

Lesson Plan: The Survival of the Moose

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Grade Level:

7-10

Subject Areas:

Life Science, Geography, Evolution, Ecology, Art Integration

Duration:

1-2 class periods (45-90 minutes)

Learning Objectives:

- Explain how environmental pressures influence species survival and extinction.
- Compare moose to other Pleistocene megafauna in terms of reproductive strategy and adaptation.
- Identify the key traits that allowed moose to survive post-Ice Age conditions.
- Analyze human and environmental impact on species like moose.
- Apply ecological knowledge to sketch or describe animal adaptations.

Materials Needed:

- Printed or digital copies of Fun Facts About Moose (with URLs)
- World map or globe showing Bering Land Bridge region
- Art supplies (optional)
- Internet access for video links or research
- Projector or whiteboard

Lesson Outline:

1. Hook (5-10 mins):

- Start with a surprising fact: 'Orcas eat moose.'
- Ask: 'How did moose even survive to get eaten by whales?'
- Brief discussion to activate curiosity

Lesson Plan: The Survival of the Moose

2. Background & Reading (15-20 mins):

- Hand out or project the Fun Facts About Moose
- Have students read aloud or silently, highlighting surprising or important facts

3. Guided Discussion (15-20 mins):

- Define megafauna. Why did most go extinct?
- Which traits helped moose survive while others (like mammoths) did not?
- Discuss speciation: why did moose remain genetically stable across continents?

4. Activity Options (choose one or both):

A. Map and Timeline Activity (20-30 mins):

- Plot moose migration from Eurasia to North America
- Mark where Cervalces lived and where Alces dominates today
- Add extinction dates of related megafauna on a shared timeline

B. Art Integration - Draw to Survive (30-45 mins):

- Students sketch a 'survivor megafauna' using moose traits
- Label adaptations that would help their creature survive climate shifts, predators, or human encroachment
- Share and explain choices

5. Exit Ticket (5 mins):

- One thing they learned
- One question they still have

Assessment:

- Participation in discussion
- Completion of map/timeline or sketch with labeled traits
- Exit ticket response

Extension Ideas:

- Compare moose to bison, deer, or giraffes in adaptation and pressure

Lesson Plan: The Survival of the Moose

- Research and debate: Should moose populations be hunted to maintain balance?
- Watch wildlife documentaries or read case studies on modern conservation

Lesson Plan: The Survival of the Moose

Fun Facts About Moose

1. Alces split from Cervalces around 100,000 years ago

The extinct stag-moose (*Cervalces scotti*) was outcompeted by modern moose in the late Pleistocene.

Source: http://www.fossilworks.org/cgi-bin/bridge.pl?a=taxonInfo&taxon_no=37468

2. Moose crossed into North America via the Bering Land Bridge 10,000-15,000 years ago

Fossil and genetic evidence shows moose migrated from Eurasia during the last glaciation.

Source: <https://www.nps.gov/bela/learn/nature/bering-land-bridge.htm>

3. No speciation occurred due to shared environments and stable pressures

Genetic studies show North American and Eurasian moose remain one species due to similar habitats and predators.

Source: <https://academic.oup.com/jmammal/article/85/3/585/873069>

4. Global wild moose population is estimated around 2 million

Moose are not endangered and are listed as 'Least Concern.'

Source: <https://www.iucnredlist.org/species/41777/22156288>

5. Sweden issues ~80,000 moose hunting permits annually

They harvest around 70,000 moose per year as part of structured wildlife management.

Source: <https://www.naturvardsverket.se/en/topics/hunting/hunting-of-large-game/moose-hunting/>

6. Moose browse on shrubs, twigs, and marsh plants

They eat willows, birch, aquatic vegetation, and young branches never grass like cattle.

Source: <https://www.adfg.alaska.gov/index.cfm?adfg=moose.main>

7. Moose are excellent swimmers and cross lakes and inlets

They can dive up to 20 feet and swim long distances, even between saltwater islands.

Source:

<https://www.smithsonianmag.com/smart-news/moose-can-dive-almost-20-feet-deep-underwater-180970039/>

Lesson Plan: The Survival of the Moose

8. Main threats: bears, wolves, and tightly regulated human hunting

Predators mostly take calves. Hunting is controlled with quotas and seasonal limits.

Source: <https://www.dnr.state.mn.us/mammals/moose.html>

9. Orcas have been recorded eating moose

Rare, but confirmed killer whales have preyed on moose swimming off the coast of Alaska and British Columbia.

Source: <https://www.canadianfieldnaturalist.ca/index.php/cfn/article/view/449>

Lesson Plan: The Survival of the Moose

Student Rubric (20 Points Total)

Participation (5 pts):

- Actively engaged in discussion and activities.

Reading & Highlighting (5 pts):

- Completed reading task and marked at least 3 important facts.

Sketch or Map (5 pts):

- Completed visual with clear labels and thoughtful adaptations or timeline points.

Exit Ticket (5 pts):

- Provided one accurate learning point and one thoughtful question.

Lesson Plan: The Survival of the Moose

Student Worksheet: Moose and Megafauna

1. What is one reason moose survived while other megafauna like mammoths went extinct?

2. What trait helps moose thrive in cold, wet environments?

3. How are moose in Europe and North America still the same species?

4. What is one thing that surprised you from the Fun Facts section?

5. Draw a 'survivor' megafauna inspired by moose. Label 2 traits that help it survive: