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TITLE: Longstanding signals of marine community structuring by winter storm wave-base

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ABSTRACT:

MEPS Marine Ecology Progress Series Contact the journal Facebook Twitter RSS Mailing List Subscribe to our mailing list via Mailchimp HomeLatest VolumeAbout the JournalEditorsTheme Sections MEPS 603:135-146 (2018) - DOI: <https://doi.org/10.3354/meps12703> Longstanding signals of marine community structuring by winter storm wave-base Kristen J. Voorhies^{1,*}, J. Timothy Wootton¹, Sarah K. Henkel² ¹Committee on Evolutionary Biology, University of Chicago, Chicago, IL 60615, USA ²Hatfield Marine Science Center, Oregon State University, Newport, OR 97365, USA *Corresponding author: kristenj14@gmail.com ABSTRACT: Coastal marine communities face both physical oceanographic changes and altered ecological relationships due to indirect human activities, such as climate-related changes, and direct human activities, such as extraction of wave energy as a renewable resource. Often single physical oceanographic changes and altered ecological relationships are investigated, rather than multiple potential drivers. Here we investigated the links between the structure of offshore benthic bivalve communities to multiple physical drivers including wave-base, and more traditional drivers of marine soft sediment community structure (e.g. temperature, pH, dissolved oxygen, salinity, and nutrients). Our benthic bivalve community data (both modern and historical) were collected from bulk sediment box-core samples taken over a depth range of 20-70 m on the continental shelf of Newport, Oregon, USA. Environmental data were collected through CTD casts at sampling locations and through NOAA Buoy Station 46094. We used a non-linear hierarchical regression approach to look for a systematic response in the benthos. Subtidal bivalve communities structured themselves along a depth gradient with a distinct shift in species? rank abundance at 50 m, and this shift was most strongly associated with storm wave-base. This distinct wave-driven community structure was present in both modern-day bivalve communities and century-scale historical communities, suggesting both the importance of waves and the long-standing nature of their impacts on biological communities in this system. These results emphasize potential consequences of changing wave-base on this shelf, which could occur indirectly through changing storm regimes due to anthropogenic climate change or directly through large-scale wave energy harvest. KEY WORDS: Benthic fauna · Community structure · Wave energy · Bivalves Full text in pdf format PreviousNextCite this article as: Voorhies KJ, Wootton JT, Henkel SK (2018) Longstanding signals of marine community structuring by winter storm wave-base. Mar Ecol Prog Ser 603:135-146. <https://doi.org/10.3354/meps12703> Export citation RSS - Facebook - Tweet - linkedIn Cited by Published in MEPS Vol. 603. Online publication date: September 17, 2018 Print ISSN: 0171-8630; Online ISSN: 1616-1599 Copyright © 2018 Inter-Research.

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