

## Transcription of *The Mystery of the Missing Megafauna*

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- Front Cover
  - Title: The Mystery of the Missing Megafauna
  - Authors: Maggie Colangelo and Dr. Bernard K. Means
- Inside Front Cover
  - Text (center of page): Acknowledgments. This comic was a collaboration between VCU's Center for Environmental Studies, The Virtual Curation Lab, and VCU's Department of Communication Arts.
  - Text (Bottom of page): Copyright 2023 Maggie Colangeo and Bernard K. Means
- Page 1:
  - Panel 1:
    - Text at top left of panel: Salt is a valuable resource.
    - Text at bottom right of panel: Saltville, VA.
  - Panels 2, 3, and 4:
    - Text across all three panels at the top: For hundreds of years, people have flocked to and even fought over the salt marshes that give Saltville its name.
    - Text at the bottom of panel 2: Chisca hunting grounds
    - Text at the bottom of panel 3: First Battle of Saltville
    - Text at the bottom of panel 4: United Salt Corporation Plant
  - Panel 5
    - Text at top of panel, left: Animals have come to the salt marshes for even longer
    - Speech bubble to right center in panel: We've been studying the remains of Ice Age animals here for over 100 years.
    - Text at bottom of panel, right: Saltville now has another valuable resource hiding its soil: Fossils!
- Page 2:
  - Speech bubble at top of page: Here are some of the species we've found evidence of in Saltville.
  - Speech bubble at center left of page: We've found lots of megafauna, like this Woolly Mammoth.
  - Labels:
    - top animal: Short-Faced Bear
    - bottom animal: Mammoth
- Page 3:
  - Speech bubble at top of page: All of these animals existed during the Ice Age, thousands of years ago.
  - Speech bubble at center of page: Megafauna are giant animals that are generally larger than humans. During the Ice Age, megafauna were a common sight.
  - Labels:
    - Top animal: Mastodon

- Middle Animal: Giant Beaver
    - Bottom animal, left: Jefferson's Ground Sloth
    - Bottom animal, right: Helmeted Musk Ox
- Page 4:
  - Speech bubble at top of page: Some of these animals still exist today.
  - Speech bubble middle of page: As you can see, many of the especially large megafauna became extinct.
  - Speech bubble at bottom of page: What happened to them?
- Page 5:
  - Panel 1
    - Speech bubble: To understand what caused the extinction of so many megafauna, let's go back in time to the Late Pleistocene
    - Text: Can't have an ice age without ice! These glaciers were several kilometers thick and covered large parts of North America.
  - Panel 2:
    - Text: Colder world temperatures kept the glaciers from melting.
  - Panel 3:
    - Speech bubble: Of course, that doesn't mean it was always freezing and snowy!
    - Text: There were actually more than one ice age separated by warmer periods.
  - Panels 4 and 5:
    - Text across both panels: Despite the differences, much of the habitat looked the same as today-it just wasn't where you'd expect.
    - Text on sign in panel 4: Sahara Desert
    - Text on sign in Panel 5: Florida
- Page 6:
  - Panel 1
    - Text at top of panel: Despite the differences, much of the habitat looked the same-it just wasn't where you'd expect.
    - Text at bottom of panel: Animals thrived in these habitats
  - Panel 2
    - Text at top of panel: Some, like the mastodon and Jefferson's giant ground sloth, preferred the twigs and leaves of the forest.
  - Panel 3
    - Text at bottom of panel: While others, like mammoths, preferred the grasslands.
  - Panel 4
    - Text at top of panel: With giant plant eaters came giant predators, like the short-faced bear.
  - Panel 5
    - Text at top of panel: Other megafauna weren't the only other predators out there: Humans hunted too!
    - Speech bubble: Darn, too late.

- Page 7:
  - Text at top of page: It seemed like a perfectly functioning ecosystem.
  - Text at bottom of page: But by 10,000 years ago, almost all the megafauna disappeared.
- Page 8:
  - Panel 1
    - Speech bubble 1: Scientists are still debating over what exactly happened. Some of the theories being thrown around seem, well, a bit silly.
    - Speech bubble 2: Humans killed them all!
    - Speech bubble 3: No, a meteor!
    - Speech bubble 4: It was a supervirus!
  - Panel 2
    - Text at top of panel: For many years, the “Overkill” theory was the most popular.
  - Panel 3
    - Text at top of panel: This theory stated that humans hunted megafauna into extinction soon after arriving in North America.
    - Speech bubble: Didn’t we just find out humans arrived in North America way before megafauna began to die out?
  - Panel 4
    - Speech bubble 1: Plus, some of the species humans hunted are still around today, while other species went extinct before humans even showed up.
    - Speech bubble 2: And there’s no way there were enough humans to kill everything.
  - Panel 5
    - Text at top of panel: Humans had an impact on megafauna populations, but they couldn’t have been the only cause for extinction.
    - Speech bubble 1: Well I don’t hear you coming up with any smart ideas!
    - Speech bubble 2: I think-
    - Speech bubble 3: *Don’t* say a meteor did it.
- Page 9:
  - Panel 1
    - Text at top of panel: Instead, researchers have started to consider another target: climate change.
    - Text at bottom of panel: Scientists found evidence frozen in ancient ice that shows how the climate got warmer at the end of the Ice Age.
  - Panel 2
    - Text at top of panel: As the climate got warmer, habitats changed. Plants that some megafauna relied on became more scarce.
  - Panel 3
    - Text at bottom of panel: Thick fur was pretty uncomfortable for large animals used to colder weather.
  - Panel 4

- Text at bottom of panel: While humans alone did not kill all the megafauna, they were a serious threat to populations weakened by climate change.
- Panel 5:
  - Text at top of panel: Megafauna reproduced much more slowly than smaller species, so they weren't able to bounce back.
- Page 10:
  - Panel 1:
    - Text at top left: If you're thinking that this story sounds familiar, you're not wrong. It's in the news every day.
    - Text at bottom right: Human influence and climate change are causing major extinctions today.
  - Panel 2:
    - Speech bubble: Unlike humans during the last Ice Age, we know we are the cause of both climate change and major extinctions today.
    -
  - Panel 3:
    - Text at bottom of panel: Remaining megafauna like elephants are endangered, as well as smaller species like frogs.
  - Panel 4:
    - Text at bottom of panel: Scientists study the megafauna extinctions of the last Ice Age partly to find solutions that may help us avoid repeating the past.

- Page 11:
  - Timeline, with text from top to bottom

Left of Icicle	On Icicle for years ago	Right of icicle
Mastodons Arrive in North America	15 million years ago	
	115,000	Last Ice Age begins
Mammoths arrive in North America	100,000	
	23,000	Humans leave footprints in what is now New Mexico
Mastodons, mammoths, and other megafauna go extinct at the end of the last Ice Age	11,000	
	221	The first mastodon fossil is reconstructed in Philadelphia.
Union and Confederate troops clash during the American Civil War at Saltville for control over the town's salt mines	158	
	105	Research on Ice Age mammals begins at Saltville

- Page 12: References

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2021b *Founding Monsters Tales* comic book. Published electronically through Virginia Commonwealth University Scholars Compass. Electronic publication:

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- Inside Back Cover has author bios

- Maggie Colangelo is a comic artist and illustrator based in Richmond VA. By combining art, science and history, she aims to engage, entertain and educate her audience. Writing *The Mystery of the Missing Megafauna* would not have been possible without the support of Dr. Means.
- Dr. Bernard K. Means is an archaeologist who teaches in the School of World Studies at Virginia Commonwealth University. He is also the director of the Virtual Curation Laboratory, where he leads a team of students to 3D scan and 3D print fossils, archaeological discoveries, and historical items for teaching, research, and public outreach.
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- **Back Cover blurb**
  - Long ago, thick sheets of ice covered much of North America. Huge animals known as megafauna roamed this land: mastodons, mammoths, giant ground sloths, and many others.
  - Humans lived alongside these megafauna, but today these giant beasts are a distant memory. What happened to America's megafauna?