AIDA 3

ONE OCEAN created by AIDA GREEN

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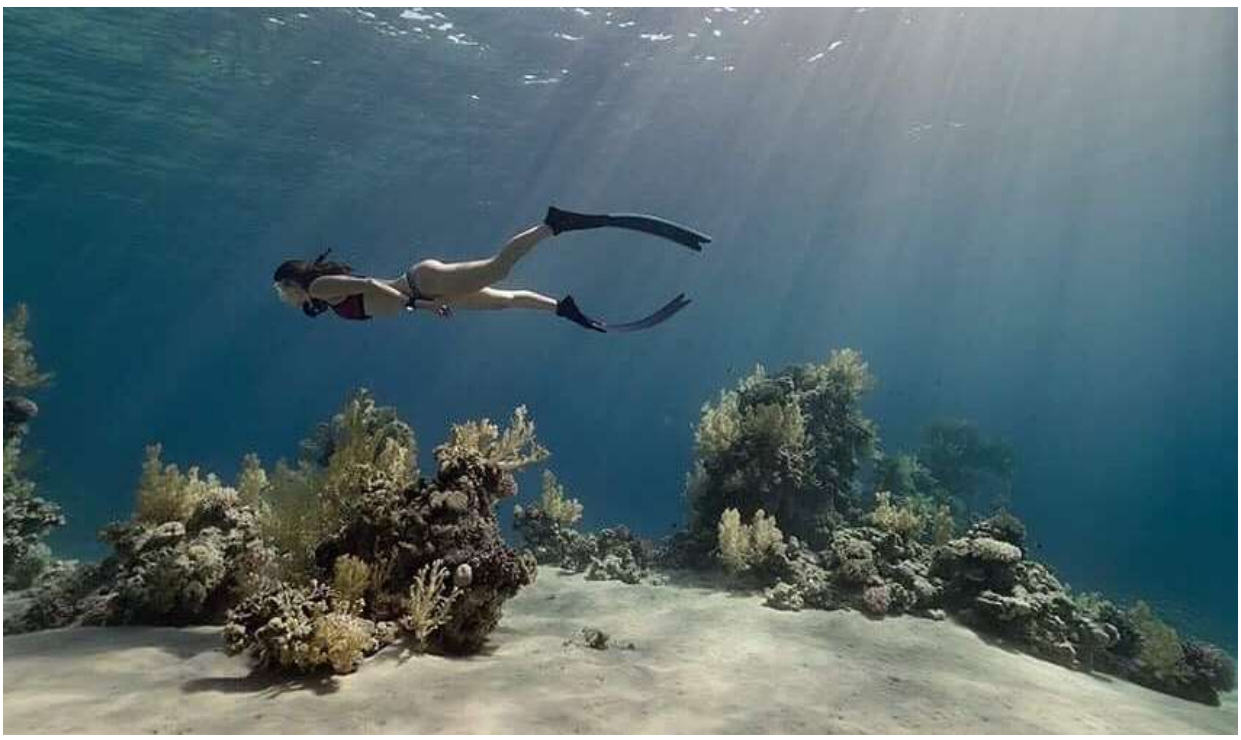


ONE OCEAN

As freedivers we are some of the first to witness the consequences of environmental changes that happen in the ocean.

AIDA Green encourages all free divers to be ambassadors of the ocean.

Please note, that when the word Ocean is used in this material, it encompasses the entire Earth's water systems such as seas, rivers and lakes.

The ocean is a crucial component of the global ecosystem.

It is heavily affected by human activities such as pollution, overfishing and tourism. Even though freediving is a gentle way to approach the ocean and marine life, our behaviour still has an impact.

This chapter builds further knowledge on top of the Rules of Behaviour from AIDA1 and AIDA2. The information presented are not only for the classroom, we are asking you to implement your environmental awareness and understanding of the marine environment into your diving, training and lifestyle, so that we can all take responsibility for the ocean's health.

STATE OF THE OCEAN

OCEAN POLLUTION

Enormous amounts of debris and pollutants end up in the ocean with severe consequences on all marine ecosystems. Among them scientists registered a generalized loss of biodiversity, widespread habitat deterioration, expansion of oxygen depletion zones, acidification, coral bleaching and extinction of certain species.

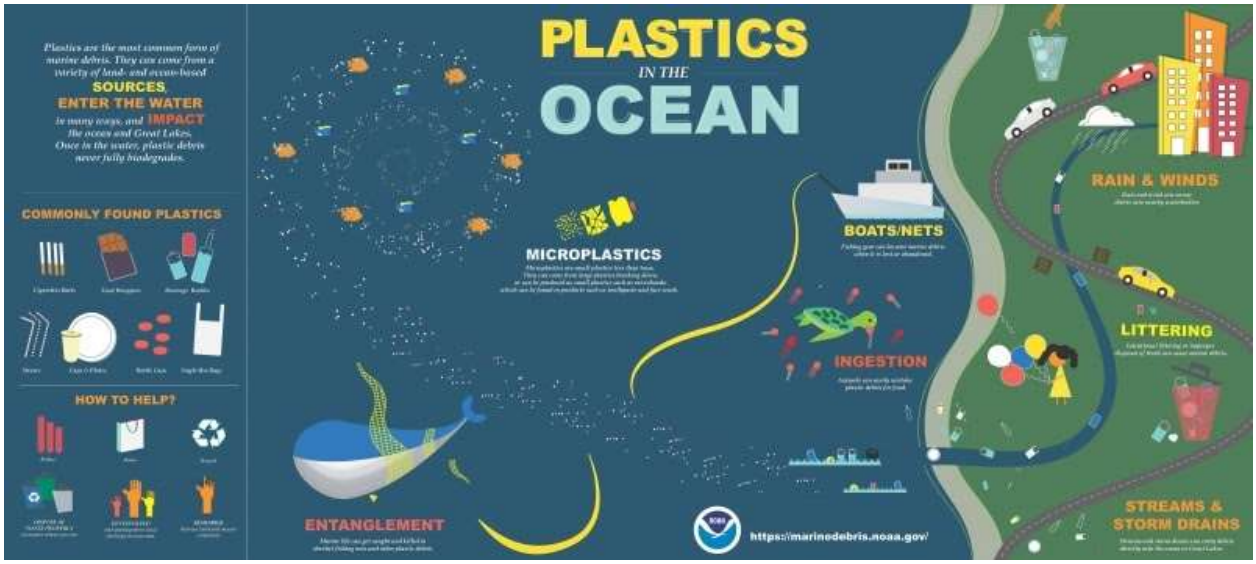
The main contributors to ocean pollution are:

- Legal and illegal industrial discharges
- Human activities on land (disposal of garbage and waste products, coastal development etc.).
- Animal farms discharges (causing the expansion of oxygen depletion zones in the ocean)
- Agrochemical runoffs (fertilizers, herbicides and pesticides).
- Plastic trash.
- Oil spills.
- Dumping of waste products/materials.
- Sewage.
- Particles in the air (molecules of waste products, gas emissions).
- Light pollution caused by coastal towns and cities. This disrupts natural rhythms of migration, mating or feeding times.
- Noise pollution. Human generated noise deriving from fracking, drilling, large ships engines and airgun seismic tests for oil search are increasing, modifying the underwater acoustic landscape. The impact on cetaceans and other marine animals is tremendous and it includes deafness, lack of orientation, disruption of hunting and mating patterns, stranding and death.

TRASH IN THE OCEAN

Plastic debris enters waterways and find their way into the ocean. Sometimes they are dumped directly into the ocean.

The plastic trash in our oceans is a consequence of the huge amount of plastic used throughout the world. Our consumption of plastic is continuously increasing and today our lives are surrounded by it.

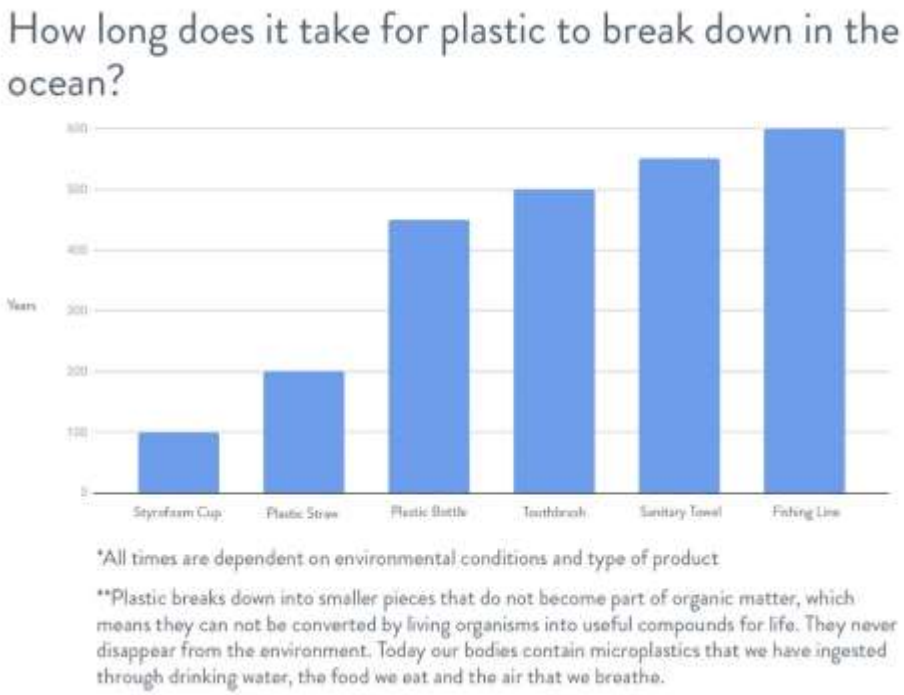


The overuse of plastic is partly due to the absence of pressure put onto industries and governments to find better alternatives. Without pressure from the global community, companies and governments may not feel responsible for their material choices.

There is a lack of infrastructure for processing plastic waste worldwide. Even in places where disposal facilities exist, intentional littering and improper disposal further complicate existing environmental problems.

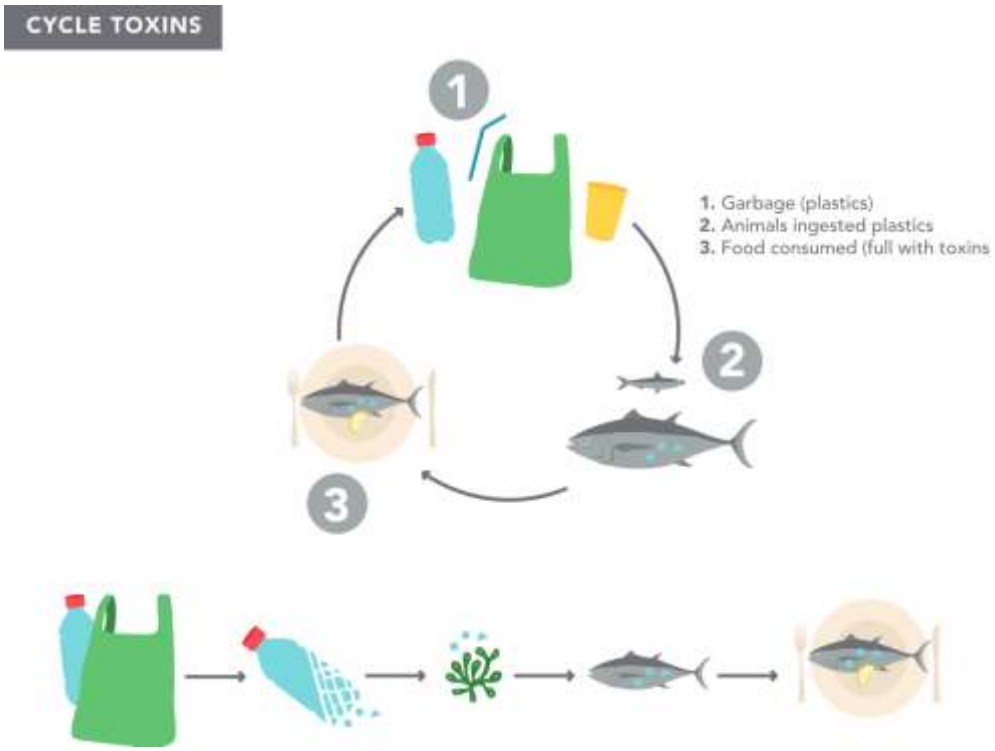
Ocean-based sources of plastic waste, such as ghost nets (abandoned fishing gear), pose a significant threat to the ocean, trapping both animals and debris.

Single-use plastics items (grocery bags, water bottles, straws, food containers, napkins, earbuds, cutlery and cups) remain in the environment, breaking down into microplastics and releasing toxins into the ecosystem.



Approximately 8 million metric tons of plastic items thrown away each year are not recycled. They end up in the ocean, polluting the water and killing marine life through ingestion or entanglement.

It is not only the environment that is affected: the consumption of marine organisms contaminated with plastics can cause serious health issues to humans as well. Marine organisms accumulate increasing levels of toxic substances as they move up the food chain. Approximately 50,000 particles of microplastic are consumed by each human per year. This number could be higher due to the small number of items analysed (according to a recent scientific study: Kieran D. Cox, Garth A. Covernton, Hailey L. Davies, John F. Dower, Francis Juanes & Sarah E. Dudas. Human Consumption of Microplastics (Environmental Science & Technology 2019)).



TOURISM

UNSUSTAINABLE TOURISM

Tourism provides employment and an economic benefit for the host country and the private sector. In areas of mass tourism it is difficult to control tourist business activities and their impact on the environment.

Tourism helps the development of a destination, but if the local community is not provided with jobs and employment, the profit remains with private companies and does not benefit the local society.

There can be serious implications for the natural ecosystem as well. Air quality, water, soil, vegetation and wildlife may all suffer as a result.

Mass tourism affects primarily:

- Beaches (e.g. pollution, damage to coral reefs, and disturbance to marine life).
- Cliff-sides (e.g. over-construction and trash).
- Degradation of the landscape (e.g. deforestation, trash pollution, occupation of territory for building). A location may lose its touristic appeal and therefore value, through over-tourism or over-use.
- Animals (e.g. destruction of habitats, expulsion of animals from their areas, food poisoning, changes to animal behaviour, extinction of species).
- Exploitation of natural resources (the use of resources may be unsustainable).

Recreational activities such as diving, snorkeling, freediving, swimming, boat trips, etc can damage coral reefs, marine animals and plants, if they are not carried out in a conscious and respectful way.

Unsustainable tourism is destroying tourism. Landscapes may lose their tourist value through misuse or overuse.

Tourism impacts local communities also at socio-cultural level. Big changes to how communities live cause displacement of indigenous populations and changes to the local culture.

Environmentally friendly tourism is the future of tourism. This involves education and interest in the local communities and in their culture, as well as a respectful interaction with the environment. Choose tour operators and businesses that focus on sustainable procedures as a way to contribute to the expansion of positive tourism.

Freedivers often travel to remote places where there may not be a highly developed understanding of conservation or protection of the environment. Therefore freedivers are asked to behave as role models for the local community: e.g. collecting trash, limiting purchase of single-use plastics, refraining from collecting anything from the ocean etc.

VALUE OF DIVING LOCALLY

Finding dive sites closer to your home can help to reduce your CO2 footprint. It also helps the development of local sites and tourism and reduces the strain on over-visited dive sites around the globe.

Your local dive site might be a beautiful diving spot with amazing wild nature. Discover it!.

ECO-FRIENDLY TRAVELLING

The planning of your travel starts from the moment you pack, and there are many things you can consider for your trip.

These are ways that you can be more environmentally conscious and still enjoy travelling:

- Ways of travelling: when possible, walk or ride a bicycle. For longer distances, try to find car-pooling methods or public transportation (public bus, subway, trams and trains are more eco friendly options than taking taxis or a short flight). When you can't reach your destination via public transport, use low emission options such as small, hybrid or electric cars. If flying is the only option, try to fly less frequently and fly shorter distances. Try to bring your own food on board, avoiding the plastic wrapping of the inflight meals. Chose flight companies that adopt carbon-offsetting to partially compensate the impact of your travel.
- When travelling by plane, search for carbon-offsetting flights.
- Pack light. A lighter luggage helps to reduce your carbon footprint: the lighter you travel, the less fuel is required, the lower are the CO_2 emissions.
- Refuse, reduce, reuse, recycle: the waste management in the destination country may not be ideal (non-existent, burning, burying, etc). The best option is to avoid unnecessary packaging. Travel with your own cutlery, containers, bags, straws, water bottles (there are loads of travel size options). Refuse single-use plastic items.
- Pick up trash whenever you see it, especially when you encounter it in the water. Dispose it correctly. Get involved in local activities like underwater and beach clean-ups (check for local Trash Heroes groups or activities, or create one yourself!).
- Refrain from buying souvenirs made out of marine life. Limit your seafood consumption in restaurants and ensure the source is sustainable (not from illegal or destructive fishing methods).
- Buy local and seasonal: consuming local food, vegetables, fruits, clothing and souvenirs. Local products have a smaller CO_2 footprint than products that have travelled far to get to where you are. By buying local you also support the local economy.
- Make an effort to consume less electricity. Whenever you leave your room, turn off lights and air conditioning and unplug electronics.
- Give back to the environment: research organizations, foundations and projects that are involved in the protection of the local environment (volunteer, donate, share information).

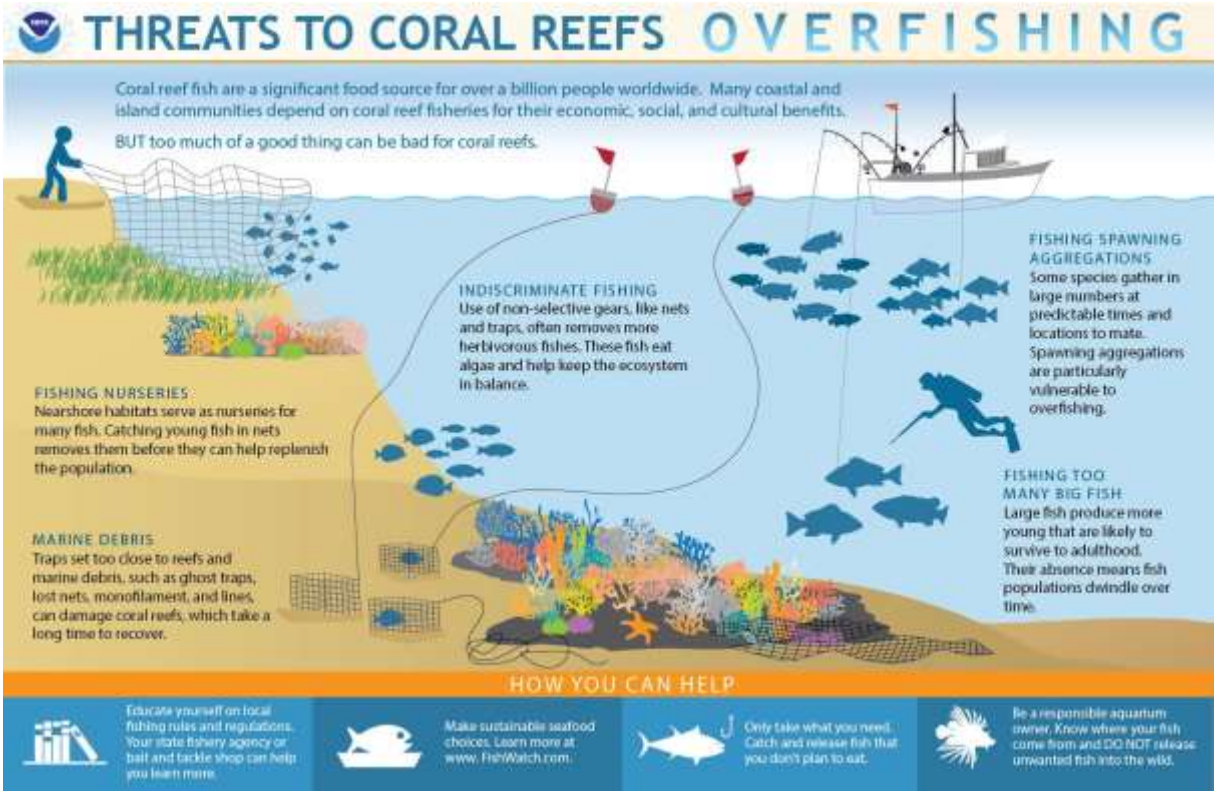
FISHING

OVERFISHING

Overfishing is when fish are caught at a faster rate than they can reproduce. Currently, as a consequence of massive overfishing carried out for several decades, the ocean ecosystem and the fish stocks are in a state of decline worldwide.

The United Nations Food and Agriculture Organisation (FAO) (2019), estimates that:

- 80% of the world’s fish stocks are fully exploited or overexploited (the fishery is being exploited above a level which is believed to be sustainable in the long term, with no potential room for further expansion and a high risk of stock depletion/collapse).
- 7% of fish stocks are depleted (exhaustion of the abundance of fish populations, catch amounts are well below historical levels, irrespective of the amount of fishing).
- 1% of fish stocks are recovering (catches that are increasing after having been depleted).



ILLEGAL FISHING

Illegal fishing is when fishing activities do not follow local or international laws and regulations.

SUSTAINABLE FISHERIES

These are fisheries that take into consideration: the species, the season, the gender and the size of what is being caught so to reduce the impact of fishing and to avoid the depletion of the local fish stocks.

The health status of the ocean is so critical and fragile that an immediate reduction of fish consumption is required. Sustainable wild-caught seafood exists but it can be difficult to find it. It is part of your task as a conscious consumer to look for sustainable options around you. Also, as a responsible consumer, if you know that shark fin soup, cetaceans or any other endangered species are being sold or served in fish markets, supermarkets or restaurants, please report this illegal activities to the authorities.

SUSTAINABILITY AND LEGALITY

Legal fishing is not necessarily a synonym of sustainable fishing. Fishing practices that are legal and regulated are often unsustainable. Legal commercial fishing is driven by financial interests, not by environmental interests. Around the world, fishing industries are often governed by rules that make the problem worse. Or there are no rules at all. This is specially true in areas where a scientific research on fish stocks has not been carried out properly.

THE IMPACT OF UNSUSTAINABLE FISHING

Unsustainable fishing on coral reefs leads to a reduction of reef species and harms the whole reef ecosystem. It causes physical damage to the coral reef, seagrass beds and marine habitats through the use of destructive fishing methods. Fishes themselves are core component of the reef ecosystems, and their removal compromises its delicate balance. Trade or commerce of endangered species leads often to the extinction of species. As the human population grows, the global demand for fish and seafood keeps increasing, leading most of fish stocks towards complete depletion.

The use of more powerful fishing technology, inadequate management and lack of law enforcement are destroying marine species and their habitats.

DESTRUCTIVE FISHING

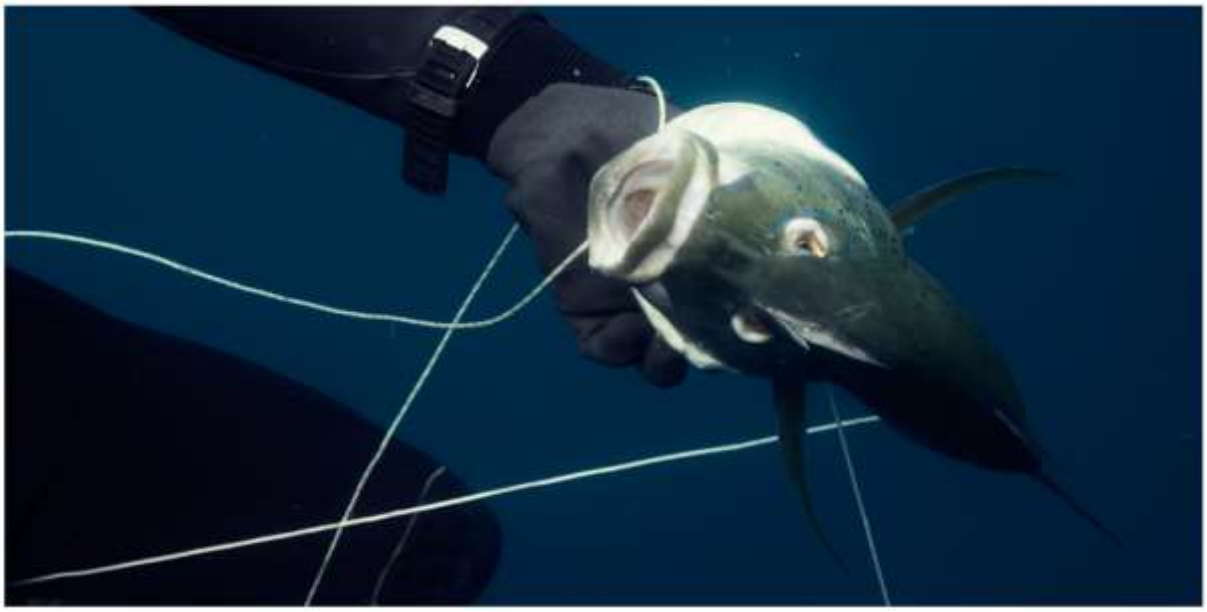
Several fishing practices harm the marine environment, destroying habitats, bringing endangered species towards extinction and creating unbalances in the marine ecosystems.

- **Trawling**: it is the most common fishing method, and one of the most destructive ones. A trawling boat or ship is dragging or pulling fishing nets through the water, normally at sea bed level. This kills and destroys anything in the path of the nets, including marine habitats, coral reefs and thousands of marine species living in the area. Despite its extreme harmful effects, it is legal and widely practised in most parts of the world.
- **Long line fishing**: The use of lines with hundreds or thousands of hooks attached. These lines are generally submerged for many hours. This fishing method is destructive as it generates bycatch and causes the entanglement of a large amount of non-targeted species (sharks, turtles, dolphins, whales).
- **Bycatch**: This is not a method of fishing, but a consequence of the most common fishing methods such as trawling, gillnets, longlines etc. Thousands of whales, dolphins, turtles, sharks, dugongs, seals and endangered species of fishes get caught and killed unintentionally every year while fishing other target species. Bycatch has no economic value so it is commonly thrown overboard. It is estimated that 300,000 of whales, dolphins and porpoises die every year from entanglement in fishing gear. Some estimates suggest that up to 40% of fish caught worldwide is bycatch. A great amount of bycatch is unobserved as it is caused by lost or abandoned fishing gear.

- **Ghost fishing**: Fishing gear that is lost or abandoned at sea (local or industrial fishing) is known as ghost nets. These abandoned and unused nets continue to trap fish and marine life, such as dolphins, turtles, sharks and whales. Ghost nets are estimated to form 46% of all ocean plastic.
- **Poison**: Sodium cyanide is poured into the water to stun fish without killing them. The fish float to the surface making them easy to catch. The major consequences are not only fish being poisoned; coral reefs and habitats are damaged and the surrounding water is contaminated.
- **Explosives**: Dynamite fishing is used to kill fish so they float to the surface, making them easy to catch. Explosions destroy everything in the surrounding area, especially coral reefs.

SPEARFISHING

Spearfishing is generally considered a sustainable and selective method of fishing. However, there is a grey area in this assumption. When spearfishing become a popular recreational activity practised by hundreds of people, it leads to devastating consequences. Even though the amount of fish caught is generally lower than industrial fishing, the fish targeted are often the largest and most productive of their species. Sometimes endangered species are caught, causing a quick decline in their numbers. In the Mediterranean Sea, especially along the Italian coastline, spearfishing caused the decimation of the grouper population and the disappearance from many habitats where they used to thrive. Only the implementation of Marine Protected Areas avoided the total extinction of a few species.



Big Game fishing (Catch and release as sport fishing) are creating wounds to the fish that could be fatal. Any duration of time for the fish out of the water, for example to be unhooked and photographed, stresses and can potentially kill them.

To ensure that you have fish to catch in the future and that the balance of the ecosystem is not compromised, please:

- Catch only what you need for your personal consumption.
- Avoid fishing in areas that are already overfished.

- Research which species, season and gender of the targeted fish are allowed to be fished, so to respect the natural life cycle and reproduction patterns.
- Respect the quantity allowed (bag limit) at all times.
- Be aware of the minimum or maximum size limit for the target species.
- Do not catch endangered species. Research the endangered species in your area.
- Be respectful to what you kill. Avoid hunting for trophy pictures.
- Remember, the ocean is already overfished. Shooting pictures of fishes can be more rewarding that shooting fishes, and it is far less destructive and more sustainable.

It is important to increase our awareness on the impact of fishing. Catching and consuming one particular species affects the balance of the whole ecosystem. Many species play a fundamental role in preserving the balance of the ecosystems in which they live. Large predators such as tuna, sharks, giant trevallies and giant groupers hunt small predators, controlling their number. If large predators are removed from the ocean, the small predators quickly increase in number decimating their preys, most of which are herbivorous fishes. These latter ones have a fundamental role in controlling the growth of algae in all marine ecosystems, so if they are hunted more intensively than normal, their numerical reduction cause algae overgrowth on corals and other reef building organisms, leading to the decay or disappearance of coral reefs and other delicate ecosystems.

How you can help:

- Inform yourself of local fishing rules and regulations.
- Make sustainable seafood choices (www.fishwatch.com)
- Only take what you need, consider the species, season and size of the fish.
- Be a role model, minimize your impact and share your awareness with other freedivers.
- Report any illegal activity.
- Observe the changes in the marine environment and provide a positive contribution to its preservation.

MARINE LIFE INTERACTION

Your interaction with marine life is critical to both its safety and yours. The recommended guidelines to follow whenever you are underwater are:

- Do not stand, touch or ride marine life: marine animals are wild and they don't enjoy being petted. You can easily injure them and yourself.
- Do not chase marine animals: Going after an animal generates stress and increases the risk of injuries to the animal and yourself. Be a cautious observant and keep your distance.
- Do not stand on the seabed: Animals and plants live on the seafloor (e.g. seagrass, stingrays, flounders, crustaceans and sea worms). Be careful not to stir up sand, (especially close to reefs or seagrass beds) or disturb animals with your long fins.
- Do not touch, step on or take any coral: corals are fragile living organisms, an intentional or accidental touch can destroy hundreds of years of growth. Mind your fins while freediving or snorkelling close to corals.

- Some coral are poisonous and can harm you. Animals hidden inside the coral can also be harmed through your touch and they can also harm you.
- Do not feed marine life: Human food is not adequate for animals and can lead to intoxication of the animal and the environment. Another serious consequence of feeding marine animals is the disruption of feeding cycles and changes in behaviour, leading to sickness or death and causing an imbalance in the marine ecosystem. The risk of feeding animals underwater is high on humans as well, especially when potentially aggressive animals may be present (e.g Barracuda or Shark).
- Do not leave trace: Don't abandon any litter into the ocean. If you see any garbage around try to take it and dispose of it properly later when on land. Having a bag/net with you, or on your buoy, will help you to collect as much trash as possible. (Be careful with sharp objects).
- Do not remove seashells from the ocean or beach: Even though seashells are small, their removal has important consequences. When sea shells are collected, beach erosion is increased and the abundance of calcium carbonate from recycled shells decreases (creating imbalances in the oceanic carbon cycle). Many animals depend on shells for food and shelter (crabs, small fish, algae, seagrass), so the removal of shells can reduce the biodiversity of an area.

ROLE MODEL THROUGH AWARENESS

Everyone is responsible for the care of the ocean. The ocean sustains life on Earth and humans shall live in sustainable ways so to preserve the ocean. Individual and collective actions are needed to effectively manage ocean resources for humans, animals and all living creatures.

It is our responsibility to stop the destruction of the ocean. By being aware of the problems and not contributing to them, we can be part of the solution by making our daily actions more ecologically conscious.

- Be mindful of your plastic consumption. Follow the “R’s” rule: refuse, reduce, reuse and recycle.
- Avoid activities that require the burning of fossil fuels.
- Use environmentally friendly methods of transport (public transport, carbon offsetting) where possible.
- Eat locally and seasonally. Reduce your consumption of meat, fish dairy and any other animal product; chose plant based alternatives.
- Reduce water pollution and runoff at home: when rinsing your freediving equipment, use a tank or bucket. If possible, rinse your gear while taking a shower (no longer than 2-3 minutes).
- Use a coral reef friendly sunscreen (titanium dioxide or non-nano zinc oxide). Use clothing/hats instead of sunscreens whenever it is possible.
- Think about what you add into the environment if donning your suit with soap or lubricant. Verify that the soap or lubricants you are using are biodegradable. Keep soap out of the ocean: the best solution is to put on your wetsuit directly in the sea or under the shower.
- For your diving equipment (wetsuit, rash guards etc.) choose brands that have environmentally friendly products and ask your favourite brand or sponsor to become

as eco-friendly as possible. Avoid plastic wrappings or minimize them as much as possible.

- Be a wise and responsible consumer. Maintain your gear in a good condition so to extend its life span and try to repair items before buying new ones. You can also buy second hand or ask yourself if a new item is necessary or not.
- Consume less, consume better. Be mindful of what and how much you consume in your everyday life.
- Choose ecotourism destinations, sustain environmental conservation project and promote the setup of Marine Protected Areas
- Promote the use of renewable energy sources, support political decisions that promote them.
- Make every dive a clean-up dive.

Be an ambassador of the ocean:

Do whatever is in your possibilities to protect it.

Share your knowledge and awareness with the others.

This material is made by

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KNOWLEDGE REVIEW A3

1. Why is there so much plastic in the ocean?

The overuse of plastic is partly due to our huge consumption of plastic as well as an absence of pressure put onto industries and governments to find better alternatives. Without pressure from the global community, companies and governments may not feel responsible for their material choices. There is a lack of infrastructure for processing plastics worldwide. Even in places where disposal facilities exist, intentional littering and improper disposal further complicate existing environmental problems.

2. Explain the negative consequences of mass tourism in the following areas:

- Beaches: pollution, damage on coral reefs, disturbance on marine life.
- Cliff-sides: over construction and trash.
- Degradation of the landscape: deforestation, trash pollution, occupation of territory for building.
- Animals: destruction of habitats, expulsion of animals from their natural habitat, changes in animal behaviour, extinction of species.
- Exploitation of natural resources: The usage of resources happens in a non sustainable way.

3. Ways to make travelling eco-friendly:

- Pack light.
- Ways of travelling: public transportation, low emission transportation, bicycle, flying less frequently. Watch out for the carbon dioxide emissions footprint.
- Refuse, reduce, reuse, recycle.
- Pick up trash.
- Do not buy souvenirs from marine life.
- Eat in restaurants with sustainable food sources.
- Buy local and seasonal.
- Reduce electricity usage.
- Get involved in marine conservation activities and support organizations and projects that take care of the ocean.

4. What is overfishing?

Overfishing is the action of catching fish faster than they can reproduce, i.e not allowing the fish stock to recover and grow in a healthy cycle.

5. Name impacts of unsustainable fishing:

- Physical damage to coral reefs.
- Reduction of fish stocks.
- Destruction of seagrass beds.
- Extinction of marine species.
- The catching and trading of endangered species.

6. What are the things to consider if you want to spearfish?

- Catch only what you need and never more than you can eat.
- Catch the correct species and gender.
- Respect the maximum quantity that you can legally catch within the season.
- Do not catch endangered species.

- Be aware of the minimum or maximum size that the species needs to be to make a catch sustainable.
- Be respectful to what you kill. Avoid hunting for trophy pictures.

7. Name guidelines for marine life interaction:
- Do not stand, touch or ride on marine life.
- Do not stand on the seafloor.
- Do not touch, step on or take corals.
- Do not feed marine life.
- Do not chase marine animals.
- Do not litter or leave garbage in the water - pick up litter and put it in the bin when back on land.
- Do not remove seashells from the ocean or beach.