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Building resilience of coastal fishing communities to harmful algal blooms

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Speaker

Kathleen M. Moore, Stephanie Moore, Stacia Dreyer, Edward Allison, Sunny Jardine, Terrie Klinger, Julia Ekstrom, Anna Varney, and Karma C. Norman

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Building socioeconomic resilience to harmful algal blooms in coastal communities

Kathleen Moore*, Eddie Allison, Stacia Dreyer, Julie Ekstrom, Sunny Jardine, Terrie Klinger, Stephanie Moore, Karma Norma

Research Motivation

Biggest-ever toxic algal bloom hits West Coast, shutting down shellfish industries -The Oregonian, June 16, 2015

Credit: WDFW

Kory Cropper, left, loads crab traps into the Amber Lynn before the start of the dungeness crab season in Bodega Bay on Wednesday, November 13, 2013. (Conner Jay/The Press Democrat)

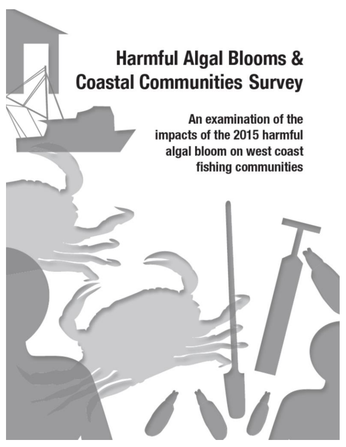
- The 2015 HAB event was linked to anomalously warm ocean conditions (McCabe et al., 2016), which may worsen in the future.

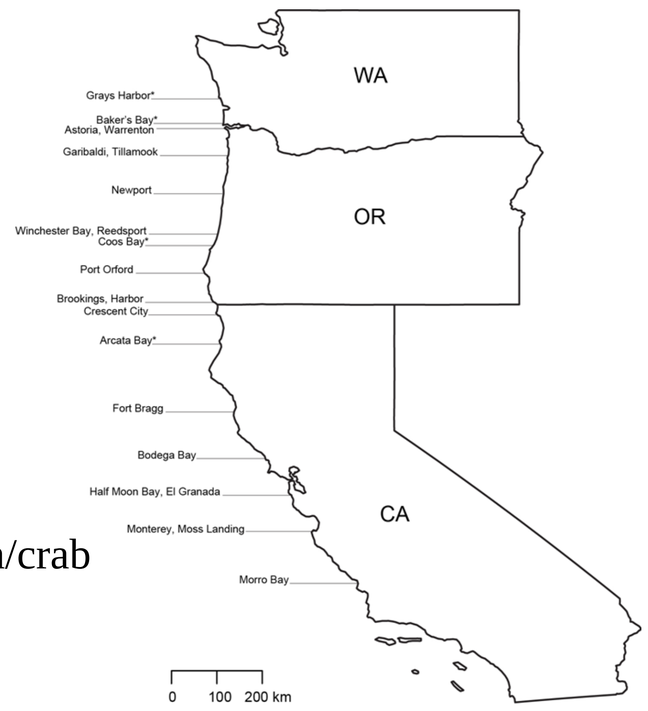
Research objectives

1. Assess the social, cultural and economic impacts of the 2015 HAB event.
2. Identify factors that contribute to an individual's ability to cope with HAB events.

Methods

- Mixed mode (mail and online) survey across 16 west coast fishing communities.





- Mail survey recruited participants in shellfish/crab related business using InfoUSA and PacFIN databases.
- Online survey advertised via state agency email lists with participants self-selecting.
- N=381 (47% mail, 53% online; 41% WA, 24% OR, 35% CA; 55% fisheries jobs, 45% hospitality/other jobs).
- Ordinal regression and multinomial logit models used to empirically test factors influencing an individual's vulnerability to HAB events.

Acknowledgements: JPB Foundation funding. Photos credits NOAA, unless otherwise noted.

Preliminary Findings

HAB Exposure Index

- Lost fishing opportunities were calculated as the proportion of days a fishery was closed due to HAB toxins relative to the normal season length (Moore et al., in prep).

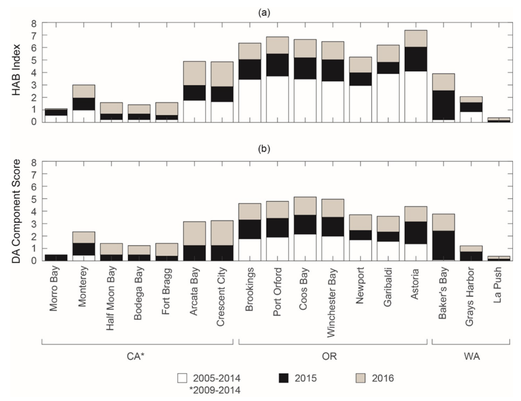


Figure. Stacked bar charts of the values of the (a) HAB index and (b) component scores for fisheries harvest closures due to domoic acid (DA) in 2015 (black), 2016 (gray) and all prior years (white).

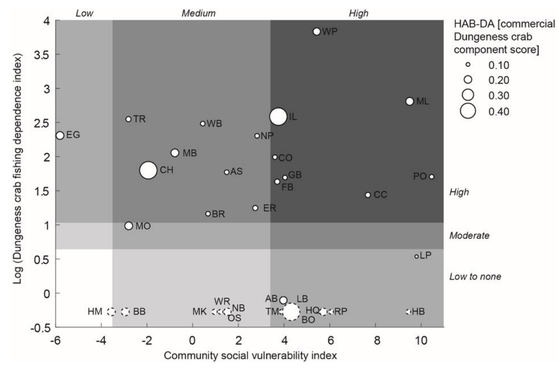
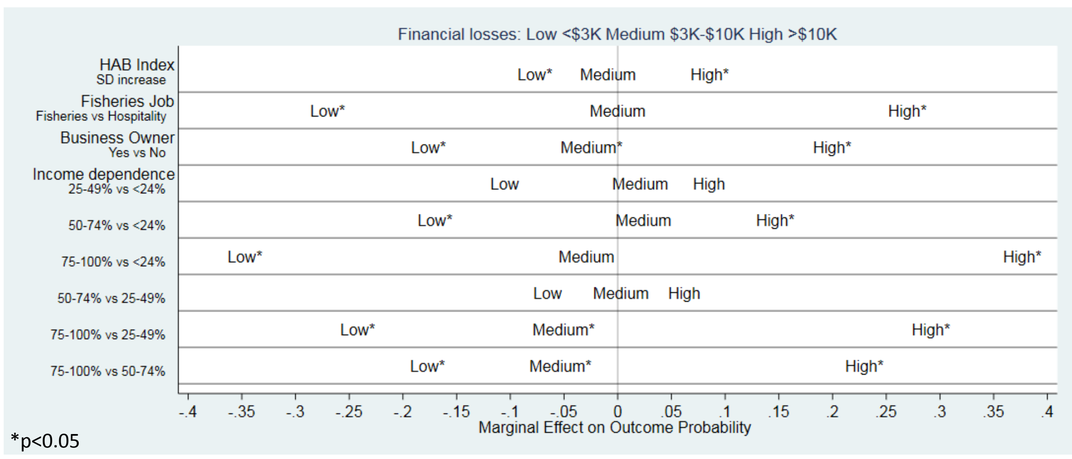


Figure. HAB index component score for closures to the commercial Dungeness crab fishery in conjunction with NOAA indices of community social vulnerability and commercial Dungeness crab fishing dependence.

Socioeconomic Impacts



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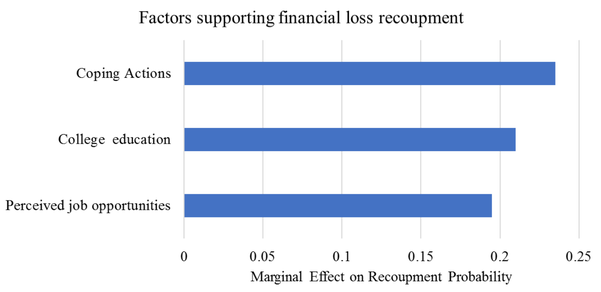

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