



### *Let's Talk Turkey*

So now that the elections are over it's time to talk turkey. The Franklin Institute's website debunked one of my long-held beliefs by relaying that Ben Franklin did not want the turkey declared the national bird. The notion that he did has its roots in a letter that

Franklin wrote to his daughter, in which he was critical of the Great Seal, saying it looked more like a turkey. He went on to say, "...a much more respectable Bird, and withal a true original Native of America...He is besides, though a little vain & silly, a Bird of Courage." I'm thinking how well-suited the turkey's red, white, and blue head would have been had it been selected as our national emblem.

How our domestic turkey came to the United States is a bit more complicated. Apparently, the bird was originally exported from Mexico to the Levant, a regional name for portions of some Middle Eastern countries, including Turkey. The British, in turn, imported these fowl via Spain and gave them their current name. So it was c. 1857 that the domesticated turkey became part of our colonial fare. (If you're following our current political border turmoil, know that domesticated Mexican turkeys didn't immigrate across our border but were introduced via Britain.) At the First Thanksgiving of 1621 with Pilgrims and Native Americans, the feast consisted of waterfowl and fish, but my grade school version of the story is more in keeping with my own Thanksgiving Day fare.

Now let's talk wild turkey. In the early 1900s, wild turkey numbers nationwide had plummeted to 30,000 birds. Habitat loss and over-hunting had decimated the population. The Pittman Robertson Act of 1937 created funds for turkey restoration and for protection of wildlife habitat in general. By 2017, thanks to conservation efforts by hunters and wildlife managers, the National Wild Turkey Federation estimated wild turkey totals to be 6 million, with NJ's population between 20,000 and 23,000.

Turkey facts: Males are called toms, gobblers, and jakes. Females are called hens, and chicks are called poults. They eat small stones or pebbles, retained in a muscular organ called a gizzard (a thick walled part of a bird's stomach), where it grinds what the bird has eaten. It's an interesting substitute for teeth.

These birds have some amazing attributes. Turkeys can run, up to 25 miles an hour, in fact. They can also fly for short distances at up to 55 miles per hour (domestic varieties don't fly). Their eyesight is amazingly acute. Human vision covers about a 120° arc, a turkey sees 270°. They are extremely

wary, picking up on the slightest movements. An adult male can be 25 pounds with a six-foot wingspan, and they typically live three to five years. In winter months, the sexes stay separated, pairing up to reproduce in the spring. One clutch may have as many as 18 eggs, and chicks leave the nest within 24 hours.

Turkeys roost in trees at night. When males wake during mating season in the spring they gobble with a call that can travel over a quarter mile. When they leave the tree they strut their stuff for the hens with what is one of the most impressive mating displays in North America, as pictured above.

During mating season, the adult male's bald head shifts between red, white, and blue in response to stress and arousal. Jakes or young male turkeys are essentially red but a mature male's head displays a variety of hues.

Collagen-enhanced blood vessels, which swell and contract in its neck and head, alter the way light waves are reflected.

When I'm out on the trail, people often ask me questions regarding a plant's properties or an animal's attributes,

wondering, “And so what is that good for?” I relay what I can. Usually they are just being curious, but infrequently, someone infers that if it doesn’t serve people it is of no interest. That makes me bristle.

Often there is an answer that is amazing but complex, and beyond my expertise. Here’s my best shot at explaining the “usefulness” of the turkey color shifts. In 2014, a bioengineer at UC Berkeley developed a team to study the changing colors. The group created phage litmus that combines a virus, which closely imitates the thin cells found in turkey collagen, with a chemical sensor to detect trace amounts of volatile chemicals like TNT. The team went on to develop a smartphone application that utilizes the camera to translate color differences into chemical analysis (see Popular Mechanics). The sensor can be modified to detect harmful pathogens, toxins, and chemicals that relate to human health or national security.

The take-home point: “Hurray for a turkey’s red, white and blue!” Think about that as you enjoy your Thanksgiving Day feast!