

Interannual/latitudinal variations in abundance, biomass, community structure and estimated production of epipelagic mesozooplankton along 155°E longitude in the western North Pacific during spring

春季の西部北太平洋 155°E 線に沿った表層性動物プランクトン
出現個体数、バイオマス及び生産量の経年・緯度変化について
(PICES-カナダビクトリア [10/29-11/4 の間、山口不在] での発表内容紹介)

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A total of 63 mesozooplankton samples collected with Norpac nets from 0-150 m depth at latitudinal stations (35°-44°N) along 155°E in May, 2002 through 2007 were analyzed. Year-to-year changes in temperature anomalies showed that the subtropical domain (<39°N) was warm in 2002 and 2003, while cold in 2004-2007 although the trend was obscure in the other two domains. Mesozooplankton abundance at each station varied from 40 to 1000 inds. m⁻³. Mesozooplankton biomass was consistently higher (80-100 mg DM m⁻³) in the transitional domain (40-42°N) than those of the other domains. Cluster analyses identified five groups (A-E) with distinct community features; e.g. subtropical communities occurred in 2002-2003 (warm year) (Group A), gelatinous zooplankton (Appendicularia and Doliolida) predominated communities in 2004-2007 (cold year) (Group B), small Copepoda predominated communities in transitional domain (Group C), communities in the subarctic domain (43°N<) (Group D), and Salpida-predominated communities in the transitional domain in 2003 (Group E). Empirical metabolic rate-based carbon budget model yielded that food requirement of mesozooplankton herbivores was the greatest (500-650 mg C m⁻² day⁻¹) in the transitional domain. Comparison between production of mesozooplankton herbivores and food requirement by mesozooplankton carnivores showed that the latter was well fulfilled by the former in the subarctic and transitional domains, but the latter was near equal to or exceeded the former in the subtropical domain. As an annual event, feeding migration of epipelagic fish to the transitional and subarctic domains in summer may be interpreted by their utilization of the excess secondary production (=production of mesozooplankton herbivores).

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