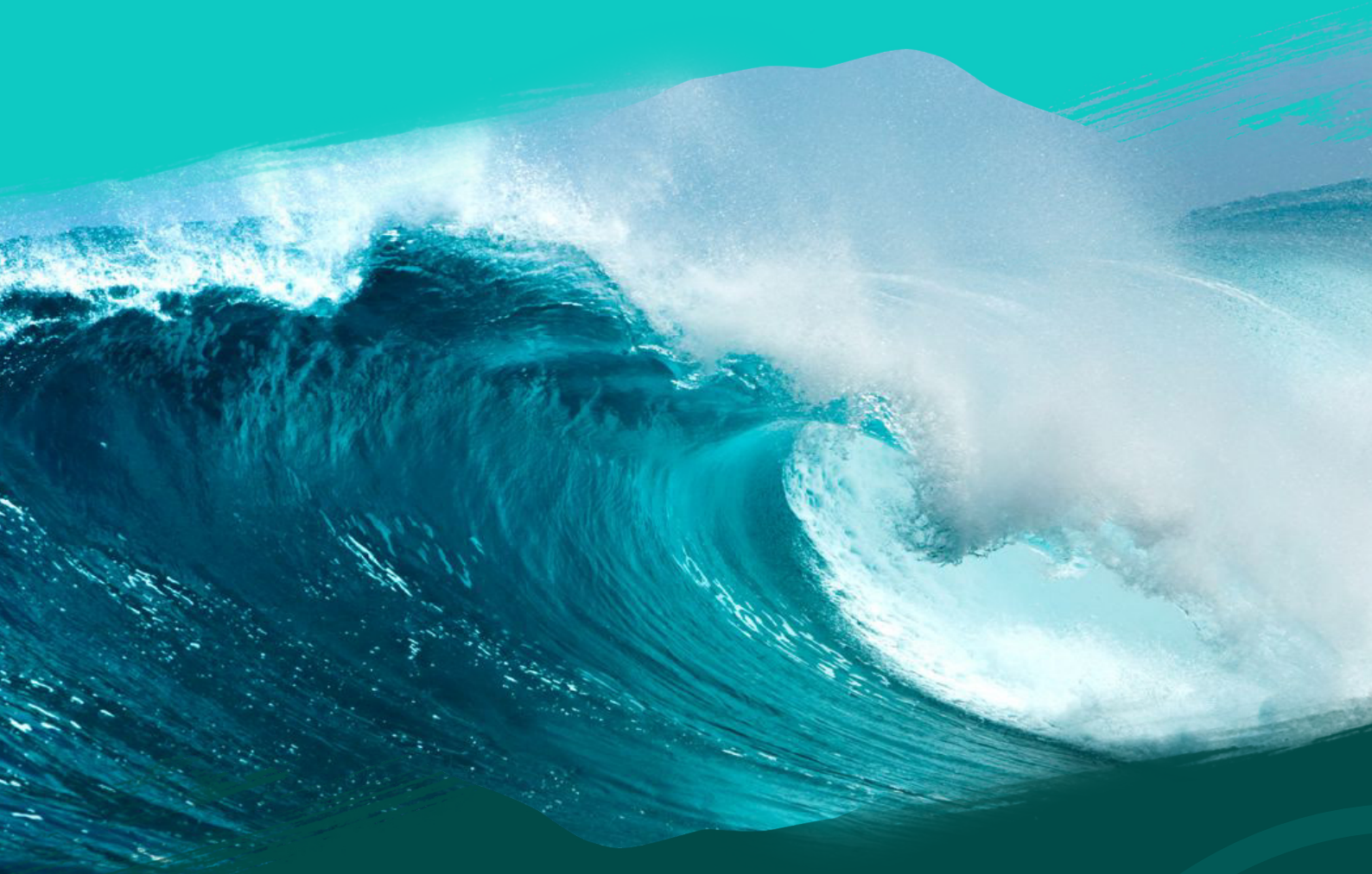


LET'S KEEP

Fish in the Sea



HUMAN ECOLOGY
PROJECT

THE PERSONAL IS PLANETARY

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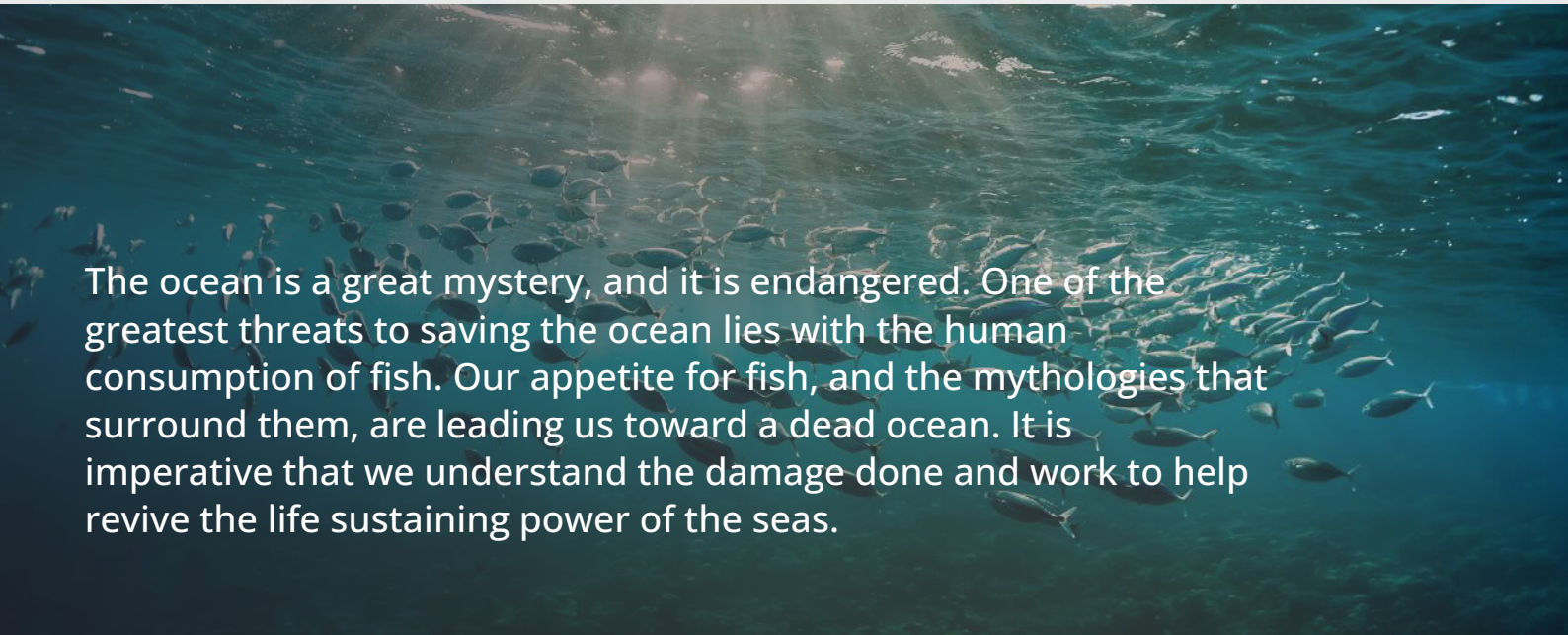


The Human Ecology Project is dedicated to illustrating the connections between human actions and their effects on individual health, society, animals, and environmental impact. The unifying factor is the food we eat.



This is a Human Ecology Project Workbook

We hope you can find a group of friends and watch the video together and discuss the issues presented in it. We have supplied some questions to get the ball rolling if you need them, and supplied a full text of the video with references to some studies and articles if you want to carry your studies deeper.



The ocean is a great mystery, and it is endangered. One of the greatest threats to saving the ocean lies with the human consumption of fish. Our appetite for fish, and the mythologies that surround them, are leading us toward a dead ocean. It is imperative that we understand the damage done and work to help revive the life sustaining power of the seas.

Remember: The Personal Is Planetary

WATCH THE VIDEO: [LET'S KEEP FISH IN THE SEA](https://www.youtube.com/watch?v=30X1ddGgBqQ&t=2s)

<https://www.youtube.com/watch?v=30X1ddGgBqQ&t=2s>

Is Fish a Healthy Food?

In the mad rush to feed the human craving for animal protein, fish have become a common substitute for animals raised on the land. Today we want to take a closer look at the results of this trend and the mentality behind our understanding of the ocean.

Our living planet is dominated by water. 70% of the earth's surface is covered by ocean but only 10% of that has been mapped or even seen by human eyes. The oceans and the life they contain are a great mystery to us. Our lack of understanding has not stopped us from dramatically changing the very composition of the seas. Today we are going to focus on fish. ¹

Of the 200,000 animals that live in the sea the largest population are the fish. They range in size from the giant whale sharks they can be up to 40 feet in length and weigh up to 21 tonnes to the smallest Midget Dwarf goby that is less than a 1/3 of an inch long.

The ocean is perhaps the most complex ecosystem on earth, and it is being drained of life by human activity. The damage being done will have catastrophic effects on all life on the planet. ^{2 3} The fate of fish is the foundation of the health of the oceans and all terrestrial life.

Since 1961, the growth in global fish consumption has grown faster than the population. ⁴ It has also exceeded the consumption of meat from all terrestrial animals, combined except for poultry.

The number of Ocean caught fish has levelled off since the mid-1990's due to the fact that fish stocks are being rapidly depleted. This has led to an increase to farmed fish which now makes up 50% of the world consumption. ⁵

This consumption is driven by several factors that are leading us down a path of environmental ruin that is even greater than the damage we do to the terrestrial environment.

¹ <https://www.sciencedaily.com/releases/2003/10/031024064333.htm>

² <https://www.nationalgeographic.org/encyclopedia/marine-ecosystems/>

³ <https://theconversation.com/why-ocean-pollution-is-a-clear-danger-to-humanhealth-152641>

⁴ <https://ourworldindata.org/fish-and-overfishing#global-fish-production>

⁵ <https://www.nature.com/articles/s41586-021-03308-6>

Health Concerns

In the more affluent countries of the world and among many health enthusiasts' fish and other seafoods have been touted as healthy alternatives to mammal meat and poultry and even as a health food. Self-described pescatarian diets have become the rage. They claim that it is the healthiest diet, nothing could be further from the truth.

The need for animal sourced protein has been disproven by hundreds of scientific studies.^{6 7} This is in addition to the fact that fish are one of the most polluted foods available.

The levels of chemical pollution in the ocean are critical. The pollution is comprised of industrial toxins, agricultural runoff, air pollution and consumer plastics.^{8 9} This is the sea that all aquatic life must live in and feed on.

We are using the oceans as a sewer and garbage dump and then eating the creatures who live in it. Fish such as salmon, mackerel, marlin, shark, swordfish, shark, and tuna all contain high levels of mercury and PCB's.¹⁰ There is a professional agreement that women who are pregnant or nursing or who plan to become pregnant within a year should avoid eating these fish. So should children younger than six.¹¹

If fish are that toxic, why would we want to eat them in any condition? Of growing concern is radioactive pollution, industrial toxins, agricultural run-off, and sewerage — this chemical cocktail contaminates the ocean food chain.¹² A situation with unimaginable consequences.



6 <https://www.nature.com/articles/s41598-020-78426-8>

7 <https://pubmed.ncbi.nlm.nih.gov/26853923/>

8 <https://www.nationalgeographic.com/environment/article/critical-issues-marine-pollution>

9 <https://springpowerandgas.us/how-do-we-pollute-9-types-of-ocean-pollution/>

10 <https://scripps.ucsd.edu/news/study-finds-toxic-pollutants-fish-across-worlds-oceans>

11 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2954077/>

12 https://e360.yale.edu/features/radioactivity_in_the_ocean_diluted_but_far_from_harmless



Fish & Fats

Regarding the proposed health benefits of fish on cholesterol, those attempting to lower their cholesterol might like to know that three ounces of shrimp contains over twice the amount of cholesterol as the same serving as a T-bone steak. Between 15 and 30% of the fat in fish is saturated depending on species and over 50% of the calories in salmon comes from fat.¹³

The Omega 3 fats, so prized in some dietary regimes, fail to mention that the vegetable sources are richer in alpha-linolenic acid, the only essential omega-3 that our bodies need.¹⁴ These healthy fats can be found in chia seeds, walnuts, soybeans, greens such as kale, broccoli, and Brussels sprouts as well as sea vegetables.

13 <https://www.ucsfhealth.org/education/cholesterol-content-of-foods>

14 <https://www.pcrm.org/good-nutrition/nutrition-information/omega-3>

Fish & the Environment

Many good people who are concerned about the health of the environment choose to eat fish. They base their choice on the belief that fishing causes less harm than other animal sourced foods — they are mistaken. In our hunger for fish, we are destroying the oceans of the world.

Without healthy oceans we die.

Take three deep breaths, consider this — two of those breaths came from the ocean one from the forests and other land plants.¹⁵ We always talk about the forests as the producers of the air we breathe but it is the oceans that are the greatest source of oxygen as well as taking in the most CO2.

The damage done by the fishing industry is a perfect example of the ripple effects of human thoughtlessness.

¹⁵ <https://oceanservice.noaa.gov/facts/ocean-oxygen.html>

Super-trawling factory ships scoop up every living organism from the ocean floor in extremely deep water. They have become widespread across the world. These ships can pull in up to 250 tons of fish every time they release their nets.¹⁶ 40% of the catch, which is thrown back into the sea, are dead.^{17 18}

95% of global ocean damage results from bottom trawling.¹⁹ This causes irreversible harm to deep-sea fish stocks. Many experts predict the oceans will be fishless by 2048.²⁰

Every year, one-fifth of the world's annual wild catch — are dried, pressed, and ground into oil and meal. The majority of this is then fed to other fish and crustaceans raised in fish farms.²¹

"Our past, our present, and whatever remains of our future, absolutely depend on what we do now."

Sylvia Earle, Oceanographer

16 <https://greennews.ie/the-worlds-two-largest-supertrawlers-spotted-fishing-off-the-west-coast/>

17 <https://ocean.si.edu/human-connections/seafood/demersal-or-bottom-trawl>

18 https://assets.wwf.org.uk/downloads/bycatch_paper.pdf

19 <https://globalfishingwatch.org/research/the-overlooked-impact-of-bottom-trawling/>

20 <https://medium.com/age-of-awareness/we-could-see-fishless-oceans-by-2048-9a2ba269887b>

21 <https://news.mongabay.com/2019/12/catching-fish-to-feed-fish-report-details-unsustainable-fishmeal-and-oil-industry/>

Killing the Ocean

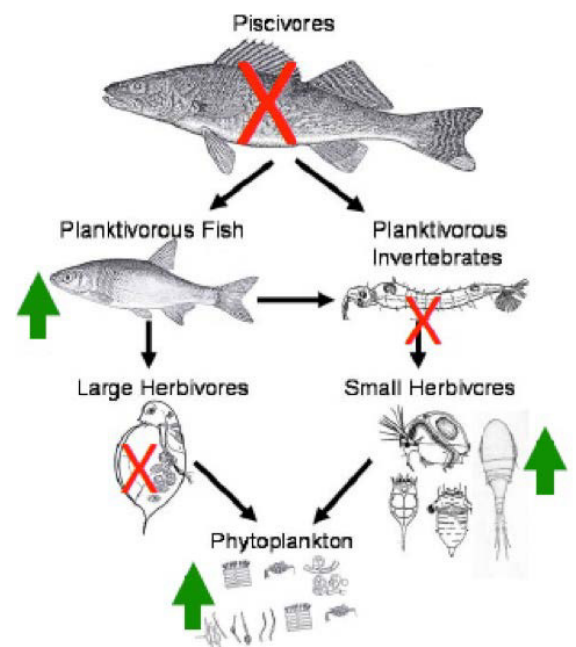


Fishing disrupts food webs by targeting specific wild predator species such as salmon, cod, sword fish and tuna which are in high demand.²² These predators sit at the top of the food chain which means that when their population is dramatically reduced it triggers a trophic cascade.

Fish below the predators in the food chain, over breed and cull the fish below them, the fish that would normally consume zooplankton and small fish who eventually consume the phytoplankton.

All life in the sea is dependent on these small phytoplankton.²³ It is these tiny organisms and the seaweeds that take up CO₂ and release oxygen. They serve as the foundation of the ocean's food chain.

The oxygen production in the ocean through marine plants has dropped significantly and is a threat to all life both on land and sea. Phytoplankton has been reduced 40% since 1950.²⁴ They are killed off by toxic waste, and the indirect damage of the fishing industry.



22 <https://www.worldatlas.com/articles/most-popular-seafood-products-in-the-united-states.html>

23 <https://oceanconservancy.org/blog/2019/08/09/plankton-small-organism-big-role/>

24 <https://www.scientificamerican.com/article/phytoplankton-population/>



What are the fish feeling?

As with many of our planet's environmental features we have tended to view the oceans of the world and the life within it through the lens of our economy. We have placed a price on the life within the sea and the minerals beneath it but have not considered the cost. The cost is the wellbeing of future generations. We have also ignored the damage we do to a whole world we do not understand and the sentient lives we destroy. Fish and sea mammals are social creatures. They recognize each other and communicate through sound.²⁵ The creatures of the sea constantly hold communications with their kind.²⁶ We are aware of the songs of the whales,²⁷ but the oceans are a symphony of sound.

Fish can remember past social interactions that they've had with other fish, and they show affection by rubbing against each other.^{28,29} They display curiosity and are interested in new objects introduced in their environment.

Fish have a very complex nervous system and react to painful stimuli the way all animals do — their breathing rate increases, their muscles contract, and they try to escape danger and fight to the death.

Those who fish for sport, look forward to the fish fighting for its life, it is the thrill of the catch. The battle between life and death. Once caught, fish die of asphyxiation. It is the equivalent of a human drowning.

25 <https://www.itsafishthing.com/how-do-fish-communicate/>

26 <https://www.scienceabc.com/nature/animals/how-do-fish-communicate-with-each-other.html>

27 <https://ali.fish/blog/symphonies-of-the-sea>

28 <https://www.cam.ac.uk/research/news/memory-like-a-fish>

29 <https://www.pbs.org/wgbh/nova/article/fish-have-feelings-too/>

Fish Fams

Because of the dwindling stocks of ocean fish, fish farming has grown rapidly all over the world. Driven by the myth of animal protein requirements, it is a major growth industry. Soon it will outproduce poultry production because it is cheaper.

Fish are the most efficient animal to produce for the kill. Fish like salmon can produce 1 kilo of food for every one and half kilos of feed, compared with chickens that need 1.9 kilos of feed, or beef that requires 8 kilos of feed.³⁰ The factory farms of the future are here, and they are fish farms.³¹

On these farms, fish spend their whole lives (up to two years) confined in tightly packed spaces. The water can become toxic, and filled with antibiotics, pesticides, parasites, and faeces.³²

A two-acre fish farm can produce as much waste as a town of 10,000 people³³

30 <https://iopscience.iop.org/article/10.1088/1748-9326/aaa273/meta>

31 <https://www.aquaculturenorthamerica.com/farm-raised-salmon-is-greener-than-chicken-beef-1311/>

32 <https://sentientmedia.org/fish-farming/>

33 <https://www.surgeactivism.org/fishandtheenvironment>



Fish & Slaves

The worst kind of modern slavery operates in the Indonesian fishing industry.

Cambodian and Burmese men are captured to work on the fishing fleets that scour the Indonesian waters. The Thai government has failed to control these fleets, where men are often chained to the boats and can be sold from ship to ship.

34

The Nestlé Corporation admitted that it was difficult to control fish sources due to multiple ports and the fishing vessels operating in international waters. Much of the fish product produced through this human misery is used in cat food. Even our pets can have slaves.^{35 36}

An investigation by the Guardian newspaper called attention to shrimp boats running out of Thailand. One-third of all shrimp imported into America comes from Thailand. We do love cheap shrimp. A six-month investigation found that suppliers to four of the world's largest global retailers — Walmart, Costco, Carrefour, and Tesco — were selling shrimp caught on slave boats. These boats scoop up huge catches of small and infant fish and inedible species to grind into meal and feed to farmed shrimp.³⁷

34 <https://www.theglobeandmail.com/news/world/men-forced-to-work-as-slaves-to-catch-seafood-for-global-supply/article23609283/>

35 <https://www.nytimes.com/2015/07/27/world/outlaw-ocean-thailand-fishing-sea-slaves-pets.html>

36 <https://theworld.org/stories/2016-12-30/fish-caught-slaves-may-be-tainting-your-cat-food>

37 <https://thefishsite.com/articles/australian-cats-eat-double-the-south-east-trawlcatch-1>

Our treatment of the oceans and our attack on the non-human lives we share the planet with always ends badly. If we are interested in creating a peaceful and healthy planet we need to think more clearly about our actions.

Food, along with air and water is our biological link to the planet. Our choices are threatening all life and we must change our habits before it is too late, and **TIME IS RUNNING OUT.**

Please stop eating all non-human animals
living on the land and in the sea. It
is the right thing to do. And you can do it now.
No need to cut back or slowly
withdraw — simply stop.
You will be rewarded with better health as
well as the knowledge that you are
daily working toward a healthy world.

Possible Discussion Topics

- 1. Is fish really needed in the human diet?**
- 2. Why do most people think that fish is a healthy option?**
- 3. Why are people resistant to buying organic food?**
- 4. Would more people avoid fish if they understood the trophic cascade?**
- 5. How best could I communicate the idea of avoiding fish in the diet?**
- 6. Do you think that fish really are sentient?**

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