

GRADES 3-5 ACTIVITIES

Welcome to *Extreme Mammals: The Biggest, Smallest, and Most Amazing Mammals of All Time*. Use this sheet to help your class explore what makes a mammal a mammal, and discover what's normal or extreme when it comes to this incredibly diverse group of animals. The activities below and on the Student Worksheet can be adapted to meet your students' interests and abilities.

BEFORE YOUR VISIT

Class Discussion: Mammals live everywhere from the sea to the treetops, and have evolved to swim, glide, burrow, run, hop, climb trees, and even fly. Start a discussion by asking students what they think is "normal" for a mammal when it comes to size, shape, or behavior. What's "extreme" or unusual, and why? For information to support the discussion, refer to the **Essential Questions** section of the Guide.

Research Activity:

After your discussion, have students go on a **Web Hunt: Dioramas Coming to Life** (www2.scholastic.com/browse/article.jsp?id=11422). Ask students to find examples of mammals on their hunt that will help them find answers to these questions: *What is a mammal? What's "normal" for mammals?* and *How and why are some mammals "extreme"?*

New York State Science Core Curriculum

Major Understanding LE 3.1c
In order to survive in their environment, plants and animals must adapt to that environment.

DURING YOUR VISIT

IN THE EXTREME MAMMALS EXHIBITION

Use the activities and guiding questions in Sections 1 and 2 of **Teaching in the Exhibition** in this Guide to help students understand mammal fundamentals – *What is a mammal?* and *What's "normal" for mammals?*

Students can use the reproducible on the reverse side of this sheet to further explore these concepts. Provide each group of students with a copy of the **Map of the Exhibition** to help them find locations in *Extreme Mammals*.

IN THE HALL OF BIODIVERSITY AND THE MILSTEIN HALL OF OCEAN LIFE (First Floor)

On your way into the Milstein Hall of Ocean Life, spend some time with your students looking at the 100-foot-long Spectrum of Life wall in the Hall of Biodiversity. How many mammals can they find among these 1,500 specimens?

Assemble your class underneath the model of the blue whale. Divide them into teams and assign each team one mammal (sea otter, northern sea lion, elephant seal, dolphin, or manatee) from the dioramas on this level. Using the back of their worksheet, have students sketch or draw their mammal, and write down three features that help it survive in its environment.

BACK IN THE CLASSROOM

Activity: Create a grid on the board. In the first column, list the five marine mammals your class observed in the Hall of Ocean Life. Along the top row, list adaptations such as fur, flippers, or streamlined shape. Ask each group to list its findings in the appropriate square on the grid. Once the grid is complete, engage the class in discussing the following questions:

- Which mammals are adapted to live on land? In water? Or both?
- What can you discover about where and how mammals move by observing features such as the shape of bodies and limbs?
- What other information or questions do you still have?

An answer key for the activities and Student Worksheet is available at amnh.org/education/extrememammals.

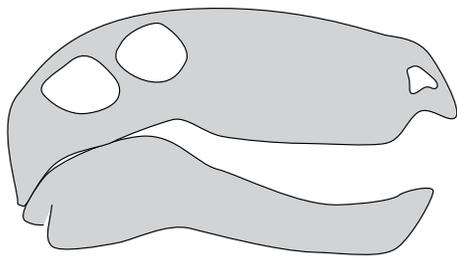
STUDENT WORKSHEET

GRADES 3-5

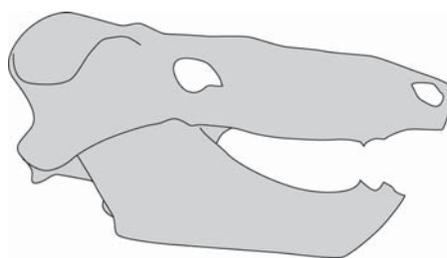
My, What Big Teeth You Have!

Go to Section 2 of the exhibition **What is a Mammal?** and look for the skull case. Look at the skulls of *Dimetrodon* and *Cynognathus*, two extinct animals that are related to mammals but are not mammals. Then find the skulls of *Uintatherium*, an extinct mammal. **Draw in their teeth on the skulls below.**

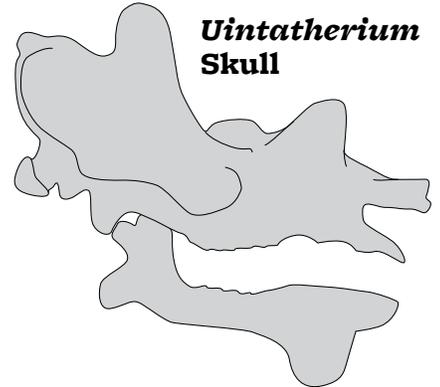
***Dimetrodon* Skull**



***Cynognathus* Skull**



***Uintatherium* Skull**



What's different about the *Dimetrodon's* teeth? _____

How do the shapes of *Uintatherium* teeth differ from the shapes of *Dimetrodon* and *Cynognathus* teeth? _____

On the back of this sheet, write one or two sentences describing how one of these animals might have used their teeth. Here are some good words to use: bite, tear, slice, grind, and chew. Can you think of any more?

Heads, Limbs, Bodies, and Tails

Draw a part of the body – head, limbs, body, or tail – of two different mammals in the exhibition.

MAMMAL NAME: _____

MAMMAL NAME: _____

How are these examples similar?

How are they different?

How does this body part help each animal survive in the environment where it is found?

GRADES 3-5 **ACTIVITIES****ANSWER KEY**

Welcome to *Extreme Mammals: The Biggest, Smallest, and Most Amazing Mammals of All Time*. Use this sheet to help your class explore what makes a mammal a mammal, and discover what's normal or extreme when it comes to this incredibly diverse group of animals. The activities below and on the Student Worksheet can be adapted to meet your students' interests and abilities.

BEFORE YOUR VISIT

Class Discussion: Mammals live everywhere from the sea to the treetops, and have evolved to swim, glide, burrow, run, hop, climb trees, and even fly. Start a discussion by asking students what they think is "normal" for a mammal when it comes to size, shape, or behavior.

"Normal" is what is typically observed in the mammal group. For instance if you take a typical house cat (Felis catus), what students might consider being "normal" for this mammal might be the following compared to other mammals:

Size: small body size

Shape: four limbs, tail

Behavior: quadruped—walks on four limbs, nurture their young

What's "extreme" or unusual, and why? For information to support the discussion, refer to the **Essential Questions** section of the Guide.

"Extreme" is what is not typically observed in a mammal group. Taking the example again from house cats compared to other mammals:

Shape: has claws to climb trees and attack

Behavior: can be domesticated as pets

Research Activity:

After your discussion, have students go on a **Web Hunt: Dioramas Coming to Life** (www2.scholastic.com/browse/article.jsp?id=11422). Ask students to find examples of mammals on their hunt that will help them find answers to these questions: *What is a mammal? All mammals are descended from a common ancestor and share the same basic body plan—head, torso, four limbs, tail. What's "normal" for mammals? It's normal for mammals to walk on four limbs (quadrupedalism), give birth to live young, produce milk, and be warm-blooded.* and *How and why are some mammals "extreme"? Extreme mammals are those that have features that are unique or special compared to other mammals. Extreme features develop in response to environmental conditions.*

DURING YOUR VISIT**IN THE EXTREME MAMMALS EXHIBITION**

Use the activities and guiding questions in Sections 1 and 2 of **Teaching in the Exhibition** in this Guide to help students understand mammal fundamentals – *What is a mammal?* and *What's "normal" for mammals?*

Students can use the reproducible on the reverse side of this sheet to further explore these concepts. Provide each group of students with a copy of the **Map of the Exhibition** to help them find locations in *Extreme Mammals*.

GRADES 3-5 ACTIVITIES *cont'd*

ANSWER KEY

IN THE HALL OF BIODIVERSITY AND THE MILSTEIN HALL OF OCEAN LIFE (First Floor)

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BACK IN THE CLASSROOM

Activity: Create a grid on the board. In the first column, list the five marine mammals your class observed in the Hall of Ocean Life. Along the top row, list adaptations such as fur, flippers, or streamlined shape. Ask each group to list its findings in the appropriate square on the grid.

EXAMPLE OF TABLE:

| | <i>FUR</i> | <i>FLIPPERS</i> | <i>STREAMLINED SHAPE</i> |
|----------------------|------------|-----------------|--------------------------|
| <i>BLUE WHALE</i> | <i>no</i> | <i>no</i> | <i>yes</i> |
| <i>SEA OTTER</i> | <i>yes</i> | <i>yes</i> | <i>no</i> |
| <i>MANATEE</i> | <i>yes</i> | <i>yes</i> | <i>no</i> |
| <i>ELEPHANT SEAL</i> | <i>yes</i> | <i>yes</i> | <i>yes</i> |
| <i>POLAR BEAR</i> | <i>yes</i> | <i>no</i> | <i>no</i> |

Once the grid is complete, engage the class in discussing the following questions:

- Which mammals are adapted to live on land? In water? Or both?

Answers may include:

On Land – polar bear, elephant seal, sea otter

In Water – manatee, blue whale, elephant seal, sea otter

On Both – elephant seal, sea otter

- What can you discover about where and how mammals move by observing features such as the shape of bodies and limbs?

Mammals with similar features can move in the same environments in more or less the same way. Different features between mammals will most likely mean that they move in different environments or move differently in the same environment.

- What other information or questions do you still have?

Answers will vary.

An answer key for the activities and Student Worksheet is available at amnh.org/education/extrememammals.

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STUDENT WORKSHEET

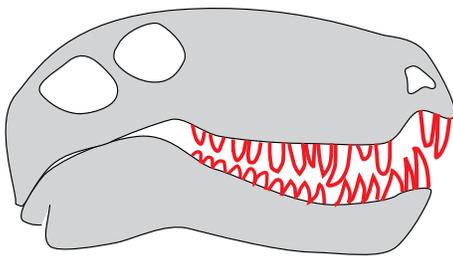
GRADES 3-5

ANSWER KEY

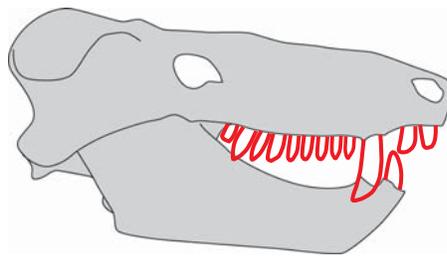
My, What Big Teeth You Have!

Go to Section 2 of the exhibition **What is a Mammal?** and look for the skull case. Look at the skulls of *Dimetrodon* and *Cynognathus*, two extinct animals that are related to mammals but are not mammals. Then find the skulls of *Uintatherium*, an extinct mammal. **Draw in their teeth on the skulls below.**

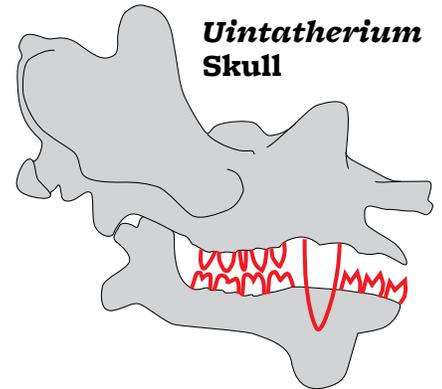
Dimetrodon Skull



Cynognathus Skull



Uintatherium Skull



What's different about the *Dimetrodon*'s teeth? *All of Dimetrodon's teeth are pointed, about the same shape, and get smaller towards the back of the jaw.*

How do the shapes of *Uintatherium* teeth differ from the shapes of *Dimetrodon* and *Cynognathus* teeth? *Uintatherium has many different types of teeth: their front teeth have two points, they have large blade-like canines much larger than their front teeth, and broad and square back teeth.*

On the back of this sheet, write one or two sentences describing how one of these animals might have used their teeth. Here are some good words to use: bite, tear, slice, grind, and chew. Can you think of any more?

Heads, Limbs, Bodies, and Tails

Draw a part of the body – head, limbs, body, or tail – of two different mammals in the exhibition.

MAMMAL NAME: _____

Students' drawings and answers will vary depending on the species and body part selected, which may include...

MAMMAL NAME: _____

*HEADS: horns, antlers, teeth, and brains
LIMBS: legs, paddles, and wings
TAILS: curly, super long, short and flat
BODIES: fur, spines, quills, thick rough skin, scales and body armor*

How are these examples similar?
Answers may include the purpose they serve (i.e. protections, insulation)

How are they different?
Answers may include locomotion, shape, or size

How does this body part help each animal survive in the environment where it is found?

Possible answers may include: serving as protection from climate conditions, for finding or obtaining food, or for moving around in a particular environment (e.g. climbing trees or swimming).