SURFRIDER FOUNDATION AUSTRALIA

Conservation
Activism
Research
Education

Protecting Waves and Beaches

10 September 2015

Committee Secretary
Senate Standing Committees on Environment and Communications
PO Box 6100
Parliament House
Canberra ACT 2600

SUBMISSION: The threat of marine plastic pollution in Australia

Dear Committee Secretary,

Thank you for the opportunity to provide a submission to this inquiry. Surfrider Foundation Australia believes that the pollution effects of plastic marine debris to be one of the most critical environmental threats facing our oceans and lifestyles. We therefore strongly encourage government interventions to reduce this problem.

Background on Surfrider Foundation Australia

Surfrider Foundation Australia is a non-profit grassroots organisation dedicated to the protection and enjoyment of oceans, waves and beaches through an activist network comprising 13 branches around Australia. We are also part of the global Surfrider Foundation organisation that was formed in California in 1984 and has over 250,000 supporters, activists and members, as well as over 100 branches worldwide.

Our volunteers engage in their community through activities like beach clean-ups to help protect our precious coastal areas. Over the past 25 years Surfrider Foundation has held hundreds of beach clean-ups around Australia (including in remote areas, such as Tasmania's South West Coast). This has involved collection of many thousands of kilograms of rubbish (mostly plastics), which have been categorised for data collection and research purposes and utilised by the Australian Marine Debris Initiative[1].

In 2007, Surfrider Foundation launched its **'Rise Above Plastics'** program. The aim of the program is to reduce the impacts of single-use plastics on the marine environment by raising awareness about the dangers of plastic pollution and advocating for a reduction of single-

[1] Australian Marine Debris Initiative – Tangaroa Blue (website) (2015).

40-42 Balgowlah Road, Balgowlah, NSW 2093
PO Box 968, Mona Vale, NSW, 1660
ABN 86 061 168 527

p: 02 9965 7372
e: operations@surfrider.org.au
w: www.surfrider.org.au

use plastics and the recycling of all existing plastics.

Surfers and ocean-users already have a strong connection with the ocean, be it our livelihood or recreation. We rely on healthy oceans. Through its networks, Surfrider Foundation is able to tap into this unique niche of people who have an innate connection to the ocean (and ultimately the need to protect it).

Summary of Submission

Key Facts on Why Marine Plastic Pollution Must Be Addressed

1. *Marine plastics are on the rise*
   - *The plastic produced in the first ten years of this century surpassed the amount produced in the entire last century.*
   - *The five oceanic gyres are estimated to contain 100 million cubic litres of marine litter[2] and an estimated 20 million tons of plastic litter enter the ocean each year.[3]*
   - *More than 70% of the rubbish entering our oceans is plastic and Australians use more than 10 million new plastic shopping bags every day.[4]*
2. *Plastics can starve, poison and strangle marine life through ingestion and entanglement.*
3. *Plastics, their chemical additives and the toxins that accumulate on them may impact the entire food chain through animal ingestion of micro plastics.*

Recommendations for government action:

1. *Banning or imposing a fee on heavily littered items such as single-use plastic bags and food containers.*
2. *Banning micro beads in cleansing products.*
3. *Establishing either a Federal or per State deposit-refund system for heavily littered items such as beverage bottles (Container Deposit Scheme - CDS).*

Current research and scientific understanding of plastic pollution in the marine environment

"Marine litter is any persistent solid material that is manufactured or processed and directly of indirectly, intentionally or unintentionally disposed of or abandoned in the marine environment." [United Nations Environment Program (UNEP) (2009)]

Plastic marine litter starves, poisons, strangles, and results in other harm to marine wildlife. Toxic chemicals sorbed onto plastic particles or used in the production of plastic can be

[2] US EPA, Marine Debris in the North Pacific: A Summary of Existing Information and Identification of Data Gaps 3 (2011)
[3] Raveender Vannela*, Are We 'Digging Our Own Grave" Under the Oceans ? Biosphere Level Effects and Global Policy Challenge from Plastics(s) in Oceans,* 46(15) Envntl Sci and Tech 7932, 7932, (2012)
[4] Clean Up Australia website ' The Facts about Plastic Bags in our Environment'

transferred to wildlife through plastic ingestion, potentially impacting human health. Globally, plastic marine litter also results in billions of dollars of damage and other costs to the fishing, tourism and shipping industries.

1. Plastic marine litter is on the rise

Plastic marine litter is one of the most pervasive and menacing problems affecting the marine environment. The volume of plastics produced in the world has sharply increased in the past decades. The plastic produced in the first ten years of this century surpassed the amount produced in the entire last century. An increasing amount ends up in our waterways and the ocean. An estimated 20 million tons of plastic globally enter the ocean each year.[5] All marine litter can be linked to human activities on land or at sea. It is estimated that land based sources of marine litter account for 60-80 per cent of all marine litter, and plastic accounts for 70 per cent of this litter.[6]

Marine litter tends to accumulate in a limited number of sub-tropical convergence zones known as gyres or garbage patches. Currently, there are 5 gyres: North Pacific, South Pacific, North Atlantic, South Atlantic, and Indian Ocean.[7] Studies have shown that marine litter deposited in coastal areas tends to accumulate in the gyres within 2 years of entering the ocean. [8] The litter remains cycling in these gyres for many years, with more than 200,000 pieces of plastic per square kilometre in some areas.[9] The sizes of the gyres are difficult to determine because they are constantly expanding and moving, but the gyres are estimated to contain 100 million tons of marine litter.[10]

2. The harms of plastic marine litter to marine life

Plastic litter is particularly hazardous to the marine environment because plastics are durable, buoyant, waterproof, indigestible and non-biodegradable. Plastics can starve, poison and strangle marine life through ingestion and entanglement.

a. Starvation of marine life

Ingestion of plastic can wound animals internally by piercing their gut. Animals at all levels of the food chain consume plastic. Because plastic can resist biological degradation, it can fill animals' stomachs so that they have a false sense of fullness causing starvation.

[5] Vannela, Ibid Note 2 at 7932

[6] California Ocean Protection Council: An Implementation Strategy for the California Ocean Protection Council Resolution to Reduce and Prevent Ocean Litter (2008).

[7] See Global research, 5 Gyres Institute (Oct 2013)

[8] US EPA Marine Debris in the North Pacific (2011)

[9] UNEP, UNEP Year Book: Emerging issues in our Global Environment (2013)

[10] US EPA Marine Debris in the North Pacific (2011)

Surfrider Foundation Australia
40-42 Balgowlah Road, Balgowlah, NSW 2093
PO Box 968, Mona Vale, NSW, 1660
ABN 86 061 168 527

p: 02 9965 7372
e: operations@surfrider.org.au
w: www.surfrider.org.au

b. Entanglement of marine life

Entanglement in marine species has been documented to affect 32 species of marine mammals (including whales and sea lions), 51 species of seabirds and 6 species of sea turtles. [11] Entanglement can kill wildlife or impair an animal's ability to swim, meaning entangled animals must eat more to accommodate for the increased weight and drag while swimming and may have greater difficulty evading predators.

c. Poisoning of marine life

Scientific studies have shown that toxic chemicals from plastic particles can be transferred to wildlife through plastic ingestion.[12] Once an animal dies its body will decompose and release the plastic again to harm and kill other animals.

2. The Harms of Toxic Chemicals and Microplastics

Toxic chemicals in plastics can poison marine animals that ingest plastic. Polychlorinated Biphenyls (PCBs) in surrounding seawater accumulate on marine plastic litter. Concentrations of the pesticide DDT, polycyclic aromatic hydrocarbons (PAHs) and other persistent organic pollutants and pesticides have been found on samples of plastic litter collected from the North Pacific and coastal Hawaii and California.[13] It is reasonable to assume that similar toxic chemicals have found their way to the coastline of Australia.

Pollutants added to some plastics at the time of manufacturing, including bisphenol A (BPA) and phthalates are linked to endocrine disruption, and are capable of being transferred to wildlife through ingestion.[14] Plastics, their chemical additives and the toxins that accumulate on them may impact the entire food chain through animal ingestion of micro plastics. [15]

3. Products / materials that represent the major sources of plastic marine pollution

a. Plastic bags

Consumption of single use plastic bags is estimated at over 10 million new bags each day in Australia (over 3.5 billion bags per annum). It is estimated that the amount of plastic bags entering the litter stream each year is more than 50 million bags per annum[16].

[11] Greenpeace, Plastic Debris in the World's Oceans (2006)
[12] Emma L Teuten et al, Transport and Release of Chemicals from Plastics to the Environment and to Wildlife. (2009)
[13] Emma L Teuten et al, Transport and Release of Chemicals from Plastics to the Environment and to Wildlife. (2009)
[14] Emma L Teuten et al, Transport and Release of Chemicals from Plastics to the Environment and to Wildlife. (2009)
[15] Richard C Thompson, 'Lost at Sea: Where is all the plastic?', 304 SCIENCE 838 Supplementary online material 3 (2004).
[16] Clean Up Australia (website) (2015)

b. Beverage containers

The single largest component of plastic litter and marine debris is beverage container waste, with plastic bottles, along with associated items (lids, straws, cups etc) and packaging representing around half of the material (by volume) of the litter stream. This represents approximately 60 per cent of all plastic rubbish recovered along Australia's beaches and waterways[17]. These statistics align with the observations made by Surfrider Foundation volunteers at our beach clean-ups around the coast in recent years.

c. Microplastics (nurdles and resin balls)

Microplastics, including nurdles (plastic resin balls from which plastics products are manufactured) and microbeads (ie. plastic exfoliants in cleansers), are increasingly causing great concern. Tangaroa Blue (an organisation to which Surfrider Foundation provides rubbish collection data from our beach clean-ups) have carried out a number of studies and sampling over a broad geographical range in five States. They have found concentrations as high as 6000 nurdles per square metre of beach. Such plastic particles are particularly prevalent in urban beach and waterway areas.[18]

Recommendations for Government Action

1. **Banning or imposing a fee on heavily littered items such as single-use plastic bags and food containers**. This would have the effect of significantly reducing the amount of plastic that enters Australia's oceans and waterways.

2. **Banning micro beads in cleansing products.** This would effectively target those plastics that are most likely to be mistaken as a source of food by marine animals.

3. **Establishing either a Federal or per State deposit-refund system for heavily littered items such as beverage bottles (Container Deposit Scheme).** Under a Container Deposit Scheme (CDS) consumers could pay a deposit at time of purchase but would be able to redeem the deposit by returning the container to a designated collector or recycler for proper disposal or re-use. This could potentially reduce beverage container litter of the marine environment by up to 60%.

4. **Other potential initiatives:**
   - a government sponsored review into the economic impact and health implications

[17] National Litter Index - Keep Australia Beautiful (website) (2015)
[18] Tangaroa Blue (website) (2015)

of plastic pollution of our oceans and waterways to humans and marine life;
- support, funding and subsidies for organisations that attempt to significantly reduce their plastic impact and consumption.

Conclusion

Plastic debris represents an extremely serious threat to the marine environment and imposes significant costs on governments and industries. Given their heavy involvement in ocean related activities, surfers are acutely aware of this. There is an increasing need for national cooperation and uniformity to address this problem.

Surfrider Foundation urges Federal politicians to take a leadership position on this critical issue and draw upon policies that have been proven to be successful domestically and internationally to develop a national guiding strategy for addressing the problem of marine plastic pollution.

Yours sincerely

Brendan Donohoe
Chairman
Surfrider Foundation Australia

Surfrider Foundation Australia
40-42 Balgowlah Road, Balgowlah, NSW 2093
PO Box 968, Mona Vale, NSW, 1660
ABN 86 061 168 527

p: 02 9965 7372
e: operations@surfrider.org.au
w: www.surfrider.org.au