Nature at War

This anthology is the first sustained examination of American involvement in World War II through an environmental lens. World War II was a total and global war that involved the extraction, processing, and use of vast quantities of natural resources. The wartime military-industrial complex, the “Arsenal of Democracy,” experienced tremendous economic growth and technological development, employing resources at a higher intensity than ever before. The war years witnessed transformations in American agriculture; the proliferation of militarized landscapes; the popularization of chemical and pharmaceutical products; a rapid increase in energy consumption and the development of nuclear energy; a remaking of the nation’s transportation networks; a shift in population toward the Sunbelt and the West Coast; a vast expansion in the federal government, in conjunction with industrial firms; and the emergence of environmentalism. World War II represented a quantitative and qualitative leap in resource use, with lasting implications for American government, science, society, health, and ecology.


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Nature at War

American Environments and World War II

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Preface

American Environments and World War II

Peter Mansoor

World War II was the largest and most destructive conflict in human history. It was an existential struggle that pitted irreconcilable political systems and ideologies against one another across the globe in a decade of violence unlike any other. There is little doubt today that the United States had to engage in the fighting, especially after the Japanese attack on Pearl Harbor on December 7, 1941. The conflict was, in the words of historians Allan Millet and Williamson Murray, “a war to be won.”¹ As the world’s largest industrial power, the United States put forth a supreme effort to produce the weapons, munitions, and military formations essential to achieving victory.² When the war finally ended, the finale signaled by atomic mushroom clouds over Hiroshima and Nagasaki, upward of 60 million people had perished in the inferno.³ Of course, the human toll represented only part of the devastation; global environments also suffered greatly. The growth and devastation of World War II significantly changed American landscapes as well. The war created or significantly expanded a number of industries, put land to new uses, spurred urbanization, and left a legacy of pollution that would in time create a new term: superfund site.

³ This is perhaps a low estimate, in as much as 50 million civilians may have perished in China alone. Statistics from the US National World War II museum website, www.nationalww2museum.org/learn/education/for-students/ww2-history/ww2-by-the-numbers/world-wide-deaths.html (accessed July 29, 2019).
Before considering how World War II changed America, it is useful to consider the magnitude of the war effort. World War II was the last great industrial total war, engulfing in its fiery embrace entire peoples, economies, and armed forces. Emerging from the throes of the Great Depression, the US gross domestic product increased from $97.1 billion in 1939 to $185.1 billion in 1944. Expenditures on national defense during this period increased from $1.7 billion to $86.3 billion; by 1945, nearly half the economy was engaged in war production. Manufacturers tripled their output; Ford Motor Company alone produced more durable goods than Italy. Nothing was impossible with victory at stake. When the War Department asked the president of Chrysler Corporation, K. T. Keller, if his company could make tanks, he immediately responded “Yes,” before adding, “What’s a tank look like?”

The American people made good on President Franklin D. Roosevelt’s desire to make the United States the arsenal of democracy. Between 1939 and 1945, the United States produced 303,695 planes, 10 battleships, 27 fleet carriers, 110 escort carriers, 211 submarines, 907 cruisers/destroyers/destroyer escorts, 82,000 landing craft, 41,000 artillery pieces, 60,973 tanks, 2,400,000 vehicles of all types, 12,500,000 rifles, 41,000,000,000 rounds of ammunition, and 3 atomic bombs. In the peak war years of 1942–1944, the United States alone produced more combat munitions than all its allies put together and nearly twice as much as the combined Axis powers. In just one year (1943), the United States produced more tanks than Germany did during the entire war. “I know how you defeated us,” remarked a German prisoner as he marched past
one of the many supply dumps in Normandy. “You piled up the supplies and let them fall on us.”

The United States was the arsenal for its allies as well—democratic or otherwise. “This is a war of engines and octanes,” Soviet Premier Josef Stalin declared as he rose to toast his allied comrades at a banquet at the Tehran conference in November 1943. “I drink to the American auto industry and the American oil industry.” Stalin was correct on all counts. Through the Lend-Lease program the United States transferred $46 billion in raw materials, munitions, and weapons to its allies, primarily the British Empire and the Soviet Union. “Long before American troops had engaged the Germans in large-scale fighting,” President Harry S. Truman reported to Congress in early 1946, “lend-lease tanks and jeeps, communication equipment, rolling stock, planes, guns, and heavy artillery were aiding the defenders of Stalingrad and helping General Montgomery’s Eighth Army hold and repulse the Afrika Korps in Egypt.” Lend-Lease recipients received 45,000 planes, helping the allies to gain and maintain air superiority. The Soviet Union alone received 14,700 planes, 7,000 tanks, 52,000 jeeps, and 375,000 trucks, without which the Red Army would have been sorely pressed to sustain the enormous land offensives that crushed the Wehrmacht in the last two years of the war.

The massive increase in wartime production was made possible by the conversion of civilian industry to defense usage and the creation of new plants. US manufacturers built 40 engine and propeller plants between 1940 and 1943, many of them with government funding. Floor space increased from 13 million square feet to more than 167 million square feet in the same period. The most impressive facility was Ford’s Willow

14 Ibid., 12.
15 Ibid., 15.
16 Ibid., 25.
17 Amazingly, civilian consumption in the United States increased slightly during the war, the only nation of the major combatants in which this occurred.
Run, a massive, newly built factory 25 miles west of Detroit that by spring 1944 was churning out a B-24 heavy bomber every hour. With these new facilities came workers, housing, and transportation infrastructure that changed the landscape of suburban America.¹⁹ According to historians Hugh Conway and James Toth, the vast array of newly constructed infrastructure “revised the correlation of American labor, raw material, transport, and electrical power across the land. The result was a far more extensive, cohesive, flexible, and dynamic pattern of production than anything the world had previously known. It revolutionized the capital underpinnings of the American economy not only for the war but also for the peace in the aftermath.”²⁰ But it was not just the economy that would be forever altered; American landscapes would never be the same again.

The Manhattan Project, which by 1945 made the United States the world’s first atomic power, involved laboratories in Chicago and Berkeley, uranium production facilities in Tennessee, plutonium production facilities in Washington, and a laboratory and integration facility in the newly constructed town of Los Alamos, New Mexico. At the height of the effort in June 1944, the Manhattan Engineer District employed nearly 129,000 people, of whom 84,500 were construction workers, 40,500 operated facilities, 1,800 were civil service employees, and 1,800 were military personnel.²¹ The world’s first atomic detonation occurred on US soil on July 16, 1945, at Trinity Site in the Jornada del Muerto Desert near Alamogordo, New Mexico. The explosion of the man-made Plutonium-239 fission device measured 22 kilotons of TNT and broke windows 120 miles distant, while the heat of the blast melted the desert sand and turned it into a green glassy substance christened trinitite. Watching the blast, the scientific leader of the Manhattan Project, Dr. J. Robert Oppenheimer, recalled a verse from Hindu scripture, “Now I am become Death, the destroyer of worlds.”²² He was correct in more ways than one. Nuclear material can quickly destroy mankind with the

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¹⁹ For an examination of how Willow Run changed the greater Detroit area, see Sarah Jo Peterson, Planning the Home Front: Building Bombers and Communities at Willow Run (Chicago: University of Chicago Press, 2013).
explosion of a thousand suns, or it can more quietly destroy life with highly toxic radioactive fallout and pollution of soil and water. The toxic effects of atomic devices were not well understood in 1945; what the military personnel and scientists working on the Manhattan Project did know is the war had to be won, and the atomic bomb was essential to that purpose.

All this production was for one purpose: to win the war. Doing so required more than just weapons, however. The United States would organize and train 89 ground divisions, 243 air combat groups, and a two-ocean navy that at its peak numbered 6,768 vessels. These forces needed vast areas for posts, camps, bases, and training areas, soldiers often building their facilities as they organized and trained for combat. All armies maneuvered in Louisiana, Tennessee, the Carolinas, and at the Desert Training Center in California. The legacy structure of military forts across the West was soon overwhelmed by the expansion and creation of huge bases such as Fort Bragg, North Carolina; Fort Knox, Kentucky; and Camp Hood, Texas. Military activity changed the landscape in many ways, and although some of this base structure was downsized or closed after 1945, much of it remained to house US armed forces during and after the Cold War.

The United States was not just the arsenal of democracy; it was also the granary of democracy. American farmers ramped up production for the war effort, assisted by generous government policy that allowed prices for foodstuffs and livestock to rise by as much as 100 percent, while subsidies encouraged production of essential war products, such as cotton and tobacco. Americans supported the war effort by rationing, recycling, and building “Victory Gardens” to ease the burden on the agricultural industry to feed both the nation and its armed forces. The success of American agriculture was so complete that by the end of the war in 1945 American farmers were feeding the people of every major ally and

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44 Ironically, the devotion of land to military purposes, which has staved off the march of suburbia and agribusiness, has been a boon to some endangered species, such as the desert tortoise in Fort Irwin, California, and the red cockaded woodpecker in Fort Bragg, North Carolina.

45 Millett and Murray, A War to Be Won, 529. Given the fact that most GIs smoked, the designation of tobacco as a critical agricultural product is not as strange as it appears on its face.
The war accelerated the industrialization of American agriculture, in the process turning a land of family farms into one of vast conglomerates run by an increasingly narrow percentage of the population.

World War II, then, was a milestone in the economic and environmental history of the United States. The former story has been well researched; the latter history largely remains to be written. The intent of this collection of essays, the result of a conference sponsored by the Mershon Center for International Security Studies in February 2016 on the campus of The Ohio State University, is to fill some of the gaps in the environmental history of the United States during World War II. The editors and authors present this work in the hope that it will shed light on the vast changes to American landscapes during World War II – a war that had to be won, but that continues to shape modern America in profound ways.

Acknowledgments

This volume began as a series of papers presented at the conference “The Nature of War: American Environments and World War II,” at the Mershon Center for International Security Studies at The Ohio State University, February 25–27, 2016. During the conference, we realized there was a fascinating new story to tell, and so we set about revising the papers and fashioning them into a volume that would explain how World War II shaped the American environment as we experience it today. The editors would like to thank the following organizations for their generous funding of the conference and book: the Mershon Center for International Security Studies, the Society for Military History, The Ohio State University Department of History, and the Sustainable and Resilient Economy Discovery Theme at Ohio State. In addition to those scholars whose chapters appear in this volume, we would also like to recognize the other participants who made the conference so very productive and exciting: Charles Closmann, Anastasia Day, Roger Lotchin, Derek Lee Nelson, Chris Otter, and Sam White. We would also like to acknowledge: Steven Blalock and Kyle McCray from the Mershon Center, whose tireless organization and budget support made the conference possible; Mark Sokolsky for his excellent editorial assistance; the anonymous reviewers of the manuscript for their insightful comments and helpful suggestions; and last but certainly not least Debbie Gershenowitz and her excellent team at Cambridge University Press.