

PROTECTING MY EARTH: PLASTIC POLLUTION



“Protecting My EARTH” is an environmental education program offered by EARTH Ltd. to help students learn how to take better care of their community and their planet.

WHAT IS EARTH LTD?



Environmental



Awareness of



Resources and



Threatened



Habitats

To provide environmental and conservation education with an emphasis on animal ecology, endangered species, and threatened habitats.

HOW ARE PLASTIC BAGS AND BOTTLES MADE?

- Petroleum is drilled and transported to a refinery
- Crude oil and natural gas are refined into ethane, propane, hundreds of other petrochemical products, and auto fuel
- Processed into a powder and then heated until it melts
- Melted plastic is cooled then fed to a pelletizer that cuts the product into small pellets
- Pellets are shipped to customers



HOW ARE PLASTIC BAGS AND BOTTLES MADE?

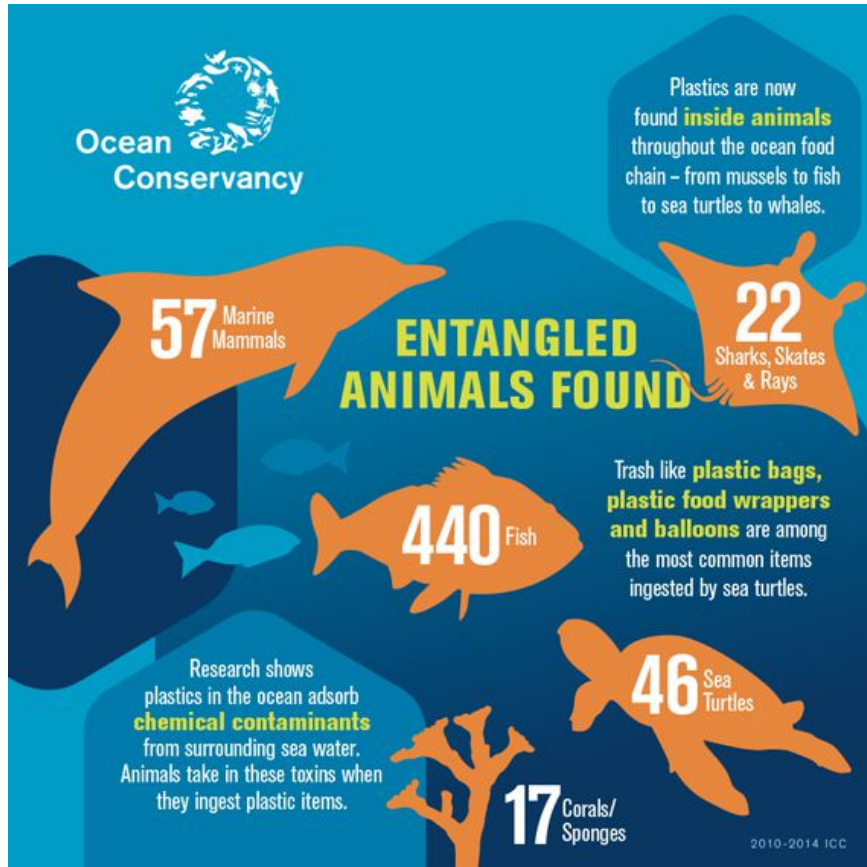
- **Extrusion Process**
 - Heats polyethylene plastic resin pellets to 500 degrees Fahrenheit
 - Molten plastic is forced through the machine through a die that controls the thickness
 - Air forces plastic into a bubble that travels upward about three stories in a cooling process
 - Air is pinched out and bubble is flattened
 - Film is cut to size and wrapped on a spindle
- **Converting Film to Bags**
 - Roll of film is unwrapped and sliced with a heated knife that both seals the sides of the bag and cuts it to size
 - Any special characteristics are added
 - Handles are cut out and zippered seals get attached
 - Printing is put onto bag
- **Polyethylene Terephthalate (PET)**
 - Thermoplastic polymer produced from petroleum hydrocarbons
- **Blow Molding**
 - PET is heated and placed in a mold to make a long, thin tube
 - Transferred to a second, bottle-shaped mold
 - Highly pressurized air used to shape the bottle
 - Mold is cooled to set plastic
- Most estimates put the figure at around 8% of the world's oil production, 4% of which is actually used in energy consumption to make the plastic.
- It takes about 1/4 of a liter of oil to produce a 1 liter water bottle.

PLASTIC POLLUTION

- We have produced more plastic in the last 10 years than we did in the whole of the last century
- Almost half of the plastic we use is used just once and is then thrown away – the problem is that there is no “away”
- According to water filtration company Brita, Americans throw away 35 billion plastic water bottles every year
- Annually approximately 500 billion plastic bags are used worldwide. More than one million bags are used every minute
- A plastic bag has an average “working life” of 15 minutes
- Plastic accounts for around 10% of the total waste generated
- Plastic has been found in all of the major oceans
- 46% of plastics float
- 80% of marine litter originates on land



PLASTIC POLLUTION “BY THE NUMBERS”



- Fish in the North Pacific ingest 12,000 to 24,000 tons of plastic each year
- Marine plastic pollution has impacted at least 267 species worldwide



DATA SPOTLIGHT



561,895
Volunteers

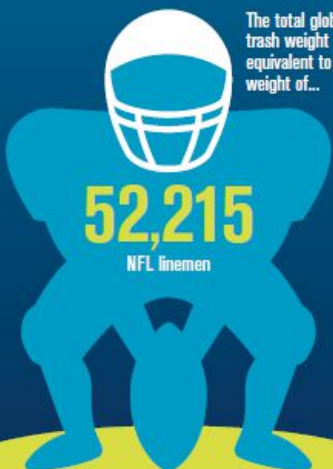


16,186,759
Pounds of Trash



13,360
Miles

The total global trash weight is equivalent to the weight of...



52,215
NFL linemen



More than enough lids for all of the students at Ohio State University to keep their coffee hot every day of spring finals

Global volume of trash collected would fill...



35
hot air balloons

Volunteers covered a distance equivalent to...



2.5 times

the length of the Great Wall of China, or...



509
marathons



TINY TRASH, BIG IMPACTS

1,522,020
Plastic Pieces

1,256,553
Foam Pieces

552,152
Glass Pieces

Tiny Trash are items less than 2.5 cm



Enough bottle caps to cover **7** tennis courts

Grocery bags collected weigh more than **3** manatees



More than enough balloons to give one to each visitor to Walt Disney World's Magic Kingdom™ in one day

WEIRD FINDS



8
Bowling balls



Plastic dinosaur **1**

Money **\$1,680**



5
Rubber ducks



26
Barbecues

TOP 10 ITEMS COLLECTED



1 Cigarette Butts
2,248,065



2 Food Wrappers (Candy, chips, etc.)
1,376,133



3 Beverage Bottles (Plastic)
988,965



4 Bottle Caps (Plastic)
811,871



5 Straws, Stirrers
519,911



6 Other Plastic Bags
489,968



7 Grocery Bags (Plastic)
485,204



8 Beverage Bottles (Glass)
396,121



9 Beverage Cans
382,608



10 Cups & Plates (Plastic)
376,479

PLASTICS SNAPSHOT

Plastic inputs are highest in rapidly developing countries, which also have some of the lowest **waste collection** rates on the planet.

Without effective waste collection, an **avalanche** of plastic debris will enter the ocean in the coming decade.

Between **5 and 12 million tonnes** of plastic enter the ocean annually from land-based sources.



PERU

HOW LONG 'TIL IT'S GONE?

Estimated decomposition rates of common marine debris items

 AVERAGE LIFE EXPECTANCY



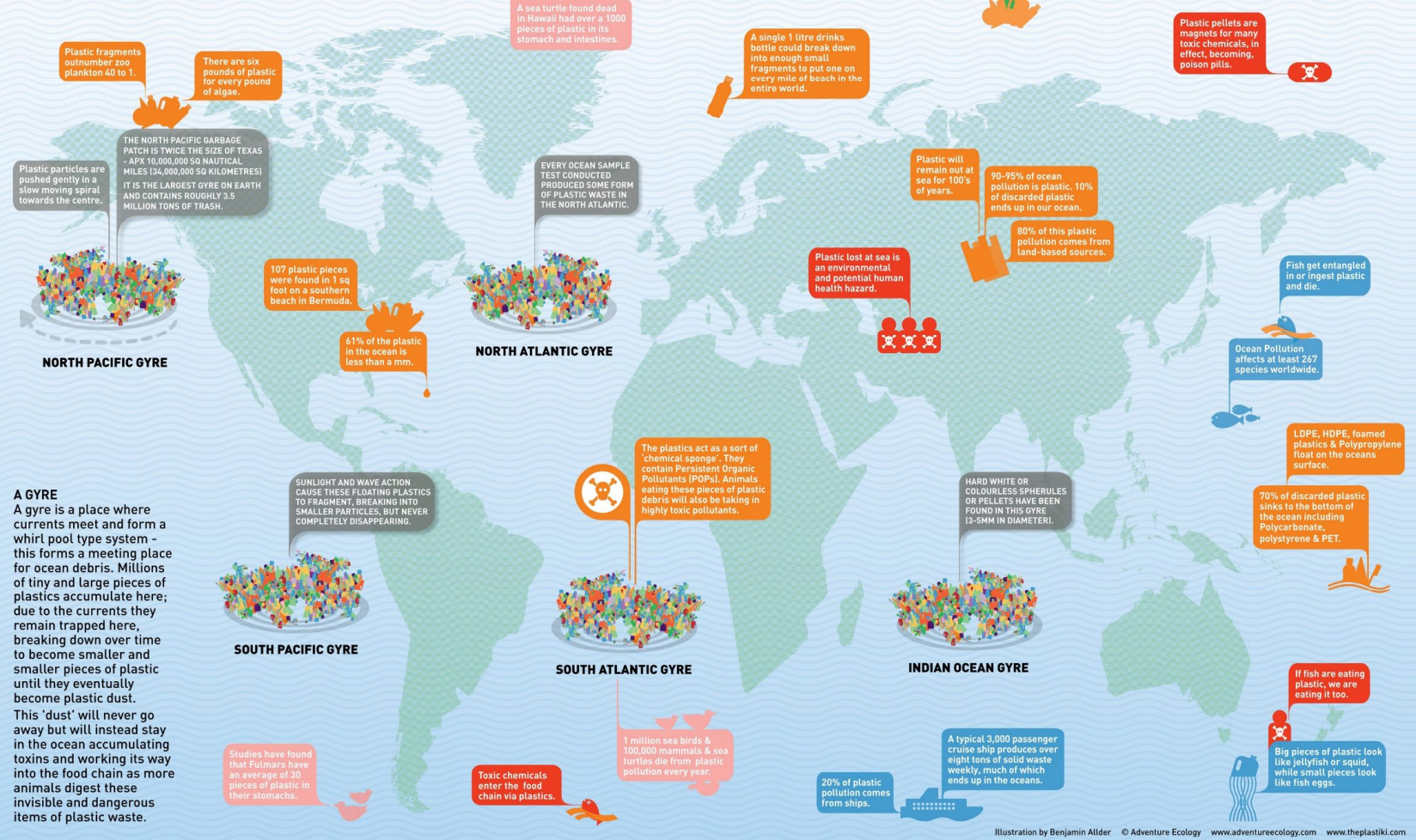
Paper Towels	2–4 Weeks	Waxed Milk Cartons	3 Months
Newspapers	6 Weeks	Newer Photodegradable Beverage Holders	Under 6 Months
Cotton Ropes	1–5 Months	Plywood	1–3 Years
Apple Cores	2 Months	Wool Socks	1–5 Years
Cardboard Boxes	2 Months		

NOTE: Estimated individual item timelines depend on product composition and environmental conditions.

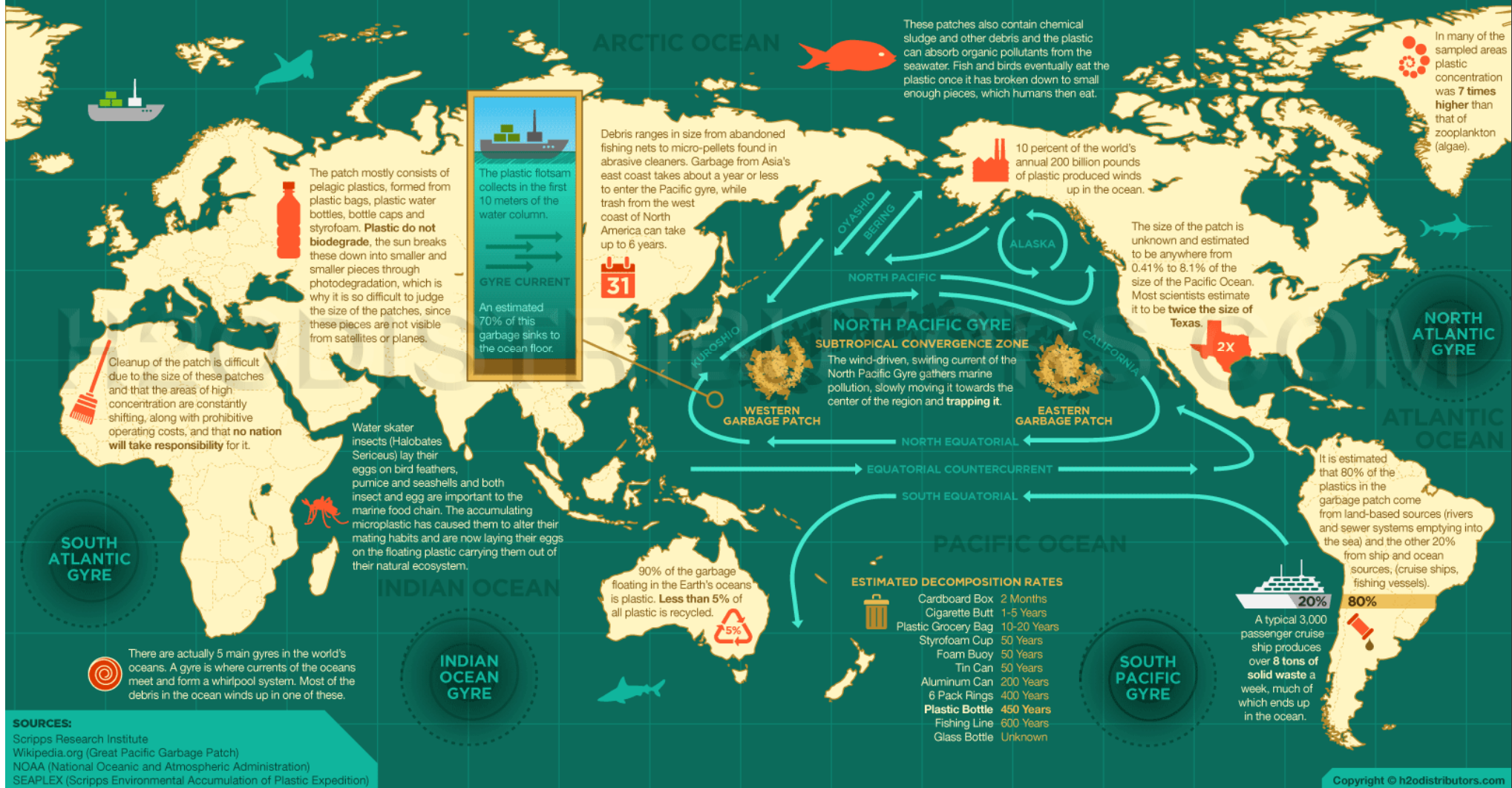
Source: South Carolina Sea Grant Consortium, South Carolina Department of Health & Environmental Control (DEHC)—Ocean and Coastal Resource Management, Centers for Ocean Sciences Education Excellence (COSEE)—Southeast and NOAA 2008.

THE FIVE GYRES

ALTHOUGH NOT WIDELY DISCUSSED THERE ARE IN FACT 5 MAIN GYRES IN THE WORLD'S OCEANS AND SEVERAL SMALLER GYRES THROUGHOUT ALASKA AND ANTARCTICA. THE MOST COMMONLY DISCUSSED GYRE IS THE NORTH PACIFIC GYRE, KNOWN AS THE GARBAGE PATCH DUE TO THE MASS OF MARINE DEBRIS THAT HAS COLLECTED THERE.

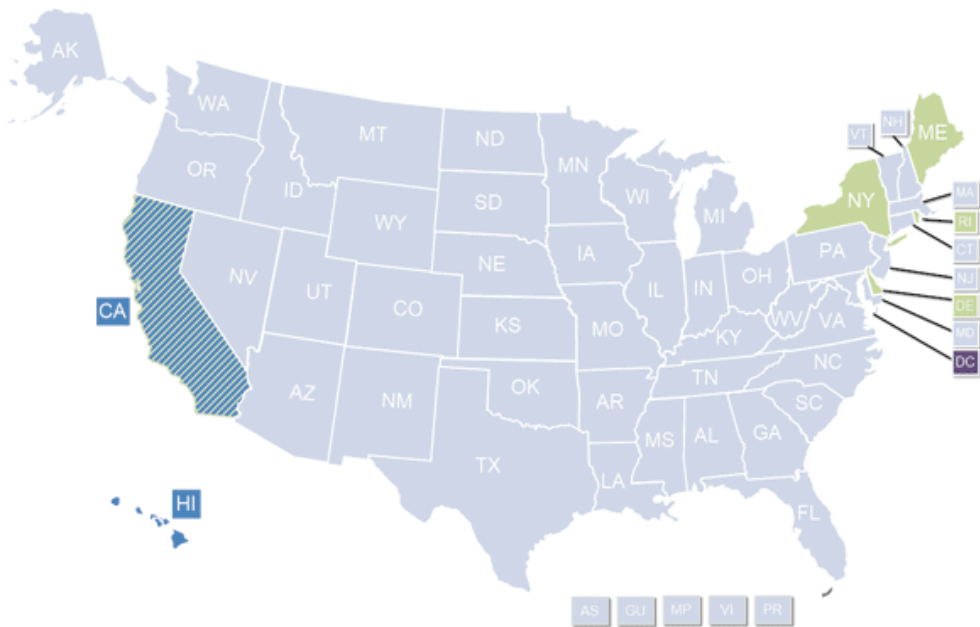


THE GREAT PACIFIC GARBAGE PATCH

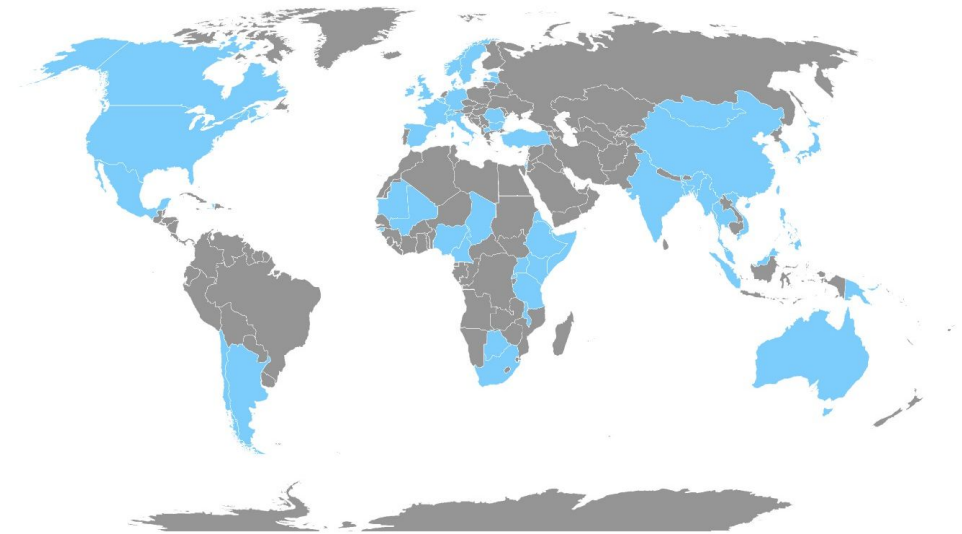




WHAT IS BEING DONE TO COMBAT THIS PROBLEM?



COUNTRIES WITH PLASTIC BAG BAN OR TAX IN PLACE



Data: from Earth Policy Institute & Reuseit.com

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WHAT CAN YOU DO TO HELP?

“The 5 R’s”

- Reduce
- Reuse
- Recycle
- Rethink
- Reach Out

QUESTIONS??