



THE HUMANE SOCIETY
OF THE UNITED STATES

About Turkeys

John James Audubon, a well-known bird expert and nature enthusiast, described wild turkeys as birds of great beauty.¹ The history and origin of wild turkeys is uncertain, yet many share Audubon's sentiment that the wild turkey is "one of the most interesting of the birds indigenous to the United States of America."² Today, wild turkeys can be found throughout the nation.³ Following the selection of the bald eagle as the American symbol, Benjamin Franklin remarked that the turkey was more "respectable", and a "true original native".⁴

Background

Turkeys (*Meleagris gallopavo*) belong to the order Galliformes (along with grouse, guinea fowl, and chachalacas), the family Phasianidae (with pheasants, quail, peafowl, and jungle fowl), and the subfamily Meleagridinae.⁵ Two turkey species survive today: *M. gallopavo* (the common turkey discussed here), and *M. ocellata* (the ocellated turkey).⁶ Ocellated turkeys are native to Mexico's Yucatán peninsula, Belize, and Guatemala and are distinguished from common turkeys by their smaller bodies, shorter legs, copper or bronze-green body plumage, and, in males, larger spurs and lack of beards.⁷

Adult male turkeys are called "gobblers" or "toms," while juvenile males are referred to as "jakes."⁸ Jakes can be distinguished by the four to six central feathers on their tail fans that are longer than the rest. Adult females are called "hens," and hatchlings are called "poults."⁹ The average weight of an adult female wild turkey is 8-11 pounds,¹⁰ and adult males generally weigh 17-21 pounds.¹¹

Every adult turkey possesses caruncles, a snood, and a dewlap. Caruncles are the fleshy bulbs at the base of the neck. The snood protrudes from the top of the head and often rests across the bill. The dewlap is a thin piece of skin that stretches under the throat.¹² There are also marked differences in the appearance of male and female adult turkeys. In most turkey strains, only males have a beard, a modified feather in the upper chest area¹³ that grows continuously, around three to five inches per year.¹⁴ Similarly, male turkeys have spurs (like roosters), although there have been isolated cases of hens with spurs.¹⁵ Hens have more feathers on the back of the neck, while toms' necks are mostly bare.¹⁶ The color of a tom's head and neck change with the onset of breeding season, from a vibrant red (caruncles), white, (crown of the head) and blue (neck and side of face) during the breeding season, to a more subdued red and blue for the rest of the year. Hens do not change their coloration with the season, retaining a bluish-gray head and light pink caruncles year-round.¹⁷

Wild turkeys are generally thought to have a lifespan of 10-13 years,¹⁸ although few wild birds live out their full potential life span. Many young poults succumb to predators.¹⁹

Habitat

Wild turkeys are highly adaptable, able to survive in warm environments as well as those regularly blanketed with snow. The one necessity for all wild turkey populations is the presence of mature or nearly mature forests. Large trees provide a significant food source and safe roosting sites above ground.^{20,21}

Wild turkeys use home ranges, distinct areas where daily activities occur. The food supply, amount of cover, and weather conditions dictate the size of these spaces as well as whether a flock will use different ranges during the summer and winter.²² If there is a large supply of mast (nuts such as acorns or chestnuts scattered on the forest floor), a flock's home range will be smaller than one containing less forage.²³ Habitats with a plethora of oaks, alfalfa and grain fields, mast-rich trees, and open grassy areas are favorites of the wild turkey.²⁴ In good habitat, flocks may maintain home ranges of 400 to 1,000 acres. In contrast, birds living in low-quality home ranges may utilize 8,000 acres or more.²⁵ In the western United States, although turkeys do not migrate in the traditional sense, they will travel up to 50 miles to a new home range if food is too difficult to find during winter.²⁶ Some birds in the eastern United States live their entire lives no more than five miles from where they hatched.²⁷

Diet

Turkeys have a varied diet. They are omnivorous, eating mast, seeds, plants, fruit, berries, spiders, tadpoles, snails, and a variety of insects. They have even been observed eating small snakes and lizards.^{28,29,30} High-protein foods, such as insects, make up the majority of a poult's diet in his or her first week of life.³¹ Grass is critical habitat for young poults, as it provides them with a plentiful supply of insects.³² While feeding, turkeys are almost constantly on the move.³³ Large flocks of turkeys may spread out to occupy a quarter acre or more while feeding.³⁴ Turkeys may be found roosting near water sources,³⁵ however, moisture from morning dew, small pools, or succulent insects, fruits, and vegetation often meet their required water intake.³⁶

Turkeys are incredibly hardy, able to withstand periods of little food intake and inclement weather. Undernourished turkeys are rarely observed and, when they are found, it is usually during periods of extended snowfall, or when they are struck with disease or injury. During periods of significant snow, turkeys generally remain in their roosting trees for days at a time, eating only buds and small amounts of snow.³⁷ They have also been observed taking advantage of holes in the snow dug by foraging deer, often supplanting the unsuspecting deer and laying claim to the newly uncovered food.³⁸

Turkeys tend to swallow their food whole, with soft foods traversing the entire digestive system quickly. Hard foods, however, remain in the gizzard, or muscular stomach where grinding occurs, before progressing through the digestive system.³⁹

Natural Behavior

Wild turkeys are diurnal, active only during the day.⁴⁰ They use their strong feet and legs for ground scratching as they forage.⁴¹ After feeding and exploring, turkeys engage in a long period of relative inactivity, interspersed with bouts of preening, dusting (wallowing in loose soil), and resting.⁴² Several hours before sunset, feeding resumes. Shortly before nightfall, flocks faithfully return to their trees for the night, preferring the cover of thick forests. If turkeys are too far from their roost at sundown, they have been observed to break into a run to get back to their favored roosting location before dark.⁴³

Wild turkeys are wary birds with the keen ability to know when they have been detected.⁴⁴ Adult turkeys can run at speeds of 10-20 miles per hour⁴⁵ and fly in short bursts at 55 miles per hour or more.⁴⁶ In large feeding groups, individual turkeys take turns scanning the horizon for predators every few seconds, resulting in a highly vigilant flock.⁴⁷ However, wild turkeys rarely desert their home range even when it is interfered with due to hunting, logging, or agricultural activities. They simply adjust their movements to avoid human contact.⁴⁸

Turkeys possess specialized sensory abilities to help them negotiate their environment and avoid predators. They are known to have excellent eyesight⁴⁹ and hearing. Turkeys have color vision, high visual acuity, and a 300° field of vision. They have a well-developed ability to discriminate between frequencies and to ascertain where a sound is coming from.⁵⁰ Their sense of smell, however, may be less well developed⁵¹ as they possess relatively small olfactory lobes.⁵²

During the winter months, hens and toms live in separate flocks.⁵³ With the onset of longer days and warmer temperatures, males begin to leave their winter flocks and move to mating grounds to gobble and attract females.⁵⁴ The first peak in gobbling occurs at the beginning of the breeding season when males are actively searching for mates. This peak occurs before many hens are ready to mate, however. In the next phase of the mating season there is much less gobbling, as females are actively seeking mates and require little persuasion.⁵⁵ A tom's head turns bright red, and his crown a bright white, when performing his complex "struts" and mating behaviors in an effort to attract hens.⁵⁶ Once the hens have mated, many move off to more isolated areas within their home range to lay eggs and incubate. During this time they rarely visit the toms. This diminishing attention from hens instigates a second, higher peak of gobbling as males attempt to locate and mate with the few remaining hens.⁵⁷ Toms will mate with multiple hens if possible, and hens may breed with the same male more than once.⁵⁸

Turkeys are polygamous, but social mating systems vary among populations across North America, depending on the way the local habitat influences the spacing patterns of males and females.⁵⁹ Eastern wild turkeys are thought to use a type of harem where multiple hens accompany one tom until they have mated. However, populations of wild turkeys in the Rio Grande area have been observed to use a lek-like system, a common area used by toms and hens for courtship behavior and mating.^{60,61} Toms have been observed to stay in sibling groups that travel together and even display together at the lek. It has been hypothesized that the lek method of breeding affords more security from predators and a way to quickly ready the hen for mating, thanks to the collective displays undertaken by the sibling groups.⁶²

Turkey hens can reproduce through parthenogenesis, a process by which viable eggs are produced despite the hen having never mated, although the number of these embryos that are viable enough to hatch are very low.⁶³ On the rare occasions when they do hatch successfully, the hatchlings are always male.⁶⁴ Although this phenomenon has only been observed in domestic turkeys, it is believed to be true for their wild cousins.⁶⁵

At the close of the mating season, toms gather in small flocks and remain together through the winter.⁶⁶ Females, on the other hand, raise their brood alone, then typically join together with other hens and broods in larger flocks that stay together until the fall. At that time, young males that have grown larger than their mothers typically leave their family flocks to join with other males in winter flocks.⁶⁷

Social Behavior

Flocks are organized by pecking order, from the most dominant bird to the subordinates, with hens and toms occupying separate hierarchies.⁶⁸ Aggressive interactions can be observed among juveniles beginning at about three months of age, reaching a peak at five months as hierarchies become established. Male turkeys tend to fight more forcefully than females⁶⁹ and their hierarchies tend to be less stable than female pecking orders. Interestingly, a subordinate hen can often be identified by the degree to which her neck is denuded. Dominant females often peck subordinates; therefore a largely bare neck reflects a hen's low social rank.⁷⁰

In the fall, as juvenile males leave their family groups, one of four types of flocks form for the winter: old hens with no brood, brood hens and their female offspring in multi-family flocks, young toms separated from family groups, and adult toms.⁷¹ In the early spring, males and females leave their winter groups to pursue breeding opportunities. Considerable cooperation is required of turkeys using leks as display and breeding grounds. The males display alongside their siblings, although only the dominant brother will mate.⁷²

Wild turkeys are highly social birds who prefer company to isolation, possibly due to their drive to avoid predation. However, even in the domestic context, turkeys have demonstrated their need for social interaction. Researchers have found that when an individual turkey was removed from his or her group, even for a short time, he or she became "obviously distressed and immediately began vocalizing which persisted until they were replaced in the group."⁷³

Turkeys also demonstrate a variety of vocalizations, although silence is the norm for poults, since the first few weeks of a turkey's life are particularly dangerous. Researchers have observed the use of three kinds of "yelps" (tree yelp, plain yelp, and plain lost call), two basic calls (the cluck and alarm putt), and several complex calls (kee-kee, cackle, and gobble). The "tree yelp" is often the first sound made by turkeys in the morning and is thought to be a sort of greeting. The "plain yelp" may be used while still in the roost, or at other times during the day. It is a louder yelp that may serve to call birds together if they have strayed too far from the flock. The "plain lost call" is very similar to the "plain yelp," but often louder and more urgent-sounding, and is thought to gather a family group together. One of the two basic calls, the "cluck" is often used to get the attention of a particular turkey or to establish the position of other turkeys. When the "alarm putt" is used, every bird looks up with a sense of apprehension. Young lost turkeys have been heard uttering the "kee-kee" call, which often sounds like a whine, whistle, or squeal. The "cackle" is most often heard as turkeys are entering or leaving the roost, and a hen will often use it to implore her brood to follow her out of the tree. The "gobble" is a well-known turkey vocalization most often associated with toms during the mating season but also used in the early mornings or when males are frightened or hear other males gobbling. Other sounds include the "pit-pit," a "purr" sound characteristic of a contented flock, and the "drum" made by males during their breeding displays.⁷⁴

Maternal Behavior & Young Development

Most turkey hens are capable of mating and nesting in their first year and are known to have hatching rates comparable to those of more experienced, adult females.⁷⁵ Similarly, yearling males are capable of breeding successfully, but they cannot successfully compete with the more dominant males.⁷⁶ Depending on the habitat type, hens may choose nesting sites adjacent to their winter habitat, or as far as 30 miles away.⁷⁷ The preferred nest locations are in or near forest openings, which provide protective cover and grassy areas ideal for feeding poults.

Typically, the female will seek out her nest site one or two weeks before she begins to lay.⁷⁸ During a hen's first week of laying, she returns to the nest every few days to lay and cover her eggs. This process continues until her third egg is laid, at which time she returns daily to lay (and cover) another egg. Once her nest contains seven or more eggs, she begins to spend increasing amounts of time at her nest, guarding it vigilantly. After her clutch is complete, with anywhere from 6-17 eggs, she begins to incubate.⁷⁹ Incubating hens will turn their eggs periodically, allowing them to exchange oxygen and carbon dioxide. This is also thought to prevent the developing poult from becoming attached to one side of the egg.⁸⁰

Wild turkey hens are capable of re-nesting if their eggs are disturbed or if they are forced from their nest. The likelihood of re-nesting varies with the hen's stage in the laying and incubating process. If the hen is disturbed while laying her eggs, or in her first two days of incubation, she will likely desert the nest. In the event of an early-stage desertion, the hen is likely to re-nest that season. On the other hand, if a hen is forced to leave a nest that she has been incubating for a significant portion of the 28 days required, she probably will not nest again. Furthermore, there is no known example of a hen nesting twice in one year if she loses an entire brood (hatched offspring).⁸¹ The nesting success of wild turkeys is approximately 35%, not atypical of other bird species.⁸²

The hatching process begins with the sounds of "pipping" as the poult becomes more active within the egg and makes the first hole in the shell with his or her "egg tooth."⁸³ Hens, in turn, begin to make soft, encouraging clucks.⁸⁴ Once pipping has begun, 24 hours may pass before the poults have fully hatched.⁸⁵ Poults are precocial and quite mobile after hatching, forming tight-knit bonds with the hen and siblings within the first two days, based on visual and vocal cues.⁸⁶ The hen and her brood typically stay around the nest for 10-12 hours, an adaptation that allows any stragglers to hatch and the brood to imprint and learn their hen's vocalizations and alarm call.⁸⁷ The male to female ratio among poults is usually one to one, except when hens reproduce parthogenically.⁸⁸

During the poults' first few days of life, they begin to forage⁸⁹ and perform most behaviors characteristic of adult turkeys: feeding, grooming, dusting, and travel.⁹⁰ They also engage in strutting, crouching, and threatening behavior, activities some consider "play."⁹¹ Since they cannot fly, they roost under the hen's wings on the

ground. Once they are 13-17 days old, and are able to fly,⁹² they can begin roosting in the trees with the hen.⁹³ They remain close to their mother for the first few nights, after which they grow in confidence and begin to roost in other parts of the tree. During their daily activities, poults will promptly scatter if the hen senses danger and vocalizes to them. Their strategy is to disperse and freeze, allowing their mother to perform her “cripple” act which serves to distract the intruder. If her loud and blustering performance does not drive off the interloper, she will keep contact with her poults from a distance. All the while they remain frozen, often for as long as 30 minutes. The poult’s defensive strategy changes with age. Once they are 10 days old, they scatter over greater distance and are practically impossible to catch by hand. At three weeks old, they can fly to avoid danger.⁹⁴

At 14 weeks, poults’ genders can be distinguished by their size and plumage differences. Fighting can emerge as they begin establishing their intra-gender hierarchies.⁹⁵ In late summer, the brood may join other hens and their poults to form a large flock roosting in several trees.⁹⁶ At this time, it is not uncommon for some poults, particularly those who are the sole survivors of their broods, to switch to another hen within these larger groups. The original hen may follow the poult and join the new family group if accepted by the adopted hen. Intact brood flocks usually stay together until fall,⁹⁷ at which time the young males leave to form small groups with other young males for the winter, while females often stay with the hen until the following breeding season.⁹⁸

Juvenile turkeys molt several times before they develop the plumage necessary to survive the winter. The natal down is replaced during the first (postnatal) molt, which is complete after six weeks, except on the head and neck. The post-juvenile (second) molt begins after four weeks and is nearly complete at 14 weeks of age. At the fifteenth week, the third (first winter) molt begins when the two pairs of central tail feathers are dropped.⁹⁹ Adults molt only once per year beginning in the spring, usually following the mating season.¹⁰⁰

Intelligence

Turkeys are competent learners on a number of cognitive tasks.¹⁰¹ Wild turkeys have exhibited the ability to remember very precise locations. In some instances, they have returned to a location a mile away, at the exact time that they were lured there the day before. On other occasions, even when baiting stations that were used the year before were moved to an alternate location the following year, wild turkeys regularly returned to the exact original location of the baiting station and proceeded to scratch and forage for food. Hens have also shown the ability to remember a location they have visited only once. If a hen lays her eggs under thick cover in an area she has never been to before, she will unfailingly return to it the following day at the precise moment necessary to continue laying eggs in her nest.¹⁰²

Conclusion

Wild turkeys are birds with considerable adaptive abilities, enhancing their survival in a wide range of environments. They exhibit complex patterns of behavior, an array of communication signals, vivid plumage and elaborate courtship, strong social ties, and have a protective maternal nature. Their ability to reproduce by parthenogenesis is a fascinating rarity. Their ability to return to an exact location at a precise time after considerable time has passed is evidence of hitherto unappreciated intelligence. Further study of the behavior and cognition of domestic and wild turkeys is warranted to better understand and appreciate these birds.

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