All Aboard Tara!

JOIN THE TARANAUTS AND DO YOUR BIT FOR THE OCEAN!

Puzzles, games and scientific experiments to do at home!

OCEAN AND CLIMATE – PLANKTON UP CLOSE
THE ASTONISHING WORLD OF CORAL – PLASTIC IN THE OCEANS
Welcome Aboard!

1 - SALOON
This is the living room, the largest space aboard. In here we eat meals and work, but it’s also a place to get together, relax and have fun.

2 - ENGINE ROOM
If there’s no wind to drive the boat along we can always fire up the engines. They are big and noisy and make the engine room the hottest place aboard. Poor old engineer!

3 - AFT DECK
This is where the scientists work. They collect water and organisms which they filter and turn into samples, ready for analysis.

4 - DRY LABORATORY
Thanks to all the machines in the lab the scientists can take photos of the plankton and measure water temperature, salinity and pH* throughout the trip.

5 - HEADS AND SHOWERS
When they have a shower crew members use environmentally friendly soap and shampoo to limit pollution. Even the loo paper is biodegradable and gets dropped into a special bin.

6 - FOREHOLD
Lots of equipment gets stowed in here, such as the emergency anchor, as well as the samples of plankton, seawater and coral collected by the scientists. A very important part of the forehold is the food store.

7 - WHEELHOUSE
This is the captain’s domain. It contains all the controls for driving the schooner and the VHF radio for talking to other boats.

8 - CABINS
Two beds per cabin, a bunk above and a bunk below. When it’s stormy be careful not to fall out of the top bunk!

* Acidity or alkalinity level

ID CARD
NAME - LAUNCHED
Tara – 1989
TYPE
centre-board schooner
LENGTH – BEAM
36 metres – 10 metres
DISPLACEMENT
130 tonnes
PURPOSE
research vessel
KEY FIGURES
11 expeditions undertaken by the Tara since 2003.
450,000 kilometres sailed by the Tara (equal to eight voyages around the world).
36,000 the number of coral samples collected during the Tara Pacific expedition.
40 nationalities of scientists have sailed on the Tara.

THE MISSION
Healthy oceans are essential for the future of our planet. The Tara enables scientists to sail across the world. Together they study oceans, marine animals and plants to better understand them and better protect them.

Find the answers!
A) What is the nautical name for a boat’s toilet?
B) What is the hull of the Tara made of?
C) How many expeditions has the Tara done since 2003?

ÉTIENNE’S EDITORIAL
I was lucky enough to discover the sea very early thanks to my grandfather and parents. They were passionate about the ocean and passed that on to me. And now it’s my turn because I’d like to share with you my passion for the beauty and mystery of these vast expanses – our heritage – of which so little is known and protected. Yes, despite its vastness, the Ocean is in danger. For the last fifteen years the scientists and team working with the Tara have been supporting research programmes that improve our knowledge of the world’s seas so we can better protect them.

Who’s on the Tara?
6 sailors including
1 captain,
1 cook,
1 correspondent,
7 scientists
and 1 artist.

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Scanner QR code with your smartphone or tablet to get more information, watch videos...
There’s a new one on every page!

See photos and videos of the Tara - bit.ly/mediathequephotostara
Take a virtual tour - bit.ly/visitevirtuelletara

© A.Deniaud / Tara Expeditions Foundation

ÉTIENNE, chairman of the Tara Ocean Foundation

Martin, captain of the Tara

Did you know?
The Tara is a “schooner” because her foremast (nearest the bow) and her mainmast (nearest the stern) are exactly the same height, a whopping twenty-seven metres!
The Great Tara Expeditions

2006-2008
TARA ARCTIC
For 507 days the Tara drifted around the North Pole in the Arctic ice pack. During their adventure the crew studied the atmosphere, the ice and the ocean.

2009-2013
TARA OCEANS
The Tara sailed around the world to make an inventory of drifting micro-organisms: plankton. Over 30,000 samples of animal and plant plankton were collected.

2014
TARA MEDITERRANEAN
The Tara looked at the microplastic littering the Mediterranean Sea. Ninety percent of pollution in the Med comes from the land.

2016-2018
TARA PACIFIC
The Tara studies the coral reefs of the Pacific Ocean. These reefs are home to a great diversity of marine species and currently under serious threat from climate warming.

Did you know?
Of all the water on our planet 97.4% of it is in the oceans. Polar glaciers contain exactly 1.9% of the water available on Earth. Rivers, lakes and other waterways account for a mere 0.01%!

Ocean and climate: inseparable friends!

The Ocean stores solar energy and regulates temperature. Thanks to the Ocean and its currents, heat circulates and spreads across the world. Without the Ocean it would be even colder at the poles and hotter at the Equator!

Ocean - sized water distributor

The Ocean recycles some of the CO2 and produces oxygen (O2)

Why is the Ocean so important?
Knowing the Ocean is all about understanding the future of our planet, and that’s the mission of the scientists aboard the Tara.

Find the answers!
1) What do we call the journey a raindrop makes around the world?
2) What does plankton at the bottom of the oceans become?

Ocean videos - bit.ly/lesvideosoceans

Discover all the expeditions - bit.ly/expeditionsstara
**The oceans are teeming with life!**

> Much of the ocean is unknown to us, we know less about it than the moon. So what do we know? The more we learn, the more we understand the importance of preserving its biodiversity.

**What is biodiversity?**

It’s the variety of all the living things, such as humans, plants, animals and even bacteria, that inhabit our world. We can look at it in a number of ways:

- Often we think of it in terms of species: fish, birds, crustaceans, and so on.
- We can also focus on the diversity within a particular species. For example, we humans are not all the same height and we have different colour hair and eyes.
- Finally, we can enlarge our viewpoint to include a particular ecosystem, perhaps a beach, a forest, a cold or warm sea...

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Plankton Up Close

> Tiny ocean creatures that make a gigantic difference!

A question for biologist Chris Bowler:

> What have you discovered about plankton thanks to the expedition Tara Oceans?

Thanks to the 35,000 samples collected during the expedition, and in particular those collected in the layer of water at the surface which sunlight can penetrate (the 'photic zone' extends to a depth of about 100 metres), we have discovered several hundreds of thousands of species of protists* and bacteria, and virus populations!

* Single cell organisms that are neither animal nor vegetable.

We studied how they interact with each other and how environmental conditions (currents, temperature) affect their lives. All these discoveries should help us understand how the ocean might change in the future!

What plankton do for our planet

Some basic facts about plankton

Plankton comprises all the organisms, both plants and animals, that live in seawater. They drift along with the Ocean’s currents. Animal plankton is called ‘zooplankton’ and plant plankton is called ‘phytoplankton’

PLANKTON IN PICTURES

Coral, a very unusual beast

Coral is a marine animal which lives in colonies and is mostly found in warm seas. It belongs to the Cnidaria family which also includes sea anemones and jellyfish. Coral builds a skeleton from calcium carbonate which develops into a reef.

The coral reef, an underwater oasis

Numerous marine animals live on and around a coral reef. Fish hide among its structures to escape a predator or lay their eggs. Coral supplies food for certain species. The reef protects the adjoining coast from sea swell and storm waves.

A new species of coral discovered during the expedition Tara Oceans!

Echinophyllia tarae – tarae refers to the Tara – is the name given to this coral species found in the Gambier Islands. It lives at a depth of between 5 and 20 metres.

Chris, biologist

© Tara Expeditions

1 - CORALS CLOSE UP © A. Amiel / Kahikai
2 - CORAL COLONY © L. Thiault
3 - CORAL FIELDS © L. Thiault
4 - ECHINOPHYLLIA TARAEE © F. Benzoni

Video of the Tara among the corals - bit.ly/taraoceanscorail

Plankton chronicles - bit.ly/chroniquesplanctons

Find the answers!

A) What does plant plankton produce?
B) What are all species of plankton have in common?
C) How many organisms does a liter of seawater contain?
D) Corals compete with other species, such as algae and sponges. They fight for space and favourable living conditions, in particular access to sunlight.

Find the answers!

A) What’s the name of the alga that lives in coral?
B) Where did the team of the Tara discover a new coral?

Eric, scientific director

Did you know?

The first living organisms to appear were plankton. Life on Earth started with them! One liter of seawater can contain up to a hundred billion organisms, such as viruses, bacteria, protists, and fish larvae.

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Coral competes with other species, such as algae and sponges. They fight for space and favourable living conditions, in particular access to sunlight.

Coral under threat!

Currently 72% of coral reefs are under threat from climate warming, ocean acidification, man-made pollution and overfishing.

Eric, scientific director

Plankton is the basis of the food chain

Some plankton, like diatoms, are at the bottom of the food chain. They are eaten by zooplankton, which in turn are eaten by larger fish. Zooplankton is important in the food chain of the oceans.

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The Crew of the Tara

CAPTAIN
Everyone must obey the skipper! In addition to sailing and maintaining the schooner, the captain is also responsible for keeping order aboard and ensuring the crew’s safety. Several captains take it in turns to command the Tara. You aren’t born a skipper, you become one!

SCIENTIFIC DIRECTOR
The director of the research team determines where the ship will carry out scientific work. He directs sampling operations and also takes part in processing the scientific work undertaken on the Tara.

ENGINEER
This mariner spends much of the expedition in the engine room. A ship’s engineer looks after the main engines and the auxiliaries which generate electricity for the systems aboard.

MANAGING DIRECTOR
Directing operations from the shore, the MD is in permanent contact with the captain and the scientific director to ensure the expedition goes according to plan.

ARTIST
Provide a fresh perspective on the expedition and the regions visited, that’s the artist’s job. Total immersion into the world of the Tara is a catalyst for creating, painting, sculpting...

COOK
Keeping the food store well-stocked and the crew’s bellies full is the cook’s concern. Good cuisine not only keeps everyone healthy it also maintains a happy atmosphere aboard!

SCIENCE MEDIATOR
Love science! That’s the message of the science mediator who acts as a bridge between scientists and schoolchildren from across the world. With simple words and fun activities, the mediator explains to classes the scientific work undertaken on the Tara.

EDUCATION OFFICER
Mission: bring the work and discoveries of the Tara to as many teachers, students and classrooms as possible.

SPECIAL CORRESPONDENT
Video, photo and text are the special correspondent’s tools for telling the story of every expedition. This information is distributed through the website of the Tara.

THE TEAM!

Did you know?

At night, the sailors take it in turns to look after the ship while the rest of the crew are sleeping. Each “watch” lasts 4 hours.

Find the answers!

A) For how many days did the Tara drift with the Arctic ice pack in 2006–2008?
B) Who directs land operations for the Tara?

On land or sea, plastic roams free

OCEAN OR PLASTIC SOUP?

Home to a multitude of plant and animal species, the Ocean is in recent years having to contend with an increasing population of… plastic! Man-made pollution is a big problem. Plastic waste now contaminates every sea in the world, indeed, the Tara even found some in the Arctic and the Antarctic! Since 2011 the Tara has been studying this type of pollution, in particular during the expedition Tara Mediterranean.

Plastic in the sea: the risks

RISK No. 1: Turtles, dolphins, whales, birds and other marine animals can mistake plastic waste for food and swallow it. Once in the stomach, items such as bags, lighters and cotton buds may cause serious health problems and even death.

RISK No. 2: As plastic drifts around the Ocean it absorbs pollutants like a sponge sucks in water. Plankton swallow these tiny fragments of plastic and, of course, any toxic compounds they might have picked up. When fish eat the plankton they too become contaminated. And who eats fish? We do!

RISK No. 3: Certain bacteria use plastic waste like miniature rafts and float away from where they originated. If they are carrying disease, they have the potential to contaminate marine species throughout the world.

Find the answers!

A) The Tara drifted with the Arctic ice pack for 507 days.
B) The MD manages the Tara.

COULD MARINE BACTERIA HELP US COMBAT PLASTIC POLLUTION?

Scientists have discovered that marine bacteria break down plastic. By eating the bacteria they turn the plastic into something else and, therefore, partially destroy it. However digesting, for example, a plastic bag takes bacteria 100 to 400 years. That’s much too slow!
Avoid buying water in plastic bottles and recycle as much as possible and reduce your reliance on plastic packaging by, for example, using a flask or a water jug!

Tell smokers not to drop their cigarette butts on the ground at the beach or even in town because they contain plastic filters and the rain can wash them into the Ocean. There are some really smart pocket ashtrays available!

Don’t flush plastic down the toilet because that route leads straight to the Ocean. There are lots of little plastic sticks floating in the sea which were once cotton buds that people dropped into the loo!

Clean up plastic from the beach. Not only is plastic dangerous for sea mammals, once it gets broken down into small pieces it can enter the food chain when fish eat it... and who eats the fish? We do!

Take part in group activities such as big beach-cleaning operations. Give it a try, you’ll see it’s really good fun working all together!

Plastic at sea: Why take action on land?

Because the wind carries plastic litter scattered in nature to the river

Because river water loaded with rubbish and pollutants flows into the sea

Because plastic thrown into the sea spreads out into the oceans

Because bad habits repeated millions of times have serious consequences

Because cleaning up the ocean is an impossible task: most pieces if plastic are smaller than a grain of rice!

Find the answers!

What do we call the special plastic-catcher net?

How many samples collected during the expedition Tara Mediterranean contained no plastic?

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You too can act to save the Earth and the Ocean!

> YOU CAN DO MANY THINGS TO HELP PROTECT OUR PLANET AND OUR OCEANS.

Here is a list of everyday actions you can do with family, friends or schoolmates which are beneficial for the Earth and the Ocean.

> AVOID TRAVELLING BY CAR AND USE YOUR BIKES, THE TRAIN OR YOUR FEET INSTEAD.

- Consume less water when you have a shower and use less energy by turning off unnecessary lights.
- Don’t drop litter, especially plastic.
- Sort your rubbish carefully to recycle as much as possible.
- Eat produce that is local and seasonal (strawberries in winter is a no-no) and, if possible, free of pesticides* (it’s better for your health).

This list is far from complete. Talk about these issues with your friends and family, and come up with new ideas. You can even send your ideas to Tara Expeditions!

contact@fondationtaraocean.org

POLITICIANS HAVE ENORMOUS RESPONSIBILITY AND MUST ACT!

> WHETHER THEY ARE LOCAL LEADERS OR HEADS OF STATE, ALL DECISION-MAKERS CAN DO THEIR BIT FOR THE PLANET. THEY CAN CREATE NEW LAWS AND DECIDE TO:

- Develop sustainable technologies that use non-polluting energy such as wind, sunlight and tides. For example, they can build wind turbines and run electric buses in town.
- Encourage sustainable agriculture by serving organic food in school canteens.
- Tax polluters so they clean up their act. Travelling by train should cost less than by plane.
- Build more recycling centres, and they create jobs too!
- Protect freshwater from pollution, including groundwater, and use less.
- Create green areas in cities.

If everybody did the right thing in their daily lives, the oceans would be safe. They would continue to keep the climate in balance and provide us with delicious food to eat. A healthy Ocean is the basis for a healthy planet!

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