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Motion in the ocean: Rare event gives look at coral spawning

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They do it only once a year in public, and this time, people will be recording.

One to two days after the full moon in April or May, Cauliflower coral, *Pocillopora meandrina*, procreate. This precious event, called broadcast spawning, is considered one of nature's mysteries that works without human intervention or even understanding.

At sunrise on Monday and Tuesday, ReefWatchers and volunteers will brave the cold water in Kahaluu and Honaunau bays to watch this phenomena.

Led by the University of Hawaii Sea Grant Extension Service in West Hawaii, they will record their observations, detailing such things as the visibility, color of the gametes, the ocean depth, spawning times and synchronization. They hope to provide researchers worldwide more information about the triggers of this spawning event, how new Cauliflower coral colonies form, distribution and whether this species is hermaphroditic -- has organs of both sexes and can produce both gametes.

"Very little is known about Cauliflower coral, which has been vaguely researched," said Dana Riddle, reef hobbyist, author of "The Captive Reef" book and ReefWatcher. "We know more about moon rocks than we do about these animals that can be found in as little as 3 feet of water."

This coral species is common in Hawaiian waters and often dominant in areas of heavy surge. Named for its resemblance to vegetable counterpart, its branches are 6 to 10 inches long, 1 to 2 inches wide, 1/2 inch thick and covered with bumps, said Sara Peck, Sea Grant extension agent.

Cauliflower corals are thought to be hermaphroditic. Coral taxonomist Doug Fenner has stated sperm are released first, followed by eggs. However, coral colonies can also be gonochoric, meaning that a single coral colony and all of its identical polyps are of a single sex, either all male or all female, Riddle said.

The biological clock is an internal system in the bodies of living creatures that create reoccurring rhythms. Primitive animals, corals depend on light, following a full moon, to synchronize the precise hour of the right day each year to release of egg and sperm, thus making it relatively easy to count the days between spawning. However, it is unknown if the recent vog or reduced sunlight will effect the coral this year, Riddle said.

South Kona resident and ReefWatcher Joan Prater has been watching this annual coral spawning since 2000. Prater said the idea derived from a ReefTalk she attended that year. The presenting researcher had mentioned daytime spawning is uncommon and Cauliflower coral was the only known species to do this. Following the researcher's instructions, Prater snorkeled in Honaunau Bay starting at 7 a.m. the day after the April full moon. Nothing occurred around or above the Cauliflower coral colonies. The next day she returned and followed the same routine, but this time, the coral appeared to smoke. A huge beige cloud mushroomed, covered the colony and rose into the water column.

"Look backing, I couldn't even see the end of my fins," she said of first spawning observation. "I was bursting with excitement to see nature doing something that we just don't understand yet."

Prater has made repeated observations year after year. She found Cauliflower coral spawning could occur one to two days after a full moon in April or May. Over the past seven years, the earliest time the event has occurred was at 7:18 a.m. and the latest was 7:49 a.m. Despite the slightly different schedules, she said the fish nearby always act the same -- unaware, unsuspecting and indifferent.

In an upside-down milky snowstorm of sperm and maybe brightly colored eggs, ReefWatchers and volunteers will note whether the female gametes are floating toward the surface or sinking in the cracks. This should reveal a lot about distribution because sinking eggs will most likely grow close to the colony while floating eggs can be carried by the tide to other places, Riddle said.

A floating research device with sensors that can record water temperature, chemistry and conditions will be used during the spawning. Riddle and Peck plan to also use a plankton net to gather gamete, which will later be studied under a microscope.



A school of Moorish idol, also known as kihikihi, swim over several heads of Cauliflower coral, *Pocillopora meandrina*. Each coral head is a colony of minute animals called polyps that make up the living animal tissue. As colonies grow, producing additional polyps and skeleton, they add more bulk to the reef. - Dana Riddle | Special To West Hawaii Today

"ReefWatchers are amateur researchers. We're the cavalry that can alert marine biologists of concerns like coral bleaching or unexplainable fish deaths," Riddle said. "By gathering data for projects such as this one, we may play an integral part in finding out what makes corals tick, better protect these keystone species, further support the ecosystem and help monitor the health of our oceans."

Get involved

- Volunteers Are Needed To Watch Cauliflower Coral Spawn And Record Observations From 6:30 To 7:30 A.M. Monday Or Tuesday In Honaunau And Kahaluu Bays.
 - Participants can chose to snorkel or dive and must have their own equipment. Small flashlights, wetsuits and plastic diving tablets are recommended.
 - To sign-up or learn more about this phenomenon, contact Sara Peck, Sea Grant extension agent, at 936-0040 (after 1 p.m. Sunday only), 322-2266 or peck@hawaii.edu.
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