

EXPLORING CORAL REPRODUCTION IN GREAT DEPTH

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Study description

Coral reproduction is a fascinating phenomenon that is receiving wide attention around the world. However, it is mostly studied at shallow depths and our understanding of the environmental cues that regulate the timing of coral reproduction is still incomplete. Over 5 years, we monitored the reproduction of a soft coral across its entire depth of occurrence (0–45 m) alongside several environmental parameters. We found that less corals are reproducing at the deeper end of the range, and that coral reproduction at great depth is usually delayed in days to weeks compared with the reproductive activities in the shallows.

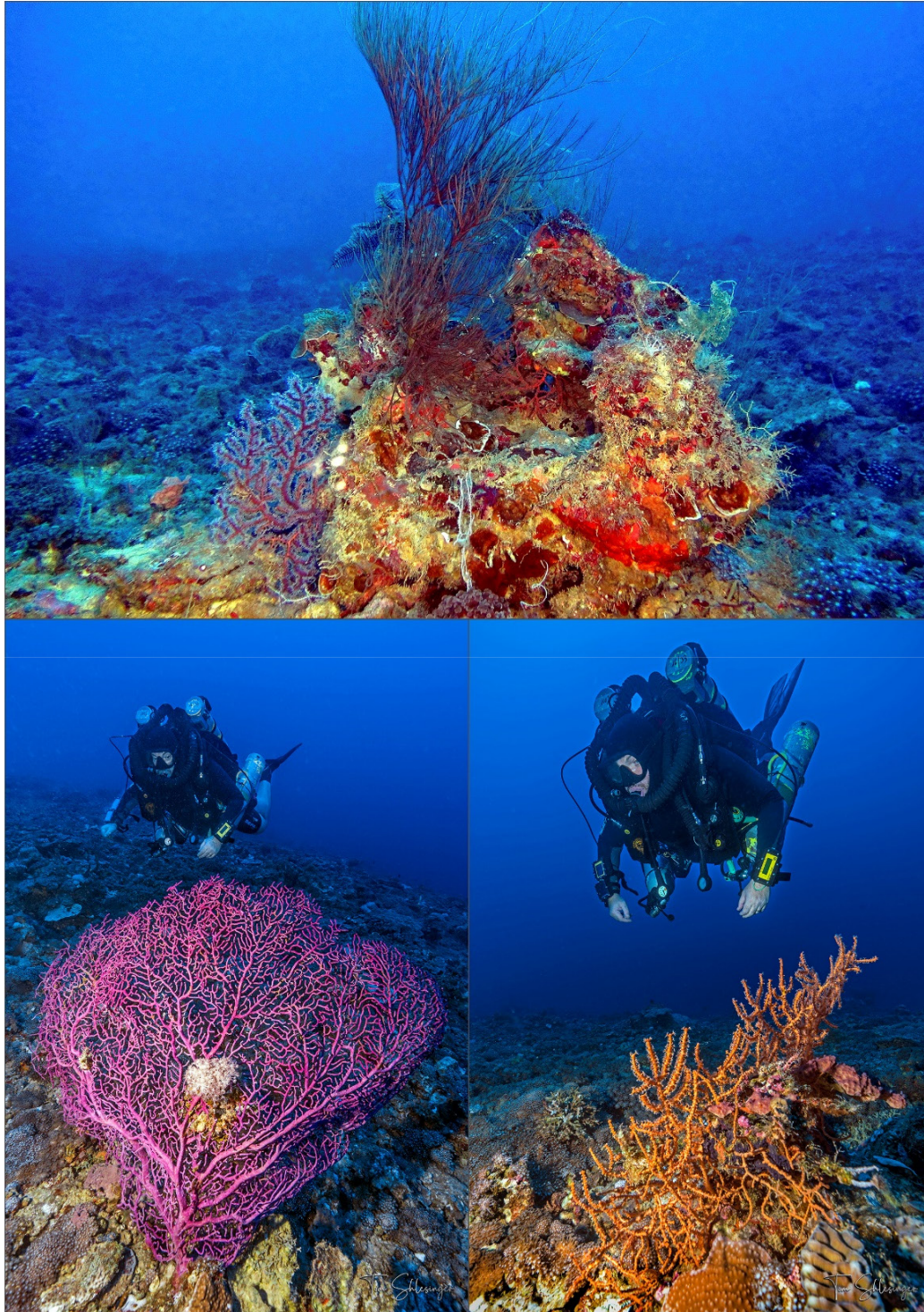


Photo 1. Great depths at the Gulf of Aqaba and Eilat, Red Sea, host flourishing reefs with thriving communities of corals, fish, and many other animals. The photos here represent scientific explorations of deep coral reefs (termed “mesophotic reefs”) at depth of 80 m (upper photos) using a remotely operated vehicle (ROV) and at depths of 45–60 m using (lower photos), closed-circuit rebreather dives with different gas mixtures as part of a 5-year study, investigating the reproduction of soft corals along with the depth. Photo credits: TASC MAR project (upper photos), Tom Shlesinger (lower photos).



Photo 2. The encrusting soft coral *Rhytisma fulvum* is a common dweller on many Indo-Pacific reefs, and can be found along a large depth gradient of 0–50 m. In the Red Sea, this species usually displays one of two distinct color morphs: yellow colonies dominate the shallow areas (0–25 m) and purple-white colonies dominate the deeper areas (25–50 m). Photo credit: Tom Shlesinger.



Photo 3. Between 2016 and 2020, from June–August, we monitored breeding events of the soft coral *Rhytisma fulvum* to document the exact timing and intensity of reproductive events across the species' entire depth range (i.e., 0–45 m). In the upper panel, Ronen Liberman (who led this study) observes a yellow morph *Rhytisma fulvum* colony brimming with 1-day old bright yellow embryos, which are entangled on the coral's surface. In the lower panel, Ronen is collecting samples at a mesophotic reef at Eilat, Red Sea, using decompression technical dives. Photo credits: Jessica Bellworthy (upper photo); Tom Shlesinger (lower photo).

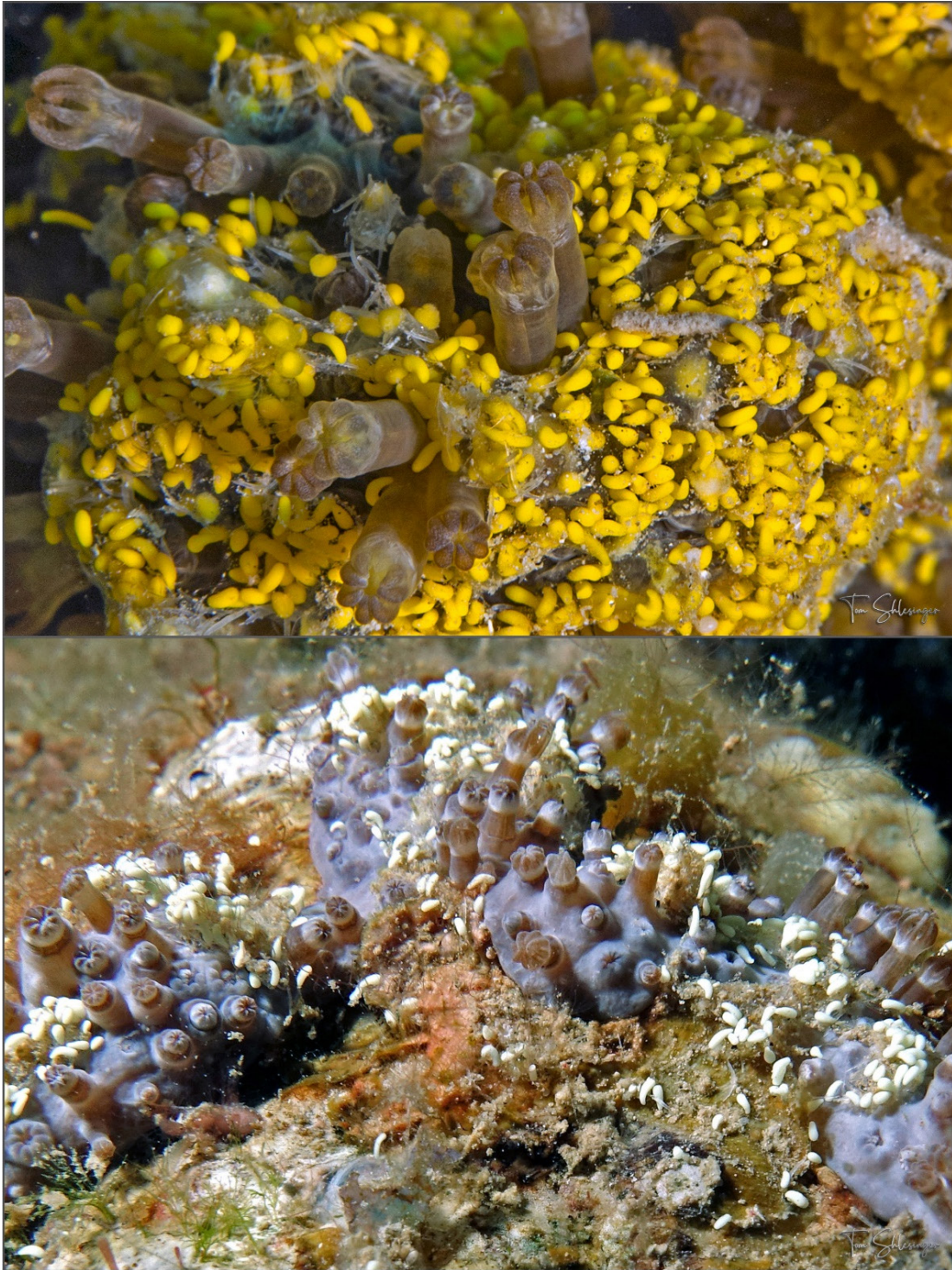


Photo 4. Within 6 days following fertilization, the embryos develop into elongated larvae-planulae and are ready to detach from the colony's surface to explore the surrounding reef area for a suitable settlement ground. In the upper panel, elongated yellow-colored planulae that are still caught on the surface of its maternal colony. In the lower panel, the white elongated planulae that were released by the purple *Rhytisma fulvum* colony begin to crawl on the substrate in search of a suitable location for settlement. Photo credit: Tom Shlesinger.

These photographs illustrate the article “Soft coral reproductive phenology along a depth gradient: Can “going deeper” provide a viable refuge?” by Ronen Liberman, Tom Shlesinger, Yossi Loya, and Yehuda Benayahu published in *Ecology*. <https://doi.org/10.1002/ecy.3760>