

An Emerging Field: World Environmental History

In recent years, environmental history has emerged as a new fast-moving historical field. Environmental history has developed from its inspiration in the deeply-felt concerns of environmentalists/historians in the United States to encompass a wide array of issues and topics. Practitioners have grown in numbers and spread from its original home in North America to include numerous communities of scholars in Europe and Asia. Increasing numbers of mature historians, intrigued by this historical approach, have realigned their skills and recast their scholarly vision to become active contributors to this field. Growing numbers of history graduate students have found mentors and programs that permit them to systematically study environmental history and complete dissertations that qualify them as environmental historians. Some job openings in history departments are now specifically advertised as environmental history positions.

As the field has grown, practitioners have turned to adjacent fields such as medical, scientific or technological, urban or public health history for insights and data. Environmental historians continually borrow from the entire range of ecological sciences including wildlife studies, botany, marine biology, and limnology. They have eagerly turned to the non-textual sources offered by tree-ring analysis and core analysis of stratified ice and sediment layers. With this explosion of scholarship precisely defining the field and laying out its boundaries is often uncertain and problematic.

However, we can define environmental history simply and directly as the record of humankind's interaction with nature, or the natural environment. This is a reciprocal process: humans from their earliest beginnings have left their imprint on the natural world and, of course, the natural world in all its manifestations – including climate change, storms, droughts, floods etc – has had a profound impact on the quality and the development of human cultures and civilizations. By and large most recent historical work has been directed at chronicling human effects on the environment, rather than the reverse – with the notable exception of systematic climate history.

From either direction, environmental history fits well with a global or world history approach. In the broad sweep of human history we see

at least three major developments that spread throughout the world and that sharply raised human capacity to shape the natural world: the discovery of fire; the Neolithic agricultural revolution; and the industrial scientific revolution. A host of more modest changes have supplemented these massive additions to the technical capacity of humankind. Teaching the effects of human action on the environment as a form of world history is a rich option. A world environmental history class can take the long view stretching back millennia to prehistory, or it can become a detailed examination of the last one or two centuries of human history. Whatever the chronological choice, the teacher of environmental world history has many choices and unusual perspectives to draw upon. Among its other strengths, environmental history demands attention to the material world in a way that runs counter to the cultural studies approach that has been so pervasive in recent years.

World environmental history is but one of an extensive list of broad themes or approaches that can be applied profitably and successfully to the teaching of world history. Many, such as the specialized history of women, gender and sexuality, labor, migration, psychoactive drugs, or racial/genetic diffusion are relatively new, vibrant fields of inquiry. Others, such as the history of the military and warfare, medicine, science and technology, are much older, although they too are being recast in interesting and challenging ways. If applied on a global scale any of these thematic approaches offers a valuable angle of vision from which to view the larger history of humankind. These and other thematic approaches offer an escape from the traditional tropes of traditional world history courses that employ civilizations, empires, world regions and the great religious traditions as primary units of analysis. Thematic world history also permits us to evade some of the claims and counter-claims and the pieties that swirl around the ongoing debate over the rise of Europe in the early modern and modern centuries.

After twenty-five years of teaching world environmental history to undergraduates at Duke University, I remain a firm believer in the pedagogical and intellectual value of this approach. My undergraduate lecture course, History 132, Modern World Environmental History, begins with the New World discoveries and ends with the present—a run of five centuries. This is a one-semester course meeting three times a week for a total of forty or so topics for lectures and discussion. Since nearly all my lectures have been prepared and revised, I now place them on the class web page in advance for the entire semester. Each class meeting we engage in a directed discussion of the day's topic in the lecture notes and assigned readings.

The narrative arc of the course is clear and compelling. Over the past five hundred years human numbers have soared from four to five hundred millions in 1500 to 6.3 billions today – a sixteen-fold increase. Over that same period, human impacts on the environment of the globe have kept pace with the steep rise in the world's population. Humankind's often desperate efforts to reduce scarcity, to improve our material condition have driven massive environmental change on a global scale. The world today, in the early twenty-first century, is by biological standards impoverished and depleted by comparison with what it was in 1500. Steady loss of species has reduced biodiversity. Continued deforestation and intensified land use has reduced total global living biomass and net primary productivity. Throughout the world today, wild animals on land and in the oceans have dwindled to remnant populations that bear little resemblance to the abundant, exuberant populations existing in the fifteenth century.

The massive rise of human settlements in mega-cities, industrialization and fossil fuel consumption has generated waste products of a size and malignancy never before seen in human history. The energy and transport revolutions have permitted global interaction and diffusion of humankind to every part of the globe with the power to impose new, never before seen changes in the natural world. Our capacities now extend to substantial interventions in basic biogeochemical cycles such as the carbon cycle among others – with future consequences that we can only faintly surmise. These new powers have created new responsibilities for us. We – humankind – must now actively manage the world's land, water and air to mitigate the effects of our continuing search for material betterment. This means that we must have intelligent global policies to implement – doing nothing or ignoring these issues is a policy determination with its own consequences.

During the last century, however, humans have begun to acknowledge enormous environmental change, to worry and protest about it, to study it systematically and to put in place plans and projects for mitigation.

However, the course narrative does not attempt to lay blame or to engage in cries of moral outrage. This is especially true in regard to the notion that responsibility for the world's environmental degradation in the early modern and modern worlds can be safely laid at the door of Europe. Or, that the West's growing domination of the world is in any way an adequate or sufficient explanation for excessive human exploitation of the natural world. To be sure the leading demands of the new world economy emerged from the expansive energy of Europe in tan-

dem with world conquest and colonialism. Nevertheless, there is just too much evidence of a universal human tendency to press hard against the environment in every world region regardless of who is in political power for me to bash Western civilization or European perfidy in this course.

I have planned the course around what I consider to be really important take-away messages. These I try to impart forcefully, clearly and repetitively to the students enrolled each semester. They consist of world-scale generalizations that emerge from an environmental historian's angle of vision. Some are obvious; others less visible. These large statements reflect both shared world historical processes and dramatic change – usually technological.

In the remainder of the paper I will list and explain these messages because impressing them on the students is a central goal of the course.

1. Global Maritime Connections

Intensified human impact on the world's environment is directly related to the new global maritime connections that first coalesced in the late fifteenth century. Between 1500 and the present the capacity, efficiency, safety, and predictability of world shipping has grown more impressive. During the sixteenth through mid-nineteenth centuries occurred continuing technical improvements in sailing ships. By 1850 steam power and its accompanying sets of innovations began the new forms of industrial shipping we see today. Accompanying these changes were improvements to knowledge of oceanic wind patterns and currents, as well as construction and refinement of coastal charts, pilotage manuals, improved breakwaters, ports and piers. And, finally, of course improvement in deep sea navigation including invention of the technical means to determine longitude.

2. The New World Connection

The Columbian voyages to the West Indies initiated a new maritime connection between the eastern and western hemispheres. This new link, often referred to as the Columbian exchange, was a turning point in world environmental history of the greatest significance. The biological exchanges that occurred range from invading bacteria and viruses that caused horrific die-offs of New World populations, to the hooved, grazing animals from Europe that so drastically changed the landscapes of much of the new world. The prodigious spread of ungulates enhanced the value of grasslands and brushlands for human populations. The new

Atlantic links created conditions favorable to production of cash crops such as tobacco and sugar, to extraction of timber and fish, and to the mining of silver and gold – all commodities that demanded a heavy investment in labor from new free and forced immigrant communities.

Of course, new plants, especially edible cultivars, made their way back to the Old World. The Atlantic connection further stimulated the economies of Western Europe as that region began to diverge in its economic growth from other regions of Eurasia.

3. Global Settlement, Ranching and Timbering Frontiers

From the sixteenth to the twentieth centuries, frontiers of settlement or commercial pastoralism, occurring in distinctive episodes, drove intensification of human land use around the world. Newly-powerful states and dynamic market forces impelled pioneer settlers to clear forests and woodlands, drain wetlands and irrigate dry lands, in order to create plowed fields for cultivation. These pioneers, after their subsistence needs were met, aimed at producing cash crops for wider markets. Ranchers imported, bred and managed new herds of cattle, sheep, and horses on areas favorably endowed with grasses and water – in the New World this meant human use of a valuable resource largely ignored. Simultaneously, the newcomers, equipped with firearms and more effective organizations, attacked and killed, enslaved, or drove off those hunters, gatherers, shifting cultivators/horticulturalists and nomadic pastoralists. These were the peoples who occupied lands defined as “empty” by the aggressors. The settlers quickly imposed new property rights in land that fostered land markets and transfers of property rights.

In other areas, timber cutters – often drawn from the ranks of pioneer-settlers – fell, processed and shipped timber to voracious world markets. Until the late nineteenth century timbering was confined to forests adjacent to water transport by rivers to ocean freighting. When railways came in the reach of the timber industry expanded to include nearly all global forest cover. However, the primary cause of global deforestation remained the massive expansion of sedentary plow cultivation that prevented regrowth possible with even clear-cutting methods of timbering.

4. The industrial/scientific/energy revolution

During the nineteenth century the British Isles became the first society in the world to shift from biomass fuels to coal as its primary domestic and industrial energy source. Coal then fueled the first steam engines

devised to pump water from coal mines. Steam engines quickly evolved to machines that could move people and goods along defined paths or railways. Simultaneously steam engines were harnessed to paddle wheels in the first steam driven vessels. This energy revolution with steam and fossil fuel was at the heart of the industrial revolution.

For the first time in our history, humankind possessed a new prime mover far more powerful and reliable than wind, water power, gravity or human and animal muscle – even when amplified by levers and other machine. This startling technical breakthrough amplified human capacity to do work and to alter the physical world. The energy revolution encouraged human use of natural resources and manipulation of the flora and fauna of the world's lands and oceans to an unprecedented level – one never seen before in world history. Fast moving developments in systematic observation of nature, in sciences of all types, continued to increase human capabilities and human impacts on the natural world.

5. The world hunt

For five centuries, humankind has engaged in a global assault on the world's wildlife. Fur-bearing creatures on land and in the oceans have been killed and their pelts and skins processed and sold in a world commodity market. Commercial hunting pressure drove many prey species to the point of near-extinction in region after region. Hunters also pursued land and sea animals for their flesh to feed the appetites of growing populations – in local, regional, and even global commodity markets. Market hunters killed millions of land and water birds for their flesh and, in some cases, their plumage.

New markets for fresh-water and ocean fish as well as for shellfish caused commercial fishermen to press relentlessly against regional and ultimately global stocks of these prey species. As early as the first decades of the sixteenth century, a new long-distance whaling industry grew swiftly in Arctic waters to meet the European demand for fats and oils. Shortly thereafter, the world hunt for walrus and seals with their valuable skins and fats put severely depleted these species in both northern and southern waters. New world sea turtles, found in astounding numbers, in warm American waters, were virtually hunted out by the end of the nineteenth century.

At the same time, farmers and ranchers launched wars of extermination against a wide array of animals and birds defined as vermin – that is those animals that menaced or consumed crops or herds.

The end result of the world hunt after five centuries is a steep reduction, largely unrecognized today, of the total numbers of the world's wildlife. Today's wildlife populations are but pitiful remnants of the vast multitudes of birds, mammals and fish that could be found around the world in 1500. The conservation impulses of recreational hunters and fishers have kept alive residual populations of favored game species.

6. Cities, human crowding, and urban pollution

Nineteenth century cities grew in size and number at an ever-increasing pace. The importance of unique urban environments became more salient over time. At first this concern was primarily for health and convenience, later came aesthetic movements for parks and greenery. Expanding cities needed daily infusions of water for domestic and industrial purposes and were forced to reach out via aqueducts to natural and artificial reservoirs miles distant. Expanding cities had to find ways to deal with organic waste, both human and animal, in coordinated municipal systems of disposal that usually involved water-borne piping systems. Expanding cities had to develop drains and sewers to remove storm waters.

At the same time, as new industries in metals, chemicals, dyes, textiles, machine tools and dozens of other specialties were established within city limits, the problems of industrial waste disposal multiplied. No longer could the most convenient disposal of waste in land, water or air sinks be tolerated. Controls and means of mitigation had to be found. When new information about contagious diseases and about the health hazards of industrial pollution moved into public discourse, self-designated sanitarians, engineers, physicians and private reformers developed a new notion of public health. The idea that the municipality and ultimately the state bore a responsibility for the health of its citizens and that measures should be taken to reduce the incidence of contagious disease took hold firmly by the end of the nineteenth century.

7. Irrigated and Industrialized Agriculture

Beginning in colonial India under the British in the mid-nineteenth century, engineers developed the technical skills to build huge perennial canal irrigation projects to secure farmers against droughts and to bring new semi-arid lands under cultivation. The environmental consequences were marked. Large, state-sponsored irrigation projects were one of the most noteworthy contributors to agricultural production in North America, in Asia, and parts of Europe during the twentieth century. The bene-

fits of hydro-electric generation added to the appeal of audacious programs to dam and control “wild” rivers around the world. Problems of insufficient drainage and poor maintenance contributed to salt-encrusted infertile soils and to regions newly-infested with malaria.

Use of steam and then internal combustion engines to draw newly-designed agricultural machinery caused steep reductions in the numbers of draught animals required and the cultivated grains required to feed them.

By the 1950’s newly-discovered and marketed pesticides and herbicides sent crop yields for new hybrid varieties of foodgrains soaring. Finally, the discovery of the Haber-Bosch method of fixing nitrogen from the air – one of the single most important scientific discoveries in world history – offered farmers copious supplies of artificial nitrogenous fertilizer, the last piece in the successful formula for the Green Revolution of the 1960’s – a development that staved off the predicted specter of world food scarcity.

8. Concrete, asphalt, and the internal combustion engine

The invention of reinforced concrete permitted building cities upward with high-rise skyscrapers in new shapes and designs and encouraged new population densities. Concrete and asphalt offered cheap, malleable paving for city streets and sidewalks that laid impermeable, heat-reflective surfaces over most urban land. Concrete and asphalt provided the medium to construct highways connecting cities and towns with a grid of highways and roads – hostile to all forms of life not encased in vehicles – that gave a new mobility to human societies. Petroleum-fueled internal combustion engines generated new forms of air, water and soil pollution. The enormous appeal of the private automobile and the efficiency and versatility of the cargo-hauling truck ensured a rising production, purchase and use of these vehicles in every world region.

9. Post World War II chemicals, heavy metals, and radioactive wastes

During the last half of the twentieth century, booming new industries and industrial capacity diffused from the core regions of Europe and North America to meet the aspirations of new post-colonial nation states in Asia, Africa and Latin America. Deposition of chemical and heavy metal industrial wastes with little or no controls followed accordingly. In the same decades the chemical industry developed thousands of new chemicals that improved productivity and efficiency in every area of

human activity. However the impacts of these new substances on human, plant and animal health were never fully tested or even considered very seriously. The leading example was DDT, which when sprayed or otherwise dispersed, was a dramatically lethal pesticide, but which also lingered in the environment to be consumed and to gather in higher concentrations in the fats of animals higher up the food chain. DDT and many other chemicals had become pollutants on a global scale. The campaign against DDT, begun by Rachel Carson's book, *Silent Spring*, set in motion a reaction against the excesses of the chemical industry and helped to foster a new environmental consciousness.

The most dramatic new environmental issue was that tied to the discovery and first use of atomic weapons on Hiroshima and Nagasaki in 1945. These explosions, and the several hundred other air and water tests of nuclear weapons that followed in the post-war decades, released new radioactive isotopes into air, soil and water. The US tests in Nevada, for example, released radioactive particles that were borne by the jet stream winds right across the continent. This was a new form of industrial pollution that threatened human health in the present and near-term and even posed the menace of human mutation through genetic change. When peaceful uses for atomic energy encouraged the building to nuclear power plants, the possibilities for environmental disasters such as that seen most notably at Chernobyl were thrown into the mix.

10. The global environmental movement and discourse

As early as the 1960's, ecologists, wildlife biologists and other scientists as well as ordinary persons began to worry about and to question the cumulative effect of the juggernaut of economic growth after World War Two. At first muted, this movement swiftly gained added momentum and numbers in North America and Europe. Reactions to the dangers and discomforts of air and water pollution, of unchecked programs of water control, of uncontrolled pesticide use, of loss of wild habitat and many other signs of environmental degradation fueled what became a global movement. For many it seemed that even human survival was at stake. Two unprecedented international conferences gave form, structure and content to a new global environmental movement. The 1968 Biosphere Conference held in Paris founded the International Biological Programme for world-scale environmental monitoring. The 1972 Stockholm meeting, preceded by several years of careful preparatory study and organization, brought together official representatives from 113 countries and a host of non-governmental organizations. After this meet-

ing the UN set up its own United Nations Environmental Program. Dozens of countries established environmental agencies and ministries.

For the next twenty years the world environmental movement grew exponentially with new organizations, new causes and new approaches ranging from contesting elections to direct action to stop the destruction of threatened environments or species. The Rio Conference of 1992 represented the maturation of the movement in a meeting which pitted the concerns of developed countries over global climate change against the anger and direct social concerns of environmental activists of less-developed countries. Finally, the course ends with a discussion of Kyoto and the issues of international state cooperation that now appear essential to adequate human responses to our own actions.

Conclusion

One of my most difficult tasks in teaching this course is to offer a balanced view of what clearly is a nearly unrelieved record of environmental despoliation. I do not believe it responsible teaching to leave the students in a state of despair or to indulge in an extended eulogy for a ravished natural world. Instead, I try to point out that all human actions directed at material survival involve some form of environmental change that can be called degradation. All economic action has an impact on the natural world. We must alter our natural environment to exist as a species. Moreover, much of what has been done in the past cannot be undone – at least in a way to satisfy purists. Instead, we must think of a managed global environment in which we do not, by our own actions, trigger unthinkable global change or in which we create environments that are unpleasant, unhealthy, depressing or otherwise deplorable conditions for human life. We can and must use the regenerative powers of nature to restore some of what we have lost in flora and fauna – even thought that will never be as rich and abundant as it was five centuries ago.

Appendix

History 132 Class Schedule Fall 2004

Course Requirements:

Completion of two in class midterm exams and a take-home final exam. Regular attendance in class. Participation in class discussion.

We will follow a discussion format rather than a formal lecture approach. For many classes lecture notes for the course are posted in the Course Documents Section of the class web page. These notes and the assigned readings will form the basis for discussion in each class. Be sure and read the assigned materials and the lecture notes before coming to class.

Approximate grading weights: Mid-terms 30%; discussion 30%; final exam 40%.

Contacts: richards@duke.edu.

Log in to class web page. <https://courses.duke.edu>

Required books for purchase:

J. R. McNeill, *Something New Under the Sun: An Environmental History of the Twentieth-century world*, 2001.

R. Carson, *Silent Spring*, 1994.

J. F. Richards, *The Unending Frontier: An Environmental History of the Early Modern World*, 2003.

Unless otherwise noted, all other readings can be found in the class web page under Course Documents, Readings Folder.

Class Schedule

Class 1 Mon Aug 23

Introduction to the Course Issues and Themes in World Environmental History

Part I The Early Modern World

Class 2 Wed Aug 25

The Tiger and the Shark: India and the Netherlands

Reading:

Richards, pp. 1-57

Class 3 Fri Aug 27

The Little Ice Age

Reading:

Richards, pp. 57-85

Class 4 Mon Aug 30

Settlement Frontiers: Taiwan

Reading:

Richards, pp. 89-111

Class 5 Wed Sept 1
Energy and Resources: Japan
Reading:
Richards, pp. 148-192

Class 6 Fri Sep 3
Energy and Resources: Britain
Reading:
Richards, pp. 193-241

Class 7 Mon Sep 6
The New World: The West Indies
Reading:
Richards, pp. 309-333

Class 8 Wed Sep 8
Settlement Frontiers: Colonial Mexico
Reading:
Richards, pp. 334-376

Class 9 Fri Sep 10
The World Hunt: Eastern North America
Reading:
Richards, pp. 463-516

Class 10 Mon Sep 13
The World Hunt: Whaling in the Arctic
Reading:
Richards, pp. 574-616

Class 11 Wed Sep 15
First mid Term Exam

Part II The Nineteenth Century

Class 12 Mon Sep 20
The Energy and Industrial Revolution
Reading:
Simmons, *Changing the Face of the Earth*, (Oxford, 1996 2nd. ed.) pp. 208-233;
245-250; 348-367.

Class 13 Wed Sep 22
Energy, Urban Waste and Pollution in the Industrial City
Reading:
A Almandoz, *The Shaping of Venezuelan Urbanism in the Hygiene Debate of Caracas, 1880–1910*, in: *Urban Studies*, 37 (2000)

D. Stradling/P. Thorsheim, *The Smoke of Great Cities: British and American Efforts to Control Air Pollution, 1860-1914*, in: *Environmental History*, 4 (1999), pp. 6-31.

Class 14 Fri Sep 25

Water and Public Health in the Industrial City

Reading:

M. Kaika/E. Jswyngedouw, *Fetishizing the Modern City: The Phantasmagoria of Urban Technological Networks*, in: *International Journal of Urban and Regional Research*, 24 (2000), pp. 120-138.

Sp. H. Brown, *Public Health in U.S. and West African Cities, 1870-1900*, in: *The Historian*, Summer, 56 (1994), pp. 685-699.

Class 15 Mon Sep 27

Perennial Canal Irrigation in Colonial India

Reading:

Sh. Watts, *British Development Policies and Malaria in India 1897-1929*, in: *Past & Present* 165 (1999), pp. 141-181.

Class 16 Wed Sep 29

Wetland Conversions in Tropical River Deltas: The Case of Colonial Myanmar (Burma)

Reading:

J. F. Richards, *Agricultural Impacts in Tropical Wetlands: Rice Paddies for Mangroves in South and Southeast Asia*, in: M. Williams (ed.), *Wetlands: A Threatened Landscape*, London 1990, pp. 217-233.

Class 17 Fri Oct 1

Humans, Wildlife and Disease in Colonial East Africa

Reading:

J. Giblin, *Trypanosomiasis Control in African History: An Evaded Issue*, in: *Journal of African History*, 31 (1990), pp. 59-80.

Class 18 Mon Oct 4

The Pampas of Argentina

Reading:

A. G. Zarilli, *Capitalism, Ecology, and Agrarian Expansion in the Pampean Region, 1890-1950*, in: *Environmental History*, 6 (2001), pp. 561-583.

Class 19 Wed Oct 6

European Settlement in New Zealand

Reading:

A. W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*, Cambridge 1986, pp. 1-7; 217-268.

Class 20 Wed Oct 13

The World Hunt: Bison and Prairie Dogs on the North American Plains
Reading:

D. Flores, *Bison Ecology and Bison Diplomacy: The Southern Plains from 1800 to 1850*, in: *The Journal of American History*, 78 (1991), pp. 465-485.

S. Jones, *Becoming a Pest: Prairie Dog Ecology and the Human Economy in the Euroamerican West*, in: *Environmental History*, 4 (1999), pp. 531-552.

Class 21 Fri Oct 15

The World Hunt: Whaling and Sealing in the Nineteenth Century
Reading:

J. R. McNeill, "Of Rats and Men: A Synoptic Environmental History of the Island Pacific", *Journal of World History*, 1994, v. 5, pp. 299-349.

Alfredo Zavala-Gonzales and Eric Mellink, "Historical Exploitation of the California Sea Lion, *Zalophus californianus*, in Mexico" *Marine Fisheries Review*, Winter 2000 v. 62 pp. 35-49.

Class 22 Mon Oct 18

The Second Phase of the Industrial Revolution

Reading: McNeill, *Something New Under the Sun*, pp. 296-324.

Class 23 Wed Oct 20

The World Hunt: Big Game Hunting and Species Depletion.
Reading:

William Beinart, "Review Article: Empire, Hunting and Ecological Change in Southern and Central Africa", *Past and Present*, 1990, No. 128 pp. 162-186.

E.I. Steinhart, "Hunters, Poachers and Gamekeepers: Towards a Social History of Hunting in Colonial Kenya", *Journal of African History*, 1989, v. 30, pp. 247-264.

Class 24 Fri Oct 22

Tracking Industrial Wastes in the Long Term

No lecture notes.

Reading: Joel A. Tarr/Robert U. Ayres, *The Hudson-Raritan Basin*, in: B. L. Turner II et. al (eds.) *The Earth As Transformed by Human Action*, Cambridge, 1990.

Part III The Twentieth Century

Class 25 Mon Oct 25

The Twentieth Century According to McNeill

Reading:

McNeill, pp. 3-17; 50-117; 269-295.

Class 26 Wed Oct 27

Industrialized Agriculture and its Environmental Impacts

McNeill, pp. 21-49; 192-227.

Class 27 Fri Oct 29

Reclamation and Water Control in the United States

Reading:

McNeill, pp. 149-191.

Donald Pisani, "Beyond the Hundredth Meridian: Nationalizing the History of Water in the United States", *Environmental History* 2000 v. 5 pp. 466-482.

Class 28 Mon Nov 1

North American Forests and Forestry

Reading: Gordon Whitney, *From Coastal Wilderness to Fruited Plain* (Cambridge, Cambridge University Press, 1994), pp. 299-347.

Class 29 Wed Nov 3

World Forestry and Forests

Reading:

McNeill, pp. 229-237.

J. Fairhead/M. Leach, *Reading Forest History Backwards: The Interaction of Policy and Local Land Use in Guinea's Forest-Savanna Mosaic, 1893-1993*, in: *Environment and History*, 1 (1995), pp. 55-91.

Ch. V. Barber, *Forest resource scarcity and social conflict in Indonesia*, in: *Environment*, 40 (1998), pp. 4-20.

Class 30 Fri Nov 5

Second Mid Term Exam

Class 31 Mon Nov 8

Environmental History of the Union of Soviet Socialist Republics.

Reading:

B. S. Richter, *Nature Mastered by Man: Ideology and Water in the Soviet Union*, in: *Environment and History*, 3 (1997), pp. 69-96.

I. Lipovsky, *The Central Asian Cotton Epic*", *Central Asian Survey* (1995), v. 14, pp. 529-542.

Class 32 Wed Nov 10

Global Dispersal of Heavy Metals and Chemicals: The Case of DDT

Reading:

D. R. Roberts/L. L. Laughlin/P. Hsheih/L. J. Legters, *DDT, Global Strategies, and a Malaria Control Crisis in South America*, in: *Emerging Infectious Diseases*, 3 (1997), pp. 1-12.

Class 33 Fri Nov 12

The Power of a Book

Video: Rachel Carson's *Silent Spring* PBS Video.

Reading:

R. Carson, *Silent Spring*.

Class 34 Mon Nov 15

Oceans in the Twentieth Century: The End to Whaling

Reading:

McNeill, 118-148; 237-252.

G. Bankoff, *Societies in Conflict: Algae and Humanity in the Philippines*, in: *Environment and History* 5 (1999), pp. 97-123.

Class 35 Wed Nov 17

Environmental History of the People's Republic of China

Reading:

F. Lee, *A Harbinger of the Problems Confronting China's Economy and Environment: The Great Chinese Shrimp Disaster of 1993*, in: *Journal of Contemporary China*, 9 (2000), pp. 323-332.

E. B. Vermeer, *Industrial Pollution in China and Remedial Policies*, in: *The China Quarterly*, No. 156 (1998), pp. 952-985.

Class 36 Fri Nov 19

Water and the Environment in the Republic of India

Reading:

K. D. Alley, *Ganga and gandagi: interpretations of pollution and waste in Benaras. (India)*, in: *Ethnology* 33 (1994), no 2, pp. 127-136.

Class 37 Mon Nov 22

Global Pollution and the Cold War: Nuclear Testing

Reading:

P. Coates, *Amchitka, Alaska: Toward the Bio-Biography of an Island*, in: *Environmental History*, 1 (1996), pp. 20-45.

Class 38 Wed Nov 24

Environmental Protection in the United States

Reading:

E. P. Russell III, *Lost Among the Parts Per Billion: Ecological Protection at the United States Environmental Protection Agency, 1970-1993*, in: *Environmental History* 2 (1997), pp. 29-51.

Class 39 Mon Nov 29

Stockholm and the World Environmental Movement

Reading:

McNeill, pp. 325-356.

Class 40 Wed Dec 1

The United Nations and the International Environmental Movement

Reading:

D. Momtaz, The United Nations and the Protection of the Environment: From Stockholm to Rio de Janeiro, *Political Geography* 15 (1996), pp. 261-271.

J. W. Meyer/D. J. Frank/A. Hironaka/E. Schofer/N. Brandon Tuma, The Structuring of a World Environmental Regime, 1870–1990, in: *International Organization*, 51 (1997), pp. 623-652.