Y, Meyrav J (2009) Checklist of the birds of Israel. Israel Ornithological Center. Society for the Protection of Nature in Israel (SPNI) Israel, p. 30.
4. Kark S A, Alkon P U, Safriel U N, Randi E (1999) Conservation priorities for Chukar partridge in Israel based on genetic diversity across an ecological gradient. *Conservation biology*13(3): 542-552.
5. Madge S, McGowan P (2002) Pheasants, partridges, and grouse. A guide to the pheasants, partridges, quails, grouse, guineafowl, buttonquails, and sandgrouse of the World. Bloomsbury Publishing London, UK, pp. 406 .
6. Larsen RT, Flinders JT, Mitchell DL, Perkins ER (2007) Conservation risks of exotic Chukars *Alectoris chukar* and their associated management. Implications for a widely introduced phasianid. *Wildlife Research* 34(4): 262-270.
7. Abd Rabou AN (2020) How is the COVID-19 outbreak affecting wildlife around the world. *Open Journal of Ecology* 10(08): 497-517.
8. Abd Rabou AN (2005) An ecological survey and assessment of Wadi Gaza Nature Reserve. Gaza Strip – Palestine with particular emphasis on wildlife. Ph.D. Thesis, Department of Environmental Studies, Faculty of Science and Technology, School of Life Sciences, Al-Neelain University – Sudan, pp. 278.
9. Abd Rabou AN (2011) Notes on some Palestinian bird fauna existing in the zoological gardens of the Gaza Strip. *American-Eurasian Journal of Agricultural & Environmental Sciences (AEJAES)* 11(2): 159-172.
10. Abd Rabou AN (2019) Ornithofauna prevailing at Al-Mawasi ecosystem of the Gaza Strip Palestine. *Open Journal of Ecology (OJE)* 9(9): 360-400.
11. Abd Rabou AN (2021) On the hunting of the Common Quail (*Coturnix coturnix* Linnaeus, 1758) along the Mediterranean coast of the Gaza Strip – Palestine. *IUG Journal of Natural Studies* 29(2): 1-19.
12. Abd Rabou AN, Yassin MM, Al Agha MR, Hamad DM, Ali AS (2007) The avifauna of Wadi Gaza Nature Reserve, Gaza Strip - Palestine. *The Islamic University Journal (Series of Natural Studies and Engineering)* 15(1): 39-85.
13. (2002) MedWetCoast. Management plan Wadi Gaza. Project for the Conservation of Wetland and Coastal Ecosystems in the Mediterranean Region – MedWetCoast, pp. 171.
14. (1994) Euroconsult/IWACO. Gaza environmental profile (Part 1) Inventory of resources. Palestinian Environmental Protection Authority, Gaza Strip, Palestine, p. 60.
15. Christensen GC (1970) The Chukar partridge Its introduction, life history, and management. *Biological Bulletin No. 4*, Nevada Department of Fish and Game, Reno, Nevada, USA, p. 80.
16. Shirihai H (1996) The birds of Israel. Academic Press, pp. 692.
17. Porter RF, Christensen S, Schiermacker-Hansen (1996) Field guide to the birds of the Middle East. T and AD Poyser, London, pp. 460.
18. Harrison C, Greensmith A (1993) *Birds of the world*. 1st American ed DK Publishing, Inc, pp. 416.
19. Abu Shammalah M, Baha Ed-Din M (1999) *Birds of Gaza*. Darwish Consulting Engineers Ltd, p. 44.
20. Kila I (2020) The savior of the Chukar partridge bird... when the "hatchery" becomes the surrogate mother in light of the repeated attacks. *Environment and Development Prospects An electronic magazine issued by the Development Action Center / Ma'an | West Bank, Palestine Issue 126*.
21. Walter H (2002) Natural history and ecology of the Chukar (*Alectoris chukar*) in the northern Great Basin. *Great Basin Birds* 5(1): 28-37.
22. Duarte J, Vargas JM (2004) Field interbreeding of released farm-reared Red-legged partridges (*Alectoris rufa*) with wild ones. *Game and Wildlife Science* 21(1): 55-61.
23. Barilani M, Bernard-Laurent A, Mucci N, Tabarroni C, Kark S, et al. (2007) Hybridization with introduced Chukars (*Alectoris chukar*) threatens the gene pool integrity of native Rock (*A. graeca*) and Red-legged (*A. rufa*) partridge populations. *Biological conservation* 137(1): 57-69.
24. Barbanera F, Guerrini M, Khan A A, Panayides P, Hadjigerou P, et al. (2009) Human-mediated introgression of exotic chukar (*Alectoris chukar*, Galliformes) genes from East Asia into native Mediterranean partridges. *Biological Invasions* 11(2): 333-348.
25. Albayrak T, García JAD, Özmen Ö, Karadas F, Ate, S D et al. (2022) Evidence for genetic hybridization between released and wild game birds Phylogeography and genetic structure of Chukar Partridge, *Alectoris chukar*, in Turkey. *Diversity* (14): 571
26. Al Safadi MM (1999) Unusual camouflaging behavior in partridge chicks, *Israel Journal of Zoology* 45(2): 293-294.
27. Mahmood T, Ahmad I, Akrim F, Hamid A, Waseem M, et al. (2019) Breeding ecology of Chukar partridge (*Alectoris chukar*) in lower Dir District, Khyber Pakhtunkhwa, Pakistan. *Pakistan Journal of Zoology* 51(1): 265-271.
28. Balcioglu MS, Rizilkaya K, Karabağ K, Alkan S, Yolcu Hİ, et al. (2009) Comparison of growth characteristics of Chukar partridges (*Alectoris chukar*) raised in captivity. *Journal of Applied Animal Research* 35(1): 21-24.
29. Yilmaz A, Tepeli C (2009) The native partridges of Turkey. *International Journal of Galliformes Conservation* (1): 9-11.
30. Yamak U S (2015) Artificial breeding of wild birds in Turkey. Partridge breeding case. *Indian Journal of Animal Research* 49(2): 258-261.
31. Albayrak T, Aytek Aİ (2022) Bill variation of captive and wild Chukar Partridge populations. *Shape or Size. Diversity* 14(1): 48.
32. Alkon PU (1974) Social behavior of a population of Chukar Partridge (*Alectoris chukar cypristes*) in Israel. Unpublished Ph.D. thesis, Cornell University, Ithaca, NY, USA.
33. Krausz S, Bernstein R, Marder J (1977) The acid base balance of the Rock partridge (*Alectoris chukar*) exposed to high ambient temperatures. *Comparative Biochemistry and Physiology. Part A Physiology* 57(2): 245-247.
34. Benjamini L (1980) Feeding behavior of the Chukar (*Alectoris chukar*) in sugar beet plantations. *Phytoparasitica* 8(1): 3-18.
35. Degen AA, Pinshow B, Alkon PU (1983) Summer water turnover rates in free-living Chukars and Sand partridges in the Negev Desert. *The Condor* 85(3): 333-337.
36. Degen AA, Pinshow B, Shaw PJ (1984) Must desert Chukars (*Alectoris chukar sinaica*) drink water. Water influx and body mass changes in response to dietary water content. *The Auk* 101(1): 47-52
37. Fridman S, Avital E (1983) Nesting and brood production in an Israeli population of Chukars, *Alectoris chukar* (Aves: Phasianidae). *Israel Journal of Ecology and Evolution* 32(4): 185-193.

38. Randi E, Alkon PU (1994) Genetic structure of Chukar (*Alectoris chukar*) populations in Israel. *The Auk* 111(2): 416-426.
39. Randi E, Tabarroni C, Kark S (2006) The role of history vs. demography in shaping genetic population structure across an ecotone. Chukar partridges (*Alectoris chukar*) as a case study. *Diversity and Distributions* 12(6): 714-724.
40. Carmi-Winkler N, Degen A A, Pinshow B (1987) Seasonal time-energy budgets of free-living Chukars in the Negev Desert. *The Condor* 89(3): 594-601.
41. Kark S (1999) Within-population diversity in the distribution range. Partridges as a research model. PhD Dissertation, the Hebrew University of Jerusalem, Jerusalem.
42. Kark S (2001) Shifts in bilateral asymmetry within a distribution range. the case of the Chukar partridge. *Evolution* (55): 2088-2096.
43. Kark SA (2002) Lek-like behavior by Chukar *Alectoris chukar*: a socially monogamous partridge. *Sandgrouse* 24(1): 28-32.
44. Yom Tov Y, Benjamini Y, Kark S (2002) Global warming, Bergmann's rule and body mass—are they related? The Chukar partridge (*Alectoris chukar*) case. *Journal of Zoology* 257(4): 449-455.
45. Abbasi H, Tahmoospour M, Nassiri M R, Ghovvati S (2010) Analysis of genetic diversity of Chukar partridge (*Alectoris chukar*) populations in Khorasan-e-Razavi province of Iran by RAPD-PCR. *Biochemical genetics* 48(11): 954-961.
46. Shojaei B, Hashemnia S, Rad RE (2016) Histochemical study of the esophagus in the Chukar partridge (*Alectoris chukar*) embryo. *Folia Morphologica* 75(4): 474-480.
47. Abbasnia M, Nili H, Mayahi M, Mohammadian B (2018) The prevalence of histomoniasis in Chukar partridge (*Alectoris chukar*) in Iran. A case report. *Iranian Veterinary Journal* 14(2): 121-125.
48. Dehaghi IM, Salmanmahiny A, Karimi S, Shabani AA (2018) Multi-criteria evaluation and simulated annealing for delimiting high priority habitats of *Alectoris chukar* and *Phasianus colchicus* in Iran. *Animal Biodiversity and Conservation* 41(1): 185-193.
49. Sarshar A, Ghasempouri SM, Aliabadian M, Naderi M (2021) Microsatellite evidence of Common Partridge (*Alectoris chukar*) genetic diversity in the western parts of Iran. *Journal of Wildlife and Biodiversity* 5(3): 120-137.
50. Evans M, Amr ZS, Al Oran RM (2005) The status of birds in the proposed Rum Wildlife Reserve, southern Jordan. *Turkish Journal of Zoology* 29(1): 17-26.
51. Eid E, Handal R (2018) Illegal hunting in Jordan: Using social media to assess impacts on wildlife. *Oryx* 52(4): 730-735.
52. Al Barwari S, Saeed I (2012) Parasitosis of the Chukar partridge. *Alectoris chukar* in north Iraq. *Türkiye Parazitoloji Dergisi* 36(4): 240-246.
53. Lahony SS, Al Rawy MA (2010) New sub-species of Chukar Partridge *Alectoris Chukar* (GRAY 1830) (Phasianidae, Galliformes) from north east of Iraq with biological observations. *Bulletin of the Iraq Natural History Museum* 11(1): 57-67.
54. Abu Taleb MHA (2008) Studies on vertebrates of Gaza Strip. Palestine, Ph.D. Thesis Department of Zoology, Faculty of Girls for Arts and Education, Ain Shams University, Egypt in cooperation with the Department of Biology. Al-Aqsa University, Gaza Strip, Palestine, pp. 252.
55. Yassin MM, Abd Rabou AN, Al Agha MR (2006) Preliminary survey of terrestrial vertebrate fauna and people's awareness towards wildlife in the Northern Governorate of the Gaza Strip. *Al-Azhar Bulletin of Science. Zoology & Botany* 17(1): 17-41.
56. Abd Rabou AN (2020) The Palestinian marine and terrestrial vertebrate fauna preserved at the Biology Exhibition, Islamic University of Gaza, bombarded by the Israeli Army in December, 2008. *Israa University Journal of Applied Science (IUGAS)* 4(1): 9-51.
57. Abd Rabou AN, Musallam NJ, Musallam EJ, Elkahlout K E, Elnabris K J, et al. (2020) The Palestinian terrestrial vertebrate fauna preserved at the biology exhibitions of the universities of the Gaza Strip. *Research in Ecology* 2(4): 9-21.
58. Al Sweirki SH (2022) Animal trade in pet shops of the Gaza City Palestine. M.Sc. Thesis, Department of Biology, Islamic University of Gaza, Gaza Strip, Palestine, pp. 163.
59. Khalilieh A (2016) Avifaunal baseline assessment of Wadi Al-Quff protected area and its vicinity, Hebron, Palestine. *Jordan Journal of Natural History* 3: 58-69.
60. Handal EN, Amr ZS, Basha WS, Qumsiyeh MB (2021) Illegal trade in wildlife vertebrate species in the West Bank, Palestine. *Journal of Asia-Pacific Biodiversity* 14(4): 636-639.
61. (2003) UNEP. Desk study on the environment in the occupied Palestinian territories. United Nations Environment Program, Nairobi, Kenya, pp. 188.
62. Abd Rabou AN, Yassin MM, Al Agha MR, Madi MI, Al-Wali MM (2008) Notes on some common flora and its uses in Wadi Gaza, Gaza Strip. *The Islamic University Journal (Series of Natural Studies and Engineering)* 16(1): 31-63.
63. Shahwar DE, Kawan A, Mukhtar H, Ullah I (2021) Distribution and population of Chukar partridge (*Alectoris chukar*) in District Bajuar, KPK, Pakistan.
64. Mustafa M, Alhadath (2015) Partridge in Gaza is facing the threat of extinction, and hunters are tracking it everywhere.
65. Al Jamal M, Al-Ayyam (2017) Partridge leaves Gaza to escape from hunter's nets.
66. Baha El Din SM, Salama W, Grieve A, Green RE (1996) Trapping and shooting of Corncrakes (*Crex crex*) on the Mediterranean coast of Egypt. *Bird Conservation International* 6: 213-227.
67. Baha El Din SM, Salama W (1991) The catching of birds in North Sinai. Cambridge, UK: International Council for Bird Preservation ICBP Report, p. 45.
68. Soorae PS, Al Hemeri A, Al Shamsi A, Al Suwaidi K (2008) A survey of the trade in wildlife as pets in the United Arab Emirates. *Traffic Bulletin* (22): 41-46.
69. Eid E, Al Hasani I, Al Share T, Abed O, Amr Z (2011) Animal trade in Amman local market, Jordan. *Jordan Journal of Biological Sciences* 4(2): 101-108.
70. Sarant L (2012) Bird hunting in Egypt: An unregulated and unmonitored activity. *Egypt Independent*.
71. El Moghrabi L (2013) The state of Jordan's birds. *The Royal Society for the Conservation of Nature, Amman (RSCN), Jordan*, p. 80.
72. Aloufi A, Eid E (2014) Conservation perspectives of illegal animal trade at markets in Tabuk, Saudi Arabia. *Traffic Bulletin* (26): 77-80.
73. Eason P, Rabia B, Attum O (2016) Hunting of migratory birds in North Sinai, Egypt. *Bird Conservation International* 26(1): 39-51.
74. Elhalawani S (2016) Hunting and illegal killing of birds along the Mediterranean coast of Egypt. Socioeconomic study. Report by Nature Conservation Egypt & BirdLife International, p. 42.
75. Abi Said MR, Outa NT, Makhlof H, Amr ZS, Eid E (2018) Illegal trade in wildlife species in Beirut, Lebanon. *Vertebrate Zoology* 68(1): 1-4.

76. Atoussi S, Razkallah I, Ameziane IN, Boudebbouz A, Bara M, et al. (2022) Illegal wildlife trade in Algeria, insight via online selling platforms. *African Journal of Ecology* 60(2): 175-181.
77. Razkallah I, Atoussi S, Telailia S, Abdelghani M, Zihad B, et al. (2019) Illegal wild birds' trade in a street market in the region of Guelma, north-east of Algeria. *Avian Biology Research* 12(3): 96-102.
78. Yom Tov Y (2003) Poaching of Israeli wildlife by guest workers. *Biological Conservation* 110(1): 11-20.
79. Borel R, Haaretz (2006) The Chukars are protected, but they are still being hunted.
80. Karabağ K, Alkan S, Mendes M (2010) Classification tree method for determining factors that affecting hatchability in Chukar partridge (*Alectoris chukar*) eggs. *Kafkas Üniversitesi Veterinerlik Fakültesi Dergisi* 16(5): 723-727.
81. Cetin O (2002) Egg production and some hatchability characteristic of Rock partridges (*A. graeca*) mated at different rates. *Turkish Journal of Veterinary & Animal Sciences* (26): 1009-1011.
82. Essaa M, Ziauddin MA, Imranb M, Naeema M, Khanc MA (2021) Analytical study of Chukar partridge farming, marketing, fighting and using it as cage bird in houses of Balochistan, Pakistan. *Gazi University Journal of Science* 34(03): 18-32.
83. Pis T (2012) Growth and development of chicks of two species of partridge: The Grey partridge (*Perdix perdix*) and the Chukar (*Alectoris chukar*). *British poultry science* 53(1): 141-144.
84. Santilli F, Bagliacca M (2019) Fear and behavior of young pheasants reared with or without parent figure. *Avian Biology Research* 12(1): 23-27.
85. Gruychev G, Dyakov N, Dimitrov D (2014) Habitat variables influencing Chukar partridge decrease in southeastern Bulgaria. *Folia Zoology* 63(3): 171-179.
86. Gruychev G (2016) Declining populations of Chukar partridge (*Alectoris chukar*) in Bulgaria. *Turkish Journal of Zoology* 40(5): 818-823.
87. Panayides P, Guerrini M, Barbanera F (2011) Conservation genetics and management of the Chukar Partridge *Alectoris chukar* in Cyprus and the Middle East. *Sandgrouse* 33: 34-43.
88. Kirazli C (2017) A temporal status of some game bird population in Bolu, Turkey. *Uluslararası Tarım ve Yaban Hayatı Bilimleri Dergisi (International Journal of Agriculture and Wildlife Science - IJAWS* 3(2): 131-136.

ISSN: 2574-1241

DOI: 10.26717/BJSTR.2022.46.007403

Abdel Fattah N Abd Rabou. Biomed J Sci &amp; Tech Res



This work is licensed under Creative Commons Attribution 4.0 License

Submission Link: <https://biomedres.us/submit-manuscript.php>



#### Assets of Publishing with us

- Global archiving of articles
- Immediate, unrestricted online access
- Rigorous Peer Review Process
- Authors Retain Copyrights
- Unique DOI for all articles

<https://biomedres.us/>