

The Natural History of Ms. Fr. 640

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Making + Knowing Project, 2021



Introduction

The goal of this project is to deconstruct the natural world at the time the manuscript Ms. Fr. 640 was written in 1580s Toulouse, drawing upon ecological references used in the manuscript, along with evolutionary lineages, botanical drawings, historical climate knowledge, and modern day images. This document is meant to act as a visual and informational supplement to the manuscript, intended both for those who want to learn more and contribute to the ecological understanding surrounding the creation of the manuscript. It serves as a living document that can grow if others choose to contribute scientific studies, field work, or add on additional species to the catalog. Hopefully this document will bring the natural world at the time to life, particularly for those who want a more vibrant image of the world in which Ms. Fr. 640 was written.

Around the time that the manuscript was written, the first herbals started to appear. These were treatises on medicinal plants intended primarily for doctors, which included drawings by artists of plants observed from real specimens.¹ The drawings had to be life-like enough so that the reader could identify the plants in the field and know which ones to use for medicinal purposes. At a time when the discipline of natural science was beginning to surface, drawing from nature itself and ecological accuracy became more important.² This, along with the emphasis on a more visual language, are core elements of what this addition to the manuscript hopes to encapsulate.

¹ Elliott, Brent. 2011. *The World of the Renaissance Herbal*. no. 1 ed. N.p.: Renaissance Studies. https://www.jstor.org/stable/24420235?seq=1#metadata_info_tab_contents.

² Olariu, Dominic. 2015. "The Misfortune of Philippus de Lignamine's Herbal or New Research Perspectives in Herbal Illustrations From an Iconological Point of View." *Max Planck Institute for the History of Science*, 1. https://www.mpiwg-berlin.mpg.de/sites/default/files/P469_4.pdf.

Methods

This document is put together with the intention that it will become a multimedia exploration of different types of research regarding the natural world at the time. In a similar style to the book *The Natural History of Pompeii* by Wilhelmina Feemster Jashemski, it contains sections with different types of articles, that can could include but are not limited to: a species catalog, documentation of research done in the field, historical environmental essay, or scientific journal. The content being studied can range from ecological to climatological research. These articles can and should be written by different scholars in the field or exploring the field, in an effort to bring together different types of knowledge on this subject.

The two types of articles included here are a species catalog and an overview of the climate at the time. For the climate study, I have pulled from my knowledge of changes in global climate across time and found a particular phenomenon that occurred at the time, researching more in depth the impact that might have had on early modern Europe. For the species catalog, I chose to do a more in depth analysis of just a few species to start--bringing them to life visually and placing them in an ecological and social context. I have identified a set of species that appear in the manuscript, including wormwood, sumac, horsetail, and the chaffinch bird. These species were chosen as a starting point based on the amount of research available and their significance at the time. For each of these species, I researched the basic lineage, modern-day appearance, including evolutionary changes if found, as well as connected ecological features to particular folios in the manuscript.

Climate at the time of Ms. Fr. 640

To begin to examine the natural history at the time of Ms. Fr. 640, it's important to first look at the climate at the time. The climate was distinct during this time because it was within a period known as "The Little Ice Age" (see fig. 1), which lasted approximately between the 1300s and 1850.³ This period wasn't as extreme as a normal ice age, which occurred cyclically every 100,000 years, but it was a period characterized by generally colder conditions.⁴

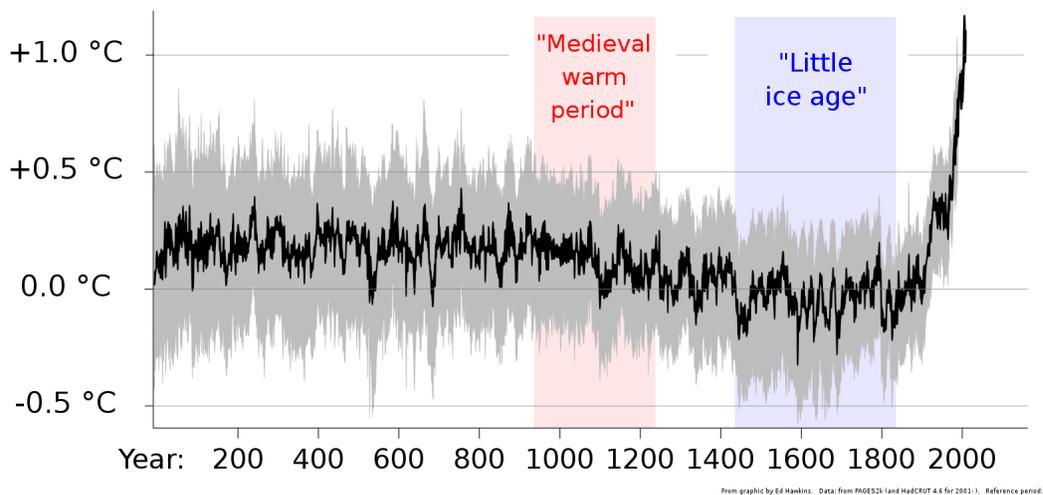


Figure 1. 2000+ year graph of global temperature including "Medieval Warm Period" and "Little Ice Age", derived from graphic by Ed Hawkins.⁵

Scientists suspect the Little Ice Age was caused by some combination of increased sunspots leading to less solar radiation and volcanism, which has a cooling effect as particles

³ Oosthoek, Jan. 2015. "Little Ice Age |." Environmental History Resources. <https://www.eh-resources.org/little-ice-age/>.

⁴ "How did climate change influence Medieval and Early Modern Europe." n.d. DailyHistory.org. Accessed December 23, 2021. https://dailyhistory.org/How_did_climate_change_influence_Medieval_and_Early_Modern_Europe.

⁵ Ed Hawkins, *Global Average Temperature Change*, graph, Wikipedia, https://commons.wikimedia.org/wiki/File:2000%2B_year_global_temperature_including_Medieval_Warm_Period_and_Little_Ice_Age_-_Ed_Hawkins.svg.

emitted reflect radiation.⁶ This led to a generally cold climate with very cold winters and cool and wet summers. Although the manuscript was written during this period, the 1500s experienced a slight warming relative to the rest of the Little Ice Age, so it's hard to know just how extreme early modern Europe climate was at that time⁷. But judging from history accounts at the time, the colder climate led to numerous issues as societies and the environment had to quickly adapt--social class conflict and unrest ensued, crops failed and growing seasons were cut short.⁸ Although the author-practitioner doesn't provide much about the climate or local weather within the pages of Ms. Fr. 640, it undoubtedly would have affected the many plant and animal species he draws reference to and collects for this work. How these plants and animals were affected by the climate at the time would require further research, and hopefully we can begin to build a better understanding of the natural history within the context of the unique climate at the time.

When looking back throughout the history of the climate, patterns in warming and cooling have always existed, however never so drastically at the level we are seeing today, as shown by the powerful graphic created by Ed Hawkins (see fig. 2). Many of the species that are referenced in the manuscript are ones that we see today and many don't look particularly different in 2022 compared to 1580. However, ecological life is changing and will continue to change drastically--which will affect the evolution, mere existence, and role of ecological life in our present-day society. This means that when doing a study like this in the future, we may not

⁶ Barbuzano, J. 2019. "The Little Ice Age Wasn't Global, but Current Climate Change Is." Eos.org. <https://eos.org/articles/the-little-ice-age-wasnt-global-but-current-climate-change-is>.

⁷ Oosthoek, Jan. 2015. "Little Ice Age |." Environmental History Resources. <https://www.eh-resources.org/little-ice-age/>.

⁸ "How did climate change influence Medieval and Early Modern Europe." n.d. DailyHistory.org. Accessed December 23, 2021.

https://dailyhistory.org/How_did_climate_change_influence_Medieval_and_Early_Modern_Europe.

be able to base as much of our knowledge of the natural world off of species we see physically around us. And so reconstructing visual and descriptive representations of our historical natural world becomes ever more important in a time like today.

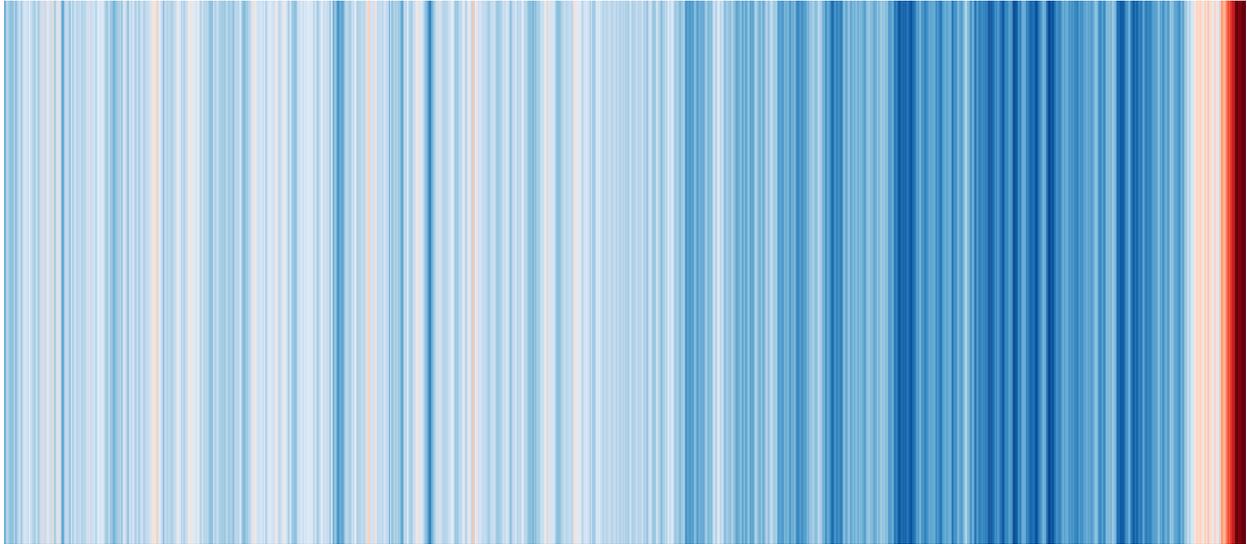


Figure 2. Temperature anomalies in the last 2,019 years. Using data from PAGES2k and HadCRUT4.6, derived by Ed Hawkins.⁹

⁹ Ed Hawkins, *Temperature Anomalies*, visualization, Webpage, March, 2021, <https://www.historicalclimatology.com/features/category/little-ice-age>

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Species Catalog:

Woodland bird that has adapted well to built environment



FRINGILLA CŒLEBS LIN.
Bajink 1 ♂ 2 ♀

Female

Chaffinch



Male

“Chaffinches are prone to becoming blind” (Folio 50v)



This line from the manuscript may refer to a practice at the time where people believed that in order to get **high quality song** from the bird, one needed to **blind** it.

Birds were often caged to listen to their song.

Present Day

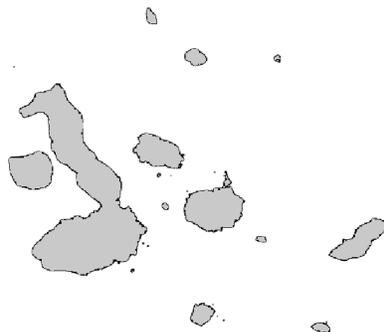
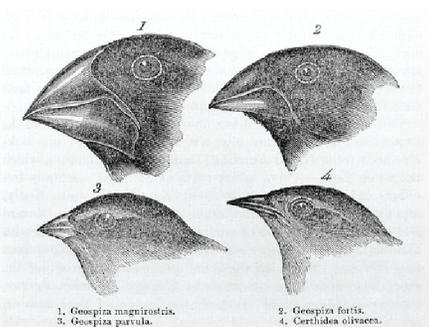
1500s (Time of Ms. Fr. 640)



Watercolor of Female Chaffinch by artist Isaac La Grese (1554-1564)

Part of genus **Fringilla**

Species of finch



Single ancestor species of the finches arrived in Galápagos Islands

2-3 million years ago

Horsetail or Scouring-Rush Family

Species of the genus **Equisetum**

Only remaining in the family
Equisetaceae



Present Day

1500s (Time of Ms. Fr. 640)



"The silica deposits of *E. thermale* hint at a physiological mechanism of **stress tolerance**...as silicon uptake ameliorate[s] salt, heat, and heavy metal stresses in living crop plants.

These adaptations exist in the horsetails to this day, illustrating that the genus developed a successful set of tools for life in **extreme environments** and has maintained them for millions of years" (Channing).



Also called "**prele**", as referred to in manuscript

In one entry, used as a **brush** to polish (Folio 6r)

Diverse group of plants of class **Equisetopsida** dominated under-story of late Mesozoic forests



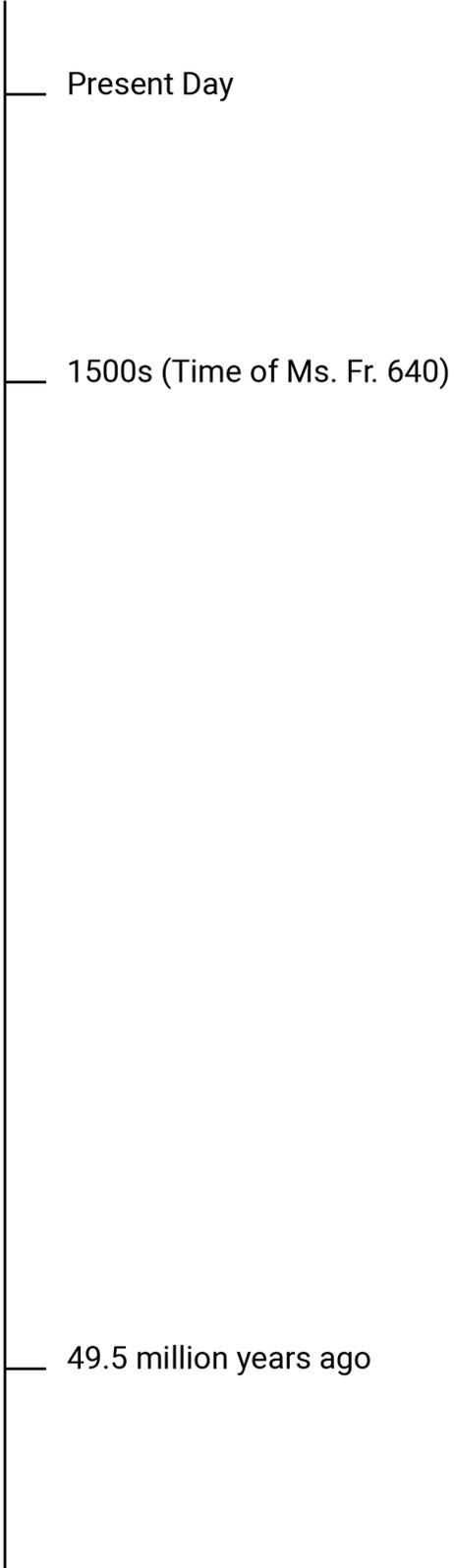
250-65 million years ago

Used to reach **towering heights of 30+ meters**

Sumac

In the cashew family
Anacardiaceae

**Deciduous shrub /
small tree**



Rhus coriaria Botanical Drawing (1785)

Leaves and berries had medicinal uses in early

Used as an ingredient in a medicinal plaster (Folio

Species likely used in recipe in manuscript was **Rhus coriaria**—a local species in southern Europe (Liu, 2017)



Found in mountains and woods of Mediter-

Both sap and fruits of Rhus coriaria are poison-

Rhus hybrid fossil, Washington



49.5 million years ago

Wormwood

Artemisia absinthium L.
(wormwood) is a species of
the genus **Artemisia**



1772 Illustration

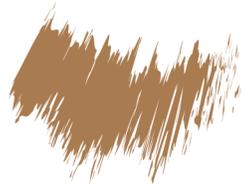
Also referenced in
manuscript as
being **fragile**:
“Molds can only be
used once because
for delicate things,
like wormwood &
others”
(Folio 107v)



Herbaceous, perennial

Height: 0.5–1.1 m (sometimes larger)

Branched flowering tops have light
yellow flowers



Wormwood appears in the
manuscript numerous times,
once using “**wormwood powder**”
for “Medicine for the Stomach”
(Folio 37r)



Wormwood extracts used in production
of popular spirit **absinthe**

Present Day

1500s (Time of Ms. Fr. 640)

Naturally grows in uncultivated fields, roadsides, rocky slopes—prefers arid ground

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