The Mosquito: across communities, politics and literatures

Thursday 15 – Friday 16 September 2022

British Academy (London) & Online

Hybrid conference

Convenor:

Dr Alice Christensen, University of Reading

Dr Carrie Friese, London School of Economics

The British Academy

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This is a hybrid conference with speakers participating in-person, at the British Academy, and virtually on Zoom webinar. Speakers presenting virtually will have (V) next to their name. All times shown are UK time.

Day 1: Thursday 15 September 2022

10:00– 10:15	Welcome and introduction
10:15 – 12:00	**Session 1: Institutions** **Professor Ann Kelly** (Kings College London) **Dr Gabriel Lopes** (Casa de Oswaldo Cruz)
12:00 – 13:00	Lunch
13:00 – 14:45	**Session 2: Colonial histories and futures** **Dr Christian Reiss** (University of Regensburg) **Dr Rohan Deb Roy** (University of Reading)
14:45 – 15:15	Coffee break
15:15 – 17:00	**Session 3: Animal-human relations** **Professor Joanna Latimer** (University of York) **Jordan Goodman** (University of London)
17:00	End of Day 1

Day 2: Friday 16 September 2022

10:30 – 12:45	**Session 4: Gender and Domestication** **Dr Alice Christensen** (University of Reading) **Dr Clare Wenham** (London School of Economics) **Professor Ilana Löwy** (French National Center for Scientific Research)
12:45 – 13:45	Lunch
13:45 – 15:30	**Session 5: Metaphors and models** **Dr Carrie Friese** (London School of Economics) **Dr Luísa Reis-Castro** (University of Southern California) (V) **Túllio da Silva Maia** (University of Exeter) **Professor Uli Beisel** (Free University of Berlin)
15:30	End of Day 2

The Mosquito: across communities, politics and literatures

Conference Paper Abstracts

Day 1: Session 1: Institutions

Professor Ann Kelly (Kings College London)

On means, matters and models of mosquito dissection: The twilight of the Detinova Technique

This paper takes as its focus a method of mosquito dissection pioneered in the 1940s by a team of vector biologists based at the Moscow Martsinovsky Institute. The Detinova Technique offered a way to determine the exact physiological age of the female mosquito, providing critical insight into the ecological dynamics of disease transmission. Heralded as a game-changer for global malaria eradication efforts, prompted new collaborations between East and West played out in large part, across the African content. Its applied potential, however, was never realized, and while it remains the most accurate means of ascertaining the age—and, by extension the infectivity—of a vector population, the Detinova technique is today practiced by only a handful of entomologists. To some extent, the degree of manual dexterity implied by the technique limited its diffusion within the malaria field, but more fundamentally, the practical applications of age-grading hinged upon a distinct conjugation of malaria surveillance and control—one characteristic of the Soviet campaign but obviated by the models driving efforts in the West. The dynamic tension evidence between technical precision and programmatic action, scalable assumptions and highly skilled practice, will serve as a prompt to consider some of the methodological parameters of knowability and doability in relation to global health, and the particular models of disease ecology upon which those topologies of intervention depend. Ultimately this story unfolds over the body of the mosquito, the struggles to render it epidemiologically legible and its singular capacity to elude the most sophisticated forms of quantitative and anatomical analysis, to resist to transformation unit of public health action.

Dr Gabriel Lopes (Casa de Oswaldo Cruz)

Anopheles gambiae in Brazil: silent spread, controversies, and eradication

The paper analyses the efforts of the International Health Division of the Rockefeller Foundation (IHDRF) in the eradication of the African mosquito Anopheles gambiae in Brazil. This species arrived in the Rio Grande do Norte State from Senegal by avisos, fast boats that

crossed the Atlantic Ocean in about 70 hours causing an unprecedented malaria outbreak after a silent spread. After producing a high rate of infection and mortality in Brazil in the 1930s, the A. gambiae was exterminated in 1940 by the Malaria Service of the Northeast (MSNE), a cooperative initiative between the Brazilian government and the IHDRF. The creation of the MSNE was criticized by some Brazilian scientists for its reductionist approach, once it was not a campaign against malaria, but an anti-gambiae campaign. We show that the decision to exterminate the A. gambiae was an attempt to apply of the principle of demonstration effect in public health that generated political and scientific conflicts, specially between scientists of the MSNE and Evandro Chagas, from the Oswaldo Cruz Institute, that was also making scientific experiments in the infested area in 1939. The extermination of that mosquito in Brazil was crucial to rehabilitate the faith in disease eradication at the time. We also explain, based on recent research at the Rockefeller Archive Center, and Fiocruz Historical Archives, how the African mosquito eradication campaign led to side research cooperative projects among Brazilian and American entomologists of the IHDRF that expanded across the Amazon region, contributing to broader entomological

Day 1: Session 2: Colonial histories and futures

Dr Christian Reiss (University of Regensburg)

Between proto-ecological case studies to colonial-military application. Mosquitos, applied entomology and the history of German ecology, 1900-1945

Mosquitoes have played a central role in the history of German military and colonial science, the history of applied entomology in Germany and the history of German-speaking-ecology. As disease vectors, they were of strategic concern for military and health officials and helped to bring zoological expertise into military and health institutions. Applied entomologists saw mosquitos as an opportunity to demonstrate the superiority of their knowledge about insects to the much more prestigious physicians and hygienists that traditionally dealt with disease vectors. Ecology in part emerged from this context, turning the knowledge created to fight mosquitoes into knowledge about the relations in nature more broadly.

In my talk, I will focus on the different relations between mosquitoes and their investigators and ask about the ways in which these relations shaped the different scientific knowledges and the mosquitoes it produced. Mosquitoes became disease vectors and Schädlinge (pests) in need of control and eradication first in colonial and later in military contexts. At the same time, mosquitoes were understood as integral parts of specific Lebensgemeinschaften or biocoenoses (the German equivalent of ecosystems) studied in ecology. The relations also varied on the level of research practices. To find ways to fight them, researches had to work with mosquitoes in the laboratory and in the field to understand them. Researchers had to collect, study, breed, keep, feed and eventually kill mosquitoes, creating a complex web of interspecies relations.

Dr Rohan Deb Roy (University of Reading)

Decolonise Mosquitoes

The decolonial turn in the academy is recent but pervasive. Scholarly manifestoes in many academic disciplines, ranging from ethnography to geology, have urged on the need to explore, and contest the impacts of colonialism in their respective fields. But what possibilities and challenges are revealed when decolonising insights are applied to rethink specific categories in animal history? In this talk, I address this question by focusing on mosquitoes in British India. In the process, I will elucidate three distinct historical processes: 'invisible labour', 'dissent' and 're-colonisation'. I will argue that the project of 'decolonising mosquitoes' should be grounded on a scholarly praxis that enables historians to formulate newer critiques of colonialism. I will also comment on why it is problematic for such a project to seek convenient alternatives in post-colonial nationalisms.

Day 1: Session 3: Animal-human relations

Professor Joanna Latimer (University of York)

Reproducing Precarity: Interspecies Entanglements, Neglected Things & Fragile Ecologies of Care

In this paper we draw upon and extend anthropological and theoretical work on reproduction and the environment to offer a critical perspective on public health. Here we juxtapose ethnographic examples – from Friese & Latimer's study of an epigenetics department in a prestigious UK Life Sciences Institute and the Fiocruz Social Science Zika Network's encounters with mosquitoes, scientists and women in Brazil. The aim is to offer a position paper on rethinking approaches to how '(re)production' (re)produces precarious environments and to possibilities of caring interventions built on taking a social, transdisciplinary and interspecies perspective. We begin by describing how Brazilian ideas shift the notion of 'public' away from the dominance of its individuating biopolitics to rethink global health from the perspective of 'collective health' that includes not just the geopolitics of reproductive environments but the importance of thinking-with more-than-human as well as transdisciplinary intimate entanglements. Drawing together Anna Tsing's theory of unscalability with Marilyn Strathern's doubling of the notion of conception, as both sexual reproduction and the making of knowledge, we think through how thinking with transdisciplinary and interspecies Others helps biomedicine break out of the laboratory model in ways which can create new and fragile ecologies of care. Specifically, these transdisciplinary and interspecies ecologies of care do not just work on the precarious reproductive environments created by the mosquito-human relations in the making and unmaking of disease, but also represent precarious reproductive environments because they are concerned with producing knowledge which is not scalable in biomedicines terms.

Jordan Goodman (University of London)

Anatomy of a Bite: Malaria – Where Three Species Meet

Human malaria, the definition goes, is a mosquito-borne disease caused by a parasite. True. But it is also more than that: an active and dynamic biological cyclical entanglement of three species and two fluids.

The entanglement begins and is driven by the life–cycle of a species of Plasmodium, a single–cell parasitic protozoan that spends its entire life solely within two hosts, an Anopheles mosquito and a human. It continues with two fundamental biological moments involving a mosquito and two fluids. Once, when a Plasmodium–infected mosquito in a blood feed penetrates human skin with its proboscis and injects, alongside its saliva, sporozoites, an early developmental stage of the parasite, into the surrounding tissue. Then again, when a non–infected mosquito in a blood feed penetrates human skin, injects saliva and with the blood ingests gametocytes, the late developmental stage of the parasite, from a Plasmodium–infected human. The three species meet on human skin twice: once when a mosquito infects a human with sporozoites; and then when a human infects a mosquito with gametocytes, in both instances human blood one way, mosquito saliva the other.

Most studies of malaria, whether conducted from a social or historical perspective, focus on the human story, initiated by the first mosquito bite, since it is in the later blood and asexual stage of the parasite's life–cycle that merozoites attack red blood cells causing the malarial symptoms of fever and chills. By shifting attention to the second bite, whose anatomy will be explored in this paper and which initiates the sexual stage of the parasite's life–cycle in the mosquito with pathological consequences for the insect, we open up a novel nonhuman and human perspective. This, I believe, has significant implications for what we are coming to call multi–species studies, in both social and historical research.

Day 2: Session 4: Gender and Domestication

Dr Alice Christensen (University of Reading)

The Domestic on the Move: Otto and Rosa Hecht's Studies of Stechmücken

This paper examines the figure of the domestic in entomologist Otto Hecht's research and private life. Although Hecht's early research was produced during the time he spent at the Hamburg Institute for Tropical Diseases, an institution intimately connected with Germany's colonial projects and aspirations, much of his work dealt with domestic insects, particularly mosquitoes (Hecht refers to "unsere einheimische Stechmücken"). Hecht's research reports describe in detail the feeding and care of his research objects, and he undertook some of this laboratory work with the assistance of his wife Rosa. The spaces of the domestic and the scholarly-institutional, of the home and the laboratory, were very much intertwined. In 1933, Hecht was fired from his position in Hamburg because he was Jewish, and his family fled Germany – first to Palestine, then to South America, and finally to Mexico, where the Hecht family was able to re-establish some domestic habits after twenty years of precarious exile. The Hechts' personal history was marked by the traumatic loss of their home and the invention of new modes of domesticity. Otto Hecht's publication record demonstrates the loss of the domestic in other ways, as this paper will show. Mosquitoes provided continuity; as Otto Hecht continued his work in vector control, the Hechts were able to move through institutional networks, across colonial contexts, into new languages.

Dr Clare Wenham (London School of Economics)

Examining the Intersection between Gender, Community Health Workers and Vector Control Policies: A Text Mining Literature Review

Gender intersects with healthcare systems; this is equally true for arboviral vector control efforts. However, there is as yet no comprehensive analysis as to how vector control is gendered. Hence, our objective is to provide the first thematic scoping and spatial distribution of the literature on gender, community health workers, and vector control. The authors use a systematic review approach to collect the academic literature on gender, community health workers, and vector control in Web of Science, Scopus, and PubMed (7,367 articles). After applying the exclusion criteria, 2,812 articles were analyzed using machine learning techniques: text mining and quantitative text analysis. The authors use topic modeling to assess the thematic scope of the literature and analyze the spatial distribution of themes. Our results show that the literature's spatial scope is strongly represented by the global south as research was conducted mainly in Latin America, Africa, and Asia, places with greater incidence of vector-borne disease and with health systems, which incorporate community healthcare workers. However, there are significant spatial heterogeneities in where and how research is conducted. The topic analysis reveals that the literature predominantly considers issues of sex (e.g., pregnancy) and gender as it relates motherhood. Gendered considerations occur upon implementation of vector control policies, rather than being mainstreamed into their development and delivery. There is a need to deepen the analysis to allow for gendered aspects to be understood beyond binary sex differences and/or reproductive health.

Professor Ilana Löwy (French National Center for Scientific Research)

Women and the "War Against Aedes Mosquitoes" in Brazil

The mosquito Aedes aegypti, the main vector of yellow fever, dengue fever, chikungunya, and Zika, is a "domesticated insect:" it dwells in and near human habitations. Despite numerous promises of rapid development of a high tech solution to the Aedes problem (selective sterilization, genetic manipulation, infection with the Wolbachia bacterium), the principal method of controlling this mosquito remains the one developed in the early 20th century: the elimination of its breeding sites and the destruction of its larvae. Or, the breeding sites of Aedes are mainly inside or near houses. Keeping the house clean and pest-free is traditionally seen as a female task. Nevertheless, from the 1920s to 1970s efforts to control Aedes, conducted between 1923 and 1939 by the Rockefeller Foundation piloted Brazilian Yellow Fever Service and from 1939 by an organization affiliated with the Brazilian Health Ministry were seen as a man's affair. Not only all the sanitary agents responsible for the elimination of Aedes larvae were men, but there were also no attempts to educate housewives about the need to control this insect. This changed in the late 20th century. In 1980, a period in which Brazil emerged from more than twenty years of military dictatorship protests against inefficient control of Aedes, and its consequence, dengue fever epidemics, were led by women. In the late 20th century, the health ministry reorganized its services, and the task to control mosquitoes was gradually delegated to the --mostly female-- corps of community health workers. On the other hand, community health workers have very limited influence on the planning and organization

of the control work. My talk will discuss different patterns of the involvement of women in the efforts to contain Aedes aegypti in Brazil.

Day 2: Session 5: Metaphors and models

Dr Carrie Friese (London School of Economics)

Mosquito Models: Thinking about Eradication

The use of CRISPR technologies to ‘eliminate’ or ‘eradicate’ mosquitos is expanding to other kinds of human-animal relationships. With mosquitos, gene editing has been developed to reduce the fertility and thus the population of mosquitos that act as vectors of human diseases like malaria. Eradicating mosquitos is understood as a means to eradicate human diseases, as part of global public health. This assemblage of techniques and logics is being expanded upon, to go beyond insects as vectors of disease to also include, for example, rodents as invasive species. Eradicating rodents is understood as a means to protect fragile ecologies, as part of environmental conservation. Mosquitos and rodents have an entangled history withing colonialism and capitalism, and these connected assemblages seek to address the problems of this history through its means, here rooted in CRISPR techniques. In this context, this paper asks how the discourse of ‘eradication’ has been operationalized and critiqued with mosquitos in public health and what might be gained by understanding the mosquito as not only a technical but also a social model.

Dr Luísa Reis-Castro (University of Southern California), Túllio da Silva Maia (University of Exeter), Professor Uli Beisel (Free University of Berlin)

Mosquito Ecologies and Invasion Rhetoric in the Anthropocene

Autochtone cases of dengue and chikungunya have recently been reported in Europe. Both diseases are caused by viruses transmitted by mosquitoes from the genus Aedes, most notably Aedes aegypti and Aedes albopictus, which can also carry other pathogenic viruses, including Zika, yellow fever, and West Nile. Aedes presence in the continent is recurrently framed as a threatening “invasion.” Vector control strategies still mostly focus on “points of entry,” which assumes the “threat” is coming from “the tropics” beyond the “walls of Europe”—even though these mosquitoes have already established themselves across the continent, albeit unevenly. How can Aedes’ presence in Europe shed light into discussions about historically-constituted epidemiological geographies as well as imagined futures within ecologies of health? By bringing the growing European investments in surveying and monitoring Aedes mosquitoes and their movement into conversation with earlier invasion and war logics in (post)colonial mosquito control, this paper discusses the politics of governing more-than-human life within shifting disease ecologies. Following Indigenous scholars' proposal that colonialism defines the Anthropocene, we analyze the long-standing geopolitics of mosquito ecologies as both being politically situated within global planetary transformation and profoundly shaped by a racial capitalist body politic.