INTRODUCTION

A native habitat* is made up of plant and animals that evolved together. Throughout the years the plants and animals have attained a balance. Even the predator/prey relationship is in balance. Only a natural disturbance should this affect the balance relationship. A typical conflict is introduced by human interference. Humans often upset this balance. One way is through habitat destruction. Another is by importing exotic plants and animals.

All plants and animals are native to a certain ecosystem. Move that plant or animal to a new ecosystem and it becomes an exotic species. A newly introduced species has not had time to fine a niche. An exotic plant can grow uncontrolled. It can cover existing vegetation and kill it. It can also force out desirable native plants.

* Underlined words are defined in the Glossary of Terms.
Exotic animals compete with native species for food, cover, and water. They may attack and destroy other species. Often, exotic animals have no predator to control their growth. Their use of similar foods as native animals can cause shortages. In the instance of exotic game, animals are bought and imported. Although still wild game, they have the status of property. As property of the landowner, they do not fall into the same category as native game animals.

**TYPES OF EXOTICS**

Many of the animals seen daily are not native to the United States. A plant or animal does not have to originate in another country to be an exotic. A plant native to Florida but moved to California is an exotic. Also, a species native to one part of a state and moved to another is also an exotic. An exotic is simply a plant or animal out of its natural habitat. Reference to plant or animal is to the species, not the individual.

Livestock are not native to North America. Explorers and immigrants brought these species with them to America. Pets are also exotic animals. The pet trade now includes many wild species. These wild species are often referred to as exotic pets. By definition, all non-native pets are exotic. This topic will not discuss domestic pets or livestock. Instead, it will discuss wild exotics. The following are examples of wild animals people keep as pets.

- Giant green iguana
- Amazon parrot
- Emerald tree boa
- Chaco tortoise
- Emperor scorpion
- Tiger salamander

Plants are still another type of exotic. They can interfere with native plant growth. Often they force out desirable native species. As an introduced species, plants may not serve as food or cover for wild animals. Some aquatic plants, such as hydriilla, cause havoc in public waters.

**INTRODUCTION OF EXOTICS**

People have long practiced the idea of moving wild plants and animals from one part of the world to another. This was before there was an understanding of the impact of exotics in a pure habitat. A pure habitat is one where only native species exist. Plants were introduced as a cover or for livestock grazing.

Animals often find their way into a pure habitat. The South American fire ant and the European rat came to America on cargo ships. The Africanized honeybee moved north after escaping from a research facility in Brazil. Now a new threat faces natural species. There is a growing market for exotic pets. Snakes, iguanas, birds, and spiders are a few of the species available. Too often when owners tire of their exotic pet, they simply release them into the wild. This is done without regard to what affect they may have on the environment.

Many accidental exotics become serious pests. They may, directly or indirectly, affect native wildlife. The problem is worldwide. Rabbits were introduced into islands near Australia. There was no natural predator of the rabbit. The rabbit competed with native animals for food. Food was scarce and competition was demanding. Many native species did not survive. New species will either adapt or die. In this case, the rabbit adapted so well it displaced or out-competed native animals.
Some people favor the planned introduction of foreign species. They argue that exotics fill vacant niches in the environment. An example of one another exotic, the fire ant, created such a niche. In its natural habitat, the fire ant has natural enemies. In the United States, the fire ant is free from attack of predators. Filling a niche would be to introduce another exotic, one that is a natural predator of the fire ant.

Currently the United States Department of Agriculture Agricultural Research Service is importing a biological enemy of the fire ant. This is the decapitating fly, *Pseudacteon tricupis*. Fire ant workers serve as a host to fly larvae. The female lays a single egg on the head of a worker fire ant. When the larvae hatches it burrows into the head of the ant the larvae releases a chemical that causes the head of the ant to fall off. The larvae will pupate in the head. Fire ants sense the danger and will hide from the fly and not feed. The decapitating fly is a natural enemy of the fire ant. This is one example of using one exotic to control another.

Introduction of exotic big game animals is popular in the southwest. Ranchers build game proof fences to prevent the animals’ escape. These exotic species include black buck antelope, oryx, nilgai, and ibex. People pay to hunt these species without the expense of travel to another country. Even though privately owned, there are still certain restrictions that affect taking exotic animals. One is the canned hunt. With this illegal activity a game animal is moved to an enclosure, such as an arena or small pasture. A person is then able to shoot the animal.

It is always a risk to introduce an animal into a new habitat. Native species may be displaced; the exotic species may become a pest; or new diseases or parasites may accompany the exotic. Still exotics may add to the environment. They could provide recreation in areas that supported few or no native species. Regardless, a complete study should be conducted to understand the effect the new specie would have in the habitat. State fish and game agencies have policies that deal with exotic wildlife. Contact should be made with these agencies before moving non-native species onto personal property. Exotic species policies should prevent past mistakes from happening again.

**EXOTIC SPECIES**

**Nuisance and Pest**

Just like native species, many exotic plants and animals are a nuisance or a pest. There is a difference between a nuisance and a pest. Pests are harmful to humans is some way. Nuisance species are annoying or unpleasant. Still, most people will consider a nuisance and a pest as the same. Either way, these species interfere with human activity and people look for a way to eradicate or control them. An exotic does not have to be accidentally introduced into a habitat to become a nuisance or pest.
**Hydrilla**

Australia, Africa, and parts of Asia are homelands of the hydrilla (*Hydrilla verticillata*). It arrived into the United States in the 1960s with the aquaria trade. It can reproduce by seeds, tubers, plant fragments, and turions. Once established it can easily spread by waterfowl or boating activities. Its growth will form dense mats that interfere with fish growth and water recreation. It will grow in low light and takes up nutrients easier than other plants.

**Kudzu**

Kudzu was brought to America in 1876. The Japanese display at the Centennial Exposition in Philadelphia featured water gardens. They contained kudzu, a large leaf plant with fragrant blossoms. Gardeners first used it as an ornamental. The Soil Conservation Service saw kudzu as a way to control erosion. During the Great Depression of the 1930s, workers were paid to plant the vines. Farmers received as much as eight dollars an acre to plant kudzu. This was done without a complete understanding of the plant. Its vine growth and large leaves allows it to engulf other vegetation, building, and power lines.

**Fire Ants**

Fire ants came into the United States at the port of Mobile in Alabama. Their introduction was by accident. Two species were imported, the black fire ant, *Solenopsis richteri*, and the red imported fire ant, *Solenopsis invicta*. Both are native of South America. The red fire ant is more competitive and will displace other ants. They attack, kill, and feed on reptiles, small snakes, birds, and insects. There are no natural controls for the fire ant.
**English Sparrow**

The house sparrow, also known as the English sparrow, was originally from Europe. Males have a gray crown, chestnut colored neck, a black beak, and grayish-brown feathers. The house sparrow associates with human activity in urban and rural settings. It is not a desirable addition to North American wildlife. The house sparrow has reduced native bluebird populations. This is a result of competition for food and cover.

*English Sparrows*

**Starling**

The import of starlings to New York from Europe occurred in 1890. Since their introduction, they have flourished to the point of being nuisances and pests. Adults have a yellow beak and their feathers are iridescent black. Younger birds are uniform brown in color, with dark beaks. In winter, adults are speckled with white. Starlings are permanent residents throughout the United States, except in the extreme North. Their diet consists of beetles, grasshoppers, and other insects, wild and cultivated fruits, and grain. Bold and aggressive, the starling competes successfully with native species for nesting sites.

*Starlings*

**Fowl**

There are several types of fowl that have been introduced into the United States. This topic will discuss a few of the gamebirds, novelty birds, and ratites that were introduced into the United States. Game birds are those that have controlled hunting. Novelty birds are those that serve as mainly ornamental purposes. Ratites are flightless birds.

**Ring-necked Pheasant**

The ring-necked pheasant is a chicken-like bird. Its weight can range from 2¼ to 3 pounds. The male color is a very bright array of browns, golds, buffs, blues, and blacks. It has a greenish-purple iridescence around the head and neck and bright red wattles. The ring-necked was first gamebird introduced into the United States. The first successfully established birds were in Oregon in 1891. It wasn’t until 1939 that they reached the Texas Panhandle. By the 1970s, they were along the Texas Gulf Coast. They can be found in croplands containing corn, grain sorghum, and small grains. A hen will lay a clutch of 12 to 15 eggs, generally in mid-June.
Peafowl

Most people recognize peafowl only by the male, called a peacock. Its easily recognized tail display is intended to attract the peahen during mating season. The long tail does not keep the peacock from flying. The peafowl is native to southern India and Ceylon. They are ground feeders that eat mainly insects. In the wild, they will also feed on young cobras. Wild species will roost high in trees at night. Peafowl have been domesticated for over 2000 years. Still, they do not mix well with other domesticated animals. A male will have a harem of two to five females. The female will lay between three and five brownish-buff colored eggs. The peafowl is largely ornamental but can be eaten.

Ostrich

The ostrich is the largest of the ratite family. A native to Africa, it is found all over the world. Adult male ostrich are solid black in color with white wing tips. The smaller females are brownish gray. The male, called a rooster, can weigh 350 to 400 pounds. Its powerful legs are a deadly weapon. An ostrich can run up to 40 miles per hour. A female, called a hen, will lay an average of 60 eggs per year. One large ostrich egg is equal in size to 24 chicken eggs. Both the male and female share in incubating the eggs. Their diet consists of succulent plants and fruits and small insects and lizards. The ostrich was imported to the United States as a viable agricultural alternative. Its main products are its fine quality leather, feathers, and gourmet meat.
Emu

The emu is the second largest member of the ratite family. Unlike the ostrich, there is no visible color difference between males and females. Emus are 4½ to 6 feet tall. Females, however, are larger than the males. Both sexes are covered with long, thick, drooping feathers. Their eyes are large and bright. Long legs give them the ability to run up to 50 kilometers per hour. In their native habitat of Australia, emus are very nomadic and often roam over hundreds of miles. They feed on grass, flowers, and seeds but will also eat insects. Females lay from 5 to 20 dark eggs with dark green shells. The male will incubate the eggs for eight weeks. The male will also provide care to the hatchlings for six to nine months.

Rhea

The rhea is a native of South America. It is the smallest of the three ratites discussed in this topic. There are two species of rheas defined by color. Rheas are either white or gray in color but some grays may be light brown with a white bottom. Weights range from 50 to 80 pounds. They reach sexual maturity from two to four years of age. The female will lay from 20 to 60 eggs per year. Incubation will take from 32 to 42 days. Females travel in herds of 5 to 15 with one dominant male. The male will mate with the females and they will lay eggs in one cluster. When the male determines enough eggs are in the nest, he will stop mating and incubate the eggs. The females will abandon the male in search of another dominant male. The male will also care for the hatchlings until they reach adolescence. The rhea defends itself with a powerful kick, reaching up to 800 pounds per square inch. Also, there is a spur, shaped like a small horn of a cow, at the rhea’s foot.

Large Game Animals

There is abundance of large game animals in the United States. Ranchers build special fences and facilities for these animals. They then allow people to hunt these animals for a fee. This creates additional income for the rancher. With the exception of threatened or endangered species, exotic game animal ownership has more freedom. This topic will identify a few of the more popular exotic large game animals.
**Aoudad**

The Aoudad is a native of the Atlas Mountains of Northern Africa. It is also known as the Barbary sheep. It was first imported for zoos and parks in the eastern United States. Aoudads are now found in the wild in California, New Mexico, and Texas. The Aoudad sheep is a pale, tawny brown, with dark areas about the head and forequarters. It is characterized by a fringe of long hair along the throat and on the front of the forelegs. The exotic sheep eat similar browse as mule deer and desert bighorn sheep. The Aoudad will compete with these American native game species.

**Axis Deer**

The axis deer is native to India and Ceylon. There are more axis deer found in Texas than any other exotic deer. The axis deer is reddish-brown with many white spots throughout its life, with no seasonal change in color. They have impressive antlers, usually consisting of six points. Axis deer are grazers when grass is available, but will eat browse when grass is in short supply. Free-ranging axis deer are steadily increasing in many areas of the Texas Hill Country. This poses a possible threat to the future of the native white-tailed deer. Hunters like to hunt this exotic, both for the trophy and for the meat.

**Blackbuck Antelope**

The blackbuck antelope was first introduced to Texas in 1932 from India. It was used to stock private game ranches. Originally the blackbuck was introduced for aesthetic value to ranchers. Now they are valued for commercial hunting. People hunt them more for trophies than for their meat. Males have contrasting black and white body color, and long, twisted horns that hunters prize. Blackbucks are grazing animals, but will also eat leaves and other browse when competition for grass is intense. Blackbucks prefer open areas where they use speed to escape predators. For safety, they rely on their keen eyesight and ability to run up to 55 miles per hour.
Elk

Elk were once native to the Guadalupe Mountains in Texas. They were of the species *Cervus merriami*. The species *Cervus elaphus* was imported into Texas in 1928 from the Black Hills of North Dakota. In 1959, elk were added to the Texas Parks and Wildlife list of game that can be hunted. Elk are also known as wapiti. They are a large, deer-like species with large antlers. They have long, shaggy hair on their neck. Their color is buffy fawn on the upper parts and their neck, head, legs, and belly range from a dull rusty brown to blackish. Elk are a popular game ranch species. They are kept in deer-proof pastures on ranches throughout Texas.

Fallow Deer

Fallow deer are a medium-sized species. Males 3 to 4 years of age develop large palmate antlers. Younger males develop spike antlers. Their color patterns vary but the following are their four predominate color forms.

- Common - rust color with white rump patch and belly
- Menil
- White
- Black

This species is native to the Mediterranean region of Europe and Asia Minor. It is the most widely introduced deer species in the world. It can be found on every continent. Fallow can be found free ranging or in confined pastures. They prefer to eat a combination of browse, grass, and forbs. They compete with white-tailed deer for browse. This has led to a larger dependence on grasses for the fallow deer.

Nilgai Antelope

Nilgai are a large antelope that is native to India and Pakistan. They stand 4 to 5 feet tall at the shoulders. The nilgai have short, smooth horns that average 7 inches but can reach 9 to 12 inches. Males are a gray to brownish gray color. Females and young are a brown to orangish brown color. Patches of white on the face and below the chin extend to the throat to form a bib. A white tuff of hair about 5 inches long forms a beard just under the bib. The nilgai is the most abundant free-ranging exotic ungulate in Texas. It is most common in South Texas. They feed on grasses and browse. Normally they travel in herds of 10 or more animals.
European Wild Hog and Feral Hogs

Feral hogs are either European wild hogs imported for sporting purposes or escaped domestic swine. The European wild hogs are easily distinguished from the feral hogs. The European wild hog is brown to blackish brown in color. It has grizzled guard hairs and 3 to 6 inch mane of hair from the neck to the rump. Their tail is straight with a tufted end. Its ears are covered with hair. The feral swine look much like their domestic counterparts. They often favor their breed. It is common to see feral hogs that look like Hampshire, Duroc, or Spotted Poland China breeds. The feral hog and the European wild hog readily hybridize. When they do, the traits of the European wild hog appear to be dominant. Wild hogs do considerable damage to cultivated crops and pastures. They form wallows during the hot summer months that make mowing or cultivating difficult. Feral hogs breed throughout the year. Litters range from 1 to 7 but average 2 per sow.

Sika Deer

The sika deer are native to southern Siberia, parts of Japan, China, and Formosa. Sika is a small to medium-sized deer. They have hybridized in Texas with other deer species. Their color is a drab brown to a deep mahogany brown mottled with many white spots. Males have antlers that have 3 or 4 points branching from a main beam. Normal length is 11 to 20 inches. Trophy racks can reach 30 inches. These exotics are mainly found on game ranches but they free-range in 12 Texas counties. Sika feed on grasses, leaves, twigs, and tender shoots of woody plants. Sika males are territorial and keep harems.

Non-game Animals

House Mouse

The house mouse is a sleek little mouse with a long snout and long tail. The tail is naked and finely scaled. The ears are large with very few hairs, and the eyes are small and bulging. The mouse’s fur is a short, buffy brown color with grayish under parts. These mice are primarily nocturnal and live in colonies. They eat practically anything, but prefer vegetable material and grains. House mice associate closely with people. Considered pests, they chew on books, boxes, and leather. They are also very common in East Texas.
Norway Rat

The Norway rat escaped from ships that sailed from England to the United States. The tail is longer than the head and body. Its fur is grayish brown above and pale gray or yellowish white below, and is very coarse. Although they will move about at any hour, they are chiefly nocturnal. Norway rats feed on both plant and animal matter. They can kill chickens, young pigs, lambs, and even infant children. Norway rats are an exotic species the United States could do without. They carry diseases, parasites, and are more dangerous to people than the rattlesnake. The Norway rat is a common resident of eastern Texas.

Nutria

The nutria is a large aquatic rodent native to South America. Except for the tail, it resembles a beaver. It has long, glossy-dark brown or yellowish brown fur. The nutria was imported in 1938 with dreams of quick riches in the fur trade. Nutria that escaped established throughout eastern Texas. They compete with muskrats and waterfowl. Nutria rapidly destroys wetland vegetation. This has lead to their classification as a pest. Their fur does have some commercial value, giving them a place in the trapping industry.

Fish

Tilapia

Tilapia is a native of Africa. It is also known as the Nile perch. The tilapia is an herbivore. Although a tasty fish, it will not take bait. The tilapia fry are an excellent fodder for game fish species. However, they compete with native species for food and breeding areas. The tilapia is a very popular production fish in the aquaculture industry. They grow very well in a cultured environment. Since it is an exotic, producers
must meet rigid production standards and be permitted by the state. The tilapia is a warm water species. If water temperature falls below 60°F, they will die. The female is a mouth brooder and will carry her eggs in her mouth until they hatch. Newly hatched fry will return to the female’s mouth for protection.

Grass Carp

Several species of carp are now common to Texas and the United States, one of which is the grass carp. Carp are in the minnow family. Normal coloring ranges from brassy-green to golden. They have a robust, humped body, and a small mouth. The upper jaw has two barbels on each side, while the dorsal and anal fins have a heavy toothed spine. Carp are abundant statewide. They flourish in shallow lakes and are available through the summer when most other fish are inactive. Their diet consists of both animal and vegetable matter. Carp were imported from Europe for fishing. However, Americans introduced the grass carp to help control thick vegetation. Because they are bottom feeders and thrive in muddy ponds and lakes, they often compete with more desirable fish.

POLICIES CONCERNING EXOTICS

The post World War II era began the import of exotic animals. Soldiers returning from war told of the games animals they had seen in other countries. Because of this, the animals imported were mainly large game. Sales of hunting licenses soared. People could now hunt these animals without the expense of overseas travel. The U.S. Fish and Wildlife Service worked to meet this need. In 1948, it established a State-Federal Cooperative Foreign Game Program. This was an attempt to create a central agency to control the introduction of these animals. The program had three objectives. First was to provide data on exotic animals such as habitat, food, and water needs. This was to help landowners match species to habitat. The second purpose was to discourage importing species into the U.S. that might be harmful. The third purpose was to fill vacant or under stocked habitats with exotics. This would take place after testing and trial introductions were conducted.

At the present, three separate policies or laws control the movement of exotics into the U.S. Each is concerned with any disruption to native habitat. The first came in 1966. The Department of Interior made eight recommendations to U.S. Secretary Steward Udall. These conditions regarded the use of exotic animals on public land. These conditions still serve as the basis for public land policy for exotic wildlife. The eight conditions are as follows.

1. There should be critical determination that a need exists with desirable ecological, recreational, and economic impacts.
2. There should be a definite niche that is available and unsuited for any native species.
3. Introductions that threaten the reduction or displacement of native populations should not be considered. Proposed or existing land uses should not conflict with an exotic transplant.
4. Ecological studies of the animal and the habitat of the proposed site should be conducted.
5. Special study of disease relationships as well as quarantine that will lead to disease-free stock.
6. Species closely related to native stock should be avoided to prevent hybridization.
7. There should first be small-scale experiments and evaluation before larger introductions.
8. Population control methods should be available before an exotic is released.
The second is a policy approved by The Wildlife Society. The Wildlife Society is an international non-profit, scientific and educational organization. The society’s governing council addressed exotic concerns in 1975. It approved a three-point policy that concerned introduction of exotic species. These points make it clear that too often transplants took place without a full knowledge of the introduced specie. The following is a summary of the three points approved by the governing council.

1. Support the introduction of exotic plants or animals only after competent scientists have demonstrated (a) the exotics has a niche to fill or a biological need, (b) the exotic is suited for the new habitat, (c) the exotic will not be harmful to other species or deteriorate the ecological complex, and (d) the exotic must meet all quarantine requirements.

2. Urge that no state, provincial, or national agency shall introduce or be allowed to introduced, unless that species can be contained within that area unless surrounding areas allow their introduction.

3. Allow officially recognized scientific and educational organizations to import exotics as long as they remain in captivity.

The third is an executive order signed by President Jimmy Carter. This order restricted importing exotics into the United States. This is Executive Order 11987 and was signed on May 24, 1977. This order has three parts. First, it restricted federal agencies from bringing exotics into any land they administer. Second, it encouraged other levels of government and private citizens from importing exotic species. Third, the order limited funds for species exported outside the U.S. unless the Secretary of the Interior determined that the introduction would not have a negative effect on the accepting environment.

HUNTING REGULATIONS

Native game laws do not apply to exotic game animals. As privately owned animals, there is no bag or possession limit. Neither is there a closed season on animals on private property. Still, any person hunting an exotic must have a valid hunting license. They must also have the owner’s permission to hunt or possess an exotic animal or its carcass. It is also illegal to hunt any exotic from a public road or right-of-way.

ADDITIONAL OUTDOORS ACTIVITY REGULATIONS

Many people do not realize that regulations and restrictions also exist for non-hunters. Trespass laws and warnings against disturbing nesting sites are as binding to bird watchers, photographers, and hikers as they are to hunters. Plants and animals need their space. To conserve wildlife, everyone should respect all regulations and policies. These regulations and policies help wildlife coexist with humans.

SUMMARY

Exotic plants and animals are now a big part of the North American culture and wildlife. In fact, exotics are found worldwide. The impact of exotic species has been seen in both the plant and animal communities. That impact has been both positive and negative. In the early years, there was little or not attention paid to how an exotic would fit into a new surrounding. The only concern was would it be able to survive. It was soon understood that bringing a new species into an area could do more harm than good. Now after much research and a better understanding of the balances within an ecosystem, the introduction of exotics is guarded. Should exotics be totally banned? Not necessarily. There are niches in every native landscape that are vacant. Exotic introduction can be beneficial if done properly.
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REFERENCES


GLOSSARY OF TERMS

Aesthetic – Relating to the beauty as distinguished from the usefulness.

Barbels – A slender tactile process on the lips of certain fish (such as catfish, drum) species.

Browse – The leaves, stems, and buds of woody plants.

Coexist – To exist together at the same time; to live in peace with each other.

Ecosystem – A community of organisms and their entire physical environment.

Habitat – The place or type of site where a plant or animal naturally or normally lives and grows.

Iridescent – Exhibiting a play of colors producing rainbow effects.
Niche – The functional role of a species in its environment, the way it interacts with living and nonliving elements.

Nocturnal – Active or functioning at night.

Pest – A plant or animal harmful to people.

Seasons – A specified time period that allows for the legal taking of game.

Turions – Overwintering buds.

Wildlife – Wild, undomesticated vertebrate or invertebrate species or native plant species living in its natural habitat.

SELECTED STUDENT ACTIVITIES

TRUE/FALSE: Circle the “T” if the statement is true or “F” if it is false.

T F 1. All animals are native to a certain ecosystem and should not be moved to another habitat.
T F 2. Exotics should have a niche to fill before being introduced into a new habitat.
T F 3. Elk were once native to Texas but are now considered native.
T F 4. Tilapia is a sport fish introduced through the aquaculture industry.
T F 5. All exotic game animals are restricted to game ranches.
T F 6. Any person hunting an exotic must have a valid hunting license.

SHORT ANSWER/LISTING: Read each statement carefully and respond with the correct answer in the space provided.

7. Identify three examples of how exotic species may become part of a new environment.
   a. __________________________________________________________________________
   b. __________________________________________________________________________
   c. __________________________________________________________________________

8. Identify the three largest ratites that are an exotic in the United States.
   a. _______________________________ c. _______________________________
   b. _______________________________

9. List three exotics that have or are having a negative impact in the United States.
   a. _______________________________ c. _______________________________
   b. _______________________________
10. List three exotics that have had a niche an ecosystem in Texas (do not include domestic animals).
   a. ___________________________________ c. ___________________________________
   b. ___________________________________

11. There are three requirements that competent scientists must determine in the first point that The Wildlife Society addressed for the introduction of exotics. List the three requirements.
   a. ___________________________________ c. ___________________________________
   b. ___________________________________

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**ADVANCED ACTIVITIES**

1. **Objective:**

   The student will be provided the opportunity to explore the impact of exotics in their county.

   **Materials:**

   The student should have the following items:

   - Camera and film (video camera if possible)
   - Note tablet
   - Tape recorder

   **Procedure:**

   The student will contact a game warden, game biologist, or Natural Resource Conservation Service field agent. Interview the person contacted as to the extent exotic species are part of the natural environment. Find out when they were first introduced into the county. After the interview, ask if they can show you where exotics exist. Photograph the exotics or any evidence of their presence. If using a video camera, video the interview. Determine if the exotics have been beneficial or harmful to the natural ecosystem. Use the camera to document your determination. Prepare your presentation for the class.

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