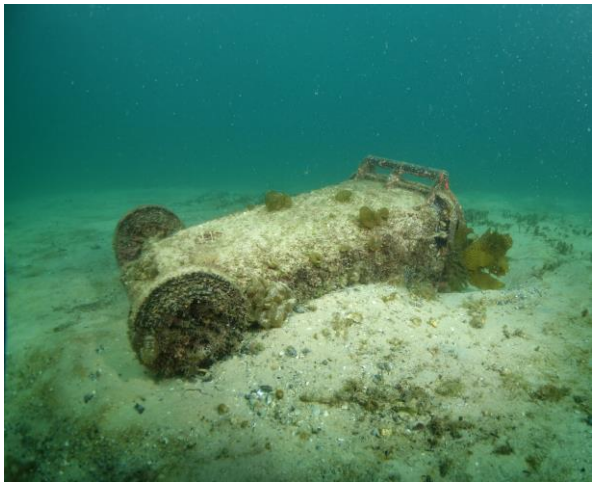
Marine Pollution – A Diver's Perspective

We all know how unpleasant it can be going diving amongst other people's rubbish; but are a few plastic bottles and bags really a problem? How "clean" are our oceans anyway?

Pollution is defined as anything introduced into the environment by humans that is then detrimental to, for example, marine life, human health and amenity. Note that it has to be "detrimental"; some things, such as artificial reefs, are not considered to be pollution even though they are introduced.

There are four main categories of marine pollution:

1. **Conservatives** – substances that get into the ocean then do not degrade, for example heavy metals, PCBs and long life radioactive isotopes
2. **Nutrients** – largely nitrogen and phosphorous from sewage and runoff that increase algal growth and can lead to toxic blooms and "dead zones"
3. **Dissipatives** – such as heat from power stations and high salinity water from desalination plants, and
4. **Debris** – such as plastics, old fishing gear, bottles and rubbish in general.



From a diver's perspective, we obviously want to avoid 1-3 but we can't do much about them (unless you become an activist!). We can do something about debris, though. But how big is the problem?

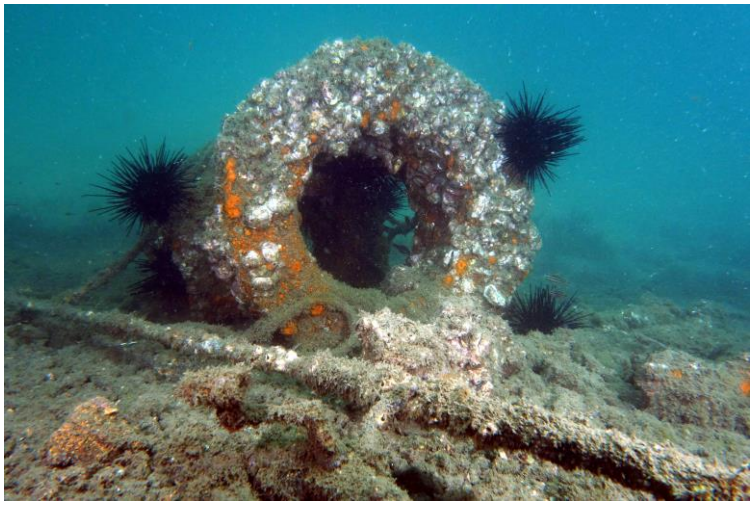
Current estimates are that there is over *100 million* tonnes of debris floating in our oceans. We add about *7 million* tonnes per year. Most of this – around 80% - originates on land and is blown or washed into the sea. The rest originates from ships and other vessels throwing rubbish overboard or losing fishing gear.

Most of this rubbish – around 90% - is plastic. Plastics are by far the biggest problem of all marine debris. Many studies have shown the detrimental effects of plastics. Old fishing gear, such as old fish traps and nets, keep catching marine life – a phenomenon known as "ghost fishing". Whales are regularly found entangled in old lines and nets, as are turtles, dolphins and sharks.

An even bigger problem that is only just being recognised, though, is *microplastics*. Plastics don't biodegrade, but they do break up into smaller and smaller pieces. One square km of ocean has been measured to contain 334,000 pieces of microplastic, many of which are too small for us to even see.

These microplastics are then mistaken for food by sea birds, fish and even plankton. Once ingested, they can poison the animal through the release of toxins, or can block the gut. Many birds are dying because they are so full of plastic they can't eat anything else. *96%* of Flesh-footed shearwaters on Lord Howe Island contain plastic; one chick was found to have *275* pieces in its gut. This is the equivalent of you carrying 11kg of plastic in your stomach. Microplastics travel large distances, so the plastic on Lord Howe may have originated from a careless toss of a plastic bag in Brisbane or Sydney.

So, what can we do about this? There's the obvious stuff, not even diving-related, like refusing to use plastic bags or buy bottled water. Of course we can recycle, or can throw our support behind the current push to have a deposit scheme in NSW like the one that has worked well in SA for many years. We can also get involved in informing others through social networks. People are often surprised to think they may be contributing to the death of sea creatures by adding to the demand for plastic bags and bottles.



As divers, though, we can take more direct action in the ocean. We can take a netting bag with us on every dive, and bring a few pieces of rubbish back with us. Focus on plastics, particularly discarded fishing gear and flimsy plastics that can break up or be ingested. Take all plastic bottles, but leave glass ones especially if they have a clear open mouth – they may be home to something and pose little risk. I've even started picking up a plastic bag whenever I go for a walk on the coast (you can always find one!) and filling it up on the way back.

Finally, we can get involved in volunteer activities such as debris survey dives, Clean Up Australia days http://www.cleanup.org.au/au/ and projects like "Two Hands" http://www.twohandsproject.org . Be warned though; once you start picking up the occasional piece of plastic it's hard to walk past more of it. You do feel good though, thinking you may have just saved a future turtle or chick.

Article by John Turnbull.