CHAPTER 14

Humans, Ticks, and the Conflict over the Cervids

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1 Introduction

In recent decades, the convergence of anthropogenic environmental changes has made life easier for ticks in northern climes, such as Finland. Consequently, their prevalence has been increasing and their habitat has extended northward. Ticks need rodents and mammals as host species during their life cycle. The warming and shortening of winters, in particular, has not only improved the proliferation of ticks but also supported an explosion in the deer population. In Finland, this consists of the white-tailed deer (*Odocoileus virginianus*), the roe deer (*Capreolus capreolus*) and a much smaller population of fallow deer (*Dama dama*). A combined deer population of more than 150,000 provides ticks with an abundant reservoir of blood. In the context of Finland, ticks, and the diseases they spread – mainly borreliosis and Tick-borne encephalitis (TBE) – have altered the perceptions of humans to nature and outdoor activities. Many are cautious, if not afraid, of hiking in forests and fields. Checking one's body for ticks and sometimes removing them has become standard procedure after spending time in vegetated terrain.[1] Concern and fears about ticks has soured the attitudes of many Finns toward deer, and particularly the White-tailed deer, and caused conflicts between humans regarding the different ways of using and enjoying nature.

In this chapter, we will analyze how the proliferation of ticks has affected human attitudes towards cervids. We will focus particularly on the human relationship to White-tailed deer, and to a lesser extent to Roe deer. They are both non-native species in Finland that only came into the country during the twentieth century. However, from the point of view of thorough analysis it is also helpful to make some comparisons to elk (*Alces alces*), with which humans have shared the natural terrain of Finland for millennia.

1 Sanna Lillbroända-Annala, "'Fästingeländet,' Praktiker och materialisering mellan människor, fästingar och natur," *Laboratorium för folk och kultur* 8 (2021), accessed September 29, 2023, https://bragelaboratorium.com/2021/11/11/fastingelandet-praktiker-och-materialisering-mellan-manniskor-fastingar-och-natur/. See also chapter by Lillbroända-Annala in this book.

There are two common species of ticks in Finland: the castor bean tick (*Ixodes Ricinus*) and the taiga tick (*Ixodes Persulcatus*). The former has probably inhabited Finland for as long as their host species, that is, since the ice retreated after the latest glaciation period. We have no way of knowing how common ticks were in earlier times, but certainly the scarcity of cervids throughout the twentieth century, caused by excessive hunting,[2] limited their number. Ticks have only begun to thrive in Finland as the population of cervids has multiplied in recent decades.

In this chapter we will examine how knowledge of ticks and the diseases they spread have affected human attitudes toward deer. We will analyze these networks of humans, ticks and cervids, and the conflicts that have arisen from the functioning of these networks, from the perspective of the concepts of belonging and alienness/invasiveness. Animal species are often perceived as either belonging to a site or being out-of-place. The terms people use about animals reveal how their belonging is perceived: native species are perceived to occupy their natural range, whereas species that have traveled between countries or continents with human help are called invasive species and animals that do so without human help are alien species. We argue that the discrepancy in attitudes towards different ticks' host species stems from the fact that the elk is a native species in Finland, whereas the White-tailed deer suffers from the intensified and culturally-accepted hostility held towards alien species.[3]

Our study material consists of four different types of sources. First, we will use newspaper articles published from the 1990s until 2020 that discuss ticks and cervids. Many of these newspapers were published in Finnish coastal areas, where the tick problem is most pressing, but the materials also include articles from national newspapers, such as *Maaseudun Tulevaisuus* and *Hufvudstadsbladet*. These materials have been gathered using the digital newspaper archive managed by the National Library of Finland. Second, we will use the materials produced by the questionnaire for the public conducted by our research project, in which people have recollected and explained their encounters, experiences and thoughts about ticks. Third, we have also used semi-structured thematic interviews, eight of which were conducted by Heta

2 Tuire Nygrén, *Suomen hirvikannan säätely – biologiaa ja luonnonvarapolitiikkaa,* Ph.D. diss. (University of Joensuu, 2009), 18–19.

3 Peter Coates, *American Perceptions of Immigrant and Invasive Species: Strangers on the Land* (Berkeley: University of California Press, 2007); Owain Jones and Paul Cloke, *Tree Cultures: The Place of Trees and Trees in Their Place* (Oxford: Berg, 2002); Dolly Jørgensen, "Migrant Muskoxen and the Naturalization of National Identity in Scandinavia," in *The Historical Animal,* ed. Susan Nance (Syracuse: Syracuse University Press, 2015); Heta Lähdesmäki, *Susien paikat. Ihminen ja susi 1900-luvun Suomessa,* Ph.D. diss. (University of Jyväskylä, 2020).

Lähdesmäki between 2019–2023 on Seili Island in the Archipelago Sea, and ten were conducted by students from the University of Turku between 2019 and 2022 on Ruissalo Island in Turku and elsewhere in the Archipelago Sea. Lastly, we also use reports and surveys produced by the Finnish Wildlife Agency and the Finnish Hunters' Association.[4]

2 Histories Separated: Deer and Ticks

In 2004, Juha Kairikko, a longtime executive director of the Finnish Hunters' Association, wrote that in the current ecopolitical climate it would be inconceivable to introduce a large mammal species, such as the White-tailed deer, into Finland from other continents.[5] In recent decades, non-native species, whether deliberately introduced into Finland or inadvertently as stowaways, have become one of the most serious environmental problems in the country.[6] In the not so distant past, things were seen rather differently. The White-tailed deer was first introduced into Finnish nature in 1934 from the United States, when a group of Finnish immigrants living in Minnesota organized a transfer of seven fawns to Finland as a gift to the hunters of their ancestral homeland. The deer were first kept in an enclosure, but one of the fawns escaped and the remaining six were later released. A series of reintroductions occurred in the 1940s and 1950s. By the late 1950s, the population was considered large enough to be hunted.[7] The deer population remained relatively low until the late twentieth century: only exceeding 10,000 individuals by the mid-1970s and 40,000 by 2000, with the majority of the species being

4 As sources, we used a report derived from a survey of 721 hunters conducted by the Finnish Wildlife Agency in 2018 and a report stemming from a survey conducted by the Finnish Hunters' Association in 2022 that contains responses from 333 hunters. Antti Rinne and Mikko Toivola, *Valkohäntäpeura Varsinais-Suomessa – kannanhoidon kysely valkohäntäpeuran metsästäjille. Raportti* (Varsinais-Suomi: Suomen Riistakeskus, 2018); The Finnish Hunters' Association, "Valkohäntäpeuran jäsenkysely tukee vahvasti Liiton linjauksia," December 15, 2022, accessed October 8, 2023, https://metsastajaliitto.fi/uutiset/valkohantapeuran-jasenkysely-tukee-vahvasti-liiton-linjauksia. Lähdesmäki's research was supported by the Academy of Finland (project no. 341118) and Kone Foundation (project *Elämän saari*).

5 Juha K. Kairikko and Jaakko Ruola, *Valkohäntäpeura* (Jyväskylä: Suomen metsästäjäliitto, 2004), 42.

6 See, for example, David Pimentel, *Biological Invasions: Economic and Environmental Costs of Alien Plant, Animal, and Microbe Species* (Boca Raton: CRC Press, 2011).

7 Kairikko and Ruola, *Valkohäntäpeura*, 42–45, 60–65; Petri Nummi, *Suomeen istutetut riistaeläimet* (Helsinki: Helsingin yliopisto, 1988), 26–29, 30–32; Heikki Lehikoinen, *Tuo hiisi hirviäsi: Metsästyksen kulttuurihistoria Suomessa* (Helsinki: Teos, 2007), 74.

confined to the south-western region of Finland, which was the mildest area of the country.[8]

There is little to indicate any major problems or controversies from the human point of view in these early decades of coexistence. At the time when the deer were introduced into Finnish nature, some had voiced concerns about the potential damage the species could inflict on agriculture or forests. Others were merely suspicious of a new species being introduced into Finland. All these concerns seemed to have been in vain. As Juha Kairikko puts it in his historical overview of the species, the transfer "brought a fine game species to Finland," and as for non-hunting locals, they were mostly "thrilled with these beautiful cervids." In some senses, Finns were fortunate as the White-tailed deer introduced into Finland were not infected with brainworm (*Parelaphostrongylus tenuis*), a parasite that is harmless to deer, but can be fatal to elk.[9] Such an eventuality would have made coexistence less harmonious. Interestingly, it was not the brainworm that changed the relationship between humans and deer, but a pathogen-carrying arachnid.

From the point of view of humans, the histories of deer and ticks, however, have only crossed paths in the twenty-first century. In their history of White-tailed deer in Finland, for example, Kairikko and Ruola did not mention ticks at all. Humans living in the Finnish countryside were fully aware of ticks, and older generations of contemporary Finns often recollect how ticks were thought to dwell in places where alders grew. From these trees they were able to attach themselves to the skin of passersby. Many people recollected being cautioned as children not to play beneath alders.[10]

Many of these early preconceptions about ticks have proven to be false in scientific studies. Ticks do not specifically favor alders, but thrive in many types of habitats, including urban green spaces.[11] What is more, they definitely do not lurk on trees. Yet, an idea that has retained its strength, although in changing form, is that ticks are somehow special among Finnish arthropods. There are other species in Finland, for example, that suck human blood or

8 Lehikoinen, *Tuo hiisi hirviäsi*, 75.

9 Kairikko and Ruola, *Valkohäntäpeura*, 42, 56. For the deer population and its development, see the Finnish Wildlife Agency, "LUKE: Valkohäntäpeurakannan kasvu pysähtyi," March 18, 2022, accessed September 19, 2023, https://riista.fi/luke-valkohantapeurakannan-kasvu-pysahtyi-2/.

10 See, for example, The Finnish Literature Society (FLS), questionnaire 2019, "Punkit tulevat," SKS 017, 027, 030, 046, 060; Interviews TKU/A/19/124; EF 7.9.2021.

11 See, for example, Jani Sormunen et al., "Enhanced Threat of Tick-Borne Infections within Cities?: Assessing Public Health Risks Due to Ticks in Urban Green Spaces in Helsinki, Finland," *Zoonoses and Public Health* 67, no. 7 (2020), doi:10.1111/zph.12767.

are able to give nasty stings, such as mosquitoes and wasps. But these hardly generate a similar aura of danger as ticks, which have elicited warnings about certain environments. An air of mystery still persists as to how they find their way onto human skin, as well as a sense of revulsion about how they penetrate inside the human body. Wasps and mosquitoes are not thrown into stoves, as sometimes happens to ticks, as if by doing so humans are able to expel evil.[12]

3 Histories Entangled: the Fear of Ticks and the Alienation of Deer

The fear of ticks, ubiquitous in present-day Finland, and the idea of these arachnids being the most dangerous animal in Finland can be traced to the mid-2000s. This was the time when the number of media stories about ticks exploded, accompanied by scientists speculating that these arachnids had been moving northward and increased in number due to climate change.[13] Apparently both factors – changes in eco-systemic and communicative spaces – strengthened each other. Subsequently, the coverage in the media was full of stories citing medical experts and educated Finns about how borreliosis could cause permanent disabilities if untreated over time. Even more disturbingly, an even more harmful subtype of TBE virus also began to spread on the Finnish mainland. This was a disease that could cause lifelong misery and in rare cases also death.[14] And these were not just scandalous stories circulated by tabloid publications. Antti Vaheri, a professor of virology at the University of Helsinki, stated the following when questioned by a journalist about the true danger of ticks: "A tick is the most dangerous animal in Finland. It can disable or even kill a human being."[15] When this idea gradually percolated through to the whole society, it is no wonder that the fear of ticks also transformed attitudes toward deer.

12 FLS, "Punkit tulevat," SKS 055, 063; Sanna Lillbroända-Annala, "Fy, en fästing! Äckel i kroppsliga och affektiva möten mellan fästing, sällskapsdjur och människa," *Budkavlen* 101 (2022).

13 See, for example, Liina Kjellberg, "Puutiainen odottaa heinikossa," *Maaseudun Tulevaisuus* (hereafter *MT*), July 15, 2015; "Punkkien aiheuttamat taudit yleistyneet," *MT*, May 19, 2006; Sanna Lillbroända-Annala and Oscar Winberg, "'Fästingen håller inget säkerhetsavstånd': Konkurrerande riskdiskurser om fästingar i media," *TRACE ∴ Journal for Human-Animal Studies* 9 (2023).

14 See, for example, "Puutiaisaivokuume lisääntynyt Manner-Suomessa," *MT*, January 19, 2007; Marjut Weman, "Varo punkkeja," *MT*, June 18, 2007; Shahin Doagu, "Puutiaisaivokuume on lisääntyvä terveysriski," *MT*, April 24, 2009.

15 Tarja Halla, "Kuinka vaarallinen punkki on?" *MT*, May 31, 2010.

As the historian Peter Coates has pointed out, for example, native species are seen as part of their own ecosystem, that is, to belong to the areas where they exist, while species classified as invasive, or alien, are often viewed as intruders and not belonging to their new environment. Moreover, animals (and plants) can also be seen to possess a national identity. Indeed, ideas of nationality have influenced our understanding of the non-human world of nature.[16]

Finns initially connected the deer to the southwestern landscape when they appeared in Finland and called them *Laukonpeura*, "the deer of Laukko," according to the place where they were first introduced. According to an article published in the popular newspaper *Ilta-Sanomat* in 1952:

> Local residents protect these animals with proper affection, here and there they are downright happy to see that the deer of Laukko has settled in the backwoods of our farms. The deer seem to have won over local peoples' hearts as no-known acts of violence have been committed against them.[17]

This indicates that the White-tailed deer was not initially seen as an alien species in Finland. On the contrary, the newspaper article from 1952 suggests they were welcomed as a game animal that was suited to their new environment. People are sometimes able to quickly include new species to the national fauna. Historian Dolly Jørgensen has written about how muskoxen were first introduced to Norway and then came to Sweden on their own, where the species "quickly became understood as a central element in the mountains, probably because of its novelty and distinctive appearance."[18]

However, bestowing a sense of belonging on a species comes with the possibility of denial if the relationship between the granter and grantee turns problematic. In our interviews, conducted between 2019 and 2023, many people living or spending time in the Archipelago Sea area described White-tailed deer as an introduced or alien species that had been brought to Finland by humans.[19] We do not claim that ticks were the only factor behind the about-face in people's mind toward White-tailed deer. A significant factor in the minds of the interviewees concerned their sheer number, as the deer began

16 Coates, *American Perceptions* (2007), 3.

17 "Laukonpeurat ja talvi," *Ilta-Sanomat*, 12 March, 1952, 8.

18 Jørgensen, "Migrant Muskoxen," 196.

19 See, for example, interviews TKU/A/22/89-lit; TKU/A/22/87-lit; TKU/A/22/67-lit; TKU/A/22/71-lit; H. V. 9.9.2021; EF 7.9.2021.

to appear "everywhere, under every window,"[20] as one interviewee put it. This ensured a collision between the interests of humans and the deer. This has also been the case with other "problem animals," and even with species that are not seen as alien, such as pigeons.[21]

First, the exploding numbers of deer made them a potential cause of traffic accidents. If you could spot "ten to twenty deer on both sides of the road,"[22] it obviously increased the sense of risk for drivers. In 2017 alone, for example, there were over 1600 traffic collisions caused by White-tailed deer in southwestern Finland.[23] No wonder people started to feel that "the White-tailed deer population is dangerously large."[24] A second problem concerned gardening. Invasive alien species transform ecosystems as they affect native species through competition, predation, hybridization, and disease. Alien species are therefore often considered synonymous with danger, negative change and damage to both the ecosystem and to humans and they have cause unease and fear among the human population.[25] This was exactly what many Finns felt toward the White-tailed deer. Interviewees described how White-tailed deer ate whatever humans tried to cultivate, whether that be ornamental or edible plants, and also endangered plants and young trees in the natural environment.[26]

However, we argue that ticks have greatly amplified the alienation of deer, which has consequently led to conflicts between humans about the place of deer in Finnish nature. Many have connected the dots between the simultaneous rapid increase in the populations of both ticks and deer.[27] As one resident put it in *Paraisten kuulutukset*, the local newspaper for the Turku Archipelago: "In my first fifty years in Parainen, I had never seen a tick, nor did I know anyone who had. But I hadn't seen a deer either. Now, in the last ten years, not a single summer has gone by without me or a family member having one or

20 Interview I.V.6.7.2020.

21 For example, as they have become more numerous, city pigeons' presence has been seen more as a negative thing. See, for example, Colin Jerolmack, "How Pigeons Became Rats: The Cultural-Spatial Logic of Problem Animals," *Social Problems* 55, no. 1 (2008), doi:10.1525/sp.2008.55.1.72.

22 Interview TKU/A/19/108.

23 Rinne and Toivola, *Valkohäntäpeura Varsinais-Suomessa*, 2.

24 Teija Uitto, "Peurakanta on päässyt vaarallisen suureksi," *Vakka: Vakka-Suomen sanomat*, July 21, 2017.

25 Coates, *American Perceptions*, I.

26 See, for example, interviews E.F.7.9.2021; H. V. 9.9.2021; TKU/A/22/67-lit; TKU/A/22/70-lit.

27 See, for example, interviews TKU/A/19/124; TKU/A/22/66-lit; TKU/A/22/67-lit; H. V. 9.9.2021; E.F.7.9.2021.

more ticks [on us]. And the deer are watching overhead with the biggest eyes."[28] Others were familiar with ticks, but, according to them, they were previously seen mostly seen in animal.[29] Now, however, with the presence of White-tailed deer it was possible to repeatedly find many ticks in humans, "thanks to the deer."[30]

People felt that deer brought ticks close to humans as the former animal roamed in peoples' yards and gardens. One interviewee worried about the impact of White-tailed deer: "once there were seven [deer] at the same time in the yard and if there are some thousand ticks in each of them and they shake them all around in the area then there are [many of] them [ticks]."[31] The connection between ticks and deer was seen as a huge public health problem by many, and they quickly began to question the usefulness of White-tailed deer and even their right to exist in Finland. Some wondered why we needed White-tailed deer, which brought ticks and diseases with them when there were other game animals in the country.[32] The above-mentioned newspaper article in *Paraisten kuulutukset* explicitly pointed out to the alienness of the White-tailed deer when criticizing the abundance of the deer: "[The White-tailed deer] is an alien species that should be controlled in the same way as lupine, which is also beautiful [...] Let's start a large-scale hunt and pick off the deer, and the ticks at the same time, from the nature of Parainen."[33]

According to many studies, the prevalence of tick-borne diseases is connected to local White-tailed deer populations.[34] These findings were also discussed in the local media.[35] In Finland, the distribution of ticks has been

28 Jussi Vuorinen, "Sudet, kauriit ja punkit," *Paraisten kuulutukset*, January 14, 2016.

29 See, for example, interview TKU/A/22/66-lit.

30 Interview H. V. 9.9.2021.

31 Interview TKU/A/19/124.

32 Interview H. V. 9.9.2021. The role of deer in spreading ticks and tick-borne diseases was acknowledged also by respondents for the survey conducted in 2013 to villagers near the Ekenäs Archipelago. See Milla Niemi and Madeleine Nyman, *Valkohäntäpeuran ekologiset ja sosiaaliset vaikutukset Tammisaaren saariston kansallispuistossa ja sen lähialueilla* (Vantaa: Metsähallitus, 2013), 23, 28, 32, 35–36, accessed October 23, 2023, https://julkaisut.metsa.fi/assets/pdf/lp/Asarja/a204.pdf.

33 Vuorinen, "Sudet, kauriit ja punkit". The garden lupine (*Lupinus polyphyllus*) is among the most worrisome invasive species in Finnish nature.

34 D.C. Duffy et al., "Ixodes Scapularis (Acari: Ixodidae) Deer Tick Mesoscale Populations in Natural Areas: Effects of Deer, Area, and Location," *Journal of Medical Entomology* 31, no. 1 (1994), doi:10.1093/jmedent/31.1.152; Niemi and Nyman, *Valkohäntäpeuran*, 23; Juho Matala et al., *Hirvieläinten vaikutuksia yhteiskuntaan, elinkeinoihin ja ekosysteemiin: Synteesiraportti* (Helsinki: Luonnonvarakeskus, 2021), 111.

35 See, for example, Kaj Sundqvist, "Rådjur och förekomst av fästingar," Åbo Underrättelser, October 10, 2017; Annika Rentola, "Fästingen är en risk också för turisten i Europa,"

observed as expanding northwards, coinciding with the spread of the White-tailed and Roe deer populations.[36] The White-tailed deer is not the only host species for ticks. Besides other cervids, smaller animals, such as moles and hares, provide a blood reservoir for ticks in different stages of their life cycle. Our interviewees, however, never raised (with one exception) any other animals as being responsible for the tick problem.[37] As for our questionnaire, when other wild animals were mentioned, the interviewees often pointed the finger at other species that were considered aliens, such as Roe deer and Common raccoon dogs.[38] Other host species are therefore regularly overlooked. This is not due to a lack of knowledge, since experts have repeatedly educated the public about the issue in newspapers and in other forms of the media. Thus, there must be another explanation for why White-tailed deer are perceived as being the principal culprit in Finland. We argue that this stems from the tendency of humans to categorize animals into those who belong and those who do not.

The White-tailed and Roe deer are both alien species in Finland, but there is one crucial difference in their alienness: Roe deer have come to Finland from Sweden with their own hooves,[39] while the much more populous White-tailed deer were imported by humans from the United States. The elk, which is another cervid that hosts ticks, was mentioned even more rarely and never as pointedly. It is a native species and the most iconic of cervids in the Finnish imagology of nature. As such, it is deeply entrenched in people's minds as an integral part of local nature. Such a sentiment was evidenced by the responses

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Hufvudstadsbladet, April 28, 2018; Mikael Piippo, "Fästingarna uppskattar mild vinter," *Hufvudstadsbladet*, November 27, 2018; "Rådjur och harar bakom ökning av TBE," Åbo Underrättelser, August 30, 2018.

36 Matala et al., *Hirvieläinten vaikutuksia yhteiskuntaan*, 89.

37 One interviewee blamed the Common raccoon dog.

38 For other responses critical of the White-tailed deer and references to other animals, see, for example, FLS, "Punkit tulevat," SKS 006, 044, 060, 063, 064, 071, 074, 077, 081, N004, N048. See also, interview B.W. 8.9.2021. Similar results have been found in an earlier survey on the White-tailed deer. People living near the Ekenäs Archipelago National Park also wanted to reduce the White-tailed deer population, although many still thought that the species formed a valuable part of the diversity in the surrounding areas. Niemi and Nyman, *Valkohäntäpeuran*, 33, 34. It is noteworthy, though, that this survey was conducted in 2013, when the tick problem was discussed far less frequently than it would be a few years later.

39 The history of the Roe deer in Finland is somewhat uncertain, but according to some theories they have existed in the country since prehistoric times, but disappeared during the early modern age, only to reappear in recent decades from Sweden across Tornio River. Once across the river they then fanned out to most of the country. See, Lehikoinen, *Tuo hiisi hirviäsi* (2007), 73.

of our interviewees. The elk was hardly ever out-of-place in Finnish nature (except perhaps when running onto roads and causing car accidents) and had every right to exist alongside humans,[40] despite spreading ticks and causing enormous financial damage to forestry and landowners.[41] Finns clearly categorized cervids according to their belonging. Indeed, even though elks were as big a threat to human health as other cervids, they were given absolution. In contrast, by invading Finland the White-tailed deer had brought the snake into paradise. But they were not the only guilty party in Eden, as hunters were also perceived by many Finns as the devil's henchmen.

4 Conflicting Relationships

Many people viewed deer hunting and the decimation of the deer population as the best and quickest solution to the ever-growing tick problem.[42] In newspapers this stance found its staunchest supporter in Margareta Gustafsson, a parasitologist from Åbo Akademi University, who relentlessly advocated for the extermination of the deer population on the grounds that it was a harmful and invasive species that risked causing "nationwide epidemics." She also accused hunters of harboring disdain for human health for the sake of having an abundant stock of deer for them to enjoy.[43] However, it was far from being a scientifically-proven fact that deer were the main factor behind the tick problem. Researchers of tick ecology, although admitting that deer did spread ticks and contributed to their population growth, argued that they constituted just one reason among many for the proliferation of the ticks. They also pointed to other host species, as well as climate change. This latter factor not only favored ticks, but also deer.[44] To overcome this uncertainty, Gustafsson suggested an

40 See, for example, interviews E.F.7.9.2021; H. V. 9.9.2021; TKU/A/22/67-lit.

41 Jere Nieminen, *Hirviä ja ihmisiä: Hirven yhteiskunnallisen läsnäolon hallinta 2000-luvun alussa*, Ph.D. diss. (Tampere: Tampere University Press, 2015).

42 Interviews TKU/A/22/66-lit; H. V. 9.9.2021; JH 29.11.2019; I.V. 6.7.2020; E.F.7.9.2021; H. V. 9.9.2021; TKU/A/22/84-lit.

43 Margareta Gustafsson, "Själö – en fästingrik och farlig turistattraktion," *Åbo Underrättelser*, May 27, 2017; Margareta Gustafsson, "Hjortdjuren som fästingbussar," *Hufvudstadsbladet*, July 9, 2017; Margareta Gustafsson, "Fästingar försvinner om man tar kål på gnagare och vitsvanshjort," *Hufvudstadsbladet*, June 2, 2018; Margareta Gustafsson and Anneli Jalkanen, "Risk för TBE- och borreliaepidemier," *Vasabladet*, June 3, 2018; Margareta Gustafsson and Anneli Jalkanen, "Fästingsmittarna och fästingspridarna – gnagare och hjortjur," Åbo Underrättelser, June 6, 2018.

44 Jonna Hongell, "Klimatet gynnar fästingar," *Vasabladet*, May 28, 2017; Mikael Piippo, "Fästingar uppskattar mild vinter," *Hufvudstadsbladet*, November 27, 2018.

experiment be undertaken whereby the environmental administration should choose an island on which there would be a total cull of the deer population in order to determine whether this affected the tick population.[45]

Many hunters, however, strongly disagreed with the idea of reducing the deer population. They also downplayed the role of deer as a source of the tick problem. For hunters, the White-tailed deer was the most important game animal in the southern part of Finland.[46] In their target program for 2019–2027, The Finnish Hunters' Association acknowledged that there were too many deer in the country, but neither they nor the respondents of the 2022 survey for hunters were in favor of any legislative changes.[47] The hunters argued that even though the deer were an alien species they posed more benefits than harm to the community, thus further complicating the situation.[48] This seems to have also been the view of many game management officials in Finland, as the White-tailed deer has yet to be added to the national list of harmful invasive alien species. The deer are categorized as an "established invasive species" and a game animal that cannot be freely hunted, unlike species designated in the harmful invasive species category, as defined in Finnish law.[49]

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45 "Pargasiternas majmöte," *Paraisten kuulutukset*, May 28, 2015; Margareta Gustafsson and Anneli Jalkanen, "Risk för TBE- och borreliaepidemier," *Vasabladet*, June 3, 2018.

46 According to the 2018 survey, most hunters perceived the White-tailed deer as the most important game animal in Southwestern Finland. Rinne and Toivola, *Valkohäntäpeura Varsinais-Suomessa*, 2, 3, 7. Bow hunters from Eastern Finland, who hunted on Seili Island, were an exception. Initiated by the university and Metsähallitus, the hunters tried to reduce the deer population or at least prevent it from growing. They hunted according to the quotas determined by the game management association but seem to have understood local peoples' views about less deer on the island. Interview with hunters, November 27, 2019.

47 The Finnish Hunters' Association, "Metsästäjäliiton tavoiteohjelma 2019–2027," 20, accessed October 8, 2023, https://metsastajaliitto.fi/sites/default/files/2019-12/Tavoite ohjelma-Metsastajaliitto.pdf. The majority of the 2022 survey respondents felt that the White-tailed deer population was tolerable, but 40 percent felt that the population was too big. Less than 15 percent of respondents thought that changing the hunting permit system would be a solution to cutting the deer population. Rinne and Toivola, *Valkohäntäpeura Varsinais-Suomessa*, 5, 7.

48 According to the 2022 survey by The Finnish Hunters' Association, hunters did not consider White-tailed deer to be an invasive alien species, but an alien species that was also a useful game animal and did not wish the animal's status would change. The Finnish Hunters' Association, "Valkohäntäpeuran jäsenkysely". See also, The Finnish Hunters' Association, "Metsästäjäliiton tavoiteohjelma 2019–2027," 9.

49 Hunting Act 615/1993, 5 §; The Natural Resources Institute Finland, Invasive Alien Species, "Valkohänt*äkauris* (*valkohäntäpeura*)," accessed November 9, 2023, https://vieraslajit.fi /lajit/MX.47629. Finnish Biodiversity Information Facility, "White-tailed Deer – Odocoileus virginianus," accessed November 9, 2023, https://laji.fi/en/taxon/MX.47629.

In the material we analyzed, hunters did not mention ticks as a problem that derived from deer, but they did cite other harmful effects. Local hunting officials, for example, listed other reasons for the explosion of the tick population, including climate change and an increase in ticks' nutrition. This nutritional factor meant that there were plenty of other host species for ticks to feed from. The hunting officials did not explain the logic of how other animals could have contributed to the rapidly increasing number of ticks, since deer were the only host species in which the population had grown. But it seems plausible that there were other reasons for their reluctance to admit that deer were a problem. These hunting advocates reasoned that the deer population had already reduced by lynx and that it would not be able to cope with more intensive hunting.[50]

In a dispute over the role of the White-tailed deer in the growing tick problem, ordinary people seem to have mostly taken an anti-deer stance. Many people increasingly felt that the way hunting was conducted – by making sure that there were sufficient number of deer for future hunters – was a problem.[51] One interviewee expressed the opinion that decision-makers belittled the problem and allowed hunters to hunt deer, while at the same time not addressing the fact that tens of thousands of people were becoming seriously ill from ticks.[52] In our questionnaire, a number of respondents expressed frustration at White-tailed deer and saw them as the main reason for ticks being so life-threateningly ubiquitous. Some argued in a straightforward manner that the White-tailed deer was an invading species that had no place in Finnish nature. One put it as follows: "Alien species introduced into Finnish nature, including those imported for hunting, should be completely removed from our nature." Another respondent argued that the White-tailed deer was the main villain and hoped that all of them would be terminated, since "there are enough elk for hunters."[53] In short, there has been and still is an unresolved conflict of interests between hunters and other users of nature in Finland. For hunters, deer were not a part of the problem, while many felt that they were, alongside the hunters themselves. Non-hunters argued that if hunters were to admit that

50 Emelie Melin, "Rädjursjakt ingen lösning på fästingplågen," *Österbottens Tidning*, July 2, 2013; Paulina Ek, "Rådjursjakt inget alternativ," *Syd-Österbotten*, July 11, 2013.

51 Interview TKU/A/22/87-lit. See also interview H. V. 9.9.2021.

52 Interview H. V. 9.9.2021.

53 FLS, "Punkit tulevat," SKS 007, 071. See also FLS, "Punkit tulevat," SKS 007, 017.

deer were a problem, they would have a hard time in justifying their ambition to maintain as big a deer population as possible for their beloved hobby.[54]

5 Conclusion

In recent years, there have been between 2000 and 6000 reported Lyme Borreliosis cases annually in Finland, and between 69 to 148 cases of TBE, from which most are severe cases with a mortality rate of approximately 1 percent.[55] In 2021, researchers at the Natural Resources Institute Finland argued that it is estimated that the total economic burden of tick-borne diseases in Finland is around €10 million per year. Hence, it is easy to see why some are speaking of a national epidemic, particularly vis-à-vis borreliosis. However, there are no easy solutions available to lessen the impact of this epidemic. All people can do is to resort to pre-emptive measures and, in the event of infection, to undertake a heavy course of antibiotics.

The fear of ticks has spoiled the relationship between humans and White-tailed deer. The species was admired by most for several decades after its introduction into Finland. Yet, it is now perceived as a villain and an unwelcomed alien. Demands to cull the deer population have grown louder. Moreover, the reluctance of hunters to act accordingly has created a conflict between them and non-hunting local residents. These interspecific conflicts have also led to a

54 This is not just our interpretation, but is also a view shared by many conservationists in Finland as well as some writers in our source material. Besides the above-listed statements by Margareta Gustafsson, see also Anne-Mari Packalén-Reinikainen, "Valkohäntäpeura on ongelmallisin riistaeläin," *MT*, February 21, 2014; Veli-Jussi Jalkanen, "Hirvieläinvahingot ovat tietoinen ja kallis valinta," *MT*, October 5, 2015; Maarit Gockel, "Valkohäntäpeurojen haittoja vähätellään," *MT*, July 28, 2017; Linnea Nordling, "Metsästyslupien määrä pohjaa kannan aliarvioon," *MT*, September 22, 2017; Leena Kauppila, "Villisikojen ja peurojen talviruokinta lopetettava," *MT*, September 28, 2018. As for the view of conservationists, see, for example, Liisa Hulkko, "Ilves tarvitsi asianajajan," *Luonnonsuojelija* 49, no. 4 (2023); Oona Lohilahti, "Ilvesten kaatoluvat järkyttivät," *Luonnonsuojelija* 49, no. 4 (2023).

55 The Finnish Institute for Health and Welfare, "Lyme borreliosis register surveillance," accessed November 9, 2023, https://sampo.thl.fi/pivot/prod/en/infestat/borre/fact_infestat_borre?&row=hcdmunicipality2020-572572&column=weeks-546468&filter=measure-546834; The Finnish Institute for Health and Welfare, "Puutiaisaivotulehduksenesiintyvyys Suomessa," accessed November 9, 2023. https://thl.fi/fi/web/infektiotaudit-ja-rokotukset/taudit-ja-torjunta/taudit-ja-taudinaiheuttajat-a-o/puutiaisaivotulehdus/puutiaisaivotulehduksen-esiintyvyys-suomessa. Matala et al., *Hirvieläinten vaikutuksia yhteiskuntaan*, 111.

heightened sense of mistrust of officials, who, according to some local people, do not take the deer and tick issue seriously enough.

Hunting, however, is hardly a perfect solution to counter threat posed by ticks. Those who advocate hunting as a solution embrace the idea of the old days when everything was supposedly in its rightful place. But there is no going back. The ecosystem in which deer thrive is not the same as it used to be, and neither is the climate. There is no proof that the removal of deer would reduce the number of ticks. A more philosophical objection stems from the fact that not only is the environment changing, but so too is human society. Jørgensen points out that many locals in Norway and Sweden view the muskoxen as an important symbol of the area. In other words, despite its original alienness, it has become integrated into their societies.[56] The White-tailed deer is also an alien species to Finland. Are we, then, to deprive muskoxen and White-tailed deer – or any species – of its belonging, whenever problems occur? This would be a highly anthropocentric stance, especially since the problems are of human origin: White-tailed deer did not ask to be transferred to Finland, nor did they bring ticks with them. Although deer do not contract the same diseases as humans, they are most likely also plagued by the blood-sucking parasites. In other words, they are not the cause of the problem but are co-sufferers alongside humans.

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56 Jørgensen, "Migrant muskoxen," 198–199.

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