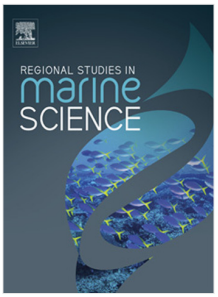
Accepted Manuscript



Seasonal changes in abundance of four *Acartia* species (Copepoda, Calanoida) in the coastal waters of Peninsular Malaysia; relationship with monsoon transition

Mohd Zuraire, Zaidi Che Cob, Tatsuki Toda, Bin Haji Ross Othman, Teruaki Yoshida

PII: S2352-4855(17)30306-7
DOI: https://doi.org/10.1016/j.rsma.2018.06.007
Reference: RSMA 393

To appear in: *Regional Studies in Marine Science*

Received date : 3 October 2017
Revised date : 16 June 2018
Accepted date : 16 June 2018

Please cite this article as: Zuraire M., Cob Z.C., Toda T., Othman B.H.R., Yoshida T., Seasonal changes in abundance of four *Acartia* species (Copepoda, Calanoida) in the coastal waters of Peninsular Malaysia; relationship with monsoon transition. *Regional Studies in Marine Science* (2018), https://doi.org/10.1016/j.rsma.2018.06.007

Date 2nd re-submission: 16 June 2018

Seasonal changes in abundance of four *Acartia* species (Copepoda, Calanoida) in the coastal waters of Peninsular Malaysia; relationship with monsoon transition

Mohd Zuraire[1], Zaidi Che Cob[1], Tatsuki Toda[2], Bin Haji Ross Othman [3,4] and Teruaki Yoshida[5*]

[1]*School of Environmental and Natural Resource Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600, UKM Bangi, Selangor, Malaysia. E-mail: mohdzuraire@gmail.com, zaidicob@gmail.com*

[2]*Department of Environmental Engineering for Symbiosis, Faculty of Engineering, Soka University, 1-236, Tangi-machi, Hachioji-shi, Tokyo, 192-8577, Japan. E-mail: toda@soka.ac.jp*

[3]*Institute of Oceanography and Environment (INOS), Universiti Malaysia Terengganu, 21030, Kuala Terengganu, Malaysia.*

[4]*School of Marine and Environmental Sciences, Universiti Malaysia Terengganu, 21030, Kuala Terengganu, Malaysia.*

[5]*Unit for Harmful Algal Bloom Studies, Borneo Marine Research Institute, Universiti Malaysia Sabah, Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia. E-mail: teruaki.yoshida@gmail.com*

*Correspondence: Tel: +6088-320 000; E-mail: teruaki.yoshida@ums.edu.my

Abstract

The seasonal variation of *Acartia* copepods from the waters of Peninsular Malaysia was studied via monthly observations at 2 fixed stations on the west coast (Pulau Pinang and Port Dickson) and 2 fixed stations on the east coast (Kijal and Penyabong) from October 2012 to March 2014. In situ temperatures recorded during this period were relatively constant (mean 29.6±0.7°C) at all stations. Salinity measurements were also fairly constant (mean 30.3±1.1 PSU) for all stations during this study except at Penyabong where the salinity during the northeast (NE) monsoon season was significantly lower ($p<0.05$) (mean 23.2±7.9 PSU) than during the southwest (SW) monsoon season. Concentration of chlorophyll *a* at Pulau Pinang during the SW monsoon period was significantly higher ($p<0.05$) (mean 14.6±5.4 µg/L) than during the NE monsoon period. Four species of *Acartia* were identified at