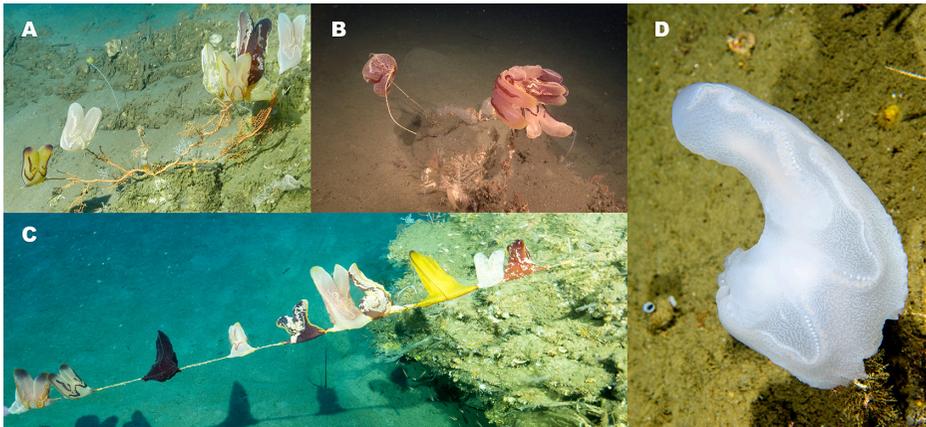


Ephemeral aggregation of the benthic ctenophore *Lyrocteis imperatoris* on a mesophotic coral ecosystem in the Philippines

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The order Platyctenida is the only group of the phylum Ctenophora that contains benthic adult forms (Podar et al. 2001). Within this group, the benthic ctenophore *Lyrocteis imperatoris* Komai, 1941 was described based on seven specimens dredged off Japan from mud bottoms at a depth of 70 m. Sixty years later, 10 individuals were observed on sperm-whale carcasses between 219 and 254 m depth, also off Japan (Fujiwara et al. 2007). The first record outside Japanese waters was published in 2009, when two specimens found attached to ropes were collected in relatively shallow water (15–25 m) off Korea (Song and Hwang 2009). Single individuals have been spotted on occasion on mesophotic ecosystems near Palau and Pohnpei (R Pyle and B Greene, Bishop Museum, pers comm).

We found, for the first time, an aggregation of *L. imperatoris* off Bauan, Batangas (13.8025°N, 120.91125°E), near the Verde Island Passage in the Philippines, while diving using closed-circuit rebreathers at mesophotic depths (85–110 m). Museum specimens were collected (CASIZ 196529, CASIZ 196532, CASIZ 206990) and live specimens were brought to the Steinhart Aquarium at the California Academy of Sciences, where they were kept alive in laboratory and public display aquaria for up to 10 mo. For 3 yrs, between 2014 and 2016, we recorded through videos (e.g.: <https://youtu.be/At5mKr9aCAk>) and still photographs hundreds of individuals while diving at depths between 85 and 110 m at the same site in the Philippines. We found the ctenophores, which were approximately 10–15 cm in height, attached to places that allowed them to be off the bottom, such as on gorgonians (Panel A: April 2016, 100 m depth), black corals (Panel B: April 2015, 85 m depth), and artificial structures such

as fishing lines (Panel C: April 2016, 100 m depth). Several color morphotypes (blue, black, white with black lines, white with yellow lines, red with white spots, yellow with black lines, etc.) were seen and recorded for the first time. These animals were found in very high densities: up to 12 individuals m^{-2} .

Curiously, upon returning to the same site in 2017, only five individuals (one white, three red with white spots, and one yellow) were found in a density of one individual per $360 m^{-2}$. The few specimens we found were incomplete, shrunken, or otherwise damaged (Panel D: May 2017, 110 m depth). The Bauan mesophotic ecosystem differs from our other research sites in the Philippines, Palau, Pohnpei, Vanuatu, and Rapa Nui, by being sheltered from strong currents and covered in a thick layer of fine silt. Azooxanthellate gorgonians, black corals, and solitary stony corals are the most abundant cnidarians in this habitat. Ambient seawater temperature (around 21 °C) did not vary across our dives, which were performed during April and May over four sequential years. Further study is needed to determine the cause of the apparent decline, which may be related to disease, predation, reproductive failure, and/or environmental disturbances, such as vertical migration of the thermocline or changes in the local currents.

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