

ACOPS Dialogue on Marine Litter House of Lords, 30 June 2015

Marine litter or debris is widespread. Plastic in particular contaminates habitats from the poles to the equator and has been reported on shorelines, at the sea surface, in the water column and in the deep-sea. Around 700 species are known to encounter marine debris; in many cases this results in physical harm or death. Yet the societal benefits that plastics bring can be realized without the need for emissions of plastic debris to the environment. Solutions are at hand, but require us to rethink our production, use and disposal of plastic items. Education is central to achieving change, raising awareness not only about the problem but also the solutions.

Lord Julian Hunt of Chesterton, President of ACOPS, welcomed participants to Fielden House, House of Lords and explained the role of ACOPS. He recalled a recent conversation with Lord Alan West of Spithead who, as former First Sea Lord, said that he had witnessed the unacceptable build up of marine litter during his career at sea. Can we find answers?

Professor David Johnson, Chairman of ACOPS, explained that the aim of the Dialogue was to exchange information and spur parliamentarians to take an interest. Plastic is integral to our way of living but marine litter is a growing problem with implications for human health, clean up costs, aesthetic values and wildlife conservation. Marine litter is found in all seas around the world, in densely populated regions but also in remote places. Key questions relate to sources of marine litter, waste management strategies, economic incentives to counter the problem, partnerships between industry and civil society and joint prevention and recovery programmes. ACOPS had brought together a group of expert presenters to provide answers and stimulate discussion.

Dr Peter Kershaw is Chairman of GESAMP, the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (an Inter-Agency Body of the UN). Defined by UNEP as 'any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment', there are many land-based and sea-based sources. The rationale for marine litter as a priority issue include potential for harm, an increasing inventory (most plastics do not completely degrade in the ocean), and potential human health concerns (e.g. from seafood consumption). Consensus views relate marine litter to inadequate waste management and whilst it is not a new phenomenon there has been a rapid increase from the mid 20th Century. Potential effects include direct effects on wildlife (e.g. entanglement/ingestion), litter as a vector for non-indigenous species, plastics containing additives (e.g. flame retardants) and plastics absorbing organic contaminants (e.g. PCBs, DDT).

The distribution of marine litter is influenced by ocean currents, so concentrations are not uniform in space or time. Graphic examples were presented to illustrate these points and latest status evaluations and simulated distributions (e.g. global distribution of floating plastic). Higher concentrations in mid ocean gyres is a well publicized phenomenon but associated risks of

ecosystem degradation are highest in SE Asia, Mediterranean and Red Sea, Southern Australia and east coast of the US. Unknowns include actual quantities entering the sea by country or in total; long-term fates including times for degradation; the extent of economic and social impacts. Dr Kershaw urged specific and cost-effective solutions recognizing pressures on budgets and conflicting priorities.

Discussion concentrated on main drivers and pressures, accepting that marine litter is increasing but that it is difficult and expensive to remove larger items effectively and safely and it is not possible to remove smaller items. It was noted that third parties often receive the burden of marine litter and direct correlations can be made to affluence, coastal populations and coastal tourism. Confusion over 'biodegradable' plastics was also a key topic. Marine litter was acknowledged as a 'wicked' problem with multiple possible solutions.

John Mouat is Deputy Secretary to the OSPAR Commission, representing 15 governments and the EU who are working collectively to protect the marine environment of the North-East Atlantic. The OSPAR Commission's vision is a clean, healthy and biologically diverse North-East Atlantic Ocean, used sustainably. Ministers have agreed to develop reduction measures and targets. This links closely with the EU Marine Strategy Framework Directive (Directive 2008/56/EC) within which marine litter is one of 11 Good Environmental Status criteria. OSPAR has developed common indicators for beach litter, plastic particles in fulmars stomachs and seabed litter. Consideration is being given to microplastics and plastic particles in fish stomachs. OSPAR assessments suggest more efforts are needed. In 2014 OSPAR agreed a Regional Action Plan on Marine Litter with common actions, actions to be raised with other competent bodies and national actions. There are specific key action areas such as port waste reception facilities, reduction of single use items, fishing for litter initiatives and encouragements of redesign of harmful products. Outreach and cooperation with stakeholders are essential elements for success.

Questions on removal actions highlighted the importance of engaging with industry and value in evaluating the potential harm caused by specific items. For example, cost recovery systems can help ensure the maximum amount of MARPOL Annex V ship generated waste is delivered back to port waste reception. Improvement in waste management is essential and a focus on floating litter hotspots should be part of any strategy for action.

Maria Westerbos is a mass communications expert who founded the Plastic Soup Foundation in 2011 transforming the attitude of businesses, governments, consumers and NGOs regarding plastic microbeads in personal care products. She provided details of a series of inspirational practical actions tackling marine litter, involving industry and educating civil society. Her presentation set out challenges and successes associated with confronting industry with concerns about using microplastics in cosmetics. Through its major 'Beat the Microbead' multimedia campaign, the foundation has since August 2012 ensured the phase out of microbeads in personal care products by national and international

companies such as Unilever, Colgate, Palmolive, HEMA, Kruidvat and ETOS. The 'Beat the Microbead' Coalition now includes 69 NGOs from 33 nations.

Development of an international App allowing consumers to recognize products with microbeads by scanning the barcode with smartphone cameras has captured public imagination. A new App 'Trash Hunters' allows individuals to record types and locations of litter. Analysis of litter elements and manufacturers allows the Plastic Soup Foundation to confront business brands responsible. "Gamification" of this idea could turn litter hunting into a teambuilding contest. All the time raising awareness and putting pressure on industry to take action.

This presentation stimulated enthusiasm, clearly demonstrating how consumers can play their part to tackle marine litter. Colleagues from Flora and Fauna International explained that their 'Good Scrub Guide' had also raised awareness about the adverse effects of gritty polishers and sparkling glitter microplastics, providing an opportunity to influence industry and secure environmental commitments.

Finally, Professor Richard Thompson, an expert in scientific assessment of microplastics and their effects on organisms, summarized key messages. Latest efforts to quantify plastic waste inputs from land to ocean were highlighted (Jambeck et al., 2015)¹. This study predicts that without waste management infrastructure improvements, the cumulative quantity of plastic waste available to enter the ocean from land is predicted to increase by an order of magnitude by 2025. He considered that single use plastic (approximately 50% of plastic produced) is a good starting point for taking action and incentives to design for end of life are key. Take home message from this Dialogue are that:

- Marine litter is a complex and multi-dimensional problem;
- Much is already being done, but as the threat grows rather than diminishes it is clear that much more still remains to be done;
- Turning the supply chain into a supply cycle by marrying end of life activities and recovery activities is one strong US-led message; and
- Marine litter is a collective and individual responsibility – individual actions count!

Photo (credit Emily Corcoran)

Speakers at the ACOP House of Lords Marine Litter Dialogue

(from left to right: Richard Thompson, Peter Kershaw, Julian Hunt, David Johnson, Maria Westerbos, John Mouat)

¹ Jambeck, JR., Geyer, R., Wilcox, C., Seigler, TR., Perryman, M., Andrady, A., Narayan, R. and Law, KL. (2015) Plastic waste inputs from land into the ocean. *Science* 13 February 2015: Vol. 347 no. 6223 pp. 768-771.