

Natural spawning of *Holothuria leucospilota* (Brandt, 1835) in an urbanised bay in the southwestern lagoon of New Caledonia

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Location

Baie des Citrons in Noumea, New Caledonia (22.301S and 166.435E), at 8-meter depth on grey sandy bottom with a moderately sparse seagrass bed, about 100 meters off the drop off of the fringing reef located south of the bay under the ledge road that leads to Vata Cove.

Date and time

The spawning event was observed on 25 December 2002 at around 09:00 local time (UTC+11). The full moon was on December 19; spawning therefore took place six days after the full moon, that is, two days before the last quarter.

Notes

The mean surface water temperature in December 2002, taken at Anse Vata 1400 meters from the observation site was 25.7°C or 25.9°C, depending on the measurement method (Varillon et al. 2018). Surface temperature on 25 December was 27.2°C, that is, 1°C warmer than the week before. Several other *H. leucospilota* were seen in erected position in the surrounding area of the bay. A small, indeterminate Monacanthid fish (Laboute and Grandperrin 2000: 461) hid behind the upright part of the sea cucumber (Fig. 1). This fish may take advantage of its mimicry with *H. leucospilota* as it was of the same black colour and had hair-like extrusions reminiscent of the integument texture and of the podia of this sea cucumber.

Egg-laying in *H. leucospilota* has been documented at Kimbe Bay in Papua New Guinea, three days after the full moon² (20 May 2011). A photograph of a partially erected individual of *H. leucospilota* in the lagoon of Rodrigues Island in Mauritius has been published by Bédier et al. (2013) but no spawning was observed. The date indicated was 12 January 2013, a day after the new moon. Spawning in *H. leucospilota* from Daya Bay, Shenzhen in China (22.561N and 114.513E) has been induced in aquaculture ponds using either transportation of mature individuals, or cold shock, or temporary exposure to air; the latter method has been considered the most efficient (Huang et al. 2018). Highest (>13%) spawning rates in such conditions were on 23 September 2016 (four days after the full moon), 11 June 2017 (two days after the full moon), 26 June 2017 (two days after the new moon), 14 August 2017 (seven days after the

full moon), and 1 September 2017 (five days before the full moon). From the foregoing, it appears that the factors triggering spawning in *H. leucospilota* are likely complex and not just linked to lunar phase.

References

- Bédier A., Bourmaud C. and Conand C. 2013. Natural spawning observations on Rodrigues Island, Indian Ocean. SPC Beche-de-mer Information Bulletin 33:53–55. <https://purl.org/spc/digilib/doc/entuj>
- Huang W., Huo D., Yu Z., Ren C., Jiang X., Luo P., Chen T. and Hu C. 2018. Spawning, larval development and juvenile growth of the tropical sea cucumber *Holothuria leucospilota*. *Aquaculture* 488:22–29.
- Laboute P. and Grandperrin R. 2000. Poissons de Nouvelle-Calédonie. Nouméa, Nouvelle-Calédonie: Editions Catherine Ledru. 520 p.
- Varillon D., Fiat S., Magron F., Allenbach M., Hoibian T., De Ramon N'Yeurt A., Ganachaud A., Aucan J., Pelletier B. and Hocdé R. 2018. ReefTEMPS: The Pacific Island coastal ocean observation network. SEANO. <http://doi.org/10.17882/55128>



Figure 1. *Holothuria leucospilota*. Semen is visible as subtle white swirls in the central part of the picture. The caudal fin of an unidentified Monacanthid fish is visible behind the upright part of the animal. Image: IRD/Philippe Borsa

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² <https://www.alamy.com/sea-cucumber-spawning-ist-eggs-holothuria-leucospilota-kimbe-bay-new-britain-papua-new-guinea-image278747824.html>