

SOCIAL BEHAVIORS OF CHUKAR PARTRIDGE (*ALECTORIS CHUKAR*)

Eyup Başer*

Bahri Dağdaş International Agricultural Research Institute Konya- TÜRKİYE

Corresponded Author Mail: ebaser32@gmail.com Tel: +90 5354831227

Abstract

In recent years, the number of Chukar partridge (*Alectoris chukar*) has been decreasing in the geography of Türkiye. In this study, some behavioral characteristics of Chukar partridge produced for game birds or release in semi-open systems were investigated. The Chukar partridge, which originates from Central Asia, is a wild bird in the family Phasianidae of the order Galliformes. In the animal kingdom, communication can generally be seen in the form of voice, body language, flapping wings, dance movements, differentiation in walking, or touching and smelling. As birds and other poultry, the different forms of sound produced by partridges appear to have different meanings as a means of communication. These include alarming, social contact, dominance, and sexual appeals. It has been observed that chukar partridges have purposes such as danger and warning signs, social status, loyalty to the group, hunger, need for feed and water, call for food and water, signs of anxiety and distress, courtship, and threat, as in other domestic or wild animals. As in chickens, the male initiates the sexual movement in chukar partridges. The unique courtship behavior of male partridges in influencing the female and finding a sexual response is the flapping or waltz movement. Female partridges may respond to courtship behavior by being positive, negative, or apathetic. During the first-time access to water and food for the partridges reared in the cage, the dominant male of the herd makes a vocal call to the group for food and water. The partridges responded to this call in a hierarchical order; it has been observed that if there are individuals who do not comply with the hierarchical order in access to feed or water, the dominant male is forced by pecking to retreat by warning the partridge that does not comply with the rule. In the study, it was concluded that the social behaviors of the chukar partridges occur in a hierarchical order.

Key words: Chukar partridge, hierarchical order, social behavior

Introduction

Animal behavior and welfare issues have attracted great attention in recent years. According to Article 13 of the Treaty on the Functioning of the European Union in the Treaty of Amsterdam signed by the European Union countries in 1997 (Anonymous, 2023); Animals are considered “sentient beings”. In the European Union, many legal regulations are made to improve animal welfare in various areas. There has been progress in this regard in Turkey in recent years. Providing care and feeding conditions suitable for the welfare of the animal is only possible by knowing the species-specific behavioral models. The branch of science that studies animal behavior in detail, causally and functionally, is called 'ethology'. Behavior may be a simple nervous event (reflex) in the form of a distinct and involuntary response to a single stimulus; It also includes all kinds of more complex activities such as locomotion, grooming, grooming, reproduction, care for offspring, social activities and communication. Since primitive times,

human beings have begun to observe animal behavior in order to survive and hunt against wild animals. Although the animal figures on the wall paintings, which are the oldest documents in history, stand out as the first visual information about animal behavior, systematic observations and ideas about animal behavior were first put forward by Aristotle (384-322 BC).

Although animal welfare has become an important premise in poultry, little attention has been paid to the effects of present-day rearing methods on the welfare of game birds, species released for hunting and re-establishment purposes (Prieto et al., 2012). Knowing the important behavioral characteristics of farm animals provides great convenience to producers in their care practices. The production technique of each animal species raised on the farm varies depending on the environmental conditions of the animal and the differences are directly reflected in the animal's behavior. As with other animals, successful breeding work can only be carried out if practices such as care, feeding, housing, breeding and selection for poultry are compatible with animal behavior models. Since the breeding of the partridge has gained importance in Turkey and it's comes important to understand the social behavioral characteristics of partridges in both breeding and adaptation to nature.

Establishing hierarchical order in poultry flocks is an important behavioral feature. In grouse partridges, the hierarchical behavioral pattern occurs among individuals within the flocks that have reached sexual maturity and is established within the colony over time (Akbay, 1980). During this period, behaviors such as fighting, feather plucking, and pecking of the head and tail area are observed among the partridges, and the fights end when order is established. The most important hierarchical order behavior in partridges, as in other poultry species, is that male partridges are dominant over females, and that male and female individuals comply with the hierarchical order and superiority order within the colony when entering and exiting feed, water and nest boxes.

Some practices are needed to establish hierarchical order within the partridge colony. Because if female partridges are added to male cages before a certain hierarchy is established among male partridges, or if males join cages containing females, chaos and conflict occur in the cages, causing cages to turn into battlefields and causing fights with pecking and wounding leading to death. Injuries can be fatal, such as peeling of the scalp in the head and neck area, and deaths occur as a result of deep wounds and blood loss (Başer and Akbulut, 2016). A similar behavior occurs when a foreign male or female is introduced into a cage colony containing 30-40 partridges or is accidentally released into the cage, and it usually results in the death of the foreign individual (Başer and Akbulut, 2016). This behavior towards the foreign individual was probably interpreted as resulting from the competitive instinct of not sharing what they have in their own area, especially food resources.

Although each animal species has its own behavioral patterns, the behavioral patterns of some species are better understood and learned due to their economic importance. In this study, among the Chukar partridges: such as establishing social order and hierarchy, competition and cannibalism, sexual behavior, social communication, feed and water access behavior, mother-offspring relationships, voice-behavior features are discussed.

Material and Methods

The experiments were carried out during the reproductive season of April to July 2021. Birds were housed in a Bahri Dağdaş International Agricultural Research Institute "Poultry Research and Application Center – Konya - Türkiye". Cages, measuring stand on 70 cm legs, are 6 m long, 1.2 m wide and 1.5 m high, and their roofs are half open and the other half closed. The cage batteries mounted side by side in an adjacent arrangement. Individually, each cage compartment

is a standard 8 m². The cages are open-air breeding partridge cages, open to external climatic conditions 365 days a week, with controlled feed, water and lighting automation. In the research, a total of 480 partridges were studied in 10 pens, 48 in each pen (36 females and 12 males), at 32 weeks of age, with a 1/3 ratio of male and female mixed. All birds were approximately thirty-two weeks old, and were in their first reproductive season. All animals were fed ad libitum on a daily basis, with a layer feed, based on corn and soybean. Water was also supplied ad libitum. Total 16th hours light period was used. This study was conducted by reviewing the literature on poultry and partridges, and evaluations were made based on video and photographic images of breeding partridges behavior by personal observation records taken at 15-day intervals and between 32–40-week-old in the semi-open cages described above.

Some behaviors of partridges

Hierarchical order-establishing behavior

There are some steps that the breeder must follow to ensure hierarchical order in partridge cages housed in groups. In the first stage, before the Henna partridges reach the adult stage, they are separated into male and female and placed in separate cages in groups. In the second step, the number of male and female individuals that will form the breeding herd in the new season is determined according to the cage size and the number of females. A ratio of 1 male to 3 females is commonly preferred for breeding partridges. Because, as a result of the studies, this ratio is preferred for sufficient mating of individuals in the herd and fertility. Care should be taken to maintain the hierarchical order in the herd and to provide a suitable mating environment. At the beginning of the breeding season, male partridges are placed in breeding cages before females. Thus, male partridges placed in the breeding environment are allowed to establish a hierarchical order among themselves in the cage for approximately 8-10 days. In the new hierarchical order, male partridges are ready to prioritize their relationships with female partridges to be placed in the cage. At this stage, the female partridges are placed in the male cages and the fusion begins to settle in a hierarchical order. The hierarchical order determines the priority order in leadership within the herd, utilization of feed and water, and mating with females.

Competition and Cannibalism Behaviors

Poultry individuals can injure each other and even feed on each other's blood and tissues as a result of fights that start with pecking in a competitive environment. Cannibalism is more common when birds in floor systems lay their eggs on the floor in crowded areas. Birds have damaged feathers, and egg production usually drops. Increased incidence of prolapse is observed in flocks that vent peck. Cannibalism can also result in higher than normal mortality (Anonymous, 2023b). Cannibalism in wild animals is seen as a form of individual behavior rather than a herd characteristic. In some cases, cannibalism, like an infectious disease, causes animals to imitate each other's behavior, starting from an individual and quickly spreading to the entire herd. After a while, it starts with unrest among the partridges in the cage and causes economic losses such as decrease in egg production and death. In recent years, researchers who have focused on the similarity of pecking behavior and feeding behavior have suggested that the low protein level in feeds triggers this behavior. However, some experts have reported that the main reason that drives poultry to cannibalism is the inadequacies arising from the shelter system and the reactive result that arises from the inequality of opportunity that prevents the animal from accessing feed and water. A possible reason for cannibalism is the pecking instinct, which goes so far as to harm each other. Because in today's intensive breeding conditions, instead of poultry

wandering around, scratching the ground with their beaks, searching for food, finding it and eating it, they find feed and water ready in front of them, and therefore their pecking needs cannot be met. According to our observation results, the fact that almost no cannibalism has been seen in large cage systems (6x3x2 m) confirms this thesis. The first thing that draws attention under current conditions is that the large wheat stalks laid in the nesting boxes have to be replaced with new and clean stalks every 4-5 days. Because the large wheat stalks laid in the nesting boxes are pecked by the partridges within 4-5 days and are crushed into hay and most of them are thrown out of the cage. This led to the conclusion that wheat straw bedding placed in the nesting boxes functions as a pecking and scratching material for partridges and has a positive effect on cannibalism-type behaviors. The second issue is that the side compartments of the cages are made of galvanized sheet material, and partridges peck at these compartments at different times and periods during the day. This behavior has been evaluated as a reflection of the partridges' instinctive desire to satisfy their pecking needs.

Social communication behaviors

As with birds and poultry, different vocal patterns are thought to have different meanings among partridges. These can be grouped under different names: alarming, social contact, dominance and sexual calls.

Partridges are a type of bird that generally walks low on the ground as if running or prefers to fly close to the ground. It has been reported that partridges in nature warn the partridges in their group by making a distinctive, up-and-down alarm sound that gives a feeling of fear and alarm in the face of a hunter, bird of prey or a sudden wild animal attack (Stokes, 1961). When partridges housed in large cages sense danger, they usually flee in the opposite direction of the sound or movement, close to the ground, or take short-distance flights. For example, when the noise of an airplane or a bird of prey is heard, partridges exhibit a similar behavior by making a shorter, reactive sound. 2-3 month old partridges raised in cages also react with sudden movements and sounds in a fearful manner when faced with people or other beings approaching them from outside. However, as partridges get older, they react more calmly instead of reacting suddenly while in the cage. While disturbing sounds cause stress and serious productivity losses in parent partridges housed in outdoor environments prone to noise, this situation is not observed in partridges that do not feel the effect of sound indoors (Başer and Akbulut, 2016). In a study we conducted, it was determined that the mother partridges housed in cages completely open to external influences were affected by the sounds of the gas magneto, glowing device used to protect the field crops from birds, and their egg production decreased by 20-30%. It returned to normal levels 2-3 days after the device was removed and the sound stopped; However, in the 2nd group of partridges, which were closed to external influences by window glass in a closed building, no negative effects of sound and low productivity were observed.

Communication between partridges

Communication between animals includes sound, body language, wing flapping, dance movements, differentiation in walking, etc. It manifests itself in forms of touch and smell. Partridges, like other domestic or wild animals, communicate for purposes such as danger and warning signs, social status, group loyalty, hunger, need for feed and water, call to feed and water, signs of anxiety and distress, courtship, threat (intimidation). Sound is an important means of communication between animals. Animals use sounds among themselves for different purposes. İnal (2016) grouped animal sounds according to their purposes as follows: a- Feeding sounds: such as hunger sounds of young birds, sounds of finding food, hunting cries. b- Distress calls: sounds that indicate the presence or approach of an enemy, such as a signal that danger has passed

after the predator has moved away. c- Sexual behavior: courtship songs, mate-fighting sounds, etc. d- Mother-offspring relationships: such as touching or making contact with the mother and sounds intended to evoke protective behavior. e- Grouping calls: calls to gather and take action together.

Display and Courtship Behavior

As in animals in general, sexual behavior in partridges includes courtship and mating. Birds or winged animals are quite remarkable in their courtship movements and have special patterns of sexual behavior. In partridges, like chickens, sexual movement is generally initiated by the male.

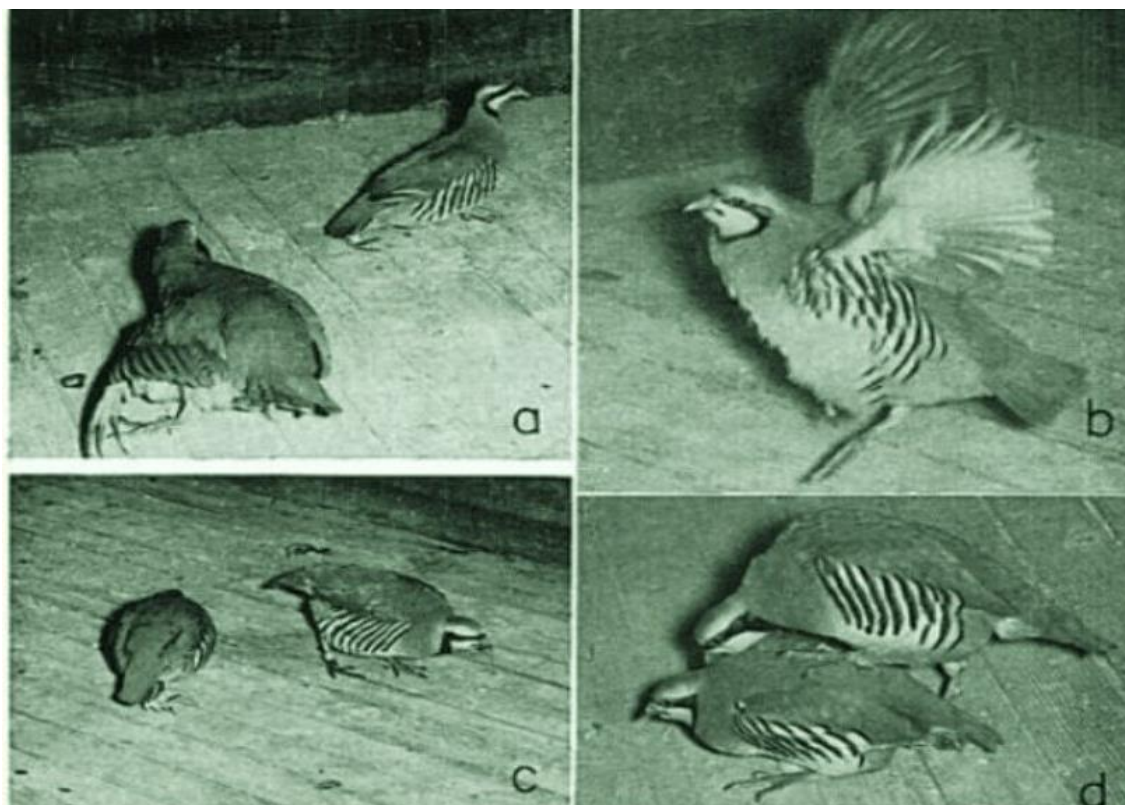


Figure 1. Display and Courtship Behavior (*Resource*: Stokes, 1961)

a- Energetic waltz performance of the male: While the female partridge runs away from the front of male, her feet are flexible, her head is high and body is tense. The male partridge's wings are horizontal to the ground and spread to the side.

b- Obedience behavior and wing flapping behavior.

c- Male courtship behavior.

d- Mating (the male grabs the female by the neck and her feathers are fluffy)

The male partridge's ability to attract the female and find a sexual response occurs through their own unique behaviors, and the most obvious courtship behavior is wing flapping or trembling, dancing or waltzing. Female partridges may respond to courtship behavior by being positive, negative, or indifferent. A positive response to courtship is in a crouching position, the head is tilted down, the wings are spread to the side and the body is brought closer to the ground. This behavior is called crouching or mating invitation. In a negative response, the female walks a few steps to the side or may run, trying to escape if caught. Rejection of the male by the female may occur in the form of the female making vocalizations of varying intensity, from low to loud. In a

positive case, it is a strong warning for the male to mount the female and mate. During mating, the male partridge's wings spread sideways, grasping the female's feathers on the back of her neck or her crest, and he moves his feet up and down. The female lays her tail to one side and the male and female cloacas protrude and enter into mating state. Then the male moves forward, the female shakes herself in place and can move away in a zigzag (Figure 1). In partridges, sexual behavior includes courtship and mating. The most distinctive courtship behavior is wing fluttering or trembling, dancing or waltzing.

Feed and Water Access Behavior

Poultry generally eat grain or concentrated feed by pecking, so feed waste and feed loss in feedlots is very high. In our observations, among the partridges raised in the cage, when the filled feeders or waterers are left in the cage, the dominant male generally makes a vocal invitation to the partridges in the group to eat or drinking by the herd leader (Figure 2). Partridges that respond to the call cautiously approach the water or feed bowl, with those who have priority in the hierarchical order coming first. If there are hasty individuals who do not comply with the hierarchical order in approaching feed or water, dominant partridges (usually males) immediately warn these partridges by pecking them, forcing them to move aside and approach the water or food themselves (Başer and Akbulut, 2016).



Figure 2. Hierarchical order in approaching feed or water (*Resource: Başer and Akbulut, 2016*)

Parent-offspring Communications

Affectionate behavior is found in females among domestic animals. Affection-seeking behavior is normal for young animals, although it varies between species. While female mother partridges care for and feed the wild partridge chicks living in nature, the incubators used in today's large-scale breeding conditions do not allow the female to have instinctive movements such as being instinctive incubation and taking care of her own offspring and protecting against dangers. While in nature a female mother partridge can mother offspring hatching from 10-15 eggs, in the controlled breeding system, they are used commercially to produce more eggs without being deprived of offspring care (Figure 3).

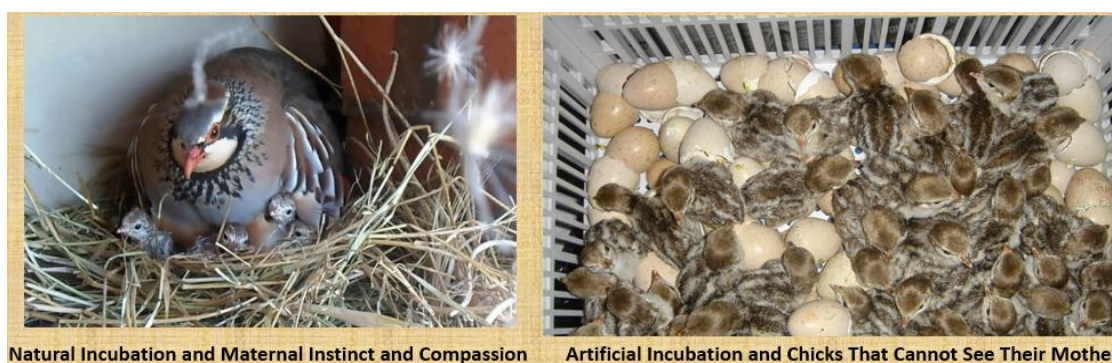


Figure 3. Parent-offspring communications (Source: Başer and Akbulut, 2016)

Result

Although each animal species has its own behavioral patterns, the behavioral patterns of some species are better understood and learned due to their economic importance. As in chickens, the male partridges initiate the sexual movement. The unique courtship behavior of male partridges in influencing the female and finding a sexual response is the flapping or waltz movement. Female partridges may respond to courtship behavior by being positive, negative or apathetic. During the first-time access to water and food for the partridges reared in the cage, the dominant male of the herd makes a vocal call to the group for food and water. The partridges responded to this call in a hierarchical order; it has been observed that if there are individuals who do not comply with the hierarchical order in access to feed or water, the dominant male is forced by pecking to retreat by warning the partridge that she does not comply with the rule. In the study, it was concluded that the social behaviors of the chukar partridges occur in a hierarchical order. As a result, in this study conducted with Chukar partridges, it was determined that some behavioral patterns such as establishing social order and hierarchy, competition and cannibalism behavior, sexual behavior, social communication behaviors and feeding behavior have a very important effect, as in other poultry species.

References

- Akbay, R. (1980): Tavukların çeşitli davranımsal özellikleri. Tarım ve Orman Bakanlığı, Ankara Tavukçuluk Araştırma Enstitüsü Yayınları No: 21.
- Aksoy, T. (2013): Sürüde hiyerarşik bir düzen kurulması tavukların önemli davranış özelliğidir. Yayın tarihi Tem 21 2013 <http://www.ciftlikdergisi.com.tr/?p=43170> (Erişim T:11.06.2016).
- Anonymous (2023a): Consolidated version of the Treaty on the Functioning of the European Union. Part One – Principles, Title II - Provisions Having General Application. Article 13 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12016E013> (Access date : 26.09.2023: 01.10.2023)
- Anonymous (2023b): Clinical Findings and Diagnosis of Cannibalism in Poultry. <https://www.msdsvetmanual.com/poultry/miscellaneous-conditions-of-poultry/cannibalism-in-poultry> (Access date : 25.09.2023)
- Anonymous (2016): Hayvan davranışları ders notları. <http://abs.kafkas.edu.tr/upload/147/> pdf. (Erişim T:12.06.2023).
- Başer, E., N. K. Akbulut (2016): Kınalı Kekliklerin Bazı Davranış Özellikleri. Ulusal Kümes Hayvanları Kongresi. Samsun/5-8 Ekim 2016.

İnal, Ş. <http://vetokopi.blogspot.com.tr/2013/11/hayvan-davranislar-ders-notlari.html> (Erişim T. 15.06.2023).

Prieto, R., C. Sánchez-García, M.E. Alonso, P.L. Rodríguez, V.R. Gaudioso (2012): Do pairing systems improve welfare of captive Red-Legged partridges (*Alectoris rufa*) in laying cages? *Poultry Science*, 91: 1751-1758.

Stokes, A.W. (1961): Voice and social behavior of the chukar partridge. *Condor*, 63(2):111-127.