Oceans: Our Blue Planet is now playing at museums and giant screen theatres. For screening dates and show times or to find out more about Oceans: Our Blue Planet, visit www.bbcearth.com/oceans

#OurBluePlanet
The demand for plastic continues to grow but its durability - the key characteristic that makes plastic so popular - is also the reason why it is so widespread in the oceans. Plastic debris is not a new problem. It is a global challenge and one that requires a response at local, regional and international levels.

**Plastic Oceans**

**The Challenge**

Global production of plastics is today 300 million tonnes a year, and this is expected to double by 2050. In 2015, scientists demonstrated that there are already more plastic debris than fish in the world's oceans. A recent study confirmed that 8.3 billion tonnes of plastic have already been produced, and unless we change our ways, it is estimated that by 2030, the amount of plastic in the oceans will outweigh the amount of fish. We are going plastic, and those of us living on land are not immune. This plastic journey does not just stop in the ocean. Many of these microplastic particles have found their way into the air, edible plants and even humans. The plastic journey has become a one-way trip, and plastic is the new air pollution.

**Ocean Facts**

- **Plastics** are made from cheap and abundant carbon sources.
- **Recycling** requires more energy than the original production process.
- **World’s oceans** contain an estimated 5.25 trillion (5.25 × 10^12) metric tonnes of plastic.
- **Plastic** is not a new problem. It is a global challenge and one that requires a response at local, regional and international levels.

**Plastic and Evolutionary Biology**

Plastics are changing the evolution of marine organisms.

**Plastics**

- **100 million** sea turtles每年 are killed by plastic entanglement or ingesting plastic.
- **1 million** seabirds每年 die from plastic ingestion.
- **50,000** marine mammals每年 die from plastic ingestion or entanglement.

**The Story of the Whale**

The plastic journey does not just stop in the ocean. Many of these microplastic particles have found their way into the air, edible plants and even humans.

**Plastics Adversely Affect Terrestrial and Aquatic Wildlife**

Plastics adversely affect terrestrial and aquatic wildlife.

**Plastics**

- **Plastic pollution** affects 80% of marine species studied.
- **Plastic ingestion** compromises their ability to catch and digest food.
- **Plastic entanglement** can result in physical injuries and eventually death.

**Invisible Plankton**

Marine phytoplankton are the foundation of oceanic biological productivity, supporting complex marine food webs, and are a vital component of life on Earth. Using energy from the sun, they absorb as much carbon as all the trees and other plants on land, through photosynthesis. They also produce half of all the oxygen that we breathe.

**Ocean Acidification**

Our oceans are currently absorbing half of the carbon dioxide CO₂ emitted by burning fossil fuels. This absorption is increasing ocean acidity, threatening the survival of marine organisms and entire ecosystems, and affecting our ocean health. If this continuing trend is not controlled, ocean acidity will reach 150% per cent by the next century.

**The Other CO₂ Problem**

Sea ice presents a very different picture of the role of CO₂. As the level of CO₂ rises, sea ice melts. This is causing particular problems for polar species. In brief, the Arctic is warming faster than anywhere else, and this will have far-reaching consequences for the global climate. The increase in ocean acidity associated with the absorption of CO₂ is challenging marine life, particularly those species that depend on calcification, such as corals and molluscs.

**Marine Conservation**

Today the oceans face many challenges from extensive human impacts. We have used the oceans for fishing, trade, communication and warfare, and the Earth’s population has increased from 2 billion in 1900 to more than 7 billion today, so the pressures have increased - particularly on fishing.

**Fisheries**

Fishing is often described as harvesting the ocean’s natural resources. However, as the global population has increased and demand has grown, that vision of sustainability has become increasingly unrealistic. The current fishing pressure is unsustainable and is insidiously impacting marine species. As a result, the world’s oceans are degrading and our ocean health is deteriorating, both in terms of health and productivity. We need to be smarter in our use of the oceans to preserve the environment and ensure that we maintain our current marine biodiversity.

**Ocean Facts**

- **70%** of the time researchers can only find species that have not been identified or counted.
- **80%** of the species are unknown to science.
- **90%** of the species are unknown to humans.

**Marine Conservation**

The development of Marine Protected Areas (MPAs) is one strategy for conserving our oceans. MPAs can take many forms, but generally they are areas of land or water that are set aside to protect and conserve the species and ecosystems within them. There are currently about 2,400 MPAs worldwide, and more than 10% of the world’s oceans are under some form of protection. In addition, there are plans to expand this.

**Ocean Facts**

- **50%** of the marine environment is protected by MPAs.
- **20%** of the world’s oceans are protected by MPAs.
- **10%** of the world’s oceans are protected by MPAs.

**CONSERVATION**

The protection or management of natural resources, the sustainability of human populations, ecosystem services and biodiversity is often a complex and challenging process. It requires a commitment from all stakeholders, from individuals to governments and beyond. Using models and scientific evidence, policymakers and conservationists can work to protect the Earth’s resources and environment.

**OCEAN ACIDIFICATION**

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**Acidification and Ecology**

Acidity and ecology are linked, and the interaction between plankton and acidity has far-reaching implications for the ocean's productivity.

**The Invisible Plankton**

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