STATE OF THE HOTSPOTS

The Atlantic Forest of South America

Biodiversity Status, Threats, and Outlook

EDITED BY
CARLOS GALINDO-LEAL AND
IBSEN DE GUSMÃO CÂMARA

Center for Applied Biodiversity Science
at Conservation International

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ISLAND PRESS
Washington • Covelo • London

The Web sites that appear in this volume were each live at the time of publication. With the exception of part III, the part opening images are used by permission of Conservation International. The part III image is used by permission of Roberto Francisco.

Library of Congress Cataloging-in-Publication data.

The Atlantic Forest of South America : biodiversity status, threats, and outlook / edited by Carlos Galindo-Leal, Ibsen de Guzmão Câmara.
p. cm.—(State of the Hotspots)
Includes bibliographical references and index.
ISBN 1-55963-988-1 (cloth : alk. paper)—ISBN 1-55963-989-X (pbk.: alk. paper)
1. Forest conservation—Brazil—Mata Atlântica. 2. Biological diversity conservation—Brazil—Mata Atlântica. 3. Forest management—Brazil—Mata Atlântica. 4. Forests and forestry—South America. I. Galindo-Leal, Carlos. II. Câmara, Ibsen de Gusmão. III. Series.
SD414.B6A84 2003
333.75'16'0981—dc21
2003001903

British Cataloguing-in-Publication data available.

Design by Brighid Willson.

Printed on recycled, acid-free paper

Manufactured in the United States of America
10 9 8 7 6 5 4 3 2 1

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Support for Island Press is provided by The Nathan Cummings Foundation, Geraldine R. Dodge Foundation, Doris Duke Charitable Foundation, Educational Foundation of America, The Charles Engelhard Foundation, The Ford Foundation, The George Gund Foundation, The Vira I. Heinz Endowment, The William and Flora Hewlett Foundation, Henry Luce Foundation, The John D. and Catherine T. MacArthur Foundation, The Andrew W. Mellon Foundation, The Moriah Fund, The Curtis and Edith Munson Foundation, National Fish and Wildlife Foundation, The New-Land Foundation, Oak Foundation, The Overbrook Foundation, The David and Lucile Packard Foundation, The Pew Charitable Trusts, The Rockefeller Foundation, The Winslow Foundation, and other generous donors.

The opinions expressed in this book are those of the author(s) and do not necessarily reflect the views of these foundations.

About the Center for Applied Biodiversity Science

The Center for Applied Biodiversity Science (CABS) at Conservation International (CI) was launched in 1998 to strengthen the ability of CI and other institutions to identify the emerging threats to earth's biological diversity accurately and respond to them quickly. CABS brings together leading experts in science and technology to collect and interpret data about biodiversity, to forge partnerships, to plan conservation priorities, and to build strategic action plans leading to concrete conservation outcomes.

The Atlantic Forest of South America

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State of the Hotspots

Carlos Galindo-Leal, Scientific Editor
Philippa J. Benson, Managing Editor

The Atlantic Forest of South America: Biodiversity Status, Threats, and Outlook
edited by Carlos Galindo-Leal and Ibsen Gusmão Câmara

Foreword

The Atlantic Forest region of South America tops the world in statistics of habitat loss, with over 93 percent of the original range of the forest already gone. Approximately twelve years ago, Conservation International selected the Atlantic Forest as one of its top-priority biodiversity hotspots worldwide. This recognition drew attention and resources from international and national organizations, private institutions such as the MacArthur Foundation, and bilateral and multilateral government agencies. The reasons the Atlantic Forest deserves global attention are to be found in the wealth of information presented in this first volume of the State of the Hotspots series. Some 3,000 plant species, 35 mammals, and 104 bird species are considered threatened. Close to 70 percent of all Brazilians live within the original distribution of the Atlantic Forest, and three of the largest urban centers on the continent are also located there. In his classic work *With Broadax and Firebrand: The Destruction of the Brazilian Atlantic Forest,* Warren Dean describes in detail the history of degradation of this incredibly wealthy region. Many other treatises have also been written on its problems. The fate of the Atlantic Forest in Paraguay and Argentina is not that different.

But the history of the Atlantic Forest is beginning to be rewritten. Of all the tropical biodiversity hotspots, this region now has the best capacity to respond to the plethora of insults it has withstood over many centuries. Over 40 protected areas have been created in the last twelve years, although still less than 20 percent of the remaining area is under strict protection. Particularly in the southern and southeastern regions, but also in several other areas, conservation efforts are being carried out by a significant army of trained professionals, dozens of capable research institutions and nongovernmental organizations, and several increasingly effective government agencies, all supported by emerging democratic structures for effective governance. On-the-ground monitoring, coupled with affordable remote sensing technologies, is enabling the assessment of land-use trends, which is vital for the survival of the region's rich biodiversity. Public campaigns and environmental education programs have helped to raise awareness of the resources that are at risk of vanishing from this biome. The public is also becoming

educated about the dependence of humans on vital ecosystem services, such as soil replenishment and water availability, that are rapidly dwindling throughout the extent of the forest.

The Atlantic Forest can be considered the cradle of Brazil's environmental movement and is home to its most capable universities, research centers, and nongovernmental organizations. Fundação SOS Mata Atlântica, whose principal focus is the conservation of remaining forests in the region, is the largest membership organization in Brazil. Together with Conservation International, SOS Mata Atlântica has formed the Mata Atlântica Alliance, which envisions zero deforestation. A new generation of public attorneys specializing in environmental issues is helping to ensure that progressive legislation regulating the use of natural resources and protecting biodiversity is enforced. And a growing number of park managers and rangers, responsible for hundreds of protected areas, look at their professions with a new commitment.

Several universities contribute to the training of dedicated individuals in many environmental disciplines. Citing just one example, in the graduate program in ecology, conservation, and wildlife management of the Federal University of Minas Gerais—created in 1989 with resources from Brazilian government agencies, the U.S. Fish and Wildlife Service, the MacArthur Foundation, World Wildlife Fund–U.S., Conservation International, and the Fundação Biodiversitas—more than 150 students have earned masters degrees or doctorates. Most graduates are now employed in training institutions, nongovernmental organizations, government agencies, or the private sector. Many of their theses and dissertations focused on conservation issues in the two Brazilian hotspots, the Atlantic Forest and the Cerrado. Scientists and research centers are now conducting hundreds of research projects throughout the Atlantic Forest.

The private sector has also taken up the challenge. In late 2002, four major Brazilian companies with operations in the Atlantic Forest region joined with Conservation International to form the Instituto BioAtlântica (IBIO). IBIO, a not-for-profit organization, is currently working to include the private sector in the conservation and restoration of the region and to promote sustainable development.

The results are beginning to show. The Atlantic Forest was the first major Brazilian ecosystem to be the focus of several biodiversity conservation planning exercises, culminating with a master plan for the entire biome. This work was done at the request of the Ministry of the Environment, state agencies, Conservation International, Fundaçao Biodiversitas, Fundação SOS Mata Atlântica, and Instituto de Pesquisas Ecologicas (IPE), in addition to national and international funding agencies. The master plan is now part of the National Biodiversity Strategy, Brazil's commitment under the Convention on Biological Diversity. This biodiversity blueprint is complemented by a remote sensing program coordinated by Fundação SOS Mata Atlântica and Instituto Nacional de Pesquisas Espaciais (INPE), the Brazilian space agency that is monitoring forest cover throughout the region. These exercises have spilled over into Argentina and Paraguay, creating a trinational initiative.

More than 40 new protected areas have been created in the past 10 years, including several state parks and reserves. More ambitious projects also have been proposed, such as the creation of two large-scale corridors that span most remaining vegetation; the aim is to maintain and restore connectivity between existing forest blocks. These proposals are now receiving funding from the G7 Pilot Program to Conserve the Brazilian Rain Forest (PP-G7), administered by the World Bank. The Critical Ecosystems Partnership Fund—a joint venture that includes Conservation International, the World Bank, the Global Environment Facility, the MacArthur Foundation, and the Japanese government—is ready to invest significant resources in projects conceived and implemented by nongovernmental organizations, universities, and community groups.

But much remains to be done. Most of these efforts, although providing hope for sustaining the Atlantic Forest and ensuring the protection of its biodiversity, are still in their initial stages. For these emerging initiatives to succeed, their progress must be monitored through the use of adequate indicators. A thorough examination of the Atlantic Forest, in Argentina and Paraguay as well as in Brazil, inaugurates the State of the Hotspots series, which aims to analyze the state of biodiversity in the most crucial areas worldwide. By proposing and tracking suitable indicators, the entire conservation community can invest its efforts in the most urgent activities, including but not limited to training people; monitoring species, habitats, and ecosystems; creating additional protected areas in key irreplaceable habitats; restoring forests; and educating the public. With mechanisms to track progress as well as the occasional and inevitable setbacks, we firmly believe we can make the Atlantic Forest the first success story among the global biodiversity hotspots.

—Gustavo A. B. da Fonseca, Russell A. Mittermeier, and Peter Seligmann

Preface

The Atlantic Forest of South America could be a poster child for biodiversity hotspots around the world. Less than 8 percent of the original coverage of the Atlantic forests of Brazil, Argentina, and Paraguay remains, much of that in small fragments. The rich biology of the region is hanging on by a thread as human population in the region continues its explosive growth and the aspirations of the inhabitants for a more consumptive lifestyle continue to increase demands on the environment.

Amazingly, nearly all the species known to be in the original 1 to 1.5 million-square kilometers of Atlantic Forest can still be found, though often in small isolated fragments of the original cover. Even new species of primates have been discovered there in the last decade. Biologists the world over are recognizing the richness of the Atlantic Forest and leading a charge to preserve the remnants and restore as much as possible of the former glory of the region. The more that is known about the biodiversity of the Atlantic Forest and the ongoing threats it faces, the better conservation programs can be directed.

Many scientific studies have been made in the region, but the nature of these studies usually focuses in detail on a small portion of the whole. When the authors of these studies, however, can bring the pieces together, a clear picture develops that is more powerful than the sum of the individual parts. This book brings the picture together for the first time. It summarizes much of what is known about the biological diversity of the region and focuses on the continuing threats to what is left. In its breadth and depth, this book should play a major role in informing and driving conservation programs in this very important region.

—Gordon E. Moore

Acknowledgments

We hope that this book contributes to the process of halting destruction of the Atlantic Forest hotspot and beginning its restoration. One of the first steps in this endeavor is to get people on the same page. We have been fortunate to get a variety of people from different disciplines, affiliations, regions, and countries on the same pages—literally. Each of them is intensely committed to preventing the loss of one of the greatest treasures of our planet. We are extremely grateful to all the authors for their contributions and for the trust they placed in us to adjust their chapters to fit the book requirements. As you will read in the book, they are passionate about their work and filled with optimism in the face of the alarming trends they describe.

Luiz Paulo Pinto, Maria Cecília Wey de Brito, Monica Fonseca, Paulo Gustavo, and Roberto Cavalcanti from Conservation International Brazil provided logistical support, valuable comments on several chapters, and help in recruiting an excellent team of Brazilian authors.

From the beginning of the project, Hernán Povedano and José Luis Cartes went out of their way to invite and help interview many of the contributors from Argentina and Paraguay. They continued to provide much-needed assistance throughout the development of the book.

Penny Langhammer undertook the painstaking job of creating maps to illustrate the chapters and provide the reader with a sense of place. She also made immense contributions in editing early versions of the manuscripts and in managing the entire project. Rob Waller, Greg Buppert, Lorena Bustos, and Mark Denil from Conservation International helped Penny create the maps, from obtaining map layers to editing final illustrations. Many information layers for the creation of these maps were provided by Fundação SOS Mata Atlântica, Guyra Paraguay, and Germán Palé and Guillermo Placci of Fundación Vida Silvestre Argentina.

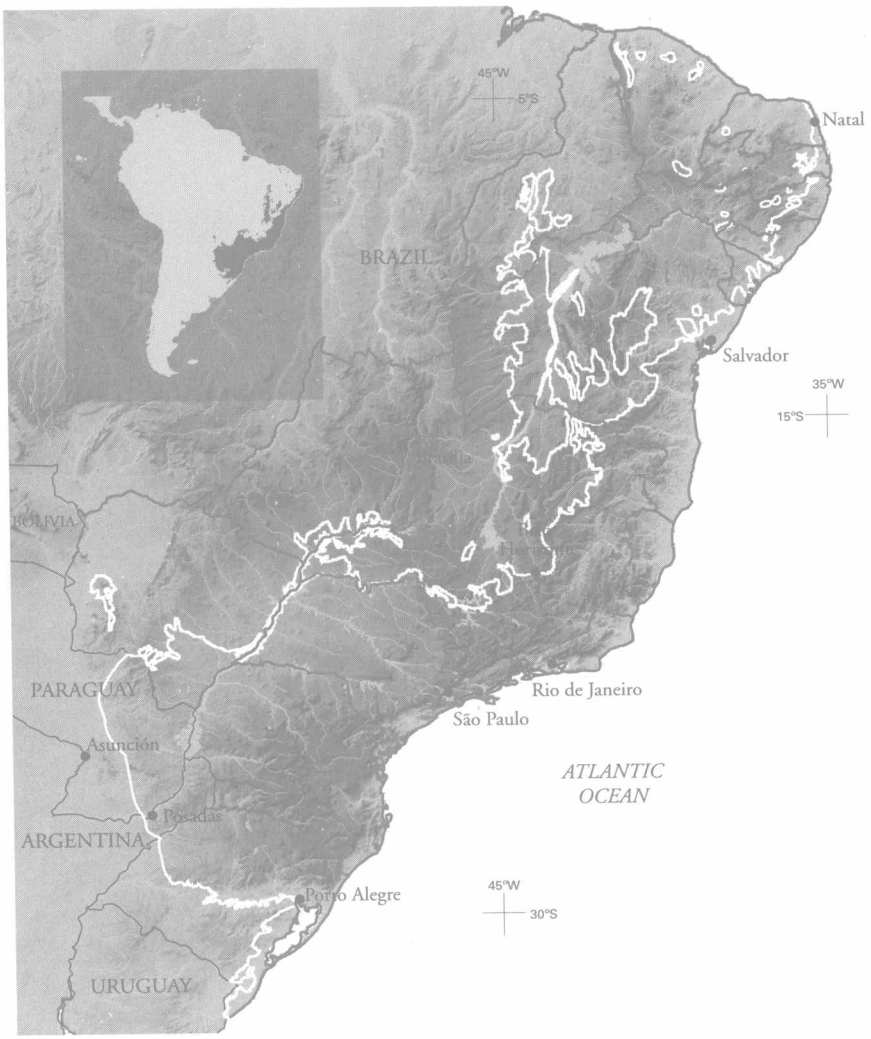
The contributions benefited greatly from the work of the CABS publications team, led by Philippa Benson. Her relentless scrutiny and tenacious editing greatly improved the clarity and readability of the final book. Her team included the superb translators Laura Vlasman and Muriel Vasconcellos, who translated

Portuguese and Spanish versions into English in meticulous academic detail. They scrutinized the clarity of meanings, references, and consistency, often examining primary sources. Neil Lindeman and Natasha Atkins thoroughly cleaned up many chapters of the book. Glenda Fabregas contributed her ideas to early versions of the book's cover. Brighid Willson from Island Press developed the interior design and later versions of the cover. We also thank Kevin Schafer for the use of his photographs on the cover of this volume, including the background image and the muriqui (right most inset).

We were lucky to have Anthony Rylands down the hall here at CABS, with his encyclopedic knowledge of the Atlantic Forest (and his library). His careful review of parts of this book added much polish and many edges of accuracy.

Finally, Barbara Dean, Barbara Youngblood, and Laura Carrithers of Island Press took on this project enthusiastically. Of course, grateful thanks go to Silvio Olivieri, Gustavo Fonseca, and Russ Mittermeier from Conservation International, who provided guidance and much-needed support throughout the process.

Bringing together the various aspects of this book has been a complex and sometimes daunting enterprise. We hope the book gives you the same understanding and sense of urgency we have about the future of the Atlantic Forest.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Thus the modern Atlantic Forest evolved and came finally to occupy its historical boundaries, altogether like some remote, antique empire, its origins mythical, its dynasties extending over epochs, its splendor astonishing, its inhabitants luxurious, shrewd, and conservative in their exploitation of its bounteous resources, for millennia unchallenged and unchallengeable in its perfect and total dominion, yet at its foundation utterly brittle and vulnerable.

—Warren Dean, *With Broadax and Firebrand: The Destruction of the Brazilian Atlantic Forest* (1995)

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