Rubbishing the ocean

The problem of plastic debris

by Dr Martin Cawthorn

The whale, a juvenile minke, died soon after it was found stranded on the coast of Palliser Bay, east of Wellington. Despite repeated efforts by locals and Ministry of Agriculture staff to return it to the safety of deep water, the distressed whale could not be rescued.

When I conducted a post-mortem of the thin and emaciated whale I found a polythene bag stuck in its oesophagus. Minke whales are known to be attracted to ships at sea and this curiosity may, in part, be responsible for the reports of them eating plastic debris thrown from fishing boats.

Again at Cape Palliser a fur seal was seen with plastic strapping stuck around its neck. It had apparently picked up the loop when young and, as it grew, the 'collar' tightened, gradually cutting through the fur, skin and blubber, until it was scraping against the muscle tissue underneath. The young animal was emaciated and in poor condition.

Such sad occurrences are a telling testament to the effect that one of the so-called benefits of the modern age — plastic — is having upon the environment, especially the marine environment.

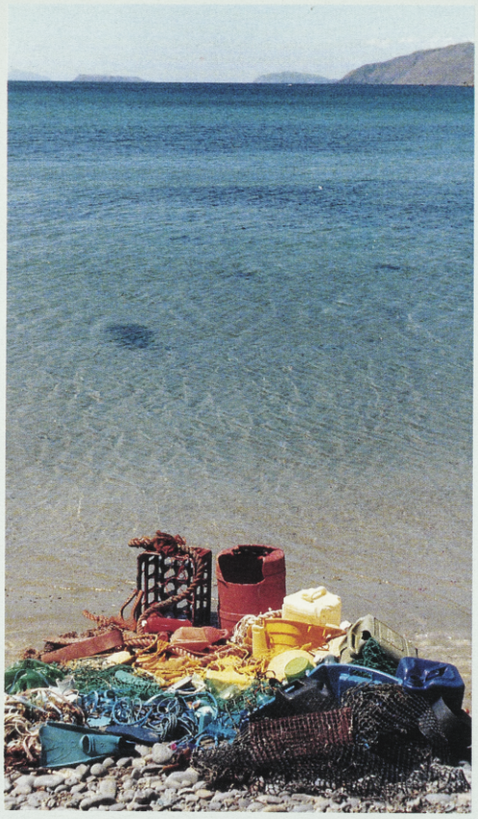
It appears in a variety of forms — from virgin plastic granules, polythene films and bags, detergent and other containers, chunks of polystyrene, lost or discarded monofilament and polypropylene fishing nets and floats, to synthetic strappings and ropes.

A single species, the North Pacific fur seal, is estimated to be losing as many as 50,000 animals a year through being entangled in such rubbish. Anywhere between 300,000 and 700,000 seabirds a year are being killed.

The tide of plastic garbage began to surge just after World War II, and the boom in commercial fishing since the 1960s has seen more and more gear either abandoned or lost. Packaging of all sorts is plastic and popular both because of its durability and low cost. For example, the cost of manilla envelopes is almost twice as high as polythene.

Staggering figures

Worldwide, the figures are staggering. In 1975 alone, the world's fishing fleet is estimated to have dumped about 23,600 tonnes of synthetic packaging bands and material as well as 135,400 tonnes of plastic fishing gear into the sea (National Academy of Sciences 1975). It is not just the fishing industry which is at fault. As much as 6.5 million tonnes of solid waste comes from the world's merchant fleets.



Wellingtonian Margaret Cochran created this colourful "environmental sculpture" when she came across a quantity of debris near Makara, west of Wellington. The collection resulted from a beach comb of just a hundred metres or so. Mana and Kapiti Islands in the background. *Photo: Margaret Cochran.*

The above figures do not include the rubbish dumped by the world's navies or pleasure craft.

The best evidence of the plastics pollution problem can be found in the North Pacific. There, each night, Japanese, Taiwanese and Korean fishermen set out their thirteen-km-long, eight-metre-deep nets, with weights at the bottom and floats at the top. In all, the night's work stretches 32,000 km of invisible curtains of net. Each morning, when the nets are retrieved, an average of 16 km of netting escapes detection. These nets are worth thousands of dollars and represent a major financial setback should they be lost. Such 'ghost' nets are a hazard not only to marine mammals but also to ships at sea. Ironically, ten times more northern fur seals are killed each year in the nets than are killed in the hunts opposed by animal-rights groups.

Terns and other small migratory birds have been found with virgin plastic granules in their guts. It is thought they pick these up in mistake for food found at the sea surface. It has been estimated that more than 1000 tonnes of similar granules or pellets are scattered along New Zealand's coasts.

While plastic pollution is obviously a greater problem elsewhere, nevertheless it has been responsible for a number of unpleasant incidents here — not to mention the unsightliness of our coastlines littered with such material.

The following are just a few examples of incidents I have observed or have had reported to me.

Seals

The first record of an entangled fur seal was made in 1975, and collared animals have been sighted regularly since then.

Polypropylene strapping was first introduced into New Zealand in 1969. This tough, buoyant material is generally coloured light blue and is fastened around a package either by heat sealing or with a mechanical metal crimp. It appears to be common practice at sea to slip the loop of strapping off the end of the package rather than cut if free, and the loop is then cast overboard along with other ship's garbage.

Unfortunately for their own safety, marine mammals are both irrepressibly playful and curious. Fur seals are attracted to floating debris and will dive and roll about in it as they do when swimming in kelp. When playing with rings of plastic strapping they can readily slip their heads through the loop as the lie of the fur allows the ring to pass unimpeded around the neck. However, the long guard hairs, like barbs, prevent the loop being slipped off.

Recently two fur seals at Cape Palliser, three at Open Bay Islands in Jacksons Bay, one at Kaikoura and one at Taiaroa Heads were seen with plastic strapping around their necks. Unless entangled seals can either free themselves or else be freed of similar tight collars, they will most likely die a slow death from strangulation, starvation, drowning or infection.

One of the most chilling prospects is that when an entangled seal dies and decomposes, the indestructible strapping band that contributed to its death is free to be picked up by any other seal, with the same