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## Feral Dynamics Of Post-Industrial Ruin: An Introduction

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*Author's note: Please see the online supplement entitled "An Ethnoecology for the Anthropocene: How A Former Brown-Coal Mine in Denmark Shows Us the Feral Dynamics of Post-Industrial Ruin" for more detailed information.*

The Great Acceleration of modern industrial ecological disturbance since World War II (McNeill and Engelke 2016) has filled the world with spaces of waste and ruin—some terrifyingly toxic, some comparatively benign, yet, either way, curious as forms of more-than-human nature. What if we imagined ourselves as historical ecologists of the future searching for the equivalents of ancient anthropogenic forests or *terra preta* soils (Balée and Erikson 2006) on these contemporary ethnobiological sites? Studying the material records, we might stumble upon exotic beliefs, such as the industriousness that allowed European and American elites to imagine that their improvement projects would fully master nature, leaving no loose ends. Exploring spaces of abandonment, we might wonder at those strange humans' tolerance for biological impoverishment and chemical poisoning—and, yet, stand in amazement, too, at life that not only survived but even flourished on infrastructures of human disturbance.

Abstract calculations of carbon or radioactivity are not enough for historical ecologists of the Great Acceleration; we need to know how the actions and reactions of living and nonliving things change the landscape. We require locally sensitive

frameworks, too, to understand their agency. To study our waste places, we will need an ethnobiological field guide, in which the nature-making practices of northern elites are just as worthy of study as other vernaculars. But most field guides identify entities one at a time, whether plants, birds, or rocks. One-on-one interactions are only enough if nature is relatively stable, autonomous from humans, and benevolent to us; in modern ruins, we humans join jumbled interactions and confront mixed-up layers. To study this mess, we will need to follow contingent histories. The field guide we propose requires attention to histories of social relations crossing points of view, species, and even inanimate objects, such as water and sand. It would show us "feral dynamics," that is, anthropogenic landscapes set in motion not just by the intentions of human engineers but also by the cascading effects of more-than-human negotiations. This special section works toward just this kind of field guide. We offer methodological notes toward a historical ecology of the northern European Anthropocene, understood as a site of the continual making of industrial ruins. Incorporating new forms of biology that stress relational and dynamic features of life, we bring together social and natural histories to show the emergence of unintended anthropogenic effects.

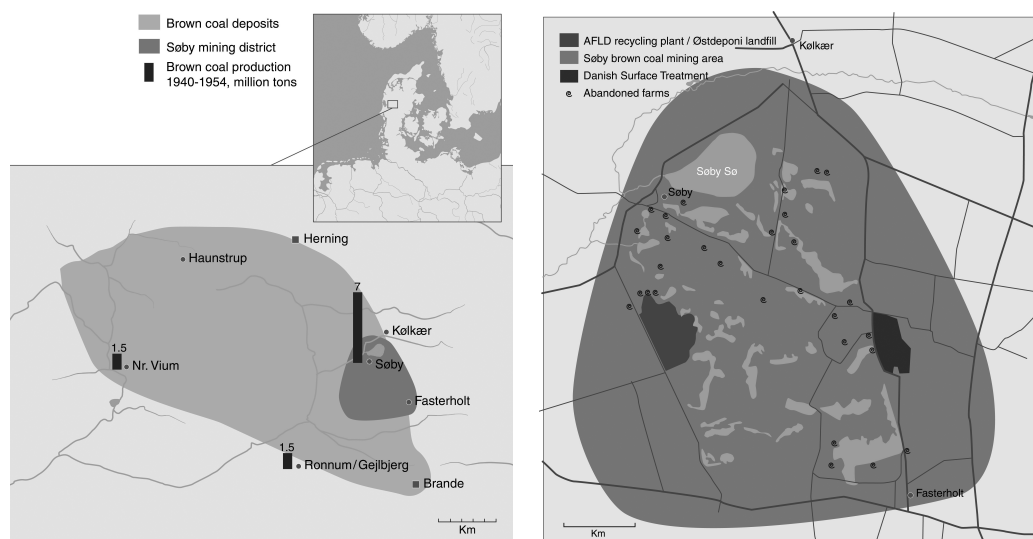
Our field site is an abandoned brown coal mine in the center of Denmark, Søby Brunkulslejer, or "Søby Brown Coal Site" (Figure 1). Located at the heart of Jutland, the main peninsula of Denmark, Søby was the

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**Figure 1.** The Søby brown coal mining area. Left: Søby region, showing location in northern Europe. Vertical bars show brown coal production in 1940-1954. Right: Detail of Søby, showing abandoned farms, lakes (abandoned mines), and location of landfill and galvanization plant. Maps drawn by Louise Hilmar, Moesgaard Museum cartography.

main site of brown coal extraction during WWII, supplying a third of national production between 1940 and 1954. Mined at the start of a Danish version of the carbon-fueled Great Acceleration (Steffen et al. 2015), Søby was transformed from heath and farmland into an industrial landscape of barren sand dunes. By the 1970s, the 1100-hectare site had become a series of holes in the ground, surrounded by the sand dug from them in great heaps and rows. The holes filled up with groundwater, gone acidic from exposed pyrite clays, becoming lakes. Some sand piles were planted with conifers, which, in turn, spread to remaining sand tips. Red deer (*Cervus elaphus*), and then wolves (*Canis lupus*), came. Within the intensively managed countryside of Denmark, this is a wild place (Figure 2). Viewed amidst the sea of seemingly successful industriousness, the Danish agricultural landscape and welfare state, here is a small place from which to appreciate the dynamics of ecological excess. Yet for wastelands around the world, this is a comfortable ruin, a place to consider what some members of our research team have called a “mild apocalypse,” that is, the gentler side of the terrors

of the Anthropocene (Brichet et al. 2017). Instead of overwhelming us with crimes of ruination, the site entices us to search for feral dynamics; that is, the pleasures and dangers of “weedy” regrowth—and not in some distant Other location, but in the heart of the imagined safety of the global north.

What we propose to call “weeds” are organisms that proliferate without human planning. We do not intend to cast shade on them through this term. The weeds we identify may be good or bad to the humans amidst whom they thrive. Although they are unplanned, they may become resources for humans; alternatively, they may hamper resource utilization—or both. By borrowing a term from the North Atlantic cultural regime we study, and redeploying it for analytic use, we seek to separate the term “weed” from its negative connotations. We do this to watch how feral landscapes move away from their original human purposes as they gather those living things that find human disturbance attractive.

Due to more-than-human activity, humans are given back landscapes different than the ones they imagined and sought to make. As this special section’s contribu-



**Figure 2.** A view of the Søby brown coal area in 1970 (Left) and 2000 (Right), from Skov og Naturstyrelsen (2000), used by permission.

tions demonstrate, a parking lot may be a spreading point for invasive species; mining spoils may become an ecologically simplified forest; a landfill may attract an unusual combination of wildlife. Studies of human interactions with the cultural-natural world must move beyond the unspoken assumption of natural stability to tackle a world increasingly challenged by the ambitious projects of modernity. If we, as a species, want to survive the industrial infrastructures we moderns have made, we as researchers need to understand how more-than-human remakings of engineered landscapes occur. These are our feral dynamics.

Methods are at the center of our field-guide-in-process. We gathered our team as a part of an experiment: might a common commitment to careful field observation allow social scientists and natural scientists to work together to study the still-emerging histories of Anthropocene landscapes? Søby is the collaborative research site of Aarhus University Research on the Anthropocene (AURA)<sup>1</sup>. Researchers from the human and natural sciences joined to learn from each other's methods and insights. If the Anthropocene is that time in which nature and culture can no longer be studied independently (Latour 2017), we will need new forms of collaboration across disciplinary differences produced by the nature-culture

divide. In contrast to “divide-and-juxtapose” interdisciplinarity (e.g., Harden et al. 2014) or a neatly separated division of labor into scientific work packages (Palsson et al. 2013), we want natural science's curiosity about the world *and* the power of social theory—simultaneously. For the study of the Anthropocene, we need to watch landscapes in motion; we need histories of cultural and political difference to follow the contingent developments we call feral dynamics. We focus on critical description and field-based observations (Tsing 2013). Our special section is an entry into the recent historical ecology of northern European landscape management and its unintended ecological consequences.

### Unsettling the Setting

We begin by identifying a world-making project, a modern “mode of existence,” if you would (Latour 2013), in which human action has occurred on the landscape we study. Brichet and Hastrup (this issue) use the term *industriousness* to describe a key feature of this Danish modern mode of action, a mode of action that combines Lutheran ethics with agricultural intensification and which reaches back at least to the middle of the nineteenth century (see Supplement). In this mode, landscape entrepreneurs are on the



lookout for “resources” to use in the projects they believe will help them succeed. As Brichet and Hastrup show, this mode of action does not reveal a static set of landscape resources: huge changes occur in what counts as a resource across historical periods. What these historical projects of landscape-making have in common is the will to improve through resources. This is a way of making landscapes but not living with them: the possibilities that human will might not control everything are hardly considered.

Various versions of this mode of elite action have been key to much of the environmental disruptions of the Great Acceleration; they also create the setting in which human-nonhuman relations play out in the Søby research site. The contributions to this special issue demonstrate how landscape history unsettles the dreams and schemes of industriousness, even as the projects of the industrious change everything. Højrup and Swanson (this issue) offer an important insight: the ground itself moves under the machines of the industrious. The brown coal mines have left an unstable combination of sand and groundwater, in which landslides are common and quicksand swallows men and machines (Figure 3). In this setting, property owners who want the land for hunting have been able to argue against development initiatives, creating a politics in which *instability*

is the key term. The feral dynamics followed in all the other papers develop within the historical ecology of human industriousness undermined by geological instability. Capital and geology come together here, creating unintentional effects.

### Ethnobiology in Reverse

The next two papers in this issue—the first by Gan and Tsing and the second by Vestbo et al.—trace patches of interspecies action made possible in this regime of cultural politics. Instead of beginning and ending with human action, however, these papers consider the infrastructure of industrious disturbance from the perspective of other creatures, including little-recognized creatures such as fungi and harvestmen (called “daddy long-legs” in North America). We stray from the most useful, most important organisms for human use to instead track these neglected—yet still ecologically crucial—species. Furthermore, these two papers offer an alternative model of inquiry than that of most human-nonhuman research, in which analysis generally focuses on how human informants understand other organisms. Instead, these two papers begin with the anthropogenic landscape and show it from the point of view of other creatures, how they, too, are able to use its elements and features. One might call this “ethnobiology in reverse”: nonhumans take center



**Figure 3.** Søby—during and after mining, respectively. Left: A truck slides into a brown coal excavation, 1956. Right: In the instability of the post-mining landscape, geysers blow through the sand, 1975. Both by anonymous photographers, displayed at the Søby Brown Coal Museum, used by permission.

stage in showing, through their actions and relations, how human-made landscape elements come to matter. Previous ethnobiologists, indeed, have led us here, for example, in asking not just how people conceive of plants but also how plants might conceive of people (Daly et al. 2016). We extend this not to talk about non-human intelligence, but rather to consider non-human practices that respond to human practice.

### Watching Others Watch Us

Our final two papers extend this method. Forssman and Root-Bernstein and Hoag et al. return us to the human—but now through the mediation of other creatures' landscape-making practices. Reverse ethnobiology is once again reversed: the question becomes how human practices, consciously or semi-consciously, are shaped in reaction to other creatures' negotiations with the human. While hunters imagine intensely how deer navigate anthropogenic meadows and forests, landfill employees respond to the way microbes make use of human waste, but without caring or knowing much about the microbial world. Hoag et al. call these human-non-human associations that are beyond full human control, and sometimes beyond full human awareness, "relationships of undomestication." In the process of working out relationships, the ethnobiologies of humans and nonhumans become entangled—and sometimes in unintended and unrecognized ways. We argue that these doubled reversals of the human gaze—how other creatures deal with the human in often weedy ways and how humans deal with these dealings of other creatures under conditions of undomestication—is a necessary part of the search for feral dynamics, the ecology of the Great Acceleration. If nonhumans are neither autonomous from human plans nor static or passive in their relationships to these plans, we need to watch them watching us. When we return to the human gaze, we do

so only through the mediation of the inter-species landscape-negotiations of which human action forms a part.

Because human projects matter from the perspectives of other creatures, landscapes change; human infrastructures created for one kind of purpose are deformed and transformed by other uses. Humans are offered landscapes of their own making—but hardly recognizable to their original plans (see also Robbins 2007). Meanwhile, humans struggle to figure out how best to live together with (and, as Hoag et al. show, to make "marginal gains" from) the weedy, invasive, and pestilent others we have indirectly encouraged. To study the complex historicities and socialities of these inter-species negotiations is a challenge facing both natural and social science.

### A Fieldguide to Feral Succession

The peculiarities of Søby's history allow us to focus on the dialogue between disciplined governance plans and weedy excess. During the heady years of mining, which escalated in the 1940s, venture capitalists, manual laborers, gamblers, and outlaws rubbed shoulders, creating a "weedy" cultural landscape, a Danish "Klondike"—yet one itself enabled by the emergent Danish welfare state (see Supplement). After the abandonment of mining in 1970, the once-pumped-out water returned and the sand shifted. Mechanical equipment risked sinking into quicksand. Brown coal excavation brought geology irrevocably to life in Søby. The instability of sand and water are our special issue's first example of feral dynamics (Figure 3; Højrup and Swanson, this issue).

Following a 1958 law requiring mining operations to co-finance a state-supported revegetation fund (Svendsen 2010:210), botanical experiments with both broad-leaf and coniferous trees were carried out. Many of the planted trees grew; only a few kinds flourished, sending seedlings into the mining spoil. Some trees, such as lodgepole pine (*Pinus contorta*) became

weeds, even as other species died out (Gan and Tsing, this issue). The spread of trees shaped the possibilities for animals. Most dramatically for human land managers, red deer spread into Søby once tree cover was available, opening a new frontier economy of game hunting. Red deer (*Cervus elaphus*) are native to Denmark, but free-roaming deer were gone by the eighteenth century, leaving only those in deer parks. Yet by the end of the twentieth century, escapees had trickled back into the countryside. The hunting economy allowed lodgepole pine to continue spreading, which in turn encouraged red deer (Forssmann and Root-Bernstein, this issue).

Distrust in the area's potential for ordinary development encouraged "waste" and "dirty" industries. An aluminum galvanizing factory was placed on the former mining fields, as was a landfill. After 1979, the latter began to receive household waste from much of the central Jutland area. For decades, the landfill enabled further wastelanding. But in a turn-of-the-century return to resource landscapes, landfill waste became *resources* through methane production, recycling, and recreational ambitions (Hoag et al., this issue).

Deer trespassed to browse on the nitrogen-rich vegetation of the now-sealed landfill. Meanwhile, all kinds of traffic, from tourism at the historical museum to the landfill's recycling, brought new species to Søby. Human infrastructure carries organisms other than humans—including exotic travelers from afar (Vestbo et al., this issue). Can we appreciate motor transport or garden mulch from a harvestman's perspective? This doubled perspective is at the heart of the transdisciplinary dialogue we aim to spark.

### A Patchy Anthropocene?

Denmark is a place of moderation rather than excess, a site of diminutives rather than superlatives—whether in cultural, economic, ecological, or demographic terms. What can this almost unbear-

ably mild place possibly teach us about the Great Acceleration? The undramatic mundaneness of our site brings into focus entanglements between intensive human management and weedy refusals of planners' imagined discipline. From here, we can see the importance of the interspecies experiments of more-than-human landscape-making negotiations. Deer and fungi make landscapes alongside human foresters; parking lots and waste dumps turn out to be lively sites for interspecies engagements. In these "unheralded collaborations," landscapes are transformed in a process of succession that cannot be held separate from the political and economic histories of management and unmanagement, relationships of domestication as well as undomestication.

Søby's feral sociality, venture capital, unstable geology, and weedy ecology move within the regulated welfare state and intensively groomed agricultural ecology of Denmark. Denmark's specificity, in turn, responds to the history in which it was "caressed" rather than devastated by recent world wars; this allowed a benevolent and pervasive welfare state to emerge after WWII. Denmark does not stand in for the world; instead, it shows us the specificity of environmental patches within which challenges for more-than-human livability arise. This is our method for studying the Anthropocene: to take advantage of the irregularity of global spaces to understand the entanglement of human and nonhuman histories.

Sites of weedy proliferation can be found in any car park, any abandoned building, or any post-industrial ruin, if we pay attention. The life worlds of plants, animals, fungi, and bacteria are already entangled in modernist enterprises—even as they also exceed the frames and boundaries of those enterprises, taking off in their own directions as well. Rather than stable ecologies that stay still to let themselves be used and named, we now have to learn to study ecologies that are unstable, undomesticated,

and “on the move.” These multispecies assemblages of life react to us—whether collapsing from our violent industriousness or, alternatively, taking advantage of it to proliferate with their own undomesticated violence, as weeds. We must learn to study ecological assemblages that are already studying us; ethnobiology is joined by reverse ethnobiology as we watch how anthropogenic landscapes escape the “best laid schemes of mice and men<sup>2</sup>.” Our field guide to feral dynamics, then, is an ethnoecology for the Anthropocene.

### Notes

<sup>1</sup>[www.anthropocene.au.dk](http://www.anthropocene.au.dk).

<sup>2</sup>Adapted from Robert Burns’ “To a Mouse,” 1785.

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