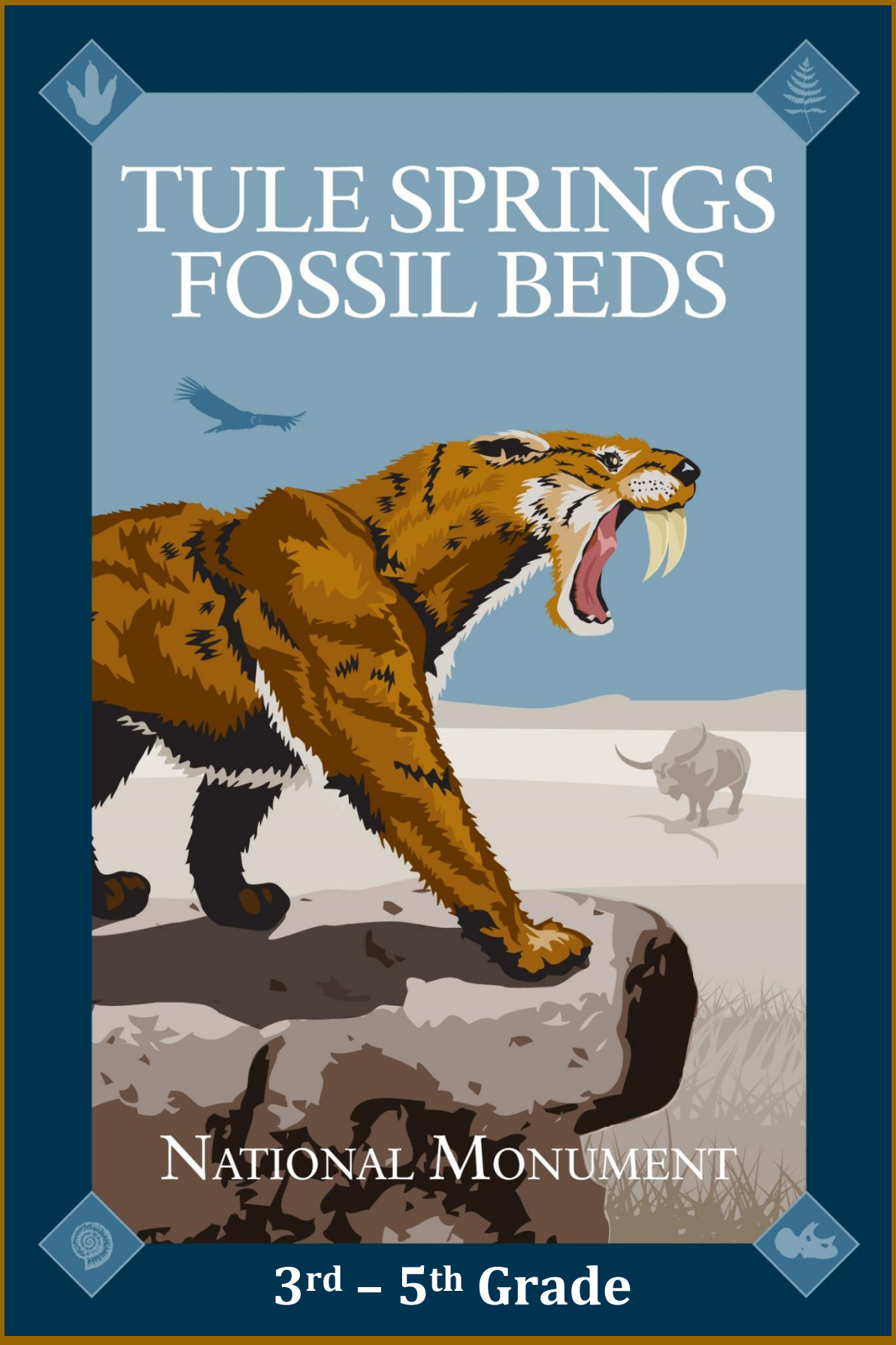
Teacher Resources



Tule Springs Fossil Beds National Monument
Teacher Resources

Grades 3-5

Tule Springs Fossil Beds is one of our newest National Park Service units, located in the Las Vegas Valley. We are providing these educational resources for K-12 educators together with our partners: the Protectors of Tule Springs. Over the last ~570,000 years, water has transformed the Upper Las Vegas Valley. Tule Springs Fossil Beds National Monument is an urban park that preserves the unique story of this ever-changing ecosystem

Tule Springs Fossil Beds National Monument preserves thousands of Pleistocene (Ice Age) fossils that help tell the story of a dynamic environment. These fossils were preserved within expanding and contracting wetlands between 100,000-12,500 years ago. Many of the Pleistocene animals of Tule Springs are still alive today, including the coyote (Canis latrans), jackrabbit (Lepus sp.), and aquatic snails. Some animals went extinct, disappearing from North America entirely.

The Monument also protects Mojave Desert habitat from urban development. This wildlife and plant corridor is home to a diverse group of native plants and animals. Flash floods are also common seasonally in the upper Las Vegas Wash. Important cultural resources, such as historic objects, cultural sites, and artifacts are also protected within the Monument.

Tule Springs Fossil Beds National Monument is in the early phases of park planning, so we do not have facilities on site. Further information can be found at NPS.gov/TUSK

Ice Age Investigation

3rd - 5th Grade

Concepts

- Fossils give us evidence about extinct animals.
- Scientists can learn how extinct animals lived by observing their adaptations and comparing them to living animals.

Objectives

- Students will understand that the fossils from Tule Springs teach us about life in Las Vegas during the Ice Age.
- Students will understand that many Ice Age animals are similar to animals that still live today.

Outline

Students will select one animal and use their research to compose a short paragraph about how that animal lived.

Review the idea that fossils give scientists evidence about plants and animals that lived a long time ago. The fossils from the Tule Springs give us information about what life was like in Las Vegas during the Ice Age. We can draw information from fossils by making careful observations and using what we already know about animals who are alive today.

Ice Age Investigation

The extinct animals from Tule Springs can tell us a lot about the way the animals lived by examining their fossil remains. From the smallest mouse to the largest mammoth, the story of their life is in their bones. Read and research about the animals of the Ice Age and see if you can uncover the mysteries!

Choose one of the animals from your reading, and use your research and observations to fill in the paragraph.

I chose to study the _____.

My animal is _____ in size compared to other animals of the Ice Age.

Its teeth are _____ which tells me that it ate _____.

It walks on _____ legs.

My animal looks like it moved _____ because_____

_____.

A living animal similar to my animal is the _____.

Draw your animal:

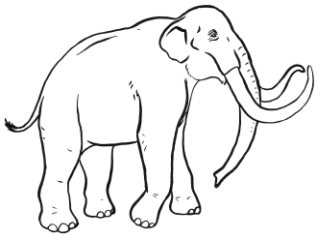
Name: _____ Date: _____

Pleistocene Food Scene

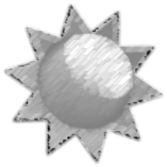
Circle the correct answer to complete each food chain.

Sun

A. Snail
B. Algae
C. Chicken
D.Grass

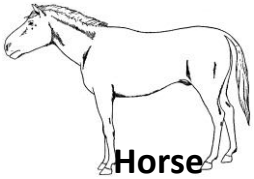


Mammoth



Sun

Grass

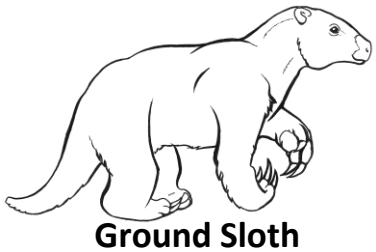


Horse

A. Deer
B. Sabertooth Cat
C. Tree
D. Spider

Sun

A. Tree
B. Human
C. Mammoth
D. Rabbit



Ground Sloth

Sun

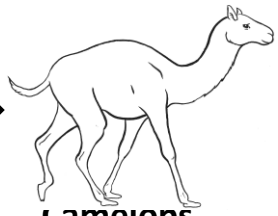
Grass

A. Snake
B. Human
C. Deer
D. Clam

Sabertooth Cat

Sun

Grass



Camelops

A. Tortoise
B. Rabbit
C. Horse
D. Lion

Owl Pellets from the Past

Author: Damon Wahl
Time:2 hours

General Objective:

The students will develop an understanding of animal identification through bones and bone fragments found in their owl pellets and how they are connected to fossils found at the Tule Springs Fossil Beds National Monument.

Learning Outcomes:

The students will better understand how animals are identified using their bones and teeth. This will help the student better understand the Tule Springs site and what it takes to be a paleontologist.

Rationale for Lesson:

This activity will help the students to develop their understanding of Tule Springs Fossil Beds and what types of animals have been found in the area and what that teaches us about Las Vegas' past.

Instructional Procedures:

Focusing Event

1: Tell the students that you are bringing in several skeletons and bones that are similar to ones found in the desert area north of Las Vegas.

What could they be from?

2: Bring out the owl pellets for dissection.

Assessing student knowledge

1: Ask the students to explain what they think these aluminum covered items could be.

2: Have the students list what they think they will find inside..

Teaching methods

The teacher will share with the students the description of how owl pellets are formed. https://www.youtube.com/watch?v=HKtcQ0z2f4w
The student may also watch the video on how owl pellets are collected.
https://mha.vids.io/videos/d49ad0b81b1ee4c65c/dirty-jobs-owl-pellets-avi

Owl Pellets from the Past

Student activities

The students will split up evenly into groups of 2 or more to dissect the owl pellets. Placing the pellets on black construction paper will make the bones more visible and providing the students with unfolded paperclips will help them clean the bones.

1:Have the students begin pulling the owl pellets apart and sorting them using the sorting charts found at https://www.nature-watch.com/images/K400%20A%20and%20B%20Owl%20Pellet%20Charts.pdf Have the students keep their records on the lab sheet provided.

2: Discuss with the students what was found. Notice the mandibles that are often found and the skull pieces. These are often used for animal identification in paleontology.

3: Share the list of rodents found at the Tule Spring Fossil Beds. (see Below)

4: Ask the students if they can identify the rodents found in their owl pellets.

5: Share the chart showing rodent skulls and have the students try and identify the skulls that are present in their owl pellets.

6: See if any of the rodents were found in Las Vegas during the Ice Age. Mark the rodents that match.

Formative checks
Have the students write down their records in their lab sheet for grading.

Closure
Ask the students about what they learned during the project that could be used for identifying other fossils. As you discuss the methods used to identify the fossils, explaining the pros and cons of each, show the students pictures of other fossils found at Tule Springs Fossil Beds.

Evaluation Procedures:
The teacher will assess the students by their lab worksheet. The teacher will also evaluate the students through verbal interaction and class participation.

Owl Pellets from the Past

Materials Needed:

- **Supplies:**
  - **Owl Pellets**
  - **Owl Pellets Sorting Charts**

- **Equipment and tools:**
  - **Tooth Picks**
  - **Paper Clips**
  - **Black construction paper**
  - **Plastic gloves (if available)**

Websites:

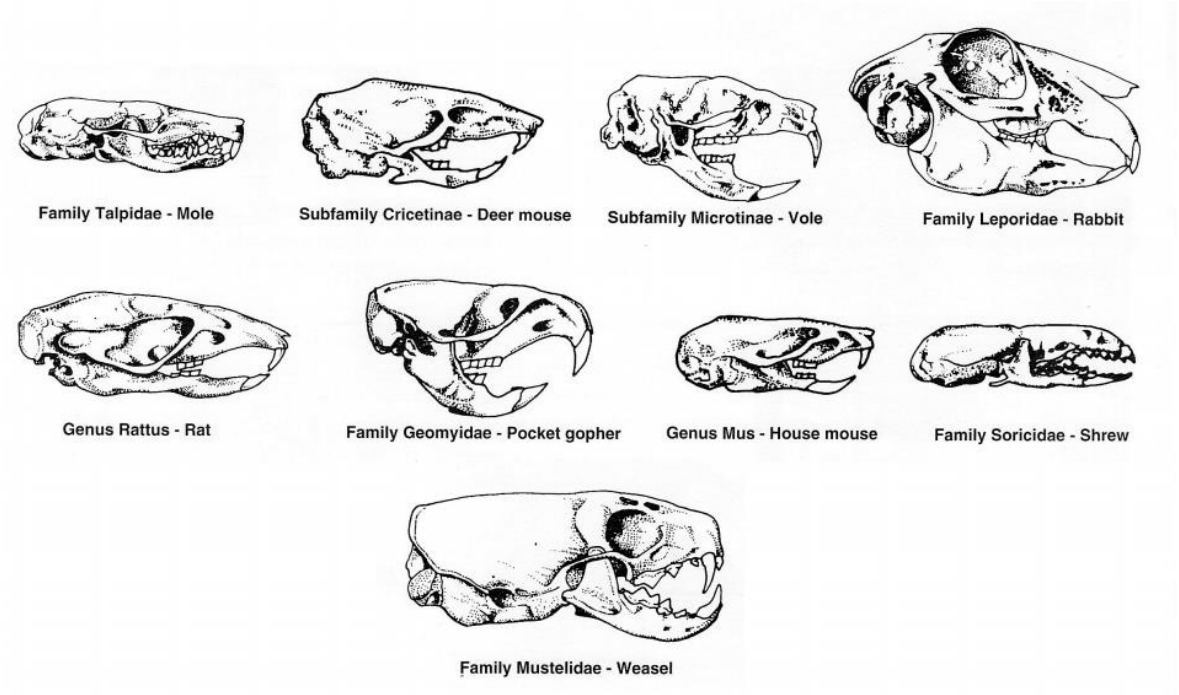
https://protectorsoftulesprings.org/wp-content/uploads/2017/12/TSLF-Scott-et-al-2017.pdf

Owl Pellets from the Past

Rodents Found in the Fossil Record at Tule Springs Fossil Beds

Scientific Name	Common Name:
Family: Sciuridae	Squirrels
Ammospermophilus leucurus	Antelope ground squirrel
Marmota flaviventris	Yellow-bellied marmot
Family: Geomyidae	Gophers
Thomomys bottae	Botta's pocket gopher
Family: Heteromyidae	Kangaroo rats and pocket mice
Dipodomys sp. (large)	Large kangaroo rat
Dipodimys sp. (small)	Small kangaroo rat
Perognathus sp.	Pocket mouse
Family: Cricetidae	Rats, mice, voles, muskrats
Peromyscus maniculatis	Deer mouse
Reithrodontomys sp.	Harvest mouse
Onychomys sp.	Grasshopper mouse
Neotoma lepida	Desert wood rat (pack rat)
Microtus californicus	Meadow vole
Ondatra zibethicus	muskrat

Rodent Skull Identification Chart



Owl Pellets from the Past

Source: “Owl Pellet Lab” from Ms. Brammer at shaunab.info

Owl Pellet Lab Worksheet

Name: _____

How many **skulls** did you find?

How many mandibles did you find?

List other bones found:

Did you find different animals?
If yes, list them:

What types of rodents do you think you found?

Do any of your rodents match ones found at Tule Springs?
If yes, please list them:

Why do you think they had similar rodents during the Ice Age?

Owl Pellets from the Past

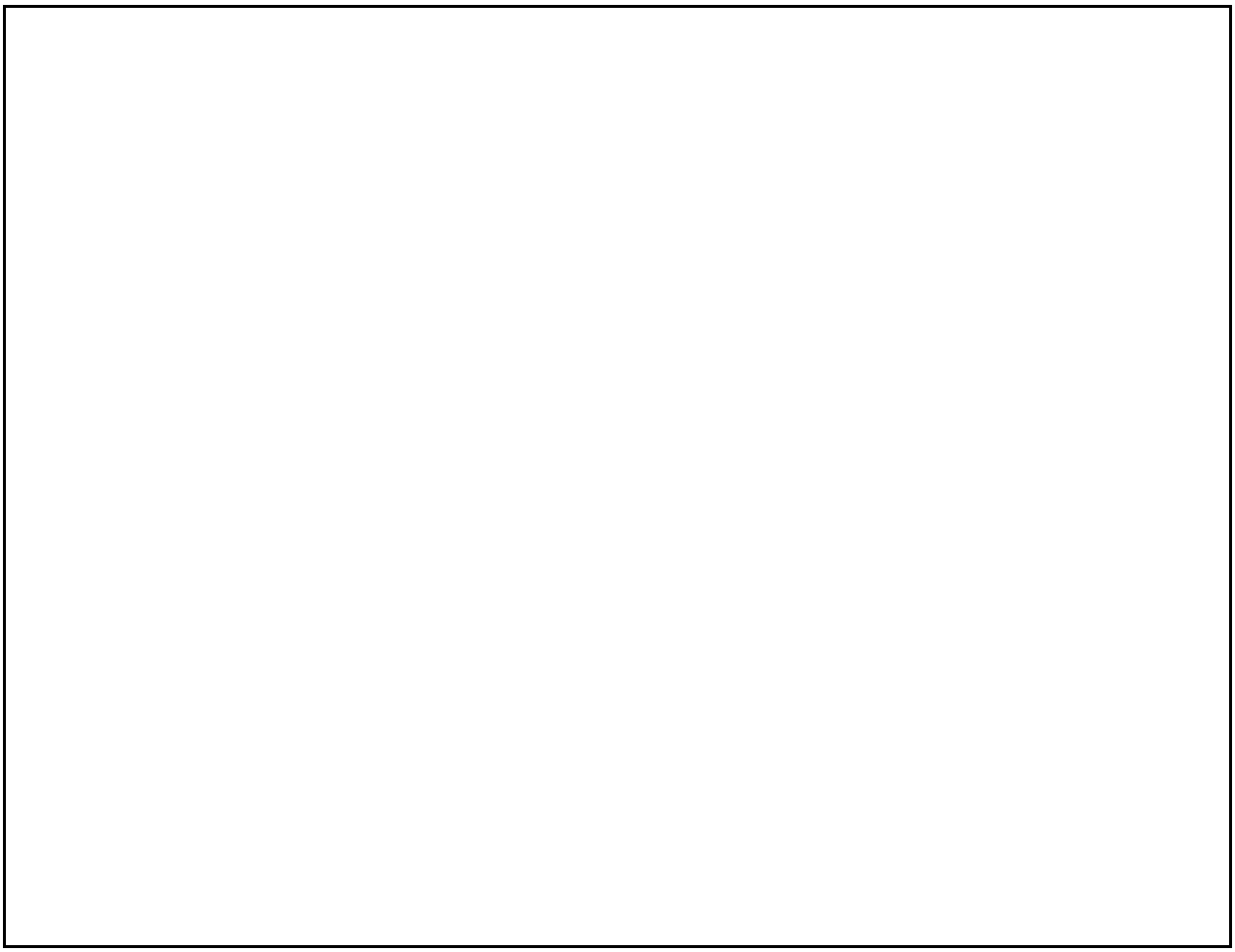
What does the owl pellet tell you about the ecosystem it was from?

What does the rodent list from Tule Springs tell you about the ecosystem?

What was surprising to you about your owl pellet?

Please draw a picture of what you found:

Owl Pellets from the Past



Owl Pellets from the Past

Fossil Samples from Tule Springs