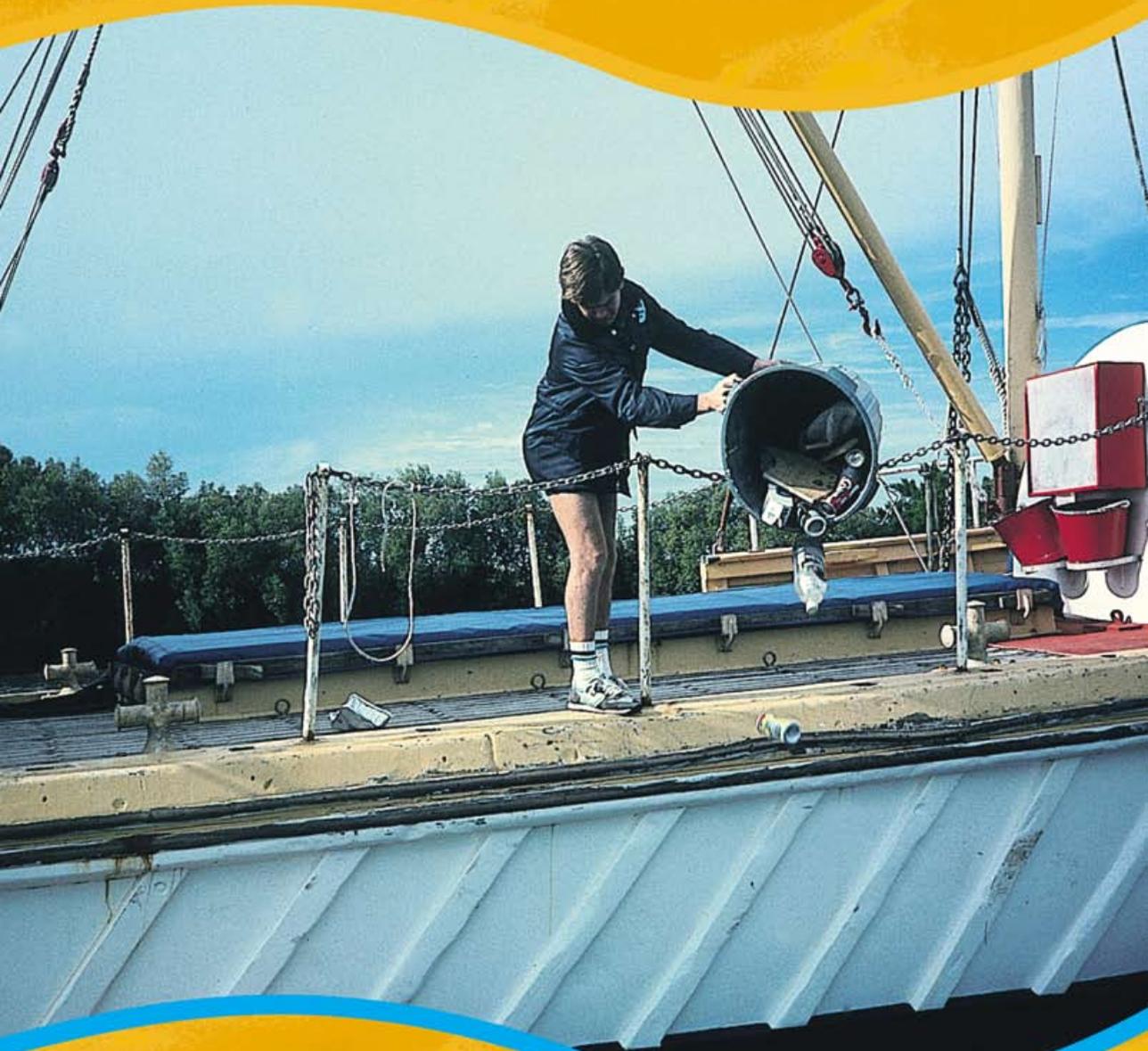




Marine Reader Series

# Don't Mess with the Sea



Bob Winters

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Wet Paper Publishers and Consultants  
14 Milbong Tce  
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Telephone: (07) 5597 2806 Facsimile:  
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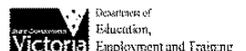
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# Don't Mess with the Sea



**Bob Winters**

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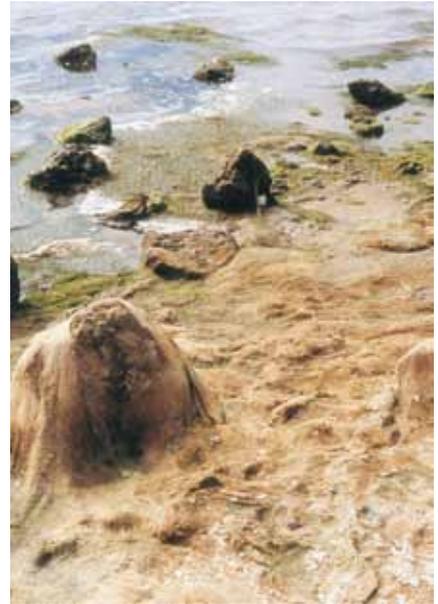


# What's the problem?

Litter and pollution in the sea harm sea life and human life. Litter injures people playing on the beach. Pollution makes people sick when they swim in the sea. Plastic litter tangles around seals, birds and fish. This prevents these animals from moving or feeding. It cuts into their flesh, wounding or killing them. Many marine animals carry lots of items of litter in their stomachs.

Pollution in the water causes many problems. Chemicals can poison sea life. Sewage and fertiliser washed from the land feed bacteria in the sea and cause disease. When oil is spilled in the sea, it can cover sea animals and birds.

Oil gets into their lungs and stops them breathing. It gets into their stomachs and poisons them. It covers birds' feathers and stops them flying.



Fertiliser in the sea helped cover these rocks with algae.

*Many marine animals carry litter in their stomachs. How did this litter get there?  
How does oil kill marine animals?*



These penguins are having oil cleaned off them after an oil spill.



**Did you know?**  
International marine protection (MARPOL) laws protect our sea life.

Never throw rubbish into the sea!

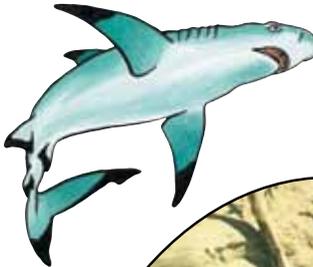
## Overboard

For thousands of years, sailors threw their rubbish overboard. Most of it was food scraps and toilet waste. This rubbish was eaten by fish and sea birds, or just rotted away.

Modern rubbish contains lots of plastic waste. Plastic can stay in the sea for thousands of years. It can't be eaten and it doesn't rot, and it causes lots of problems. Scavenging sea birds get entangled in floating plastic. Plastic bags can jam boat propellers.

Many animals die tangled in fishing nets or line that has been thrown overboard by careless fishers. This line can also remain in the sea for thousands of years, a lethal trap for many sea creatures.

Another new hazard is large ship containers that have fallen from cargo ships.



*How do discarded nets and fishing lines harm sea creatures?*



# Oil pollution

When an oil tanker is damaged, it can spill oil into the sea, float on the surface as a slick and wash up on the shore. Most animals and birds caught up in the spill will die.

The problem of oil pollution may be getting worse. All ships and boats that use fuel could cause an oil spill. New tankers are less likely to leak but they are very large. If they do have an accident, they spill much more oil into the sea.

The most common form of ship oil pollution is caused when the waste is pumped from the bilge into the sea. The bilge is a large container under the engine that collects water and oil. Bilge contents are supposed to be pumped into storage tanks when the ship is in dock.

Leaks can happen accidentally when oil is being pumped between the ship and the dock or around storage containers on a ship.



A penguin being cleaned

## Did you know

- Most of the oil that gets into the sea does not come from ships.
- Only small amounts of the litter and pollution in the sea comes from boats and ships.



This ship has run aground on a reef. Oil has started to leak from the engines, fuel tanks and cargo into the sea.

*Where does most of the oil in the sea come from?*



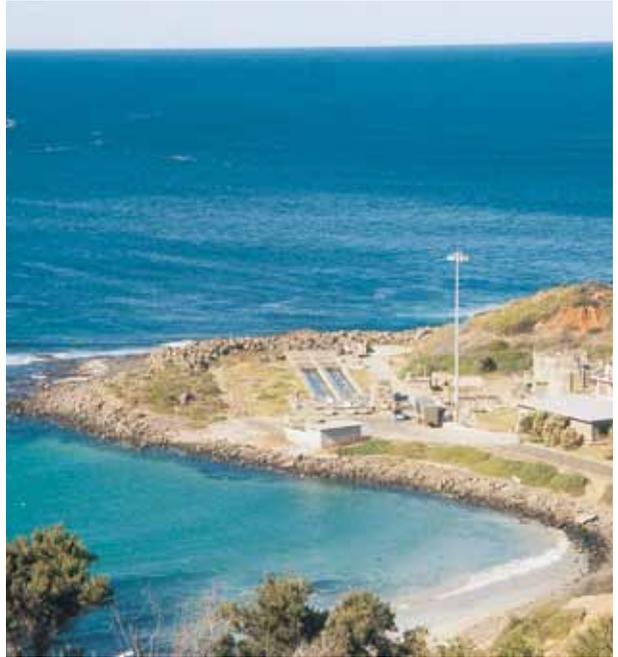
# Where does pollution come from?

Most of the litter, oil and other pollution in the sea doesn't come from boats and ships.

It comes from the land and is washed into the stormwater system.

The stormwater system is a network of large underground pipes in our cities. It removes rain water quickly from streets and prevents flooding of homes and roads in low-lying areas. The pipes channel the stormwater to a creek or empty straight into the sea.

Chemicals, oil, fertiliser, litter and even dog droppings wash into drains and into the stormwater system every time it rains.



This sewerage treatment plant discharges treated effluent into the sea.



This stormwater drain has become polluted with oil from the buildings in the background.



This litter has been caused by people dumping rubbish in the mangroves.

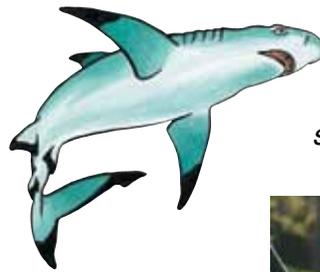
## What causes litter?

Litter can be seen along country roads, city streets, in parks and many public places like beaches.

Most litter is dropped by careless people. They may be driving and don't want the rubbish in their car, so they throw it out the window. They may be eating some food and don't want to carry the wrapper, so they drop it. The most common type of litter is cigarette butts. Cigarette filters can remain as litter for many years.

Some litter is rubbish that falls out of full rubbish bins. Birds or dogs cause litter when they pull rubbish out of bins looking for food. Rubbish also blows out of trucks and trailers going to the tip.

Some people even dump their rubbish in public places because they cannot be bothered to put it in the right place.



*What is the most common type of litter?*

*What is a stormwater system?*



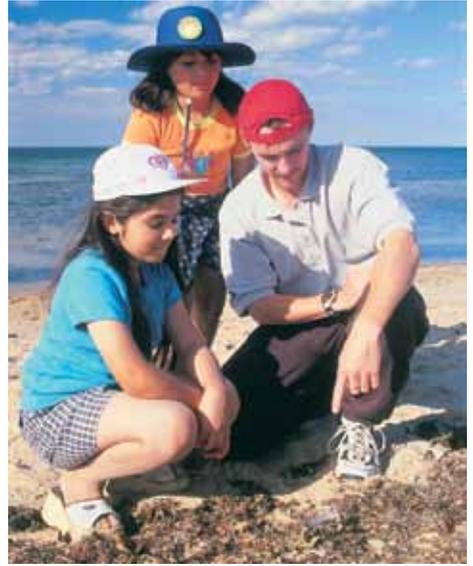
If all the cigarette butts dropped by smokers every year in Australia were lined up, they would stretch twice around the world.

# What's the damage?

Litter harms the environment. It can hurt wildlife and harm people and their pets.

Some organic litter, like food, will rot. Bacteria are the living things that make this rubbish rot. Some of these bacteria can cause disease in animals and plants. When many bacteria breed in organic material in the sea, they use most of the oxygen in the water. This makes it difficult for sea animals to survive.

Glass, plastic and metal will not rot or disappear. Most plastic waste floats. All oceans in the world have plastic litter floating in them. People and their pets get hurt on the beach. Syringes that have been thrown into gutters can end up on beaches where people can step on them. Broken glass on beaches cuts the feet of people and pets.



Needles on our beaches are an increasing problem.

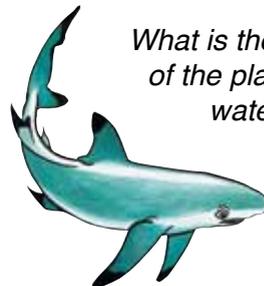


This plastic ring will prevent this sea-lion from feeding properly.

*What type of litter rots away quickly?*

*Name three items of litter that do not rot.*

*Why are syringes a problem on our beaches? How do they get there and how should they be removed?*



*What is the name of the place where water enters the stormwater system from the gutter?*



A beach cleaner

## How's the mess cleaned up?

If nothing is done to prevent rubbish entering the sea, a lot of it ends up on beaches. Many cities and coastal towns use special tractors to rake and pick up the litter. Unfortunately, these rakes also remove the interesting seaweeds and shells from the beach.

Water in the gutters enters the stormwater system through an opening called a side entry pit. Some cities and towns place special plastic sieves in the pit to catch the large bits of rubbish. They must be cleaned regularly or the stormwater system blocks up.

There are special ways of removing litter and rubbish from the environment. Expensive machines can extract litter from stormwater. Special litter traps have been built in creeks and rivers (though much of the litter escapes during floods). If oil spills occur, booms can be dropped to contain the pollution and teams of workers can clean and release affected birds.

Wouldn't it be better to prevent litter and rubbish from polluting the sea in the first place?



# Preventing litter

The best way to prevent litter is to persuade people not to create rubbish. Fining people for littering does not seem to stop them. Many people who litter, don't understand how their rubbish can affect the environment. People need to know where they can dump their rubbish safely.

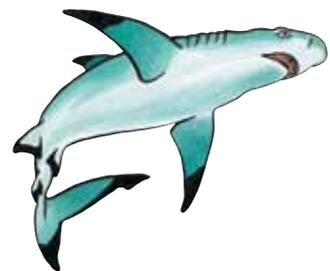
Rubbish bins need to have lids that prevent rubbish blowing out. The lids also need to stop foxes, dogs and birds from pulling out rubbish for food. Bins should be emptied frequently.

Trailers and trucks carrying rubbish need to be covered with tarpaulins so litter does not blow away.

The best way to prevent litter is to take all your waste home. Recycle as much as you can and place the rest securely in a bin.



Making sure rubbish does not blow out



*Make a list of five ways to prevent litter entering the sea*

It would be a lot easier if people did not litter



*What are three things besides litter that gets washed down the drain?*

*How do each of these affect the sea?*



## **Down the drain**

What else, besides litter, gets washed down drains?

Rain can wash garden leaves and lawn clippings down drains. Many people sweep and hose garden rubbish down drains on purpose. Their gardens look nice but the waste can create a smelly polluted mess in rivers and the sea. When cars are washed on a driveway, the water, detergent and dirt goes straight down the drain. The detergent helps some plants and bacteria grow and take over waterways. Washing the car on the lawn is better for the grass because then it gets some water and fertiliser.

When we use too much fertiliser or garden chemical sprays they can wash into the stormwater system and out to sea.



Stormwater drain and runoff

# Doggy do, doggy don't!

Dogs drop up to 70 tonnes of faeces every day in some cities. This is about 8 tip truck loads of smelly horrible droppings. Dog droppings will dissolve, sometime slowly if they have been baked in the sun. As they dissolve they will gradually get flushed into the stormwater system. Large quantities of droppings from meat-eating animals or people cause major water pollution.

Yet this pollution doesn't have to happen at all. Most dogs go for walks with their owners. Responsible dog owners take a plastic bag or other container when they exercise their dogs. They will pick up their dog's mess and at the end of the walk they put it in a bin or flush it down the toilet and place the bag in the bin.



*How will this dog owner clean up after his dog?*

*What should he be carrying?*

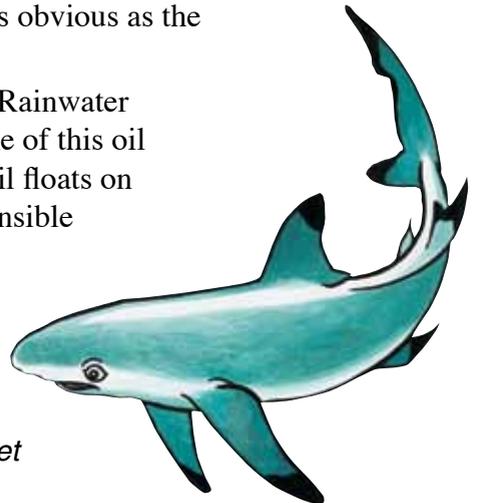


Oil on a road

## Oily roads

Busy car parks often have large black stains on the ground. These stains are where oil has dripped from car engines. Older and badly maintained cars may leak oil from the engine, the gearbox or brake system. Oil also drips onto the roads, but it is not as obvious as the oil in car parks.

Oil does not mix with water but floats on top of it. Rainwater washing into the stormwater system will carry some of this oil with it. When it reaches a creek, river or sea, this oil floats on the surface and sticks to plants and animals. Responsible people make sure that their cars do not leak oil.



*What happens to oil if it leaks from a car engine? How does it get to the sea?*

## Out of sight

What can you do with the water and chemicals after you have cleaned a paintbrush? Cleaning paintbrushes over a drain or gutter sends the water and paint straight into the stormwater system resulting in damage to animals and plants. Clean paintbrushes in old plastic containers. Don't empty the containers, just keep them in a safe place. The water eventually evaporates and the paint dries in the container and you can throw it away. It is better to wash paintbrushes on the lawn than over a drain.

Some people tip unwanted chemicals into drains because they are lazy and don't want to find out how to dispose of the chemicals correctly. Find out what to do with unwanted chemicals by asking your local authority.



Don't wash paint down the drain



**Did you know**  
Industry is controlled by very strict laws



*Industrial chemicals are sometimes illegally poured into the stormwater to save money on proper disposal. What can we do to prevent this?*

# Preventing litter and pollution

To keep our cities healthy for people all our waste must be properly disposed of.

Oil from the car can be taken to recycling stations and other household items can be recycled in household rubbish bins.

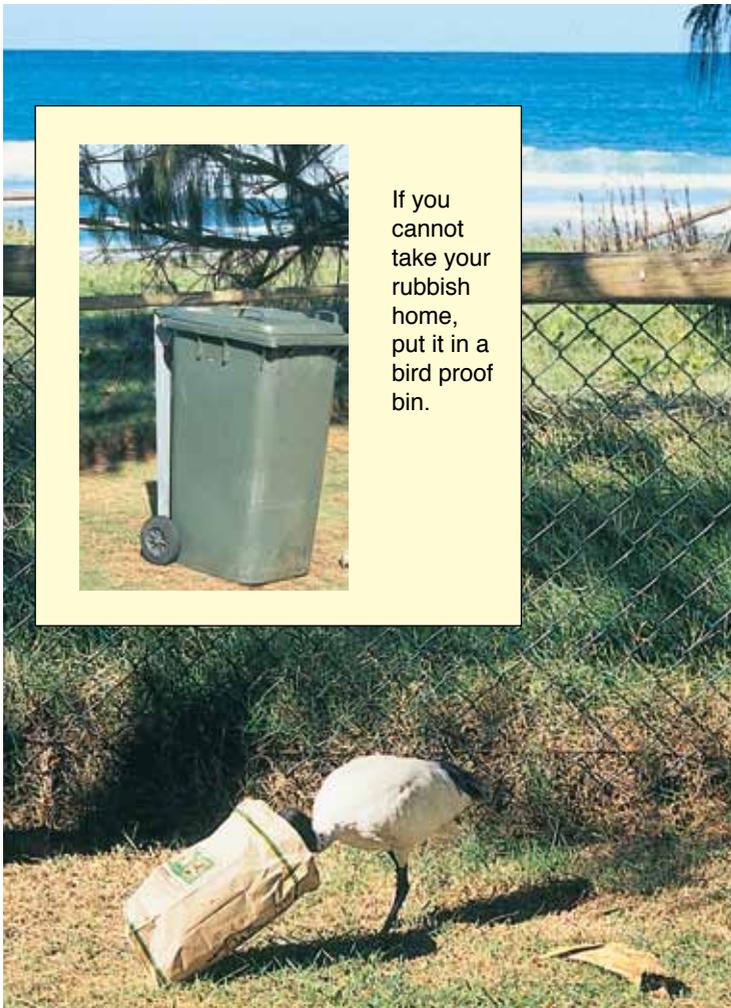
Plastics, glass, paper, cardboard, newspapers and cans are all able to be recycled.

We can prevent much litter at the beach by placing rubbish in bins that are bird proof.

The best way to prevent litter is to reduce what we use. Can you think of ways to do this?



Oil can be recycled at the rubbish tip



If you cannot take your rubbish home, put it in a bird proof bin.

*Why are wheelie bins better than garbage bins at busy city beaches?*

*Can oil be recycled in your city or town? If so, where?*



Ibis

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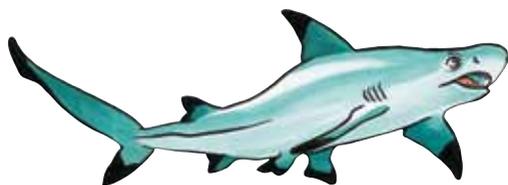
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- Book 3 : At the Beach

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- Book 8 : All Kinds of Boats
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- Book 11 : Shipwrecks
- Book 12 : Our Day on a Research Boat

## Level 4

- Book 13 : Let's Go Sailing
- Book 14 : Food from the Sea
- Book 15 : Classification and Survival
- Book 16 : Sea Creatures at Risk
- Book 17 : Better Boating Behaviour
- Book 18 : Don't Mess with the Sea



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