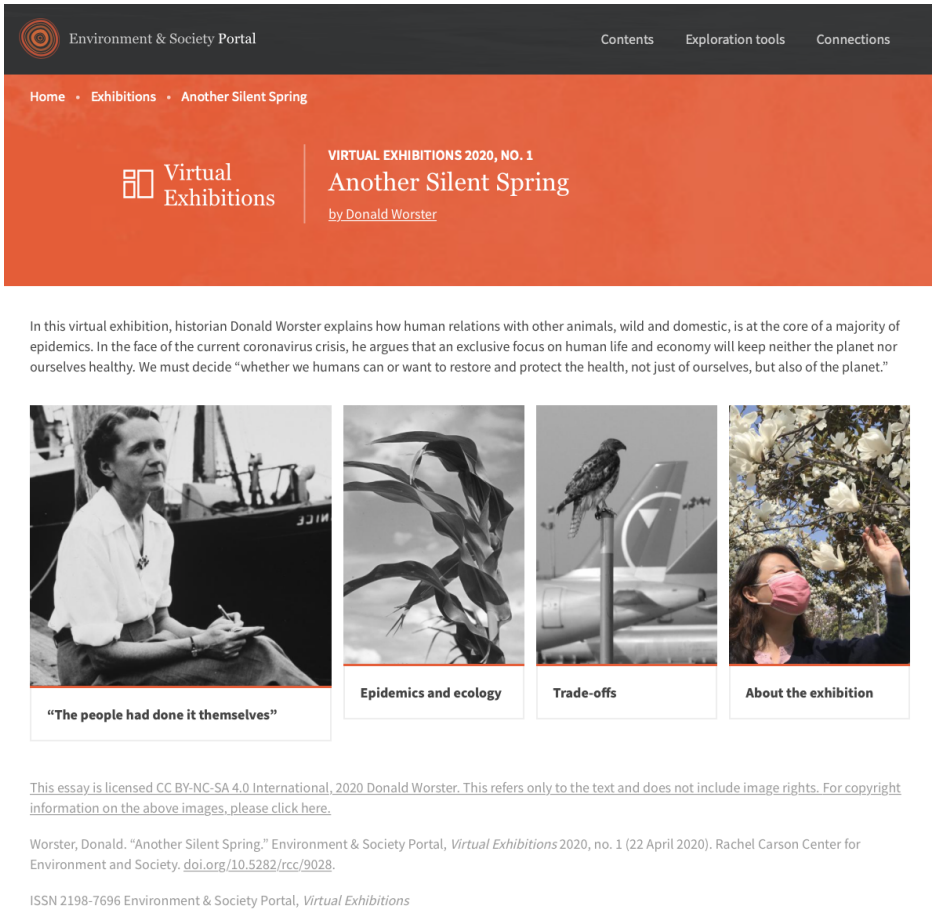
Another Silent Spring

by Donald Worster

In this virtual exhibition, historian Donald Worster explains how human relations with other animals, wild and domestic, are at the core of a majority of epidemics. In the face of the current coronavirus crisis, he argues that an exclusive focus on human life and economy will keep neither the planet nor ourselves healthy. We must decide "whether we humans can or want to restore and protect the health, not just of ourselves, but also of the planet."



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“The people had done it themselves”

This springtime an eerie silence has fallen over the world’s cities and towns, as governments order their citizens to stay home, avoid unnecessary travel, and keep away from large-group gatherings. Urban streets, rural highways, brand-new airports, and the new generation of bullet trains are all emptier than before, for they are the dreaded paths that the coronavirus (COVID-19 or SARS-Cov2) takes to spread from continent to continent and reach its next victims.

Milan’s Piazza del Duomo on 28 February 2020 during the coronavirus pandemic. Photograph by Miguel Medina.

Other plant and animal species, according to reports, have begun returning to our cities, making a rather unfamiliar noise with their singing and honking. That clamor of geese, woodpeckers, and swans comes from tough and adaptive survivors of a general holocaust that animal species have been going through. They represent the few who have survived, but they should not be taken as signs of a planetary recovery. That process may take

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thousands, even millions, of years. Industrial civilization, in contrast, will not take so long to recover.

Rachel Louise Carson (1907–1964). Unknown photographer, n.d.

Courtesy of the U.S. Department of Agriculture.
Accessed via Flickr on 14 April 2020. Click here to view source.

The biologist and writer Rachel Carson opened her world-shaking 1962 book *Silent Spring* with "a fable for tomorrow"—a future when "some evil spell" had settled on our communities, when "mysterious maladies swept the flocks of chickens; the cattle and sheep sickened and died. Everywhere was a shadow of death." The cause of her imagined silence was pesticides like DDT, liberally applied to fields and lawns to eradicate the pests and vermin that threatened agricultural production. All-out production was deemed necessary to feed a burgeoning human population and make money for corporations and farmers. Now, six decades later, DDT is no longer used in the United States, although many replacements have been spreading across the land. Throughout Africa, Asia, and Latin America the old poison is still being used to combat insect pests and control diseases. China, for example, last year produced 4,500 metric tons of DDT to kill ticks and mites. And worldwide more than 2.5

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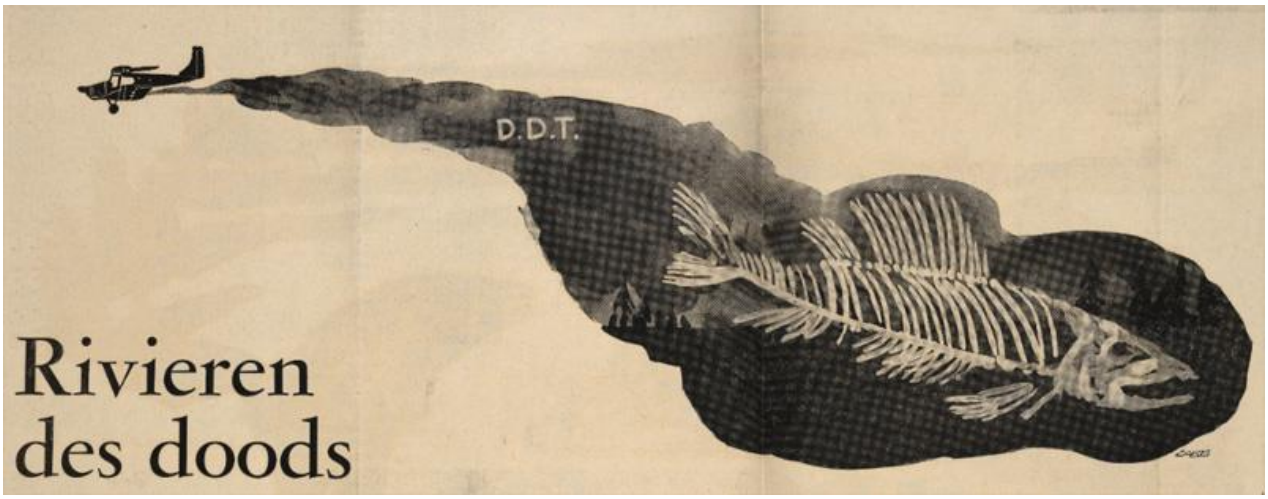
million metric tons of biocidal chemicals are being applied to the land each year. That poisonous rain has become much heavier than Carson ever imagined, and it continues to damage the planet's ecology.



The popular Dutch weekly *Elseviers Weekblad* serialized selections of *Silent Spring* over several issues. *Elseviers* was the only periodical to commission its own illustrations, which were strikingly dramatic and even lurid.

Nor did Carson foresee the new kind of silence we are experiencing. As I said, it comes from a cessation of industrial civilization's usual screeches, roars, and rumbles. This time the cause is not a biocide but a dangerous virus that has jumped from lower animals, where it first evolved, all the way up to humans. As I write, there are more than two million confirmed cases of COVID-19 infection worldwide—and that has happened in a mere three months. We may have years to wait before a vaccine to stop the virus is available. Thus, the silence spreading across our cities and countryside may reach a deafening silence—one that stops all rational thought.

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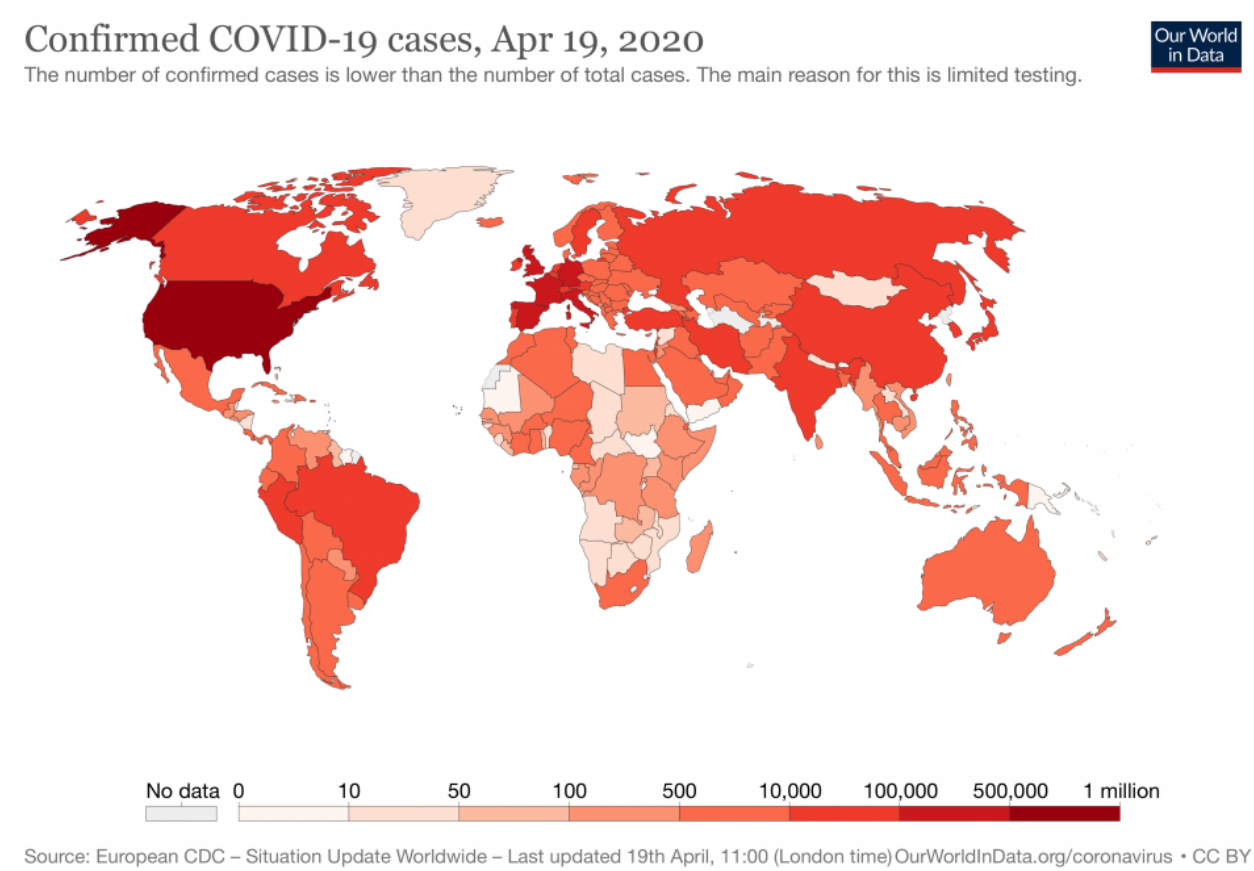

Total confirmed COVID-19 cases (31 December 2019 to 19 April 2020). Source: Our World in Data , accessed 19 April 2020.

Speaking of irrationality, some people are calling for nothing less than mass extermination of the guilty animals, just as they did when insects were seen as the great enemy and chlorinated hydrocarbons and organic phosphates became weaponized. Kill the Japanese beetles! Exterminate the Russian thistle! Now the cry is to kill all the bats. Rid the world of viruses and bacteria. Drench the Earth with bleach baths, hand sanitizers, and vaccines. Save civilization from dangerous, out-of-control nature.

There is no shortage of noise when humans begin to panic and shout for revenge. We are in a fighting mood, and the fight once more is against nature. The nonhuman world is being blamed not only for the current wave of sickness but also for upheaval in trade, manufacturing, transportation, jobs, currencies, stock prices, education, climate and biodiversity conferences, immigration, and hospitals. Eventually, after the first waves of panic begin to subside, we may be ready to think about why this epidemic has occurred.

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A rat leaving a ship via the mooring rope, thus spreading the plague. Drawing by A. L. Tarter, 1940s.

Drawing by A. L. Tarter, n.d.
Courtesy of the Wellcome Collection.
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The plague spreads to America. Drawing by A. L. Tarter, 1940s.

Drawing by A. L. Tarter, n.d.
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"No witchcraft, no enemy action had silenced the rebirth of new life," Carson wrote at the end of her fable about a spring that never arrived. "The people had done it themselves." She did not blame pesticide deaths merely on some cabal of greedy capitalists or foreign militarists. All kinds of people had some role—rich and poor, men and women, even newborn infants. They were part of the biggest population boom in history, and to feed themselves they demanded more food and fiber. Then they went to war on insects and fungi, a war that, unintentionally of course and with some noble motives, ended by devastating the web of life.

By driving agricultural production to new heights, consumers threatened their own health as well as the health of the planet. (Carson linked rising cancer rates and other modern diseases to the new pesticides.) The ultimate cause, therefore, was not simply a concentration of economic and technological power; it was a deeper and broader cultural drive to conquer nature. While it was true that some powerful agribusiness companies had led the creation of new agricultural chemicals, showing "no humility before the vast forces with which they tamper," ordinary people bore some responsibility too. Millions of people had gladly bought and used those chemicals or otherwise supported their use. The domination of nature was what they commonly sought, and chaos was what they got.

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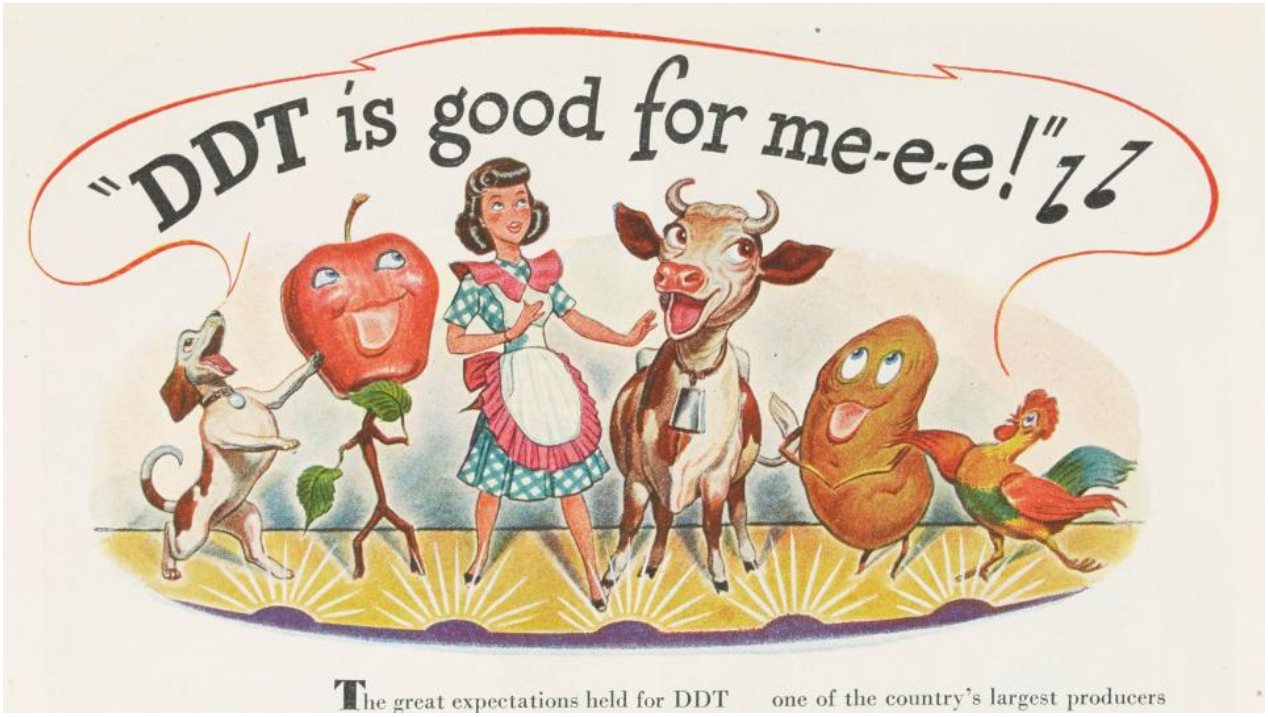

"DDT is good for me-e-e!" Color print magazine advertisement for Pennsalt DDT products. This ad appeared in *Time Magazine*, 30 July 1947.

"DDT Is Good for Me-e-e!," 30 July 1947.
Courtesy of Science History Institute. Philadelphia.

So it is in the current pandemic. Once again it is, by and large, all of us—including the anonymous, obscure, and decent people—who have made the world sick. Once more we have done it ourselves. Yet the media is noisy with ethical reductionists who want to fix all the blame on a few. They worry only about the distribution of modern abundance, not its mode of production, and about human security, not the damage we have done to the earth. Then there are super-nationalists, in the United States and China for example, who want to blame the virus on foreigners competing with them for power and wealth and infiltrating their cities. But that cannot be the real story, for COVID-19 is only the latest in a long series of pandemics, and these have originated from many different places on earth.

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Torture and execution of alleged plague carriers during the plague epidemic at Milan, 1 August 1630. Unknown artist, n.d.

Courtesy of the Wellcome Collection.
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Take for example the Justinian plague of the sixth century CE, which killed half the population of Eurasia and northern Africa. Ground zero back then was the city of Constantinople, which had been infected by rodents carrying the bacterium *Yersinia pestis* (the same bacterium responsible for the Black Death of fourteenth-century Europe, which killed a third of Europeans). Those outbreaks of "the Plague" may have begun in central Asia or northern India, from which tiny, unicellular microorganisms were unwittingly transported by desert caravans and trading ships westward, following the Silk Road or crossing the Black Sea, the Indian Ocean, and the Mediterranean Sea. A similar etiology was repeated in the horror of 1918, when the virus H1N1 (misnamed the "Spanish flu") was possibly transported from the United States to the battlefields of World War I and points beyond, killing at least fifty million people in all. More recently a rash of epidemics has spread from a multiplicity of points: from Europe (the Marburg virus), Africa (Ebola, HIV), Latin America (Zika, dengue), North America (Hantavirus), and Asia (MERS-CoV, SARS CoV-2). Clearly, there has been no single "evil nation" or "evil class"

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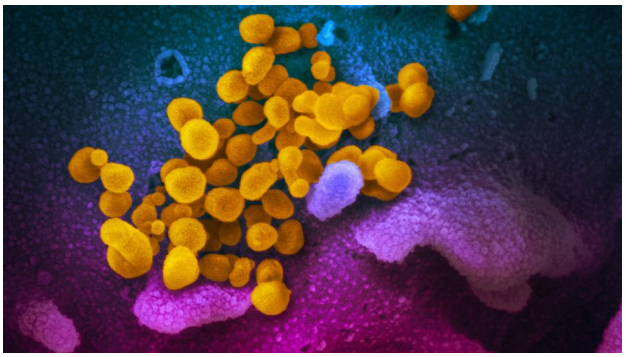
behind all those epidemics. More sensibly, we should ask what common factors lay behind all of them.



This scanning electron microscope image shows SARS-CoV-2 (yellow)—also known as 2019-nCoV, the virus that causes COVID-19—isolated from a patient in the U.S., emerging from the surface of cells (blue/pink) cultured in the lab.

Photograph by NIAID, 2020.
Accessed via Flickr on 20 April 2020.
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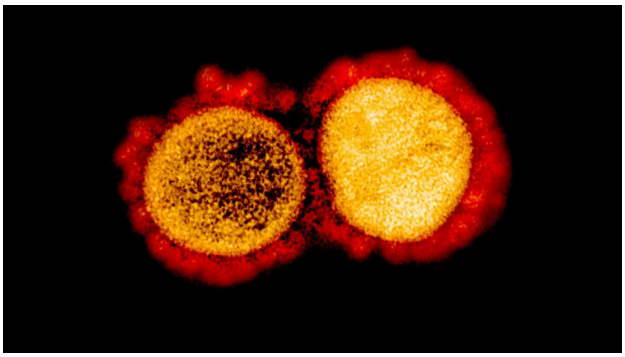

Transmission electron micrograph of SARS-CoV-2 virus particles, isolated from a patient. Image captured and color-enhanced at the NIAID Integrated Research Facility (IRF) in Fort Detrick, Maryland.

Photograph by NIAID, 2020.
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Epidemics and ecology

Epidemics typically begin where human relations with animals go awry. Some estimates put the animal-human relationship at the core 75% of the time. Therefore, in the case of COVID-19 we should look beyond our cities, factories, and hospitals to where most animals live—in wild forests, grasslands, marshes, and river valleys, or (much more likely these days) on farms large and small, including confined animal facilities called feedlots. Radical changes in the ecology of either wild or rural environments can make animals sick, and it is sick animals that make people sick, though we may never touch or see them. Sick animals are not an enemy—they are victims much as we are, scapegoats no less. That is why killing all bats, sinister-looking little creatures that get blamed in so many cases, would neither be fair to bats nor make us healthier; it might even make things worse by adding to ecosystem turmoil.

Horseshoe bat chasing a moth. Photograph by Frank Greenaway, n.d.

Accessed via Galway Community Heritage on 14 April 2020.
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A growing number of biologists who study disease outbreaks are finding that epidemics often follow a disturbance in ecological relations, and they point to humans as the main disturbing force.[1] We are making animals sick by altering their habitats and disorganizing their lives. This happens when people turn a wild ecosystem into a more simplified agricultural regime, a deed our species has been repeating for ten thousand years or more, but are doing more aggressively than ever before because there are so many more of us needing food.

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Complex checks and balances get disrupted. Local diversity gets suppressed or lost. Viruses multiply, spread, and kill.

Deforested areas around Rio Branco, Brazil. Most of the light-green areas are pastures for cattle. Photograph from the CBERS-4 satellite, 2018.

Courtesy of Coordenação-Geral de Observação da Terra/INPE.
Accessed via Flickr on 14 April 2020.
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This process of ecological simplification began long before plant or animal domestication occurred on earth. Hunters and gatherers now and then unbalanced nature by killing off too many species or severely diminishing their prey through overhunting, making it harder for them to reproduce or feed themselves. Consequently, they became more susceptible to bacterial and viral infections. Microorganisms in the environment, which hitherto had been relatively harmless, began to throw off new mutants that earlier would have died but now exploded in numbers, like bees buzzing around a sweet-smelling bed of flowers.

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Aerial photograph of a cornfield. Photograph by Sarah H, 2007.

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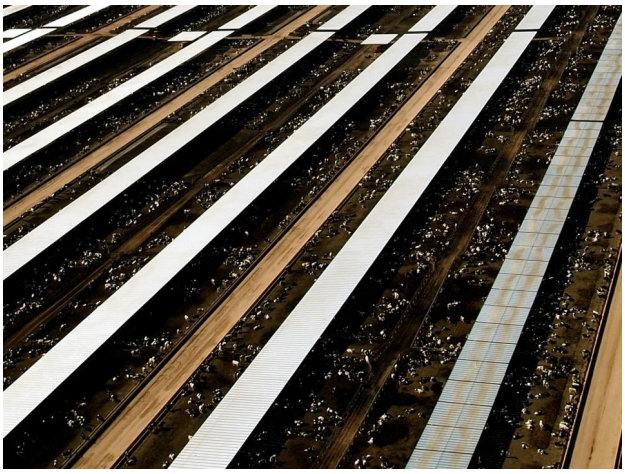

Aerial photograph of a cattle feedlot. Photograph by Wongaboo, 2010.

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A virus reproduces by attaching itself to a host cell and injecting its DNA. This stresses the host. A host animal that is already overwhelmed by changes going on in its habitat is more vulnerable to strange new parasites that proliferate and attack its vital functions. It sickens and dies. As individuals die, an entire species may disappear and a stable ecosystem fall apart. Nature becomes rampant with aggressive organisms that meet little resistance.

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Turkeys being raised on a turkey farm. Photograph by Scott Bauer, 2013.

Courtesy of U.S. Department of Agriculture.
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Climate change or tectonic movements have usually proved more powerful disturbers than human hunters, but not always. Then through cultural evolution came agriculture, which intensified ecosystem disruption, as much as paving the land with asphalt would do to the soils. Agriculture is a process of choosing and rejecting species, sometimes fairly gentle and moderate in impact but other times radical and violent. At either extreme the selector becomes a single population of a single species looking for a more secure food supply, usually because of its own demographic surge. Like a super-virus, human farmers mutate their methods and spread them as far as they can. Their favored species, plants and animals that they have decided to raise in a protected abundance, can themselves become more susceptible to disease than they were in the wild. Agricultural history is full of epidemics, and they have harmed not only our own species.

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Pig in a farrowing crate. Photograph by Farm Watch, 2013.

Courtesy of Farm Watch.
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Ecological simplification forces microorganisms, new or old, to concentrate on the favored few, and become parasitic on domesticated livestock or food crops—invading cows, camels, chickens or wheat, barley, peas. The farmer has innocently created an epidemic. Agriculture has been a destabilizer from the start, for a single super-virus, self-styling itself as *Homo sapiens,* invented it to feed itself and its kind. For a long time the destabilization was so slow and gradual that no individual, not even an entire village, could see its full effects. What they saw and feared was only the threat of scarcity. Making the earth produce more food was deemed necessary to save the babies and civilization. Even today agriculture is the biggest single cause of declining biodiversity and species extinction on the planet, turning old, relatively harmless viruses that had been generalists into deadly specialists that live on a narrowing biotic spectrum. Eventually, those specialists find their best sources of survival, not only in the barnyard, but also among our own kind. COVID-19 is spreading and attaching itself to us simply because there are so many of us. The bats are not so appealing.

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A normal day at the Shibuya crossing, Japan. Photograph by Jorge Láscar, 2018.

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Agriculture, though born of necessity, is the essential foundation of civilization, including written languages, the state, and the city. Modern industrialization has built itself on the back of the farmer and cannot live without his food surpluses. As agricultural settlements began to trade with one another, they unwittingly spread viral mutations and cause other problems far from home. Thousands of years later, those busy with local concerns may not know the distant consequences of their actions. Does the farmer see the remote effects of his or her choices? Does the urban consumer?

Before there was agriculture, cities, or trade, to be sure, there was the spread of sickness, for wild, unmanaged nature has never been a perfectly stable set of bio-relations. Inorganic forces older than life have repeatedly caused ecosystem disruption and species death. But the general tendency of ecosystems has been to moderate those inorganic disturbances and to stabilize the populations of all organisms, including bacteria and viruses, preventing any one of them from runaway domination. But with the spread of agriculture, humans became a new disturbing force that, ironically, made people more secure in their food supply and more uncertain in their health. We have become more plagued by diseases than our foraging ancestors had been, although in recent centuries modern medicine has improved our odds for survival.

Note

[1] Among the many scientists writing about the ecology and evolutionary history of disease, I recommend particularly the publications of Professor Kate Jones of the University College of London. They include "Impacts of Biodiversity on the Emergence and Transmission of Infectious Diseases" (co-authored with Felicia Keesing et al.), *Nature* 468 (2 December 2010): 647–52; and "Global Trends in Emerging Infectious Diseases," *Nature* 451 (21 February 2008): 990. Also see Jason R. Rohr, et al., "Emerging Human Infectious Diseases and the Links to Global Food Production," *Nature Sustainability* 2 (2019): 445–56; and David W. Redding, et al., "Impacts of Environmental and Socio-Economic Factors on Emergence and Epidemic Potential of Ebola in Africa," *Nature Communications* 10, no. 4531 (2019). And of course David Quammen's *Spillover: Animal Infections and the Next Human Pandemic* (New York: W. W. Norton, 2012).

Websites linked in image captions:

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Trade-offs

The diseases have not stopped appearing, so we are forced continually to make trade-offs. We pursue agricultural development (most recently the Green Revolution); every continent except Antarctica is now under its reign, and food abundance flows endlessly to the cities. So far the strategy has worked well for our kind; we now number nearly eight billion, most of us well fed, hale and hearty. More than half of us can now live in towns, cities, and megalopolises because our efficient world food system supports us. Even multiple waves of COVID-19, killing 100 million people or more, would not decrease our population much. In a single year or two we can make up the loss and replenish the earth. But this historical trade-off has required paying some gruesome costs. It entails severe injustice and collateral damage, and you or I may soon be among the losers.

New York City Subway entrance at Times Square 42nd Street New York City Manhattan 7th Avenue. Photograph by Mobilus In Mobili, 2015.

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Yet most of us remain uneducated in the science needed to understand epidemic history: the Darwinian revolution has given us astounding new knowledge that can explain more profoundly than ever our history on

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earth. Yet even now, ignorance, or cultural resistance, characterizes many citizens, including some university professors, corporate executives, and even experts in public health. They simply haven't learned to think about disease in Darwinian terms, and thus they are doomed to repeat the ultimate causes of all the dying that keeps happening.

Here is what we should ask about the evolutionary and ecological history of the coronavirus. Where exactly did it originate? We need to talk about places, not to place blame on some people, but to understand a planetary challenge. We need to know the particular species involved (that is, which mutant organism living within which bat) but also the conditions of its habitat. We need to understand the ecosystemic changes that so many different places have been going through.

Red-tailed hawk at an airport in the United States. Photograph by USDA, 2015.

Courtesy of U.S. Department of Agriculture.
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We need to ask how climate change or land-use change has affected the diversity of species living in that place.

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Have humans been shoving in to capture "bush meat," or expand agriculture, and doing so in unprecedented numbers? Consequently, has species or population diversity diminished in that place? In the case of COVID-19, have virus carriers like local populations of bats (or snakes or pangolins or bamboo rats) been struggling to find food for themselves and their babies? What about the human demographics? What impact has local population growth, and international growth and markets, had on formerly isolated places?

Did the animals living in that original place of infection go through a time of disturbance and tension—and if so, what data can we get on their physical and mental condition? When did they get more sick than usual, and begin carrying more and more new pathogens in their bodies? Did viral mutations emerge that were well adapted to the changing conditions?

How then did sickened animals and their load of microorganisms manage to get all the way to cities like Wuhan, Milan, or New York? Once there, how might they have been mixed in with other animals, tame and wild, forced into tightly confined quarters, and how did their excrement, loaded with viruses and bacteria, get mixed with that of other animals? Why were they not still in their native habitats?

Why has the coronavirus spread so quickly to humankind? Is it because we too are living more packed together than we were even a few decades ago, and at the same time we have been enjoying greater freedom of movement across continents and the planet?

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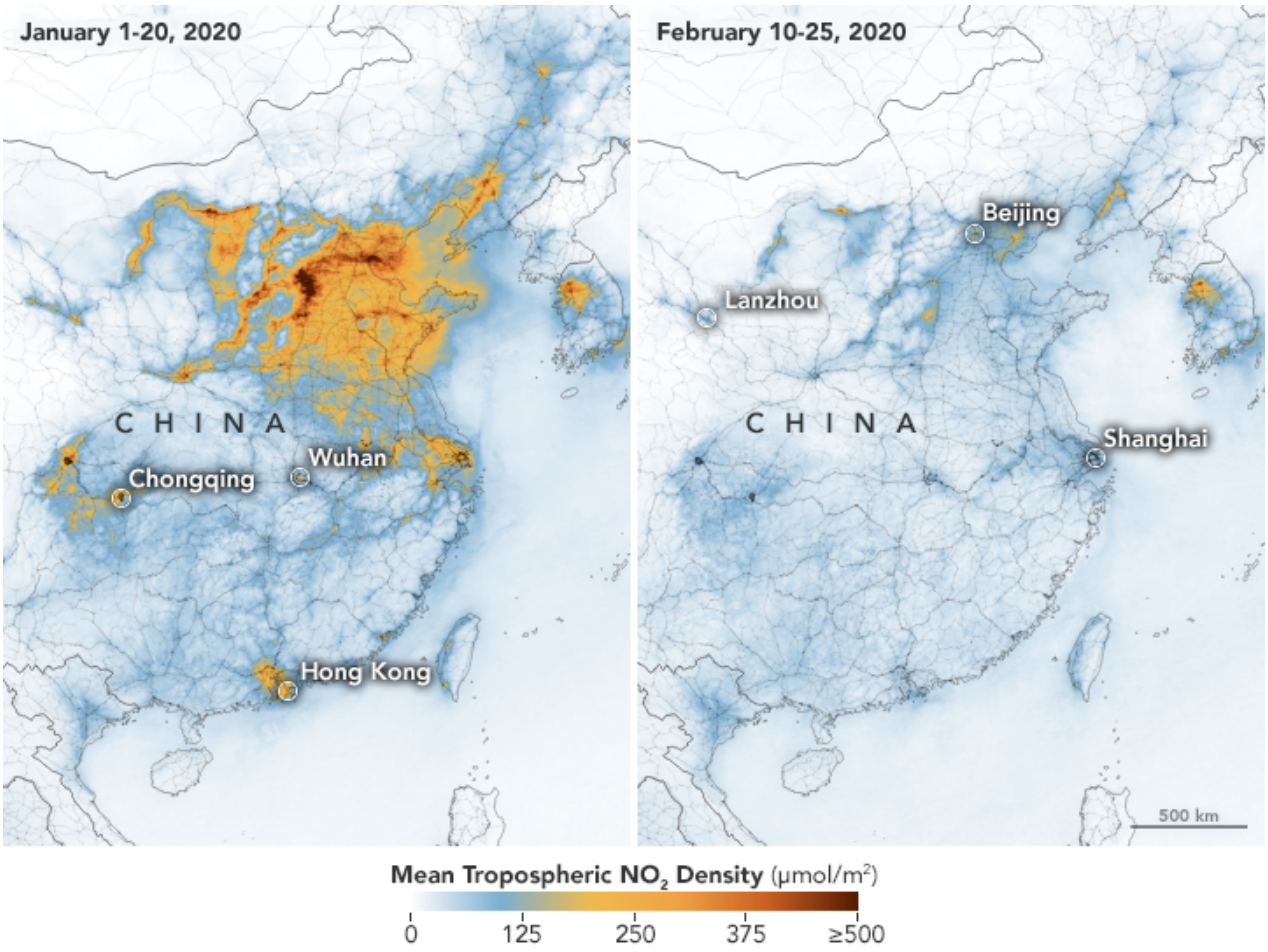

Amounts of airborne nitrogen dioxide have dropped with the coronavirus quarantine, Chinese New Year, and a related economic slowdown. Maps by Joshua Stevens, 2020.

Courtesy of NASA Earth Observatory.
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Above all, do we know how to restore the balance of nature? How can we prevent such new destabilizing forces as man-made climate change and protect biodiversity? How can a better understanding of history, one more informed by scientific ecology and evolution, help us craft better strategies for our own survival? The core challenge presented by COVID-19 is whether we humans can or want to restore and protect the health, not just of ourselves, but also of the planet. If we focus only on the security of our own lives and the economy, we will fail again and again to keep either the planet or ourselves healthy.

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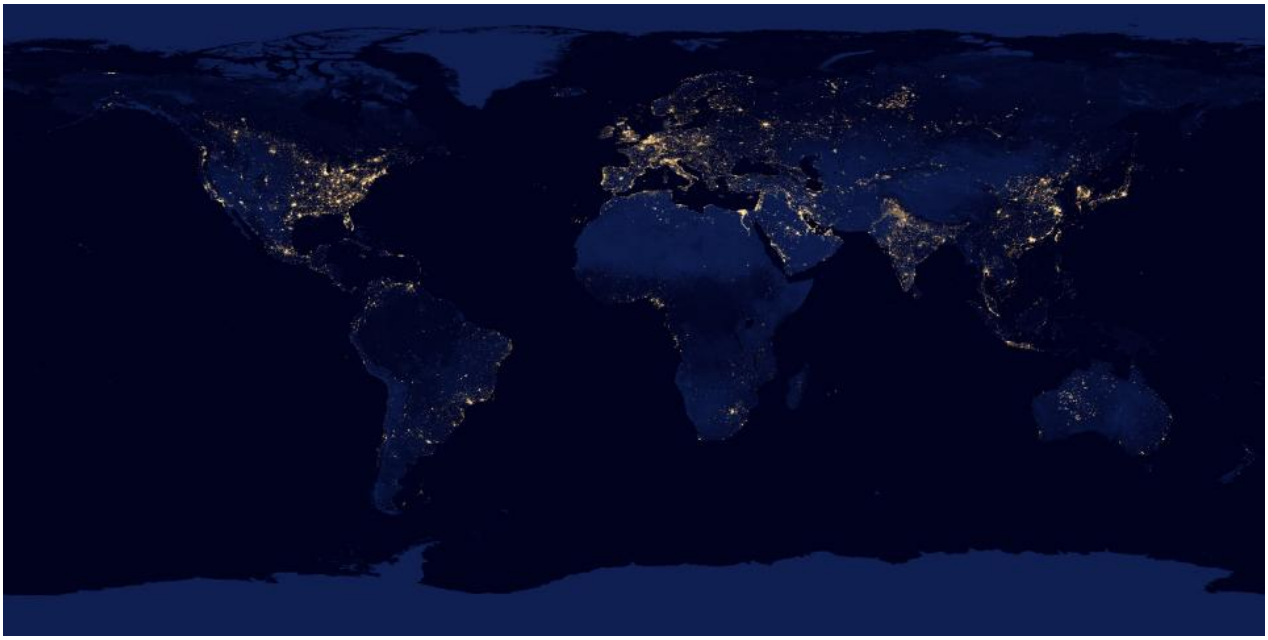
To assume a higher, broader responsibility we need to plant one basic truth deep in our skulls: we humans are animals too. What we do to our fellow creatures we do to ourselves. The deed will bounce back to hit us in the lungs or liver. Taking responsibility for our own role in making epidemics requires absolving the nonhuman agents. Yes, it is viruses or bacteria that become dreaded agents of death, but they are not guilty of any evil or crime. A virus is neither plant nor animal; it is a simple, primitive boundary organism, dating back to the origins of life on the planet. Its nature is simply to live as a parasite. It knows no guilt.



Earth by night. Image compiled by Robert Simmon (NASA), 2012.

Courtesy of NASA Earth Observatory.
Click here to view source.

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A woman appreciates spring flowers in a Qingdao city park on 3 April 2020. Photograph by Shen Hou.

Let us acknowledge too that we humans are also a kind of virus. We too have become epidemic on earth. Viruses "want" only one thing: to find a host, attach and grow, reproduce, spread, and increase in numbers. How is that different from what humans do or want? We want to reproduce and increase our numbers, and the way we do that is to become parasites on others. We have emerged through genetic mutation and, wonderfully, we have survived, spreading to all the continents and finding plenty of "hosts" that we force to support our drive to reproduce. It is precisely because of our biological nature that we find ourselves the architects of our own tragedy.

That was Rachel Carson's message at the dawn of the age of ecology: We humans can be safe and healthy only when this living planet is also safe and healthy. Are we smart enough to see this fact and are we determined enough to act on it? Do we have a capacity for humility as well as intelligence? For both qualities are required to create a civilization unlike any other, one that has learned how to think ecologically.

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- https://earthobservatory.nasa.gov/images/146362/airborne-nitrogen-dioxide-plummets-over-china
- https://earthobservatory.nasa.gov/images/79765/night-lights-2012-map

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About the exhibition

In this virtual exhibition, historian Donald Worster explains how human relations with other animals, wild and domestic, is at the core of a majority of epidemics. In the face of the current coronavirus crisis, he argues that an exclusive focus on human life and economy will keep neither the planet nor ourselves healthy. We must decide " whether we humans can or want to restore and protect the health, not just of ourselves, but also of the planet."

The author wishes to thank Professor Shen Hou of Renmin University of China for editorial advice and publication help, including translation into Mandarin of an earlier version, published in 中華讀書報 *(China Reading Weekly).*

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Rachel Carson Center

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About the Author

Donald Worster is one of the founders of, and leading figures in, the field of environmental history. He is currently Distinguished Foreign Expert and senior professor in the School of History of Renmin University of China. Before coming to Beijing, Worster held the position of Hall Distinguished Professor of American History at the University of Kansas from 1989 until his retirement.

Worster has been active in environmental history since the early 1970s, in the United States and other parts of the world. In 1971, he completed his Ph.D. at Yale University, where he studied the history of ecology, environmental literature, intellectual history, and the history of the American West. Formerly the president of the American Society for Environmental History, Worster has served on a number of editorial boards, and, for more than two decades, has been founding editor for the *Environment and History* book series published by Cambridge University Press. He is an elected member of the Society of American Historians and the American Academy of Arts and Sciences. In 2011 and 2013 he was a Fellow at the Rachel Carson Center for Environment and Society at LMU Munich.

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Worster's books include *Nature's Economy: A History of Ecological Ideas*; *Dust Bowl: The Southern Plains in the 1930s*; *Rivers of Empire: Water, Aridity, and the Growth of the American West*; *A River Running West: The Life of John Wesley Powell;* and *A Passion for Nature: The Life of John Muir*; along with several books of collected essays including *The Wealth of Nature: Environmental History and the Ecological Imagination*. His current research focuses on two projects: Darwinian and post-Darwinian science and the concept of adaptation as theoretical bases for environmental history, and the twin, competing themes of natural abundance and scarcity in American and modern world history.

How to cite:

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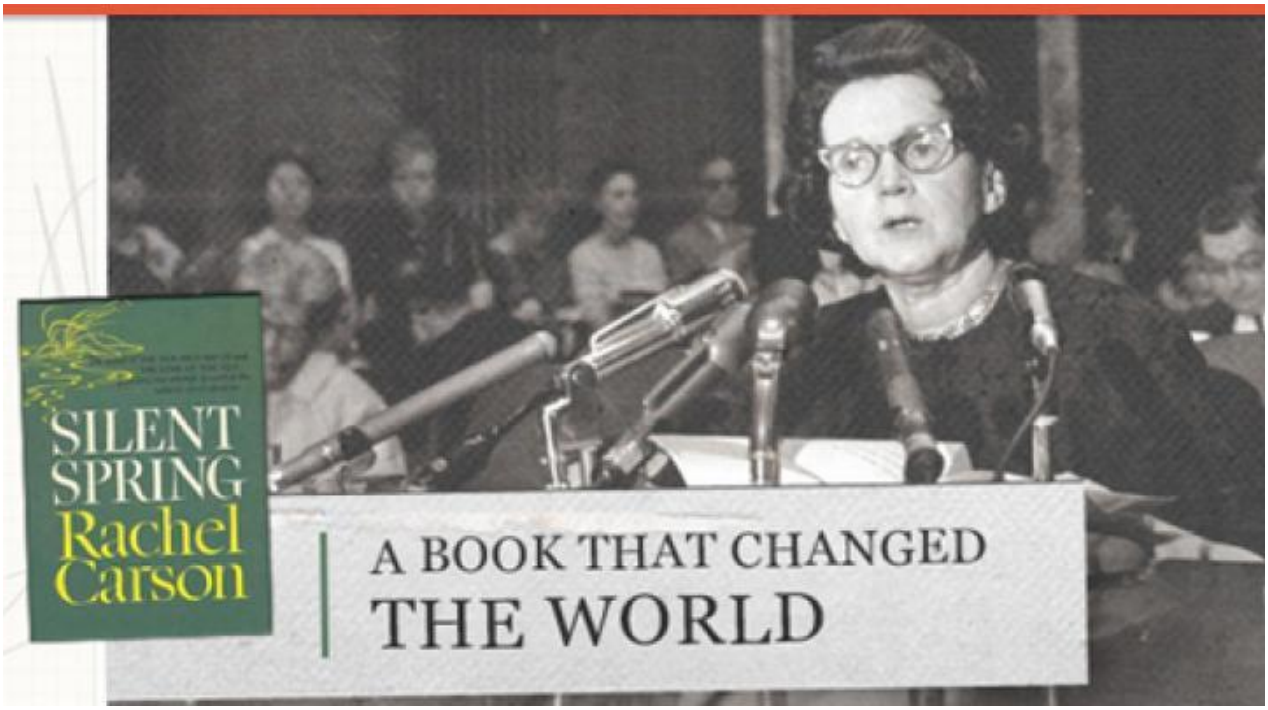
The Environment & Society Portal's Pandemics in Context page offers a growing collection of open-access resources (analyses, primary sources, and digital resources) that help put pandemics in ecological and environmental humanities contexts. The gallery below highlights open-access multimedia resources for reading, learning, listening, and viewing.



Rachel Carson's *Silent Spring*, a Book that Changed the World

This exhibition presents the global reception and impact of Rachel Carson's ***Silent Spring***. On one side are the attacks that began even before a word was printed, as well as the vilification of the present day. On the other is found the equally persistent admiration and support for Carson and her book from scientists, policymakers, activists, and the general public. Portions of the exhibition rely on quite thorough and extensive documentation, particularly for the United States, where Silent Spring had its earliest and greatest impact. Other sections go beyond previous accounts to emphasize popular culture, music, literature, and the arts. They also give equal weight to the book's international legacy.

Worster, Donald. "Another Silent Spring." Environment & Society Portal, *Virtual Exhibitions* 2020, no. 1 (22 April 2020). Rachel Carson Center for Environment and Society. doi.org/10.5282/rcc/9028.
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“Pangolins And Pandemics: The Real Source Of This Crisis Is Human, Not Animal”

Starting with the trafficking of the scaly anteater, philosopher, writer, and former Rachel Carson Fellow Thom van Dooren explains how the current pandemic is a symptom of a broader problem: “an increasingly dysfunctional relationship between human communities, other animals, and the broader environment.” Thom van Dooren, **“Pangolins And Pandemics: The Real Source of This Crisis is Human, Not Animal,”** *newmatilda.com* (22 March 2020).

Worster, Donald. “Another Silent Spring.” Environment & Society Portal, *Virtual Exhibitions* 2020, no. 1 (22 April 2020). Rachel Carson Center for Environment and Society. doi.org/10.5282/rcc/9028.

"Risky Zoographies: The Limits of Place in Avian Flu Management."

Global anxieties about avian influenza stem from a growing recognition that highly-virulent, highly-mobile disease vectors infiltrate human spaces in ways that are difficult to perceive, and even more difficult to manage. The article analyses a participatory health intervention in Việt Nam to explore how avian influenza threats challenge long-held understandings of animals' place in the environment and society. In this intervention, poultry farmers collaborated with health workers to illustrate maps of avian flu risks in their communities. The divergent risk maps emerging demonstrate how ecological factors, interpersonal networks, and global market dynamics combine to engender a variety of interspecies relationships, which in turn shape the location of disease risks in space. The term risky zoographies is developed to signal the emergence of competing descriptions of animals and their habitats in zoonotic disease contexts. This concept suggests that as wild animals, livestock products, and microbial pathogens continue to globalise, place-based health interventions that limit animals to particular locales are proving inadequate. Risky zoographies signal the inextricability of nonhuman animals from human spaces, and reveal interspecies interactions that transect and transcend environments.
(Adapted from the author's abstract.)

Porter, Natalie. "Risky Zoographies: The Limits of Place in Avian Flu Management." Environmental Humanities, vol. 1 (November 2012): 103–21.

Worster, Donald. "Another Silent Spring." Environment & Society Portal, *Virtual Exhibitions* 2020, no. 1 (22 April 2020). Rachel Carson Center for Environment and Society. doi.org/10.5282/rcc/9028.
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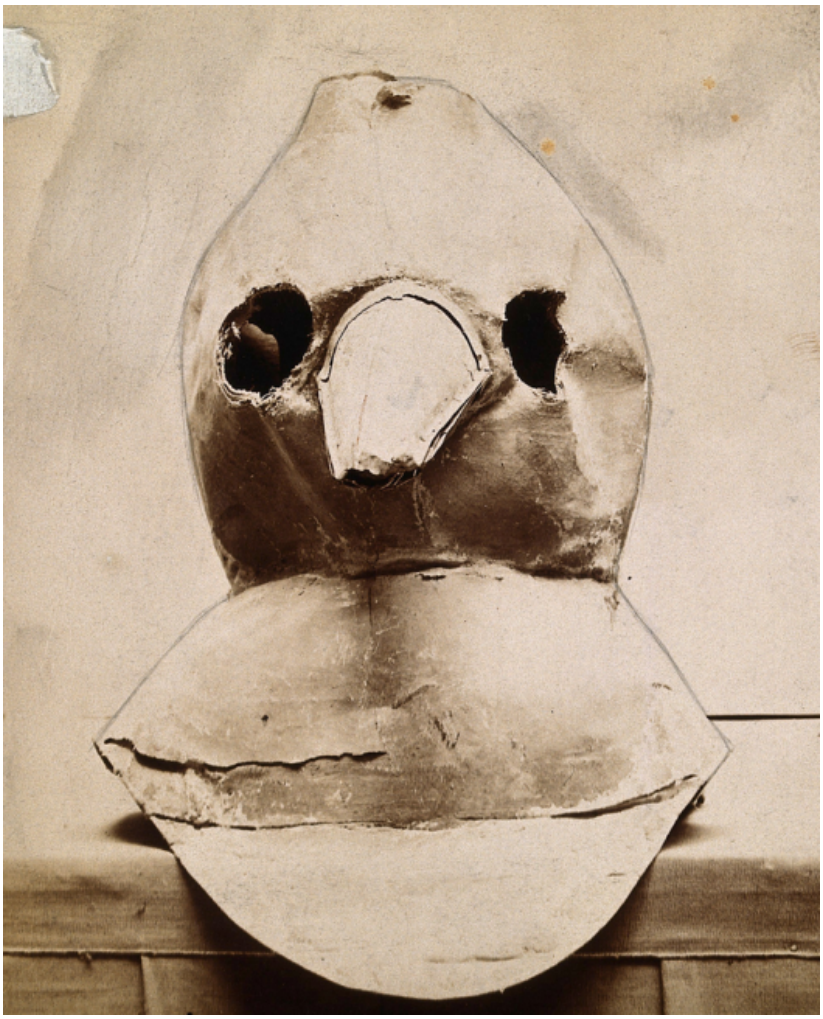

“How Pandemics Change History”

In “How Pandemics Change History,” Isaac Chotiner interviews Frank Snowden, Andrew Downey Orrick Professor of History at Yale University (*New Yorker*, 3 March 2020). Prof. Snowden’s online “Open Yale Course” Epidemics in Western Society since 1600 includes twenty-six streamable lectures recorded in 2010.

Worster, Donald. “Another Silent Spring.” Environment & Society Portal, *Virtual Exhibitions* 2020, no. 1 (22 April 2020). Rachel Carson Center for Environment and Society. doi.org/10.5282/rcc/9028.

In the Shadow of Ebola is an intimate story of a family and a nation struggling against the Ebola outbreak in Liberia. Gregg Mitman, former Rachel Carson Fellow and award-winning author, filmmaker, and teacher, follows a Liberian student and his family living divided between the United States and Liberia. As the crisis unfolds, loved ones are isolated in Monrovia where the government is shut down, schools and markets are closed, and food prices are rising. The director's cut (26 minutes) is free to stream.

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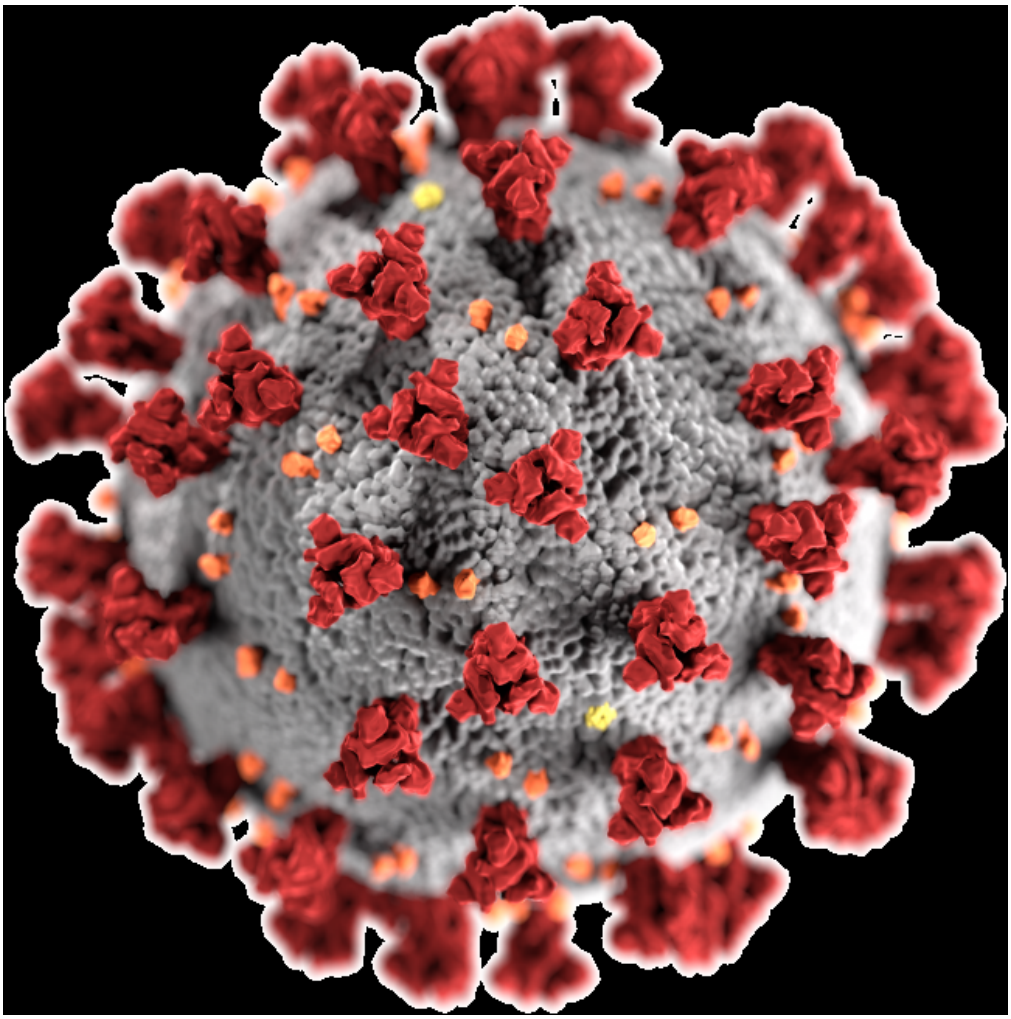

Syllabi on pandemics

This new and growing web resources collection of annotated links to open-access media (analyses, primary sources, and digital resources) helps put **pandemics in context** . For example:
Northeastern University Profs. Sari Altschuler and Elizabeth Maddock Dillon have compiled a community-sourced **Humanities Coronavirus Syllabus** with focus on epidemics in literature, arts, philosophy, and religion, and many links to digital media. **Teaching COVID-19: An Anthropology Syllabus Project** is a developing document designed to collect and share resources for anthropologists and other social scientists teaching about COVID-19.

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COVID Calls Podcast

On his podcast "Slow Disaster," historian Scott Knowles hosts **COVID-Calls** , conversations with international experts on history and humanities aspects of the current pandemic.

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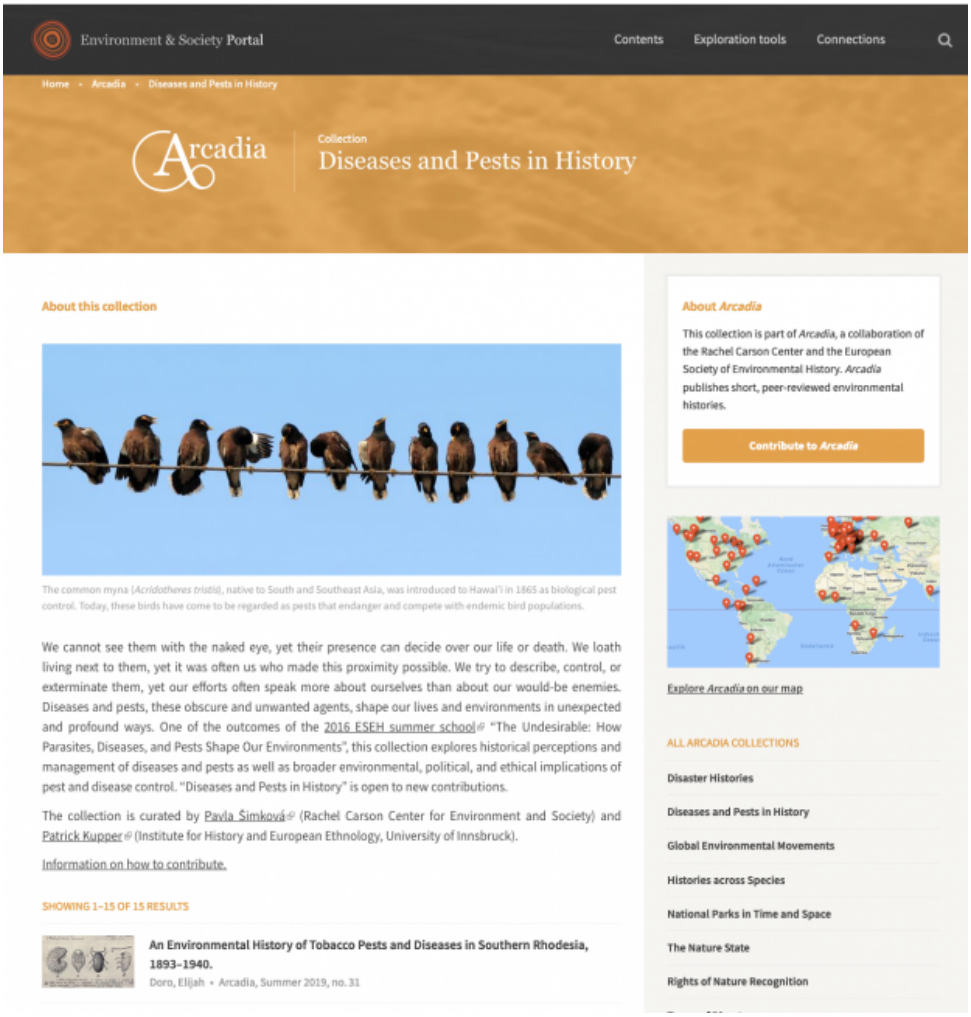

"Diseases and Pests in History"

Rachel Carson Center's open-access journal *Arcadia: Explorations in Environmental History* features a special collection on **"Diseases and Pests in History."** The collection explores historical perceptions and management of diseases and pests as well as broader environmental, political, and ethical implications of pest and disease control. It is curated by Pavla Šimková and Patrick Kupper. Arcadia has also published other relevant articles such as Kseniya Barabanova's **"The First Cholera Epidemic in St. Petersburg"** and Cindy Ermus's **"The Plague of Provence: Early Advances in the Centralization of Crisis Management."**

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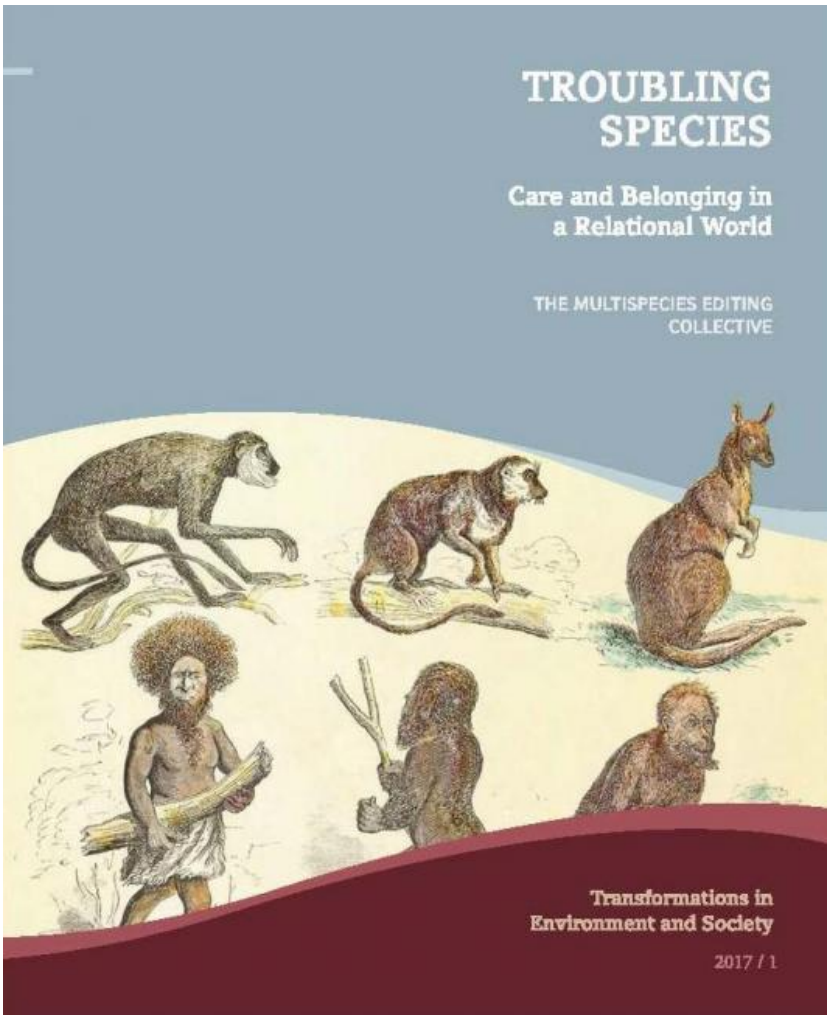

"Troubling Species: Care and Belonging in a Relational World"

The **articles in the RCC Perspectives volume "Troubling Species: Care and Belonging in a Relational World,"** explore some of the intricacy, ambiguity, and even irony in our perceptions and approaches to "multispecies" relations. What constitutes a pet or a pest, or defines something wild or domesticated? The knowledge and motives behind such classifications direct our ways of caring for and about other beings with whom we share our worlds, from culling for conservation to rehabilitation for research animals. But the categories and the types of care we assign are very often tenuous and troubled in nature.

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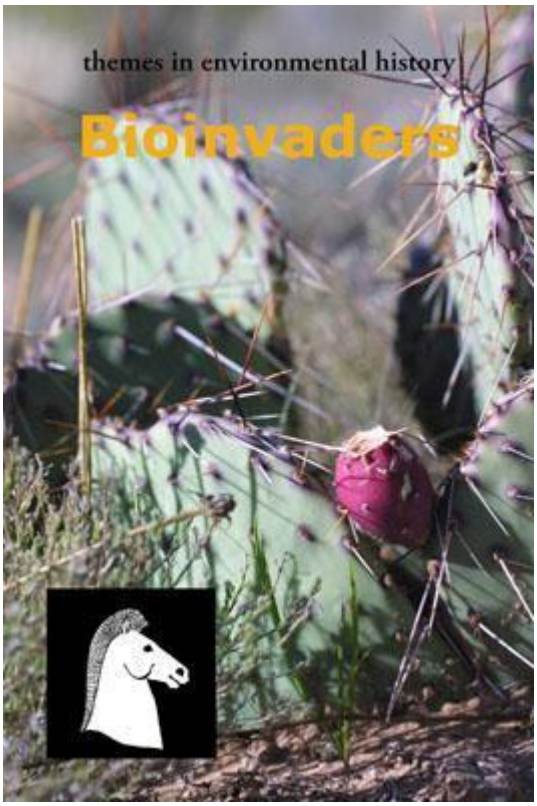

Bioinvaders

Fourteen environmental historians investigate the rhetoric and realities of exotic, introduced, and "alien" species. The book comprises several general essays, exploring and challenging common perceptions about such species, and a series of case studies of specific species in specific contexts. Its geographical coverage ranges from the United Kingdom to New Zealand by way of South Africa, India, and Palestine; and the essays cover both historical and recent introductions.
Johnson, Sarah, ed. ***Bioinvaders*** . Themes in Environmental History Series. Cambridge: The White Horse Press, 2010.

Websites linked in this text:

- http://epaper.gmw.cn/zhdsb/html/2020-04/29/nw.D110000zhdsb_20200429_1-13.htm
- http://www.environmentandsociety.org/mml/pandemics-context

Websites linked in image captions:

- http://www.environmentandsociety.org/exhibitions/rachel-carsons-silent-spring
- https://newmatilda.com/2020/03/22/pangolins-and-pandemics-the-real-source-of-this-crisis-is-human-not-animal/

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- http://www.environmentandsociety.org/mml/risky-zoographies-limits-place-avian-flu-management
- https://www.newyorker.com/news/q-and-a/how-pandemics-change-history?itm_content=footer-recirc
- https://oyc.yale.edu/NODE/156?fbclid=IwAR23mmmxiRPDu9pVU2bjscBuuo2cjFjSc6Rf6DF3zdXOJYIsXv-hXkzRjRE
- http://intheshadowofebola.com/film?fbclid=IwAR1pzUxR-jTkLb_55Vy8T6a5mgNRuOxBwbc0Bo_ZtFcoVDxFMn0hQ2HLcmM
- http://www.environmentandsociety.org/mml/pandemics-context
- https://docs.google.com/document/u/1/d/1UeAN5jhSib-CsP17keNC6c3iMF7PgE3KDDDBy24w0xY/mobilebasic?fbclid=IwAR1ja-2yij2aWnHXHhz3vQ9KI-hCzK1_4ZuRClzKFmAJIpbhjCsPcnLc1jc
- https://docs.google.com/document/d/1-IRVbz1nsBQJHcaCVh8QLRBiwj3cFT_bXSwmTNs_Hf0/edit#
- https://soundcloud.com/scott-knowles-433708957
- http://www.environmentandsociety.org/arcadia/first-cholera-epidemic-st-petersburg
- http://www.environmentandsociety.org/perspectives/2017/1/troubling-species-care-and-belonging-relational-world
- http://www.environmentandsociety.org/mml/bioinvaders

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Corn near Muskogee, Oklahoma.

Photo: 1939/1940 Russell Lee (ca. 1939). Source: Library of Congress

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Red-tailed hawk at an airport in the United States. Photograph by USDA, 2015.

Courtesy of U.S. Department of Agriculture.
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A woman appreciates spring flowers in a Qingdao city park on 3 April 2020. Photograph by Shen Hou.

How to cite:

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Websites linked in this text:

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- http://www.environmentandsociety.org/exhibitions/another-silent-spring

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- https://www.flickr.com/photos/usdagov/7803227436/in/photostream/
- https://flic.kr/p/2cjwokr