

PREFACE

A MANIFESTO IN DEFENCE OF BIOLOGICAL DIVERSITY

This book seeks to open a door to the study of biodiversity and its interconnections with ecology, evolution, economy and the anthropogenic impacts, starting with students and passed along by university teachers, to bring into the hands of readers a universal tool that is as complete as possible.

The approach adopted embraces a comprehensive vision of biodiversity and introduces theoretical and practical information that can help to conduct rigorous studies, without omitting the space-temporal component in the analysis of a subject that merges ecological and evolutionary sciences.

Biological diversity is what makes the Earth an extraordinary planet in every sense. Life itself is the most extraordinary thing that exists. There is nothing ordinary about her. In the universe, as far as we know, or at least in our galaxy, life is the exception rather than the rule. And even if one day we are able to document the presence of living beings on other planets, they too will be an exception. The appearance of life is a phenomenon that has always fascinated human beings since without it, our species would never exist, and no hairless biped would ever have studied with such admiration, and destroyed with equal force, its diversity.

Biologists today agree that we owe all that we are to the existence of the diversity of life; there would be, in fact, no chance for human beings to exist on this planet if the incommensurable diversity of living beings on Earth had not evolved with such incredible power to populate every corner of the continents, from polar caps to the most arid deserts, from steppes to prairies, from forests to temperate seas, in the explosively rich tropics, in lush wetland forests full of species, and among colored coral reefs.

The same diversity represents a mystery of the very existence of life. Why did evolution lead to the "endless forms most beautiful", as Charles Robert Darwin called them, instead of letting a unique, unbelievably adapted, monstrous species dominate? To

ensure the functioning of ecosystems, some will answer. To allow resilience to disturbances, others will say. To resist catastrophic events, the remaining people will suggest.

Because diversity is the fundamental and emergent characteristic of life itself, put much more simply.

Life tends to diversity. Diversity to stability. Stability, albeit dynamic and never in constant equilibrium, to maintaining the conditions that guarantee life. A monospecific planet would be an unspecific planet. A dead planet!

Scientists have recently demonstrated that biodiversity and diversity, in general, are autocatalytic phenomena. That is, life requires other life so that it can continue to exist. The very meaning of life, even that of all human beings, is to ensure not only their own species but every other, to continue to exist. For this reason, where the first living organism appeared on the Earth or on other living planets, this has certainly given rise to other infinite and beautiful forms.

Recent evidence shows that biological evolution is sustained mainly by symbiosis (genetic, physiological and behavioral) in which processes reshape the overemphasized role of competition in Nature. How sad the world is when seen through the eyes of reductionists, as composed of selfish genes of individuals constantly struggling against each other to ensure their survival, in a universe in which life has no meaning. Instead, as the biologist Lynn Margulis said: "Life did not take over the globe by combat, but by networking. Life forms multiplied and complexified by co-opting others, not just by killing them."

Yet, in recent years, the extinction rate of species and the loss of ecosystems have become alarming on every corner of the planet. Biological diversity is reduced, day after day, due to the shameful human actions that aim at a short-term profit and unconditional economic growth.

Equally, human diversity is increasingly threatened and spurned in many parts of the world. Episodes of violence against those who are considered diverse are on the agenda: a new wave of racism against *diverse peoples* is affecting many nations considered as civil societies; abuses, torture, violence and killing are committed against those who manifest diverse sexual orientations; wars, assassins and assassinations are the means to hindering and fighting *diverse cultures and religions*; abuses and exterminations erode the indigenous people of Earth because they are accused of belonging to "diverse civilizations."

The elimination of biological and human diversity seems to have become the ultimate purpose of our species.

It is, therefore, fundamental that we as scientists join forces with civil society's protests in defending the rights of human diversity and that civil society joins scientists in the struggle for the conservation of biological diversity.

It is imperative for us as human beings to understand that we are equal in our needs, feelings, rights and duties in belonging to Planet-Earth as citizens of the world. We must be free of rampant nationalism and we must respect universal and natural laws. as diversity represents the invaluable resource of that universal exception, which is Life. Until our species can understand that Nature has endowed us with beautiful and endless forms of living beings that inhabit our planet, which serve to maintain the conditions that guarantee life itself and, conversely, life perpetuates and prospers thanks to its diversity, we won't understand that this is the essence of everything including of our existence as human beings. Without that understanding we will never really feel alive. Never feel completely free.

Those same detractors who alter the message of equality and diversity left by Darwin two hundred years ago and use it as an excuse for a social Darwinism, authorizing mass slaughters to ensure *the survival of the fittest* and to *eliminate the diverse* miss a great opportunity to seize the message in the beauty of light or dark skin, yellowish or olive skin, distant and fascinating tongues, round or pointed eyes, wings or paws, feathers or ridges, leaves or needles, men who love other men or women who love other women, people praying in mosques or hands clinging to a crucifix, red flowers or black seeds, monks kneeled in front of a statue or an altar.

They forget that diversity makes the Earth alive and life makes the Earth diverse.

This is a heartfelt appeal to scientists from around the world, to civil society and to heads of state and government: let us stand in defence of biological and human diversity!