Exhibit Theme: Keystone Species

A keystone species is a species that many other species depend on for survival in a specific environment. Several animals inhabiting the prairie rely on prairie dogs for a variety of reasons; prairie dogs are an abundant food source, provide habitat, aerate soil, and control grass populations.

Threats: Hunting, habitat loss, disease

Hunting: Prairie dogs are often considered pests and are hunted or poisoned by farmers, for fear that their foraging and burrowing activity will cause damage to their crops and livestock.

Habitat Loss: Prairie dog habitat has drastically decreased over past two centuries, and is now mostly limited to protected areas.

Disease: Due to their communal nature, disease spreads quickly in prairie dog colonies.

Exhibit Conservation Messaging:

Despite the fact that prairie dogs are often viewed as pests, they are vital to the survival of many species that share the same ecosystem. Protecting and conserving keystone species ultimately helps to conserve numerous other species that depend on them for survival.

There are many keystone species that live in our area that are facing many of the same threats as prairie dogs, such as bats and bees.

Conservation Ask: Make environmentally responsible lifestyle decisions to help conserve habitat, conserve energy and resources, and reduce litter and pollution.

Recommended Biofact: Prairie dog skull

Additional Resource: The role of prairie dogs as a keystone species
Bees: Native bees and honey bees provide an invaluable service for the ecosystem by pollinating approximately 80% of flowering plants; this includes the beautiful trees, shrubs and wild flowers that decorate our landscapes, and the fruits, nuts and vegetables that we eat.

“Colonies Collapse Disorder” has been greatly affecting honey bee colonies. The exact cause of CCD is unknown, but is likely due to a combination of disease, habitat loss, poor nutrition, stress, and pesticide poisoning. Many of the same factors that affect honey bee health also affect the health of native bee species. Bees are also viewed as pests by people who are fearful of their sting.

How can we help bees?: Not all bee’s sting!

Different species of bee prefer different plants. Filling your garden with a variety of native plants will attract several different pollinators, including birds, butterflies and native bee species!

Changing the negative perception of bees is very important to their survival. Some people are afraid of being stung, and prefer that bees are not in their yard and garden. What many people don’t know is that native bees are different from honey bees in the sense that they are not likely to sting. Many native bee species have very mild stings, or have stingers so small that they are incapable of stinging human skin.

Bats: 10 species of bat are native to Maryland. Cave-roosting bats are extremely important to cave ecosystems as the nutrients in their guano are often the basis of the cave’s food chain. Bats are also amazing insect hunters and consume more than half their body weight in insects each night.

Bats are facing many threats across the globe, including habitat loss, disease (white-nose syndrome), and pesticide poisoning. Unfortunately, bats are also frequently misunderstood and feared by humans due to the rumor that bats attack people and suck their blood.

How can we help bats?: Bats aren’t pests; they eat pests.

Bats eat mosquitoes! Building a bat house in your backyard not only provides much needed nesting habitat for bats; it helps keep pesky insects away from your house.

Just like bees, changing the negative perception of bats is very important to their survival. It is highly uncommon for bats to come into contact with humans, and the few species of bat that drink blood are only found in South America.


Possible Hooks: Does this animal look like a predator, or prey? What type of food do you think a prairie dog would eat? What do you think a prairie dog uses their big front teeth for? Did you know that many other animals rely on prairie dogs for survival?

Description: One reason prairie dogs are considered a keystone species is that several animals, including coyotes, badgers, black-footed ferrets, various snakes and birds of prey, rely on them as a significant source of food. By looking at their skull, we can see that they are an herbivorous prey species.

Teeth: Rodents have large, chisel-like incisors that are great for gnawing and tearing tough grasses and roots. Molars in the back of the mouth are used to grind and mash plant material.

Eyes: Prairie dogs have large, wide-set eyes that are useful for scanning the prairie for predators. Their eyes are located near the top of their head; this allows them to peak out of their burrows without becoming too exposed.

Fun Fact: Prairie dogs aren’t the only animals that use their burrows for shelter and protection; hundreds of species, including the critically endangered black-footed ferret, inhabit abandoned prairie dog burrows.
Black-tailed Prairie Dog

*Cynomys ludovicianus*

**Description:**
- **Size:**
  - Length: 13-17 in (35-42.5 cm)
  - Weight: 1-3 lbs (454-1360 g)
- **Physical Description:** Stout-bodied ground squirrels with round heads and small ears. The tail is ¼ of their body length and has a distinctive black tip. Fur along the top of the body is typically beige or tan in color, and the underside ranges from light brown to white. Coat color varies from season to season; lighter in the summer and darker in the winter.
- **Sexual dimorphism:** Males larger than females.

**In the Wild**

**Habitat and Range:**
- **Range:** Mid-western North America, spanning from south-central Canada to northern New Mexico
- **Habitat:** Open and flat grass plains with dry soil

**Diet:**
- Herbivorous: Diet consists mostly of grasses, forbs (flowering plants) and roots

**Adaptations:**
- Claws and whiskers are useful for digging and navigating below ground
- Large wide-set eyes are useful for scanning vast landscape for predators
- Light beige fur provides excellent camouflage against a backdrop of dirt

**Social Structure**
- Groups of prairie dogs are referred to as *colonies* or *towns*, and may contain hundreds of individuals living in a relatively small area.
- Within the colony, there are subgroups called *coteries*. Females typically remain in the same coterie, but males tend to disperse to nearby coteries.
  - Coteries are typically comprised of related females, and one male. Multiple males may be found in very large coteries. These males are usually related to each other.
  - Coteries function as a collective unit, sharing food, scanning for predators and excavating burrows together.
    - When a predator is spotted, the prairie dog will issue an “antipredator” call to alert their offspring and other members of their coterie.
- During the mating season females become fiercely territorial. They will occasionally raid the burrows of other females, killing the pups they find and stealing food. After the breeding season, these behaviors diminish, and the coterie becomes a cooperative unit.
Black-tailed Prairie Dog  
*Cynomys ludovicianus*

again.
- Males are only territorial with other males, and usually ignore intruding females.
- Prairie dogs are social groomers, and will bond with others in their coterie through grooming and play.

**Lifespan:**
- 5-8 years

**Ecosystem relationships:**
- Predators: Prairie dogs have several predators, such as coyotes, badgers, black-footed ferrets, lynx, various snakes and birds of prey.
- Interspecies competitors: Black tailed prairie dogs are specialists, and do not compete with many other native species for food or habitat. They eat plants that livestock does not tend to feed on unless there is nothing else, so overgrazing by cattle and other livestock can be seen as competition.
- Role/ Niche: Black-tailed prairie dogs are considered to be a *keystone* species. A keystone species is a species on which many other species depend on for survival in a specific environment. Black-tailed prairie dogs fulfill many roles in the ecosystem such as:
  - Control the populations of various grasses and forbs
  - Aerate the soil through their burrowing activity
  - Abandoned burrows provide shelter to many other animals
    - Black-footed ferrets, a critically endangered species, are highly dependent on Black-tailed prairie dogs for food and shelter.
  - As an abundant prey species, they provide food for a whole community of predators.

**Reproduction:**
- Breeding season: Varies based on latitude, breeding from late winter in the south to early spring in the north.
- Behavior:
  - Polygynous, the male mates with many females in his coterie.
  - Young are communally nursed and cared for by the females in the coterie.
  - Males are responsible for defending their coterie from infanticidal male invasions.
  - Both male and females participate in nest building, antipredator calling, allogrooming and playing with young.
- Gestation: 33-38 days
- Number of offspring: 3-4 pups per litter on average, up to 8.
- Maturation:
  - Young are *altricial*; born blind, naked, and mostly helpless.
Black-tailed Prairie Dog
*Cynomys ludovicianus*

- Pups grow fur by 3 weeks old, and open their eyes at about 5 weeks old.
- Weaning varies by litter size; with larger litters weaning later than smaller ones, from 27-51 days old.
- Pups become independent by 1-2 years old, and are reproductively mature at about 1-3 years old.

**Activity:**
- Diurnal: Active during the day
- Burrowing: Prairie dogs burrow underground; their burrows act as shelter from predators and the elements, and are used to rear their young.
- Black-tailed prairie dogs do not hibernate, but they eat less and are less active in the winter, which helps them conserve energy.

**Other “fun facts”:**
- The largest colony ever recorded was found in Texas. It covered an area of 65,000 sq. km and contained estimated 400 million prairie dogs
- There are 5 species of prairie dog, all of which are only found in North America.

**Conservation Status and Threats:**
- Listed on the IUCN Red List as Least Concern
- Threats: Hunting, habitat loss and disease
  - Historically, prairie dogs were hunted and exterminated by ranchers, for fear of them damaging their crops, or their cattle becoming injured from falling in burrows.
    - Both of these turned out to be untrue, as cattle are rarely injured from falling into prairie dog holes, and prairie dogs do not typically feed on most crops.
  - Their population and range was once extremely prolific, with an estimated 5 billion individuals spanning over the majority of the Midwest. In the past two centuries, their population has decreased by as much as 98%, and their habitat has shrunk drastically, down to mostly just protected areas.
  - Disease has been a historical problem for prairie dogs, since they are communal in nature, disease spreads fast.
- Conservation efforts:
  - Black-tailed prairie dogs were nearly driven to extinction. Federal protection over the last 40 years has helped them rebound, and they are no longer considered to be an endangered species.
  - Continued partnerships between regulators and farmers are essential to the continued recovery of this critically important species.

*At the Zoo*
The Maryland Zoo in Baltimore has a colony of black-tailed prairie dogs, which are managed as a group. The colony is currently estimated at between 40 and 60 individuals, but varies.

What We Can Do

- Learn more about prairie dogs and spread awareness; efforts to educate and raise awareness on the importance of black-tailed prairie dogs throughout their range helps to reduce the negative perceptions of prairie dogs as pests.
- Make environmentally responsible lifestyle decisions to help conserve habitat – conserve energy and resources.
- Support the conservation efforts of local organizations like The Maryland Zoo as well as organizations working in the field to protect wildlife and conserve habitat. Learn more about them, spread the word, and consider donating or getting involved.

References:
- http://www.marylandzoo.org/animals-conservation/mammals/black-tailed-prairie-dog/
- http://animaldiversity.org/accounts/Cynomys_ludovicianus/#behavior
- http://www.iucnredlist.org/details/6091/0
- http://www.arkive.org/black-tailed-prairie-dog/cynomys-ludovicianus/