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S.F. deep divers bring back catch from reef's 'Twilight Zone'

By David Perlman

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Three deep-diving explorers from San Francisco have brought back a batch of living fishes they discovered on a Philippine coral reef at depths where only a few divers dare venture.

The fish are close relatives of many known to pet fanciers, but they inhabit what divers call the Twilight Zone, some 300 to 500 feet deep where humans must use a specialized breathing apparatus called rebreathers to survive, and their quarry must swim inside decompression chambers to prevent the fish from getting the bends as divers carry them to the ocean surface.

The scientists were on a mission from the National Science Foundation to explore deep-sea life in an area called the Coral Triangle. It is one of the world's most biologically diverse regions. The rich variety of fish and coral species is unequaled anywhere, but the depths are still unknown.

"The deep reefs are like being in another world, a world we've known absolutely nothing about," said Bart Shepherd, director of the Steinhardt Aquarium at the California Academy of Sciences who was one of the deep explorers to the Verde Island Passage. "It goes down and down to depths where we can look at ecosystems we'd never observed before."

Unexplored zone

Divers using snorkels and typical Scuba gear can explore regions to depths of about 100 feet to find new aquatic life forms, and remote-controlled submersibles have been employed to deep levels of the ocean, but the Twilight Zone in between is truly unknown, said Shepherd, who was joined on the expedition by Luiz Rocha, the academy's specialist in exotic fish and living corals and Elliot Jessup, the team's dive safety officer.

'Another world'

“There’s a deep reef off one island where we had no idea what was there, and when Jessup and I dove, we were the first human eyes that ever saw the life, the corals and the fish of another world,” Shepherd said.

“Those reefs are so charismatic, so beautiful, and we know so little about them,” Shepherd said. “They may be resilient — maybe more so than nearer the surface. They may be regions that could be repopulated with animals from the surface when the reefs above become victims of change. Or they may not. We just don’t know, and we need to know.”

The divers were preparing for more efforts to study the deep ecosystems of the Coral Triangle in even greater detail, in order to help Philippine scientists devise strategies for protecting the reef region, Rocha said.

“Coral reefs are being destroyed in all the oceans,” Rocha said. “Over-fishing isn’t controlled, but now we have baseline data to help the Philippine people protect the biodiversity of at least one region.”

On every scuba dive hundreds of feet deep, the scientists used well-known techniques to decompress slowly on their way to the surface, Shepherd recalled. But while a single deep dive into a reef in the Twilight Zone could take as long as five hours in the water, it would yield barely a half-hour of observation time, he said.

Bring fish back alive

And bringing the fish back alive was really a high-tech effort. Normally, Shepherd said, divers who go deep will prick a fish’s swim bladder with a needle to keep it from expanding or even exploding from too-rapid a decompression as it is brought to the surface.

“But I don’t like poking holes in fish,” he said, “so we developed a much nicer technique.”

Technicians at the academy, working with the divers, devised a kind of hand-held hyperbaric chamber that a single diver could carry along. It’s a small plastic-and-metal tank filled with ocean water under high pressure, and as a diver swam slowly back to the surface with a tank of the fish, the diver slowly released the tank’s pressure, fathom by fathom, until captor and captive reached the surface safely.

For exhibit

The fish and corals that the divers brought back to the academy in Golden Gate Park are now acclimated to surface waters and will eventually be exhibited there, Shepherd said. They include varied species of cardinalfish (Ostorhinchus), wrasses (Oxycheilinus), fairy basslets (Pseudanthias), sand perches (Parapercis) and hogfish (Bodianus).

http://www.sfgate.com/science/article/S-F-deep-divers-bring-back-catch-from-reef-s-5863574.php#photo-7082907