

Sea Oats School

SCIENCE LESSON

The Story of Sand

and the

MAKING OF DUNES



Sand

Wind & Waves

DUNE

Outer Banks, North Carolina

Sea Oats School Science Lesson: The Story of Sand and the Making of Dunes

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About This Book

This storybook was created by the Outer Banks Coastal Conservation (OBCC), a nonprofit organization whose mission is to foster environmental stewardship and a deeper connection to the Outer Banks of North Carolina through outreach, education, and conservation efforts.

We believe that small stories can spark big change. That is why we have made this book available as a free resource for parents, teachers, and community members.

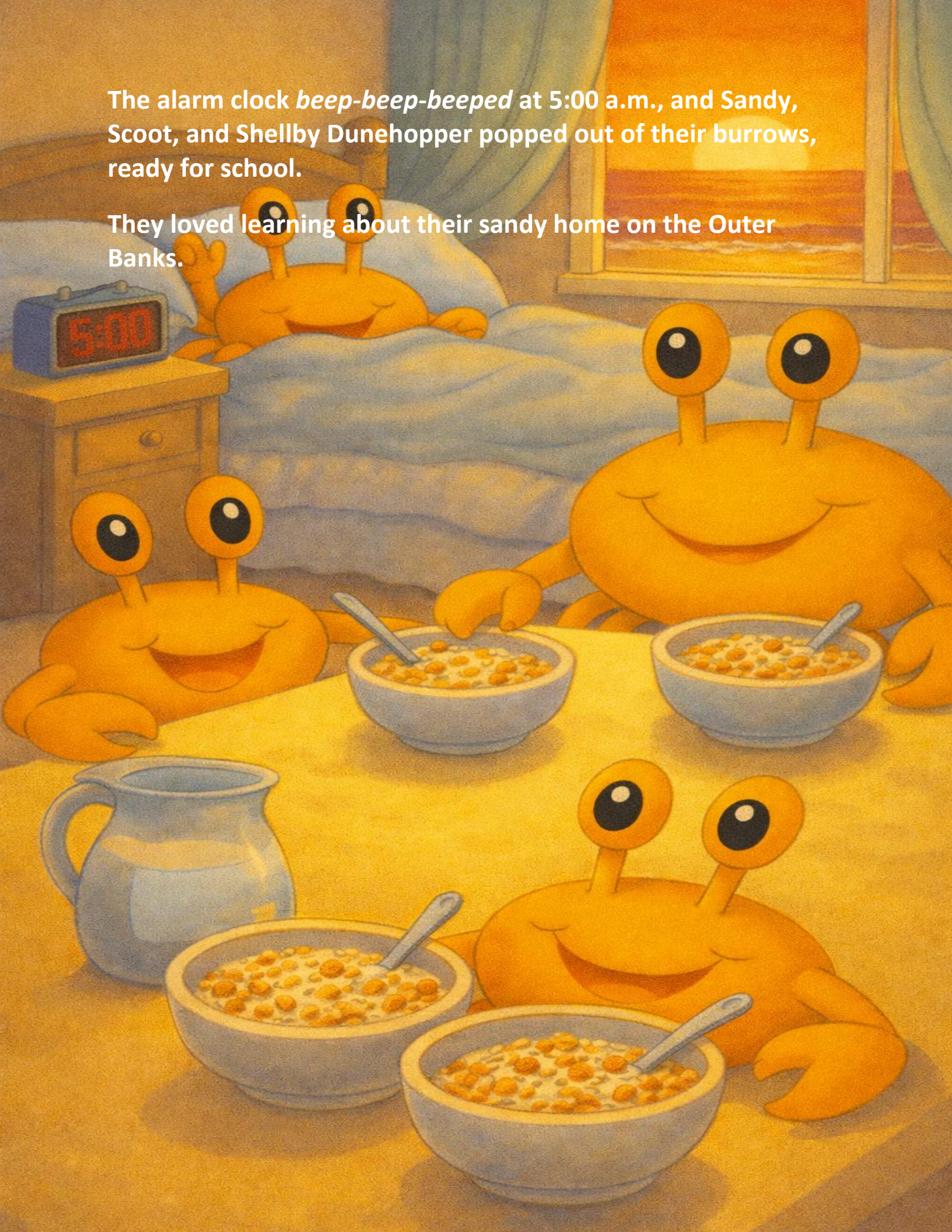
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The alarm clock *beep-beep-beeped* at 5:00 a.m., and Sandy, Scoot, and Shellby Dunehopper popped out of their burrows, ready for school.

They loved learning about their sandy home on the Outer Banks.



In the kitchen, Mama flipped warm seaweed pancakes onto a plate—Papa’s favorite! Soon, the whole Dunehopper family gathered around the table.

Sandy wiggled with excitement.

“Today we have a guest speaker at Sea Oats School!” she said. “Her name is Professor Sandstone, and she’s a geologist. She’s going to teach us where our sand comes from and how dunes are made!”

Papa smiled proudly.

“That’s an important lesson,” he said.

“Healthy sand dunes help protect our island—and they help ghost crabs like us survive.”



After breakfast, Sandy, Scoot, and Shellby grabbed their napsacks and scuttled off to Sea Oats School, their claws clicking happily in the sand.



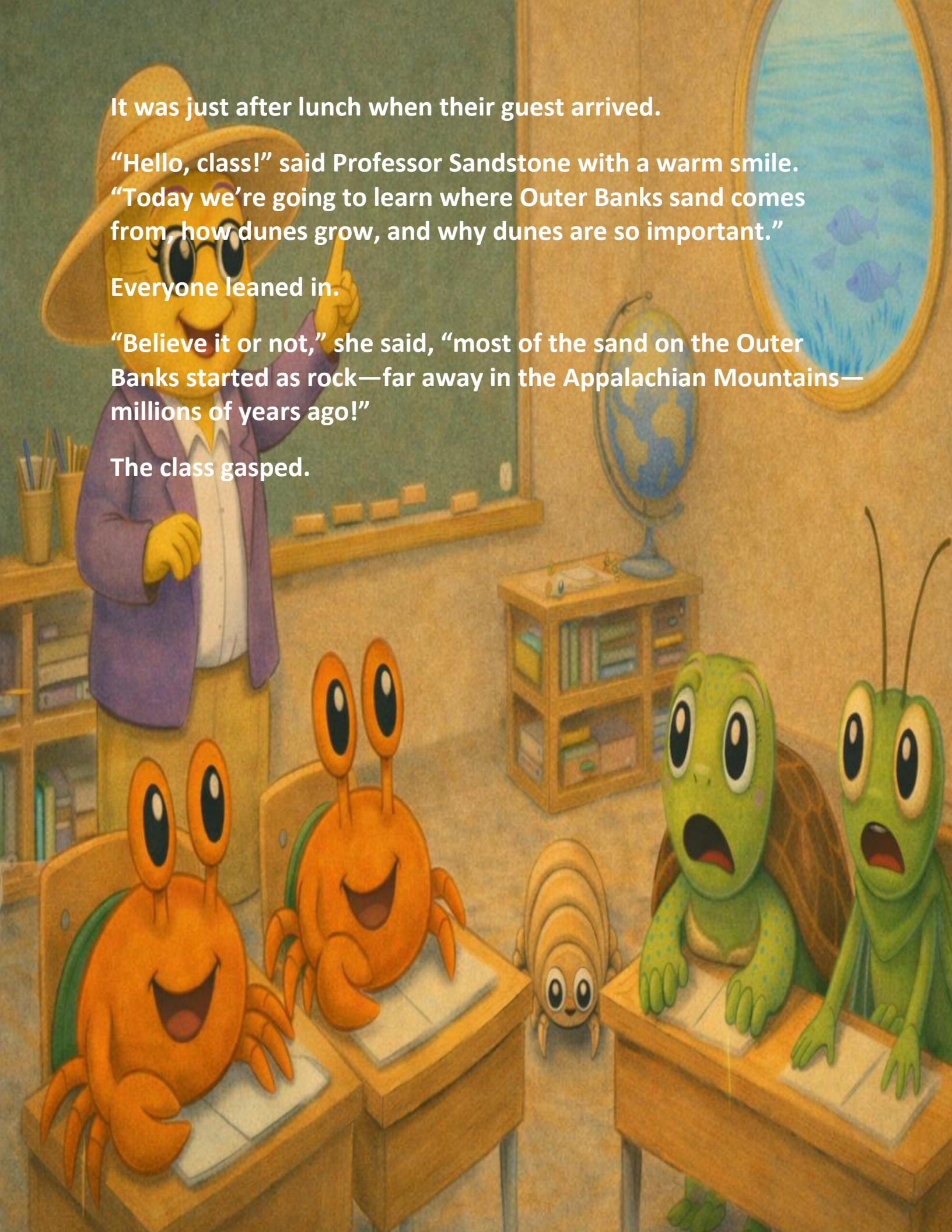
It was just after lunch when their guest arrived.


“Hello, class!” said Professor Sandstone with a warm smile. “Today we’re going to learn where Outer Banks sand comes from, how dunes grow, and why dunes are so important.”

Everyone leaned in.

“Believe it or not,” she said, “most of the sand on the Outer Banks started as rock—far away in the Appalachian Mountains—millions of years ago!”

The class gasped.





“Rain and rivers slowly broke those rocks into tiny pieces and carried them all the way to the ocean,” she explained.

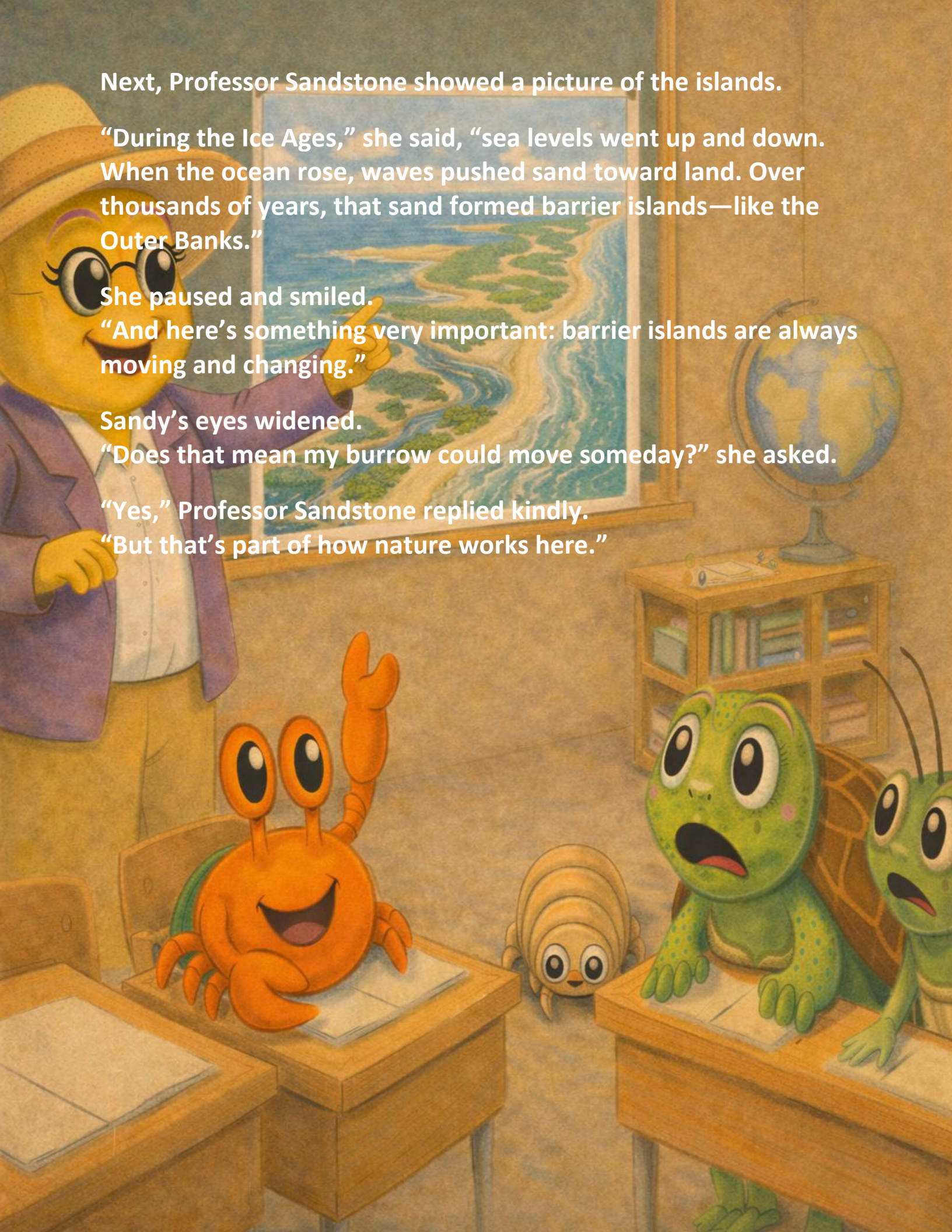
“Most of our beach sand is made of quartz, a very hard mineral. That’s why it sparkles in the sun!”

George raised his claw.

“What’s quartz again?” he asked.

Professor Sandstone chuckled.

“It’s the tough, shiny mineral that makes up most beach sand.”



Next, Professor Sandstone showed a picture of the islands.

“During the Ice Ages,” she said, “sea levels went up and down. When the ocean rose, waves pushed sand toward land. Over thousands of years, that sand formed barrier islands—like the Outer Banks.”

She paused and smiled.

“And here’s something very important: barrier islands are always moving and changing.”

Sandy’s eyes widened.

“Does that mean my burrow could move someday?” she asked.

“Yes,” Professor Sandstone replied kindly.

“But that’s part of how nature works here.”

A colorful illustration of a classroom. On the left, a female teacher with a yellow face, wearing a purple blazer and a straw hat, points towards a large framed picture on the wall. The picture shows a beach with dunes, sea oats, a sea turtle, and birds. In the foreground, three students are seated at wooden desks. On the left, an orange crab with large eyes is smiling. In the middle, a small brown snail with large eyes is peeking out from under a desk. On the right, a green sea turtle with large eyes is looking surprised. In the background, there is a wooden bookshelf with books and a globe on a small table.

Then came everyone’s favorite part—the dunes.

“Wind blows dry sand inland,” Professor Sandstone said.

“Plants like sea oats catch the sand with their roots and stems. As more sand piles up, dunes grow taller—and the plants grow right along with them.”

She pointed to a big dune on the screen.

“Dunes are like natural walls. They protect homes, roads, and freshwater from storms. They also provide safe homes for sea turtles, birds, ghost crabs, and many other animals.”

She added gently,

“Because of climate change, rising seas, and stronger storms, dunes will keep changing. That’s why it’s so important to protect dune plants and let dunes move naturally.”

The classroom grew quiet as everyone thought about their sandy home.

That evening, the Dunehopper children shared everything they had learned with Papa and Mama.

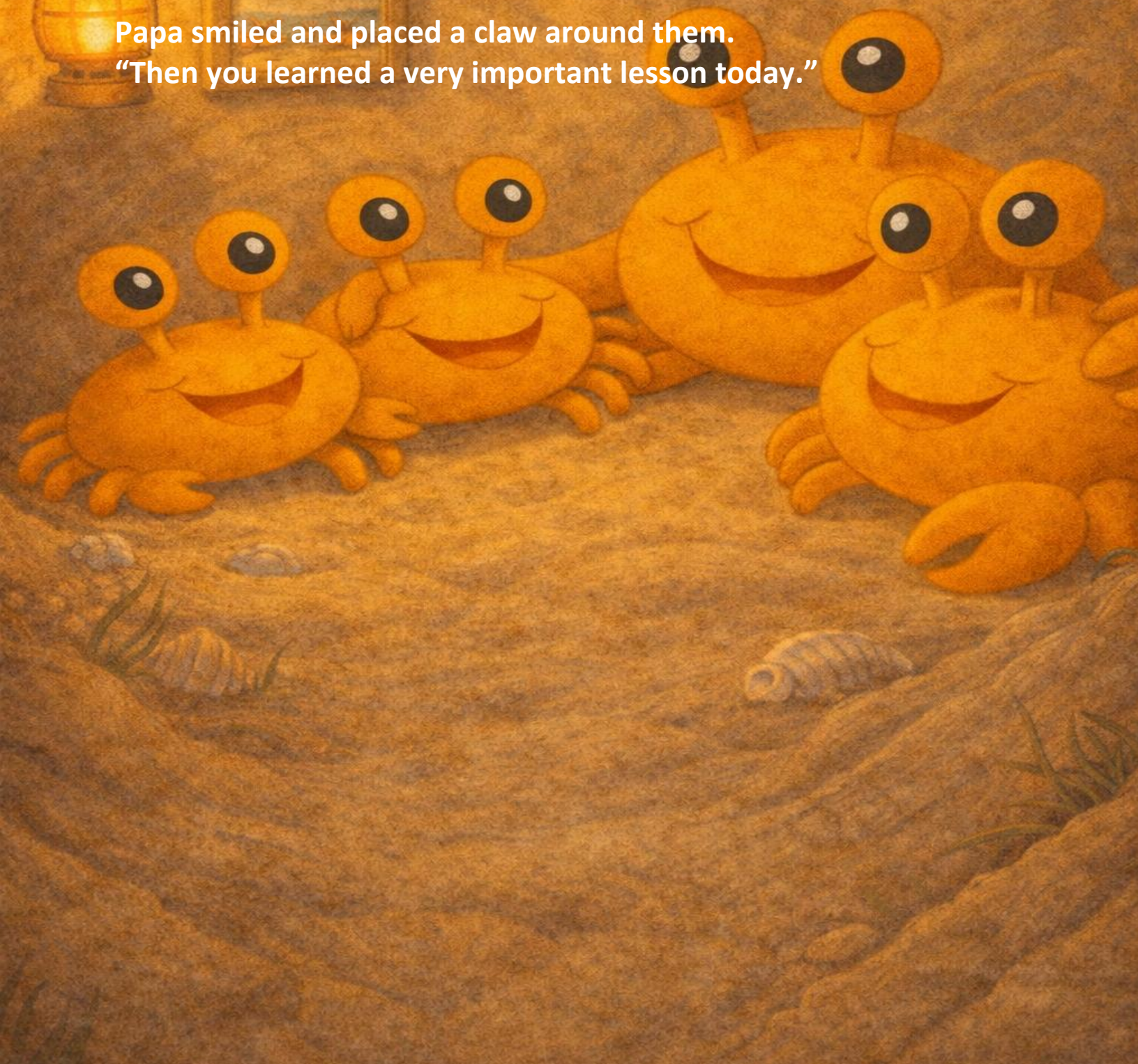
“The Outer Banks are living, moving islands,” Sandy said.

“Made of ancient sand!”

“And dunes are one of the most important protections we have,” Scoot added.

Papa smiled and placed a claw around them.

“Then you learned a very important lesson today.”



The moon rose over the dunes as the waves whispered nearby—reminding the Dunehoppers that their sandy home was always changing, and always worth protecting.



Did You Know?

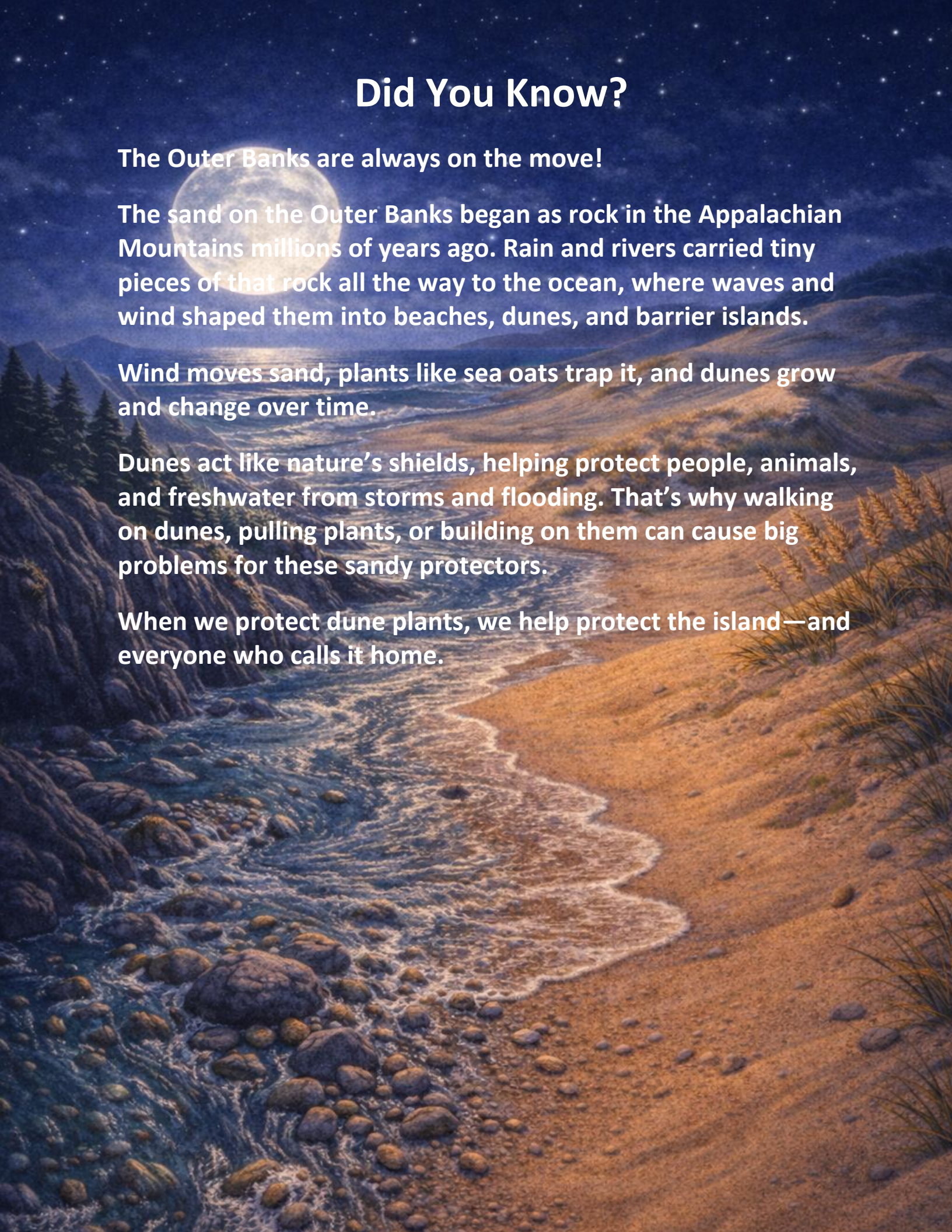
The Outer Banks are always on the move!

The sand on the Outer Banks began as rock in the Appalachian Mountains millions of years ago. Rain and rivers carried tiny pieces of that rock all the way to the ocean, where waves and wind shaped them into beaches, dunes, and barrier islands.

Wind moves sand, plants like sea oats trap it, and dunes grow and change over time.

Dunes act like nature's shields, helping protect people, animals, and freshwater from storms and flooding. That's why walking on dunes, pulling plants, or building on them can cause big problems for these sandy protectors.

When we protect dune plants, we help protect the island—and everyone who calls it home.



Sea Oats School Science Lesson: The Story of Sand and the Making of Dunes

This children's science storybook follows the Dunehopper ghost crab family as they learn where Outer Banks sand comes from, how dunes are formed, and why dunes are essential to protecting barrier islands. Through a visit from Professor Sandstone at Sea Oats School, young readers discover that beach sand began as ancient rock from the Appalachian Mountains, carried by rivers to the sea and shaped by wind and waves over millions of years. The story explains how plants like sea oats trap sand to build dunes, how barrier islands naturally move and change, and how dunes protect wildlife, freshwater, homes, and people from storms and flooding. The book introduces climate change and emphasizes that protecting dune plants and respecting natural coastal processes helps keep the Outer Banks healthy for all who live there.

About the Publisher

Outer Banks Coastal Conservation (OBCC) is a nonprofit organization dedicated to fostering environmental stewardship and a deeper connection to the Outer Banks of North Carolina through education, outreach, and conservation initiatives.

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