

WILDLIFE HANDBOOK

Kaw Nation Environmental
Department (KNED)

This workbook belongs to:



WHAT'S INSIDE?

Topics

- Kaw Lake: Facts and importance
- Ecosystems of Kaw Lake
- Wetlands: Facts and importance
- Wetlands: A Valuable Resource
- Plant Adaptations
- Animal Adaptations
- Invasive Species in Oklahoma Wetlands
- Plants - Traditional Medicinal Uses
- Leave No Trace

Worksheets

Activity 1:

Water Quality Sampling

Activity 2:

Scavenger Hunt

Activity 3:

Aquatic and Terrestrial Macroinvertebrates

Posters

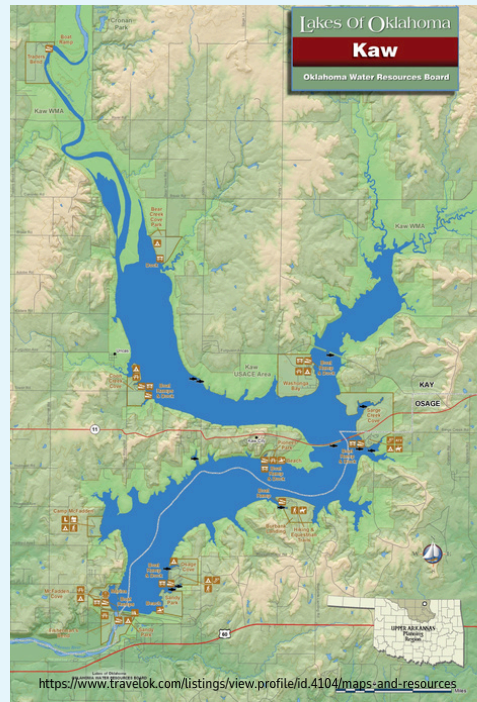
- Animals of Kaw Nation I
- Animals of Kaw Nation II
- Plants of Kaw Nation I
- Plants of Kaw Nation II
- Animal Tracks
- Snakes in Kaw Territory

KAW LAKE

FACTS AND IMPORTANCE

The Kaw (Kanza) Nation lands in north-central Oklahoma (around Kay County, near Ponca City) sit in a mix of tallgrass prairie, riparian forests, and river systems, so the wildlife is diverse.

Kaw Lake is a large reservoir in north-central Oklahoma, created in 1976 by the U.S. Army Corps of Engineers when they built Kaw Dam on the Arkansas River. It covers about 17,000 acres and has over 160 miles of shoreline, making it an important place for both people and wildlife.



Inflow to Kaw Lake comes from the **Arkansas River** to the north and from Beaver Creek to the northeast. Little Beaver and Bear Creeks are second order creeks that join the Big Beaver and Arkansas River, respectively.

Kaw Lake, besides its recreational services, is the **main source of the drinking water** supply for over 100,000 people living in Kaw City, Newkirk, Red Rock, and Stillwater. Also, the lake helps **control flooding and stores water**.

Kaw Nation is dedicated to **protecting the water quality** of the Arkansas River and Kaw Lake, including streams, along with the wildlife habitats within the Kaw Nation service area, for the **health and well-being** of its tribal citizens and other Native Americans residing in the service area.

ECOSYSTEMS

of Kaw Lake

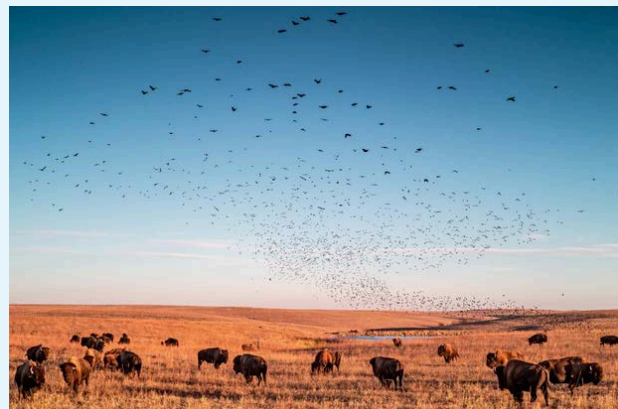
An **ecosystem** is made up of all of the living (biotic) and nonliving (abiotic) things in an area. This includes all of the plants, animals, and other living things that make up the communities of life in an area. An ecosystem also includes nonliving materials—for example, water, rocks, soil, and sand. The Kaw Nation lands in northcentral Oklahoma are part of a transitional zone where the eastern forests meet the Great Plains. This creates a **high level of biodiversity** across **three primary ecosystems**.

1. TALLGRASS PRAIRIE

This is the dominant ecosystem of the region. It is characterized by deep, fertile soils and grasses that can grow over six feet tall. It is part of the largest remaining expanse of this endangered ecosystem, with less than 4% of the original tallgrass prairie remaining in North America.

The ecosystem is maintained by the interaction of climate, grazing by bison, and fire.

- **Key Flora:** Big bluestem, indiangrass, switchgrass, and wildflowers.
- **Key Fauna:** Habitat for the bison, deer, coyote, bobcat, wild turkey, prairie chicken and over 300 bird species.



2. WOODLANDS

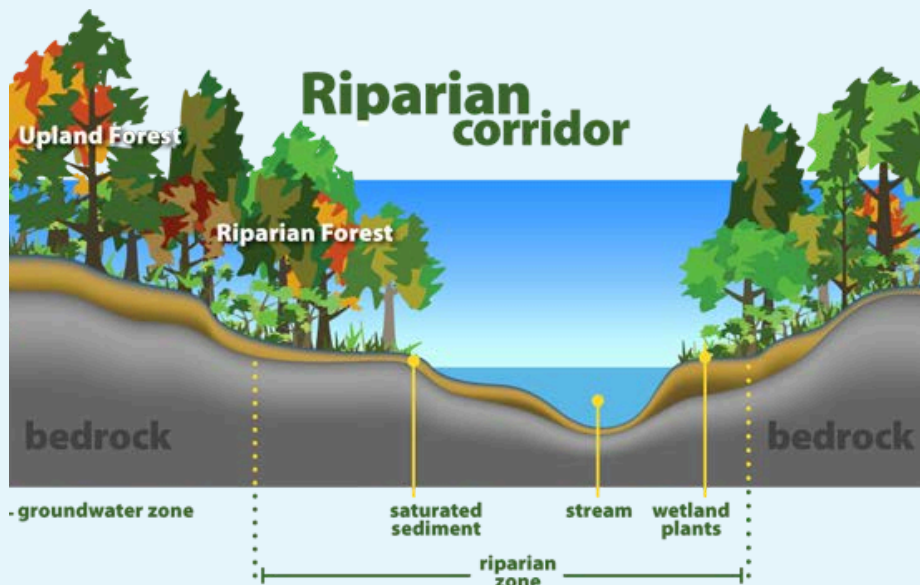
The Kaw Nation sits on the western edge of the Cross Timbers, a rugged transition zone of stunted forest and prairie.

- **Key Flora:** Ancient, slow-growing post oak, blackjack oak, bur oak, chinquapin oak, walnut, sycamore, hickory, and hackberry.
- **Key Fauna:** deer, coyote, badgers, cottontails, wild turkeys, hawks, ospreys, cardinals.



3. RIPARIAN AND WETLAND SYSTEMS

These ecosystems exist along the banks of the Arkansas River, its tributaries, and the shores of Kaw Lake. These areas include riparian zones, marshes, and river margins that support a wide variety of migratory birds, fish, and mammals, while playing a vital role in water quality protection for the region. They are crucial for **filtering water** and providing stopover points for migratory waterfowl and American Bald Eagles. The lake itself supports a massive population of catfish and the prehistoric paddlefish.



WETLANDS:

Facts and Importance

Wetlands are distinct ecosystems where water covers the soil or is present at/near the surface for at least part of the year, creating a **transitional zone** between dry land and water bodies.

Characterized by water-saturated soils (hydric soils) and specialized plants (hydrophytes), they are **highly productive**, critical habitats for biodiversity that act as natural buffers for **flood control** and **water filtration**.

Key Characteristics

- **Hydrology:** They are saturated with water (fresh, salt, or brackish) permanently, seasonally, or periodically.
- **Hydric Soils:** The soil develops under low-oxygen (**anoxic**) conditions due to water saturation.
- **Hydrophytic Vegetation:** Plants in these areas are adapted to live in waterlogged soils (e.g., cattails, rushes, mangroves).

Importance and Functions

- **Flood Mitigation:** Acting as natural sponges, they absorb heavy rainfall, slowing water velocity and reducing flood damage.
- **Water Quality Improvement:** Wetlands filter pollutants, trap sediments, and absorb nutrients, improving water quality.
- **Biodiversity Hotspots:** They support a massive range of plant and animal life, including endangered species.
- **Carbon Storage:** Wetlands are highly effective at storing carbon, helping to mitigate climate change.



WETLANDS:

A Valuable Resource

The wetland ecosystems within the Kaw Nation's jurisdiction, particularly around Kaw Lake and the Arkansas River in northern Oklahoma, serve as critical, diverse habitats monitored by the Kaw Nation Environmental Department (KNED).

ENVIRONMENTAL PROTECTION AND CHALLENGES

- **Climate Change & Protection:** The KNED actively works to protect these resources from the impacts of climate change, such as fluctuating water levels and rising temperatures.
- **Water Quality:** The KNED conducts monitoring and assessment of the watershed, addressing contamination and managing water resources, ensuring the health of the ecosystem.
- **Restoration:** Management efforts often focus on protecting wetlands to maintain their capacity to support diverse plant and animal life, along with providing a sanctuary for birds of prey and other wildlife.

WETLANDS PROVIDE:

BALANCE for nature's ecosystems.

SHELTER and protection of animals.

FOOD for animals and humans.

EROSION PREVENTION by holding on to the earth with their roots and absorbing the wave action of ponds and lakes.

NATURAL PROTECTION from flooding and droughts. During wet weather, wetlands act as a huge sponge. They catch and hold water to keep it from flooding homes, roads, and fields.

WATER PURIFICATION helping make dirty water pure, fresh, and sparkling. The roots and stems of wetland plants act as filters catching dirt and pollutants from rain or runoff water.

RECREATION such as bird watching, fishing, hunting, hiking, camping, boating, photography, adventure, and nature study.

PLANT ADAPTATIONS

To live in the wetlands

Wetland plants and animals have **evolved** remarkable physical, physiological, and behavioral adaptations to survive in waterlogged, low-oxygen soils and aquatic environments. These **specialized traits** allow them to thrive where other species cannot, by filtering water and maintaining crucial ecological balance.

PLANT ADAPTATIONS (HYDROPHYTES)

Wetland plants face two major challenges: absorbing enough oxygen in waterlogged soils and staying upright to catch sunlight.

- **Aerenchyma Tissues:** Plants like Cattails have spongy, hollow tissues within their stems and leaves. This allows oxygen to flow freely from the parts of the plant above water down to the roots buried in oxygen-poor soil.
- **Pneumatophores:** Trees like the *Bald Cypress* and Mangroves feature specialized "breathing roots" that poke up out of the water and mud to absorb oxygen directly from the air.
- **Buoyancy and Flexibility:** Submerged plants have highly flexible stems and air spaces in their foliage that make them buoyant, ensuring their leaves remain upright to absorb sunlight as water levels fluctuate.
- **Specialized Root Systems:** Many wetland plants develop shallow, sprawling root systems that tightly hold onto the soil, securing the plant and preventing erosion.



ANIMAL ADAPTATIONS

To live in the wetlands

ANIMAL ADAPTATIONS

Wetland animals need ways to move through muddy and watery terrains, avoid predators, and effectively hunt in shallow waters.

- **Specialized Appendages:** Animals like frogs, ducks, and even alligators have webbed feet to use like paddles for swift, efficient movement through water and soft mud.
- **Breathing Modifications:** American alligators have nostrils positioned at the very top of their snouts, allowing them to act like a snorkel mask so the animal can submerge its entire body while still breathing.
- **Specialized Beaks and Necks:** Wading birds (such as herons) have long legs to avoid getting their bodies wet and long necks with sharp bills optimized for spear-fishing. Others, like the Black-necked Stilt, feature elongated beaks specifically designed for probing the mud for insects.
- **Camouflage:** Many wetland fish, amphibians, and invertebrates (such as crayfish) have drab, dark coloring that allows them to perfectly blend in with decaying plant matter and murky water to hide from predators.



Duck beaks skim the surface water for food



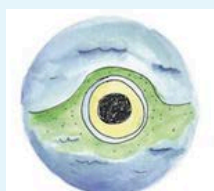
Heron's sharp pointed beak snags fish in the water



Long toes spread weight to keep foot from sinking



Sebaceous oil glands waterproof fur & feathers
Dense fur and fat for warmth



Some frogs, fish and insects have clear eyelids to see under water



Sandpiper's beak gets food just under the mud surface



Webbed feet for swimming in water



Beavers have a special toenail to spread the oil on their fur



Gills for getting oxygen from the water

INVASIVE SPECIES

in Oklahoma Wetlands

An invasive specie is an organism (plant, animal, or microbe) that is introduced to a new ecosystem where it is not native, and whose rapid spread causes harm to the environment, the economy, or human health.

Invasive species in Oklahoma wetlands displace native plants, disrupt the waterfowl food chain, and damage water infrastructure.

High-Priority Wetland Invaders

Aquatic Plants:

- **Hydrilla:** Forms dense, light-blocking mats that deplete dissolved oxygen and create monocultures in reservoirs.
- **Purple Loosestrife:** An incredibly fast-spreading perennial that invades shallow wetlands and wet meadows, aggressively crowding out native wetland vegetation.
- **Yellow Flag Iris & Water Hyacinth:** Prolific bloomers that choke out native flora, drastically reducing the biodiversity vital to local wetland ecosystems.



Aquatic Animals:

- **Zebra Mussels:** Small, sharp-shelled mollusks. They outcompete native mussels, filter out essential plankton from the water column, and severely clog water management infrastructure.
- **Silver & Bighead Carp:** Rapidly reproducing invasive fish that outcompete native species like the paddlefish for food.



PLANTS

Traditional Medicinal Uses

The Kaw Nation (Kanza) people have a deep ethnobotanical history, utilizing the diverse plants of the tallgrass prairie and riparian zones for spiritual, medicinal, and practical needs. The prairie provided a natural pharmacy for treating common ailments.

- **White sage (*Artemisia ludoviciana*):** Tea used by Native Americans for stomach troubles and other ailments.



- **Pale purple coneflower (*Echinacea pallida*):** The roots were used by nearly all Plains tribes as a potent painkiller for toothaches, sore throats, and snakebites.

- **Wild bergamot (*Monarda fistulosa*):** The fragrant leaves were brewed into tea to treat colds, fevers, and stomach issues.



- **White yarrow (*Achillea millefolium*):** Frequently used to treat wounds due to its antibacterial properties.

- **Black willow (*Salix nigra*):** Contains salicin (similar to aspirin) and was used to reduce fevers, pain, alleviate body aches and treat acne.



LEAVE NO TRACE

7 PRINCIPLES

The 7 Principles of Leave No Trace provide an easily understood framework of minimum impact practices for anyone visiting the outdoors. The Principles can be applied anywhere — from remote wilderness areas, to local parks and even in your own backyard.



PRINCIPLE 1 - PLAN AHEAD & PREPARE

Know the regulations of the area, prepare for extreme weather, and aim to visit in small groups to minimize impact.

PRINCIPLE 2 - TRAVEL AND CAMP ON DURABLE SURFACES

Stick to established trails and camp in existing, durable sites (rock, gravel, dry grass) rather than impacting vegetation.

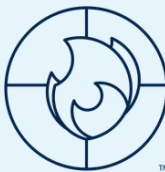


PRINCIPLE 3 - DISPOSE OF WASTE PROPERLY

Pack out all trash, dispose of human waste properly (cat holes 6-8 inches deep, 200 feet from water), and wash dishes away from water sources.

PRINCIPLE 4 - LEAVE WHAT YOU FIND

Preserve the past and present by leaving rocks, plants, artifacts, and natural objects as you found them.

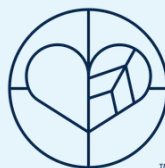


PRINCIPLE 5 - MINIMIZE CAMPFIRE IMPACTS

Use a lightweight stove for cooking. If building a fire, use established fire rings, keep it small, and burn wood completely to ash.

PRINCIPLE 6 - RESPECT WILDLIFE

Observe animals from a distance, never feed them, and secure food to avoid altering their natural behaviors.



PRINCIPLE 7 - BE CONSIDERATE OF OTHERS

Keep noise down, manage pets, and yield to others on the trail to protect the quality of everyone's experience.

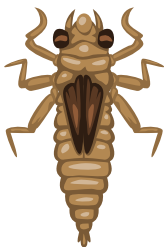
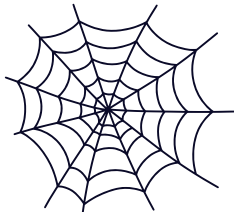
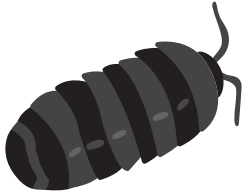
ACTIVITY 1: WATER QUALITY SAMPLING

Use your senses and tools to gather data from two different water samples from Kaw Lake.
Record the data and write your answers in the blanks.

PHYSICAL CHARACTERISTICS	WATER SAMPLE A	WATER SAMPLE B
Color		
Odor		
Temperature		
Turbidity		
CHEMICAL CHARACTERISTICS	WATER SAMPLE A	WATER SAMPLE B
Salinity		
Alkalinity		
Copper		
Mercury		
Nitrate		
Nitrite		
pH		
Other		
BIOLOGICAL CHARACTERISTICS		

ACTIVITY 2: SCAVENGER HUNT

Circle the name of the object or organism you found!!
Remember... Leave No Trace and avoid disturbing wildlife!

			
Bird nest	Feather	Mushroom	Lichen
			
Plant growing in water	Acorn	Singing bird	Animal track
			
Scat	Butterfly	Squirrel	Flower
			
Ants	Aquatic insect	Flying bird	Spider web
			
Fish	Turtle	Roly poly	Dragonfly

ACTIVITY 3: AQUATIC AND TERRESTRIAL MACROINVERTEBRATES

Kaw Lake supports a highly diverse ecosystem of aquatic and terrestrial macroinvertebrates. These organisms—ranging from stream-dwelling aquatic insects to the terrestrial bugs living in the surrounding tallgrass prairie and bottomland forests—are vital indicators of the lake's ecological health and form the essential foundation of the local food web, serving as a primary food source.



Find the following words in the puzzle



Dragonfly
Mayfly
Springtail
Water Strider

Beetle
Nymph
Larva
Caddisfly

Leech
Snail
Water Flea
Crayfish

Spider
Butterfly
Grasshopper
Worms



B	C	K	Q	S	X	P	M	A	Y	F	L	Y	U	D	U	W	M	X	Q	Y	X	
H	W	P	H	B	H	N	G	T	R	U	A	E	G	C	E	G	S	S	R	S	W	I
A	J	A	M	U	F	H	X	R	K	Z	A	L	J	I	G	H	P	M	Y	N	N	X
W	U	P	T	Y	P	T	E	B	A	R	X	I	A	D	A	R	J	Z	H	A	M	N
N	A	Z	O	E	N	N	H	C	O	S	A	W	J	J	R	H	C	S	C	I	H	R
C	O	T	B	C	R	V	E	I	R	X	S	A	S	Q	E	A	I	P	E	L	J	B
E	A	B	E	L	A	S	N	E	L	A	T	H	Q	P	T	O	G	J	E	X	R	N
P	A	D	E	R	K	Y	T	P	K	O	Y	I	O	U	R	Q	Y	O	L	K	T	L
V	V	H	D	E	F	F	D	R	I	H	N	F	R	P	D	I	T	I	N	X	R	G
S	R	R	U	I	T	L	C	L	I	J	W	K	I	S	P	Z	N	V	R	F	Z	M
P	A	X	O	N	S	L	E	J	N	D	F	O	N	S	M	E	D	G	B	R	L	W
I	L	V	D	Z	D	F	E	A	C	U	E	B	R	K	H	K	R	Y	T	S	C	Y
D	S	R	Q	F	G	C	L	H	G	H	V	R	P	M	Y	K	K	W	W	A	O	N
E	X	K	A	W	C	K	M	Y	E	M	A	L	Q	Q	S	R	R	V	P	S	I	N
R	D	V	S	V	H	M	S	J	W	W	L	I	E	R	Q	W	O	N	G	S	F	L
K	P	Q	S	B	U	T	T	E	R	F	L	Y	S	X	L	K	Y	H	O	I	W	S



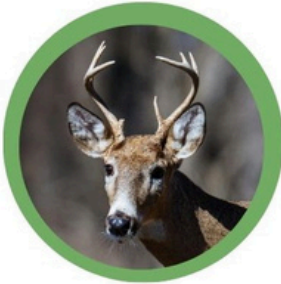


ANIMALS



OF KAW NATION I

Vertebrates are animals that have a backbone. These animals include **mammals**, **birds**, **reptiles**, **amphibians** and fish



White-tailed deer
ta sínje ska



Coyote
shónmikáse



Bobcat
ilónga sínje dápa hìnga



Striped skunk
mónga lezé



Armadillo
Níkayaché



Raccoon
miká



Opossum
sínje shta



Red fox
zhótaⁿ zhúje



Beaver
zhábe



Muskrat
tási zhiⁿga



Mountain lion
ilónga sínje scéje



Cottontail rabbit
mashcíⁿge



Prairie dogs
maⁿyíⁿxòje hìnga



Squirrel
sínga



Scissor tailed
stastágetàⁿga



Bald eagle
xuyá pasú



Red-tailed hawk
úbe zihi



Great horned owl
wapónga



Buzzard
héga



Wild turkey
síka taⁿga



ANIMALS



OF KAW NATION II

Vertebrates are animals that have a backbone. These animals include **mammals**, **birds**, **reptiles**, **amphibians** and fish



Woodpecker
gadádaghe



Quail
shúta^{nga}



Pelican
wazhí^{nga} dójeha



Killdeer
tányiⁿ zhí^{nga}



Great blue heron
wazhí^{nga} xóje tà^{nga}



Red cardinal
wazhíⁿzhuje



Blue jay
wazhí^{nga} tóho



Screech owl
hiyádadàghe hì^{nga}



Duck
míⁿgha.



Bullsnake
wéts'a maⁿxíga tá^{nga}



Rattlesnake
wéts'a síⁿje
yishkáⁿshke



Copperhead
wéts'a zhúje



Ornate box turtle
ke



Snapping turtle
kehá gacóce



Bull frog
cébuk'a tá^{nga}



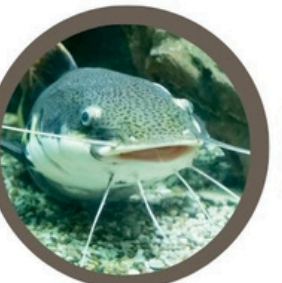
Tree frog
cébuk'a tóho



White crappie
hó skà lézhe



Largemouth bass
hó í tà^{nga}



Blue catfish
hóxcí tóho



White bass
hó skà



PLANTS



OF KAW NATION I

Plants are organisms belonging to the kingdom Plantae that produce their own food through photosynthesis using chlorophyll. Examples include trees, shrubs, herbs, grasses, and ferns.



Common arrowhead
máⁿhiⁿ sú



Pecan
páⁿ scéje



Sandbar willow
yúghehìⁿga



Cottonwood
bák'a



Giant bulrush
sá tàⁿga



Cattail
sabláska



Black willow
yúghe sàbe



Sycamore
zháⁿ saⁿ



White oak
zháⁿ xoje hú



PLANTS

OF KAW NATION II



Plants are organisms belonging to the kingdom Plantae that produce their own food through photosynthesis using chlorophyll. Examples include trees, shrubs, herbs, grasses, and ferns.



Big bluestem



Little bluestem



Indian grass



Switchgrass



Raven's foot sedge



Square-stem spike sedge



Blackjack oak
pusúhu



Sand plum
puzá kánje



Hackberry
goⁿbé



ANIMAL TRACKS

of Kaw Nation



DEER
ta síⁿje ska



COYOTE
shóⁿmikáse



BOBCAT
ilóⁿga síⁿje dápa hìⁿga



MOUNTAIN LION
ilóⁿga síⁿje scéje



FOX
zhótaⁿ zhúje



RACCOON
miká



OPOSSUM
síⁿje shta



ARMADILLO
kokósa-ke



SKUNK
móⁿga lezé



RABBIT
mashcíⁿge



BEAVER
zhábe



MUSKRAT
tási zhiⁿga



SQUIREL
síⁿga



PRAIRE DOG
maⁿyíⁿxòje hìⁿga



DUCK
míⁿgha



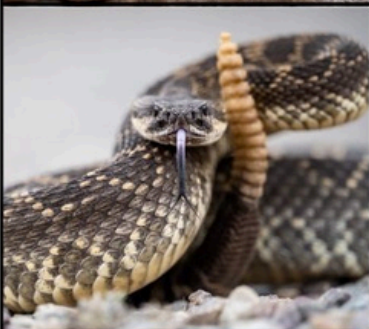
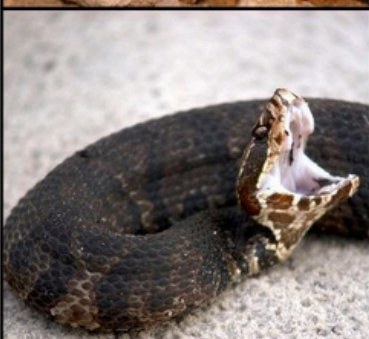
TURKEY
síka taⁿga



SNAKES

IN KAW TERRITORY



PICTURE	COMMON AND SCIENTIFIC NAME	VENOMOUS	HOW TO RECOGNIZE IT	WHERE YOU CAN FIND IT
	Western Diamondback Rattlesnake <i>Crotalus atrox</i>	✓	• Diamond-shaped back markings. • Black-and-white banded tail. • Obvious rattle.	• Dry prairies, rocky hillsides, open grasslands, brushy areas • 🌿 Terrestrial
	Timber Rattlesnake <i>Crotalus horridus</i>	✓	• Dark V-shaped bands. • Heavy body. • Black tail ending in a rattle.	• Mature forests, wooded hills, rocky bluffs, river valleys • 🌿 Terrestrial
	Copperhead <i>Agkistrodon contortrix</i>	✓	• Copper-colored head. • Hourglass-shaped crossbands. • Vertical pupils.	• Woodlands, leaf litter, rocky outcrops, creek bottoms • 🌿 Terrestrial
	Water Moccasin - Northern Cottonmouth <i>Agkistrodon piscivorus</i>	✓	• Broad, wedge-shaped head with a narrow neck. • Vertical pupils. • Heavy, thick-set body.	• Meadows, lawns, wetlands, pond edges, marshes. • 💧 🌿 Semi-aquatic.
	Ring-necked snake <i>Diadophis punctatus</i>	✗	• Distinctive ring entirely circles the neck. • Bright belly: yellow, orange or red. • Small size 10 to 14 inches.	• Woodlands, leaf litter, rocky outcrops, prairie grasslands. • 🌿 Terrestrial



SNAKES

IN KAW TERRITORY



PICTURE	COMMON AND SCIENTIFIC NAME	VENOMOUS	HOW TO RECOGNIZE IT	WHERE YOU CAN FIND IT
	Speckled Kingsnake <i>Lampropeltis holbrooki</i>	✗	- Black body with yellow or white speckles. - Glossy appearance. - Non-triangular head.	- Prairies, woodlands, near streams, rocky areas - Mostly terrestrial
	Bullsnake <i>Pituophis catenifer sayi</i>	✗	- Large size. - Yellowish body with brown blotches. - Often hisses loudly when threatened.	- Prairies, pastures, agricultural fields, sandy soils - Terrestrial
	Plains Garter Snake <i>Thamnophis radix</i>	✗	- Three light stripes running lengthwise. - Relatively small size. - Slender body.	- Meadows, lawns, wetlands, pond edges, marshes. - Semi-aquatic.
	Plain-bellied Watersnake <i>Nerodia erythrogaster</i>	✗	- Uniform yellow or orange belly. - Heavy body. - Back color ranges from solid dark brown, gray, or black to olive green.	- Lakes, ponds, rivers, streams, marshes, including Kaw Lake and the Arkansas River. - Aquatic / Semi-aquatic.
	Prairie Kingsnake <i>Lampropeltis calligaster</i>	✗	- Tan body with dark blotches. - Smooth scales. - Rounded head.	- Grasslands, farmland, open woodlands, under logs and rocks - Terrestrial

NOTES - OBSERVATIONS





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Preserve – Protect – Improve

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