

TANGAROA BLUE OCEAN CARE SOCIETY



2008 South West Marine Debris Project Report to the Minister

Heidi Taylor, Wally Smith, Renee Mouritz, Liz McGuire, Zoe Brockhoff

"Pollution is a symbol of design failure." William McDonough, American architect.

Tangaroa Blue Ocean Care Society
PO Box 1063, Dunsborough, Western Australia, 6281, Australia
www.oceancare.org.au

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1. EXECUTIVE SUMMARY

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

The goals of the society are:

- To create community awareness 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 TBOCS founded the South West Marine Debris Project (SWMDP) 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.

Over 1,000 TBOCS volunteers have collected more than 300,000 items of rubbish from South West beaches since 2004. In the fifth year of the SWMDP, data on what is making up the debris and where it is coming from is helping create a plan to reduce the amount of rubbish in local waters.

In every square mile of ocean it is estimated that there are over 46,000 pieces of plastic, resulting in the deaths of more than 1 million seabirds and 100,000 marine animals every year. This includes 20 Australian endangered animals, including sharks, turtles and marine mammals. Impacts of marine debris on wildlife include entanglement that can cause restricted mobility, drowning, starvation, smothering and wounding, which in turn leads to infections, amputation of limbs and death. Debris may also be confused with prey species and ingested by marine wildlife, causing physical blockage in the digestive system and leading to internal injuries and starvation.

Table 1.1 Summary of the community coastal clean up event, the Cape to Cape Beach Clean Up, 2005-2008.

	Cape to Cape Beach Clean Up Year			
	2005	2006	2007	2008
Number of volunteers	100	191	274	571
Number of clean up sites	30	43	47	72
Number of items collected	9,244	11,566	19,081	26,363
Weight of marine debris collected	1,044kg	1,739kg	1,190kg	1,876.5kg
Number of kilometres cleaned	72km	106km	107.7km	158.5km
% of marine debris made of plastic	90%	86.5%	83%	79.5%

The increase in items collected in 2008 is partly linked to the increasing size of the annual clean up area. However, the study indicated that in five out of seven areas, marine debris on the Cape to Cape coast increased. This together with growing numbers of clean up days being conducted throughout the year on the Capes coast suggests that overall marine debris ending on the Capes coastal environment has increased.

The most numerous type of item showing up in the 2008 Cape to Cape Beach Clean Up data is plastic fragments making up 59% and totalling 12,893 items. The Capes coast in particular, with its rocky shorelines, greatly accelerates the fragmentation of plastic debris. This visible layer of fragmenting plastic debris forewarns of a hidden layer of micro plastic pollutants.

Data collection from monthly clean ups at five Capes beaches, as well as regular clean ups along the Busselton Jetty, have also provided valuable information on the sources of marine debris in the South West.

Given the rapid rise in the production of consumer plastic goods and packaging and the consequent loss into the environment, it is critical that industries and governments take proactive steps in changing and improving products, tools and legislations in order to have a resulting effect on the current unsustainable situation.

Data from the 2008 Cape to Cape Beach Clean Up showed that 708 items equating to 5% of fully intact items collected can be directly attributed to the commercial fishing industry. Rope makes up another 14.5% (1960 metres) of intact items and a proportion of this is also attributable to this industry. Of the 3.3% (453 items) of intact items which plastic strapping band accounts for, we estimate 1.3% (200 items) as also coming from commercial fishing sources. We propose changes be made to packaging making its way onto fishing vessels including removing the plastic strapping bands currently used to secure bait packaging.

The Capes region is well-known for its high social value providing many recreational activities including recreational fishing and spending time at the beach. The data suggests that both these activities contribute to high levels of marine debris. Education, along with infrastructure such as bins in high use areas and enforcement of anti-littering laws, all need to be made priorities to ensure the reduction of marine debris in the South West region.

The SWMD project has successfully delivered educational presentations at schools and community groups engaging over 2000 participants during 2008. There have also been over 2 million hits on the www.oceancare.org.au website which has assisted TBOCS in promoting and expanding marine debris projects throughout Western Australia, Australia and New Zealand.

A detailed technical data report focusing on the 2008 Cape to Cape Beach Clean Up data is also available for download at www.oceancare.org.au .

2. INTRODUCTION

Tangaroa Blue Ocean Care Society, www.oceancare.org.au - is a non-profit organisation dedicated to ocean conservation and protection.

The goals of the society are:

- To create community awareness 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;
- 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 2008 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 government agencies and organisations for funding and support, enabling us to continue the South West Marine Debris Project.



3. 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.”

‘Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris’ was listed in August 2003 as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*.

The Australian Government's Draft Threat Abatement Plan for the impacts of marine debris on vertebrate marine life states that: "Harmful marine debris impacts on a range of marine life, including protected species of birds, sharks, turtles and marine mammals." Twenty marine species listed as threatened under the EPBC Act were identified as being impacted by harmful marine debris. Impacts of marine debris on wildlife include entanglement that can cause restricted mobility, drowning, starvation, smothering and wounding, in turn leading to infections, amputation of limbs and death. Debris such as plastic bags, rubber, balloons, plastic fragments and confectionery wrappers may be confused with prey species and ingested by marine wildlife, causing physical blockage in the digestive system and leading to internal injuries and starvation. Within marine food webs, plastic debris can also serve as a transport medium and a potential source of toxic chemicals such as polychlorinated biphenyls (PCBs), endocrine-active substances, and chemicals similar to dichlorodiphenyltrichloroethane (DDT). These chemicals are known to compromise immunity and cause infertility in animals, even at very low levels.



NZ Fur Seal found entangled in fishing net at Wonnerup, WA 2004.
Photo: Warwick Roe/DEC

- "Every year more than 6 million tonnes of rubbish are dumped in the world's oceans."
- "In every square mile of ocean it is estimated that there are over 46,000 pieces of plastic."

The Department of Environment and Heritage's "Keep the Sea Plastic Free – Bin It"

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

Dr David Kemp, Minister for the Environment and Heritage March 2004

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 smaller pieces of the same material. Plastics not only contain harmful chemicals in their makeup but also absorb toxic chemicals from seawater.

Tangaroa Blue Ocean Care Society 2007 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 (Kamette), & AB 904 (Feuer); From Algalita Marine Research Foundation (AMRF); April 9, 2007*

Research from the Capes region of South West of Western Australia has shown that between 80%-90% of all marine debris collected is made from plastics. *Tangaroa Blue Ocean Care Society 2009*

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.*

4. RESULTS FROM THE 2008 CAPE TO CAPE BEACH CLEAN UP

The 2008 Cape to Cape Beach Clean Up was the fourth 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.

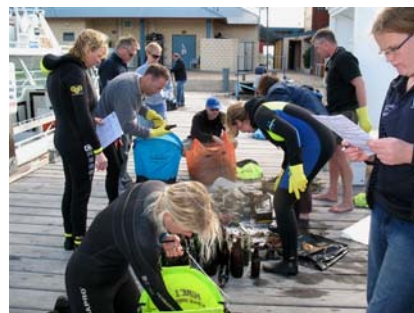
The Cape to Cape Beach Clean Up is part of the South West Marine Debris Project, and its goals are to:

- raise public awareness about marine debris and its impact on the marine environment;
- clean up 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 11th & 12th October, 571 volunteers from the community, government agencies and industry participated in the 2008 Cape to Cape Beach Clean Up. Volunteers cleaned up 72 coastal sites between Augusta, Cape Leeuwin, Cape Naturaliste, Busselton, Capel, Mandurah and the Marmion Marine Park, in the South West of Western Australia.

4.1 Statistics from the Cape to Cape Beach Clean Up 2008

Number of volunteers	571
Number of beaches/stretches of coastline cleaned	72
Number of individual pieces of marine debris collected	26,363
Weight of marine debris collected	1876.5kg
Number of bags filled	357
Number of kilometres cleaned	159.5km
% of marine debris made of plastic	79.5%



Clean Up Volunteers at Bunker Bay, Yallingup Beach, Dalyellup, Marmion National Park & the Busselton Jetty

4.2 Total Items Collected During the Cape to Cape Beach Clean Up 2008

SHORELINE/RECREATIONAL ACTIVITIES

Total	Item	Total	Item	Total	Item
407	Plastic Bags	6098	Pieces of Plastic	228	Shoes
2131	Plastic Bag Remnants	34	Yellow Council Dog Poo Bags	1517	Lids/Bottle Tops/Corks
28	Balloons	884	Food Wrapping	9	Bubble Wrap
874	Plastic Drink Bottles	30	Wooden Ice Cream Sticks	249	Plastic Wrap
602	Glass Drink Bottles	24	Pull Tabs	9	Tea Bag
2256	Broken Glass	13	Polyweave Bag	3	Hessian Bag
43	Glass Jars	343	Plastic Containers	70	Foil
569	Aluminium Cans	303	Straws/Stirrers	19	Tins
33	Aerosol Cans	78	Toys	10	Shotgun Shells
27	Pens, Pencils	865	Polystyrene Foam	1	Six Pack Holder
149	Binding/Thread/String	538	Paper/Cardboard	3	Lolly Sticks
286	Cloth/Clothing	84	Cups/Plates/Cutlery	1	Paint Brush
1	Mobile Phone	1	Printer Cartridge	1	\$10 note
2	Candle	8	Surf Wax	3	Sunglasses/Glasses

OCEAN/WATERWAY ACTIVITIES

Total	Item	Total	Item	Total	Item
166	Bait Containers/Lids	190	Bait Bags/Packaging	31	Light Bulbs/Tubes
26	Fishing Nets	226	Buoys/Floats	37	Boat Pieces
1432	Fishing Line - metres	453	Strapping Bands - metres	137	Rubber
86	Fishing Lures	30	Drift Net Floats	22	20 Litre Drums
111	Fishing Floats	24	Oil/Lube Bottles	16	Cable Tie/Tags
160	Cylume Chemical Sticks	18	Plastic Sheeting/Tarps	6	Marine Engine Parts
8	Pallets	49	Plastic Piping	2	Float Grommets
7	Fishing Rod/Hand Reels	1960	Rope -metres	42	Crates
24	Electrical Cables	45	Bleach/Cleaner Bottles	26	Hooks & Sinkers
2	Torches	3	Tools	60	Oil Globules/Tar Balls
18	Broom/Brushes	82	Crab/Lobster/Fish Traps		

SMOKING-RELATED ACTIVITIES

Total	Item	Total	Item	Total	Item
1024	Cigarettes / Filters	8	Batteries	45	Building Materials
81	Cigarette Lighters	347	Wood	3	55-Gal. Drums
38	Tobacco Packaging	98	Metal	1	White Goods
6	Drug Paraphernalia	13	Carpet	16	Cars/Car Parts
		3	Tyres	8	Furniture

DUMPING ACTIVITIES

MEDICAL/PERSONAL HYGINE

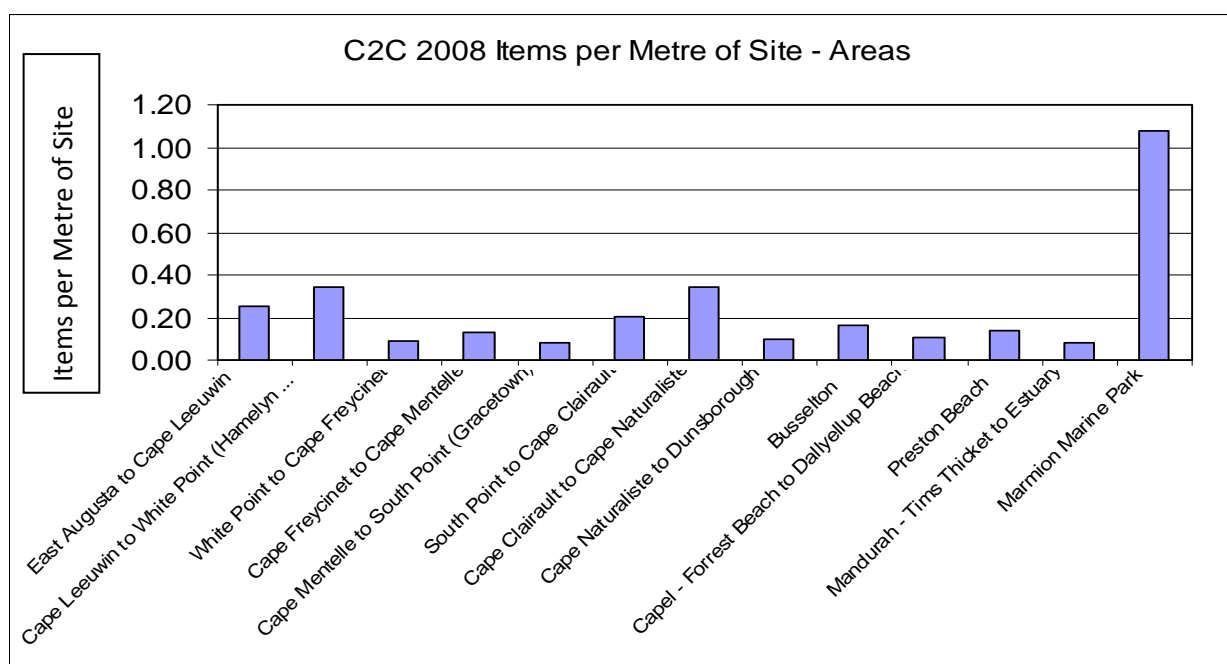
Total	Item	Total	Item	Total	Item
3	Condoms	8	Brushes/Combs	1	Razor
8	Nappies	10	Band aids	7	Ear Plug
9	Syringes	154	Tissues	28	Cotton Bud Stems
2	Tampons / Applicators	1	Sanitary Napkins	80	Skincare Bottles/Tubes
20	Toothbrushes	6	Dummy	1	Asthma Inhaler

4.3 Summary of the Cape to Cape Beach Clean Up 2008

Amount of Debris

A total of 26,363 items were collected in the 2008 clean up; this was 7,300 items more than the 2007 total. This is partly accounted for by the increase in size of the clean up area. However five out of seven areas on the Cape to Cape coast showed increases and this together with there now being clean ups conducted many times throughout the year on the Capes coast indicates that overall debris has increased.

Figure 4.3: Areas/Sites with Greatest Concentration of Items



Based on the number of items per metre of beach, the highest levels of marine debris in the clean up data were found at Marmion Marine Park (Perth), followed by Cape Leeuwin to White Point; Cape Clairault to Cape Naturaliste; and East Augusta to Cape Leeuwin, all being above the clean up average of 0.24 items per metre of beach. Each of these areas reflects different aspects of the pollution problem.

- Marmion Marine Park, in the Perth metropolitan area, experiences a combination of high beach usage and associated littering together with some offshore and near shore generated debris. (Hillarys had the highest count with 365 items);
- Cape Clairault to Cape Naturaliste, which includes some high usage tourist and recreation sites, shows a combination of accrued offshore and longshore sourced debris together with sites affected by littering. (Windmills to Lighthouse Beach had the highest count with 2276 items);
- Cape Leeuwin to White Point (Hamelin Bay) reflects accrued debris from offshore, especially Deepdene Beach, where nearly all the debris comes from offshore or longshore sources. (Deepdene South had the highest count with 1917 items);
- East Augusta to Cape Leeuwin covering part of Flinders Bay, incurred a combination of littering around Augusta and littering and offshore sourced debris on the beaches. (Colour Patch Cafe (Estuary) to Flinders Bay had the highest count with 398 items).

Interpreting the Data

During 2008, a new method for categorising and analysing the marine debris data collected was developed. The new categories enable a site signature to be produced which shows which categories of debris are prevalent and require further analysis. The new categories are: 1) End User Items (consumables); 2) Packaging (all packaging and wrapping); 3) Industrial and Commercial Items (usually commercial fishing items in this area); 4) Linear Items (e.g. rope measured in metres, each metre is counted as one item); 5) Sundry Items (items not fitting the other categories including items possibly dumped); 6) Oil and Tar; and 7) Remnants (remains and fragments of marine debris).

Site signature graphs for the clean up area are contained in the 2008 Cape to Cape Beach Clean Up Technical Data Report. Following is a summary of what was evident in the data for each debris category.

The remnants category includes pieces of plastic, rope and net fragments, lids and tops and polystyrene foam, and this category accounts for 59% and 12,893 items of all debris collected. The items in this category need to be viewed as items continually breaking down – eventually into microscopic fragments. The preponderance of visible remnant items gives us concern as to the levels of micro plastics in our coastal environments – especially along the Capes coast where our plastic resin pellet and micro plastic surveys have indicated a significant level of this type of pollution.

The next highest count of items was in the packaging category with 5,101 items. Based on the distribution of packaging items across the various clean up areas, the curve shows a distinct rise in high usage areas, we estimate 60% of all packaging items are the result of littering while 40% come from offshore sources. The highest ranking items were plastic drink bottles, food wrap, plastic wrap (non food), glass drink bottles, plastic containers and aluminium cans.

End user items numbering 2,888 items also follow this pattern with cigarette butts, straws and stirrers, clothing and shoes, tissues and fishing floats frequently found.

In the linear category (3,846 items), items showing up strongly are rope, plastic strapping band and fishing line. Rope was found to come ashore in lengths of tens and hundreds of metres as well as in many small fragments and remnants. Its distribution was episodic with more rope found on the coasts away from Geographe Bay.

This year's underwater clean up participants at Busselton Jetty extracted 1.2km of snagged fishing line. This quantity viewed against the background of a scattering of small quantities of line at other sites highlights the fact that much discarded or lost fishing line remains in the ocean.

In the industrial and commercial category (782 items), commercial fishing debris was highest with 518 lobster fishing related items, followed by 190 commercial net and line fishing items and lastly 74 items which could be attributed to commercial shipping.

Wood and rubber (793 items) showed up strongly in sundry items with very few obvious dumping items recorded. Oil globules and tar balls (60 items) were found at a small number of sites.

Two sites recorded the presence of plastic resin pellets with high numbers at Ellensbrook (found amongst the rocks beneath the lookout) and medium numbers at Deepdene South (medium numbers in one small location with a scattering along the whole southern section).

Items whose count exceeded 500 fell into four groups:

- Items mainly sourced from littering were cigarette butts (1024), food wrap (884), plastic drink bottles (874), glass drink bottles (602) and aluminium cans (569);
- Remnants – much of which result from past littering were pieces of plastic (6098) and broken glass (2256);
- Fishing line (1432m) while usually not intentionally discarded its loss into the marine environment is a serious problem; and
- Rope (1960m) related to commercial, especially fishing activities.

The additional data collected from Capel, Mandurah and Perth has allowed for the beginnings of a characterisation of the marine debris pattern in the whole South West. The broad features of this are:

1. An ever present and high volume of remnant debris on the entire coast, but not strongly expressed in Geographe Bay;
2. A growing beach/coast littering problem especially at high visitation sites and in built up areas;
3. The migration of buoyant members of these debris items along the coast and thus polluting downstream sites;
4. Significant fragmentation of this migrating debris along the Capes coast producing a cascade of small synthetic pieces and fragments which penetrate into all parts of the Capes coastline; and
5. An annual beaching of large amounts of debris from offshore activities and from remote regions during winter.

Further detail is available in the Tangaroa Blue Ocean Care Society's 2008 Cape to Cape Beach Clean Up Technical Data Report which is available for download at www.oceancare.org.au .

4.4 Comparisons between 2005 - 2008 Cape to Cape Beach Clean Ups

	Cape to Cape Beach Clean Up Year			
	2005	2006	2007	2008
Number of volunteers	100	191	274	571
Number of clean up sites	30	43	47	72
Number of items collected	9,244	11,566	19,081	26,363
Weight of marine debris collected	1,044kg	1,739kg	1,190kg	1,876.5kg
Number of kilometres cleaned	72km	106km	107.7km	158.5km
% of marine debris made of plastic	90%	86.5%	83%	79.5%

Note: There has been continued clean ups at many Capes beaches between each of the annual 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, 2007 and 2008 data will show data on debris that has predominantly arrived on the beaches within the previous 12 months.

5. MONTHLY MONITORING PROJECT

Monthly monitoring clean ups have been taking place on Capes beaches since 2004. In 2007 five sites at 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.

5.1 South West Marine Debris Project 2007 Summary

Site Signatures

Site signature graphs show at a glance the broad makeup of the marine debris load at a site or in a region. The first five categories compare the relative input of different types of items and narrows down the possible sources of these items. The remnant items part of the signature shows the extent of old debris in the process of breaking down into ever finer fragments and particles and provides an indicator for the background residue in the site. To see more clearly the makeup of the first six categories on the signature graph, figure 5.1b is given without the remnant category.

Figure 5.1a

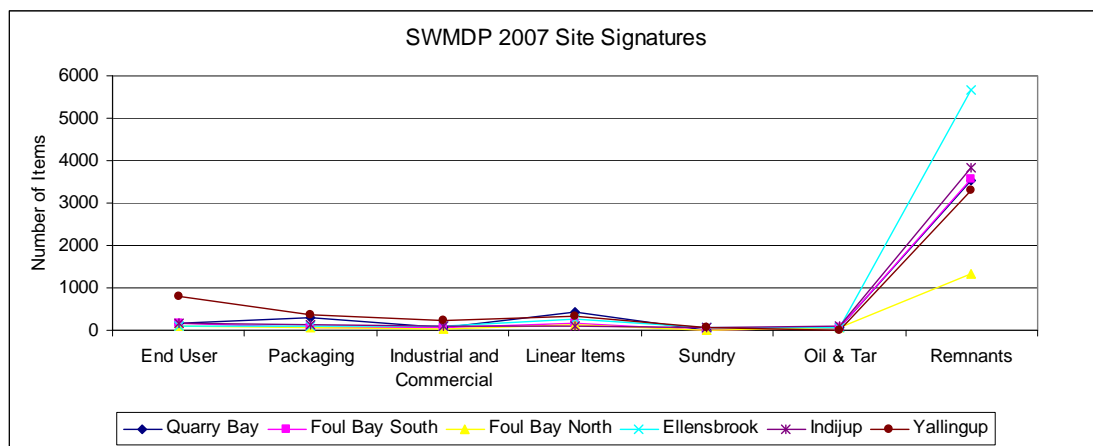
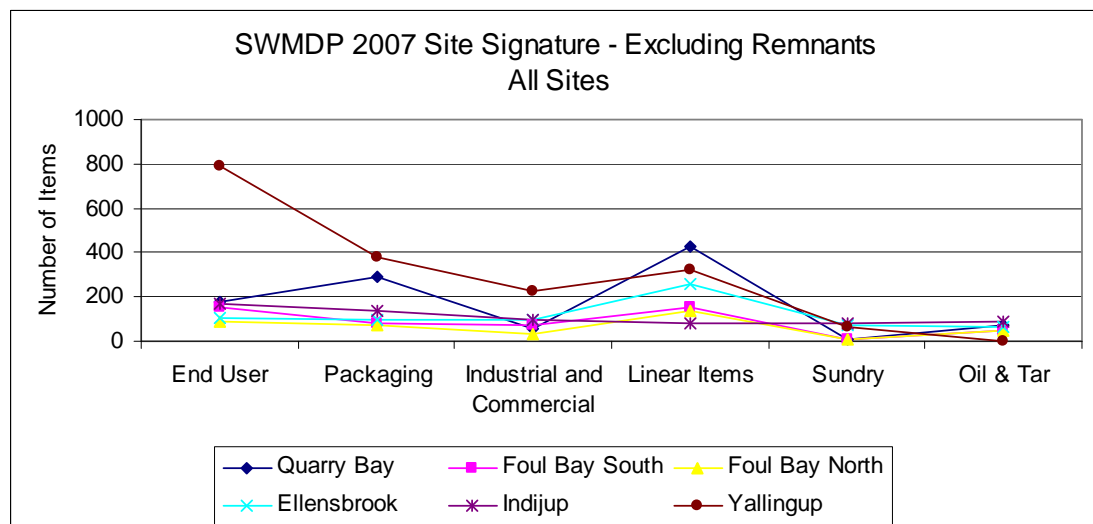


Figure 5.1b



Summary of SWMDP 2007 Graphs

- Yallingup with its high visitation numbers produces a large amount of end user items compared to the other sites. Straws and stirrers (135) and confection sticks (101) were most numerous, followed by cigarette butts (76). At the other end of the Capes, Quarry Bay has

low visitation numbers, but also produced a high proportion of straws and stirrers. The seasonal distribution of these items indicates they came from offshore or longshore sources whereas at Yallingup they were mainly the product of littering.

- Packaging items most frequently found were food wrap and plastic drink bottles with the seasonal distribution pattern again indicating littering at Yallingup and offshore and longshore origins for sites further south.
- The major linear item was rope with Quarry Bay (222m) and Yallingup (218m) producing the larger amounts, followed by plastic strapping band with a collective total of 258 metres.
- All sites are heavily polluted by remnants, especially pieces of plastic. The remnant category in figure 5.1a indicates the extent of fragmenting plastic debris along the Capes coast and provides an indicator for a hidden level of plastic pollution. During 2007 the presence of plastic fragments >5mm (micro plastics) and plastic resin pellets were surveyed at selected sites. In July 2007, the highest concentration found was recorded with 10,854 items per square metre on a section of beach at Foul Bay (south end). Samples of plastic resin pellets were sent to Japan in August 2007 and tested for absorbed organic pollutants. The tests showed the following results; PCBs - 20ng/g-pellet, DDT - 9ng/g-pellet, PAHs – 0.4ng/g-pellet, Hopanes - 14ng/g-pellet and HCH - <0.2ng/g-pellet. These levels were considered low in terms of persistent organic pollutant levels globally.
- Northern sites – especially Yallingup – show a growing litter problem and it seems at least some of this litter migrates downstream to pollute the other sites. All sites receive large amounts of debris from offshore during the winter to early spring period.



Table 5.1: 2007 SWMDP Total Items and Weight

Site	Quarry Bay	Foul Bay	Ellensbrook	Indijup	Yallingup
Total Items	4573	5826	6332	4465	4757
Total Weight	82kg	95.5kg	123kg	70kg	55kg
Items/ metre*	1.25	0.38	0.72	0.2	0.27

* Annual average of items per metre of site

5.2 Busselton Jetty Marine Debris Monitoring Summary

Between March and December 2008, Busselton Jetty Underwater Observatory Staff conducted rubbish collections along the entire 1.7km of the Busselton Jetty. Over a ten month period 139 rubbish collections took place.

A total of 4598 individual pieces of rubbish were collected from along the Busselton Jetty, preventing them from being blown into the ocean.

Top Items

- 1530m of fishing line
- 323 plastic bags
- 244 bait packaging bags
- 203 glass bottles



Underwater Observatory Staff member with morning rubbish collection

- 141 plastic bottles
- 140 food wrapping
- 72 hooks and sinkers

Visitors to the Busselton Jetty are engaged in various activities including walking, recreational fishing, scuba diving and visiting the Underwater Observatory.

Debris which could be specifically attributed to recreational fishers accounted for over 41% of the debris collected.

We strongly support the implementation of fishing line disposal bins and educational signage on the Busselton Jetty and foreshore to help increase awareness of the impacts of marine debris in the local area and assist in reducing the amount of rubbish left on the Jetty by visitors.

6. RECOMMENDATIONS

With the continued occurrence of marine debris on the Capes beaches, it is critical that industries and governments take proactive steps in changing and improving products, tools and legislations in order to have a resulting effect on the current unsustainable situation. 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.

6.1 Plastic Strapping Bands



Items such as rope and uncut plastic strapping band, sourced from the commercial fishing industry, present a threat to marine life. With sharks, seals, sea lions, dolphins, turtles, seabirds and whales all being threatened by this marine debris, it is vital that the fishing industry implements 'Best Practices' for waste management.

One item which continually finds its way onto the Capes coastline is the plastic strapping bands used to secure bait boxes in the commercial fishing industry. Plastic strapping bands are a known threat to marine life which can become entangled in the uncut plastic rings, causing painful cuts, amputations and death. There are alternative products, such as cardboard self-locking boxes, that can take the place of these environmentally damaging strapping bands.

Environmentally safe packaging is the responsibility of both manufacturers and consumers. Proactive measures must be taken by both parties to reduce the amount of one-time used packaging and the percentage of bands ending up as marine debris and litter.

With continued information and data being forwarded to the Department of Fisheries and industry members, Tangaroa Blue Ocean Care Society recommends a ban on these bands being taken out to sea in the first place, eliminating the chance of them ending up in the ocean. A ban has been supported by both the West Australian Fishing Industry Council and the Western Rock Lobster Council. We await a final decision from the WA Minister of Fisheries on this proposal.

6.2 Education and Enforcement – Recreational Fishing Industry and Beach Visitors

The Capes region is well-known for its high social value providing many recreational activities including recreational fishing and spending time at the beach. The data suggests that both these activities contribute to high levels of marine debris. We estimate 60% of packaging items in the SWMDP data are from littering at popular sites. Local clean ups at fishing hotspots during fishing seasons and popular beaches during peak season, have consistently found an enormous increase in marine debris compared with other times of the year.

We support extra rubbish bins being provided by local Shires at fishing hotspots during fishing seasons and also recommend educational stickers and signage to accompany these bins to ensure that visitors are aware of what damage their rubbish can cause if left on the beaches and rocks.

Large amounts of debris have consistently been found at popular beaches within the Cape Leeuwin – Cape Naturaliste National Park. There is no rubbish infrastructure available for visitors contributing to much rubbish being left in the car parks, lookouts and on beaches. We support a proposal for rubbish bins and cigarette butt bins to be placed at high use areas in the Cape Leeuwin – Cape Naturaliste National Park to facilitate the reduction of debris being left on the beach by visitors.

Enforcement of anti-littering laws by local Fisheries Officers, Department of Environment and Conservation Rangers and Shire Rangers are vital in getting the message across to those community members who offend and do not learn by other means.

7. EDUCATIONAL WEBSITE WWW.OCEANCARE.ORG.AU

The creation of www.oceancare.org.au has enabled TBOCS to increase awareness and provide information on marine debris to regions both inside and outside of the South West. Over 2 million people have visited the website since mid 2007. In 2008 an online data submission form was created allowing volunteers from all over Australia to submit data on marine debris collected, giving TBOCS an opportunity to expand the marine debris project both state-wide and nationally.

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

8. MARINE DEBRIS EDUCATIONAL PRESENTATIONS

8.1 School & Community Group Presentations

During 2008, a total of 15 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. At each school, these presentations created an introduction to marine debris that was then expanded to include a beach clean up. The data was also contributed to the TBOCS database.

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.

9. ACKNOWLEDGMENTS

I would like to make a special thanks to the following people for their ongoing 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, helping to protect our precious marine life.

You are making a difference!!

Wally Smith Renee Mouritz Liz McGuire Alison Dorn Zoe Brockhoff

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 2009!

**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
Busselton Underwater Observatory & Jetty Staff
Gracetown Progress Association
Margaret River Recreational Boardriders
Prevelly Penguins
Cape to Cape Catchments Group
Dunsborough Bay Yacht Club
Keep Busselton Beautiful Group
Friends of Marmion Marine Park
ACTIV Foundation
Leeuwin Links
Australian Seabird Rescue – Mandurah
Bouvard Coastcare Group
Geocatch**

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 2009!!

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 2009!

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

**A DATE FOR YOUR DIARIES!!!
SOUTH WEST BEACH CLEAN UP & CAPE TO CAPE BEACH CLEAN UP
10TH & 11TH OCTOBER 2009**