THE ENVIRONMENT IN HISTORY: INTERNATIONAL PERSPECTIVES: 13

A LIVING PAST

Environmental Histories of Modern Latin America

Edited by John Soluri, Claudia Leal, and José Augusto Pádua

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berghahn
NEW YORK • OXFORD
www.berghahnbooks.com

First published in 2018 by

Berghahn Books

www.berghahnbooks.com

Library of Congress Cataloging-in-Publication Data

Names: Soluri, John, editor. | Leal, Claudia, 1970- editor. | Pádua, José Augusto, editor.
Title: A Living Past: Environmental Histories of Modern Latin America / edited by Claudia Leal, John Soluri, and José Augusto Pádua.
Description: New York: Berghahn, 2018. | Includes bibliographical references and index.
Identifiers: LCCN 2017051497 (print) | LCCN 2017059196 (ebook) | ISBN 9781785333910 (eBook) | ISBN 9781785333903 (hardback: alk. paper)
Subjects: LCSH: Human ecology—Latin America—History. | Nature—Effect of human beings on—Latin America—History. | Latin America—Environmental conditions.
Classification: LCC GF514 (ebook) | LCC GF514 .L58 2018 (print) | DDC 304.2098—dc23
LC record available at https://lccn.loc.gov/2017051497

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN 978-1-78533-390-3 hardback
ISBN 978-1-78533-391-0 ebook

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CHAPTER 1

Mexico's Ecological Revolutions

Chris Boyer and Martha Micheline Cariño Olvera

The state has acted as the primary mediator between nature and society in Mexico. This is not because its power and stability have made possible control of the social or economic practices of people, businesses, or bureaucratic entities within its borders. Nor has it been a powerful state characterized by its ability to direct the country's political, economic, and ecological destiny. Rather, the Mexican state's influence is the result of governments and changing political circumstances that have created opportunities for various groups of actors in different historical periods, with profound consequences for the nation's population and territory. The state has also experienced radical changes due to the establishment of militant liberalism in the nineteenth century, the social revolution of 1910, and the resurgence of development liberalism beginning in the mid-twentieth century. Transitions from one period to another nearly always have been sudden and unforeseen. In other words, the country has not only experienced a series of political revolutions, but also various "ecological revolutions," in the sense proposed by Carolyn Merchant: dramatic changes in the way people conceive and make use of their surroundings and the country's so-called natural resources.[1]

These ecological revolutions arose in a context of growing—though discontinuous—commodification of nature and in increasingly precarious environmental conditions. Nevertheless, in many specific cases they have given rise to sustainable uses, and even to *new* sustainable uses, of territory and resources.

Beginning in 1854, when the state began to consolidate, up to the present, Mexican territory went through three stages that led to ecological revolutions: the political-liberal movement that erupted in Ayutla in 1854, the social revolution of 1910, and the so-called Green Revolution that began in 1943 and that presaged the neoliberal period beginning in 1992. None of these revolutions completely broke with prior ecological, social, and political conditions, yet each generated new circumstances in which each social group that used natural resources came to new understandings about their surroundings and were likewise affected by changes in the environment. Each revolution left long-term social and ecological footprints, creating the context that led to the

following revolution. But each revolution also created countercurrents, that is, historical dynamics capable of counteracting the effects of the revolution itself which, in the long term, constituted unexpected openings for groups and individuals to value and use nature, creating new forms of social organization.

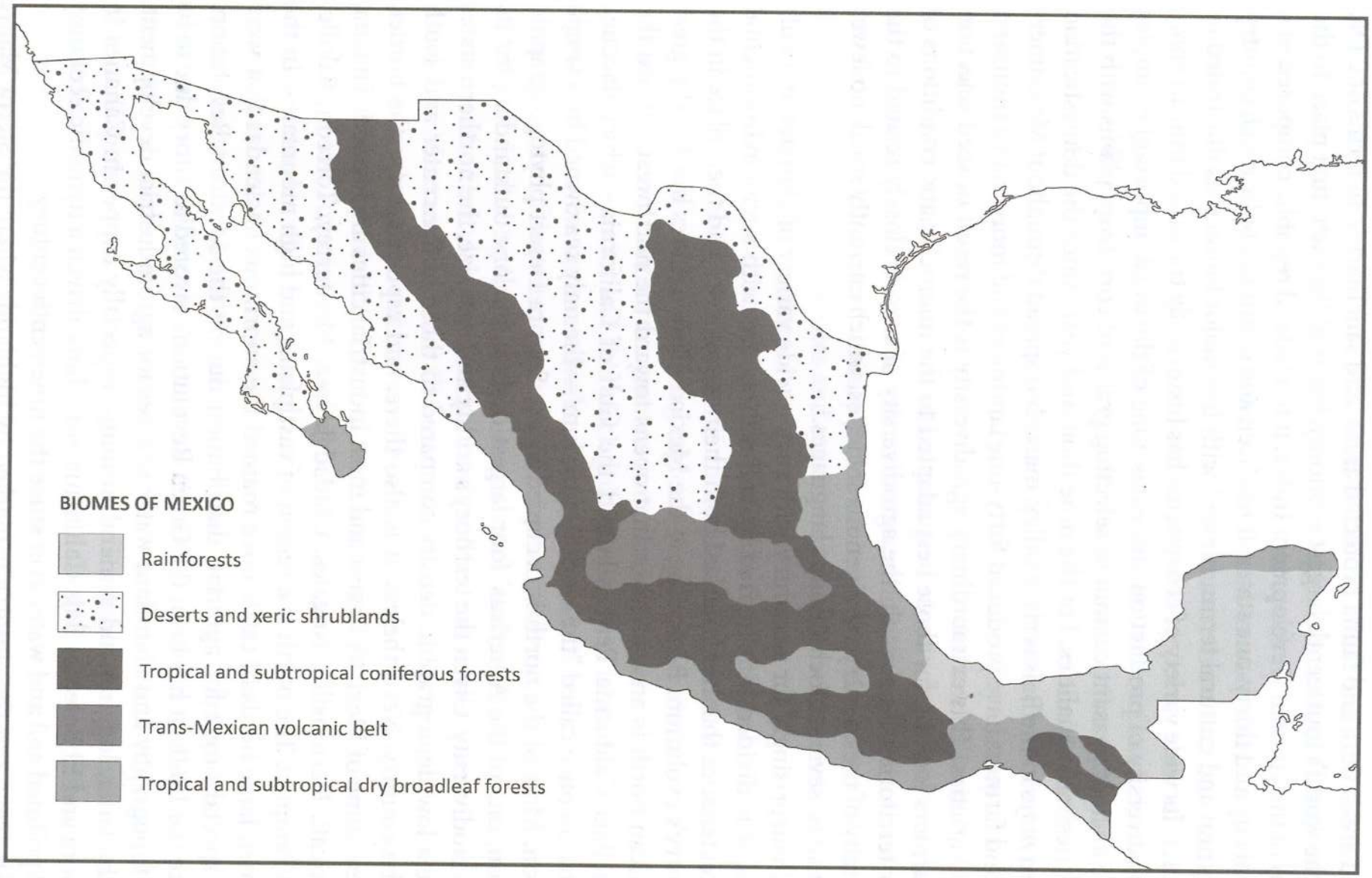
Nineteenth-century liberalism cemented private property's hegemony, opening new investment possibilities leading to the increasing commodification of natural resources. Thus, it contributed to the neocolonial extractive regimen that characterized the regime of president Porfirio Díaz (1876–1911, known as the *Porfiriato*), which was characterized by the sacking of minerals, water, forests, and oil by predominantly foreign interests. The social revolution reorganized landholding and permitted its collective use, though neither private property nor the intensive use of natural resources was eradicated. These were subject to a new period of exploitation with the Green Revolution, whose ostensible goal was to promote small-scale agriculture but ultimately favored private landholders and commercial production. As the years passed and with the advent of neoliberalism, market forces became stronger, putting an end to the accomplishments of the 1910 revolution and producing a new wave of commodification in fields, forests, rivers, seas, mines, and on seashores. The commodification of nature has gone hand in hand with an increase in the dispossession of peasants, fishermen, and indigenous communities, thereby sharpening social inequality. The cities overflow with migrants who are hard put to find work even in the informal economy. Insecurity grows, as does pollution in both urban and rural areas.

This situation explains the increase in popular mobilizations of people fed up with the growing power of the transnational corporations that increasingly have acquired control of the nation's natural resources. In response to the widespread reprivatization of land and aquatic ecosystems experienced in the country, since the year 2000 an unprecedented phenomenon has appeared: the slow but unmistakable strengthening of a rural-urban alliance proposing alternatives to the overexploitation of natural resources and the use of genetically modified organisms, and opposing the dismantling of *campesino* agriculture. These same movements seek new ways to reconstruct the country on the basis of its biocultural wealth and diversity.

Biocultural Sketch

Mexico is the world's eleventh most populated country, with more than 119 million inhabitants as of 2014. It is categorized as one of the world's twelve megadiverse countries according to Conservation International. Thirteen percent of the nation's territory is located within 177 protected areas, including biosphere reserves, national parks, natural monuments, natural resource pro-

Map 1.1. Mexico's main biomes.



Source: Anthony Challenger, *Utilización y conservación de los ecosistemas terrestres de México. Pasado, presente y futuro* (Mexico City: UNAM/CN-CUB, 1998), figures 6.2 (p. 278) and 6.3 (p. 280). Simplified version by Camilo Uscátegui.

tected areas, flora and fauna protected areas, and sanctuaries. In terms of GDP, it is the world's fourteenth largest economy, but is in the sixty-first place in the terms of the Human Development Index. It is a federal republic composed of a capital city and thirty-one states. It has been and continues to be a rich country in natural and cultural terms, blessed with five major biomes, as illustrated in map 1.1. Its wide variety of ecosystems has historically translated into an enormous diversity of production strategies. One of the most important examples is the ancient peasant custom of selecting grains of corn from plants with the most desirable qualities. For the nine thousand years since the domestication of *Zea mays* in the Balsas river valley, maize has spread throughout Mesoamerica, and farmers have produced forty-one landraces and more than a thousand local varieties. This extraordinary agrodiversity is the result of seed selection by farmers looking for those best adapted to the microclimatic conditions of their territories. As a result, the agrodiversity of corn is closely related to the diversity of the country's indigenous societies, which currently speak no fewer than sixty-seven autochthonous languages.[2]

Unsurprisingly for a country with such a wide variety of climates and cultures, it is divided into myriad biocultural regions with socioenvironmental characteristics that have marked both their own history and their place in the country's evolution. Beginning at the Mexico–United States border, the great Mexican north is an arid space that opens toward the northwest, toward the long Baja California Peninsula and the Gulf of California—which Jacques Cousteau once called "the world's aquarium"—the only sea owned by a single nation. Most of the north is occupied by the Sonora Desert phytogeographic region, one of the Americas' four largest deserts, but one outstanding for its rich biodiversity. Given the territory's aridity and vast size, the northern states have a low demographic density compared to those of the center and south of the country. Nevertheless, it is also there, and especially near the border, where some of Mexico's largest and most industrial cities are located: Tijuana, Mexicali, Hermosillo, Nogales, Ciudad Juárez, Monterrey, Torreón, Saltillo, and Tampico. The north is a region of vast plains and high mountains. In the former, large herds of cattle once roamed the enormous haciendas that were the special target for agrarian distribution during the Mexican Revolution. Since the 1960s, it has been the Green Revolution's favored territory due to its flat topography and abundant water sources for agroindustrial development. In the latter, logging and mineral mining—especially copper in Cananea in Sonora and El Boleo in Baja California Sur—have driven a dynamic economy and polluted soil and water ever since the nineteenth century.

The center of the country is marked by highlands where the Sierra Madre Occidental and Oriental cordilleras come together. Here the old colonial cities are located, many of them World Heritage sites: Morelia, Guanajuato, San Luis Potosí, Querétaro, Puebla, Tlaxcala, and Mexico City. Toward the south,

the cordilleras join in the Mixtec Range and are interrupted by a depression that forms the Tehuantepec Isthmus. The highlands and their valleys have been densely populated since the pre-Hispanic epoch by different indigenous groups, who in the colonial era were often forced to work in the region's gold and silver mines. As population and power centers, these sites have been the stage for important events in the nation's history, especially during the Independence War, the War of the Reform—as the liberal revolution is known in Mexican historiography—and the Mexican Revolution. For example, the independence struggle (1810) was planned in Querétaro, and it was there that Maximilian of Hapsburg faced the firing squad (1867) and the current Constitution of 1917 was written and signed. The Mexico City metropolitan area, with more than twenty million residents, is among the world's largest megacities. In spite of pollution and constant changes in land use, the central mountains and valley still have large conifer forests, which, in addition to providing lumber and cellulose, are partially protected in parks and reserves. The area is also rich in archeological sites and many communities whose residents maintain their indigenous culture.

In the east, under the tropical influence of the Gulf of Mexico, are the Huasteca Mountains with their forest microclimates. In the sierras of Puebla and Veracruz are the coffee-producing regions—organic, for the most part—and the areas that still contain the greatest corn diversity. In the Gulf of Mexico lie the largest oil deposits, and this black gold continues to lead Mexico's exports. In the west, the Pacific coast forms a rich plain, and the coastal area includes an abundance of lagoons, mangroves, beaches with palm stands, and tourist centers, including those with a long history, such as Acapulco, as well as new sites like Huatulco. Also in this area are Mexico's largest ports: Ensenada, Mazatlán, Manzanillo, Lázaro Cárdenas, Salina Cruz, and Puerto de Chiapas.

In the south are the states with the widest biocultural diversity: Guerrero, Oaxaca, Chiapas, Tabasco, Campeche, Yucatán, and Quintana Roo. The last three form the Yucatán Peninsula where the calcareous plain is the site of an intricate complex of underground rivers that produce natural open air wells known as *cenotes*. Here too rises the Petén forest, where Mayan ruins and communities abound. The seven southern states contain exuberant tropical ecosystems whose biodiversity varies from the high mountains to the coast. They also contain invaluable archaeological wealth at numerous large sites of the Mixtec, Zapotec, Olmec, and Maya cultures. There are also beautiful beaches on the Pacific Ocean, the Gulf of Mexico, and the Caribbean Sea, with countless coastal lagoons, mangroves, bays, islands, and tropical reefs, including the Mesoamerican Reef, which ranks as the world's second largest, and nearly sixty protected areas (35 percent of Mexico's total). These are also the states with the largest number of indigenous groups and languages. This wealth has constantly attracted those who seek to exploit the land, the coast, the seas, and

the subterranean minerals. Since colonial times, large landed estates have been concentrated in this area, monocultures have been introduced, tons of timber have been extracted, enormous hydroelectric dams have been built, and the coast has been plagued by resorts closed to the majority of Mexicans whose annual income would not pay for a single night's stay.

Mexico's location within world geopolitics has been a key factor in its environmental history. Ever since the colonial era, the country's two ocean fronts have joined Asia to Europe, facilitating colonial Spain's interoceanic communication and making Mexico the most important colonial administrative center; meanwhile, Mexico's natural resource wealth (silver, especially, but also other precious commodities such as cochineal, pearls, and cacao) had an influence on the location and development of human settlements and the institutionalization of an economy based on extractivism. Since the mid-nineteenth century, proximity to the United States has been a decisive factor in the development of another productive wave based on mining, livestock, and large-scale agriculture, especially in the north. Today, the two countries share the world's longest terrestrial border between the global North and South. The border, physically marked by a fence and by the Río Grande has become one of the globe's most dynamic frontier areas. Tons of merchandise—legal and illegal—cross the border between the two trading partners. Millions of people also cross, including both documented and undocumented migrants hailing from Mexico but also from Central and South America.

Mexico is a country of contrasts and contradictions, which have turned into socioenvironmental conflicts whose historical trajectories have culminated in the ecological revolutions analyzed in this article.

The Political-Liberal Revolution: From Mexican Independence to the Fall of the *Porfiriato*

The extractive regime of the colonial economy was destroyed by eleven years of armed movements, beginning with the rebellion led by Miguel Hidalgo in 1810 and ending with Agustín de Iturbide's military uprising in 1821. The major mines (in Zacatecas and San Luis Potosí) flooded, and a half century passed before the mining industry recovered. The sector's decline temporarily ended the environmental damage caused by colonial mining, allowing forests to recover for several decades. Ever since the sixteenth century, exploitation of precious metals had caused deforestation around mineral deposits, the extraction and refining of which required increasing quantities of wood. Mining was also the force behind the development of businesses providing supplies, such as the charcoal haciendas and the small-scale charcoal sellers.[3] As Robert C. West demonstrated more than sixty-five years ago, the variety and scale of inputs

that the mines required multiplied their ecological impact, and this influenced the location of human settlements and the use (and overuse) of forest, hydraulic, and agricultural resources, and thus determined the socioenvironmental history of various desert areas in the north of the country.[4] With the outbreak of the independence wars at the beginning of the nineteenth century, insurgent and royal armies sacked the haciendas in Bajío (an area rich in grain production, located in parts of the states of Guanajuato, Querétaro, Jalisco, and Michoacán). As Eric Van Young has shown, the rural population also attacked haciendas during the war.[5] Economic damage, together with the disappearance of the mining market, bankrupted many properties and led to the creation of small agricultural properties known as *ranchos*. These family-run farms came to predominate in regions where grain production diminished and created conditions for the spread of livestock, which in turn had important ecological implications in the form of deforestation, soil compaction, and increased erosion.[6]

The prolonged independence movement undermined the central government's ability to rule, with both social and ecological consequences, especially in the border areas of the new nation-state. In Yucatán, the violent caste war broke out in 1847 as a result of generations of indigenous oppression and competition among local elites. A significant number of Maya communities in the present-day state of Quintana Roo continued fighting until 1883. The rebellion destroyed commercial properties, displaced thousands of persons, and led to the outbreak of epidemics.[7] Lack of security prompted illegal logging of mahogany both on the coast of Tabasco and the border with Guatemala, particularly by British interests.[8] In the north, a series of uprisings by ethnic groups such as the Comanches and the Apaches created constant uncertainty in the states of Chihuahua, Sonora, and Coahuila. Northern indigenous groups settled in the arid, sparsely populated space to establish an economy (and a military way of life) based on raising horses.[9]

Economic catastrophe produced political instability, leaving Mexico vulnerable to two groups of imperialist adventurers: North American (1846–48) and French (1862–67). Not surprisingly, the population grew very slowly, from 6.8 million in 1828 to 8.4 million in 1868, an annual rate of 0.6 percent.[10]

The liberal political revolution began in 1854 at the hands of Ignacio Comonfort and Benito Juárez and others, culminating with the Laws of Reform (1855–57) and the War of Reform (1857–61), which eventually put an end to postindependence instability. The liberal revolution was consolidated through a series of initiatives begun during the Restored Republic (1867–76) and ending with the long regime of Porfirio Díaz (1876–1911), an era known as *Porfiriato* that was characterized by authoritarian political stability and an extended phase of economic growth between 1880 and 1905. A liberal state par excellence, the Porfiriato's development model was based on foreign (espe-

cially U.S.) investment in extractive industries, railroads, and other infrastructure, in the agriculture and livestock sector, and in financial institutions. This model generated enormous fortunes, not only for foreign investors but also for Mexican businessmen and owners of large estates who had capital and political ties. But the social and ecological cost of economic growth was extremely high. Thousands of people lost their communal lands to commercial agriculture as well as to the forestry, mining, oil, and transport sectors.

The railroads were the backbone of the extractive model and they grew at an impressive rate: from 650 kilometers of track on the eve of the Porfiriato, the figure rose to 25,000 kilometers around 1910, almost half of which were owned by North American companies. The expansion of railroads threatened lands of indigenous peoples as investors bought up territory where new lines were expected to be opened. This process, which John Coatsworth has called "anticipatory dispossession," led to at least fifty-five local uprisings, beginning in 1877.[11] Forests were also affected by the felling of timber needed to build trestles and ties, water stops, and as fuel for many steam engines prior to the universalization of coal power around 1930.[12] In some cases, railroads established their own lumber companies. The Ferrocarril Noroeste de México, a Canadian-U.S. consortium in Chihuahua, built two enormous sawmills with cutting-edge equipment. The Madera Company received a generous concession and rented additional land for a total of more than 670 thousand hectares of virgin forest. Although only one sawmill ever operated with any regularity, it succeeded in producing a half million board feet daily by 1909. Almost all the timber came from forests easily accessible by train; the rapid devastation of available timber contributed to the consortium's collapse within a decade.[13] In addition to the railroads, Porfirian development affected forests in other ways. Lumber companies were created in various areas in the center of the country to provide lumber to mines and to meet the increased urban demand for construction materials and charcoal.[14] Commercialization of forest resources led to their privatization or delivery to logging interests in the form of concessions, all of which impeded the access communities had traditionally enjoyed to the woods.

In most cases, railroads were built to transport the goods that had structured the Mexican economy for four centuries: minerals. The Porfirian mining renaissance was made possible by foreign investment, new technologies, political stability, and North American demand for industrial metals such as copper. Dozens of mines were opened in the north; the largest were El Boleo in Baja California Sur and Cananea in Sonora. Mining generated new settlements and an increasing demand for lighting for cities and mines, for which sperm whale oil was used; hunting for this species by North American whalers drove it to near-extinction.[15] In the center of Mexico, illumination was provided by turpentine, itself a distillate of pine tree resin, which proved more sustainable.

Population movement toward the border drove the agriculture-livestock industry and the resulting environmental transformation. It also increased water and soil pollution from industrial wastes.[16]

In addition to forests, other collectively owned village resources were privatized, with serious implications for the environment and society. In particular, the commercialization of agriculture led to important changes in water use. In the state of Morelos, more than 100 percent of the water's real disponibility from the Higuerón River was leased to sugar haciendas.[17] Modernized Michoacán haciendas drained wetlands that were the source of reeds and fish for surrounding indigenous communities. The reorientation of water that previously had been, if not communal, at least shared between haciendas and indigenous communities produced social tensions that became evident during the 1910 revolution.[18]

The desire to control water was manifest especially in the country's capital, where engineers hoped to control constant flooding. After a decade of work, they managed to almost completely drain Lake Texcoco by building a huge canal and a tunnel that transferred the water out of the Valley of Mexico and into the Valley of Mezquital. But that civil engineering victory did not solve the flooding problem. Draining the watershed led to shortages and stimulated extraction of groundwater which, in addition to being unsustainable, undermined the capital's subterranean foundation.[19]

The Porfirian economic boom intensified in land use, particularly of irrigated fields, which accounted for approximately 13 percent of all agricultural land in 1907. In central areas, cutting-edge equipment came into use, such as steam-powered tractors, although these technologies were often inappropriate for the Mexican climate.[20] Nevertheless, the great majority of rural dwellers were small-scale farmers, as shown in illustration 1.1.

Many social consequences of the Porfirian agricultural revolution have been studied in detail, especially the privatization of communal lands brought about by the Lerdo Law (1856) and its rigid application to indigenous commons during the final decades of the nineteenth century.[21] The ecological effects are not as well known, though it is clear that monocultures appeared in many areas of the country, including La Laguna (cotton), Yucatan (henequen), and Morelos (sugar). In Yucatan, the demand for twine to feed agricultural machinery in the United States and Canada led to the de facto slavery of the Maya population and the transformation of a small-scale livestock-raising landscape into one dominated by henequen haciendas with the felling of what was left of the Yucatan forest.[22] In the north, immense livestock haciendas were established, like that of Luis Terrazas in Chihuahua, with close to three million hectares. These probably also changed local ecology by favoring certain forage species and by compacting soils, but that subject needs to be studied further to assess these possible effects.

Illustration 1.1. "Corn Patch Fringed with Maquay [*sic*]," Toluca, 1907.

Note the careful use of maguey to mark the border of the corn patches and to minimize erosion.

Courtesy Milwaukee Public Museum, Sumner W. Matteson Collection, negative number SWMI-D179.

Intellectuals recognized the Porfiriato's ecological impacts. Biologists, engineers, agronomists, and others formed scientific societies to discuss the possible consequences of overexploitation of natural resources. Especially outstanding was Miguel Ángel de Quevedo, a hydraulic engineer who soon became known as the "Apostle of the Tree" for voicing alarm about deforestation and the disappearance of forests around cities, which, in his opinion, were essential to public health. These experts' concerns led to the formation of a forestry service, a school of forestry, and the first national conservation regulations. Although companies that produced the greatest environmental damage ignored the legislation, the nascent intellectual conservation movement was a forerunner of the environmental movement of the postrevolutionary years. But intellectuals were not alone in their concern for nature. In some cases, businessmen themselves warned of the need to protect the resources on which they were economically dependent. In Baja California Sur, Gastón Vives, director of the Compañía Criadora de Concha y Perla de Baja California S.A., received a concession in the Gulf of California and developed the world's first method of cultivating pearl-producing oysters. This stopped the overfishing of the mother-of-pearl species and allowed him to produce pearls in large quantities. Vives's pioneering methods in the pearl industry demonstrated that extractivism is not the only road to economic development.[23]

The Social Revolution and Cardenismo

Some sectors of Mexican society who had paid the price for Porfirian commodification of nature and privatization of the commons (water, soil, forests), as well as with social and political repression, found a way to voice their anger in the early twentieth century. The end of the Porfiriato came in 1910, in the context of presidential succession. Díaz had been elected for five terms and was eighty years old. Two years earlier, he had provoked a wave of political speculation by suggesting that he would leave the presidency to facilitate a democratic opening. In the end, he refused to do so and jailed his opponent, Francisco I. Madero, who declared himself in rebellion on 10 November 1910, sparking a social revolution. The civil war lasted for almost a decade and reduced the population by 6.6 percent, as one million people either perished or fled into exile.[24]

Among the numerous factions involved in the revolutionary struggle, the one with the greatest socioenvironmental impact was led by Emiliano Zapata. Under the popular slogan "Land and Liberty," he headed a mass peasant movement; its major demand was to divide up the large landed estates known as *haciendas* and to return the *pueblos* (peasant communities) their lands, forests, and water. These demands eventually formed the basis of one of the Revo-

lution's principle achievements: land reform codified in the Constitution of 1917. It took decades, however, to become a reality.

Postrevolutionary regimes tried to fulfill the expectations of the popular classes that had been accentuated by the revolutionary experience. Land reform began slowly and intensified during the Lázaro Cárdenas administration (1934–40), which transferred eighteen million hectares to agrarian communities. Postrevolutionary governments also sponsored other changes that had environmental implications, including passage of conservationist legislation, the development of bureaucracies for managing natural resources, and nationalization of some strategic industries related to the exploitation of raw materials such as oil and the primary railroads.

Agrarian reform represented a basic change in land use, though it did not affect all of the country's regions; in Morelos, Yucatan, and La Laguna, the intensive commercial use of land gave way to small-scale peasant production. The few detailed studies of the ecological effects of this productive transformation suggest that peasant uses of the land are less damaging, although more widespread in some cases, than commercial agriculture.[25] But the agrarian bureaucracy also created new power relations between land-reform communities (*ejidos*) and the state, placing the knowledge of experts over that of local residents and establishing a dependency relationship between state officials and peasant communities.[26]

The agrarian reform affected not only agricultural land but forests as well. Many indigenous communities lived in the woods since, as Gonzalo Aguirre Beltrán argued in 1967, the forests (along with jungles and desert areas) represented refuges far from mestizo population centers.[27] Some experts opposed the redistribution of the forestlands, fearing that deforestation would inevitably follow, along with the consequent erosion and changes to the hydrological regime. These concerns inspired the Forestry Law of 1926, an attempt to control use of forests through the establishment of production cooperatives. In practice, the provisions of the new law were not respected until 1934, when Cárdenas established an autonomous forestry department, headed by Quevedo, that was charged with enforcing compliance. There were only six cooperatives in the country before 1935; in 1940, the number rose to 860.[28] In practice, cooperatives experienced a wide variety of problems, including capture by corrupt political bosses and a growing dependence on commercial timber interests. Nevertheless, the experiment introduced by Cárdenas represented one of the world's first attempts at what today we would call community forestry management. Moreover, peasant communities gained capacity and experience in managing their own resources in several parts of the country.

The Constitution of 1917 also foresaw the exploitation of subsoil natural resources for the benefit of Mexican citizens. However, the application of this

measure would be delayed for more than twenty years—that is, until the nationalization of the petroleum industry in 1938. From the first years of the twentieth century, North American and British companies produced oil in the Huasteca of Veracruz. These companies felled forests to build small industrial cities, where employees, usually foreigners who were paid better than their Mexican counterparts, lived far from the wells and the toxic surroundings where the locals lived. When Mexican workers complained about health conditions and pay, oil companies refused to negotiate, and Cárdenas nationalized the industry on 18 March 1938. After six months of administration by the workers themselves, Cárdenas created the state-owned PEMEX company charged with producing, refining, and selling the oil. PEMEX has implemented measures to protect the wellbeing of workers over the years, although less attention has been paid to care of the natural environment.[29]

The promises of the revolution of 1910 reached their widest application during the presidency of Lázaro Cárdenas. He was the first chief of state to take broad measures to assure the long-term conservation of natural resources. His administration created forty national parks and sponsored the first studies of fishing in Lake Pátzcuaro and the Pacific Ocean in a bid to achieve a sustainable catch and to promote production cooperatives. His administration also made innumerable improvements in infrastructure (roads, electrification, potable water) in cities and rural areas. The *ethos* of the period aimed at harmonizing the use of nature with society's needs, especially in the agrarian sector. The Cardenistas managed, simultaneously, to modernize and organize the landscape and society.[30] Reforms were not error-free, and some were not sustainable, but they were conceived as a holistic regime that would not alienate human beings from the biosphere. Unfortunately, a few years after its birth, this perspective came up against a third revolution: the so-called Green Revolution.

The Green Revolution and Statist Developmentalism

Since 1945, Mexico has fluctuated between revolutionary-*cardenista* promises of food sovereignty and support for small-scale peasant production versus a modernizing liberal development model centered on industrialization, the commodification of natural resources, and the channeling of economic and administrative assets into the cities. It is no surprise that the latter model grew more powerful given that the nation's population grew from 28.3 million in 1950 to 117.9 million in 2010, a period during which the urban population went from 42.6 percent to 76.8 percent of the country's inhabitants.[31] The demographic shift from countryside to cities produced both social and environmental changes, as well as a series of debates, beginning in 1970, between

a group of so-called *campesinista* academics, such as Rodolfo Stavenhagen, who argued that rural society could survive more or less intact thanks to the economic underdevelopment of the Mexican countryside,[32] and the so-called *de-campesinista* academics, such as Roger Bartra, who predicted the gradual proletarianization of peasant society in the context of capitalist penetration into the countryside and growing inequality between relatively rich peasants and their landless peers.[33]

The viability of peasant society began to be undermined in the early 1940s with the application of new and costly agricultural technologies to increase productivity, a process known as the Green Revolution. In 1942, the Angostura dam began operating in the upper Yaqui Valley, in Sonora. The dam provided water to irrigate sixty thousand hectares of land previously belonging to the Yaqui Indians. The opening of a vast territory to an intensive agricultural regime came to the attention of North American agronomists, who arrived in the region the following year with plans to modernize Mexican agriculture, motivated by humanitarian considerations, as well as by "good neighbor" geopolitics implemented by the Roosevelt administration at the beginning of World War II. The project was sponsored by the Rockefeller Foundation under the leadership of North American agronomists such as Edwin J. Wellhausen and future Nobel laureate Norman Borlaug. North American and Mexican scientists founded the International Maize and Wheat Improvement Center (known by its Spanish acronym CYMMIT), which introduced a variety of Japanese semi-dwarf wheat (Norin 10) in 1952 that was crossed with local varieties to produce a hybrid whose weight did not cause the plants to break (i.e., lodge) when fertilizer was applied. The new wheat variety led to an explosion of biological changes that transformed certain regions of Mexico, and later of Asia and Africa, into agricultural landscapes that were highly productive but also dependent on industrial inputs such as large-scale irrigation, artificial fertilizers, and chemical pesticides.[34]

The Green Revolution spread through the arid Mexican north (where irrigation created favored pockets of production) and brought significant changes to commercial agriculture and peasant production. In spite of the slow demise of farming on communal lands, various state institutions promoted the use of pesticides and chemical fertilizers in peasant maize, strawberry, and coffee production. For example, representatives of the Banco Ejidal promoted the use of agrochemicals in corn and wheat production, while state-owned corporations such as INMECAFE did something similar in communal coffee production lands in the states of Oaxaca, Puebla, and Veracruz. The application of Green Revolution technology produced a number of problems. In many cases, peasants received inadequate training, leading to the overuse of fertilizers and, especially, pesticides. Some small farmers lacked the funds to buy these agricultural technologies and depended on state subsidies, which were grad-

ually reduced until they disappeared with neoliberalism in the 1980s. Thus, the Green Revolution favored commercial farmers with the capital to take advantage of the new technologies. Many members of these wealthier producers grew export crops such as strawberries, tomatoes, vegetables, and (beginning in 1990) avocados. In many cases, agroindustrialists did not supervise workers applying fertilizers and pesticides, with dreadful consequences for the environment and the health of field workers.[35] The development of some commercial crops—such as avocado in Michoacán—also led to large-scale deforestation.

This situation does not imply that there existed—or continues to exist—an innate incompatibility between peasant production and Green Revolution technology. In many cases, peasant producers enthusiastically adopted the fertilizers and pesticides provided by the federal agrarian bureaucracy and used them on their own corn and other small-scale crops, such as coffee and avocado. On the other hand, the new technology's "benefits" did not reach all rural, much less indigenous, communities. The lack of zeal on the part of the federal government and the administration for indigenous development was partially responsible for these failures, but the weight of tradition in agricultural production also played a role. In many communities, techniques for growing the corn crop and even the use of certain varieties of corn are the backbone of the local culture. In almost all regions throughout the country, the planting and harvesting of corn, as well as the preparation of traditional dishes derived from it (tamales, *tlacoyos,* toasted corn, *corundas, sopes,* tacos, and so on), continue to be a major factor in the economic and cultural life of Mexicans.

This does not mean that rural communities have remained unchanging. On the contrary, many rural people have looked for ways to participate in international markets. During the Porfiriato, for example, some "traditional" Huasteca communities opted to privatize their communal lands and form a kind of collective corporation called a *condueñazgo* to sell vanilla in European markets.[36] Elsewhere, rural people have used their natural resources to produce crafts for the tourist market, such as the famous guitars of Paracho, Michoacán, or the lacquered boxes of Olinalá, Guerrero. The strategy of selling in international markets reappeared in the final decades of the twentieth century. One example is the well-known Unión de Comunidades Indígenas de la Región del Istmo (UCIRI) in Oaxaca, which produces crops such as coffee for export under the Fair Trade brand.[37]

The Green Revolution also represented the spearhead of a process leading to the further commodification of nature, which would transform the environment in almost all of Mexico during the second half of the twentieth century. The renaissance of Porfirista-type concessions opened forests, mines, and fishing to private enterprise. In 1952, President Miguel Alemán Valdés granted a three-hundred-thousand-hectare concession to the Bosques de Chihuahua,

S.A., a company in which Alemán himself was a silent partner. In coastal areas, especially in the south, new colonization policies around 1960 led to the transfer of thousands of peasants from the center of the country to the rain forests of regions such as Quintana Roo and Tabasco. The homesteaders felled trees to open land for livestock grazing, a practice supported by the National Land Clearance Program (PRONADE), destroying almost a half-million hectares of forest classified as "useless."[38] As regards oil, the poor administration and lack of investment in equipment that characterized PEMEX (the semi-state oil company) caused many oil spills and industrial accidents, such as the enormous spill caused by an explosion in the Ixtoc I well in 1979, whose effects are felt in coastal communities to this day.[39]

The feverish rate of urban growth also produced new built spaces throughout the country, but especially in Mexico City, where the population reached twenty million by 2010. The capital has the same environmental problems that afflict other megacities in the Global South: transportation bottlenecks, crime, lack of green spaces, and a profusion of informal settlements. But its location in what was the basin of a lagoon implies special challenges, such as thermic inversions (produced by the concentration of hot, polluted air pushed to the surface by cold air) in the winter, which result in extreme atmospheric pollution indices, the perennial problem of flooding during the rainy season (June to October), and the partial sinking of the city due to the volcanic lime and clay composition of the soils in the context of the intensive exploitation of aquifers. These conditions were aggravated by the earthquake of 19 September 1985, measuring 8.1 on the Richter scale, whose epicenter on the Pacific coast was fully 350 kilometers from the capital. High population density produced devastating consequences, with ten thousand deaths, seven hundred thousand persons left homeless in Mexico City and close to three thousand modern buildings destroyed, including part of the General Hospital and two buildings in the Tlatelolco residential complex.[40] The federal government's inadequate response to this "natural" disaster produced popular resentment that has been felt for decades.

Ecological links between the city and its rural surroundings underline the close relation between "the rural" and "the urban." For example, water scarcity in the capital, dating from the end of the nineteenth century, has become worse. Heavy buildings, like the Metropolitan Cathedral and the Fine Arts Palace, are gradually sinking in soils that are undermined by the pumping of water without allowing for aquifer recharge. But since demand for the precious liquid continues to rise, the National Water Commission (CONAGUA) has to bring water from ever more distant rivers to satisfy the great city's thirst. Official neglect of the peasant sector has contributed to a notable drop in productivity in agricultural production in communal lands, and the country has thus

become a net importer of basic grains. The neoliberal system, and especially the North American Free Trade Agreement (NAFTA) with Canada and the United States, in effect since 1994, has made problems worse. NAFTA opened the market to such an extent that Mexico imports a third of its corn. While it is true that subsidies have made the country self-sufficient in white corn for human consumption, most of the crop comes from agribusinesses in the state of Sinaloa. Small producers on communal lands lack the resources and the opportunities to participate in domestic production, much less the transnational market. On the other hand, urban residents (with the exception of citizens who participate in movements in support of semi-urban and urban agriculture) tend to eat processed foods rather than consuming crops produced by peasants close to cities.

These contradictions, as well as the ever more widespread recognition of the need to defend the ecological integrity of the national heritage, contributed in the 1980s to the resurgence of an environmental tradition that goes back to the nineteenth century. In the forests, neoliberalism quashed concessions and the paragovernmental enterprises that dominated the sector, while professional forestry engineers and local leaders established community enterprises engaged in the sustainable use of forests in the states of Oaxaca, Quintana Roo, Michoacán, and others. The same official organs, such as SEMARNAT (Environment and Natural Resources Secretariat), supported a local, sustainable production policy.[41] Cooperatives have been created to produce organic coffee (in Chiapas and Puebla), to fish in rivers (in Veracruz and Baja California Sur), and to offer alternative tourism activities (in Oaxaca and Yucatán), among many other sustainable production activities. Urban residents also organized. In March of 1985, poet Homero Aridjis formed the "Group of One Hundred," a collective of urban intellectuals who promoted ecological policy; five years later, the organization led an international movement that paralyzed expansion of the Exportadora de Sal (salt exporter), a business financed by Japanese and Mexican capital on the Pacific coast of Baja California Sur that would have affected the habitat of the sperm whale.[42]

A new wave of ecological activity appeared around 2000 based on the idea of food sovereignty and small-scale, sustainable production. There also appeared a broad opposition to transnational agriculture and transgenic crops. In 2002 and 2003, the El Campo No Aguanta Más (the countryside can take no more) movement appeared and, more recently, the Sin Maíz No Hay País (without corn there is no nation) campaign has proposed to maintain small-scale organic production and to veto transgenic corn in Mexico. However, it seems that the *de-campesinista* argument has predominated, in general terms, though there continue to be rural communities and urban activists who promote sustainable use of the land.

Conclusion: Toward a New Ecological Revolution?

Each of the revolutions studied here has derived from both the successes and failures of its predecessor. The protagonists of these revolutions have included political actors, of course, but they have also involved scientists, agronomists, biologists, and economists, as well as urban and rural producers and consumers. Each revolution promised to increase productivity and improve collective wellbeing; all achieved the first goal but, with the partial exception of the Zapatista/Cardenista revolution, they failed in the second. Two factors explain this phenomenon: the promoters of the revolutions (again, with the partial exception of the Zapatista/Cardenista movement) have proceeded from the neocolonial view of progress that prioritizes economic growth and privileges the dominant classes, yet minimizes the socioenvironmental consequences of unsustainable development. Nevertheless, the series of social, political, economic, and environmental adjustments and readjustments that the Mexican revolutions have produced are a fertile base of historical experience on which Mexican society can build a future.

Developmentalist thinking has demonstrated its profound ability to polarize society and to destroy the environment. The cumulative effects of centuries of overexploitation of natural resources, erosion caused by bad land management—by both large-scale farmers and peasants—and, more recently, global climate change have generated serious problems that affect all Mexicans. Nevertheless, the costs of ecological degradation have been unequally distributed; the poorest members of the population, the most marginalized—indigenous, in many cases—are those who suffer the most dreadful consequences. More than eleven million people migrated to the United States between 1980 and 2010, and it is no exaggeration to maintain that many of them should be classified as environmental refugees.

In spite of their seriousness, however, ecological problems have not managed to overwhelm promises articulated by Zapata, Cárdenas, and generations of their followers. The communally held lands still exist, as do producers' cooperatives and indigenous production methods that thrive in socioenvironmental movements whose participants attempt to use soils, water, and forests in a way that allows them to live with dignity while leaving a legacy to future generations. Popular demands for socioenvironmental justice and the cosmovision of native peoples constitute indispensable components of an other, possible Mexico.[43] The consequences of social struggles have slowly but surely permeated federal environmental legislation and the socially committed scientific and intellectual tradition, and have reinforced social organization. In urban and rural areas, Mexican society is renewing its relationship with its territories, its ecosystems, and its biocultural heritage, deriving a variety of local expressions for sustainability that offer concrete alternatives to overcoming

civilization's global crisis. Urban-rural social movements, such as Sin Maíz no hay País and Vía Campesina, have a visible presence in the capital and in provinces, and their members have experienced significant political successes, such as the prohibition on transgenic corn production. In addition, in most states, solidarity movements have sprung up to promote consumption of locally and organically produced items. Indigenous communities have waged legal battles against state abuses (for example, the neo-Zapatistas in Chiapas, who have embraced sustainable production on their lands as a self-sufficiency measure),[44] as well as against organized crime and those who would sack their resources, as in the recent case of Cherán, in Michoacán (where the people rose up in 2013 against illegal timber operations in communal forests and against authorities in collusion with organized crime; today they have undertaken a communal reforestation program and self-government). It is premature to state that a new ecological revolution is taking place, but countercurrents visible today may well gather strength in the years to come.

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Notes

This chapter was translated by Mary Ellen Fieweger.

1. Carolyn Merchant, *Ecological Revolutions: Nature, Gender, and Science in New England,* 2nd ed. (Chapel Hill: University of North Carolina Press, 2010).

2. Rafael Ortega-Paczka, "La diversidad del maíz en México," in *Sin maíz no hay país,* ed. C. Esteva and C. Marielle (Mexico City: Consejo Nacional para la Cultura y las Artes, Dirección General de Culturas Populares e Indígenas, 2003), 123–154.
3. Jerome O. Nriagu, "Mercury Pollution from the Past Mining of Gold and Silver in the Americas," *The Science of the Total Environment* 149 (1994): 167–181; Daviken Studnicki-Gizbert and David Schecter, "The Environmental Dynamics of a Colonial Fuel-Rush: Silver Mining and Deforestation in New Spain, 1522 to 1810," *Environmental History* 15 (2010): 94–119.
4. Robert C. West, *The Mining Community in Northern New Spain: The Parral Mining District.* University of California Publications in Ibero-Americana, vol. 30 (Berkeley: University of California Press, 1949).
5. Eric Van Young, *The Other Rebellion: Popular Violence, Ideology, and the Mexican Struggle for Independence, 1810–1821* (Stanford: Stanford University Press, 2001), 433–444.
6. David Brading, *Haciendas and Ranchos in the Mexican Bajío: León 1700–1860* (Cambridge: Cambridge University Press, 1978); Margaret Chowning, *Wealth and Power in Provincial Mexico: Michoacán from the Late Colony to the Revolution* (Stanford: Stanford University Press, 1999), 286–306; and Luis González y González, *Pueblo en vilo: Microhistoria de San José de Gracia* (Mexico City: El Colegio de México, 1968).
7. Heather L. McCrea, *Diseased Relations: Epidemics, Public Health, and State-Building in Yucatán, Mexico, 1847–1924* (Albuquerque: University of New Mexico Press, 2011).
8. Jan de Vos, *Oro verde: La conquista de la Selva Lacandona por los madereros tabasqueños* (Mexico City: Fondo de Cultura Económica, 1988), 202–227.
9. Brian DeLay, *War of a Thousand Deserts: Indian Raids and the U.S.-Mexican War* (New Haven: Yale University Press, 2009), 86–113.
10. Raúl Benítez Zenteno, *Análisis demográfico de México* (Mexico City: Instituto de Investigaciones Sociales de la UNAM, 1961), appendix A.
11. John H. Coatsworth, *Growth against Development: The Economic Impact of Railroads in Porfirian Mexico* (DeKalb: Northern Illinois University Press, 1981), 174; see 149–174.
12. Luz Carregha Lamadrid, "Tierra y agua para ferrocarriles en los partidos del Oriente potosino, 1878–1901," in *Entretejiendo el mundo rural en el "oriente" de San Luis Potosí, siglos XIX y XX,* ed. Antonio Escobar Ohmstede and Ana María Gutiérrez Rivas (San Luis Potosí and Mexico City: El Colegio de San Luis / CIESAS, 2009), 177–204.
13. Christopher R. Boyer, *Political Landscapes: Forests, Conservation, and Community in Mexico* (Durham, NC: Duke University Press, 2015).
14. José Napoleón Guzmán Ávila, *Michoacán y la inversión extranjera, 1880–1900* (Morelia: Universidad Michoacana de San Nicolás de Hidalgo, 1982), 39–67; José Juan Juárez Flores, "Besieged Forests at Century's End: Industry, Speculation, and Dispossession in Tlaxcala's La Malintzin Woodlands, 1860–1910," in *A Land Between Waters: Environmental Histories of Modern Mexico,* ed. Christopher R. Boyer (Tucson: University of Arizona Press, 2012), 100–123.
15. Cariño, Micheline, *Historia de las relaciones hombre/naturaleza en Baja California Sur 1500–1940* (La Paz, Mexico: UABCS-SEP, 1996).
16. Samuel Truet, *Fugitive Landscapes: The Forgotten History of the U.S.-Mexico Borderlands* (New Haven: Yale University Press, 2008); John Mason Hart, *The Silver of the*

Sierra Madre: John Robinson, Boss Shepherd, and the People of the Canyons (Tucson: University of Arizona Press, 2008).

17. This situation is possible only if we consider that the government oversold the water from the Higuerón River.
18. Alejandro Tortolero, "Water and Revolution in Morelos, 1850–1915," in *A Land Between Waters: Environmental Histories of Modern Mexico,* ed. Christopher R. Boyer (Tucson: University of Arizona Press, 2012), 124–149; Alfredo Pureco Ornelas, *Empresarios lombardos en Michoacán: La familia Cusi entre el Porfiriato y la postrevolución (1884–1938)* (Zamora: El Colegio de Michoacán, 2010).
19. Manuel Perló Cohen, *El paradigma porfiriano: Historia del desagüe del valle de México* (Mexico City: Porrúa, 1999); Matthew Vitz, "'The Lands with Which We Shall Struggle': Land Reclamation, Revolution, and Development in Mexico's Lake Texcoco Basin, 1910–1950," *Hispanic American Historical Review* 92, no. 1 (2012): 41–71.
20. Alejandro Tortolero, *De la coa a la máquina de vapor: Actividad agrícola e innovación tecnológica en las haciendas de la región central de México, 1880–1914* (Mexico City: Siglo XXI, 1995).
21. For a summary of agrarian history, see Antonio Escobar Ohmstede and Matthew Butler, "Transitions and Closures in Nineteenth- and Twentieth-Century Mexican Agrarian History," in *Mexico y sus transiciones: Reconsideraciones sobre la historia agraria mexicana, siglos XIX y XX,* ed. A. Escobar Ohmstede and M. Butler (Mexico City: CIESAS, 2013), 38–76.
22. Sterling Evans, *Bound in Twine: The History and Ecology of the Henequen-Wheat Complex for Mexico and the American and Canadian Plains, 1880–1950* (College Station: Texas A&M University Press, 2007).
23. Micheline Cariño and Mario Monteforte, *El primer emporio perlero sustentable del mundo: La compañía Criadora de Concha y Perla de Baja California, S.A. y perspectivas para Baja California Sur* (La Paz: UABCS, 1999).
24. Robert McCaa, "Missing Millions: The Demographic Costs of the Mexican Revolution," *Mexican Studies/Estudios Mexicanos* 19, no. 2 (2003): 367–400.
25. Gene C. Wiken, *Good Farmers: Traditional Agricultural Resource Management in Mexico and Central America* (Berkeley: University of California Press, 1987).
26. Joseph Cotter, *Troubled Harvest: Agronomy and Revolution in Mexico, 1880–2002* (Westport, CT: Praeger, 2003), 45–123.
27. Gonzalo Aguirre Beltrán, *Regiones de refugio* (Mexico City: Instituto Indígena Interamericano, 1967).
28. Christopher R. Boyer, "Revolución y paternalismo ecológico: Miguel Ángel de Quevedo y la política forestal, 1926–1940," *Historia Mexicana* 57, no. 1 (2007): 91–138.
29. Myrna Santiago, *The Ecology of Oil: Environment, Labor, and the Mexican Revolution, 1900–1938* (Cambridge: Cambridge University Press, 2007).
30. Christopher R. Boyer and Emily Wakild, "Social Landscaping in the Forests of Mexico: An Environmental Interpretation of Cardenismo, 1934–1940," *Hispanic American Historical Review* 92, no. 1 (2012): 73–106.
31. United Nations, *World Population Prospects: The 2012 Revision,* vol. 1, *Comprehensive Tables* (New York: United Nations, 2012), table S2, 58; Instituto Nacional de Estadística y Geografía. Retrieved 6 May 2013 from http://www3.inegi.org.mx/sistemas/temas/default.aspx?s=est&c=17484.

32. Rodolfo Stavenhagen, "Capitalism and the Peasantry in Mexico," *Latin American Perspectives* 5, no. 3 (1978): 27–37.
33. Roger Barta, *Campesinado y poder político en México* (Mexico City: Ediciones Era, 1982).
34. Cynthia Hewitt de Alcántara, *Modernizing Mexican Agriculture: Socioeconomic Implications of Technological Change, 1940–1970* (Geneva: United Nations Research Institute for Social Development, 1976), 148–171.
35. Angus Wright, *The Death of Ramón González: The Modern Agricultural Dilemma*, rev. ed. (Austin: University of Texas Press, 2005).
36. Emilio Kourí, *Un pueblo dividido: Comercio, propiedad y comunidad en Papantla, México* (Mexico City: Fondo de Cultura Económica, 2013).
37. José Antonio Ramírez Guerrero, "La experiencia de UCIRI en México", in *Producción, Comercialización y certificación de la agricultura orgánica en América Latina*, ed. Gómez Cruz et al. (Mexico City: UACH-CIESTAAM, AUNA), 119–132.
38. Arcelia Amaranta Moreno Unda, "Environmental Effects of the National Tree Clearing Program, Mexico, 1972–1982" (Master's thesis, Universidad Autónoma de San Luis Potosí/Cologne University of Applied Sciences, 2011).
39. Lisa Breglia, *Living with Oil: Promises, Peaks, and Declines on Mexico's Gulf Coast* (Austin: University of Texas Press, 2013).
40. The most well-known account of the Mexico City earthquake is Elena Poniatowska's *Nada, nadie. Las voces del temblor* (Mexico City: Ediciones Era, 1988). There is still no environmental (or social) history of the event, but see Louise E. Walker, "Economic Fault Lines and Middle-Class Fears: Tlatelolco, Mexico City, 1985," in *Aftershocks: Earthquakes and Popular Politics in Latin America*, ed. J. Buchenau and L. L. Johnson (Albuquerque: University of New Mexico Press, 2009), 184–220.
41. Leticia Merino Pérez, *Conservación o deterioro. El impacto de las políticas públicas en las instituciones comunitarias y en las prácticas de uso de los recursos forestales* (Mexico City: SEMARNAT/INE/CCMSS, 2004), 194–211.
42. Lane Simonian, *Defending the Land of the Jaguar: A History of Conservation in Mexico* (Austin: University of Texas Press, 1995), 212–215.
43. Víctor Toledo, *Ecología, espiritualidad y conocimiento: De la sociedad del riesgo a la sociedad sustentable* (Mexico City: PNUMA, Universidad Iberoamericana, 2003).
44. There are many other cases of communities—indigenous and mestizo—whose members have confronted the state to avoid confiscation of their territories threatened by the building of dams and aqueducts or by enormous, toxic mines.

THE ENVIRONMENT IN HISTORY: INTERNATIONAL PERSPECTIVES: 13

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Cover photo: Smog around the Pico de Orizaba volcano in Mexico City, the second largest city in the Americas, 2015. Courtesy Gogadicta/iStock.

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1: *What is your overall opinion of this manuscript?*

Overall, the strength and contributions of this manuscript are excellent and I can fully recommend its publication. My suggestions for changes are very minor. The MS is remarkable, especially for an edited book of this type, for its even quality across all contributions, which is a testament to both the expertise of the scholars and the efforts of the editors. The writing for the most part is concise, well organized, and clear. I am happy to have had the chance to read it, and my own coursework and research have directly benefited by a number of the pieces. The book will be a good place to send both graduate and undergraduate students to bring them up to speed on the breadth and direction of some of the best work being done in the field.

I see the work as a sort of state of the field piece, taken up and addressed in the context of some stimulating themes.

2: *Do you feel that conceptual and methodological concerns are appropriately addressed or would you recommend a reassessment of these concerns?*

> As these are mostly syntheses of past and current work, this isn't significantly applicable, but for those pieces that do approach new conceptions, they are appropriately cast and contextualized.

3: *In terms of content do you think that the manuscript needs any revisions? (e.g. additions, omissions)*

> The content is well chosen and embraces many of the major themes addressed in Latin America's environmental history in the period from the 19th century to the present, which is its strength. The authors and editors have set appropriate bounds between the various contributions, and yet they do helpfully connect at various points.

4: *Do you think that the proposed structure needs any revisions? A key question is the length of the proposed manuscript.*

> The length doesn't seem inappropriate. And the book is reasonably organized and structured around regions and themes. I'll have a comments below on specific suggestions for a few articles.

5: *Does the research presented appear to adhere to the ethical standards of the discipline? Are informant identities blurred where appropriate? Does the author discuss appropriate methodological steps to protect participants?*

> Questions not relevant to the work herein.

6: *In which disciplinary areas would the main and subsidiary interest in this manuscript occur?*

This is potentially a fairly broad range of interests and fields: Environmental History, Latin American History, Agricultural History, History of Science, Urban History, Forest History, Indigenous History, History of Food, etc.

7: *What do you consider to be the main markets for this manuscript? (i.e. academic, postgraduate, undergraduate, general interest)*

The main audience for this book will be scholars of Latin America's environmental history and their students. As with other environmental histories of the region, it is likely to draw the attention as well of scholars and policy makers in geography, anthropology, conservation, agriculture, etc.

8: *Who do you consider to be the main purchasers for this manuscript? (i.e. individual academics, individual students, central libraries, department libraries)*

Scholars, students, and university libraries.

9: *If the work is likely to be useful for students, for what courses and at what levels might it be useful?*

The book would make an excellent choice for adoption in courses dealing with Latin America's environmental history, or even as material that could be used in more broadly focused environmental courses, such as the Americas or world histories.

10: *Do you envision the work being an essential purchase or recommended reading for students, or neither?*

A little of both. It is quite likely some of the chapters would be assigned as stand alone readings.

11: *Are you aware of any other material that is appropriate for the same course/purpose as this manuscript (either forthcoming or already available)? If you are, please supply details of title, author, publisher (where known) and any other comments e.g. strengths and weaknesses.*

There is nothing out there currently that matches this book's principal contribution, in this scope and detail. There are a few of articles/chapters that attempt to give the state of the field (Lise Sedrez, Mark Carey, Shawn Miller) which can become quickly dated, but there isn't anything this comprehensive or ambitious. Miller's book, *An Environmental History of Latin America* (Cambridge, 2007), makes a more basic, narrative approach aimed at a broader readership.

13: *Is the author's style appropriate for the intended market?*

The writing is concise and clear (in all three languages), avoids jargon, and is hence accessible to a general readership.

14: *Is the title/subtitle appropriate for the intended market?*

The title "New Histories" seems a bit misleading. The "history" here isn't for the most part new, and there's very little primary research, with a couple of exceptions. I see that in the introduction, the word "New" has been dropped, which I think works better; it is more accurately descriptive, if a bit plain. How about something like "Environmental Histories in Latin America: Nations, Regions, and Themes." I'm not sure that fully expresses that this collection of chapters is largely a synthesis, a state of the field, but that would be helpful as well.

15: *Please, outline any points you may have regarding possible international sales (i.e. countries, course, level, need for case studies etc.).*

No useful comment.

16: *What is your overall recommendation?*

Again, I recommend publication. This is work of high quality that meets a particular need in the field.

17: *Do you have any other points not covered by this questionnaire?*

Here are just a few comments on specific chapters. Those I do not comment on I think are pretty much ready to go. Again, the quality across the collection is quite good, and my comments consist of minor concerns.

Chapter 3: The Caribbean

Page 73. The author may want to cite Roderick Nash who I believe first made the argument for the transition from exporting raw nature from exotic places to importing tourists to appreciate exotic nature in situ. His examples are the US, Africa, and Switzterland, and they often lead to conservation, but there are similarities with the Caribbean. See Roderick Nash, "The Exporting and Importing of Nature: Nature Appreciation as a Commodity, 1850-1980. Perspectives in American History 12 (1979) 517-60.

I wouldn't mind seeing a little more on the environmental consequences of tourism in the Caribbean.

Chapter 4: Indigenous Traces

I found this piece of great interest, the tenacity of indigenous cultures in the face of 500 years of challenges to culture and property. It can come off as a bit of an

"ecological native" piece. The author addresses this, but only in the last paragraph. Addressing it earlier might better parry such criticism.

In English, the title might be something like: "Imprints and Remnants: the Persistence of Indigenous Ecological Relations in the Tropical Andes." Creoles are given little attention in the piece and might be dropped from the title. They should remain in the piece itself, but maybe more as a counterpoint to the dominant theme.

Chapter 5: The Splendid Cradle

On page 126, the same map is used a second time. I believe it should be a map that shows the period *after* 1960.

The author does mention climate, but only very briefly. Climate is also an old part of Brazil's internal and international identity and construction, an essential element of the berço esplêndido. Maybe a bit of content on the perceived role of climate in both perceived failures (environmental determinism, as perceived by Brazilians and foreigners) and successes (tropical agriculture, extractives), but also the challenges or benefits climate change itself may present Brazilians. Will they be net beneficiaries, or will droughts impose heavy penalties on a nation that relies heavily on hydropower, etc?

Chapter 6: Jungles

A great theme, and excellent use of literature here to demonstrate changing attitudes toward La Selva. The author speaks briefly (pp. 147-48) of the impact of roadbuilding in the Amazon. She might cite Shelton Davis, *Victims of the Miracle*, Cambridge: 1977. or Douglas Stewart, *After the Trees: Living on the Transamazon Highway*. UT Austin, 1994.

Maybe a bit more developed title. In the title, I'd translate "Selvas" to "Jungles" since the piece deals with tropical forest in that connotation. And it might read, in part, "From Threatening to Threatened" to foreshadow the chapter's argument about changing attitudes that lead to tropical forest conservation and protections.

Chapter 7: Wall and Creeper

This is a superb piece that makes the best of what is still a neglected area of research. I appreciate the authors efforts to share lots of examples from across the region to add some flesh to the generalizations. One area I'd like to possibly see a little more is on the benefits of urbanization. There are many challenges, but one that comes to mind (and this ties to Cuvi's chapter) is farm preservation. Because the region has such high urbanization rates, some of the world's highest, and because Latin Americans (despite some recent trends, such as gated communities that are appropriately mentioned) tend to live more densely than the N. American model, does this bring benefits? The automobile and its infrastructure haven't been as widely adopted. This would seem to help protect farms on the fringe whereas in N. American they are disappearing rapidly. That might be too specific, but can the piece consider the city's environmental benefits? The piece does note the communal benefits of public spaces. But what other benefits are there to high rates of urbanization and dense living arrangements, for land use, energy use, transportation issues, etc.?

Chapter 8: Campesino Agrodiversity

This is the most narrowly focused piece of the work. I still think it makes a good fit, but the research here, as Soluri mentions repeatedly, is thinner than in most of the other areas and themes covered in the collection, so it has less of a synthesizing contribution.

I wonder if the inclusion of coffee fits the specific central intent of the piece. The initial focus is on domestic production for domestic consumption, which despite assumptions about LA being a place of food exports, was in some ways the central agricultural and economic activity across the region. The stories of agrodiversity around maize, beans, and potatoes are of central significance. Coffee, on the other hand, was an introduction, and it didn't have much diversity in itself. Coffee, or coffee production, is presented more as a space in which agrodiversity in other crops could take place. First, I wonder how much of LA's coffee was consumed locally. In Brazil, at the very least, it must have been quite high. So maybe more about that aspect of coffee, if it is kept, or maybe that's beside the point. Second, and maybe more pertinent, was coffee really all that different than say indigo, rice, tobacco, and possibly even sugar as a space in which other forms of diverse agriculture and seed saving, could take place. Maybe coffee, with its shading practices, is the best example, but my sense is that even slaves in sugar, despite being a far less stable cultural entity than natives and campesinos, in their provisioning plots may have had a fairly strong domestic agricultural presence, one in which diversity was not only maintained but was enhanced by African introductions. So, is coffee exceptional? Maybe coffee, rather than having a section to itself, could be incorporated into the other three sections, noting how the campesino's diversity was taking place in all kinds of agricultural landscapes, even those thought of primarily about exports. Maize, potatoes and beans, in various varieties, were probably all produced on coffee, sugar, and other plantations, in addition to more traditional farms and communities. Currently, the section on beans is only 5 paragraphs, which feels a bit cursory.

Chapter 9: Ranching

The is a superb overview of the research. My only question is whether the authors can say more about recent trends: feedlots, factory farms, and their environmental impacts say relative to more traditional farms? And is their space to say anything about animal rights? Funes Monzote's recent work "Animal Labor and Protection in Cuba: Changes in Relationships with Animals in the Nineteenth Century" in Few and Tortorici, *Centering Animals in LA History*, Duke, might merit a little space. That is more about oxen as labor than ranching per se, but as this is only chapter that deals directly with animals, it may merit some brief attention.

Chapter 10: Laborers of Extraction

With this chapter, the reader may feel somewhat unsatisfied on the question of the *results* of labor organization and resistance. The nature of work in extractive industries is there, and that there was resistance, but the content on the actual results of labor resistance is often lacking. On p. 243, for example, the author does note gains in health, safety, and social benefits, but it would be nice if they were spelled out a bit more and the actual role of labor movements in securing them better detailed. Nationalization was a result in some instances (Mexico and Chile), but again readers aren't told exactly what

benefits nationalization brought, or didn't bring to the workers. There is the suggestion that some nationalized entities were not much better to their workers than had been multinational corporations, but it could be clarified.

The observation that the dispersed nature of extractive industries made labor organization and its effectiveness difficult is enlightening. Maybe a bit more could be said about those difficulties and how they made labor success a fraught endeavor. That Venezuela did not build centralized refineries for fear that the workers who gathered there would be trouble suggests the benefits of scattered extractive workers for the kind of labor relations they wanted to maintain.

On p. 249, it is noted that today, it is not workers who are leading the fight against extractive industries but local communities, indigenous groups, and environmentalists. Why? Have the workers in those industries secured most of what they wanted: good wages, healthcare, reasonable working conditions, etc? And hence have they left the fight, and in fact, become part of the industrial machine that threatens local peoples and the landscapes they depend on. Have corporations coopted workers by giving them mostly what they want in order to focus on new battles?

Chapter 12: Panorama of Parks

This contribution is well written with insightful observations throughout. However, I find the introduction not all that helpful in setting up the major points that are made. Its narrative is slow to get to the point, and its content only ties into one early assertion. In its place, I'd prefer to see more on the pace of park formation, the nature of the parks, and some more comparative elements, not necessarily between Latin American and the rest of the world, but with each other. More on the "panorama" the title promises. There is content on where parks have been formed, and when. Where have they not formed, and why, or why were some areas later than others? The map on p. 292 does give a sense of parks' widespread adoption across the region, but some few more examples might help. On the map, Uruguay and Paraguay seem to lag. Why?

The quantification of park formation in the graph, and the periodization the author creates are enlightening. But I wonder if the rather severe dip after about 2005 deserves some explanation. Is it a data problem, or have park creations fallen that precipitously, and if so why?

The issue of origins stories also might be done somewhat more concisely. For example, on p. 281, I'd drop the first half of the paragraph and simply start with "There was no single hero and no native "Yellowstone" . . .

1: *What is your overall opinion of this manuscript?*

Before I got this manuscript, I already knew short summaries of most of the contributions presented for a workshop of the Rachel Carson Center for Environment and Society (RCC) in Munich, and I already found these papers really promising. Next year I will teach a seminar related to the topic and already am in search of relevant literature: As far as I realize, there is no comparable anthology with such a variety of approaches on the book market. Taken all aspects together, I would strongly recommend the publication of this manuscript.

Until now, the only extensive "Environmental History of Latin America" is a book with that very title, written by Shawn William Miller (Cambridge University Press, 2007). At the time of its publication it was a landmark; but if you compare this new anthology with Miller's book, you find a wealth of new aspects. Another book that has dealt with South America is Alfred Crosby's "Ecological Imperialism" of 1986: Crosby's work was a famous, even overpoweringly successful for some time; but over the course of time it became clear how limited it was: one cannot continue to regard (Latin) American environmental history merely from an epidemiological and biological viewpoint: as a victory of neophytes. The "New Environmental Histories" are based instead upon a much more detailed regional research – mostly based on secondary literature, but sometimes on archival sources - , and at the same time taking into account transnational perspectives.

It is also important that most contributions of this manuscript are written by Latin American historians. In this respec the anthology marks a breakthrough as until recent time you found only rarely Latin American historians on international conferences on environmental history. Moreover, historians from Latin America usually were focusing only on their own national history. This book presents an emerging international network of scholars dedicated to Latin American environmental history with a more transnational outlook.

On the whole you can say they represent a second generation of environmental historians who are telling not only a history of decline, of reduced biodiversity and violation of nature by humankind, but a diversity of narratives. So José Augusto Pádua, former Greenpeace Latin America's Forest Campaign Coordinator, explains that the

Green public of the First World make an exaggerated alarm on the destruction of the tropical rain forest: In fact, the savannahs with their high biodiversity are threatened much more by big agrobusiness. Or take the contribution written by John Soluri on "Campesinos, Cuisine and Hidden Histories of Agrodiversity": It is not only a history of decline, but a much more ambiguous history in which even the tortilla sometimes appears as an element favouring the campesinos as well as agrodiversity.

Shawn Van Ausdal and Bob Wilcox point out that Elinor Melville's "A Plague of Sheep" (1994) – a classic work on Mexican environmental history – probably has exaggerated the destructive effect of sheep grazing; but as to modern cattle ranching, the "declensionist" narrative of environmental history remains realistic (p. 227). And, as Myrna Santiago detects (p. 248), "at the turn of the 21st century, mining and oil projects of unprecedented scale accosted the Latin American landscape." Moreover, today we know that the famous "wilderness" in several parts of Latin America is not pristine, but is the result of depopulation caused by epidemics introduced by the European conquistadors. Colonial history, however, is only treated in a rather marginal way in this anthology, though Emily Wakild looks back to "deep nature, 16.500-10.000 years ago" (p. 276 f.). It is a pioneering work in particular for the 20th century. Also climate history is treated only sporadically; Stuart McCook, however, emphasizes (p. 271), that "in the early 21st century, many of Latin America's most pressing problems are now connected to climate change."

From my view environmental history should not only present a story of lament, but also a story of opportunities. This book presents not only environmental history but also the history of environmentalism. To be sure the authors are well aware of ambiguous traits of "green revolutions" for which Mexico presents the best example: see the contribution of Chris Boyer and Micheline Carino on "Los revoluciones ecológicas de Mexico".In my opinion the element of surprise, of unexpected change in these turns of history, is of particular importance. Appropriately the editors point out in their introduction (p. 3 f.): "Latin American environmental history has emerged in a paradoxical era marked by the expansion of both protected areas and mega-mines; an increase in organic coffee farming and genetically modified soy plantations; and the rise of transnational NGOs and drug cartels."

2: *Do you feel that conceptual and methodological concerns are appropriately addressed or would you recommend a reassessment of these concerns?*

I think so. Several scientists might prefer more extensive theoretical and/or methodological reflections; but the wider public usually is bored by this.

3: *In terms of content do you think that the manuscript needs any revisions? (e.g. additions, omissions)*

I do not see any need of revisions but would rather recommend that this manuscript should be published. To be sure, with regard to the fact that today nearly 80 percent of Latin America's population is living in cities, in most contributions the tremendous environmental problems of the big city agglomerations especially since the second half of the 20th centuries appear merely in a marginal way; but they are described in an impressive and analytical manner by the contribution "O mura e a hera" composed by Lise Sedrez and Regina Horta Duarte, also with a look upon of the environmentalism of the elites in their "green gated communities". Several contributions point out in an impressive way that environmental problems got new dimensions in the second half of the 20th century on which the main emphasis of this anthology has been put, including the effects of Caribbean tourism which changed "tropicality" from hell to paradise as is described in an impressive manner by the contribution of Reinaldo Funes Monzote.

4: *Do you think that the proposed structure needs any revisions? A key question is the length of the proposed manuscript.*

For such an extensive matter with this variety of topics, the length is quite adequate.

5: *Does the research presented appear to adhere to the ethical standards of the discipline? Are informant identities blurred where appropriate? Does the author discuss appropriate methodological steps to protect participants?*

Yes. The indigenes are treated in a fine and sympathetic way; see in particular the contribution of Nicolás Cuvi. And the editors are right when they assure in their brilliant preface that "a cosmopolitan ethos has guided this endeavour".

6: *In which disciplinary areas would the main and subsidiary interest in this manuscript occur?*

Not only environmental history, but general history, too. It is promising that in this anthology environmental history again and again becomes "histoire totale".

7: *What do you consider to be the main markets for this manuscript? (i.e. academic, postgraduate, undergraduate, general interest)*

The manuscript though it meets high academic standards is mostly written in a popular and vivid, sometimes even exciting style. Surely it can be used also by undergraduates, and it is of interest for a wider public too: especially for those who are interested in environmental questions, belong to an environmentalist NGO and/or are travelling in Latin America and the Caribbean.

8: *Who do you consider to be the main purchasers for this manuscript? (i.e. individual academics, individual students, central libraries, department libraries)*

I presume most purchasers will be students and academics.

9: *If the work is likely to be useful for students, for what courses and at what levels might it be useful?*

Seminars and lectures on Latin American and/or environmental history.

10: *Do you envision the work being an essential purchase or recommended reading for students, or neither?*

The book may well become a basic literature for courses.

11: *Are you aware of any other material that is appropriate for the same course/purpose as this manuscript (either forthcoming or already available)? If you are, please supply details of title, author, publisher (where known) and any other comments e.g. strengths and weaknesses.*

Most well-known and fundamental are surely the books of Alfred Crosby and Shawn W. Miller that I mentioned above.

12: *Do you think the proposed length seems appropriate for the topic and readership?*

Yes.

13: *Is the author's style appropriate for the intended market?*

I think so. Of course an anthology like this contains stylistic differences but I would argue against dropping any of the contributions.

14: *Is the title/subtitle appropriate for the intended market?*

I think so.

15: *Please, outline any points you may have regarding possible international sales (i.e. countries, course, level, need for case studies etc.).*

I presume also in Europe this book will find many readers.

16: *What is your overall recommendation?*

See my first point.