


Hunted to Extinction: Finding Lost Species in the World of Bernard Palissy (1510–89)

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Contrary to the idea that awareness of extinction is quintessentially modern, this article argues that Bernard Palissy conceived of extinct species—what he called “lost species” (“espèces perdues”)—in the sixteenth century. This premodern craftsman knew that human activity caused species to vanish. But how? By retracing his interactions with merchants and fishermen at the French Atlantic ports, I show that Palissy learned about the overfishing of waters from other commercial actors. Rather than paint human-caused extinction as a novel insight, I demonstrate that Palissy drew on common vernacular knowledge about the depletion of the ocean. Palissy’s pronouncements, it is further shown, expand his well-known polemic against bookish learning. The artisan championed practical experience against a textual tradition of natural history, exposing the latter’s silence on commercially decimated species.

INTRODUCTION

IN THE MIDDLE of France’s Atlantic coast, north and south of the Gironde estuary, lie the ports of La Rochelle and Bordeaux. These ports were once the bustling centers of France’s global fishing industry. During the sixteenth century, French commercial vessels depleted the Bay of Biscay to such an extent that they set sail for the Arctic Circle in search of more stock. Half a century before the English set foot on North America, French fishermen arrived on the shores of Newfoundland, filling up their nets with cod and shipping it back in barrels to fish markets in France (fig. 1).¹

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¹ Mitchell, 158–60, 168–72; Innis, 11–51; Turgeon.

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Figure 1. Frans Snyder and Cornelis de Vos. *Fish Market*, ca. 1620–30. KHM-Museumsverband / Public Domain.

The expansion of commercial fishing operations into the Atlantic frontier marked the accelerating world of Bernard Palissy (1510–89).² Palissy was a local of Saintes, a town squeezed between the ports of La Rochelle and Bordeaux. One cannot say with certainty that Palissy was born in Saintes, but the first fifty years of his life were so centered on this place that one may call him Saintonaise. Later in life, he remembered the cliffs around the town and the marine fossils they contained. Palissy recalled:

I walked along the rocks of this town of Saintes, and while contemplating their natures, I perceived in a rock certain stones shaped in the manner of a sheep's horn . . . One day a man named Pierre Guoy (a bourgeois and sheriff of this town) . . . made me a present of said stone, about which I was greatly delighted. And from then on I knew that said stone had formerly been a shell of a fish, which fish we see no more.

“This kind of fish is lost because it has been fished too often.” Such was Palissy's verdict on the fossils that today are called †*Caprina* (fig. 2).³

² See Bolster, 12–48.

³ Palissy, 1563, fol. E3^v: “Je me pourmenois le long des rochers de ceste ville de Xaintes, et en contemplant les natures, j'apperceu en un rocher certaines pierres, qui estoient faites en façon d'une corne de mouton, non pas si longues, ni si courbées, mais communement estoient arquees, et avoyent environ demi pied de long. Je fus l'espace de plusieurs annees, devant que je



Figure 2. Fossilized marine shells, †*Caprina*, at Saintes. © Pascal Goethgheluck / Science Photo Library.

In this article, I explore Palissy's conception of lost species (*espèces perdues*) in relation to commercial fishing and its perceived impact on the ocean. I argue that awareness of human-induced extinction was widespread among sixteenth-century merchants and fishermen. Generally, my research questions the prevailing assumption within scholarship that the idea of extinction was a nineteenth-century innovation.⁴ Specifically, I argue that Palissy's claims about the disappearance of species were far from unique, and that the artisan was drawing on vernacular knowledge about the commercial depletion of oceans and rivers. Accordingly, Palissy's understanding of human-induced species loss was grounded in the

cogneuse qui pouvoit estre la cause, que ces pierres estoient formees en telle sorte: mais il advint un jour, qu'un nommé Pierre Guoy, Bourgeois et Eschevin de ceste ville de Xaintes, trouva en sa Mestairie une desdites pierres, qui estoit ouverte par la moitié, et avoit certaines denteleures, qui se joignoient admirablement l'une dans l'autre: et parce que ledit Guoy sçavoit que j'estois curieux de telles choses, il me fit un présent de ladite pierre, dont je fus grandement resjouy, et dès lors je cogneu que ladite pierre avoit esté d'autre fois une coquille de poisson duquel nous n'en voyons plus. Et faut estimer et croire que ce genre de poisson a d'autres fois fréquenté à la mer de Xaintonge: car il se trouve grand nombre desdites pierres, mais le genre du poisson s'est perdu, à cause qu'on l'a pesché par trop souvent." See Plaziat, 2011, 258, for the paleontological determination.

⁴ There are many excellent histories of manmade extinction for the nineteenth and twentieth centuries, including Barrow; Cowles; Alagona; and Sepkoski. This modern chronological arc is reiterated in popular histories of the subject, such as Kolbert, which won the Pulitzer Prize. The rise of extinction in modern paleontology is expertly discussed in Rudwick, 349–415.

practical experience of fishermen and merchants whom he met at the ports of La Rochelle and Bordeaux.

For decades, environmental historians have argued that European colonization was the driving motor behind the extinction of species.⁵ Strikingly, however, there is no scholarly account of how species loss was articulated by contemporary voices—indeed, contemporary awareness of it is most often denied.⁶ This article urges early modern historians of all stripes to investigate how the extinction of species was experienced in the premodern world. Palissy, for example, saw the vanishing of species not as a story of ecological decline but as a humdrum truth of commercial society. For an artisan, it was a banal fact that human consumption eventually caused species to disappear. This was simple knowledge of the marketplace: extinctions were unremarkable.

Human environmental agency is now recognized as a premodern category. Sara Miglietti and Lydia Barnett have shown how physicians and philosophers of the period voiced deep concerns about the environment, expressing a sense of moral culpability for human alterations to the natural world.⁷ In addition, scholars have analyzed a range of political projects to reengineer the environment, from improving the soil and draining the fenlands to efforts at reforestation.⁸ Following in the footsteps of recent work, this article opens up a new domain of premodern ecological awareness: manmade extinction. By stepping outside of the religious frame of recent work, I show that ideas about human-induced extinction were not rooted in Christian notions of sin or classical sources, but that a heightened awareness of species loss emerged from the commercial depletion of the ocean in the sixteenth century.

Since Pamela Smith and Paula Findlen's *Merchants and Marvels*, scholarly interest has renewed in how global trade reshaped the production of natural knowledge.⁹ Palissy offers a promising case to rethink this question, for the artisan attempted to document how overfishing had permanently scarred oceans and rivers. I read Palissy's investigations as an attempt to make vanished species part of empirical fact-collecting.¹⁰ Palissy viewed this knowledge as highly valuable, because it handed him a rhetorical tool to assert himself as an authority on

⁵ The classic statement is Crosby. See more recently Grove, 145–52; Richards, 9–10, 463–616.

⁶ Rare exceptions are Poole, 124–27; and Keller.

⁷ Barnett, 2015; Zilberstein; Miglietti and Morgan; Barnett, 2019; Miglietti, 2020; Miglietti, 2023.

⁸ See Grove; Jonsson; Falkowski; Ash; and Pluymers. The close attention to actors' categories and practices traces back to the beginnings of environmental history: see Cronon.

⁹ Smith and Findlen. Two central follow-up works are Cook; and Margócsy.

¹⁰ On the latter see Grafton and Siraisi; Ogilvie; Egmond, 2010; and Egmond, 2017.



Figure 3. Palissy’s ceramic plate with marine creatures from the French Atlantic. © Musée de Beaux-Arts, Lyon.

nature. While knowledge of extinction was common within the oral culture of merchants, it was mostly unknown within the scholarly world of writing.

Palissy is perhaps best known among art historians for his unique craftsmanship, the intricate rustic plates (*rustiques figulines*) that made him famous in his own time and would attract imitators for centuries (fig. 3).¹¹ For his ceramic plates, Palissy used a technique called “casting from life” in which real animals—lizards, frogs, snakes, shells—served as templates for his clay molds. Palissy boasted that “these animals will be sculpted and enameled so close to nature that other natural lizards and snakes will often come to admire them.”¹² Yet his exact method has remained a secret. Historians of science—Pamela Smith foremost among them—are only now beginning to reconstruct the techniques that Palissy and his contemporaries used. The difficulty of translating words back into actual practices explains why Palissy has recently received attention as an advocate of “artisanal epistemology”—knowledge that was consciously opposed to textual learning, because it could not be explicitly written down.¹³

I argue that Palissy’s notion of extinct species—what he called “lost species and kinds” (“espèces et genres perdues”)—fits into his espousal of artisanal

¹¹ Amico, 82–129.

¹² Palissy, 1563, fol. I1^v: “Lesdits animaux seront insculpez et esmaillez si pres de la nature, que les autres lizers naturels et serpents, les viendront souvent admirer.”

¹³ Smith, 2004, 100–06; Smith and Beentjes; Smith, 2019. See further the essays collected in Smith, Meyers, and Cook; as well as *The Making and Knowing Project*.

epistemology.¹⁴ For Palissy, lost species were not lost just from the natural world; they were lost from the written record. Palissy's idea of lost species, I argue, formed part of his well-known polemic against bookish learning. I show how Palissy engaged in a practice I call negative reading: the attempt to demonstrate that lost species were forgotten by and absent from received texts. Palissy championed practical experience of nature against a bookish tradition of natural history, trying to expose the latter's silence on commercially decimated species.¹⁵

THE ARTISAN AND HIS SHELLS

An artisan his entire life, Bernard Palissy struggled to make ends meet.¹⁶ Born in 1510, he trained as a *vitrier*—a maker and painter of glass—traveling as a journeyman and working from town to town. Around 1540 he settled down in Saintes, abandoning the art of stained glass. He turned instead to the task of enforcing the despised salt tax (*gabelle*) for the French Crown, which led him to survey the salt marshes around Saintes. On these trips Palissy conducted his own natural history investigations and developed a keen interest in fossils. Back in Saintes, he continued to experiment with ceramics in his workshop. Palissy's tireless attempts to imitate Chinese porcelain—reducing his family to poverty, even burning their furniture to feed his insatiable furnaces—ended in both failure and success.

While surveying the salt marshes of the Saintonge, Palissy developed his approach to natural history. During his trips he theorized—following the precepts of Paracelsian alchemy—that the salt marshes continually enveloped dead animal bodies, filling their pores with mud and hardening them into stone.¹⁷ This particular notion of petrification is significant, as Palissy himself converted animals into stone. He saw fossils akin to the products of his artisanry: creatures had fossilized just in the way that he himself pressed dead animals into clay.¹⁸ It has been shown that the shells, lizards, and toads that Palissy cast into his ceramics were all gathered from his local surroundings, first near the Atlantic coastline and later in the regions around Paris.¹⁹ As the French geologist Jean-Claude Plaziat discovered, Palissy even cast fossils themselves into his plates, thus creating an impression of an impression of an animal.²⁰

¹⁴ I render *genre* as “kind,” because a clear hierarchy of species and genus only emerges in seventeenth-century taxonomy. See Wilkins, 65–68; and Schneider, 184.

¹⁵ To date, the only analysis of Palissy's ideas about extinction is Delord, 111–36.

¹⁶ Numerous (mostly nineteenth-century) biographies of Palissy exist: Cap; Morley; Brightwell; Audiart; Dupuy. The newest biography appeared in 1996: Amico.

¹⁷ Newman, 154–62. For Paracelsian chymistry, see Principe, 127–36; and Roos.

¹⁸ Daston and Park, 286; Shell.

¹⁹ The best scientific analysis is Plaziat, 2019.

²⁰ Plaziat, 1997.

In 1563, the provincial potter from Saintes moved to the urban center of Paris. Now under the patronage of Catherine de' Medici, the queen mother, Palissy lived in the gardens of the Tuileries Palace and ran a workshop under the auspicious title of "Worker of the Earth and Inventor of Rustic Ware" ("Ouvrier de Terre et Inventeur des Figulines Rustiques"). Palissy's labor brought forth splendid grottoes and fountains that adorned the royal gardens. But they never brought forth wealth. Even at the height of his abilities, Palissy was mockingly known as the "pauvre Potier M.[onsieur] Bernard."²¹

As a Huguenot, Palissy faced countless trials during the French Wars of Religion (1562–98). He was imprisoned for heresy on multiple occasions, his workshop raided, his tools destroyed. Palissy would have died on the night of 23 August 1572—the bloody purge of Saint Bartholomew's Day—had Catherine de' Medici not offered him her protection. Palissy escaped to Sedan, an independent principality ruled by a Huguenot. And it was there, in the Ardennes mountains, that he studied fossilized shells once again.

Neil Kamil has shown that shells formed a persistent theme in Palissy's thought. For Palissy, shells were protective houses built by creatures against their predators, and he drew countless analogies between shells and fortresses.²² I hasten to note that "shell" (*coquille*) was a wide-ranging term at the time. In Latin, the terms *concha*, *cochlea*, *conchylium*, *testa*, *limax*, and *testudo* were often interchangeable. No principal distinction existed between the shell-houses of terrestrial snails and marine organisms.²³ Hence Palissy's belief that fossil shells evidenced snails that once abounded inland in rivers and lakes.

Palissy firmly believed that humans had hunted these amphibious snails to extinction. The tragic failure of their fossilized shell-houses reflects Palissy's own life experience: French Huguenots were themselves at the brink of extinction, seeking refuge in fortresses like La Rochelle that were besieged and destroyed many times over, and migrating increasingly to the New World to escape those who hunted them (fig. 4).²⁴ The extinct shell-fortresses Palissy found in the earth told of a sinister past; towns like La Rochelle, one of the only Huguenot bastions remaining, of a sinister future. It is striking that Palissy began to design a walled refuge after seeing "so many species of houses and fortresses, which certain small fish had made." Because these creatures were weak

²¹ Audiat, 447.

²² Kamil, 5–7, 76–99.

²³ Kuechen, 489–90.

²⁴ See Rambeaud on the Huguenot refugees in La Rochelle; see Butler for the subsequent migration to the New World.



Figure 4. A broadside of 1573 showing the siege of La Rochelle. © The Trustees of the British Museum.

by nature, they erected “marvelously excellent fortresses against the intrigues of their enemies”—and Palissy hoped to learn from their protective homes.²⁵

In 1575, Palissy felt it safe to return to Paris, where he gave lectures on natural history to a learned audience. While he had printed his first work in La Rochelle—a symbol of Huguenot resistance—he decided to publish his lectures with a printer in Paris under the title *Discours admirables* (Admirable discourses, 1580).²⁶ He held his lectures inside his workshop in the Tuileries gardens, because the shelves in his museum housed the evidence for his assertions. Palissy made powerful rhetorical use of objects. He would point to fossils, and other specimens, as part of his demonstrations. No wonder that the printed version of his lectures urged readers to “come and see my cabinet” so they could observe “marvelous things which are placed there as witness and proof of my writing.”²⁷

²⁵ Palissy, 1563, fol. P4^r: “J’apperceu tant de diverses especes de maisons et fortresses, que certains peti[t]s poissons avoyent faites de leur propre liqueur et salive, que deslors je commençay à penser, que je pourrois trouver là quelque chose de bon, pour mon affaire. Adonc, je commençay à contempler l’industrie de toutes ces especes de poissons. . . . Quant est des foibles [poissons], je trouvoy que Dieu leur avoit donné industrie, de savoir faire des fortresses merueilleusement excellentes à l’encontre des brigues de leurs ennemis.”

²⁶ Palissy, 1580. Modern editions of the lectures exist, and I have consulted both Dittmann (German) and La Rocque (English). In the cases where I deviate from La Rocque’s translation, I quote the French original.

²⁷ Palissy, 1580, xiii; La Rocque, 27; Dittmann, 9.



Figure 5. Ammonites, mostly †*Cardioceras*, from the Ardennes. Photo by the author.

Based on the labels that Palissy wrote for his specimens, the geologist François Ellenberger ventured that a group of spiral fossils must represent ammonites that Palissy found in the Ardennes mountains (fig. 5).²⁸ The label for these fossils instructed visitors inside Palissy’s museum to realize a startling truth:

Look at all these species of fish I have placed before your eyes: you will see some among them whose seed [*semence*] is lost. And we do not know at present how these ought to be called.²⁹

Loss of seed—together with loss of a name—indicated the deepest loss: historical oblivion. The label continued:

You clearly see that all these forms of shells converted into stone were once living fish. And because the memory of and familiarity with all these species has been lost, we can nevertheless recognize—on the basis of other species that remain familiar and were also converted into stone—that nature does not create any of these things without reason.³⁰

²⁸ Ellenberger, 144.

²⁹ Palissy, 1580, 353; La Rocque, 236; Dittmann, 271: “Regarde toutes ces especes de poissons que j’ay mis devant tes yeux, tu en verras un nombre desquels la semence en est perdue, et mesmes, nous ne sçavons à present comment il les faut nommer.”

³⁰ Palissy, 1580, 357–58; La Rocque, 238–39; Dittmann, 274–75: “Tu vois evidemment que toutes ces formes de coquilles reduites en pierres, ont esté autrefois poissons vivants et par ce que de toutes ces especes la memoire et usage en est perdue, ce neantmoins par les autres especes qui sont en usage, sont aussi reduites en pierres, nous pouvons aisement connoistre que nature ne fait rien de telles choses sans sujet comme j’ay dit cy dessus. Et pour ces causes j’ay mis un parquet à part et du genre que tu vois estre formé en façon de lignes spirales.”

Remarkable is that Palissy reserved a special shelf (*parquet*) for the spiral fossils whose seed had ended. The display of such fossils proved that lost species had disappeared from knowledge just as they had from nature.

The context for these demonstrations is difficult to reconstruct. Palissy reports that he hung up signs advertising his lectures on street corners and charged an admissions fee of 1 crown.³¹ He also published a list of his audience members (mainly the learned physicians of Paris) in an attempt to establish credibility.³² The two most well-known attendees of his lectures were Ambroise Paré (1510–90), surgeon to the king and author of several chirurgical treatises; and Pierre Pena (1535–1605), a medical man who had published a Latin work on plants, the *Stirpium Adversaria Nova* (A new adversary of plants, 1571). I mention their writings because Palissy polemically chastised bookish learning in front of his audience.

While editing his lectures for publication, Palissy rewrote them into a dialogue between Theory and Practice, adopting the dialogue format he had used in previous works. It is usually assumed that Practice is the voice of Palissy and Theory the voice of a bookish opponent.³³ However, I argue that practical experience and bookishness converge in Palissy's own analysis of extinct forms. For his complaint that lost species possessed no written memory led him to sift through texts to highlight this omission.

EXTINCTION AND COMMERCE

Let me begin by characterizing the idea of lost species. Did Palissy imply that species had vanished off the face of the earth? Or were these disappearances limited to a geographic region? It might seem puzzling that Palissy never explicitly hypothesized this point. The reason, I believe, was his refusal to go beyond the limits of his own experience. For Palissy, numerous species had vanished from view. The artisan diligently compared his fossils with marine shells from all over the world. No matter how hard he tried, certain fossils could not be identified with living species. All that Palissy knew (and could ever know) was that such fossils were not known to be alive; they were hence “lost.”

At the beginning of his lectures, Palissy introduced a crucial distinction. He contrasted all those species that were lost with those that were still commonly known: “Sometime after I had gathered various petrified shells and fish, I decided to represent or capture in drawing those I had found petrified, in order to distinguish them from vulgar [species], with which familiarity is nowadays

³¹ Palissy, 1580, 208; La Rocque, 154; Dittmann, 167.

³² Cameron et al., 2:232–35.

³³ Cf. Damm, Thimann, and Zittel, 52–60.

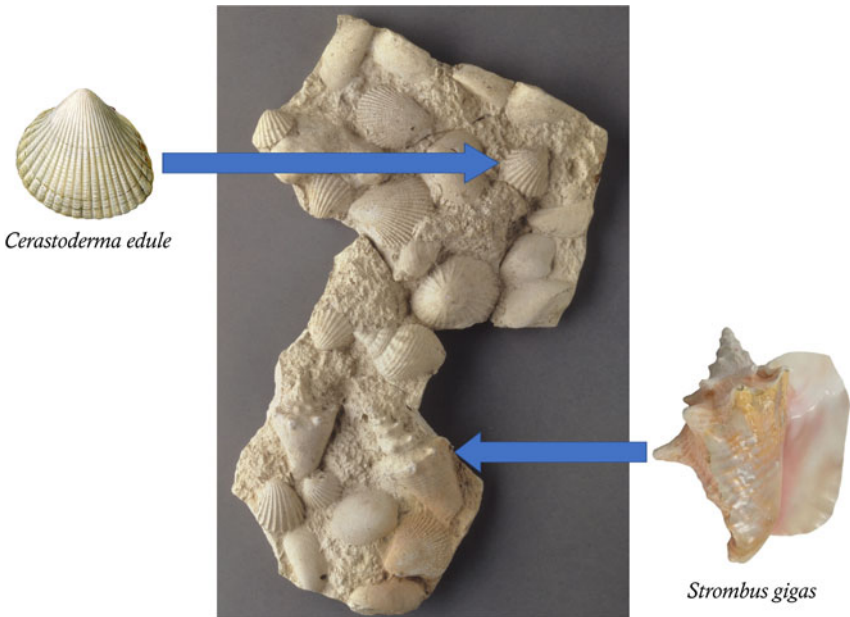


Figure 6. Fragment from Palissy's grotto, ca. 1556–90, containing shells from across the globe.
© Réunion des musées nationaux – Grand Palais.

common.”³⁴ His artistic creations reveal that the artisan was familiar with a wide range of marine organisms. A modern analysis of his ceramics and grottoes has shown that he had intimate knowledge of shells from all of the world's oceans.³⁵ A vivid sense of the range of specimens is provided by the fragment of a grotto (fig. 6) that Palissy assembled for his patron Anne de Montmorency, Grand Master of France.³⁶ Palissy decorated the grotto with shellfish from both the coast of France (*Cerastoderma edule*) and South America (*Strombus gigas*)—specimens he obtained from France's Atlantic ports. The shells Palissy acquired for his artisanal casting acquainted him with marine organisms from all over the world.

In limited cases, Palissy likened the shells within his collection to the fossil forms he had found. He observed that some fossils resembled mussels from the

³⁴ Palissy, 1580, 225; La Rocque, 163; Dittmann, 179: “Quelque temps apres que j'euz recouvert plusieurs coquilles et poissons petrifiez, je fus d'avis de reduire ou mettre en pourtraiture ceux que j'avois trouvé lapifizez pour les distinguer d'avec les vulgaires, desquels l'usage est à present commun.”

³⁵ Plaziat, 2019, 112. On vernacular terms for fish in the period, see Sainéan.

³⁶ Amico, 18. See also Dimier.

Meuse river while others resembled oysters in the Atlantic.³⁷ Palissy remarked that certain fossils even looked like species from the tropics: “One finds in the Champagne and Ardennes such [fossils] that resemble some species of several kinds of purple shells, whelks, and other large snails whose kinds one does not find in the [Atlantic] Ocean, and that we do not see except through seafarers, who very frequently bring them back from the Indies and Guinea.”³⁸ Palissy’s trips to the coastal ports, in particular La Rochelle, had acquainted him with a global marketplace for shells, allowing him to find many suitable analogies for the fossils he had collected.³⁹

But most interesting for Palissy were fossils for which he could find no counterparts in living forms at all:

No matter how many petrified shells I found of oysters, cockles, venus clams, sea snails, mussels, angelwing clams [*d’alles*], razor clams, scallops, sea-urchins, crayfish, great green turbans [*burgaulx*], and all the other species of snails which inhabit the aforementioned ocean, I still found in many places—both within the fresh lands of the Saintonge and Ardennes and the region of the Champagne—species whose kind is outside our knowledge and which are only discovered in petrified form.⁴⁰

Palissy claimed to have found fossils in the “thousands and millions” that appeared to be missing from nature. How was he to explain this fact? It is here that Palissy’s knowledge of the commercial fisheries became central.

I return to his first encounter with fossils in the Saintonge. In his *Recepte véritable* (True recipe, 1563), Palissy explained their meaning:

One must believe and suppose that this kind of fish was once numerous in the sea of the Saintonge, because one finds a great number of said stones. But nowadays this kind of fish is lost [*perdu*], because it has been fished too

³⁷ Palissy, 1580, 222; La Roque, 162; Dittmann, 177.

³⁸ Palissy, 1580, 226; La Roque, 164; Dittmann, 180: “Il s’en trouve en la Champagne et aux Ardennes de semblables à quelque especes d’aucuns genres de pourpres, de buccines, et autres grandes limaces, desquels genres ne s’en trouve point en la mer Oceane, et n’en void on sinon par le moyen des nautonniers, qui en apportent bien souvent des Indes & de la Guinée.”

³⁹ See Palissy, 1563, fol. Q1^v, for how he acquired shells in La Rochelle that came from Guinea on the West African coast.

⁴⁰ Palissy, 1580, 225–26; La Roque, 163–64; Dittmann, 179–80: “Et combien q[ue] j’aye trouvé des coquilles petrifiées d’huîtres, sourdons, avallons, jables, moucles, d’alles, couteleux, petoncles, chastaignes de mer, escrevices, burgaulx, et de toutes especes de limaces, qui habitent en ladite mer Oceane, si est ce que j’en ay trouvé en plusieurs lieux, tant és terres douces de Xaintonge que des Ardennes, et au pays de Champagne d’aucunes especes, d’esquelles le genre est hors de nostre connoissance, et ne s’en trouve point qui ne soyent lapifiées.”

often. Likewise, the salmon kind is also beginning to disappear from sea inlets in several countries, because we are constantly trying to catch it.⁴¹

Palissy's connection to local fishermen proved crucial for his understanding of why species disappeared. In his lectures, Palissy repeatedly invoked the "fishermen of the Saintonge" ("pêcheurs de Xaintonge"). This was no idle reference to his home province. Palissy elaborated in detail on the methods fishermen deployed, the nets and rods they used, and how they outsmarted their prey. He learned from local fishermen that they routinely boarded vessels to Prussia, Poland, and Russia—fisheries having expanded increasingly outward as a result of depleted waters.⁴² These interactions should be no surprise: as a potter, Palissy had lived and worked among the artisans. He frequently recalled his trips to the fish markets at La Rochelle.⁴³ Like other Atlantic ports, La Rochelle sold foodstuffs from all over the world, attempting to satiate the heightened demand for fish.⁴⁴

The overfishing of European waters began in the late Middle Ages. Environmental historians now recognize that the rise of commercial fisheries in twelfth-century Europe led to rivers and estuaries being severely depleted.⁴⁵ This problem was swiftly perceived. In 1285, Edward I of England imposed the Salmon Preservation Act to protect rivers from being decimated. In 1289, Philip IV of France also issued an ordinance to limit the catch. Each river, he lamented, "yields nothing due to the evil of fishers."⁴⁶ By the start of the sixteenth century, the salmon population in Normandy had been entirely destroyed. And in Paris, where Palissy lived, salmon had vanished off the menus of wealthy Parisians.⁴⁷

⁴¹ Palissy, 1563, fol. E3^v: "Et faut estimer et croire que ce genre de poisson a d'autres fois fréquenté à la mer de Xaintonge: car il se trouve grand nombre desdites pierres, mais le genre du poisson s'est perdu, à cause qu'on l'a pesché par trop souvent, comme aussi le genre des Saumons se commence à perdre en plusieurs contrées des bras de mer, parce que sans cesse on cherche à le prendre."

⁴² Palissy, 1580, 38–39, 155, 160–61; La Rocque, 50–51, 122, 125; Dittmann, 40–41, 128, 131.

⁴³ Palissy, 1563, fol. E3^f. For Palissy's deep involvement in French commercial projects, see Heller, 1986, 248–51.

⁴⁴ Trocmé and Delafosse, 61–74.

⁴⁵ I rely on the classic article by Hoffmann, 1996. A short summary is given in Hoffmann, 2005, while its broader context in environmental history is given in Hoffmann, 2014, 155–95. Paleoenvironmental excavations support the claim that the period 1000–1300 CE witnessed an increased move from inland to deep-sea fishing; see the newest findings in Barrett, Locker, and Roberts; Barrett.

⁴⁶ Hoffmann, 1996, 648, 657–58; Bond.

⁴⁷ Hoffmann, 1996, 649–50; Halard; Desse and Desse-Berset; Sternberg.

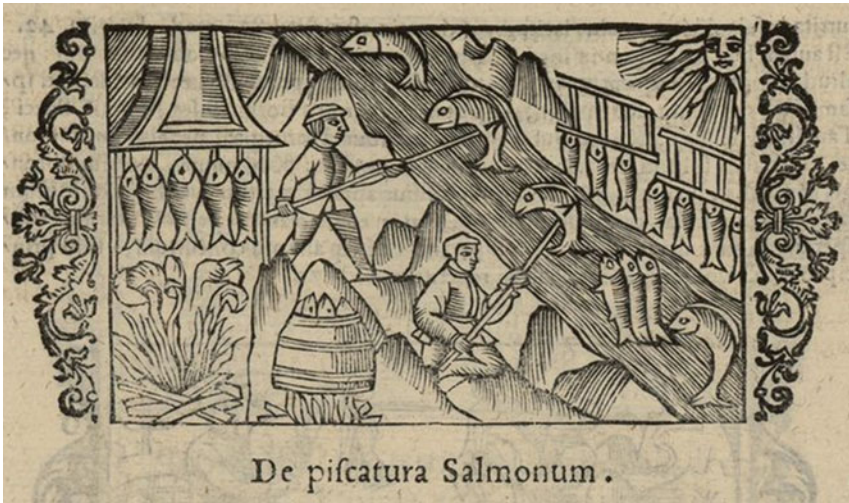


Figure 7. “On the fishing of salmon,” in Olaus Magnus’s *Historia de Gentibus Septentrionalibus* (1555). Princeton University Library.

Yet these experiences did not translate into knowledge available in contemporary books. In which modern treatise could one find such facts? A striking account of salmon fishing was given in Olaus Magnus’s *Historia de Gentibus Septentrionalibus* (History of the Nordic peoples, 1555), his famous ethnographic depiction of Scandinavia (fig. 7). While this woodcut image showed an industry at work, its meaning is surprising. “However many fish of this kind are caught,” Olaus wrote, “their number never seems to decrease in their home waters.”⁴⁸

Olaus, a scholar in exile, was compiling reports about his Scandinavian homeland from afar. Palissy, by contrast, had conversed with local fishermen and documented the effects of overfishing. Palissy stressed this fact in first-person observations: “I have seen [*j’ay veu*] many brooks where great numbers of lampreys were caught, where now no more are found. I have also seen other brooks in which crayfish were caught by the thousands, where now no more are found. I have seen rivers where salmon used to be caught, and now there are no more to be found.”⁴⁹

Palissy described the disappearance of species as a manmade process. Species were vanishing, bit by bit, due to human activities. While this observation was widespread in vernacular circles, it is nearly impossible to recover from written

⁴⁸ Magnus, 3:1033.

⁴⁹ Palissy, 1580, 215; La Rocque, 158; Dittmann, 172. See Pomata for the rise of *observatio* as an epistemic genre.

sources. Monica Azzolini has shown how sailors, fishermen, and merchants circulated knowledge by word of mouth, forming an oral culture of knowledge about the ocean.⁵⁰ Palissy conversed with Saintonaise fishermen and heard of the push to overseas fishing. Domestic waters were so depleted that fishing operations had expanded into the frontier in search for new stock: nowadays, Palissy explained, “we must even fetch cod from Newfoundland.”⁵¹

Palissy was by no means unique. Since classical antiquity, commercial actors had understood the deleterious effects of overfishing and overhunting.⁵² Aristotle interviewed Greek fishermen and assessed their reports,⁵³ recording their understanding of why shellfish had disappeared from certain parts of the Aegean Sea. Hence Aristotle wrote of the large lagoon by Lesbos: “In the Euripus of the Pyrrhans the scallops disappeared [ἐξέλιπον], not only because of the instrument with which they capture and dredge them but also because of the droughts.”⁵⁴

Medieval Europe experienced many parallel instances, even though the written documentation is scarce. The royal clerk Gerald of Wales (1146–1223) observed that hunters in the British Isles had reduced beavers to a single colony along the river Tivy (Teifi).⁵⁵ Because of the significance of beaver skins to the fur trade, the animal became fully extinct in England by the sixteenth century, causing increased reliance on furs from the Baltics and Virginia.⁵⁶ In his *Poly-Olbion* (1612) the poet Michael Drayton bemoaned the death of the beaver, now the stuff of popular legend:

More famous long ago than for the Salmon’s leap,
For Beavers *Tivy* was, in her strong banks that bred,
Which else no other Brook of Britain nourished:
Where Nature, in the shape of this now-perished beast
His property did seem t’have wondrously expressed.⁵⁷

The disappearance of beavers was not a uniquely English lament. In Central and Southern Europe beavers were likewise decimated, causing them to become

⁵⁰ Azzolini.

⁵¹ Palissy, 1580, 214; La Rocque, 158; Dittmann, 172.

⁵² Hughes, 102–05.

⁵³ Lloyd, 1979, 211–12; Lloyd, 2014, 41–42.

⁵⁴ Aristotle, *Historia Animalium*, 603a21–24: “ἐν δὲ τῷ Πυρραίων ποτ’ εὐρίπω ἐξέλιπον οἱ κτένες οὐ μόνον διὰ τὸ ὄργανον ᾧ θηρεύοντες ἀνέζυον ἀλλὰ καὶ διὰ τοὺς ἀρχμοῦ.” I have closely followed the German commentary of Schnieders, 598–600. Here and elsewhere in the notes I use the Harvard referencing style for classical texts.

⁵⁵ Gerald of Wales, 174.

⁵⁶ Appleby, 17–18.

⁵⁷ Drayton, 88. I have modernized the spelling.

nearly extinct across the continent. For most Europeans, beavers faded into memory as creatures one encountered in songs and the journals of antiquarians.⁵⁸

The experience of overhunting desirable animals repeated itself in colonial arenas. The English colonizers of Massachusetts (who initially praised American nature as plentiful) were already bemoaning the widespread loss of wild turkeys by the late seventeenth century.⁵⁹ What was unique about Palissy, however, was his belief that these processes could be documented. Fossils, he argued, were material proof that lakes and rivers were once teeming with amphibious snails.⁶⁰ Rather than using fossils to verify the truth of the biblical flood (which is what many learned figures proposed), Palissy turned fossils into evidence of human commercial activity and its transformative impact on the landscape:

That the land or its rivers produce shelled fish as plentifully as the sea I prove through petrified shells, which one finds in many places by the thousands and millions. I own a great number that are petrified, ones whose seed is lost [*perdue*] because they were caught too often.⁶¹

Fossils, Palissy argued, revealed that the land was once populated by amphibious snails before they were hunted to extinction.

These disappearances could be articulated in myriad ways. Take Adriaen Coenen (1514–87), a Dutch fishmonger, who compiled two illustrated manuscripts on fish and whales.⁶² Coenen eagerly gathered knowledge from the fishing village of Scheveningen. He recorded what he had “heard from the fishermen and learned from questioning them,”⁶³ and he mixed their vernacular knowledge with information from learned works.⁶⁴ The commercialization of the ocean formed a key theme in his fish-book (*Visboek*). Coenen recorded where fish were caught and cut up, who consumed them, and how they were used to manufacture oils and ointments. His drawing of the North Sea was

⁵⁸ Veale, 175; Harper, 191–200. The Eurasian beaver (*Castor fiber*) was only reintroduced into Europe at the end of the twentieth century: see Nolet and Rosell, 165–73.

⁵⁹ Cronon, 22–24, 99–107.

⁶⁰ Palissy, 1580, 214–22; La Rocque, 158–62; Dittmann, 172–77.

⁶¹ Palissy, 1580, 215; La Rocque, 158; Dittmann, 172: “Et que la terre ou rivières d’icelle ne produisent aussi bien des poissons armez comme la mer, je le prouve par des coquilles petrifiées, lesquelles on trouve en plusieurs endroits par milliers et millions, desquelles j’ay un grand nombre qui sont petrifiées, dont la semence en est perdue, pour les avoir trop poursuyvis.”

⁶² The pioneering editions are Egmond and Mason; and Egmond, 2005.

⁶³ Egmond, Mason, and Kees, 158.

⁶⁴ On Coenen’s sources see Egmond, 2005, 193–211.



Figure 8. The North Sea in Adriaen Coenen's *Visboek*, ca. 1579. Koninklijke Bibliotheek / Public Domain.

populated by boats, trawls, and nets—a sea plagued by never-ending commercial activity (fig. 8).⁶⁵

While Coenen never spoke of “lost species” like Palissy, he nonetheless possessed detailed knowledge of the scarcity and abundance of fish populations. For example, Coenen observed that “so many people are fed by herring, indeed incomparably more than by other foods or fish that exist in abundance.”⁶⁶ He explained the endless supply of herring through the process of salting and drying the fish for long-distance distribution. (In reality, its abundance was due to the fact that commercial catches had been regulated.)⁶⁷ Salmon, by contrast, was universally associated with scarcity. Coenen noted that salmon belonged to the fish products that were constantly missing from the market. He reported that during the life of his parents salmon was so scarce it was never available. While in Coenen’s youth it reappeared on the market for a $\frac{1}{4}$ *stuiver* per pound,

⁶⁵ Koninklijke Bibliotheek, KW 78 E 54, fols. 28^v–29^r.

⁶⁶ Quoted in Egmond, 2005, 78: “Daarom heb ik de haring . . . de naam gegeven Gratia Dei . . . want daardoor worden zoveel mensen gevoed, ja onvergelykbaar veel meer dan door andere spijzen of vissen in overloed omdat men ze gezouten en gedroogd naar verre vreemde landen kan vervoeren.”

⁶⁷ Mietes, 11–18; Unger, 256–66; Sicking. Herring stocks in the North Sea remained stable until the nineteenth century: see Poulsen, 76–80.

salmon had become extremely rare by 1578. If it was available at all, then only for a hefty price of 4 *stuiver*.⁶⁸

Palissy had observed these natural changes too. And yet he engaged in much deeper theorizations about species loss. Why? I argue that, unlike Coenen, Palissy harbored polemical intent against the world of learning. Palissy saw “lost species” as an opportunity: a chance to highlight knowledge absent from contemporary texts. Lost species, so Palissy urged, had not just vanished from the land; they had vanished from encyclopedias about nature. Palissy’s unique straddling of both commercial and scholarly arenas explains his desire to polemically thematize lost species. It is to Palissy’s engagement with contemporary learning that I now turn.

NEGATIVE READING

The very notion of lost species was a polemical construction. The idea, I claim, formed part of Palissy’s well-known polemic against bookish learning. In order to show the imperfection of books, the artisan engaged in a practice I call *negative reading*: the attempt to prove that extinct species were absent from received texts. Palissy elevated vernacular knowledge of nature over a bookish tradition of natural history, trying to lay bare how contemporary encyclopedias omitted the creatures that had vanished from nature.

Palissy hoped to provoke the learned audience of his lectures, the physicians of Paris. As Brian Ogilvie has taught us, physicians stood at the forefront of natural history, studying plants and minerals as extensions of their medical practices and producing compendia about the natural specimens they studied.⁶⁹ Palissy regularly conversed with the physicians of Paris about the natural world. He led them out into the fields and even visited their cabinets to persuade them that certain minerals in fact represented fossilized animals.⁷⁰

These learned medical men attended Palissy’s lectures. The University of Paris was then a leading center of medicine, reflected not only through its international student body but also by the fact that current professors were treated like celebrities, whose lives were written down.⁷¹ In a lecture, Palissy invoked the university’s illustrious faculty of medicine, claiming that its regent had followed his advice in banning the use of theriac and gold as medicinal

⁶⁸ Koninklijke Bibliotheek, KW 78 E 54, fols. 43^v–44^r.

⁶⁹ Ogilvie, 30–37; Grafton.

⁷⁰ Palissy, 1580, 130, 202–04; La Rocque, 150–51, 202–04; Dittmann, 109, 162–64. Two physicians whose cabinets he visited were called Ra(s)ce and Roisi; two others he consulted were Choysnin and Jules.

⁷¹ Siraisi, 116, 128–31.



Figure 9. A learned physician reading Galen. Manuscript illumination in *Galeni opera varia*, ca. 1450. Sächsische Landesbibliothek, Staats- und Universitätsbibliothek, Dresden / Public Domain.

compounds. While the faculty had indeed outlawed the use of such compounds (against the prescriptions of Paracelsian doctors), Palissy's role in this ban remains questionable.⁷²

Parisian medical science, while applied in acts of dissection and anatomy, remained a largely bookish affair.⁷³ The fame of Paris as a leading European medical center derived from its new editions of the Galenic and Hippocratic corpus.⁷⁴ Ancient medical learning found its apogee in sixteenth-century Paris, building on centuries of French humanist scholarship on the texts of Galen (fig. 9).⁷⁵

To Paris physicians, Palissy was a *vulgus*, unable to read Latin and Greek. In his lectures, Palissy provoked these figures by silencing “those who ask how it is possible for a man to know something and to speak of natural things without

⁷² Palissy, 1580, 138; La Rocque, 111; Dittmann, 115. See, for sources, Chevalier. The broader dispute around medical Paracelsianism is analyzed in Debus, 145–59.

⁷³ In 1557 a commission was created at the university to make the curriculum more applied. See Heller, 1996, 102–05; and Grafton and Jardine, 161–200.

⁷⁴ Lonie.

⁷⁵ Sächsische Landesbibliothek, Staats- und Universitätsbibliothek, Mscr. Dresd. Db.93, fol. 407^v.

having seen the Latin books of the philosophers.”⁷⁶ In a mocking tone, Palissy had Theory ask Practice from which books it had acquired its knowledge of nature:

Theory: And where have you found this written down? Or better, tell me in which school you have been, where you might have heard what you are saying?

Practice: I have had no other book than that of heaven and earth, which is known and given to all.⁷⁷

Palissy’s hostility toward texts was not unique. It echoed the previous criticisms of the Swiss doctor Paracelsus (1493–1541), who had attacked the medical establishment in Basel for its reliance on ancient books.⁷⁸ Yet Palissy introduced a new trick by displaying lost species in his museum. Palissy’s listeners could not find such creatures described in their natural history books. Parisian physicians owned impressive libraries, great storehouses of knowledge of the Latinate West. But now he, Palissy the potter, was going to show them something they had not read about or seen in any book they owned: lost species.

Palissy nevertheless engaged in some reading of his own. While he was unable to read Latin or Greek, a fact he proudly paraded, he still read learned texts in French translation. These vernacular books proved a vital resource for Palissy’s argument that lost species were wholly absent from learned texts:

I have dared to tell my disciples that Mr. Belon and Rondelet had taken pains to describe and depict the fish they had found while making their journey to Venice and that I found it strange that they had not endeavored to know the fish that once lived and abundantly reproduced in our regions.⁷⁹

Palissy named two French physicians who had failed to include within their illustrated encyclopedias the vanished shellfish that formerly inhabited their own country. Pierre Belon’s *L’histoire naturelle des estranges poissons marins* (The natural history of exotic marine animals, 1551) did not contain the extinct shell-houses Palissy found buried in France; rather, it depicted extravagant and

⁷⁶ Palissy, 1580, v–vi; La Rocque, 24; Dittmann, 9.

⁷⁷ Palissy, 1580, 199; La Rocque, 148; Dittmann, 160: “*Theorique:* Et ou est ce que tu as trouvé cela par escript, ou bien di moy en quelle escole as tu esté, ou tu puisses avoir entendu ce que tu dis? *Practicque:* Je n’ay point eu d’autre livre que le ciel et la terre, lequel est conneu de tous, et est donné à tous.”

⁷⁸ Pagel, 19–22; Smith, 2004, 82–93; Moran, 29–43.

⁷⁹ Palissy, 1580, 226; La Rocque, 164; Dittmann, 180: “J’ay osé dire à mes disciples que monsieur Belon et Rondelet avoyent pris peine a descrire et figurer les poissons qu’ils avoyent trouvez en faisant leur voyage de Venize, et que je trouvois estrange de ce qu’ils ne s’estoyent estudiez a connoistre les poissons qui ont autrefois habité et genere abondamment en noz regions.”

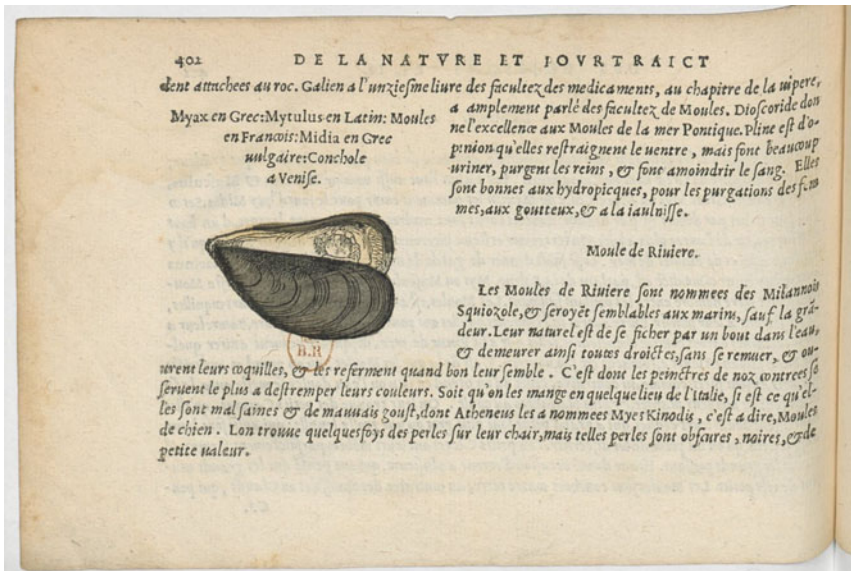


Figure 10. River mussel in Pierre Belon's *La nature et diversité des poissons* (1555). Bibliothèque nationale de France / Public Domain.

exotic marine animals like dolphins, the drawing of which came from the Venetian humanist Daniele Barbaro.⁸⁰ The absence of lost species reinforced Palissy's belief that these were lost not just from nature but also from knowledge.

Palissy used texts as a negative foil to convey that lost species had vanished from memory. Even the most esteemed physicians in France showed no familiarity with such animals in their works. While perusing Belon's most comprehensive treatise on marine creatures, *La nature et diversité des poissons* (The nature and diversity of marine animals, 1555), originally published in Latin yet available in an abridged French translation,⁸¹ Palissy did not once encounter extinct forms. All he saw were the shell-houses of known species (fig. 10).⁸² Palissy's recourse to books is no triviality. He deliberately invoked compendia of nature from which his lost species were absent. He used contemporary works to strikingly reveal that the

⁸⁰ Belon, 1551, fols. 6^v–7^r.

⁸¹ A thorough analysis of the translation is given in Glardon, 291–313.

⁸² All the shellfish Palissy labeled “modern kinds” he found in the treatises of Belon and Rondelet with a name, drawing, and description. See Belon, 1555, 360–61 (*escrevisses*), 389–32 (*chastaignes de mere*), 401–02 (*moules*), 413–14 (*petoucles*), 414–16 (*couteleux/cou(s) teaux*); Rondelet, 1:388–90 (*escrevices*), 1:413–15 (*chastaignes de mer*), 2:11 (*petoncles*), 2:25–29 (*huitres*), 2:31–32 (*couteleux/cou(s) teaux*), 2:33–34 (*moules*).

fossilized shells he had collected were woefully missing from present learning. Palissy's reading aimed to separate lost species from current knowledge. He was reading in order to find the omission.

I interpret this form of negative reading as part of Palissy's larger polemic against book learning. Palissy savaged many other Latin works he read in French translation, including Girolamo Cardano's *De la subtilité* (On subtlety, 1556). Again Palissy targeted a natural historical work written by a "famous physician," which was available to him only in translation: "I was sorry that the books of the other philosophers had not been translated into French, as this one was, to see if perchance I could have contradicted them, as I contradict Cardano in this matter of lapidified shells."⁸³ Palissy accused Cardano of repeating "such babble" ("une telle bavasse") as the common assertion that Noah's flood had transported marine shells onto mountaintops, where they were now found. If only Cardano had read the book of Genesis closely, Palissy groaned, he would have realized that Noah's flood did not originate from the overflowing of the sea but from water that had simultaneously poured out of the heavens and burst forth from the abyss.⁸⁴ Having thus rejected the sea as the original source of buried shells, Palissy quipped: "I now ask whoever holds the opinion of said Cardanus: through which gate did the sea enter in order to deposit the aforementioned shells inside the most tightly-packed rocks?"⁸⁵

Palissy was deliberately provoking known authorities from the medical establishment. Whether he actually read his "Cardanus" is debatable.⁸⁶ Importantly, Palissy's antagonism toward Latinate authors labeled his own discoveries as unbookish, hence as empirically original. Lost species fit this mold: their novelty traded on the fact that they were entirely absent from received texts.

Palissy indicted other books besides natural histories. He ranted that alchemists' "pernicious books have led me to scratch the earth during forty

⁸³ Palissy, 1580, 211; La Rocque, 156; Dittmann, 169–70.

⁸⁴ Palissy, 1580, 213; La Rocque, 157; Dittmann, 170.

⁸⁵ Palissy, 1580, 221–22; La Rocque, 161; Dittmann, 177: "Je demande maintenant à celui qui tient l'opinion dudit Cardanus, par quelle porte entra la mer pour apporter lesdites coquilles au dedens des rochers les plus contigus?"

⁸⁶ Given the way Palissy messes up Cardano here, I find it unlikely. Duhem, 311–19, argued that Palissy derived his theory of petrification from Cardano. But the fact that Palissy attributes to Cardano the idea that fossils originated from Noah's flood suggests the opposite. Cardano had merely claimed that marine fossils around Megara proved that the area was once covered by water. See Cardano, fol. 151^v: "Et ceci est un certain indice, que la mer avoit auparavant couvert la region ou est situee Megara [And this is a certain indication that the sea had once covered the region where Megara is located]."

years” and that these books aimed to “delude youth and waste its time.”⁸⁷ Despite railing against alchemical authorities, he cited the arguments for and against alchemy given by medieval authorities such as Geber, Jean de Meun, and Ibn Sīnā.⁸⁸ Moreover, he cited Pliny and Plutarch for facts about the natural history of water, even invoking Vitruvius in a voice of veneration, because the Roman architect seemed to him a figure of practical skill.⁸⁹

Artisans read ancient texts. As Ivano dal Prete has shown, vernacular translations of Aristotle’s *Meteorologica* were popular among artisans in Renaissance Italy. They prized this text for the idea that the sea had flooded land in eternal cycles, explaining through a non-biblical system of philosophy why marine fossil shells were found on mountains.⁹⁰ Palissy knew Aristotelian meteorology,⁹¹ but he rejected even this. Against the idea of earth’s cyclical submersion, Palissy (a strict Huguenot) cited Jeremiah 5:22: “I made the sand a boundary for the sea.”⁹²

Palissy regarded Aristotle’s theory as learned gibberish and knowingly put it into the mouth of his bookish antagonist:

Theory: Do you think I am so ignorant as to believe more what you say than many philosophers who say that all waters come from the sea and return to it? . . .

Practice: I am quite certain I shall win out against you and all those who are of your opinion, even Aristotle and the most excellent philosophers.⁹³

Palissy was adamant that nature itself had “taught [him] much more about philosophy than Aristotle had.”⁹⁴ The Greek philosopher was taken to have argued that the fossil shells found on hilltops had originated from the earth’s cyclical submersion by the sea. But Palissy riposted that these fossils came from amphibious snails that formerly populated lakes, rivers, and estuaries within the land, until humans exterminated them through hunting.⁹⁵

This was no grandiose narrative of the eternity of time’s cycles and the loss of civilizations, which certain Aristotelians had associated with fossils. For Palissy,

⁸⁷ Palissy, 1580, v; La Rocque, 24; Dittmann, 6.

⁸⁸ Céard; Newman, 145–47.

⁸⁹ Palissy, 1580, 20, 59; La Rocque, 40–41, 62; Dittmann, 27–28, 55. Cf. Pliny, *Historia Naturalis*, 2.106; Plutarch, *Alexander*, 77; Vitruvius, *De Architectura*, 8.2.

⁹⁰ Dal Prete, 2014; Dal Prete, 2018; Dal Prete, 2022, 65–92.

⁹¹ French translations of *La météorologie* had existed since the thirteenth century: see Ducos.

⁹² Ellenberger, 138.

⁹³ Palissy, 1580, 35; La Rocque, 48–49; Dittmann, 38.

⁹⁴ Palissy, 1580, 231; La Rocque, 167; Dittmann, 183–84.

⁹⁵ Palissy, 1580, 216–20; La Rocque, 159–61; Dittmann, 173–76.

fossils represented animals humans had hunted for sustenance: these shells were “thrown to the ground after the fish had been eaten,” and it was there that they became petrified and subsequently forgotten.⁹⁶ Palissy insisted that fossils be taken as evidence that snail-like creatures had been entirely exterminated by human hunters: “For it is certain that humans hunt the beasts and fish that are good to eat so relentlessly that in the end they cause their seed to become lost.”⁹⁷ Fossils represented species whose lineage had ended. They did not evidence philosophical theory but human activity.

Who were these ancient hunters? Palissy never explicitly identified them, but he did mention that Roman aqueducts and amphitheaters at Saintes, Nîmes, and other locations in France were “the vestiges and antiquities of our ancestors.”⁹⁸ It is likely that he saw Roman hunters in ancient Gaul as the cause of the death of these species. Palissy coupled the destruction of species to historical changes in diet: “This is something we see every day, that people eat meats that formerly no one would have eaten for the world. And in my time I have seen that there were few people who would eat turtles and frogs, and now they eat all things that they formerly did not eat.”⁹⁹ It was common knowledge that changes in consumption dictated which animals were hunted. Therefore, Palissy’s fossils had to represent shellfish that had been so popular to consume that they had vanished altogether.

A further clue is contained in Palissy’s description of fossils as “monstrous forms” and “monstrous stones.”¹⁰⁰ Monsters were supposedly hunted at the edges of the world and were often illustrated in cosmographical works of the sixteenth century.¹⁰¹ Palissy had perused such books in French, for he lampooned a group of authors he labeled “the cosmographers” (“les cosmographes”).¹⁰² The best seller was Sebastian Münster’s *Cosmographie* (1544), a German cosmography published in over thirty editions and translated into Latin, Italian, Czech, and French. Reinhard Dittmann has demonstrated that Palissy leafed through the French edition of Münster’s work, because the artisan referenced its fossils: “fish turned into metal” in “the region of Mansfeld” (correctly spelling the name of the German town).¹⁰³

⁹⁶ Palissy, 1580, 216; La Rocque, 159; Dittmann, 173.

⁹⁷ Palissy, 1580, 214–15; La Rocque, 158; Dittmann, 172: “Car pour le certain les bestes et poissons qui sont bons à manger, les hommes les poursuyvent de si pres qu’en fin ils en font perdre la semence.”

⁹⁸ Palissy, 1580, 12–17; La Rocque, 36–38; Dittmann, 21–24.

⁹⁹ Palissy, 1580, 215; La Rocque, 158; Dittmann, 172–73.

¹⁰⁰ Palissy, 1580, 209 (“formes monstrueuses”), 221 (“pierres monstrueuses”); La Rocque, 154, 161; Dittmann, 168, 176.

¹⁰¹ Mackenzie; Van Duzer. For broader context, see Davies.

¹⁰² Palissy, 1580, 195; La Rocque, 146; Dittmann, 157.

¹⁰³ Dittmann, 530–33.



Figure 11. The “monstrous snail-fish” in Thevet’s *Cosmographie Universelle* (1575). Bibliothèque nationale de France / Public Domain.

A cosmography that Palissy and his audience had almost certainly browsed was André Thevet’s *Cosmographie universelle* (Universal cosmography, 1575). This popular French encyclopedia contained many monsters, including a “monstrous snail-fish” that was reportedly hunted on the northern coasts of the Black Sea (fig. 11). According to Thevet’s description, this monstrous amphibian was scarcely seen because it avoided the shores for fear of hunters. “I told you she stays in the open sea,” Thevet noted, “but it is by force that she is fearful.” He added in an aside: “The flesh is very delicate and pleasant to eat.”¹⁰⁴

The longstanding tradition of medieval natural history had counted monstrous snails among the animals that were hunted for nutrition. An early

¹⁰⁴ Thevet, fols. 929^r–929^v: “La mer Sarmatique, qu’on dit Germanique Orientale [i.e., northern Black Sea]: C’est celle qui nourrit tant d’espèces de poissons incogneuz à ceux qui habitent és régions chaleureuses, et des plus monstrueux que l’on sçauroit voir: entre autres il s’en trouve un, tout ainsi fait qu’un Limaçon, mais gros comme un tonneau, ayant les cornes quasi comme celles d’un Cerf: au bout desquelles, et aux rameaux d’icelles, y a de petits boutons ronds et luyans, comme fines perles. Ceste Chimere ne s’apparoist gueres au rivage de la mer, ains s’en tient fort elloignee. . . . Je vous ay dit qu’elle se tient en plaine mer: mais c’est de force qu’elle est craintive . . . La chair en est fort delicate, et plaisante à manger.”



Figure 12. Giant snail-houses on the island of Taprobane in *Les secrets de l'histoire naturelle*, ca. 1380. Bibliothèque nationale de France, MS Fr. 22971, fol. 60^v. Bibliothèque nationale de France / Public Domain.

example is found in the *Les secrets de l'histoire naturelle* (The secrets of natural history), a manuscript of natural history that was first compiled around 1380 and reproduced in French commercial ateliers in the fifteenth century, running through multiple editions with updated illuminations.¹⁰⁵ The popular *Secrets* mixed folkloric accounts of marvelous beasts with ancient sources, in one case detailing a society that hunted giant snails for meat and used their shells for housing (fig. 12).¹⁰⁶ The accompanying description of the island of Taprobane (near Sri Lanka) quoted the ancient authority Solinus:

¹⁰⁵ Friedman, 23–26.

¹⁰⁶ Bibliothèque nationale de France, MS Fr. 22971, fol. 60^v.

Solinus says that among the progeny of Taprobane grow the biggest snails that exist in the world, and they move so quickly that it is a marvel, and the men of the country hunt and chase them as we over here hunt wild animals. And the people of the region live on their flesh. And the shells are so big that the men and women of the country live inside them, and they have no other houses or habitations.¹⁰⁷

Subsequent manuscripts quoted Solinus alongside depictions of monstrous snails hunted for food and their protective shells.¹⁰⁸

This was important for Palissy's listeners—learned physicians. When Palissy showed his audience the fossil shells of creatures he deemed extinct, this well-read audience would have made connections with the natural history of monsters. Monsters were a subject of learned medicine.¹⁰⁹ And the most famous figure in Palissy's audience, the surgeon Ambroise Paré, had recently published his *Des monstres* (On monsters, 1573). Paré exemplifies the study of monsters within learned medicine, as described by Fabian Krämer, in which reading and observing went hand in hand.¹¹⁰ Palissy stood in close contact with the world of learned medicine, proudly showing his listeners the monstrous snail-forms he had found in fossils.

To what extent this argument resonated with his audience is impossible to recover. An alternate view among learned physicians held that fossils were mere jokes of nature (*lusus naturae*).¹¹¹ "You must not think," Palissy cautioned his listeners, "that these shells were formed, as some say, because Nature amuses itself."¹¹² Yet that is precisely what Paré had claimed in *Des monstres* (1573), proclaiming fossils as nature's jokes: "One sees in stones and plants effigies of humans and other animals, and there is no explanation other than to say that nature is playing in her works."¹¹³ Paré—arguably Palissy's most illustrious listener—believed fossils to be mere tricks in stone. He had no problem with the monsters propagated in books, but he rejected those that Palissy alleged in stones.

This exemplifies the tragedy of Palissy's reception. Palissy was among the very few to explicitly express the loss of species in writing. But the Huguenot

¹⁰⁷ Bibliothèque nationale de France, MS Fr. 22971, fol. 61^r; translated in Friedman, Giogoli, and Figg, 293. Cf. Solinus, *Polybistor sive De Mirabilibus Mundi*, 53.19. The analysis in Kamil, 122–24, is problematic.

¹⁰⁸ Morgan Library & Museum, MS M. 461, fol. 78^r.

¹⁰⁹ Daston and Park, 173–214.

¹¹⁰ Krämer, 58–61.

¹¹¹ Findlen.

¹¹² Palissy, 1580, 219; La Rocque, 160; Dittmann, 175.

¹¹³ Paré, 532–33: "On voit dans des pierres et plantes effigies d'hommes, et autres animaux, et de raison il n'y en a aucune, fors de dire que nature se joue en ses oeuvres."

died imprisoned in the Bastille, condemned as a heretic. A limited print run meant that his lectures were not widely read.¹¹⁴ Their significance was only truly rediscovered in the eighteenth century, when the French savants of the Académie des sciences found new meaning in them.¹¹⁵ Palissy's assertions about lost species were not a common reference point in the debates about extinction that would begin reverberating in the early modern world. But Palissy gave voice to an otherwise silent artisanal sphere, complaining that lost species remained absent from written traditions and needed to be rescued from oblivion.

CONCLUSION

Bernard Palissy, a sixteenth-century potter, ranks among the first to complain—in writing—that human activities had caused species to disappear. His concept of “lost species” (“espèces perdues”) was intended to resonate in a dual sense: species lost from nature were also lost from memory. Like the lost texts of antiquity, lost species embodied forgotten knowledge in need of recovery. Palissy chastised modern encyclopedias of natural history for having utterly failed to record the animals that had vanished. As these species no longer existed, Palissy reasoned, one had to seek out their remains within the regions where they had formerly flourished.

Palissy's understanding of manmade extinction stemmed from the oral culture of fishing ports and merchant towns. Not only did fishermen and hunters know which animal populations had disappeared, but they related that information to their own activities. When Palissy delivered lectures to Paris's learned elite, the city was in the midst of an economic boom: its 250,000 inhabitants comprised countless craftspeople and merchants.¹¹⁶ It was their knowledge that Palissy championed through the idea of lost species, emphasizing practical experience of nature over bookish traditions of natural history.

Yet the claim that lost species were absent from learned books is not the end of the story. Are texts really so imperfect? Pierre Belon—one of the authors Palissy attacked—had in fact described the fisheries of Ottoman Turkey, detailing how the rise of fishing villages and pescatarian diets had caused the

¹¹⁴ The only pre-1700 discussions of Palissy's ideas about fossils I am aware of are (1) ETH Bibliothek, Rar 10565, fols. 216–23, where an anonymous reader of the *Discours Admirables* annotated (and reformulated) Palissy's theory of petrification; and (2) a casual reference in Ray, 118.

¹¹⁵ Ellenberger, 135–36; Bertucci, 54–55.

¹¹⁶ Benedict, 9.

decline of coastal eel populations.¹¹⁷ Lost species only acquired their aura of oblivion because the texts that Palissy read did not feature them. Palissy's limited reading, while deliciously polemical, did not accurately portray contemporary knowledge. It thus remains the task of the historian to explore how lost species were in fact debated, to recover the range of experiences around extinction in the early modern world.

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¹¹⁷ Belon, 1553, 32^v–33^r, 69^v–73^v.

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