The study on benthic litter around the coastal of Sri Racha, Chon Buri Province

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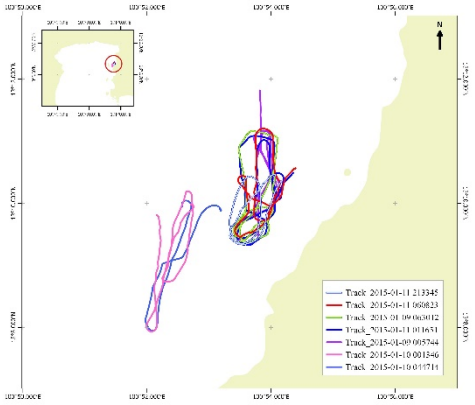
Introduction

Distribution and accumulation of litter in the marine ecosystem is important issue. Marine litter is an environmental, economic, human health and aesthetic problem. Marine litter has been found in all marine habitats and in all the oceans of the world, not only in densely populated regions, but also in remote areas far from obvious sources and human contact. Marine litter is defined as “any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment” (UNEP, 2009). The study on marine littler were conducted in recent years, particularly in European seas. Thailand has few information and study on marine litter. This study is the preliminary research to get the composition and density of marine litter.

Materials and methods

Study area

Data were collected from surveys conducted during collecting data of “Energy Audit Pilot Project Phase 2” from 7 – 13 January 2015. Study sites were located on the fishing ground of bottom trawl in in Sri Racha, Chon Buri province

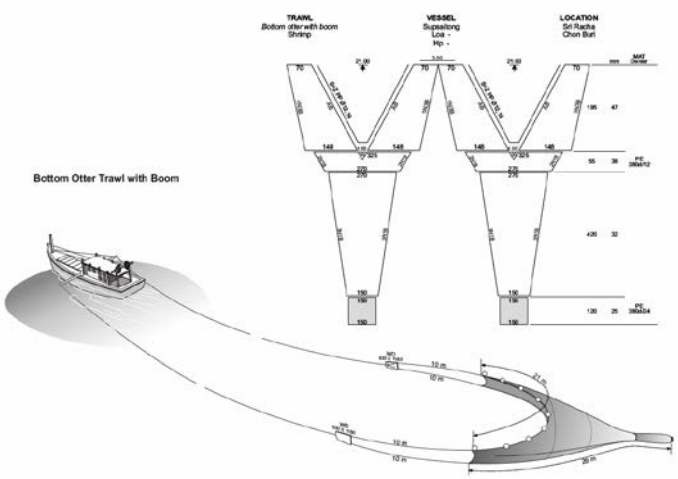


Sampling methods

Trawl samples were collected using two fishing boats with the nearly same side, 11 m and 11.2 m of overall length with 3.7 m of width. They are otter board trawl operated with boom. Fishing nets are same design and size, Length of head rope and ground rope are 21 m with overall length 29 m. The codend net is a 25 mm-diamond stretched mesh size. Fishing operations were conducted in night time. Towing time about 6 hours for each operation. Trawl tracks were gathered by GPS, after towing lines had been set until the fisher started retrieving.

Data analysis

All litter items were separated and classified into different material types and weighed, after excess water and mud had been removed. All litter were measured in weight, litter density was estimated as kg of litter per km^2. The area of which is the length of the path times the width of the trawl, called the "swept area". The swept area, **a**, can be estimated from:



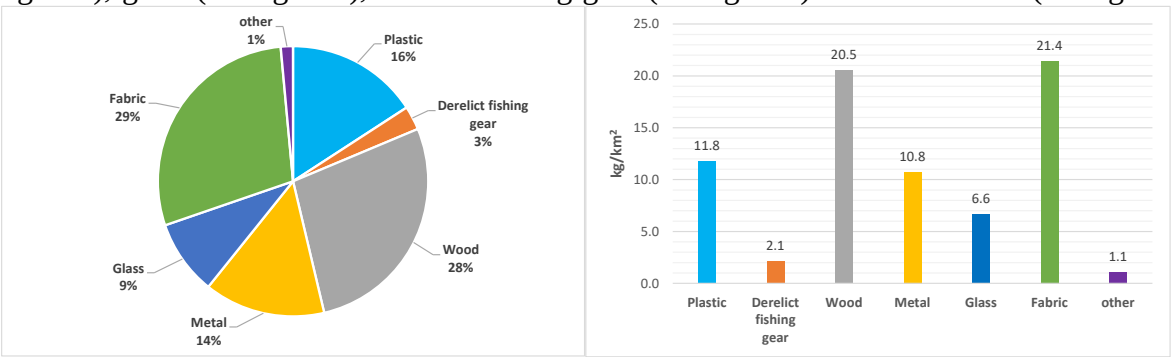
a = D × gr × 0.5 (Sparre P. and Venema S. C., 1998)

Where **D** is the distance covered, **gr** is the length of the ground rope.

Results

Total of 11 bottom trawl operations were conducted and covered the trawl swept area path about 1.9 km^2. All litter items were encountered throughout every operations. The composition of litter compose with fabric 29% of the litter items, follow by wood 28%, plastic 16%, metal 14%, glass 9%, whilst derelict fishing gear were the less abundant litter item for 3%. Items classified as ‘‘other items’’ accounted for 1% of the litter items included paper, rubber and coal.

Analysis of litter density from trawl surveys found fabric is the most abundant litter type (found in 21.4 kg/km^2), followed by wood (20.5 kg/km^2), plastic (11.8 kg/km^2), metal (10.8 kg/km^2), glass (6.6 kg/km^2), derelict fishing gear (2.2 kg/km^2) and other items (1.1 kg/km^2)



Discussion and conclusion

Trawl is the method used to provide data on benthic marine litter and can do as a parallel objective to surveys benthic organism sampling. Fabric, wood and plastic are encountered throughout all trawl operations. Under the studying quantity litter by weighting, fabric is the most common marine litter found in the study area follow by wood and plastic. This study methodology might be overestimated because some litters material for example, fabric and wood can absorb water more than plastic, metal and glass. While, they spit out water more slowly as well. The study on composition and density of benthic marine litter should consider among the analysis methodology by weight and by number of litter item to avoid overestimation. Most of marine litter will forever remain in marine ecosystem until decomposed over the time in case of degradable material. After fishers sort their catch, they will discard unwanted things that include marine litter to the sea. The Marine litter composition and density might difference depend on study location, distance from community and seasonal. Then, the future study on marine litter in Thailand should be done.