

Ecosystems And Human Well Being Our Human Planet Summary For Decision Makers Millennium Ecosystem Assessment Series

Climate change is occurring, is caused largely by human activities, and poses significant risks for--and in many cases is already affecting--a broad range of human and natural systems. The compelling case for these conclusions is provided in *Advancing the Science of Climate Change*, part of a congressionally requested suite of studies known as *America's Climate Choices*. While noting that there is always more to learn and that the scientific process is never closed, the book shows that hypotheses about climate change are supported by multiple lines of evidence and have stood firm in the face of serious debate and careful evaluation of alternative explanations. As decision makers respond to these risks, the nation's scientific enterprise can contribute through research that improves understanding of the causes and consequences of climate change and also is useful to decision makers at the local, regional, national, and international levels. The book identifies decisions being made in 12 sectors, ranging from agriculture to transportation, to identify decisions being made in response to climate change. *Advancing the Science of Climate Change* calls for a single federal entity or program to coordinate a national, multidisciplinary research effort aimed at improving both understanding and responses to climate change. Seven cross-cutting research themes are identified to support this scientific enterprise. In addition, leaders of federal climate research should redouble efforts to deploy a comprehensive climate observing system, improve climate models and other analytical tools, invest in human capital, and improve linkages between research and decisions by forming partnerships with action-oriented programs.

Is sustainable development a workable solution for today's environmental problems? Is it scientifically defensible? Best known for applying ecological theory to the engineering problems of everyday life, the late scholar James J. Kay was a leader in the study of social and ecological complexity and the thermodynamics of ecosystems. Drawing from his immensely important work, as well as the research of his students and colleagues, *The Ecosystem Approach* is a guide to the aspects of complex systems theories relevant to social-ecological management. Advancing a methodology that is rooted in good theory and practice, this book features case studies conducted in the Arctic and Africa, in Canada and Kathmandu, and in the Peruvian Amazon, Chesapeake Bay, and Chennai, India. Applying a systems approach to concrete environmental issues, this volume is geared toward scientists, engineers, and sustainable development scholars and practitioners who are attuned to the ideas of the Resilience Alliance--an international group of scientists who take a more holistic view of ecology and environmental problem-solving. Chapters cover the origins and rebirth of the ecosystem approach in ecology; the bridging of science and values; the

challenge of governance in complex systems; systemic and participatory approaches to management; and the place for cultural diversity in the quest for global sustainability.

It is clear that nature is undergoing rapid changes as a result of human activities such as industry, agriculture, travel, fisheries and urbanisation. What effects do these activities have? Are they disturbing equilibria in ecological populations and communities, thus upsetting the balance of nature, or are they enhancing naturally occurring disequilibria, perhaps with even worse consequences? It is often argued that large-scale fluctuations in climate and sea-levels have occurred over and over again in the geological past, long before human activities could possibly have had any impact, and that human effects are very small compared to those that occur naturally. Should we conclude that human activity cannot significantly affect the environment, or are these naturally occurring fluctuations actually being dangerously enhanced by humans? This book examines these questions, first by providing evidence for equilibrium and non-equilibrium conditions in relatively undisturbed ecosystems, and second by examining human-induced effects.

Ecosystems and Human Well-being is the first product of the Millennium Ecosystem Assessment (MA), a four-year international work program designed to meet the needs of decision-makers for scientific information on the links between ecosystem change and human well-being. The Millennium Ecosystem Assessment is modeled on the Intergovernmental Panel on Climate Change (IPCC) and will provide information requested by governments, through four international conventions, as well as meeting needs within the private sector and civil society. Ecosystems and Human Well-being offers an overview of the assessment, describing the conceptual framework that is being used, defining its scope and providing a baseline of understanding that all participants need to move forward. The Millennium Ecosystem Assessment focuses on how humans have altered ecosystems, and how changes in ecosystems have affected human well-being. The assessment also evaluates how ecosystem changes may affect people in future decades and what responses can be adopted at local, national, or global scales to improve ecosystem management and thereby contribute to human well-being and poverty alleviation. The assessment was launched by United Nations Secretary-General Kofi Annan in June 2001, and the primary assessment reports will be released by Island Press in 2005. The Millennium Ecosystem Assessment series is an invaluable new resource for professionals and policy-makers concerned with international development, environmental science, environmental policy, and related fields. It will help both in choosing among existing options and in identifying new approaches for achieving integrated management of land, water, and living resources while strengthening regional, national, and local capacities. The Millennium Ecosystem Assessment series will also improve policy and decision-making at all levels by increasing collaboration between natural and social scientists, and between scientists and

policy-makers. Ecosystems and Human Well-being is an essential introduction to the program.

Feel like life's too busy to find your zen? Think again. Be a calmer, more productive, healthier you, without sacrificing precious hours. Discover the secret wellness hacks you can incorporate into your routine - whether it's a 5-minute focus exercise on your commute, 10 minutes' meditation at lunchtime, or balanced nutrition ideas for your next trip abroad. The mindfulness, meditation, nutrition, yoga and stretching ideas in 101 Ways to Live Well all focus on providing easy, quick, tangible solutions to the stresses and strains of everyday life. That means ditching the generic, one-size-fits-all approach and embracing the targeted, let's-get-this-sorted attitude, with tips from experts in their fields including: Mindfulness exercises to help you sleep A mid-morning snack that will crush your cravings Yoga twists that will stimulate your digestion Why and how to reconnect with friends you've lost touch with This holistic approach promises to help you create space in your life, declutter your brain and become unflappable in the face of whatever life throws your way. And with gorgeous original illustrations, this is a beautiful compact package - the perfect gift book for the busy person in your life. Chapters cover all aspects of modern life: Home Work Play Relationships Travel

These bite-sized wellness tips are designed to inject a little daily zen into an on-the-go lifestyle and help readers to live life to the full - whether they're on the road or at home. About Lonely Planet: Started in 1973, Lonely Planet has become the world's leading travel guide publisher with guidebooks to every destination on the planet, gift and lifestyle books and stationery, as well as an award-winning website, magazines, a suite of mobile and digital travel products, and a dedicated traveller community. Lonely Planet's mission is to enable curious travellers to experience the world and to truly get to the heart of the places they find themselves in. TripAdvisor Travelers' Choice Awards 2012, 2013, 2014, and 2015 winner in Favorite Travel Guide category 'Lonely Planet guides are, quite simply, like no other.' - New York Times 'Lonely Planet. It's on everyone's bookshelves; it's in every traveller's hands. It's on mobile phones. It's on the Internet. It's everywhere, and it's telling entire generations of people how to travel the world.' - Fairfax Media (Australia)

Scenarios are an invaluable tool for analyzing complex systems and understanding possible outcomes. This second volume of the MA series explores the implications of four different approaches for managing ecosystem services in the face of growing human demand for them: The Global Orchestration approach, in which we emphasize equity, economic growth, and public goods, reacting to ecosystem problems when they reach critical stages. Order from Strength, which emphasizes security and economic growth. Adapting Mosaic, which emphasizes proactive management of ecosystems, local adaptation, and flexible governance. TechnoGarden, a globalized approach with an emphasis on green technology and a proactive approach to managing ecosystems. The Scenarios volume will help decision-makers and managers identify development

paths that better maintain the resilience of ecosystems, and can reduce the risk of damage to human well-being and the environment.

Since the second edition of this text was published, many new environmental incidents have occurred, including another nuclear disaster, a mine disaster in the United States, and the Gulf of Mexico oil spill. Updated throughout the text, *Ecosystems and Human Health: Toxicology and Environmental Hazards, Third Edition* explores the broad range of environmental and human health aspects of chemical and biological hazards—from natural toxins and disasters to man-made pollutants and environmental crises. The book begins with the basic principles of pharmacology and toxicology, risk analysis, and air, water, and soil pollution. It then examines various toxicants and hazards, such as airborne hazards, halogenated hydrocarbons, metals, and organic solvents. Chapters also discuss food additives and contaminants, pesticides, hormone disrupters, radiation hazards, and natural environmental hazards such as venomous and toxic animals. The text reviews the Chernobyl nuclear crisis and the Walkerton drinking water tragedy, as well as other disasters, assessing some of their long-term effects, now that sufficient time has elapsed since their occurrence. With updates in every chapter, this third edition contains significant expansion of information on the genetics of chemical carcinogenesis, global warming, food additives, invasive species in the Great Lakes, nuclear accidents, and more. The book describes how chemical toxins and biological hazards can impact the environment and the people who live in it. The author presents numerous examples of the relationship between ecosystem health and human health. He emphasizes the need to consider the environmental impact of human activities and includes many real-world examples and new case studies.

In his report "We the peoples, the role of the United Nations in the twenty first century" (also known as the Millennium report), Kofi Annan presented an overview of the challenges facing humankind and the progress being made. This book contains a series of briefing papers that can help students understand the key themes of that report. Each paper presents a review of the issue under discussion, identifies recent developments, explains areas needing attention and includes case studies. Amongst the topics covered are: AIDS; biodiversity; child labour; children's rights; climate change; disarmament; poverty; human rights and international law.

One of the critical issues of our time is the dwindling capacity of the planet to provide life support for a large and growing human population. Based on a symposium on ecosystem health, *Managing for Healthy Ecosystems* identifies key issues that must be resolved if there is to be progress in this complex area, such as: Evolving methods f

The Millennium Ecosystem Assessment (MA) is the most extensive study ever of the linkages between the world's ecosystems and human well-being. It is one of the most important conservation initiatives ever undertaken, and the ecosystem services paradigm on which it is based provides the standard for practice. This manual supplies the specific tools that practitioners of the paradigm need in order to extend their work into the future. The manual is a stand-alone "how to" guide to conducting assessments of the impacts on humans of

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ecosystem changes. It builds on the experiences and lessons learned from the MA global and sub-global assessment initiatives, with chapters written by well-known participants in those initiatives. It also includes insights gained from service-focused assessment activities since the completion of the MA in 2005.

One of the major innovations of the Millennium Ecosystem Assessment is the incorporation of local and regional assessments into a global portrait of the planet's health. It is the first global assessment of ecosystems to include not only a diversity of ecosystems, but to draw on a wide range of cultural orientations and intellectual traditions, including those of indigenous peoples. The Sub-global Assessments Working Group integrated information from multiple sources and found that biophysical factors such as land-use change, climate change and variability, pollution, and invasive species have a significant effect on human well-being across cultures. For example, in places where there are no other social safety nets, diminished human well-being tends to increase immediate dependence on ecosystem services, which can damage the capacity of those local ecosystems, which in turn appears to increase the probability of natural disaster or conflict. Representing the baseline and framework for ongoing assessments of ecosystem and human well-being on a variety of scales around the world, Multiscale Assessments provides students, researchers, and policy-makers with the most comprehensive methodology for assessing ecosystems at local, national, and regional scales. Biodiversity and Human Health brings together leading thinkers on the global environment and biomedicine to explore the human health consequences of the loss of biological diversity. In 2005, The Millennium Ecosystem Assessment (MA) provided the first global assessment of the world's ecosystems and ecosystem services. It concluded that recent trends in ecosystem change threatened human wellbeing due to declining ecosystem services. This bleak prophecy has galvanized conservation organizations, ecologists, and economists to work toward rigorous valuations of ecosystem services at a spatial scale and with a resolution that can inform public policy. The editors have assembled the world's leading scientists in the fields of conservation, policy analysis, and resource economics to provide the most intensive and best technical analyses of ecosystem services to date. A key idea that guides the science is that the modelling and valuation approaches being developed should use data that are readily available around the world. In addition, the book documents a toolbox of ecosystem service mapping, modeling, and valuation models that both The Nature Conservancy and the World Wide Fund for Nature (WWF) are beginning to apply around the world as they transform conservation from a biodiversity only to a people and ecosystem services agenda. The book addresses land, freshwater, and marine systems at a variety of spatial scales and includes discussion of how to treat both climate change and cultural values when examining tradeoffs among ecosystem services.

This classroom resource provides clear, concise scientific information in an understandable and enjoyable way about water and aquatic life. Spanning the hydrologic cycle from rain to watersheds, aquifers to springs, rivers to estuaries, ample illustrations promote understanding of important concepts and clarify major ideas. Aquatic science is covered comprehensively, with relevant principles of chemistry, physics, geology, geography, ecology, and biology included throughout the text. Emphasizing water sustainability and conservation, the book tells us what we can do personally to conserve for the future and presents job and volunteer opportunities in the hope that some students will pursue careers in aquatic science. Texas Aquatic Science, originally developed as part of a multi-faceted education project for middle and high school students, can also be used at the college level for non-science majors, in the home-school environment, and by anyone who educates kids about nature and water. The project's home on the web can be found at <http://texasaquaticscience.org>

Ecosystems and Human Health introduces Ecohealth as an emerging field of study, traces its evolution, and explains its applications in cross-disciplinary and holistic programs. Its

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integrative approach not only focuses on managing the environment to improve health, but also analyzes underlying social and economic determinants of health to develop innovative, people-centered interventions.

Nature provides us with many services seemingly for free: recharged groundwater, fertile soil and plant biomass created by photosynthesis. We human beings draw extensive benefits from these “ecosystem services,” or ES – food, water supply, recreation and protection from natural hazards. Major international studies, such as the Millennium Ecosystem Assessment, have addressed the enormous role of biodiversity and ecosystems to human well-being, and they draw particular attention to the consequences resulting from the reduction or loss of these services. These very topical issues are being addressed by authors/scientists in a wide variety of disciplines – and their approaches, terminologies and methodological specifics are just as diverse. What, for example, does the efficacy of nature or natural capital mean? Which values of nature are particularly important, how are they distributed in space and time and how can they be assessed and the relevant knowledge promoted? Can all ecosystem services be quantified and even monetarised? What should be done to ensure that the multiple services of nature will be available also in future? This book explains the multifaceted concept of ecosystem services, provides a methodological framework for its analysis and assessment, and discusses case examples, particularly from Germany. It is addressed to scientists and practitioners in the administrative, volunteer and professional spheres, especially those who deal with environment, landscape management and nature conservation and regional and land-use planning. The target group includes experts from the business community, politicians and decision makers, students and all those interested in fundamental ecological, economic, ethical and environmental issues.

Approximately 60% of the benefits that the global ecosystem provides to support life on Earth (such as fresh water, clean air and a relatively stable climate) are being degraded or used unsustainably. In the report, scientists warn that harmful consequences of this degradation to human health are already being felt and could grow significantly worse over the next 50 years.

This volume presents some of the latest developments in research in interdisciplinary traditions of ecological economics in India. It outlines strategies and policies that can be adopted to ensure ecological sustainability. Containing both methodological and empirical essays, the book covers a number of critical issues including: - ecological and social resilience - ecosystem services and quality of life - policy reform for sustainable development - governance and ecosystems - valuing changes in the ecosystem - communities and collective action Overall, the contributors maintain that it is essential to rethink the criteria used in the design of development processes in order to avoid committing ecological blunders. The volume focuses on the need for bridging the knowledge systems of ecology and economics and, as such, will be of interest to researchers, environmentalists, economists and development practitioners.

This book answers key questions about environment, people and their shared future in deltas. It develops a systematic and holistic approach for policy-orientated analysis for the future of these regions. It does so by focusing on ecosystem services in the world’s largest, most populous and most iconic delta region, that of the Ganges-Brahmaputra delta in Bangladesh. The book covers the conceptual basis, research approaches and challenges, while also providing

a methodology for integration across multiple disciplines, offering a potential prototype for assessments of deltas worldwide. *Ecosystem Services for Well-Being in Deltas* analyses changing ecosystem services in deltas; the health and well-being of people reliant on them; the continued central role of agriculture and fishing; and the implications of aquaculture in such environments. The analysis is brought together in an integrated and accessible way to examine the future of the Ganges Brahmaputra delta based on a near decade of research by a team of the world's leading scientists on deltas and their human and environmental dimensions. This book is essential reading for students and academics within the fields of Environmental Geography, Sustainable Development and Environmental Policy focused on solving the world's most critical challenges of balancing humans with their environments. This book is licensed under a Creative Commons Attribution 4.0 International License.

This report is a synthesis of the findings of the MA on marine and coastal ecosystems, taken from the global and sub-global assessments. This synthesis report sets out to provide answers to a series of questions that all stakeholders not just decision makers may ask : what is at stake, what is the current status of marine and coastal ecosystems, why should we care if we lose marine and coastal ecosystems, and what can be done to ensure that marine and coastal ecosystems and services are conserved.

Human well-being relies critically on ecosystem services provided by nature. Examples include water and air quality regulation, nutrient cycling and decomposition, plant pollination and flood control, all of which are dependent on biodiversity. They are predominantly public goods with limited or no markets and do not command any price in the conventional economic system, so their loss is often not detected and continues unaddressed and unabated. This in turn not only impacts human well-being, but also seriously undermines the sustainability of the economic system. It is against this background that TEEB: The Economics of Ecosystems and Biodiversity project was set up in 2007 and led by the United Nations Environment Programme to provide a comprehensive global assessment of economic aspects of these issues. This book, written by a team of international experts, represents the scientific state of the art, providing a comprehensive assessment of the fundamental ecological and economic principles of measuring and valuing ecosystem services and biodiversity, and showing how these can be mainstreamed into public policies. This volume and subsequent TEEB outputs will provide the authoritative knowledge and guidance to drive forward the biodiversity conservation agenda for the next decade.

An overview of the benefits and services that nature offers to people. The contributors present a detailed synthesis of our current understanding of a suite of ecosystem services and a preliminary assessment of their economic value. *Ecosystems and Human Well-Being Current State and Trends: Findings of the Condition and Trends Working Group* Island Press

This book aims to identify, present and discuss key driving forces and pressures

on ecosystem services. Ecosystem services are the contributions that ecosystems provide to human well-being. The scope of this atlas is on identifying solutions and lessons to be applied across science, policy and practice. The atlas will address different components of ecosystem services, assess risks and vulnerabilities, and outline governance and management opportunities. The atlas will therefore attract a wide audience, both from policy and practice and from different scientific disciplines. The emphasis will be on ecosystems in Europe, as the available data on service provision is best developed for this region and recognizes the strengths of the contributing authors. Ecosystems of regions outside Europe will be covered where possible.

Satoyama is a Japanese term describing mosaic landscapes of different ecosystems—secondary forests, farm lands, irrigation ponds and grasslands—along with human settlements managed to produce bundles of ecosystem services for human wellbeing. The concept of satoyama, longstanding traditions associated with land management practices that allow sustainable use of natural resources, has been extended to cover marine and coastal ecosystems (satoumi). These landscapes and seascapes have been rapidly changing, and the ecosystem services they provide are under threat from various social, economic, political, and technological factors. Satoyama-Satoumi Ecosystems and Human Well-Being presents the findings of the Japan Satoyama Satoumi Assessment (JSSA), a study of the interaction between humans and ecosystems in Japan. It was written by the 200-plus authors, stakeholders, and reviewers from Japan and elsewhere who make up the JSSA team. The study analyzes changes that have occurred in satoyama-satoumi ecosystems over the last 50 years and identifies plausible future scenarios for the year 2050, taking into account various drivers such as governmental and economic policy, climate change, technology, and sociobehavioral responses. This provides a new approach to land-use planning that addresses not only economic development but also cultural values and ecological integrity. This book is a key reference text for development planners, policymakers, scientists, postgraduate students, and others interested in the environment and development.

This volume offers a comprehensive review of the chemical, biological and hydromorphological quality of the Danube. The first part examines the chemical pollution of surface waters, focusing on organic compounds (with special emphasis given to EU WFD priority substances and Danube River Basin specific pollutants), heavy metals and nutrients. Attention is also given to pollution of groundwater and drinking water resources by hazardous substances and to radioactivity in the Danube. The second part highlights the biology and hydromorphology of the Danube. It focuses on benthic macroinvertebrates, phytobenthos, macrophytes, fish, phytoplankton as well as microbiology, with chapters dedicated to gaps and uncertainties in the ecological status assessment and to invasive alien species. Further chapters dealing with the hydromorphology, sediment management and isotope hydrology complete the overall picture of the status of the Danube.

As the Gulf of Mexico recovers from the Deepwater Horizon oil spill, natural resource managers face the challenge of understanding the impacts of the spill and setting priorities for restoration work. The full value of losses resulting from the spill cannot be captured, however, without consideration of changes in ecosystem services--the benefits delivered to society through natural processes. An Ecosystem Services Approach to Assessing the Impacts of the Deepwater Horizon Oil Spill in the Gulf of Mexico discusses the benefits and challenges associated with using an ecosystem services approach to damage assessment, describing potential impacts of response technologies, exploring the role of resilience, and offering suggestions for areas of future research. This report illustrates how this approach might be

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applied to coastal wetlands, fisheries, marine mammals, and the deep sea -- each of which provide key ecosystem services in the Gulf -- and identifies substantial differences among these case studies. The report also discusses the suite of technologies used in the spill response, including burning, skimming, and chemical dispersants, and their possible long-term impacts on ecosystem services.

Humans have changed ecosystems more rapidly and extensively in the last 50 years than in any comparable period of human history. We have done this to meet the growing demands for food, fresh water, timber, fiber, and fuel. While changes to ecosystems have enhanced the well-being of billions of people, they have also caused a substantial and largely irreversible loss in diversity of life on Earth, and have strained the capacity of ecosystems to continue providing critical services. Among the findings: Approximately 60% of the services that support life on Earth are being degraded or used unsustainably. The harmful consequences of this degradation could grow significantly worse in the next 50 years. Only four ecosystem services have been enhanced in the last 50 years: crops, livestock, aquaculture, and the sequestration of carbon. The capacity of ecosystems to neutralize pollutants, protect us from natural disasters, and control the outbreaks of pests and diseases is declining significantly. Terrestrial and freshwater systems are reaching the limits of their ability to absorb nitrogen. Harvesting of fish and other resources from coastal and marine systems is compromising their ability to deliver food in the future. Richly illustrated with maps and graphs, *Current State and Trends* presents an assessment of Earth's ability to provide twenty-four distinct services essential to human well-being. These include food, fiber, and other materials; the regulation of the climate and fresh water systems; underlying support systems such as nutrient cycling; and the fulfillment of cultural, spiritual, and aesthetic values. The volume pays particular attention to the current health of key ecosystems, including inland waters, forests, oceans, croplands, and dryland systems, among others. It will be an indispensable reference for scientists, environmentalists, agency professionals, and students.

This open access book identifies and discusses biodiversity's contribution to physical, mental and spiritual health and wellbeing. Furthermore, the book identifies the implications of this relationship for nature conservation, public health, landscape architecture and urban planning – and considers the opportunities of nature-based solutions for climate change adaptation. This transdisciplinary book will attract a wide audience interested in biodiversity, ecology, resource management, public health, psychology, urban planning, and landscape architecture. The emphasis is on multiple human health benefits from biodiversity - in particular with respect to the increasing challenge of climate change. This makes the book unique to other books that focus either on biodiversity and physical health or natural environments and mental wellbeing. The book is written as a definitive 'go-to' book for those who are new to the field of biodiversity and health.

Stress is then laid on the global context within which user groups operate, including the nature and the forms of state intervention and the effects of increasing market integration. To date, this context has generally been uncongenial to community-based resource management; therefore, the authors recommend that, whenever a co-management approach is feasible, the concrete institutional form adopted is tailored to the specific features of local cultures.

With the knowledge of possible outcomes, what kind of actions should we take? The Millennium Ecosystem Assessment scored 74 response options for dealing with declines in ecosystem services and biodiversity, and managing drivers such as climate change and nutrient loading. This third volume in the MA series analyzes the track record of past policies and the potential of new ones. The challenge of reversing the degradation of ecosystems while meeting increasing demands for their services can be met only with significant policy and institutional changes. However, a difficult set of obstacles stand in the way. Policy makers must keep in mind that there are both trade-offs and synergies between human well-being,

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ecosystems, and ecosystem services, and that decisions regarding these tradeoffs are difficult and often contentious. The Responses volume ultimately establishes which policy options have the greatest chance to overcome the obstacles and generate positive outcomes. It will serve as an invaluable guide to the creation of stronger policy frameworks for the future.

"The new book Mapping Ecosystem Services provides a comprehensive collection of theories, methods and practical applications of ecosystem services (ES) mapping, for the first time bringing together valuable knowledge and techniques from leading international experts in the field." (www.eurekalert.org).

The purpose of this regional workshop in the Southeast was to broaden the environmental health perspective from its typical focus on environmental toxicology to a view that included the impact of the natural, built, and social environments on human health. Early in the planning, Roundtable members realized that the process of engaging speakers and developing an agenda for the workshop would be nearly as instructive as the workshop itself. In their efforts to encourage a wide scope of participation, Roundtable members sought input from individuals from a broad range of diverse fields-urban planners, transportation engineers, landscape architects, developers, clergy, local elected officials, heads of industry, and others. This workshop summary captures the discussions that occurred during the two-day meeting. During this workshop, four main themes were explored: (1) environmental and individual health are intrinsically intertwined; (2) traditional methods of ensuring environmental health protection, such as regulations, should be balanced by more cooperative approaches to problem solving; (3) environmental health efforts should be holistic and interdisciplinary; and (4) technological advances, along with coordinated action across educational, business, social, and political spheres, offer great hope for protecting environmental health. This workshop report is an informational document that provides a summary of the regional meeting.

The Earth's biodiversity-the rich variety of life on our planet-is disappearing at an alarming rate. And while many books have focused on the expected ecological consequences, or on the aesthetic, ethical, sociological, or economic dimensions of this loss, Sustaining Life is the first book to examine the full range of potential threats that diminishing biodiversity poses to human health. Edited and written by Harvard Medical School physicians Eric Chivian and Aaron Bernstein, along with more than 100 leading scientists who contributed to writing and reviewing the book, Sustaining Life presents a comprehensive--and sobering--view of how human medicines, biomedical research, the emergence and spread of infectious diseases, and the production of food, both on land and in the oceans, depend on biodiversity. The book's ten chapters cover everything from what biodiversity is and how human activity threatens it to how we as individuals can help conserve the world's richly varied biota. Seven groups of organisms, some of the most endangered on Earth, provide detailed case studies to illustrate the contributions they have already made to human medicine, and those they are expected to make if we do not drive them to extinction. Drawing on the latest research, but written in language a general reader can easily follow, Sustaining Life argues that

we can no longer see ourselves as separate from the natural world, nor assume that we will not be harmed by its alteration. Our health, as the authors so vividly show, depends on the health of other species and on the vitality of natural ecosystems. With a foreword by E.O. Wilson and a prologue by Kofi Annan, and more than 200 poignant color illustrations, *Sustaining Life* contributes essential perspective to the debate over how humans affect biodiversity and a compelling demonstration of the human health costs. It is the winner of the Gerald L. Young Book Award in Human Ecology Best Sci-Tech Books of 2008 for Biology by Gregg Sapp of Library Journal

This book is about doing innovative research to achieve sustainable and equitable change in people's health and well-being through improved interactions with the environment. It presents experiences from the field of ecosystem approaches to health (or ecohealth research) and some insights and lessons learned. It builds on previous literature, notably Forget (1997), Forget and Lebel (2001), Lebel (2003), and Waltner-Toews et al. (2008). Through case-studies and other contributions by researchers supported by Canada's International Development Research Centre (IDRC), the book presents evidence of real changes in conditions of people, their health, and the ecosystems that support them. These changes were derived from applications of an ecosystem approach to health in developing regions of the world. The book also illustrates the resulting body of applied, participatory, and action research that improved health and environmental management in developing countries and, in many cases, influenced policies and practices.

The two hundredth anniversary of the birth of Charles Darwin, February 12, 2009, occurred at a critical time for the United States and the world. In honor of Darwin's birthday, the National Research Council appointed a committee under the auspices of the U.S. National Committee (USNC) for DIVERSITAS to plan a Symposium on Twenty-first Century Ecosystems. The purpose of the symposium was to capture some of the current excitement and recent progress in scientific understanding of ecosystems, from the microbial to the global level, while also highlighting how improved understanding can be applied to important policy issues that have broad biodiversity and ecosystem effects. The aim was to help inform new policy approaches that could satisfy human needs while also maintaining the integrity of the goods and services provided by biodiversity and ecosystems over both the short and the long terms. This report summarizes the views expressed by symposium participants; however, it does not provide a session-by-session summary of the presentations at the symposium. Instead, the symposium steering committee identified eight key themes that emerged from the lectures, which were addressed in different contexts by different speakers. The focus here is on general principles rather than specifics. These eight themes provide a sharp focus on a few concepts that enable scientists, environmental NGOs, and policy makers to engage more effectively around issues of central importance for biodiversity and ecosystem management.

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