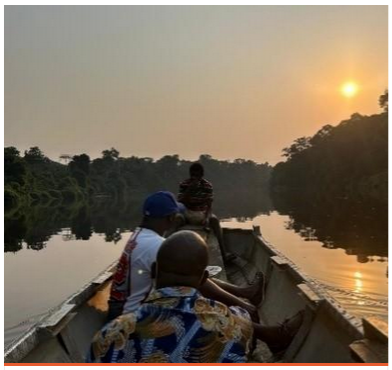
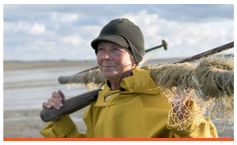
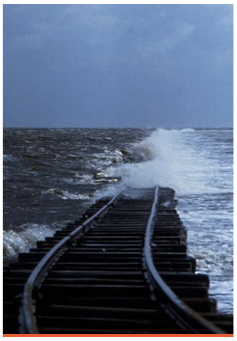
Wetland Times

Azambuja, Enaiê Mairê, Blake Ewing, and Nicola Thomas

Wetlands are ecologically dynamic and vulnerable landscapes where multiple temporalities, human and nonhuman, intersect and challenge one another. This virtual exhibition explores the dynamic temporalities of wetlands and their complex relationships—the temporal imaginaries, narratives, structures, flows, (a)synchronicities, and ruptures they contain—framed by a conceptual vocabulary that reveals the role of language in understanding wetland times and temporalities. Our examples draw on case studies from three wetlands: the Wadden Sea in Northern Europe; Morecambe Bay, in the northwest of the United Kingdom; and the Dja-et-Lobo region in southern Cameroon, focusing specifically on wetland areas near settlements of the Baka People.







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About the Exhibition

The "Wetland Times" exhibition is the product of a three-year British Academy–funded research project which has brought together humanities scholars and social scientists to develop new methods and approaches to understanding the complexity of time in wetland spaces. We begin from the premise that broad concepts like the Anthropocene, deep time, and planetary thinking threaten to overshadow and even invalidate the varied, localized, and culturally specific temporal experiences essential to human/nonhuman relationships. The material in the virtual exhibition shows how some of these large-scale concepts and narratives relate to overlapping, messy, and ever-changing "local" times.

All of the multimedia presented in this virtual exhibition was collected by Enaiê Mairê Azambuja and Blake Ewing during the course of our research activity across the three case study sites: Morecambe Bay, the Wadden Sea, and the Dja-et-Lobo region in Southern Cameroon. Enaiê Mairê Azambuja conducted interviews with people connected with Morecambe Bay and the Wadden Sea, focusing in particular on areas of the Danish Wadden, as well as gathering their stories and ideas through shared walks and dialogue, and the exchange of multimedia material including artworks, photographs, video, and audio. Similarly, Blake Ewing and Nsah Mala engaged in exchange and dialogue with people living around the margins of the Dja Faunal Reserve—Baka and Bantu people, researchers, conservationists, and NGOs—as well as accompanying them on forest walks and listening to oral stories told by these communities. Nsah Mala ran the "futures triangle" workshops with local communities in these areas which are discussed in the chapter "Ruptures."

The exhibition has been curated by Enaiê Mairê Azambuja with text and editorial suggestions contributed by Blake Ewing and Nicola Thomas.

Acknowledgements

This research was funded by a British Academy Knowledge Frontiers grant (KF7100138) and we thank the BA for their ongoing support for our work. We are also grateful for the support of the Rachel Carson Center, including Pauline Kargruber, Jonatan Palmblad, and Annika Stanitzok, in coordinating this virtual exhibition. The research on which it is based is a wider collaboration to which our whole team, including Gordon Walker, Nsah Mala, and Katie Ritson, have contributed in numerous varied and important ways. Research in the Danish Wadden Sea was facilitated by Marco Brodde; in Morecambe Bay, by Tessa Bunney, Gordon Walker, and Debbie Yare; and in Cameroon by Ruksan Bose, Bertille Djoupée, Allyson Bery, Gaston Mempong, Ernest Simpoh, and Zita Tchengo. We would also like to acknowledge the essential role our partner organizations—the Congo Basin Institute, the Wadden Sea World Heritage Centre, the Wadden Sea National Park (*Vadehavscentret*), and Eden Project Morecambe—have played in shaping and enabling this project. The methodology and visual style of the mapping tool were inspired by the work of Levi Westerfeld and Anne Kelly Knowles.

We are honored that so many people in Morecambe Bay, on the Wadden Sea coast, and on the edges of the Dja Faunal Reserve shared their stories, photographs, and ideas with us, including many we could not include here for reasons of space. Many thanks to Anna-Katharina, Ben, Colin, Insa, Marco, Marjolijn, Sophia, Tue, Anna,

Claire, Clive, Debbie, Jenn, Karen, Laura, Margaret, Gordon, Sarah, Steve, Tessa, Fonjip, Sylvie, Félix, Gaston, Ernest, and the people of Bemba I and II, Assom, Assok, Akom, Zobefam, and Doum villages.

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Introduction

"Nature, the environment and sustainability," Barbara Adam once wrote, "are not merely matters of space but fundamentally temporal realms, processes and concepts." This is one of the starting points of the "Wetland Times" virtual exhibition: The material presented here reflects the results of two years of research into the temporal "realms, processes and concepts" present within three wetland spaces, Morecambe Bay (United Kingdom), the northern European Wadden Sea, and the Dja Faunal Reserve (Dja-et-Lobo, southern Cameroon). We frame specific, local wetland "timescapes"—to use another of Adam's terms—against a backdrop of planetary change, looking at how local times sometimes align with and sometimes push up against those ideas of time (like "deep time" or the idea of the Anthropocene) which have come to dominate global thinking about the environment, biodiversity, and environmental change.

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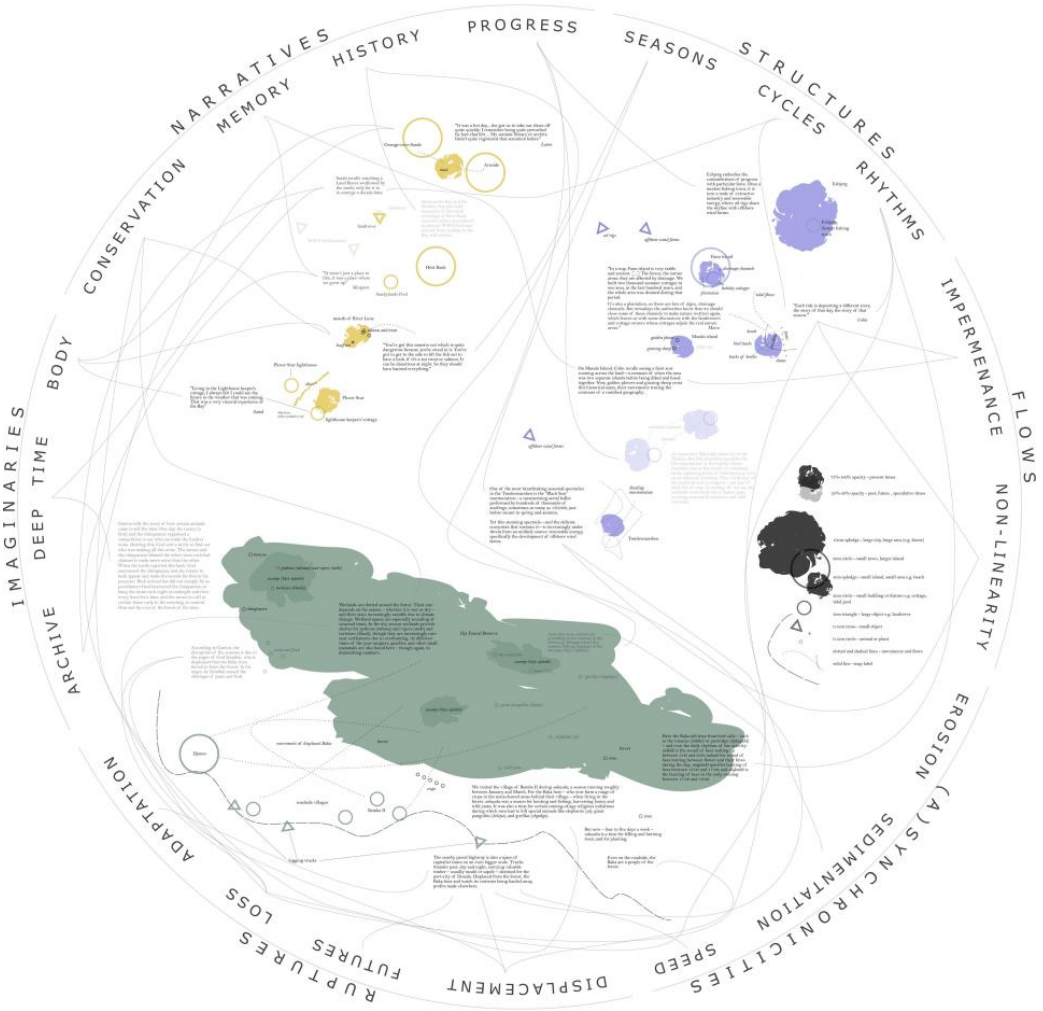

Figure 1: Mapping tool: This virtual wetland times mapping tool serves as an exhibition guide, showing the numerous time stories and voices from across our sites, chapters, and case studies. The data visualization methodology is adapted from the work of Levi Westerfeld and Anne Kelly Knowles by Nicola Thomas.

To read the full text on the graphic, please click on the image twice to open it in a new window and then zoom in. *

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But what, in fact, is a wetland? The term itself emerged as a scientific and policy category in the mid-twentieth century, particularly through international frameworks like the Ramsar Convention, to describe a diverse range of ecologies—from lakes, rivers, and estuaries to marshes, peatlands, mangroves, and tidal flats. Yet this language, while useful in some contexts, risks flattening a much more complex ecological and cultural reality. Local names and classifications—whether fens, bogs, swamps, moors, or the many Indigenous and vernacular terms we encountered—often capture place-specific understandings that are lost when subsumed under the general label of "wetlands." This question of terminology lies at the heart of our exhibition: The language we use to name and

* Please note that this function does not work in the PDF version of the exhibition. Please refer to the online version to read the text boxes in this graphic.

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describe wet places shapes how we know, value, and relate to them. In many ways, "wetland" is not simply a category but a compromise, one that reflects tensions between global conservation discourses and the deeply rooted vocabularies of local and Indigenous communities.

In a similar way, we use related terms such as *landscape*, *nature*, *environment*, and *ecosystem* throughout the exhibition in a flexible and sometimes overlapping manner. While we remain attentive to their distinct histories and connotations, our interest lies less in strict definitions and more in how these terms are mobilized to express temporal relationships. Of these, *landscape* is particularly significant, as it foregrounds the entanglement of space, time, and lived experience. Concepts from wetland ecology, such as *ecotone*, describing transitional zones between ecological communities, and *hydrosere*, the succession of vegetation in wet environments, also remind us that wetlands are not fixed or bounded entities, but inherently dynamic. These scientific terms underscore the temporal and processual nature of wet places, offering valuable insights alongside cultural and experiential understandings.

Figure 2: The Dja River in Dja-et-Lobo, South Region, Cameroon. Photograph by Blake Ewing, January 2025.

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In gathering our data, we spoke to people living and working in each of the case-study sites: to artists and writers who have used creative approaches to think with and through these wetlands; to fisherfolk, hunters, and farmers who know them intimately as a source of food and income; and to conservation practitioners and environmental educators who are passionate about caring for them and communicating their value. We conducted interviews,

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went on exploratory walks, and asked them to share with us their images and stories.

One of the central tensions that emerged through this process, and that runs throughout the exhibition, is the paradox between the cyclical and rhythmic qualities of wetlands and the fragmented, fractured, and often-unpredictable temporalities they also embody. Wetlands are defined by flows, seasons, and recurrences; yet they are also shaped by rupture, by disjunction, by asynchronous timescapes where pasts, presents, and futures collide or resist alignment. We do not seek to resolve this paradox, but to hold it in view. It reflects the layered and sometimes contradictory temporalities that wetlands, and those who live with and think through them, continually navigate.

From this rich data, a series of overlapping temporal categories and concepts emerged, which here provide the six chapters of this exhibition: *Imaginaries*, *Narratives*, *Structures*, *Flows*, *(A)synchronicities*, and *Ruptures*. These speak to a range of time concepts, from the largest and deepest imaginaries which run (often unacknowledged) beneath temporal experience; through the narrative concepts we use, self-consciously or otherwise, to articulate and aesthetically shape our ideas of time; and the (generally cyclical and rhythmic) structuring frames into which we put time, or via which we understand it—our clocks, calendars, and seasons. The exhibition also explores ideas of temporal flow (duration, tempo, agency) in wetland landscapes; the moments of synchronization and asynchrony within these flows; and ends by examining significant experiences of temporal rupture against the backdrop of planetary change.

Within each chapter, exhibition visitors will find key time concepts listed and linked, in the form of keywords in **bold** and at the end of the text. These reflect crosscutting ideas that speak to themes across chapters, and they are the product of our interest in how the language(s) of time structures and shapes our thinking about it. Drawing on theories of conceptual history, we explore the contested nature of temporal concepts like *progress*, *history*, *futurity*; of structuring ideas like *rhythm* or *season*; and of the instrumentalized time language of *conservation*, *adaptation*, and *climate change*. *

How we talk about time, and how we talk about wetland times, matters. Annie Proulx likens the wild array of wetlands around the world to "wallpaper samples, each with its own design and character"—and, we would add, its own time and its own time language(s). This is true in a literal sense: Our research also engaged with speakers of at least seven languages (English, French, Dutch, German, Danish, Frisian, Baka, and Fang). Although the language of this exhibition and its keywords is English, you will notice the presence of these, and other, languages throughout.

*Please note that this function does not work in the PDF version of the exhibition. Please refer to the online version to explore the cross references within the exhibition.

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Figure 3: Danger! Maritime & Coastguard Agency and Lancashire Fire and Rescue Service poster.

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Sometimes, our wetland languages emphasize danger and vulnerability, shaping public perception through narratives of treacherous tides and shifting sands, as seen in the legacy of the 2004 Morecambe Bay cockling disaster, when 23 migrant workers tragically drowned due to rapidly rising tides while harvesting cockles. Such fear-driven discourse highlights the unpredictable and hazardous nature of these landscapes, reinforcing the idea that they are to be feared rather than understood. One of our research participants, speaking from Morecambe Bay, calls for a different understanding and language, one that moves beyond sensationalized portrayals and acknowledges the deeper knowledge and respect required to navigate these environments. She advocates for a more reciprocal relationship with wetlands, where language reflects their dynamic, living nature rather than reducing them to sites of peril and vulnerability.

At the same time, the rich vocabulary the Baka People use to describe seasonal and diurnal temporal markers is being eroded as a direct consequence of external political agendas that have displaced them from the forested

wetlands they have long inhabited. These wetlands, far from being perceived as dangerous or marginal, are understood by the Baka as spaces of safety and continuity, offering refuge from the real hazards posed by life on the edges of a busy logging road. This contrast between state narratives of progress, which often equate land reclamation and wetland clearance with modernity and development, and the Baka's lived experience of the wetlands as sites of familiarity, resilience, and belonging, reveals deeper tensions in how time and space are conceptualized. While dominant discourses frame wetlands as obstacles to social advancement—spaces to be drained, ordered, and brought into productivity—the Baka's temporal vocabularies articulate a different orientation, rooted in ecological rhythms and ancestral connection. What is needed is not the imposition of a new language of progress, but recognition of the temporal knowledge embedded in existing ways of being and relating to place.

Time language shapes the politics and narratives of climate change and biodiversity loss. For one thing, we can understand the concept of the Anthropocene as a new temporal framework that disrupts traditional human progress narratives and foregrounds the urgency of understanding planetary change. Even more pressing, for those who work with wetland landscapes in various capacities, are debates over the temporal baselines of "natural" landscapes in conservation and rewilding efforts: What does it mean to "rewild" an ever-changing landscape? Which parts of human-occupied wetlands are "natural," and how can attempts to preserve, protect, or conserve these also take account of ideas like history, tradition, and culture? These are some of the questions on which our exhibition aims to shed light.

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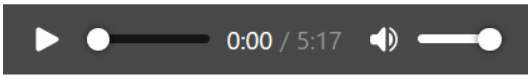
Imaginaries

One evening, in the village of Bemba II, on the road heading towards the Dja Reserve, Gaston Mempong tells the story of how certain animals came to tell the time. One day, the turaco (a bird) and the chimpanzee organized a competition to see who can make the loudest noise—the bird call or the chimpanzee with a drum. Hearing this, God sent a turtle to find out who was making all this noise. The turaco and the chimpanzee blamed the other, since each had claimed to make more noise than the other. When the turtle reported this back, God summoned the chimpanzee and the turaco to both appear and make the sounds for him in his presence. Both arrived but did not comply. So, as punishment God instructed the chimpanzee to bang the drum each night at midnight and then every hour for a time, and the turaco to call at certain times early in the morning, to remind Him and the rest of the forest of the time.



The original exhibition includes an audio snippet here. "Evening stories," Baka storytelling: audio clip of the story above in the Baka language. Recorded by Blake Ewing, 7 January 2025.

Listen to the recording here:
https://www.environmentandsociety.org/exhibitions/wetland-times/imaginaries

Gaston's story speaks to the temporal imaginaries of the Dja, in which the structure of the diurnal (and seasonal) cycle is closely linked with cultural knowledge, expressed through myth and symbolic narrative as part of a shared reality. Rather than separating the mythical from the factual, this cosmology integrates both as coconstitutive ways of knowing and sensing time in the forested world.

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Figure 4: Baka women drumming in a forest stream, near the village of Doum, Dja-et-Lobo, South Region, Cameroon. Photograph by Achu Joachem, January 2025.

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Wetlands shape and are shaped by the imagination—and many are places that unsettle as much as they captivate. Debbie Yare, an artist based in Morecambe Bay, thinks of wetland landscapes as "living **archives**," dynamic repositories of memory shaped by both human and nonhuman forces. These are fluid and ever changing, retaining and erasing traces with each tide. Wetlands are capable of making things visible and invisible, conjuring a palpable cyclical impermanence .

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Figure 5: "Sediment," video by Debbie Yare, 2023–2024. The original exhibition contains a video here. You can watch the video here: https://www.environmentandsociety.org/exhibitions/wetland-times/imaginaries.

Similarly, writer Colin Williams describes the Wadden Sea as a place where the symbolic dimension of the passage of time becomes startlingly tangible. "Time is very visible in the Wadden Sea," he notes, explaining how each tide brings new deposits of sand and detritus, creating an ever-renewing surface that nonetheless carries the ghost of previous tides. Colin's phrase, "haunted by the last tide," captures this transience. Footprints of people, birds, and beetles are imprinted in the dunes, but these ephemeral marks are quickly erased. The sea does not retain its stories in a fixed form; rather, it carries them forward in fragments—traces of amber washed ashore after a storm, sea-polished stones, or the occasional shard of ancient pottery. This sense of time is shaped by the specific rhythms of tidal marshlands, where daily cycles visibly reshape the land. It contrasts with other wetland types, such as those formed behind coastal dunes, where slower geomorphological processes act across longer timescales. In the Wadden Sea, time unfolds at the pace of the tide.

Debbie's concept of the living archive also acknowledges the agency of nonhuman forces—cockles, birds, and the tides themselves—not simply as objects within an archive, but as *archivists* of place. In the Wadden Sea, a migratory crossroads teeming with movement and memory, this role becomes especially vivid. These beings record, transmit, and reshape the landscape's temporal and ecological stories: The return of birds like the bittern, cuckoo, and nightjar, now rare or extinct elsewhere, forms a symbolic, sonic archive that echoes across the marshes. The landscape itself, marked by restored marshes and shifting dunes, bears the imprints of both human intervention and natural change, but it is through the daily rhythms and migrations of these other-than-human archivists that the continuity and renewal of place is sustained.

Debbie and Colin's vivid, fragmentary and ghostly archives—and perhaps Gaston's parable of forest times, too —seem to offer ways of imagining the abstraction others have called "**deep time**" in the context of wetland spaces.

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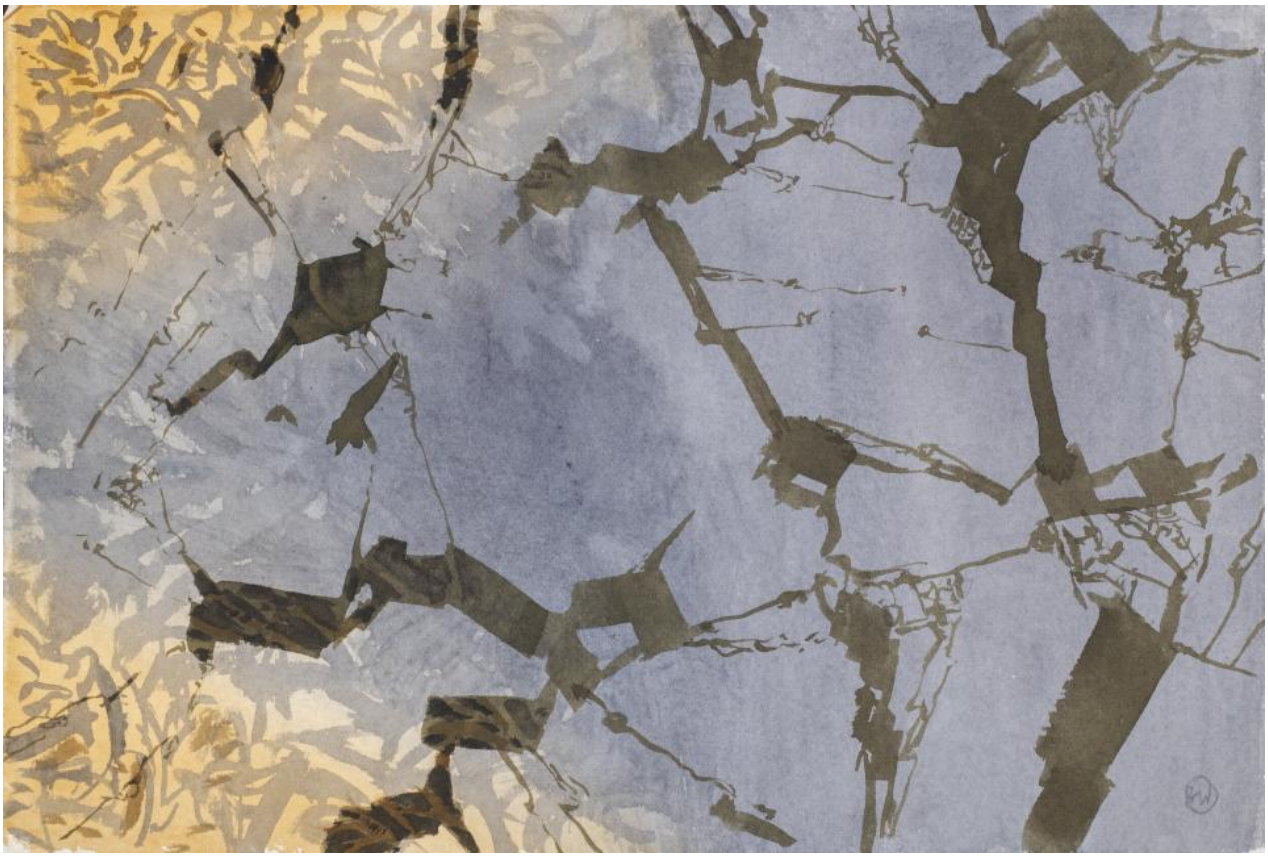

Figure 6: "Mudflat, Bacterial Biofilm," watercolor by Ben Woodhams, *Haunted by the Last Tide: The SWLA and the Danish Wadden Sea*, edited by Marco Brodde, 2023.

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Wetland imaginaries affect us on a **bodily** level. To move through wetlands is to surrender to shifting rhythms—mud pulling at each step, tides dictating movement, horizons dissolving into sky. These environments evoke a sense of alienness—of being both immersed in and estranged from the land, as if stepping into a space where human presence is neither central nor assured. Walking on the clay in Hest Bank, Morecambe Bay, time slows as the ground pulls at each step, movement becoming a negotiation with the terrain. Laura Harrington, an artist, recounts walking barefoot across the Bay from Arnside to Grange-over-Sands, struck by the strange, alien texture of the sediment—a sensation absent from her "somatic archive." The ground was neither entirely solid nor liquid, an environment that is neither fixed nor entirely knowable. The gray sediment, the endless sky, the disorienting lack of landmarks, all contributed to a feeling of being suspended between past and future, in a moment that could vanish at any second. While this description captures the sensory and temporal experience of tidal flats, wetlands take many forms—bogs, marshes, floodplains—each with their own distinct rhythms and materialities, affording different kinds of embodied engagement with land and time.

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Figure 7: "Remains of Fishing Baulk," December 2015. Photograph by Sarah Hymas.

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One of the oldest, deepest imaginaries of all is our idea of **nature** as a realm outside of human time. In Cameroon, like elsewhere, there are conflicting imaginaries of nature. For the Baka, however, as a man from the village of Doum explained, the forest is where they came from. Even on the roadside, the Baka are a people of the forest. It is therefore difficult for them to imagine a concept of nature, or a nature reserve like the Dja, where the Baka are not allowed to go.

On the Wadden Sea coastline shifting tides, **conservation** efforts, and historical land reclamation complicate the relationship between nature and culture. Colin describes his journey across the border between Germany and Denmark, where drained farmland transitions to the untamed vibrancy of the Tøndermarsken marshlands, a critical sanctuary for migratory birds. At the border, life seemed to intensify—thousands of barnacle geese, waders, plovers, and curlews surging together in a restless, shifting mass, their cries echoing against the gray sky. This spectacle, reflected in the ditches, drains, and open waters, symbolized the delicate balance between conservation and natural forces, shaped by both human intervention and the sea's enduring rhythms. Here, conservation has worked both with and against the sea—protecting reclaimed farmland with dykes and sluices while also opening waterways to restore ecological flows, as seen in the return of migratory fish. Yet, conservation itself complicates traditional understandings of nature and culture: Landscapes that appear wild are, in reality,

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carefully managed, and conservation acts rely on human intervention.

The Netherlands exemplifies an extreme attempt to control the times of nature through conservation. For centuries, dykes and drainage projects have imposed a rigid human temporality onto wetland environments, transforming tidal marshes into engineered landscapes. The saying "God created the Earth, but the Dutch created the Netherlands" reflects this deeply ingrained and symbolic belief in mastery over nature. **Reclaimed** land, tidy, productive, and shaped by centuries of human effort, is often perceived as "natural" because it aligns with dominant cultural values of order and utility. In contrast, untamed salt marshes, with their shifting boundaries, seasonal floods, and unruly ecologies, are seen as unstable or incomplete, land not yet brought under control. This perception reveals an underlying colonial mindset in which value and naturalness are tied to human intervention and control.

Marco Brodde, an artist who lives in Fanø in the Danish Wadden Sea, observes that the relationship between island life and the surrounding water is particularly complex. Historically, land was drained for forest plantations, and current conservation efforts seek to reverse this process, making "nature" wetter again. This raises important questions about what kind of "nature" is being preserved, not as a fixed past ideal, but as a future-oriented goal informed by historical conditions. Is the aim to maintain the managed forests shaped by past human intervention, or to foster the shifting mudflats untouched by artificial drainage? While dynamic change is a feature of all landscapes, wetland conservation uniquely involves managing these continuous transformations to balance ecological resilience with cultural histories.

Keywords: archive, deep time, body, nature, conservation

Link words: structures , cycle , memory , impermanence , rhythms , flows , reclamation, history

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Narratives

Narratives weave together symbols and imaginaries to provide ways of understanding the world. Temporal narratives are attempts to make sense of moments, events, and processes as stories, histories, or memories. But in wetland spaces, the difficulty of crafting linear narratives in constant motion becomes clear. Colin Williams describes the Wadden Sea as open ended , evoking Shakespeare's *The Tempest*: "What is past is prologue." The Wadden coast does not offer tidy conclusions—it is a story still being written, with each tide adding and erasing. Morecambe Bay, too, holds **history** and **memory** in unpredictable ways. Objects lost to the tides—shoes, cockle bags, fragments of boats, vehicles, and even massive shipping containers—sometimes reappear unexpectedly, as if the Bay momentarily reveals a glimpse of its buried archive before concealing it again.

> The sands are an impermanent record of a million natural transactions.
>
> —Colin Williams

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Figure 8: “Vehicle swallowed by the sands,” Hest Bank. Photograph by Enaiê Mairê Azambuja, February 2025.

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Human memory in these wetlands is layered and fragmented. Morecambe Bay’s sands are an unpredictable recordkeeper. Writer and artist Sarah Hymas recalls watching a Land Rover swallowed by the sands, only for it to reemerge a decade later—an uncanny reminder that the Bay does not so much erase as conceal, holding memories in suspension beneath its surface. Today’s footprints on Sunderland Point might one day be uncovered, much like the Neolithic tracks along the Lancashire coast. This underscores the strange continuum of time in the Bay, where the footprints of modern walkers briefly intersect with those of ancient beings—separated by millennia yet momentarily revealed by the shifting sands and tides.

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Figure 9: “Footprints,” Hest Bank. Photograph by Enaiê Mairê Azambuja, February 2025.

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Wetlands are sites of crossing, where human and nonhuman journeys intersect: storms scar the land, tides reshape it, and migratory birds mark its seasons. In Morecambe Bay, these crossings hold deep histories, from the WWII-era concrete pillars at Hest Bank and hidden bunkers among the dunes, to much older routes like “Priest Skear,” where monks once paused while guiding travelers across shifting sands. The Old Norse *skear*, meaning rocky reef or outcrop, hints at the Bay’s layered cultural past. Across tides, time, and **tradition**, the landscape bears witness to movement within its unpredictable terrain.

To speak of wetlands is to speak of temporalities in tension—of rhythms interrupted, traditions obscured, and ecologies frayed by the mechanics of **progress**. At the same time, the globally dominant post-Enlightenment

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hegemonic narrative of progress is itself challenged by wetland times. Fractures caused by industry, land reclamation, and climate change expose the limits of mastery and the illusion of linear progress.

This experience is not unique to Europe. In the Dja-et-Lobo region in southern Cameroon, climate change is widely felt and equally inexplicable. The wetlands are drying up earlier than before, though in some places and times they appear wetter. Rainfall has become more unpredictable , damaging crops and disrupting established seasonal patterns . Forest plants flower at unexpected times, unsettling normal cycles of activity. The Baka's deep attunement and reliance on these natural rhythms make them particularly vulnerable, as almost every aspect of their lives is exposed to natural variation. For example, in the wetlands, raffia palms traditionally produced abundant white worms, a vital food source. Storms would cause some palms to fall and rot, creating conditions for worms to thrive; during the dry season, the worms could then be harvested. Elephants historically played a role by pushing down raffia palms, helping to maintain this cycle. However, with elephant populations now depleted, this natural process is disrupted, adding to the uncertainty faced by the Baka.

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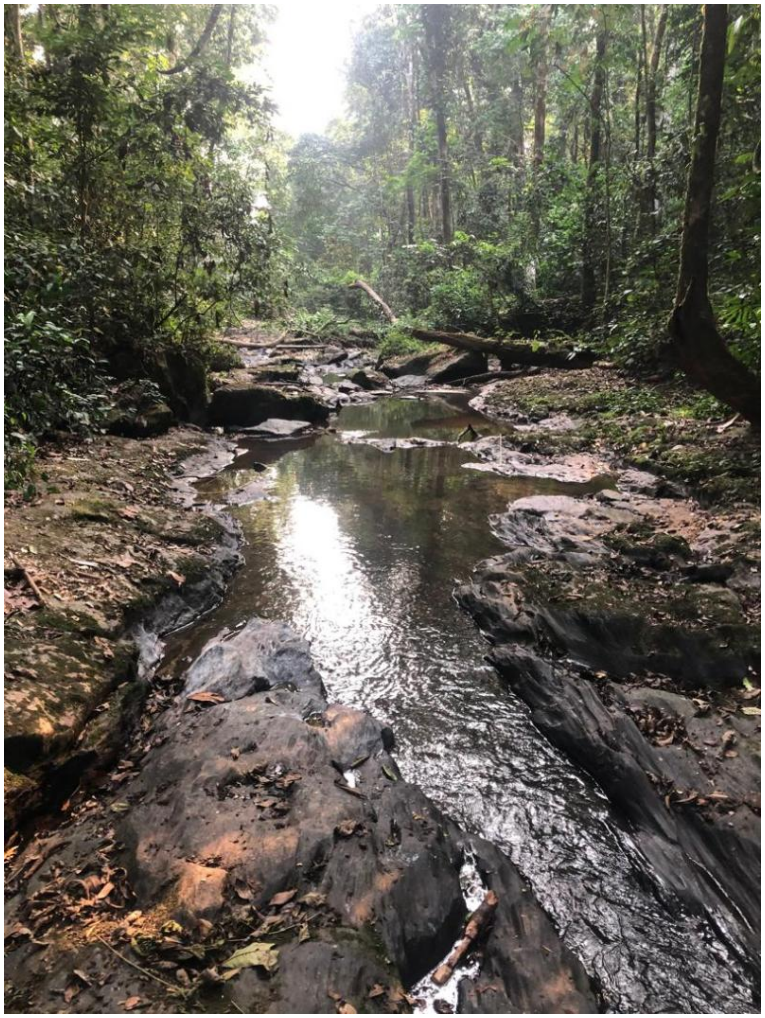

Figure 10: "Wetland Path," Dja Faunal Reserve, Cameroon. Photograph by Blake Ewing, January 2025.

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Meanwhile, the Baka are prone to fold other events into a climate narrative. One man from a village very near the Dja Reserve noticed that people fall sick more often. Women are catching fish with sores on their skin. Still, they are not sure how to respond. Before, when it rained during the dry season , there was a way to prevent it by finding a termite mound (*èjèmbèlèmbè*) in which snakes, scorpions, and ants also lived. "We would set it on fire," explained one man, "and it would burn for a month, preventing the rain from falling and allowing us to carry out our activities." Some remark speculatively that perhaps God is angry and punishing the government for expelling the Baka from their ancestral forests, since they no longer harvest their fruits and can no longer perform their rituals in the right places and at the right times. Most agree that the wetlands are especially vulnerable to climate change. Within conservation circles, peat bogs have gained renewed prominence as critical carbon sinks, strengthening arguments to protect these ecosystems. However, this focus on "saving" the landscape often

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involves complex and sometimes contentious decisions, including restrictions on local communities' access and traditional practices. In some cases, conservation efforts have led to the exclusion of Indigenous peoples, raising important questions about whose voices and needs are prioritized in protecting these environments.

But elsewhere, the story of wetlands takes a different turn—one of containment rather than attunement. Take dykes: Their construction marks a historical shift from the adaptive living of mound settlements—where people cohabited with water and its rhythms —to the dogma of enclosure and drainage. As researcher Marjolijn Dijkman observes, in the Wadden Sea this transition parallels the Christianization of the region, where churches rose at the center of reclaimed lands, replacing pools of tidal memory with stone altars of certainty. This "civilizing" of the wetlands was a conquest—not just of land, but of time. In sealing off the sea, the wetlands were fixed into a human pace, severing seasonal fluctuations and tidal intrusion. The dykes, once engineered symbols of protection, have become double-edged monuments of colonial ambition and environmental control. Yet even this engineered present is unstable. Rising sea levels, extreme storm surges, and the exhaustion of the land signal the fragility of control. Gas extraction has triggered earthquakes, damaging homes and shaking the very foundations of these reclaimed zones. The sea, it seems, is restless.

Figure 11: View of Esbjerg from Fanø, Danish Wadden Sea. Photograph by Enaiê Mairê Azambuja, March 2025.

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The Wadden's towering dykes sit beside the Esbjerg industrial area—a sprawling, mechanized world that cleaves apart ancestral rhythms and lifeways. Esbjerg embodies the contradictions of progress with particular force. Once

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a modest fishing town, it is now a node of extractive industry and renewable energy, where oil rigs share the skyline with offshore wind farms. The town's evolution into a hub for wind-turbine assembly and power-to-x technologies (converting renewable energy into hydrogen and synthetic fuels) may signal a green future , but it also brings profound ecological consequences.

In nearby Tøndermarsken, wind farms disrupt migratory paths of birds, fracturing the choreography of flight that once defined the wetlands. The mechanical presence of turbines reshapes the sensory field—soundscapes, light patterns, nesting sites—all altered under the pressure of progress. This paradox of green energy as both solution and disruption extends further through the presence of AI technologies and data infrastructure, like the Google data center in Eemshaven (The Netherlands) that now warms the waters of the Ems estuary through its industrial cooling process.

Here, the virtual meets the visceral—our digital searches, abstract and invisible, imprint heat into a fragile, silting landscape. The critical mass of dredged sediment and rising water temperatures reflects a technoecological entanglement few acknowledge. These wetlands, shaped for centuries by the tension between land and sea reclamation , now also negotiate the specter of a "cyborg" landscape—controlled by algorithmic logic, predictive modeling, and remote computation.

Keywords: history, memory, tradition, progress

Link words: cycles , archives , rhythm , ruptures , impermanence , structures , adaptation , reclamation , memory , season , tradition, future

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Structures

Wetlands present overlapping diurnal, **seasonal**, and in some cases tidal **cycles** blurring past , present, and future , and challenging linear perceptions of time. The attempt to structure time into neat, measurable units via clocks and calendars—hours, days, moments—can stand in stark contrast to the unstructured , shifting **rhythms** of the wetland. Those who occupy these landscapes must also devise and interpret local patterns against a backdrop of time structured by global concerns.

Figure 12: View over Keldsand and meadows near Sønderho through the day and at the Vidå sluice through the day (Højer, Denmark). Watercolors by Ben Woodhams, *Haunted by the Last Tide: The SWLA and the Danish Wadden Sea*, edited by Marco Brodde, 2023.

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Ben Woodham's watercolors of the Wadden Sea capture the interplay between human-imposed order and the

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landscape's fluid rhythms . By painting each strip at different moments of the day, he creates a fragmented but interconnected record of time—each segment distinct, yet inseparable from the whole. The Wadden Sea, with its shifting sands and ever-moving tides, is an ideal subject for this exploration of structure and impermanence . Like human-built dykes that attempt to stabilize the boundary between controlled land and untamed sea, his paintings expose our desire for control—while ultimately affirming the necessity of adapting to change.

For the Baka People, adapting to change has entailed profound loss of seasonal awareness. Assok is a Baka village straddling either side of the N9, a recently paved road south of the Dja Reserve that heads towards the border with the Republic of the Congo. Amidst the roar of logging trucks passing at regular intervals, the elders tell us how they ended up here. After leaving the forest, their parents initially settled in Mintom, towards Djoum, before moving to this area where they felt safer. A Bantu couple welcomed them and even helped gain state recognition for the Chief of Assok, who is the only state-recognized third-class chief in the region.

Figure 13: *Musee* in Assok, Dja Faunal Reserve. Photograph by Blake Ewing, January 2025.

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Upon entering the forest, our guide speaks to *jéngì*, a forest spirit, about entering with strangers. He explains how time and space are structured differently in the forest. Spatially, wetlands are scattered throughout the forest, their size fluctuating with the seasons—expanding during the wet season and shrinking in the dry—with increasing variability due to climate change . Wetland spaces serve as important markers of seasonal time. In the dry season, they provide shelter for pythons (*mboma*), vipers (*mékè*), and tortoises (*kùndà*), though these animals are increasingly rare near settlements because of overhunting. At different times of year, *sangiers*, gazelles, and other small mammals can also be found here—though again, in diminishing numbers. Among the wetland vegetation, clusters of the medicinal malatassé plant stand out as another temporal indicator: Its broad leaves close tightly in the evening and gradually open and widen as the day progresses.

Figure 14: Malatassé plant (*Marantaceae*) in Assok. Photograph by Blake Ewing, January 2025.

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Compared to the roadside, the dry wetland is calm. Our guides speak to time passing differently here and in the adjacent forest. Here the Baka tell time from bird calls—such as the *turacou* (*kólóká*) or partridge

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(*kpúngūlù*)—and even the daily rhythms of bee activity: *Màkèló* is the sound of bees waking up between 5 a.m. and 6 a.m.; *màndò* the sound of bees moving between flower and their hives during the day; *mògòmbé* specifies buzzing of bees between 3 p.m. and 5 p.m.; and *mòjèmbɔ̀* is the buzzing of bees in the early evening between 5 p.m. and 6 p.m. But on the noisy roadside these time indictors are silent.

In all three sites, situated knowledge is increasingly challenged by external pressures that seek to impose rigid structures on inherently dynamic environments. In the Wadden Sea, time unfolds in multiple registers, where immediate concerns like climate change and erosion coexist with historical legacies of land reclamation and diking. The Halligen islands of the Wadden Sea, unprotected by dykes, embody an existence of continual adaptation to flooding. The inhabitants of the Halligen have long built elevated homes—*Warften* in German—to accommodate the encroaching sea.

Figure 15: Sunderland Point. Photograph by Enaiê Mairê Azambuja, February 2025.

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Morecambe Bay's shifting sandbanks and tidal channels defy static readings, with dangers like quicksand and fast-moving tides being both real and constructed through language, contrasting with the lived knowledge of those who adapt to its changing rhythms. This dynamic environment fosters a dual experience: slow immersion in vast open spaces, paired with the urgency of shifting tides. Artist Debbie Yare, talking to us about her artistic practice, underscores the importance of walking "with" the Bay, recognizing its changing nature and the attentiveness needed to navigate its rhythms. In all three sites, it is clear that temporal structures represent a negotiation between local knowledge and contexts which are constantly in flux.

Keywords: seasons, cycles, rhythms

Link words: history , future , impermanence , rhythms , adaptation , seasons , ruptures

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Flows

The temporal flows of Morecambe Bay, shaped by its shifting tides and **impermanent** landscapes, have long influenced the practices of those who depend on its waters. For Steve Brown, a lifelong fisherman from Fleetwood, the Bay is not a fixed entity, but a fluid environment constantly evolving. Over the years, Steve has observed dramatic changes in the Bay, with sandbanks migrating unpredictably, old fishing grounds vanishing, and new ones emerging almost overnight. The geography of the coastline is rewritten by tides, storms, and human intervention. Morecambe Bay has always been in flux, but, as Steve observes, the pace of change seems to be accelerating.

As Steve puts it, fishing in Morecambe Bay is not just about technique but about attunement and agency—an ability to listen to the land and the water. He recalls how a single storm, one "dark and stormy night," caused the river to change course entirely, carving through the land in a way no engineering could prevent. The illusion of permanence is just that. Roads, docks, and flood defenses may try to fix the landscape, but the tides continue to tell their own stories, rewriting the coast as they have for thousands of years. The water, Steve suggests, keeps its own memory . Old marshes reveal where tides once reached. Silting patterns trace the histories of lost channels. Even the ghost of a glacial tunnel—the "Lune Deep"—has been gradually filling in over decades, restricting the drainage capacity of Morecambe Bay. To fish these waters is to work within that memory, responding to a past that is not buried but alive, still shaping the present.

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Figure 16: Steve Brown shrimping using a push net, Fleetwood, Lancashire, 2019. Photograph from the series "Going to the Sand" by Tessa Bunney.

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The Bay's rhythms are not only hydrological or geological but also biological. The movements of fish, the spawning of shrimp, the growth of mussel beds—all unfold in rhythms tied to moonlight, temperature, and salinity. Steve's practice depends on sensing these subtle cues, much like how his predecessors did before him. Knowledge passed down orally, through gesture and story, forms a kind of living calendar: seasonal migrations, breeding tides, the arrival of jellyfish warning of salt changes. It is a biological clock tied not to hours, but to cycles —many of which are now being disrupted by climate shifts. For Steve, fishing is a form of navigation through time. It is about reading the Bay's moods, remembering where the channels ran last year, and imagining where they might be tomorrow. His knowledge, gained through lived experience rather than textbooks, is an archive of the wetland's past and a guide to its uncertain future.

Similarly, Margaret and Trevor Owen, two longtime fisherfolk from Overton, have developed a deep attunement

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to the temporal flows of Morecambe Bay over the years. Margaret, who began her fishing life walking the sands of Sunderland Point as a child, reflects on the intimate relationship between human practices and the rhythms of the Bay's natural cycles. Growing up in a place cut off by the tide twice daily, Margaret learned to read the changing landscape, developing an intricate understanding of the Bay's rhythms. As she describes it, the shifting sands, tides, and the ebb and flow of water were not just markers of time but key elements of the ecological patterns that shaped her fishing practices. In this dynamic environment, Margaret and Trevor have honed their skills to move with the rhythms of the land, constantly attuning their activities to the subtle shifts in the environment, whether it be the turning of the tide or the patterns of marine life that follow the flow of the water.

Margaret's practice of haaf net fishing—a traditional method involving wading into the river with an eighteen-foot net—embodies a deep, intuitive relationship with the rhythms of Morecambe Bay, where success depends on reading the tides, anticipating the fish, and responding to the subtle signals of the land and water. From childhood, she honed this skill through hours spent walking the sands, learning how fish often wait for the tide to turn and how the most dangerous, surging moments can be the most fruitful. For Margaret, the Bay once offered a sense of freedom, where tides were read by sight and feel rather than tables, but coastal changes and human infrastructure have disrupted these natural cues, transforming once-thriving mudflats into uncertain terrain and forcing constant adaptation. Fishing, she says, is like farming—you must know when to plant, harvest, and let the land rest—requiring respect, patience, and a keen sensitivity to the interplay of elements like rain, turbulence, and the blend of salt and freshwater. Physical and ecological markers—like ancient fishing baulks revealed by storms or birds signaling the turn of the tide—remain etched in her memory, reflecting a lifetime of listening to the Bay's evolving voice. Alongside Trevor, and like fellow fisherman Steve, Margaret has learned to move with the land's cycles, treating fishing not as a static technique but as a living dialogue with the landscape, where every shift in tide or sand is part of an ancient, ever-changing rhythm.

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Figure 17: Margaret Owen with her haaf net, Sunderland Point, Lancashire, 2018. Photograph from the series "Going to the Sand" by Tessa Bunney.

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These stories of the fisherfolk reveal a deeper truth about Morecambe Bay: Time here does not follow a linear path but moves in cycles —cycles of water, sand, and human influence. The fishing practices of Steve, Margaret, and Trevor are shaped by this temporal flow, as they learn to read the ever-changing conditions of the Bay, responding to shifts in the environment with a deep knowledge of its rhythms. The unpredictability of the tides and the movement of the sands mean that fishing in Morecambe Bay is never static; it is a constant act of adaptation , one that requires an understanding of both the present moment and the historical patterns that shape the landscape.

In the Wadden Sea, time and landscape are uniquely intertwined through the rhythmic ebb and flow of tides and seasons, creating a temporal pattern that continuously shapes the physical environment. Unlike many other landscapes where change may be slower or less cyclical, here the daily tidal pulse reveals and conceals mudflats

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and pools in a dynamic cycle of exposure and submersion. This constant transformation sustains a hyperdynamic mosaic of habitats that support extraordinary biodiversity. The Tøndermarsken marshlands, part of the Wadden Sea National Park, exemplify this phenomenon—tidal flats that are renewed each day, providing rich feeding grounds for seals, fish, invertebrates, and especially birds. The region is a sanctuary for countless avian species, from resident oystercatchers and redshanks to seasonal migrants such as the curlew, dunlin, and grey plover. In spring and autumn, these migratory birds descend in vast numbers, transforming the marshes into a temporary haven teeming with motion and sound. Thousands of barnacle geese, elegant waders, and plovers fill the sky and fields, their calls echoing through the air as they move with the tides, creating a dynamic and ever-shifting landscape shaped by flight, feeding, and rest.

One of the most breathtaking seasonal spectacles in the Tøndermarsken is the "Black Sun" murmuration—a mesmerizing aerial ballet performed by thousands of starlings, sometimes as many as one hundred and fifty thousand, just before sunset in spring and autumn. From early March to mid-April and again from mid-August through October, these birds gather in massive flocks to roost in the reed beds of the marshes, their synchronized movements forming dark, shifting patterns in the sky—like a living language written in flight. This mesmerizing behavior serves as both protection and performance: Moving as one, the flock confuses predators such as sparrowhawks, merlins, hen and marsh harriers, northern goshawks, and even peregrine falcons. The reed beds offer ideal roosting grounds, sheltered from ground predators like foxes and out of reach of sight-dependent birds of prey once night falls. At the same time, the marsh meadows provide abundant food—beetle larvae that help the starlings fuel up for breeding in spring and prepare for migration in late summer. Yet this stunning spectacle —and the delicate ecosystem that sustains it—is increasingly under threat from an unlikely source: renewable energy, specifically the development of offshore wind farms. These developments risk disrupting the delicate balance of the Wadden Sea's tidal and migratory rhythms through noise, visual interference, and changes to the marine environment. The very rhythms that enable phenomena like the Black Sun to occur may be destabilized, placing both wildlife and local communities in a precarious position. Like the fisherfolk of Morecambe Bay, who must constantly adapt to shifting tides, the people and creatures of the Wadden Sea now face the complex challenge of balancing progress with preservation —where the pursuit of sustainability in one form could inadvertently threaten another. In this rare and fluid meeting of land, sea, and sky, even nature's grandest performances remain vulnerable to the far-reaching impacts of human ambition.

Figure 18: Murmuration in Tøndermarsken, 26 March 2025. Video by Enaiê Mairê Azambuja. The original exhibition contains a video here. You can watch it here: https://www.environmentandsociety.org/exhibitions/wetland-times/flows.

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Just as the starlings of Tøndermarsken move in rhythm with the marshlands' shifting seasons, so too do the lives of women in the village of Doum unfold in tune with the landscapes they inhabit—whether forest or roadside, cultivated field or village compound. For the women of Doum, time flows depend on the place. In our focus group—separated off from the men—we hear that life is split unevenly between the forest and the roadside, spending more time in the latter nowadays. In the village, the women take care of the household—cooking, cleaning, and looking after children, some of whom attend school. The women plan the "program of the week" as they put it, including church on Sundays. In the fields, the women sow plantain, macabo, cassava, maize, wild yams, and ground nuts.

Figure 19: Akom Village by the road, Dja-et-Lobo, South Region, Cameroon. Photograph by Blake Ewing, January 2025. Akom is a mixed Baka and Bantu village on the paved roadway from Mintom (Cameroon) towards Congo-Brazzaville.

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In the forest the women go fishing and collect food, such as mushrooms, while the men hunt. To fish, the women construct small dams. Time passes differently here. A woman explains that when they are in the forest, you do not need to look at the time because there are birds that tell you that we are already in such and such a time: *Kouloukao*, *Kukoluo*, *Mango*, *Ouluka*, *Teni*, *Yoka*. For instance, the *Kukuluo* orders from 6 a.m. to 6 p.m. Despite these durational markers, though, time flows more quickly in the forest. In the bush they are always busy, without waiting for things to cook or children to arrive home from school.

But while it is hard to allocate more time in the forest, fishing and collecting is becoming difficult. The wetlands

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and streams are changing due to climate change. Collecting non–timber products is also less predictable since plants are flowering at different times and sometimes they need to wait for leaves to clear. There is also a scarcity of certain medicinal plants, especially the moabi tree, prized by the state and logging companies for its timber. Later in the afternoon we walk by a group of women returning from a few hours of fishing. They are very frustrated. What used to be enough time to produce a bucket full of fish has only rendered five or so. “The stream is too dry.”

In wetlands, time is not measured by clocks or calendars , but by the rhythmic pulse of tide, land, and season . These landscapes are alive with motion—shaped not only by natural forces but by human hands, histories, and hopes. For the fisherfolk of Morecambe Bay and the migratory flocks of the Wadden Sea, survival depends on attuning to these temporal flows, reading the signs of change, and responding with adaptability and care. Whether through the intimate knowledge of shifting sandbanks, the collective dance of starlings at dusk, or the lives of the Doum women, these places reveal a profound truth: Life at the edge of land and water is shaped by cycles that are both repetitive and rhythmically reliable, yet always nuanced by variability and change. In this fluid world, past, present, and future are intertwined—not as fixed points in a simple loop, but as overlapping layers of experience that inform one another. To live in harmony with these landscapes is to recognize their cyclical patterns while embracing their constant transformation and unpredictability.

Keywords: impermanence

Link words: memory , history , rhythms , archives , tradition , cycles , adaptation , seasons , conservation , progress

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(A)synchronicities

Wetlands hold time unevenly. Here, tidal cycles , ecological rhythms , and human schedules intersect—but rarely align. Moments slip past one another: Seasonal patterns clash with policy timelines, and ancestral knowledge contends with the disruptions of climate change and development. These are landscapes of layered time, where histories persist beneath the surface even as futures are abruptly redrawn. The rhythms of water, soil, and species move at a different pace than human attempts to regulate or control them, producing a constant tension between what is remembered, what is unfolding, and what cannot be anticipated. In these spaces, time is not singular but fractured—held in suspension, pulled in multiple directions, and increasingly marked by temporalities out of sync.

In Morecambe Bay, the tension between natural forces and human interventions is acutely felt. The landscape, constantly reshaped by **erosion**, **accumulation**, and shifting tides, has become a place of uncertainty for fishermen like Steve Brown of Fleetwood. These forces are not abstract to him—they are daily realities that literally alter the ground beneath his feet. “The sands move all the time—sometimes you don’t know what’s going to be there from one day to the next,” he says. Once-reliable coastlines have become unpredictable, a shift intensified by engineered changes such as modified tidal channels and river straightening. These interventions have disrupted traditional fishing grounds, making areas that were once rich in mussels, cockles, or shrimp vanish or reappear with little warning. The Queen’s Channel and the North Run, altered to manage tidal flow, have unintentionally redirected sediment and reshaped vital shrimping zones. As a result, Steve’s fishing methods, especially in the River Wyre, have evolved; what was once a practice grounded in memory now demands constant adaptation and relearning, reflecting a deep awareness of the landscape’s ongoing transformation .

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Figure 20: “Imperfect Earth Study” (the movement of the body/camera across the ground at the edge of an eroding salt marsh). Collage by Debbie Yare, April 2022.

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Margaret and Trevor Owen, longtime fisherfolk from Overton, have seen how human interventions have increasingly disrupted the natural rhythms of Morecambe Bay. Margaret, who grew up attuned to the Bay’s tidal cycles, remembers how flood protection barrages, designed to shield Morecambe Bay from storms, unintentionally suffocated mussel beds with mud, forcing the couple to travel farther for fishing grounds. What was once a familiar environment became unsettled, its delicate balance upset by a regulatory logic that overlooked the Bay’s natural cycles. “They said it would take more than 10 years before the barrage altered anything,” Margaret recalls, “but it altered things in six months.” These changes not only affected the local ecology but also led to a deeper cultural loss , like the disappearance of Sandylands Pool, a beloved place where generations of children grew up playing. The loss of such spaces highlights the disjointedness between human

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timelines and the Bay's cyclical time, reflecting an ongoing clash between ecological continuity and the pressures of managing coastal catastrophes.

Margaret's experience highlights the misalignment between traditional fishing practices and the rigid regulations governing Morecambe Bay. As one of the few women licensed to fish with a haaf net, she faces challenges with the ongoing salmon fishing ban, which has lasted for over a decade. While fisherfolk are required to release salmon after catching them, distinguishing between salmon and sea trout in fast-moving waters is difficult and dangerous, especially at night. Margaret criticizes the absurdity of the regulation, pointing out the risks involved and the disconnect between the rules and local knowledge. The restrictions, she argues, are enforced without considering the lived experiences of fisherfolk, sidelining the Bay's cyclical rhythms and traditional practices in favor of a bureaucratic framework that does not reflect local realities.

This temporal misalignment was never more devastating than in the 2004 cockling disaster, when 23 undocumented Chinese migrant workers drowned after being caught by the incoming tide while harvesting cockles. The tragedy was one not just of illegal labor and exploitation, but of temporal disjunction—people unfamiliar with the local rhythms of tide and terrain, working to an economic clock that disregarded environmental time. The cocklers were operating within a brutally compressed temporality of extraction and desperation, while the Bay moved on its own ancient, unforgiving schedule. The sea offered no warning in bureaucratic terms, only in its own language of rising water and shifting sands. The disaster stands as a grim parable of what happens when human urgency collides with deep tidal time—a misreading of the landscape that proved fatal.

Just as in Morecambe Bay, the Wadden Sea reveals the friction of temporal misalignment between human practices and the changing landscape. A vast network of tidal flats and wetlands, the Wadden Sea has been historically shaped by the rhythm of the tides. These tides create a world of shifting sands, emerging islands, and submerged landscapes that have always demanded a careful attunement to the natural world. Yet, as climate change **accelerates** and human interventions intensify—particularly the construction of dykes and barriers to protect the land from rising seas—the region is facing an increasingly fragmented temporal experience. Much like Morecambe Bay, the natural processes of erosion and sedimentation, which have long sustained the ecosystem, are now countered by human-made structures that force the landscape into a timeline dictated by the needs of modern society. This disjointed temporal experience produces risks—not only environmental ones like floods and storms, but also quieter risks of lost traditions, ignored knowledge, and ecological misalignment. Despite these challenges, there is resilience as people continue to adapt , reading the water and sky and passing down stories across generations. In these amphibious worlds, where erosion meets memory, flood meets regulation, and disaster meets ritual , time does not simply pass; it accumulates, erodes, and returns.

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Figure 21: View from Hallig Oland towards the submerged causeway of the Halligbahn Dagebüll–Oland–Langeneß railway (Schleswig–Holstein Wadden Sea National Park, North Frisia), September 1984. Photograph by Rüdiger Stehn, Kiel, Deutschland.

Photo by Rüdiger Stehn, 1984.

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Along the roadside the Baka People are in between different, often incongruous, times and temporalities. In the forest, seasonal times are marked by plant flowerings, water levels, and the movement of animals. In the forest there are five seasons: *Yáká*, *Sokoyaka* (*gbîêmbɔ̀ngɔ̀*), *Sokoma*, *Èlàngà*, *Bi Ebongo* (*sɔ́kɔ́ mā*). All these seasons had natural signals. For instance, one man explained that encountering certain animals coming to wetlands to drink would signal the emergence of *Èlàngà*, a short dry season between June and August. When cotton on baobab trees starts falling, the rainy season is coming. Living along the roadside, they lack the forests and wetlands lose their temporal resonance. Here the Baka mainly operate according to an agricultural calendar , with seasons for clearing, planting, and harvesting. Different time durations and temporal experiences. In the forest they were always busy. But living by agricultural time often includes times of planning and waiting (*siti*). For most, time moves **slower** along the road.

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Figure 22: Woman in Assok, Dja-et-Lobo, South Region, Cameroon. Photograph by Blake Ewing, January 2025.

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We visited the village of Bemba II during *Sokoyaka*, a season running roughly between January and March. For the Baka here—who now farm a range of crops in the semicleared areas behind their village—when living in the forest, *Sokoyaka* was a season for hunting and fishing, harvesting honey and wild yams. It was also a time for certain coming-of-age religious initiations during which men had to kill special animals like elephants (*yà*), giant pangolins (*kelepa*), and gorillas (*ebgobgo*). But now—four to five days a week—*Sokoyaka* is a time for felling and burning trees, and for planting. Conservationists have altered the Baka's attitude towards hunting protected species, we are told. But nonetheless, due to overhunting and poaching, subsistence hunting requires traveling greater distances, taking more time.

Their agroforestry enterprises also necessitate adapting to the times and temporalities of a broader capitalist

world. With agricultural time comes selling time and negotiating time. With no previous experience of money and market economy, Indigenous times had a different sense of value. Payment for time is a new phenomenon, and Bantu farmers, who often hire the Baka as farm laborers, are known to exploit the Baka's inexperience. The nearby paved highway is also a space of capitalist times on an even bigger scale. Trucks thunder past, day and night, carrying valuable timber—usually moabi or sapele—destined for the port city of Douala. Displaced from the forest, the Baka hear and watch its contents being hauled away, profits made elsewhere. Tree species integral to forest times become matters of delivery time, shipping time, lumbering time, and installation time.

Keywords: erosion, accumulation, acceleration

Link words: cycles , rhythms , structures , seasons , tradition , ruptures , future , adaptation , imaginaries

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Ruptures

Wetland landscapes hold within them layered timescapes: tidal pulses, seasonal migrations, rhythms of rain and drought, agricultural cycles , ancient settlements, and the creeping inevitability of industrial modernity. Yet rupture—the moment of profound breakage or collapse, where temporalities visible and dramatically clash —materializes most starkly where the human will to dominate meets the volatility of wetland ecologies.

Figure 23: Clan Baka Ndjenbeh welcome sign, A-sok, Cameroon. Photograph by Blake Ewing, January 2025.

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The first wave of expulsion of the Baka from their forest homes began the 1950s, shortly after the creation of the Dja Faunal Reserve. But not all resettlement was forced. Some groups were drawn to the roads and their sounds. There they met Bantu people who taught them how to plant. In return, the Baka helped them hunt and showed them how and when to collect honey. One of the villages we visited was founded with the help of an Italian missionary. Now the only remaining villages in the Reserve lie on the very outskirts, just over the Dja river on the north side. During our trip to the Mintom II area, on the south side, we never crossed the river into the reserve. There were no Baka to speak with on the other side.

Displacement is not just spatial; it is temporal. Rupture is a past and future broken apart from each other. But

the roadside Baka villages feel very much in between a past and future. A roadside present in between a past living in the forest, and a commercialized and urbanizing world from which they remain estranged. In some sense, then, the rupture does not look like a clean break. After moving, or being moved, from what is now the Dja Reserve, the Baka's access to a healthy forest that surrounded them has been diminishing over time. Roads, logging, mining, and overhunting are isolating the Baka further, raising calls for allowing them to spend more time in the Reserve to practice their traditional way of life, including hunting animals for subsistence and religious purposes. But for many residents there is no going back.

On the Wadden Sea coastline, rupture can take the form of **loss** by extreme flooding, made worse by rising seas which are a consequence of anthropogenic climate change. The region bears scars of catastrophic floods like the 1219 storm surge ("First St. Marcellus flood"), which claimed 36,000 lives, and the 1362 "Second St. Marcellus Flood" or Grote Mandrenke (Low Saxon for "Great Drowning of Men"), which drowned 25,000 and wiped out entire communities, including the legendary town of Rungholt. These events, though historical, remain ingrained in collective memory and shape the local understanding of the environment as both cyclical and episodic. In recent decades, storm surges with sea-level rises of more than two meters have tripled, increasing the vulnerability of the region. Floods in 1981, 1990, and 1999 highlight the growing frequency of these events, while islands like Langli, though still existing, are increasingly vulnerable to the forces of erosion and shifting tides. Lands like Jordsand, once part of the mainland, have disappeared. Despite flood protection efforts, such as the 1981 dyke in Fanø, the increasing frequency of floods underscores the fragility of the land.

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Figure 24: *Stormflodshøjder* (storm surge height marker) in Fanø, Denmark, showing the worst flood to date on 24 November 1981. Photograph by Enaiê Mairê Azambuja, March 2025.

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In Morecambe Bay, the looming presence of Heysham nuclear power station marks a particularly charged rupture—both spatial and temporal. Constructed in the 1970s and licensed to operate until 2030, Heysham 1 and 2 rise as concrete sentinels above a mutable shore, asserting a vision of time that is linear, extractive, and stretches long into the **future**. Their monolithic forms exist in uneasy dialogue with the estuary's tidal breathing—its cycles of erosion, deposition, migration, and retreat. Beyond the ecological tension lies an economic one: The decline of small-scale fishing in the bay, once a cornerstone of local identity, has forced many residents to seek employment at the power stations. As artist and researcher Debbie Yare remarks, "Everyone knows someone who works there." This economic entanglement complicates any critique of the nuclear

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presence.

The stations offer stability where fishing has faltered, anchoring families amid broader precarity—but at a cost. The facilities impose a constant, invisible anxiety: Emergency evacuation zones blur the boundaries of home, while the question of decommissioning haunts the horizon of renewal. The challenge is not solely technical —how to dismantle without contaminating a fragile habitat—but symbolic. Nuclear infrastructure embeds the land into timelines of risk that stretch far beyond human memory , binding it to futures shaped by the inertia of past decisions. The vision for a postnuclear bay—one that centers on wind energy, community stewardship, and ecological repair—remains nascent, aspirational, and deeply tethered to the legacies of rupture.

Figure 25: “Mirror Man,” part of the “Settlement” installation by Rob Mulholland, Half Moon Bay, 2018. Photograph by Gordon Walker.

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Wetlands are not simply sites of ecological richness, but of temporal negotiation. In the responses to each of these ruptures lie flickers of possibility—glimpses of futures shaped not by extraction, but by **adaptation** and repair. In several villages close to the Dja Faunal Reserve, we hosted an exercise called the "futures triangle," a method that helps communities explore how hopes for the future, the weight of past traditions, and present challenges interact to shape their path forward. Amid at times heated discussion, villages deliberated how to best navigate the "pull" of the future in relation to the "weight" of the past. With the help of NGOs like the Congo Basin Institute's School of Indigenous and Local Knowledge (SILK) (an institutional partner to the Wetland Times project), villagers are making sure younger generations know the old ways.

But the strongest feeling was for adapting, especially making sure the young are educated and have opportunities. During the exercise, the Baka posed many rhetorical questions. Who would refuse a car ride to get to Djoum (a nearby town)? Who can stop a young person from having a mobile phone? The TV informs, even if it is bad for the eyes. What they can control, it was felt, is to try and "slow down" (*ralentir*) some harmful modern practices. As one participant put it, "*on ne doit pas embrasser le modernisme aveuglément*" ("We must not embrace modernity blindly").

Keywords: displacement, loss, future, adaptation

Link words: cycles , histories , tradition , impermanence , memory

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PDF created on: 10 December 2025 16:29:46

Further Readings

General / Theory / Methods

Adam, Barbara. *Timescapes of Modernity: The Environment and Invisible Hazards*. Routledge, 1998. https://doi.org/10.4324/9780203981382 .

Allen-Paisant, Jason. "Animist Time and the White Anthropocene." *New Formations: A Journal of Culture/Theory/Politics* 104/105 (2021): 30–49. https://doi.org/10.3898/NewF:104-105.02.2021 .

Chakrabarty, Dipesh. *The Climate of History in a Planetary Age*. University of Chicago Press, 2021. https://doi.org/10.7208/chicago/9780226733050.001.0001 .

Eyvaz, Murat, and Ahmed Albahnasawi, eds. *Wetlands: New Perspectives*. IntechOpen, 2023. https://doi.org/10.5772/intechopen.104315 .

Flaherty, Michael G. *The Textures of Time: Agency and Temporal Experience*. Temple University Press, 2010.

Fluet-Chouinard, Etienne, Benjamin D. Stocker, Zhen Zhang, et al. "Extensive Global Wetland Loss over the Past Three Centuries". *Nature* 614 (2023): 281–86. https://doi.org/10.1038/s41586-022-05572-6 .

Gergan, Mabel, Sara Smith, and Pavithra Vasudevan. "Earth Beyond Repair: Race and Apocalypse in Collective Imagination." *Environment and Planning D: Society and Space* 38, no. 1 (2018): 91–110. https://doi.org/10.1177/0263775818756079 .

Ingold, Tim. "The Temporality of the Landscape." *World Archaeology* 25, no. 2 (1993): 152–74. https://doi.org/10.1080/00438243.1993.9980235 .

Keddy, Paula A. *Wetland Ecology: Principles and Conservation*. Cambridge University Press, 2010. https://doi.org/10.1017/CBO9780511778179 .

Koselleck, Reinhart. *Futures Past: On the Semantics of Historical Time*. Translated by Keith Tribe. Columbia University Press, 2004.

Lorimer, Jamie. *Wildlife in the Anthropocene: Conservation after Nature*. University of Minnesota Press, 2015. https://doi.org/10.5749/minnesota/9780816681075.001.0001 .

Malhi, Yadvinder. "The Concept of the Anthropocene." *Annual Review of Environment and Resources* 42, no. 1 (2017): 77–104. https://doi.org/10.1146/annurev-environ-102016-060854 .

Newing, Helen, Stephanie Brittain, Ana Buchadas, et al. "'Participatory' Conservation Research Involving Indigenous Peoples and Local Communities: Fourteen Principles for Good Practice." *Biological Conservation* 296 (2024): 1–9. https://doi.org/10.1016/j.biocon.2024.110708 .

Azambuja, Enaiê Mairê, Blake Ewing, and Nicola Thomas. "Wetland Times." Environment & Society Portal, *Virtual Exhibitions* 2025, no. 2. Rachel Carson Center for Environment and Society. doi.org/10.5282/rcc/10006.
PDF created on: 10 December 2025 16:29:51

Nordblad, Julia. “Time for Politics: How a Conceptual History of Forests Can Help Us Politicize the Long Term.” *European Journal of Social Theory* 20, no. 1 (2017): 164–82. https://doi.org/10.1177/1368431016653241 .

Proulx, Annie. *Fen, Bog and Swamp: A Short History of Peatland Destruction and Its Role in the Climate Crisis*. Scribner, 2022. https://doi.org/10.1660/062.126.0307 .

Randazzo, Elisa, and Hannah Richter. “The Politics of the Anthropocene: Temporality, Ecology, and Indigeneity.” *International Political Sociology* 15, no. 3 (2021): 293–312. https://doi.org/10.1093/ips/olab006 .

Salimi, Shokoufeh, Suhad A.A.A.N. Almuktar, and Miklas Scholz. “Impact of Climate Change on Wetland Ecosystems: A Critical Review of Experimental Wetlands.” *Journal of Environmental Management* 286 (2021): 112160. https://doi.org/10.1016/j.jenvman.2021.112160 .

Westerfeld, Levi, and Anne Kelly Knowless. “I Was There: Places of Experience in the Holocaust.” *Visionscarto*, 13 December 2018. Accessed 20 April 2025. https://www.visionscarto.net/i-was-there .

Whyte, Kyle. “Time as Kinship”. In *The Cambridge Companion to Environmental Humanities*, edited by Jeffrey Cohen and Stephanie Foote, 39–55. Cambridge University Press, 2021. https://doi.org/10.1017/9781009039369.005 .

Widlok, Thomas, Joachim Knab, and Christa van der Wulp. “#African Time: Making the Future Legible.” *African Studies* 80, no. 3–4 (2021): 397–414. https://doi.org/10.1080/00020184.2021.1942786 .

On Cameroon

Awum, Harrison Esam. “Access to Discourse, Marginalisation and Exclusion in Conservation-Induced Resettlement: The Case of the Displaced Baka of East Cameroon.” *International Journal of Environmental Studies*, 73, no. 2 (2016): 294–312. https://doi.org/10.1080/00207233.2016.1148446 .

Carson, Savanna L., Fabrice Kentatchime, Eric Djomo Nana, Kevin Y. Njabo, Brian L. Cole, and Hilary A. Godwin. “Indigenous Peoples’ Concerns About Loss of Forest Knowledge: Implications for Forest Management.” *Conservation and Society* 16, no. 4 (2018): 431–40. https://doi.org/10.4103/cs.cs_17_105 .

Djoupee, Bertille. *Le Baka: Langue oubanguienne du Cameroun*. L’Harmattan, 2025.

Hoyte, Simon, and Felix Mangombe. “No Thanks: How an Ideology of Sharing, not Reciprocating, Ensures Abundance in the Forests of South-Eastern Cameroon.” *People and Nature* 7, no. 5 (2024): 1041–55. https://doi.org/10.1002/pan3.10734.

Kouagheu, Josiane. “In Southeastern Cameroon, the Baka People Are Marginalized in the Name of Nature Conservation.” Pulitzer Center. Accessed 24 April 2025. https://pulitzercenter.org/stories/southeastern-cameroon-baka-people-are-marginalized-name-nature-conservation . Originally published as “Dans le sud-est du Cameroun, les Baka sont marginalisés au nom de la protection de

la nature." *Le Monde*, 20 August 2022.

Nijei, Achu Frida, and Norah Aziamin Asongu. "Development Challenges Amongst the Baka People of the Eastern Region of Cameroon: An Anthropological Perspective." *International Journal of Innovation and Applied Studies* 12, no. 2 (2015): 440–46.

Sauber, Maud. "Under Threat: Cameroon's Dja Reserve and the Credibility of the UNESCO World Heritage System." *Medium: Conservation Watch*, 26 August 2016. Accessed 24 April 2025. https://medium.com/conservationwatch/under-threat-cameroons-dja-reserve-and-the-credibility-of-the-unesco-world-heritage-system-8ec5851e6d82 .

Tabue Mbobda, Roger Bruno, Chimi Djomo Cédric, et al. "Indigenous Knowledge as a Tool for Wildlife Conservation in the Dja Biosphere Reserve, Cameroon." *International Journal of Social Science and Humanities Research* 6, no. 4 (2018): 148–56.

On the Wadden Sea

Brodde, Marco, and Colin Williams. *Haunted by the Last Tide: The SWLA in the Danish Wadden Sea*. Society of Wildlife Artists, 2023.

Common Wadden Sea Secretariat. "Report on the State of Conservation of the World Heritage Property 'The Wadden Sea (N1314)'." Common Wadden Sea Secretariat, 2025.

de Smalen, Eveline, and Katie Ritson. "Imagining the Anthropocene with the Wadden Sea." *Maritime Studies* 20, no. 3 (2021): 293–303. https://doi.org/10.1007/s40152-021-00230-5 .

de Smalen, Eveline, and Katie Ritson. "Literature and the Wadden Sea: Teaching Coastal Environments through Literature." *Coastal Studies & Society* 2, no. 4 (2023): 331–35. https://doi.org/10.1177/26349817231179930 .

Döring, Martin, Cormac Walsh, and Beate Ratter. "Emplaced Climate Imaginaries: The Regional Construction of Climate Futures on the German Wadden Sea Coast." *Geoforum* 137 (2022): 222–29. https://doi.org/10.1016/j.geoforum.2022.02.010.

Nationalpark Vadehavet. *Plan for Nationalpark Vadehavet 2025–2030*. Nationalpark Vadehavet, 2024.

Reise, Karsten. *A Natural History of the Wadden Sea: Riddled by Contingencies*. Waddenacademie, 2013.

Wöbse, Anna-Katharina. "Space, Place, Land and Sea: The Ecological 'Discovery' of the Global Wadden Sea." In *Spatializing the History of Ecology: Sites, Journeys, Mappings*, edited by Raf de Bont and Jens Lachmund, 204–22. Routledge, 2017. https://doi.org/10.4324/9781315191041-11 .

On Morecambe Bay

Bastik, Stuart. "The Seldom Seen Series of Maps: Morecombe Bay." Art Gene, 2016.

Azambuja, Enaiê Mairê, Blake Ewing, and Nicola Thomas. "Wetland Times." Environment & Society Portal, *Virtual Exhibitions* 2025, no. 2. Rachel Carson Center for Environment and Society. doi.org/10.5282/rcc/10006.
PDF created on: 10 December 2025 16:29:51

https://www.art-gene.co.uk/the-seldom-seen-series-of-maps-morecambe-bay/ .

Bunney, Tessa. *Going to the Sand*. Another Place Press, 2023.

Dean, Claire. *A Short History of the Morecambe Bay Sand Library*. Aqueous Futures Exhibition, 2023. https://wp.lancs.ac.uk/milieu/aqueous-futures-exhibition/aqueous-futures-9/ .

Lloyd, Karen. *The Gathering Tide: A Journey Around the Edgelands of Morecambe Bay*. Saraband, 2016.

Morecambe Bay Partnership. "Recording Morecambe Bay." Accessed 27 Febrary 2025. https://www.recordingmorecambebay.org.uk/ .

Pollastri, Serena, Joseph Earl, Liz Edwards, and Suzana Ilic. "Morecambe Bay Timescapes: Drawing Together Coastal Futures that Will, May, or Could." *TRACEY* 17, no. 1 (2024): 1–17.

Azambuja, Enaiê Mairê, Blake Ewing, and Nicola Thomas. "Wetland Times." Environment & Society Portal, *Virtual Exhibitions* 2025, no. 2. Rachel Carson Center for Environment and Society. doi.org/10.5282/rcc/10006.
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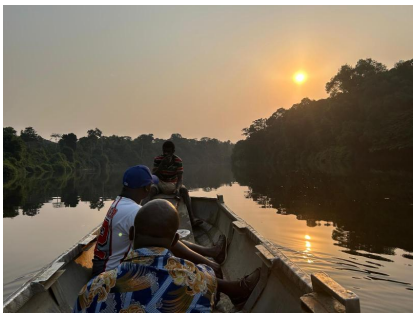

The Dja River in Dja-et-Lobo, South Region, Cameroon. Photograph by Blake Ewing, January 2025.

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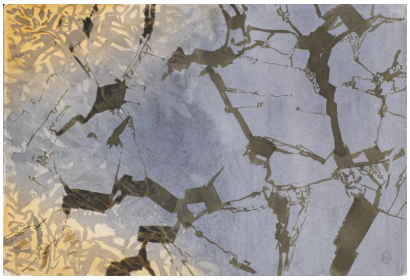

Figure 6: "Mudflat, Bacterial Biofilm," watercolor by Ben Woodhams, *Haunted by the Last Tide: The SWLA and the Danish Wadden Sea*, edited by Marco Brodde, 2023.

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Figure 9: "Footprints," Hest Bank. Photograph by Enaiê Mairê Azambuja, February 2025.

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Figure 14: Malatassé plant (*Marantaceae*) in Assok. Photograph by Blake Ewing, January 2025.

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Figure 17: Margaret Owen with her haaf net, Sunderland Point, Lancashire, 2018. Photograph from the series "Going to the Sand" by Tessa Bunney.

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Figure 21: View from Hallig Oland towards the submerged causeway of the Halligbahn Dagebüll–Oland–Langeneß railway
(Schleswig–Holstein Wadden Sea National Park, North Frisia), September 1984. Photograph by Rüdiger Stehn, Kiel, Deutschland.

Photo by Rüdiger Stehn, 1984.

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Figure 25: "Mirror Man," part of the "Settlement" installation by Rob Mulholland, Half Moon Bay, 2018. Photograph by Gordon Walker.

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Photo of *A Short History of the Morecambe Bay Sand Library*, artwork by Claire Dean, 2023.

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