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Letter to society: what are we doing to the environment that sustains us?

Carta à sociedade: O que estamos fazendo com o meio ambiente que nos sustenta?

Carta a la sociedad: ¿Qué estamos haciendo con el medio ambiente que nos sostiene?

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Abstract
In recent decades, attention has increasingly focused on the impact of human disturbances on the degradation of natural ecosystems, primarily due to the need to "supply" food, housing, and consumer goods for the human population. Human activities have intensified the effects of climate change, which are considered the main drivers of biodiversity loss, economic, and social damage. Thus, it can be argued that the capitalist system, based on fossil fuels and the forest resources exploitation, is chiefly responsible for the current ecological crisis. This “document” aimed to present a letter to society about what we are doing to our ecosystems, serving as a warning for the existence of our specie. The methodology used in the preparation of the study was a narrative literature review.
Keywords: Ecology; Ecosocialism; Climate changes; Human disturbances; Biodiversity loss.

Resumo
Nas últimas décadas, tem crescido a atenção cada vez mais nos impactos das atividades humanas na degradação dos ecossistemas naturais, principalmente devido à necessidade de "suprir" alimentos, moradia e bens de consumo para a população humana. As atividades humanas têm intensificado os efeitos das mudanças climáticas, consideradas os principais motores da perda de biodiversidade, danos econômicos e sociais. Assim, pode-se argumentar que o sistema capitalista, baseado em combustíveis fósseis e na exploração dos recursos florestais, é o principal responsável pela atual crise ecológica. Com isso em mente, o objetivo deste “documento” é apresentar uma carta à sociedade sobre o que estamos fazendo com nossos ecossistemas, servindo como um alerta para a existência da nossa espécie. A metodologia utilizada para elaboração do presente estudo foi a da revisão bibliográfica narrativa.
Palavras-chave: Ecologia; Ecossocialismo; Mudanças climáticas; Perturbações antrópicas; Perda de biodiversidade.

Resumen
En las últimas décadas, se ha prestado cada vez más atención a los impactos de las actividades humanas en la degradación de los ecosistemas naturales, principalmente debido a la necesidad de "suministro" de alimentos, vivienda y bienes de consumo para la población humana. Las actividades humanas han intensificado los efectos del cambio climático, considerados los principales impulsores de la pérdida de biodiversidad y de los daños económicos y sociales. Por tanto, se puede argumentar que el sistema capitalista, basado en los combustibles fósiles y la explotación de los recursos forestales, es el principal responsable de la actual crisis ecológica. Teniendo esto en cuenta, el objetivo de este “documento” es presentar una carta a la sociedad sobre lo que estamos haciendo con nuestros ecosistemas, sirviendo de alerta sobre la existencia de nuestra especie. La metodología utilizada para elaborar este estudio fue una revisión bibliográfica narrativa.
Palabras clave: Ecología; Ecosocialismo; Cambio climatico; Perturbaciones antropogénicas; Pérdida de biodiversidad.

1. Introduction

In recent decades, increasing attention has been given to the effects of human disturbances on the degradation of natural ecosystems. Primarily driven by the need to supply food and housing for a human population growing at ever-higher rates, natural vegetation areas, especially tropical rainforests, have been converted into other land uses, with habitat loss and

fragmentation now considered the main causes of biodiversity loss and the degradation of ecosystem functions and services (Wright, 2005). In this context of human-modified landscapes, habitat reduction, isolation of remnant areas, and microclimatic changes (temperature, air and soil humidity) (Laurance et al., 2011), along with changes in light availability and wind regimes (Laurance & Curran, 2008), have been reported as responsible for limiting the distribution and/or reducing populations of species such as large mammals (Peres & Palacios, 2007), understory birds (Lees & Peres, 2006), shade-tolerant plants (Gao & Schwilk, 2008), emergent canopy plants (Oliveira, Grillo & Tabarelli, 2004), and plants dependent on vertebrates for pollination (Girão et al., 2007) and seed dispersal (Camargo et al., 2020). Conversely, species and/or groups that are adapted to disturbances, such as pioneer plant species (Tabarelli et al., 2012), become increasingly dominant in landscapes human-modified landscapes. As a result, only a subset of species originally from the ecosystem is likely to withstand the new environmental conditions imposed by human disturbances, leading to biotas that are more homogeneous in taxonomic, phylogenetic, and functional terms (Santos et al., 2010).

As we can see, ecosystems are increasingly exposed to human disturbances driven by two major structuring forces: i) changes in land-use dynamics, primarily the conversion of natural landscapes into anthropogenic ones, and ii) global climate change (Hobbs et al., 2006). The effects of climate change tend to be more severe in regions with drier, more seasonal climates (Nobre & Borma, 2009). Models on the impact of climate change on the resilience of various ecosystems worldwide indicate that lower tree density increases the likelihood of ecosystems experiencing a higher occurrence of open areas (Hirota et al., 2011).

The 2018 IPCC reports emphasize that climate change is progressing rapidly, with average global temperatures already 1.1°C higher than pre-industrial levels. If this continues, we could face catastrophic consequences, particularly for vulnerable ecosystems and communities. As humanity, we must aim to develop actions in relation to the following themes: i) Temperature Rise - if immediate action isn't taken, global temperatures could exceed the critical threshold of 1.5°C above pre-industrial levels by the early 2030s, leading to more severe impacts like extreme heat, wildfires, and storms; ii) Climate-Driven Risks - rising temperatures will exacerbate food and water insecurity, especially in regions already facing challenges. Increased warming combined with other stressors (such as conflicts or pandemics) makes these risks even more difficult to manage; iii) Worsening Droughts - in areas with dry, seasonal climates, such as parts of Africa and South America, the effects of climate change are expected to be particularly severe. Reduced tree density and increased open areas are predicted for ecosystems like the Amazon, affecting biodiversity and climate resilience; and iv) Urgent Need for Emissions Reductions - to avoid crossing the 1.5°C threshold, rapid and deep reductions in greenhouse gas emissions are essential across all sectors by 2030. Transitioning to clean energy, improving air quality, and promoting climate-resilient development are crucial strategies.

The environmental issues often associated with climate change include the proliferation of heat waves, wildfires, and cyclones, as well as earthquakes and tsunamis, the increase in pollution, the accumulation of waste in the oceans, biodiversity loss, water scarcity, deforestation, among others. With so many issues being raised day after day in newspaper pages, it is not surprising that a portion of the population develops climate and environmental-related anxiety, known as eco-anxiety or climate anxiety (Pihkala et al., 2022). As we can see, in addition to the environmental problems related to climate change, there are also economic and psychological consequences for society. It is worth noting that most terrestrial tropical biotas are already or will likely be comprised of a set of human-modified landscapes exposed to climate change. It is within these landscapes that a significant portion of global socio-biodiversity still resides (Cassol & Sellitto, 2020).

Given this scenario, we can assume that capitalism system, driven and spread since the Industrial Revolution, founded on fossil fuels and the rampant exploitation of natural resources, is the main actor in the current ecological crisis, caused by human activities within a capitalist society. The worsening of climate change stems, above all, from the insatiable pursuit of wealth accumulation concentrated in the hands of a minority, the waste of resources, excessive consumption, and the

production of goods already destined for obsolescence upon entering the market (Löwy, 2021). All of this is driving our planet toward an ecological catastrophe of great magnitude, and if nothing is done, the changes in ecosystems and the global climate will become irreversible, with consequences for ALL living organisms on Earth. Here, we emphasize the word "all" to highlight that we, the human species (*Homo sapiens*), are part of the ecosystem, and our actions may lead to our extinction. Thus, this "document" aimed to present to society a letter about what we are doing to our ecosystems, serving as a wake-up call for our species.

2. Methodology

This study is a qualitative, reflective research supported by a literature review (Pereira et al., 2018). A narrative literature review (Rother, 2007; Snyder, 2019; Casarin et al., 2020) was conducted using the databases Google Scholar (https://scholar.google.com.br/?hl=pt) and Web of Science (https://www.webofscience.com). The following keywords were used: Ecosocialism, environment, human disturbances, capitalism, biodiversity, and ecosystems. For this qualitative study, articles were selected using the method of Thematic Content Analysis. In this context, content analysis is understood as a set of techniques for "communication analysis, which aims to obtain, through systematic and objective procedures for describing the content of messages, indicators (quantitative or not) that allow inferences about the conditions of production/reception (inferred variables) of these messages" (Bardin, 2004). It is seen as a set of methodological tools, constantly being improved, that aims to analyse different types of content, whether verbal or non-verbal, through a systematization of methods employed in data analysis. The Content Analysis research technique is structured into three phases: 1) pre-analysis; 2) material exploration, categorization, or coding; 3) treatment of results, inferences, and interpretation. The validity of the research findings results from an internal and systematic coherence between these phases, where the rigor in organizing the investigation prevents ambiguities and serves as a foundational premise (Bardin, 2011). After the analyses a compilation of key papers to prepare the letter.

3. Results and Discussion

Prologue

We are living in decisive times. The planet, once abundant and generous, now cries out for help. The landscapes that once inspired generations with their beauty now bear the deep scars of a system that prioritizes profit over life (Stuart et al., 2020, Löwy, 2021). The forests, rivers, oceans, and even the atmosphere call for justice, for a collective awakening that can reverse the course of destruction we, as a society, have imposed on the Earth. This letter is not just a plea. It is a call to action, to responsibility, and to change. We can no longer turn a blind eye to the ecological crisis surrounding us or to the role: we have played in its origin. The time to act is now. We must reassess our priorities, rethink our practices, and strive for a future where harmony between humanity and nature is possible. What is at stake is not only the well-being of future generations, but the very continuity of life as we know it. May this letter be the beginning of a sincere and transformative dialogue. May we heed the Earth's call and, forge a new path forward.

Letter

The past few years have shown current generations the significant impacts humans, embedded within a complex ecological web, can have on the world and their species. We are living at the peak of technological development, that happened in past centuries, we have developed sciences, technologies, and habits that have completely transformed how we perceive ourselves, and how we eat, travel, interact, think, and live. The Earth has never housed so many human beings living in its

most remote corners, with life expectancy steadily rising (Folke et al., 2021). Because of this significant population growth, space becomes smaller, the demand for food grows exponentially, and the production of waste has reached unprecedented levels. For many years, the natural resources so vital to our survival and quality of life seemed permanently available. However, their indiscriminate use has led to consequences that we now face: scarcity of drinking water in various regions, extinction of plant species (exploited for timber, dyes, and oils), and open wounds on Earth due to intensive mining and natural gas extraction, among others (Wang & Azam, 2024).

The uncontrolled extraction of resources, the relentless production of waste, the intense greenhouse gas emissions from industries, automobiles, and wildfires, along with deforestation for urban expansion and livestock farming, have led to the most aggressive consequence of all (for the environment and for us): climate change. What was once referred to as "global warming" now carries a new name because we have realized it is not just the warming of the atmosphere, but a complex set of changes in the meteorological dynamics of the globe. Rising temperatures, warming of the atmosphere and bodies of water (oceans, lakes, rivers), glacier melting, shifts in air mass movement, increased storms, hurricanes, floods, tsunamis, and rising sea levels—all of these phenomena constitute climate change (Mishra, 2024).

Some person may argue that climate change is a natural phenomenon, as it has always occurred throughout the planet's history. While this statement is not entirely incorrect, it is crucial to consider the timeframes over which these processes unfold and the forces driving them. Indeed, natural climate changes have never occurred at the scale and speed we are witnessing today (Wang et al., 2023). Since the Industrial Revolution, which transformed production methods, we began to extract and burn fossil fuels, releasing carbon that was previously stored underground, and deforesting forests for agriculture and urban expansion, thus releasing the carbon that was stored in the forests (Friedemann, 2021). Additionally, we have extended life expectancy and significantly increased the global population. When we examine scientific data, it becomes clear that the accumulation of heat-trapping gases in the atmosphere is directly linked to human activities over the past few centuries.

We live in an era marked by the incessant accumulation of goods, where a person's or society's value is often measured by the quantity of possessions they have (for example, gross domestic product - GDP). Capitalism, at its core, encourages a constant cycle of consumption, driven by the notion that happiness and success are linked to the purchase and ownership of objects (Siddiqui, 2022). However, this cycle is sustained by a perverse logic: planned obsolescence. Products are designed to have a short lifespan, forcing us to replace them quickly, even when they still hold utility. With each new version released, we are led to believe that what we possess is no longer sufficient, and that we must consume more to maintain our relevance in the world (Yurtsever, 2023).

This consumption model, driven by the artificial demand created by capitalism, not only depletes our natural resources but also perpetuates a constant sense of dissatisfaction (Vega, 2024). We are led to believe that to feel complete, we must acquire the newest, fastest, and most modern items. In this way, the market shapes our desires, making us dependent on a never-ending cycle, as we accumulate goods that will soon become obsolete. The consequence is a planet overwhelmed by waste and a society that is alienated and disconnected from genuine human and environmental needs. As we strive to keep up with the latest trends or the newest releases, we overlook the real cost of this behavior: resource depletion, environmental degradation, and rising inequalities. The accumulation of goods, far from becoming a symbol of progress, has become a trap that ensnares us in a cycle of waste and superficiality. True wealth often lies in simplicity and the ability to live more consciously and harmoniously with what truly matters (Cafaro, 2002).

Technology, while crucial for the convenience of our daily lives, has distanced us from nature and our understanding of what is natural, as well as from our responsibilities toward the planet and, above all, from living in society (Floriani, 2021). We must recognize, as soon as possible — while there is still time — that the maintenance of all ecosystems on planet Earth is

vital for ensuring the conditions for our survival as a species and a community. All ecosystems, (no matter how distant they may be from your immediate environment) are important for the balance of nature's relationships, for well-being, and for the existence of your children, grandchildren, and great-grandchildren.

For example, deserts, often perceived as hot ecosystems filled with sand and characterized by water scarcity and lack of life, are home to diverse species with incredible resilience. These deserts also serve as sources of nutrients, such as mineral salts, which enrich much of the surrounding waters, transforming any nearby body of water into an oasis for numerous species to thrive. Deserts provide breeding grounds and nurseries for various animals; due to the absence of large predators, they offer a tranquil place for reproduction (Rundel, 1992). However, this is not always the case. In regions like the Arabian deserts, for instance, ocean humidity enriches the land, providing enough resources for certain types of vegetation to establish themselves, which, in turn, supports herbivores and their predators, such as Arabian leopards. Yet, for these animals to thrive, they require space.

It is important to highlight that deserts play a fundamental role in the rainfall formation and soil fertility in regions like the Amazon (Rizzolo et al., 2017). This reality helps refute the notion of independence among ecosystems. Each year, winds transport a significant amount of phosphorus and other essential nutrients, enriching our lands and promoting plant growth. Thus, the fertility of our soils — not only for forests but also for agriculture — is partly related to deserts across the ocean. For rainfall to occur, there must be moisture in the atmosphere and the aerosol presence (microparticles that attach to water molecules), which cause water droplets to become heavy enough to fall as rain. In addition, the deserts harbor a wide variety of animals and play a crucial role in enriching waters while supporting other ecosystems. However, climate change can destabilize this dynamic, leading to excessive rainfall in deserts and consequently, reducing the amount of nutrient-rich dust transported to different environments (Rundel, 1992).

In the same scenario, grasslands and prairies, ecosystems characterized by low vegetation and a scarcity of trees, are essential for life on Earth. They host a rich diversity of animals, including large herds of wildebeests, bison, and zebras (Veldman, 2015). These ecosystems, which have supported some of the planet's largest population concentrations over the centuries, teach us how resilient life can be when managed appropriately. The herds graze in search of rain and the sprouting of plants, feeding and migrating to new areas, which allows vegetation to recover. However, the reality we face is different. Grasslands have fallen victim to our neglect and irresponsibility. Much of this land has been taken over by extensive agricultural practices, including monoculture — a practice that does not occur in nature and requires constant fertilization and the use of pesticides. Livestock farming, in turn, is not conducted sustainably, as it is in nature. Instead of allowing pasture rotation, we continuously use the same area, which becomes trampled by cattle and other livestock, leading to complete soil degradation (Garrett, 2018).

The chemical fertilization applied by producers, both for large monoculture crops like soybeans and for pasture cultivation for livestock, is harmful to nearby water bodies (Altieri, 2009). Rainfall washes these chemical compounds into rivers and lakes, which suffer from a phenomenon known as eutrophication, where the excess nutrients lead to uncontrolled increases in organic matter, ultimately resulting in the death of the aquatic ecosystem. However, all this effort with chemical fertilization and pesticide use could be reduced or even replaced by the natural mechanisms that biodiversity provides. Ecological balance, where one species controls the population of another, can be an effective solution for promoting soil health and crop fertility sustainably (Doran, 2002).

On the other hand, we have devastated grasslands and caused the extinction of various animals that are unrelated to our irresponsibility, economy, and ignorance. The demand for meat has risen significantly, and our method of producing this resource is not the most sustainable. To expand agricultural frontiers, we promote the deforestation of forests, allowing the vegetation to dry before setting fires to clear the land (Garrett, 2018). Then, we plant pastures for livestock or crops like soy,

mainly intended for animal feed production. This process is repeated annually, with the intensive use of chemical fertilizers to maintain soil productivity. However, after a few cycles, nutrient depletion and soil degradation lead to a decline in agricultural returns, resulting in the abandonment of these areas and the search for new forested lands, thus restarting the cycle (Thomaz & Watanabe, 2020). If we reduce (Don't be alarmed! I say reduce, not necessarily eliminate) meat consumption, seek alternatives to extensive livestock farming, and explore other cultivation methods, such as those adopted by traditional communities, while valuing species diversity and other animals for pest control, we can reverse the situation and allow our grasslands to recover, bringing back the incredible fauna that call these areas home.

A great example for the world when it comes to grassland conservation is India (Karanth et al., 2008, Ghosh-Harihar et al., 2019). As the most populous country in the world (Yet only the seventh largest in terms of land area!), it also has the lowest meat consumption. India is home to various giants, such as the Indian elephant (*Elephas maximus indicus*), the Indian rhinoceros (*Rhinoceros unicornis*), and the Bengal tiger (*Panthera tigris*). Worldwide, tiger populations are experiencing a significant decline, but in India, the number of individuals in this species has been increasing considerably. This is a sign that if we provide these species with the territory they deserve and once occupied before our population explosion, they will thrive.

In forests, which are ecosystems marked by a high density of trees, these natural environments play a crucial role in regulating temperature: they absorb significant amounts of heat and convert it into life. In terms of biodiversity the Tropical forests alone are home to about 80% of all terrestrial species on Earth (Raven et al., 2020). The Amazon, the largest tropical rainforest in the world, is estimated to host between 40,000 and 53,000 different plant species. Remarkably, within a single hectare of tropical forest, one can find between 200 and 300 tree species — an astonishing diversity that exceeds that of many entire temperate regions. Moreover, around 25% of modern medicines originate from plants found in tropical forests, yet only a small fraction of these species has been thoroughly studied (Qadir & Raja, 2021). This highlights the immense potential for discovering new medicinal compounds. Besides hosting a large portion of global biodiversity, tropical forests are known for forming "flying rivers," enormous masses of moisture that move across the continent, bringing rainfall to other regions.

Let's delve deeper into the flying rivers formed when the trees of the Amazon rainforest release large amounts of water into the atmosphere through the process of evapotranspiration — the sum of water evaporation from the soil and plant transpiration. The Amazon is one of the regions, that contribute most significantly to this phenomenon, given its immense volume of biomass and dense vegetation. It is estimated that a single tree in the Amazon can release up to 1,000 liters of water per day (Sorribas et al., 2020). Flying rivers are essential for agriculture in various regions of the continent, particularly in Brazil, Argentina, Paraguay, and Uruguay. Without the moisture provided by the Amazon, many of these areas — including the Brazilian Cerrado, the Pantanal region, and the vast agricultural plains of Argentina and Uruguay — would experience more severe droughts. The vapor currents carried by the flying rivers account for up to 70% of precipitation in regions such as southeastern and central-western Brazil, which are major producers of soybeans, corn, cotton, and other crops. These areas rely on regular rainfall to ensure high agricultural productivity (Borma, 2022). Livestock in South America, especially in Brazil and Argentina, depend on pastures that are also nourished by the rains brought by flying rivers (Peña-Claros & Nobre, 2023). A lack of these rains, caused by alterations in the flying rivers due to Amazon deforestation, can severely impact meat production. In addition to promoting direct precipitation, flying rivers help maintain the levels of rivers and aquifers that supply irrigation systems in various parts of the continent. Amazon deforestation threatens the functioning of these flying rivers. As forest cover decreases, there is a reduction in evapotranspiration, resulting in less water vapor being released into the atmosphere. This can lead to more frequent droughts, changes in regional climate patterns, and a loss of agricultural productivity (Sorribas et al., 2020).

Although synonymous with richness (species diversity and bioproducts), forests rely on their diversity for sustainability, promoting balance through dispersal activities by animals and collaboration with other ecosystems, such as

deserts. However, tropical forests face increasing threats, primarily due to illegal deforestation driven by the extraction of raw materials like timber and the conversion of land for livestock agriculture (Koch & Kaplan, 2022). Brazil, which contains the largest expanse of tropical forests on the planet, suffers from the negligence of public authorities, who promote deforestation through the weakening of institutions responsible for oversight, lack of funding, dissemination of scientific denialism, and the concentration of wealth in a small segment of the population. If forests lose a considerable portion of their territory, they will reach a point of no return, as they will no longer be able to regenerate. Their rich biodiversity may disappear without our ever fully understanding it (Garrett et al., 2021). Many of the medicines and cosmetics we use today have been discovered through scientific research, and we risk losing the opportunity to uncover various compounds from nature (bioproducts) due to our actions. The invaded lands (indigenous territories and protected areas) of the Amazon for livestock grazing and extensive monoculture — essentially the relentless pursuit of profit — fail to fulfill the social function of feeding the nation. Instead, they primarily serve to maintain the wealth of large landowners who profit not only from environmental destruction but often from slave labor as well (Domiciano et al., 2020).

We have the opportunity to reverse this situation, but it requires changes in our environmental, social, and economic habits. Reducing meat consumption and prioritizing small producers over large agribusinesses can contribute to diminishing this trade. Pressuring public authorities to enforce the conservation units and the territories of Indigenous peoples — areas that contain the largest preserved expanses on the continent — is also critically important. We have a voice in society, and by uniting them, we increase our chances of being heard. Establishing protected areas in deserts, grasslands, savannas, and forests provides the opportunity for these ecosystems to recover.

Now up to this point, we understand the situation of our terrestrial environments and how they function. And the oceans, are they exempt from our greed? The oceans, which cover about two-thirds of the planet's surface, are essential allies of terrestrial ecosystems. They harbor a wide diversity of life forms, and for a long time, due to their abundance, we believed there would be no risk of disrupting the balance of species in the vast oceanic expanses. However, we have discovered that our potential for destruction is far greater than we imagined. Intensive fishing has led to the devastation of numerous species, including both animals and plants, jeopardizing entire life cycles and ecological chains (Dulvy et al., 2021). The overfishing of large schools not only affects fish populations but also impacts the large predators that depend on them for food, resulting in a drastic decline in their populations and, in some cases, a risk of extinction (Akita et al., 2022).

However, increasing human activity has introduced a variety of pollutants that compromise these vital systems. Plastic pollution is one of the most visible and alarming issues (Mihai et al., 2021). It is estimated that 8 million tons of plastic are dumped into the oceans each year. These materials, which include bags, bottles, and microplastics, do not decompose easily and can persist for hundreds of years. Plastics affect marine life, being ingested by fish, birds, and marine mammals, which can lead to the death of these animals and contamination of the food chain. The use of pesticides and fertilizers in agriculture results in the runoff of chemicals into rivers and oceans, causing chemical pollution. These pollutants can lead to eutrophication, a process that causes excessive algal growth, reducing oxygen levels in the water and creating dead zones where aquatic life cannot survive (Maggi et al., 2023). Many industries and wastewater treatment facilities discharge untreated or inadequately treated effluents into the oceans. This can introduce a range of contaminants, including heavy metals, toxic chemicals, and excess nutrients, which harm marine ecosystems (Landrigan et al., 2020). Oil spills, often resulting from shipwrecks, drilling operations, and accidents on oil platforms, are a significant source of pollution. Oil contaminates water and affects marine life, damaging habitats and rendering marine organisms unsafe for human consumption. Increased maritime traffic, exploration activities, and underwater construction generate noise pollution, which interferes with the communication and navigation of marine species such as whales and dolphins. Excessive noise can cause stress and disorientation, affecting migration and reproduction patterns (Bhagarathi, 2024).

The sharks, apex predators in the marine food chain, have seen their populations reduced by about 95% and now can only establish themselves in more remote areas. In contrast, some shark species (blacktip shark *Carcharhinus limbatus* and tiger shark: *Galeocerdo cuvier*) are migrating to coastal areas because the degradation of marine habitats, such as coral reefs and mangroves, may force sharks to migrate to new areas in search of food and shelter (Rulifson, 2020). This may increase the likelihood of encounters with humans in places where they were not previously common. The sharks are ecological fundamental to the health of the oceans, as they play a crucial role in regulating fish populations and maintaining ecological balance. As apex predators, sharks regulate the populations of species below them in the food chain, such as forage fish. When present, they help keep these populations at sustainable levels. Conversely, the absence of sharks leads to unchecked growth of certain fish species, which voraciously feed on others, such as mollusks and crustaceans. This disproportionate increase in fish populations can exert excessive pressure on marine communities, leading to overfishing of other species and compromising biodiversity (Pacoureau et al., 2021).

This ecological imbalance has cascading consequences. For instance, the overpopulation of forage fish can result in a decline in the populations of the organisms they consume, affecting the entire food chain. Additionally, sharks help preserve the health of coral reefs, which are essential habitats for many marine species (Dedman et al., 2024). By regulating the populations of herbivorous fish that consume algae, sharks contribute to maintaining the balance between corals and algae, preventing excessive algal growth that can suffocate corals. In summary, the extinction of sharks is not merely a matter of losing a species, but a threat to the integrity of marine ecosystems as a whole. The preservation of these apex predators is vital for the resilience and health of the oceans, underscoring the urgent need for conservation actions and sustainable management of shark populations and their habitats (Pacoureau et al., 2021).

Today, many marine species, crucial for the balance of these ecosystems, are at risk of disappearing from our waters. A prominent example is the large whales (blue whale: *Balaenoptera musculus*; humpback whale: *Megaptera novaeangliae*), which were intensely hunted to the brink of extinction over the last century (Braulik et al., 2023). Whales are essential for the equilibrium of ecosystems, as their excrement provides nutrients that promote the establishment of phytoplankton—microscopic organisms that perform photosynthesis, capture carbon from the atmosphere, and release oxygen, which is vital for our existence (Yes! The oxygen we breathe comes from photosynthesis carried out by algae in the oceans). Phytoplankton also releases substances into the atmosphere that bind to water particles, aiding in the rain formation, which is transported to the continents. This process is critical for regulating the planet's temperature, as the white clouds formed reflect solar rays into space, contributing to the cooling of the Earth (Williamson et al., 2024).

Speaking of the planet's cooling, dear reader, you have likely heard about the importance of large glaciers. They play a crucial role in cooling the Earth and reflecting solar rays. These immense ice blocks support various species, including large mammals like whales, which fertilize the oceans with their waste (as previously stated) (Hock & Huss, 2021). Whales utilize Arctic areas to feed on large groups of krill, small crustaceans essential to the marine food chain. Although whales have managed to recover a significant portion of their population following the implementation of fishing control measures by governments, krill populations are declining due to the warming of Arctic waters (Braulik et al., 2023). This situation prompts us to reflect: what is the point of protecting a single species without understanding its ecological niche and without adopting measures that promote the balance of the entire planet? Preserving a healthy ecosystem requires a holistic approach that considers the interactions among various species and the environments in which they live. Only by doing so can we ensure the resilience and health of our oceans and the life they harbor.

It is these frozen ecosystems that have been suffering the most intensely and immediately from climate change. Polar bears (*Ursus maritimus*), the great predators of the Arctic, are already experiencing a decrease in their body mass due to dwindling food supplies (Regehr et al., 2021). Animals in frozen regions are adapted to the conditions their habitats provide,

and sudden changes in temperatures can severely impact them; after all, not all animals can adapt to wide variations in temperature.

As we can see, all ecosystems depend on well-established interactions among the organisms that inhabit them and require the existence and balance of other ecosystems to remain healthy (Rubin & Crucifix, 2022). The melting of glaciers poses a threat not only to the fauna living in these environments but also to the survival of humanity. Glaciers function as massive reservoirs of freshwater and are essential for regulating the global climate. Moreover, they store pathogens that may have remained dormant for thousands of years. As temperatures rise and glaciers melt, these pathogens are exposed to the environment, potentially jeopardizing public health. Scientific studies suggest that with the thawing of permafrost — a layer of frozen soil — the likelihood of ancient diseases resurfacing increases, as these regions harbor viruses, bacteria, and even parasites that have not been seen for millennia (Alempic et al., 2023). An alarming example, but not correlated, occurred during the COVID-19 pandemic, which began in 2019 and resulted in millions of deaths worldwide. This situation prompts us to consider the vulnerability of the human population to pathogens that may emerge from ecosystems rapidly altered by climate change (Heyd, 2021). In addition to the direct health risks, glacier melting has profound implications for biodiversity and the ecosystem services that sustain life on Earth. The loss of glacial habitats not only threatens the species that depend on them but can also trigger a domino effect, destabilizing food chains and impacting the productivity of adjacent ecosystems, such as forests, rivers, and oceans. Therefore, the preservation of glaciers and the fight against climate change are crucial not only for protecting biodiversity but also for ensuring the safety and health of future generations (Hock & Huss, 2021).

Numerous islands and coastal regions are at risk of vanishing as rising sea levels, driven by climate change and the melting of polar ice caps and glaciers, threaten their existence. According to the Intergovernmental Panel on Climate Change (IPCC - 2019), sea levels are projected to rise between 0.3 and 1.1 meters by 2100, depending on greenhouse gas emissions and the dynamics of the ice sheets. This increase threatens not only the existence of coastal communities but also the infrastructure and biodiversity of these ecosystems. Regions like the Maldives and parts of Florida are already facing critical challenges due to rising sea levels, and some small islands in the Pacific are on the brink of total disappearance (Sakamoto et al., 2022).

Moreover, rising sea levels can intensify extreme weather phenomena, such as tsunamis and hurricanes. The increase in sea surface temperatures contributes to the intensification of hurricanes, making them more destructive. Research indicates that every 1°C rise in sea surface temperature can increase the intensity of tropical cyclones, resulting in stronger winds and greater precipitation. The warming temperatures and rising sea levels alter air mass dynamics, enhancing the formation of more severe storms and increasing the risk of natural disasters in coastal regions (Guzman & Jiang, 2021). In addition to physical threats, changes in temperature also affect biological communities, particularly insect species essential for pollination and the dispersal of many plants we consume. Pollination is a critical ecological service; studies show that about 75% of food crops worldwide rely on insect pollination (Khalifa et al., 2021). Rising temperatures can lead to changes in migration patterns and the geographical distribution of insect species, resulting in decreased biodiversity and the potential extinction of some species. For instance, bees, which are vital for pollination, have seen their populations decline in various parts of the world, partly due to climate change and habitat loss. These changes not only impact the health of ecosystems but also the food security of human populations. The decline in pollination can lead to smaller harvests and increased food prices, exacerbating existing issues of food insecurity and poverty. Thus, protecting coastal regions and mitigating climate change are imperative not only for biodiversity conservation but also for ensuring the resilience and sustainability of human communities worldwide (Jactel et al., 2020).

Currently, we face the imminent possibility of a drastic change in the conditions that make our planet habitable (Tyrrell, 2020). The threats looming over us include not only the extinction of thousands of species but also the destabilization

of the ecosystems that sustain life, including our own. Although humans are capable of surviving a range of temperatures, our existence is intrinsically dependent on a complex balance between various species and the services that ecosystems provide us, such as clean water, pure air, and food. The loss of biodiversity, as emphasized by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) report, can lead to irreversible consequences, affecting the resilience of ecosystems and the ability to adapt to climate change (Gustafsson, 2020).

There is still time to reverse this critical situation, but the urgency of our actions cannot be underestimated. It is essential to rethink our daily habits and transform our choices into sustainable practices. This includes changing the way we consume food, favoring local and organic products, which not only reduce the carbon footprint associated with transportation and pesticide use but also support agricultural practices that preserve biodiversity (Asher, 2021). The food industry, often characterized by unsustainable practices and monocultures, needs to be reformed. Supporting initiatives that promote agroecology and regenerative agriculture is an effective way to help restore soil, increase biodiversity, and ensure food security (Jeanneret, 2021).

Now more than ever, it is crucial to pressure authorities to demarcate protected areas, such as conservation units and territories of traditional peoples (Massé, 2020). Protecting these spaces is not only an environmental preservation issue but also a necessity to ensure the survival of countless species and the maintenance of the ecosystem services that benefit us. Supporting policies aimed at restoring degraded ecosystems and protecting biodiversity is essential to mitigate the impacts of climate change and ensure a sustainable future. We must also change our relationship with the land, recognizing that we are one of many species that intervene in the dynamics of ecosystems. However, this intervention is unique because we are the only species capable of understanding the consequences of our actions. This implies an ethical and moral commitment to act consciously and responsibly. Environmental education plays a vital role in this transformation, as it helps us understand how our choices affect the world around us. By becoming more aware of the interconnections between our actions and the state of the planet, we can adopt a lifestyle that respects and protects nature (Žalėnienė & Pereira, 2021).

Finally, the call to action must be a global priority. Social mobilizations, awareness campaigns, and collaborations between public and private sectors are essential to create a collective movement in defense of our planet. True change begins with each of us, in our homes and communities. Therefore, we must come together, in a joint effort to promote sustainable practices, demand political changes, and ensure that the Earth remains a safe and healthy home for all forms of life. The future of our planet depends on the choices we make today. If we do not act urgently, we may face irreversible consequences that will affect not only future generations but also our survival.

Epilogue

In recent years, the reality of our planet has become a mirror of the increasingly tense relationship between humanity and nature. Despite being surrounded by technological innovations and scientific advances, the essence of our way of life continues to be shaped by a voracious logic of consumption, which perpetuates the destruction of ecosystems and exacerbates social crises. The interdependence between all living beings and their habitats has been neglected in favor of an economy that prioritizes short-term profit, ignoring the long-term consequences of our actions. With each passing day, the evidence that the unchecked exploitation of natural resources and environmental degradation are unsustainable becomes more undeniable. As we look at the devastation caused by industrialization and rampant globalization, we are forced to question the true cost of the capitalist system. What, at first, may have seemed like a promise of prosperity and development now reveals itself as a cycle of dissatisfaction and degradation. This system, which defines the value of societies by the accumulation of material goods, discourages deep reflection on what it truly means to live in harmony with the environment. It is alarming to see how this distorted vision of progress results in alienation and disconnection between humans and their natural surroundings,

transforming our relationship with the world into an act of exploitation rather than coexistence.

The phenomenon of climate change is undoubtedly a direct result of this economic model that places itself above ethics and responsibility. The promises that technology will solve all our environmental problems are misleading and dangerous, as they ignore the need for a radical rethink of our relationship with the planet. It must be understood that limitless economic growth is an illusion that conceals the fact that our world has finite resources. The ecological tragedies we face, from extreme droughts to natural disasters, are a desperate cry from the Earth, pleading for a new way of life that values sustainability and social justice. In this context, it becomes imperative that the collective consciousness unites around the idea that it is possible and necessary to build a different future. The preservation of forests, the recovery of marine ecosystems, and the protection of areas with high biodiversity are urgent tasks that require concrete actions. The voices of the communities that inhabit these regions, who hold valuable knowledge about sustainable practices, must be heard and respected. The future of our planet depends on our ability to reverse current trends, prioritizing an economy that respects natural limits and promotes equity among all beings.

In light of the above, it is time to abandon the belief that well-being and happiness are synonymous with consumption. True wealth lies in the ability to live simply, in harmony with nature and with one another. Our value is not determined by how many possessions we have but by how we care for the world and for each other. The capitalist system, with its incessant pressure for more and more, fails to recognize that the health of the planet and the well-being of future generations must be our priority. Thus, as we reflect on the challenges we face, may we find a new path that leads to true prosperity: a prosperity that respects the Earth and values life in all its forms.

4. Final Considerations

In conclusion, criticism of the capitalist system becomes essential as we confront the realities of the environmental and social crises that permeate our time. The prevailing economic model, which prioritizes immediate profit and rampant consumerism, not only threatens the integrity of the planet but also perpetuates inequalities and injustices. We need a paradigm shift that not only recognizes the interconnection of all forms of life but also promotes a new understanding of progress, where sustainability and social equity are at the center of our decisions. It is time for a collective awakening, leading to the transformation not only of our economy but of our relationship with the world. Only then can we build a future that not only preserves our planet but also guarantees a dignified home for all generations to come.

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