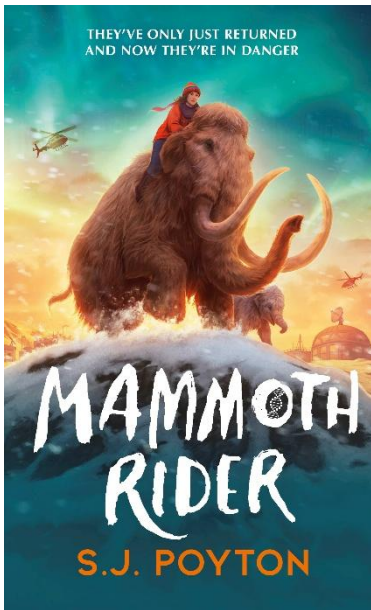


# Mammoth Rider – Ethics Questions & Educational Notes -Older Students 10+ - by S.J. Poyton



In *Mammoth Rider*, mammoths have been cloned to help slow the rate of global warming. As the world heats up and the ice caps melt, increased snowfall is beginning to fall in areas of the Arctic where it hasn't snowed in thousands of years. This snowfall blankets the ground and warms the land beneath, thawing the permafrost (permanently frozen ground). When permafrost melts, it releases methane gas that has been locked in the ice for millennia — and methane is a powerful greenhouse gas. This makes the world heat up even faster.

Mammoths may be able to help by trudging across the tundra with their heavy bodies and digging for food beneath the snow. This breaks up the insulating snow blanket and helps prevent the permafrost from melting.

The mammoths in the story are created using “cut-and-paste” cloning technology, where the DNA of Asian elephants (their closest living relatives) is edited to create winter-proofed elephants. Scientists use the preserved DNA of woolly mammoths found in the melting permafrost as a guide. These cloned animals would not be exact copies of extinct mammoths, but newly created “neo-mammoths.”

Here are some questions to spark interesting discussions about cloning and de-extinction:

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## Environmental Impact

### Questions

- What might happen if we release mammoths — a long-extinct species — back into the tundra?
- How could this affect the current Arctic ecosystem?

### Teaching Notes

- Encourage pupils to think about food webs, predators, and habitats.
- Some ecosystems might benefit (e.g. vegetation balance, soil health), while others may be disrupted (competition with existing species).
- Mammoths could help slow warming, but they might also change plant life or land patterns in unexpected ways.

- There is no single “correct” answer — discussion should highlight ecosystem balance and unpredictability.

## Learning to Survive

Mammoths, like their cousins the elephants, are believed to live in matriarchal groups where knowledge is passed from elder females to younger ones.

### Questions

- How will newly cloned mammoths learn to survive in the harsh environment of the tundra if there are no older mammoths to teach them?
- Would we need “mammoth schools”?
- Who would be qualified to teach mammoths how to be mammoths?

### Teaching Notes

- Prompt pupils to explore the difference between instinct vs. learned behaviour.
- Elephant calves learn key behaviours from their elders — searching for food, avoiding danger, migration routes.
- Scientists, animal trainers, conservationists, and even AI/robotics could hypothetically help — but would that replace natural learning?
- This opens conversations about whether humans should interfere in animal behaviour at such a deep level.

## Protection and Poaching

### Question

- How could we keep mammoths safe from poachers?

### Teaching Notes

- Connect to real-world conservation of elephants: anti-poaching patrols, protected reserves, law enforcement, banning ivory trade, GPS tracking.
- Discuss whether mammoth tusks would create new illegal markets or reduce pressure on elephants by offering an alternative — both outcomes are possible.
- Highlight that human greed is a major challenge in conservation.

## Conservation Priorities

Asian elephants — the mammoths' closest relatives — are endangered. They would be needed as surrogate mothers for cloned mammoths.

### Questions

- Is it right to use an endangered species to bring back an extinct one?
- Should conservation efforts focus on protecting Asian elephants first?

### Teaching Notes

- Guide students to think about resource allocation — funding, scientific focus, habitats, and animal welfare.
- Asian elephants need protection now — using them as surrogates could cause stress, harm, or even deaths.
- Students may suggest waiting until elephant populations are secure, or finding alternative methods like artificial wombs (currently experimental).
- Key ethical debate: Should we fix extinction before fixing endangered species? Can one source of funding be used to help the other? (e.g. The recent DireWolf de-extinction has helped the critically endangered Red Wolf conservation project – both sides benefitting from the investment)

## Human and Mammoth Coexistence

### Questions

- Mammoths are huge animals and could potentially be dangerous.
- What problems might arise if mammoths live alongside humans in remote Arctic regions?

### Teaching Notes

- Encourage thinking about land rights, Indigenous communities, tourism, accidents, property damage, and human conflict with wildlife.
- Link to real examples: polar bears, bison, elephants damaging crops or settlements.
- Consider benefits too: eco-tourism, scientific research, local employment.

# Climate Ethics

## Question

- If mammoths could help reduce the speed of global warming, does that benefit outweigh the risks and ethical concerns of cloning them and releasing them into the wild?

## Teaching Notes

- Emphasise critical thinking rather than a “yes/no” result.
- This is about weighing scientific innovation vs. ethical responsibility.
- Ask students to consider:
  - Do ends justify means?
  - Is it better to fix climate change using technology or change human behaviour?
  - Could we create new problems while trying to solve one?

Learn more at [mammothrider.com](http://mammothrider.com)