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Scales of variability in supply side ecology of a marine invertebrate: Challenges to stock-recruitment forecasting

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The state of exploited populations is a function of the stock and recruitment, which are regulated by larval supply and settlement rates. Environmental conditions causes supply side processes to vary in space and time at several scales challenging recruitment forecasting. In this study, we assessed the relationship between supply side processes in *Perna perna*, a commercial rocky shore bivalve, and meteorological-oceanographic conditions at different spatial-temporal scales. This study was conducted at South Brazilian Bight, a subtropical region influenced by upwelling and meteorological fronts. Larval supply, settlement and recruitment rates were measured monthly, weekly and daily from 2012 to 2013, with local (km) and regional (10-100 km) resolutions. Meteorological-oceanographic conditions were described by physical forcing (wind speed and direction, wave and sea level height), chlorophyll-a concentration and sea surface temperature. Results show that the strength of the relationship between supply side processes and environmental conditions depends on the temporal scale. The degrees of correlation between ecological and environmental variables were low and specific larval supply mechanisms could not be identified. Local contrasts were responsible for most of the variability in supply side processes; however, regional coincidences blocked recruitment along the region. These results suggest that processes at both scales have similar power when regulating recruitment, affecting community to species levels. This study highlights the importance of scales of variability when predicting marine stocks.

Biography

Ana Carolina de Azevedo Mazzuco has completed her PhD from University of São Paulo. She is currently a young Researcher and Environmental Consultant at Deep Blue. She is also an extended member of IMAR/Federal University of São Paulo. Her studies focus on "Benthic-pelagic coupling in rocky shore invertebrates". She has more than 10 years of experience in scientific field. She has published two papers in reputed journals and has presented her work at important scientific meetings.

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