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COASTAL WATCH

TURNING THE TIDE AGAINST MARINE LITTER

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COASTAL WATCH

TURNING THE TIDE AGAINST MARINE LITTER

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PREFACE

“ Coastal Watch as an initiative shows what can be done when the community comes together to collaborate and deal with the marine litter environmental issue with government to create awareness and change behaviour. I would like to congratulate the various groups who joined the project as this creates ways of working in future to better protect our oceans , reduce the use of plastic and harness the full support and participation of community youth groups , green groups and many other stakeholders - let's now tackle the litter problem at source. ”

Peter Cornthwaite

Chief Executive Officer, WWF-Hong Kong

“ My wish is that people would see that they create the issue of trash and must accept responsibility to change the way they create waste. ”

Paul Whitehead

Managing Director, Eco Marine

“ Mudflats and mangroves are biodiversity hotspots. It's time for us to say “no” to disposable plastics to keep our mudflats and mangroves clean for precious plant and animal species like horseshoe crabs. ”

Joe Cheung

*Assistant Community Education Manager,
Ocean Park Conservation Foundation, Hong Kong*

“ Cutting out single-use plastic is easy with a little effort. It's something we can all do. ”

Jo Wilson

Living Lamma

“ Hong Kong Cleanup is proud to be a Coastal Watch partner; this coalition has not only contributed valuable data and awareness to the issue of marine debris, but it has also demonstrated the great strength that lies in the cooperation between NGOs. ”

Lisa Christensen

Founder, Hong Kong Cleanup

“ Coastal Watch has effectively engaged thousands of people on the beach and has been a fantastic project to encourage behaviour change to decrease the amount of single-use plastic used on a daily basis. ”

Dana Winograd

Director - Operations, Plastic Free Seas

“ Marine debris is a serious and worsening problem worldwide, and Hong Kong's coasts have not escaped this problem. We need to urgently change our behavioural patterns and start taking responsibility for our home immediately. ”

Kevin Chiu

Senior Project Officer, Green Council

“ Coastal Watch has given us an incredibly significant “start”. Now, after a fruitful two-years of Hong Kong clean-ups and trash surveys, what's next? ERC hopes that the momentum will keep rocking and move in the direction of combatting the sources of marine trash. ”

Carol Liu

Education Manager, Eco-Education and Resources Centre

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1. EXECUTIVE SUMMARY

Marine litter is a serious global problem, the impacts of which spread far beyond the world's populated areas. Litter radiates insidiously across the planet, landing on uninhabited islands, spreading through pristine Arctic waters and sinking into the deep seas through the action of the winds and ocean currents. At least eight million tonnes of plastic enter the world's oceans every year; equivalent to the contents of one garbage truck being dumped into the sea every minute. This litter creates substantial threats to the marine ecosystem and to human beings.

34
LOCATIONS
130
SURVEYS
>2,000
VOLUNTEERS

Hong Kong is home to incredible coastal and marine biodiversity, with almost 6,000 marine species recorded in our waters; but our precious marine environment faces a constant assault from marine litter. In 2014, with the support of the Environment and Conservation Fund and the Environmental Campaign Committee, WWF-Hong Kong and six strategic partners launched a two-year large-scale ecological survey and coastal clean-up project called Coastal Watch. Working with over 2,000 volunteers from across society, the project has gathered and archived marine litter and ecological data at 34 sites around Hong Kong, aiming to identify point sources of marine litter and formulate solutions which in turn will help steer long-term marine conservation policy.

This report summarizes Coastal Watch's survey results and its many achievements. First and foremost, the results draw attention to the fact that our unsustainable, disposable lifestyle is having long-lasting effects on the marine environment. The surveys reveal that plastic debris makes up between 60 and 80 per cent of marine litter found along our shorelines, on the sea surface and on the seabed; posing a serious threat to Hong Kong's marine environment, including places that are seldom visited by people. The top ten types of plastic litter collected were disposable items like packaging, bottles, cutlery and polystyrene boxes, with the litter's primary origins being domestic and recreational waste.

Clearly, Hong Kong's current attempts to solve this problem are not working. More assertive and proactive approaches must be urgently adopted, including reducing waste generation, preventing waste from entering the sea and effectively cleaning up the marine environment. These actions will require close cooperation between the government, green groups and all of society across several key areas: policy and legislation, research, innovation, education, facility support, stakeholder engagement and enforcement.

As consumers ourselves, we should all work towards becoming part of the solution. Every one of us can start making things better today, by following the "3Rs" principles – REDUCE, REUSE and RECYCLE. This will reduce the generation of unnecessary waste and keep garbage out of the sea.

The Coastal Watch project has proved that the wider Hong Kong community wants to restore the marine environment, and we believe that by working together this is possible. By partnering with our neighbours – particularly Macau and Guangdong Province – we can lead the way and conduct research, innovate, improve our waste facilities and implement the policies necessary to tackle marine litter at source and help solve this pernicious global problem.

2. THE GLOBAL MARINE LITTER PROBLEM



2. THE GLOBAL MARINE LITTER PROBLEM

2.1 WHAT IS MARINE LITTER?

Marine litter can be broadly defined as “all objects that do not naturally occur in the marine and coastal environment but are nevertheless found there”¹. Marine litter may be deposited on beaches or coastlines, float on the surface of the sea, float within the ocean itself or sink to the seabed.



One example of Hong Kong's serious marine litter problem. (Lap Sap Wan, Hong Kong. 27 April 2015)

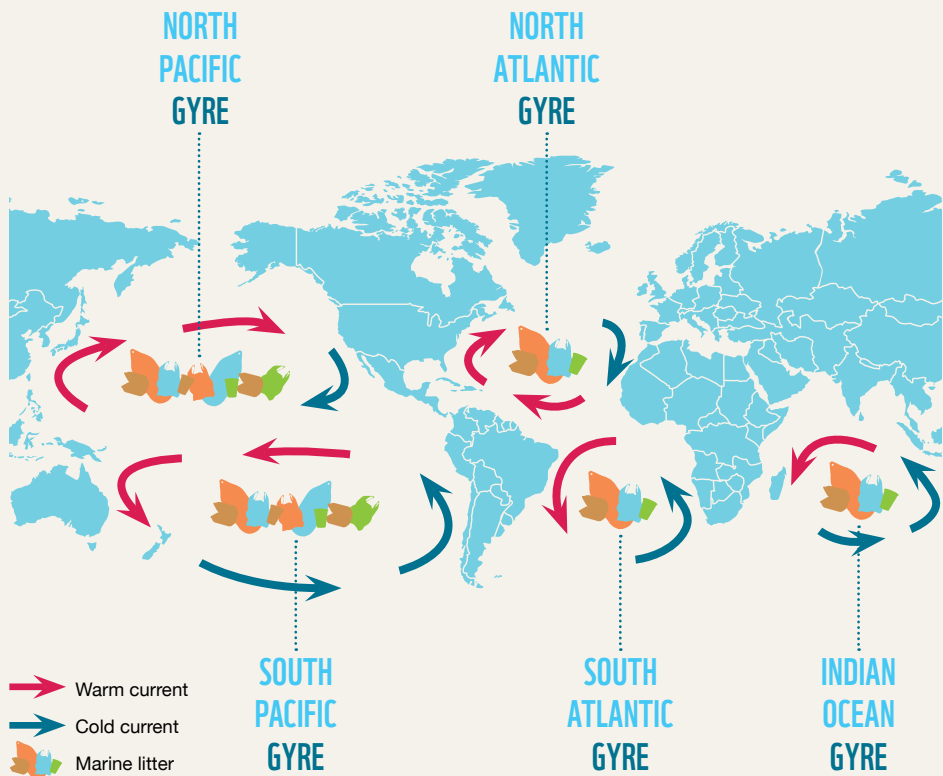
Marine litter comes in many forms, ranging from disposable daily products like plastic bottles, cutlery and plastic bags, to items which can barely be imagined – bicycles, shopping carts, refrigerators, sofas and more. Practically anything we use in our daily lives – indeed almost anything produced by human beings – can be found in the marine environment. Most marine litter is composed of plastic in one form or another. These plastics are generally non-biodegradable and thus persist in the environment for decades; in fact many forms of plastic last for centuries – far, far longer than the human lifespan.

2.2 AFFECTED AREAS

Marine litter travels. As such, it not only affects Hong Kong’s local waters, it also affects the world’s oceans. Marine litter is without question a serious and growing global problem.

So how does marine litter travel?

THE FIVE MAIN OCEAN GYRES



The Earth’s oceans have systems of currents which circulate water around the planet. These are called gyres. These gyres are formed by global wind patterns and the forces created by the rotation of the Earth. The movement of these ocean gyres helps drive the “ocean conveyor belt”, a process which is essential for regulating nutrient flows throughout the world’s oceans as well as the oceans’ temperature and salinity. Sadly, every year, millions of tonnes of litter end up in the ocean from a myriad of sources located all around the planet. Individual pieces of litter are transported by currents and atmospheric winds, transporting marine litter thousands of miles from where it originally entered the ocean. Seasonal weather patterns and large storms also affect the movement of litter. Compounding the problem is that marine litter continuously accumulates and becomes even more widespread as time goes by – for instance, the amount of marine litter found on UK coastlines doubled between 1994 and 1998; while it increased a hundred-fold in the Southern Ocean during early 1990s². Humanity simply cannot stand by and allow the situation to deteriorate any further.



© Patrick Yeung / WWF-Hong Kong

Enormous amounts of marine litter have accumulated in remote areas of Hong Kong, even in sea caves. (Po Toi Island, Hong Kong. 31 July 2014)

2.3 THE SOURCES OF MARINE LITTER

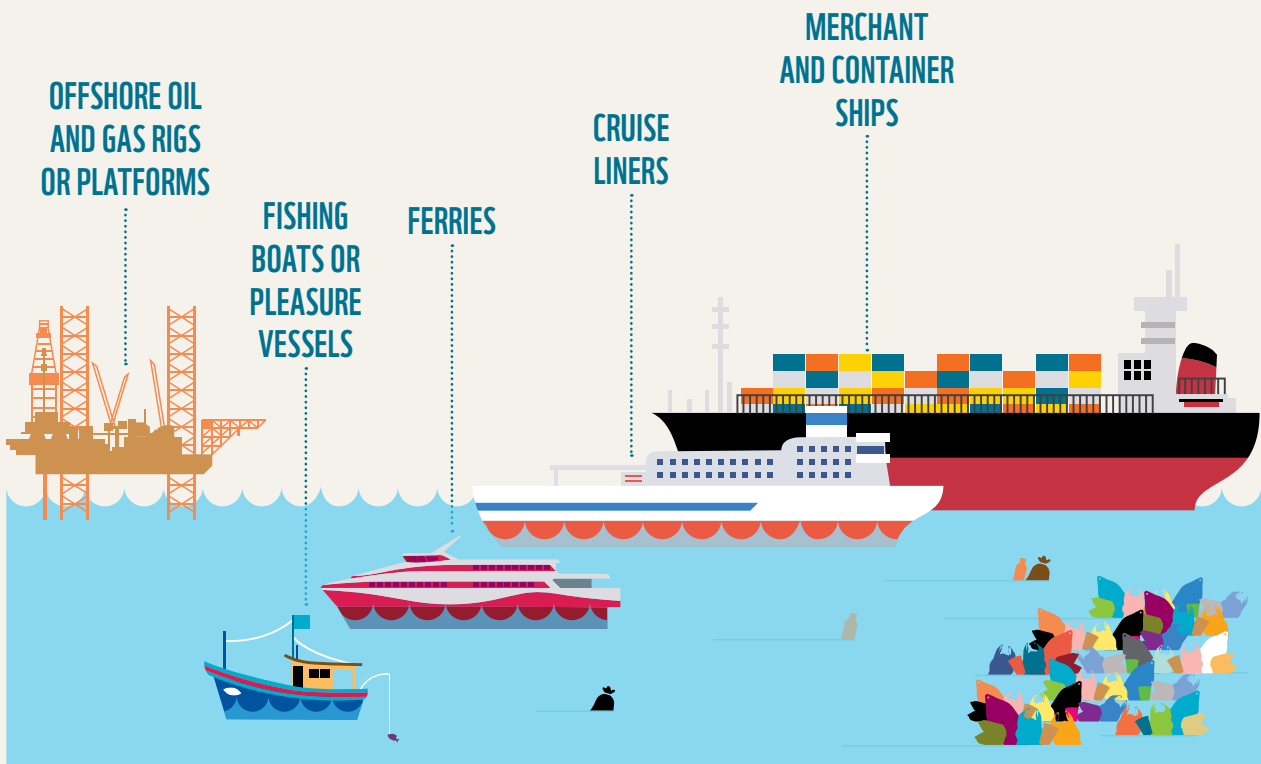
60-80%
OF MARINE DEBRIS IS GENERATED FROM
LAND-BASED SOURCES



Marine litter is produced by both land-based and sea-based activities. Data from International Coastal Cleanup³ indicates that 60 to 80 per cent of marine debris is generated from land-based sources. The primary land-based sources are littering, dumping in rivers and streams which lead to the sea and industrial losses; one example being the spillage of plastic resin pellets during production, processing or transportation – something which occurred on a major scale in Hong Kong in 2012. This debris can be blown, swept or washed out to sea.

20-40%

OF MARINE LITTER ORIGINATES FROM
SOURCES AT SEA



At the same time, 20 to 40 per cent of marine litter originates from sources at sea. These sources include offshore oil and gas rigs or platforms, fishing boats, pleasure vessels, merchant ships, container ships, ferries and cruise liners. This debris is often dumped overboard or swept or blown off vessels and stationary platforms.

2.4 THREATS TO THE MARINE ECOSYSTEM

Marine wildlife entanglement



© Patrick Yeung / WWF-Hong Kong

A crab caught in a ghost net. Entanglement can lead to injury, illness, suffocation, starvation and eventually death.

Ingestion of debris by marine life

© Mandy Wong



© Mandy Wong

A large amount of marine litter, which included nylon ropes, plastic straps and packaging wrappers, was found inside the gut of this deceased turtle. When ingested, litter threatens the health of marine creatures and can cause death.

MARINE LITTER HAS NEGATIVE IMPACTS ON



MARINE HABITATS

Marine litter can lead to the degradation of ecosystems through wildlife entanglement, loss of biodiversity and other negative impacts. Affected habitats include:



CORAL REEFS



MANGROVES



BEACHES

ECONOMICS AND SOCIETIES

Marine litter affects quality of life and diminishes the economic benefits of coastal and marine activities. These negative impacts include:



FISHERIES LOSSES

Increased costs to the fishing community due to damaged fishing gear; reduced time spent fishing and potential losses in catch volume



NAVIGATIONAL HAZARDS TO VESSELS AND RISK TO CREW

Marine litter can foul or entangle vessels' propellers and increase the risk of collisions



PUBLIC HEALTH AND SAFETY IMPACTS

Injuries to recreational users of the marine environment; leaching of poisonous chemicals created during the manufacture or breakdown of plastics



HIGH COSTS OF REMOVING MARINE LITTER

Collection, transportation and disposal of litter can incur steep costs



TOURISM LOSSES

Marine litter blights the marine landscape and drives tourists away

3. THE MARINE LITTER PROBLEM IN HONG KONG



3. THE MARINE LITTER PROBLEM IN HONG KONG

3.1 HONG KONG'S MARINE ENVIRONMENT



© Apple Chui

Hong Kong's marine environment supports a high level of biodiversity

6,000
MARINE
SPECIES LIVE IN
HONG KONG
WATERS



A recent survey recorded almost 6,000 marine species living in Hong Kong waters. Hong Kong occupies only 0.03 per cent of China's total marine area, yet the number of marine species recorded in our waters represents approximately 25 per cent of China's total⁴. Adding to this surprising fact, the number of marine species per unit area in Hong Kong is several hundred times higher than in many other regions of the world, underlining the exceptional marine biodiversity of our waters.

Regrettably, our highly diverse and extremely precious marine ecosystem faces a barrage of threats, including reclamation, development, overfishing and unavoidably, marine litter. This is driving the rapid and dramatic deterioration of Hong Kong's rich marine biodiversity. It goes without saying that these threats to our marine ecosystem would have disastrous effects on our marine biodiversity. Marine litter is a challenging problem because it is caused by every one of us. The solutions to this problem will require concerted efforts from responsible citizens and businesses, and strong leadership from governments.

3.2 OUR MARINE LITTER PROBLEM

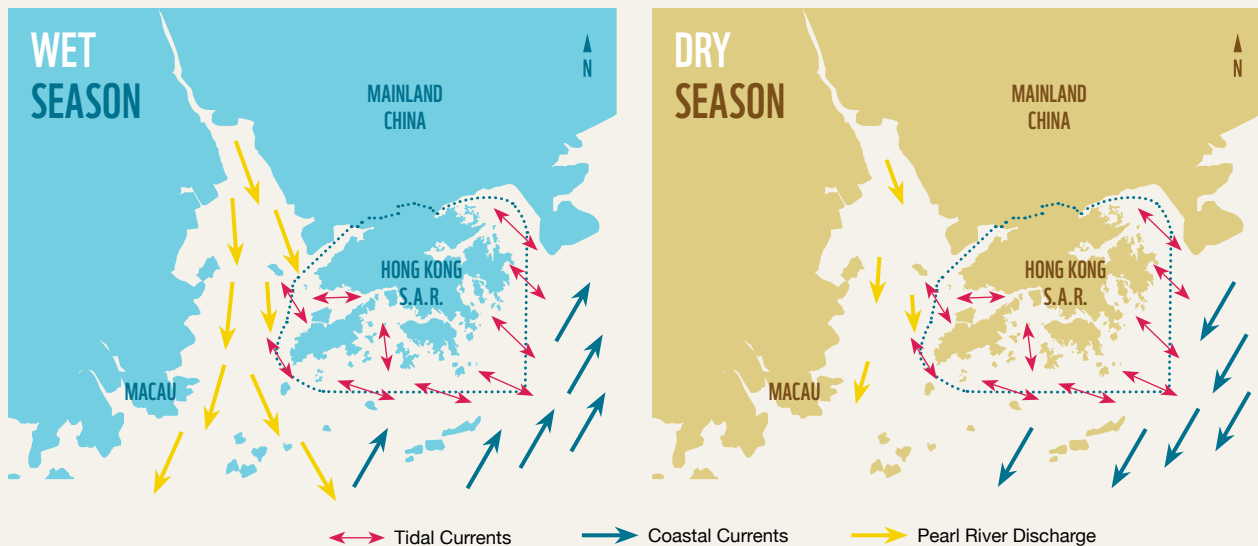
Marine litter has been a persistent problem in Hong Kong for years. The primary reason is that our 263 islands and 733 km of coastline are situated in one of the world's most densely populated areas. On average, 15,000 tonnes of marine litter is collected by the Hong Kong government annually, while thousands of tonnes more remains uncollected – remaining in place and polluting our beaches and shorelines. In many areas, especially the bays and sea caves that are not subject to regular clean-ups by government contractors or community groups, marine litter accumulates and remains in situ, creating a serious impact in these more remote areas.

15,000
TONNES OF
MARINE LITTER
COLLECTED
ANNUALLY



Marine litter is transported around the world by winds and the ocean currents. Thus, in order to predict places where marine litter might accumulate in Hong Kong, we need to understand the different factors that influence Hong Kong's hydrography - the science of "how the ocean behaves" - during both the wet and dry seasons.

A report released by the Environmental Protection Department (EPD) in 2015 explains the broader picture⁵. During the wet season, Hong Kong is influenced by the waters of southeast China, where the south-westerly oceanic flow prevails during the summertime. The influence of this oceanic flow and the outflow of the Pearl River progressively diminishes towards the east of the territory. As a result the western and southern coastlines of Hong Kong are more affected by marine litter during the wet season. However during the dry season, Hong Kong is primarily influenced by a north-easterly oceanic flow, meaning that more marine litter accumulates along the eastern and north-eastern coasts of Hong Kong during the winter months.



No matter what the season, rubbish constantly accumulates on Hong Kong's shorelines. Not only does the enormous amount of litter piled on our coasts affect the scenery at our beaches and coastlines, persistent rubbish creates a multitude of threats to our marine ecology. The entanglement of sea creatures is one problem, while the fish bite marks that have been found on different types of marine debris is another. The fact that fish are consuming plastic directly affects the health of the fish and the integrity of the food chain: if pollutants related to this litter enter the food chain, fisheries resources and eventually human health will be affected⁶.



© Patrick Yeung/ WWF-Hong Kong

Marine litter with fish bite marks

3.3 EXISTING SOLUTIONS OFFERED BY THE GOVERNMENT

In 2012, the Inter-departmental Working Group on Clean Shorelines was set up after the plastic pellet disaster, aiming to review and formulate measures to improve the cleanliness of our shorelines. Several government departments involved in the working group share various responsibilities for cleaning up marine litter. These are detailed as follows:

 <p>AGRICULTURE, FISHERIES AND CONSERVATION DEPARTMENT Cleanliness of marine parks and marine reserve</p>	 <p>LEISURE AND CULTURAL SERVICES DEPARTMENT Cleanliness of gazetted beaches</p>	 <p>MARINE DEPARTMENT Sea surface cleanliness in Hong Kong waters</p>
 <p>FOOD AND ENVIRONMENTAL HYGIENE DEPARTMENT Cleanliness of non-gazetted beaches and coastal areas, except those areas under the purview of other departments</p>	 <p>DRAINAGE SERVICES DEPARTMENT Testing the feasibility of trapping refuse using floating booms and silt curtains at outfalls</p>	 <p>ENVIRONMENTAL PROTECTION DEPARTMENT Coordinating the Working Group, organizing educational and promotional campaigns and helping coordinate community clean-up operations</p>

The Working Group also conducts other activities like roving exhibitions, competitions, shoreline clean-ups and other awareness-raising work, as well as increasing engagement with stakeholders, providing various facilities, and raising the level of enforcement. Despite these efforts, in the ensuing years the numerous territory-wide clean-ups organized by different groups and the frequent reports of marine litter in black spots all over Hong Kong have revealed a telling truth: the cleanliness of our marine environment is still far from satisfactory and much more work is required to solve the problem.

4. THE COASTAL WATCH PROJECT



4. THE COASTAL WATCH PROJECT

A COLLABORATIVE COASTAL SURVEY PROJECT

Coastal Watch is the first collaborative conservation project in Hong Kong to concurrently conduct marine litter and ecological surveys on seashores, in coastal waters and underwater.

Survey data for the project was collected between July 2014 and July 2016, and classified into five main types: ecological, land-based macro-litter, land-based micro-litter, coastal floating litter and underwater litter.

4.1 PROJECT BACKGROUND



The plastic pellet spill disaster of August 2012 marked a watershed moment for Hong Kong's marine environment. On the night of 23 July 2012, a severe typhoon swept past the south China coast. Six containers loaded with 150 tonnes of polypropylene pellets – the raw material used to make thousands of kinds of plastic products – were washed off a vessel in rough seas east of the Ninepin Islands.

As the containers smashed onto various islands and ripped open, sacks filled with the polypropylene floated free and burst, releasing billions of pellets less than one cm in size. These then began washing up onto Hong Kong's southern coastlines, and piles resembling snowdrifts began forming on beaches. Green groups, members of the public and representatives of private enterprises came together in response to this calamity and worked hard to mitigate its impacts. The spill took many weeks to clean up, and pellets still remain to this day over four years later. While the urgency of the pellet spill crisis has now passed, marine debris remains a constant – in fact a growing – presence on Hong Kong's beaches and coastlines, raising serious concerns among the Coastal Watch project staff and clean-up crews as well as the wider population.



© WWF-Hong Kong

“Snowdrifts” of plastic pellets released by the 2012 disaster covered Hong Kong’s shorelines

The spirit of the two-year Coastal Watch project focused on bringing forward the momentum and action-oriented mind-set created after the plastic pellet spill and encouraging every Hongkonger to cherish our oceans and keep them clean. Developed by **WWF** and six strategic partner organizations – **Eco Marine, Ecovision’s Hong Kong Cleanup, Green Council, Eco-Education and Resources Centre, Ocean Park Conservation Foundation Hong Kong** and **Plastic Free Seas**, Coastal Watch was at its heart a citizen science project which used scientifically-sound methodologies to study, protect and provide year-round monitoring of Hong Kong’s ecologically valuable coastal habitats.

4.2 OBJECTIVES

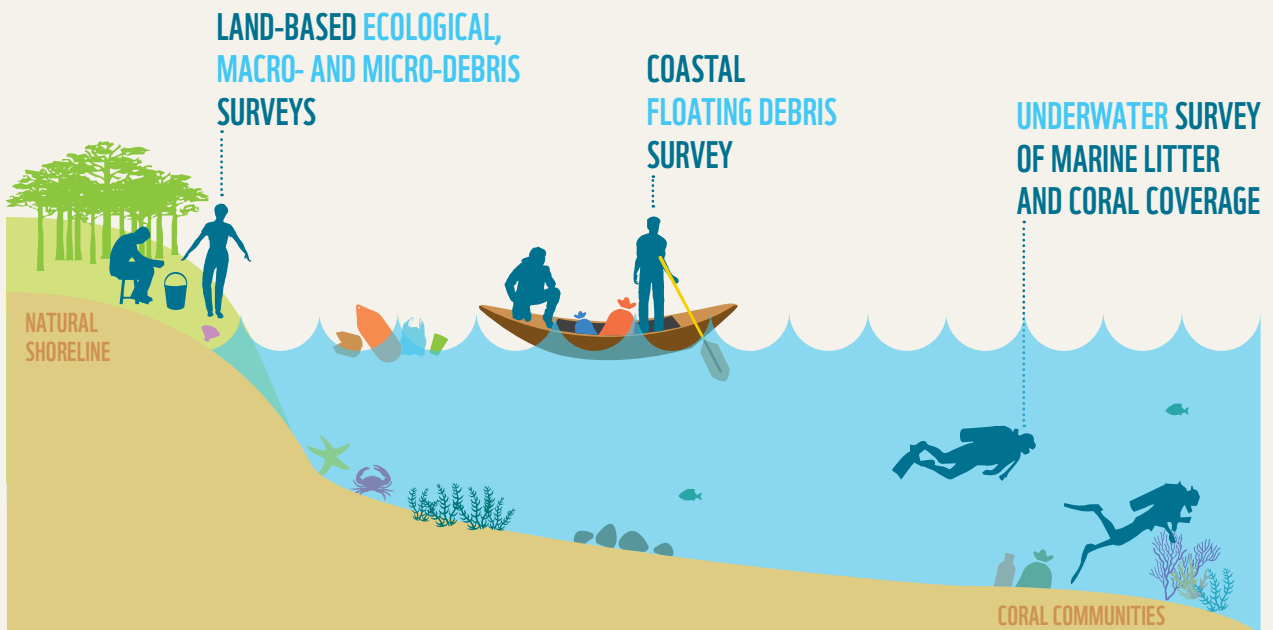
The ultimate objectives of Coastal Watch were to survey the size and scale of Hong Kong’s marine litter problem, develop a long-term solution to the marine litter problem, educate a broad segment of the Hong Kong public about our marine environment and then inspire and mobilize people from across society to take positive action to shape the future of our waters. Coastal Watch chose six marine habitats: mangroves, mudflats, sandy shores (specifically non-gazetted beaches – i.e. those which receive no regular cleaning), rocky shores, coral communities and coastal water areas (which we visited with the help of the fishing community). By coming to understand the biodiversity of these areas and the way in which they are impacted by marine litter, Coastal Watch sought to formulate practical solutions to conserve our marine environment.

4.3 SURVEY LOCATIONS

In Year One (2014-2015), 27 sites located across Hong Kong were studied. This number increased to 34 sites in Year Two (2015-2016). The project's site distribution and respective habitat types are illustrated below.



4.4 SURVEY METHODOLOGIES



© Patrick Yeung / WWF-Hong Kong



Macro-debris survey (collecting debris larger than 1cm)

© Tiffany Zau / WWF-Hong Kong



Micro-debris survey (collecting debris smaller than 1cm)

© Tiffany Zau / WWF-Hong Kong



Floating debris survey

© Patrick Yeung / WWF-Hong Kong



Underwater survey of marine litter and coral coverage


For further details on these surveys, please visit:
<https://wwf.hk/coastalwatchsurvey>



© WWF-Hong Kong

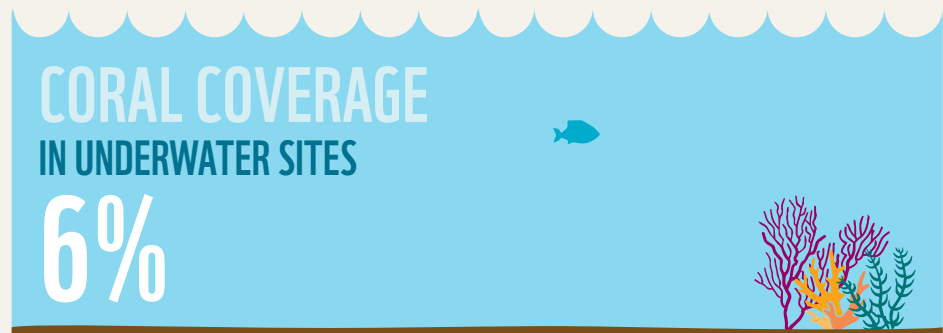
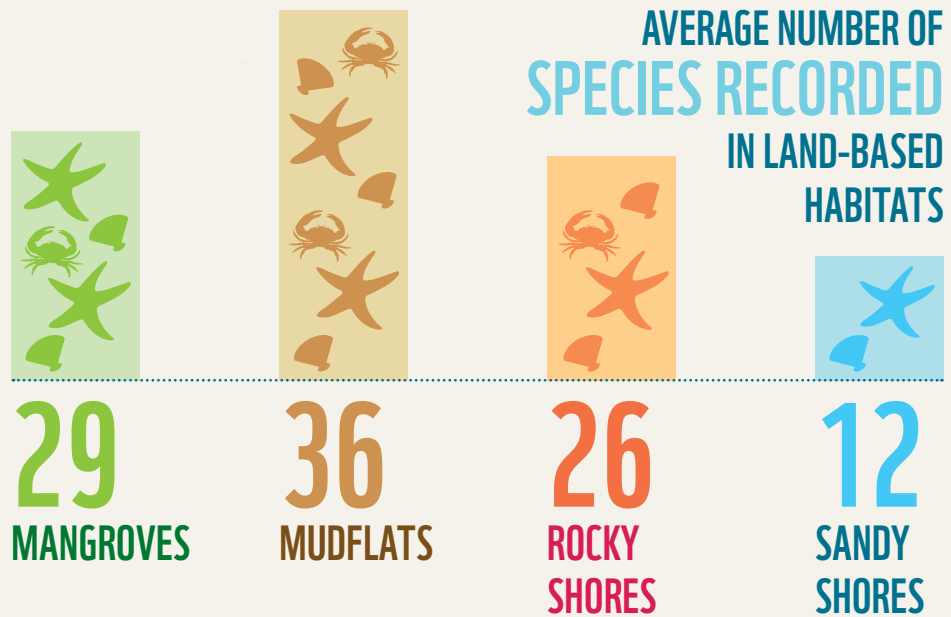
Volunteers identifying species during an ecological survey

4.5 SURVEY RESULTS

130
SURVEYS AND
CLEAN-UPS 

Over its two-year span, the Coastal Watch project conducted 130 surveys and clean-up activities which mobilized over 2,000 people. The project also analysed the results collected.

Ecological Survey



© Patrick Yeung / WWF-Hong Kong



Mangrove trees provide shelter and nutrients for other marine organisms in intertidal habitats

© Patrick Yeung / WWF-Hong Kong



Colourful gastropods found in an intertidal area at low tide

© Billy Kwan



Horseshoe crabs spend their early years on sandy beaches and mudflats.

© Patrick Yeung / WWF-Hong Kong



Hong Kong has a high diversity of coral which supports a wide variety of marine life.

Marine Litter Survey

**LAND-BASED
MACRO-DEBRIS**
PER FIVE-METRE
BELT TRANSECT

391.4

**LAND-BASED
MICRO-DEBRIS**
PER ONE SQUARE METRE
QUADRAT

89.3

**COASTAL FLOATING
LITTER**
COLLECTED EVERY TWO HOURS

517.6

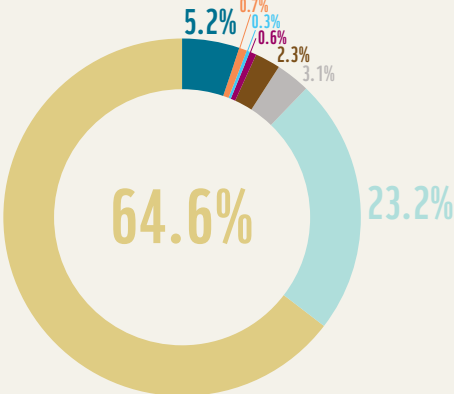
**AVERAGE NUMBER OF
PIECES OF LITTER**

**UNDERWATER
LITTER**
PER 100 METRE
TRANSECT

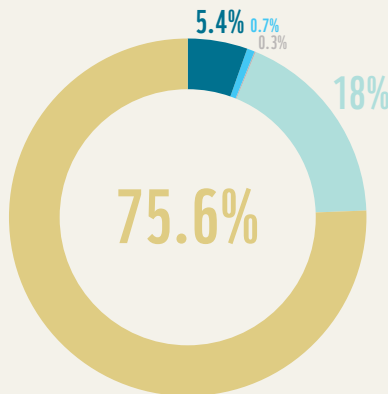
30.0



**LAND-BASED
MACRO-DEBRIS**



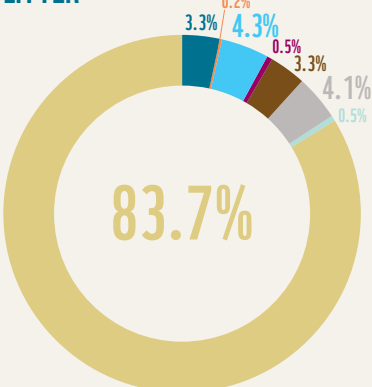
**LAND-BASED
MICRO-DEBRIS**



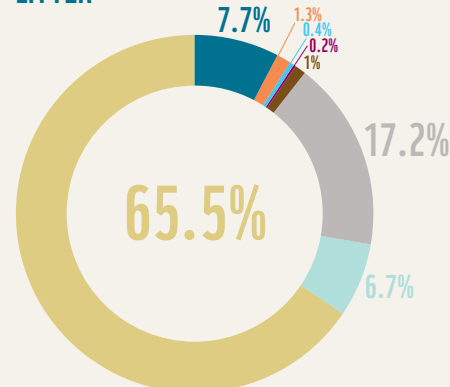
**COMPOSITION
OF MARINE LITTER**

- Plastic
- Glass
- Metal
- Wood
- Rubber
- Paper
- Cloth
- Others

**COASTAL FLOATING
LITTER**



**UNDERWATER
LITTER**



TOP TEN CATEGORIES OF LITTER LAND-BASED MACRO-DEBRIS

1



Glass fragments

2



Polystyrene – fragments

3



Plastic packaging (wrappers) and film – fragments

4



Polystyrene – food boxes and cups

5



Plastic fragments – hard

6



Drink bottle caps

7



Thin rope, string, ribbon pieces

8



Plastic straws and stirrers

9



Plastic packaging (wrappers) and film

10



Miscellaneous plastic items



© Tiffany Zau / WWF-Hong Kong

Broken glass fragments on beaches pose potential harm to beach users.



© Tiffany Zau / WWF-Hong Kong

Disposable plastics, e.g. food containers and bottles, commonly accumulate in coastal areas.

TOP TEN CATEGORIES OF LITTER COASTAL FLOATING LITTER

1



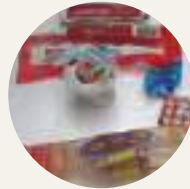
Polystyrene – fragments

2



Plastic packaging (wrappers) and film – fragments

3



Plastic packaging (wrappers) and film

4



Drink bottles, 1L or smaller

5



Polystyrene – food boxes and cups

6



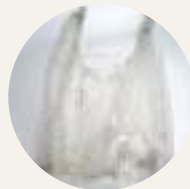
Polystyrene boxes

7



Fast food containers, lids and cups

8



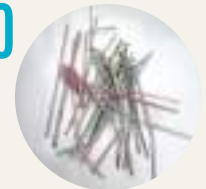
Plastic shopping bags

9



Thin rope, string, ribbon pieces

10



Straws and stirrers

TOP TEN CATEGORIES OF LITTER UNDERWATER LITTER

1



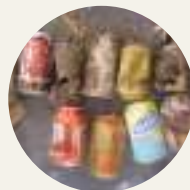
Fishing net pieces

2



Plastic packaging (wrappers) and film – fragments

3



Metal cans (food or drink), lids

4



Fishing items (floats, lures, buoys, fishing line)

5



Ceramics pieces

6



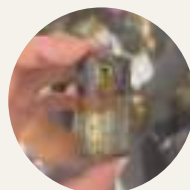
Plastic fragments – hard

7



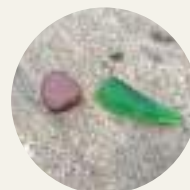
Plastic packaging (wrappers) and film

8



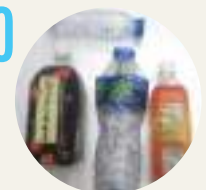
Metal, other

9



Glass fragments

10



Drink bottles, 1L or smaller

© Tiffany Zau / WWF-Hong Kong



Due to their light weight and neutral or positive buoyancy, many types of disposable plastic litter float and spread widely across the sea. (Aberdeen, Hong Kong)

© Tiffany Zau / WWF-Hong Kong



Polystyrene fish boxes generated by the fishing industry. These containers break easily, falling apart into thousands of tiny pieces which are very difficult to remove from the marine environment. (Aberdeen, Hong Kong)

© Patrick Yeung / WWF-Hong Kong



Abandoned fishing nets can entangle marine life, causing injury and even death. (Po Toi Island, Hong Kong)

© Patrick Yeung / WWF-Hong Kong



Mismanagement of litter disposal may cause litter to end up in the sea and create persistent negative environmental impacts. (Po Toi Island, Hong Kong)

4.6 PUBLIC ENGAGEMENT AND EDUCATION WORK

The Ocean Seminar series and other exhibitions



© Carl Tang / WWF-Hong Kong

Over the past two years, the Coastal Watch team has organized a total of six Ocean Seminars – lively and interesting seminars designed to raise public awareness about the marine litter issue in Hong Kong and engage people from across society in helping to develop solutions. The six seminars in the series introduced people to local marine species, explored ways of recycling and upcycling waste and provided a forum where experts shared their unique marine conservation experiences. The series largely succeeded in its goal, with around 1,000 people taking part during the two years.



© Carl Tang / WWF-Hong Kong

Coastal Watch put on several other public exhibitions which revealed the extent of marine litter in Hong Kong and introduced various ways to tackle the problem.

Education leaflet

The marine litter education leaflet is fun, engaging and visually striking. Focusing on the importance of keeping litter out of the marine environment, the leaflet illustrates the sources of marine litter, discusses how litter interacts with the marine environment and gives people tips on how to reduce waste. E-versions of the leaflets can be downloaded via the following link:



© Carl Tang / WWF-Hong Kong

https://wwf.hk/marinelitterleaflet_eng

Cross-border coastal clean-up

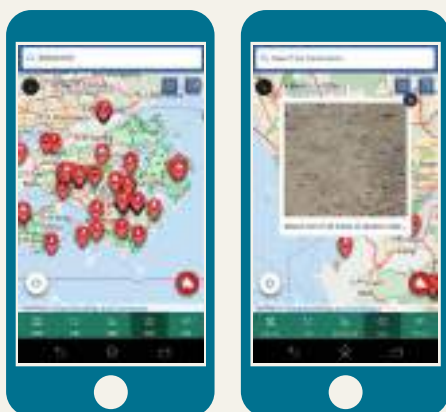


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While there are many local sources of marine waste, trans-boundary marine litter is also a serious issue, one which needs to be resolved through close regional collaboration. To address this point, the Coastal Watch team organized the first ever cross-border clean-up activity. Timed to coincide with the 2016 World Environment Day, the event saw passionate volunteers

from committed organizations based in Hong Kong, Macau and mainland China team up to tackle marine litter. During the event, volunteers from each of the three regions simultaneously cleaned areas of their coastlines. In Hong Kong, over 400 enthusiastic volunteers were recruited by the Coastal Watch team.

Cooperation with TrailWatch App



Coastal Watch also cooperated with TrailWatch, an online platform on the Creative Commons, to help monitor instances of environmental damage. The TrailWatch application allows anyone to use their smartphone camera to take photos and make instant, independent reports about marine litter and pollution incidents in Hong Kong. The hope was that this powerful public tool would attract active participation and encourage all Hong Kong citizens to start working together to solve our marine pollution problem. By and large, these hopes have been realized.

4.7 LAP SAP WAN SURVEY

© Andy Ching / WWF-Hong Kong



April 2015



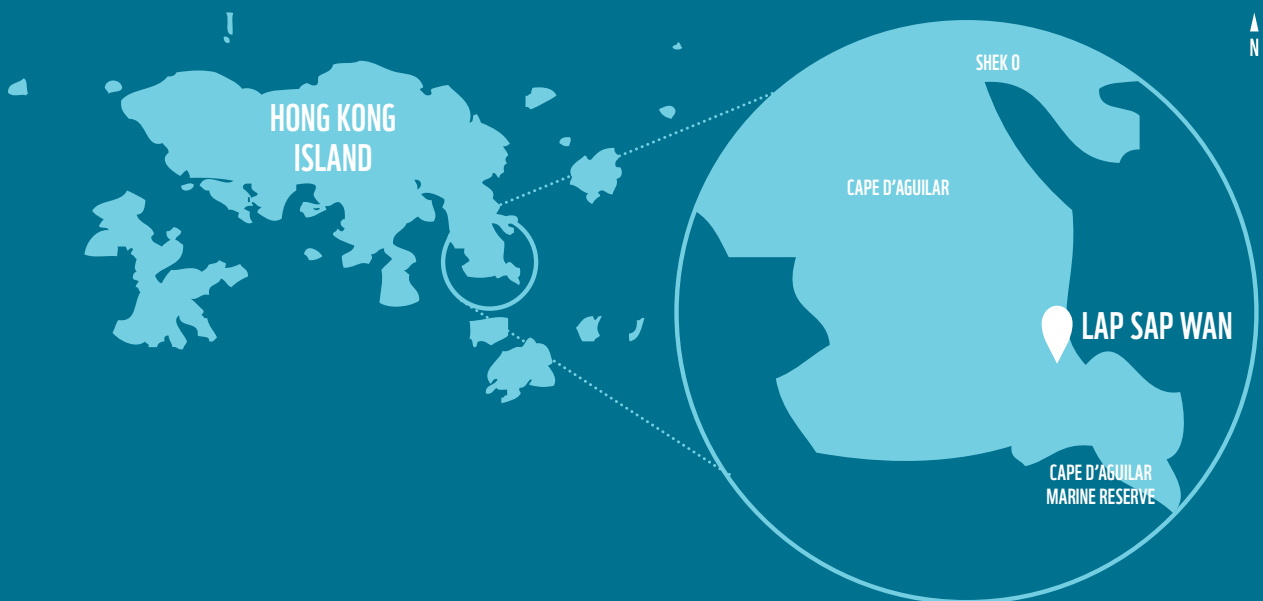
July 2015

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January 2016

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185 TONNES OF
MARINE LITTER
IN LAP SAP WAN



46

**GARBAGE TRUCKS REQUIRED TO REMOVE
THIS ESTIMATED AMOUNT OF RUBBISH**

(based on the estimated amount of rubbish and using
garbage trucks with a capacity of 4 tonnes each)

2,064
BOTTLES
COLLECTED BY
9 VOLUNTEERS IN
30
MINS



Over the last few decades, Lap Sap Wan, or “Rubbish Bay” – located in Cape D’Aguilar near Shek O on the south side of Hong Kong Island – has consistently accumulated huge volumes of marine refuse. In late April 2015, Coastal Watch and TrailWatch led a group of volunteers to Lap Sap Wan to conduct ecological and marine litter surveys. During the surveys, the total weight of marine litter present in the bay was estimated to be around 185 tonnes. To remove this much debris would have required 46 refuse collection vehicles with a capacity of four tonnes each. The presence of such an enormous amount of rubbish gathered significant attention from the press and created public awareness across the city.

Reacting to this discovery and the resulting media coverage, the Hong Kong government acted promptly and after three months of hard work from May to July 2015, most of the macro-marine litter was finally cleared from the bay. A whopping 8,290 garbage bags of marine litter were removed and the pebble beach was visible once again.

However, the sea is relentless – as is, it seems, humankind’s ability to produce marine litter. The sea continues to wash garbage into this beautiful bay, as was revealed by another site visit conducted at the end of January 2016: the beach has once more begun to be covered by marine debris, underlining the importance of eliminating the sources of marine litter.

5. CONTRIBUTING TO CLEANER SEAS



5. CONTRIBUTING TO CLEANER SEAS

5.1 WHY ARE OUR COASTLINES STILL AWASH WITH MARINE LITTER?



A LACK OF UNDERSTANDING OF THE EXTENT OF THE PROBLEM

- Limited scientific research is conducted regarding the main sources of marine litter and its effects on human health, the environment and the economy.
- Society as a whole continues to lack awareness about the harmful effects of single-use disposable plastic items on the environment leading to the continued use of these items of convenience.



A LACK OF TARGETED ACTIONS ON THE SOURCES OF MARINE LITTER

- Limited efforts have been made to engage marine user groups on the issues of plastic waste reduction and proper waste disposal, meaning that little is being done to eliminate their production of marine litter. E.g. Fishing activities are a primary source of marine litter, producing items like free-floating lost fishing gear like gill nets, and polystyrene containers that are blown into the sea.

3



A DISPOSABLE LIFESTYLE

- A lack of resources and facilities that encourage sustainability, e.g. public drinking fountains which reduce the use of single-use water bottles.
- A lack of research and initiatives regarding the development of and transition to sustainable substitutes for disposable plastic products, such as polystyrene food containers and plastic straws.

4



POOR FACILITATION OF THE “3Rs”

- Hong Kong lags behind other jurisdictions in the region, like Taiwan, in terms of public awareness of the importance of recycling and a government-led holistic recycling system that encourages – or even obliges – people to recycle more effectively.
- Slow progress in introducing a new Producer Responsibility Schemes (PRS)⁷ – there is no requirement for industry to work towards improving the recycling rates of plastic products. This is exacerbated by a lack of support from the government and a lack of incentives for producers.

5



INEFFECTIVE ENFORCEMENT

- Littering and improper waste disposal are some of the major causes of our marine litter problem. However, the number of marine litter cases which were prosecuted averaged 13.7 per year in 2012-2014⁸. These low rates of prosecution offer no effective deterrent to littering.

6



CROSS-BORDER MARINE LITTER

- Hong Kong is surrounded by the ocean, and inevitably marine litter from other places around the region will always land on our shores. This problem is aggravated during periods of heavy rain and during the typhoon season.

5.2 PROPOSED SOLUTIONS

The government, green groups and all of society need to take responsibility



PRODUCER RESPONSIBILITY

Facilitate and support the establishment of Producer Responsibility Schemes and persuade various parties to share responsibility for the collection, recycling, treatment and end-of-life disposal of products – plastic drink bottles, for example



SUPPORTING FACILITIES

Provide and install more public facilities which will reduce waste generation – e.g. more drinking fountains which will encourage people to refill water bottles instead of buying bottled water, and increasing the number of locations where recycling bins are situated



RESEARCH

Establish sources of funding for marine litter-related research and data collection on the main sources of plastic marine litter; its effects on human health, the environment, and the economy; and the most effective means of controlling the production of litter



GOVERNMENT 

GREEN GROUPS 

SOCIETY 

EXPLORING ALTERNATIVES

Work with academics, technical experts and industries to explore environmentally-friendly substitutes for plastic products, for example polystyrene fish containers



POLICY AND LEGISLATION

Formulate new policies and enact legislation geared towards banning the most common and damaging types of plastic products, such as microbeads and polystyrene food packaging



EDUCATION

Increase public education efforts regarding the problems associated with excessive packaging and over-consumption and the importance of proper waste management – i.e. the sorting, separation and recycling of waste



THE IMPORTANCE OF THE MARINE SECTOR

Marine-related businesses (i.e. the fishing community, yacht clubs and tourism companies) can embrace a much more careful approach to avoiding marine litter and be aware of their responsibilities to remind their customers that their actions must leave no trace



SUSTAINABLE LIFESTYLE

Encourage society to say “no” to disposable products, support the “3Rs” (reduce, reuse, recycle), make pledges and influence the rest of society to act





PREVENTING WASTE FROM ENTERING THE SEA

EDUCATION

Educate the public about the various ways in which litter can enter the sea; actively promote the “leave no trace” principle



COORDINATION

Create and nurture better coordination between different government departments; ensure that adequate facilities and services are provided to collect litter in coastal areas to prevent litter entering the marine environment



INNOVATION

Explore new technology and install facilities to intercept litter in coastal areas and drainage systems



GOVERNMENT 

GREEN GROUPS 

SOCIETY 

STAKEHOLDER ENGAGEMENT

Engage the fishing sector and educate the fishing community about the importance of not littering; encourage NGOs to work closely with the fishing community regarding using more sustainable materials in fishing gear and related items such as fish containers



ENFORCEMENT

Increase enforcement of Hong Kong laws and strengthen penalties for littering and dumping, particularly in the locations identified as marine litter generation black spots





CLEANING UP THE MARINE ENVIRONMENT

INCREASED EFFORT

Accelerate efforts to clean up existing marine litter. Clean-up efforts should be significantly increased at marine litter black spots, including coastlines and underwater



PRIORITIZATION

Allocate sufficient resources to prioritize clean-ups in ecologically important areas other than marine parks and marine reserve



UPGRADE EMERGENCY RESPONSE

Establish and maintain an emergency response mechanism whereby government departments and green groups can rapidly collaborate to address marine litter emergencies



GOVERNMENT 

GREEN GROUPS 

SOCIETY 

INNOVATION

Put in place systems to more effectively capture marine litter, e.g. floating booms to collect litter and improved rubbish collection boats



STAKEHOLDER ENGAGEMENT

Communicate with stakeholders to understand marine litter accumulation trends and formulate targeted, effective solutions



REPORTING

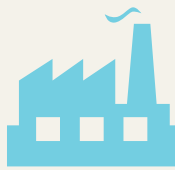
Report marine litter cases in coastal areas, at sea and underwater in a timely manner to the government and NGOs for follow up action



Following the “3R” principles



Given the fact that the vast majority of marine litter items are disposable and were not disposed of properly, it is of the utmost importance to effectively address the sources of this litter. Under the producer responsibility principle, Coastal Watch suggests that manufacturers, retailers and consumers are all responsible for preventing litter from entering the sea – whether they generate waste that ends up in the sea, or provide goods and services near coastal areas or in the sea. We suggest that this problem can be addressed at every point along the litter generation chain by using the “3Rs” principle:



MANUFACTURERS

All suppliers which produce products

- Reduce unnecessary packaging and avoid using non-reusable/ non-recyclable materials in their products
- Consider the reusability of products during the design process to maximize the products’ lifespan
- Provide incentives to encourage customers to recycle the company’s products – e.g. install collection systems in convenient locations which reward those who recycle – this will help promote good recycling habits



RETAILERS AND SERVICE PROVIDERS

Shops, yacht clubs, water sports centres, seaside restaurants and caterers and more

- “No disposable plastics” promises and campaigns to attract wider consumer participation
- Incentives given to those who bring their own products, e.g. discounts for customers who bring their own cutlery and takeaway containers, or extra fees for the use of disposable items
- Provide recycling bins at their locations to facilitate recycling by users, customers and staff



CUSTOMERS

The general public, tourists, participants in outdoor activities

- Bring your own water bottle, lunchbox, utensils and bags to reduce your consumption of single-use disposable products
- Ensure that you recycle properly and encourage others to do so as well
- Use your creativity to upcycle used items and support local social enterprises which give a “second life” to old products
- Encourage government to facilitate greater recycling efforts and to introduce extended producer responsibility schemes

5.3 EXAMPLES WHICH HONG KONG CAN LEARN FROM

Tackling the marine litter problem is no easy task, especially when it comes to devising real action. The keys to success are innovative ideas and technologies, along with the determination to be proactive. The following are a few examples from Hong Kong and other parts of the world which we hope will inspire the various stakeholders in the marine litter issue to devise new and creative solutions to this pressing problem.

SAN FRANCISCO'S POLYSTYRENE BAN



To achieve its goal of being a waste-free city by 2020, San Francisco recently voted to ban all polystyrene products by 2017⁹. Enacted in addition to the existing ban on polystyrene takeaway containers from food vendors and restaurants which has been in place since 2007 – and which was then emulated by more than 100 cities – the

ban will make it illegal to sell most polystyrene products, including food packaging, packing peanuts, foam dock floatation devices, mooring buoys and pool toys in the city by January 2017. A ban on polystyrene fish and meat trays will come into effect in July 2017.

Polystyrene is an extremely long-lasting substance, once it is in the ocean it begins to break down into microplastic particles. These can threaten marine life by entering the food chain and leaching potentially harmful chemicals, eventually causing impacts to human health. This new ordinance, unanimously voted in on 28 June 2016, is a big step towards realizing San Francisco's environmental protection goals, despite being considered the most extreme environmental legislation passed in the US thus far.



©KIMO

FISHING FOR LITTER

Fishing for Litter is an initiative run by Kommunenes Internasjonale Miljøorganisasjon (KIMO) since 2000, aiming to reduce marine litter through engagement with the fishing industry¹⁰. KIMO provides large bags to fishing boats, allowing their crews to collect litter originating at sea and keep it safe and secure. When full, these bags are deposited on piers when the boats return to shore and are then collected for disposal.

This initiative not only involves the direct removal of litter from the sea, which prevents it from washing up on beaches or becoming entangled in fishing nets; it also raises awareness of the significance of the problem. This pioneering project has expanded from an original pilot scheme in the Netherlands, and it is now a widely-recognized initiative in the United Kingdom and other parts of Europe. By the end of 2015, the scheme had landed 908 tonnes of marine litter using 214 vessels at 15 ports.

On 8 June 2016, the Royal Hong Kong Yacht Club (RHKYC) authorized a policy to cease selling beverages in single-use plastic bottles and stop providing straws or plastic bags for any purpose¹¹. Members of the Club were advised to start planning ahead and bring their own reusable bottles, water containers and bags. To give support to this new green policy, the management installed filtered water taps in the clubhouses, and made glass bottled water and large reusable water containers available in the restaurant and ship shop.

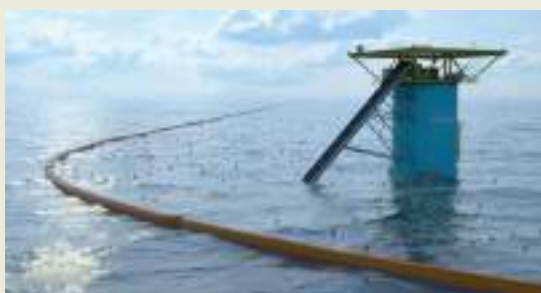
Anthony Day, the Rear Commodore Sailing of the RHKYC, commented that “Here in Hong Kong, where recycling is effectively non-existent, it’s impossible to sail far without being struck by the amount of plastic that finds its way into our waters and onto our beaches. As one of the world’s larger and most active yacht clubs, we are uniquely positioned to be able to show innovation and leadership in no longer using or providing plastic bags, bottles or straws”.

THE ROYAL HONG KONG YACHT CLUB SAYS NO TO PLASTIC

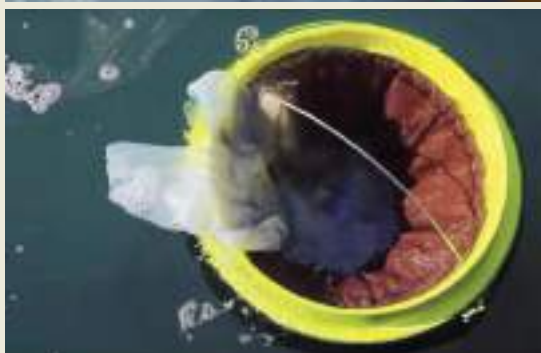


©RHKYC

INNOVATIVE CLEAN-UP TECHNOLOGIES: THE OCEAN CLEANUP PROJECT AND THE SEABIN PROJECT



©The Ocean Cleanup



©The Seabin

The Ocean Cleanup project aims to develop advanced technologies to rid the world’s oceans of plastic¹². The project team has developed a passive system which acts as a solid screen in the middle of the sea that catches floating plastic – acting as an offshore “artificial coastline”. The system fully relies on natural ocean currents to catch and concentrate the debris – no external energy source is required. A feasibility study was launched in 2014 and the system is expected to begin a full-scale clean-up of the Great Pacific Garbage Patch by 2020. Initial modelling results show that a single 100 km-long installation would be able to collect half the Great Pacific Garbage Patch in a 10 year period.

The Seabin on the other hand is like an “automated rubbish bin” in the water¹³ – a shore-based pump generates a current which sucks up nearby floating debris – as well as oil, fuel and even detergents – into the bin. The Seabin is designed to tackle marine litter problems in relatively controlled environments, including marinas, private pontoons, inland waterways, residential lakes, harbours, inland waterways, ports and yacht clubs. The first Seabin unit is expected to begin operating by the end of 2016.



TAIWAN – A SUCCESSFUL EXAMPLE OF WASTE MANAGEMENT IN ASIA

In Taiwan, a waste charging scheme coupled with strong enforcement has created high rates of waste reduction and separation. At the same time, manufacturers and importers are now required to pay a fee based on the estimated garbage collection costs of their products. This fee is then put into a recycling fund. These robust waste management policies have dramatically increased the island's recycling rate – increasing it from 5.87 per cent in 1998 to 55 per cent in 2015. These figures are comparable to other global environmental leaders like Germany, Austria and Korea¹⁴.

Smaller-scale action is also effective. For example, to help encourage people to adopt an environmentally-friendly lifestyle, Taipei City Hall has banned the use of disposable utensils in its cafeteria and convenience store, and prohibited the provision of bottled water at meetings and activities organized at City Hall¹⁵. All public elementary schools and junior high schools also adopted this ban in August 2016, helping instill the concept of the importance of environmental protection in young students¹⁶. To help facilitate these important changes, the Department of Education supported the schools as they installed water dispensers and is supplying reusable stainless steel utensils for school canteens.

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BEA Volunteers
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OCBC Wing Hang Bank
Ocean Park Conservation Foundation, Hong Kong
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Sea Lion Diving Team
Speak up for our ocean
Sinopec Kantons
South China Diving Club
Swedish Chamber of Commerce
Tai Tam Tuk Eco Education Centre
Wayfoong Dive Club
Wharf T&T Limited
All Day All Night Fun Dive Club
超齡值日生

THE COASTAL WATCH ORGANIZER AND STRATEGIC PARTNERS

ORGANIZER



WWF-Hong Kong

together possible – WWF is one of the world’s most respected conservation organizations, with a network active in more than 100 countries. WWF’s mission is to build a future in which humans live in harmony with nature. WWF-Hong Kong has been working since 1981 to transform Hong Kong into Asia’s most sustainable city through our Conservation and Education programmes.

STRATEGIC PARTNERS



Eco Marine

Eco Marine is a non profit organization that aims to promote local marine awareness and to offer marine education and research programs in Hong Kong. Programs will range from fun weekend events for raising community awareness of local marine issues, to eco tourism internships where local and international recruits spend 4 to 12 weeks studying Hong Kong’s marine environment and learning diving and marine research methods.



Eco-Education and Resources Centre

Founded in 2002, “Eco-education & Resources Centre”(ERC) comprises experts, academics, students and enthusiasts. The organization aims at promoting eco-education. Through different channels like public exhibition, eco-tourism experience, publications, APP development, wildlife filming and nature-exploring workshops, concept of ecological conservation is conveyed to the general public by which knowledge and awareness is raised, and this ultimately drives environmental protection.



Ecovision Asia's Hong Kong Cleanup

The Hong Kong Cleanup is a 16-year strong education platform that works to educate and activate communities, schools, government and businesses around solutions to the waste that plagues our natural ecosystems. Having engaged over 270,000 participants to date, it is also the official local coordinator of the global clean-up movement on behalf of Ocean Conservancy's International Coastal Cleanup and Let's Do It! World Cleanup, which is sanctioned by UNEP.



Green Council

Green Council is a non-profit, non-partisan environmental association based in Hong Kong. Green Council was formed in May 2000 with the motto "conservation begins with education" and a mission to, through education, encourage the public and the industrial and commercial sectors to become aware of the importance of environmental protection and to apply this awareness in their lifestyles, behaviour and production and management processes.



Ocean Park Conservation Foundation Hong Kong

OPCFHK is committed to advocating, facilitating and participating in effective conservation of Asian wildlife, with an emphasis on Chinese white dolphins and giant pandas as well as their habitats through partnerships, fundraising, research and education. It envisions a world where Asian wildlife remains biologically diverse under the stewardship of humans, corporations and governments.



Plastic Free Seas

Plastic Free Seas is a registered Hong Kong charity. Their goal is to reduce the amount of plastic ending up in our seas through solution-based education with both local and international schools, and action campaigns and awareness raising activities targeting individuals, corporates and government.

SUPPORTING PARTNERS



海岸清潔跨部門工作小組
Inter-departmental Working
Group on Clean Shorelines



COASTAL WATCH PROJECT - TURNING THE TIDE AGAINST MARINE LITTER

HK



 [HTTP://COASTALWATCH.HK](http://coastalwatch.hk)

