SEAMAIL™

FROM: DEEPEND Science Team
TO: DEEPEND Virtual Team Leaders
SUBJECT: Deep-sea fish adaptations and meet the swallowers

Dear Virtual Science Team!

My name is April Cook. I study deep-sea fish. In particular, I study a family of fishes known as swallowers or snaketooth fishes (Family Chiasmodontidae). Their closest relatives all live in shallower waters. But swallowers have adapted to living in the deep, dark sea.

One adaptation to deep-sea life is the loss of their swim bladder. A swim bladder is like a balloon inside a fish. The swim bladder fills with air to help the fish float (buoyancy). A swim bladder allows the fish to move up and down without having to use a lot of energy moving their fins. Take a look at the illustration of the hatchetfish to see how a swim bladder works.

Almost all shallow water fish have swim bladders. Most deep-sea fish do not have swim bladders Why do you think deep-sea fish do not have swim bladders? Take a guess about what might happen to a deep-sea fish that kept its swim bladder.

If you said something about pressure, you are correct. As you go deeper in the ocean the pressure increases which causes air to compress (get smaller).

Another adaptation to life in the deep sea is the swallower's ability to distend its stomach to the extreme! Take a look at the photograph of a black swallower with an empty stomach taken on our recent cruise. Now compare that to the next three images of different types of swallowers with full stomachs. What a difference!

Are they the gluttons of the sea? Why do you think they eat so much -- or this way?

Food is scarce or hard to find in the deep sea. Animals have adapted to this by taking advantage of any meal that they may come across no matter how large. In order to be able to eat a meal this

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large, swallowers' mouths have adapted to open much wider than most other fishes. Swallowers have many rows of sharp teeth. Their stomachs can expand to several times their normal size. We capture a lot more of these fishes with full stomachs than with empty stomachs – can you guess why?

Thank you for joining our mission! I hope you're having as much fun as we are!

April

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Creep into the DEEPEND Mission

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