

## MARINE DEBRIS ON SELECTED PUBLIC BEACHES IN MALAYSIA DURING DIFFERENT MONSOON SEASONS

Julyus-Melvin Mobilik<sup>1,\*</sup>, Ruhana Hassan<sup>2</sup>, Teck-Yee Ling<sup>2</sup>, Mohd-Lokman Bin Husain<sup>3</sup>

<sup>1</sup>Malaysia Marine Department (Sarawak Region), Lot 683, Seksyen 66, Jalan Utama, Tanah Puteh, 93619 Kuching Sarawak.

<sup>2</sup>Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Malaysia

<sup>3</sup>Institute of Oceanography and Environment, Universiti Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu, Malaysia

\*Corresponding author: [julyus.mobilik@gmail.com](mailto:julyus.mobilik@gmail.com)

**Abstract:** Marine debris including persistent plastics are widely distributed at the surface and coastal area of the global oceans, but many uncertainties remain about their specific sources, quantities and distribution. Although awareness of the plastic pollution problem has grown in Malaysia, comprehensive studies have not been extensive to document its pollution. This study was designed to assess the amount and distribution of marine debris on eight sandy public beaches in Malaysia. A standard method of beach marine debris survey has been adopted in this study to assess the type and amount of debris on a 1 km section of each beach during the northeast monsoon (NEM), southwest monsoon (SWM) and intermediate monsoon (IM) seasons. Marine debris items were collected and categorized during surveys of the beaches in October/November 2012, May 2013 and July/August 2013. A total of 17,299 items of debris weighing 863 kilograms were collected during the survey period. Kosuhoi (1,205 item/km or 57 kg/km), Tg. Aru (1,077 item/km or 47 kg/km) and Batu Rakit (761 item/km or 39 kg/km) received substantially greater quantities of debris compared to Saujana (684 item/km or 36 kg/km), Pasir Pandak (653 item/km or 27 kg/km), Temasyah (501 item/km or 33 kg/km), Pandan (453 item/km or 27 kg/km) and Tg. Lobang (433 item/km or 23 kg/km) beaches. Plastic category items were the most numerous amounting to 15,080 items (87.17%) followed by timber, rubber, metal, glass and cloth categories contributed 2,219 items (12.83%) in total debris item. Clear plastic bottles and fragments of plastic objects were the most abundant objects collected which contributed 4,706 items (27.20%) from the total item collected in this study. Objects associated directly with marine source were 20.46% whereas those from terrestrial and common sources amounted to 24.52% and 55.02% respectively. Debris was more abundant during SWM (7,383 items) compared to NEM (6,519 items) and IM (3,397 items) seasons.

**KEYWORDS:** Marine debris, beach pollution, MARPOL, plastic debris, marine debris source