



## 2007 South West Marine Debris Project Report to the Minister

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### Tangaroa Blue Ocean Care Society

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[www.oceancare.org.au](http://www.oceancare.org.au)

*"Marine pollution represents one of the most significant environmental problems facing mankind."*  
Tharpes, Yvonne, "International Environmental Law: Turning the Tide on Marine Pollution," 20 U. Miami Inter-Am. L.Rev. 579, 581.

*"A single one-litre drink bottle could break down into enough fragments to put one fragment on every mile of beach in the entire world."*

Moore, C. "A Comparison of Neustonic Plastic and Zooplankton Abundance in Southern California's Coastal Waters and Elsewhere in the North Pacific." Presentation to the World Ocean Conference. Santa Barbara, CA, USA, October 2002.

### INTRODUCTION

Tangaroa Blue Ocean Care Society, [www.oceancare.org.au](http://www.oceancare.org.au) is a non-profit organisation dedicated to ocean conservation and protection.

The goals of the society are:

- To create awareness in the community of marine environmental and conservation issues through marine environment science projects; and
- To proactively participate in and organise marine conservation projects which address marine conservation issues.

In 2004, Tangaroa Blue Ocean Care Society (TBOCS) founded the South West Marine Debris Project to focus on the issue of marine debris in the South West region of Western Australia with an aim of finding ways of reducing the amount of marine debris making its way into our oceans and impacting on our marine life.

The South West Marine Debris Project comprises:

- The annual Cape to Cape Beach Clean Up – a community coastal clean up event in the South West of Western Australia;
- Monthly marine debris monitoring of five stretches of Capes coastline;
- An educational marine debris website [www.oceancare.org.au](http://www.oceancare.org.au);
- Marine Debris Educational Presentations for community groups and schools;
- Marine Debris Educational Materials including the Marine Debris Identification Manual and the Marine Debris Fact Sheets;
- Scientific papers and reports based on the data collected in the project.

The 2007 South West Marine Debris Project Report to the Minister aims to provide an update of our research findings and a list of recommendations which focus on reducing the amount of marine debris being found in local waters.

Thanks to the following agencies for funding and support, enabling us to continue the South West Marine Debris Project.

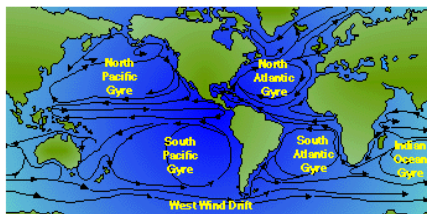


Australian Government



## 1. THE IMPACT OF MARINE DEBRIS

Under *Key Threatening Processes* in the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, "harmful marine debris" is defined as consisting of: "...land sourced plastic garbage, fishing gear from recreational and commercial fishing abandoned into the sea, and ship sourced, solid non-biodegradable floating materials disposed of at sea."



Marine debris can join one of 6 gyres, areas in our oceans that hold floating materials & marine debris for up to ten years or more before pushing them out where they then end up on coastlines around the world. The North Pacific Gyre is twice the size of the State of Texas and the marine debris circulating within weighs an estimated 3.5 million tonnes. <http://www.algalita.org/>

Over 6 million tons of debris finds its way into the world's oceans every year.

Dr David Kemp, Minister for the Environment and Heritage March 2004 [www.deh.gov.au/plasticdebris](http://www.deh.gov.au/plasticdebris).

More than half the debris in Australia's seas comes from land and up to 80% around our cities.

18,000 pieces of plastic litter are floating in every square kilometre of the world's oceans.

Plastics comprise about 60 percent of the trash found on beaches and about 90 percent of the debris found floating in the water.

U.S. Department of Commerce and U.S. Navy. *Turning to the Sea: America's Ocean Future*. Washington, DC, Sept 1999 & United Nations Environment Programme, Global Programme of Action Coordination Office; Swedish Environmental Protection Agency; and United Nations International Maritime Organization. "Marine Litter—What & Where?" <[www.marine-litter.gpa.unep.org/facts/what-where.htm](http://www.marine-litter.gpa.unep.org/facts/what-where.htm)> Accessed November 2, 2003.

Plastics are polymers which are made up of individual units called monomers. Plastics photodegrade when exposed to sunlight. When plastic breaks down it does not fully degrade but simply becomes more and more pieces of the same material. Plastics not only contain harmful chemicals in their makeup but also absorb harmful chemicals from seawater.

Tangaroa Blue Ocean Care Society 2007 [www.oceancare.org.au](http://www.oceancare.org.au)

Researchers estimate that it could take several centuries for these plastic pieces to biodegrade. 60 billion tons of plastic are being produced every year, and most of this for single use. *PELAGIC PLASTIC: Paper Prepared For AB 259 (Krekorian), AB 820 (Karnette), & AB 904 (Feuer); From Algalita Marine Research Foundation (AMRF); April 9, 2007*

About one million seabirds and 100,000 marine mammals and turtles (including 30,000 seals) are killed by plastic marine litter every year, around the world.

Dr David Kemp Minister for the Environment and Heritage March 2004

Research from the Capes region of South West of Western Australia has shown that between 83%-90% of all marine debris collected is made from plastics. *Tangaroa Blue Ocean Care Society 2006*

Plastic is a particular danger to 20 Australian threatened species, listed under the EPBC Act.

**Endangered species:** Loggerhead Turtle, Southern Right Whale, Blue Whale, Tristan Albatross, Northern Royal Albatross, Gould's Petrel. **Vulnerable species:** Leatherback Turtle, Hawksbill Turtle, Flatback Turtle, Green Turtle, Wandering Albatross, Humpback Whale, Antipodean Albatross, Gibson's Albatross, Southern Royal Albatross, Indian Yellow-nosed Albatross, Grey Nurse Shark, Grey-headed Albatross, Blue Petrel, and Northern Giant Petrel.

Dr David Kemp Minister for the Environment and Heritage March 2004

A 1997 study found that at least 267 species have been affected by marine debris worldwide, including 86% of all sea turtle species, 44% of all seabird species, and 43% of all marine mammal species, as well as numerous fish and crustaceans.

Laist, D.W. "Impacts of Marine Debris: Entanglement of Marine Life in Marine Debris, Including a Comprehensive List of Species with Entanglement and Ingestion Records." In *Marine Debris: Sources, Impacts and Solutions*, eds. J.M. Coe and D.B. Rogers. New York, NY: Springer-Verlag, 1997.

## **2. RESULTS FROM THE 2007 CAPE TO CAPE BEACH CLEAN UP**

The 2007 Cape to Cape Beach Clean Up was the third time this community event has been held. Members of the community, industry and authorities were invited to participate in the event which addresses marine debris in the South West of Western Australia.

In 2004, the issue of marine debris was highlighted from initial clean up data collated by Heidi and Richard Taylor from Tangaroa Blue Ocean Care Society. Since then the South West Marine Debris Project has focused on cleaning up the Capes region and collating data on the marine debris found. The data is then used by government agencies, industry and the broader community to find practical ways of reducing the number of the most commonly found items from ending up in our oceans.

The Cape to Cape Beach Clean Up is part of the South West Marine Debris Project, and its goals are to:

- raise public awareness about marine debris and its impact on the marine environment;
- clean up the South West beaches and coastline;
- collect detailed data and information on the types of marine debris being found; and
- collate the marine debris data and distribute to all parties with an interest in the ocean and coast, highlighting areas that can be worked on to reduce marine debris in our local waters.

Over the weekend of October 13 & 14, over 274 volunteers from the community, government agencies and industry participated in the 2007 Cape to Cape Beach Clean Up. Volunteers cleaned up 47 coastal sites between Augusta, Cape Leeuwin, Cape Naturaliste, Busselton and Dalyellup, in the South West of Western Australia.

### **2.1 Statistics from Cape to Cape Beach Clean Up 2007**

Number of volunteers	274
Number of beaches/stretches of coastline cleaned	47
Number of individual pieces of marine debris collected	19,081
Weight of marine debris collected	1,190kg
Number of bags filled	244.5
Number of kilometres cleaned	107.7km
% of marine debris made of plastic	83%



Left: Rigby & Sam Jones helped clean up Injidup Beach.

Right: Newton Moore Class from Bunbury High School at Contos Beach.



## **2.2 Total Items Collected During the Cape to Cape Beach Clean Up 2007**

### **Shoreline and Recreational Activities**

Total	Item	Total	Item	Total	Item
149	Plastic bags	5395	Pieces of plastic	142	Shoes
1098	Plastic bag remnants	28	Yellow Council dog poo bags	1523	Lids/bottle tops/corks
30	Balloons	452	Food wrapping	5	Bubble wrap
613	Plastic drink bottles	22	Wooden ice cream sticks	75	Plastic wrap
418	Glass drink bottles	40	Pull tabs	25	Tea bags
1215	Broken glass	15	Polyweave bags	8	Hessian bag
58	Glass jars	161	Plastic containers	38	Foil
362	Aluminium cans	256	Straws/stirrers	43	Tins
21	Aerosol cans	73	Toys	16	Surf wax
24	Pens/pencils	940	Polystyrene foam	2	CO2 canisters
156	Binding/thread/string	509	Paper/cardboard	3	Candles
113	Cloth/clothing	79	Cups/plates/cutlery	14	Shotgun shells
1	Mobile phones	3	6 pack holder	1	Sunglasses

### **Ocean/Waterway Activities**

Total	Item	Total	Item	Total	Item
117	Bait containers/lids	93	Bait bags/packaging	78	Light bulbs/tubes
14	Fishing nets	116	Buoys/floats	36	Boat pieces
566	Strapping bands – pieces	239	Fishing line - metres	60	Bleach/cleaner bottles
22	Fishing lures	24	Drift net floats	13	20 litre drums
120	Fishing floats	10	Oil/lube bottles		Cable tie/tags
272	Cylume chemical sticks	8	Plastic sheeting/tarps		Marine engine parts
4	Pallets	30	Plastic piping	1	Torches
9	Fishing rod/hand reels	1459	Rope – metres	77	Crab/lobster/ fish traps
5	Electrical cables	15	Crates	119	Oil globules/tar balls
28	Hooks & sinkers	5	Brooms/brushes	71	Rubber
1	Float grommets	2	Gas bottles		

### **Smoking Related Activities**

### **Dumping Activities**

Total	Item	Total	Item	Total	Item
649	Cigarettes/filters	4	Batteries	45	Building materials
126	Cigarette lighters	189	Wood	4	55 gallon drums
49	Tobacco packaging /wrappers	35	Metal	5	Furniture
2	Drug paraphernalia	2	Tools	1	Cars/car parts

### **Medical/Personal Hygiene**

Total	Item	Total	Item	Total	Item
10	Condoms	18	Brushes/combs	3	Razors
14	Nappies	3	Band aids	5	Ear plugs
6	Syringes	64	Tissues	7	Cotton bud stems
1	Tampons /applicators	1	Sanitary napkins	80	Skincare bottles /tubes
41	Toothbrushes				



### **2.3 Summary of Cape to Cape Beach Clean Up 2007**

The Cape to Cape Beach Clean Up was once again well supported by the local community, with an increase in the number of volunteers joining the event since 2006. This resulted in an increase in the number of items collected from the coast, however, interestingly a decrease in the weight of debris collected.

The decrease in the total weight of debris could be directly related to the increase in the amount of smaller and lighter debris being found, such as small pieces of plastic. During the previous two Cape to Cape Beach Clean Ups, several very large and heavy items were removed, possibly being found after a number of years of having been discarded on the beach. This year, only a few large items and no white goods were found, the majority being smaller items, all weighing less.

For the third year in a row plastic makes up the majority of debris with 83% of all debris collected containing plastic components. With plastic taking up to 600 years to breakdown in the ocean environment, this data gives a true indication of the state of our oceans – an ocean of plastic.

By comparing data from previous years, the number of each type of marine debris being found is fairly consistent with pieces of plastic in all three years being the most commonly found item.

Also for the third year in a row are the same six categories that all marine debris has been able to be allocated to:

- Commercial Fishing Industry
- Recreational Fishing Industry
- Beach Users
- Shipping Industry
- Stormwater Runoff
- Illegal Dumping

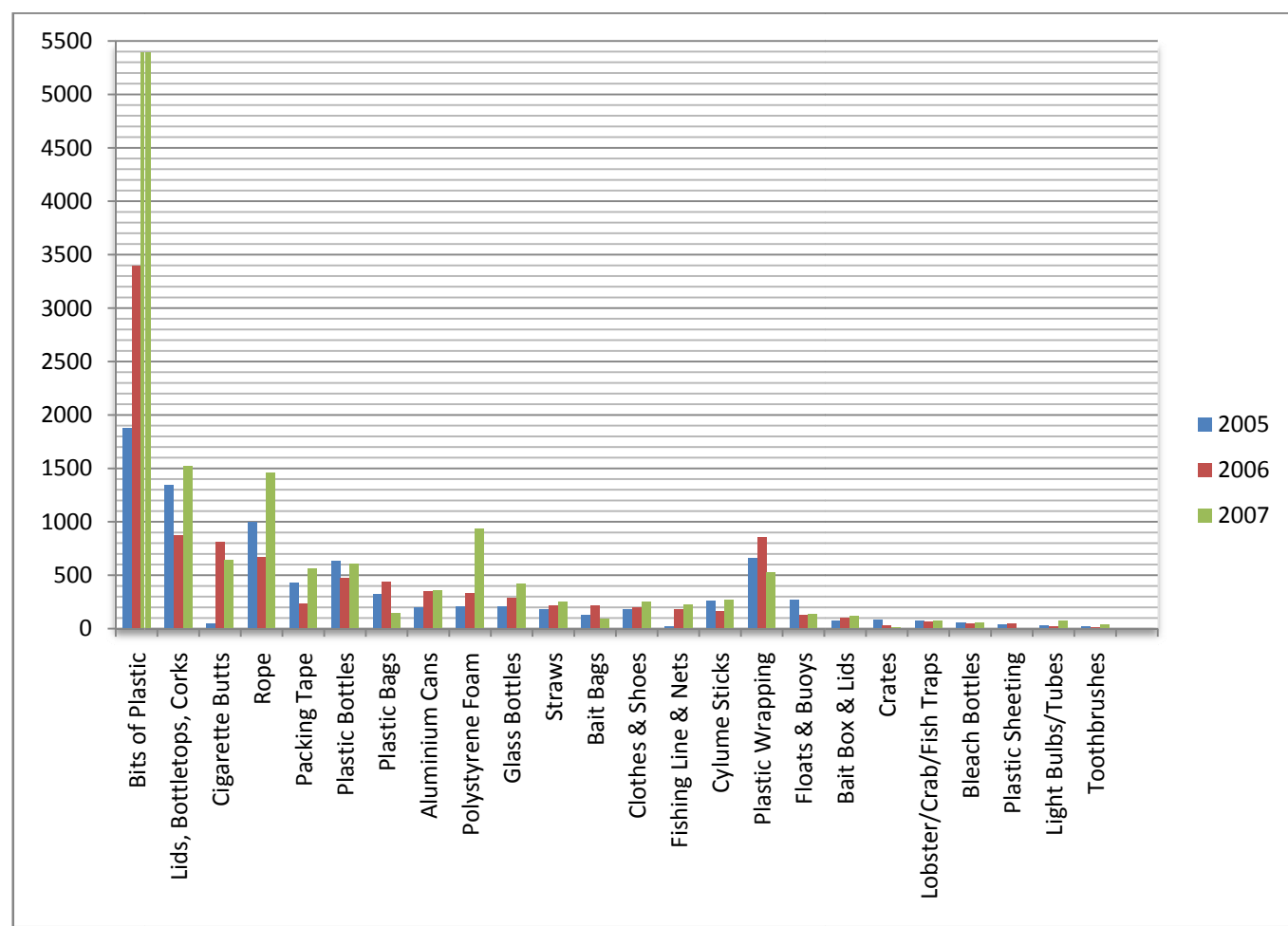
It is impossible to put all debris items into specific categories as some items such as plastic bottles could potentially come from more than one source i.e. beach users, stormwater runoff, shipping industry or either of the fishing industries.

Every year more and more marine debris is ending up in our oceans and waterways; this is being shown consistently from TBOCS data as well as data from other researchers around the world. Researchers believe that it would not be possible to remove the vast majority of marine debris from the ocean environment due to its small size and abundance, and therefore the best way to begin mitigating the marine debris problem is to stop the flow of debris into the marine environment.



Marine Debris found during the Cape to Cape Beach Clean Up (from left): Syringe and medical alcohol found at Quinninup Beach; fishing gear at Prevelly Beach and a jet ski left at Gallows Beach.

## 2.4 Comparisons between Items Found Cape To Cape Beach Clean Up 2005, 2006 & 2007



## 2.5 Comparisons between 2005, 2006 & 2007 Cape to Cape Beach Clean Ups

Cape to Cape Beach Clean Up Year	2005	2006	2007
Number of volunteers	100	191	274
Number of beaches/stretches of coastline cleaned	30	43	47
Number of individual pieces of marine debris collected	9,244	11,566	19,081
Weight of marine debris collected	1,044kg	1,739kg	1,190kg
Number of bags filled	140	217	244.5
Number of kilometres cleaned	72km	106km	107.7km
% of marine debris made of plastic	90%	86.5%	83%
Number of hours spent by volunteers	300	493	863
Weather during clean up event	7m swell, 40kt Westerly winds	Light winds, medium swell	Light winds, small swell

Note: There has been continued clean ups at many Capes beaches between each of the Cape to Cape Beach Clean Ups. Therefore the 2005 data may show items that have potentially been on the beaches for years, where the 2006 and 2007 data will show data on debris that has arrived on the beaches within the previous 12 months.

### **3. MONTHLY MONITORING PROJECT**

Monthly monitoring clean ups have been taking place on the Capes beaches since 2004. In February 2007 a new project started: Foul Bay, Quarry Bay, Ellensbrook, Injidup and Yallingup beaches were selected for a detailed monthly monitoring project. Once a month volunteers visit their nominated site collecting marine debris as well as data on the beach and weather conditions. A report will be produced to show in-depth findings from the research and data collected from the 12 month project. We will however summarise some important findings from the monthly monitoring project here.

#### **3.1 Identification of New Marine Debris - Plastic Resin Pellets/Nurdles**

In 2007, Wally Smith from TBOCS, discovered small (2-5mm) round plastic pellets on local South West beaches. Further investigation of these pellets has revealed that they are pre-production plastic pellets or nurdles. Due to their size and weight they are easily blown or spilled out of shipping containers when loading and unloading. Spillage also occurs during the transportation and handling of pellets at manufacturing sites and many of these pellets eventually find their way into drainage and river systems connecting to the ocean.

Studies around the world have found that plastic resin pellets are accumulating in large numbers in our oceans and could make up roughly 10% of plastic debris in the ocean.

Pelagic Plastic; Algalita Marine Research Foundation (AMRF), USA, [www.algalita.org](http://www.algalita.org) April 9, 2007

Resin pellets have been found at all 5 of the monthly monitored beaches as well as an additional 12 Capes beaches; and Meelup, Bunbury and Denmark in the South West. The highest concentration of these pellets was found at Foul Bay where 6600 pellets per square metre were found.

Of a major concern is the way these resin pellets attract and hold persistent organic pollutants (POPs). Marine animals and seabirds commonly mistake plastic as a food source, therefore plastic resin pellets and the toxic chemicals they absorb can affect sea life through intestinal blockages and interfering with endocrine system processes.

TBOCS is currently awaiting results from samples of plastic resin pellets, which were found on South West beaches, and sent to the International Pellet Watch Organisation in Japan who are testing them to identify toxins absorbed in the pellets. <http://www.tuat.ac.jp/~gaia/ipw/>



Plastic resin pellets found at Foul Bay, WA.

The size of these pellets makes them an extreme hazard for filter feeders and seabirds that can easily ingest them, confusing them for food.



### **3.2 Hotspots**

Since 2004, 50 different stretches of beaches between Cape Leeuwin, Cape Naturaliste, Busselton and Dalyellup have been cleaned up and data collected. During these clean ups volunteers have found stretches of beach that accumulate a much higher concentration of debris than others.

TBOCS has named these areas of high marine debris concentrations as “Hotspots” and additional research is being undertaken to determine the influences of the current, weather, swells, reef structures, dune structures and seasons on the amount of marine debris being found.



Debris is revealed when sand dunes are subjected to large swells and storms. 2007 was a significant erosion year along the Cape to Cape region in the far South West corner of Western Australia.

Plastics can be hidden in dune systems for years before being exposed and washed back into the ocean, during which time it leaches chemicals into the environment.



### **3.3 Enforcement of Littering Regulations**

Whether it be littering on the ocean or on land, legislation exists to make this illegal. However, without enforcement, there is no deterrent to the act of littering.

TBOCS volunteers have joined together to provide evidence for investigations of dumping and littering to both State and Federal agencies for the last three years. Unfortunately, some people can only be deterred from littering when there is a financial implication.

The Australian Maritime Safety Authority is currently in possession of six items which have been traced back to specific vessels. These vessels are under investigation for alleged breaches of the MARPOL legislation which prohibits dumping of plastics at sea.

Since 2005, The Department of Planning and Infrastructure, Marine Safety has received samples of oil globules found on South West beaches. These samples have been analysed to determine if they have been processed in any way and therefore the result of illegal dumping in the ocean. To date samples have been shown to have come from natural seepage, possibly from areas in Indonesia. This database will continue to be compiled to provide samples for comparison in the future.



TBOCS volunteers have joined the Keep Australia Beautiful Council's Litter Reporter program. This program enables volunteers to report incidents of littering they witness from people in cars and vessels and results in an infringement for the individual seen littering.



## **4. RECOMMENDATIONS**

With the continued and consistent amount of marine debris being found on Capes beaches, it is clear that industry and government must make serious proactive steps with their products, tools and legislation to reduce marine debris. The first step is to identify sources of debris production and then to work on ways of stopping the continued input of debris into the oceans and waterways.

Education for the broader community as a whole is needed. There is effective “shock” advertising for smokers regarding cigarettes; we recommend an advertising campaign showing the effects of marine debris on marine life and the amount of debris being collected from the coastline as well as highlighting the importance of not littering.



A New Zealand Fur Seal killed by fishing net at Wonnerup Beach. Photo: Warwick Roe/DEC

### **4.1 Commercial Fishing Industry**

The commercial fishing industry is contributing a high percentage of the marine debris which is found in the Capes region. With sharks, seals, sea lions, dolphins, turtles, seabirds and whales all being threatened by this marine debris, it is vital for the fishing industry to implement ‘Best Practices’ for waste management.

**a) Producer responsibility:** Producers must ensure that environmentally unsafe forms of packaging are amended. TBOCS has collected plastic packing tape which secures bait boxes has been collected in high numbers in the Capes region. Since 2004 the number of bait packing tapes collected in the region has reached 2564. That includes 427 during the 2005 Cape to Cape Beach Clean Up, 240 in 2006 and 566 in 2007. A number of these pieces of tape were still intact creating a circle of death for sharks and seals to become entangled in. For the last two years TBOCS has provided information to the West Australian Fishing Industry Council (WAFIC) on the high number of packing tape being found and lobbied them to stop using packing tape in preference for the cardboard self locking boxes used in South Australian & Tasmanian fisheries. In the past the Minister of Fisheries has indicated that he would like the industry to address this problem without legislation, however as there has been no change to this practice for the last three years, we urge the Minister of Fisheries to look at other options to ensure that this issue is addressed as soon as possible.



Packing tape is a known threat to marine life that can become entangled in the uncut plastic rings, causing painful cuts, amputations and death and other alternative products exist to take its place.

**b) Mandatory Codes of Conduct** should be implemented. With consistent data showing that Voluntary Codes of Conduct are not being adhered to, the commercial fishing industry needs to be forced to protect the very environment which is supporting its livelihood.

**c) Identification of waste:** Vessels should have all plastics brought onboard stamped with their vessel's description as a way of making the identification of any item traceable.

**d) Revenues:** Revenues from commercial fishing activities should be used to clean up the debris resulting from this industry. This debris not only impacts on our marine life and seabirds, but also impacts on other industries such as tourism and local communities.

## **4.2 Recreational Fishing Industry**

The Capes region is well-known for its recreational fishing; however the recreational fishers also contribute to a high percentage of marine debris found. Local clean ups at fishing hotspots during fishing seasons, have consistently found an enormous increase in marine debris compared with other times of the year.

In 2006 the Busselton Shire provided garbage bins at Point Piquet (a salmon fishing hotspot) during the salmon season, however plastic bait bags, fishing line, cans, glass bottles, plastic bags, cigarette butts and food wrappers were still found amongst the rocks in large numbers. Bins will once again be provided at Point Piquet during the 2008 salmon season; however we also recommend educational stickers and signage to accompany these bins to ensure that people engaged in fishing are aware of what damage their rubbish can cause if left on the beaches and rocks.

TBOCS has also received reports that recreational fishers are contributing high levels of debris at the Busselton Jetty. Large numbers of plastic bait bags, fishing line, glass bottles, cigarette butts and food wrapping are being left on the Jetty, which is then blown into the surrounding ocean.

**a) Enforcement and Education:** The Department of Fisheries and local Shires need to target these fishing hotspots, particularly during peak periods focusing on education and enforcement of litter prevention laws.

**b) Recreational Skipper's Licence:** With the introduction of this mandatory licence in Western Australia, comes a great opportunity to educate boat users on marine debris, its effects on the marine ecosystem and MARPOL regulations of disposal of rubbish at sea. Either as part of the course or as educational material, this issue should be addressed in licensing paperwork.

**c) Producer responsibility:** The number of plastic bait bags being found during clean ups is extremely high. During this year alone 198 have been found on the Capes beaches, 93 of them during this year's Cape to Cape Beach Clean Up. We require producers of bait to find alternatives to the plastic packaging.

## **4.3 Beach Users**

Seasonal use of beaches by the general community is relative to the amount of debris being found from this source. Education and enforcement are the two tools needed to change littering behaviour.

**a) Enforcement:** We recommend an increase in effort and funding for enforcement of anti-littering laws.

**b) Education and adequate facilities:** Much of the area between the Capes is part of the Cape Leeuwin – Cape Naturaliste National Park, and the waters surrounding this area will make up a large part of the Capes Marine Park in the future, however there is no litter infrastructure throughout the park. We recommend garbage bins with heavy lids at high use areas in the park as well as cigarette butt bins at lookouts which need to be emptied regularly, as well as educational signs explaining the impact of marine debris to the marine ecosystem.

**c) Dog poo bags:** During clean ups, both full and unused dog poo bags have been found on local beaches. In 2007 Busselton Shire addressed this problem and has introduced a new secure "Dog Tidy Bag Dispenser" which will allow users to take only one bag at a time. The bags are also totally degradable and will be available at 30 distribution spots in the Shire. We recommend that other local Shires look at alternative options to the old unrecyclable yellow dog poo bag. We also recommend further education and enforcement by local rangers at hotspot beaches such as Bunker Bay, Yallingup, Smiths Beach, Augusta and Margaret River.

**d) The Tourism Industry:** With beach user debris increasing during holiday periods, the tourism industry has a responsibility to promote environmental awareness to their visitors. An educational program with information, posters and adequate amenities should be implemented in tourist offices, attractions, accommodations and other areas that have a high tourist activity.

**e) Enforcement:** The Department of Environment and Conservation (DEC) has a Litter Reporter Scheme where registered people can report individuals they see littering. This program needs to be actively promoted to encourage community members to register as well as being seen as a real disincentive to littering.

#### **4.4 Shipping Industry**

The Australian Maritime Safety Authority (AMSA) has the responsibility for the implementation and enforcement of Annex V of MARPOL 73/78 (Regulations for the Prevention of Pollution by Garbage from Ships). [www.amsa.gov.au](http://www.amsa.gov.au) Australian laws can be applied to vessels within Commonwealth jurisdiction. Australian representatives at the International Maritime Organisation (IMO) are currently involved in deliberations and updates related to MARPOL 73/78 Convention including the tighter control on the disposal of garbage under Annex V. As large amounts of debris originating from foreign vessels is being found on Australian beaches, we need Australian representatives to the IMO to have a strong voice in targeting this marine debris. AMSA will investigate items of debris which can be positively traced back to a specific vessel.

#### **4.5 Stormwater Runoff**

**a) Stormwater management:** Local councils advise that it is currently too expensive to fit Gross Pollutant Traps (GPTs) into already existing subdivisions. We recommend research and development into a cost effective filtering system to be designed which can be used in this circumstance. Funding should be provided to local authorities to ensure that both new and old areas have ways of preventing litter from streets ending up in the ocean/coastline. While there is a requirement to install a GPT where possible in new developments, it has been reported that many GPTs are designed for specific circumstances and their effectiveness varies depending on the conditions they are under. The Augusta Margaret River Shire is looking at Retention Basins which filter runoff water by catching nutrients through soil and plants as well as an entry screen to catch rubbish in stormwater runoff.

**b) Community education:** A campaign to engage the community in the issue and the effects of poor stormwater management is recommended. The Busselton Shire is working in partnership with Geocatch to conduct a production programme in the Busselton Light Industrial Area to plan and develop a nutrient and pollutant stripping swale to treat drainage water in the Lower Vasse River.

#### **4.6 Illegal Dumping**

**a) Greater enforcement of fines:** To remove illegally dumped items can run into the thousands of dollars, current fines of a \$200 infringement notice or \$1000 if the case is taken to court would not cover these costs in many instances. We recommend much higher fines for illegal dumping to make it a true deterrent, as well as a well-advertised campaign so community members know who to contact should they witness illegal dumping.

### **5. EDUCATIONAL WEBSITE [WWW.OCEANCARE.ORG.AU](http://WWW.OCEANCARE.ORG.AU)**

The creation of [www.oceancare.org.au](http://www.oceancare.org.au) has enabled TBOCS to provide information on marine debris to regions outside of the South West. Over 1460 people have visited the website since mid 2007. In the future an online database will enable volunteers from all over Australia to submit data on marine debris that they are finding, giving TBOCS an opportunity to expand the marine debris project nationally.

The website also allows school groups, community groups, industry and agencies to download educational materials, data reports and scientific papers on marine debris. These materials will be regularly updated as new information and data comes to hand.

## **6. MARINE DEBRIS EDUCATIONAL PRESENTATIONS AND MATERIALS**

### **6.1 School Presentations**

During 2007, a total of eleven presentations to more than 2000 participants were held for local schools, community groups, workshops and conferences on the issue of marine debris, its impact on the marine ecosystem and the South West Marine Debris Project. These presentations enabled us to recruit new volunteers, as well as provide valuable information on the state of our oceans which has the potential to reach many more people through word-of-mouth from presentation participants.

As the world's and nation's population continues to boom, educating the next generation about human's negative impact on the earth is vital in creating good environmental behaviour and practices.

### **6.2 Marine Debris Identification Manual**

This year TBOCS published the Marine Debris Identification Manual to assist volunteers in identifying marine debris that they are finding during beach clean ups. The manual has been distributed to local schools and will be used in the annual Cape to Cape Beach Clean Up to assist in consistent data collection; it is also available for download from [www.oceancare.org.au](http://www.oceancare.org.au).

### **6.3 Fact Sheets**

The TBOCS Fact Sheets are another educational tool that is available for download on the website and suitable for schools and community groups. They have focused on four major areas:

- a) What is marine debris?
- b) How long does marine debris take to breakdown?
- c) What impacts does marine debris have on our marine ecosystem?
- d) What can we do about marine debris?



# THANK YOU!!!

I would like to make a special thanks to the following people for their continued support to the Cape to Cape Beach Clean Up and Tangaroa Blue's South West Marine Debris Project. With their dedication, thousands of pieces of debris are being removed from South West beaches every year, protecting our precious marine life. You are making a difference!!

Wally Smith  
Renee Mouritz  
Kirrily White  
Liz McGuire  
Alison Dorn  
Zoe Renfrey

To the following groups, thank you for participating in the Cape to Cape Beach Clean Up and helping us protect our oceans, we look forward to your support again in 2008!

Augusta Regional Environment Centre  
Probus Club of Dunsborough  
Dunsborough CALC  
Dunsborough Primary School  
Dunsborough District Progress Association  
Friends of Cape to Cape Track  
The Wilderness Society  
The Underwater Explorer's Club  
Bunbury High School  
Busselton Jetty Staff  
Gracetown Progress Association  
Margaret River Recreational Boardriders  
Western Australia Fishing Industry Council  
Prevelly Penguins  
Cape to Cape Catchments Group  
West Whales  
Dunsborough Bay Yacht Club  
Jennings Hopkins  
ACTIV Foundation  
Leeuwin Links  
Dalyellup Beach Community Association  
Harvey Shire

To all the individual volunteers, we appreciate your time and efforts in helping us clean up our coastline during the Cape to Cape Beach Clean Up, we hope to have you back again in 2008!!

And thank you for the support from the following organisations and agencies that supported this project through funding, insurance, materials, time, effort and lots of encouragement. We look forward to working with you again in 2008!

Coastwest  
South West Catchments Council  
Department of Environment & Conservation  
Department of Fisheries  
Shire of Busselton  
Augusta Margaret River Shire  
Keep Australia Beautiful Council, WA  
Clean Up Australia Organisation  
Project Aware

**A DATE FOR YOUR DIARIES!!!**  
**CAPE TO CAPE BEACH CLEAN UP 2008 - 11<sup>TH</sup> & 12<sup>TH</sup> OCTOBER 2008**