Reef sites

An old and massive colony of *Pavona decussata* is sexually active at high latitude (32°N) in Japan



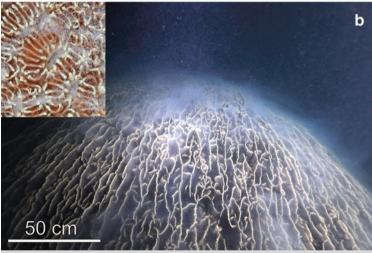


Fig. 1 a Wide-angle view of *Pavona decussata* colony in Tatsukushi Marine Park, Kochi, Japan. **b** Wide-angle and close-up (*inset* photo) view of the colony releasing eggs

Although modular organisms like corals are often portrayed as escaping senescence, which is natural in other organisms, there are some evidences of senescence in few coral species (Rinkevich and Loya 1986; Irikawa et al. 2011, and references cited therein). This raises a question whether old coral colonies are sexually active and whether they can reproduce successfully. We report here the presence and spawning of a massive colony of Pavona decussata (Fig. 1a), located within a designated natural monument in Tatsukushi Marine Park, Kochi Prefecture, Japan (132°52′E; 32°46′N), where this species is quite common. In 1966, this colony was measured to be 44.5 m long and 24.6 m wide (Tokioka 1968). The present size of this colony is 50.9 m long, 30.6 m wide, and 2.7 m in maximum height, and it is believed to be 150 years-old.

We observed spawning by this old colony in 2011 and 2012, 6 days after the full moon during August. In 2011, the colony started releasing eggs from 04:20 hours (Fig. 1b). In 2012, most of the colony released eggs, but a small part of it $(1 \times 3 \text{ m})$ started releasing sperm 15 min before releasing eggs (04:30 hours), which might be a result of fusing genotypes. Spawning in the colony continued for 30 min with the release of positively buoyant sperm, and for 1.5 h with positively to negatively buoyant eggs. Eggs and sperm were successfully fertilized in the laboratory condition and developed into larvae in 8–10 h. This massive colony of *P. decussata* might be an important source of larvae in and around Tatsukushi Marine Park.

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