



## Museum of Natural History & Science Interpretation Guide for *Ice Age Trail*

The tundra **musk ox**, an ice age relic, greets the visitors at this portion of the exhibit. Once a companion to the mastodon and the mammoth, the musk ox survived to modern times by following the glacier north. Today, the musk ox can be found in the Arctic regions of Alaska, Greenland and Canada.

Musk oxen herds are renown for their protectiveness of their young, which at birth may weigh only 19 pounds—compared to an adult male’s weight of over 600 pounds. When confronted by a pack of wolves, the musk oxen move into a defensive ring with their hindquarters toward the center, their heads facing the direction of the impeding danger. Calves, if any, are herded quickly into the middle. The adults take turns rushing at the predators while the others protect the circle. This defensive circle works quite well when dealing with a cooperative group of predators, such as wolves, rushing them simultaneously. The wolf is no match for the adult musk ox and if the circle remains unbroken, the survival of the young is usually very secure.

Seemingly well adapted to survive the harshest of climates with its thick coat, this same thick fur has also made the musk ox a relentless target of humans. The outer guard hairs can grow to lengths of two feet! Underneath, a thick cashmere-like undercoat protects the ox from the bitter cold. In the summer, this wool is shed leaving patches of hair clinging to the tundra shrubs.

The wall of rock, which separates the musk ox from the visitor, is an **annual moraine**. Deposited yearly as the ice melts back each summer, this moraine is composed of large erratics, mud, gravel, and other organic matter. Because the annual moraine was deposited by the glacier and not the result of outwash, the ‘ingredients’ have not been sorted but appear mixed in the pile.

In the mural to the left, kames or small mounds of debris left by meltwaters as they flowed through the glacier can be seen. Look down on the floor to the left. There is a long flowing mound of debris ending with a rock. This is called a **fluted moraine**. As the glacier rode over the rock it created a depression in the ice, which later filled with some of the debris it carried.

A glacier is a dynamic structure. When it begins to decay, enormous pressure is created producing sounds that often become deafening. This part of the journey, had this been an actual glacier, would be quite hazardous to undertake because of the instability of the glacier during decay. The water is working its way down through crevices, eroding the ice, creating weak areas, which will break away and plummet to the ground. Darkness looms ahead as you actually journey inside a meltwater passage and exit at the receding edge of the glacier. The scalloping that is present in the walls of the cave is created by water that at one time flowed through the channel. Some of the glaciers that covered North America reached a thickness of more than a mile. Glacial ice that covered the Chicago area would have been taller than the Sears Tower!

When glaciers began to decay or melt, the large amount of run-off formed new streams, rivers and lakes. The Great Lakes are a product of glacial advance and then decay. *The Ice Age* exhibit depicts a unique ecosystem, a system that has vigorously clung to life against sometimes insurmountable odds.

Exiting the glacier, we begin our journey into Sharon Woods Gorge and continue through Ohio, south to Kentucky, ending up at Big Bone Lick State Park. This exhibit covers 124 feet of space and represents approximately 44 actual miles. It portrays three types of ice age communities complete with life-sized models of fauna and flora. These communities are: **periglacial**, an environmental disturbance zone found along the front edge of a glacier; a **spruce-pine forest** community; and an **open grassland** community.

We begin our walk in the spring, evident by the clusters of spring flower, the extinct woodland musk ox calf nursing from its mother, saber-toothed kittens frolicking on a ledge and baby great horned owls waiting patiently for their mother to return with her latest kill. Behind us is the glacier and all the rocks abound. Is this glacier advancing or receding? How can we tell the difference? This glacier is receding and has actually dumped its rock, gravel and mud on the ground as it has begun to melt. When a glacier is advancing, the land that precedes it may be forested or may have abundant plant life occupying the area right up to the edge of the glacier. In this diorama there is quite a barren land occupied with glacial erratics, boulders that were deposited by the glacier, and kames before plants and forests appear. This is evidence that the glacier was here and that a melt has already occurred. The glacier itself is not snowy white, but has picked up a great deal of sediment and rocks on its journey. There appear to be bands of sediment in the glaciers. This is caused by one layer of ice moving along the ground then riding up and over a preceding layer. **Firn**, or year-old snow, can be seen topping off the glacier like whipped cream tops off a sundae.

Beside the glacier a **peregrine falcon**, the world's fastest flying bird, has made a kill. Clocked at over 200 mph while in pursuit of its prey, the falcon can easily catch the rock ptarmigan as it takes to flight or moves along the ground in search of food. The peregrine, one of the most aggressive birds of prey, weighs only one or two pounds but will attack birds much larger than it.

This time its target was the rock **ptarmigan**, a master of camouflage on the ground but no match for the peregrine in the sky. Given the lack of natural ground cover where they live, rock ptarmigans remain white in the winter then, as the snows melt to uncover the rocky ground, the ptarmigan molts to a mottled brown. In the autumn it molts for a third time, a very unusual occurrence in birds, to blend in better with the rocky terrain.

The **spotted sandpiper**, wading across the side of a creek, looks for food. As is typical of many wading birds, its long beak and legs help it in its pursuit of food, which may include small crustaceans, mollusks and marine insects.

The **dire wolves**, sniffing the air and ground, are tracking the caribou that can be seen in the distance. Following the receding edge of the glacier, the caribou search for lichens that have begun to colonize the area. On a typical day a caribou will eat 12 pounds of food; they are constantly on the move in their quest for nourishment. The ground is broken-up from the herd of animals that have just passed by. Although not strong enough to hunt a caribou one-on-one, the pack is an efficient killing machine, usually weeding out either the very young, old or sick. In this way, the herd continues to stay strong and healthy. A howl can be heard as the visitors pass by, a chilling reminder of their presence.

Dotting the landscape are mound-shaped formations called **kames**. These were deposited by water seeping through a crevasse in a glacier. As water cascades to the ground it picks up sediment in the process, which allows a layering effect to take form. One kame shows a cross section of the inside layering.

The **terminal moraine** looks somewhat like a snake as it weaves its way around the kames and into the mural. This moraine represents the farthest advance of the glacier. Unlike an **esker** that runs parallel to a glacier, these moraines will always be found running perpendicular. They are the stop signs of the glacial advance.

Moving down the pathway, a plant or two appear to grow out of nowhere. These pioneer plants are called **dryas** and can be distinguished by their bright white flowers. Dryas do well in a mineral-rich environment such as this, where there is little nitrogen and no soil. Bacteria living in the root system of the plant are able to convert atmospheric nitrogen into soil nutrients, which in turn will encourage the growth of new and larger species of plants. The length of time required for vegetation to become established on barren land resulting from a glacial advance is dependent upon four factors:

1. *The time it takes for soil to develop.* Soil formation from barren rock is generally slow. However, on newly deglaciated land the process is accelerated by wind-borne soil from nearby unglaciated areas. The existence of nitrogen-fixing plants such as dryas and alders also help to convert glaciated areas to more usable soil. Seeds are then deposited on the soil, via the wind. Eventually as more of these plants live and die they will add the much needed nitrogen to the ground, making it possible for other plants to migrate into the area. As the soil becomes richer in nutrients, different varieties will be able to migrate into the area. The spruce and pine forests are found much farther away from the glacier, although they appear quite close in the exhibit due to the scale involved. They could not possibly exist any closer, as the soil conditions are not favorable for their growth.
2. *The presence of fungi that form mycorrhizae with the tree roots.* This fungus allows the roots to draw up more of the nutrient-rich soil water from a larger area.
3. *The alkalinity of the soil.* Trees such as spruce and pine are unable to flourish in soil that is highly alkaline and must wait until the rains have leached much of it out before they can successfully inhabit an area. After a glacier recedes, it is often a race as to which plants will take a firm foothold first.
4. *Finally, if the ground remains frozen underneath a thin top layer of soil, or permafrost, larger plants and trees cannot establish themselves.*

As we start to walk into the forest, notice the diversity of small mammals and birds. Don't forget to look up! **Boreal Chickadees**, primarily an occupant of Canada, can be found up in the tree tops. Chickadees generally dwell in cavities left behind by woodpeckers although they have been known to excavate their own homes in rotting wood. The nest serves two functions: it provides a home for the young, and also serves as shelter during the winter for adults.

A **Yellow-Bellied Sapsucker**, a type of woodpecker, can be found clinging on a tree trunk. The sapsucker, in his pursuit of food, will often drill holes in the trunks of trees. This piercing of the bark provides a channel through which the sap can flow to the surface, thereby attracting insects that the woodpecker will eat along with the sap. Instead of being long and thin like that of most woodpeckers, the sapsucker's tongue is rather short and feathery making it ideal for licking up insects ala-mode!

Well hidden on the ground and for good reason is a **Red-Backed Vole**. It is most comfortable at home in cool, damp forest environments. Red-backs are very nervous animals and may faint or

even die if handled. Many animals hunt the red-back, including shrews, hawks, snakes and even bears.

The **Giant Beaver** family can be seen at its favorite haunt—around a pond where cattails and sphagnum moss grow in abundance. Unlike the beavers of today, these giants were not capable of chopping down trees as their teeth tapered to a blunt point. Their diet consisted of water plants such as cattails. Interestingly, molds taken of the giant beaver's brain indicate that they were slow-witted creatures compared to the modern day beaver and were not capable of the higher thinking that would be required to build dams. Their pond is a **kettle** that was formed by a melting chunk of ice left by the glacier.

Across from the Giant Beaver family, the **modern day beaver** can be seen. Actively cutting down a tree, its entire life has evolved around the use of trees—using them not only as a food source, but also for building dams and lodges in which to live. The thick, dense fur, although a perfect coat for keeping dry and warm, almost caused the demise of the beaver, as it became a valuable commodity for fur traders during the 1800s and early 1900s. The leathery tail serves as a balance, a rudder and an alarm system for the beaver. When danger appears at the edge of the pond, the beaver slaps the water with his tail, creating a sharp smacking sound that alerts others of impending danger. A beaver can remain submerged for 10 to 15 minutes. Their lips close behind their incisor teeth allowing the rodent to chew underwater. The nose and ears have valves that also close when the beaver dives underwater.

The Fred Astaire of the bird world is the **Sandhill Crane** depicted in the mural. Sandhills dance during courtship but are not restricted to courting to flaunt their dancing skills. They nest on mounds of vegetation surrounded by water. Their diet includes a variety of amphibians, reptiles, insects, small mammals and plant materials.

This long-legged ancestor of the spectacled bear of South America, the **Short-Faced Bear**, once roamed both North and South America. Its unusually long legs and primitive carnivore tooth pattern suggested that it was able to capture and eat more meat than its modern counterpart. Although taller than the giant Kodiak bears from Alaska, it had a lighter build. The short-faced bear became extinct around 12,000 years ago, perhaps due to competition with the grizzly and brown bears.

In the safety of the pond, two **Mallard Ducks** and a **Green-Winged Teal** swim leisurely about while keeping an eye out for the ever-hungry mink. The **Mink**, possessing semi-webbed feet and a thick oily coat, is a formidable enemy of the duck in or out of the water. The pond was provided by the diligent efforts of the beaver family. It affords many ducks and other semi-aquatic animals a safe haven for living and rearing their young.

The web of life continues to influence the many animals that live within it. **Muskrats** too, abound in this wetland, adopting some of the same habits as the giant beaver. The muskrat derives its name from its rat-like appearance and from the musk glands that produce a penetrating odor to either attract females or to warn other males to stay away. The muskrat has to be wary of the mink, even though the muskrat is the heavier of the two, as the fierce nature of the mink makes him a feared predator. In fact, minks have such a hatred for muskrats that they have been known to destroy entire colonies.

The **Woodland Musk Ox** is concerned only with getting enough to eat and caring for its young. Unlike the tundra musk ox of today, the woodland variety spent most of its life browsing in the forests rather than on the plains. Much taller and thinner than the male tundra musk oxen, the woodland musk oxen horn sheaths fused together to form a single dome. A common and quite

abundant resident of this area during the ice age, our exhibit animal was modeled after an actual ox that had been preserved in the permafrost. The baby was modeled after a bison calf.

The **Raven**, nearly twice the size of a crow, sits perched atop a snag. A member of the *Corvidae* family of birds, which includes crows, jays and magpies, these birds are the most advanced of the avian evolutionary tree. They can withstand extreme temperature fluctuations and they do not usually migrate. The raven and its cousin the magpie will eat just about anything. Their diverse diet includes small mammals and birds, eggs, frogs and even carrion.

You could almost imagine the shrieks of the **Gray Jay** as the **Fisher**, not a fish eater, stalks the **Porcupine** from the treetops. The fisher, a master of mobility in the forest canopy, can even out-manuever a squirrel. The female mates a week or two after giving birth. The gestation period is approximately 358 days. During this time, 10 months pass before the embryo becomes implanted. The actual development of the fetus takes only two months! Thus, the female spends nearly all of her adult life in a state of pregnancy. Porcupines, one of the fisher's favorites, used to be predominant in these woods but have since died out because of European settlement in the area resulting in the clearing of forests. They are still numerous in Canada and the northern United States. Because they debark and kill trees, they remain a problem in some areas. Foresters and fishers have become allies in some areas, the former finding the fishers more desirable than poison to keep porcupines from over-populating and killing the trees.

The **Elk-Moose**, a close relative of the moose, can be seen browsing on the tree branches rather than on water plants as his modern-day counterpart frequently does. An exquisite set of antlers adorns its head. Shed each winter after mating season is over, the antlers provide calcium for many of the forest rodents such as the **Chipmunk** and the **Jumping Mouse**.

The **Flying Squirrel**, a very shy, nocturnal creature, can be seen clinging to the side of a tree. Although its name implies that it flies, it is actually a glider, using a membrane of skin that extends from its body to the outside of the wrist on the front leg to the ankle on the hind leg. Foragers of mostly plant material, they are a very important link in the survival of the forest, being a primarily planter of nuts and a natural pruner of tree buds.

The **White-Footed Mouse**, one of the most abundant mammals, averages three or four mice per acre but sometimes that number can swell to 20. Breeding occurs year round with the typical litter size averaging around four young. It usually nests high in trees but could also choose a stonewall or an abandoned beehive as a possible site. In the exhibit, the visitor can only see the white-footed mouse from the viewing window on the upper level by the sabertooth cat.

The **Rock Vole** is diurnal, or active during the day, but even so is rarely seen. It prefers areas of moist woodland, feeding on grasses, plants, fungi and sometimes caterpillars. Voles have such a high metabolic rate that they consume their own weight in food every 24 hours! Imagine eating your own weight in food everyday...that would be the equivalent of a 100-pound person eating 400 quarter pound hamburgers a day!

The **Sabertooth Cat** is perched high atop a ledge. From this vantage point it can survey the land and possible game while also keeping an eye out for any predators that may be a threat to its cubs. A large cat, about the size of an African lion, it has a heavy bone structure that indicates it is more adapted for ambush rather than speed. Large but ungainly animals such as the ground sloth may have fallen prey to its hunting skills more frequently than their quick and agile counterparts. The large bone of an elk-moose found by its side is probably from a sick or old animal that was too slow to escape or was caught off guard by the attack. The use of the large upper canines continues to be debated. It was first believed that they were used to stab or slash their prey. More

recent evidence indicates that it may have used its canines to tear open the soft underbelly of its victim.

The **Eastern Woodrat** peers wearily from the ledge, just a moment after a great horned owl flew overhead in search of a meal. Luckily for the woodrat, a vole was caught instead. The Groundhog or woodchuck appears for a brief moment to check for danger. Although considerably heavier than the woodrat, there are many predators such as owls, minks and weasels that prey on young woodchucks. Never far away from the protection of its den, the woodchuck is a true hibernator and loses between one-third to one-half of its autumn weight. Because of their great burrowing ability, woodchucks provide homes for many other animals such as foxes, weasels, opossums and rabbits. A vegetarian by nature, the woodchuck has a large pair of incisor teeth that continue to grow throughout its lifetime.

A **Black Vulture** circles overhead, perhaps because it has spotted the sabertooth cat's kill. The vulture is an ever-present reminder of the cycle of life. This bird, still living today, eats carrion or animals that are already dead. Equipped with a strong hooked beak for tearing, the black vulture is well adapted for the life it leads. Its head and neck are largely devoid of feathers to allow the vulture to reach into the carcasses of animals without getting its feathers covered with blood. In most birds, the sense of smell is not well adapted, however vultures are an exception. Smelling plays an important role in locating their next meal. Black vultures can still be found nesting in Adams County.

Beneath the black vulture, the **Flat-Headed Peccaries** can be found frolicking in the mud. The female is getting spruced up for her date as mud is often used as a type of combination sunscreen and insect repellent, while the two male suitors decide who the lucky peccary is going to be. Eyes set high on their heads and long legs suggest that peccaries inhabited the plains. These features helped them to watch for potential predators. Most fossil finds suggest that peccaries lived in herds rather than individually. During the Pleistocene Epoch, this animal ranged throughout the Americas. Although this species of the peccary is extinct today, other species can be found ranging from the southwestern United States into South America.

Up above in the treetops, a pine grosbeak, magpie and a gray squirrel can be seen. The **Pine Grosbeak**, a large, plump finch with a strong curved bill, lives in open coniferous forests of northern Europe, Asia and North America. During the winter they survive by eating buds from vegetation and the seeds from fruit.

The **Magpie**, a member of the crow family, has an unusual habit of occasionally eating the eggs and young of smaller birds. Magpies are gregarious birds preferring to travel in groups except during the mating season. Their nest is composed of mud or manure and fine plant materials that are shaped into a dome-like structure with both an entrance and escape exit.

Acrobats of the treetops, the **Gray Squirrel** depends upon the tree for every aspect of its survival. To escape danger, no animal except for the fisher, can surpass the squirrel's agility in the forest canopy. The trees also provide materials from which its nest is made and a place to put it. Last, but not least, the very tree the squirrel calls home may also provide a rich meal of nuts and acorns.

**Bison Antiquus** can be seen leisurely grazing on grass. Steppe bison migrated across the Bering Land Bridge into North America about half a million years ago. Two types of bison evolved from the steppe bison: *Bison latifrons* and *Bison antiquus*. The modern American bison, sometimes called a buffalo, evolved from *Bison antiquus* on the Great Plains about 8,000 years ago. *Bison antiquus* preferred the open plains in which to graze. Perched atop his back is the small **Mastodon Bird**. Similar in behavior to today's oxpeckers, mastodon birds ate parasites from the hides of animals as

they grazed. This symbiotic relationship benefited both animals, providing 'fast food' for the mastodon bird and ridding the host animal of annoying pests.

Look closely and you may see a small meadow vole or a thirteen-lined ground squirrel on the ground. The **Meadow Vole** became one of the most important links of the food chain, providing a meal for the smaller carnivores such as owls and foxes. The **Ground Squirrel** is one of the few true hibernators. When it wakes up in the spring, the search begins for seeds, roots, insects, worms and carrion.

The **Great Horned Owl** babies are patiently waiting for mother to bring back dinner. Owls, although thought to have infinite wisdom, are no more intelligent than other birds of prey. Its large eyes facing forward allow it to locate small rodents during the evening when it hunts. As its name implies, a pair of horns adorn its head. Neither horn nor antler material, these are merely feathers which act as sound collectors, directing the slightest noise down to the owl's ultra-sensitive ears. Its feathers fringed on the wing tips, allow it the advantage of silent flight. The prey, unaware of advancing peril, remains out in the open until it is too late. The deadly talons quickly make the capture and kill as the owl flies back to a perching branch close to the nest. A vole seen dangling from its beak reassures the babies that dinner will soon be served.

**Passenger Pigeons** fill the sky as they search for food. Once so numerous they numbered in the millions and blackened the sky as they flew overhead, they are no longer prevalent. In fact the last passenger pigeon, Martha, died at the Cincinnati Zoo in 1914, a monument has been erected at the Zoo in honor of Martha and the millions of passenger pigeons that were exterminated. The real Martha can be found on exhibit at the Smithsonian Institute.

A **Horned Lark**, a perky little bird that is able to withstand severe temperatures, looks for seeds littering the ground. The lark got its name for the two tufts of feathers that project from either side of its head. The range of this bird today is from the Arctic to Georgia.

Look up to see one of nature's best cavity builders. The **Pileated Woodpecker** depends on trees exclusively for its lifestyle. Not only does it find its food living under the bark of trees—its favorite are carpenter ants—but nesting and courting also take place in the trees. Often the drumming of a woodpecker signals communication rather than a search for food. The pileated woodpecker's range has been seriously reduced in some areas due to the cutting down of mature forests.

In the background on the wall, a herd of **Columbian Mammoths** can be seen foraging for grass on the vast plains. Mammoths, a close relative to the elephant family, migrated out of Africa around five million years ago, via the Bering Land Bridge, into North America. A gentle herbivore of the grasslands, the mammoth had six successive sets of teeth, although only four teeth were present at any one time. This may seem like a small number of teeth, but keep in mind that each molar was composed of a series of plates, each one measuring a foot in length! As the older teeth became worn, new teeth erupted and moved forward. As with modern-day elephants, this type of tooth replacement enabled the animal to survive at least 60 years of eating abrasive grasses and plant materials. Columbian mammoths were well suited to withstand the cold temperatures. They had small extremities compared to other animals. They were insulated from the cold by several layers of subcutaneous fat, which was then covered by a soft woolly undercoat and topped off with long guard hairs. Some scientists think Columbian mammoths used their tusks as scrapers to remove snow from plant material on the ground.

**Horses** were present in North America in the Pleistocene era. They were approximately the size of a modern day Arabian, but with a much heavier build. Well adapted to living on the plains, their cheek teeth were high crowned enabling them to eat the abrasive grasses that grew on the plains.

Although horses became extinct in North America around 10,000 years ago, they were later reintroduced by the Spanish explorers.

Notice the land is becoming more swamp like as we near the back wall. A **Bittern** is hiding in the high grasses of the bog. Head pointed to the sky in an effort to camouflage itself, it will remain motionless, sometimes swaying with the breeze, until danger passes. Many bogs such as the one that was described at the beginning of the exhibit were present. **Bogs** can be thought of as ponds that have filled with an abundance of vegetation, which has decomposed and sunk to the bottom, adding layer upon layer to its mass. Although it appears to be solid land it is anything but stable.

The **Mastodon** has accidentally slid off the bank. Sinking quickly, its hapless attempts at freeing itself are in vain. Mastodons, often confused with mammoths, stood only slightly more than six feet at the shoulder. Although both animals had trunks, the mastodon had teeth that suggested it fed primarily on leaves and twigs rather than on grasses. Relatives of the mastodon, only distantly related elephants, migrated to North America from Africa probably about 15 million years ago. Between 12,000 and 10,000 years ago their favorite food, spruce, disappeared from the region south of the Great Lakes. The spruce forest was replaced by pine, which was not acceptable to them. The pine in turn became scarce giving way to deciduous forests. Deprived of food and habitat, the mastodons died out 10,000 years ago. Was it the change of the climate and ultimately the lack of preferred vegetation that wiped out the mastodon? The reproductive cycle of some of the large herbivores may not have been synchronized with the changing climate of hotter summers and colder winters. The newborn young were not able to survive the extremes in temperature as well as the adults thereby the population was not replenished.

A **Fox Squirrel** stays close to his tree, ever alert to impending danger. The fox squirrel's home is either a nest of leaves built high in the treetops or a cavity found in the older trees that were originally carved out by a woodpecker. Staying in close proximity to their nests, the fox squirrel may use only 10 acres during one season, but over a year's time, may cover 40 acres by erecting more nests and moving on to new feeding territories. An adult can weigh in at a hefty three pounds, which often proves a hindrance today as they are hunted heavily by humans. The saw is mightier than the sword however, as the destruction of their habitat has had a far more damaging affect on their populations.

**Jefferson's Ground Sloth**, a seemingly ferocious looking animal with gigantic claws and enormous body size was actually a very inoffensive herbivore. Thomas Jefferson, the father of North American paleontology, once described the claws that were presented to him as claws from some enormous cat that still roamed North America. In 1797, Jefferson proposed the name "Megalonyx" for the claw. However, he failed to name the species thus the name "Megalonyx" had no scientific meaning. In 1807, when Lewis and Clark set out on their scientific expedition, Jefferson warned them about this supposed cat. At Big Bone Lick, Kentucky, they found several bones that were sent back for study. These were subsequently recognized as sloth bones. The situation was remedied in 1822 when a French naturalist by the name of Desmarest officially named the species *Megalonyx jeffersonii* in honor of Thomas Jefferson. Rather than being a weapon to kill with, the claws were actually used to pull the higher branches down to its mouth. Ground sloths are extinct today. Their smaller relatives, the two-toed and three-toed sloths can be found in South America.

In the mural, **White-Tailed Deer** and wild turkey can be seen. These familiar animals are present in our forest today and remain virtually unchanged. The deer's ability to blend in with its surroundings is legendary, even by today's standards. Their camouflaged bodies enabled them to remain unnoticed by a crew of six veteran hunters as they combed the square mile where 39 deer were fenced. It took the hunters four days to spot one buck! Their coats in the winter are comprised

of long, hollow air-filled hair and an accumulated layer of fat under the skin, which allows them to retain the warmth they need to sustain cold winters. They are in fact so well insulated that they can lie on snow and not even melt it. Deer are mainly browsers, eating a combination of twigs, fungi and shoots. The doe gives birth to the twins in the spring and the youngsters remain well hidden during their first weeks of life. Frozen like a statue, the fawn will withhold feces and urine until the mother arrives, thereby allowing no telltale odor to give away its hiding place. The mother will ingest all of the fawn's waste until it is old enough to leave its hiding place and follow her.

The **Wild Turkey**, Ohio's largest game bird, was Benjamin Franklin's first choice as the national symbol, rather than the bald eagle. The wild turkey, much leaner than the domestically raised varieties, forages in the woodlands feeding upon nuts, seeds, berries and insects. It is able to flush from a hiding place with a strong burst of speed, but cannot sustain long flight.

Why did some of the animals survive the ice age, while others did not? This question has puzzled scientists for ages. More than half of the all the Pleistocene large mammal species have vanished from the earth. While a few species of small animals and birds became extinct, by far the greatest proportion of species that disappeared were megafauna—those that, as an adult, weighed more than 100 pounds. The descendants of the large animal species that did survive were smaller than their ancestors. The North American bison of today, for example, is the smallest member of a long range of bison. The brown bear of Eurasia is less than half the size of its ice age ancestors. Was it the change in climate that led to their demise, or was it the introduction of the human predator? The puzzle is far from being solved.

When you enter the final display for the *Ice Age*, the immense structure of the mastodon captures your eye. However, remind visitors to look to the left to see what has become of the mired mastodon. A **Paleontologist** studies the bones unearthed from the recent dig. After all the bones are found and catalogued, they are sent to a museum to be duplicated, mounted and put on display. A study of muscle attachment to the bone gives scientists clues as to what the animal may have looked like or how it interacted with its environment. In some cases, the fur has been preserved on animals so that models can be replicated accurately. Paleontologists have learned a great deal about the ice age from a variety of clues that nature has left behind. Like a puzzle, each piece must be studied and scrutinized, before it is put in its place. Sometimes the pieces fit and a new discovery is made. Many times, however, more questions are raised. These questions are what keep scientists going and hopefully, some day in the future, the creatures, the environment and the story behind the ice age will be written.