The New York Times

Friday, 19 October, 2007

Sexy Corals Keep 'Eye' on Moon, Scientists Say

By : William J.Broad

A star coral releasing egg and sperm bundles, responding to the moon with photoreceptors.

Birds do it. Bees do it. Even lowly corals do it — but infrequently, forgoing sex for as long as a year.

Then, at night, just after the full moon, under warm tropic breezes, the corals dissolve in an orgy of reproduction, sowing waters with trillions of eggs and sperm that swirl and dance and merge to form new life. The frenzy can leave pink flotsam.

Scientists discovered the mysterious rite of procreation in 1981 and ever since have puzzled over its details. The moon clearly rules the synchronized mass spawning, which happens during different months in different parts of the globe, but usually in the summer. But how do corals monitor the moon's phases and know when to start mingling?

Today, seven scientists from Australia, Israel and the United States report in the journal Science that corals have primitive photoreceptors, if not true eyes. In experiments, they found that the photosensitive chemicals respond to moonlight as admirably as, well, human lovers.

"This looks to be the smoking gun," Ove Hoegh-Guldberg, a team member at the University of Queensland, said in an interview. "It triggers the largest spawning event on the planet."

Margaret W. Miller, a coral specialist at the National Oceanic and Atmospheric Administration, called the finding by the group of scientists "a big step forward. It's always been a mystery as to how these animals manage to synchronize themselves."

In recent years, the undersea love-fests have become tourist attractions for divers in the Caribbean, in Australia on the Great Barrier Reef, and other coral havens. Al Giddings, a famous ocean photographer, made a PBS documentary that showed reefs around the Pacific islands of Palau exploding in blizzards of rising sperm and eggs.

Though the scientists involved say more work is needed to determine how the photoreceptor works, the finding is significant because it addresses the spawning's main riddle, marine biologists say. "When I talk about thousands of reefs in the Caribbean releasing their spawn within minutes of each other during a specific phase of the moon, people marvel and ask, 'How do they do it?'" said Alina M. Szmant, a coral expert at the University of North Carolina, Wilmington. "My answer is always, 'It's a mystery.'"

Now, she said, the discovery provides clues to the puzzle and opens up "a new direction to explore." Biologists say the finding sheds light on hidden aspects not only of coral reproduction but of evolution, suggesting that light receptors arose surprisingly early in the development of animals. Corals emerged more than 500 million years ago, near the dawn of complex life. "Our discovery," the scientists write in Science, suggests that the basic mechanisms for responding to light "were in place at the origins of multicellularity in animals."

People have known about the moon's romantic possibilities for a long time. Shakespeare in "A Midsummer Night's Dream" relies on moonlight to set the mood. The 1987 movie "Moonstruck" features a love story centered on "La Bella Luna."