

□ **READING CHALLENGE**

The Teenager Who Is Cleaning the Ocean

How a 16-year-old Dutch boy invented a system to remove millions of kilograms of plastic from the sea

Level	B1 — Intermediate
Age Group	Teens (11-16)
Topic	True Stories
Duration	~15-20 minutes
Skill	Reading
Vocabulary	15 words
Quiz	5 questions

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On a warm summer day in 2011, a sixteen-year-old Dutch boy named Boyan Slat went scuba diving during a family holiday in Greece. He was excited to explore the underwater world and see colourful fish and coral. But when he put his head below the surface, he was shocked. Instead of beautiful sea life, he saw plastic bags, bottles, and wrappers everywhere. There was more **garbage** than fish. That moment changed his life forever. While most teenagers would have simply felt sad and moved on, Boyan decided to do something about it. He asked himself a question that many adults had given up on: could we actually clean the ocean?

The Problem: A Sea of Plastic

Every year, around eight million tonnes of plastic enter the world's oceans. Some of it sinks, but much of it stays on the surface, carried by ocean **currents** to certain areas where it collects in enormous patches. The largest of these is the Great Pacific Garbage Patch, located between Hawaii and California. Despite its name, it is not a solid island of rubbish that you can walk on. Instead, it is a vast area — roughly three times the size of France — where millions of pieces of plastic **float** in the water. Some pieces are large, like fishing nets and crates, but many are tiny fragments called **microplastics**. These are often smaller than a grain of rice, and they are almost impossible to see with the naked eye.

This plastic is deadly for **marine** life. Sea turtles mistake plastic bags for jellyfish and eat them. Seabirds feed small pieces of plastic to their chicks, thinking it is food. Fish and whales end up **ingesting** plastic that fills their stomachs so they cannot eat real food. Scientists estimate that over one hundred thousand marine animals die from plastic pollution every year. The plastic also enters the food chain: when small fish eat microplastics, and bigger fish eat the small fish, the chemicals from the plastic move up through the **ecosystem** — eventually reaching the seafood on our dinner plates.

A Teenager's Big Idea

Back home in Delft, the Netherlands, Boyan could not stop thinking about what he had seen in Greece. He was studying aerospace engineering at the Delft University of Technology, and he began using his technical knowledge to think about the problem differently. Most people said cleaning the ocean was impossible because the plastic was spread over such a huge area. Sending ships to collect it would take thousands of years and cost billions of euros. But Boyan had a different idea. Instead of going to the plastic, what if the plastic came to you?

He knew that ocean currents naturally push floating objects together. His concept was simple but **innovative**: place a long, floating **barrier** in the ocean that would use the natural movement of the water to concentrate the plastic. The barrier would sit on the surface like a long arm, and the current would push plastic towards it. Because the barrier would not use nets, fish could swim underneath it safely. A ship would then come regularly to collect the trapped plastic, like a rubbish truck collecting bags from the pavement.

From Idea to Reality

In October 2012, when Boyan was just eighteen years old, he presented his idea at a TEDx talk in Delft. The video went viral online, and suddenly millions of people around the world were talking about this young inventor from the Netherlands. In 2013, he dropped out of university to focus on his project full-time. He founded a non-profit organisation called The Ocean Cleanup and published a 530-page [feasibility](#) study to prove his idea could work.

But turning an idea into a real machine in the middle of the Pacific Ocean is incredibly difficult. Boyan needed money, engineers, and years of testing. In 2014, The Ocean Cleanup launched a [crowdfunding](#) campaign that raised over two million dollars in just one hundred days. It was the most successful crowdfunding campaign for a non-profit at that time. With this money and additional donations, the team began building [prototypes](#) and testing them in the North Sea near the Netherlands.

Failures and Breakthroughs

The road from prototype to a working system was full of setbacks. In September 2018, The Ocean Cleanup [deployed](#) its first full-scale system, called System 001, in the Great Pacific Garbage Patch. The system was a 600-metre-long floating barrier designed to catch plastic as currents pushed debris into its U-shaped path. But within months, a section of the barrier broke off in the rough ocean conditions. The team had to tow the damaged system back to Hawaii for repairs.

Critics said the project was a failure, but Boyan refused to give up. His team analysed what went wrong, redesigned the system, and launched System 001/B in June 2019. This improved version was smaller but more effective. In October 2019, The Ocean Cleanup announced that System 001/B had successfully captured plastic from the Great Pacific Garbage Patch for the first time. It was a historic moment: proof that cleaning the ocean was actually possible.

The team continued to improve. System 002, nicknamed “Jenny,” was deployed in 2021 and could hold much more plastic. Then came System 03, launched in 2023, which was three times larger than Jenny. System 03 covers an area the size of a football pitch and can collect huge quantities of plastic in a single pass. Each new version [accumulated](#) the lessons learned from earlier failures, becoming stronger and more efficient.

The Interceptor: Stopping Plastic at the Source

While working on the ocean systems, Boyan and his team realised something important: eighty percent of ocean plastic comes from just one thousand rivers around the world. If they could stop the plastic before it reached the ocean, the problem would be much easier to solve. So in 2019, The Ocean Cleanup introduced a new machine called the [interceptor](#).

The Interceptor is a solar-powered barge that sits in a river and catches plastic as the water flows past. It uses a barrier to guide floating waste onto a conveyor belt, which carries the plastic into large bins on the barge. When the bins are full, a local team empties them and the Interceptor continues working. It operates twenty-four hours a day, seven days a week,

and can extract up to fifty thousand kilograms of plastic per day from heavily polluted rivers. The machine runs entirely on solar energy, producing zero emissions.

By 2024, Interceptors had been deployed in rivers in Indonesia, Malaysia, Vietnam, the Dominican Republic, Jamaica, Thailand, and the United States. The organisation's goal is to tackle the one thousand most polluting rivers within five years. Stopping plastic at the source is crucial because once plastic reaches the open ocean, it breaks down into smaller and smaller microplastics that are far harder to collect.

Turning Trash into Products

One of the cleverest parts of The Ocean Cleanup's plan is what they do with the plastic they collect. Instead of simply throwing it into landfill, the organisation recycles ocean plastic into new products. In 2020, they released their first commercial product: sunglasses made entirely from plastic pulled out of the Great Pacific Garbage Patch. The sunglasses sold out quickly, and the profits went back into funding more cleanup operations.

Since then, The Ocean Cleanup has partnered with companies like Kia, which used ocean plastic in parts of its electric cars, and other brands that want to use recycled materials. By creating a market for ocean plastic, the organisation hopes to make cleanup financially sustainable in the long term. The idea is simple: the ocean's garbage becomes a valuable resource.

The Criticism and the Response

Not everyone agrees with The Ocean Cleanup's approach. Some marine scientists argue that the real solution is to stop producing so much plastic in the first place, not to clean it up after it enters the ocean. They worry that cleanup technology gives governments and companies an excuse to continue polluting. Others have raised concerns about whether the barriers could accidentally harm marine ecosystems by disturbing plankton or other small organisms that live near the surface.

Boyan has always acknowledged these criticisms. He agrees that reducing plastic production is essential, but he argues that the two approaches are not mutually exclusive. "We need to both turn off the tap and mop up the mess," he has said in interviews. The Ocean Cleanup works with scientists to study the environmental impact of its systems and has made design changes to reduce any harm to marine life.

A Vision for 2040

Today, Boyan Slat is in his early thirties, and The Ocean Cleanup employs over one hundred and twenty engineers, researchers, and staff. The organisation's goal is ambitious: to remove ninety percent of floating ocean plastic by 2040. As of early 2025, the project has removed over fifteen million kilograms of plastic from oceans and rivers combined. That is roughly the weight of about seventy-five Boeing 747 aeroplanes.

Boyan's story is a powerful reminder that age does not determine what you can achieve. A teenager who was horrified by what he saw while scuba diving in Greece turned his anger into action, built a global organisation, and created technology that is genuinely making the oceans cleaner. There are still enormous challenges ahead, and the plastic crisis is far from solved. But because one young person refused to accept that the problem was impossible, the world's oceans have a better chance than they did before. Every great solution starts with someone who looks at a problem and says, "I think I can fix this." Boyan Slat said exactly that — and then he got to work.

Vocabulary

#	Word	Definition
1	garbage	rubbish or waste material that people throw away
2	current	a continuous movement of water in a river or ocean in a particular direction
3	float	to stay on the surface of water without sinking
4	marine	related to the sea or ocean
5	barrier	a structure that blocks movement or separates one area from another
6	prototype	the first version of something new, built to test whether the idea works
7	feasibility	whether something is possible and practical to do
8	deploy	to move something into position and make it ready for use
9	interceptor	a device or machine designed to stop and catch something
10	ecosystem	all the living things in an area and how they relate to each other and their environment
11	microplastic	an extremely small piece of plastic, often invisible to the human eye
12	crowdfunding	collecting money for a project by getting small amounts from many people online
13	ingesting	taking food or other substances into the body by swallowing or absorbing them
14	accumulate	to gradually collect or increase in amount over time
15	innovative	introducing new ideas, methods, or inventions

Comprehension Quiz

1. What inspired Boyan Slat to start thinking about ocean plastic?
 - A) He read a book about pollution in school
 - B) He saw more plastic bags than fish while scuba diving in Greece
 - C) His parents worked for an environmental organisation
 - D) He watched a documentary about the Great Pacific Garbage Patch
2. What was special about Boyan Slat's TEDx talk in 2012?
 - A) He announced he had already cleaned part of the ocean
 - B) He presented his idea for a passive cleanup system using ocean currents
 - C) He asked governments to ban all single-use plastic
 - D) He showed underwater videos of marine animals dying
3. How did The Ocean Cleanup raise money to build the first system?
 - A) The Dutch government paid for everything
 - B) A single billionaire donated the full amount
 - C) Through a crowdfunding campaign that raised over \$2 million
 - D) By selling recycled plastic products online
4. What problem did System 001 face when it was first deployed?
 - A) It sank to the bottom of the ocean immediately
 - B) It could not hold plastic because it broke apart in rough seas
 - C) Fish kept getting trapped inside the barrier
 - D) It floated to the wrong part of the ocean
5. What does the Interceptor do differently from the ocean systems?
 - A) It removes plastic from rivers before it reaches the ocean
 - B) It uses robots to pick up plastic from beaches
 - C) It filters microplastics from drinking water
 - D) It burns plastic waste to create electricity

Answer Key

#	Answer	Question
1	B	What inspired Boyan Slat to start thinking about ocean plastic?
2	B	What was special about Boyan Slat's TEDx talk in 2012?
3	C	How did The Ocean Cleanup raise money to build the first system?
4	B	What problem did System 001 face when it was first deployed?
5	A	What does the Interceptor do differently from the ocean systems?