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TITLE: Patchiness of deep?sea communities in Papua New Guinea and potential susceptibility to anthropogenic disturbances illustrated by seep organisms

AUTHOR: ['Sarah Samadi', 'Nicolas Puillandre', 'Eric Pante', 'Marie-Catherine Boisselier', 'Laure Corbari', 'Wei?Jen Chen', 'Philippe Maestrati', 'Ralph Mana', 'Justine Thubaut', 'Dario Zuccon', 'Stéphane Hourdez']

ABSTRACT:

Abstract The deep?sea part of the ?Papua Niugini Biodiversity Expedition? surveyed the deep?sea environments along the coasts of New Guinea Island in the Bismarck Sea, from the Vitiaz Strait to the border between Papua New Guinea (PNG) and Irian Jaya. This expedition was a follow?up of the BIOPAPUA cruise (2010) that gave some of the first insights into the diversity of the deep?sea fauna of the Bismarck and Solomon Seas for environments other than deep?sea hydrothermal vents. The main aims of the cruise were to survey the diversity of the fauna of (i) hard bottoms that are typically found on deep seamounts, (ii) Astrolabe Bay from 200 m to about 1000 m, (iii) the chemosynthetic environments of the deep sea, including cold?seep environments and plant debris. Astrolabe Bay was one of our targets because its topography allows sampling over the complete bathymetric gradient covered by our sampling gear (down to 1000 m depth), and the recent start of nickel refining activities in the bay is a potential threat to its marine fauna for which little reference data are available. Sampling in the bay revealed not only a diversified fauna associated with soft bottoms and plant debris, but also a chemosynthetic fauna typical of cold?seep environments (e.g . siboglinid worms and bathymodioline mussels) below the Ramu refinery. Although the refinery activities had officially started just one week before our work in the area, we observed impacts of these activities. Our molecular work indicates that the siboglinid tubeworm species and one of the two mussel species collected below the Ramu refinery have so far only been documented from this location, despite intensive sampling effort. This illustrates the potential destructive effects of human activities in areas where the diversity and uniqueness of deep?sea communities are poorly understood.

SOURCE: Marine ecology

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