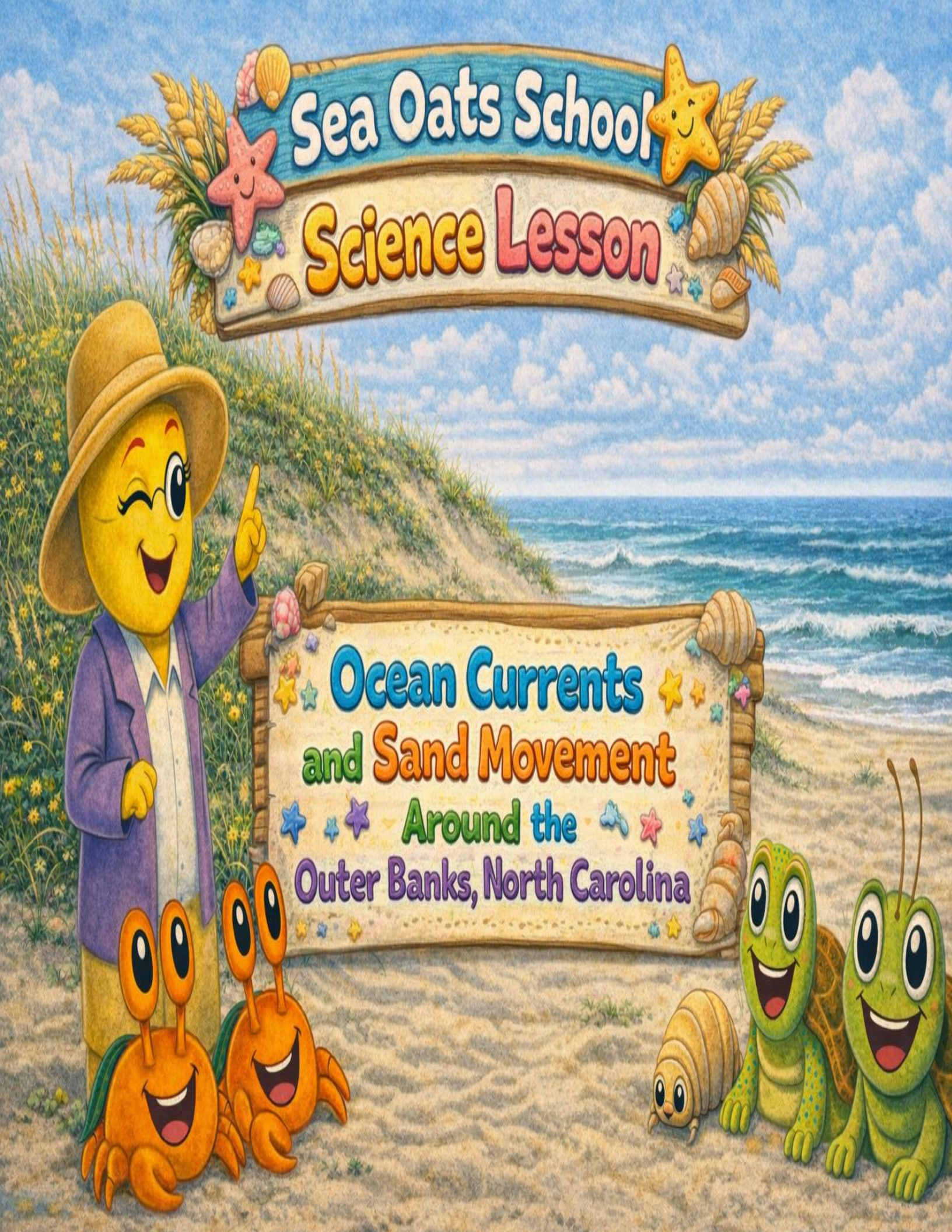

Sea Oats School
Science Lesson
Ocean Currents
and Sand Movement
Around the
Outer Banks, North Carolina

Forward

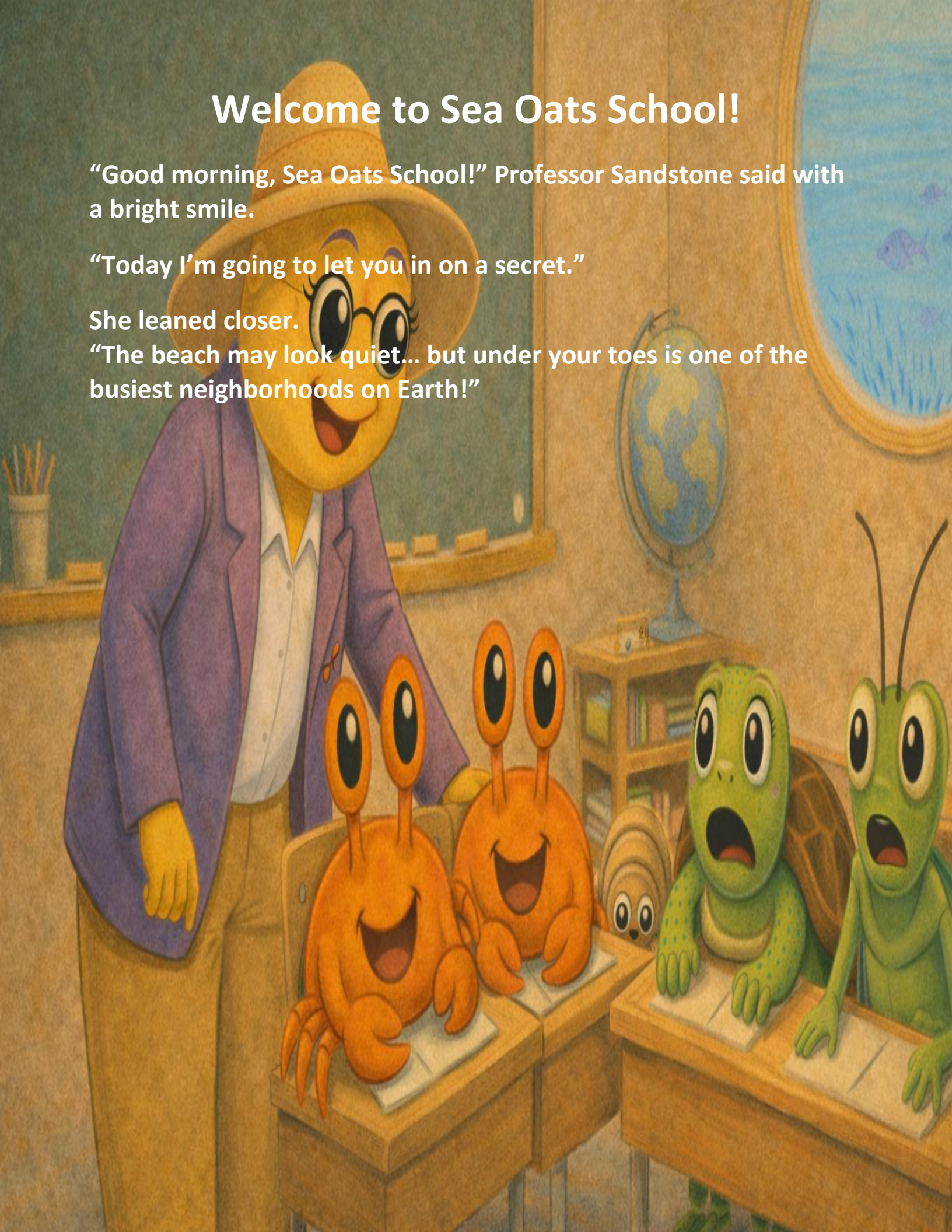
This storybook was created by the Outer Banks Coastal Conservation (OBCC), a nonprofit organization whose mission is to foster environmental stewardship and a deeper connection to the Outer Banks of North Carolina through outreach, education, and conservation efforts.

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.

All materials in this book may be freely downloaded, shared, printed and used for educational or nonprofit purposes.

To learn more, access additional resources at: www.theobcc.org.

Welcome to Sea Oats School!

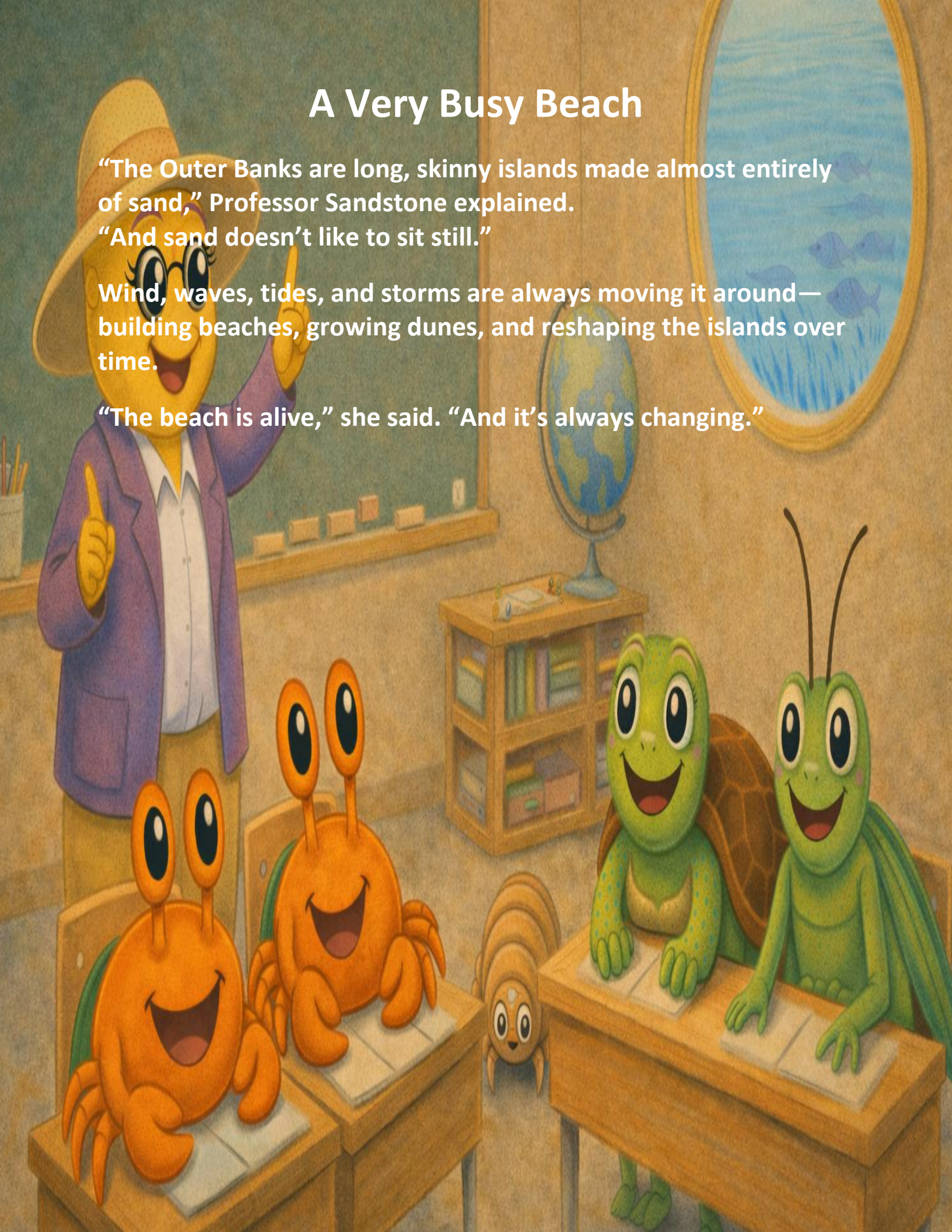


“Good morning, Sea Oats School!” Professor Sandstone said with a bright smile.

“Today I’m going to let you in on a secret.”

She leaned closer.
“The beach may look quiet… but under your toes is one of the busiest neighborhoods on Earth!”

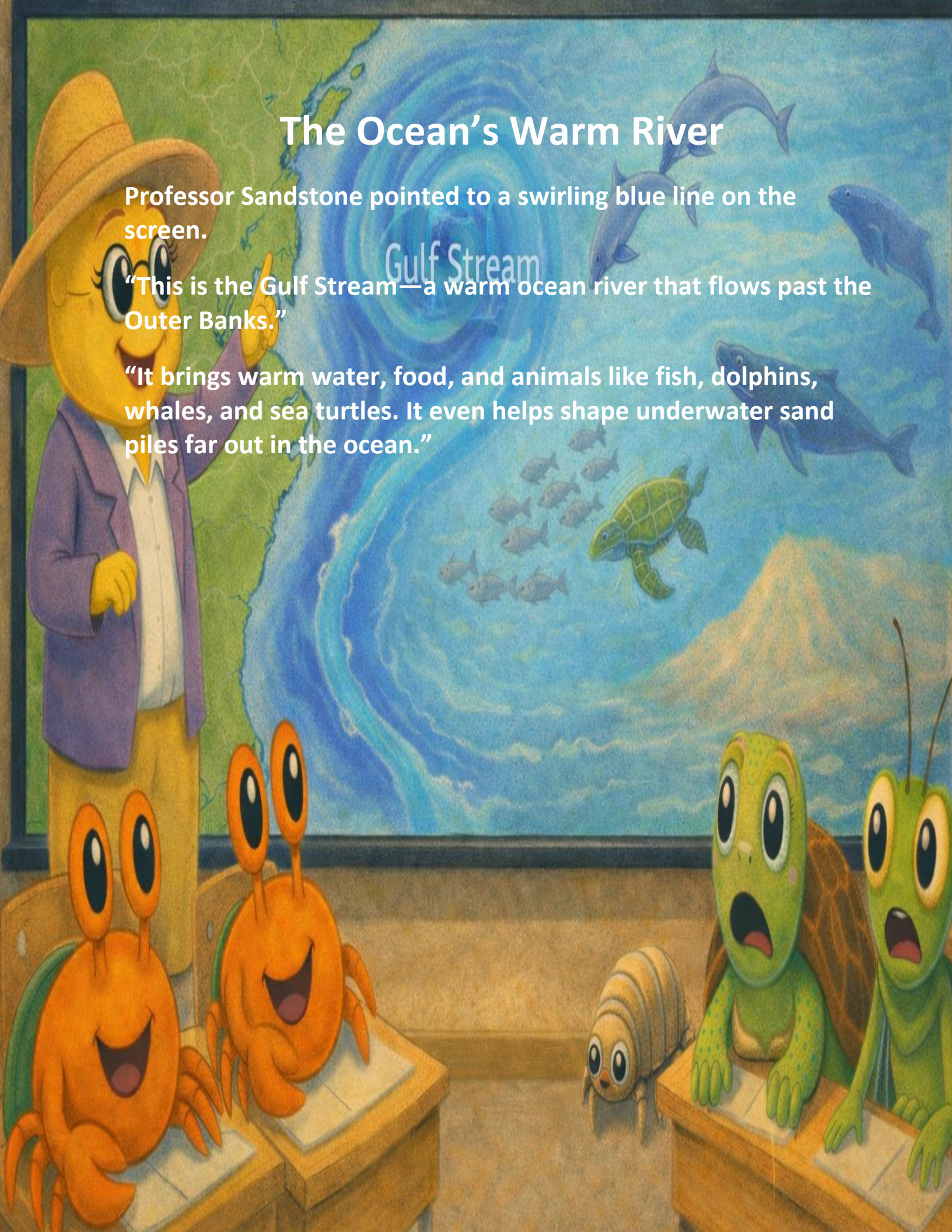
A Very Busy Beach



“The Outer Banks are long, skinny islands made almost entirely of sand,” Professor Sandstone explained.
“And sand doesn’t like to sit still.”

Wind, waves, tides, and storms are always moving it around—building beaches, growing dunes, and reshaping the islands over time.

“The beach is alive,” she said. “And it’s always changing.”



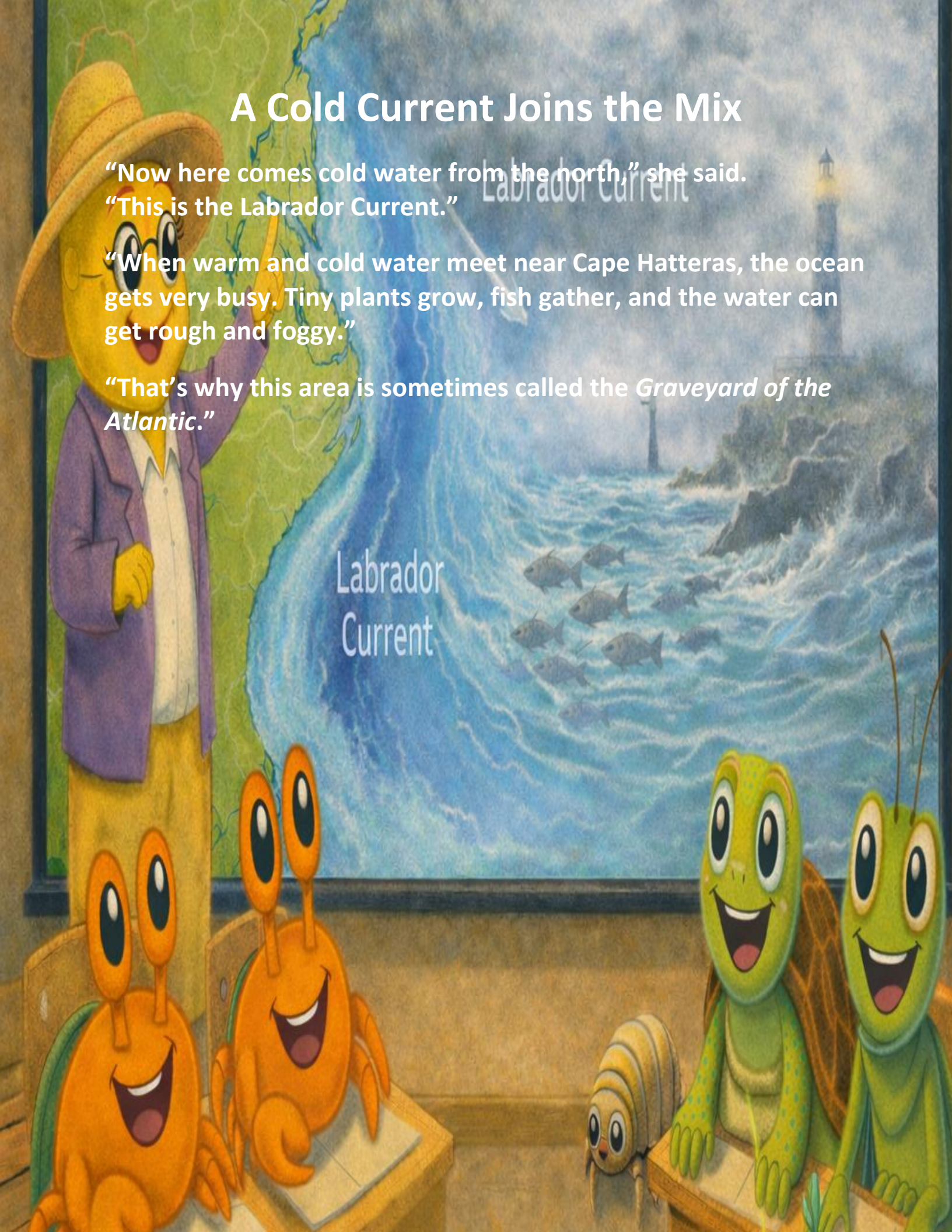
The Ocean's Warm River

Professor Sandstone pointed to a swirling blue line on the screen.

"This is the Gulf Stream—a warm ocean river that flows past the Outer Banks."

"It brings warm water, food, and animals like fish, dolphins, whales, and sea turtles. It even helps shape underwater sand piles far out in the ocean."

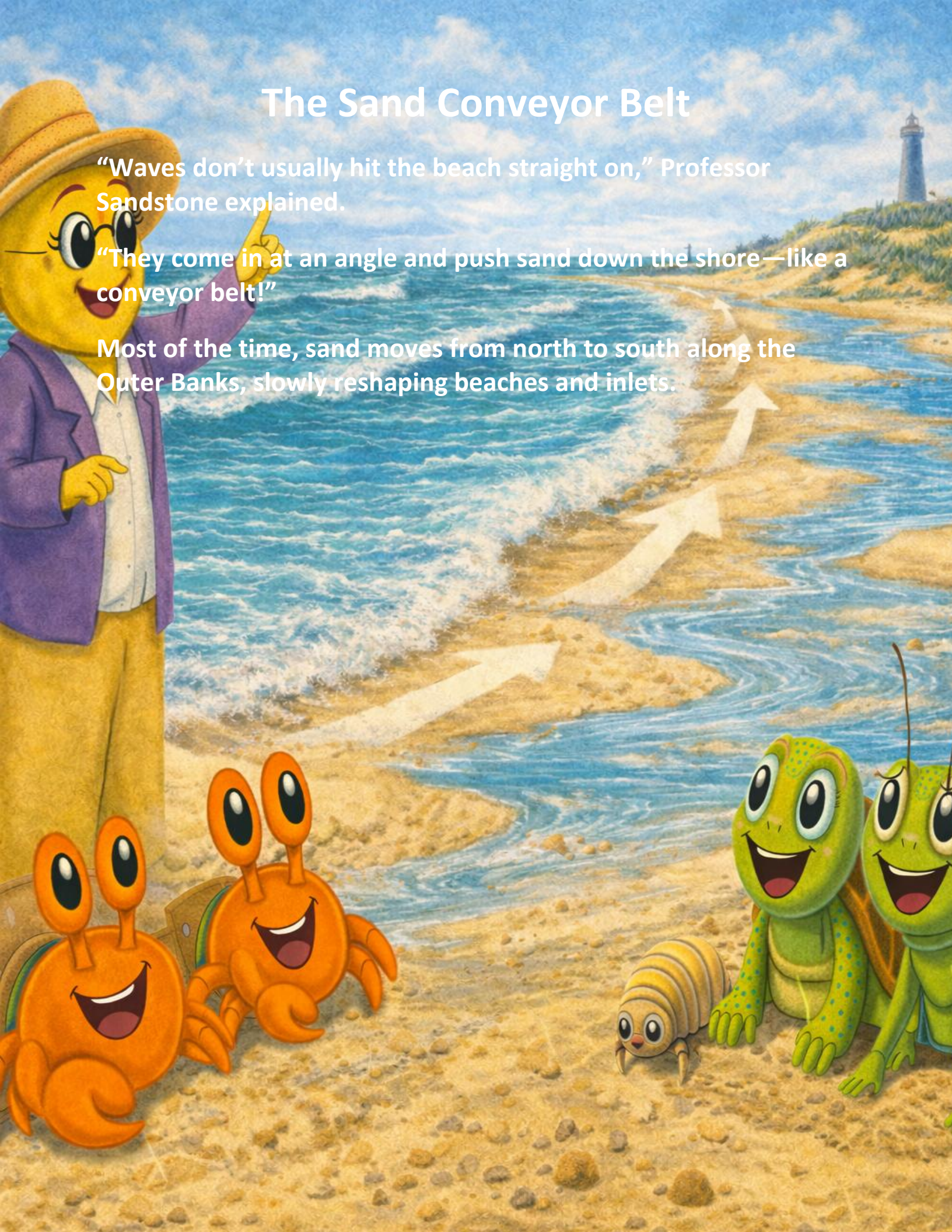
A Cold Current Joins the Mix



"Now here comes cold water from the north," she said. "This is the Labrador Current."

"When warm and cold water meet near Cape Hatteras, the ocean gets very busy. Tiny plants grow, fish gather, and the water can get rough and foggy."

"That's why this area is sometimes called the *Graveyard of the Atlantic*."



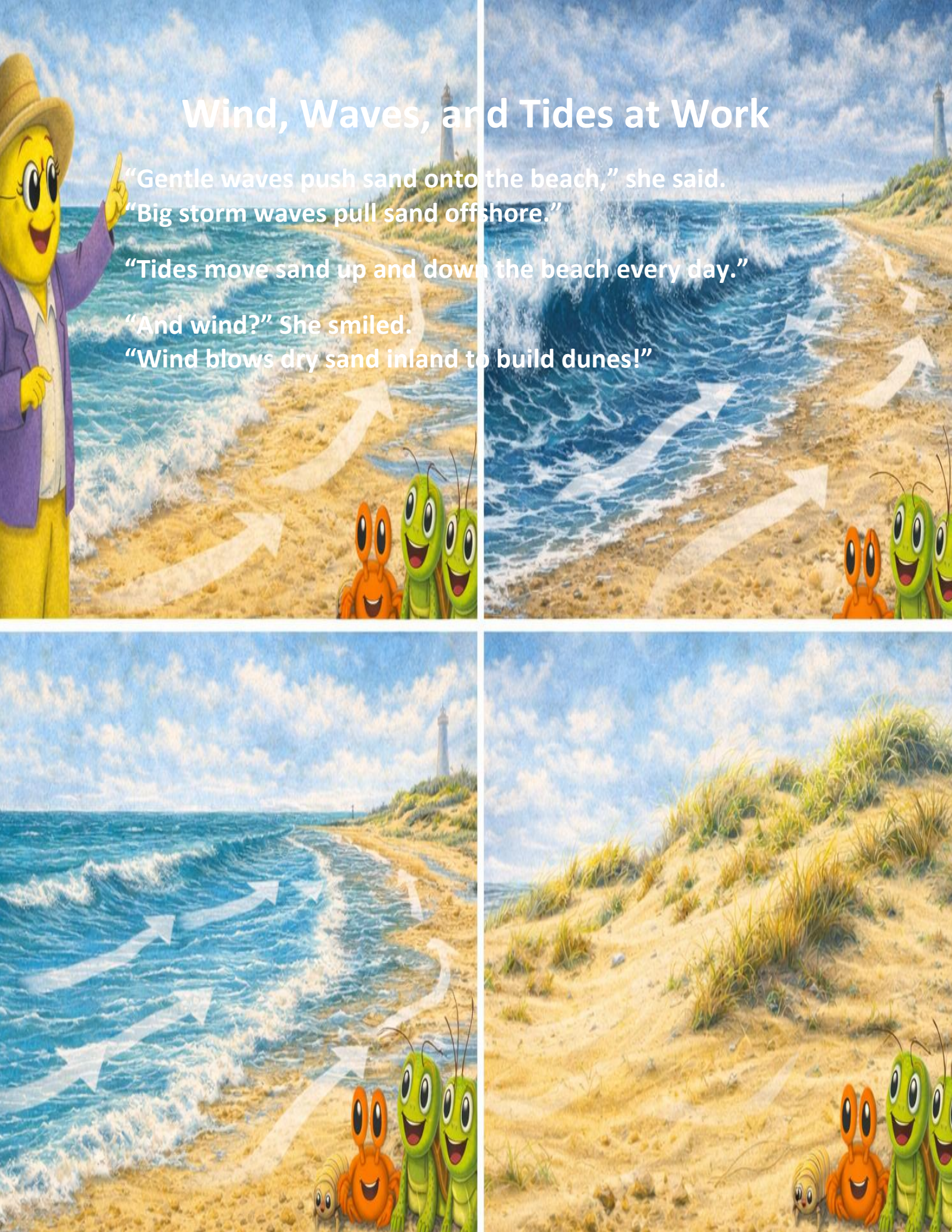
The Sand Conveyor Belt

“Waves don’t usually hit the beach straight on,” Professor Sandstone explained.

“They come in at an angle and push sand down the shore—like a conveyor belt!”

Most of the time, sand moves from north to south along the Outer Banks, slowly reshaping beaches and inlets.

Wind, Waves, and Tides at Work

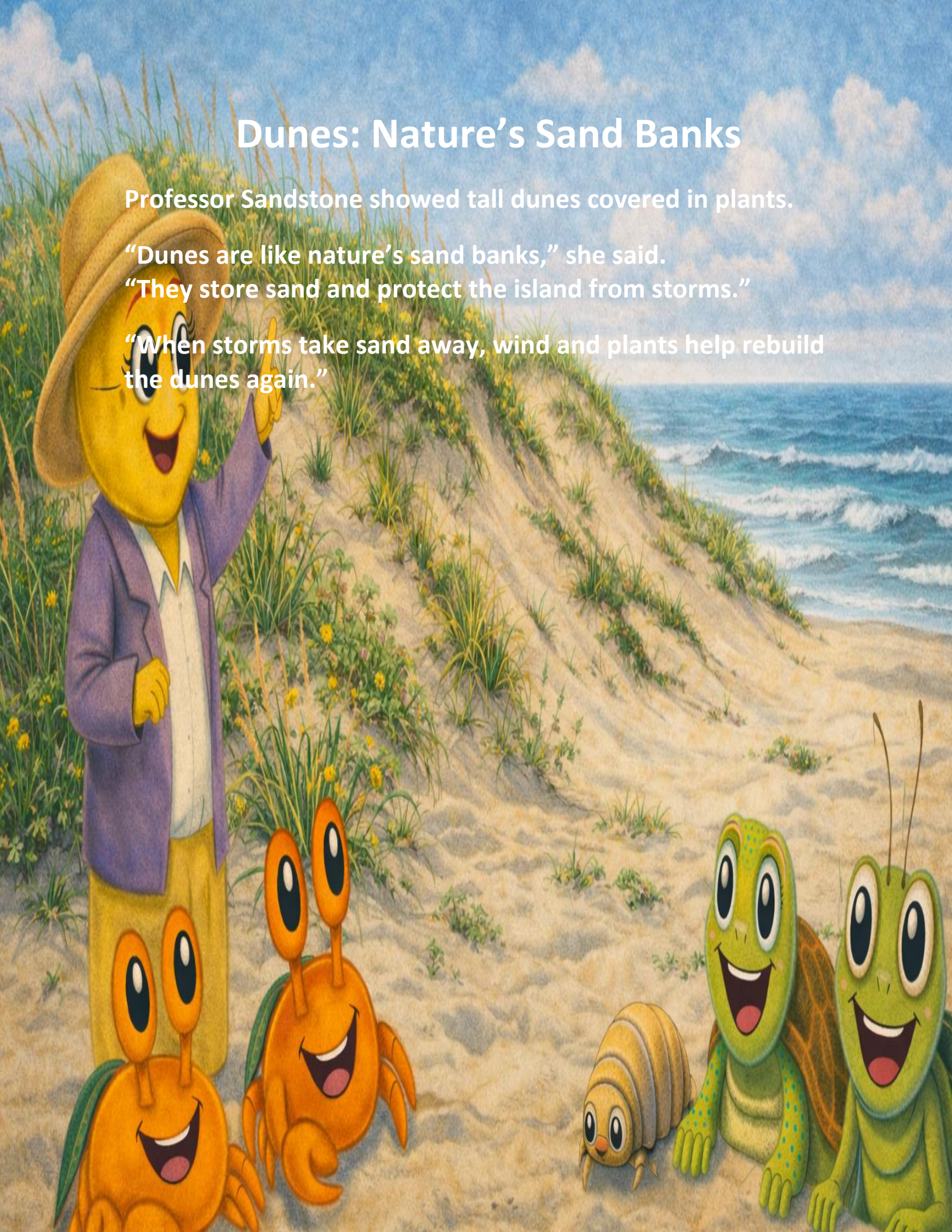


"Gentle waves push sand onto the beach," she said.
"Big storm waves pull sand offshore."

"Tides move sand up and down the beach every day."

"And wind?" She smiled.
"Wind blows dry sand inland to build dunes!"

Dunes: Nature’s Sand Banks

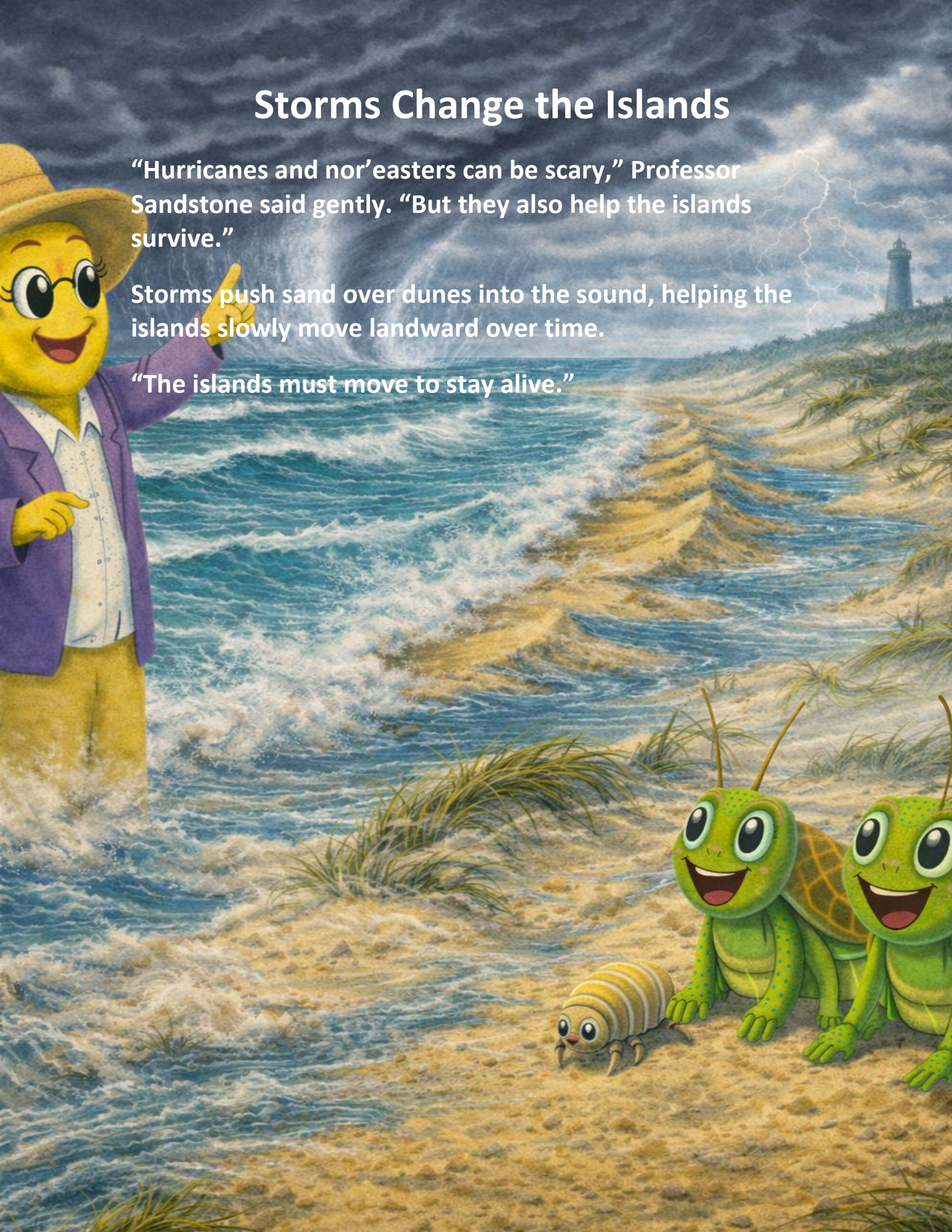


Professor Sandstone showed tall dunes covered in plants.

“Dunes are like nature’s sand banks,” she said.
“They store sand and protect the island from storms.”

“When storms take sand away, wind and plants help rebuild the dunes again.”

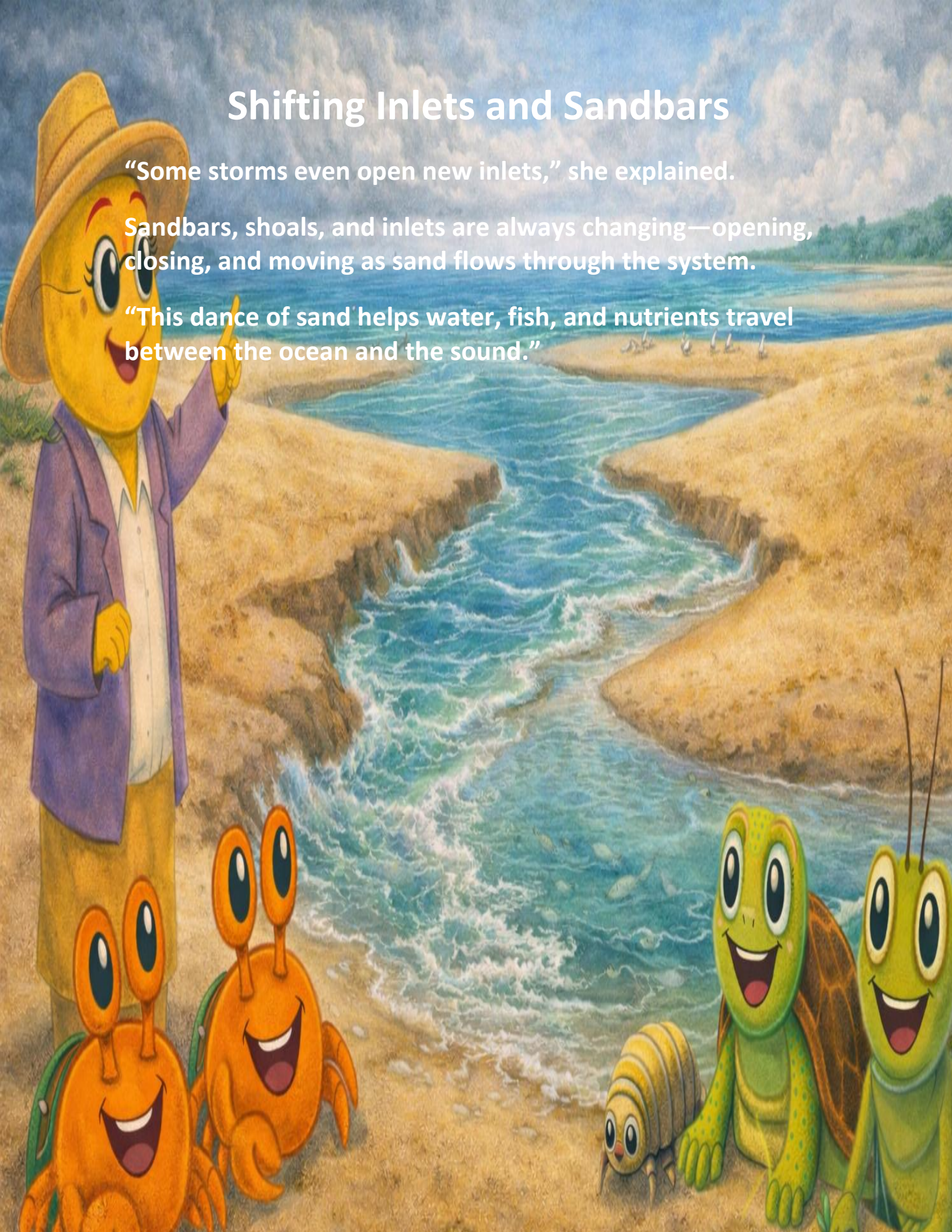
Storms Change the Islands



“Hurricanes and nor’easters can be scary,” Professor Sandstone said gently. “But they also help the islands survive.”

Storms push sand over dunes into the sound, helping the islands slowly move landward over time.

“The islands must move to stay alive.”



Shifting Inlets and Sandbars

“Some storms even open new inlets,” she explained.

Sandbars, shoals, and inlets are always changing—opening, closing, and moving as sand flows through the system.

“This dance of sand helps water, fish, and nutrients travel between the ocean and the sound.”

When People Stop the Sand

Professor Sandstone’s voice grew serious but kind.

“Sometimes people try to stop sand from moving by building walls, roads, or houses on dunes.”

“Those fixes might help for a little while—but they can cause bigger problems later.”

When sand can’t move naturally, the island becomes weaker.

Working *With* Nature

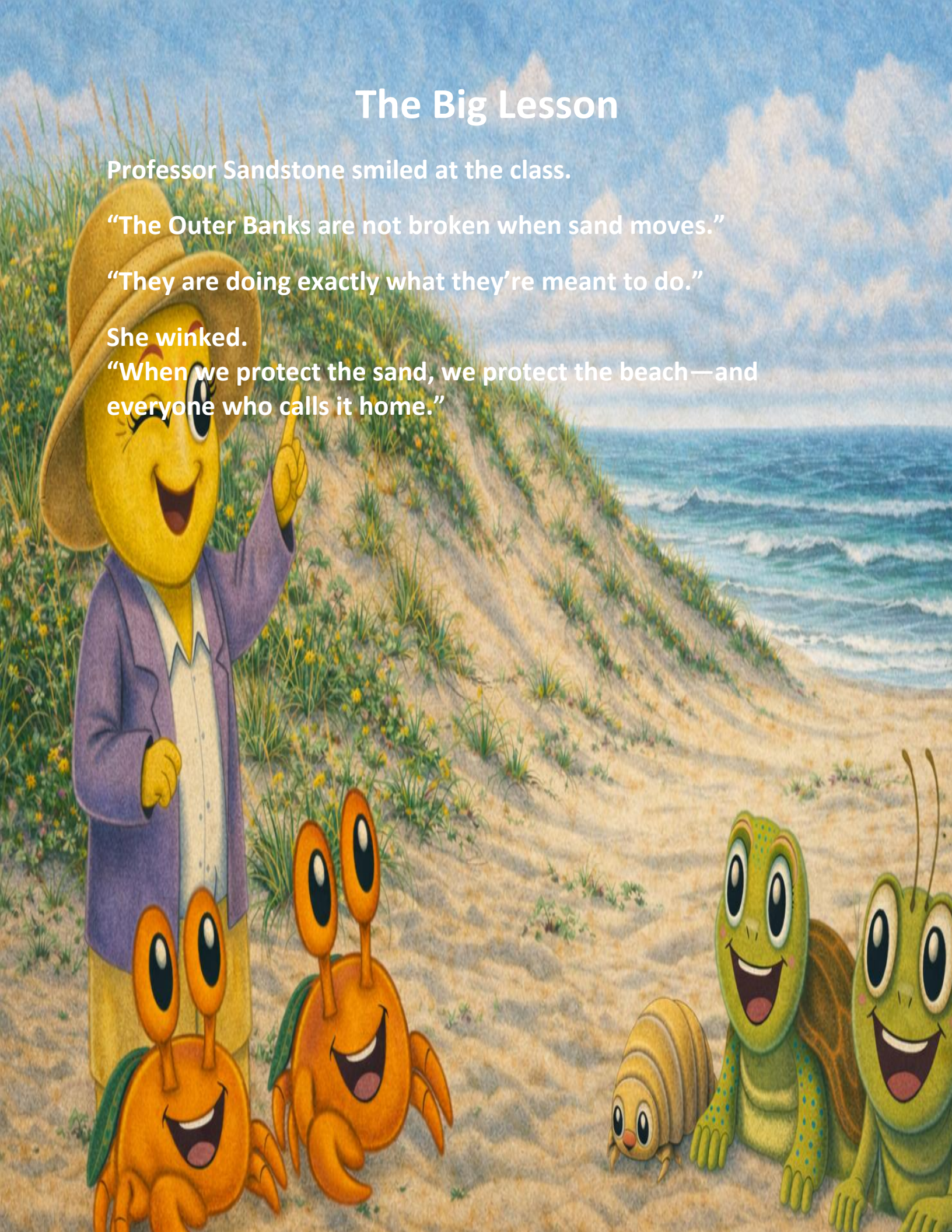
"So what should we do instead?" she asked.

"We work with nature!"

- Plant sea oats and beach grass
- Protect dunes and stay off them
- Let beaches and islands change naturally

"These choices help protect wildlife, people, and the island itself."

The Big Lesson



Professor Sandstone smiled at the class.

“The Outer Banks are not broken when sand moves.”

“They are doing exactly what they’re meant to do.”

She winked.
“When we protect the sand, we protect the beach—and everyone who calls it home.”

Did You Know?

Did you know that the Outer Banks are always on the move? These long, skinny islands are made almost entirely of sand—and sand *loves* to travel!

- **Wind blows dry sand inland to help build dunes**
- **Waves and tides move sand up and down the beach every single day**
- **Storms can push sand over dunes into the sound, helping islands slowly shift instead of disappearing**
- **Sea oats and beach grass trap blowing sand and help dunes grow stronger**
- **When sand moves naturally, it creates homes for animals like ghost crabs, birds, fish, and sea turtles**

That's why scientists say barrier islands like the Outer Banks are *alive*—they bend, shift, and change to protect themselves. When we protect the sand, we're helping the islands do their job.