



FREE SPIRIT

TRINO

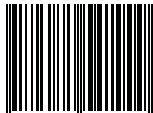
OCEAN ISSUE



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**International Coastal Cleanup
Cleanup St. Martin's Island
Overfishing
Lighter Project
Swatch of No Ground**

ISSN 2075541-4



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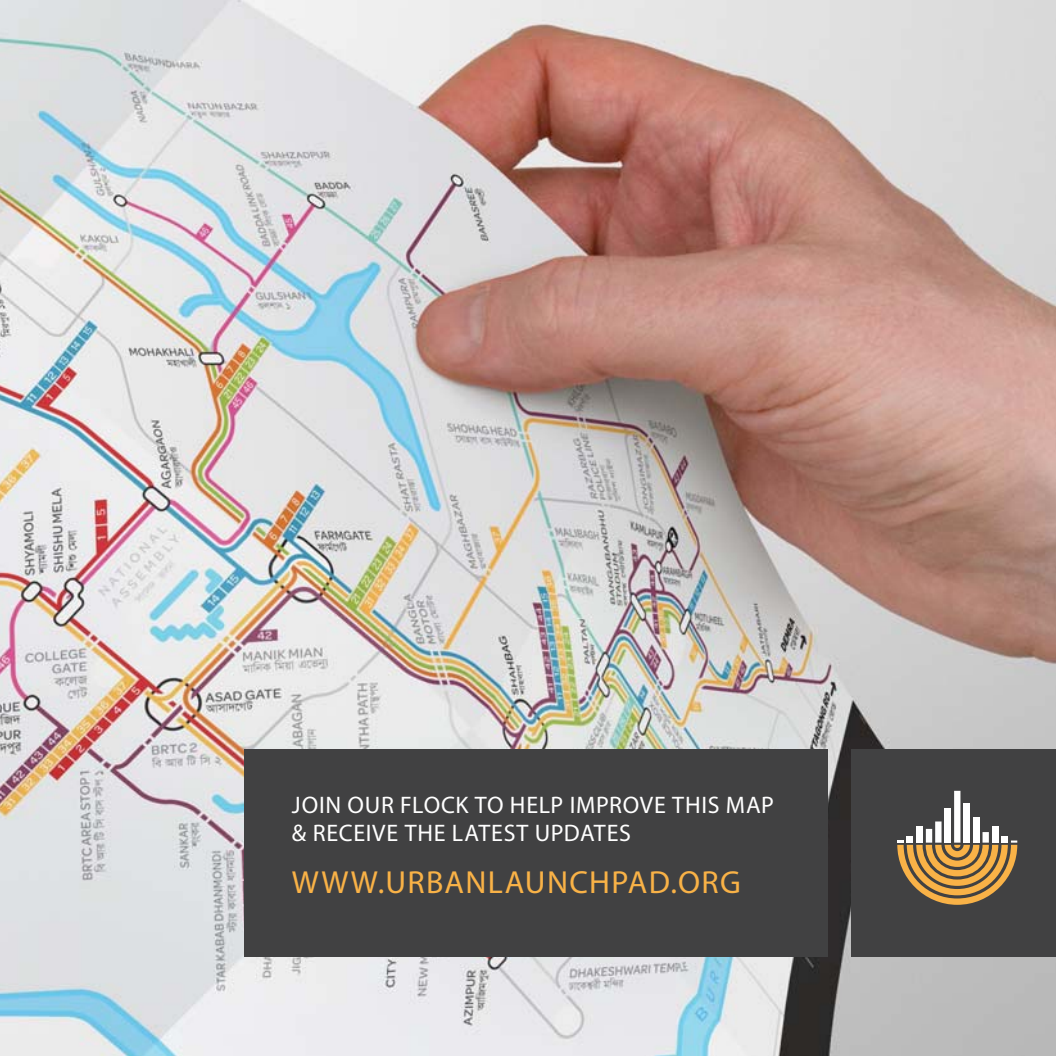
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ALPHA

Dhaka BUS Map

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Kewkradong Bangladesh is proud to present **Trino** - **adventure quarterly** which has content volume equal to any other existing magazines of the genre. Trino has a strict policy on less paper consumption in its production and distribution. Trino believes in **Reducing, Reusing** and **Recycling** of consumables to help cut down consumption of natural resources.

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Editor-in-Chief
Creative Director
Managing Editor
Circulation

MUNTASIR MAMUN
TRINO DESIGN
SARAHJANE SALTMARSH
MORSHED CHANCHAL

Editorial Advisor
Photo Editor

STEVE DIKINSON
DAVID BARIKDER

Text Editor
Production
Cartoon

SHAKHAWAT CHOWDHURY
HARADON DHOR
NAZAM SHAHPAR

Advisor

ASHRAFUZZAMAN UJJAL
D. NABEEL ATIQE
D. FARSEEM M. MOHAMMEDY
ENAM UL HAQUE
M. RIAZ HAMIDULLAH
SEZAN MAHMUD

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EDITOR | CLASSIFIED ADVERTISING
Muntasir Manum Imran
Ph: +88 01811 310 275
Email: kewkradong@gmail.com
15/A Mirpur Road, Dhaka,
Bangladesh



TRINO, supported by country's most active and oldest youth lead adventure community – Kewkradong Bangladesh. This is totally non-political, non-violent, non-profitable organization originated in Bangladesh. In order to popularize adventure related sports like urban and rural trekking, mountaineering, high altitude trekking, mountain biking, adventure water sports, Kewkradong Bangladesh believes in creating local enthusiasm towards voluntarism and conceptual adventure/humanitarian/nature building tourism in Bangladesh. Kewkradong Bangladesh shows professional attitude during handling different projects, expedition planning, concept development and inter organizational relationship.

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Photo taken from facebook

*Everest is for those, who are lucky & brave.
You are one of them.
Rest in Peace.*

Sajal Khaled
1977-2013

Editorial

Welcome to TRINO 11, and welcome to 2014! It's been a while between editions. We've been as active as always, but unfortunately not in our writing – specifically, we have missed three issues in a row. Our stories are back in your hands now though, and the next edition will be even better!

TRINO is an adventure quarterly run entirely on the collective voluntary effort of likeminded friends. None of us are professionals but we are all super interested in producing it. This issue focuses on our incredible oceans, the rhythm of our earth. Somehow as a society, we still fail to understand why oceans are so important in our lives, so we have tried in this edition to share some of the reasons for their importance – and showcase some of Bangladesh's most beautiful beach and ocean areas.

We are honoured to have Japanese scientist Shigeru Fujieda contributing an interesting piece on using cigarette lighters to map global trash patterns. I met him at the Korea Institute of Ocean Science and Technology last year, and his presentation at the Marine Debris I: Macro Debris workshop was so interesting that I asked him to please share it with others. I am sure you will find Shigeru's story interesting and motivating.

Coastal cleanups are slowly becoming a trend among young people in Bangladesh! We are seeing more and more initiatives to reduce

marine debris which gives Kewkradong Bangladesh immense satisfaction – we have been advocating for marine debris for over eight years now, and it seems a bigger group is now also joining the quest to keep our oceans and rivers clean. We ran clean-ups in three locations in 2013, and of course mixed in a few boat trips, a bit of surfing and a beautiful evening concert by Joler Gaan in Coxs Bazar as well. Sun, fun and cleaning up our incredible planet – the best combo!

This edition of TRINO does carry a sad piece of news. During 2013 we lost one of our friends, in the first death toll of our adventure community. Sajal Khaled died after summiting the challenging slopes of Mount Everest. We miss his presence deeply! Rest in Peace my friend.

Four years ago when we published the first edition of TRINO, we had no idea where the magazine would end up or how it would go. It is 2014 and we are happy to report that our readership is growing, our subscriptions are rising and the variety of articles we are publishing is continuing to expand. We are loving the adventure and we want to thank you for being part of it. Here's to a whole new year of challenges, hopes, laughs and achievements together.

Shanti
Muntasir Mamun
Editor-in-chief



International Coastal Cleanup

850 VOLUNTEERS.
850 GARBAGE BAGS.
850 PAIRS OF GLOVES.
ONE DAY.

THE WORLD'S LONGEST SANDY SEA BEACH.
LET'S DO THIS!

2013 is the eighth year that Kewkradong Bangladesh has brought the world's largest volunteer event for the ocean to the world's longest sea beach. This year, more than one in every thousand volunteers involved in the International Coastal Cleanup (ICC) was a Bangladeshi*.

Armed with biodegradable gloves on their hands and carrying biodegradable garbage bags, Bangladeshi volunteers hit the sands of Inani Beach and Cox's Bazar on September 21 to keep our coast clean and safe.

Mobilising 850 volunteers to give up their weekend to collect debris on a hot summer day was no small challenge, but the dedicated team of volunteers at Kewkradong Bangladesh have been working on it for a while. ICC had its humble beginning in Bangladesh in 2006 with 17 volunteers and has continued to grow every year since then.

Bangladesh' most famous rubbish picker

Amongst the 850 volunteers this year was the Australian High Commissioner to Bangladesh, Greg Wilcock, and his wife, Wilhelmina van Beers. We took some time out to speak about what motivated them to spend their weekend sorting out trash.

GREG

SAID THAT THEY BOTH HAVE BEEN INVOLVED FOR MANY YEARS WITH SIMILAR INITIATIVES IN OTHER COUNTRIES, SUCH AS CLEAN UP AUSTRALIA, AND SO WERE PROUD TO BE PART OF THE INTRODUCTION OF A SIMILAR EVENT IN BANGLADESH. *WILHEMINA* SAID THAT ONE OF THE ACTIVITIES THEY REALLY ENJOY DOING IS GOING ON LONG NATURE HIKES, AND THIS WOULD NO LONGER BE ENJOYABLE IF THE ENVIRONMENT WAS LITTERED WITH TRASH, SO THEY ENJOY BEING PART OF DOING SOMETHING ABOUT IT.



Why is it important?

Cleaning oceans and waterways for one day a year is a small initiative when we consider how much trash is dropped every day in the world. Why bother with the International Coastal Cleanup then? Three reasons: getting hands dirty, being part of a global movement for trash-free seas and collecting the statistics needed to inform global change.

Getting hands dirty:

We live in a world where most of us get our trash taken care of. Once it leaves our hands in Bangladesh, it gets collected by rubbish pickers or carried away by a drain into a river, eventually ending up in the sea. We never see where it ends up and that makes it hard for us to be accountable for our actions. The ICC brings rubbish right back into the hands of volunteers, who potentially could even be the same people who

dropped it in the first place. By collecting and sorting through the huge bags of trash collected, volunteers get a hands-on feel for what we are dumping every day, what it looks and smells like and just how much of it there actually is.

Being part of a global movement for trash-free seas:

By lending a hand to pick up trash for a day, you are an important part of a showing your support for a much bigger cause; a global movement towards

MOST OF THE VOLUNTEERS IN BANGLADESH ARE YOUNG PEOPLE – UNIVERSITY STUDENTS AND RECENT GRADUATES – LIKE **HABIBA ISLAM SHIFAT**. DURING A BREAK FROM RECORDING DEBRIS STATISTICS, THIS IS WHAT HABIBA HAD TO SAY ABOUT THE EVENT: *"THIS IS MY THIRD YEAR OF BEING A PART OF THE CLEANUP IN BANGLADESH. THE FIRST YEAR I DID NOT KNOW MUCH ABOUT IT BUT JUST THOUGHT IT SOUNDED INTERESTING. THROUGH BEING A PART OF IT EVERY YEAR, I HAVE STARTED UNDERSTANDING ABOUT TRASH AND ITS POISONOUS EFFECTS ON THE ENVIRONMENT AND ON WILDLIFE. IT HAS MADE ME CHANGE THE WAY I THINK ABOUT DROPPING RUBBISH, AND MADE ME THINK THAT BEING MORE CAREFUL WITH TRASH IS A VERY SMALL THING THAT WE CAN ALL DO FOR THE WORLD."*

clear, blue, clean seas. Ocean Conservancy (the organization behind the ICC) is working with everyone from individuals to businesses to change

behaviors that cause ocean trash. They are empowering people taking concrete actions every day, bringing useful tips to people on every street corner, supporting good trash policies and bringing people together through initiatives like the Trash Free Seas Alliance.

Collecting the statistics needed to inform global change

The statistics from that single day that debris is collected, sorted and recorded around the world are compiled by Ocean Conservancy to form the basis for the Marine Debris Index. This index counts rubbish item by item, state by state and country by country, to present-overall data on the amount of trash on beaches and along coastal and inland waterways. This data has been collected systematically since 1989 and has informed major marine debris legislation like the US Marine Debris Research, Prevention, and Reduction Act. The index is also regularly cited in a major global environmental reports and plans concerning global pollution. The ICC is not just a day of picking up debris – you are collecting information to


inform future global environmental policy and strengthening the scientific research that says ocean trash is a problem we need to do something about.

Dropping trash has been affecting the soil and seas for a long time. It has now become a serious pollution problem that affects the health of people, wildlife and local economies. It is also helping to accelerate the rate of climate change. Coastal cleaning is really important to look after the ocean, not just for one day, but because, over time, it encourages people to change their behaviour so that the trash does not actually get into the sea. After being part of this program I am much more careful not to just drop my trash here and there. I would like to encourage everyone around the world to work together to make the cleanup into a real global movement – we all use the ocean and so many of us rely on it so ocean debris is a problem we must all work together to solve. "

What did we find?

Together, this year's volunteers covered a total of **181** square kilometers and collected a total of **419** kilograms of rubbish. What was there? To start with, there were **13,749** cigarette butts/filters, **11,436** plastic food wrappers, **2,956** cups/plates and **2,174** straws. One concerning thing that we did find was plastic advertising banners, which take an incredibly long time to break down compared to the more traditional cloth-based banners. Then there were some more surprising items, such as an old Hindi film record, 28 pairs of





shoes and sadly, a dead crab trapped inside a transparent plastic food wrapper. After looking at this list, we might want to ask ourselves how many of these items we could be dropping, perhaps even without realizing it – and whether we can reduce this amount. In terms of food packaging, one thing we could do is make our own home cooked snacks. To find out how, check out the travel snacks article along on this issue.

*Based on 2012 figures, stating **500,000** volunteers participated globally.

A REGULAR DAY TRIP DESTINATION FOR HOLIDAYMAKERS IN BANGLADESH, **ST MARTINS ISLAND** IS THE PERFECT PLACE TO FLOAT THE DAY AWAY IN A WARM ROCK POOL, SPRINT ALONG A SANDY BEACH OR GO FOR A QUICK AFTERNOON SNORKEL IN CLEAR BLUE CRYSTAL WATER.

from **Abala** to **Sager**



We decided three years ago that we wanted to expand the International Coastal Cleanup in Bangladesh. The clean up already included Cox's Bazar and Inani Beach, but we decided to add one more place to that list – St Martins Island.

Bangladesh's only coral island, it is hidden away right at the bottom tip of the country where our borders meet those of Myanmar.

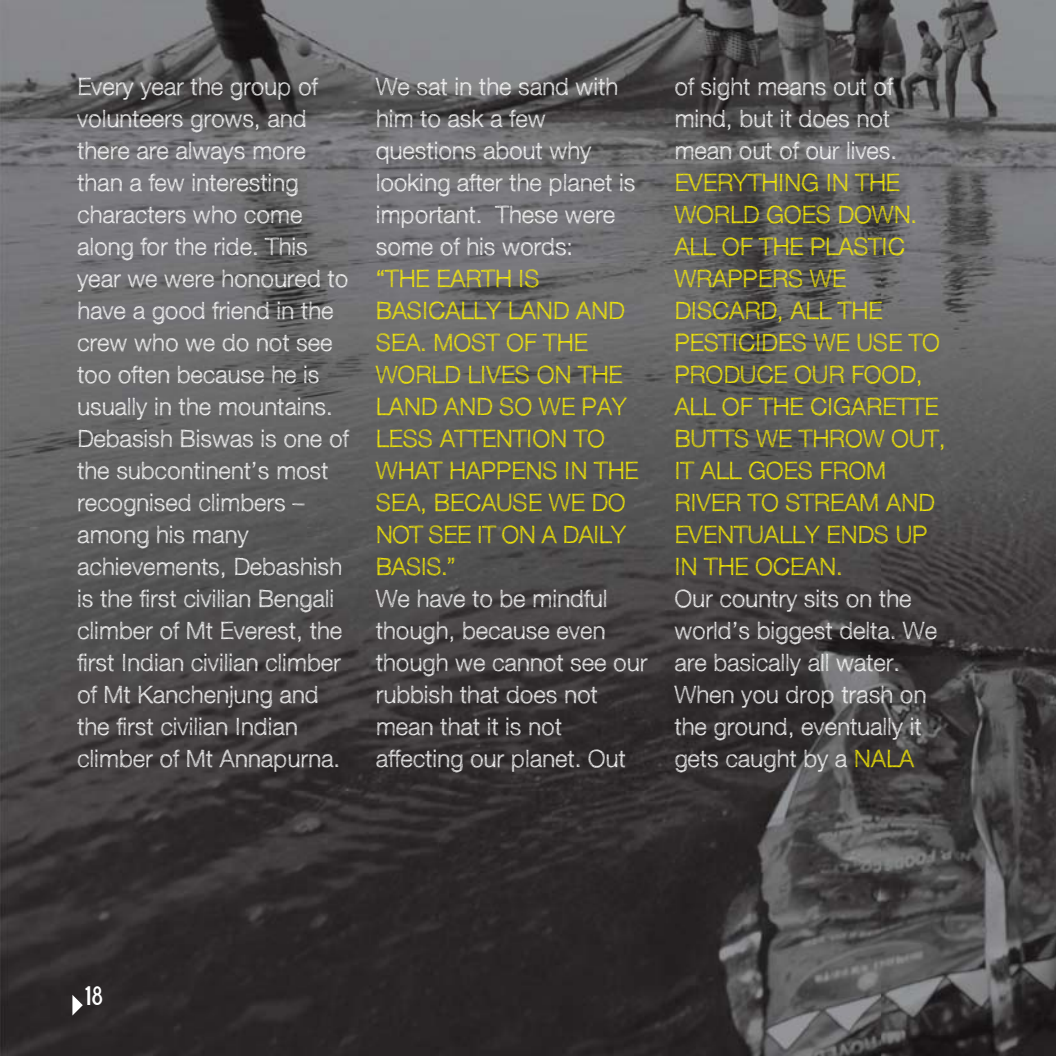
LITTLE SLICE OF PARADISE WAS BEING HARMED. THE LOVELY SAND AND CLEAR WATER WERE SLOWLY BUT SURELY BEING OVERTAKEN BY DEBRIS, MURKIER WATERS AND POLLUTION.

WHILE THE INTERNATIONAL COASTAL CLEANUP ONLY LASTS FOR ONE DAY A YEAR ON THE ISLAND, IT IS A DAY

VOLUNTEERS ARE RIGHT THERE WITH THE STUDENTS, HELPING TO CARRY THE RUBBISH BAGS, SORTING IT, RECORDING THE DATA AND THEN HELPING TO COOK AND SERVE LUNCH TO EVERYONE INVOLVED.

WE ADDED THE ISLAND TO THE CLEANUP BECAUSE WE LOVE IT, BUT ALSO BECAUSE WE NOTICED OVER THE YEARS THAT OUR

WHERE UP TO 200 SCHOOL STUDENTS GET ON THE BEACH, BIODEGRADABLE GLOVES ON HANDS, TO PICK UP RUBBISH. OUR



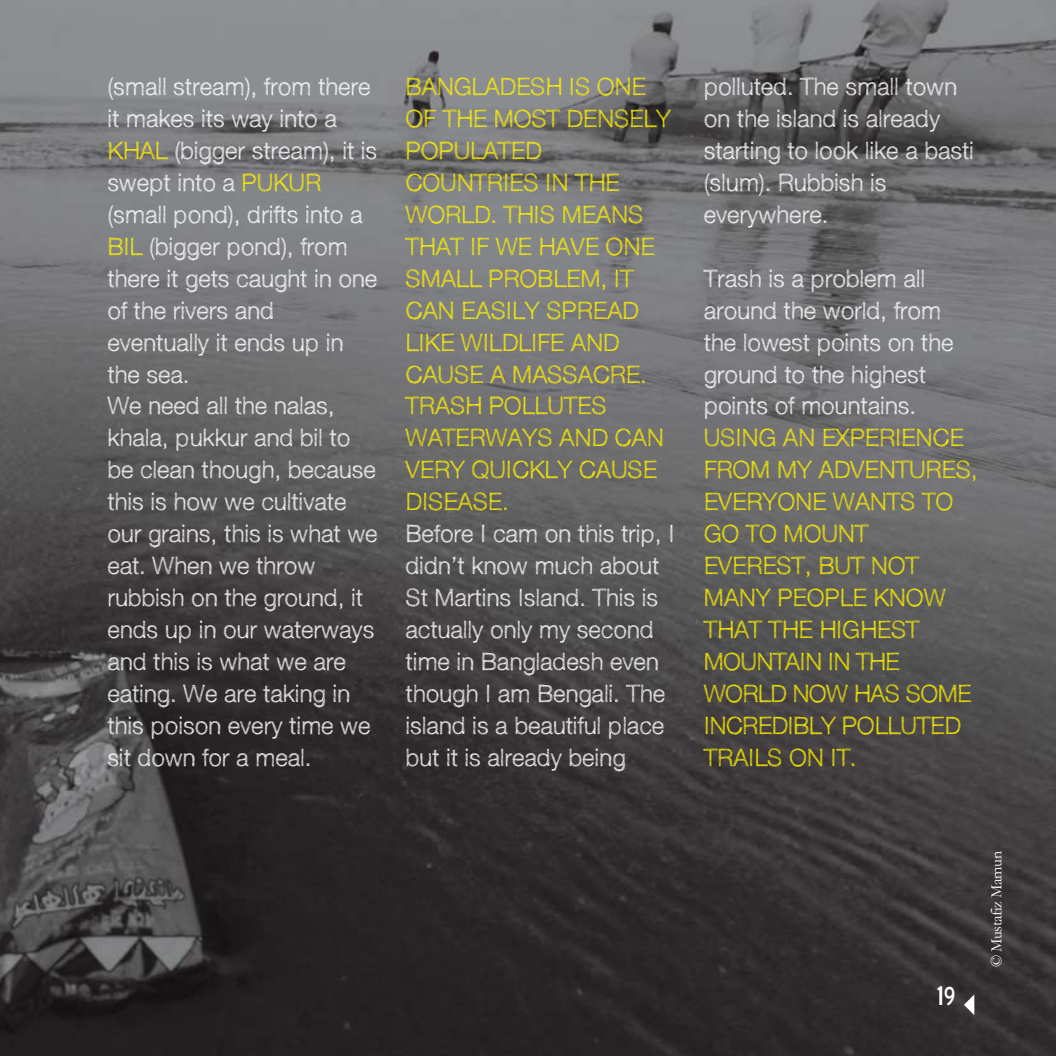
Every year the group of volunteers grows, and there are always more than a few interesting characters who come along for the ride. This year we were honoured to have a good friend in the crew who we do not see too often because he is usually in the mountains. Debasish Biswas is one of the subcontinent's most recognised climbers – among his many achievements, Debashish is the first civilian Bengali climber of Mt Everest, the first Indian civilian climber of Mt Kanchenjung and the first civilian Indian climber of Mt Annapurna.

We sat in the sand with him to ask a few questions about why looking after the planet is important. These were some of his words: **“THE EARTH IS BASICALLY LAND AND SEA. MOST OF THE WORLD LIVES ON THE LAND AND SO WE PAY LESS ATTENTION TO WHAT HAPPENS IN THE SEA, BECAUSE WE DO NOT SEE IT ON A DAILY BASIS.”**

We have to be mindful though, because even though we cannot see our rubbish that does not mean that it is not affecting our planet. Out

of sight means out of mind, but it does not mean out of our lives. **EVERYTHING IN THE WORLD GOES DOWN. ALL OF THE PLASTIC WRAPPERS WE DISCARD, ALL THE PESTICIDES WE USE TO PRODUCE OUR FOOD, ALL OF THE CIGARETTE BUTTS WE THROW OUT, IT ALL GOES FROM RIVER TO STREAM AND EVENTUALLY ENDS UP IN THE OCEAN.**

Our country sits on the world's biggest delta. We are basically all water. When you drop trash on the ground, eventually it gets caught by a **NALA**



(small stream), from there it makes its way into a **KHAL** (bigger stream), it is swept into a **PUKUR** (small pond), drifts into a **BIL** (bigger pond), from there it gets caught in one of the rivers and eventually it ends up in the sea.

We need all the nalas, khala, pukkur and bil to be clean though, because this is how we cultivate our grains, this is what we eat. When we throw rubbish on the ground, it ends up in our waterways and this is what we are eating. We are taking in this poison every time we sit down for a meal.

BANGLADESH IS ONE OF THE MOST DENSELY POPULATED COUNTRIES IN THE WORLD. THIS MEANS THAT IF WE HAVE ONE SMALL PROBLEM, IT CAN EASILY SPREAD LIKE WILDLIFE AND CAUSE A MASSACRE. TRASH POLLUTES WATERWAYS AND CAN VERY QUICKLY CAUSE DISEASE.

Before I came on this trip, I didn't know much about St Martins Island. This is actually only my second time in Bangladesh even though I am Bengali. The island is a beautiful place but it is already being

polluted. The small town on the island is already starting to look like a basti (slum). Rubbish is everywhere.

Trash is a problem all around the world, from the lowest points on the ground to the highest points of mountains. **USING AN EXPERIENCE FROM MY ADVENTURES, EVERYONE WANTS TO GO TO MOUNT EVEREST, BUT NOT MANY PEOPLE KNOW THAT THE HIGHEST MOUNTAIN IN THE WORLD NOW HAS SOME INCREDIBLY POLLUTED TRAILS ON IT.**



On a single day last year, more than 500 people climbed Everest. One average, every one of those people brought four oxygen cylinders up with them. After climbers finished using the oxygen though, no one wants to carry empty cylinders, and they mostly always left where they are dropped.

The government has recently become more conscious of the problem, and, because of the threat of rubbish to the environment and the natural beauty of the mountain, they are now charging people for polluting. People climbing the mountain have to show what they are

carrying down from upper camps and, if they dump equipment, they face harsh fines. This is really important, because it is not only oxygen cylinders, it is torn ropes, damaged tents – each year approximately 2-300 tents are dumped on the mountain.



St. Martin B.N. Islamic
Uccha Biddyaloy

SCHOOLS



Grid Prathomic Biddyaloy

Jinjira Sorkari
Prathomic Biddyaloy

Islamia Madrasa



85% of the volunteers are local school students, the other 15% are general volunteers







I also find it really inspirational to see that the people who helped to cause the problem are also now realising how bad it is getting and are working together to fix it. Some expeditions are now organised with the sole purpose of clearing trash from the mountain. In many cases, these are groups of climbers who recognise the potential damage of trash and want to see a change, and are starting that change with their own hands.

Trash is not a small problem. It is a huge, global problem that we all need to work together to fix. We know what to do. We have to start with ourselves. Once we change our ways, then we work on telling others not to throw things here and there. It starts with just one person though – you.

I was watching the water tonight come up and down the beach in the moonlight and thinking every day it makes a

mark. Every day, it comes again, even though the night before it drained completely back into the ocean. Let us take a lesson from the sea – let us make our own mark on trash on a regular basis, and if we face challenges, lets try again the next day, and lets continue that until we have a world that we can confidently hand over to our children. “

THANK YOU TO DEBASHISH FOR JOINING THE CLEANUP THIS YEAR, AND FOR ENTERTAINING US THE WHOLE WEEKEND WITH ADVENTURE STORIES, JOKES AND SOME OF THE INCREDIBLE MOVIES YOU HAVE MADE. YOU ARE AN INSPIRATION TO ADVENTURERS AROUND THE WORLD, AND WE ARE TRULY HONOURED TO HAVE YOU AS PART OF KEWKRADONG BANGLADESH. GOOD LUCK ON YOUR NEXT CLIMB!



snacks you and the planet will

LOVE

by sarah-jane



We were bouncing along in the bus from Dhaka to Cox's Bazar for the International Coastal Cleanup and it came to that time in between lunch and dinner when everyone started pulling out snacks. I was looking around at all the individually packaged snacks and couldn't help thinking about how much trash we had created just for a few bites. I was thinking – there must be a better way - when one of the crew pulled out a little bag filled with homemade snacks and started passing them around. Not only did they taste great and gave us a lot more energy than processed snacks would, but there was no packaging! I asked her to share her recipes with us:

- Editor's note



Travelling in Bangladesh is like nothing else. There is a new adventure to be found in every corner of every one of its 64 districts, from jumping off the top of waterfalls in Sylhet to watching the sun rise from behind the Himalayas in Panchargh, to snorkelling coral reefs in Chera Dip or surfing the break at Cox's Bazar. The views are incredible, the people are the friendliest, the traditional clothes are beautiful and there is never a shortage of incredible music – from singing ricksha-wallahs to village fusion jazz folk beats.

Something that does put a dampener on the fun though is trash. Ugly, dirty, polluting, potentially deadly trash. There is no sicker feeling than hiking through a beautiful remote rainforest track and spotting a cheeky monkey swinging above you – and then realising that the colourful object in its fist is a discarded chip packet wrapper. Jumping in a river with a bunch of children only to find yourself surrounded by biscuit wrappers and plastic packaging. Every time we

carelessly throw something on the ground, it ends up somewhere – a beach, a river, the stomach of a river dolphin, the beak of an endangered bird. This is in no way a problem confined to Bangladesh, unfortunately people across the world leave a lot more than just their footprints behind when they travel, but it is a problem we can do something about. What can we do?

REDUCE, RE-USE, RECYCLE.

Lets start at the first and most important step – reduce.

When we are travelling, we get hungry. We are lucky in Bangladesh – street food can be found on basically every street in existence, and there are loads of healthy, minimal-packaging options available. But what if we are in a place that does not have streets? We will still be hungry – but instead of street food we will be reaching for biscuits, chips or whatever was available as the last little shop we passed on the way. Most likely that will not be a delicious and nutritious snack we prepared before we left, it will be a high-sugar,

high glycemic index quick energy fix encased in packaging which we will not want to carry around with us after we finish eating. In a country with very few rubbish bins, this means this packaging usually ends up on the very same trails that give us so much joy to explore.

, to pack when we are going on adventures where shops are available and as crucial supplies when we go to places where shops are not available (of course, always the best spots!). Home made food is always going to taste better (of course, factory-bought food is never made with love),



Why don't we reduce the problem of packaging altogether? We usually only eat home cooked food when we are either at home or close to home, like bringing lunch to work. What we can do is start taking it further, by making our own snacks, , to share with friends,

and it comes without the packaging – and all the energy that goes into mass producing it. The reason we don't usually take it is homemade snacks need to be:



*COMPACT, LIGHT, SQUASHABLE,
NON-PERISHABLE, FILLING,
NUTRITIOUS*

Here are two recipes that tick all those boxes, and are also delicious, full of locally produced and super nutritious. The first is very quick to make and the second takes a little longer – you will need an oven to make them, but a small bench-top one is just fine. A good trick is to double or even triple the recipes because it won't take much longer to make larger quantities, and that way they'll last much longer/you will be able to share them with more people.

*BANANA, OAT AND DATE LOVE
BITES (MAKES ABOUT 30 YUMMY
BITES):*

Mash together six little sweet bananas (best variety = chapa kola), 1 cup of juicy chopped dates, 1 grated apple, 2 cups rolled oats, 1 cup grated coconut, 1/2 cup chopped almonds, 1/3 cup grapeseed (or any other vegetable) oil, 1 tsp cinnamon, sprinkle of ground nutmeg in a bowl with your hands until smoothish. Roll into little balls onto a greased tray and bake in a preheated oven for about 30 mins, until they are

crispy and golden brown on the outside, and springy in the middle.

*CHOCOLATE AND ALMOND
ENERGY BARS (MAKES ABOUT 20
DELICIOUS BARS):*

Mash together 1 1/2 cups cooked chickpeas, 1/2 cup natural peanut butter, 1/4 cup molasses or honey, 1/4 cup mashed banana or chopped dates, 1 tsp lemon juice, 1 tsp cinnamon and a sprinkle of salt with your hands in a bowl until smoothish. Add in 1 1/2 cups oats, 1/2 cup chickpea flour and 1/2 cup cocoa. Mix again, then add a mixed cup of shredded coconut and chopped nuts, and mix one more time. Taste it - you might want to add some more molasses/honey. Flatten out the mix onto a greased tray and bake in a preheated oven for about 15 mins, or until you can put a knife in and it comes out clean, and they are crispy on top.

Enjoy! I'd love to know how they go - jump onto the Kewkradong website and let me know, and you might just get a homemade energy bar for your effort – I usually have a few stored in my bag :)

an Idiot's

*guide to doing
something for the
planet*

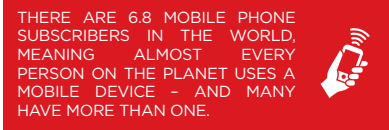
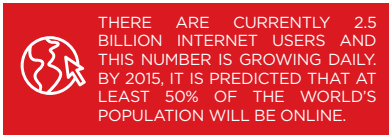


Like most people, I tend to be a bit lazy and am mostly preoccupied with my personal life. I put effort into a few things that I am interested in, but most of the time I do not seriously consider the net return of my actions. One of the things I am personally interested in though is the environment. Because of this interest, I am willing to put in a bit of effort and time. I realise that not everyone has this interest however, but to see real environment change we all need to be part of the solution – as we are all

part of the problem. The challenge then is making it easy for everyone to take part.

A good starting point is trash – collecting the data needed to making people aware of how big of a problem it is and collecting it to dispose of it responsibly.

USING TECHNOLOGY FOR GOOD:



17.4% of global web traffic comes through mobile devices, and this is rapidly increasing. Asia is leading the trend, with 26.6% of people accessing the Internet through mobile devices.

To utilize these huge resources - both of technology and of manpower – for the environment, we need a system that allows everyone to contribute their own small part.

INTRODUCING TRASHMANIAC:

[1] Anyone can download the Trashmaniac app using their mobile device. The app will be simple and able to be used by everyone with an Android-enabled mobile device.

[2] When you have some spare time and you see trash, you can use Trashmaniac to quickly identify what type of trash it is and upload it onto Trashmaniac system, which will automatically also record the location. You will not need a high speed Internet connection to upload.

[3] You then have the option of collecting it and disposing of it yourself, or alerting others about it. If you choose the second option, it will be flagged and another registered individual/organisation will be

alerted, to collect it and then unflag it. Registered individuals/organisations could include; independent volunteers/volunteer groups, community service providers, municipalities, city corporations, or neighbourhood councils.



Just by recording trash on Trashmaniac, you will contribute to global trash statistics, the area that you collected it from will be marked on the global trash map (which is useful for planning regular trash collection and, whether you collect it or you alert

someone else, it will be collected and will therefore cause less harm to local wildlife or water systems.

The practice of obtaining needed services, ideas or content by soliciting contributions from a larger group of people, and especially from an online community, rather than from traditional employees or suppliers, is the key to mitigating trash. Trashmaniac uses crowdsourcing to combine the efforts of a mass of self-identified volunteers or part-time workers, with each person doing a small part to contribute to a greater result. Crowdsourcing is different from an ordinary outsourcing since it is a task or problem that is outsourced to an undefined public rather than to a specific, named group.



COMMUNITY
SERVICE PROVIDER /
MUNICIPALITIES /
CITY CORPORATION /
NEIGHBORHOOD /
COUNCIL

Trashmaniac is an educational as well as a statistical tool, building on traditional trash cleanup activities by providing everyone with a way to integrate doing something good into our daily activities. That way, besides our daily jobs and lives, we can still be as important as any activist

or cleanup volunteer. The app is simple, and you do not have to know anything about trash or technology to use it.

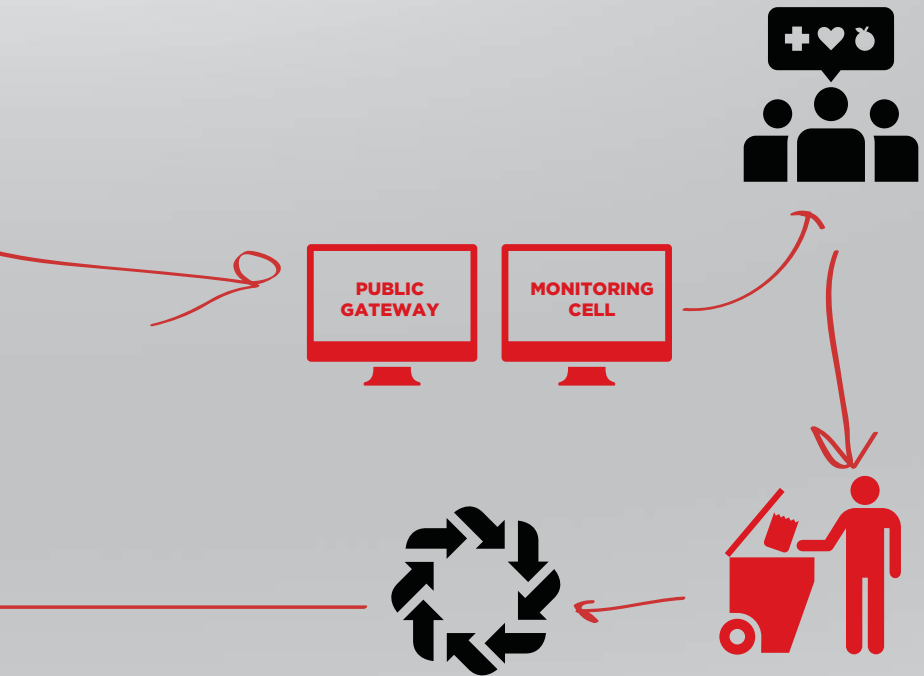
The upward trend in mobile Internet usage will make it increasingly easier to access a bigger group of potential activists while keeping the net return on investment of time and money low. Currently, Trashmaniac only works on Android-enabled devices, but eventually it will work on all operating systems.

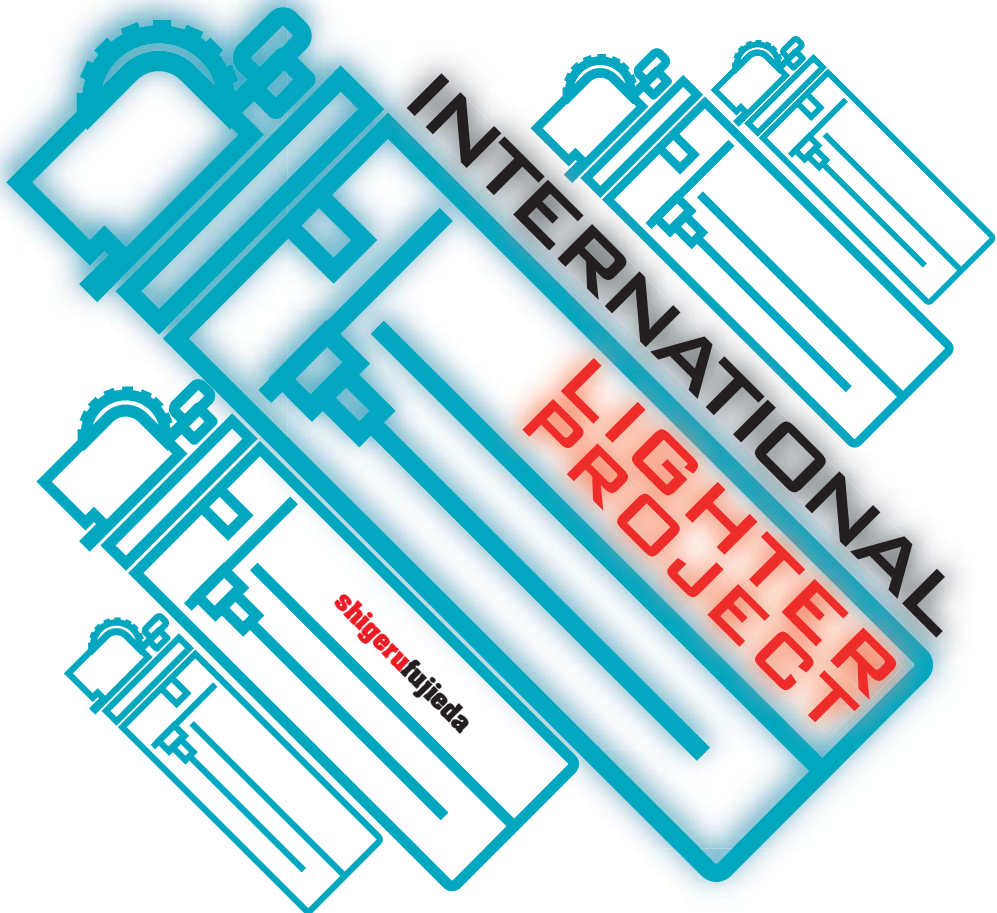
Over time, Trashmaniac could eventually ask volunteers to, for example, visit local areas that are lacking in trash information. It could also become a platform for volunteers to connect with each other and, for example, integrate Trashmaniac into their holidays, volunteer trips, hikes or organise coordinated trash missions.



TRASHMANIAC







It can be difficult to track marine litter because it does not usually hold obvious evidence of where it comes from/where it was discarded. It unfortunately cannot talk and there is usually nothing location-specific printed on it, or if it did have something at one point, it has faded.

A LITTER ITEM WHICH CAN TELL A STORY

To overcome this challenge, we have developed a method to monitor outflow areas, the flow and the extent of the effects of marine litter using disposable lighters on the coast of the East Asia as an indicator item (Fujieda, 2003, Fujieda & Kojima, 2006, Fujieda et al. 2006). The lighter is the only flotsam that clearly displays the details of its consumption area for a long period of time, through the printed information (e.g. shop address, shop name, telephone number) on the tank surface. Using this

information, we were then able to see, for example, that on the coast of the Japan Sea, lighters that flowed out of southern areas were found in northern areas of the sea, but the reverse was minimal (Fujieda & Kojima, 2006, Fujieda et al., 2006).

This direction of flow makes sense because of the Tsushima Warm Current. It was suggested that by using this method that it would be possible to monitor the outflow area, distribution of influence area and annual change of marine litter from the coast of many other countries.

Fujieda et al. (2011) expanded the initial observation area further after this breakthrough, to the remote islands of the North Pacific, and began the study referred to as the International Lighter Project. This project monitored the marine debris from Japan to the North Pacific and identified the outflow area of marine litter on the coast of North

Pacific using the method from 2010 and with the support of NGOs and beachcombers in North Pacific area. Lighters – useful for igniting research as well as cigarettes



Fig.1 Disposable lighters (Left; Korea, Japan, Taiwan, China, Hong Kong)

Disposable lighters are used as an indicator item because of the following characteristics;

- A disposable lighter is a popular item among smokers.
- It can drift a long time on the sea because of its robust, hollow construction.

- It can easily be found, picked up and carried because of its bright color and small size.
- An outflow (production or consumption) area and country can be distinguished by punched marks on the tank bottom and by the different types of tank bodies.
- A consumption region or location can be distinguished by printed characters/letters on the tank surface (Fig.1).

Samples were collected from 1,237 beaches in the North Pacific area (Japan, Korea, Taiwan, China, Russia, US (Midway Atoll, Hawaii)). The collecting period was from 2003 to 2010. All washed up lighters, regardless of being gas-filled, broken, and with or without printed characters/letters, were picked up from the beach. Site name, position on the map, date (day/month/year) and

estimated beach length was recorded at each site. If there was liquid in the tank, a hole was drilled by a power drill with 2.0 mm bit so as to remove the gas from the lighters before transporting it to the laboratory.

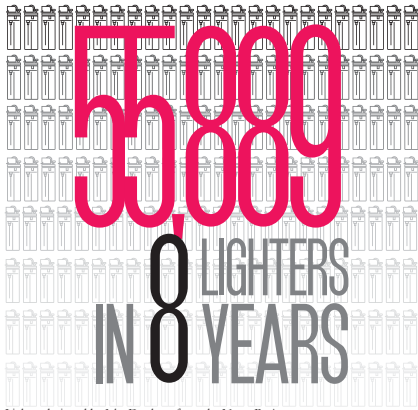
WHERE ARE LIGHTERS COMING FROM AND WHERE ARE THEY GOING?

The production or consumption area and country, distinguished by a punched mark on the tank bottom/type of tank body/printed characters/bar code, was classified according to where it originated (Japan, Korea, China, Taiwan, Russia, US and others). This was referred to as the “outflow area” and was shown in the study as a country or area.

The shop address of lighters was researched on the Internet following the shop address, shop name and telephone number printed on the tank surface of the lighters. This was referred to as the

“outflow location” and was shown in the study as a city.

A total of 55,889 lighters were collected over eight years. Figure 2 shows the collecting sites and the percentage of each outflow area of lighters on the East Asia coasts. The classification rate of the outflow areas was about 80% and this figure is only using classified data. The major currents (Kuroshio and Tsushima warm current) flow from south to north and to the North Pacific. The southern area is affected by China and Taiwan, and the Japan Sea area is affected by Korea. The Pacific area in turn is affected by Japan, and the Pacific remote islands are affected by East Asia. This pattern of lighter distribution and moving is consistent with the currents in each area.



Lighter designed by Jake Dunham from the Noun Project

IS THAT PLASTIC OR DELICIOUS SQUID? FOR SOME IT IS HARDER TO TELL

In summer of 2011, I got the chance to go to the Midway Atoll in the Northwest Hawaiian Islands and three Hawaiian islands to expand the research. 500,000 young Laysan albatross birds live on Midway Island (Fig 3,4). There is always plastic in their stomachs because the parents eat plastic, mistaking it for squid in the ocean, and feed it to their offspring.

Young birds spit out the items in their stomachs before fledging, so plastics are scattered across the inland areas of the island. They don't know what plastic is; only humans know that plastic cannot be eaten. I picked up over 1000 ingested lighters by Laysan albatross birds from the inland areas of this atoll. The results showed that almost all of the lighters came from East Asia including into Japan (Fig.5).

We obtained 701 lighters from Oahu, Maui in the Hawaiian Islands for the past two years. These lighters were not only from East Asia but also from Hawaii, and the outflow locations from East Asia were as same as the Midway Atoll (Fig.6).

The result demonstrated that lighters that flow out of East Asia can not only reach neighboring countries but can also be transported as far away as the North Pacific Islands and West Coast of North

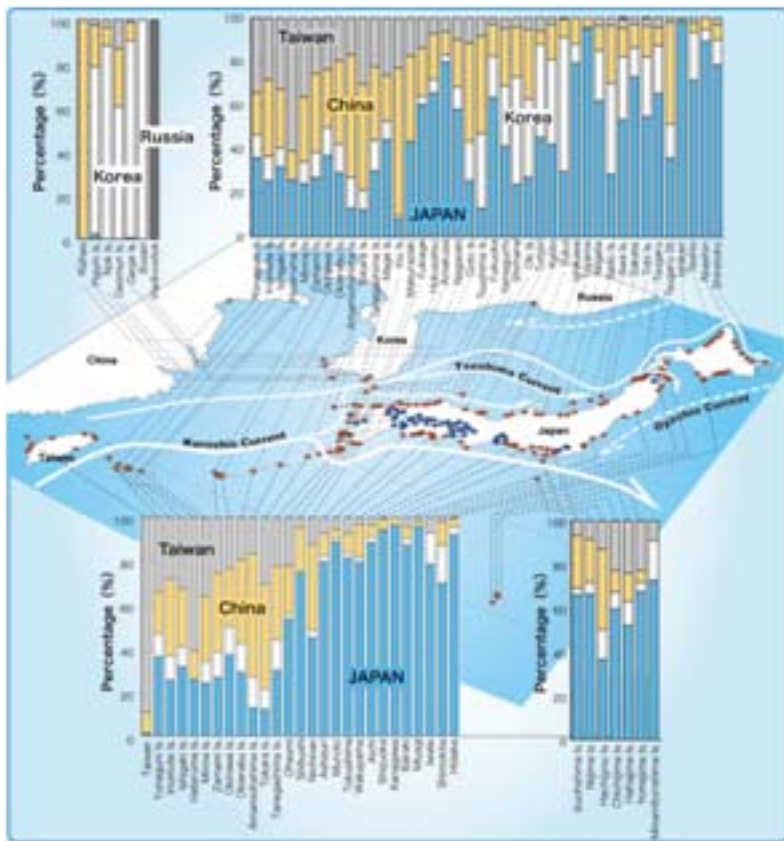


Fig.2 Collecting sites and percentage of outflow area in each sites

American continental. Therefore our East Asia countries must always consider our effect on the North Pacific.

This article is an edited extract from published paper – *‘Estimate of the outflow area of marine litter using disposable lighters as an indicator item’*

Kagoshima University Faculty of Fisheries, 50-20-4 Shimoarata, Kagoshima City, Kagoshima, Japan, 890-0056
JEAN, 3-4-12-200 Minami-cho
Kokubunji City, Tokyo, Japan, 185-0021

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Fig.3 Laysan albatrosses on Midway Island (Brown head is a young bird, and white head is a parent.)

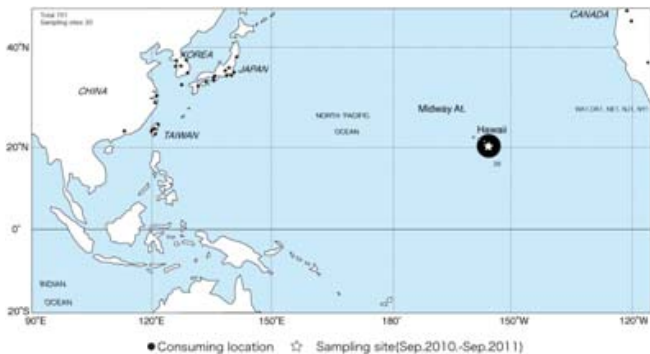


Fig.5 Outflow locations of the collected lighters on the Midway

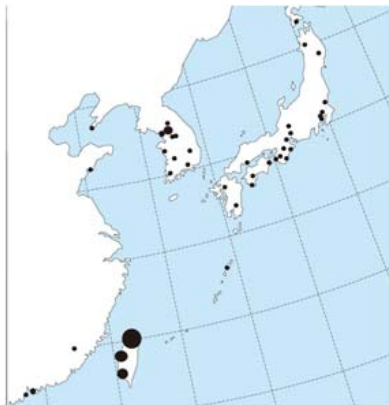


Fig.6 Outflow locations of the collected lighters on Hawaiian Islands



Fig.4 Lighter around at his foot

WHY?

irindesk



ARE THE OCEANS IMPORTANT?

Oceans cover more than 70% of the earth's surface, hold 97% of the water and contain 99% of the Earth's living space. An estimated 50-80% of all life on earth is found in oceans. Here are five reasons the earth's life support systems are so important:

The article is an edited extract from the 1998 Project Oceanography Fall Series 4 Year of the Ocean

#1

Biodiversity

Here are just a few examples of the ocean environments with the highest levels of biodiversity (largest numbers of different species):

Estuaries and coral reefs: Sustain 75% of all commercial fish and shellfish. In estuaries, sea grasses provide protection to juveniles and food for herbivores. In coral reefs, the fish, anemones, sea cucumbers and sea fans that populate them all work together in symbiosis. Spawning organisms make their homes in estuaries and reefs because they can find an abundance of food and excellent protection from predators there. Without coral reefs and estuaries, our oceans would lose

many, many organisms that are important to both humans and other marine life.

Sandy shores: Home to fiddler crabs and burrowing worms, as well as a feeding ground for birds.

Mangroves: Not only act as nurseries for commercially important marine species, they act as a filtering system for coastal water.

Seagrass beds: In conjunction with mangroves and coral reefs, these are crucial in providing protection against shoreline erosion and flooding.

#2

Healthy oceans regulate weather

Warm ocean waters provide the energy to fuel storm systems that provide the fresh water vital to land-dwelling organisms. Oceans interact with and affect global weather and climate. As air passes over warm waters, it warms and rises.

As it cools, condensation of the water creates rainfall. As air passes over cooler waters, it cools and sinks.

Healthy marine habitats like reefs, barrier islands, mangroves and wetlands help protect coastal communities from the results of hurricanes and storm surges.

See more about the link between oceans and weather, see the article [Ocean and Climate](#)).

#3

Healthy oceans are critical to medicine

You'll find ocean ingredients flowing out of your medicine cabinet in everything from shampoos and cosmetics to medicines that help fight arthritis, Alzheimer's, heart disease, viruses and other diseases. On example you might not know of is that Compounds from ocean sponges and cartilage from sharks are being used in medication to help fight cancer.

Great care needs to be being taken in the research of marine-based drugs however, to prevent the depletion of important natural marine resources

In many areas, research is being conducted to synthesize artificial forms of marine compounds. Marine based drugs are vital because many infectious organisms have developed strains resistant to soil and plant based drugs.

#4

Healthy oceans clean the air we breathe and give us healthy food and water

Oceans are a critical player in the basic elements we need to survive. Ocean plants produce half of the world's oxygen, then these amazing waters absorb nearly one-third of human-caused carbon dioxide emissions. Oceans also form the clouds that bring us fresh water.

In addition to this, oceans are connected to what you eat in many more ways than you may have realised. Ocean ingredients, like algae and kelp, are used in making beer, soy milk and frozen foods. Plus, 36 percent of the world's total fisheries catch each year is ground up into fishmeal and oil to feed farmed fish, chickens and pigs.

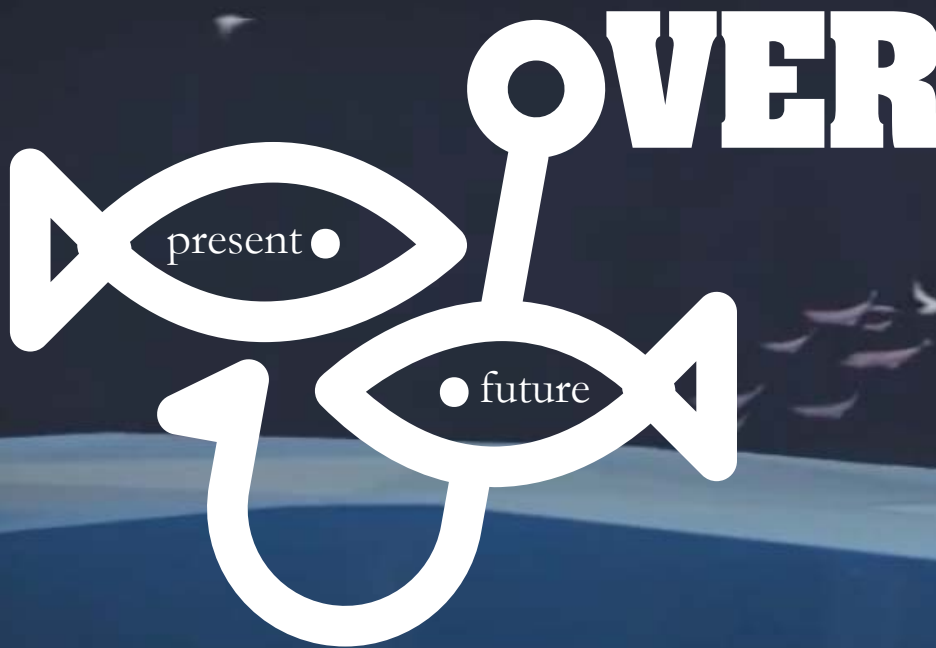
#5

Healthy oceans are vital to our economy

66% of the world's population lives within 100 kilometers of the coastline. Real estate, recreation, ocean-related occupations, and other services associated with the ocean generate 54 billion dollars in goods and services per year.

In the United States for example, one in six jobs is marine-related and more than \$128 billion in GDP annually results from ocean tourism, recreation and living resources.

There are also many other revenue sources that come from the ocean that you might not immediately think of, such as seaweed, food, shipping and biomedical products.



Fishing designed by Raymond Felix from the Noun Project

A photograph of a fishing boat on the water, with a large white text overlay. The text reads "FISHING must be stopped" in a bold, sans-serif font. The word "FISHING" is in all caps, while "must be stopped" is in lowercase. The background is a slightly blurred image of a fishing boat on the water.

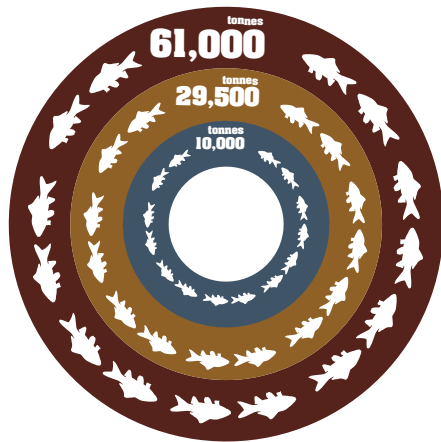
tahsinshahed

FISHING must be stopped

This article is an edited extract from an incredible viral video called End Overfishing, shared and produced by BirdLife International, GREENPEACE, OCEAN2012 and OCEANA.

The video can be seen here: <http://videos.real.com/v/9ivs65-incredible-animation-on-overfishing>

The earth! There are currently 700 million people living on 30% of its surface. And all of them are dependent on the remaining 70% - the ocean. The ocean is the largest source of food in the world. Fishing is central to the livelihood and food security of 200 million people, especially in developing countries such as Bangladesh. One of five people on this planet depends on fish as their primary source of protein. According to the UN, aquaculture - the farming and stocking of aquatic organisms including fish, molluscs, crustaceans and aquatic plants - is growing more rapidly than all other animal food producing sectors. Amid facts and figures about aquaculture's soaring worldwide production rates though, there are some other statistics that need to be taken into account. These statistics reveal that global main marine fish stocks are in serious jeopardy, and the pressure on them due to overfishing and environmental degradation is only increasing.



How bad is the problem?

Over the past 60 years, the number of fish in the seas has reduced by up to 90%. As fisheries continue to return lower and lower yields, we are starting to understand that the oceans we had assumed were unendingly vast and rich

are in fact highly vulnerable and sensitive. Scientists say that if overfishing continues at current rates, there will be no fish left in less than 50 years.

Its not just fish

There are many kind of methods used for fishing all around the world, from super trawlers to individual fisherman with hand lines.

Just looking at one method - long line fishing vessels – we can see that they deploy 1.4 billion hooks a year. 1.4 billion hooks, each of them potentially with a fish hanging on them!

A particularly damaging method is using nets. Fishing nets do not discriminate. Fish are unable to swim backwards, so once they are caught in the net, there is no escape unless they are small enough to fit through the net's mesh. Did you know that for every one tonne of prawns caught, more than five tonnes of other fish are killed and thrown away? 20,000 porpoises die each year in the nets of salmon fishermen in the Atlantic and Pacific Oceans and hundreds of thousands of marine creatures are killed each year by tuna fishermen, just as examples.

Science versus reality - what we should be doing vs we are actually doing

In 2010, the European Commission closed the fishing season one week early in an attempt to start preserving remaining fish stocks, particularly of the Atlantic blue fin tuna. Blue fin is one of the largest fish in the world - their incredible appetite and varied diet pushes their average size to a huge 6.5 feet (2 meters) in length and 550 pounds (250 kilograms), although much larger specimens are not uncommon. Unfortunately for the species however, bluefin meat also happens to be regarded as one of the most delicious, particularly among sashimi eaters, and overfishing has driven their numbers to critically low levels – they are now classified as an endangered species. Blue eye tuna is the next best alternative to blue fin tuna, however that is also now a vulnerable species.

Scientists recommend that catching of blue fin tuna shall not exceed 10,000 tonnes per year. However, the EU and another fishing nations have a fishing limit of 29,500 tonnes, three times more than what research tells us are sustainable limits. Before blue fin tuna came into the spotlight, the scenario was even worse -

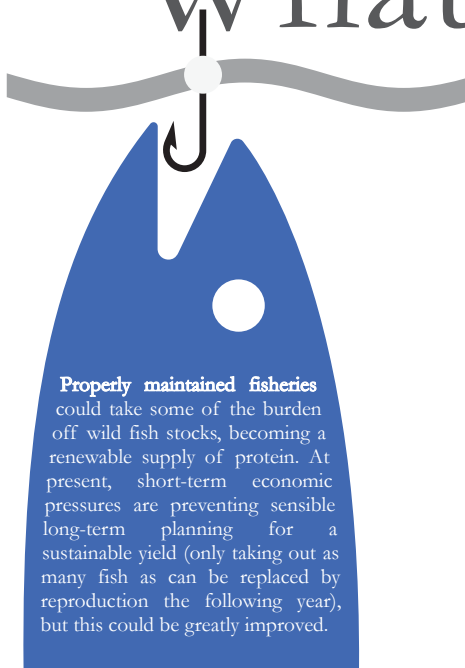
- more than 60,000 tonnes of blue fin tuna were caught every year. We are making progress, but are we making it fast enough?

In addition to public sector investment, a lot of private sector players are also involved in the sector. This makes regulation even more difficult, and means a whole lot of fishing vessels in the sea. All of these fishing vessels, all over the world, are continuously polluting the sea through fuel and other toxic substances – further harming the fish stocks they rely on to make money.

Reason for hope

Illegal fishing and unsustainable harvesting still plagues the industry. A public that is accustomed to abundant seafood and largely apathetic about the plight of the oceans also complicates efforts to repair the damage we've done and move forward. There is still reason for hope though. Many scientists say most fish populations could be restored with aggressive management of fisheries, better enforcement of laws governing catches, and increased use of aquaculture. On an individual level, being aware of what you are eating, how much you are eating and where it comes from, and supporting sustainable fishing initiatives will also help.

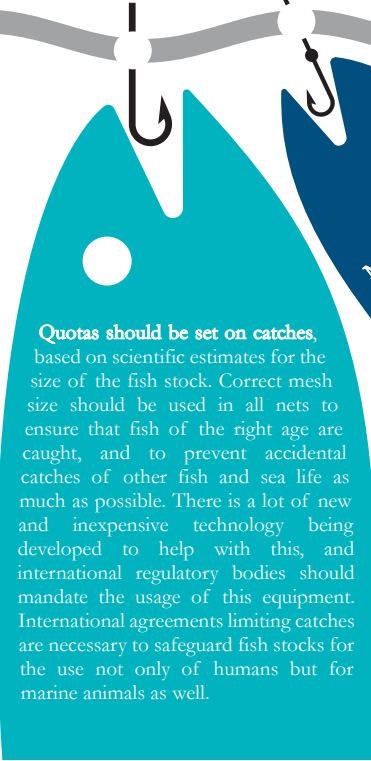
What




Properly maintained fisheries

could take some of the burden off wild fish stocks, becoming a renewable supply of protein. At present, short-term economic pressures are preventing sensible long-term planning for a sustainable yield (only taking out as many fish as can be replaced by reproduction the following year), but this could be greatly improved.

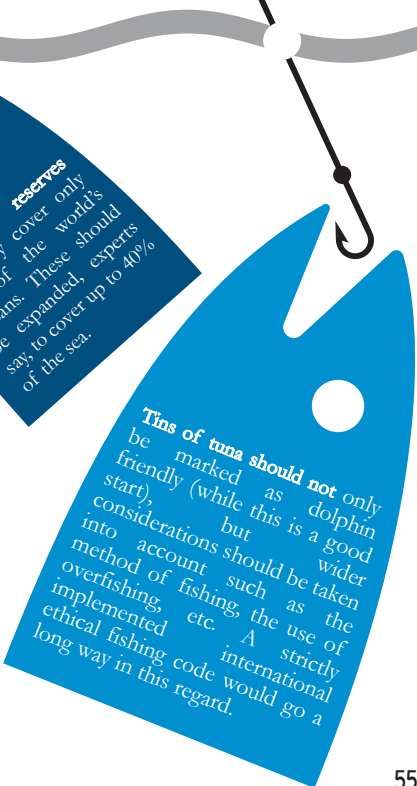
t can be done?



Quotas should be set on catches, based on scientific estimates for the size of the fish stock. Correct mesh size should be used in all nets to ensure that fish of the right age are caught, and to prevent accidental catches of other fish and sea life as much as possible. There is a lot of new and inexpensive technology being developed to help with this, and international regulatory bodies should mandate the usage of this equipment. International agreements limiting catches are necessary to safeguard fish stocks for the use not only of humans but for marine animals as well.



Marine reserves currently cover only 1% of the world's oceans. These should be expanded, experts say, to cover up to 40% of the sea.



Tins of tuna should not be marked as dolphin friendly (while this is a good start), but wider considerations should be taken into account such as the method of fishing, the use of overfishing, etc. A strictly implemented international ethical fishing code would go a long way in this regard.

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Ocean

How Do the Oceans Affect Global Climate?

Oceans affect global weather patterns and play a major role in the Earth's climate system. Oceans have tremendous thermal and dynamical inertia, which can alter the rate of climate change. The upper ten feet (three metres) of the ocean holds as much heat as the entire atmosphere. The moderating effect of ocean temperature reduces the daily and annual range of coastal temperatures, and results in a lag of the global summer and winter seasonal temperatures extremes by several weeks behind the annual track of the sun. For the considerably longer periods—decades to millennia—which are relevant for climate change, the significantly larger heat capacity of the deep ocean is important.

Ocean currents and mixing by wind and waves can transport and redistribute heat to deeper ocean layers. The heat can then reside in this deep reservoir for centuries, further stabilizing the Earth's climate and slowing climate change.

The ocean stores and transports not only heat but also carbon dioxide (CO₂), a potential major source of global warming. About half of the total CO₂ added to the atmosphere during the past century by human activity—mostly from the use of fossil fuels and deforestation—has been absorbed by the ocean. Most of the CO₂ emitted into the atmosphere will eventually be absorbed by the ocean. However, this process will take from several decades to centuries. Phytoplankton also store carbon dioxide from the upper layers of the ocean. Many

Climate Interactions

species sequester CO₂ in their carbonate shells, which eventually sink to the ocean floor for burial, or long-term removal from the carbon cycle.

Why Are the Ocean Currents Important to Climate?

Ocean currents transport and redistribute heat and salt. Both play an important role in driving the planetary climate engine. Of particular importance are the western boundary currents (e.g., Gulf Stream and Kuroshio Current) and eastern boundary undercurrents (e.g., California Undercurrent), which transport heat from the tropics toward the poles, effectively acting as the ocean's "great conveyor belt". Fluctuations in the transport of these currents alter the rate that heat is redistributed through the

oceans. Sudden shifts in these currents are thought to have initiated past ice ages. In addition to the horizontal transport of water and heat, vertical motions in the ocean are critical to the exchange of heat and gases such as CO₂ between the surface layer and the deep ocean. One of the most common processes is upwelling. Interannual variations in upwelling at the coast create fluctuations in biological production in coastal ecosystems. Longer-term trends in upwelling are thought to be related to global warming.

The article is an edited extract from the website of the Pacific Fisheries Environmental Laboratory (PEEL). For more information, please visit: <http://www.pfeg.noaa.gov/research/climate/marine/cmfoceanatm/cmfoceanatm2.html>

Healthy Oceans for Adventuring In



A particularly important reason for keeping our rivers, streams and oceans healthy is because they are so good for having fun in!

Not only is clean water vital for all the other reasons outlined so far in this edition of TRINO, but for adventurers, water is lifeblood for us.

ADVENTURING WITHIN BANGLADESH – A COUNTRY OF WATER

There is no country where adventure is more dependant on water than in this is truer in than in sonar Bangla. Situated on the world's biggest delta, nearly all of our

adventure opportunities are water-based!

...exploring the beaches of Kuakata and Inani

...boating around the islands of Sonalia, Moheshkali and Nijhum Dip

...snorkeling, diving and surfing the waves of St Martins and Coxs Bazar

...swimming in the waterfalls hills of Sylhet

...trekking and kayaking through the rivers of the Chittagong Hill Tracts

...venturing out to the Swatch of No Ground in the Bay of Bengal

...surfing the waves of Coxs Bazar

Imagine if all of the water involved in these adventures was dirty and full of trash?

OUTSIDE OF BANGLADESH - WINNER OF THE BANFF MOUNTAIN FILM FESTIVAL WORLD TOUR 2013

When we sat down for this year's Banff Festival, the topic of caring for oceans was at the top of the list as well, with winning film being about a whole lot of frozen water.

Crossing the Ice, the winner of the Grand Prize, People's Choice Award and Best Film, Exploration and Adventure, documented two Australians attempting the first ever unsupported trek from the coast of Antarctica to the South Pole and back. Starting with very limited experience they spent months researching, consulting with experts from all round the globe, training in the Arctic and NZ, and rehearsing the skills they would need to survive in the highest, driest, windiest and coldest place on Earth.

It all paid off as well - Cas and Jonesy were successful! Crossing the Ice was the first EVER unsupported return journey to the South Pole and Cas and Jonesy were the youngest team to ever reach the South Pole. The total distance of frozen ice they tackled was 2275km return. A

perhaps lesser known fact is that less people have man hauled to the South Pole (58 people) than have stood on the summit of Mt Everest (4600). We held our breath as they battled snowstorms, winced as they suffered from frostbite and celebrated with them as they blew up balloons and swapped presents inside their frozen tent on Christmas Day. Crossing the Ice was gritty, painful and hilarious, and a real adventure story - not fancy, not staged, but honest, and all set against a stunning polar backdrop.

Pulling loads that started at 160kg and temperatures as cold as -40 C, they battled injury, whiteouts, crevasses, gear failure and slow starvation. It took them 89 days to ski the 2275km and they lost a combined 55kg of body weight.

Their adventure set a new benchmark and raised the bar of polar exploration globally. Their adventures also gave audiences the chance to experience frozen ice like every before – the scenery is the film was incredible, with nothing on the screen except brilliant 360 degree views of a landscape made entirely of frozen ice.

One of the 1200 attendees at this year's sold-out festival saw Canada's High Commissioner to Bangladesh, Heather Cruden, an adventure enthusiast herself. Heather inaugurated the festival saying that the festival inspired her to "remember how incredible the planet is, how important it is for us all to work together to look after it and regularly turn off from technology to spend time with nature."



The Arctic is one of Earth's most pristine ecosystems, home to some of the world's largest seabird populations and iconic wildlife like polar bears, belugas and the extremely long-lived bowhead whale. The unspoiled nature of the Arctic doesn't mean it's without threats however. Today the Arctic and the Antarctic face unparalleled challenges from oil and gas development and other industrial activity, increasing water temperatures and climate change impacts—all jeopardizing the integrity of the marine ecosystems. In addition to that, in the remote sub-Antarctic island of South Georgia, fishing-related debris, approximately 80% plastics, are responsible for the entanglement of large numbers of Antarctic fur seals. Marine litter is even found on the floor of the Arctic Ocean.

Canada's High Commissioner to Bangladesh, Heather Cruden at the inauguration.





THE SWATCH NO GROUND *of*

The Bay of Bengal is a small corridor of the mighty Indian Ocean with a unique geographical location where it is possible to find whales and dolphins.





Whale song

Whale! Whale!! Whale? In Bangladesh? No way, no one can imagine the existence of whales in Bangladesh!

The Bay of Bengal is a small corridor of the mighty Indian Ocean with a unique geographical location where it is possible to find whales and dolphins.

For over seven years now, the Bangladesh Cetacean Diversity Project (BCDP) of the Wildlife Conservation Society (WCS) has conducted research in this area and recorded at least four species of dolphins and two species of whales. Researchers from BCDP have also estimated the population of Irrawaddy dolphin in the

coastal waters of Bangladesh to be around 5800. This is the largest population of this threatened coastal dolphin species in the whole world. Specific sightings include large groups of Indo-Pacific Bottlenose dolphins (*Tursiops aduncus*), Pantropical Spotted dolphins (*Stenella attenuate*), Spinner dolphins (*Stenella longirostris*), Rough-toothed dolphins (*Steno bredanensis*), Bryde's whales (*Balaenoptera edeni*) and False Killer whales (*Pseudorca crassidens*).

Hearing the whale song

The Swatch of No Ground is not easy to get to - it is an incredible adventure just to reach the spot, with at least three days on big and small boats. When you are there though, it is incredible there is nothing more beautiful than watching a whale breach. We won't describe it too much - the photos tell a better story than words ever will when it comes to whale watching.

From the southern coastal belt of Bangladesh, the Swatch is nearly 100 km from Kuakata in a southwestern direction. It is located at 89.35°E to 90.10°E and 20.55°S to 21.55°S, about 30 km away from Dublarchar and 40 km from Sunarchar.

The largest submarine canyon in the Bangladesh marine shelf

The Swatch of No Ground, also known as the "Ganga Trough", is one of the most conspicuous physiographic features in the northern Bay of Bengal. The canyon, deeply incised into the Bangladesh shelf, connects the active channel-levee system network in the Bengal Fan with its distal area. It is believed that the Swatch of No Ground formed over 125,000 years ago.

The Bengal Fan is the largest submarine fan in the world. With a width of about 1000 km, it extends to a length of 3000 km, accommodating sediments that have thickness exceeding more than 16 km at the proximal region of the Bengal delta. Canyons and a network of levee channels act as conduits to carry sediments from the Bangladesh shelf to different parts of the Bengal Fan. These channels change their configuration from time to time due to sea-level fluctuations, migration of turbidity channels and their orientation, and input of the sediments. According to experts, such migration of channels occurred during the Pliocene-Pleistocene period.

The swatch covers a total area of about 3,800 sq km, of which 70% is more than 40m deep. The overall depth of the area ranges from 10m to 100m. The bottom sediment consists of muddy sand, the surface salinity is 28% to 34%, and the bottom salinity is 30% to 35%. Water temperature in the area falls between 24°C to 30°C.

Matching your travel patterns to the whale song

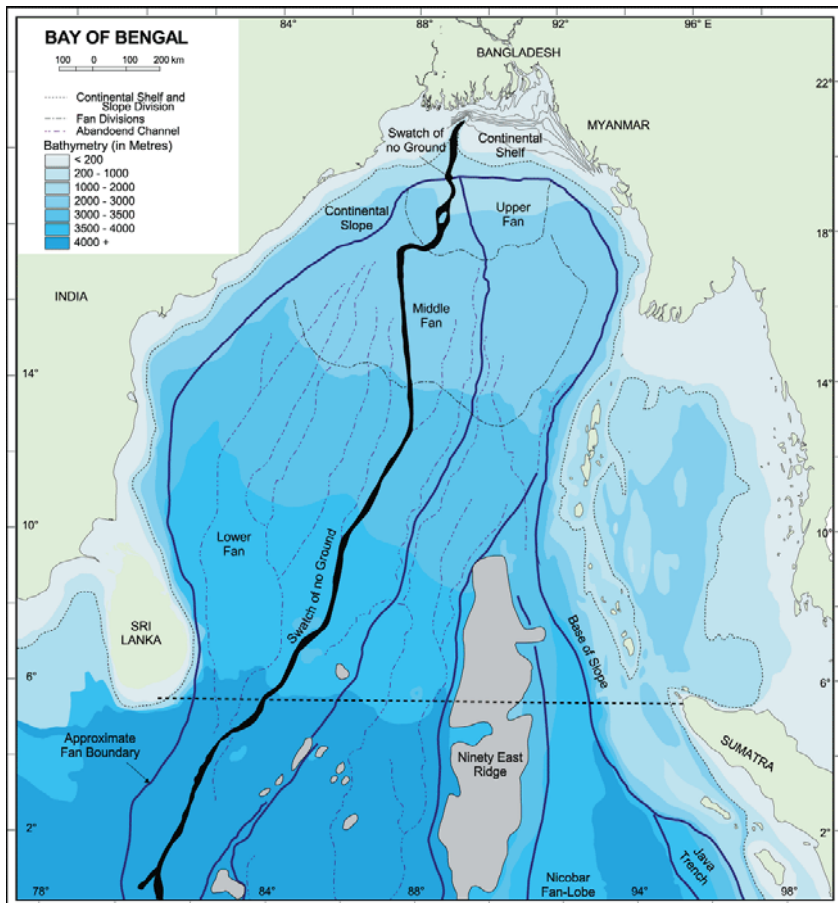
It is impossible to say the accurate number of whales living in the area due to the lack of a proper survey. We do know that they cannot be seen all year though - whales tend to seasonally migrate, moving towards higher latitudes during the summer and towards the equator during winter. The best time to visit the Swatch (because of migratory patterns and also because of the roughness of the ocean that you will have to travel in to get there) is in Bangladesh's winter season, roughly from November to February.

Article compiled with information from Guide Tours, BanglaPedia, the National Institute of Oceanography and these two excellent publications:

Marine geophysical investigations across the submarine canyon (Swatch-of-No-Ground), northern Bay of Bengal, available here:

http://drs.nio.org/drs/bitstream/2264/962/2/Curr_Sci_94_507.pdf

Curry, J. R., Emmel, F. J. and Moore, D. G., *The Bengal Fan: Morphology, geometry, stratigraphy, history and processes*. Mar. Pet. Geol., 2003, 19, 1191-1223



7 habits

Small actions in our daily lives affect the health of the oceans that we love. Here are seven habits you can choose to help reduce your ocean impact:

1 CAREFULLY DISPOSE OF YOUR CIGARETTE BUTTS

Cigarette butts make up a huge part of trash in Bangladesh. Even butts discarded on sidewalks and streets end up in drains where they are carried out to rivers and oceans.

These filters contain harmful chemicals that leach into the water and contaminate and kill fish. Sea life, such as young sea otters and seabirds, also mistake the butts for food. But they can't properly digest them, so they can die as the butts accumulate in their stomachs. Cigarette butts are composed of cellulose acetate, a non-biodegradable plastic, which can take

15 years or more to decompose. If you smoke, take along a small container to hold your cigarette butt until you can dispose of it properly. Or better yet, quit smoking to protect your own health as well as the health of your environment.

2 REDUCE, REUSE, RECYCLE; ESPECIALLY PLASTIC WASTE

The four most common types of trash on our beaches are cigarette butts, food wrappers, beverage bottles and plastic bags. Plastics are now so common in the ocean that they form vast garbage patches. Plastic waste doesn't biodegrade and is mistaken for food by many sea creatures. It can accumulate in their bodies and eventually kill them.

Even if you don't litter, a lot of plastic from landfills still finds its way to the beaches and oceans. So, the best way to reduce plastics in the ocean is to reduce our overall use of plastic — using reusable water bottles and shopping bags is a way to protect our oceans.

3 REDUCE YOUR CARBON FOOTPRINT

Climate change and increased levels of carbon dioxide are having profound negative effects on the ocean. The change

in ocean temperature, acidification (from absorbing atmospheric carbon dioxide) and melting sea ice all disrupt marine ecosystems, leading to harmful algae blooms, decreased fish stocks and the death of important organisms like coral and shellfish.

So, everything you do to reduce your carbon footprint and the impacts of climate change also helps the ocean. Ride your bike, walk or take the bus. Eat local produce and choose organic whenever you can. Use energy-efficient appliances and lighting. Reduce home heating and air conditioning. These simple steps, all combined, can make a huge difference – and save you money at the same time!

4 KEEP TOXINS OUT OF OUR OCEANS BY KEEPING THEM OUT OF YOUR HOUSE

Even a tiny amount of some toxic chemicals can have a huge impact on ocean health: household cleaners often contain volatile organic compounds that can lead to harmful algae blooms; chlorine bleach is highly toxic to fish; motor oil contains heavy metals that can end up in the fish we eat.

For household cleaners, choose effective green alternatives. For example, vinegar

disinfects and is a great non-toxic alternative to bleach. Avoid artificial air fresheners – instead mix half a cup of baking soda with 20 drops of essential oil in a jar, poke some holes in the lid and use that instead.

Air freshener ingredients are of huge concern since many are made with formaldehyde (a known carcinogen), naphthalene (a suspected carcinogen), toluene (known to cause liver and kidney damage) and xylene (a neurotoxin). Use fewer disinfectants. The Canadian Medical Association has found that plain soap is effective and adequate to prevent germs (infection) in the home.

5 MAKE A CONNECTION AND SHARE IT

Research shows we take better care of nature of we connect with it more frequently. It also lowers stress levels and improves mood. Spending time outside near or in the ocean will keep you healthy, happy and inspired to protect it. Sharing the experience with a friend and talking about the importance of healthy oceans will help spread the love.

More and more, social science research shows that people are most receptive to changing their behaviour if they hear from people they know and trust. Sharing an experience, leading by example and making personal connections will bring the message of ocean conservation to new audiences in a meaningful way.

6 ENJOY THE OCEAN, MINIMIZE YOUR IMPACT

There are so many activities you can do to enjoy the ocean — surfing, swimming, scuba diving, beachcombing, sailing, paddle boarding, kayaking and fishing. Choose one of these activities rather than jetskiing or power boating and minimize your impact on the ocean you love to play in.

To keep the ocean safe while enjoying its beauty, if you're fishing, be sure you're fishing in season and with a permit, call to report illegal fishing or habitat destruction, report all poachers and polluters and, of course, never feed or try to pet wild ocean creatures.

7 EAT FOR HEALTHY OCEANS

Choosing ocean-friendly seafood is an effective way to help protect the oceans.

Vote with your wallet to send the message to government and business leaders that you support responsible stewardship of our oceans. Where do you buy your seafood? Do you know how it is caught? Remember that eating less fish, or eating vegetarian also reduces the stress on fish stocks.

This article is based on an article from the **David Suzuki Foundation** Newsletter, published as part of the 7 Weeks: 7 Actions: Habits for Healthy Oceans campaign. **David Suzuki** is an award-winning environmentalist, scientist and broadcaster and the newsletters. To read the original article and subscribe to the newsletter, visit:

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