

“From Mosquitoes to People”: Marston Bates and the Rockefeller Foundation International Health Division

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Abstract

This essay charts the career of the entomologist and popular author Marston Bates (1906-1974) within the Rockefeller Foundation (RF) between 1935 and 1952. Today, Bates is best remembered as a science communicator. Publishing over a dozen books on natural history and the environment, he helped bring ecological ideas to broader public audiences during the 1950s and 1960s. Not simply a popularizer of contemporary scientific concepts, Bates stood out for his critical commentary on the environmental problems of economic development, conservation, and global population growth, as well as the need for more integrative, cross-disciplinary approaches to understanding humans in nature. Long before becoming a public intellectual, however, he worked for the RF as a mosquito specialist, serving as director of International Health Division malaria and yellow fever laboratories in Albania, Egypt, and Colombia during the 1930s and 1940s. Bates' mid-career shift from researching mosquito ecology to writing about human ecology may seem to be a sudden left turn. A closer look at the archival record reveals the pivotal role played by the Rockefeller Foundation in shaping Bates' career trajectory and ideas about the environment. Furthermore, placing Bates' work in the context of his time with the RF reveals connections between twentieth-century U.S. environmental thought and international health projects.

Introduction

Marston Bates has been called a “visionary environmentalist” and has been counted among the authors whose works should be more widely read by environmental historians.¹ Originally trained as an entomologist, Bates wrote more than a dozen environmental books and textbooks.² In these, he not only communicated scientific ideas about ecology and natural history to broader audiences; he also contemplated the deeper problems of humanity’s place in nature. Although Bates was a public figure during the 1950s and 1960s, his writings are less widely remembered today than more controversial books like Rachel Carson’s *Silent Spring* (1962) or Paul R. Ehrlich’s *Population Bomb* (1968). Yet, he anticipated these contributions, tackling the topics of conservation, economic development, and global population growth in such works as *Where Winter Never Comes: A Study of Man and Nature in the Tropics* (1952), *The Prevalence of People* (1955), *Gluttons and Libertines: Human Problems of Being Natural* (1958) and *The Forest and the Sea* (1960). At the same time, informed not only by his own scientific background but also by perspectives from the humanities, anthropology, and geography, Bates stood out for his critical perspectives on contemporary modes of international development that ignored the complexities of human cultures and the ecological communities. His insights remain surprisingly relevant more than a half-century later.

Nevertheless, Bates should not be understood only as yet another player in the history of modern environmentalism. Instead, his career can shed light on the connections between U.S. environmental thought and international health projects during the twentieth century. Long before he became a public figure, Bates worked with the Rockefeller Foundation (RF). His more than sixteen-year association with the RF deeply shaped both the trajectory of his career and his perspectives on science, humanity, and nature. Between 1935 and 1948, Bates served as director of International Health Division (IHD) research laboratories in Tirana, Albania; Cairo, Egypt; and Villavicencio, Colombia. During this time,

he became an expert on the behavior and ecology of the mosquito vectors of malaria and yellow fever. His experience in the field deeply shaped the views he would express in books and media appearances later in his life—on subjects including the nature of science, the diversity of human cultures, and the interconnections between humans and the rest of the natural world. The RF also played a pivotal role in Bates’ mid-career shift when, in 1948, it requested his assistance in its emerging efforts in the field of “human ecology” and population growth. Bates and the Rockefeller Foundation would finally part ways in 1952, but his time with the RF set him on the path that would guide the rest of his intellectual career.

While some authors have acknowledged the role of the Rockefeller Foundation in Bates’ initial foray into human ecology, the few scholarly discussions of Bates’ life and work have been based more often on his published works than on archival records.³ Bates’ personal papers are housed at the Bentley Historical Library of the University of Michigan, but as extensive as these are, they only provide one avenue into understanding his life and work. The records of the Rockefeller Foundation and the papers of Bates’ colleagues at the RF provide a more three-dimensional view of this period of his life. These records contextualize his career and research activities within the overall goals of the Rockefeller Foundation IHD’s yellow fever and malaria research efforts of the 1930s and 1940s, as well as within the foundation’s early work on human ecology and global population growth during the late 1940s and 1950s.⁴ A closer look at the archival record reveals the pivotal role that the Foundation played in shaping Bates’ career and environmental ideas. This research thus also suggests further avenues for exploring the historical relationships among international health, ecology, and environmentalism.⁵

The Making of a Mosquito Specialist

In November 1935, Marston Bates was offered a temporary position as a research entomologist in Albania.⁶ The Rockefeller Foundation had been working with the

Albanian government and health authorities in malaria research since 1926—an offshoot of broader efforts headquartered in Rome, Italy, since 1925.⁷ Bates was to assist Lewis Wendell Hackett, Assistant Director of the IHD, in his ongoing field studies of malaria-carrying mosquitoes in the region by taking charge of the Albanian Seksioni Antimalarik field laboratory in Tirana.

Bates, at first glance, seems a strange choice for this job. He had no experience with mosquito research—a point which made Assistant Director George K. Strode skeptical of hiring him.⁸ At the time, the twenty-nine-year-old Bates was employed as a research assistant at the Museum of Comparative Zoology, Harvard, where he had completed his Ph.D. the year before. His thesis, “The Butterflies of Cuba,” was a taxonomic study that hardly impinged on public health, nor did it suggest any special acumen in experimental biology in a laboratory setting.⁹ Of course, Bates was fairly well connected and came highly recommended to Associate Director Wilbur Sawyer by Harvard’s Joseph C. Bequaert.¹⁰ Prior to his graduate work, Bates had also worked as an economic entomologist for the United Fruit Company between 1928 and 1931, so he did have practical field experience in rural Honduras and Guatemala working on agricultural pests, if not mosquitoes. Yet, the Albania position would do little to take advantage of Bates’ experience in Latin America or his Spanish language skills.

The Rockefeller Foundation’s recruitment of Bates makes sense, though, in the context of the specific type of biological problems Hackett was confronting in his work on *Anopheles* mosquito populations in Europe. As he and Bates would explain:

The modern trend of malaria control is toward ‘species sanitation’ and ‘naturalistic’ measures which call for careful study of the natural history and physiology of mosquitoes with reference to the particular region in which the control program is carried out. The aim is to limit the attack when possible to the vector species and by acquiring a working knowledge of its local habits, to determine the place where this attack can be effectively delivered.¹¹

The primary European malaria vector species, *Anopheles maculipennis*, however, was far from a simple, homogenous taxonomic group. Hackett's work in Italy had already begun to show that it was made up of a variety of different populations—perhaps they were subspecies, “races,” or even reproductively distinct species in their own right. *Anopheles maculipennis* was a prime example of the “species problem.” Although the adults were morphologically indistinguishable, they varied in their feeding, resting, and mating behaviors, geographical ranges, and ecological preferences. Some of these populations were much more effective and significant vectors for malaria than others; some preferred to bite humans and others livestock, for example. The existence of these population differences was an answer to the theoretical problem of “anophelism without malaria,” where the presence of *Anopheles* did not correlate with the incidence of malaria in humans. The practical problem, now, was learning how to identify the dangerous populations through their behavior or subtle morphological variations across the populations during different life stages (eggs or larvae), as well as extending this knowledge to new locations and environmental contexts throughout Europe and the Mediterranean.¹²

In other words, from Hackett's perspective, malaria control was an ecological problem. Bates may have had no experience with mosquito research, but his dissertation involved teasing out the species and geographical varieties of Cuban butterflies. The complex life cycles, polymorphisms, and mimicry displayed by many butterfly species meant that Bates' graduate work actually crossed the disciplinary boundaries between taxonomy and ecology. Therefore, he was in fact better-suited to the position that he at first appeared.¹³ He would be switching from butterflies to mosquitoes, but his work would still center on ecology and the species problem.¹⁴

At the same time, there was quite simply a shortage of qualified entomologists. While Hackett at first felt “unable to decide in my own mind exactly how much value to attach to previous experience with mosquitoes,” ultimately he preferred to hire an American, and sought a young (single) man with strong potential and enthusiasm for research work. The new hire must also have no qualms about working in the “primitive conditions” of a small field lab far from major urban

centers—something Bates’ experience with United Fruit did prepare him for. “It might even be that a fresh mind coming to a new subject would observe things which we are overlooking,” Hackett also reasoned.¹⁵ Previous experience in mosquito research was ultimately less important because Bates would receive mentorship from Hackett in the specific laboratory techniques necessary—through formal training in Rome before arriving in Tirana, and then through periodic visits and an extensive correspondence.¹⁶ Hackett taught Bates to try to “see the world from the point of view of the mosquito.”¹⁷

After a year working at Tirana, Hackett wrote approvingly to Sawyer, “Bates has turned out to be an experimental biologist of the first rank.”¹⁸ Originally paid through the funds of the Albanian malaria project, Bates would officially join the permanent staff of the IHD in 1938.

An Ecological Perspective

Bates’ transformation from a lepidopterist to a mosquito specialist led to a long and fruitful career with the Rockefeller Foundation, though these years were not without drama and dislocation. First the Italian invasion of Albania precipitated a shift from Tirana to a new lab in Cairo in 1939, then the outbreak of world war forced the closure of the lab and Bates’ reassignment to South America (where his Spanish skills could finally be put to use).¹⁹ Bates was transferred from the study of malaria to yellow fever, specifically the confusing case of “jungle” or sylvan yellow fever, which appeared in unexpected regions far from urban centers and in the absence of known vector species. Sylvan yellow fever was a tricky scientific problem. Bates, with his background in natural history and ecological perspective, was well-prepared to attack it.

In 1940, he settled with his family in Villavicencio, where he was again in charge of a small field laboratory, operated largely by local staff.²⁰ Villavicencio was then a frontier town, known as the gateway to Colombia’s rapidly developing llanos region. Nancy Bell Bates, his wife, told the story of their life and work there in

fascinating detail in her popular book *East of the Andes and West of Nowhere*.²¹ Rockefeller Foundation records help to put the laboratory's work into the broader context of the RF's research on sylvan yellow fever throughout the Caribbean and South America, as well as the longer trajectory of the Foundation's projects in Colombia. Bates reported to the RF's offices in Bogotá, but the relative remoteness of the lab and the broader concerns of the Bogotá staff meant that he had a large degree of autonomy in pursuing his research agenda. Yet, because IHD field officers circulated their diaries, new techniques and ideas were shared with researchers working on the same problems in different ecological contexts.²² The Villavicencio lab was spartan, but very well positioned for the integration of laboratory and field techniques Bates had learned with Hackett in Albania and Egypt. A variety of groundbreaking techniques were developed at Villavicencio—including studies of mosquitoes in their natural habitats high in the forest canopy, as well as successfully sustaining diverse mosquito populations and mammalian hosts in captivity in order to observe their behavior.²³

This ecological and interdisciplinary approach was crucial to identifying the specific vector of sylvan yellow fever and working out its epidemiological pattern in animals. The work of Bates and the staff of the Villavicencio lab contributed to the understanding of the “sylvatic cycle” of yellow fever, whereby a natural reservoir of the yellow fever virus was maintained within monkeys and mosquitoes living in forest canopies in the countryside. It was only when people entered the forest—in particular when woodcutters felled trees and came into contact with mosquitoes from the canopy—that yellow fever spilled over into human populations in rural areas, particularly areas undergoing rapid settlement like the countryside around Villavicencio.²⁴ The problem of sylvan yellow fever brought into sharp focus the complexity of ecological relationships in nature, as well as how inextricable humans were from this web of life—themes that would continue to occupy Bates later in life his as an author.

The Turn to Human Ecology

The IHD had transformed Bates from a budding butterfly taxonomist into a leading mosquito researcher. But during what would be his final years with the Rockefeller Foundation, he would be asked to radically change his organism of study once more—this time from mosquitoes to people. As Bates recounted years later in *The Prevalence of People*, on 26 October 1948, George K. Strode, now Director of the IHD, turned to him “rather abruptly and asked, ‘How would you like to study the human population problem, from your point of view as a biologist?’”²⁵ Bates was being recruited for the RF’s new efforts in what it would soon label “human ecology.” He snapped at the opportunity. Headquartered at the RF’s New York office, he began work immediately, reading widely and meeting with experts from a wide variety of relevant disciplines.²⁶ During 1948–1949, he was partnered with Rockefeller officer Marshall C. Balfour on the project.²⁷ Then, effective 1 January 1950, Bates became Special Assistant to Rockefeller Foundation President Chester Barnard.²⁸

Bates acknowledged that this change in direction might seem “bizarre,” but explained that his “shift from mosquitoes to people, from Villavicencio to New York, was perhaps not as abrupt and illogical as it might seem at first sight” because his time in Colombia had awakened his interest in “the social responsibility of science.”²⁹ Indeed, his personal papers bear out his growing concerns with the role of science in society and world affairs during this time. He also sometimes cited his need to leave Colombia so that his four young children could be schooled in the United States. Yet, this personal side is only half the story. Why did the RF choose Bates, in particular, for this project?

The answer involves a combination of intellectual and institutional factors, at multiple levels, that made Bates available and appropriate for the job. First, there was the exit of the Rockefeller Foundation and Bates from the Villavicencio laboratory, turning it over to the Colombian Instituto Roberto Franco. This departure was precipitated in 1948 by a dramatic personality conflict between Bates and members of the Roberto Franco.³⁰ Yet it occurred during a period of building tension between the research interests of the RF and the public health

concerns of the Colombian government and public.³¹ With the ultimate solution of the sylvan yellow fever problem, the Villavicencio lab had transitioned to a focus on malaria research in 1945, but the Colombians were more concerned with immediate control efforts—DDT and other pesticides seemed to make Bates' ecological approach obsolete. The Rockefeller Foundation also found itself on difficult political terrain as Colombia's era of La Violencia began. Given these broader contexts, the RF's exit from Villavicencio was likely inevitable. In any case, Bates' sudden departure raised, as he half joked, the “problem of what to do with Bates.”³²

The Rockefeller Foundation itself had been reconsidering its approach to public health during this same period. John D. Rockefeller 3rd had long held an interest in birth control and a variety of population control advocates began to raise troubling questions about whether the RF's battles against malaria, yellow fever, and other diseases were ultimately for the good of humanity.³³ Were public health efforts extending human lives only to create greater suffering by starvation and overcrowding? Could it be that all the work of the IHD “might be changing the disease problem into a population problem”?³⁴ The question of population suggested that public health could no longer be carried out in isolation from agricultural improvement, let alone social and economic contexts. Yet population control was a highly controversial and politicized topic, stigmatized by its historical connection to eugenic policies. Edmund Ramsden has suggested that the rebranding of the Rockefeller Foundation's population project as “human ecology” was largely an effort to “diffuse controversy,” and “Bates was an astute appointment” for that purpose.³⁵ Yet, the ecological framing was far from simply an act of camouflage; after all, one of the primary critics of the role of international health campaigns in creating a population growth problem was William Vogt, an ecologist. In Bates, the RF found it already had on staff an ecologist well-qualified to respond to such critiques. All of his previous mosquito research centered on problems of populations—not simply in terms of population numbers or density, but in terms of the relationships of populations (of mosquitoes, monkeys, and humans) to each other and their environment. Fundamentally, because Bates was trained as a biologist rather than a medical doctor or public health specialist, he had credibility to take on

Vogt's critique on its own disciplinary territory. Serendipitously, he was of course also in need of a new assignment.

When Strode asked Bates to shift to population studies and human ecology, he expected him to bring to bear his expertise on the phenomena of biological populations in the natural world. Bates did so, but in unexpected ways. To Bates, aware of and deeply interested in current developments in biological research, this meant a need for synthesis. He noted that, in the social sciences, “the people and institutions working directly on human population problems form a fairly clearly defined group who, in part at least, think of themselves as ‘populationists’; while students of the corresponding biological problems are widely scattered and hardly aware of their community of interest.”³⁶ In part, he had in mind the evolutionary synthesis, then in process, which was very much focused on bringing disparate biological fields together through the perspective of “population thinking.” His voracious reading, conversations with experts in many fields, and—in more subtle, but vitally important, ways—his encounters with diverse peoples on three continents during his career as IHD field staff led him increasingly to take this synthetic perspective beyond the natural sciences to the social sciences and humanities. He argued:

Any general study of the population problem obviously involves factors that would separately be handled by Health, Social Science, Natural Science and Medicine. The relation to the Humanities, perhaps not so obvious, is to me one of the most important. The Humanities are concerned with values and purposes: which we are questioning and testing. They are concerned with the historical process: which has produced the population problem, and produced science as well. They are concerned with interpretations and meanings: and all of our huffing and puffing about population density will be purposeless until someone, whom the Humanities might claim as their own, comes along and transmutes our wind into a force that has relevance and meaning for the cultural stream of civilized mankind.³⁷

The Rockefeller Foundation expected Bates to bring ecological science to bear on the problem of population. Rather than reduce population to biology, however, Bates' ecological perspective helped him see the connections among seemingly

disparate disciplines. Ecology led him to highlight the human in “human ecology.”

The Rockefeller Foundation ultimately decided not to take on human ecology in the broad interdisciplinary manner in which Bates recommended, however.³⁸ The entry of Dean Rusk as the RF’s new president in 1952 brought organizational changes and new priorities. The IHD, which had for so long been Bates’ home in the RF, was also merged with Medical Sciences to form a new Division of Medicine and Public Health and “the new program made it difficult to use to the maximum Mr. Bates’ abilities.”³⁹ In 1952, Bates made the decision, which he had long toyed with, to resign from the Rockefeller Foundation and take a position as a professor of zoology at the University of Michigan.⁴⁰ There he would turn his attention to teaching and a career as an author. But he would never leave behind the subject of human ecology.

1 Socrates Litsios, “Marston Bates, Visionary Environmentalist,” *Perspectives in Biology and Medicine* 60, no. 2 (2017); Elliott West, “The Gosh! Factor,” *Environmental History* 10, no. 4 (2005).

2 Marston Bates, *The Natural History of Mosquitoes* (New York, NY: Macmillan Co., 1949); Marston Bates, *The Nature of Natural History* (New York, NY: Scribner, 1950); Marston Bates, *Where Winter Never Comes: A Study of Man and Nature in the Tropics* (New York, NY: Scribner, 1952); Marston Bates, *The Prevalence of People* (New York: Scribner, 1955); William L. Thomas Jr., et al., eds. *Man’s Role in Changing the Face of the Earth* (Chicago, IL: University of Chicago Press, 1956); Marston Bates, and Philip S. Humphrey, *Darwin Reader* (London: Macmillan, 1957); Marston Bates, and Donald Putnam Abbott, *Coral Island: Portrait of an Atoll* (New York, NY: Scribner, 1958); Marston Bates, *The Forest and the Sea: A Look at the Economy of Nature and the Ecology of Man* (New York, NY: Random House, 1960); Marston Bates, *Man in Nature* (Englewood Cliffs, NJ: Prentice-Hall, 1961); Marston Bates, *Animal Worlds* (New York, NY: Random House, 1963); Sciences Curriculum Study Biological, *High School Biology: BSCS Green Version: Student’s Manual, Laboratory and Field Investigations* (Chicago, IL: 1963); Marston Bates, *The Land and Wildlife of South America* (New York, NY: Time, 1964); Marston Bates, *Gluttons and Libertines; Human Problems of Being Natural* (New York, NY: Random House, 1967); Marston Bates, *A Jungle in the House: Essays in Natural and Unnatural History* (New York, NY: Walker & Co., 1970).

3 For example, Litsios, “Marston Bates, Visionary Environmentalist.”

4 The standard reference biographies of Marston Bates mistakenly do not list the Rockefeller Archive Center among the major holders of archival records relevant to his life. Keir Brooks Sterling, “Marston Bates,” in *Biographical Dictionary of American and Canadian Naturalists and Environmentalists* Greenwood Publishing Group, 1997); Richard Harmond, “Bates, Marston,” *American National Biography Online* (2000); William C. Kimler, “Bates, Marston,” in *Complete Dictionary of Scientific Biography* (Detroit: Charles Scribner’s Sons, 2008).

5 This essay is based on research completed at the Rockefeller Archive Center (RAC) during July-August 2018, made possible through the generous assistance of a 2018-2019 RAC Research Stipend. I wish to thank Lee R. Hiltzik, Tom Rosenbaum, and all of the center’s archivists and staff for their many helpful suggestions and conversations.

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- 6 Unsigned letter to Bates, 13 November 1935, RAC, Rockefeller Foundation (RF) Record Group (RG) 15, series 1, box 2, folder "Bates, D. Marston (2)."
- 7 For an overview of activities in Albania, see the RF Annual Reports 1927-1936 and L. W. Hackett, "Albania and its Malaria Problem," RAC, RF RG 1.1, series 704, box 2, folder 10; Persis Putnam and Pauline A. Mead, "The Results of Malaria Studies in Albania," July 1936, and "Malaria Control Work in Albania," RAC, RF RG 1.1, series 704, box 1, folder 8.
- 8 For example, Strode to Hackett, 8 October 1935, RAC, RF RG 1.1, series 704, box 1, folder 5.
- 9 Marston Bates, "The Butterflies of Cuba," *Bulletin of the Museum of Comparative Zoology* 78, no. 2 (1935).
- 10 Sawyer to Strode, 18 September 1935, RAC, RF RG 1.1, series 704, box 1, folder 5.
- 11 International Health Division Annual Report 1938, p. 96., RAC, RF Field Staff (FA487), series 2.8. See also L.W. Hackett, and Marston Bates, "The Laboratory for Mosquito Research in Albania.," *Acta Conventus Tertii de Tropicis atque Malariae Morbis, Amsterdam* 2 (1938), 113.
- 12 Such subtleties would later be made moot by the widespread use of DDT, but they were cutting-edge science at the time. □Hughes Evans, "European Malaria Policy in the 1920s and 1930s: The Epidemiology of *Minutiae*," *Isis* 80, no. 1 (1989). For a comparison of Hackett's pre-DDT efforts and later Rockefeller projects in Italy, see David Kinkela, *DDT and the American Century: Global Health, Environmental Politics, and the Pesticide That Changed the World* (Chapel Hill, NC: University of North Carolina Press, 2011), 47. See also Lewis Wendell Hackett, *Malaria in Europe: An Ecological Study* (London: Oxford University Press, 1937); Leonard Jan Bruce-Chwatt, and Julian De Zulueta, *The Rise and Fall of Malaria in Europe: A Historico-Epidemiological Study*. (Regional Office for Europe of the World Health Organization, 1980).
- 13 The position had opened up when D. J. Lewis, the British entomologist first assigned to the Tirana lab, resigned to take a post in India. George K. Strode to Wilbur A. Sawyer, 27 August 1935, RAC, RF RG 1.1, series 704, box 1, folder 5. See also references to Lewis throughout RAC, RF RG 1.1, series 704, box 1, folder 3.
- 14 Bates' later thoughts on mosquitoes and the species problem can be found in Bates, *The Natural History of Mosquitoes*, 239-53.
- 15 Hackett to Strode, 8 October 1935, RAC, RF RG 1.1, series 704, box 1, folder 5.
- 16 See Bates' correspondence with Hackett in RAC, Lewis W. Hackett Papers (FA043); and Bates' correspondence with Hackett diary and reports from Albania, 1935-1938, Bentley Historical Library (BHL), University of Michigan, Marston Bates Papers, boxes 15 and 16.
- 17 See the dedication of Bates, *The Natural History of Mosquitoes*. See also Bates, *Forest and the Sea*, 175.
- 18 "Excerpt from letter from Dr. Hackett to WAS [Sawyer]," 9 April 1937, RAC, RF RG 15, series 1, box 2, folder "Bates, D. Marston (2)."
- 19 Hackett's account of the occupation of Albania can be found in RAC, Lewis W. Hackett Papers (FA043), series 2, box 10, folder 156. For an overview of the transfer of the laboratory from Tirana to Cairo, see "Resolved," 16 December 1949, RAC, RF Biographical File (FA485), box 3, folder 123.
- 20 The lab was originally planned and established as a temporary field station by Fred L. Soper and J. Austin Kerr in 1938 and originally overseen by John C. Bugher. For an overview, see untitled, Bugher, 28 April 1949, and "The Laboratory at Villavencio," May 1949, RAC, RF RG 5, series 4, box 5, folder 42. For broader context on the yellow fever project in Colombia, see RAC, RF RG 1.1, series 311O.
- 21 Her success would encourage Bates try his own hand at writing for broader audiences. Nancy Bell Fairchild Bates, *East of the Andes and West of Nowhere: A Naturalist's Wife in Colombia* (New York, NY: Charles Scribner's Sons, 1947); Nancy Bell Fairchild Bates, "Keeping House for a Biologist in Colombia," *National Geographic Magazine* 94, no. 2 (1948). On Villavencio, see also Jane M. Rausch, *From Frontier Town to Metropolis: A History of Villavencio, Colombia, Since 1842* (Lanham, MD: Rowman & Littlefield, 2007); Jane M. Rausch, "Con los Ojos de Ellas: Percepciones de la Historia en Colombia 1920-1950, a Partir de Las Narraciones de Tres Mujeres Norteamericanas," *Historia y Memoria* 3 (2011).
- 22 See the Colombia Yellow Fever Service Diaries, RAC, RF RG 1.1, series 311O, boxes 12-15. The daily routine of diary writing also seems to have played an important role in the development of Bates' practice as a writer.

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- 23 Detailed accounts of this work appear within the Routine Reports of the Caribbean Region, 1929-1954, RAC, RF RG 5, series 3_420; and in Bates' diaries, RAC, RF RG 1.1, series 311.O, box 13, folder 113; box 14, folder 114 and 115a; box 15, folder 116. Bates also discusses aspects of this research in Bates, *Where Winter Never Comes*; Bates, *Forest and the Sea*.
- 24 The history of the solution of the problem of sylvan yellow fever has been told many times from distinct points of view. Accounts by or centering on Rockefeller Foundation staff include George K. Strode, ed. *Yellow Fever* (New York, NY: McGraw-Hill, 1951); Greer Williams, *The Plague Killers* (New York, NY: Charles Scribner's Sons, 1969); Hugh H. Smith, *Life's a Pleasant Institution* (Tucson, AZ: Hugh H. Smith, 1978); John Farley, *To Cast Out Disease: A History of the International Health Division of the Rockefeller Foundation (1913-1951)* (New York, NY: Oxford University Press, 2004). On the global history of yellow fever in general, see also Michael A. Osborne, "The Several Meanings of Global Health History: The Case of Yellow Fever." *Rockefeller Archive Center Research Reports* (2017): 1-18, <http://rockarch.issuelab.org/resource/the-several-meanings-of-global-health-history-the-case-of-yellow-fever.html>. Colombian historians have more recently highlighted the central role of Colombian doctors in sylvan yellow fever research and other Rockefeller Foundation activities. Claudia M. García, and Emilio Quevedo V., "Uncinariasis y Café: Los Antecedentes de la Intervención de la Fundación Rockefeller en Colombia: 1900-1920," *Biomédica* 18, no. 1 (1998); Paola Mejía Rodríguez, "De Ratones, Vacunas y Hombres: El Programa de Fiebre Amarilla de la Fundación Rockefeller en Colombia, 1932-1948," *Dynamis* 24 (2004); Emilio Quevedo V., *et al.*, "Knowledge and Power: The Asymmetry of Interests of Colombian and Rockefeller Doctors in the Construction of the Concept of 'Jungle Yellow Fever,' 1907-1938," *Canadian Bulletin of Medical History* 25, no. 1 (2008); Paola Mejía Rodríguez, "Intolerable Burdens: Malaria and Yellow Fever Control in Colombia in the Twentieth Century," (PhD diss., Columbia University, 2009); Emilio Quevedo V., *et al.*, *De los Litorales a Las Selvas: La Construcción Del Concepto de Fiebre Amarilla Selvática, 1881-1938* (Rosario, Colombia: Editorial Universidad del Rosario, 2018). Tracing the story through the Villavicencio laboratory has the potential to break down some of the barriers between these literatures because it was linked into multiple U.S., Colombian, and broader international networks, but this is beyond the scope of this brief report.
- 25 Bates, *The Prevalence of People*, 1.
- 26 Bates' diaries for his work on the biology of human populations can be found in RAC, RF RG 12 (FA391), box 27. See also Marston Bates, "Memorandum regarding the biology of human populations," 5 November 1948, RG 3.2, series 900, box 57, folder 310. This document is also available on 100 Years: The Rockefeller Foundation, accessed 10 July 2018, https://rockfound.rockarch.org/digital-library-listing/-/asset_publisher/yYxpQfeI4W8N/content/memorandum-regarding-the-biology-of-human-populations.
- 27 On this work see "Pro Pop-1: Marshall C. Balfour and Marston Bates; Special Report to the Board of Scientific Directors of the International Health Division of the Rockefeller Foundation Human Ecology (Population)," 4 November 1949; and "Pro Pop-2: Marston Bates; Human Ecology and the Rockefeller Foundation, Final Report to Chester I. Barnard (copy filed 900 Pro45r)," 22 October 1951, RAC, RF RG 3.2, box 57, folder 312. See also Balfour's diaries for 1948 and 1949, RAC, RF RG 12, boxes 23-24.
- 28 "Notice," 10 January 1950, RAC, RF RG 15, series 1, box 2, folder "Bates, D. Marston (2)."
- 29 Bates, *The Prevalence of People*, 2-3.
- 30 See, for example, RAC, RF RG 2, series 1948/100, box 393, folder 2647.
- 31 An excellent exploration of this context is Mejía Rodríguez, "Ratones, Vacunas y Hombres."
- 32 Bates to Strode, 13 January 1948, BHL, Bates Papers, box 3, folder 39.
- 33 John Ensor Harr and Peter J. Johnson, *The Rockefeller Conscience: an American Family in Public and in Private* (New York, NY: Scribner, 1991), 158.
- 34 Bates, *The Prevalence of People*, 2.
- 35 See, for example, Edmund Ramsden, "Negotiating the Problems of Population: Demography, Ecology, and Family Planning in the Post-War United States." *Rockefeller Archive Center Research Reports* (2010): <http://rockarch.issuelab.org/resources/27912/27912.pdf>, 3.

36 Bates, "The Biology of Human Populations," 5 November 1948, RAC, RF RG 12 (FA391), box 27.

37 Bates, "Objectives of Population Studies," 1949, RAC, RF RG 3.2, series 900, box 57, folder 310. See also Bates, "Excerpt from Marston Bates's diary," 100 Years: The Rockefeller Foundation, accessed 12 October 2017, https://rockfound.rockarch.org/digital-library-listing/-/asset_publisher/yYxpQfeI4W8N/content/excerpt-from-marston-bates-s-diary

38 A good discussion of this missed opportunity is Litsios, "Marston Bates, Visionary Environmentalist."

39 Andrew J. Warren, "Separation Allowance--Marston Bates," 30 July 1952, RAC, RF RG 15, series 1, box 2, folder "Bates, D. Marston (2)."

40 Bates' association with the Foundation did not in fact truly end with his resignation. He periodically consulted with the Foundation and would receive grant funding through the Division of Social Sciences to complete his *The Prevalence of People*, for example.