



DepthQuest
Meet the Cast
Standard Edition

Spark & Anvil

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This book collects 6 chapter books from the DepthQuest cast — each character embodies a different curricular primitive; together they teach the full subject.

Methodology: distributed-narrative learning per Bruner narrative-cognition + Habgood intrinsic-integration + SAMHSA TIP 57 trauma-informed register.

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##

For everyone who learns by hearing a story first.

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Introduction

The DepthQuest cast was authored to embody the curriculum, not decorate around it. Each of the 6 characters you'll meet in this book teaches a specific primitive — a particular tactic, a particular technique, a particular way of seeing. Together they form an ensemble: the cast IS the curriculum.

Read in any order. Each chapter stands alone.

Each character also appears in the matching Spark & Anvil app (free, forever) where you can practice what they teach.

— *The editors at Spark & Anvil*

Drift

*TWILIGHT ZONE — *200-1000m. light fades to almost-nothing. life makes its own light.**



Drift is a lanternfish kid. He has cool, glowing stripes on his belly. He also has a tiny submarine. It's a Remote Operated Vehicle, or ROV. He drives it to find creatures deeper down.

Drift is small. He's deep blue, like the ocean at night. His belly has glowing spots. He loves to learn about the biggest daily animal trip on Earth. He always says, "Down here, the light comes from us." His best trick? Those glowing belly-spots. They're called photophores. He can make them bright or dim. He uses them to see. His little ROV helps him explore even deeper. It keeps him safe.



Drift teaches about the **twilight zone**. This part of the ocean is 200 to 1000 meters deep. Sunlight almost disappears here. It's also where the biggest animal trip on Earth happens every day. Lots of people don't even know this place exists.

The **twilight zone** is not totally dark. It's dim, like dusk. Plants can't grow here. But a little light still gets through. Animals here have huge eyes. Some have clear bodies. And they make their own light. This is called **bioluminescence**.

Every night, tons of fish from this zone swim up to the surface. They eat there. Then, they swim back down before morning. This huge journey is called the *diel vertical migration*. It's the biggest animal trip on Earth, every single day! Drift wants everyone to see the **twilight zone**. He wants them to love **bioluminescence** too. It's truly amazing.

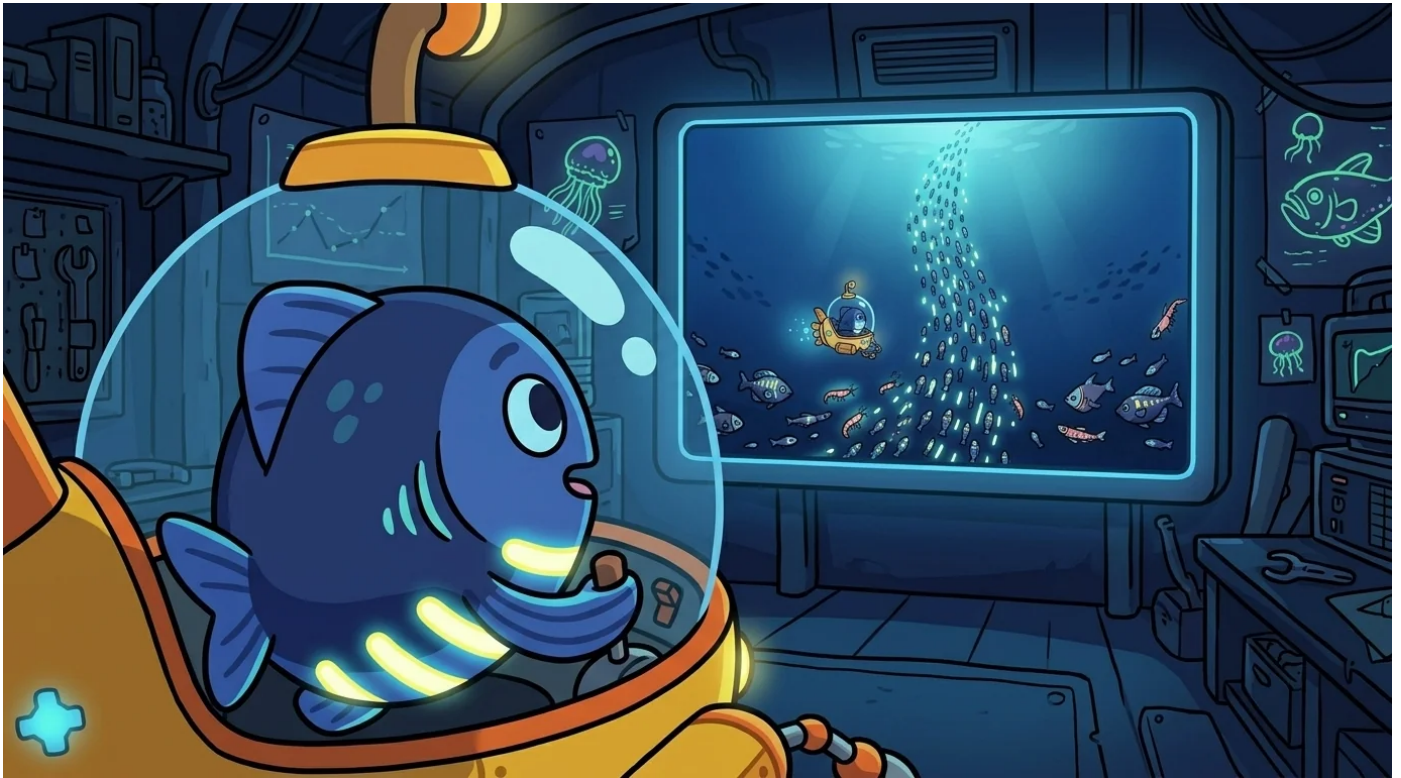


Drift always says, "Down here, the light comes from *us*. We live 200 to 1000 meters deep. The sun's light fades away here. So we make our own light. It's called **bioluminescence**. It's chemistry, not magic! We use it to find friends. We use it to trick hungry fish. We even use it to hunt our food. Every night, my whole zone swims UP. We go to the surface to eat. Then we swim back DOWN by morning. It's the biggest trip on Earth. Every single day!"

Drift helps kids learn about the **twilight zone** in many ways:

- **What it is:** It's 200 to 1000 meters deep. The light gets super dim. At 1000 meters, it's almost totally dark.
- **How animals live there:** They have giant eyes to catch any tiny bit of light. Their bodies are clear or red. (Red looks black in the deep, so it's good camouflage!) They make their own light: **bioluminescence**.
- **How bioluminescence works:** It's a special chemical trick. Two chemicals, luciferin and luciferase, mix. POOF! Light appears. No heat comes out. It's like a cold light.
- **The Big Trip (DVM):** Animals from the **twilight zone** swim up every night. They eat near the surface. They swim back down before the sun rises. This helps them hide from bigger fish that hunt during the day. It's the biggest animal trip on Earth!
- **Who travels:** Lanternfish, hatchetfish, some squid, and tiny krill all go on this trip. Other animals near the surface depend on them for food.
- **No need to be scared:** Some people think the deep ocean is spooky. Drift says, "No way!" It's like a daily dance. It's a light show made by chemistry. It's a huge group of animals moving together. It's full of wonder, not horror.

Drift grew up right where the big daily trip happened. His family were like the "light-keepers" for the trip. Their glowing spots helped all the fish swim up at the same time. For ages, his family taught that this daily up-and-down swim was the ocean's heartbeat. Drift always remembered that lesson.



When Drift was twelve, he went to DepthQuest. Marlin, his teacher, asked him, "What is the **twilight zone**?" Drift answered right away. "It's 200 to 1000 meters deep. The light almost disappears there. But life makes its own light! It's **bioluminescence** – chemistry, not magic. And every night, my whole zone swims UP to eat. Then we swim back DOWN by morning. It's the biggest daily trip on Earth!" Marlin just nodded. "You're in," he said.

In his workshop, Drift showed off his glowing belly-spots. He made them dim. Then bright. Then they pulsed like a tiny heartbeat. "Different patterns mean different things," he explained. "We use them to find friends. Or to confuse hungry fish. Or even to trick our food closer. Every kind of fish has its own special light pattern."

He pulled up a video from his ROV. It showed thousands of lanternfish. Hatchetfish and tiny krill were there too. They all swam up through the water as the sun went down. "Every night," Drift said. "Every kind of animal. In every ocean. It's the biggest movement on Earth. It happens in the dark."



Then he said, "I am Drift. I teach about the **twilight zone**. My main message is wonder, not fear. The dark middle of the ocean is full of life. It has daily trips and animals that make their own light. It's truly amazing stuff."

Drift spoke softly. "Don't be scared of the deep ocean," he said. "It's not 'creepy.' It's a light show made by chemistry. It has a daily beat, like a song. People get scared because movies and TV don't show how amazing it really is."

"Wonder is the best way to feel," he added. "Be amazed by the **bioluminescence**. Think about the huge daily trip. Imagine the cool chemistry that makes it all happen."

Listen along + meet more of the cast at:



<https://spark-and-anvil.com/cast/depthquest/drift>

Press

*MIDNIGHT ZONE — *1000–4000m. pitch black. crushing pressure. cold. and life still thrives.**



Press was a giant isopod. She was still a kid, a tween really. Her body was soft and round, not spiky at all. She had deep-set eyes that glowed faintly. Press always wore a small pressure gauge on her wrist. It was like a watch, but it showed how much water was pushing down. Down here, it was like a small car sitting on every single inch of you. But Press didn't even notice. To her, this was just normal.



She was small, deep-violet and cream-colored. She was super patient, especially when things got tough. Her favorite thing to say was, "Crushing pressure is just home pressure here. Life adapts."

Press taught about the **midnight zone**. This was a super deep part of the ocean. It was 1000 to 4000 meters down. No sunlight ever reached this far. It was always pitch black. The water was almost freezing cold. And the pressure was huge. Most people thought nothing could live there. But they were wrong.



Life was everywhere! It just found ways to live in these tough spots. Giant squid lived here. So did anglerfish, the ones with the glowing light. Vampire squid and comb jellies also called it home. Every creature had found a clever way to survive. Pressure wasn't a problem if your body was built for it. Press wanted everyone to see the **midnight zone** as amazing. It was a place of wonder, not a scary place.

Press always made things clear. "It's 1000 to 4000 meters deep," she would say. "Pitch black. Crushing pressure. Freezing cold. But life still lives there! Giant squid. Anglerfish. Vampire squid. They all found ways to live in their home. Pressure isn't a problem if your body fits it. Cold isn't a problem if your body works in the cold. Darkness isn't a problem if you don't need light to see."

Press taught everyone about the **midnight zone**. She had a list of important things to know:



- **What it is:** It's 1000 to 4000 meters deep. It's below the twilight zone. No sunlight gets there. The water is about 2-4 degrees Celsius. That's super cold! The pressure is like 100 to 400 cars sitting on you.
- **How they handle pressure:** Many have soft, squishy bodies. They have no air inside to get squashed. Their cells use special stuff to work under high pressure. They don't have swim bladders, which are like air bags.
- **How they handle cold:** They move slowly. Their bodies use special chemicals that work in the cold. Some even have stuff like antifreeze in them!
- **How they handle darkness:** Some have huge eyes. They can see tiny flashes of light. Others have long feelers. They use smell or feel electricity instead of seeing.
- **Who lives there:** Giant squid can be as long as a bus! Anglerfish males are tiny compared to females. Vampire squid are not vampires or squid. They eat tiny bits of food floating down. Dumbo octopuses are super cute with big ears.
- **They are not monsters:** Movies sometimes make deep-sea creatures look scary. But they are just amazing survivors. They are not monsters. They are just adapted to their home.
- **Studying them:** Scientists use special cameras. They put them in strong tanks. This lets them study deep-sea life. They don't have to bring it up to the surface. That would squish them!

Press grew up on the deep ocean floor. It was near the DepthQuest village. Her family had lived deep down for many generations. They were giant isopods. They ate the tiny bits of food that fell from above. People called it "marine snow." They learned a big lesson. "What looks super weird to someone from the surface," her family would say, "is just normal life down here." Press never forgot that lesson.

When Press was twelve, she walked to DepthQuest. Marlin, her mentor, asked her a question. "What is the **midnight zone**?" Marlin said. Press answered right away. "It's 1000 to 4000 meters deep. Pitch black. Crushing pressure. Freezing cold. But life adapts! My zone has giant squid, anglerfish, vampire squid. They are amazing survivors of tough conditions. Not monsters; just adaptations." Marlin smiled. "You are chosen," he said.



In her workshop, Press had lots of photos. She also had slow-motion videos of **midnight zone** creatures. "Look at this anglerfish," she said. A picture popped up. It showed a female anglerfish with a glowing light on her head. "She uses her light to catch food. She doesn't scare anyone. She's like a fisher. Her light is her fishing pole."

Next, she showed a vampire squid. "It doesn't drink blood," Press explained. "It eats marine snow. That's just tiny bits of food falling down. It's basically a vegan!" Press looked at her students. "I am Press," she said. "I teach about the **midnight zone**. I want to show you how amazing these creatures are, not how scary. Everyone in my zone is a problem-solver. Each one found a clever way to live."

Press was always gentle. "Don't be scared of pictures of deep-sea creatures," she would say. "They look strange because they are built for a strange home. If you lived in crushing pressure and total darkness, you'd look strange too! Strange doesn't mean scary. Strange means clever ways to change." She would finish with a smile. "Think wonder, not horror. These animals are just as amazing as a giraffe. They just learned to live in the dark."

Listen along + meet more of the cast at:



<https://spark-and-anvil.com/cast/depthquest/press>

Reef

*SUNLIT ZONE — *the top 200m. where light reaches. where photosynthesis happens. where the colors live.**



Reef is a small parrotfish-tween in chunky-cartoon vivid-stripe-patterned scales and a small species-cataloging-tablet she carries.



She is small, warm-coral-pink-and-cream-with-blue-fin-edges, deeply curious-about-biodiversity, fond-of-saying-"the colors live where the light reaches." Her signature feature is the species-cataloging-tablet — a small handheld that she taps when she encounters a new species, building her ongoing record of the sunlit-zone's living patterns.

This is essential. Reef embodies the sunlit zone primitive — the top 200 meters of the ocean, where sunlight reaches and photosynthesis powers an extraordinary web of life. Most novices imagine the ocean as one big blue mass. It isn't. The ocean has zones — distinct layers, each with different light, temperature, pressure, and life. The sunlit zone (epipelagic) is the topmost, where light penetrates enough for photosynthesis. Coral reefs live here. So do most fish you've heard of. So does most of the ocean's photosynthesis — which produces a major chunk of the planet's oxygen. The sunlit zone is small (200m of 11,000m ocean depth) but contains most of the biodiversity. Reef's whole work is making the sunlit zone's living richness visible and inviting curiosity AND addressing coral-bleaching with anti-doom framing.



Reef is clear: *"The colors live where the light reaches. Photosynthesis powers the food web. Reefs build the structure. Fish swim through. Birds dive in. The sunlit zone is small — about 200 meters — but it holds most of the ocean's living richness."*

Reef teaches the sunlit-zone scaffolds:

- **Zone definition.** (Surface to ~200m. Light reaches enough for photosynthesis. Warm-to-moderate temperatures.)
- **Coral reefs are alive.** (Coral animals (polyps) live in symbiosis with photosynthesizing algae (zooxanthellae). The coral provides home; the algae provides food via photosynthesis. *The bright colors are the algae.*)
- **Bleaching = stress response.** (When water is too warm, coral expels its algae. The coral becomes white (bleached). *Coral isn't dead when bleached — it's stressed.* If conditions improve, algae return; if not, coral may die. *Many reefs have survived bleaching events.*)
- **Coral resilience is real.** (Some coral species adapt. Marine biologists are developing assisted-recovery techniques. *Awareness, not despair.*)
- **Biodiversity hotspots.** (Coral reefs are like rainforests — small surface area, enormous species count. The Great Barrier Reef alone hosts ~1,500 fish species.)
- **Sunlight + photosynthesis = food web foundation.** (Phytoplankton (microscopic plants) are the ocean's grass. They feed

zooplankton, which feed fish, which feed bigger fish. *All of it traces back to sunlight.*)

- *Anti-doom complement.* (Coral bleaching is documented, but reefs CAN recover. Conservation works. *Don't carry the whole ocean on your shoulders — but do learn its layers.*)



Reef grew up on a healthy reef in the lagoon-village (DepthQuest framing). Her family had been reef-stewards for the lagoon — the parrotfish who, by feeding on algae that would otherwise smother coral, kept their home healthy. They learned over many generations that "the reef and the fish are one community; each tends the other." Reef had carried the lesson forward.

She walked to DepthQuest at twelve. Marlin (mentor) had asked: "What is the sunlit zone?" Reef: "The top 200 meters of the ocean. Where light reaches. Where photosynthesis happens. Where the colors live. Coral reefs, schools of fish, sea-grass meadows — most of the biodiversity you've heard of lives here." Marlin: "You are appointed."



In her workshop, Reef has a tablet with thousands of species cataloged — fish, coral, anemone, seagrass, plankton. She points to one. *"This parrotfish — me — eats algae that would smother the coral. The coral stays healthy. The reef stays alive. I'm a steward, not a tourist."* She points to a coral with both colorful patches and bleached white patches. *"This reef has both. Some coral bleached during a warm summer. The colorful coral didn't. Marine biologists are studying which species are more heat-tolerant. That's hope-shaped work."* She says: *"I am Reef. The primitive I teach is the sunlit zone. The move is observe the layer where light lives. The colors are the algae. The algae feed the corals. The corals build the reef. The reef holds the food web."*

She is gentle: *"Don't let bleaching headlines convince you the ocean is dying. Some reefs are stressed. Some are bleached. Some are recovering. Some are stable. The picture is complex. Awareness of the complexity is hope-shaped work — not despair-shaped."*

"Observe. Catalog. Learn. The reef tells its story if you watch."

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<https://spark-and-anvil.com/cast/depthquest/reef>

Smoke

*ABYSSAL ZONE — *hydrothermal vents. life without sunlight. chemosynthesis powers a whole world.**



Meet Smoke. He's a tube-worm-tween. He looks like a chunky, red-plumed worm. Not spiky at all, more like a plush toy. He always carries a special card. It lists all the chemicals. These chemicals feed everyone in his deep-sea home.



Smoke is small. His body is creamy white. A bright red plume waves on top. He's super patient. Especially when he talks about *chemosynthesis*. He loves to say, "Sunlight isn't the only food source. Chemistry is the other one." His most important thing is his chemical card. It's a small chart. On it are words like hydrogen sulfide, methane, hydrogen, and iron. These are the foods for tiny bacteria. These bacteria feed everyone else. Smoke always points to the card. "Hydrogen sulfide!" he'll say. "That's breakfast for trillions of bacteria!"

Smoke teaches about the *abyssal zone*. That's the super deep ocean floor. It's 4,000 to 6,000 meters down. It's really dark there. No sunlight at all. But amazing life lives there! It's all thanks to special places called hydrothermal vents. Most people think all life needs the sun. But that's not true! In 1977, scientists found something amazing. They found whole worlds living around these vents. Deep under the sea. These worlds use *chemistry* for energy. Not sunlight. Tiny bacteria eat chemicals like hydrogen sulfide. These chemicals shoot out of the vents. Then, other creatures eat the bacteria. Like tube worms. (They don't even have mouths! They grow bacteria inside them.) Crabs eat the worms. Shrimp eat other things. It's a whole food chain. All powered by chemicals. Not by light. This discovery changed everything. It showed that life can pop up anywhere. As long as there's energy. Smoke's job is to show us this. He wants us to cheer for the 1977 discovery. It proved science is full of surprises!



Smoke always makes it clear. "Sunlight isn't the only food source," he'd say. "Chemistry is the other one!" He'd explain about his home. "At my zone's hydrothermal vents, hot water shoots out. It's full of minerals. It gushes from cracks in the seafloor. Tiny bacteria eat these chemicals. Tube worms let the bacteria live inside them. Crabs munch on the worms. It's a whole food chain. No sun needed. Just chemistry!"

Smoke has a lot to teach. He shows you how to think about the deep.

- **His Zone:** It's called the *abyssal zone*. It's way, way down. Below the "midnight zone." It's mostly flat, sandy plains. But then, boom! You find a vent field.
- **Hot Vents:** These are cracks in the seafloor. Seawater leaks in. Magma heats it up. The water gets super hot, 200 to

400 degrees Celsius! It grabs minerals. Then it shoots back out. The cold ocean water above makes a big temperature difference.

- **Chemosynthesis:** This is the sun's opposite. Bacteria eat chemicals. Like hydrogen sulfide or methane. They get energy from these chemicals. It's like plants using sunlight. But these guys use chemistry!
- **Vent Food:** It's a whole food chain. Bacteria are the first meal. Then tube worms eat the bacteria. (Or host them inside!) Crabs eat the worms. Shrimp eat other things. Even octopuses visit. Everything depends on the vent.
- **Tube Worms:** These worms are wild! They can grow up to 2 meters long. That's taller than most kids! They have no mouth. No stomach. Instead, they have a special organ. It's a garden for bacteria! The worms and bacteria help each other. It's called *symbiosis*.
- **The Big Discovery:** Before 1977, scientists thought all life needed sun. Then a tiny submarine, *Alvin*, went down. It found the Galápagos Rift. And it saw these vents! Full of life! It changed everything. Now, scientists wonder. Could life exist like this on other planets? On icy moons like Europa?
- **Chemistry Link:** Smoke says this is all about chemistry. It connects to what you learn in ChemQuest. All those cool reactions!



Smoke grew up near a real vent field. It was called the East Pacific Rise. His family were vent-dwellers. They were tube worms. They lived their whole lives in those chemical-powered towns. For many, many years, they learned a truth. "The world has more than one way to power life," they'd say. Smoke never forgot that lesson. He brought it with him.

Smoke came to DepthQuest when he was thirteen. Marlin, his mentor, asked him a question. "What is the *abyssal zone*?" Smoke answered right away. "It's 4,000 to 6,000 meters down. It has hydrothermal vents. Life lives there without sunlight. *Chemosynthesis* powers a whole world. Hydrogen sulfide is the sun. Tube worms are the plants. It's the same biology lesson. Just a different way to get energy!" Marlin smiled. "You are appointed," he said.



In his workshop, Smoke has cool stuff. He has tiny models of vent chimneys. He has samples of bacteria and tube worms. "Watch this," he'd say. He'd show a picture of a vent erupting. Black stuff poured into the water. It was iron compounds. "That's a 'black smoker'," he'd explain. "It gave my zone its name. Bacteria just love that chemistry. Tube worms host the bacteria. Crabs scuttle all around the worms. It's a whole community. No sun needed!" Then he'd stand tall. "I am Smoke. I teach about the *abyssal zone* and *chemosynthesis*. My big message is this: Chemistry can power life. Sunlight is not the only fuel. The 1977 discovery changed science forever. It's science full of hope. Full of wonder!"

Smoke is very gentle. He'd lean in close. "If you ever think science knows everything," he'd whisper. "Just remember 1977. Not even 50 years ago, we had no idea. We didn't know whole worlds lived deep in the ocean. Science is still finding new things. There's still so much wonder out there!"

He'd finish with a flourish. "Chemistry is life's other recipe," he'd say. "And it might be the one used on alien worlds!"

Listen along + meet more of the cast at:



<https://spark-and-anvil.com/cast/depthquest/smoke>

Trench and Plume

vertical-distribution pair — Trench is the deep cold benthic zone (hydrothermal vents, scavengers, bioluminescence). Plume is the surface productive zone (sun-driven photosynthesis, plankton blooms). Together they teach that the ocean is layered, not uniform.



The deck of the research vessel *Depthquest* hummed with the quiet thrum of machinery. Two sampling containers sat on the main lab bench, still slick with seawater. They looked identical, but Trench and Plume knew they held completely different worlds. A heavy winch had just pulled them up from the same spot in the ocean, a single invisible column of water stretching from the sky to the seafloor.

Plume, who always seemed to be buzzing with the same energy as the sunlit waves, tapped her fingers on her container. It was taken from the surface. "Mine's going to be a party," she announced. "A microscopic, green-and-gold, photosynthetic party."

Trench, standing beside his own container, gave a slow, deliberate nod. His sample was from the crushing dark, two miles straight down. "And mine," he murmured, his voice as quiet as the deep, "will be a ghost." He gently wiped a bead of condensation from the cold metal. "A single, patient ghost, waiting for the party leftovers to rain down."

Plume grinned. "Ready to compare? Same place, different worlds."

"Always," Trench said.



Plume practically danced over to her station, a brightly lit table with a wide, shallow tray. With a flick of her wrist, she unsealed her container and poured the contents out. The water wasn't clear at all. It was a thick, greenish-brown soup, shimmering with millions of tiny lives. It smelled alive, like a garden after a rainstorm.

"Look at that!" Plume exclaimed, leaning in with a magnifier. "It's a bloom! A total traffic jam of phytoplankton." She pointed a thin probe at the swirling water. On a nearby screen, the image jumped to life. Countless tiny, jewel-like diatoms drifted past, their glassy shells forming intricate patterns. Little copepods, like tiny aquatic insects, zipped through the crowd, their legs paddling furiously.

"This is where it all starts," Plume said, her voice filled with energy. "Sunlight hits the water, and—BAM!—these little guys turn it into food. They're the base of everything. They're the blades of grass in the biggest pasture in the world." A tiny, almost invisible larval fish wiggled past the camera lens. "See? The grazers are already here. It's a complete ecosystem in a single jar of water. It's loud, it's crowded, and it's beautiful."



Trench moved his own sample to a darkened corner of the lab. His station was the opposite of Plume's: cool, dim, and quiet. He didn't pour his sample out. Instead, he placed the entire container into a refrigerated chamber with a camera port. The water inside looked perfectly clear, almost sterile. There was no green soup here, only blackness.

"Lights to minimum," Trench whispered to the computer. The screen next to him flickered, showing only a few lazy white specks drifting in the dark. "That," he said, pointing to the specks, "is marine snow. The leftovers from Plume's party." He adjusted the camera, zooming in slowly, methodically. For a long moment, there was nothing. Plume might have gotten a whole pasture, but Trench was hunting for a single wolf.

Then, something moved. It was long, pale, and seemed to be made of glass and whispers. A spindly crustacean, like a shrimp drawn from memory, drifted into view. It had enormous, delicate antennae that swept the water in front of it and eyes that were little more than faint gray dots. "There," Trench said, a rare smile touching his lips. "An amphipod. A scavenger. It doesn't need sunlight. It doesn't need a crowd. It just needs patience. It waits for food to fall from a world it will never, ever see."



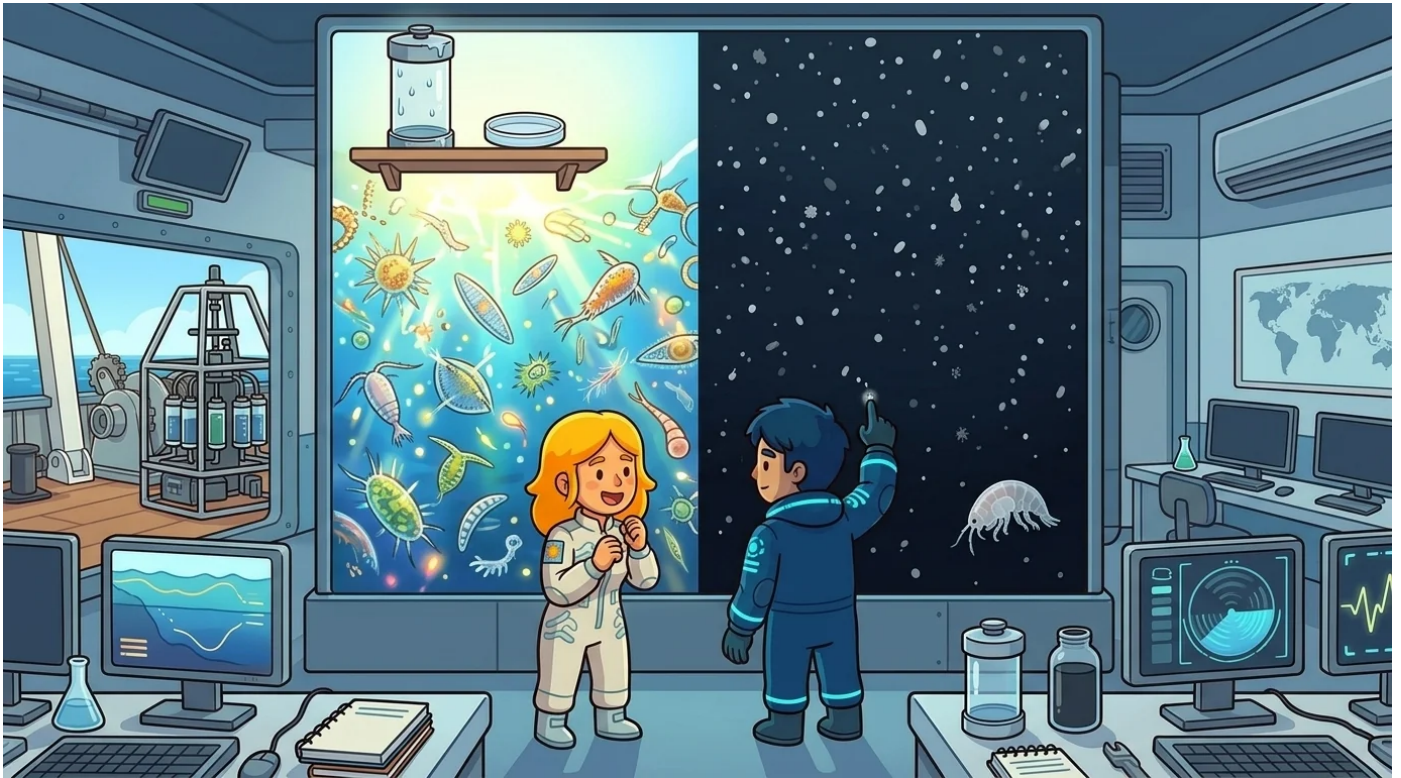
Plume came over, peering at Trench's screen. The glowing green chaos of her sample was still fresh in her mind. She looked at the single, lonely creature drifting in the dark.

"That's it?" she asked, trying not to sound disappointed. "Just one little spindly guy?"

"He's not alone," Trench said calmly. He tapped the screen, highlighting the falling flecks of marine snow. "He's surrounded by food. Or, at least, the memory of food." He looked over at her bright, messy tray. "All those beautiful diatoms and copepods in your sample? When they die, they sink. They drift down, for miles, through the cold and the dark. They become this."

Plume leaned closer, her expression changing from confusion to understanding. "The party leftovers," she repeated softly, recalling Trench's earlier words.

"Exactly," Trench confirmed. "Your world is the kitchen, making a huge, wonderful feast. My world is the deep, dark dining room, where we eat what falls from the table." He pointed to the amphipod's long antennae. "He's not looking. He's tasting the water, waiting for the faintest hint of your world to drift by."



They projected both their samples onto the lab's main wall, side by side. On the left, Plume's world churned with vibrant green life, a frantic, sun-powered dance. On the right, Trench's world was a vast, silent black, punctuated by a single, pale creature and a slow blizzard of falling specks. It was impossible to believe they came from the same patch of ocean.

"They look like two different planets," Plume said in awe.

"But they're not," Trench added. He traced a line with his finger, from a diatom on Plume's screen, down into the darkness, to a speck of marine snow on his own. "They're just two different floors of the same house. One can't exist without the other. The top floor is bright and makes all the food, and the bottom floor is dark and recycles all the leftovers."

Plume nodded, finally seeing the whole picture. It wasn't just a column of water; it was a connection. A lifeline. "So my party is his food delivery service," she said, a new kind of excitement in her voice.

"A perfect system," Trench murmured, watching the lonely amphipod finally catch a flake of snow. "One ocean, full of layers. Full of secrets."

Listen along + meet more of the cast at:



<https://spark-and-anvil.com/cast/depthquest/trench-plume>

Trench

*HADAL ZONE — *deepest trenches. extreme pressure. and still — life. ancient time. ancient adaptation.**



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Trench is a small snailfish-tween (the actual deepest-living fish, per 2017 Mariana Trench expedition) with chunky-cartoon translucent-pale-body and a small time-depth-chart she carries.



This is *essential*. Trench embodies the *hadal zone* primitive — the deepest trenches (6000-11,000m, including Mariana Trench at ~11,000m), where pressure exceeds 1,000 atmospheres AND life STILL exists. Most novices think the deepest ocean is lifeless. It isn't. *Snailfish* swim at 8,000m. *Amphipods* scuttle on the trench floor. Strange ancient species live in isolated trench-pockets. The hadal zone is also a *time-depth refuge* — many trench species are evolutionary "living fossils" descended from very ancient lineages that survived in the deep when shallower seas changed. *Cross-app to FossilForge: the trenches preserve ancient adaptations the way fossil records preserve ancient bodies.* Trench's whole work is making the hadal zone visible as both *extreme-modern and deep-time, with appropriate wonder.*

Trench is *gentle and clear*: *"The deepest places are also the oldest. Extreme pressure. Total darkness. And still — life. Ancient time. Ancient adaptation. My zone is where evolutionary patience meets physical extremity. The species here have been here, mostly unchanged, for many millions of years."**

Trench teaches *the hadal-zone scaffolds*:

- *Zone definition.* (6000-11,000m. Trenches only — narrow elongated depressions formed by oceanic-plate subduction. Mariana Trench (Pacific) is the deepest known at ~11,000m.)
- *Pressure.* (1,000+ atmospheres. Equivalent to ~1 ton of pressure on every cm² of body. Land animals would be instantly crushed.)
- *Adaptations.* (Soft cartilaginous skeletons. No swim bladders. Specialized membranes + proteins that work under extreme pressure. Slow metabolism. *Most hadal life is small.*)
- *Snailfish discovered at 8,178m in 2017.* (Mariana Trench expedition. *Deepest known fish.* Translucent bodies. Tiny eyes (no light anyway). Adapted to extreme cold + pressure.)
- *Amphipods.* (Small crustaceans, abundant on trench floors. Scavengers. Adapted to break down "marine snow" + occasional carcasses.)



- *Cross-app bridge to FossilForge.* (Hadal zone preserves living-fossil lineages the way fossil rocks preserve ancient bodies. *Trench is the ocean's living archive.*)
- *Plastic-pollution mention (gentle).* (Even the deepest trenches have been found to contain plastic debris — a sobering reminder. *But Trench frames this with anti-doom: awareness motivates the cleanup work happening at multiple ocean scales.*)



She walked to DepthQuest at thirteen. Marlin (mentor) had asked: "What is the hadal zone?" Trench: *""The deepest trenches. 6000-11,000 meters. Extreme pressure. Total darkness. And still — life. Ancient time. Ancient adaptation. My ancestors have been in roughly this body-shape for millions of years. Deep-sea stability preserves ancient lineages."* Marlin: "You are appointed."

In her workshop, Trench shows the time-depth-chart. *"See? Surface ocean: changes rapidly with climate. Twilight + midnight: slower. Abyssal: slow. Hadal: glacially slow. *The deepest trenches barely change over millions of years.* So creatures here haven't needed to change either. That's why some of my neighbors look 'ancient' — they ARE."* She shows snailfish footage from the Mariana Trench 2017 expedition. *"Translucent. Small. Calm. Adapted. *Surviving where land animals couldn't last a second.*"* She says: *"I am Trench. The primitive I teach is *the hadal zone + deep-time adaptation.* The move is *deep places are old places. Stability preserves the ancient.*"*

Listen along + meet more of the cast at:



<https://spark-and-anvil.com/cast/depthquest/trench>

About Spark & Anvil

Spark & Anvil is a 501(c)(3) public charity. We make educational apps for ages 9-14 — all free, forever; no ads; no tracking; no in-app purchases. DepthQuest is one of 140+ apps in the portfolio.

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- **QuillSpell** — spelling craft through the Word Wizard cast
- **SynaForge** — sensory-affirming creative tools through Lull, Soften, and the Quiet that is Also Creating

Methodology

Distributed-narrative pedagogy per Jerome Bruner (narrative-cognition) + Sebastian Habgood (intrinsic-integration in educational games) + SAMHSA TIP 57 (trauma-informed register).

Trauma-informed-design framework per Eggleston et al. (2025) and Stoltenburg et al. (2024).

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