

## **Senate Environment and Communications References Committee**

### **Inquiry into the threat of Marine Plastic Pollution in Australia and Australian Waters**

**That the following matter be referred to the Environment and Communications References Committee for enquiry and report by 8 April 2016**

- a) the review of current research and scientific understanding of plastic pollution in the marine environment

Australian Seabird Rescue has been rescuing, rehabilitating and when possible, releasing seabirds, sea turtles, shorebirds, pelicans, other waterbirds and sea snakes for over 20 years. We have seen all of the above listed species affected by marine plastic pollution in Australia and Australian Waters.

Australian Seabird Rescue (ASR) noticed the negative affect primarily on pelicans being entangled in plastic fishing line and also from ingesting this fishing line. At least 20% of pelicans in any estuary or coastal area are affected by fishing line entanglement or ingestion.

As ASR expanded to other species of birds and marine wildlife, we saw the same negative affects on all of these species increasing over the last 25 years.

ASR was successful in changing legislation in 20?? on the ban of the Mass release of helium balloons in New South Wales, after seeing the effects of ingestion of balloons on seabirds and sea turtles.

We have conducted many necropsies on seabirds and sea turtles and found plastic marine debris in many cases have caused the death of the animal.

ASR being a small grass roots organisation is primarily run by volunteers. These volunteers have various degrees of skills, therefore before I conducted my Integrated project at Southern Cross University in 2007, much of the information we could have acquired on the effects of plastic on marine wildlife that has been rescued or died, was not recorded in a suitable manner to warrant further research, especially on seabirds. Although we had to start somewhere with research, so we did!

In 2012 Jann Gilbert completed an integrated project at Southern Cross University on Seabirds and plastic ingestion. Jann has continued to ad to the database she designed for this project with animals from Australian Seabird Rescue.

In the past year, of one hundred seabirds necropsied for all species of seabirds combined that the incidence of plastic ingestion is 65%. For Shearwater species with plastic in their stomachs, it is over 80%.

I, personally completed my integrated project at Southern Cross University in 2007: the title of my project was “Australian Seabird Rescue Database of Marine Turtle Strandings on the coast of Northern New South Wales, Highlighting Plastic Ingestion and Entanglement Incidences, 2001 - 2007. That report was written in my married name, Kathrina Francis, I am now Kathrina Southwell. Below is the abstract from my report, still relevant 8 years later:

#### ABSTRACT

Out of the world's seven species of marine turtles, six inhabit the tropical and subtropical coasts of eastern Australia. Plastic ingestion and entanglement may be causing turtle numbers to decrease, yet there is a need for more research into what effects these threats are actually having on populations.

Marine debris is a key threatening process (Injury and Fatality Caused by the Ingestion and Entanglement of Marine Life in marine Debris) under the Commonwealth Environment and Protection and Biodiversity Conservation Act 1999 and is listed in the Australian Recovery Plan for marine turtles as one of the threats to the recovery of marine turtle populations in Australian Waters. In Australia and other parts of the world, there is a lack of long term data about the types of plastics that are causing mortalities and if the plastic has actually caused these deaths.

A database consisting of marine turtle strandings and a standardised reporting sheet highlighting plastic ingestion and entanglement incidences for the coast of northern New South Wales, Australia was established using recorded information from Australian Seabird Rescue, Marine Turtle Rehabilitation Division. A total of 142 stranding incidences from 2001 - 2007 were listed in the database, with a total of 18 samples of plastic ingestion and 4 incidences of entanglement. By recording these incidences, the database will enable researchers embark on further studies and discussions on solutions to these problems.

Some of the stranding incidences are discussed, highlighting possible causes of death relating to plastic ingestion and entanglement. Inclusion of these incidences in the database is a starting point to record the types of plastic that are ingested by marine turtles. There is currently no unified method of quantifying and qualifying plastics or any other gross pollutants ingested by turtles, this database is the first endeavour at recording detailed information about the types of plastic ingested by marine turtles on the north coast of New South Wales.

Some of the recommendations I made in my integrated Project were quoted and referenced in “Impacts of Plastic Debris on Australian Marine Wildlife by C&R Consulting for The Department of the Environment, Water, Heritage and the Arts, 19th June, 2009.

The following information was extracted from the above report, as it is still very relevant, 7 years later:

To improve information on the impacts of plastic debris on marine wildlife, a national database needs to be established and a nationally consistent, systematic approach to monitoring and the recording of information needs to be implemented. Key future research priorities include:

- Facilitating the collection of more necropsy data specifically aimed at detecting ingested plastic debris. Devise species-specific methods aimed to increase the probability of detecting ingested plastic (e.g. Francis 2007).

For example, in 2003, the Australian Government listed the ‘injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris’ as a Key Threatening Process under the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, and is developing a ‘Threat Abatement Plan for the impacts of Marine Debris on Vertebrate Marine Life’ (Commonwealth of Australia 2008b).

The susceptibility of different turtle species to both entanglement and ingestion is likely to be closely related to their diet and movement patterns, both of which can change during their lifespan (Francis 2007).

The development of a centralised national database would permit statistical analyses to further define the magnitude of the impacts on each species, through time and space. It would also allow the development of risk assessments through the calculation of the probability of entanglement or ingestion of plastic debris for any given species in different locations and in different months of the year. Modelling could then be applied to link plastic debris accumulation 'hotspots' to turtle feeding grounds and rookeries (Kiessling and Hamilton 2003), and also whale migration routes, dolphin habitats, dugong protection areas and feeding grounds, pinniped foraging habitats and seabird nesting sites. Supplementing the analysis of a centralised database with experimental work to track patterns of plastic debris movement (e.g. Wilson and Randall 2005) will provide further information to support measures to prevent and mitigate the impacts of debris on marine wildlife.

A national database would ideally be able to draw on existing recorders and expertise, and would complement those with targeted surveys that monitor locations where there are gaps in the existing coverage. Monitoring methods would vary according to the location, as much of the existing monitoring in remote locations is already driven by the accessibility of an area (Riki Gunn, Carpentaria Ghost Nets Programme, pers. comm.), but still allow comparisons with other areas. Expertise about an area could be provided by people or organisations already engaged in existing studies, including local indigenous communities.

Ideally, a number of steps would then be followed in the development of a national database.

- Make use of the existing State databases (Qld, NT, SA) to aid and inform the development of similar databases in other States (NSW, Vic, WA, Tas).
- Standardise the methods used to collect and store information, with a standardised training program for all data collectors. Ensure that plastic debris causing entanglements and ingestions are described in as much detail as possible.
- Collect State data into a central national database and allow access for those wishing to conduct relevant and related research projects.
- Determine the necessary statistical analyses required to develop a more accurate estimate of the magnitude of the impact of plastic debris on marine wildlife.
- A national workshop engaging scientists, managers and coastal communities could elicit key questions that need to be asked of the national database. This workshop may also recommend research to supplement the results likely to emerge from analyzing the database.
- Facilitate the collection of more necropsy data specifically aimed at detecting ingested plastic debris. Devise species-specific methods aimed to increase the probability of detecting ingested plastic (e.g. Francis 2007). This may include examining regurgitated food in seabirds (Copello and Quintana 2003) or scats in pinnipeds (Eriksson and Burton 2003).
- Develop a method to assess cryptic mortality (unrecorded or unknown deaths) caused by impacts of plastic debris.

Seek involvement of fishers (commercial and recreational), fisheries authorities and marine tourism operators in collecting and sharing information about marine wildlife entanglements observed at sea. This could be aided by the distribution of a • standardized recording form and clear instructions for submitting completed forms to the appropriate authorities.

- Analyse climatic and oceanographic information to assist in detecting seasonal patterns in the impacts of plastic debris on marine wildlife.
- Devise a reporting system for the national database and supporting research, to monitor trends in the magnitude of the impacts of plastic debris on marine wildlife. Reporting must take into account the limitations of survey methods and provide the framework for updating and refining methods.

- Develop a system of regular public reporting to increase the general awareness of the issue.

#### b) sources of marine plastic pollution

The main sources of marine plastic pollution are coming from the land. Dumping of rubbish and other plastic debris in the marine environment has become an increasingly serious problem. Manufacturers have been producing plastic and plastic wrappings and bags that they claim will biodegrade faster for many years. Although this so called biodegradable plastic may break down, if it ends up in the ocean it will cause problems for marine wildlife and birds, before it starts to break down.

There are many sources, all widely documented:

Urban and industrial waste sites, sewage and stormwater outlets, and other land based rubbish that enters the ocean through rivers and creeks or is left on the beach by humans.

As coastal development and populations increase along the coast, this is the main source of marine plastic pollution that we find during ASR's regular beach clean ups. More than half of the items found in our beach and river cleanups are plastic beverage containers, bottles, cups, lids and straws and single use plastic bags..

Of the small pieces of plastic that we find, most of it looks like it used to be household items, old broken plastic bottles and plastic pieces that look like sticks and caps. We also find many nurdles. Australian Seabird Rescue received a grant this year for \$5,000.00 through Keep NSW Beautiful, funded by the EPA's waste levy. We have conducted beach cleanups in relation to this grant. They have supplied us with data sheets that they want copies of once we have finished the project. These data sheets do not list plastic bottles to be recorded. This is very disappointing as the funding has come from large polluters like Coca Cola Amatil as part of the EPA's waste levy. We are concerned that funding is available but the information they expect us to collect does not capture the full picture of the type of plastic pollution that we are mainly finding on the coast.

#### c) the impacts of marine plastic pollution, including impacts on species and ecosystems:

Impacts on species and ecosystems is well documented by many of people around the world and some of our findings are listed above in current and past research and literature that we have undertaken. Over 40 % of the sea turtles that come into care at Australian Seabird Rescue in Ballina are affected by plastic ingestion and/or entanglement, many of these animals die.

As listed above many species of seabirds and pelicans are affected by plastic ingestion and/or entanglement, often causing their demise.

We have found in any estuary, 20% of pelicans are injured by fishing line (made of plastic).

Last year we had a Green Sea Turtle (that was otherwise healthy) that had to be euthanised due to a plastic bag wrapping tight around its flipper. The bag must have been there for a very long time because as the turtle grew, the circulation to its flipper was cut off and the flipper was 90% detached by the time we were alerted and tried to rescue the turtle. The turtle had to be euthenased by our vet Evan Kossak. We have hundreds of examples of plastic pollution affecting species and ecosystems. If you require any more of these, please contact us.

and human health:

Plastics are not biodegradable, they merely break down into smaller pieces, this fact is also well documented many times over.

Plastic pieces are attractants for pcb's and some pieces of plastic in the ocean have millions more times pcb's on their surface. These concentrated toxic pieces of plastic can affect many birds, marine wildlife and ecosystems. This fact is also well documented. If these toxins are affecting marine wildlife, especially fish, then it is obvious that it is entering the food chain and affecting human health. David Suzuki says that every human being is walking around with 2 pounds of toxic plastic in their systems, due to it entering the food chain through many pathways.

d) measures and resourcing for mitigation: and

Please refer to the recommendations listed in a) in the review of literature and additional recommendations below.

There are thousands of people along the Australian coastline and in the ocean surrounding Australia on any given day picking up plastic pollution on our beaches and estuaries and recording the types and amount of plastic they have found. There is a lack of uniformity in recording data on rubbish collected on beaches and necropsies of animals affected by plastic pollution.

There needs to be an Australia-wide database to record this plastic pollution that has been collected to create more research opportunities to understand how we can minimise and hopefully one day, solve this massive problem.

There needs to be an Australia-wide database where scientists and wildlife carers can record the amounts and types of plastics found inside or around animals after conducting necropsies

More funding for wildlife rescue groups to be able to rehabilitate animals effected by plastic ingestion and entanglement and to be able to conduct necropsies on each individual animal to see if the animal has been affected.

A container deposit scheme to recycle single use plastic bottles should be introduced Australia-wide. It has been very successful in the states that have this in place already.

Ban balloons Australia-wide

Ban helium balloon releases Australia-wide

Ban plastic bags, bring back paper bags at all retail outlets.

More funding for non-profit groups to increase education and awareness is so important and funding has dropped dramatically over the last ten years. It is difficult for wildlife rescue groups to find the time to fundraise as well as caring for the creatures affected by plastic pollution. There should be a fee on companies that create the plastic items that are causing problems for the wildlife. This money should be filtered to the wildlife rescue groups and to beach cleanups. This funding could come from the EPA.

Education is the key, especially for younger generations.

Education of the general public on recycling and plastic pollution disposal and dangers to marine wildlife and birds. An Australia-wide campaign, linking all of the non-profit groups and others that have been wanting similar solutions to gather momentum and share the same information, funding and knowledge about the issues.

e) any other relevant matters

Here are some of the comments from some of the volunteers at Australian Seabird Rescue, in how they have been affected by working with the animals that have suffered from plastic ingestion or entanglement:

Plastic pollution with regard to rehabbing bird species and sea turtles is both saddening and depressing as there are ever increasing occurrences and it is hard to not start to wonder if the human race has an agenda that I didn't sign up for. We are wiping out species at alarming rates and consuming plastic with no regard to quality, longevity or, heaven forbid I mention it, the environment. My heart dies a little bit every time a pelican or a pied oyster catcher or even a silver gull loses a leg to fishing line. Sea turtles come into care starving, parasite ridden, sunburnt and near death due to an inability to dive underwater due to the gases in their gut caused by their inability to digest plastic and the acid reaction in their gut as a byproduct. When will we ever learn? Can the human race survive alone?

Australian Seabird Rescue – Central Coast branch launched 10 years ago this year and over this time a majority of the rescued birds has been for line entanglement, this includes – Pelicans, Cormorants, Seagulls, Darters, Penguins and many other shore and water birds with Green Sea Turtles also suffering during this time from fishing hook and line injury. Plastic ingestion has seen Black Browed Albatross, Yellow Nosed Albatross and Southern Giant Petrels come into care – we transfer these animals to Taronga Zoo as we don't have the facilities for long term care for these specialised animals who are suffering from starvation by the time they are rescued. It's devastating to see these endangered animals coming into care because of human carelessness. Discarded pollution entering our waterways have killed many hundreds/thousands of animals that we were not able to find prior with evidence of their decaying bodies showing plastic ingestion around our local waterways – Tuggerah Lakes, Brisbane Waters and Lake Munmorah. Balloons and balloon strings have been found on dead bodies of Cormorants and Darters hanging from the pine trees near major waterways here on the coast and a balloon release from one of our local Clubs Mingara found in a sick green turtle rescued by our Ballina branch some 600kmks away! It's clear that there needs to be a solution to the plastics entering our marine environment with a majority of these animals on the IUCN Red List and they require protection now!

Hi Kath

I am sorry but I cannot volunteer at ASR any more.

I am too distressed and heartbroken at the sight of so many turtles and sea birds tangled in plastic or that have digested plastic. They suffer terribly but you all do a fantastic job to help them.

Keep up the great work.

Volunteering and working for the animals of my earth and my sea make my heart its fullest, and tie me to the land and the planet - but the plastics that strangle them and choke them turn me cold, angry, ungrounded. Fighting a flood of people I cannot see.

I started a petition to ask a major supermarket to stop using plastic bags for home deliveries (sometimes they would put one item in one plastic bag) on [change.org](https://change.org). I have nearly 20,000 signatures.  
Dani Suslov

Since volunteering at Australian Sea bird Rescue I have witnessed first hand the devastating impacts plastic can have on marine wildlife. Since volunteering at ASR I am now determined to limit my plastic usage and educate others around me of the negative effects plastics can have. It is upsetting to see these animals suffer from humans careless actions.

Before I started at ASR I had no idea how much we rely on plastic. Now, my eyes have been opened wide and I see plastic everywhere! I now hate balloons because of the way it is affecting our ocean's wildlife. The couple of petrels we had not long ago proved that balloons do blow... They cause widespread illness to whichever animal decides to eat them. They recognise our pollution as a food source because they look so similar once aged in the ocean. Over the past 8 months since starting at ASR, it has sickened me to see how many animals are suffering with this epidemic and, at the same time, it saddens me to see that this is the cause of death that many of our beautiful animals suffer.

I have written this report hoping that, for more than 20 years of educating people about plastic pollution in the ocean, that something will finally change. I sometimes feel like I am hitting my head against a brick wall when I go for a stroll on the beach and still see so many household items littered all over the place. The plastic pollution problem has become my life. I live and work on-site at Australian Seabird Rescue and Sea Turtle Hospital in Ballina, NSW. For the past 16 years, I have witnessed first-hand the effects of plastic pollution on the wildlife that we rescue. I have spent many days, probably years of my life trying to nurse these creatures through their plastic induced injuries and will continue to do so until the day I die. It has become my life. There are many people in Australia and on the planet that are in a similar situation as mine. They cannot sit back and think the problem is too big, or that it is too late to do something. You only need to look on any social media outlets to see that there is growing concern and so many people are trying to do their bit in fixing the problem. But as for most things, it all comes down to funding, education and change. We need a container deposit scheme. We need a ban on plastic bags. We need policies in place to stop so much plastic that is made in other countries from entering Australian retail outlets. All of the children's toys that make people money that are not necessary, as the toys break in a few days after purchase. We need more funding to keep up our tireless work, we need more support from the industries that have created this disaster and we need more funding from the government. I am available to supply you with any more information that you require for this extremely important enquiry and report. Thank you for taking the time to read our submission and we look forward to the outcomes from the information supplied.

Regards,

Kathrina Southwell  
General Manager, Australian Seabird rescue and Sea Turtle Hospital, Ballina.

