



TE AO MĀORI BOUTEILLE À LA MER 2120

Information for teachers



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Plastic pollution is everywhere

Since the 1950s, plastic has invaded our daily lives and our consumption of it is increasing exponentially. Look around! Portable telephones, clothes, vehicles, household goods, food wrapping, everyday and special objects, medical instruments... All contain plastic.

Plastic has many properties and numerous uses all for very low production costs. It has allowed us to increase our purchasing power and has made many aspects of our lives easier. Our consumption patterns have changed. It has become the ideal material for numerous domains and applications and is responsible for their astonishing expansion over the last few decades.

This revolutionary material has changed our lives profoundly. However...

It is estimated that 90% of the world's waste is neither recycled nor incinerated. It is found heaped in dumps or scattered about the environment. There are many types of plastic not all of which are recyclable. Above all, discarded plastic does not degrade. It fragments into millions of microparticles over centuries, or even over thousands of years, and is then dispersed by rivers, winds and humans. It is clear that production of waste is as important as its treatment: in Europe, the origin of 59% of discarded domestic plastic is single-use or packaging.

In the oceans, which produce half of the oxygen we breathe, marine currents take plastic waste to the remotest corners. It has an impact on whales, for example, which confuse it with their usual prey, and on corals and small fish which feed on plankton contaminated with it. All these species on the food chain transmit the poison they have absorbed to the top predators such as shark and tuna.

Large predators at the top of the food chain become victims of plastic pollution even though they play a crucial role in maintaining the fragile balance of the marine ecosystem. The micropollutants (persistent organic pollutants, heavy metals, etc.) present in or on the surface of plastics are released into organisms when they are consumed.

Plastic pollution is an irreversible global problem which concerns all ecosystems. We all need to act. Avoid single-use plastic, re-use, recycle and choose alternatives. Together we can and will make a difference



This exhibition is supported by the Save Our Seas Foundation, with the participation of the Race for Water Foundation and the NGO Oceaneye

Fondation Save Our Seas

The Save our Seas Foundation (SOSF), founded in Geneva in 2003, is a philanthropic organisation dedicated to the health and protection of the world's oceans. The Foundation focuses mainly on threatened shark and ray species and encourages and supports ground-breaking research, conservation and education.

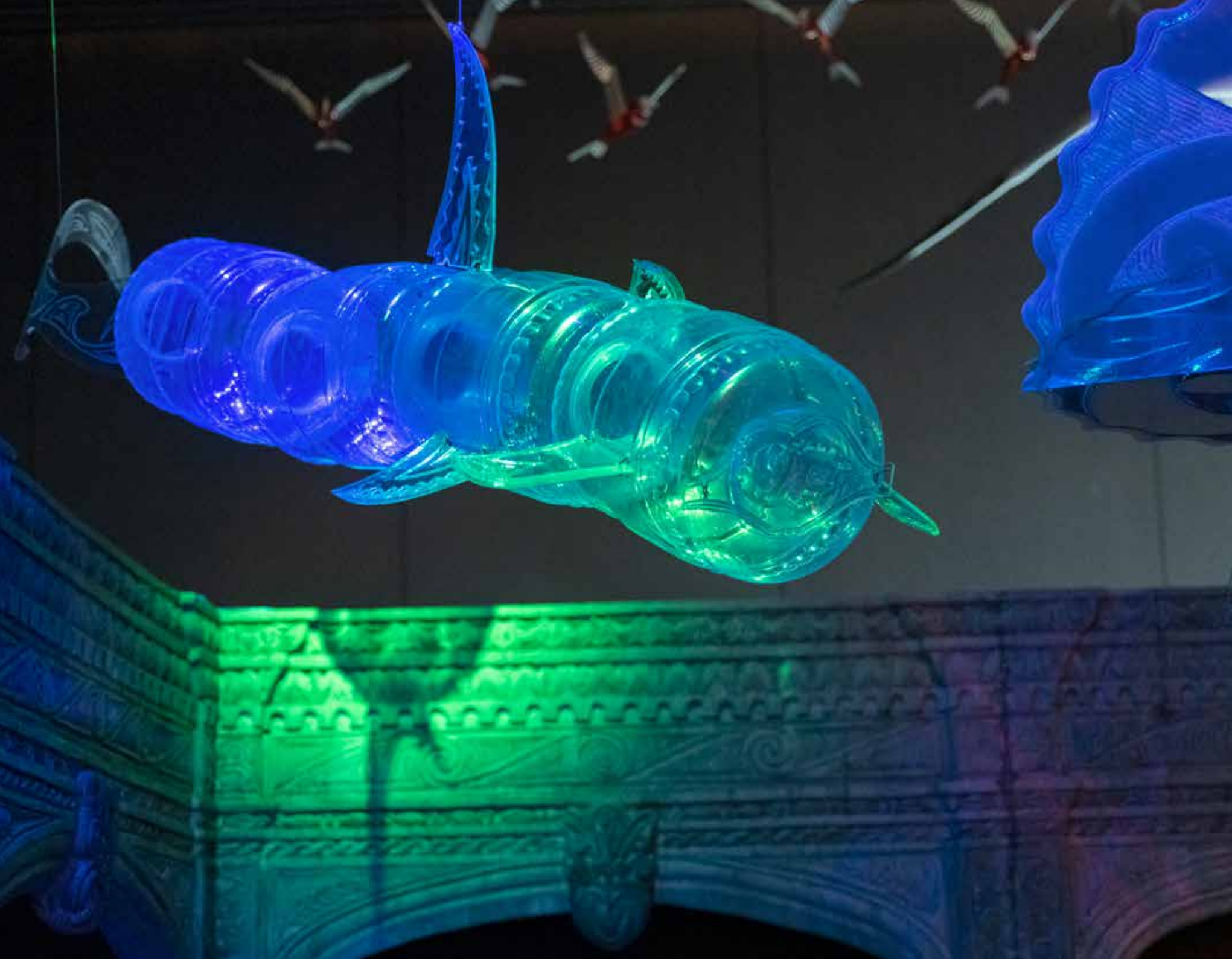
Over the past sixteen years, the Foundation has supported over 300 projects in more than 60 countries, confirming the wish of the founder that Save Our Seas will have a long-lasting impact on the health of our oceans and, in the end, on everyone.

Association Oceaneye

Oceaneye is a Geneva non-governmental organisation (NGO) founded in 2010. It addresses the issue of pollution of seas caused by plastic waste. It contributes to scientific studies by collecting data on pollution levels and sharing them with scientists and international organisations. Oceaneye also aims to inform and raise awareness amongst the population, politicians and industrialists about associated issues (consumption, waste production and management) on the basis of facts.

Fondation Race for Water

The Race for Water Foundation is an organisation dedicated to the preservation of water and the oceans. Today, seriously under threat from plastic pollution, it is imperative that we protect what is an essential resource for life. Race for Water has given itself the mission of preventing plastic waste from reaching the waterways and oceans by developing social and economic models encouraging reduction and collection of plastic waste.



The ubiquity of plastic in our daily lives

Plastics have become indispensable in our daily lives. They are flexible, smooth, soft, transparent, coloured, tough, inexpensive and can take on any shape. The properties of plastic are infinite and it is unthinkable for the majority of us to pursue our daily lives without it.

Although the first plastics appeared in the 19th century, their production has continuously diversified and evolved. **They are, in general, derived from fossil fuels such as oil, natural gas and coal and exist in numerous forms:** Polyethylene, Polypropylene, Polystyrene, Polyamides, Thermoplastic Polyesters, Epoxies, Polyurethanes, Silicones, Elastomer, etc. There are also bioplastics which are manufactured from corn, wheat, potatoes, cane sugar and sugar beet.

Plastic can provide practically every property for unrivalled production costs. Carbon fibre is more resistant than titanium, silicone used for bottle teats is more flexible than natural rubber, polyethylene cling film is as impermeable as aluminium foil; plastic is resistant to heat and to sterilisation methods; it can be injected, soldered, shaped, hammered, machined; it can be adapted to all manufacturing methods. Its diverse properties are conferred by different mixtures of its chemical components.

Since 1950, global production has continued to expand alarmingly. While some products may have a long useful life, it is estimated that 40% are discarded in fewer than 30 days. **According to a study by Jemma R. Jambeck, only 30% of plastic is recycled in Europe and only 9% in the world.** Every year, millions of tons of waste plastic are dumped into the seas and oceans and more is piled up in landfills or scattered in the environment.

Plastics take dozens, if not hundreds, of years to degrade and the vast majority of plastics that have been produced are still here. Finally, some plastics contain additives which may be toxic such as chlorine, lead and cadmium. These give the resistance, flexibility, transparency, and other properties demanded.

Recently, a hitherto unknown form of pollution has been discovered by Portuguese scientists on the island of Madeira, in the middle of the North Atlantic: deposits of plastic are forming on rocky coasts. This layer of polyethylene, which resembles a blue or white lacquer, has been called plastic crust or plasticrust.

Everyday objects made of plastic

Have a look at the plastic objects you own. Do you think that you could manage without plastic?



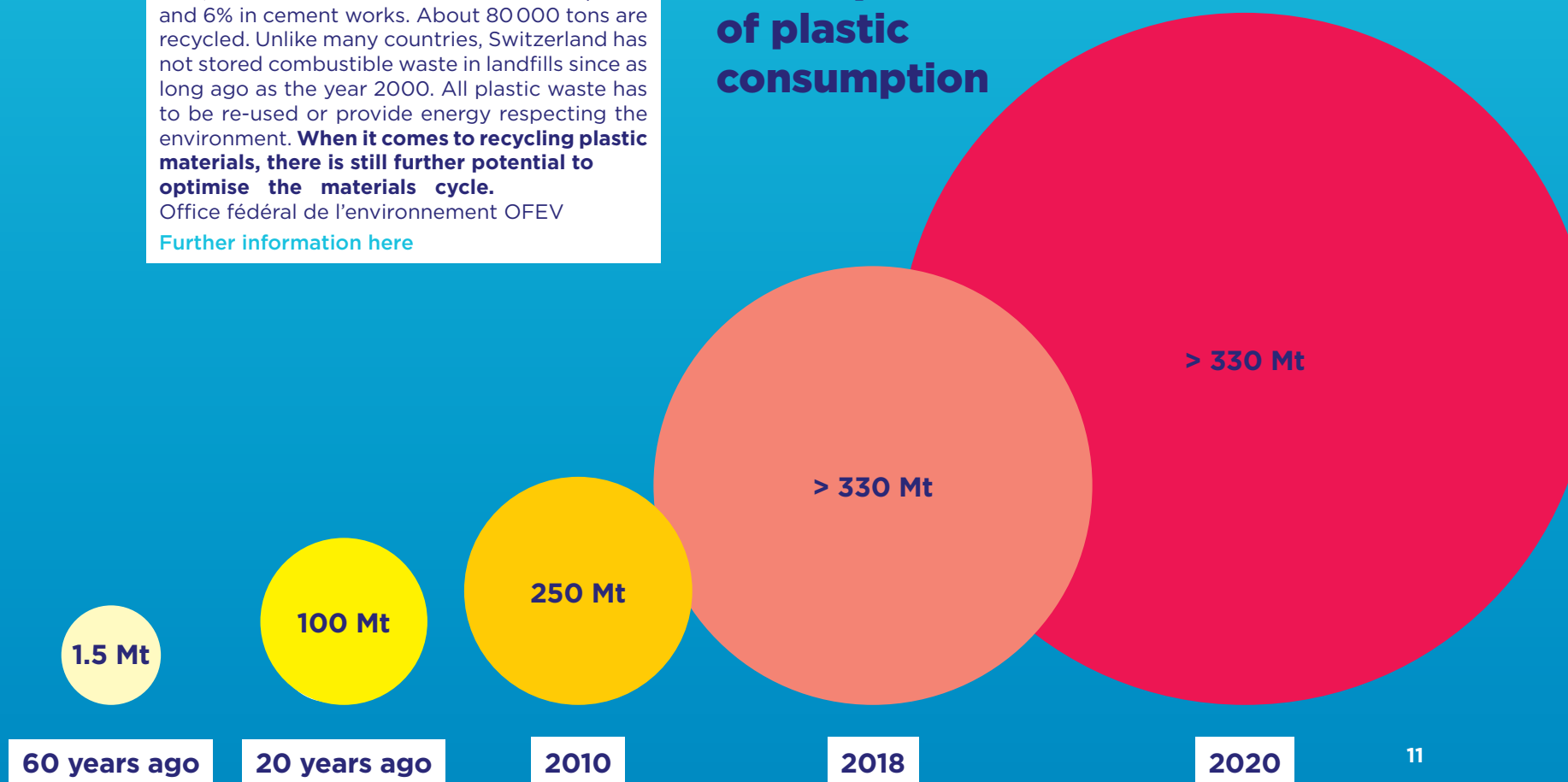
Recycling in Switzerland

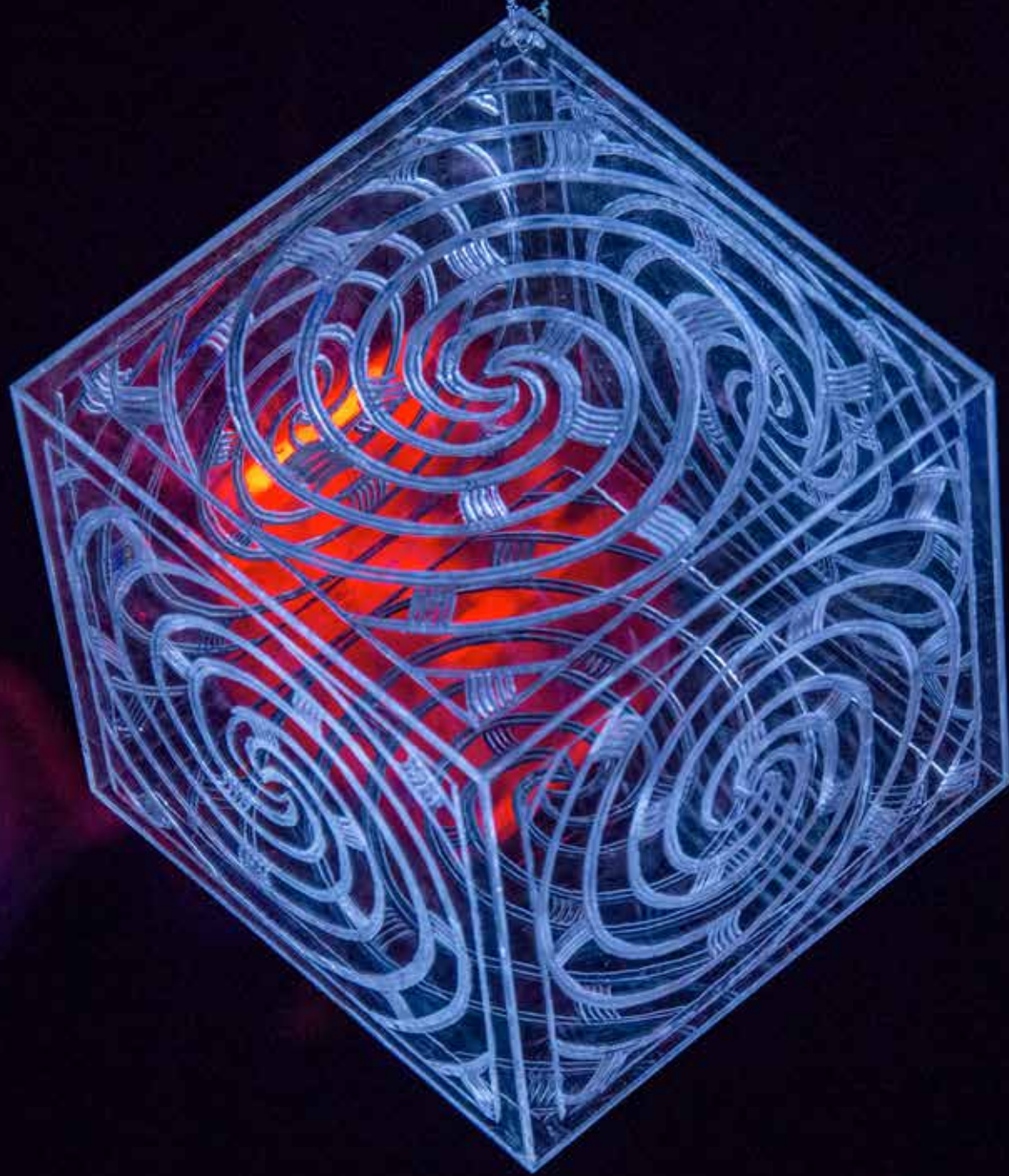
About one million tons of plastic are used every year in Switzerland, that is 125 kg per person (in 2010). Some 250 000 tons are used to produce items with a long life (e.g. plastic window frames). Of the 780 000 tons of plastic waste produced each year, over 80% (about 650 000 tons) are used fuel waste incineration plants and 6% in cement works. About 80 000 tons are recycled. Unlike many countries, Switzerland has not stored combustible waste in landfills since as long ago as the year 2000. All plastic waste has to be re-used or provide energy respecting the environment. **When it comes to recycling plastic materials, there is still further potential to optimise the materials cycle.**

Office fédéral de l'environnement OFEV

[Further information here](#)

The explosion of plastic consumption





Pounamu Pounamu: sacred plastic



Pounamu is the Māori term for jade, the fabulous stone found in water hence its name - Ika Pounamu, like a fish.

When 'Pounamu Pounamu' is repeated the sound takes on a lyrical quality evoking glacial rivers cascading over jade-bearing stones in the mountains, 'Te Wai Pounamu' the waters containing the greenstone the Māori name for the South Island of New Zealand.

It is profoundly anchored in the psyche and heart of the Māori world. This stone, whose beauty and hardness are immense, represents all that is sacred, precious and prestigious. **It symbolises longevity and immortality, a belief shared with other jade cultures such as Imperial China, the Olmec Sun Kingdoms, the Toltecs and the Aztecs.**

In the 19th century, the Māori saw the same translucent quality of jade in bottles brought by Europeans. They thus named this matter 'Pounamu'. They also identified genealogical links when it was explained that glass is made from sand.

I have followed the same principles because I have named plexiglas 'Pounamu', the same name as its precious, sacred and magnificent predecessors. Formed from the bones of dinosaurs and of ancient forests millions of years old, extracted from the breast of Mother Earth in the form of oil, plastic is our ancestral past and our extraordinary future fused into a seminal moment. THE PRESENT.

George Nuku





Plastic pollution of water, air and land

Detailed research has shown that particles of plastic are not only found in the seas but also in high altitude lakes. How is this possible?

In nature, everything is linked. That is why plastic pollution reaches every level of the biosphere: air, earth, sediments, oceans and lakes, rivers. It is found in every country and in the most remote areas such as the deep seas, isolated islands and polar glaciers. In Switzerland, all the lakes are contaminated and contribute billions of particles to pollution downstream. Fresh water pollution is entirely comparable to that of the oceans. The lifespan of these plastics is also very long and suggest that our times could be called the Plastic Era!

Scientists working on how plastic is transported between different environmental domains often speak of “land, sea, atmosphere and biota”. **It has now been shown that microplastics are transported by winds, rivers, marine currents and by living creatures to form a “reservoir” of plastic.** Accumulation zones are present on land (river banks, beaches) and in the seas (gyres).

In the seas as in the air, plastic has another property: it fragments into small pieces, then into particles measuring just a few millimetres, that is, microplastic. Some particles divide further to become nanoplastics. **During this long degradation, toxic substances added to the plastic escape and disperse into the environment.**

The nanoparticles polluting our soils and the land surface may have different origins: abrasion of vehicles' tyres, deterioration of paints, textile microfibres from washing machines or cosmetics containing microbeads. In some countries, the greatest source of pollution is probably plastic packaging or simply littering.

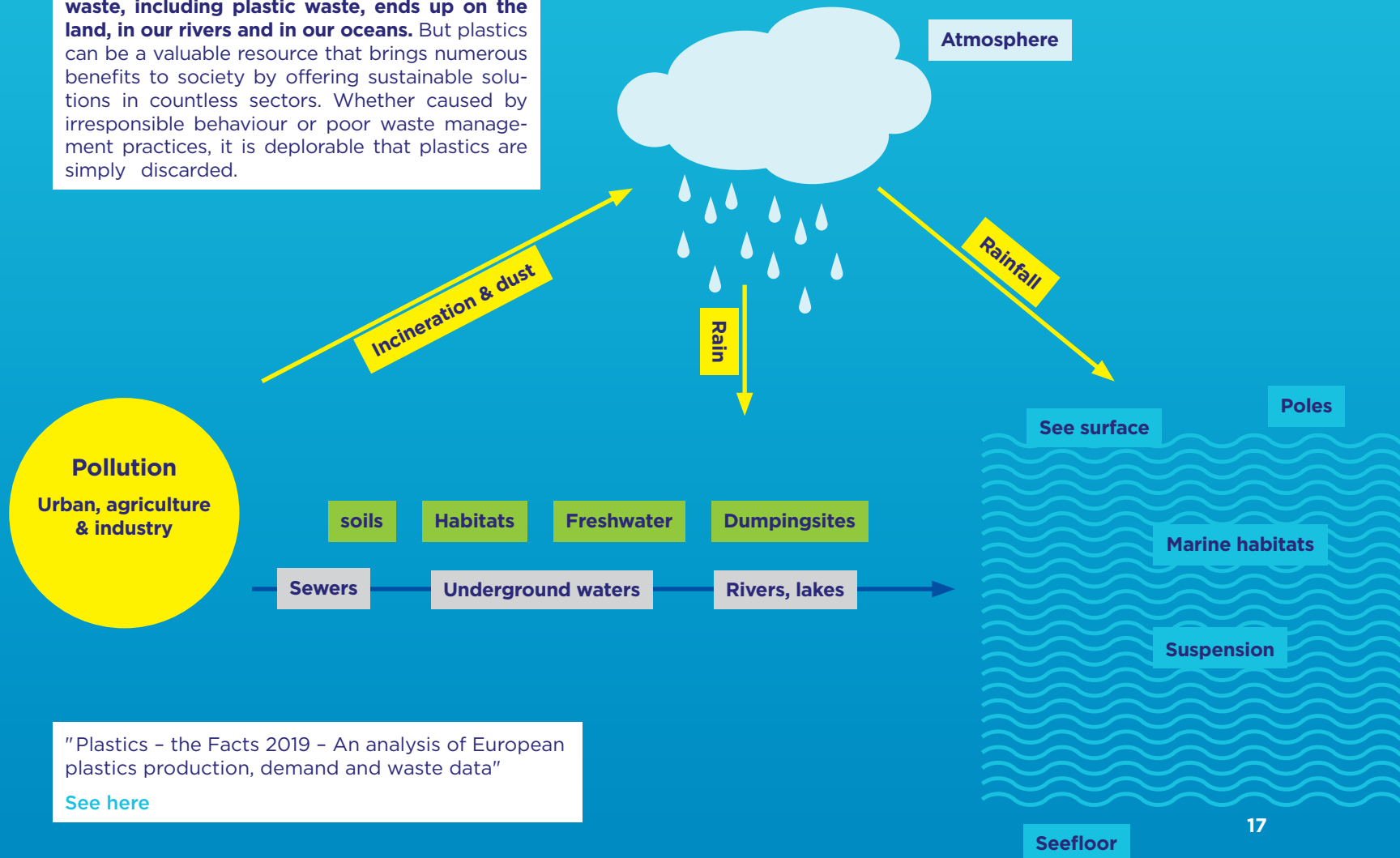
There are many causes of fragmentation such as light, temperature differences, biological activity or certain mechanical factors. Each type of plastic fragments in a specific way, some age better than others. The speed of degradation also depends on the environment in which it rests.

It is the fragmentation which make this pollution especially worrying. Accumulation of microplastic waste, even of nanoplastics, in our soils, rivers and seas is irreversible.



Plastics do not belong in the oceans

Using the seas as a gigantic garbage bin is a global problem and it is unacceptable that waste, including plastic waste, ends up on the land, in our rivers and in our oceans. But plastics can be a valuable resource that brings numerous benefits to society by offering sustainable solutions in countless sectors. Whether caused by irresponsible behaviour or poor waste management practices, it is deplorable that plastics are simply discarded.



"Plastics – the Facts 2019 – An analysis of European plastics production, demand and waste data"

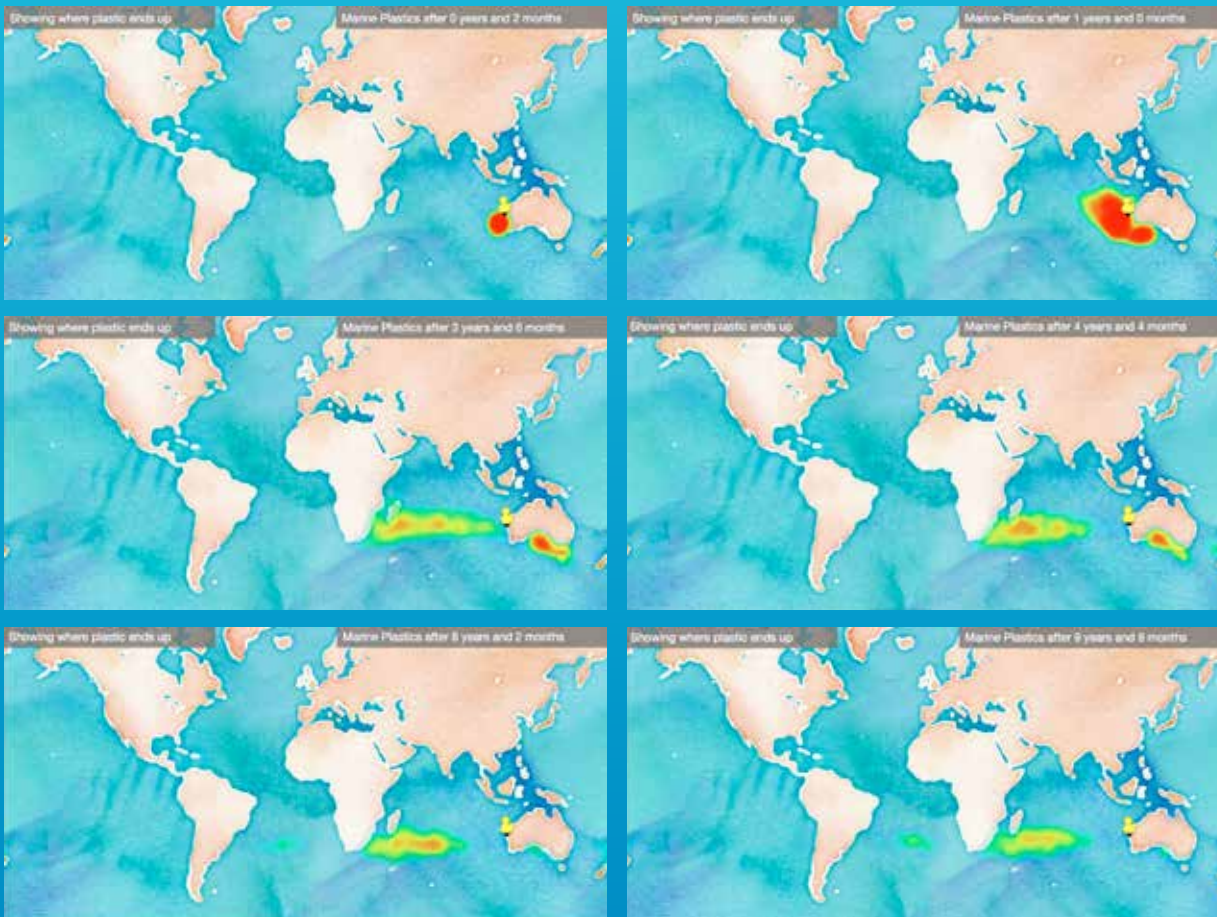
[See here](#)



Do you know where plastic ends up?

In this interactive animation, follow the journey of a piece of plastic thrown into the sea.

[See here](#)



**For our future it is essential
to develop new marine
protected areas and to
carefully choose the food
and products from the seas
that we consume, so that we
can re-establish harmony
with marine life and its
environment.**

The oceans are our life support, our legacy to future generations

Do you know that oceans account for 70% of the earth's surface and 97% of the water? The water cycle begins in mountain streams, then follows rivers and waterways to the sea. The journey of water continues as it rises into the atmosphere in the form of invisible gas and falls again as rain, hail or snow. The drops are absorbed by every form of animal and vegetable life.

Seas are also a food source for both humans and many other species. **It is estimated that nearly half of the world's people rely on sea products for food.** Fish, shellfish, mussels, seaweeds and other marine life are invaluable treasures of nature. The seas produce over one half of the oxygen we breathe thanks to the photosynthesis of phytoplankton, algae and sea grasses. In addition, marine plants absorb carbon dioxide thereby offering a significant carbon sink.

It is now estimated that 8 million tons of plastic are dumped into the seas every year. There will soon be more plastic than fish. Currents transport the plastic to every corner of the marine realm. Most, the heaviest, sinks to the bottom (99% of waste) while the lightest floats on the surface. Amongst the latter, large quantities are moved by ocean currents and concentrate in the centre of gyres, the celebrated whirlpools created by winds and currents thousands of kilometres away from land.

The oceans and seas still shelter immense stores of biodiversity but research suggests that half of these living species could disappear by 2100. Every year hundreds of thousands of birds, mammals and fish suffocate in abandoned nets. Turtles and whales, which confuse plastic waste with their usual prey, can be poisoned and suffer swelling of the stomach until they die after atrocious and long drawn out suffering. And yet, the diversity of life in the seas guarantees that the earth functions correctly.

The great predators, such as sharks, at the top of the food chain, absorb the toxic substances consumed by smaller fish. They, the small inhabitants of the seas, also play a crucial role in maintaining the balance of the marine ecosystem. Finally, another threat is the transport of invasive species over long distances by floating waste.

For our future it is essential to develop new marine protected areas and to carefully choose the food and products from the seas that we consume, so that we can re-establish harmony with marine life and its environment.



Plastic rain



Did you know that clothing made from polyester, acrylic, nylon and other synthetic materials are essentially types of plastic? If you have sports gear and clothing, most of it is likely to be made of synthetic fibres. Rain jackets, many t-shirts, fleece sweaters, even the soles and uppers of trainers and other shoes – these and many more items are made from synthetic materials. Some companies recycle plastic bottles to make polyester and market the clothing made with this ‘repurposed’ material as somehow more environmentally friendly. But the truth is, it’s not.

[See here](#)

When we wash clothes made from synthetic materials, very tiny pieces of that material, called ‘microfibres’, are released and flow down the drain. As you might guess, microfibres are microplastics in the form of a fibre with a diameter of less than 10 micrometres (that’s less than one-fifth of the diameter of a strand of human hair). Hundreds of thousands of these fibres can be released with each wash and the older the clothes, the more microfibres they release. **Washing machine filters and water treatment plants do not catch them because of their tiny size, so they end up in rivers, lakes and the ocean.**

Ruth H. Leeney





Microplastics are easy to mistake for plankton, the base of the food chain. Can you see them?
(Source Oceanyeye)

From microplastics to sharks: the entire food chain in danger

Life in the seas has different forms. Plankton are minuscule creatures invisible to the naked eye. There are thousands of different species. **The smallest plankton are plants which supply nearly two thirds of the earth's oxygen. They lie at the base of the food chain, the most important food on earth.** They are consumed by the animal plankton, or zooplankton. Each link in this chain is essential for the survival of large animals. Woven into a complex system they are all interdependent.

Detailed studies have shown that, because of their size, **microplastics are ingested by numerous marine and terrestrial species.** Microplastics are particles that measure a maximum of 5mm. They are present in seas, lakes, rivers, fields, gardens, along coasts and in the air.

In this cycle, microparticles of plastic are consumed by marine animals such as microplankton which has itself been ingested by molluscs or krill. They, in their turn, are eaten by fish, cetaceans, aquatic birds and right up to the summit of the food chain occupied by the large predators such as sharks. **All are affected by microplastic pollution. The global food chain is compromised and is in danger.**

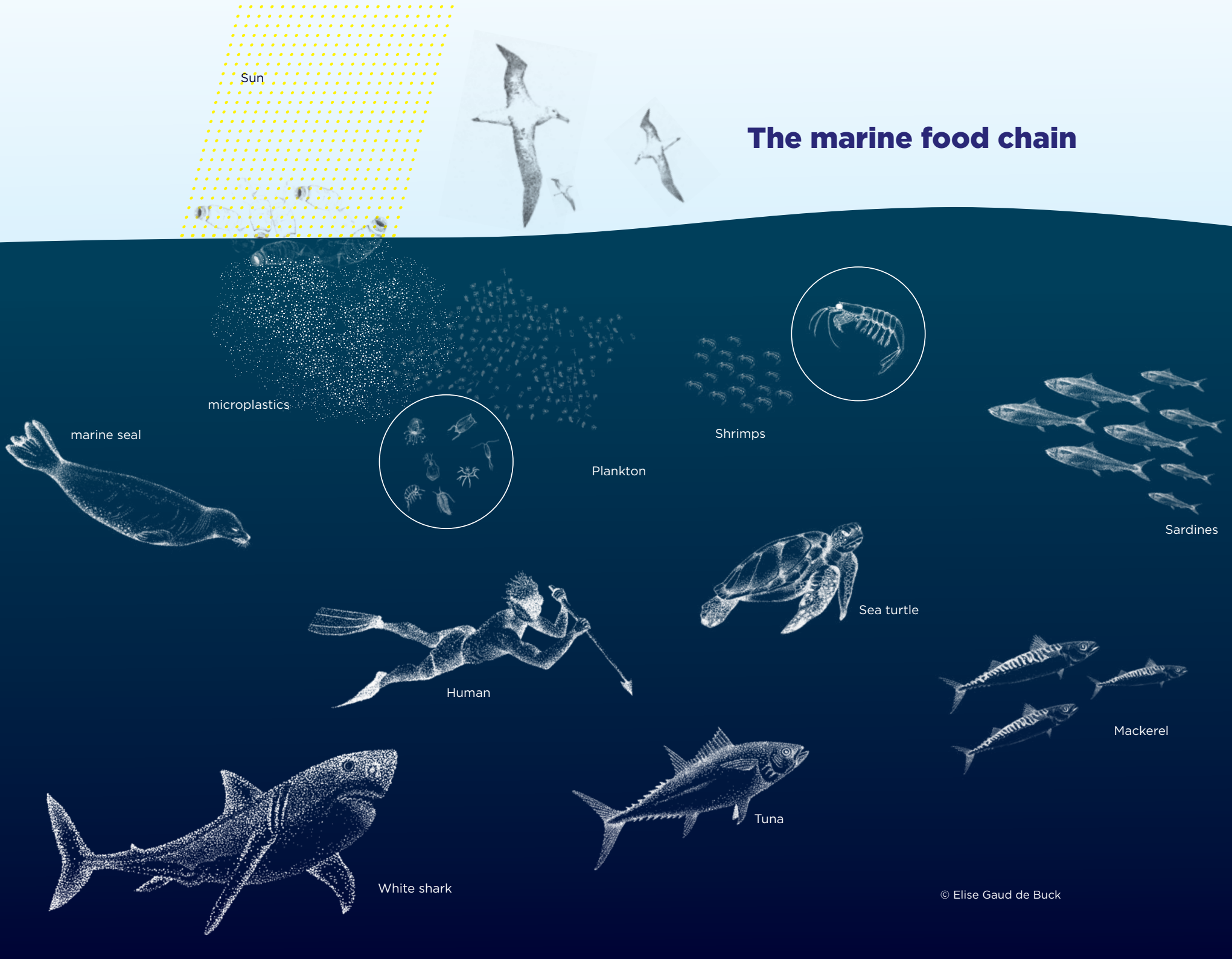
Plastic waste of all sizes is found in the digestive systems of fish, birds and shellfish. Research has shown that both terrestrial and marine plants absorb nanoplastic particles which modify their genetic code making them potentially damaging for our health. **A study by Newcastle University in Australia has even calculated that humans ingest 5 gr of microplastics per week on average, that is the equivalent of eating a credit card!**

The effects on plants and animals are not yet very well known. The most troubling aspect seems to be the toxicity of the plastic waste. **Toxic additives and pollutants are adsorbed by the whole food chain including humans.** The microparticles are present in drinking water and the finest (less than 130 microns in diameter) can pass through human tissue. **It is possible that a small proportion is inhaled directly by the lungs.**

The World Health Organisation (WHO) has said that it is urgent to carry out further research into the potential consequences for human health of plastic pollution and to limit its increase around the world.

Sun

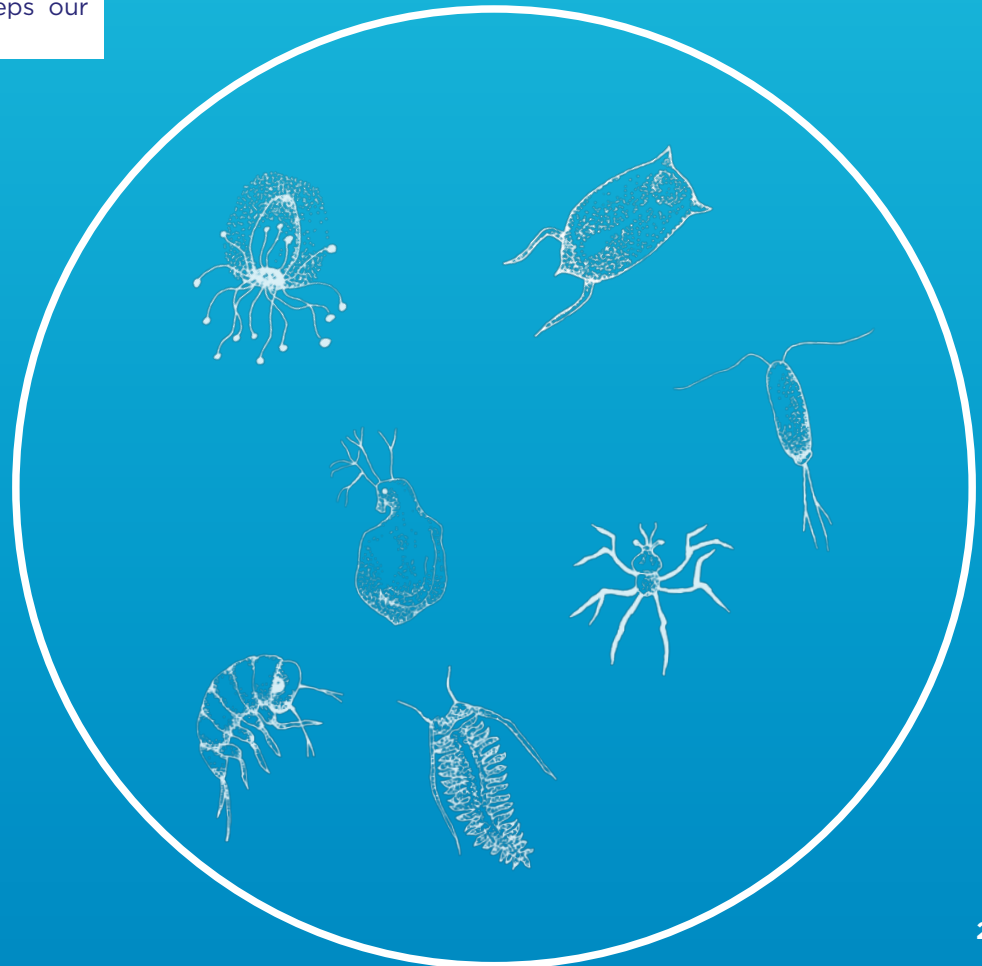
The marine food chain

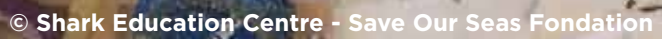


Why are sharks important?

Across the world's oceans, there are over 500 species of shark. They are older than the first dinosaurs and have inhabited our oceans for over 400 million years. Some are apex predators, others are the clean-up crew of the ocean. They help maintain a balance that keeps our oceans healthy.

[More informations here](#)





Waste management: how can we prevent plastic reaching the seas?

Plastics found in nature are a serious global threat to fauna, flora and humans: habitat destruction, suffocation and strangulation of animals, obstructed digestive tracts, toxic additives, dispersion of invasive species, impact on fisheries, marine transport and tourism.

There are various origins of plastic waste in the sea: nylon fishing lines and other marine equipment; and on land, mainly packaging, plastic bottles, construction material and polystyrene insulation and industrial such as plastic granules prepared for transformation.

As the origin of most waste is terrestrial and cleaning vast marine areas is not feasible, researchers are thinking about how to prevent the arrival of waste in watercourses and seas. Although waste management differs greatly between regions of the world, much waste finishes up in improvised dumps along coasts. **It is often incinerated in the open, a dangerous method which gives rise to respiratory, cardiac and skin illnesses as well as cancer.**

Waste management is currently inadequate everywhere. **But there is no one method capable of resolving the problems. Solutions must be local and adapted to the specificities of each country or region.** However, they must observe a series of indispensable stages: reduce wastefulness in order to decrease the production of plastic; sort at source; recycle; use for energy production, and treat to reduce toxicity.

In Switzerland, a large proportion of plastic is incinerated or recycled. **Even so, FOEN estimates that 14 000 tons of plastic matter is deposited each year in soils and rivers and that it will remain for several hundred years.** Litter found in the countryside includes dust from tyres, pipes used in buildings, paints dumped outside, artificial grass or playgrounds, the remains of plastic sheets used to protect plants, etc.

Not all plastic waste is easily recycled. How can we transform it into clean and sustainable energy? Industrialists and scientists are invited to search for recycling solutions which will give plastic waste an economic value and thereby discourage its disposal in water courses.

A photograph showing a large pile of debris, primarily wood and plastic waste, deposited at the Verbois dam. The debris is piled up on a concrete structure, with water visible in the foreground and background. The text "If nothing is done there will be more plastic than fish in the sea by 2050" is overlaid on the image in a large, white, sans-serif font.

**If nothing is done
there will be
more plastic
than fish
in the sea
by 2050**

Wood and plastic waste carried by the Rhône and deposited at the Verbois dam (summer 2013).
Source: Oceaneye

Plastic pollution in Lake Geneva identical to that of the seas (Oceaneye)

A project to measure and map plastic pollution at the surface of Lake Geneva and the river Rhone down to the Mediterranean, was begun in 2018 by the Geneva NGO **Oceaneye**, with the voluntary support of the NGO **Precious Plastic Léman** (for collection of samples in the Rhône). Although the question of plastic pollution of water is in the news, field data on pollution of the surface of Lake Geneva is scarce. Only a few samples were collected in 2013 (Faure 2014). The aim of this study is to quantify this pollution.

A lake as polluted as the seas: Preliminary results indicate that the waters of the Lake show a level of pollution identical to the average of the world's seas.

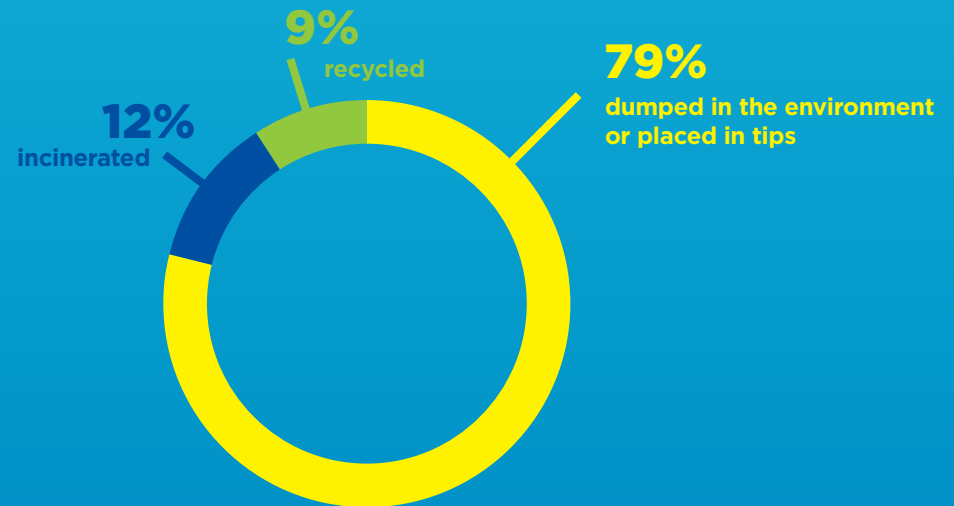
Tons of plastic conveyed by the Rhône. The waters of the Rhône are polluted to a similar extent.

[See here](#)

"If nothing is done there will be more plastic than fish in the sea by 2050."

Since 1950, 8.3 billion tons of plastic have been produced. Of this, 6 billion tons have become waste; the rest is still in use.

Treatment of plastic waste since 1950



A photograph showing three people participating in a beach cleanup. They are standing on a sandy path next to a large pile of plastic waste, including water bottles, a green balloon, and other debris. The person on the left is wearing a blue t-shirt with a 'Wildlife Clubs of Seychelles' logo and a grey cap. The person in the middle is wearing a white t-shirt and a camouflage bucket hat. The person on the right is wearing a white t-shirt with a graphic and glasses. They are all looking down at the waste. In the background, other people are visible on a path surrounded by greenery.

**And you:
what would you
like to do to reduce
plastic pollution?**

Act together!

In the face of the environmental emergency, we must act together: citizens, experts, industrialists, political leaders and NGOs. **It is not easy to radically and sustainably change habits. However, we must imagine a life more in tune with our environment.** Initiatives, community groups and innovative solutions are spreading world-wide.

Consume and eat differently and responsibly: study ecosystems, sources of pollution and the ways of transforming plastic into energy; **encourage collection of plastic** while creating jobs and generating resources; **raise awareness about plastic**, about the management of this potentially new resource, about our environment – these are crucial stages for our future. Each person can act in the same direction at their own level.

Every gesture can help: avoid over-consumption, use less plastic or re-use it before throwing it away; carry a fabric bag rather than a plastic one for shopping; use a re-usable water bottle; participate in local clean-up efforts; transform new plastic waste. **There are also alternatives to standard plastic packaging:** biodegradable biofilm, food wrapping with a honey or seaweed base, for example.

Governments around the world are moving forward with various initiatives. For example, Montreal has decided to ban single-use plastic water bottles in its equipment. **The European Union has banned a number of single-use plastic products:** cotton-buds, plates and straws. In Geneva, certain measures have been enacted such as stopping the distribution of free plastic bags in the Canton.

Some supermarkets in New Zealand and Amsterdam have no plastic packaging. In Germany, a company is selling toothpaste tablets in glass bottles in order to avoid the usual plastic tubes which are very difficult to recycle. There are global initiatives on social networks such as the Trash-tag ecological challenge, from Algeria, in which a participant takes a selfie in a place full of plastic waste and then a second photo after it has been cleaned up.

**And you:
what would you like
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plastic pollution?**



The 5 Rs of Race for Water

The Race for Water Foundation offers guidance on thinking about our behaviour (the 5Rs) in order to adopt a more plastic-aware way of life.

[See here](#)

Refuse

The best waste is the kind we don't produce. With a proactive approach, we can avoid a lot of upset. Over-packaging, poor quality advertising items, leaflets - refuse them and you won't have to deal with them. For that to work you have to remain vigilant: you buy an item and the shop assistant slips it into a plastic bag, your coffee is served to you with an individually wrapped stirrer, you help yourself to a glass of water at the office and the cups are made of plastic. If you want to refuse, you also have to be aware of all these little elements of waste which pollute our environment on a daily basis.

Ideas for 'refusing':

- Slipping a few essential reusable objects into your bag, storing some at the office or in your car, will make it easier for you to jump into your new zero-waste life. Stainless steel water bottles, fabric bags, miniature cutlery and cups and stainless steel straws for example, need to be bought once only and adapted to your lifestyle.

Reduce

This is about scaling back your purchases in relation to your actual needs. Do you really need the object you have your eye on? Will you use it on numerous occasions? If buying something is linked to pleasure in your mind, don't imagine that the principle behind reduction will mean your life is dull: buy less, but of better quality. A beautiful product, made of healthy materials, will be much more enjoyable to use.

Ideas for 'reducing':

- Don't change smart phones with each new edition, that's as much less electronic waste on the mountains that pile up worldwide.
- Favour a few good quality basics for your wardrobe rather than a multitude of small items, mostly made of synthetic fibres, that accumulate in your closets and release microplastics when they are washed.
- Join the "Do-it-yourself" movement. Many recipes are available online and are usually easy to make. This will allow you to eradicate your cosmetic and household product packaging. It's also a great way to learn about the composition and quality of your everyday products!

Refuse

Reduce

Re-use

Repair

Recycle

Les 5 R de Race For Water (suite)

Re-use

Re-using a product is about finding a new use for it in its original form. If you're smart, you can extend the lifespan of your things. Over time, you'll instinctively adopt reusable rather than disposable objects.

Ideas for 're-using':

- Buy second-hand (and offer a second life to a product)
- Keep a food jar and use it to store your leftovers or your latest bulk food purchases.

Repair

Repairing an object, a product, is to restore it to a good condition or to its original style. Some brands refuse to programme obsolescence into their products and guarantee the longevity of their products. Inquire!

Some 'repair' ideas

- Choose a product which can be repaired and whose spare parts will be available for a long time.

Recycle

If we've stuck to our 'R's in a coherent fashion, we will have very little left to recycle and this is obviously more positive than sending our possessions to the landfill. For plastic, recycling mostly means sorting which is the only way to improve the chances that it will actually be recycled or transformed into energy.

Ideas for 'recycling':

- Be uncompromising on sorting instructions
- Train your family and neighbours, why not in the form of a game or by organising a visit to the sorting centre for waste in your neighbourhood?

Refuse

Reduce

Re-use

Repair

Recycle



Less plastic in Geneva

In the spring of 2019, the Geneva Municipal Council publicly raised the issue of banning single-use plastic in the city of Geneva.

Geneva has decided to act at the municipal level. From 1st January 2020, single-use plastic products such as bags, straws, cups, plates and cutlery were banned from activities occurring on public premises under the auspices of the events and equipment services (SEP).

The ban is part of the conditions for authorisation for activities. Infringements attract a fine (minimum CHF 100 which can double if the offence is repeated). For more serious breaches, authorisation for the activity may be withheld.

[See here](#)



© « Bouteille à la mer 2119 »
Muséum d'histoire naturelle de Bourges, Avril 2019

People and nature are one

It is now time for all of us to be aware of our place in the environment and of our capacity to act. In Māori thought nature has always occupied a very important place. The island of Aotearoa has recently recognised the same rights for a river as for a human.

As in other cultures, Māori mythology personifies every element present in nature. **Humans belong to the earth and our well-being depends on its health.** We occupy the same space as plants, animals and minerals.

Te Ao Māori, the natural world according to George Nuku

« **The word māori means 'natural'.** We call the water we drink **wai Māori**. Since the 19th century we have used the Māori term in order to distinguish ourselves from **pakeha**, meaning extraordinary, the name given to the new arrivals from Europe.

The name for man is **Tane**, the firstborn of **Papatuanuku** (Earth Mother) and **Ranguinui** (the Sky). It is **Tanewho** separated his parents to bring light to the world. He propped up the skies with majestic trees. This is why he is called **Tanemahuta**, the lord of the forest. If trees are uprooted the sky will fall and the world will end. When a person dies we say that a tall tree has fallen in the forest. **Tanere** reminds us that we are all trees, each one of us.

We are all birds and, inspired by their movements, we learn to dance, walk and fight. At **Aotearoa**, some of the birds are flightless while others fly simply by jumping from tree to tree. We observe their movements and they show us how to move and how to speak with eloquence. Birds understand and speak the Māori language.

I still wear feathers in my hair for special occasions and to remind myself of the dignity attached to being a bird. To help me conduct myself with the stately allure and eloquence of a bird. By wearing feathers I can continue to fly because you need feathers to fly.





'PaiKee #2'

© GEORGE NUKU ART 23/2/14

People and nature are one (continued)



We say that the **Kereru** (Wood pigeon) eats the berries of the Miro tree and that the forest is his world. We say that knowledge is the food of the **Tangata** (humans) and that the world is their forest. We are all birds.

The **Mangopare** (Hammerhead shark) is venerated and respected by the Māori for its courage. When he is captured, he struggles and doesn't give up until his last breath. The **Wheke** (Octopus) is different. He twists and turns and asks for mercy. We are all still creatures of the ocean.

Whales are the great chiefs of the world, the seas and oceans are their territory. Chiefs are considered to be whales and whales are looked upon as chiefs. **Rei Paraoa** (Sperm whale) is the supreme being. Of the **Parao**, Māoris say that to have the tooth of a whale you have to have the jaw too. This means that one has to earn the right, the skills and the authority to lead a people. We are all whales.

We are all from *Te Ao Māori*, the natural world. The nature which surrounds us and human nature are both in us.

George Nuku





Bouteille à la mer 2120, Te Ao Māori at the Natural History Museum of Geneva

(from 25th September 2020 – 27th June 2021)

Bouteille à la mer 2120, Te Ao Māori was launched in 2014 in Tapei. Geneva is its 12th international visit. The installation expresses George Nuku's Māori vision of climate change which will manifest itself in 2120.

The story is told through combining ethnographic collections from museums in Geneva and Basle and the natural history collections of museums in Geneva and Bern. This exhibition is supported by the **Save Our Seas Foundation** with the participation of the **Race for Water Foundation** and the NGO **Oceaneye**.

“We are all from Te Ao Māori”. These could be George Nuku's first words on meeting you. “We all come from the natural world. The nature which surrounds us as well as human nature are within each of us”. George comes from the Here-taunga region where life is created from the dew of the mists, where streams and paths converge, a place where the falcon flies and where ancestor chiefs lie.

George has a Māori heart and George is life.

After several minutes in his company you will learn that all humans are trees, but also birds. You will notice that George is wearing a bird's feather in his ear... Then you learn that plastic has become an important part of his body and thought, that light and water pass through him, that George has truly evolved during the many

years he has faced the unforgiving surface where unbridled light is reflected! He will say “This creates a glistening unquantifiable dance”, that it is his “supreme joy”.

**Don't just take our word for it.
See for yourself!**

By 2120 the poles have melted, the earth is covered in water. Survivors have adapted to a new world. Under the water are barnacles, coral reefs, sea anemones and shoals of fish. Submarine arches and columns display ancient Greek motifs fused with Māori images. Through the arches there are delicate works of art sculpted from plexiglass. Hammerhead sharks patrol in search of food. Manta rays and tuna swim above them. Then, as if shipwrecked, the anthropological objects begin a dialogue with the natural objects.

From this imagined world voices are sending messages. This is a world of hope, a world of light. This is the path to the sublime, where poetry finally overcomes reality

Hervé Groscarret
responsable de l'Unité publics et expositions
du Muséum d'histoire naturelle de la Ville de Genève



Biography of George Tamihana Nuku

George Nuku is an internationally known Māori artist. He was born in 1964 in Aotearoa (New Zealand), in the village of Omahu. He grew up in Heretaunga, in the Hawkes Bay region of the North Island. His father was of German and Scottish origin while his mother links him to the NgātiKahungunu and NgātiTuwharetoa Māori tribes. In 1986, he began a career in arts in New Zealand which continued in Europe, the United States, Asia and Australia.

George Nuku works with traditional materials such as stone, bone and shells but also with artificial products such as polystyrene, plastic and plexiglass. He has incorporated these into the Māori cosmology and genealogy, whakapapa, because petrol, from which plastic is produced, comes from the Earth Mother Papatuanuku. They descend from her like pounamu, nephrite, one of the stones elevated by the Māori to the status of taonga or cultural treasure. George Nuku observes the rituals appropriate to the use of these synthetic materials just as he does when he is working with nephrite or local wood.

George Nuku has developed more than 50 large projects and has exhibited in several famous museums and art galleries around the world. In 2009 he participated in the New Zealand pavilion at the Venice Biennale. He now divides his life between France and New Zealand.

Roberta Colombo Dougoud,
Curator, Department of Oceania
at the Musée d'ethnographie de la Ville de Genève







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Plastic materials in the environment: FOEN publishes an overview of the situation

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Association pour la Sauvegarde du Léman

Association Net'Léman

Associaion J'aime ma Planète

Fondation Save Our Seas

Fondation Race for Water

Association SEA Plastics

George Nuku

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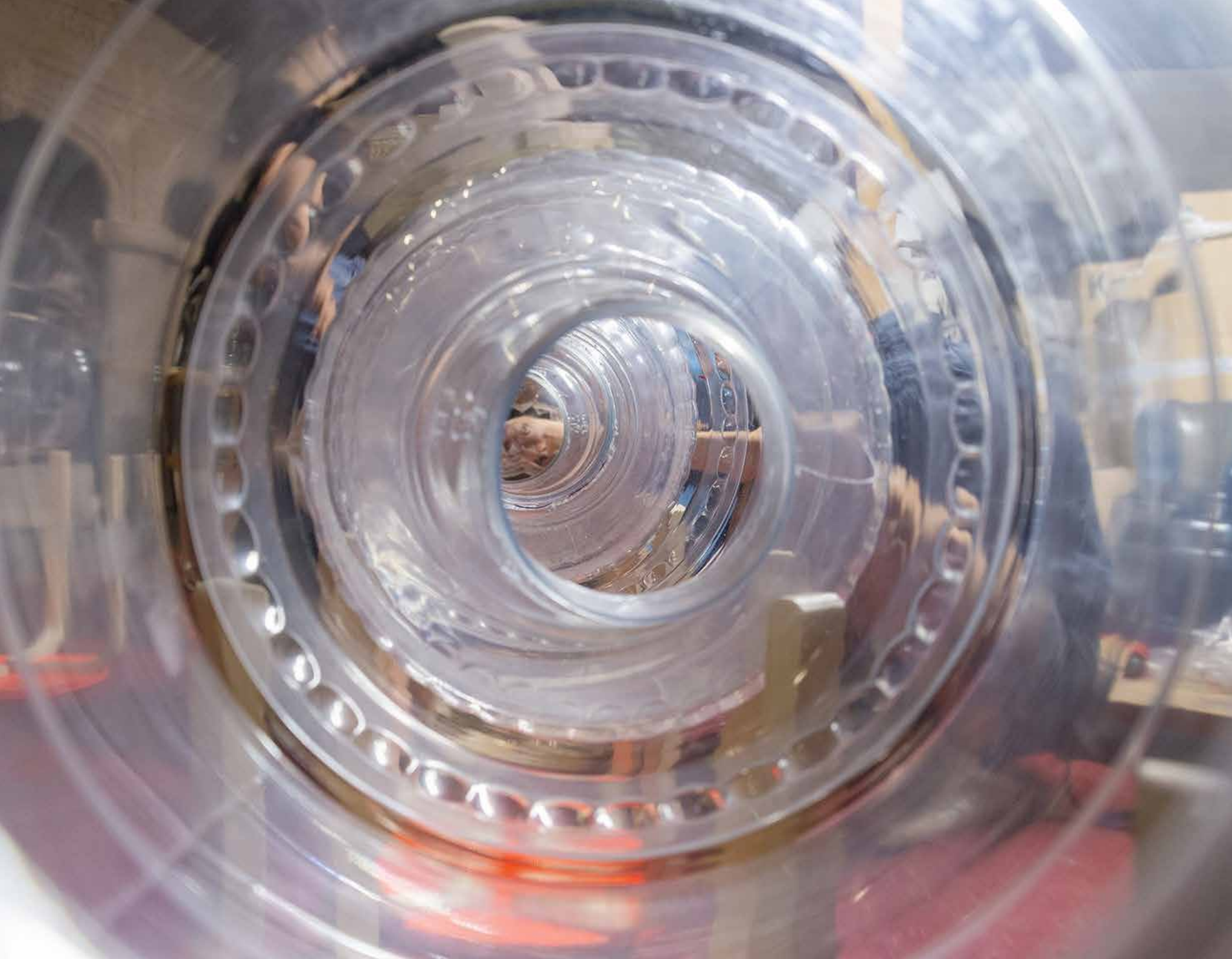
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Route de Malagnou 1
CH - 1208 Geneva
Tél: +41 (0)22 418 63 00
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Impressum

Authors	Christiane Kurth with the participation of the Save Our Seas Foundation, the Oceaneye Association and the Race for Water Foundation
Layout/illustration	Elise Gaud de Buck
Pictures	Philippe Wagneur, Christopher Vaughan-Jones, Michael Sholl, Peter Charaf
Proofreading	Corinne Charvet and Hervé Groscarret
Commissaire d'exposition	George Nuku
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