Excerpts from

Conservation of Shared Environments
Learning from the United States and Mexico

Edited by
Laura López-Hoffman, Emily D. McGovern, Robert G. Varady, and Karl W. Flessa

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Excerpts from

Conservation of Shared Environments

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Abstract

The United States and Mexico’s shared environment extends far beyond the political line. It comprises the plant and animal species whose natural distributions extend deep into each nation along with the waters in rivers and aquifers that support ecosystem function far removed from the border. Conservation of Shared Environments presents a broad perspective on the ecological, social and political challenges of conserving biodiversity across the U.S.-Mexico border. Covering topics as diverse as wildlife and grassland preservation, water rights, ecosystem services, indigenous peoples, and the ecological consequences of border security, the contributors illustrate collaborative, transboundary efforts to overcome cross-border conservation challenges. This volume offers scientific analysis as well as insight for bridging gaps between researchers, policymakers, and the public.
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Introduction

In honor of Cinco de Mayo, in early May 2009, the newly elected President of the United States, Barak Obama, addressed a crowd of celebrants at the White House. Flanked by the Mexican Ambassador, Arturo Sarukhan, the President spoke of the nature of the binational relationship between the United States and Mexico. His words touched on the historical, cultural, linguistic, and even gastronomic connections between the two countries. Speaking of the economic and security challenges shared by the nations, the President remarked, “good neighbors work together when faced with common challenges.” In addition to the trials of commerce and security discussed by President Obama and Ambassador Sarukhan, the countries face another common challenge, one that has the potential to fundamentally alter the well-being of people in both nations. The challenge is to protect and conserve the environment shared by the United States and Mexico in the face of environmental change—drought, land-use change, intensive water use, deforestation, urbanization, habitat fragmentation, and climate change.

With this book we aim to provide citizens and leaders in Mexico and the United States with a blueprint to work together to conserve their shared species, ecosystems, and ecosystem services. The chapters collected here—by authors from both countries and with backgrounds in academia, government agencies and nongovernmental organizations—present a broad view about the challenges of conserving biodiversity across an international border. The authors bring to the book many years of experience working on transboundary environmental processes. In these pages, they examine the implications of their work for transboundary policy-making. We believe the results will be worthwhile, instructive to decision-makers and other stakeholders, and resonate as well tomorrow as they do today.
While the contributors to this volume describe many types of transboundary conservation, common ecological themes run through the chapters: maintaining corridors and habitat for migratory species such as birds, bats, and butterflies in the face of land use change; retaining habitat connectivity for species like lizards, black bears, and Sonoran pronghorn antelopes, whose natural range distributions are bisected by the political border; preserving adequate water flows to support ecosystems and biodiversity in binational watersheds and landscapes under chronic water shortage and droughts; preserving the ecological integrity of borderland spaces in the face of the border wall, unilateral security, undocumented migration and narcocotics trafficking; and sustaining ecological processes that support the ecosystem services shared by people in both countries under a changing climate.

Throughout their chapters, the authors underscore the increased difficulty of addressing changes in the shared environment under the division of management between the two countries. The contributors show that when administrative regimes are divided, information sharing is slowed; decision-making on projects that should be coordinated binationally can be delayed or disjointed among jurisdictions, yielding incoherent policies; and joint responsibilities for protecting shared resources may sometimes be overlooked. Further, several authors describe how the problems that would occur in any transboundary conservation situation may be exacerbated by the economic and cultural differences between the United States and Mexico.

As the species, spaces, and ecosystem services examined in these chapters vary in their geographic scope, so do the terms used to describe their respective settings. In our title and introduction to the book, we describe our
subject as the shared U.S.-Mexico “environment” because the word is expansive both in concept and geography. Conceptually, environment encompasses species, ecosystems and ecosystem processes, as well as people and institutions. Geographically, the term is sufficiently far-reaching to include the continent-wide ecological and social connections between countries we consider in this book.

By “conservation,” we mean preserving species, ecosystems, and ecosystem processes and sustaining their contributions to human well-being. Throughout the book, we have taken “transboundary conservation” to mean any conservation effort that must consider ecological processes in another country, as well as the cross-border consequences of actions, policies, and management regimes in one country on ecological processes in the other. Under this definition, “transboundary” is not always “at or near the border.” Because each chapter has its own central conservation problem, authors have at times used different terms to fit the scope of the problems they describe. These include “transborder” or “cross-border” (usually referring to processes very close to the border) and “binational” (denoting the involvement of two national governments or peoples).

We have taken this broad geographic approach to transboundary conservation for two key reasons. First, species survival depends on connectivity of habitats in patterns that predate the contemporary political border. Many species have distributions that extend beyond the border zone. Second just as the ecological connections between countries may extend far across the political line, so may the causes, consequences, and solutions to transboundary conservation problems. On-the-ground conservation activities and policymaking must therefore be focused at times far away from the border—such as
at critical bird stopover points throughout the Americas, or within the vast Colorado River system far to the north of its delta in Mexico, or on the ecological processes in Mexico that support life-sustaining ecosystem services in the U.S., and vice-versa. In this sense, both the geographic and topical scope of this book are more expansive than that of other volumes that have focused solely on the immediate United States-Mexico border region\(^3\) or on shared ecosystems, eco-regions and biomes.\(^4\)

The invited chapters of this volume are presented within five thematic sections. The first three sections are organized around the ways through which the United States and Mexico share their environment: spaces, species and ecosystem services. **Conserving Shared Spaces** focuses on landscape conservation in the United States-Mexico borderlands. The second section, about animals that migrate and range across the U.S.-Mexico border is entitled, **Conservation of Shared Species**. In the chapters of the third section, the authors offer the novel approach of framing transboundary conservation through **Shared Ecosystem Services**—the conditions and processes by which natural ecosystems support human life.\(^5\) The fourth section explores **Border Security and Conservation**. The fifth section of the volume hones our capacity for binational collaboration by **Building Institutional Bridges** across the administrative differences between countries.

Read individually, the book’s chapters provide insights into specific aspects of transboundary conservation, such as preserving habitat for migratory animals, protecting borderland wetlands, or sustaining the ecosystem processes that support shared ecosystem services. Read as a whole, the chapters reveal principles for how to frame successful transboundary conservation efforts: 1) the scope of such efforts may often need to extend far
beyond the political line; 2) transboundary collaborations happen at many scales, from the local to the federal level and should include diverse stakeholders; 3) informal collaborative, and non-governmental processes are instrumental in promoting transboundary conservation; 4) formal institutions are also crucial to establishing binational responsibilities for protecting shared environments and facilitating transboundary conservation; and 5) the concept of ecosystem services can be used to frame transboundary conservation in terms of mutual interests between countries.

We summarize the aforementioned ideas in the Guiding Principles for Successful Transboundary Conservation. In offering these principles, we suggest that the ideas are enduring, that they will be as relevant to U.S.-Mexico transboundary conservation efforts in the future as they today. In Energizing Transboundary Conservation: Three Easy Steps, we provide three simple, feasible policy recommendations that could be rapidly and easily implemented today, however. These suggestions reflect the guiding principles for framing transboundary conservation that emerge from this book, and are actionable in the short term because they follow on existing binational institutional arrangements.

The publication of this book takes place at a time when a wall is being built to separate our two countries. Discussions of undocumented migration, narco-trafficking and arms smuggling appear to be driving a deep wedge between us. The contributors to this book remind us, however, that we share an environment. They provide insights and tools for bridging the differences between our countries and addressing the impeding challenges of climate change, land use change and lost habitat. At this moment, it is crucial to remember how our environment unites us—how the rivers and aquifers, plants and animals, ecosystems
and ecosystem services we have in common transcend the differences between us—and how as neighbors we would be well served to work together on the environmental challenges we share.

Endnotes


Sample image and map from Connecting wildlife habitats across the U.S.-Mexico border, by Melanie Culver, Cora Varas, Patricia Moody Harveson, Bonnie McKinney, and Louis A. Harveson
Sample map from *Finding mutual interest in shared ecosystem services: New approaches to transboundary conservation*, by Laura López-Hoffman, Robert Varady, and Patricia Balvanera

Sample images from *Assessing border-related human impacts at Organ Pipe Cactus National Monument*, by Chris Sharp and Randy Gimblett
Figure 1. The Big Bend reach of the Rio Grande/Rio Bravo showing the locations of the federal and state protected areas that are involved in this binational conservation effort. At 1,865 miles long, the Rio Grande is the fifth longest river in North America, flowing from headwaters in the southern Rocky Mountains of Colorado to a terminus near Brownsville, Texas. Its watershed occupies 180,000 square miles (46,700,000 ha) of Mexico and the U.S., including portions of Colorado, New Mexico, and Texas. The major tributaries of the Rio Grande are the Pecos River on the U.S. side and the Río Conchos in Mexico.
Sample map from *A fence runs through it: Conservation implications of recent U.S. border security legislation*, by Brian P. Segee and Ana Córdova

Sample image from *Grasslands in the borderlands: Understanding coupled-natural-human systems and transboundary conservation*, by Gerardo Ceballos, Rurik List, Ana D. Davidson, Ed L. Fredrickson, Rodrigo Sierra, Lourdes Martínez, Jeff E. Herrick, and Jesús Pacheco
Energizing Transboundary Conservation
Three Easy Steps

Where to begin? Throughout this volume, the authors have described the breadth of the environmental connections between the U.S. and Mexico, and the ecological, social and political complexity of transboundary conservation. Going further, they have suggested numerous ways of improving binational management in the shared environment. Reflecting on the lessons and guiding principles that have emerged from this book, the editors offer three simple, feasible policy recommendations. Because they follow on existing binational institutional arrangements between the countries, these ideas are actionable in the short term.

First, under the auspices of the 1983 La Paz agreement, the U.S. and Mexican governments should form a binational task force to monitor the environmental impacts of border security. In the La Paz accord, the nations agreed to cooperate in environmental protection in the border area, and to “assess ... projects that have significant impacts on the environment of the border area, that appropriate measures may be considered to avoid or mitigate adverse environmental effects.”

The task force should be composed of diverse stakeholders from both countries including: local, state, and federal land management agencies, NGOs, academic researchers, and the local and Indigenous peoples most affected by security activities. The task force should begin by developing and implementing protocols for monitoring environmental and social impacts of border security. After a reasonable period of monitoring, the working group should then set priorities for, and oversee the implementation, of mitigation efforts. The binational effort will not only lessen the ecological effects of security
infrastructure and activities on borderland landscapes and species, but will reawaken a spirit of transboundary conservation cooperation in the wake of unilateral security actions.

Second, we suggest that in the spirit of Minute 306 of the 1944 Treaty between the U.S. and Mexico, the countries should support restoration of riparian, wetland, and estuarine habitats such as those of the Colorado River and the Rio Grande/Río Bravo and their deltas. Funds should be made available by the two governments to enable the International Boundary and Water Commission (IBWC/CILA), with the advice of a binational technical task force, to support NGOs, community groups, universities, and the private sector conservation efforts. IBWC should enlist these groups to help restore riparian and delta habitats affected by surface water allocations, groundwater utilization, and water policies and practices. Such studies and activities would define the ecosystem functions desired by stakeholders in each country and allocate water to restore those functions. Funds should support projects that are binational and collaborative and that address the greatest environmental needs, regardless of country.

Third, the Commission for Environmental Cooperation (CEC) should be reinvigorated. The CEC was created by the environmental side agreement to NAFTA—the North American Agreement on Environmental Cooperation (NAAEC). Of all the binational arrangements for transboundary conservation, the CEC is the only one with a geographic mandate broad enough to address the vast ecological linkages between the countries, and a topical mandate sufficiently expansive to consider the spectrum of environmental and social changes shaping the U.S. and Mexico’s shared environment. The CEC’s three principal functions—"scaling" ecological linkages across North America, "organizing" networks of stakeholders
and “spotlighting” issues of transboundary environmental concern through investigations—suit it to work with stakeholders to address transboundary ecological and conservation concerns (see Mumme et al, this volume).

The implementation of CEC’s Transboundary Environmental Impact Assessment (TEIA) mechanism, envisioned in the NAAEC enabling document, could add immediate force for protecting the environment of one country against unintended impacts of actions and policies in the other country. After 15 years of non-action, we urge the two countries to negotiate and implement a workable and forceful TEIA agreement for conserving the U.S. and Mexico’s shared environment.

Since the CEC’s creation in 1994, the U.S. and Mexico have generally supported its mission. Nevertheless, it has been seen as underfunded and weak. Because it has lacked the resources and thus the “teeth” to identify problems, investigate them, and enforce corrective measures, the commission has yet to fully realize its promising mandate.

For CEC to be effective requires two important changes: (1) a redesign to make it more inclusive of affected communities and other stakeholder groups, and (2) far greater and longer-term financial commitment by the participating countries.

A redesigned CEC would be uniquely situated to meet the transboundary conservation principles set forth in this book: thinking beyond the border to recognize continent-wide ecological connections; incorporating diverse stakeholders; encouraging cross-border collaboration at many scales, from local to federal; and framing conservation in terms of ecosystem services. We believe this is the ideal moment for the U.S. and Mexico to work together to reinvigorate the CEC.
At this time of heightened environmental changes, when growth is depleting water resources and stressing transboundary ecosystems, when border security activities are transforming borderland landscapes and preventing species movements across the border, when actions and policies in one country are affecting ecosystem services and human well-being in the other country, and when the two governments can start afresh and bring new perspectives to thorny problems, Mexico and the United States should seize the opportunity to work together in conserving their shared environment. They would be wise to begin with three simple, feasible and actionable steps: develop a binational task force on border security, restore transboundary riparian ecosystem, and reinvigorate the CEC.
Editors

Laura López-Hoffman is an assistant professor at the School of Natural Resources, and an assistant research professor at the Udall Center for Studies in Public Policy at the University of Arizona. She obtained her Ph.D. from Stanford University in biological sciences in 2003. As an undergraduate at Princeton University, López-Hoffman studied ecology, Latin American studies and public policy. Prior to coming to the University of Arizona, she was an NSF post-doctoral fellow at the Universidad Nacional Autónoma de México’s Center for Ecosystem Studies. López-Hoffman studies the linkages between the environment and human society. Her research focuses on the ecology and policy of managing transboundary systems, in particular, the surface waters, aquifers, species, ecosystems and ecosystem services shared by the United States and Mexico.

Emily D. McGovern received a B.A. from Grinnell College, with a major in English literature and concentration in environmental studies, and an M.A. in geography from the University of Arizona. She is currently a researcher and editor at the Udall Center for Studies in Public Policy at the University of Arizona. She has also worked on cooperative projects between the Sonoran Institute and the National Park Service to develop technical reports, monitoring protocols, and outreach publications related to Sonoran Desert ecosystems and adaptive management. In her scholarly writing, she has addressed the politics, culture, media institutions, and water policies of the U.S.-Mexico border region, and analyzed the status and significance of global water initiatives.

Robert G. Varady is deputy director of the University of Arizona’s Udall Center for Studies in Public Policy, where he is research professor of environmental policy and of arid lands studies. He also is adjunct professor of hydrology and water resources; director of the French CNRS Joint International Unit (UMI) on Water, Environment and Public Policy; and president of the International Water History Association. Varady has been principal investigator for a number of projects on climate and water in the southwestern U.S. and northern Mexico. He has written extensively on U.S.-Mexico transboundary environmental policy and on global water initiatives. Varady obtained his Ph.D. in 1981 in modern history from the University of Arizona, and B.S. and M.S. degrees in mathematics from the City College of New York and the Polytechnic University, respectively.

Karl W. Flessa received his A.B. from Lafayette College and his Ph.D. from Brown University. He has been on the faculty of the University of Arizona since 1977 and has appointments in geosciences and in ecology and evolutionary biology. He is currently Head of the Department of Geosciences. A paleontologist by training, he and his students have been working on the Colorado River Delta since 1992. His current research focuses on the use of skeletal remains and stable isotopes in conservation biology. He has authored more than 100 scientific articles. Flessa has been a Humboldt Fellow, a program officer at the National Science Foundation, president of the Paleontological Society, visiting professor at the Universidad Autónoma de Baja California and at Cornell University, a fellow at the Udall Center for Studies in Public Policy and visiting scientist at the Sonoran Institute.
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About The Edge
Environmental Science, Law, and Policy Series
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The Edge emerged from the combined strengths of The University of Arizona's Institute of the Environment, James E. Rogers College of Law, Biosphere 2 and Biosphere 2 Institute, Udall Center for Studies in Public Policy, and University of Arizona Press.

The series offers an extraordinary forum for bringing together physical and social scientists and experts in the field to tackle the big environmental challenges of our times, to inform public understanding, and to advise policy-makers on these critical issues.

The Edge books will be produced through a unique model for conceptualizing, developing, and distributing printed materials and ideas. Each book will present an integrated picture of a complex environmental science and public policy dilemma framed without regard to disciplinary and political boundaries. Authors will collaborate in a novel fashion to produce a cohesive volume. Two author meetings will allow editors and authors to refine the major themes addressed in that volume, and will enable editors and authors to interweave chapters into a coherent narrative. Expert editors and science writers will work with chapter authors to ensure that the books speak effectively to a public audience. Books produced for this series will adhere to an ambitious publication schedule from manuscript to sending the book to the printer.

The Edge aims to disseminate cutting-edge scientific knowledge in a form and style that engages leaders and citizens in dialogue and that encourages policy efforts aimed at resolving the leading environmental issues of our times.
Objectives and Strategies

1. The Edge books will present environmental science and policy in a readable and informative manner.

Each book in The Edge series will present an integrated picture of a complex environmental science and public policy dilemma. The first volume addresses Transboundary (U.S.-Mexico) environmental challenges. Other volumes will address the many dimensions of climate change, water conservation, invasive species, and ecosystem management and restoration. Each volume will be framed to reflect the reality that these issues cross disciplinary and political boundaries and thus require consideration from multiple perspectives.

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The series and the important scientific information it presents will be available through a variety of venues:

- hard-copy books
- electronic books
- companion website
- Spanish and Mandarin Chinese translations

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In addition to disseminating environmental science information to the public, The Edge has an explicit goal of communicating with policy-makers about the role science can play in the development of wise environmental policy.
Series Editors

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