The Biosphere

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The Biosphere MIT Press
21st Century Science & Technology celebrates 150 years of Vernadsky with this two-volume anthology of original translations of Vernadsky's work, as well as articles both historical and scientific regarding this prolific thinker, the founder of biogeochemistry.
Encyclopedia of the Biosphere: Our living planet Fundacion BBVA
Here is a valuable one-semester course text for non-science majors that delivers! It is concise, focused on material that will enable students to make intelligent choices about the future of the earth, and written in a style that will enable students to make connections to their own lives. Students want to know how science relates to their lives, how the biosphere works, what is wrong with it, and what they can do to make a difference. Now there is a new text that provides the information students need and gives real-life examples that make the learning process more interesting and relevant. THREE MAIN DIVISIONS OF TEXT 1. What science is and what students need to know about it 2. The biosphere, how it works, and its current problems 3. What students can do about the problems ABOUT THE AUTHOR Dr. Sharon La Bonde Hanks teaches biology at William Paterson College in New Jersey. She holds a Ph.D. from Rutgers University. Her 33 years in teaching have concentrated on biology and environmental science, with research focused on ecology, taxonomy and systematic palynology. She has a special interest in writing about the discipline, assessment and race/gender issues in science. Hanks is the author of a major text on how to teach biology using the process approach. In addition, she runs workshops and is a consultant, an expert perennial gardener and naturalized landscaper, and an avid student of Tai Chi. She is most proud of her memberships in the New Jersey Audubon Weis Ecology Center, Habitat for Humanity, and the Nature Conservancy.
The Biosphere and the Bioregion MIT Press
Anthropogenic release of carbon dioxide into the atmosphere has been recognized as the primary agent in global climate change. The volume discusses the possibilities for limiting that increase by the long-term storage of carbon in soils, vegetation, wetlands and oceans. Each of these storage media is analysed in detail to elucidate those processes responsible for the uptake and release of carbon. Several chapters address the practical prospects for deliberate interventions aimed at adjusting the balance in favour of uptake over release, i.e. sequestration, while having regard to simultaneous changes in the various environments.
The Biosphere Routledge
An essential, up-to-date look at the critical interactions between biological diversity and climate change that will serve as an immediate call to action The physical and biological impacts of climate change are dramatic and broad-ranging. People who care about the planet and manage natural resources urgently need a synthesis of our rapidly growing understanding of these issues. In this all-new sequel to the 2005 volume Climate Change and Biodiversity, leading experts in the field summarize observed changes, assess what the future holds, and offer suggested responses. Edited by distinguished conservationist Thomas E. Lovejoy and climate change biologist Lee Hannah, this comprehensive volume includes the latest research

and explores emerging topics. From extinction risk to ocean acidification, the future of the Amazon to changes in ecosystem services, and geoengineering to the power of ecosystem restoration, this volume captures the sweep of climate change transformation of the biosphere. An authoritative, up-to-date reference, this is the new benchmark synthesis for climate change scientists, conservationists, managers, policymakers, and educators.

The biosphere concept and index CRC Press

A comprehensive overview of Earth's biosphere, written with scientific rigor and essay-like flair. In his latest book, Vaclav Smil tells the story of the Earth's biosphere from its origins to its near and long-term future. He explains the workings of its parts and what is known about their interactions. With essay-like flair, he examines the biosphere's physics, chemistry, biology, geology, oceanography, energy, climatology, and ecology, as well as the changes caused by human activity. He provides both the basics of the story and surprising asides illustrating critical but often neglected aspects of biospheric complexity. Smil begins with a history of the modern idea of the biosphere, focusing on the development of the concept by Russian scientist Vladimir Vernadsky. He explores the probability of life elsewhere in the universe, life's evolution and metabolism, and the biosphere's extent, mass, productivity, and grand-scale organization. Smil offers fresh approaches to such well-known phenomena as solar radiation and plate tectonics and introduces lesser-known topics such as the quarter-power scaling of animal and plant metabolism across body sizes and metabolic pathways. He also examines two sets of fundamental relationships that have profoundly influenced the evolution of life and the persistence of the biosphere: symbiosis and the role of life's complexity as a determinant of biomass productivity and resilience. And he voices concern about the future course of human-caused global environmental change, which could compromise the biosphere's integrity and threaten the survival of modern civilization.

The Biosphere and Civilization: In the Throes of a Global Crisis Springer Science & Business Media

"Biosphere 2" rises from southern Arizonas high desert like a bizarre hybrid spaceship and greenhouse. Packed with more than 3,800 carefully selected plant, animal, and insect species, this mega-terrarium is one of the world's most biodiverse, lush, and artificial wildernesses. Only recently transformed from an abandoned ghost dome to a University of Arizona research center, the site was the setting of a grand drama about humans and ecology at the end of the twentieth century. The seeds of Biosphere 2 sprouted in the 1970s at Synergia, a desert ranch in New Mexico where John Allen and a handful of dreamers united to create a self-reliant utopia centered on ecological work, study, and their traveling experimental theater troupe, "The Theater of All Possibilities." At a time of growing tensions in the American environmental consciousness, the Synergians took on varied projects around the world that sought to mend the rift between humans and nature. In 1984, they bought a piece of desert to build Biosphere 2. Eco-enthusiasts competed to become the eight "biospherians" who would lock themselves inside the giant greenhouse world for two years to live in harmony with their wilderness, grow their own food, and recycle all their air, water, and wastes. Thin and short on oxygen, the biospherians stoically completed their survival mission, but the communal spirit surrounding Biosphere 2 eventually dissolved into conflict--ultimately the facility would be seized by armed U.S. Marshals. Yet for all the story's strangeness, perhaps strangest of all was how normal Biosphere 2 actually was. The story of this grand eco-utopian adventure (and misadventure) becomes a parable about the relationship between humans and nature in postmodern America. Visit the authors' website at www.dreamingthebiosphere.com

Encyclopedia of the Biosphere: The biosphere concept and index CreateSpace

The biosphere is the thin skin of life clinging to the surface of our planet that includes all of earth's animals, plants and ecosystems and their interactions. Because all humans and other creatures on earth depend equally on the biosphere for survival, The Biosphere is a Commons proposes that the biosphere and each of its components can be considered as commons: the common property of all who live on the planet. This perspective is explained while the different aspects of the biosphere and the history of humanity's interaction with it are overviewed. After chapters of "About a Commons" and the "Human Population", there are chapters on "Climate", "The Atmosphere", "Oceans and Freshwater", "Changing Water by Pollution", "Chemicals in the Biosphere", "Soils and Desertification", "Wildlife as a Commons", and "Forests as a Commons". The last chapters overview "Public Lands and Special Places" and "The Role of Environmental Organizations", and the book ends with a short epilogue about "A Sustainable Global Commons" and an appendix about "Legislation Enacted to Prevent Ruin of a Commons".Information about these aspects of the earth and human history can be found spread among environmental science textbooks or other sources, but the authors provide a broad, yet detailed overview of these subjects that is integrated into a uniquely compact and readable book. It tells the amazing story about how in a few centuries humans have changed a large proportion of the biosphere. It also explains what we have done to slow down the destruction of parts of the global web of life contained within the biosphere in an effort to begin to find a sustainable path into the future. Some maps provide additional information, and there is imagery to inspire us about the beauty of earth. The perspectives contained in The Biosphere is a Commons will provide understanding of this subject for all types of readers and it contains some details that even students and experts in the field of environmental science will likely find interesting. By seeing the biosphere as a commons that we all need for our survival, and by understanding how we are changing this system, we can more easily begin to work together to live harmoniously and sustainably on this small, beautiful blue planet we call Earth.

The United States Man and the Biosphere Program Gale / Cengage Learning

The Encyclopedia of the Biosphere features comprehensive coverage of the earth's greatest ecosystems, their characteristics and their operations. The Encyclopedia explains how these ecosystems have been transformed by human activity, while presenting the main species inhabiting each region. The text in each volume is clearly organized into four distinct sections covering the ecosystem's environmental factors, plants and animal ecology, human influences and biosphere reserves. Eleven fully-illustrated, 4-color volumes present in a contemporary, dynamic manner, the earth's principal ecosystems and the better known species of flora and fauna.

The Biosphere Catalogue Springer Science & Business Media

The period since World War II, and especially the last decade influenced by the International Biological Program, has seen enormous growth in research on the function of ecosystems. The same period has seen an exponential' rise in environmental problems including the capacity of the Earth to support man's population. The concern extends to man's effects on the "biosphere"-the film of living organisms on the Earth's surface that supports man. The common theme of ecologic research and environmental concerns is primary production the binding of sunlight energy into organic matter by plants that supports all life. Many results from the IBP remain to be synthesized, but enough data are available from that program and other research to develop a convincing sum mary of the primary production of the biosphere-the purpose of this book. The book had its origin in the parallel interests of the two editors and Gene E. Likens, which led them to prepare a symposium on the topic at the Second Biological Congress of the American Institute of Biological Sciences in Miami, Florida, October 24, 1971. Revisions of the papers presented at that symposium appear as Chapters 2, 8, 9, 10, and 15 in this book. We have added other chapters that complement this core; these include discussion and evaluation of methods for measuring productivity and regional production, current findings on tropical productivity, and models of primary productivity.

Pushing Our Limits Wiley-Interscience

This book considers the principle of ‘sustainable development’ which is currently facing a growing environmental crisis. A new mode of thinking and positioning the ecological imperative is the major input of this volume. The prism of co-viability is not the economics of political agencies that carry the ideology of the dominant/conventional economic schools, but rather an opening of innovation perspectives through science. This volume, through its four parts, more than 40 chapters and a hundred authors, gives birth to a paradigm which crystallizes within a concept that will support in overcoming the ecological emergency deadlock.

Recarbonization of the Biosphere Routledge

The Encyclopedia of the Biosphere features comprehensive coverage of the earth's greatest ecosystems, their characteristics and their operations. The Encyclopedia explains how these ecosystems have been transformed by human activity, while presenting the main species inhabiting each region. The text in each volume is clearly organized into four distinct sections covering the ecosystem's environmental factors, plants and animal ecology, human influences and biosphere reserves. Eleven fully-illustrated, 4-color volumes present in a contemporary, dynamic manner, the earth's principal ecosystems and the better known species of flora and fauna.

Bringing the Biosphere Home Routledge

Presented here for the first time is a comprehensive, single-volume treatment of all the important aspects of biospheric civilizational energetics. The author uses measurements of energy and power densities and intensities throughout to provide an integrated framework of analysis. All segments of energetics are examined, including planetary energetics (solar radiation and geomorphic processes) and bioenergetics (photosynthesis) to human energetics (metabolism and thermoregulation) traced from hunting-gathering and agricultural societies through modern day industrial civilization. Concludes with general patterns, trends and socio-economic considerations of energy use today plus their impact on the environment.

The Biosphere The Biosphere

THE STUDY OF THE BIOSPHERE The term 'biosphere' first appeared in the works of the French biologist 1.-B. Lamarck and the Austrian geologist E. Suess in the 19th century. In the 20th century, the study of the biosphere attracted considerable attention, largely due to the research of V. I. Vernadsky (1863- 1945). The results Qf Vernadsky's investigations have appeared in a number of publications, including the monograph The Biosphere published in 1926. This work consists of two parts, The Biosphere in Cosmos' and The Zone of Life', written in a form of speculation and reflection that is rarely used in modern studies. This work concerns the distinguishing properties of the space occupied by organisms and the exceptional importance of the activities of these organisms in the formation of their environment. In this and subsequent studies, Vernadsky has laid the foundations of the science of the biosphere, which today plays an important role in th.c many branches of science concerned with the Earth. Several terms have been suggested for the science of the biosphere, including global ecology (a discipline studying the global ecological system, whose meaning is close to that of the biosphere). One of the most prominent predecessors of Vernadsky was his teacher V.

Geography of the Biosphere Twenty-First Century Books

Biospherian Mark Nelson offers insider perspectives on Biosphere 2 and bold insights into today's global ecological challenges--Provided by publisher.

The Earth's Biosphere CRC Press

"This book offers a simple and novel theoretical approach to understanding the history of the biosphere, including humanity's place within it. It also helps to clarify what the possibilities and limitations are for future action. This is a subject of wide interest, because today we are facing a great many environmental issues, many of which may appear unconnected. Yet all these issues are part of our biosphere. For making plans for the future and addressing our long-term survival and well-being, an integrated knowledge of our biosphere and its history is therefore indispensable"--

Coviability of Social and Ecological Systems: Reconnecting Mankind to the Biosphere in an Era of Global Change CRC Press

Biochemistry, energy flow.

Microbes: The Foundation Stone of the Biosphere Wiley

This collection of essays discusses fascinating aspects of the concept that microbes are at the root of all ecosystems. The content is divided into seven parts, the first of those emphasizes that microbes not only were the starting point, but sustain the rest of the biosphere and shows how life evolves through a perpetual struggle for habitats and niches. Part II explains the ways in which microbial life persists in some of the most extreme environments, while Part III presents our understanding of the core aspects of microbial metabolism. Part IV examines the duality of the microbial world, acknowledging that life exists as a balance between certain processes that we perceive as being environmentally supportive and others that seem environmentally destructive. In turn, Part V discusses basic aspects of microbial symbioses, including interactions with other microorganisms, plants and animals. The concept of microbial symbiosis as a driving force in evolution is covered in Part VI. In closing, Part VII explores the adventure of microbiological research, including some reminiscences from and perspectives on the lives and careers of microbe hunters. Given its mixture of science and philosophy, the book will appeal to scientists and advanced students of microbiology, evolution and ecology alike.

How the Biosphere Works MIT Press

The BiosphereSpringer Science & Business Media

The Biosphere University of Arizona Press

Human activities are significantly modifying the natural global carbon (C) cycles, and concomitantly influence climate, ecosystems, and state and function of the Earth system. Ever increasing amounts of carbon dioxide (CO_2) are added to the atmosphere by fossil fuel combustion but the

biosphere is a potential C sink. Thus, a comprehensive understanding of C cycling in the biosphere is crucial for identifying and managing biospheric C sinks. Ecosystems with large C stocks which must be protected and sustainably managed are wetlands, peatlands, tropical rainforests, tropical savannas, grasslands, degraded/desertified lands, agricultural lands, and urban lands. However, land-based sinks require long-term management and a protection strategy because C stocks grow with a progressive improvement in ecosystem health.

General Energetics Princeton University Press

"Vladimir Vernadsky was a brilliant and prescient scholar-a true scientific visionary who saw the deep connections between life on Earth and the rest of the planet and understood the profound implications for life as a cosmic phenomenon." -DAVID H. GRINSPOON, AUTHOR OF VENUS REVEALED "The Biosphere should be required reading for all entry level students in earth and planetary sciences." -ERIC D. SCHNEIDER, AUTHOR OF INTO THE COOL: THE NEW THERMODYNAMICS OF CREATIVE DESTRUCTION