Journal of Global History (2026), 1–22
doi:10.1017/S1740022826100539

CAMBRIDGE UNIVERSITY PRESS

ARTICLE

The plague of Egypt crossing the Red Sea: The arrival and focalisation of plague in the southern Red Sea region in the 1430s

Philip Slavin

History, Heritage and Politics, University of Stirling, UK
Email: philip.slavin@stir.ac.uk

Abstract

Drawing on textual, archaeological, and palaeoclimatic evidence, this article reconstructs the broad patterns of plague's arrival in the southern Red Sea region during the 1430s. It contends that this initial introduction led to the formation of a medium-term reservoir that generated recurrent epidemic waves over the subsequent 150–200 years. This development is attributed to the interplay of environmental and human-driven factors acting together. The study adopts a dual approach: first, it examines how commercial networks across the Red Sea facilitated the spread of the plague; second, it investigates the environmental and topographical shifts in the southern Red Sea between 1370 and 1470 to understand how these conditions allowed the disease to become endemic to the region.

Keywords: plague; Red Sea; late medieval; Solomonic Ethiopia; Rasūlid Yemen; environmental history

Introduction

Until recently, the history of the Second Plague Pandemic—from its first wave (the Black Death of 1338–53) onward—was studied largely from a Eurocentric perspective, with a few notable exceptions.[1] More recently, conceptual and methodological shifts have reframed plague as a global disease, integrating non-European regions into scholarly analysis, particularly the Middle East and Central Asia,[2]

[1]Some good examples include Michael W. Dols, *The Black Death in the Middle East* (Princeton University Press, 1977) and Stuart J. Borsch, *The Black Death in Egypt and England. A Comparative Study* (University of Texas Press, 2005).

[2]Robert Hymes, 'Epilogue: A Hypothesis on the East Asian Beginnings of the *Yersinia pestis* Polytomy', *Medieval Globe* 1, no. 1 (2014): 285–308; Stuart Borsch, 'Plague Depopulation and Irrigation Decay in Medieval Egypt', *Medieval Globe* 1, no. 1 (2014): 125–56; Nükhet Varlık, *Plague and Empire in the Early Modern Mediterranean World: The Ottoman Experience, 1347–1600* (Cambridge University Press, 2015); Nükhet Varlık, ed., *Plague and Contagion in the Islamic Mediterranean: New Histories of Disease in Ottoman Society* (Arc Humanities Press, 2017); Stuart Borsch and Tarek Sabraa, 'Refugees of the Black Death: Quantifying Rural Migration for Plague and Other Environmental Disasters', *Annales de démographie historique* 134, no. 2 (2017): 63–93; Uli Schamiloglu, 'The Impact of the Black Death on the Golden Horde: Politics, Economy, Society, Civilization', *Golden Horde Review* 5, no. 2 (2017): 325–43; Philip Slavin, 'Death by the Lake: Mortality Crisis in Early Fourteenth-Century Central Asia', *Journal of Interdisciplinary History* 50, no. 1 (2019): 59–90; Monica H. Green, 'The Four Black Deaths', *American Historical Review* 125, no. 5 (2020): 1601–31; Nahyan Fancy and Monica H. Green, 'Plague and the Fall of Baghdad (1258)', *Medical History* 65, no. 2 (2021): 157–77; Robert Hymes, 'A Tale of Two Sieges: Liu Qi, Li Gao, and Epidemics in the Jin–Yuan Transition', *Journal of Song-Yuan Studies* 50 (2021): 295–363; Robert Hymes, 'Buboes in Thirteenth-Century China: Evidence from Chinese Medical Writing', *Medieval Globe* 8, no. 1 (2022): 3–59; Maria A. Spyrou et al., 'The Source of the Black Death in Fourteenth-Century Central Eurasia', *Nature* 606, no. 7915 (2022): 718–24; Philip Slavin, 'The Rise and Fall of a Chaghadaid Community: Demographic Growth and Crisis in "Late-Medieval" Semirech'ye (Zhetysu), *c.*1248–1345', *Journal of the Royal Asiatic Society* 33, no. 2 (2023): 513–44; Philip Slavin, 'The Birth of the Black

the Great Lakes region of sub-Saharan Africa,[3] and Yemen.[4] This shift is driven primarily by advances in the evolutionary and (palaeo-)genetic study of *Yersinia pestis*, which have transformed our understanding of plague's global history and underscored the value of integrating (palaeo-)genetics with historical research.[5] Although this interdisciplinary approach—combining written sources with aDNA and other non-textual evidence—has so far been adopted by relatively few plague historians, it is clearly gaining momentum.[6]

This more global and interdisciplinary approach to plague history has raised new questions, notably concerning the origins of plague reservoirs and recurrent waves during the Second Pandemic. While some scholars argue that later outbreaks were repeatedly reintroduced from Asia,[7] others posit the existence of regional 'domestic' reservoirs, particularly in Europe. Various areas—including southern Russia,[8] the Caucasus-Volga region,[9] Moldova-Wallachia,[10] the south-west Balkans,[11] the Peloponnese,[12] the Marseille region in Provence,[13]

Death: Biology, Climate, Environment, and the Beginnings of the Second Plague Pandemic in Early Fourteenth-Century Asia', *Environmental History* 28, no. 2 (2023): 300–34; Jonathan Brack, Michal Biran, and Reuven Amitai, 'Plague and the Mongol Conquest of Baghdad (1258)? A Reevaluation of the Sources', *Medical History* 68, no. 4 (2024): 392–410; Monica H. Green and Nahyan Fancy, 'Plague History, Mongol History, and the Processes of Focalisation Leading up to the Black Death: A Response to Brack et al.', *Medical History* 68, no. 4 (2024): 411–35.

[3]Monica H. Green, 'Putting Africa on the Black Death Map: Narratives from Genetics and History', *Afriques*, no. 9 (2018), accessed 29 April 2026, https://doi.org/10.4000/afriques.2125; Guillem Mas Fiol et al., 'Global Evolutionary Patterns of *Yersinia pestis* and Its Spread into Africa', *bioRxiv* (preprint, 2024), accessed 29 April 2026, https://doi.org/10.1101/2024.11.26.62544; Philip Slavin and Guillem Mas Fiol, 'The Introduction and Spread of Plague in the Great Lakes Region of East Africa, *c.*1700–1900: A Palaeogenetic and Social History', *Social History* 51, no. 2 (2026): 107–140.

[4]Philip Slavin, 'Jinn in the Mountains: Ecology, Climate and Plague Reservoir in the Yemeni Highlands, *c.*839/1436–965/1558', *Nouvelles Chroniques du manuscrit au Yémen*, NS 21, no. 40 (2025): 67–106.

[5]Monica H. Green, 'Taking "Pandemic" Seriously: Making the Black Death Global', *Medieval Globe* 1, no. 1 (2014): 27–62. Some important genetic/palaeo-genetic publications stressing the importance of Central Asia as major historical source of plague include Yujun Cui et al., 'Historical Variations in Mutation Rate in an Epidemic Pathogen, *Yersinia Pestis*', *Proceedings of the National Academy of Sciences of the United States of America* 110, no. 2 (2013): 577–82; Galina Eroshenko et al., '*Yersinia pestis* Strains of Ancient Phylogenetic Branch 0.ANT Are Widely Spread in the High-Mountain Plague Foci of Kyrgyzstan', *PLOS ONE* 12 (2017): e0187230; Spyrou et al., 'Source of the Black Death'; Katherine Eaton et al., 'Plagued by a Cryptic Clock: Insight and Issues from the Global Phylogeny of *Yersinia Pestis*', *Communications Biology* 6 (2023), accessed 29 April 2026, https://doi.org/10.1038/s42003-022-04394-6.

[6]Examples of works integrating textual evidence and aDNA include Philip Slavin, 'Out of the West: Formation of a Permanent Plague Reservoir in South-Central Germany (1349–1356) and Its Implications', *Past & Present* 252, no. 1 (2021): 3–51 (see also the ensuing debate: Monica H. Green, 'Out of the East (or North or South): A Response to Philip Slavin', *Past & Present* 256, no. 1 (2022): 283–323; Philip Slavin, 'Reply: Out of the West—and Neither East, nor North, or South', *Past & Present* 256, no. 1 (2022): 325–60); Slavin, 'The Birth of the Black Death'; Rachel Singer, 'Contextualising Edix Hill: First-Pandemic Plague and Britain', *English Historical Review* 139, no. 600 (2024): 992–1026.

[7]Boris Schmid et al., 'Climate-Driven Introduction of the Black Death and Successive Plague Reintroductions into Europe', *Proceedings of the National Academy of Sciences* 112, no. 10 (2015): 3020–25; Barbara Bramanti et al., 'Assessing the Origins of the European Plagues Following the Black Death: A Synthesis of Genomic, Historical, and Ecological Information', *Proceedings of the National Academy of Sciences* 118, no. 36 (2021): e2101940118.

[8]N.P. Mironov, 'The Past Existence of Natural Foci of Plague in the Steppes of Southern Europe', *Journal of Microbiology, Epidemiology, and Immunobiology* 29, no. 8 (1958): 1193–8; V.N. Fyodorov, 'The Question of the Existence of Natural Foci of Plague in Europe in the Past', *Journal of Hygiene, Epidemiology, Microbiology, and Immunology* 4 (1960): 135–41; N.I. Kalabukhov, 'The Structures and Changes of the Natural Foci of Plague', *Journal of Microbiology, Epidemiology, and Immunobiology* 32, no. 5 (1961): 877–83; M.V. Suponitskii and N.S. Suponitskaya, *Ocherki Istorii Chumy* (Vuzovskaya Kniga, 2006), 87; John T. Alexander, *Bubonic Plague in Early Modern Russia: Public Health and Urban Disaster* (Johns Hopkins University Press, 1980), 13; Timur F. Khaydarov, *Epokha 'Chernoi Smerti' v Zolotoi Orde i Prilegayushchikh Regionakh, Konets XIII–Pervaya Polovina XV vv* (Institut Istorii im. Sh. Mardzhani, 2018), 84, 162, 214.

[9]Green, 'The Four Black Deaths', 1610 and 1620; Fancy and Green, 'Plague and the Fall of Baghdad', 175–6.

[10]Daniel Panzac, *La Peste dans l'empire Ottoman, 1700–1850* (Peeters, 1985), 116.

[11]Ibid., 109–16.

[12]Peter Topping, *The Minnesota Messenia Expedition. Reconstructing a Bronze Age Regional Environment* (University of Minnesota Press, 1972), 73.

[13]Nükhet Varlık, 'Rethinking the History of Plague in the Time of Covid-19', *Centaurus* 62, no. 2 (2020), 285–93, 288.

the Swiss Alps,[14] and England[15]—have been proposed. Recent textual and aDNA evidence has shown that the pestis secunda wave (1356–66) originated in a south-central German reservoir,[16] with additional plague foci likely in southern Germany.[17]

Another major historiographic issue concerns the role of maritime and inland trade networks in the transregional spread of plague. The trade–plague nexus was already proposed in the early nineteenth century by figures such as Schnurrer, Hecker, Gasquet, and Nohl—who (incorrectly) posited a Chinese origin of the Black Death and (correctly) argued for Central Asian routes of plague transmission.[18] However, it is only in recent scholarship that trade has been subjected to sustained analytical scrutiny, demonstrating that plague transmission along Eurasian networks was shaped above all by political-military conditions, economic and commercial institutions, and eco-climatic factors.[19]

A further contested issue in plague history concerns the impact of eco-climatic factors on plague activity. This is particularly important given that plague is fundamentally an enzootic disease of wild rodents, crossing into human populations only under specific conditions (as at least 60 per cent of all known and 75 per cent of new emerging infectious diseases).[20] Although the role of ecology and climate has long been acknowledged,[21] it has often remained abstract or conjectural, largely because the spatio-temporal contours and geographic origins of successive plague waves have only recently begun to be clarified. Without establishing where and when plague activity emerged, the influence of environmental forces cannot be properly assessed.

This article integrates the southern Red Sea region into the global history of the Second Plague Pandemic by examining plague's (re-)introduction in the 1430s—most likely from Egypt (where it

[14]Ann G. Carmichael, 'Plague Persistence in Western Europe: A Hypothesis', *Medieval Globe* 1, no. 1 (2014): 157–92.

[15]Robert S. Gottfried, *Epidemic Disease in Fifteenth Century England: The Medical Response and the Demographic Consequences* (Rutgers University Press, 1978), 126–38; Jim L. Bolton, 'Looking for *Yersinia pestis*: Scientists, Historians and the Black Death', in *The Fifteenth Century XII: Society in an Age of Plague*, ed. Linda Clark and Carole Rawcliffe (Boydell & Brewer, 2011), 33–4; Kathleen Pribyl, *Farming, Famine and Plague: The Impact of Climate in Late Medieval England* (Springer, 2017), 213–23; Paul Slack, *The Impact of Plague in Tudor and Stuart England* (Routledge, 1985), 13–14, 68, 133, 147, 238.

[16]Slavin, 'Out of the West'; Green, 'Out of the East'; Slavin, 'Reply: Out of the West'; Cody Parker et al., '14th Century *Yersinia pestis* Genomes Support Emergence of Pestis Secunda within Europe', *PLoS Pathogens* 19, no. 7 (2023): e1011404.

[17]Marcel Keller et al., 'A Refined Phylochronology of the Second Plague Pandemic in Western Eurasia', *BioRxiv [Preprint]* (2023), accessed 30 April 2026, https://doi.org/10.1101/2023.07.18.549544.

[18]Friedrich Schnurrer, *Chronik der Seuchen in Verbindung mit den Gleichzeitigen Vorgängen* (Christian Friedrich Osiander, 1823); Justus Friedrich Carl Hecker, *Der Schwarze Tod im Vierzehnten Jahrhundert* (Herbig, 1832); Francis Aidan Gasquet, *The Great Pestilence (A.D. 1348–9), Now Commonly Known as the Black Death* (Simpkin Marshall, 1893); Johannes Nohl, *Der Schwarze Tod: Eine Chronik der Pest 1348–1720* (G. Kniepenheuer, 1924).

[19]Bruce M.S. Campbell, *The Great Transition: Climate, Disease and Society in the Late-Medieval World* (Cambridge University Press, 2016), 241–52 and 267–77; Hannah Barker, 'Laying the Corpses to Rest: Grain, Embargoes, and *Yersinia Pestis* in the Black Sea, 1346–48', *Speculum* 96, no. 1 (2021): 97–126; Slavin, 'Out of the West', 33–41; Philip Slavin, 'From the Tian Shan to Crimea: Dynamics of Plague Spread During the Early Stages of the Black Death, 1338–46', *Journal of the Economic and Social History of the Orient* 66, no. 5–6 (2023), 513–627; Martin Bauch and Ulf Büntgen. 'Climate-Driven Changes in Mediterranean Grain Trade Mitigated Famine but Introduced the Black Death to Medieval Europe', *Nature Communications Earth & Environment* 6 (2025): Article no. 986.

[20]World Health Organization, 'Zoonotic Disease: Emerging Public Health Threats in the Region', accessed 30 April 2026, https://www.emro.who.int/about-who/rc61/zoonotic-diseases.html.

[21]K.D. Pang, 'Fourteenth-Century Climatic and Hydrologic Extremes: Possible Causes and Consequences', *Eos, Transactions American Geophysical Union* 71 (1991): 171; Kyrre Kausrud et al., 'Modeling the Epidemiological History of Plague in Central Asia: Palaeoclimatic Forcing on a Disease System over the Past Millennium', *BMC Biology* 8 (2010): Article no. 112; Schmid et al., 'Climate-Driven Introduction'; Campbell, *The Great Transition*, 228–30; Pribyl, *Farming, Famine and* Plague, 213–23; Monica H. Green, 'Climate and Disease in Medieval Eurasia', in David Ludden, ed., *Oxford Research Encyclopedia of Asian History* (Oxford University Press, 2018); Henry Fell et al., 'Volcanism and Global Plague Pandemics: Towards an Interdisciplinary Synthesis', *Journal of Historical Geography* 70 (2020): 36–46; J. Lutterbacher et al., 'Past Pandemics and Climate Variability across the Mediterranean', *Euro-Mediterranean Journal for Environmental Integration* 5, no. 46 (2020), accessed 30 April 2026, https://doi.org/10.1007/s41207-020-00197-5; Slavin, 'The Birth of the Black Death', 314–20; Bauch and Büntgen, 'Climate-Driven Changes'.

had been rife in 1429–30)—and its subsequent focalisation there.[22] In doing so, it contributes to broader debates on plague origins, trade-mediated transmission, and eco-climatic drivers, moving beyond Eurocentric and single-disciplinary perspectives. It addresses three core questions: when and how plague entered the region; the role of long-distance trade in its spread; and the environmental conditions that enabled the formation of local reservoirs.

Recent historiography has stressed the role of transregional trade—both long- and medium-distance, inland and maritime—in shaping the spread of plague.[23] In the Red Sea region, the structures and infrastructures of international trade created favourable conditions for the relatively direct and unimpeded movement of the disease from Cairo to its eventual focalisation in the highlands of Ethiopia and Yemen. The early fifteenth century was a comparatively stable period, during which long-distance trade and travel between Mamluk Egypt, Ethiopia, and Yemen were particularly buoyant, as attested by both textual and archaeological evidence. People and goods circulated regularly along well-established maritime and overland routes, linking commercial hubs, educational institutions, and religious centres—categories that often overlapped.[24] Among the commodities traded, grains and textiles, temporarily stored in sacks, could function as 'very short-term' plague reservoirs, transporting *Yersinia pestis* via infected ectoparasites (and occasionally commensal rodents). In Yemen, lowland Ethiopia, and along the Somali coast, merchandise was transported predominantly on camelback, a practice that may have further facilitated the interregional spread of plague, not only because camels could traverse vast distances, but also because they themselves could serve as potential plague hosts.[25]

Within Ethiopia and Yemen proper, local economic structures—both agricultural and commercial—also appear to have played an important role in facilitating plague spread, during both its initial introduction in the 1430s and subsequent recurrent waves from the fifteenth to the seventeenth centuries (and, in the case of Yemen, possibly beyond). Many villages were situated along transregional trade routes, while agricultural activities—ploughing, sowing, harvesting, threshing, transporting, and storing crops—brought rodents into ever closer proximity with human settlements.[26] The storage, movement, and marketing of crops across local and regional markets would, in turn, have promoted the spread of plague at both regional and transregional scales.

Thus, at the epidemiological level, the article delineates regional, short-term 'transient' and medium-term reservoirs in Ethiopia and Yemen, characterised by distinct eco-climatic and zoological configurations. As such, this case study offers a valuable point of comparison with plague reservoirs identified in other regions of the world and across different chronological contexts. At the historical level, it highlights the analytical gains of focusing on both interregional and intraregional networks, and serves as an example of scholarship that moves across linguistic, religious, and national boundaries.

Yemen and Ethiopia have not received much scholarly attention in the context of plague history. Apart from Richard Pankhurst's classical article and monograph on famine and epidemics in pre-modern Ethiopia, and Marie-Laure Derat's article on epidemic outbreaks in the early

[22]I opt for the term 'reintroduction' rather than 'introduction', because the First Pandemic appears to have impacted some Red Sea regions (in addition to Egypt), including Himyarite Yemen, as indicated in a 548 CE inscription from the Marib Dam and in John of Ephesus's *Ecclesiastical History*. See, Christian Darles, Christian Julien Robin, and Jérémie Schiettecatte, 'Contribution à une meilleure compréhension de l'histoire de la digue de Maʾrib au Yémen', in *Regards croisés d'Orient et d'Occident*, ed. François Baratte, Christian Julien Robin, and Elsa Rocca (Éditions de Boccard, 2013), 9–70; Frantz Grenet, and Kyle Harper, 'Was the Hephthalite Empire in Central Asia the Cradle of the Justinianic Plague?', *Journal of Interdisciplinary History* 56, no. 1 (2025): 20–4.

[23]Barker, 'Laying the Corpses to Rest'; Slavin, 'From the Tian Shan to Crimea'.

[24]Tamon Baba, 'Notes on Migration between Yemen and Northeast Africa during the 13–15th Centuries', *Chroniques du manuscrit au Yémen*, Special Issue 1 (2017–2018): 69–86, 78.

[25]Slavin, 'From Tian Shan to Crimea', 562–3.

[26]Robert T.O. Wilson, *Gazetteer of Historical North-West Yemen in the Islamic Period to 1650* (G. Olms, 1989).

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

Solomonic period, there are no studies on the subject.[27] As far as Yemen goes, a recent article by Philip Slavin analysed the ecology of a local highland reservoir, possibly situated in the Ibb region, active in the period *c*.1436–1558.[28] Otherwise, plague in Yemen has been addressed only in passing, typically through brief mentions of the 1435–37 outbreak in studies concerned with the socio-economic history of the Rasūlid period (1229–1454).[29]

To address the gap, the article makes use of both written sources from Egypt, Yemen, and Ethiopia and non-textual data. The first category includes Mamluk- and Rasūlid-era Arabic chronicles, some Gəʿəz hagiography, Rasūlid almanacs, and agricultural treatises, as well as Arabic, Italian, and Portuguese travelogues. The second category, complementing the first one, consists of archaeological findings at both Christian and Muslim sites of Ethiopia and palaeoclimatic evidence (sediment record from Lake Hayq and the stalagmite record from Hoti Cave in Oman). In theory, these sources are to be supplemented with palaeogenetic data, but so far no ancient DNA has yet been recovered from any historical context in the Red Sea region. The closest available proxy is a single isolate from a 1969 outbreak in the awlān region of Yemen—most likely associated with the ʿAsīr reservoir—which could not be incorporated into the study, but which has been discussed in the supplementary information material (SI), details of which are given at the end of this article, and elsewhere.[30] The SI together with the SI Tables, contain detailed information plague outbreaks in southern Red Sea region, as well as rodents likely maintaining plague reservoirs of Ethiopia and Yemen.

Based on the available evidence, this article reconstructs the main contours of plague arrival in the southern Red Sea region in the 1430s and argues that its introduction was followed by the establishment of a medium-term reservoir responsible for recurrent epidemic waves. To explain this process, it analyses environmental and institutional factors as exogenous and endogenous enablers operating in tandem and facilitating the persistence and spread of plague in the region over the following 150–200 years.

Plague in the southern Red Sea region: Some basic concepts

To avoid any potential disambiguation, it is necessary to define the 'southern Red Sea' as a region covering Ethiopia–Eritrea, the Somali coast, and Yemen. In the present article, 'Ethiopia' or 'Abyssinia' (used interchangeably) is defined as an area overlapping roughly with today's Ethiopia, Eritrea, as well as parts of neighbouring countries; it consisted of the Christian Abyssinian empire ruled by the Solomonic dynasty since 1270, the Muslim sultanate of Adal, and a series of smaller polities including Dankali, Ajuran, various Oromo chiefdoms, and the kingdom of Kaffa.

Before turning to plague in the southern Red Sea region, a few key terms require definition. Plague is a zoonotic infectious disease caused by *Yersinia pestis*, maintained primarily in wild rodent reservoirs and only occasionally transmitted to humans. In nature, the bacterium persists

[27]Richard Pankhurst, 'The History of Famine and Pestilence in Ethiopia Prior to the Founding of Gondär', *Journal of Ethiopian Studies* 10, no. 2 (1972): 37–64; Richard Pankhurst, *The History of Famine and Epidemics in Ethiopia Prior to the Twentieth Century* (Relief and Rehabilitation Commission, 1985); Marie-Laure Derat, 'Du Lexique aux talismans. Occurrences de la peste dans la corne de l'Afrique du XIIIe au XVe siècle', *Afriques* 9 (2018), accessed 30 April 2026, https://doi.org/10.4000/afriques.2090.

[28]Slavin, 'Jinn in the Mountains'.

[29]Barbara Eileen Croken, 'Zabîd under the Rasûlids of Yemen, 626–858 AH/1229–1454 AD' (PhD diss., Harvard University,1990), 199–203; Nayef Abdullah al-Shamrookh, *The Commerce and Trade of the Rasulids in the Yemen, 630–858/1231–1454* (Unnamed publisher, 1996), 122, 125; Éric Vallet, *L'Arabie marchande. État et commerce sous les sultans Rasûlides du Yémen (626–858/1229–1454)* (Publications de la Sorbonne, 2010), 670–2. For the Red Sea as a hypothetical gateway of plague to Egypt at the onset of the Justinianic Plague in 541, see Costas Tsiamis, Effie Poulakou-Rebelakou, and Eleni Petridou, 'The Red Sea and the Port of Clysma: A Possible Gate of Justinian's Plague', *Gesnerus* 66, no. 2 (2009): 209–17.

[30]On the 1969 outbreak in the region, see M. Bahmanyar, 'Human Plague Episode in the District of Khawlan, Yemen', *American Journal of Tropical Medicine and Hygiene* 20, no. 5 (1972): 123–8; the genome has been sequenced and described in Mas Fiol et al., 'Global Evolutionary Patterns', and discussed in Slavin, 'Jinn in the Mountains', 90–1.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

in ecological foci—combinations of biotic and abiotic factors that enable long-term survival. Plague most commonly appears in bubonic form, but may also be septicaemic, pneumonic, or, rarely, gastroenteritic. *Yersinia pestis* is over 6,000 years old and has been identified in late Neolithic and Bronze Age aDNA across Eurasia.[31] In the Red Sea region, plague is attested during the First (*c.*541–770), Second (*c.*1338–1844), and Third (*c.*1894–1950) Pandemics; its arrival in the Red Sea in the 1430s thus should be regarded as its 'reintroduction', rather than 'introduction'.[32]

Plague terminology in the southern Red Sea region is often imprecise. In Arabic sources, the only term that reliably denotes plague is *ṭāʿūn*, though authors sometimes used broader terms such as *wabāʾ* ('epidemic' or 'pestilence'), and more rarely *mawt* ('mortality') or *fanāʾ* ('destruction'). This reflects the well-known maxim—attributed to Yaḥyā ibn Sharaf al-Nawawī (*c.*1230–77) (who himself drew his knowledge on plague from historical sources on the First Plague Pandemic, as there were no plague outbreaks in the Middle East or elsewhere in Western Eurasia in his own day)[33]—that 'every *ṭāʿūn* is a *wabāʾ*, but not every *wabāʾ* is a *ṭāʿūn*', a distinction widely cited by later Mamluk scholars.[34] Late Rasūlid sources mirror Mamluk chronicles from Syria and Egypt in showing that epidemic terminology was approximate rather than precise: while *ṭāʿūn* in the context of the Second Pandemic clearly denotes plague, the same disease could also be described using more generic terms, especially *wabāʾ*, and occasionally *mawt* or *fanāʾ*—as shown below. In Gəʿəz sources, the situation is even less straightforward, with most commonly used terms in plague contexts being *bedbed* (ብድብድ, meaning 'pestilence' or 'epidemic' and paralleling the Arabic *wabāʾ*) or *mota bedbed* (ሞተ፡ ብድብድ, meaning 'pestilential death').[35]

Plague in Ethiopia, *c.*1431–35

Around 1430, Niccolò de' Conti, a Venetian merchant visiting the port of Berbera on the Somali coast, claimed that the Abyssinians enjoyed long lives and rapid population growth because they knew no pestilence.[36] He was mistaken. Contemporary Mamluk and Ethiopian sources indicate that an epidemic—apparently plague—was raging in Abyssinia at the time. One Gəʿəz account reports a plague outbreak around 1432 at the monastery of Dabra Demāh in southern Eritrea, which was subsequently abandoned for 175 years.[37] Al-Maqrīzī likewise notes that plague was widespread in *bilād al-Ḥabasha* before reaching Berbera and Aden, killing many, including the Christian king, probably Sārwe ʾIyāsus (reigning November 1433–June 1434), followed by the

[31]Aida Andrades Valtueña et al., 'Stone Age *Yersinia Pestis* Genomes Shed Light on the Early Evolution, Diversity, and Ecology of Plague', *Proceedings of the National Academy of Sciences of the United States of America* 119, no. 17 (2022): e2116722119; Ruairidh Macleod et al., 'Lethal Plague Outbreaks in Lake Baikal Hunter-Gatherers 5500 Years Ago', *bioRxiv [Preprint]* (2024), accessed 30 April 2026, https://doi.org/10.1101/2024.11.13.623490.

[32]See note 22 above.

[33]All recent attempts to 'identify' plague in thirteenth- and early fourteenth-century West Eurasia are based on assumptions and misinterpretation of historical sources that are liable to scholarly criticism. See Hymes, 'Epilogue'; Green, 'The Four Black Deaths'; Fancy and Green, 'Plague and the Fall of Baghdad'; Green, 'Out of the East'; Green and Fancy, 'Plague History'. For replies and criticism of this approach, see Slavin, 'Reply: Out of the West'; Brack, Biran, and Amitai, 'Plague and the Mongol Conquest'. For the usage of *ṭāʿūn* in thirteenth-century texts (theoretical and historical), see Lawrence I. Conrad, 'Tāʿūn and Wabāʾ Conceptions of Plague and Pestilence in Early Islam', *Journal of the Economic and Social History of the Orient* 25, no. 3 (1982): 268–307, 291; Fancy and Green, 'Plague and the Fall of Baghdad'; Brack, Biran, and Amitai, 'Plague and the Mongol Conquest', 394.

[34]Dols, *The Black Death in the Middle East*, 315–19; Conrad, 'Tāʿūn and Wabāʾ', 291.

[35]Derat, 'Du Lexique aux talismans'.

[36]Richard Henry Major, ed., *India in the Fifteenth Century: Being a Collection of Narratives of Voyages to India, in the Century Preceding the Portuguese Discovery of the Cape of Good Hope* (The Hakluyt Society, 1857), 36–7; Poggio Bracciolini, *De l'Inde: Les voyages en Asie de Niccolò de' Conti*, ed. Michèle Guéret-Laferté (Brepols, 2004), 172.

[37]Carlo Conti Rossini, 'Il Gadla Filpos e il Gadla Yohannes di Dabra Bizan', *Memorie della Reale Accademia dei Lincei* 8 (1900): 61–170, 157.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

brief reign of ʿAmda ʾIyāsus. Plague also affected the sultanate of Adal in 839 AH (1435–36 CE), causing deaths among both Christian and Muslim populations.[38]

Juxtaposing the chronology of the two accounts together, we may deduce that the plague wave commenced in the Solomonic empire, before spreading eastwards into the Adal sultanate and crossing from Berbera to Aden. Although there are references to 'pestilence' (*bedbed* ብድብድ) or 'pestilential death' (*mota bedbed* ሞተ፡ ብድብድ) in the later fourteenth and early fifteenth centuries in Gəʿəz sources (including references to epidemics *c.*1370, *c.*1403, and *c.*1420), we do not know if these were indeed plague outbreaks.[39] Even if they were, we do not know if plague had focalised in Abyssinia before the early 1430s wave, or if these outbreaks (both the 1430s one and the previous ones) were imported from outside, with Mamluk Egypt being the most obvious candidate.

One possibility—assuming an external introduction—is that the Abyssinian outbreak of *c.*1432–35 was linked to the same plague wave that devastated Mamluk Egypt in 1429–30. Mamluk sources trace this wave from the Volga (*bilād as-Sarāy*) and Pontic–Caspian regions (*dasht-i Qipchāq*) around 1427–29, through Anatolia and Syria (*bilād al-Shām*), reaching Ramla, Jerusalem, and Gaza in spring 1429, the Egyptian Delta in late 1429, Cairo and Alexandria in early 1430, and Upper Egypt by April.[40] This spatio-temporal pattern suggests a southward trajectory. Although evidence for plague south of Upper Egypt is lacking, it may have continued via the Nile and Eastern Desert caravan routes into Sudan and the Solomonic empire. While Ottoman-era sources suggest plague rarely spread beyond the Second Cataract, exceptional environmental and demographic conditions could permit such movement, as seen during the 1694–97 famine, when plague appears to have reached the Great Lakes region of East Africa.[41]

Several fifteenth- and early sixteenth-century Venetian travel manuals estimate the uninterrupted travel time between Cairo and ʾAksum at 84 to 89 days, and that between Cairo and Barārā (a major commercial hub, close to Addis Ababa) at 163 to 168 days.[42] Hence, it is possible that the plague was imported into Abyssinia by late 1430 or 1431, and, by the time it attacked Dabra Demāh in or about 1432, it was already spreading in the empire.

Plague in Rasūlid Yemen, 1433/4–37/8

In 749 AH (April 1348–March 1349), plague reached north-western Arabia, including Mecca, most likely during the *ḥajj*, from Egypt.[43] The 'great mortality' (*mawt ʿaẓīm*) reported in Yemen and Taʿizz in 751 AH (1351), which peaked in June, may also have been linked to the Black Death.[44] Thereafter, and until the 1430s, there is no textual evidence for recurrent plague in Yemen. While silence does not prove absence, the richness of Rasūlid and Mamluk chronicles—particularly their detailed recording of crises—lends weight to this argument from silence.

The Rasūlid chronicler Ibn al-Daibaʿ records a 'severe mortality' (*mawt ʿaẓīm*) in the Zabīd region in 837 AH (1433–34), killing around thirty people a day and decimating households.[45] As he provides no clinical details and uses the vague term *mawt*, it is uncertain whether this was plague

[38]R. al-Badrī and A.M. Qāsim, eds., *Rasâil al-Maqrīzī* (Dār al-Ḥadīth, 1998), 233, 244.

[39]Derat, 'Du Lexique aux talismans'.

[40]Al-Maqrīzī, *Kitāb al-sulūk li-maʿrifat duwal al-mulūk*, ed. S.ʿA.F. ʿĀshūr, vol. 4.2 (Matba'at Dar al-Kutub, 1973), 821–9.

[41]Mas Fiol et al., 'Global Evolutionary Patterns'.

[42]O.G.S. Crawford, ed., *Ethiopian Itineraries circa 1400–1524* (Cambridge University Press for the Hakluyt Society, 1958), *passim*.

[43]Dols, *Black Death in the Middle East*, 63.

[44]ʿAli b. Ḥasan Khazrajī, *The Pearl Strings: A History of the Resuliyy Dynasty of Yemen*, trans. J.W. Redhouse, vol. 2 (Brill, 1907), 74.

[45]Croken, 'Zabîd under the Rasûlids', 200; Ibn al-Daybaʿ al-Shībānī, *Al-Faḍl al-Mazīd ʿalā Bughyat al-Mustafīd fī Akhbār madīnat Zabīd*, ed. Joseph Chelhod (Markaz al-Dirāsāt wa ʾl-Buḥūth al-Yamānī, 1983), 111; Carolus Theodorus Johannsen, ed., *Historia Iemanae, E Codice Manuscripto Arabico, Cui Titulus Est Būgyat al-Mustafīd fī Akhbār Madīnat Zabīd Concinnata* (Ex Officina Baadeni, 1828), 178.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

or another epidemic, especially since the outbreak appears local rather than transregional. However, as *ṭāʿūn* ('plague'), *wabāʾ* ('pestilence' or 'epidemic') and *mawt* ('mortality') were used interchangeably by contemporaries to describe the plague of 1435–37—and since that later outbreak is not attested in Zabīd—the 1433–34 episode may represent an earlier phase of plague's introduction into Yemen. Given evidence for plague in Abyssinia by *c.*1432, this outbreak may have belonged to the same wave, possibly entering via the Dahlak Archipelago–Zabīd route. Al-Maqrīzī also notes an epidemic (*wabāʾ*) in Mecca in spring 837 AH/1434 CE, though whether the Zabīd and Meccan outbreaks were connected remains uncertain.

An anonymous Rasūlid chronicle reports that severe mortality (*mawt ʿaẓīm*), elsewhere identified as 'plague' (*ṭāʿūn*), reached Aden in early 839 AH (July–August 1435) before spreading further.[46] By contrast, al-Maqrīzī and Ibn Ḥajar Asqalānī (paraphrasing the former) date its arrival slightly later, in Rabīʿ II or Jumādā I 839 AH (late October–late December 1435), describing a severe epidemic (*wabāʾ shadīd*) that originated in Abyssinia, passed through Berbera, and spread south into the Horn of Africa and north to Aden.[47] While in Mecca, preparing for the 839 AH *ḥajj* (June–July 1436), al-Maqrīzī received reports that the outbreak in Aden killed about 7,800 people and as much as three-quarters of the population, with some 300 households entirely wiped out.[48] Ibn al-Daybaʿ corroborates the Berbera–Aden route and reports peak daily deaths of 500–1,000, amounting to some 10,000 deaths in Aden and surrounding cities.[49]

Once established in Aden, the pandemic soon spread north into Rasūlid territories. Al-Maqrīzī's informants report that the epidemic lasted four months in Aden, subsiding by late Shaʿbān 839 AH (March 1436), before moving northward.[50] Significantly, this spread coincided with Aden's annual international fair, which drew merchants from across Arabia and beyond, trading various kinds of merchandise, including enslaved people, livestock, textiles, glassware, and metalware (discussed below).[51] As elsewhere, such fairs could facilitate epidemic transmission, much as the Frankfurt am Main fair may have contributed to the initial spread of the *pestis secunda* in 1356–66.[52]

Drawing on al-Maqrīzī (and Asqalānī, relying on the former), Rasūlid chronicles, Yemeni biographical sources, and two Judeo-Arabic treatises by Hoter ben Shlomo and Zechariah ha-Rofeh, it is possible to reconstruct the spatio-temporal spread of plague in Yemen. From Aden, the disease moved east to Abyan and north to Lahij,[53] reaching Mikhlāf al-Maʿāfir and Taʿizz in Ramaḍān 839 AH (spring 1436), followed by Jiblah and Ibb.[54] At Taʿizz, daily burials reportedly reached 150, with thousands dying over a few days and villages becoming depopulated.[55] In major

[46]Hikoichi Yajima, ed., *A Chronicle of the Rasulid Dynasty of Yemen: From the Unique Ms. Paris No. Arabe 4609* (Institute for the Study of Languages and Cultures of Asia and Africa, 1976), 183–4; ʿAbd Allāh al-Ḥibshī, ed., *Taʿrīkh al-dawla al-Rasūliyya* (Dār al-Jīl, 1984), 302–3. By contrast, Ibn al-Daybaʿ al-Shībānī, referred to the same epidemic as *ṭāʿūn*: ʿAbd al-Raḥmān ibn ʿAlī Ibn Al-Daybaʿ, Kitāb qurrat al-ʿuyūn bi-akhbār al-Yaman al-maymūn, ed. ʿAlī al-Akwāʿ, vol. 2 (Al-Maṭbaʿah al-Yamanīyah, 1977), 123.

[47]Al-Maqrīzī, *Kitāb al-Sulūk*, 4.2:974; Ibn Ḥajar Asqalānī, *Inbā al-Ghumr bi-anbā al-ʿumr*, ed. Ḥ. Ḥabashī, vol. 3 (Majlis al-Aʿlā liʾl-Shuʾūn al-Islāmiyyah, 1994), 347.

[48]Al-Maqrīzī, *Kitāb al-Sulūk*, 4.2:974.

[49]Ibn al-Daybaʿ, *Kitāb qurrat al-ʿuyūn*, 123; Croken, 'Zabîd under the Rasûlids', 200.

[50]Al-Maqrīzī, *Kitāb al-Sulūk*, 4.2:974, 976, 1013 and 4.3:1114.

[51]Daniel Martin Varisco, trans., *Medieval Agriculture and Islamic Science: The Almanac of a Yemeni Sultan* (University of Washington Press, 1994), 218.

[52]Slavin, 'Out of the West', 36–7.

[53]Yaḥyā b. al-Ḥusayn, *Ghāyat al-amānī fī akhbār al-qutr al-Yamanī*, ed. Sayyid ʿAbd al-Fattāḥ ʿAshūr, vol. 2 (Dār al-Kātib al-ʿArabī, 1968), 572.

[54]Yajima, *Chronicle of the Rasulid Dynasty*, 183–4; Al-Ḥibshī, *Taʿrīkh al-dawla al-Rasūliyya*, 302–3; Al-Maqrīzī, *Kitāb al-Sulūk*, 4.2:974, 976, 1013 and 4.3:1114; Ibn Ḥajar Asqalānī, *Inbā al-Ghumr*, 347; D.R. Blumenthal, ed., *The Philosophic Questions and Answers of Ḥōṭer Ben Shelōmō* (Brill, 1981), 389–90; Al-Khaḍrajī, *Al-ʿuqūd al-lulūiyya fī tārīkh al-Dawla al-Rasūliyya*, ed. ʿAbd Allāh Muḥammad al-Ḥibshī (Maktabat al-Irshād, 2009), 302–3; ʿAbd al-Wāsiʿ b. Yaḥyā al-Wāsiʿī, *Tārīkh al-Yaman* (Maṭbaʿat Ḥijāzī, 1947), 44–5; Al-Ḥusayn, *Ghāyat al-amānī*, 2:572.

[55]Al-Maqrīzī, *Kitāb al-Sulūk*, 4.2:976.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

towns the epidemic persisted for up to two years, though it lasted only forty days in smaller settlements.[56] The plague then spread to Baʿdān, Ẓafār, Dhamār, al-Ḥaql, Sanaa (by mid-1436), and further to Ḥajja and Ṣaʿda,[57] with an alleged death toll of 80,000 in Sanaa, Ṣaʿda, and their hinterlands.[58] It finally reached the highlands of Jabal Milḥān and Jabal Ḥarāz, subsiding in 841 AH (1437–38).[59]

Hoter ben Shlomo notes that plague persisted in some cities for up to two years and that many inhabitants fled north and were never heard from again, possibly indicating further spread along the highlands into what is now south-western Saudi Arabia.[60] Al-Maqrīzī also reports an epidemic (*wabāʾ*) in Mecca in spring 1434, though its connection to the 1433–34 outbreak in Zabīd remains uncertain.[61] He further records a 'severe epidemic' (*wabāʾ ʿaẓīm*) in Ṭāʾif, Khulais, and other Hejazi localities in early 1440, which devastated entire households.[62] Whether these outbreaks were linked to those in northern Yemen in the late 1430s cannot, however, be established.

In Sanaa, the epidemic abated on Yom Kippur 1436 (2 October).[63] The absence of any reference to plague in Zabīd during 1435–37 supports the view that the city had already experienced an earlier outbreak in 1433–34, possibly linked to the same wave and introduced via Dahlak. Similarly, the silence of Hadhramauti and Omani sources suggests that the epidemic did not spread further east.[64]

The Mamluk–Ethiopian trade and travel system, *c*.1430

As the reconstruction in the previous sections has shown, Egypt served the 'proximate' origin of plague introduction into Abyssinia, while Abyssinia and the Somali coast served as 'proximate' origins of plague spread into Yemen. To understand the ways in which plague made it first to Abyssinia and then to Yemen, it is essential to appreciate the structures of trade and travel between all these regions. Let us consider the Mamluk–Ethiopian channels of exchange first.

Mamluk–Ethiopian trade remains understudied, but textual and archaeological evidence allows a partial reconstruction of its main routes. From Cairo, traders travelled south along the Nile to Qus, crossed east to the Red Sea port of Quseer, and either continued by sea to Suakin, or proceeded on camelback via Aswan and Aydhab. From Suakin, routes led into Medri Bahri in the Eritrean Highlands, then onward to ʾAksum or to Kalghur near ʿAlīyu ʾAmba and Barārā near present-day Addis Ababa, with pack animals changing from camels to mules around Dese — because of frequent inundations, omnipresent mud, but more importantly, because of dangerous terrain known as Aheyyā Faǧǧ (the 'Donkeys' Death'), marked by narrow passes at about 2,500 metres altitude or higher.[65] Venetian travel manuals of the fifteenth and early sixteenth

[56]Blumenthal, *Philosophic Questions and Answers*, 389–90; Rabbi Zekharyah Ben Shelomo Ha-Rofe, *Midrash Ha-Ḥefetz*, ed. Meir Havazelet, vol. 1 (Mossad Harav Kook, 1990), 310–1.

[57]Yajima, *Chronicle of the Rasulid Dynasty*, 183–4; Al-Ḥibshī, *Taʿrīkh al-dawla al-Rasūliyya*, 302–3; Al-Maqrīzī, *Kitāb al-Sulūk*, 4.2:974, 976, 1013 and 4.3:1114; Ibn Ḥajar Asqalānī, *Inbā al-Ghumr*, 347; Blumenthal, *Philosophic Questions and Answers*, 389–90; Al-Khaḍrajī, *Al-ʿuqūd al-lulūiyya*, 302–3; Al-Wāsiʿī, *Tārīkh al-Yaman*, 44–5; Al-Shawkānī, *Al-Badr al-Ṭālīʿ bi-Maḥāsin man baʿd al-qarn al-sābi*, vol. 1 (Dār al-kitāb al-islāmī, 1929), 58; Al-Khaḍrajī, *Al-ʿuqūd al-lulūiyya*, 302–3; Al-Ḥusayn, *Ghāyat al-amānī*, 2:572.

[58]Al-Maqrīzī, *Kitāb al-Sulūk*, 4.2:1013.

[59]Ibn al-Ahdal, *Tuḥfat al-Zaman*, ed. ʿAbd Allāh Muḥammad al-Ḥibshī, vol. 2 (Al-Majmaʿ al-Thaqāfī, 2004), 536.

[60]Blumenthal, *Philosophic Questions and Answers*, 389–90.

[61]Al-Maqrīzī, *Kitāb al-Sulūk*, 4.2:914.

[62]Ibid., 1184.

[63]Blumenthal, *Philosophic Questions and Answers*, 389–90.

[64]Aḥmad b. ʿAbdullā Shanbal, *Tārīkh Ḥaḍramawt*, ed. ʿAbd Allah Muḥammad al-Ḥabshī (Maktabat Ṣanʿāʾ al-Athariyya, 1994); E.C. Ross, trans., *Annals of Oman from the Earliest Times to the Year 1728* (G.H. Rouse, Baptist Mission Press, 1874); George Percy Badger, ed., *The History of the Imâms and Seyyids of ʾOmân by Salîl-ibn-Razîk, from AD 661–1856* (The Hakluyt Society, 1871).

[65]Marie-Laure Derat, 'La Passe d'Aheyyā Faǧǧ (XVe–XVIe siècle): itinéraires, places fortes et contrôle du territoire éthiopien', *Études Rurales* 197 (2016): 73–92.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

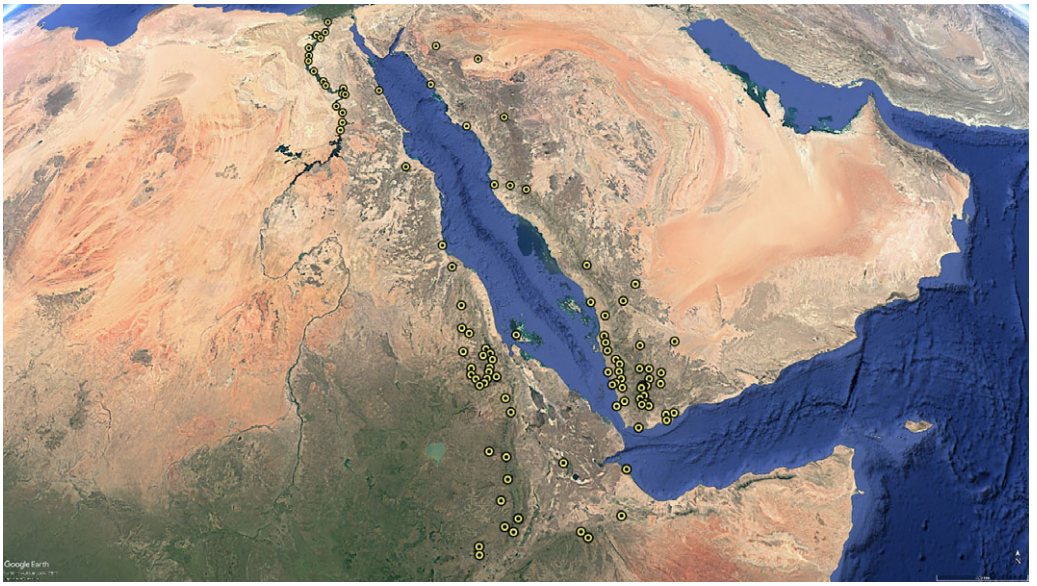

Figure 1. Main Red Sea trade hubs *c.*1430. Éric Vallet, *L'Arabie marchande. État et commerce sous les sultans Rasûlides du Yémen (626–858/1229–1454)* (Publications de la Sorbonne, 2010), 744; O.G.S. Crawford, ed., *Ethiopian Itineraries circa 1400–1524* (Cambridge University Press for the Hakluyt Society, 1958); G. Rex Smith, trans., *A Traveller in Thirteenth-Century Arabia: Ibn al-Mujawir's Tarikh al-Mustabsir* (The Hakluyt Society, 2008), Maps 1 and 2.

centuries—based on Alessandro Zorzi's Ethiopian informants (1519–24)—estimate journeys of 84 to 89 days from Cairo to ʾAksum and 163 to 168 days to Barārā.[66] In addition to major commercial centres—most notably ʾAksum, Lālibalā, Gendebelo (near modern Nora), Harlaa, Barārā, and Kalghur—some two dozen smaller settlements, with their attached churches, functioned as international trade hubs and caravan stopovers (Figures 1–2).

What goods were traded at these sites? Ethiopian traders supplied Egypt-bound merchants, first and foremost, with slaves, eunuchs, ivory, and gold; in addition, marine shells, textiles, cubeba peppers, gums, civet cats (and their musk), agarwood, *wars* plant for yellow dyeing, hides, and leather goods would be exported from local markets. In return, Mamluk merchants would supply local markets primarily with ceramics (including textile and bread stamps), glassware, silverware, silver coins, as well as gold-brocaded and woollen textiles, oil, and balsam.[67] These goods associated with Mamluk trade were unearthed, among other places, at Harlaa, a Muslim town abandoned *c.*1500.[68] At Lālibalā, local churchmen would use Middle Eastern salvers in the fourteenth and fifteenth centuries.[69] At Nora (identified with Gendebelo), and Ambā Gabriel

[66]Crawford, *Ethiopian Itineraries*, *passim*.

[67]Timothy Insoll, 'Archaeological Perspectives on Contacts between Cairo and Eastern Ethiopia in the 12th to 15th Centuries', *Journal of the Economic and Social History of the Orient* 66 (2023): 154–205; Doris Behrens-Abouseif, *Practising Diplomacy in the Mamluk Sultanate* (I.B. Tauris, 2014), 49–52; Verena Krebs, 'Crusading Threats? Ethiopian–Egyptian Relations in the 1440s', in *Croisades en Afrique. Les expéditions occidentales à destination du continent africain, XIIIe–XVIe siècle*, ed. Benjamin Weber (Presses Universitaires du Midi, 2019), 250–1. For Egyptian–Abyssinian trade in preceding centuries, reflected in the Cairo genizah and associated documents (which may still reflect the situation in the Mamluk era), see Elizabeth Lambourn, *Abraham's Luggage: A Social Life of Things in the Medieval Indian Ocean World* (Cambridge University Press, 2018); Shelomo Dov Goitein and Mordechai A. Friedman, *India Traders of the Middle Ages: Documents from the Cairo Geniza* (Brill, 2007), 413 and *passim*.

[68]Insoll, 'Archaeological Perspectives'.

[69]J. Mercier and J. Lepage, *Lalibela: Wonder of Ethiopia* (Paul Holberton, 2012), 317–21.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

Figure 2. Main trade hubs in the Yemen–Somalia–Ethiopia regions, *c.*1430. Éric Vallet, *L'Arabie marchande. État et commerce sous les sultans Rasûlides du Yémen (626–858/1229–1454)* (Publications de la Sorbonne, 2010), 744; O.G.S. Crawford, ed., *Ethiopian Itineraries circa 1400–1524* (Cambridge University Press for the Hakluyt Society, 1958), *passim*; G. Rex Smith, trans., *A Traveller in Thirteenth-Century Arabia: Ibn al-Mujawir's Tarikh al-Mustabsir* (London: The Hakluyt Society, 2008), Maps 1 and 2.

(a Christian site in the Manz region of central Ethiopia, thriving in the fourteenth-sixteenth centuries), Mamluk-era Egyptian beads were unearthed.[70]

Trade was only one form of interconnectivity between the two regions. Travellers included pilgrims (Christian and Muslim), scholars, clerics, and diplomats, with categories often overlapping. Ethiopian and Somali students at al-Azhar in Cairo were housed in the *Zayāliʿa* fraternity, while Christian Abyssinian and Nubian clerics—subject to the Coptic Patriarchate of Alexandria—travelled regularly between Ethiopia and Coptic ecclesiastical institutions in Egypt, as well as Alexandria and Cairo.[71] Some Christian pilgrims continued on to Sinai and Jerusalem, both home to Abyssinian communities in the fifteenth century, while Muslim scholars may have returned from the *ḥajj* via Cairo and Alexandria.[72] Diplomatic exchanges were infrequent but attested, with five known Solomonic embassies to the Mamluk sultanate in the fifteenth century (1412, 1437, 1443, 1453, and 1481).[73]

[70]François-Xavier Fauvelle and Romain Mensan, eds., *Nora, ville islamique de l'Éthiopie médiévale (fin du XIIIe–début du XVIe siècle): les fouilles de 2008* (Centre français des études éthiopiennes, 2024), Section 9.5.1; and Marie-Laure Derat and Anne-Marie Jouquand, eds., *Gabriel, Une église médiévale d'Éthiopie. Interprétations historiques et archéologiques de sites chrétiens autour de Mesḥāla Māryām (Manz, Éthiopie), XVe–XVIIe siècles* (Centre français des études éthiopiennes, 2012), Section 7.

[71]Julien Loiseau, 'Abyssinia at al-Azhar: Muslim Students from the Horn of Africa in Late Medieval Cairo', *Northeast African Studies* 19, no. 1 (2019): 61–84.

[72]Enrico Cerulli, *Etiopi in Palestina. Storia della comunità etiopica di Gerusalemme*, vol. 1 (Libreria dello Stato, 1943), 148 and 151 and *passim*.

[73]Julien Loiseau, 'The Ḥaṭī and the Sultan: Letters and Embassies from Abyssinia to the Mamluk Court', in *Mamluk Cairo, a Crossroad for Embassies: Studies on Diplomacy and Diplomatics*, ed. F. Bauden and M. Dekkiche (Brill, 2019), 638–57.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

The Ethiopian–Yemenite trade and travel system, *c.*1430

The impact of Red Sea trade on plague spread into Egypt at the onset of the Justinianic Plague in 541 has been hypothesised by Tsiamis et al. in 2009.[74] In the Rasūlid era, maritime traffic between Yemenite ports and the Somali coast was a daily activity, facilitated by a network of interconnected commercial hubs (Figures 1 and 2). On the northern coast of the Red Sea, the main ports were Aden and Zabīd, in addition to a series of at least nineteen more minor ports and anchorages.[75] On the southern coast, the three main ports were Zaylaʿ (Saylac in Somali), Berbera, and al-ʿĀra, in addition to a dozen of smaller hubs mentioned by Najm ad-dīn Aḥmad al-Ḥarrānī (*c.*1295), in an undated Rasūlid manual *Nūr al-maʿārif*, and by Aḥmad ibn Mājid (1490).[76] Between the coasts, the Dahlak Archipelago—a major slave-trade entrepôt—served as a coastal stopover linking the northern Solomonic empire with Zabīd.

Southbound Red Sea voyages, aided by the southern wind (*al-azyab*), typically ran from mid-October to late February, though Ibn Mājid extends the season to mid-May.[77] Ibn Baṭṭūṭa crossed from Aden to Zaylaʿ in four days in January 1331.[78] Northbound sailing, assisted by northern winds, usually occurred between March and early October, though favourable conditions could permit two-way crossings within a single season, as Ashraf ʿUmar II's almanac (*c.*1271) indicates.[79] The *Nūr al-maʿārif* manual details Red Sea trade practices, including costs, fees, profits (*c.*30–40 per cent), and commodities.[80] Ethiopian exports to Yemen included gold, ivory, enslaved people, mules, sheep, civet cats, and hides, while Somali ports imported Indian cottons, silk, luxury textiles, and silver from Yemen.[81]

Although most of Rasūlid–Ethiopian trade would be conducted at one of the Somali ports (predominantly, Zaylaʿ and Berbera) directly by Ethiopian or Yemeni merchants, or via Somali intermediaries, some dealings would take place in the Abyssinian interior or in Yemen proper. While some Yemeni merchants lived in Zaylaʿ and al-ʿĀra, it is possible that some resided, on a temporary basis, in Adal sultanate towns, enjoying privileges of their co-religionist patrons.[82] According to Francisco Álvares, sojourning in Abyssinia in 1520–26/7, the town of 'Manadeley' (in the Doba region of today's Ethiopia) was an international trade centre, bringing together merchants from Arabia, Maghreb, India, Anatolia, and Greece.[83] Likewise, some Ethiopian merchants (both Muslim and Christians) would go all the way to Yemen to conduct their business:

[74]Tsiamis, Poulakou-Rebelakou, and Petridou, 'The Red Sea'.

[75]Ghulāfiqa, al-Ahwāb, al-Fāza, al-Buqʿa, al- awiha, al-Makhāʾ, al-Mudabbī, al-Qarīn, al-Ṭamid, al-Ḥudayda, al-Ḥirda, ʿUrgh, Ghābir, al-Ḥādiṭ, al-Luḥayya, al-Shargha, Ḥalī b. Yaʿqūb, al-Mikhlāf al-Sulaymānī and al-Mukhā/Mokha (Vallet, *L'Arabie marchande*, 392–3; Baba, 'Notes on Migration'), 78.

[76]Giovanni Vantini, *Oriental Sources Concerning Nubia* (International Society for Nubian Studies, 1975), 448–9; Muḥammad ʿAbd al-Raīim Jazim, ed., *Nūr al-ma ʿārif fī nuẓum wa-qawānīn waa ʿrāf al-Yaman fī al-ʿahd al-muẓaffarī al-wārif. Lumière de la connaissance: règles, lois et coutumes du Yémen sous la règne du sultan rasoulide al-Muẓaffar*, vol. 1 (Centre Francais d'Archéologie et de Sciences Sociales de Sanaa, 2003), 364; Gerald Randal Tibetts, ed., *Arab Navigation in the Indian Ocean before the Coming of the Portuguese: Being a Translation of Kitāb al-fawāʾid fī uṣūl al-baḥr waʾl-qawāʾid of Aḥmad b. Mājid al-Najdī* (Gibb Memorial Trust, 1972), 166, 205, 207, 235, 240. For three other sailing manuals of the same author, preserved in a St Petersburg manuscript, see T.A. Shumovskii, ed., *Tri Neizvestnye Lotsii Aḥmada Ibn Mādzhida, Arabskogo Lotsmana Vasko Da-Gamy* (Izdatel'stvo Akademii Nauk SSSR 1957).

[77]Tibetts, *Arab Navigation in the Indian Ocean*, 225.

[78]H.A.R. Gibb, trans., *The Travels of Ibn Baṭṭūṭa*, vol. 2 (Cambridge University Press, 1971), 373.

[79]Varisco, *Medieval Agriculture and Islamic Science*, 39, 59.

[80]Jazim, *Nūr al-maʿārif*, *passim*.

[81]Vallet, *L'Arabie marchande*, 413 and *passim*. On African eunuchs in Rasūlid Yemen, see Magdalena Moorthy Kloss, 'Eunuchs at the Service of Yemen's Rasūlid Dynasty (626–858/1229–1454)', *Der Islam* 98, no. 1 (2021): 6–26.

[82]Al-Ghanadī, *Al-sulūk fī tabaqāt al-ʿulamā wa-al-mulūk*, ed. Muḥammad ʿAlī al-Akwaʿ, vol. 2 (Maktabat al-irshād, 1995), 422–3; Vallet, *L'Arabie marchande*, 414; Baba, 'Notes on Migration', 82–3.

[83]C.F. Beckingham and G.W.B. Huntingford, eds., *The Prester John of the Indies: A True Relation of the Lands of the Prester John, Being the Narrative of the Portuguese Embassy to Ethiopia in 1520*, trans. Stanley Alderley, vol. 1 (The Hakluyt Society, 1961), 186–7.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

according to Shihāb al-Dīn's *Futūḥ al-Ḥabasha* (*c.*1550–60), in *c.*1529 Solomonic emperor Dawit II sent Christian traders to Aden with various luxurious goods.[84]

Based on interviews with Ethiopian priests in Venice (1519–24), Alessandro Zorzi described inland routes from Zaylaʿ to central Abyssinia. The first leg covered 230 km through the Danakil Desert from Zaylaʿ to Genasere (near Asayita) in twenty-five days on camelback. The second stretched 240 km from Genasere to Gendebelo (identified with modern Nora) in forty days through the western Danakil and the 'cultivated land' (*campagne*) of the Great Rift Valley. The final 55 km to Barārā (near Addis Ababa) took eight and a half days.[85] The total 630 km in seventy-three and a half days implies an average of 8.6 km/day—a very slow speed compared to 30–40 km a day achieved by Bactrian camels crossing the Ustyurt Plateau and Amu Darya valley in Central Asia in the 1330s, but, then again, the upland and highland terrain (and especially the Aheyyā Fağğ tract) meant that travellers had to proceed carefully.[86] Adding two days for the Berbera–Zaylaʿ crossing yields a complete journey time of some seventy-five and a half days. This information about travel speed is important for the discussion of plague spread mechanisms in the next section.

Once in Aden, the pandemic quickly spread north into Rasūlid territories, aided by local trade and communication networks. Unlike for Ethiopia, Yemen's rich documentation allows reconstruction of the disease's geographic spread. As elsewhere in the Islamicate world, travel relied on dromedary caravans, with camels carrying heavy loads six hours a day at about 3 miles per hour, and lighter loads up to 50 miles a day.[87] Yemen had several transregional routes: (1) Janad–Ṣaʿdah via Taʿizz and Sanaa (~15 days); (2) the Tihāmah coastal route from Aden to Mecca via Zabīd and Jeddah, and inland via Taʿizz (~1 month); (3) four eastbound roads to Hadhramaut; and (4) the Lahij route connecting Aden and Taʿizz.[88] Fourteenth- and early fifteenth-century Rasūlid rulers invested in renovating routes, establishing khans, waterpoints, and market villages, and attempted to contain Bedouin banditry.[89] While these measures facilitated trade and travel, they also created conditions for rapid pathogen spread across the region.

Yemeni goods are well represented in Ethiopian archaeological contexts. At Harlaa (an Islamic site in eastern Ethiopia, abandoned c. 1500), excavations yielded Yemeni glazed wares alongside Iranian lustre fritware and Chinese celadon.[90] At Ambā Gabriel (a Christian site in the Manz region of central Ethiopia of the fourteenth to sixteenth centuries), Hadhramaut glass tableware appears.[91] By contrast, no Yemeni goods have been found at Nora (Gendebelo), thriving from the late thirteenth to the early sixteenth century.[92]

Besides merchants, Islamic scholars, mystics, and annual *ḥajj* pilgrims also crossed the Red Sea, though the latter's role in plague spread should not be overstated. Apart from the Black Death reaching Mecca in 749 AH (1348–49), most likely during the *ḥajj* (February–March 1349), documented outbreaks in the later Mamluk period occurred in Shaʿbān 792 AH (mid-July–mid-August 1390), Dhū al-Ḥijja 827 AH (November 1423), Shaʿbān and Ramaḍān 837 AH (March–May 1434), Shaʿbān–Ramaḍān 843 AH (January–February 1440, reported generally in Hejaz), and at the

[84]Paul Lester Stenhouse and Richard Pankhurst, trans., *Futūḥ al-Habaša, the Conquest of Abyssinia (16th Century) by Shihab Ad-Din Ahmad Bin ʿAbd al-Qader Bin Salem Bin ʿUtman Arab Faqih* (Tsehai Publishers, 2003), 42–3.

[85]Richard Pankhurst, *History of Ethiopian Towns* (Franz Steiner Verlag, 1982), 37.

[86]Slavin, 'From the Tian Shan to Crimea', 555.

[87]Al-Shamrookh, *Commerce and Trade*, 212–13.

[88]Ibid., 216–19. The author did not mention a putative 'Lahij Route', but its existence can be inferred from the spatio-temporal trajectory of plague spread in 1435–36.

[89]Ibid., 214–16.

[90]Timothy Insoll, 'Marine Shell Working at Harlaa, Ethiopia, and the Implications for Red Sea Trade', *Journal of African Archaeology* 19, no. 1 (2021): 1–24; Timothy Insoll et al., 'Material Cosmopolitanism: The Entrepot of Harlaa as an Islamic Gateway to Eastern Ethiopia', *Antiquity* 95, no. 380 (2021): 487–507; Insoll, 'Archaeological Perspectives'.

[91]Derat and Jouquand, *Gabriel, Une église médiévale*, Table 8.2, ff.

[92]Ibid., Table 8.2, ff.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

end of 881 AH/beginning of 882 AH (spring 1477), with only the last explicitly termed *ṭāʿūn*.[93] Of these, only the 827 AH and 881–82 AH outbreaks coincided with the *ḥajj*. Yemenite scholars resided in the Adal sultanate, and Muslim Ethiopians stayed in Yemen—for example, the Sufi ʿAlī b. ʿUmar al-Shāḏilī (d. 828 AH/1424–25), linked to al-Mukhā and the introduction of coffee, spent years at the Adal court.[94] Fourteenth-century Solomonic embassies to the Rasūlids were rare, and none are recorded in the fifteenth century.[95]

Plague spread through the Red Sea trade and travel system, *c*.1430–38

Based on Red Sea trade routes, we can hypothesise how plague first reached Ethiopia, then the Somali coast and Yemen. Direct travel took 84 to 89 days from Cairo to ʾAksum, 163 to 168 days to Barārā, and 78 to 80 days from Aden via Zaylaʿ or Berbera to Barārā, likely longer with breaks. *Yersinia pestis* would thus need to survive in goods or personal items for several months without triggering human outbreaks during transit.

A recent study on plague spread from the Tian Shan to the Caspian in the 1340s suggests that *Yersinia pestis* could survive in 'very short-term' transient reservoirs, such as grain sacks, textiles, or rugs, where fleas could persist for months, transmitting bacteria to new fleas.[96] Textiles were widely traded—Egyptian wool and gold-brocaded fabrics to Ethiopia, Yemeni cotton to Ethiopia, and Ethiopian textiles to Egypt and Yemen. Conversely, there is no evidence of long-distance grain trade between Egypt and Yemen, on the one hand, and the Horn of Africa, on the other. Egyptian and Yemeni wheat was exported to Hejaz, but not into Ethiopia.[97] Local and regional Ethiopian grain trade, especially in teff, barley, and wheat produced in the highlands, may have aided plague spread through marketplaces and exchanges with pastoral arid lowlands.[98]

While some plague hosts—gerbils, jerboas, and ground squirrels—tend to avoid human settlements, others—mice and rats, both commensal and sylvatic, often live near communities searching for crop fodder. Agriculture was central to both Ethiopian and Yemeni economies. In Yemen, local *qabāʾil* (tribal farmers) cultivated wheat (highlands and Mikhlāf Jaʿfar), sorghum (two to three harvests per year, highlands and Tihāmah coastal plain), millet (Tihāmah, sown in June, harvested in October), legumes (widely), rice (Wadi Zabīd), and cotton (coastal Tihāmah, Lahij, Abyan).[99] In the Ethiopian highlands, wheat, sorghum, teff, and legumes were widespread, barley grew in the highest Christian plateau,[100] and cotton was common, including in Gojjam (paying the royal tribute of 3,000 mules, 3,000 horses, 3,000 cotton garments, as noted by Álvares) and the (still largely pagan) southern provinces (rendering the tribute in gold, horses, cotton under

[93]Ferdinand Wüstenfeld, ed., *Die Chroniken der Stadt Mekka*, vol. 4 (F.A. Brockhaus, 1861), 261–2, 284; Al-Maqrīzī, *Kitāb al-Sulūk*, 4.2:663, 914 and 4.3:1184; ʿAlī Ibn ʿAbd Allāh Samhūdī, *Wafāʾ al-Wafā bi-Akhbār Dār al-Muṣṭafā*, ed. Muḥammad Muḥyī al-Dīn ʿAbd al-Ḥamīd, vol. 1 (Maṭbaʿat al-Saʿādah, 1955), 66–7.

[94]Baba, 'Notes on Migration', 78.

[95]Vallet, *L'Arabie marchande*, 417–18 (for instance, there was an Ethiopian embassy in 1369).

[96]Slavin, 'From Tian Shan to Crimea', 555.

[97]Elyahu Ashtor, 'The Wheat Supply of the Mamluk Kingdom', *Asian and African Studies* 18, no. 3 (1984): 283–95; Vallet, *L'Arabie marchande*, 438.

[98]On grain production, marketing and consumption in late medieval Abyssinia, see Anaïs Wion, 'Medieval Ethiopian Economies: Subsistence, Global Trade and the Administration of Wealth', in *A Companion to Medieval Ethiopia and Eritrea*, ed. Samantha Kelly (Brill, 2020), 413; Thomas Guindeuil, 'Alimentation, cuisine et ordre social dans le Royaume d'Éthiopie (XIIe–XIXe siècle)' (PhD diss., Université de Paris 1 Panthéon-Sorbonne, 2012), *passim*.

[99]This information can be gleaned from several late thirteenth- and fourteenth-century agricultural treatises (for instance, Varisco, *Medieval Agriculture*; Al-Malik al-Afḍal al-ʿAbbās B. ʿAlī b. Dāwūd al-Rasūlī, *Bughyat al-Fallāḥīn fī al-Ashjār al-Muthmira wa-l-rayāḥīn*, ed. Khālid Khalfān b. Nāṣir al-Wahībī (Dār al-Farqad, 2016)) and a 1372 royal crop tax register (Daniel Martin Varisco, 'A Royal Crop Register from Rasulid Yemen', *Journal of the Economic and Social History of the Orient* 34, no. 1–2 (1991): 1–22). See also al-Shamrookh, *Commerce and Trade*, 108–11, 139–40.

[100]Amélie Chekroun and Bertrand Hirsch, 'The Sultanates of Medieval Ethiopia', in *A Companion to Medieval Ethiopia and Eritrea*, ed. Samantha Kelly (Brill, 2020), 106; Wion, 'Medieval Ethiopian Economies', 399–400, 403.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

negus Yesḥaq I, 1414–29/30).[101] Arid lowlands, by contrast, focused on pastoralism and arboriculture.[102]

Crop storage was another crucial economic factor. In Yemen, harvested grains and cotton bales were kept in village barns, larger market-town warehouses, and Red Sea ports (mainly for export to Hejaz), always facing the north wind to prevent spoilage.[103] Stored grains and cotton could facilitate plague spillover from sylvatic and commensal rodents to humans.[104] Information on Abyssinian storage is patchier: Zorzi noted storehouses at Gendebelo and Barārā and described the Barārā and Us-Ugie (near Andode) regions as 'one warehouse and a country of storehouses'.[105] Country barns are harder to trace, but some highland rock-hewn monuments likely served as granaries in addition to houses, churches, or burial chambers.[106] In arid eastern Ethiopia and lowland Yemen, crops were often stored in underground pits, a method still used today.[107]

Once harvested, crop surpluses—beyond seed and household consumption—were transported to local rural and urban markets as seeds or bales. In Yemen, the diversity of crops and ecological differences between lowlands and highlands meant that harvests occurred nearly every month, making crop transport a constant feature. Since rodents and their fleas often inhabit crops and textiles, plague could travel from villages near reservoirs to distant settlements year-round, causing human outbreaks. This was aided by the fact that, except for the lesser Egyptian jerboa, local sylvatic rodents did not hibernate. This was unlike Europe, where annual summer harvests created a narrower window for plague to spread from reservoirs to surrounding areas, as evidence from South Germany shows.[108]

Like Yemen, Ethiopia lacked wheeled transport; goods moved via camel caravans in the lowlands and donkey trains in the Rift Valley and highlands. Donkeys do not carry plague, but camels can.[109] For months-long journeys, camels had to remain plague-free until near the end, that is, approaching the Somali coast from Abyssinia to Zaylaʿ or Berbera. In theory, infected camels could die mid-journey and be replaced, but this would slow plague spread. Humans—merchants, pilgrims, or enslaved people—could also carry *Yersinia pestis* via fleas and lice. Ibn Baṭṭuṭa noted camels and fat *barābir* sheep reared from the Danakil desert to Mogadishu.[110] Sheep, though less susceptible than camels, could also carry plague. In the Red Sea region—much as in other parts of the world—rodent colonies are often clustered near livestock-grazed pastures, avoiding dry, nutrient-poor grasslands.[111] As some sources state, *barābir* sheep were transported from Zaylaʿ to Aden and then inland into Yemen.[112]

[101]Beckingham and Huntingford, *Prester John of the Indies*, 1:117, and 2:425–30; Ignazio Guidi, 'Le Canzoni Geez-Amariña in onore di re abissini', *Rendiconti della Reale Accademia dei Lincei, classe di scienze morali, storiche e filologiche* 5, no. 2 (1889): 53–66; Wion, 'Medieval Ethiopian Economies', 411, 422.

[102]Wion, 'Medieval Ethiopian Economies', 399, 402.

[103]Al-Shamrookh, *Commerce and Trade*, 108, 111–12.

[104]J. Isgaer Roberts, 'The Relationship of the Cotton Crop to Plague, and Its Role as a Vehicle for Rats and Fleas in East Africa', *Journal of Hygiene* 35, no. 3 (1935): 388–403; Slavin, 'From Tian Shan to Crimea', 555.

[105]Crawford, *Ethiopian Itineraries*, 173, 190–1.

[106]Claire Bosc-Tiessé, 'Christian Visual Culture in Medieval Ethiopia: Overview, Trends and Issues', in *A Companion to Medieval Ethiopia and Eritrea*, ed. Samantha Kelly (Brill, 2020), 332.

[107]Abdul Gabbar al-Kirshi, 'Storage of Grain in Underground Pits (Madāfin)', in *Savoirs locaux et agriculture durable au Yémen*, ed. Frédéric Pelat and Amin al-Hakimi, trans. Saeed A. Ba-Angood and Daniel Varisco (Centre français de recherche de la péninsule Arabique, 2003), 30–3; R.A. Boxall, 'Underground Storage of Grain in Harar Province, Ethiopia', *Tropical Stored Products Information* 28 (1974): 39–48.

[108]Slavin, 'Out of the West', 33–7.

[109]Slavin, 'From Tian Shan to Crimea', 562–3; Mansour F. Hussein, '*Yersinia Pestis* (Camel Plague)', in *Infectious Diseases of Dromedary Camels: A Concise Guide*, ed. Abdelmalik I. Khalafalla and Mansour F. Hussein (Springer, 2021), 201–4; Ahmad Mahmoudi et al., 'Plague Reservoir Species throughout the World', *Integrative Zoology* 16, no. 6 (2021): 820–33.

[110]Giovanni Vantini, *Oriental Sources Concerning Nubia*, 448; H.A.R. Gibb, trans., *Travels of Ibn Baṭṭūṭa*, 2:373.

[111]Afework Bekele and Herwig Leirs, 'Population Ecology of Rodents of Maize Fields and Grassland in Central Ethiopia', *Belgian Journal of Zoology* 66 (1997): 341–9; Slavin, 'Birth of the Black Death', 313.

[112]Vallet, *L'Arabie marchande*, 393.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

Somali coastal towns like Berbera and Zaylaʿ may have aided human plague spread. Al-Ḥarrānī described Zaylaʿ as very populous, while Ibn Baṭṭuṭa called it as a filthy city due to fish consumption and camel slaughter.[113] Rats and mice thrive near slaughterhouses, providing a potential short-term plague reservoir,[114] and camels themselves could carry the disease, with meat processing offering a transmission route.[115] Abū Ḥāmid al-Gharnātī (*c.*1162) noted that Zaylaʿ inhabitants ate dogs and rats, which they preferred to sheep.[116] If true in the early fifteenth century, rat meat processing could have further facilitated plague transmission locally and across the sea.

The eco-climatic context of plague focalisation in the Red Sea region in the 1430s

The previous sections have shown how trade and travel mechanisms linking the Red Sea region may have functioned as very short-term 'transient' reservoirs, harbouring plague bacteria in goods and animals for weeks or months. Once introduced into interior Abyssinia and Rasūlid Yemen, plague could spill over into human communities, spread widely, and—more decisively—become established in medium-term reservoirs in the highlands, possibly around Lake Tana (Ethiopia) and in the Ibb region (Yemen). Such transient reservoirs, and their interaction with longer-term endemic foci, remain poorly studied. To understand how plague focalised in Highland Yemen and possibly Abyssinia (around Lake Tana) in the 1430s, the ecological and climatic contexts of these regions must be considered.

In the early fifteenth century, the vegetation and wildlife landscapes of the Great Rift Valley and the northern Ethiopian highlands differed markedly from today. According to Alessandro Zorzi and Francisco Álvares in the 1520s, these regions were covered by extensive, dense woodlands sheltering elephants, with villages nearby.[117] In subsequent centuries, however, the area underwent progressive deforestation.[118] Álvares already noted tree burning for agriculture and road expansion in the 1520s; Manoel de Almeida (1624–33) observed widespread tree scarcity due to systematic cutting; and James Bruce (1770–71) later lamented the severe lack of woodland, especially around Gondar and Lake Tana.[119]

The Yemenite Highlands likewise appear to have been more forested in the fifteenth century than later. Ibn al-Mujāwir, travelling there in the early thirteenth century, described parts of the highlands as impenetrable due to dense evergreen and deciduous forests, including *Trichilia emetica*, tamarind, and acacia, noting that these forests supplied timber to other regions of Yemen.[120] More than three centuries earlier, Abū Ḥanīfah al-Dīnawarī (d. 895), in his *Kitāb al-*

[113]H.A.R. Gibb, trans., *Travels of Ibn Baṭṭūṭa*, 2:373.

[114]Lakew Zewude, Embialle Mengistie, and Amanuel Ejeso. 'Hygienic Practices and Associated Factors in Slaughterhouses and Meat Retail Shops in Hawasa City, Ethiopia', *PLOS One* 20 (2025), accessed 1 May 2026, https://doi.org/10.1371/journal.pone.0336784.

[115]Yu. Rivkus and A.G. Blyummer, *Endemiya Chumy v Pustynyakh Srednei Azii i Kazakhstana* (Voronezh, 2016), *passim*; V.V. Kutyrev and A. Yu. Popova, *Kadastr Epidemicheskikh i Epizooticheskikh Proyavlenii Chumy na Territorii Rossiskoi Federatsii i Stran Blizhnego Zarubezh'ya s 1876 po 2016 gg* (Saratov, 2016), *passim*; J.M. Klein et al., 'La Peste en Mauritanie', *Médecine et Maladies Infectieuses* 5, no. 4 (1975): 198–207.

[116]Giovanni Vantini, *Oriental Sources Concerning Nubia*, 289.

[117]Crawford, *Ethiopian Itineraries*, 176–7; Beckingham and Huntingford, *Prester John of the Indies*, 1:111–15.

[118]Richard Pankhurst, 'The History of Deforestation and Afforestation in Ethiopia Prior to World War I', *Northeast African Studies* 2, no. 1 (1995): 119–33; Ayenachew Deresse, 'Environmental Descriptions of European Travelers in Ethiopia (16th–19th c.)', in *Climatic and Environmental Challenges: Learning from the Horn of Africa*, ed. David Ambrosetti et al. (Centre français des études éthiopiennes, 2016), accessed 1 May 2026, https://books.openedition.org/cfee/405.

[119]Beckingham and Huntingford, *Prester John of the Indies*, 1:111; C.F. Beckingham and G.W.B. Huntingford, eds., *Some Record of Ethiopia, 1593–1646* (The Hakluyt Society, 1954), 48, 188; James Bruce, *Travels to Discover the Source of the Nile, in the Years 1768, 1769, 1770, 1771, 1772, and 1773*, vol. 3. (James Ballantyne, 1805), 92.

[120]G. Rex Smith, trans., *A Traveller in Thirteenth-Century Arabia: Ibn al-Mujawir's Tarikh al-Mustabsir* (The Hakluyt Society, 2008), 89–90.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

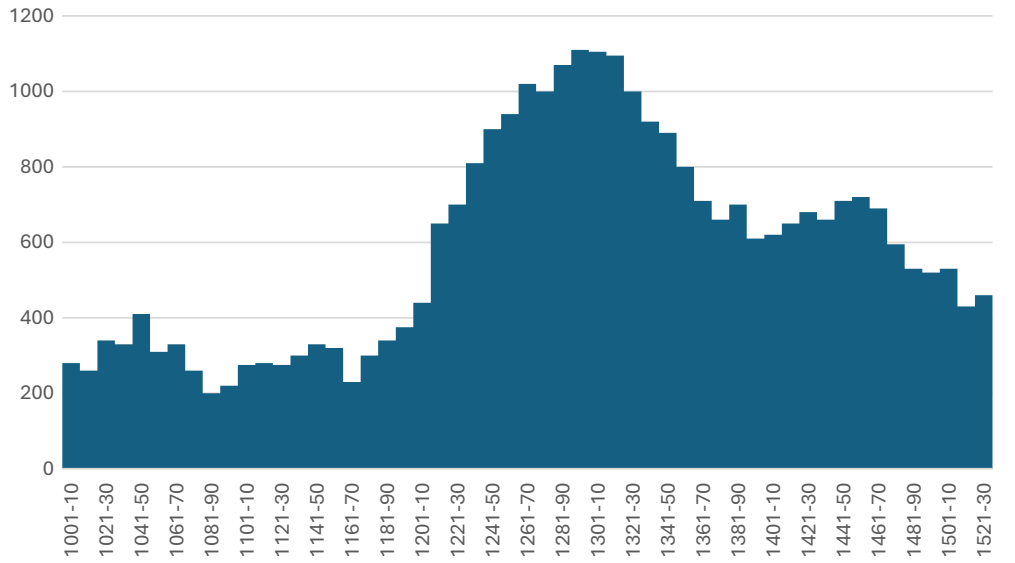

Figure 3. Decennial averages of Indian Ocean monsoon activity reflected in precipitation levels around Lake Hayq (in northern Ethiopia) deriving from sedimentary carbonate record (in inverted $\delta^{18}O$ (oxygen) values), 1001–1530. Henry F. Lamb et al., 'Oxygen and Carbon Isotope Composition of Authigenic Carbonate from an Ethiopian Lake: A Climate Record of the Last 2000 Years', *The Holocene* 17, no. 4 (2007): 517–26.

Nabāt, mentioned additional trees—such as cashew and walnut—growing in Yemen's mountains and wadis.[121] By contrast, when Carsten Niebuhr travelled through the highlands in June–July 1763, he observed a marked scarcity of trees, despite the continued presence of shrubs and other vegetation.[122]

Focusing on the early fifteenth-century climatic context of the southern Red Sea region, proxy evidence points to unusually wet conditions. Sedimentary carbonate records from Lake Hayq (northern Ethiopia; Figure 3) show that Indian Ocean monsoon intensity rose sharply in the thirteenth century, peaking in *c.*1290–1320, declined *c.*1320–80, then increased again and remained relatively high until *c.*1470, before falling thereafter. This pattern is corroborated by summer–autumn Rhoda Island nilometre readings from Old Cairo (Figure 4) and winter–spring stalagmite data from Hoti Cave in northern Oman (Figure 5), both indicating exceptionally wet conditions between *c.*1376 and *c.*1440 (*c.*1432 in Oman and *c.*1447 for the Nile). These were the wettest intervals on record for the Nile for the period 1001–1522 (there are, unfortunately, only forty-two annual nilometre recordings between 1523 and 1698, hence *c.*1522 is the upper chronological boundary for all three climatic series here) and for Hoti Cave, for the same period. Although the nilometre lay over 2,000 km north of the putative Ethiopian plague reservoir, its readings reflect conditions in the Ethiopian highlands, since intensified summer monsoons flooded the Blue Nile and Atbara River, raising Nile levels during the annual inundation from early June to mid-October.[123] High post–Black Death Nile floods, however, also reflected rising riverbed height and—most importantly—failures in canal and basin maintenance in Upper Egypt,

[121]Catherine Alice Yff Breslin, 'Abu Hanifah al-Dinawari's Book of Plants: An Annotated English Translation of the Extant Alphabetical Portion' (MA diss., University of Arizona, 1986), 95, 118.

[122]Carsten Niebuhr, *Travels through Arabia and Other Countries in the East*, trans. Robert Heron, vol. 2 (Morison and Son, 1792), 57, 350–62, 365.

[123]Stuart Borsch, 'Nile Floods and the Irrigation System in Fifteenth-Century Egypt', *Mamluk Studies Review* 4 (2000): 131–45, 131–2.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

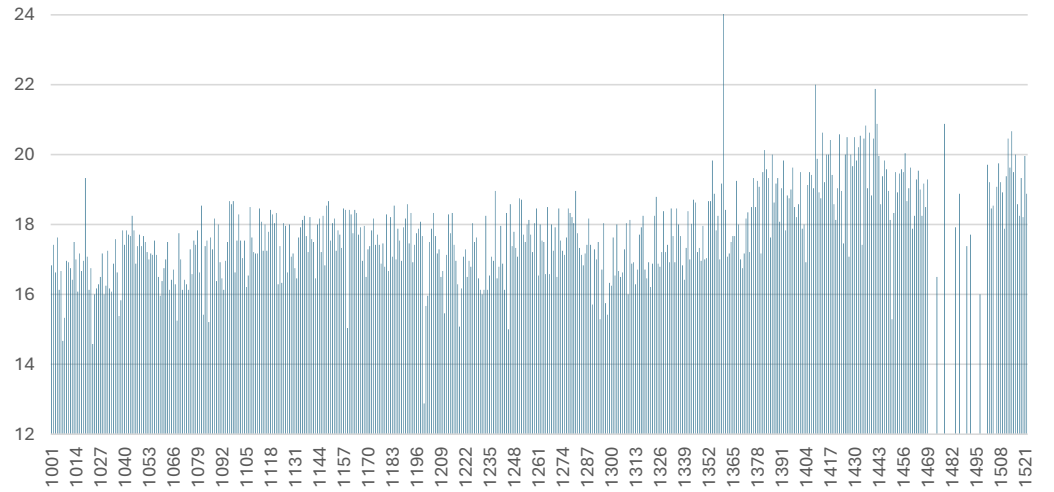

Figure 4. Annual Nile flooding levels, 1001–1522 (in pre-Ottoman-style cubits; max = 24). Omar Toussoun, *Mémoire sur l'histoire du Nil*, vol. 2 (Imprimerie de l'Institut français d'archéologie orientale, 1925), 361–93; Sāmī Amīn Pāshā, *Taqwīm al-Nīl* (Al-Maṭbaʿah al-Amīrīyah, 1916), 17–21; William Popper, *The Cairo Nilometer: Studies in Ibn Taghrî Birdî's Chronicles of Egypt* (University of California Press, 1951); Otto F.A. Meinardus, 'Nilometer Readings According to a 13th Century Coptic Source', *Oriens Christianus* 62 (1978): 169–95; Al-Maqrīzī, *Kitāb al-sulūk li-maʿrifat duwal al-mulūk*, ed. S.ʿA.F. ʿĀshūr (Matbaʿat Dar al-Kutub, 1973), vols. 2.1–4.3.

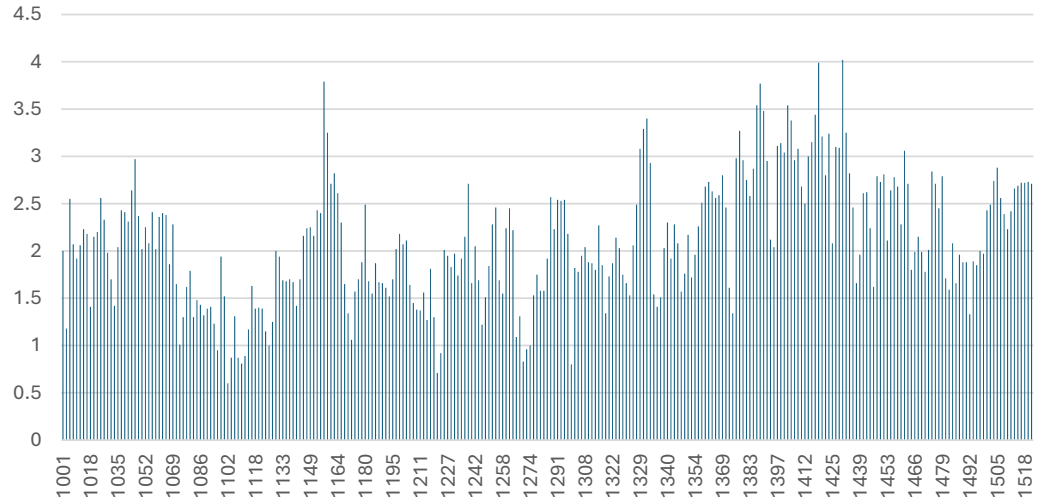

Figure 5. Winter–spring precipitation levels deriving from Hoti Cave (northern Oman) stalagmite record (in inverted $\delta^{18}O$ (oxygen) values), 1001–1522. Dominik Fleitmann et al., 'Droughts and Societal Change: The Environmental Context for the Emergence of Islam in Late Antique Arabia', *Science* 376 (2022): SI.

caused by plague-related labour shortages and Bedouin attacks, which prevented excess flood-waters from being properly absorbed.[124]

Importantly, rainfall regimes differ across the Arabian Peninsula: northern Oman and most of Arabia depend on Mediterranean frontal systems, whereas summer monsoon precipitation is

[124]Ibid.; Borsch, 'Plague Depopulation'.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

largely confined to the Yemeni highlands and southern Oman.[125] For this reason, Hoti Cave data cannot serve as a direct palaeoclimatic proxy for the Yemeni Highlands. Nevertheless, comparison of the Lake Hayq record and annual nilometre values with Hoti Cave stalagmite data reveals a striking synchronicity (Figures 3–5). Dry spells in the later eleventh and thirteenth centuries appear in both the nilometre and Hoti Cave series; wet conditions *c*.1280–1460 are reflected in both the Hayq and Hoti records; and the pronounced wet phase of the later fourteenth and early fifteenth centuries stands out clearly in all three. Although the drivers of this convergence between distinct climatic regimes remain unclear, the Hoti Cave record may be cautiously employed as an indirect proxy for conditions in the Yemeni Highlands.

Extreme flooding is well attested in textual sources. Between 1377 and 1450, torrential rains were recorded on at least twenty-nine occasions in Lower Egypt, on ten occasions in the Hejaz and on eleven occasions in Yemen.[126] Comparable Ethiopian data are lacking, but the eco-climatic linkage between Egypt and Ethiopia allows the use of very high Nile floods (≥19 cubits) recorded by the Rhoda nilometre on forty-six occasions between 1376 and 1447 as an indirect proxy for excessive Ethiopian monsoon rainfall (keeping in mind also the failure of local canals and basins in Egypt), corroborated by Lake Hayq data for *c*.1380–1470 (Figures 3–4).[127] It was against this background that *negus* Zarʿa Yāʿeqob (r. 1434–68) sent his 1443 letter to Sultan Jaqmaq (r. 1438–53), threatening to divert the Nile in response to the persecution of Coptic Christians in Mamluk lands.[128]

Some 260 years of elevated Indian Ocean monsoon precipitation, indicated by Lake Hayq sediments (*c*.1210–1470), together with a shorter wet phase in the Hoti Cave record (*c*.1280–1460), and an even briefer period of sustained wet conditions in the nilometre data (*c*.1376–*c*.1440), profoundly affected highland ecologies in Yemen and Ethiopia. These conditions likely promoted the expansion of woodland and pasture vegetation. In the Ethiopian highlands, torrential rains—common during and beyond the *kremt* season (June–mid-September)—caused frequent flooding and disrupted travel, as noted by Zorzi and Álvares.[129] But rainfall during these centuries must have been exceptionally intense, generating abundant grass. Such vegetation surpluses are closely linked to the proliferation of sylvatic rodents, including species capable of acting as plague reservoirs.

Both the Yemeni and Ethiopian highlands hosted numerous potential plague-carrying rodents and their ectoparasites. In Yemen, these included five *Muridae* species (Cairo spiny mouse, African grass rat, Balochistan gerbil, House mouse and Black rat), the lesser Egyptian jerboa, and the Cape hare.[130] The Ethiopian highlands supported even greater diversity: some sixteen Muridae species (mice, rats, gerbils and *Mylomys*), three *Nesomyidae* mice, the African *Hammada* jerboa,

[125]D. Fleitmann et al., 'Holocene Forcing of the Indian Monsoon Recorded in a Stalagmite from Southern Oman', *Science* 300, no. 5626 (2003): 1737–9.

[126]Lower Egypt: 1377, 1381–82, 1393, 1397, 1414–15, 1418–21, 1423–25, 1427–28, 1432–41, and 1444–46; Hejaz: in 1377, 1381–82, 1393, 1397, 1414–15, 1418–21, 1423–25, 1427–28, 1432–41, and 1444–46; Yemen: 1386–87, 1391, 94–1395, 1397, 1400, 1421, 1433–34 (the year of the Zabīd plague), and 1450. A very helpful database of climatic and environmental events for the Levant and Hejaz is S. Vogt et al., eds, *Grotzfeld Data Set: Coded Environmental, Climatological and Societal data for the Near and Middle East from AD 801 to 1821*, accessed 2 May 2026, https://freidok.uni-freiburg.de/data/11544. The Yemeni data has been listed in Croken, 'Zabîd under the Rasûlids', 182–204 and al-Shamrookh, *Commerce and Trade*, 117–26.

[127]The years, in which the Nile measured at over 19 cubits, were 1376, 1378–79, 1382, 1384, 1386, 1388, 1391–92, 1395–97, 1401, 1405–10, 1413, 1415–17, 1421–22, 1425–26, 1428–43, and 1445–47 (for sources, see Figure 4). See also Kristine Chalyan-Daffner, 'Natural Disasters in Mamlūk Egypt (1250–1517): Perceptions, Interpretations and Human Responses' (PhD diss., University of Heidelberg, 2013), 662–5, for Nile flooding measurements in other Egyptian regions.

[128]Haggai Erlich, *The Cross and the River: Ethiopia, Egypt, and the Nile* (Lynne Rienner Publishers, 2002), 46.

[129]Crawford, *Ethiopian Itineraries*, 44, 171; Beckingham and Huntingford, *Prester John of the Indies*, 1:170–1.

[130]Colin Campbell Sanborn and Harry Hoogstraal, 'Some Mammals of Yemen and Their Ectoparasites', *Fieldiana. Zoology* 34, no. 23 (1952): 229–52; Montazer K. Mensoor, *The Mammals of Yemen (Chordata: Mammalia)* (International Center for Training, Research & Development (ICTRD), 2023), 52–72. For a greater detail on these rodents and their association with plague, see SM Table 3.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

dormice, and the African striped ground squirrel.[131] Wild rodents and ectoparasites also appear in historical accounts: Carsten Niebuhr (June–July 1763) noted hares and jerboas in the Yemeni highlands, while James Bruce (1770–72) described swarms of mice, rats, and insects threatening agriculture in the Gondar region.[132] Given that both regions were far more densely wooded in the fifteenth century than in later periods, rodent populations were likely higher. Combined with the exceptionally wet phase of the 1370s–1440s, this would have favoured increases in both rodent hosts and their ectoparasites, whose densities are closely correlated with plague activity.[133] Humid conditions further promote ectoparasite hatching and survival, making the eco-climatic setting of the wider Red Sea region in the 1370s–1440s particularly conducive to plague persistence and focalisation in the Yemeni and Abyssinian highlands.

Once *Yersinia pestis* penetrated the Abyssinian interior and Rasūlid territories, it appears to have focalised in local ecologies. On the basis of historical evidence, a recent study has reconstructed a Yemeni plague reservoir located in the highlands—possibly in the Ibb region—active *c.*1436–1557/58, after which it abated (see SI and SI Tables).[134] The Ethiopian reservoir generated recurrent outbreaks until 1634/35, after which Ethiopian sources do not mention this disease. Its precise location remains uncertain due to limited evidence, but early seventeenth-century outbreaks suggest a focus in the Lake Tana area, possibly in Gojjam or the Dambeyā region (see SI). If this reconstruction is broadly correct, then these highland reservoirs functioned as medium-term foci, persisting for roughly 125 years in Yemen and about 200 years in Ethiopia. While the environmental factors sustaining the Yemeni reservoir have been recently studied, those of the Ethiopian highlands remain entirely unexplored.[135]

The analysis above indicates that plague's arrival, focalisation, and recurrent outbreaks in the southern Red Sea region were triggered by distinctive eco-climatic conditions. As sedimentary evidence from Lake Hayq indicates, this process was preceded by approximately 260 years of elevated Indian Ocean monsoon precipitation. The period *c.*1376–1440 was characterised by exceptionally wet conditions, as reflected in both the Hoti Cave stalagmite record (Oman) and the Rhoda Island nilometre. In the latter case, however, high flood levels also resulted in part from the failure of Nile canals and flood basins to absorb excess water, following post–Black Death depopulation and recurrent Bedouin attacks.

In broad terms, these conditions translated into many decades of sustained vegetation growth, such that on the eve of the initial plague introduction in the 1430s, pastoral and sylvatic vegetation must have been unusually abundant. Woodland landscapes in both the Ethiopian and Yemeni highlands—prior to later phases of deforestation—were considerably denser than in subsequent centuries. Extensive woodland and pasture would have promoted the growth and high densities of wild rodent populations and their ectoparasites, serving respectively as potential hosts and vectors of plague bacteria, and thereby creating optimal conditions for plague focalisation. This once again underscores the importance of eco-climatic factors in shaping plague activity, a point repeatedly emphasised in recent historical scholarship.[136]

Conclusions

For some scholars, recurrent outbreaks in Afro-Eurasia during the Second Plague Pandemic are understood as repeated reintroductions from Asia.[137] In recent years, however, both historians

[131]Josef Bryja et al., 'Annotated Checklist, Taxonomy and Distribution of Rodents in Ethiopia', *Folia Zoologica* 68, no. 3 (2019): 117–213. For a greater detail on these rodents and their association with plague, see SM Table 4.

[132]Niebuhr, *Travels through Arabia*, 324–5; Bruce, *Travels*, 3:196.

[133]Slavin, 'The Birth of the Black Death', 314–20.

[134]Slavin, 'Jinn in the Mountains'.

[135]Ibid.

[136]See note 21 above.

[137]Schmid et al., 'Climate-Driven Introduction'; Bramanti et al., 'Assessing the Origins'.

https://doi.org/10.1017/S1740022826100539 Published online by Cambridge University Press

and ancient DNA researchers have increasingly recognised the likelihood of endogenous plague reservoirs in other regions, including in south-central Germany.[138] More recently still, the ecology of a Yemeni plague reservoir has been examined,[139] and a case has been made for the focalisation of plague around Lake Victoria *c.*1700.[140] By contrast, plague focalisation in Ethiopia during the pre-modern period has received no scholarly attention. The present article therefore adds Ethiopia to the global map of natural plague reservoirs.

This body of new evidence naturally raises a series of further questions that lie beyond the scope of the present article. What was the spatio-temporal reach of the recurrent plague waves emanating from these newly identified reservoirs? Were they confined to Abyssinia and Yemen, or did they extend further, for example into the Arabian Desert, Egypt, and northwards into the Middle East? What factors enabled the long-term persistence of these reservoirs, and what triggered the periodic re-emergence of plague—eco-climatic conditions, anthropogenic activity, or some combination of the two? Under what circumstances did these reservoirs ultimately decline and disappear in the sixteenth and seventeenth centuries? More specifically, what role, if any, did deforestation play in the contraction and eventual extinction of highland plague reservoirs? This final question intersects with broader and ongoing debates concerning the relationship between ecology and infectious diseases, particularly those centred on the zoonotic origins of epidemic pathogens.[141]

There are additional 'big' questions that pertain to the longue durée history of the Red Sea region. For example, what effects did recurrent plague waves—and the associated demographic decline and stagnation—have on the socio-economic structures of Abyssinia and Yemen? A substantial body of scholarship has argued for the role of plague in driving long-term economic decline in the late medieval and early modern Middle East, yet Yemen, as a perceived 'periphery' of the Islamic world, has been largely excluded from these discussions. Similarly, Ethiopia has not been integrated into this growing body of work. Expanding the geographic scope in this way has considerable potential to enrich ongoing debates about the origins, character, and chronology of the so-called 'Great Divergence' between the 'West' and the 'Rest'.[142]

This last point is closely connected to the quasi-global character of plague history in general, and of the Second Plague Pandemic in particular. As demonstrated above, before focalising in the Ethiopian and Yemeni highlands, the plague wave under discussion undertook a long trajectory from its point of origin somewhere in northern Eurasia—possibly the Pontic–Caspian steppe—moving through the Caucasus, Anatolia, Syria, Palestine, and Egypt into Abyssinia, and subsequently via the Somali coast into Yemen. The scope of the present article does not permit a comprehensive analysis of this entire trajectory; nonetheless, in order to understand how plague reached Ethiopia and Yemen in the first place, it was essential to situate the discussion within the broader Red Sea world, incorporating Egypt and the Somali coast. A focus restricted to Yemen, to Ethiopia, or even to both regions together—without reference to this wider context—would have produced only partial conclusions and left key questions unresolved. This, once again, underscores

[138]Slavin, 'Out of the West'; Slavin, 'Reply: Out of the West'; Parker et al., '14th Century *Yersinia pestis* Genomes'.

[139]Slavin, 'Jinn in the Mountains'.

[140]Mas Fiol et al., 'Global Evolutionary Patterns'; Mas Fiol and Slavin, 'The Introduction and Spread of Plague'. The introduction of plague into the Great Lakes region in the pre-colonial era, has been already discussed in Monica H. Green, 'Putting Africa on the Black Death Map: Narratives from Genetics and History', *Afriques*, no. 9 (2018), accessed 2 May 2026, https://doi.org/10.4000/afriques.2125.

[141]See various studies in Bakyt B. Atshabar, Nils Chr. Stenseth and Jeanne M. Fair, eds., *Plague: The Ecology of Natural Foci* (Springer, 2024).

[142]The literature on this topic is too vast to be cited here. For the Middle East's lagging behind, in this context, see Timur Kuran, *The Long Divergence: How Islamic Law Held Back the Middle East* (Princeton University Press, 2011); Jared Rubin, *Rulers, Religion, and Riches: Why the West Got Rich and the Middle East Did Not* (Cambridge University Press, 2017). On Middle Eastern agricultural and economic crises and decline in the aftermath of the Black Death, see Eliyahu Ashtor, 'The Economic Decline of the Middle East during the Later Middle Ages: An Outline', *Asian and African Studies: Journal of the Israel Oriental Society* 15 (1981): 253–86.

the necessity of embedding any study of plague history, whether regional or transregional, within a much broader geographical framework.[143]

Lastly, the present article underscores another key scholarly imperative: the need to adopt an inherently multidisciplinary approach to the study of plague history. For all their undeniable strengths, textual sources have clear informational limits and are at times sparse or altogether absent. To address that, these were supplemented with both archaeological findings and palaeoclimatic data. Ideally, aDNA of plague bacteria is to be integrated into the analysis, but there is no aDNA from these regions (the closest thing is a single isolate from a 1969 outbreak in the awlān region of Yemen, discussed in SI). Currently, obtaining additional aDNA from local contexts in Yemen and the Somali coast is impossible due to ongoing conflicts, insecurity, and corruption, which hinder scientific research. One can only hope—perhaps naïvely—that conditions will improve in the future, allowing aDNA to be recovered from archaeological sites in the southern Red Sea region.[144] Such findings would be invaluable, not only for studying the history of plague, but also for tracing the global evolution and dissemination of *Yersinia pestis* strains during the Second Plague Pandemic. Importantly, the environmental conditions of the Yemeni and Ethiopian highlands are more favourable for aDNA preservation than the hotter, excessively arid, or overly humid areas elsewhere in the Arabian Peninsula, the Somali coast, and the Ethiopian lowlands.

Only through such an interdisciplinary approach—integrating multiple forms of evidence and deploying diverse methodological perspectives—can we begin to make sense of phenomena as complex as epidemic diseases, plague included. A deeper, historically based understanding of pandemics, past and present, grounded in this interdisciplinary vision, will ultimately place us in a stronger position to comprehend and confront those of the future.

Supplementary material. The supplementary material (including tables) for this article can be found at https://doi.org/10.1017/S1740022826100539

Acknowledgements. I am grateful to Stuart Borsch (Assumption University) and Kate Pukhovaia (Utrecht University) for their kind help with sources.

Financial support. This work is funded by the ERC/UKRI Project 'SYNERGY PLAGUE: Reconstructing the environmental and societal drivers of plague outbreaks in Eurasia between 1300 and 1900'.

Competing interests. The author declares none.

Philip Slavin is a professor of medieval and environmental history at the University of Stirling and an author of over sixty publications on various topics related to environmental, economic, and social history of late medieval Eurasia, with a particular focus on ecological and biological crises. He is currently working on various papers dealing with global plague ecologies and their connections to wider biological, demographic and socio-economic processes.

[143]Green, 'Taking "Pandemic" Seriously'.
[144]Slavin, 'Jinn in the Mountains'.

Cite this article: Slavin, P., 'The plague of Egypt crossing the Red Sea: The arrival and focalisation of plague in the southern Red Sea region in the 1430s', *Journal of Global History* (2026). doi:10.1017/S1740022826100539