



9<sup>th</sup> September 2015

Committee Secretary

Senate Standing Committee on Environment and Communications

PO Box 6100

Parliament House

CANBERRA ACT 2600

Dear Secretary

**RE: Threat of marine plastic pollution in Australia and Australian Waters**

Thank you for the opportunity to provide a submission to this inquiry. This submission from Coolum & North Shore Coast Care focuses on the findings of our monthly beach rubbish surveys and plastic ingestion problems associated with sea turtles.

**Background to our monthly beach rubbish surveys**

Coolum and North Shore Coast Care volunteers carry out monthly marine debris beach surveys of four sites in the Coolum Beach, Peregian Beach and Marcus Beach areas (northern Sunshine Coast, Queensland). Three sites are 100m transects of open beaches and the fourth site is a small bay measuring 122m in length. The same sites are surveyed each month and we now have monthly marine debris data collected over a three year period from August 2012. The data is collected and recorded onto datasheets according to methodology provided by Dr Kathy Townsend of the University of Queensland (Dr Townsend also works in collaboration with CSIRO marine debris scientists). The completed datasheets are entered into spreadsheets to enable data across all four sites to be collated.

**Marine debris data – first 12 months from September 2012 – August 2013**

Below and on the following page is a detailed summary of the marine debris collected and recorded at the four sites during the first 12 months of our surveys:

SITE DETAIL AND DISTANCE		Total Pieces Collected Sept 2012 – Aug 2013 (monthly surveys completed on 14 <sup>th</sup> of each month)
First Bay Coolum - 122m		3,215
Coolum Beach – Beach Access 70 - 100m		2,623
Pitta St South Peregian - 100m from marker 67A		6,468
Marcus Beach - 100m		2,543
<b>TOTAL</b>		<b>14,849</b>
Size Break Up	Size	Breakup of No. of Pieces for each Size
Size 1	0.5cm - 1cm	2,561
Size 2	1cm - 2cm	4,704
Size 3	2cm - 4cm	4,769
Size 4	4cm - 8 cm	1,903
Size 5	8cm - 16cm	708
Size 6	16cm+	204
<b>TOTAL</b>		<b>14,849</b>

**Breakup of rubbish type – monthly surveys Sept 2012 – Aug 2013 – total of 422m of beach surveyed**

Type of Rubbish	Pieces Count	% of Total Pieces Found
Hard Plastic Pieces	9161	61.69
Plastic container lids	332	2.23
Straws	128	0.86
Lollipop sticks	247	1.66
Plastic bags	37	0.24
Film like plastics	369	2.48
Other soft plastics	349	2.35
Plastic packing straps	156	1.05
Fishing Net	4	0.02
Plastic string / rope	562	3.78
Cloth	80	0.53
Glass	41	0.27
Metal hard	55	0.37
Metal soft	88	0.59
Balloon	59	0.39
Other rubber	206	1.38
Polystyrene	1802	12.13
Other foam	338	2.27
Wood	54	0.36
Cigarette butts	551	3.71
Paper	230	1.54
<b>Total pieces over 12 months</b>	<b>14,849</b>	<b>100%</b>

At the time of writing this submission, data for years two and three of our survey (1 Sept 2013 – 31 Aug 2015) was unfortunately not yet fully collated into our spreadsheets. However it is anticipated that the data entry and collation for years two and three will be completed by the end of October 2015 and will be available from that date if required.

**Observations from our beach surveys - marine debris on northern Sunshine Coast beaches**

- ***Even apparently clean looking beaches have plastic pollution*** - At first glance, our beaches appear relatively clean. However, a closer inspection reveals that our beaches are affected by plastic pollution. At Coolum Beach, our data indicates that at least 26,000 pieces of rubbish per kilometre per year can be found on this beach. Most of these pieces are fragments (see below) which mix with beach sand or will be washed back out to sea if not collected;
- ***Hard plastic pieces the most common*** - The most common item of rubbish we find is hard plastic pieces (61% of all rubbish found). Most of these pieces are less than 4cm long and are primarily from plastic containers, bottles and lids that have broken up into pieces in the ocean. The pieces often have algae or barnacles present and are faded and brittle to the touch. The pieces are also from common items such as clothes pegs, buckets and toothbrushes. The vast majority of these pieces have washed up onto the beach (at the high tide line or below) rather than being dropped on the beach as litter;
- ***Polystyrene and plastic string / rope*** - The second most common item is polystyrene (12%) and the third most commonly found item is plastic string / rope (3%). The polystyrene comes from a number of sources such as coffee cups and packaging (e.g. takeaway food, polystyrene insulation boxes, fruit packaging and meat trays). The plastic string / rope includes rope fragments from shipping, fishing nets and crab pots;
- ***Rubbish colours*** - The most common colours of rubbish we find are white (35%), blue (20%), green (9%), clear (8%) and red (8%). A number of scientists (e.g. Dr J Lavers, Q Schuyler, Dr K Townsend and many more) continue to study whether colour is a factor in animals such as turtles and seabirds selecting plastic to ingest, so we are recording the size, colour and type of rubbish for each item found during our surveys;
- ***Littering*** - Some of our survey sites record higher numbers of particular items such as cigarette butts and film like plastics (i.e. food wrappers such as chip packets and confectionery). This tends to occur at sites that are more popular with beachgoers. The higher concentration of these items at particular beaches suggests littering of cigarette butts and food packaging is more prevalent at these sites (rather than the items being washed in from the ocean).

## Sea turtle monitoring and beach rubbish surveys

We commenced the monthly marine debris surveys as we were concerned that there appeared to be little long term, consistent data collection on marine debris for the northern Sunshine Coast area.

Our beaches are important for both the economic and ecological sustainability of our region with the local tourism industry heavily reliant on promoting the coast's natural beauty. We are located within close proximity to Brisbane (which is approximately 130km to the south) and our area has a small but significant nesting population of endangered loggerhead and green sea turtles that use our beaches to nest. Within our organisation we have a number of trained volunteers who monitor the nesting sea turtles and who attend marine turtle strandings. Sea turtles generally only wash ashore when very ill or dead.

Coolum & North Shore Coast Care volunteers have been recording sea turtle strandings for the last 9 years - we attend approximately 30 turtle strandings a year between the Maroochy River mouth and Sunshine Beach Noosa (approximately 35km of beach). Most of these strandings are juvenile turtles of approximately 1 to 20 years of age (adult sea turtles are generally 30 to 80 years of age). Live turtle strandings are transported by our volunteers (using their own fuel and vehicles) to SeaLife Mooloolaba Aquarium or to Australia Zoo for rehabilitation. If the turtle is dead, our volunteers identify the species, take the turtle's measurements, take photos, prepare a stranding report for the QLD government's sea turtle research program and bury the turtle. Below is a brief summary of our turtle stranding data for the last three years (the same duration as our beach rubbish surveys) to illustrate the numbers of strandings our volunteers deal with:

Period	No. of live sea turtle strandings	No. of dead sea turtle strandings	Total turtle strandings
1 Sept 2012 – 31 Aug 2013	16	19	35
1 Sept 2013 – 31 Aug 2014	40	36	76
1 Sept 2014 – 31 Aug 2015	7	16	23
<b>Total strandings – 3 years</b>	<b>63</b>	<b>71</b>	<b>134</b>

## Turtle strandings and plastic pollution

Many of the live turtles transported to rehabilitation facilities do not survive. If they do survive, recovery can take several months or more.

## **Necropsy studies**

Until recently, SeaLife Mooloolaba forwarded some of the turtles that did not survive rehabilitation to Dr Kathy Townsend at the University of Queensland Research Station, North Stradbroke Island, for necropsy. Published research from 2012 from turtle necropsies carried out at this facility indicates that **33% of the sea turtles necropsied from the Brisbane and Sunshine Coast areas had ingested plastic debris (1)**. The types of plastics found in the necropsied turtles included hard plastic pieces, soft plastics, balloons, rubber, food packaging and plastic bags. Some of these items are not found in large quantities in marine debris surveys, suggesting that turtles may be targeting particular types of rubbish.

## **Volunteer resources – necropsies not available to determine cause of death**

As sea turtle monitoring volunteers, we are not authorised or trained to perform sea turtle necropsies. For stranded sea turtles found in our area, this means that only live turtles that subsequently die during rehabilitation have a possibility of necropsy and therefore a definitive cause of death recorded. Necropsies are not performed on any of the dead sea turtle strandings our volunteers attend, and it is therefore unknown how many of the dead turtles we see have ingested plastic. Given that many show signs of floating syndrome (see below) and that the UQ necropsy studies show plastic ingestion affected 33% of the turtles studied, it is reasonable to assume that plastic ingestion is present in the dead turtle strandings we see. However in our capacity as volunteers with limited resources we are unable to quantify this precisely for the turtle strandings we attend.

## **Floating syndrome in stranded sea turtles**

It's very common for our volunteers to attend a dead turtle stranding where the turtle shows signs of "floating syndrome" which is attributed to a fatal digestive system blockage (from ingesting foreign objects such as plastic pieces). Such signs include a sunken plastron (underneath of the turtle) or emaciated body condition. This occurs when an intestinal blockage causes an internal build up of gasses and the turtle can no longer dive for food. It will float on the ocean surface and slowly starve over a period of months before it washes ashore. On attending a stranding we are trained to record basic observations like signs of emaciated body condition but we cannot make a formal assessment as to the cause of death.

## Some of the solutions we would like to see implemented

Based on our observations of marine debris in our area, we would like to see the following implemented:

- **Australia wide container deposit scheme** – hard plastic pieces (such as pieces from plastic bottles and lids) are common marine debris items on Australian beaches. The potential for these items to enter the ocean and break up into pieces (or take up space in landfill) could be substantially reduced by introducing a container deposit scheme to incentivise better disposal of these items and reduce littering. In turn this also provides sources of income for community groups and increases bottle and can recycling rates;
- **Source reduction of the use of non biodegradable plastics in food packaging** – The vast majority of existing food packaging is non biodegradable plastic. While this type of packaging appears convenient and is presumably cheaper for food manufacturers to use, it is significantly contributing to the marine debris problem. In supermarkets it's increasingly difficult for consumers to purchase food and grocery items that are not packaged in plastic. There appears to be little incentive for manufacturers to reduce the amount of plastic packaging they use or to deal with the resultant packaging waste. In our opinion, food manufacturers need to be more accountable for the volume and type of packaging they produce and not just "leave the onus on the consumer to choose". Specific packaging waste reduction targets on all manufacturers, importers and distributors of products would assist in creating a source reduction strategy targeting plastic packaging and single use items.

Additional solutions that Coolum and North Shore Coast Care would like to see implemented:

- **Banning the use of plastic microbeads in cleansing products** – Small particles of plastic from cleansing products can make their way through the sewerage system into our oceans. In turn these pieces can be consumed by marine life or change the structure of beach sand and river sediments. It is completely unnecessary to include non biodegradable plastic pieces in cleansing products;
- **A national, systemised approach to recycling of post consumer plastics** - Local councils throughout Australia have different capabilities for the disposal or recycling of plastic waste. The "recycling symbol" found on plastics does not necessarily mean the item is recyclable in that region.

Yours sincerely

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Submission authorised by Leigh Warneminde, President, Coolum & North Shore Coast Care

## References

- (1) Schuyler, Q, Hardesty, BD, Wilcox, C and Townsend, K. (2012) To Eat or Not to Eat? Debris Selectivity by Marine Turtles. Plos One 7 (7): e40884. DOI:10.1371/journal.pone.0040884.

**Photo – Beach rubbish survey – some of the types & sizes of items collected.**

**There are just over 5,000 items of rubbish in this photo. Most are fragments of whole items.**

