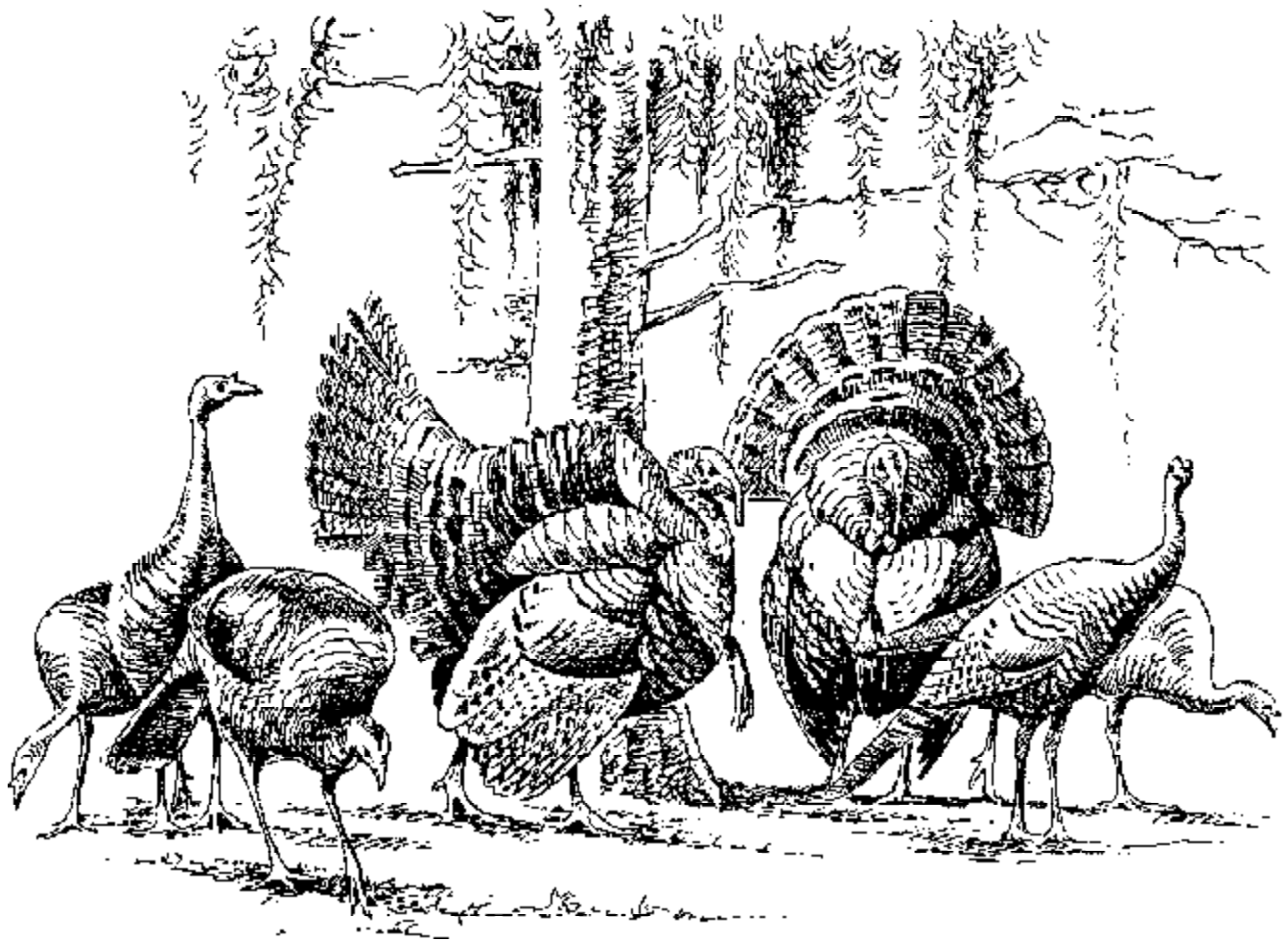


TEACHER'S GUIDE

TURKEY TROUBLE

Michigan Supplement To The Project Wild Activity
"Turkey Trouble"



Adapted and reprinted with permission from
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supplement authored By Sharon L. Donovan

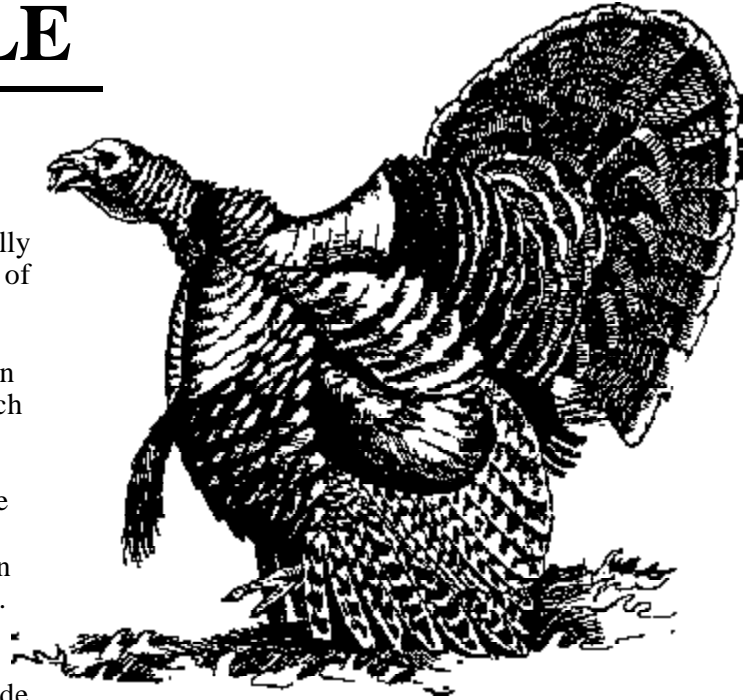
Adapted for Michigan educators by
Dale Elshoff; Michigan State University

TURKEY TROUBLE

INTRODUCTION

“You Turkey!” This may sound quite insulting, but actually wild turkeys are one of the more interesting inhabitants of Michigan. In fact, the Eastern wild turkey serves as a prime example of successful wildlife management in Michigan. Through careful management, the population has gradually increased to the healthy condition in which it is found today.

The Project WILD activity “Turkey Trouble!” uses the reintroduction of the **Merriam’s Wild Turkey** (*Meleagris gallopavo merriami*) in Wyoming as the basis of a lesson on understanding and graphing wildlife population growth. “Turkey Trouble” can be an excellent activity for Michigan students because of the state’s active participation and success in turkey restoration. This guide is designed to provide the background to allow teachers to transfer the situation of “Turkey Trouble” to the state of Michigan, and use the activity to teach students about their own state and its wildlife. It also gives some ideas for possible enrichment activities.



HISTORY OF THE WILD TURKEY IN MICHIGAN

Turkeys were common in Michigan prior to the arrival of European settlers. During pre-Columbian times, an estimated 94,000 birds roamed the state. During colonial times, the Eastern Wild Turkey was abundant in Michigan south of a line from Saginaw to Muskegon. During the 1800’s their population declined dramatically. This was mainly due to detrimental land-use practices and unregulated hunting as the population of human inhabitants increased. The last definite report of a wild turkey on record for Michigan was a bird taken in January, 1897, in Arlington Township of VanBuren County. It is believed that wild turkeys were extirpated in Michigan by 1900. Nationwide, by the 1940’s turkeys could only be found in 12% of their former range in the east and were in serious trouble in the west. By 1948, the wild turkey was completely gone from 15 of the states it had originally inhabited.

In 1937, a national coalition of conservationists, virtually all hunters backed by the sporting arms and ammunition industries, persuaded Congress to direct the receipts from an excise tax on those items into a special fund to be distributed to the state for wildlife restoration. Had it not been for this key legislation, the Federal Aid in Wildlife Restoration Act (commonly called the **Pittman-Robertson Act**) wild turkeys and a number of other wildlife species may be known only as part of local lore and national legend. With this type of national support, interest in restoring the wild turkey in Michigan increased.

In 1954 Michigan’s wildlife biologists began a reintroduction program releasing birds in the Allegan State Game Area. The released birds were 7/8 wild stock (wild offspring of 3/4 wild hens bred by wild gobblers), and demonstrated better survival skills than captive bred birds. Between 1954 and 1963, similar birds were introduced into the expansive northern hardwood and pine forests in northern Michigan. By 1964, approximately 2,000 free ranging birds had become established over significant areas of Michigan’s lower peninsula. By 1983, Michigan wild turkeys ranged over portions of 8,000-square miles and their population numbered nearly 15,000 birds. Today, statewide turkey populations are estimated at over 140,000 birds. They can be found in 76 of Michigan’s 83 counties.

The National Wild Turkey Federation has also played a major role in the return of the wild turkey since its incorporation in 1973. The NWTF launched its Target 2000 program in 1987, with a goal of assisting state resource agencies in the restocking of wild turkeys in all suitable habitat in the U.S. by the year 2000. This program has provided the state wildlife agencies with the necessary funding to trap and transfer the wild turkey.

CLASSIFICATION

CLASS: Aves
ORDER: Galliformes
FAMILY: Meleagrididae
SCIENTIFIC NAME: Meleagris gallopavo

Only two species of wild turkey exist in the world. The **Ocellated Turkey** (*Meleagris ocellata*) exists in a 50,000 square mile area comprised of the Yucatan Peninsula of Mexico, northern Belize and the El Peten region of northern Guatemala. The second species is *Meleagris gallopavo*, or **North American Wild Turkey**.

The turkey found on modern Thanksgiving Day dinner tables purchased in the local grocery store is not the wild turkey discussed here, but rather the domestic turkey commercially raised on farms throughout the country. Students should not confuse them with the wild turkey. It is believed that the forerunner of the domestic turkey is an extinct subspecies, *Meleagris gallopavo gallopavo*, which was taken from Mexico by the Spanish conquerors in the 1500s and then brought back from Europe. It is thought that these turkeys were domesticated by Native Americans in Mexico between 150 BC and 400 AD.

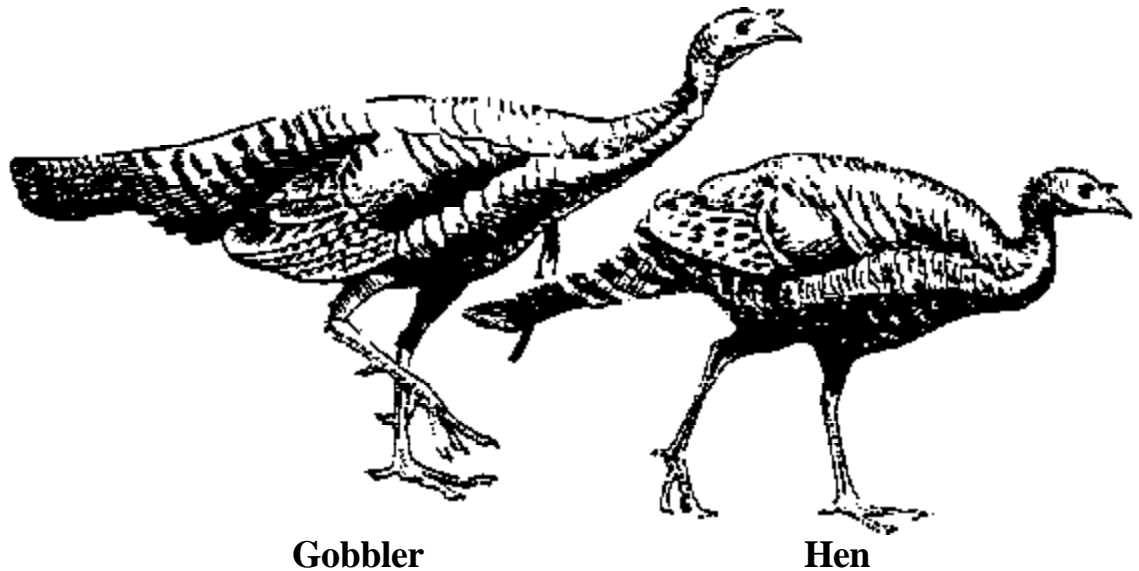
There are five subspecies of wild turkey in the United States. The Merriam's wild turkey has already been mentioned. The other four subspecies are **Florida wild turkey** (*Meleagris gallopavo osceola*), **Gould's wild turkey** (*Meleagris gallopavo mexicana*), **Rio Grande wild turkey** (*Meleagris gallopavo intermedia*), and **Eastern wild turkey** (*Meleagris gallopavo intermedia*). Subspecies are distinguished mainly by coloration, body size, length of legs, and where they live.

The Merriam's, Rio Grande, and Gould's are generally western birds. The Florida wild turkey is found in peninsular Florida. The Eastern wild turkey is found mainly in the eastern U.S., although it has been introduced into several Midwest and western states. The Eastern wild turkey is the only subspecies found in Michigan.

PHYSICAL CHARACTERISTICS

The adult male, called a "**gobbler**" or "**tom**" can grow up to 4 feet tall and weigh more than 20 pounds. Its tail feathers are chestnut brown to chocolate brown, while the breast feathers are tipped in black. The rest of the body feathers are a shiny copper/bronze color. Primary wing feathers have black and white bars, and secondary wing feathers have prominent white bars and are edged in white. This produces a white triangular area on each side of the turkey when the wings are folded back. Mature females, called "**hens**," can grow almost as tall but will only weigh between 8 and 12 pounds. Their coloration is more brown and less metallic or shiny.

Both sexes have a "**snood**" which is a limp appendage just above the beak and a "**dewlap**," or pinkish flap of skin that hangs directly under the throat. Gobblers are usually bald, with fleshy red protuberances, called **caruncles**, at the base of the front of the neck and on the back of the head. Males also have a tuft of bristles, or "**beard**," near the base of the neck **and spurs** on their legs just above the feet. Measuring the size of spurs is a good way to estimate the age of the turkey. About 10% of females may grow beards, although they are thinner and shorter. Hens may even grow spurs, but they are usually rounded and poorly developed. Another major difference between the sexes is that the female has a grey head, rather than the pinkish or white head of the gobbler, and the back of her neck has feathers.



Wild turkeys have keen eyesight. They see approximately the same distance as humans, but they can pick out minute details. They have excellent hearing, but a poor sense of smell.

One of the most surprising facts about the turkey is that they fly and have been clocked at speeds up to 55 mph. They can also run at a good clip, up to 19 mph if needed. Average walking speed is about 3 mph. Turkeys roost in trees at night, keeping predators from interrupting their rest.

The commercially raised domestic turkey looks quite different from its wild relative. Feathers are usually white, which is preferred for the “clean” appearance of the skin. Also, the birds are so round, they have difficulty flying and even walking. Efforts were made to mate wild and domestic turkeys to increase the wild population, but this was unsuccessful because the resulting offspring could not survive in the wilderness. They had lost their survival instincts and were quickly eaten by predators. This was true even if the wild turkey had only a small percentage of domestic turkey in its genetic makeup. Because of this, early wild turkey restorations were hindered by the release of pen-reared birds.

MATING, NESTING, AND BROODING

In Michigan, mating season can begin as early as late March, is in full swing by early April, and is signaled by the gobbling and strutting of the males, which attracts the females. There is a definite pecking order among males. Males will mate with several females, but the female chooses which gobbler will be her mate. There are no traditional “families.” The male takes no interest in nesting or raising the “**poults,**” or baby turkeys.

Hens become secretive when choosing a nesting site. The nest is not very complicated at first, it is usually being just a shallow depression on the ground. It takes 2 weeks for the hen to lay 10-12 eggs. The hen lays one egg per day for 10 to 14 days. She will start incubation only after all the eggs are laid, so that all the poults will hatch at the same time. Wild turkey eggs are larger than chicken eggs, but smaller and more pointed than domestic turkey eggs. They are generally a pale creamy white with reddish-brown or chocolate colored speckles. Initially the eggs weigh about 2.5 ounces but, during incubation, will lose weight due to metabolism of the embryo and evaporation of gases and moisture through the shells microscopic pores. For this reason, the hen will turn the eggs almost hourly to allow the exchange of carbon dioxide inside the egg for fresh oxygen outside. After each egg is laid, the hen adds debris to the nest to cover the eggs. In this way, the nest is actually built while the eggs are being laid. The hen will continually incubate the eggs for 26-29 days and leave the nest only for short periods to feed.

Turkey hens begin nesting at one year-old and may nest again if their first clutch is destroyed, If the hen is disturbed while laying the eggs, she may abandon the first nest and find another suitable place to start a new nest. However, this may be delayed for two weeks. She will “dump” the egg that was ready to be laid and hold the rest

inside in suspended animation for a few days. Records have shown that some hens nested four times in one year, producing 40 eggs! Unlike chickens, turkeys have a determinant number of eggs to lay and will not continue to lay eggs indefinitely if the eggs are removed from the nest.

When the poults start pipping, the hen will make soft clucking sounds, which help the poults to **imprint** on their mother. The poults start hatching by chipping a small hole in the egg with their egg tooth. Hatching takes about 30 hours, continuing through the night regardless of weather conditions.

While the last eggs are hatching, the day-old **precocial** (chicks in the downy feather stage of development) poults are already jumping around, catching flies and ants, and calling to each other. As soon as all the poults are hatched, the hen prepares to leave the nest by calling to them. The last ones to hatch have trouble at first, because they have not had enough time to imprint on the hen and instead are fixated on the nest. Eventually they listen to the persistent hen and follow her. They never return to the nest.

If the hen and her brood leave in the morning, they may travel a mile before dark. The hen will find dense ground cover near a tree, spreading her wings to cover her brood. Poults will roost on the ground until they are about 12 days of age. They begin flying at 12 to 14 days of age. They are soon able to fly 10 to 20 feet and roost in trees at night, just like the adults. They will stay close to their mother for the first few nights but will eventually move several feet away from her. As summer progresses, the brood spreads out, first to other branches on the same tree, then to nearby trees. By fall, the family flock may roost in an area of an acre or more.

As the juvenile turkeys grow to maturity, they go through several molts, or feather replacements. Knowing the details of these molts is helpful to hunters for aging the turkey.

Life expectancy for wild turkeys is 2-3 years, on the average, but 13 year-old turkeys have been recorded. Predators, both animal and human, and adverse weather conditions are the main causes of wild turkey mortality.

HABITAT

The wild turkey is essentially a forest species. In the late 1980s, biologists learned that the birds would thrive in areas with as little as 10-15 percent forested cover mixed with pastures and fields. They can be found throughout Michigan, but are more prevalent in the regions of the state that receive less than 60 inches of snow each year.

Food

Adult wild turkeys prefer plant matter, which composes about 90% of their diet. However, the eating habits change seasonally, depending on the availability of food. Turkey foods fall into four main categories: mast (nuts and fruits), seeds, greens, and insects. In winter they prefer hard and soft mast including acorns, beechnuts, crabapples, and hawthorns. They will also eat waste grains in harvested fields of corn, buckwheat, soybeans, oats, and grain sorghum. In agricultural areas, turkeys foraging in the fall and spring eat mostly waste grains, wild plants, insects, and young grasses. Corn, buckwheat, and wheat are outstanding sources of fall, winter, and spring foods.

Water

Turkeys need water almost daily, and hens rarely nest farther than a quarter-mile from a reliable water sources such as a creek, spring, seep, or farm pond.

Shelter

Cover is extremely important to the wild turkey, especially when nesting. They prefer the borders between woodlands and fields, where there is low groundcover for nesting, but not so dense that the turkey has trouble detecting predators. The trees are used for roosting at night and for the mast deposited on the ground. Heavy forest cover, with mixed hardwoods and pine forest is preferred, often near water. The corridors along streams are convenient for travel, feeding, and roosting.

Space

Surprisingly, the annual range of many wild turkeys is less than 1,000 acres! They are not migratory. Most Eastern wild turkeys live out their lives and die within five miles of their hatching site. Typical daily movement from one end of the home range to the other is often less than two miles. However, there are records of turkeys moving 12 miles within one year.

MORTALITY FACTORS

Predators

As soon as the eggs are laid, they are in danger from predators seeking a tasty meal. Skunks, crows, ravens, snakes, opossums, raccoons, rodents, dogs, and coyotes are prime patrons of the nest while the hen is off feeding. Only half of wild turkey nests successfully hatch. The poults that hatch are then vulnerable to the predators mentioned above as well as hawks, owls, foxes, and larger predators such as eagles. Because of predators, as well as other factors such as weather and straying, only half of all poults live beyond three weeks. Turkey eggs, poults, and even adults are not the normal diet for these predators, however. Where turkeys have optimum ground cover and where habitat favors small mammals like rats and mice (the main staple of most predators' diet), predation of turkeys is reduced. As predator-prey relationships are part of the natural "balance" in nature, attempting to reduce the number of predators of turkeys would only upset delicate food chains, resulting in further problems.

Diseases and Parasites

Wild turkeys have several kinds of harmless tapeworms, roundworms, and smaller blood parasites that do not hinder their survival. However, two diseases are cause for concern.

Avian Pox is an infectious, contagious disease belonging to the genus Avipoxvirus. This disease may infect any order of birds, including domestic and wild turkeys. Poxoviruses infect the epithelial tissues resulting in wart-like growths, usually on unfeathered areas like the head, legs, feet, eyelids, margins of the beak, and in the mouth, crop, and upper respiratory tract. Mortality depends on the severity and location of the lesions and how debilitating it becomes to the turkey. Transmission is through contact with damaged epithelium or through insect vectors, which is why the disease occurs frequently during peak mosquito activity. Clinical signs include emaciation, weakness, respiratory distress, and blindness. Control and prevention is difficult, but it is extremely important to check for infected turkeys before they are released into new locations.

Blackhead Disease has caused more havoc in the domestic turkey business than any other disease, and is also an important disease of the wild turkey, although it is not common. Technically called Histomoniasis, it is caused by a protozoan parasite called *Histomonas meleagridis*. Signs of infection include sulfur-colored droppings, lethargy, drooping wings, weakness or emaciation. The birds will close their eyes and hold their head close to their body. Lesions occur internally, causing necrosis of the liver. Transmission of the disease is dependent upon a parasitic roundworm, which is an intermediate host, and is spread through droppings. Another intermediate host is the earthworm.

The important point to remember is that controlling the spreading of the disease depends on careful observation of birds which may be transported to new locations. Pen-raised birds should never be mixed with their wild relatives. Ringnecked pheasants and chickens should also be isolated from wild turkeys because they rarely become sick with the disease and will serve as unsuspected carriers.

Hunting

Though unregulated hunting and habitat loss almost drove the wild turkey to extinction, the Pittman-Robertson Act, the National Wild Turkey Federation's Target 2000 program, and excellent hunting policies by the states have helped to secure the wild turkey's future.

In Michigan, hunters of age 12 years and older must have a Michigan Hunting License and a Turkey Hunting License. These turkey hunting licenses are given out by lottery. Turkey tags are required statewide regardless of age. Shotguns and bows and arrows are permitted. All other weapons and methods of taking are prohibited. Baiting turkeys is strictly banned as well as shooting at the turkeys from a vehicle. Electronic callers and dogs may not be used. Hunters can only hunt during the specific hunting seasons. In the fall, hunters are permitted to hunt male and female turkeys, while in the spring males are the only turkeys that can be hunted. The Bag Limit is one bearded turkey per licensed hunter in the Spring season A regulations brochure is published each year with exact bag limits and exceptions, and hunters should refer to those turkey regulations before hunting. Turkey hunting is strictly managed in Michigan, as in other states.

Weather

Turkeys in Michigan must endure many weather extremes. Spring rains and melting snow can wash out nests and cause the turkeys to seek higher ground, becoming vulnerable to predation. Heavy snow or extremely cold temperatures can cause the bird to remain in trees for several days, unable to find food when they do come down. However, turkeys can survive more than a week without food and can get water from the snow. In many areas of northern Michigan, supplemental feeding seems to play a major role in winter survival.

Habitat Deficiencies

Two of the main threats to wild turkey habitat are large, severe forest fires and destruction by the expansion of human populations into their land. Though once more prevalent, both of these are now slowly being curbed by improvements in management practices. More and more natural land is being preserved, landowners are more conscientious of wildlife on their property, and the benefits of forest fires are more understood so they can be better controlled.

MANAGEMENT

Along with the MDNR and the NWTF, Michigan is blessed with very conscientious land owners who strive to make their property “turkey friendly.” Land management may be time consuming, but the benefits are numerous. In addition to turkeys, other wild animal populations have benefited, including birds (buntings, hawks, quail, and warblers) and mammals (red and gray fox, black bear, rabbits, white-tailed deer, raccoons and squirrels).

Wild turkeys are opportunistic feeders, eating whatever is available when it is available. Their menu is diverse. One study done in Virginia, in which the crops and gizzards of 537 turkeys were examined, found that the turkeys used 354 species of plants and 313 species of invertebrates.

Bulletins listing plants suitable to enhance wild turkey habitat are available from the NWTF, MDNR, and MSU extension. These are listed in the Resource section of this guide. Careful attention needs to be given to types of small plants and trees as well as the combinations of ages of trees, so that food will always be available at all times of the year.

Another management technique that is very important for wildlife in Michigan is called **Prescribed Burning**. This involves burning the low groundcover in forests on 3 to 5 year cycles, but avoiding the nesting and brood rearing seasons from March to June. Burning improves nutrition of understory plants, stimulates fruit production, and maintains open understories. Turkeys prefer the fresh growth resulting from these burns. This also produces rich insect crops for summer and fall feeding. Prescribed burning is also valuable to all landowners because it reduces the danger of destructive wildfires. By burning undergrowth, fires have less to “feed” on and will not spread as quickly. This was an unfortunate problem that occurred in Florida in the summer of 1998, in which entire counties had to be evacuated until the fires were under control.

TURKEY RESTORATION

So, how are those turkeys trapped and transferred to establish new populations? Are they easy to catch?

One early method used was called a **pole trap** and was originated by Native Americans. This involved stacking poles up to 8 feet high on four sides and covering with netting. Bait was put inside and a funnel-type entrance was constructed. These traps caught turkeys, but they were difficult to construct and inflexible.

The **cannon-net** technique proved to be an effective way of capturing turkeys. This was originally developed in Missouri in 1948 to catch waterfowl. The cannon net was first used in 1951 in South Carolina, one of the few states that maintained a turkey population. A net concealed on the ground was remotely fired, propelling by 3 or 4 black-powder cannons which pulled the net over a flock of turkeys without harming them. Today, cannon-nets have been replaced by **rocket-nets**, because they are easier to use and faster.

The trapped turkeys are carefully placed individually into **transport boxes** for travel to their destination. Typically, 10 hens and 5 gobblers are released at the new location. Within 3-4 years, there may be 400-500 turkeys produced as a result of just one relocation. The National Wild Turkey Federation provides these boxes to wildlife agencies.

It was previously mentioned that attempts to cross wild and domestic turkeys to increase wild turkey stock were failures. Another idea was to raise the wild turkeys in pens under ideal conditions and then release them after the stock had built up. This, too, failed because the hen was unable to teach the poults survival techniques, such as searching for food and avoiding predators. When the turkeys were released, they either starved or were easily caught by other animals.

TURKEY LORE

Wild turkeys were an important part of Native American history. The meat was a staple of many Indian tribes, with some exceptions. The Cheyennes would not eat the turkey for fear it would make them cowardly, probably because of the turkey's habit of running away quickly when threatened. The Papago and Apache also considered the turkey timid and would not even use the feathers. Some tribes would not eat the bird, even in famine, because it was feared this might anger the deities. Many other tribes, though, incorporated the turkey in their religious ceremonies. It was considered sacred and had to be cooked in specific ways.

Turkey feathers were important in the ritual manufacture of prayer sticks, masks, and headdresses, and were also used by priests while conducting various rites. Feathers were also believed to bring rain, provide protection, and battle evil spirits. Some tribes used the sharp, horn-like spurs of big toms as arrow points. An account by D.B. Cook, who spent six months living with the Native Americans in Allegan County during the winter of 1839, stated that a pipe in the possession of Chief Saginaw was reputed to once have belonged to the legendary leader Tecumseh. The stem of the pipe was made of the hollow quills of a wild turkey, reinforced with hickory splints and wrapped with deer sinew.

Many tribes duplicated the turkey's motions during various ceremonies. Comanche, Choctaw, Delaware, and Seminole dancers imitated turkeys. Sioux and Chickasaw women were sure that turkeys caused illness and tried to gain favor with a special dance.

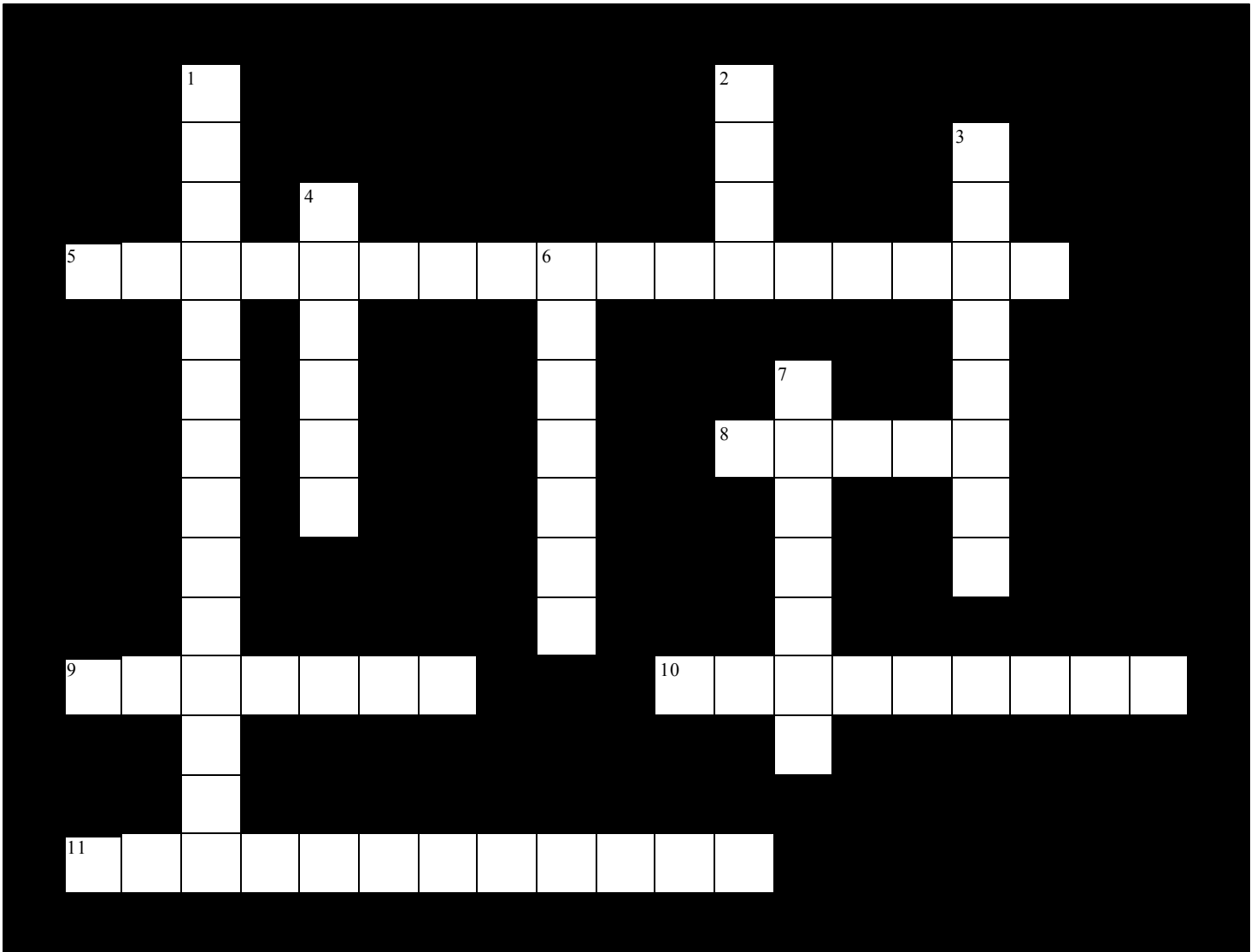
Some strange beliefs are associated with the turkey. Did you know that it was once thought that the bird could make warts disappear? Using a white turkey feather, remove grease from the wheel of a wagon drawn by a white mule. Rub the greased feather on the wart for three days at exactly 3:30 p.m. sharp and the wart will fall off.

Turkeys can predict the weather, according to some. New England farmers claim the Eastern wild turkeys are forecasting a storm if they stand with their backs to the wind. Midwesterners believe that if a turkey perches on the top of a building, cold weather is on the way.

The word "turkey" has been associated with all sorts of unusual, sometimes unpleasant things. If a person is flushed with anger, he is "red as a turkey cock." You can "strut like a turkey," be as "shy as a turkey," or "poorer than a turkey in summer." However, you can do the "turkey trot" or merrily dance to "Turkey in the Straw." In the sport of bowling, threestrikes in a row is a "turkey," but calls to several bowling centers in upstate South Carolina revealed that no one seems to know why that term is used. A quick call to the National Bowling Hall of Fame and Museum in St. Louis, MO, was also fruitless. It will apparently remain a mystery.

So, let's talk turkey!

Let's Talk Turkey



Across:

- 5. *Meleagris gallopavo intermedia* is the scientific name of this subspecies of bird. The only subspecies found in Michigan.
- 8. An immature turkey.
- 9. The native environment of a plant or animal.
- 10. The stage of a baby chick when it is covered by downy feathers.
- 11. A system of management in which the health of the natural environment is maintained through such methods as wildlife population control.

Down:

- 1. A management tool that uses controlled fires to control underbrush growth to maintain the ecosystem of certain forest habitats.
- 2. The fallen berries and nuts of trees and bushes. One of the main staples of a turkey's diet.
- 3. An animal that hunts other animals for food.

- 4. A pinkish flap of skin that hangs from the throat of a turkey.
- 6. A learning mechanism by which a newborn chick is bonded with its mother.
- 7. A male turkey.

Vocabulary Words:

- Dewlap
- Mast
- Conservation
- Habitat
- Imprint
- Eastern Wild Turkey
- Precocial
- Poult
- Prescribed burn
- Predator
- Gobbler



Using Michigan Data In “Turkey Trouble”

Consult Project Wild activity “Turkey Trouble” to use this guide.

Background

Generally, turkeys were moved in groups of 15, with ten hens and five gobblers. This information can be substituted in the Project Wild activity, “Turkey Trouble”, allowing teachers to use the activity to teach Michigan students about their own state.

Procedure

Task 1

Essentially the same procedure will be followed as is in the Project Wild activity guide, except the population growth of Eastern Wild Turkeys in Michigan will be calculated. The one assumption that must be changed is 8. (See Procedure, Task 1, Assumptions)

8. Of the original number of 15 turkeys, 10 are females and 5 are males.

APPENDIX A (Teacher Copy) Task 1 Exponential Growth Data Table						
YEAR	1	2	3	4	5	6
1. Beginning Population	15	115	215	815	1900	5800
2. -Beginning breeding age males	5	5	55	105	400	900
3. -Last year’s hatch (not yet breeding)	0	100	100	600	100	4000
4. =Breeding age females	10	10	60	110	400	900
5. Offspring (#4 x 10 eggs)	100	100	600	1100	4000	9000
6. +Beginning population	15	115	215	815	1900	5800
7. -5 year old turkeys	0	0	0	15	100	100
8. =Total population	115	215	815	1900	5800	14700
9. Beginning breeding age males	5	5	55	105	400	900
10. +Male offspring of last year’s hatch (1/2 of #3)	0	50	50	300	550	2000
11. -5 year old male turkeys	0	0	0	5	50	50
12. Total breeding age males	5	55	105	400	900	2850

APPENDIX A (Student Copy) Task 1 Exponential Growth Data Table						
YEAR	1	2	3	4	5	6
1. Beginning Population	15	115	215			
2. -Beginning breeding age males	5	5	55			
3. -Last year’s hatch (not yet breeding)	0	100	100			
4. =Breeding age females	10	10	60			
5. Offspring (#4 x 10 eggs)	100	100				
6. +Beginning population	15	115				
7. -5 year old turkeys	0	0				
8. =Total population	115	215				
9. Beginning breeding age males	5	5				
10. +Male offspring of last year’s hatch (1/2 of #3)	0	50				
11. -5 year old male turkeys	0	0	0	5	50	50
12. Total breeding age males	5	55				

Task 3

Follow same procedure in Project Wild activity guide, use the for Eastern wild turkey in Michigan starting with a population of 15. Only Assumption #1 needs to be changed.

1. 100 offspring were produced by the offspring each year

APPENDIX B (Teacher Copy) (Task 3) Linear Growth Data Table						
YEAR	1	2	3	4	5	6
Population	15	115	215	315	415	515
+ increase	100	100	100	100	100	100
= total population	115	215	315	415	515	615

APPENDIX B (Student Copy) (Task 3) Linear Growth Data Table						
YEAR	1	2	3	4	5	6
Population	15	115				
+ increase	100	100				
= total population	115	215	315			

Task 5

Again, follow same procedure, but for question 2 use the data chart below.

APPENDIX C (Task 5) Estimated Eastern Wild Turkey of Michigan Growth Table						
YEAR	1	2	3	4	5	6
Population	15	30	90	270	810	2430

(Numbers are only approximate. No accurate method of census taking is available for wild turkeys.)

NATIONAL WILD TURKEY FEDERATION

The National Wild Turkey Federation is a non-profit organization dedicated to the conservation of the American wild turkey. It was incorporated March 28, 1973, in Fredericksburg, VA. National headquarters is located at the Wild Turkey Center, 770 Augusta Rd., Edgefield, SC 29824-0530. Mailing address is P.O. Box 530, Edgefield, SC 29824-0530. Telephone: 803-637-3106.

NWTF also sponsors JAKES (Juniors Acquiring Knowledge, Ethics & Sportsmanship), an education and outreach program to teach children about wild turkey hunting and conservation, as well as other areas of outdoor recreation and wildlife management.

The official publication of the NWTF is *Turkey Call*, published bimonthly by NWTF. Annual membership is \$25, which includes \$10 for the magazine.

NWTF has produced several Bulletins, some of which were used for this guide. They are available through the National Wild Turkey Federation and are listed by number:

1. *Eastern Wild Turkey*
2. *Florida Wild Turkey*
3. *Rio Grande Wild Turkey*
4. *Merriam's Wild Turkey*
5. *Gould's Wild Turkey*
6. *Ocellated Turkey*
7. *Chufa "Turkey Gold"*
8. *Sawtooth Oak*
9. *Planting Legumes For Wildlife*
10. *Children's Activity Book from JAKES*
11. *Tree Shelters*
12. *Planting Bareroot Tree and Shrub Seedlings*
13. *Regional Recommendations for Planting for Wild Turkeys*
14. *Wildlife Habitat Development on Reclaimed Lands*
15. *History of the Wild Turkey in North America*
16. *Managing for Timber and Wildlife Diversity*
17. *Predators and Wild Turkeys*
18. *Managing Streamside Zones for Wildlife*
19. *Aging Spring Turkeys*
20. *Rights-of-Way for Wildlife*
21. *Spring Seep Management for Wild Turkeys and Other Wildlife*
22. *Wild Turkey Status and Range*
23. *Wild Turkey Expansion and Density*
24. *Roads*
25. *Avian Pox - A Disease That Can Affect Any Bird*
26. *Blackhead Disease - Does Not Really Cause Black Heads*

Additional information from the NWTF used in this guide:

Twenty-Second Southeast Director's Wild Turkey Committee Meeting. Report of the 1997 meeting held at the Webb Wildlife Center near Garnett, SC, June 2-5, 1997, sponsored by the SC Chapter of the National Wild Turkey Federation.

USDA Forest Service - Benefits of Prescribed Burning Target 2000

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Arnosky, Jim. *All About Turkeys*. New York: Scholastic Press, 1998.

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Nunnery, Gene. *I Will Lift Up Mine Eyes Unto the Hills - Mississippi Hill Folk-the Red, the White, the Black and the Wild Turkey*. Meridian, MS: Eugene Nunnery, 1986.

Schorger, A. W. *The Wild Turkey: Its History and Domestication*. Norman, OK: University of Oklahoma Press, 1966

Williams, Lovett E., Jr. *The Book of the Wild Turkey- Natural History, Range, Management, and Hunting of America's Greatest Game Bird* Tulsa: Winchester Press, 1981.

ADDITIONAL VIDEO

Turkeys in the Wild. Produced and copyrighted by Berlet Films, 1646 W. Kimmel Rd., Jackson, MI 49201. (Your local library may have this.)

PROJECT WILD ACTIVITY GUIDE RELATED ACTIVITIES

“Who Lives Here?”

“Planting Animals”

“Who Pays for Wildlife”

“What's WILD”

(adapt to wild vs. domestic turkeys)

“Let's Talk Turkey”

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