



Nanda Nath Saikia College, Titabar, Jorhat
Department of Zoology

A Project Report On :

“ Study of behaviour in Guinea Fowl (*Numida meleagris*)”.



Submitted by :-

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DECLARATION

This is to declare that the project entitled “**Study of behaviour in Guinea Fowl**” submitted by me to the Nanda Nath Saikia College, Titabar, Jorhat in partial fulfilment of the Requirement for the award of the degree of B.Sc. in Zoology. This is an authentic work carried out by me under the supervision of Dr. Jafrin Farha Hussain of Zoology Department, N.N. Saikia College. The Content of the project, in full or in parts, have not been submitted by any other student for the award of a B.Sc. degree or diploma.

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CERTIFICATE

This is to certify that the project titled “ Study of behaviour in Guinea Fowl” is an original piece of work done by Abdul Azize Ali, Univ. Roll No. 17120001, Reg. No. S1838440 final year student of B.Sc. in Zoology, Nanda Nath Saikia College. This project is partial fulfilment for the requirement of B.Sc. in Zoology. I have worked under by supervision and the project has not been submitted by anyone for the award of B.Sc. degree or diploma.

Date: 04/09/2021

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Date: 04/09/2021.

Place: Titabar

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1. INTRODUCTION :-

The Guinea Fowl is the best known of the bird family Numididae and the only member of the genus *Numida*. It is native to Africa, mainly south of the Sahara and has been widely introduced into the West Indies, Brazil, Australia and Europe. The Guinea Fowl is large with a round body and small head. They weigh about 2.9 lb. The body plumage is grey black speckled with white, and this species has head devoid of feathers. It is decorated with a dull yellow or reddish bony knob, and bare skin with red, blue or black hues. The wings are short and rounded and have a short tail. This species will typically form flocks outside the breeding season of about 30 birds that roost communally.

Guinea Fowls are particularly well-suited to consuming massive quantities of ticks which might otherwise spread Lyme disease. These birds are terrestrial and prone to run rather than fly when alarmed. Guinea Fowl are great runners too and make loud harsh calls when disturbed. This bird is a typical fixture of farming households with farmers keeping small flocks of the bird, not only for its meat and eggs but for important socio-cultural purposes. Scientific tests have found Guinea Fowl meat and eggs to be nutritionally superior to imported chicken products (Ayeni 1980; Moreki, and Adam 2000, Seabo 2012; Teye). Guinea Fowls are generally resistant to common virulent diseases such as Newcastle disease, Fowlpox and Gumboro which decimate affected poultry populations.

The objective of the survey was to study behaviour of Guinea Fowl which may help in directing future project interventions and also help measure impact towards increasing Guinea Fowl productivity. This project is focused on the behaviour of Guinea Fowl. This study was observed in Titabar. These are-

- Difference between male and female, size, colour, difference in shape, absence or presence of some .
- Feeding and drinking, what they eat or how many times in a day interval between meals, protective about their food or not.
- Searching for food.
- How they protect themselves.
- Communication pattern.
- Mating, the action of birds coming together to breed or copulate for producing young ones. This is generally preceded by courtship.

- Nesting and egg laying , tendency of birds to occupy or build a nest to lay eggs and take care of its young.
- Incubation/ brooding, the action or behavioural tendency to sit on and incubate eggs
- Parental care, any pattern of behaviour in which parents offer protection to their eggs and young ones for better survival.

2. **OBJECTIVES** :-

- To study the ingestive behaviour of Guinea Fowl.
- To study the foraging behaviour of Guinea Fowl.
- To study the locomotory behaviour of Guinea Fowl.
- To study the defensive behaviour of Guinea Fowl.
- To study the grooming behaviour of Guinea Fowl.
- To study the roosting behaviour.
- To study the communication behaviour of Guinea Fowl.
- To study reproductive behaviour.
- To study the nesting and egg laying behaviour.
- To study the brooding behaviour.
- To study parental care after hatching of keets and further repeating the breeding process.

3. REVIEW OF LITERATURE :-

Helmeted Guinea Fowls (*Numida meleagris*) originated in Africa (Belshaw, 1985; Somo, 1996) and were first domesticated by ancient Egyptians (Bondo, 1997). They are currently being reared in many parts of the world.

The *Numida meleagris* (red wattled Guinea Fowl) is from West Africa. It is a docile bird that can lay in captivity (Belshaw, 1985; Binali and Kanengoni, 1998). This species of Guinea Fowl can be easily tamed and its production potential under domestication resulted in its wide domestication in Africa and had been exported to Europe for genetic improvement for intensive production.

The Guinea Fowl production is associated with smallholder farmers in Africa (Smith et al., 2000). This species of poultry is kept for various purposes depending on the society.

Poultry management systems in Africa are differentiated on the basis of flock size and input- output relationships (Kitulyi et al., 1999). These include extensive, semi-intensive and intensive management systems. Poultry production by smallholder farmers in rural areas is mainly extensive (Branckaert and Gueye, 1999; Kitulyi, 1999). The semi-intensive poultry management systems refers to the provision of permanent housing with access provided to a yard or the surrounding environment (Fanatico et al., 1998). Under this system of management, the birds are given supplementary feed and water within the houses and the stocking density is up to 500 birds per acre (Embury et al., 2001).

There is great variation in the performances in of unimproved Guinea Fowls reared by farmers. The performance also varies between the Guinea Fowl strains that includes White, Black, Lavender, Pearl, Splashed and Dan (Belshaw et al., 1985; Ayorinde, Ayeni and Oluyemi, 1989; Nwagu and Alawa, 1995; Somes, 1996). The production characteristics of economic interest in Guinea Fowls which have been documented are slaughter weight, age of point of lay, egg production per season, incubation period, egg fertility, hatchability of eggs and rate of keets survival (Ayorinde et al., 1989; Mundra, Raheja and Singh, 1993; Nwagu and Alawa, 1995; Embury, 2001). In countries such as France, Belgium, Canada and Australia, the bird is now produced commercially on a large scale (Embury, 2001; Robinson, 2002), while in most African countries like Nigeria, Malawi and Zimbabwe, Guinea Fowl production is in its infancy (Nwagu and Alawa, 1995; Dondofema, 2000; Ligomela, 2000; Smith, 2000; Saina, 2001).

4. METHODS AND MATERIALS :-

The present study was conducted in Titabar, Jorhat District of Assam. The monitoring and evaluation was carried out to study the behaviour of a total of 30 local Guinea Fowls of the lavender variety. Birds were brooded for 6 weeks and then transferred to a deep litter house until the end of the experiment. They were individually identified using tags placed through their inner wings to prevent detection by other birds and thus avoid pecking. Keets were brooded at 35°C for hatching. Birds were maintained at ambient temperatures between 22°C and 35°C. Feed and water were supplied daily. Day old keets were fed ground rice in flat feeders followed by a starter ration from day 2 until day 6. This was followed by a grower ration from day 6 until day 21 and then a layer feed is supplied from a commercial feed supplier.

The head length of Guinea Fowls was taken with a pair of calipers and measured from the tip of the beak to the back of the occipital bone. The head width was measured from one side of the face to the other between calipers. The wattle length was measured with a ruler.

The records were observed on a regular basis.

4.1 STUDY AREA :-

The study was carried out between January- July 2021 in a local area in Titabar, district Jorhat. Titabar is a town in the Jorhat district of Assam in India. Titabar is about 20 km away from Jorhat city. The district is located at the central part of the Brahmaputra valley. Titabar has an average elevation of 98 m. The maximum elevation is 124 m and minimum elevation is 89 m.

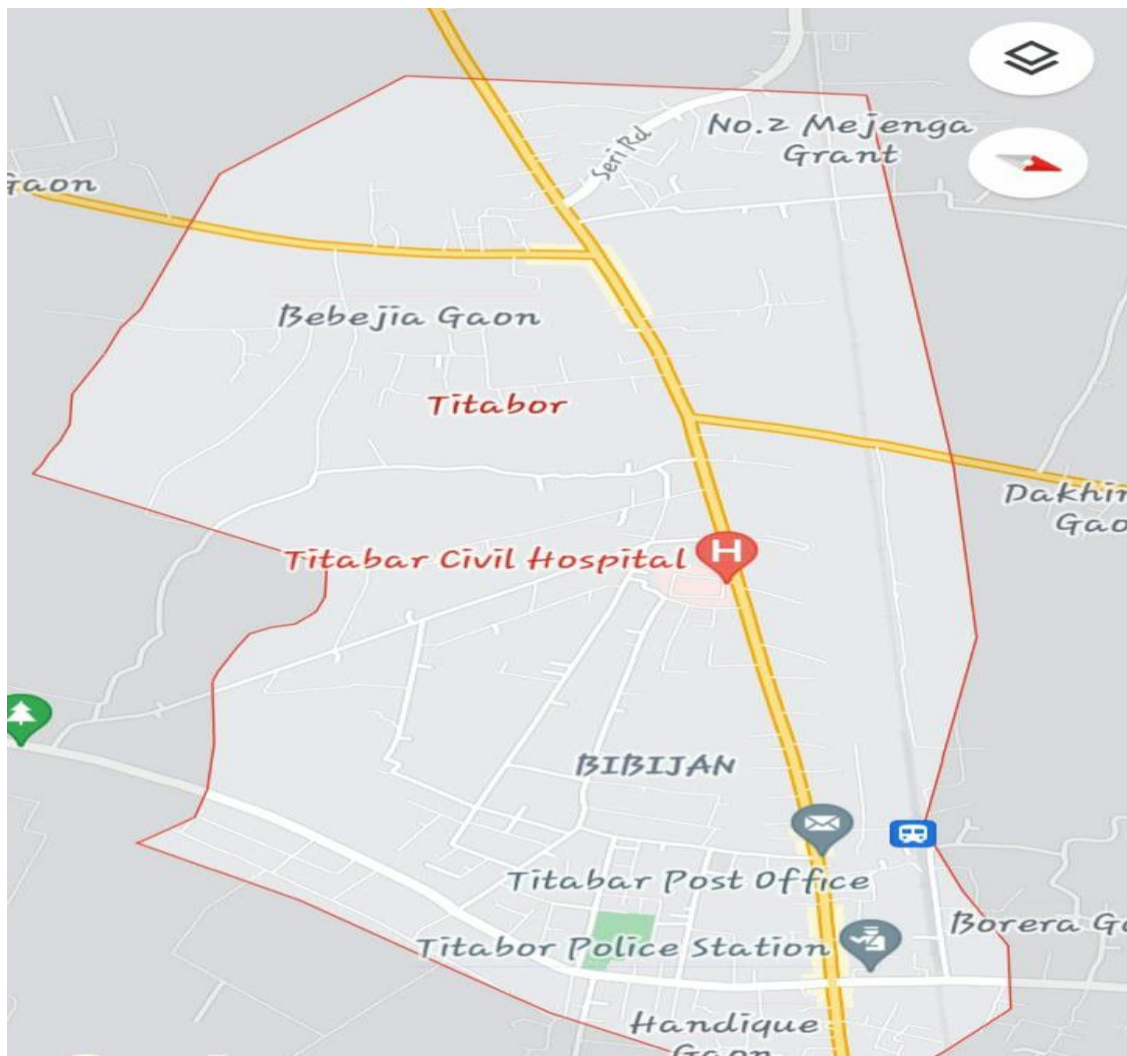


Fig: Location of study area

5. RESULTS :-

5.1 BIOLOGY :-

The largest and most colourful species of Guinea Fowl is Vulturine Guinea Fowl of Eastern Africa with a long-necked bird and a hackle of long lance-shaped feathers striped black, white and blue and red eyes and a vulture-like bare blue head. Wild forms of *Numida meleagris* are known as helmeted Guinea Fowl from their large bony crest and their sexes look alike. The helmet Guinea Fowl has many local varieties widespread in the savannas and shrublands of Africa. They are about 50 cm long. The typical form has a bare face, brown eyes, red and blue wattles at the bill, black white spotted plumage and hunched posture.

Both male and female look similar.. The adult males usually have large and elongated wattle which fold upward towards the upper jaw. Meanwhile, the female's wattle usually looks fairly flat and it is smaller than the male. Guinea has a helmet which is also known as casque, which is a prominent horn-like structure on the top of their head. The male's helmet is usually larger than the female's which tends to be short and narrow. The colour of wattle in male Guinea is bright red whereas in female Guinea the colour is faded red and smaller in size. The males have in the nasal while in the females the swelling is not apparent. Males over one year old are called Guinea cocks while females over one year old are called Guinea hens.

5.2INGESTIVE BEHAVIOUR :-



Guinea Fowl have no specific feeding practices. They eat a variety of foods like ticks, spiders, insects, worms, wasps, seeds etc. They are very aggressive and protective about their food. They may prefer company while eating.

Foods are distributed two or three times daily, especially in the morning upon opening the henhouse, after and evening. They can be treated with chicken feed, chopped corn, rice grain etc . Guinea Fowls require more protein than chickens so they need a feed of 16% protein. To maintain proper digestion of food, they need to be provided with grit and vegetation like leafy alfalfa, etc. The feed intake of Guinea Fowl is between 25-30g per day between the ages of 0-6, 50-60g between the ages 6-12 and 70-80g between the ages 12-16. The starter diet should contain at least 20% protein and should be fed for the first four weeks. Clean water should be available always.

5.3 FORAGING BEHAVIOUR :-



Guineas are excellent free ranging birds, they consume about 90% of their food when free ranging. They like wheat, sorghum or millet grain and will ignore whole corn kernels. If they are not allowed to forage, they can be fed a commercial poultry diet. It is important to use feed that is devoid of medicines. Guineas need a higher protein feed than chickens but they do quite well on regular poultry diets. Adult Guineas forage for themselves and are able to meet most of their nutrition requirements on their own.

5.4 LOCOMOTORY BEHAVIOUR :-

Guinea Fowls are predominantly ground scavengers and this is where they will spend most of the time. They prefer to walk rather than fly and can walk up to 10 kilometers a day. They opt for flight when they smell danger. Their flights are usually very short, not more than about 100m.

5.5 DEFENSIVE BEHAVIOUR :-



The Guinea Fowls sound an alarm whenever anything unusual occurs on the farm and the loud sound has been shown to discourage rodents from invading the area. Flocks of Guineas will kill and eat mice and small rats. In areas where snakes are a problem, groups of Guineas have been known to locate and kill snakes before they can harm. Every flock has a general territory that it defends and females join males in that defence. A flock also will try to defend itself from predators and is often loud and aggressive enough to succeed against many predators on land and in the sky. A flock will also scatter, run for cover and sit tight until danger passes. Some farmers keep Guinea Fowls as watch dogs around homesteads because they have an excellent eye-sight, a harsh cry and shriek at the slightest provocation. The noisy nature makes Guinea Fowl excellent guard birds warning chickens and other barnyard fowl when hawks, owls, racoons or other enemies intrude into the area. Guineas Fowl are quick to defend themselves and their young by scratching and flapping their wings, pecking with their beak and claws at enemies.

5.6 GROOMING BEHAVIOUR :-



The adult male and female will groom themselves during social get-togethers and take dust baths in the soil. During the quieter time of the day these birds will rest under cover. They keep their feathers in shape by using their beak. They roll and move around dust to maintain their body.

5.7 ROOSTING BEHAVIOUR :-



Guinea Fowl can walk, run and fly in the wild and they usually roost in trees at night. These birds may be seen roosting together in a single large tree. On farms, they are seen perched high up outside or inside barns. Guinea Fowls are often left to fend for themselves, but it is best to provide a shelter to protect them from winds, rain, cold, sun and predators. Guineas prefer to roost, so it is important to provide perches.

5.8 COMMUNICATION BEHAVIOUR :-



These birds have a unique sound. The male Guinea has a one- syllable call which sounds like 'chi'. Meanwhile, the female Guinea has a two- syllable call which sounds like ' buck- wheat' or ' qua- track' . They have a high pitched trill that they use to communicate with each other in a less ear- splitting fashion. The female Guinea Fowl can make both the female call and male call but the male can only make the male call. Guinea hens sound like “buck- wheat, buck- wheat” and “ chi, chi, chi”.

The warning call of a mature Guinea cock means that he has spotted something unusual in their territory. The warning call is one syllable i.e ' chi- chi- chi- chi' and female is of two syllables i.e ' buck- wheat, buck-wheat, buck-wheat, buck-wheat'.

5.9 REPRODUCTIVE BEHAVIOUR :-



Guinea Fowls are normally monogamous which means they pair with only one partner. Guinea Fowls segregate into smaller groups during the spring season for breeding. They will move in smaller groups of about 4-8 Guinea Fowl. This behaviour is a way to show their supremacy over another male and to impress the female Guinea Fowl. The males will run in one direction with one fowl chasing the other and then come back in the other direction with the opposite Guinea Fowl chasing. This is their way of showing the female that they are the worthy choice. The male Guinea Fowl will chase the female Guinea and tug on their beak feathers. When a male is courting a female, his body takes on a hump-backed posture as he struts in front of her.

5.10 NESTING AND EGG LAYING BEHAVIOUR :-



Guinea Fowls are seasonal egg layers. They start laying eggs from April or May and may continue to lay until August. The egg production depends on breeding stock and management. Guinea Fowl eggs are smaller than chickens and are hard shells that reduce breakage. Their eggs are light brown and speckled with a very rich flavour. Guinea Fowl can lay upto 80 or more eggs per year. They are ground nesting birds and they hide their nest among fallen branches and tall grasses. In breeding season, they will sit on the nest and lay an egg a day while the make Guinea keeps sharp eyes on predators or any other dangers. Guinea Fowls are very good at keeping their nest hidden. To avoid any danger, Guinea hen will warn the male guards with a high- pitched sing- song type of a call. The male Guinea will probably scream their heads off at the visitors for the first few times they see. If the visitors come much closer, the louder they scream like an alarm.

5.11 BROODING BEHAVIOUR :-



The incubation of Guinea Fowl is commonly done naturally. This allows improving egg hatching by inhibiting their brooding instinct and limit losses of keets as hens take more care of them. This method is used by farmers with small flocks.

The incubation period is between 26 to 28 days. Guinea Fowls are very susceptible to dampness during the first two weeks after hatching. After two weeks Guinea are widely considered the hardest of all domestic fowl. Guinea hens do not go broody until the nest has around 30 eggs. If 4 or 5 eggs are removed, she may return to the same nest. During incubation, females incubated alone however the male is often seen near the nesting area during the first few days of incubation. If an intruder approaches the nesting area, male Guinea utter loud check calls and moves away. Female remains silent throughout such encounters.

Male Guinea may attempt to join other females after their mates begin incubation. Keets can be raised in the same type of brooder house as chicks. The brooding house should be cleaned properly. Prepare the brooding ring and put the litter into the brooding ring. Light the brooder for being a heat source. Lay papers or litters. Then place feed trays. Keets should be counted and kept in the records.

5.12 PARENTAL CARE :-



After the eggs hatch out, both parents brood the keets and lead them while foraging. However, males spend more time brooding than females. Females were seen brooding the keets during night while males roosted with the rest of the flock. Both sexes participated in leading the keets during foraging and the female usually led by the family unit, followed by the keets and the male. The female gives the two note call to gather the keets while the male follows in silence or emitting soft whistles. Both parents defend their young ones from predators. If any further movement approaches a wing- threat is displayed by the parents.

6. DISCUSSION :-

The behaviour of the Guinea Fowl was observed consistent . The birds formed mixed- sex flock of 20-30 birds during the non- breeding season. Incubation was performed by the female Guinea solely and the male performed guarding behaviour of the nesting female during early incubation. Guinea Fowls start laying eggs from April to August. The incubation period is over 28 days. Males and females shared parental care duties during the day. Females brooded the young at night. Females of a pair spent more time foraging their young ones than males. Both male and female take care of their young ones until they get young enough to feed themselves. Parental care was observed for 20 days. It was observed that if the female walked more than 2 metres away, the male followed her, sitting down near the Guinea hen when she concentrated her feeding in a particular area. Guinea Fowl roost communally during breeding and non- breeding seasons. Paired males and females roosted at about the same time and perched adjacent to each other. One vocalisation, the buck- wheat call is given exclusively by the female's, especially when they are visually separated from their mates.

Guinea Fowls are highly territorial during the spring breeding phase compared to roosters(cock). Chicken eggs are bigger compared to Guinea eggs. Compared to chickens, Guinea fowl mate with a single partner. It was seen that Guinea cock chased the rooster if they entered into their territory. Hen or ducks lay eggs in the barnyard but Guinea lays eggs under tall grass or fallen branches and they are very good at hiding their nesting area. Guinea Fowls are more alert than any other domestic fowls and they can be used like ' watch dogs' in the barnyard. (Branckaert and Gueye et al., 1999; Kitanyi, 1999) found that the poultry production by smallholder farmers in rural areas is mainly extensive while from my observation it was found that Guinea production by smallholder farmers in local areas is mainly intensive. The Guinea Fowl was studied and exhibited a seasonal change in the local area.

7. CONCLUSION :-

Guinea Fowls belong to the family Numididae. They are resistant to many common diseases. Both male and female look alike but they can be differentiated from their size of wattles. They are free- ranging birds therefore they can forage near the barnyard or in an open large field. They have better capacity to scavenge insects, wasps, ticks, grains, etc. They have the ability to protect themselves from predators. Guinea Fowl roost inside the barns at night. Guinea Fowls have high-pitched trill calls that they use to communicate with each other. They are generally monogamous and they mate with only one partner. Guinea Fowl incubation was done naturally with the help of hen. The incubation period is over 28 days. After that, both parents perform parental care and feed their young ones.

Though this project report does not describe complete study material therefore, I want to forward this research to the next worker for further brief analysis.

From the present study it was found that-

- Guinea Fowls are highly territorial.
- Guinea Fowls act as watchdogs in the barnyard.
- They pair with only one partner
- Guinea Fowls start laying eggs from April and continue to lay until August.
- The incubation period of Guinea Fowls is 28 days.
- After incubation, both parents performed parental care till 28 days

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