



Wild Boar Events and the Veterinarization of Multispecies Coexistence

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By considering the emergence and threat of African Swine Fever (ASF) in Europe, this paper demonstrates the growing role of veterinary rationales in reframing contemporary human-wild boar coexistence. Through comparative ethnographies of human-wild boar relations in the Czech Republic, Spain and England, it shows that coexistence is not a predictable and steady process but is also demarked by points of radical change in form, course and atmosphere. Such moments, or *wild boar events*, can lead to the (re-)formation or magnified influence of certain discourses, practices and power relations in determining strategies of bio-governance. Specifically, this paper highlights how the spread of ASF in Europe has accelerated an already ongoing process of *veterinarization*, understood as the growing prominence of veterinary sciences in the mediation and reorganization of contemporary socioecologies. This example highlights how veterinary logics increasingly influence localized human-wildlife relations and, through analogous practices of biosecurity and control, also connect different places and geographic contexts.

Keywords: African Swine Fever (ASF), game management, hunting, critical event, veterinary medicine

INTRODUCTION

Through ethnographic and historical accounts of human-wild boar relations in the Czech Republic, Spain, and England, this paper considers how the ever-developing process of human-wildlife coexistence is subject to rapid and sometimes destabilizing changes in form, course and atmosphere. To better understand such shifts, the paper draws on the concept of *events* as developed by a number of philosophers and utilized across social sciences (Fraser, 2006). Tracing human-wild boar relations both before and during the recent spread of African Swine Fever (ASF) in Europe, the paper emphasizes how events can dramatically reconfigure politics, knowledges, practices, power relations and ways of living with wild animals. In particular, it identifies the emergence of *veterinarization* as a regulatory mechanism whereby the veterinary sciences, enacted in varying degrees of tension with long-standing modes of management such as hunting, play an increasingly prominent role in the mediation and reorganization of contemporary socioecologies.

Speaking broadly, the paper contributes to a body of literature that has been developing the concept of “coexistence,” moving it from the more singular, anthropogenic lens of conflict to a more nuanced and diverse framing of human-wildlife relations (Carter and Linnell, 2016; Frank and Glikman, 2019; Pooley et al., 2020). Such work highlights the dynamic nature of

coexistence, its complex material and discursive landscapes, and the ways this necessitates an ongoing negotiation between various human, non-human, individual or institutional actors. Bringing to light a particular set of multispecies relations revolving around the ASF virus, the paper proposes that particular critical events (Das, 1997) enhanced the role of biosecurity—the systematic effort to regulate flows of life and prevent their unwanted interactions (Donaldson, 2008; Hinchliffe et al., 2013)—in shaping human-wildlife coexistence. In so doing the paper seeks to further the conversation between the growing body of literature on biosecurity (Dobson et al., 2013; Hinchliffe et al., 2016; Barker and Francis, 2021) and the human-wildlife coexistence scholarship.

Based on research involving a mixture of qualitative approaches, this paper is methodologically and conceptually grounded in multispecies ethnography and more-than-human geography (see Kirksey and Helmreich, 2010; Hodgetts and Lorimer, 2015, 2018; van Dooren et al., 2016). Two researchers have lived periodically in their case locations (Arregui in Barcelona, Spain; O'Mahony in the Forest of Dean, England) and to differing extents have followed local practices and events involving various human (e.g., hunters, vets, conservation biologists, authorities, members of the public) and non-human actors (e.g., wild boar, domestic pigs, dogs), whilst the other researcher (Broz) has analysed game and ASF management practices and conducted a review of historical documents. All three authors have also conducted interviews with key stakeholders and monitored national and international media narratives surrounding ASF.

The paper consists of two main sections. The first begins by outlining a European-scale trajectory of human-wild boar coexistence, before then considering the historical contexts of our three respective research contexts. It then introduces the concepts of *events* and *veterinarization* to consider how the recent arrival of ASF to Europe has been reshaping human-wild boar relations in affected and (currently) unaffected locations.

HUMAN-WILD BOAR COEXISTENCE IN EUROPE

Over recent decades wild boar have become increasingly prominent agents within the global socioecological landscape. Classified by the IUCN as a species of “least concern,” broad accounts of wild boar underline their increasing population and expanding range throughout their “native” and “introduced” geographies (Massei et al., 2015; Keuling et al., 2017). Various explanations have been put forward for this apparent escalation in numbers and the subsequent risks those pose to humans. As a species, wild boar are highly intelligent, ecologically reactive, physically mobile and omnivorous, a combination of which allows them to successfully adapt to and move through a range of habitats (Morelle et al., 2014, 2015). Furthermore, their fecundity and reproductive “elasticity” (e.g., the capacity to delay or accelerate fertility) enables them to adapt according to changing environmental conditions (e.g., food availability, climate and predation risk) and ensure their populations’

persistence (Bieber and Ruf, 2005; Frauendorf et al., 2016). These relational, environmental influences also hint at how humans have influenced wild boar proliferation, too. Accelerated, human-induced climate change and its ecological impacts; modifications to the temporal rhythms and species of arable farming; rural depopulation and its subsequent cultural changes; and urban expansion, to name a few, have all provided opportunities for wild boar to exert agency and actively contribute to transforming socioecological landscapes in Europe (Sandom et al., 2013; Hearn et al., 2014; Massei et al., 2015; Vetter et al., 2015; Keuling et al., 2017; Linnell et al., 2020; Valente et al., 2020).

Localized and global wild boar abundance has often been facilitated by their complex relations with humans, sometimes even through direct human support in the form of feeding or reintroductions by hunters (for example, see Hearn et al., 2014). Primarily, however, human-wild boar interactions are framed as conflictual. Normatively represented as forest inhabitants, “out-of-place” wild boar are seen as transgressing multiple boundaries and causing “damage” to crops; biologically threatening domesticated livestock; endangering local ecosystems and vulnerable species (Massei et al., 2011; Barrios-Garcia and Ballari, 2012; Ballari and Barrios-García, 2014; Snow et al., 2017); and disrupting everyday human activities in rural areas, edgelands, suburbs and even urban centers (Licoppe et al., 2013; Stillfried et al., 2017). In other words, their increasingly conspicuous presence is often perceived as untenable within contemporary ecologies and economies (Schofield, 2010; Day, 2015; Warner, 2019).

Whilst generalized narratives such as this provide a relatively useful contemporary context, they give little understanding of the complicated political, ecological and socio-economic situations that give rise to specific human-wild boar relations in different locations. Importantly, there is also little consideration of how these distinct geographic and socioecological circumstances come to affect one another. Herein, the paper now introduces three accounts from the Czech Republic, Spain and England which help highlight the diverse historical, material and geographic contexts in which human-wild boar coexistence has played out.

Czech Republic: Coexistence Through Rural Change

By 1800, wild boar were nearly extinct in the open landscape of what is now the Czech Republic (Kovařík and Vosátka, 2013, p. 186; Andreska and Andreska, 2016). This was not a slow demise but was likely the result of a swift change in their governance. Namely, as part of reforms introduced by Maria Theresa and her son Joseph II who ruled over what was then part of the Austrian empire, a new hunting act was passed in 1786 which outlawed wild boar from the open landscape (Andreska and Andreska, 2016). Emphasizing economic growth and re-valuing agriculture over aristocratic interests in hunting, the act took away privileges from aristocrats and gave commoners hitherto unheard of rights to shoot or kill wild boar they encountered. Furthermore, they could even get compensation for property damage caused by wild

boar. In turn, wild boar themselves lost their status as knightly game, instead becoming a readily killable animal *non-grata*.

The resulting near extinction of wild boar, seemingly over less than 30 years, coincided with the newly emerging practice of four-course agricultural rotation, adopted in the 1st decades of the 19th century and which led to “unprecedented changes in both crop and livestock productivity and output” (Overton, 1996, p. 117). In this new socio-ecology, wild boar’s only acceptable place was in well-secured game enclosures which further changed who they were. Restricted in movement and now occupying a position akin to domestic swine, their “wild” qualifier merely appeared a reminder of their previous way of being.

However, post-WW2 turmoil allowed wild boar to undertake a gradual yet spectacular comeback from this state of near extinction. Legally backed by the 1947 hunting act which reinstated its presence as a legitimate game animal in the open Czech landscape, wild boar took advantage of a radical landscape change. From 1948, the communist collectivization of farmland and forests led to the creation of huge fields dominated by only a few crops, such as the maize promoted in the socialist bloc by the Soviet leader Nikita Khrushchev (Hale-Dorrell, 2018). While the rapid industrialization of agriculture led to an equally rapid demise of some wild species, for wild boar it apparently created ideal, plantation-like habitats they could colonize, hide within and feed upon. The collectivized countryside thus facilitated a renegotiated coexistence: wild boar suddenly stood between humans and their crops; the crops, especially maize, stood between wild boar and the hunters; and dogs used to drive “game” animals from the cover of vegetation, were increasingly vulnerable, often falling victim to boar groups far away from their human companions at the field edges. Wild boar, according to the numbers of animals hunted annually (the only reliable figures regarding wild animal populations), effectively recolonized Czech lands, their population growing from <4,000 in 1961, to more than 239,000 in 2019 (Andreska and Andreska, 2016; Kahuda, 2021).

Barcelona (Spain): Coexistence in the Urban Wild

In contrast to the broad spatial story of the Czech Republic, the Spanish case turns attention to the city of Barcelona, where the peri-urban population of wild boar has been growing and attuning to the expanding urban environment over recent decades. Key is the adjacent Collserola Natural Park, a 300-m-high massif covered by Mediterranean pine and oak forest which provides an important ecological core for wild boar. Understanding current wild boar demographics here also requires an understanding of socio-economic transformations over recent centuries. During the 19th century, agricultural fields, meadows and cattle enclosures were progressively abandoned as poor peasants started to migrate to cities to work in the emerging industrial sector, leaving behind a depopulated rural landscape (Doñate and Marquez, 2020). This industrial drift and the subsequent rural abandonment was followed by the natural regeneration of agricultural areas, the disappearance of buffer zones around farmers’ plots and fences, and thus enabled

the movement of fauna throughout Collserola park (Cahill and Llimona, 2004).

Over recent decades, as residential zones have expanded into the park, urban resources such as trash containers, water supply infrastructure, leisure zones and grass areas have increased. This growth in human presence and waste around the city periphery, in combination with the acorn-rich suburban forest, has diversified food and water resources for wild boar, leading to their increased presence in these urban interzones (Cahill and Llimona, 2004; Cahill et al., 2012). With an estimate of at least 1,200 individuals in the peri-urban area alone (Mitja Soto, 2019), wild boar currently stir concerns relating to traffic accidents (Gutiérrez, 2020), their disturbance of lawns and trash containers, and their bewildering appearances in central districts (Accini, 2018; Arregui, 2020).

Today, Barcelona is the scene of public debates as to how to cope with the ongoing transformation of the city’s urban ecology. While “expert” and “lay” perspectives come together over the need to recognize urban wild boar’s behavioral, bodily, and demographic changes, there is significant disagreement as to how their relations with humans should look. For conservation agents—scientists and local authorities—the ecological fabric of the outskirts need to return to a point when wild boar were largely absent, a process requiring strategic captures of peri-urban wild boar groups, or removing and euthanizing wild boar individuals which enter the urban hub. For peri-urban dwellers who encounter wild boar in their everyday life, however, experts’ interventions are frequently felt to be an unnecessary mediation, and more emphasis is placed on *personal* negotiations with wild boar individuals as some novel form of urban coexistence.

England: Coexistence as Absence-Presence

Whereas the cases from Czech Republic and Barcelona narrate human-wild boar relations that have grown in intimacy and intensity over long periods of time, the situation in England is somewhat different. Rather than presence, contemporary wild boar relations have been framed by the legacy of their multi-century absence. Commonly, this has been dated back to the late 13th Century and their disappearance from Royal hunting documents and archaeological records (Albarella, 2010; Yalden, 2010). In practice, however, wild boar extirpation from the British Isles was likely a drawn out and indeterminate process, something highlighted by medieval accounts of “wild” boar escaping from estates and “swine parks,” and the likelihood that phenotypically-similar domesticated “English pigs” and wild boar were cohabiting, interacting and interbreeding within woodlands where they both roamed freely (White, 2011; Yamamoto, 2017). Identifying a moment of extirpation, therefore, is complicated not only by patchy historical records, but also complex past modes of coexistence.

The return of wild boar as a rural actor began toward the end of the 20th Century when changing agricultural economies and subsidies led to their (re)introduction as “exotic” livestock, predominantly in southern England (Wilson, 2013; O’Mahony, 2020). Though licenses were given to farms from the 1980s

onwards on the condition their enclosures were secure, wild boar took advantage of lapses in surveillance and deliberate acts of sabotage to transgress farm borders. With no specific policy governing the presence of these unexpected, feral arrivants, locally isolated groups began reconfiguring human-wildlife relations in ways unfamiliar to contemporary Britain. Whilst some animals found space and time in woodlands to establish a multi-generational presence, others were quickly eliminated by agricultural landowners who saw them as an unwanted, risky presence.

In 2004, the sudden appearance of a large group of animals on government managed woodland in west England (the Forest of Dean)—believed “dumped” by a farmer—triggered a series of changes in human-wild boar relations (O’Mahony, 2020). Firstly, in response to the policy void and uncertainty about appropriate management, the government initiated a public consultation in 2005 and the eventual publication of a national action plan (DEFRA, 2008)¹. At the same time, wild boar began settling in the forest and their numbers grew. Initially rare encounters with the general public increased, as did their movements beyond the forest boundary. Early impressions these were woodland inhabitants at home in their “natural habitat” began to shift, and debates intensified over whether, and how, wild boar coexistence should take shape.

MULTISPECIES EVENTS AND THE VETERINARIZATION OF COEXISTENCE

These accounts from the Czech Republic, Spain and England exemplify the geographical, historical and socio-ecological diversity of human-wild boar relations in Europe. More than this, however, they also show that human-wildlife coexistence is not a process that unfolds evenly or predictably but, rather, is temporally unstable and dynamic. Human-wildlife relations are in flux and influenced by, for example, abrupt political enactments, gradual socio-economic changes, unexpected human-wildlife encounters, or individual behaviors and decisions. Some such shifts might prove to have long-lasting ramifications on the way coexistence is lived, perceived and governed.

One way to conceptualize these key moments is as (*critical events*) (Das, 1997; Rabinow, 1999; Donaldson, 2008; Humphrey, 2008; Lynteris, 2014; Seeberg, 2014)². For Veena Das, critical events arise from “unique configurations” which generate “new modes of action,” redefine “traditional categories” and lead political actors to acquire “new forms” (Das, 1997, p. 6). This understanding of events has been applied to research into disease outbreaks and epidemics. Christos Lynteris, for instance, has described how the Manchurian pneumonic plague epidemic of 1910–1911 (in China) “generated a radical rupture” (Lynteris, 2014, p. 65) and social-political transformation whereby new socio-technologies were implemented to exert medical power

over populations. According to Lynteris, subsequent epidemics had not produced such significant shifts, and thus amounted to “crises” rather than “events” (Lynteris, 2014, p. 71–72). Even more pertinently, Andrew Donaldson describes the 2001 outbreak of foot and mouth disease in the UK as an event that established biosecurity as an organizing idea that “shapes the regulatory landscape” of agriculture (Donaldson, 2008, p. 1554). Yet, while the body of literature on biosecurity has been steadily growing, its overlap with the scholarship on human wildlife coexistence has so far been modest.

In sum, thinking of coexistence as *event*-ful is helpful because it foregrounds its unpredictable nature and the ways in which sudden occurrences can rapidly alter human-wildlife relations. More than just temporally specific moments, *critical events* are watersheds that emerge and rupture processes in ways that significantly alter what comes next. For example, they might create new geographies and political ecologies; lead to the emergence of new knowledges; reconfigure power relations; or radically alter the ways in which different human and non-human actors (re)negotiate their interactions.

The Event of African Swine Fever in Europe

To exemplify the importance of *events* in transforming human-wildlife coexistence, we turn to the case of African Swine Fever in Europe. This viral disease is endemic to Sub-Saharan Africa and primarily circulates through the ecological relations of warthogs and soft ticks, although it is also transmitted through other *suidae*—bushpigs, domestic pigs and wild boar—as well as via infected carcasses or contaminated meat (Chenais et al., 2019; Dixon et al., 2019; Podgórski et al., 2019; Schulz et al., 2019). Fundamentally, the virus is deadly for both wild boar and domestic pigs, meaning it has long-existed as a latent threat to the multi-billion-euro Eurasian pork industry. In 2007, analysis of some mysterious pig deaths in Georgia revealed the virus had been transmitted from Africa to Eastern Europe. This event, its significance perhaps not fully realized by governing authorities at the time, has led some veterinary epidemiologists to term ASF as “probably the most serious animal health disease [the world has] had for a long time, if not ever” (Normile, 2019). Its subsequent spread has disrupted the Asian and Eastern European pork industries, led to various socioeconomic, environmental and human health consequences (Li and Tian, 2018; Bai et al., 2021; Luskin et al., 2021; Xia et al., 2021) and, as this article argues, radically altered the conventional dynamics of human-wild boar coexistence in Europe.

The post 2007 spread of ASF through Eastern Europe and into the Baltic region was gradual, apparently following paths of localized transmission. However, in June 2017, whilst undertaking a passive surveillance scheme, the Czech State Veterinary Administration confirmed a wild boar carcass found in the Zlín region (Eastern Czech Republic) had tested positive for ASF. This discovery was startling, primarily, because the carcass was located hundreds of kilometers from the nearest previous detected ASF case in Northeastern Poland. Like other diseases, ASF once again shown it had the capacity to make unexpected “large jumps” (Smith et al., 2017) that both connected and threatened locations relatively removed. Whilst

¹Due to the devolution of UK government, this action plan covered England only.

²This social scientific literature appropriates the concept that has originally been developed and extensively explored by a range of philosophers such as Whitehead, Deleuze, Stengers and Badiou (for a summary see for example Fraser, 2006).

the story sparked concern for farmers and hysteric responses in various media, the country's State Veterinary Administration orchestrated a rapid and meticulous reaction (Danzetta et al., 2020). This used extreme measures, including the creation of a 50 km² no-go zone that temporarily overrode individual land ownership rights, as well as the deployment of police snipers to shoot wild boar. These drastic top-down measures were successful, the outbreak was contained and the country was declared ASF-free, thus enabling it to recommence its international pork trade in April 2019 (Semerád, 2019).

This ASF outbreak has turned out to be a transformative *event* in human-wild boar coexistence in the Czech Republic. Despite its closure, the biosecurity concerns it raised have remained as the single most important factor determining wild boar population management in the country. Local wild boar specialists were offered substantial research funding to address ASF related questions regarding their behavior and ecology. The annual reporting of hunting bags, hunting plans for the upcoming year and general discussions about the species' biology have, ever since 2017, been considered in dialogue with veterinary experts and in relation to ASF's potential return. The passive surveillance scheme that proved useful in the early detection of the 2017 outbreak has established its critical importance in the species' management. Due to the technical nature of these emerging procedures, veterinarians have increasingly appeared "in charge" and displaced hunters and game managers from this long-standing role of stewardship, whose own historic practices and roles are now being transformed by the requirements of veterinary specialists (see also Emond et al., 2021). This tendency was reiterated in autumn 2020 when, following an ASF outbreak in neighboring Germany, veterinary authorities announced an intensified hunting zone in the border region. This aimed to radically decrease wild boar population density through the promise of bounties paid for every hunted wild boar and carcass found. The hope was that the less dense population would make it harder for the virus to spread and, consequently, could better protect the domestic pig industry.

The event of ASF in the Czech Republic, we believe, has intensified and accelerated a pre-existing, ongoing process of what might be understood as the *veterinarization* of human-wildlife relations. Veterinary expertise represents a potentially powerful body of knowledge, set of practices and network of institutions. Driven by a coalition of factors—advancing knowledge practices, public interests in animal health and welfare, globally connected political ecologies, and growing concerns about biosecurity—veterinary expertise has increasingly assumed a significant role in mediating contemporary human-animal relations. As a phenomenon and analytical tool, this process somewhat reflects *medicalization*, a process through which an ever-growing number of human conditions are "defined in medical terms, described using medical language, understood through the adoption of a medical framework, or "treated" with a medical intervention" (Conrad, 2007, 5; e.g., Rose, 2007)³. Like medicalization, veterinarization is

not a simple, singular process, but a complex one that potentially connects individual and state actors, individual animals and populations, and isolated practices of care with overarching strategies of governance. Drawing logics of care and biosecurity together, veterinary knowledges not only assist and intervene in specific human-wildlife relations but, when incorporated into the law-making and executive apparatus of states, hold the power to prescribe, regulate and sanction those relations in the name of human and non-human well-being. Foregrounding safety and security, veterinarians can find themselves responsible for shaping policies relating to agricultural practices and wildlife management. Moreover, the veterinary perspective can also (re)define wildlife presence, intra and inter-national animal mobilities, and the desirable futures of individuals and species.

The Veterinarization of Wild Boar in Spain and England

The Czech Republic experience of ASF was a highly publicized, critical event that enhanced veterinary prominence within human-wild boar coexistence. As we go on to show, it has also had similar effects in other parts of Europe, including those, such as Spain and England, that have suffered no incidence of ASF since its emergence in Georgia in 2007. This is, we argue, because the ASF outbreak—initially emerging in Georgia, slowly spreading through Eastern Europe, and performing a "large jump" (Smith et al., 2017) to the Czech Republic and then Belgium—has effectively connected wild boar populations in distant, transborder locations. This connection has not materialized merely through the circulation of the ASF virus itself, but also the discourses that surround human-wild boar coexistence, the strategies of bio-governance that shape it, and the kinds of knowledge practices that influence these strategies. Put bluntly, the Czech case became a kind of exemplar that simultaneously warned and generated a "success story" to be shared in a vibrant international network emerging around ASF and wild boar management (Charvátová et al., 2019, 2020).

This multidisciplinary milieu centers around a cluster of international organizations, such as OIE⁴, European agencies such as EFSA⁵, and focused multi-institutional groups like ASF-Stop COST Action⁶ or the EU funded Enetwild consortium⁷. Together, these have created an arena to produce knowledges and help translate these into regulations, (best) practices and technologies to be adopted by national regulatory bodies, industries and other stakeholders. These influential actors, clustered around the problem of ASF, are active agents in the veterinarization of human-wild boar relations beyond locations where ASF outbreaks have occurred. By mobilizing pre-existing, anticipatory biosecurity logics that foreground prevention and preparedness (Braun, 2013; Keck, 2020), they are re-shaping the boundaries of human-wildlife engagement whilst contributing toward and promoting more interconnected

colonial Namibia. While our understanding of veterinarization certainly subsumes that example, we argue for a much broader understanding, analogous, not surprisingly, to the "medicalization of society" concept.

⁴<https://www.oie.int/en/home/>

⁵<https://www.efsa.europa.eu/en>

⁶<https://www.cost.eu/actions/CA15116/>

⁷<https://enetwild.com/>

³To our knowledge, only Giorgio Miescher (2012) has spoken about "veterinarization" in a similar vein, specifically the "veterinarization of police" when referring to the control of stock as an integral part of police work in

forms of bio-governance. This process has influenced the two contexts of Spain and England, countries prone to this enhanced veterinarianization due to their own previous experiences managing animal disease events.

Spain has previously experienced ASF, and although it was eradicated in the 1990s it still foreshadows local strategies of prevention and preparedness. Due to its potentially devastating impact on intensive pig farming, ASF occupies rural Spanish imaginations as an “economic illness” which triggers deep fears of crisis and economic vulnerability (Montoto, 2019; Gutiérrez Fernández de Velasco, 2020). In other words, for pig farmers and other biosecurity stakeholders, ASF has always remained a latent yet intense worry. In the last three decades pig-related epidemic concerns have mobilized funding, institutions, and bio-sanitary policies in discreet ways. As such, Spanish veterinary experts are extremely visible participants in the aforementioned pan-European ASF milieu, notably leading the Enetwild consortium, European ASF reference laboratory⁸ and consortia developing an ASF vaccine⁹.

This deeper context has meant local veterinary agencies were well-positioned and ready to intervene as wild boar have increasingly begun to appear in Barcelona and other Spanish cities (Madrid, A Coruña). In Barcelona, an emblematic moment that saw veterinarians take a lead role in management occurred in 2013, when a wild boar roaming the city center caused turmoil and resulted in an injury of a police officer¹⁰. In response, the Government of Catalonia and the Provincial Deputation of Barcelona signed several research contracts with the Universitat Autònoma de Barcelona (UAB) to conduct an ecological and sanitary study of wild boar¹¹. These agreements effectively put a team of veterinary scientists—the Wildlife Ecopathology Service based at the UAB—in charge of managing the wild boar population in the urban and peri-urban areas of Barcelona. The same veterinarians were also the people to contact and report wild boar related “incidents,” of which more than 300 were officially recorded between 2013 and 2018. All these episodes involved, first, police notification and, second, the intervention of vets who were called to anesthetize and euthanize the animals, and in some cases conduct necropsies before incineration.

Besides these targeted removals, nowadays the vets also conduct regular captures of wild boar groups in critical peri-urban spots. These veterinary interventions have been implemented in parallel to more traditional hunting battues, which are also framed as part of the control of the wild boar

“plague”¹². After battues, veterinary scientists join hunters at the so-called *junta de carnes* (meats’ joint), spots where hunters dispose animal carcasses and vets can extract samples to be analyzed. In this context, veterinary scientists have become ubiquitous agents of wild boar bio-surveillance and population control. The increasing presence of these animals in Spanish urban peripheries, along with the persistent news of ASF spread in Europe and other pathogens carried by wild boar (Ruiz-Fons, 2017), have placed veterinary expertise at a central position in local sanitary and ecological policies.

The case in England shows a different yet related trajectory of veterinarianization. Although it has never experienced ASF, a foot and mouth (FMD) outbreak in 2001 which led to the cull of around 6 m sheep, cattle and pigs dramatically affected agricultural practices and the well-being of rural communities (Peck et al., 2002; Convery et al., 2005; Hagar, 2005; Mort et al., 2005). Moreover, ongoing contestations over bovine tuberculosis (bTB), cattle and badgers have also shaped wildlife management and the methods through which multispecies coexistence is negotiated (Enticott, 2001; Cassidy, 2019). Overall, these events have contributed to an ongoing veterinarianization of wildlife and partially influenced responses to the recent ASF emergence in Europe.

Similar to the biosecurity logics unfolding in Barcelona, growing tensions surrounding wild boar encounters and rooting in the villages and towns of the Forest of Dean were presumed to relate to their population growth, and government forestry officials began a cull in 2008 to reduce their numbers. Importantly, however, the appearance of these animals had also spawned several ethically eclectic publics which drew in individuals and groups both enthused and concerned by the prospect of wild boar coexistence. As the forestry began culling, public disquiet grew and counter arguments formed, prominent amongst which was a sense that with no genuine understanding of the wild boar population, authorities could not argue their cull was “scientific.” The response, in 2011, was for the forestry officials to temporarily halt their cull and “ecologize” their practices by implementing a monitoring strategy using distance sampling, thermal imaging and computer modeling. Over the years since, this monitoring has suggested a continuing growth in the wild boar population, one which has meant the cull has continued, as have tensions among local communities, forestry officials and local authorities (O’Mahony, 2020).

The ongoing debates about coexistence have been accelerated by the critical ASF events on the continent, and broadened interest from a local to national scale. Whereas concerns around the Forest of Dean have primarily been around “out of place” animals in settlements, the growth in population and its believed expansion has increasingly worried the agricultural

⁸<https://asf-referencelab.info/asf/en/>

⁹<https://vacdiva.eu/>

¹⁰On April 2, 2013, a wild boar was seen perambulating in central districts of the city, nearby Sants Train Station. It was 4 a.m., but two police officers believed the animal could cause traffic accidents or attack pedestrians. In a stroke of misfortune, in attempting to shoot the wild boar, a bullet ricocheted into one of the officer’s knees, resulting in a serious injury. The boar in question was hit seconds later. The case was widely reported in the media (Redacción, 2013).

¹¹<https://www.uab.cat/web/sala-de-prensa/detalle-noticia/convenio-para-investigacion-ecologia-de-los-jabalies-1345667994339.html?noticiaid=1345659040511>

¹²Further technoscientific measures have been implemented as pilot projects, such as the sterilizations of sows. The city council of Barcelona has also launched environmental education campaigns seeking to reduce human-wild boar interactions (Claverol, 2016). Likewise, some tweaks to the urban infrastructure have pursued to curb wild boar urban presence. Among these changes are fixing trash containers to the ground (to prevent wild boar from overturning them), installing deeper fencing in strategic areas, or reducing the green spaces which have become regular rooting spots for wild boar.

sector. Although the 2008 Action Plan had a specific annex on health and disease, early agricultural concerns around wild boar were, in practice, often framed around crop and grassland disturbance (DEFRA, 2008).

Now, however, it appears ASF disease ecologies are foreground in shaping the future boundaries of wild boar coexistence. Agricultural interest groups (historically, representing a diverse voice which viewed them either as novel game or pest), especially the pig industry, are vocal about the need for a more coherent “control strategy” (see NPA, 2018), and have funded a working group to formulate a more coherent practical management strategy¹³. This is primarily motivated by a need to protect the national pig economy, physically separated from mainland Europe and seen as benefitting from a high welfare status and freedom from notifiable disease (such as ASF), but simultaneously unsettled by the ramifications of Brexit. Coupled with the emotional trauma caused by past FMD and bTB epidemics, there is a powerful driver for change.

The event of ASF on the continent has prompted government departments and veterinary agencies to centralize its preemptive and preventative management. A broader disease control strategy for managing various notifiable diseases now focuses specifically on ASF, and virtual simulations of ASF have been held, while government funding has focused on research into disease modeling and alternative management measures, such as sterilization (Croft et al., 2020a,b). Simultaneously, authorities have increased their effort in communicating biosecurity risks by targeting and responsabilizing farmers (about their on-farm biosecurity practices), stalkers (about the signs of disease and transmission risk), and local residents and tourists (about the risks of feeding food waste). This has incorporated different communities (of practice) and actors into ASF epidemiology. Finally, some more practical steps have also been made, with forestry authorities now sending found carcasses to the Animal and Plant Health Agency (APHA) for sampling, and sniffer dogs being trialed at airports/seaports to monitor potentially infected products¹⁴. Veterinarization of wild boar in England, thus far less interventionist than in Barcelona and Czechia, appears likely to become increasingly proactive as disease risks grow or feel increasingly threatening.

CONCLUSION: COEXISTING IN VETERINARIZED FUTURES

Foregrounding the ways human-wild boar relations have shifted through *critical events* helps disclose the unstable and open-ended quality of porcine ecologies as they emerge in Europe and beyond. As we have shown, different forms of coexistence are increasingly subject to a progressive veterinarization. This trend seems relatively clear. Whereas only several decades ago (and, to a degree, still now) human-wild boar relations were seen as primarily situated in the countryside and relating purely to the practices of game management and agriculture, this has

changed. Not only have wild boar actively (re)colonized spaces from which they were displaced, but humans have also colonized some of those spaces where wild boar were emplaced. This has caused a fundamental broadening not only in the geographies of coexistence, but also changes in governance arrangements and the ways in which practices of “management” are performed.

As our three examples highlight, human-wild boar coexistence is not a relationship with only two actors. Rather, it is a complex multispecies web in which other species and lifeforms assume various roles, such as the ASF virus and domestic pigs as this paper has described. We have argued that the 2017 ASF outbreak in the Czech Republic was a critical event in human-wild boar coexistence in Europe, simultaneously an example of a large viral jump and a model for successful intervention. It confirmed the authority of veterinary specialists and justified a growing suite of biosecurity measures, firmly placing them at the center of human-wild boar relations. This veterinary engagement with wild boar has, as the Barcelona example confirms, also altered longstanding practices of “control,” of which hunting and culling is the primary example. Thus, hunters and wildlife rangers are no longer uncontested stewards, but simply one of many stakeholders who undergo compromise and need to comply with prevention and preparedness as two key regimes of epidemiological engagement (Keck, 2020).

Despite our focus on ASF, this is not the only future concern around human-wild boar relations. Another key driver in the process of their veterinarization is the anticipation of potential zoonoses, i.e., the transmission of diseases between non-human animals and humans. Zoonotic concerns center on the high number of diseases that wild boar can transmit to humans, including respiratory viruses (Ruiz-Fons, 2017). While awareness of zoonoses has largely remained within the domain of “experts,” the COVID-19 pandemic brought it to wider public attention (Arregui, 2020). Zoonosis, as a potential “epidemic ground zero” (Keck and Lynteris, 2018), is now present in both scientific and popular discourse as a very real factor guiding future forms of human and non-human coexistence. While zoonotic concerns may further intensify the veterinarization of human-wild boar coexistence, they may simultaneously highlight its effective limits, a point resonating with literature on “One Health” and biosecurity (Enticott, 2012, 2017; Hinchliffe, 2015). In such light, to ensure the significant role veterinary rationales have assumed is a positive one, a close dialogue with other knowledge disciplines—for example, human medicine and epidemiology, or the social sciences—should be fostered to sensitively address the social-cultural dynamics of disease in human-wildlife coexistence.

DATA AVAILABILITY STATEMENT

The data is of an ethnographic nature and not available for secondary use or publicly available. Please direct any enquiries to LB, broz@eu.cas.cz.

ETHICS STATEMENT

The three researchers belong to different institutions. The research in the UK was part of wider project involving

¹³<https://www.pig-world.co.uk/news/ahdb-funded-working-group-to-formulate-feral-wild-boar-plan.html>

¹⁴http://www.npa-uk.org.uk/Defra_showcases_sniffer_dogs_at_Heathrow_in_ASF_crackdown.html

human subjects which was reviewed and approved by the Cardiff University School of Geography and Planning Research Ethics Committee. The research in Czechia and Spain did not involve any research with human subjects. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

All authors contributed empirical material and conceptual work.

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