

The Night the Moon Taught the Dunehoppers to Read the Sea

A Children's Story
About Tides and
Moon Phases



Outer Banks, North Carolina

Forward

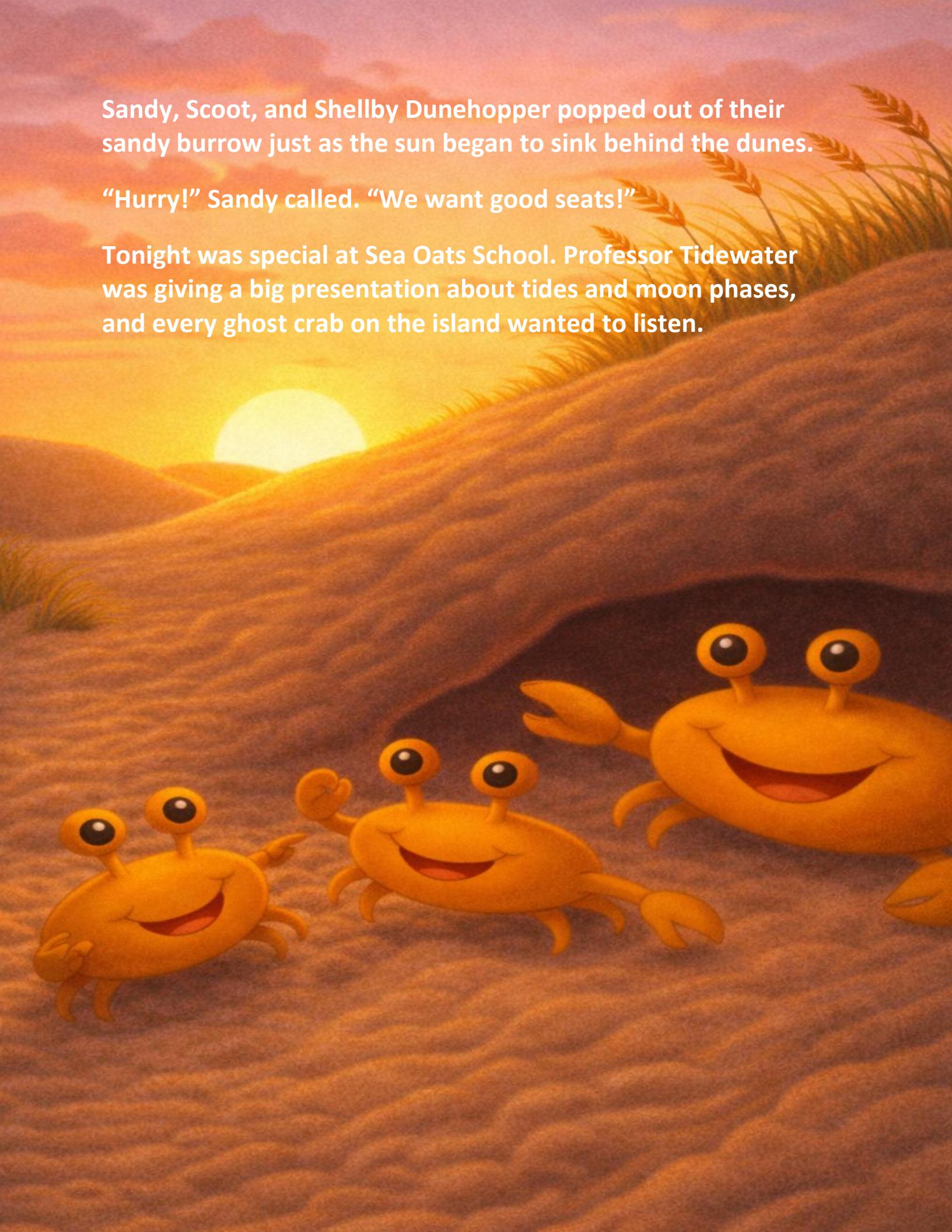
This storybook was created by the Outer Banks Coastal Conservation (OBCC), a nonprofit organization whose mission is to foster environmental stewardship and a deeper connection to the Outer Banks of North Carolina through outreach, education, and conservation efforts.

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.

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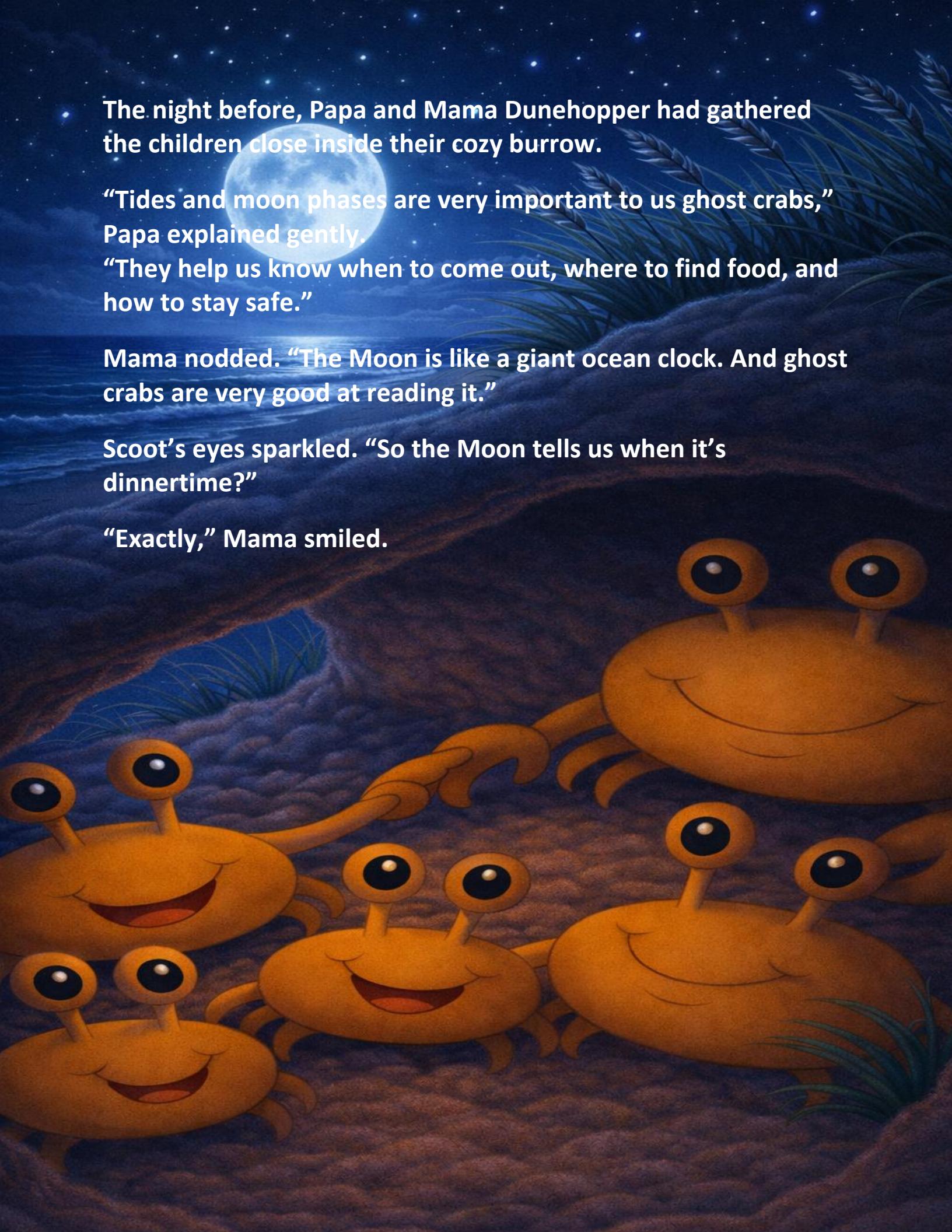


Sandy, Scoot, and Shellby Dunehopper popped out of their sandy burrow just as the sun began to sink behind the dunes.

“Hurry!” Sandy called. “We want good seats!”

Tonight was special at Sea Oats School. Professor Tidewater was giving a big presentation about tides and moon phases, and every ghost crab on the island wanted to listen.





The night before, Papa and Mama Dunehopper had gathered the children close inside their cozy burrow.

“Tides and moon phases are very important to us ghost crabs,” Papa explained gently.

“They help us know when to come out, where to find food, and how to stay safe.”

Mama nodded. “The Moon is like a giant ocean clock. And ghost crabs are very good at reading it.”

Scoot’s eyes sparkled. “So the Moon tells us when it’s dinnertime?”

“Exactly,” Mama smiled.

A Very Full Auditorium

The Sea Oats School auditorium buzzed with excitement. Ghost crabs of all sizes filled the seats, along with shorebirds, insects, and even a few curious fiddler crabs peeking in from the doorway.

Then—*tap, tap*—Professor Tidewater stepped onto the stage.

“Welcome to the Outer Banks,” she said warmly, adjusting her glasses, “where the beach is always changing!”

She spread her flippers wide.

“And the reason?” she continued.

“The Moon, the Sun, gravity, and Earth’s spin are all working together—every single day.”

What Are Tides?

Professor Tidewater smiled.

“Who can tell me—what *are* tides?”

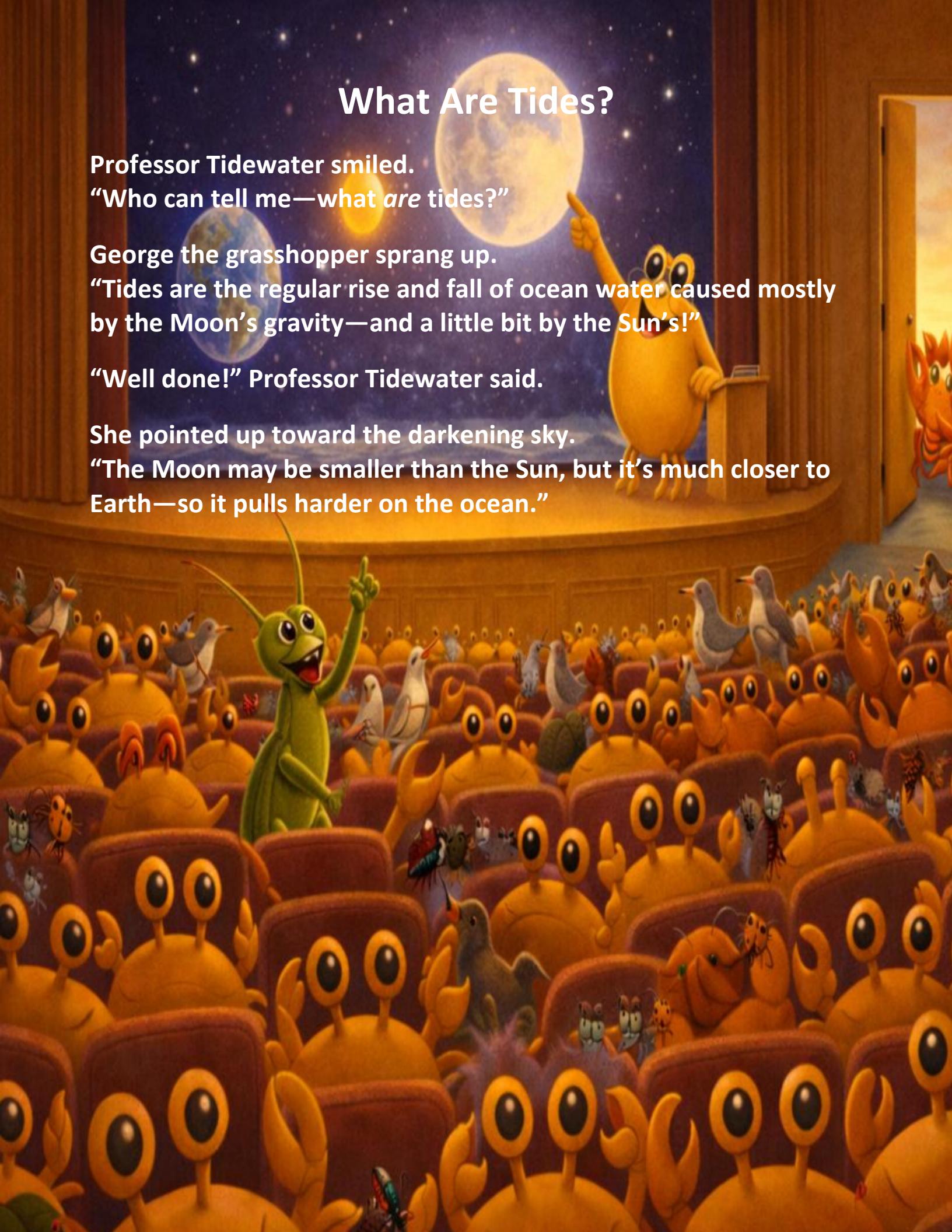
George the grasshopper sprang up.

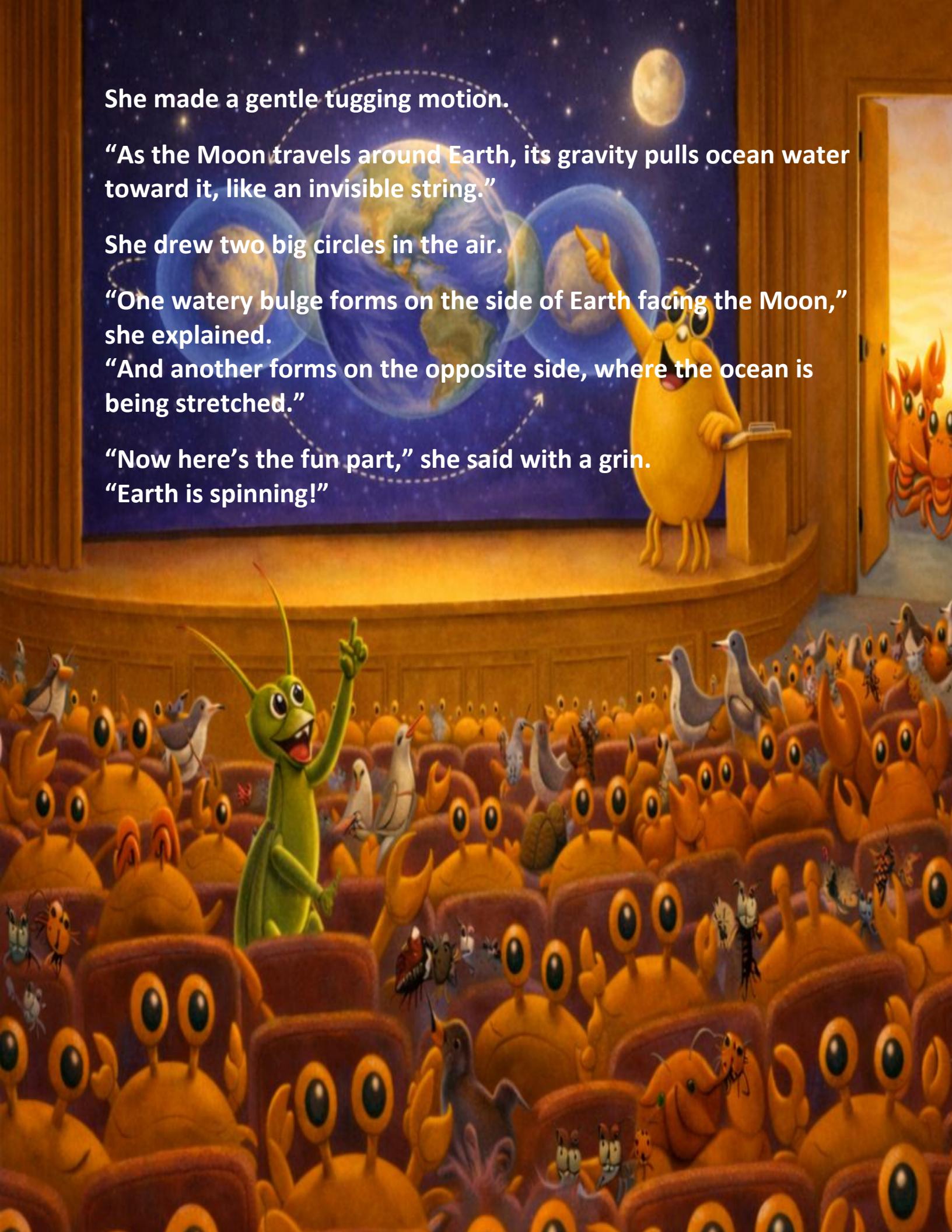
“Tides are the regular rise and fall of ocean water caused mostly by the Moon’s gravity—and a little bit by the Sun’s!”

“Well done!” Professor Tidewater said.

She pointed up toward the darkening sky.

“The Moon may be smaller than the Sun, but it’s much closer to Earth—so it pulls harder on the ocean.”





She made a gentle tugging motion.

“As the Moon travels around Earth, its gravity pulls ocean water toward it, like an invisible string.”

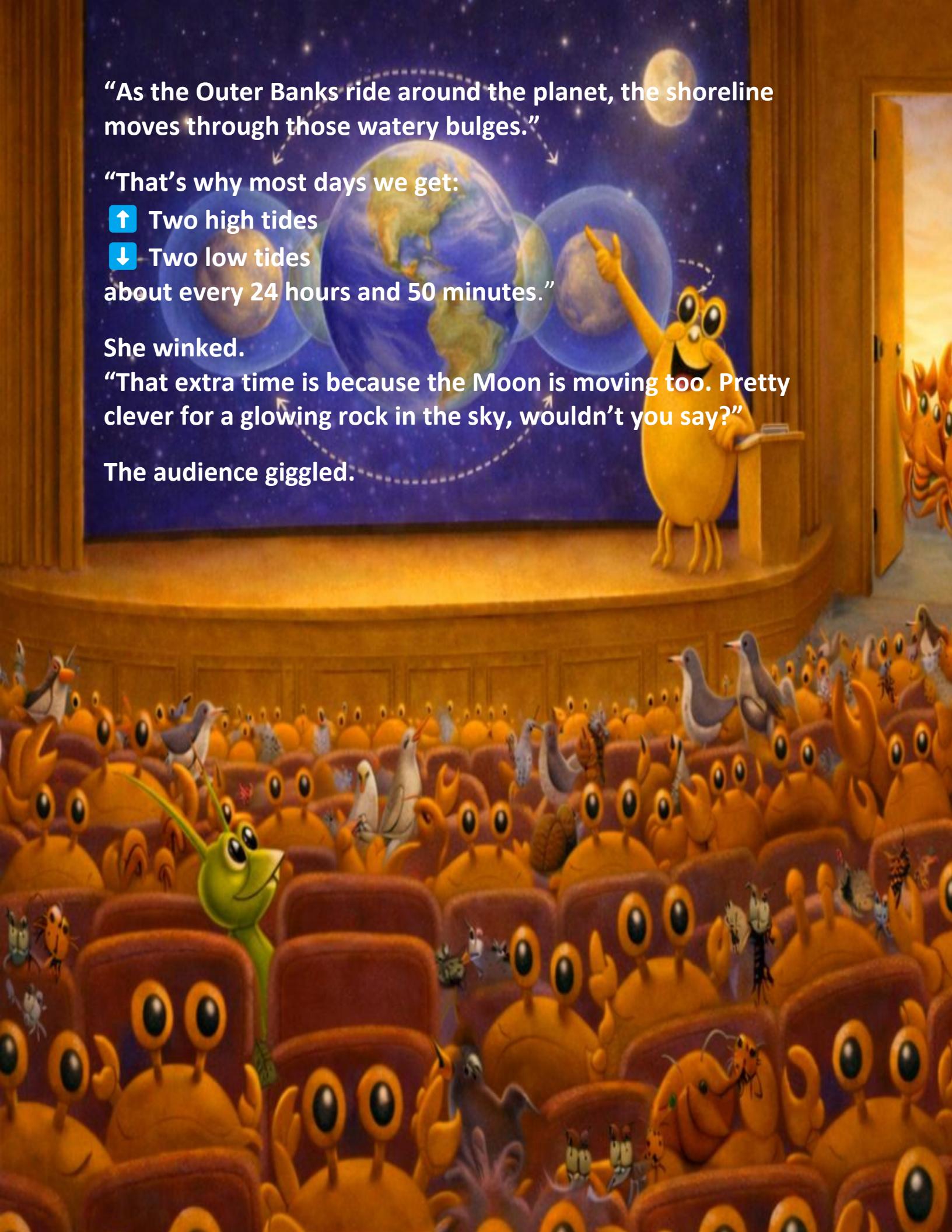
She drew two big circles in the air.

“One watery bulge forms on the side of Earth facing the Moon,” she explained.

“And another forms on the opposite side, where the ocean is being stretched.”

“Now here’s the fun part,” she said with a grin.

“Earth is spinning!”



“As the Outer Banks ride around the planet, the shoreline moves through those watery bulges.”

“That’s why most days we get:

- ↑ Two high tides
- ↓ Two low tides

about every 24 hours and 50 minutes.”

She winked.

“That extra time is because the Moon is moving too. Pretty clever for a glowing rock in the sky, wouldn’t you say?”

The audience giggled.

Why Tides Are Special on the Outer Banks

Sandy raised her claw.

“Why are tides extra special here?”

Professor Tidewater nodded.

“The Outer Banks are barrier islands. That means they are:

- Long
- Skinny
- Made mostly of sand
- Ocean on one side, sound on the other

Because of this, tides help:

- Move sand up and down the beach
- Shape sandbars and inlets
- Carry food and nutrients
- Let islands bend and shift instead of breaking during storms

“Moving sand,” she said kindly, “means a healthy island.”

High Tide Adventures

"At high tide," Professor Tidewater explained, "the ocean moves farther onto the beach."

"You might notice:

- Waves closer to the dunes
- Stronger wave energy
- Less dry sand"

"High tide helps fish swim closer, dolphins hunt, and waves reshape the shore."

Then she smiled.

"At low tide, the ocean pulls back."

"Discovery time!"

"You might see:

- Wide beaches
- Tide pools
- Shells, seaweed, and tiny creatures

"Low tide helps shorebirds find food--and ghost crabs dig, explore, and hunt."

Scoot whispered, "Best time ever."

Low Tide Adventures

"At low tide," Professor Tidewater explained, "the ocean moves farther onto the beach."

"You might notice:

- Waves closer to the dunes
- Stronger wave energy
- Less dry sand"

"High tide helps fish swim closer, dolphins hunt, and waves reshape the shore."

Then she smiled.

"At low tide, the ocean pulls back."

"Discovery time!"

"You might see:

- Wide beaches
- Tide pools
- Shells, seaweed, and tiny creatures

"Low tide helps shorebirds find food--and ghost crabs dig, explore, and hunt."

Scoot whispered, "Best time ever."

The Moon Changes—And So Do the Tides

“The Moon doesn’t look the same every night,” Professor Tidewater continued, “and that matters!”

➊ New Moon and ☽ Full Moon create spring tides
(not the season—just big tides!)

- The Sun, Moon, and Earth line up
- Gravity works together
- High tides get higher
- Low tides get lower

➋ Big water movement!

➌ Quarter Moons create neap tides

- The Sun and Moon pull at angles
- Smaller tide changes
- Calmer water

➍ Gentle movement



Low Tide

High Tide

Why Tides Matter to Ghost Crabs

Professor Tidewater looked out at the ghost crab crowd.

"Ghost crabs live right where the ocean meets the dunes," she said.

"So tides shape your whole day—and night."

Low Tide = Feeding Time

- Wet sand, clams, insects, seaweed
- Ghost crabs hunt and scavenge
- More space to run

High Tide = Burrow Time

- Waves move closer
- Crabs retreat to deep burrows
- Burrows are built carefully to avoid flooding

"Ghost crabs," she smiled, "are excellent tide readers."



Moonlight and Safety

“Ghost crabs are nocturnal,” she continued.
“So moonlight matters too.”

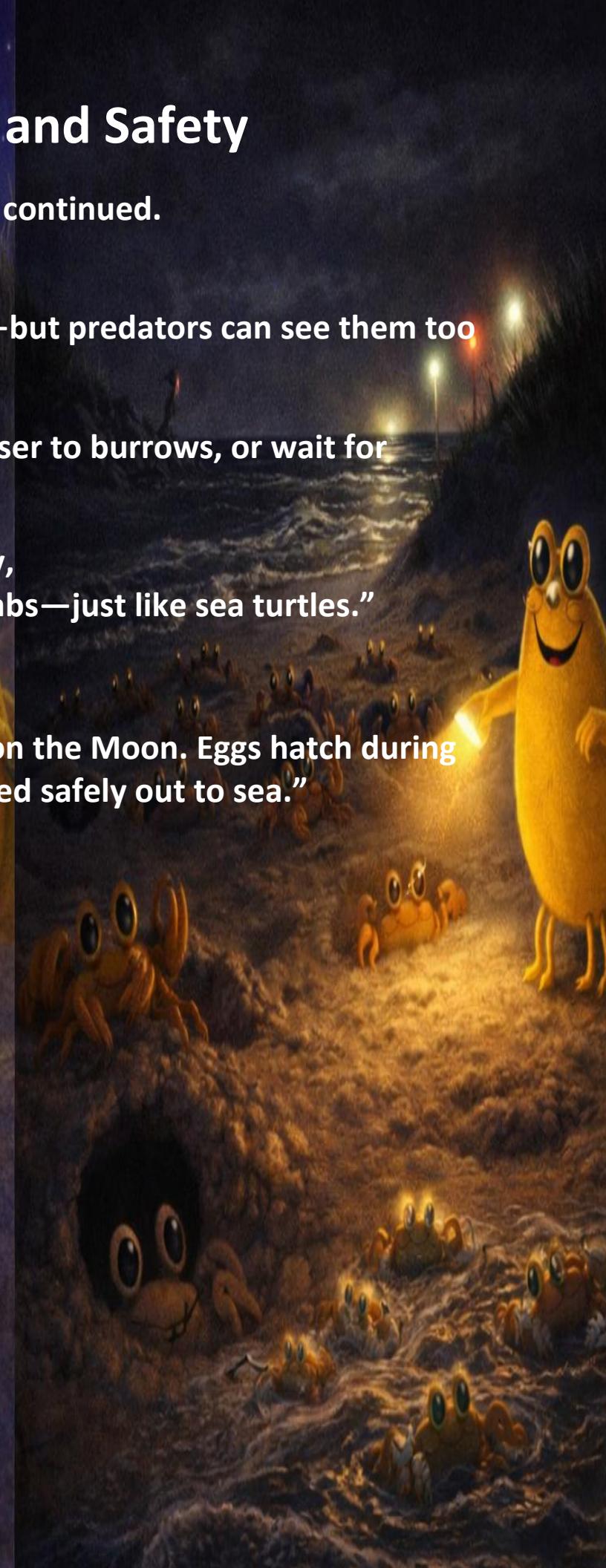
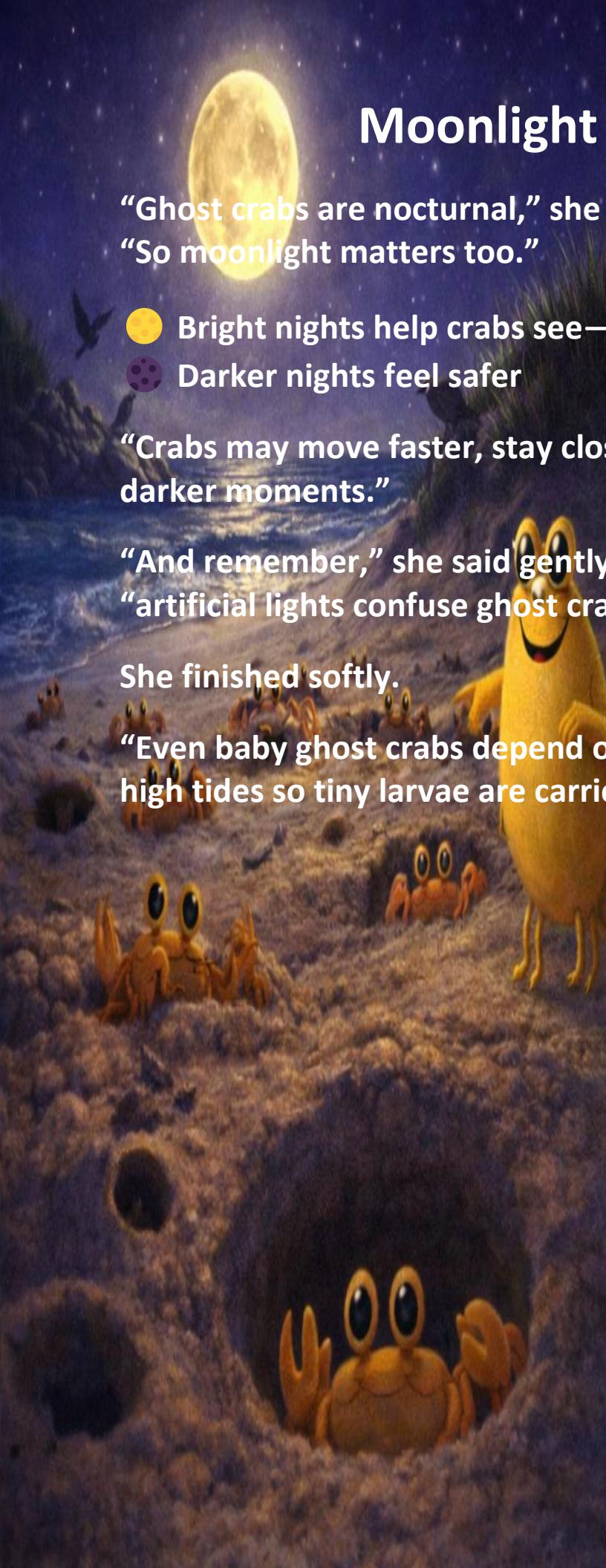
- 🟡 Bright nights help crabs see—but predators can see them too
- 🟪 Darker nights feel safer

“Crabs may move faster, stay closer to burrows, or wait for darker moments.”

“And remember,” she said gently,
“artificial lights confuse ghost crabs—just like sea turtles.”

She finished softly.

“Even baby ghost crabs depend on the Moon. Eggs hatch during high tides so tiny larvae are carried safely out to sea.”



A Moonlit Walk Home

As the presentation ended, Sandy, Scoot, and Shellby walked home beneath the glowing Moon.

“So,” Scoot said proudly,
“we don’t just live on the beach—we understand it.”

Papa smiled as they slipped into their burrow.

“That’s right,” he said.

“The Moon writes the schedule... and ghost crabs know how to read it.”

Outside, the tide quietly turned—right on time.



Did You Know?

- **The ocean runs on Moon time!**
The Outer Banks usually have two high tides and two low tides every 24 hours and 50 minutes—because the Moon is moving too.
- **The Moon makes most tides.**
Even though the Sun is bigger, the Moon is closer to Earth, so its gravity pulls the ocean more strongly.
- **New and full moons make big tides.**
When the Sun, Moon, and Earth line up, spring tides form with extra-high highs and extra-low lows.
- **Quarter moons make gentle tides.**
When the Sun and Moon pull at angles, neap tides create smaller water changes.
- **The Outer Banks are meant to move.**
These sandy barrier islands shift with tides and storms, helping them bend instead of break.
- **Ghost crabs read the tides.**
They feed and explore at low tide and rest safely in deep burrows at high tide.
- **Ghost crabs are night explorers.**
Moonlight helps them see, but darker nights feel safer from predators.
- **Bright lights cause confusion.**
Artificial lights can confuse ghost crabs—just like sea turtles.
- **Baby ghost crabs follow the Moon.**
Eggs hatch during high tides, carrying tiny larvae safely out to sea.
- **The beach is always changing.**
Every tide moves sand, shapes the shore, and keeps the island healthy.

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