

Poison to the Beasts.

Changing poisons and poison practices in the quest to kill birds and mammals in Norwegian fauna, 1845-1967.¹

May-Brith Ohman Nielsen, professor of history, University of Agder.
Anne Mette Seines, MA in history, University of Agder.

Throughout history, man has attempted to eradicate different species of wild animals for various purposes and with various means. The eradication efforts have been guided by changing ideas of man and nature and carried out by different social groups and through different forms of social organisations. Many valuable studies of wild animal killings or historical eradication processes have focused on one species or related species. The majority of the studies have analysed the animal killings as acts of individuals or local communities.

We suggest that interesting insights into perceptions of man and nature and of man's changing relations to other species also can be obtained from investigations into specific eradication *methods* and how those were adopted against different species. We have chosen to study the use of strong poisons for fauna eradication purposes and examine poison practices and poison campaigns that were initiated by, regulated by or otherwise supported by the authorities. Our case is Norway 1845-1967.

In this article we present the findings from an investigation into *one* specific arena of fauna killings: the use of highly toxic substances to deliberately kill wild animals of some size. Our general hypothesis is that the values, mentalities and rationalities fostered by the legal and explicit targeting of species with poison constitute an important social, cultural and political framework within both the general history of poison and within man/nature relations.

Contrary to other scholarly studies of animal eradications campaigns our study is designed to systematically follow the use of different types of *poison* across a variety of species. We do so by combining sources from authority led campaigns against macro fauna with sources from the suppliers of the poison. Our focus is not animal eradication in itself, but rather the shifting trends and habits in regards to using poison as means in these campaigns to kill fauna.

¹ The present study is undertaken as part of the Deadly Dreams project. <http://deadlydreams.no>

Our material shows that poisoning was a far more widespread method than has been acknowledged in previous studies of fauna eradication in Norway. Poisoning fauna was more effective, but also more hazardous. Thus it might be surprising that the presence of substantial quantities of substances like arsenic, strychnine, phosphorus and barbiturates appear to have been far more socially and culturally accepted in Norwegian society and communities than previously acknowledged. And that the acceptance was based on the intended use: to kill animals. We hope that our findings might inspire other scholars to ask whether the same might be the case for their geographical area of study too.

Close and lengthy encounters with poisons may have made people more comfortable with, or even careless about, poison in their vicinity and their everyday life, may have caused less dangerous poisonous substances in households, farms, vessels, workshops, factories and other surroundings to appear relatively safe or insignificant. The opposite may also be the case: Close encounters with poisons may have made people sceptical, critical or extra careful and aware of exposure to, and possible risks of, poisons in other areas of their daily lives. There is a historical dynamic here. In times when poisons are criticized or contested in arenas where they are used openly, the distribution of poisons might be challenged in other arenas as well, arenas where the environmental toxins might be distributed in more discreet and invisible ways. For instance, it seems quite clear that the attitudes towards, and specific practices of, poisoning wildlife species have provided substantial support and shape to cultural images and assumptions that influenced the cultural and commercial strategies adopted in pesticide propaganda in the post-WW2 decades.² Attitudes and insights also cross-fertilized when criticism began to mount against excessive or brutal use of poisonous substances in the 1960s and 1970s.

By studying the use of poison against quite different types of species, the changing legislation in the field and by investigating the specific types of poison used, we argue this: Animal eradication campaigns were not *solely* driven and halted by economic interests and by shifting cultural ideas of nature and attitudes towards specific species. They were most certainly affected by this. However, the use of strong, gruesome and hazardous poison tells of other

² Ohman Nielsen, 2014.

Our research questions in the study presented in this article are: Which groups of larger wild animals have been targeted with poisonous substances, by whom and for what purposes? What were the substances used, and how were they distributed to the intended targets? How did the authorities and local community handle, regulate and negotiate these practices, and how were the practices perceived by those involved? The case study of this article is Norway, from 1845 to 1967. Our focus is on persons, groups or authorities who legally acquire highly toxic substances and distribute these in the environment with the explicit intention to kill wild animals of specific species or groups of species for purposes other than to protect these animals from suffering or sickness.³

Wildlife poisoning that takes place as side-effects of applying toxic substances for other purposes, will not be addressed in this text. However, our understanding is that perceptions and attitudes towards both are related, and may often support each other, especially in the construction of period specific shared knowledge and value clusters. Other parts of our ongoing *Deadly Dreams* project will explore this.⁴

We will first present our method, sources and empirical results before we discuss the implication of our findings for the study of animal eradication in a wider context and for studies of the uses of poison in a cultural and environmental context.

Method and sources.

Earlier historical studies of fauna eradication campaigns in Norway have started from the state records of bounties paid for predators. These studies have generally assumed that the, over all, majority of these animals were shot. Our study, however, have started from the records of poison purchased for the purpose of killing animals of all species and the legal regulations and administrative negotiations concerning the use of poison for fauna killing. We argue that the poison was much more widely used than previously acknowledged, that the majority of animals killed for bounties were probably poisoned, and that both regional and municipal bounty systems existed alongside the state bounty

³ We will not argue that people who legally acquired poison under the pretext of killing certain species, always refrained from applying the poison to other species and in other settings. See below. However, it is far too complicated to systematically uncover these illegal, and sometimes borderline practices from the archive sources, except where explicit complaints are made by third parties, or where the sources indirectly reveal the existence of practices that are not in line with the letter of the law.

⁴ See also Ohman Nielsen 2014. See <http://www.deadlydreams.no>

system. Some of these latter also continued for decades after the state bounties were terminated. Our material strongly suggests that the culture of rat eradication in practice were more significant as model of thinking for other fauna eradication campaigns than the “sports hunter ideology” that often coated the display of the killed animals and thus the general interpretation of the entire eradication history.

We have systematically investigated the archives of 20 authorities, institutions and organizations, all found in Norwegian public archives.⁵ These are: 1. The Norwegian Parliament Proceedings. 2. The former Directorate for Wildlife and Fresh Water Fish, now The Norwegian Directorate for Nature Management. 3 The Norwegian Ministry of Agriculture's Committee on Poisonous Substances. 4. The Norwegian National Plant Protection Agency.⁶ 5. The Risør⁷ and Kristiansand Police.⁸ 6. The Municipalities of Grimstad,⁹ Oddernes¹⁰ and Søgne og Greipstad,¹¹ all located in the southernmost counties of Norway, Aust-Agder and Vest-Agder. 7. The County Governor of Vest-Agders financial records.¹² 8. The municipality of Søgne's District Medical Officers/ Health Councils records.¹³ 9. The City of Kristiansands Local Council.¹⁴ 10. The Norwegian Pharmaceutical Museums Poison protocols.¹⁵

⁵ May-Brith Ohman Nielsen has performed the archive investigations and source work analysis on no. 1-4 in the list of archives and the general analysis and discussion. Anne Mette Seines has performed the archive investigations on no. 5-10 in the list of archives and built the quantitative basis for *fig. 1*.

⁶ No 1-4 are deposited in The Norwegian National Archive.

⁷ KUBEN Risør Politikammer. Diverse dokumenter bla søknader om gift/sprit, 1898 - 1925, "AAKS/PA-288/Y01/L0003."

⁸ Statsarkivet i Kristiansand Kristiansand politikammer - 2. Giftprotokoll attester giftkjøp, 1921 - 1967, "SAK/1243-0009/N/Na/Naa/L0437."

⁹ KUBEN Grimstad kommune Helseseksjonen. Skadedyr- utrydding, 1961 - 1993, "AAKS/KA0904-640d/D02L0018/0007."

¹⁰ IKAVA Oddernes kommune - Formannskapet. Utryddelse av rovdyr, 1960 - 1964, "IKAV/100110D120/D/Db/L0043/0004."

¹¹ IKAVA Søgne og Greipstad kommune - Formannskapet. Utryddelse av rovdyr, 1850 - 1871, "IKAV/1018SG120/Db/L0001/0008."

¹² Statsarkivet i Kristiansand Fylkesmannen i Vest-Agder. Regnskap. Premieattester for felte rovdyr + kråkekrig, 1934 - 1935, "SAK/1271-0004/F/Fc/L0050/0002." Statsarkivet i Kristiansand Fylkesmannen i Vest-Agder. Regnskap. Premieattester for felte rovdyr + utryddelse av kråker, 1937 - 1938, "SAK/1271-0004/F/Fc/L0057/002." Statsarkivet i Kristiansand Fylkesmannen i Vest-Agder. Jakt og fangst fiskeri. Fangstregulering og skuddpremier, 1876 - 1945, "SAK/1271-0004/K/Kb/L0022."

¹³ Statsarkivet i Kristiansand Søgne distriktslege/helseråd. Saksarkiv. Rottebekjempelse utgassing smitte mv, 1940 - 1977, "SAK/1751-0010/D/L0012."

¹⁴ IKAVA Kristiansand By - Formannskapet. Bekjempelse av kråkeplagen, 1947 - 1952, "IKAV/1001KG120/D/Dc/L0760/001." Bekjempelse av rotter, 1941 - 1957, "IKAV/1001KG120/D/Dc/L0349/0003."

¹⁵ NPM Poison protocols of these pharmacies; Elefantapoteket in Kristiansand, 1796 - 1937, "NF/Ark-1041/D/L0070/0012." Stavanger apotek, 1827 - 1879, "NF/Ark-1041/D/L0086/0006." Svelvik apotek, 1861 - 1866, "NF/Ark-1041/D/L0087/0002." Lillesand apotek, 1867 - 1914, "NF/Ark-1041/D/L0087/0002." Apoteket Ørnen in Drammen, 1878 - 1942, "NF/Ark-1041/D/L0087/0005."

Together these archives represent not only the vast majority of the institutions, but also the known, existing and accessible sources that may provide information about this historical phenomenon.¹⁶ The documents studied add up to approximately six shelf meters covering the period 1845–1967. We will present, interpret and discuss our findings in four steps. We will: 1. Compile a historical timeline and periodization of the main species targeted, the poisons used, the methods of distribution and the authorities, groups and institutions involved. 2. Present our findings in regard to the three major targets for poison killings and the historical context of changing wildlife poison regimes. 3. Synthesize and discuss some general findings from the material.

1. Periodization of poison targets

Based on the analyses of the document sources from all our examined archives, we can construct a timeline as follows:

HERE: Place timeline fig 1. ½ page. See figure 1 in attachment. Figure comment:

Figure 1 is a timeline and periodization of the main species of larger animals targeted with poison in Norwegian fauna, 1845-1967. The timeline is constructed from the analysis of quantitative and qualitative sources from all the archives in this study. Among them are a total of 11 00 entries of poison purchases in the poison protocols of 8 pharmacies and 2 police stations, together covering the entire period.¹⁷

The main categories of poison targets were rats, predators and crow birds. The main types of poisons used were respectively arsenic, phosphorus, allium and Warfarin for rats; strychnine and Veronal for predators; strychnine, phosphorus and phosphorus-glycerine for crow birds. They were all highly toxic substances, used in high concentrations, distributed widely through the pharmacies (arsenic, strychnine, Veronal, phosphorus and phosphorus glycerine), local authorities (arsenic, allium and Warfarin and phosphorus glycerine), organizations and businesses (phosphorus-glycerine).

Gressvik apotek, 1895 – 1960, “NF/Ark-1041/D/L0087/0004.” Apoteket ved Vestbanen in Oslo, 1901 – 1953, “NF/Ark-1041/D/L0087/0006” and Evje apotek, 1954 – 1961, “NF/Ark-1041/D/L0005/0002.”

¹⁶ We have exhausted all the related search-words in the Norwegian public archive electronic databases, Arkivportalen, such as: poisonous, poison and pollution, crows, vermin, arsenic, extermination, poison-protocol, bait, poison-certificate, rats, mink, fox, wolverine, Veronal, crows, strychnine.

¹⁷ For pharmacies see note 16. As well as the poison certificates from Kristiansand police 1921 – 1967 and poison certificates from Risør police 1904 – 1919, notes 8 and 9.

Individual purchases at the pharmacies and subsequent transport and storing were modes of poison distribution throughout the entire period.¹⁸ The organization with regards to the extensive rat and crow eradication campaigns, the “rat-wars” and “crow-wars” in the middle of the 20th century, reveals a complex distribution web from cities like Kristiansand. The poison was sent by mail to pre-approved general stores, school districts, co-ops, school masters, post-offices, senior postal workers and private persons, to be distributed further to the end-receiver. In cities like Kristiansand rat poison was delivered door to door by the ordinary city couriers.¹⁹

In major campaigns against rats and crow-birds during the mid 1900s, the poison was also distributed by cooperative farmer-owned businesses like the local dairies, by Hunter and Fisherman Associations, local councils’ crow committees and sent by ordinary mail from local authorities to inhabitants.

Between 1845 and 1967 highly poisonous substances had a widespread physical presence in many communities, for numerous purposes, and involved many different people.²⁰ In addition to killing unwanted animals in rural and urban areas, lethal poisons were in Kristiansand, and other towns, regularly used by craftsmen such as jewellers, clock and compass makers, metal workers, barbers, hairdressers, ship builders, as well as dyers, tanners, cleaners and physicians.²¹ This made strong poisons “familiar” and a normal and acceptable thing. The use of strong poisons was not unique to the domain of our study.²² It was the intention to kill wild birds and mammals, that is specific for the poison arena we examine.

The problems related to the killing of wild animals with poison, for the purpose of eradication, decimation and/or hunting profit, bounties and fur sales, were present with varying intensity in almost all Norwegian local communities throughout the entire period. The poison practices were on the agenda of local councils and local boards of agriculture, forestry and game management, sheriffs, local physicians, farmer

¹⁸ The distribution of poison for this use from the pharmacies was also regulated by Government Decrees of 1904, 1909 and 1929. *Kgl. Plakat om Utlevering af Gifter og andre Stoffer fra Apotek af 4. Januar 1904, Kgl. Res. Af 10. September 1909 of 20. September 1929*, DVF, RA.

¹⁹ Statsarkivet i Kristiansand Søgne distriktslege/helseråd. Saksarkiv. Rottebekjempelse utgassing smitte mv, “SAK/1751-0010/D/L0012.”

²⁰ This means substances that, at different times, were listed and defined as poisons in the relevant legislation. For early public health involvement in poisonous substances in Kristiansand, Norway, see Ohman Nielsen 2008, p. 236ff.

²¹ See above. See also forthcoming articles from Anne Mette Seines on the poison protocols. To be announced on the project website.

²² See information on forthcoming articles on these issues on <http://www.deadlydreams.no>

associations, hunter and fishermen associations, as well as the Parliament and Government. Disputes over the right to hunt animals with poison and over the damage and danger this activity caused to humans and domestic animals also involved lawyers and the court system.²³

Notions of danger, risks and safety concerning the use and presence of poison in people's vicinity and everyday life was, for a long time, mainly connected to and developed through the social experience linked with this use of arsenic, strychnine and phosphorus-glycerine. These poisons were "The Poisons" in most communities and the approach to them shaped cultural perceptions and patterns of practice as well as attitudes towards specific species.

We find that the ideas, mentalities and material practices related to these highly toxic substances, and their use for the deliberate purpose of killing animals, constitute a central feature of the cultural history of poison. We find that they are important prerequisites within the cultural history of other types of poisons too, like those widely used in plant protection and vermin extermination. Furthermore, they affect people's attitudes towards the types of environmental poisons that were distributed, directly or indirectly, from production processes and commercial products.

2. Rats, predators and crow birds.

Rats.

Most urban societies have, at times, sought to limit or get rid of rats, at least in times when they were numerous or perceived as carriers of threatening disease. The people and institutions involved, the means adopted to kill rats and the legislation on rats may have varied and changed over the centuries. Antipathy towards rats transcends historical time and place.

For centuries rats were obvious outlaws. Between 1845 and 1944 rats in Norway were not covered by the law. All legislation dealing with hunting and poisoning, as means of eradication of species, explicitly mentioned rats and mice as the only animals the law did not apply to. This meant that rats could be targeted, using any means whatsoever, including poison, anywhere and at any time. Rats were mainly a problem in urban areas, especially in harbours and on board ships. Rats were mainly perceived as a health threat, a sanitary problem and as possible carriers of disease. Targeting rats was

²³ See below.

a cleanliness issue, because they spread dirt, garbage and bad smell. Rats were associated with slums and neglect, and because the animals thrived on almost any kind of stored food, especially the basic staple food supply of grain and potatoes, they supposedly ate a substantial amount of people's food. From 1845 and up to 1944 this was mainly understood and presented as a problem for those who directly suffered rats in their homes, businesses or neighbourhoods. People fought rats with traps, sticks, axes and with the help of cats and dogs. However, those who wanted to enjoy rat free homes, workshops, stables, sheds, factories, schools, cafés, stores or private town gardens had to accept the presence of rat poison.

The main poison used from 1845 and until the end of the 19th century was arsenic. Arsenic and other strong poisons were, unlike in some other countries, not sold freely at groceries and drug stores, but only at pharmacies under strict control. One needed a poison permit from the police to purchase it. In some rural villages with no police locals could acquire a poison permit from the clergyman. Obtaining permits for buying poison for this purpose was from 1845 and until the 1960s an issue of human trustworthiness and intention, not an issue of animal welfare. The pharmacy recorded the buyer's name and address in the poison protocol. That the poison was intended for rats is known due to the naming of the product they bought. It was named "Rottekrudt" which translates to "rat powder" (as in gunpowder) and this was pure arsenic.²⁴

The 1840s records in the poison protocol from Elefantapoteket in Kristiansand, show that each private customer could obtain 32 grams of arsenic in each purchase. This was the standard quantity sold at pharmacies.²⁵ Today, one gram of arsenic is considered sufficient to kill five people. These figures illustrate the changing social and cultural perceptions of risks and safety in human/environment considerations. From 1840 until 1849 a total of 3.4 kilos of pure arsenic was sold in this pharmacy alone. Kristiansand had 8349 inhabitants in 1845, but customers also came from the neighbouring areas.²⁶ This decade marks the peak of distribution of arsenic for killing animals.

However, arsenic was replaced by other poisons, no less lethal or hazardous. From the 1860s and onwards the most commonly used poison against rats and crow

²⁴ Beer, *Læren Om de Livløse Naturlegemer*. Malling, 1881, p. 13

²⁵ The standardization of quantity sold is because the weight system for this non-medication commodity at this time case was the older «lodd» and not the more refined pharmaceutical system for small medical amounts or the metric system introduced from 1875. See Ohman Nielsen, 2011, vol. 3, p. 150ff.

²⁶ "Kristiansand Kommune - Historikk."

birds was different substances made with phosphorus. At Elefantapoteket there is a steady increase in the sale of phosphorus substances such as paste and salves, from 4 sales in 1840s up to 311 sales in the 1890s. But in the following decades the practices change. The perception of rats in urban and rural environments remain the same, and campaigns against them are intensified more organized.

In the first decades of the 20th century most Norwegian towns took up some form of municipal rat-control measures, when the number of rats exceeded what was seen as “normal” or “unavoidable”. The preferred means for coordinated rat campaigns was poison, and the rat campaigns were usually organized the by local health authorities.²⁷

During WW2, when Norway was occupied by Nazi Germany, scarcity of food supplies was a concern. Thus rats were also now also perceived as competitors for food, food for humans, horses, cattle, pigs and poultry. With democracy suspended, more radical measures were adopted in the Führer led communities: In the fall of 1941 and again in 1944 the health department in Kristiansand waged a war on rats. Rat poison was distributed to all citizens with instructions on how and when to use it. The Ministry of the Interior decided to attack the issue on a national level.²⁸ This first “Rat Law” was passed June 22th 1944. This law made Nazi-appointed Norwegian mayors *personally* responsible for planning and carrying out rat extermination campaigns, once or twice a year, in co-ordination with neighbouring municipalities.²⁹

This law was still in place in the fall and winter of 1945, when the re-established democratic authorities conducted the annual “rat war” in the same manner. The preferred poison now was Allium powder, also known as “schilla.”³⁰ The archives show that more people now expected to make a living out of rat eradication and offered their services to local councils.³¹ For some more years, however, Kristiansand decided to deal with the rat wars themselves, using their own employees, other local “resources” and broad citizen cooperation, rather than to leave it to the professional few. The decision impinged on ideas, attitudes and habits in regards to fauna killings. This indicates how

²⁷ IKAVA Kristiansand By - “IKAV/1001KG120/D/Dc/L0349/0003.”

²⁸ In the “Health Magazine” from April 1944, as included in the archive files on the rat problems in Kristiansand, there is an article on rats. This maps out two stages of rat-war, first making buildings, and businesses rat-proof, and then going at them with poison. IKAVA “IKAV/1001KG120/D/Dc/L0349/0003.”

²⁹ Ibid.

³⁰ The species was *Drimia Maritima*, that was dried. The largest commercial product on the Norwegian market appears to have been Schilla root. Ohman Nielsen 2014b.

³¹ IKAVA Kristiansand By - “IKAV/1001KG120/D/Dc/L0349/0003.”

many people were personally involved in poison campaigns in the 1940s and early 1950s. Similar types of organizations may be expected elsewhere:

In Kristiansand, South Norway Canneries were engaged to mix the allium powder with a bait consisting of flour, smoked herring, milk, fat and sugar, a mixture the campaign leaders thought the rats would fancy and which was to some extent available. The plan was to produce 1000 kilos of poison bait. This was to be repacked into 125 000 individual baits by post-war political prisoners at Dalane prison camp.³² The poison-packages were then designated for each street, and each house, and distributed by employees of the city engineer's office. 200 kilos of rat poison with the potential of killing more than 200 000 rats were distributed in Kristiansand and the neighbouring municipality of Oddernes. This must have led to a substantial amount of dead rats lying about.³³ Kristiansand and surrounds had only 22 000 inhabitants at this time.³⁴ Campaigns like this show the considerable involvement of people and public resources in poison practices. The "rat wars" in Kristiansand and other Norwegian municipalities would go on for at least two decades with ever more sophisticated production of baits and packing.³⁵

After 1945 rats were more often perceived and presented as a threat to local societies and to the *national* economy. Rats now also stole the recovering *nation's* food, and were a problem for the national economy and welfare, and the anti-rat campaigns and commercial advertisements were heavily loaded with post-war recovery ideology.³⁶ In 1946 the Norwegian National Assembly passed a new and democratic Rat Law. Some of the subsequent administrative regulations were slightly revised in 1953.³⁷

Between 1946 and 1953 rats were targeted with extensive campaigns in most cities, towns and villages. The local councils led these campaigns, and all property-owning citizens were obliged to constantly fight rats on their property, by securing

³² The prisoners were mainly former Nazi party members or others accused of crimes or "socially unacceptable behavior" during the German occupation. Forcing these prisoners to do this type of work was heavily symbolical. Adm. note to Kristiansand Sanitary Board from municipal administrative leader, October 17th 1947, IKAVA Kristiansand By "IKAV/1001KG120/D/Dc/L0349/0003. Also in Oslo political prisoners were used for this kind of work.

https://www.oslo.kommune.no/OBA/aktuelt_arkiv/rottekrig.asp

³³ 0.8 grams of allium was needed to kill a rat, and each bait was a total of 8 grams with 10% allium.

³⁴ "Kristiansand Kommune - Historikk."

³⁵ IKAVA Kristiansand By - "IKAV/1001KG120/D/Dc/L0349/0003."

³⁶ Nielsen, "Kverk krekene."

³⁷ Lov om utrydding av rotter av 5. Juli 1946 og forskrifter om utryddelse av rotter av 16. Juli 1946 og 19. August 1953, circular from Ministry of Social affairs, copy in IKAVA Kristiansand By - Formannskapet. Bekjempelse av rotter (1941-1957).

windows, doors, foundations and floors and taking part in the organized communal “rat wars” once or twice a year using the designated poison.³⁸ A model citizen, and “normal person”, was now an inveterate rat poisoner. Thus poisoning other species might appear quite normal too, and as a matter of methods, practical capabilities, and organization, not a question of environmental considerations.

The 1949-50 rat campaign in Kristiansand switched to a stronger poison, Antox, again mixed with baits manufactured locally, after numerous complaints from citizens who refused to pay for the old allium baits because they claimed the poison was not strong enough to kill any rat that ate it, and wanted something more efficient. This was a consumer’s “value-for-money” complaint, arguing that poison should be truly deadly. The new Antox baits were presented to the citizens as more lethal and more dangerous. “Dangerous for humans and livestock” said the instructions and posters, in line with the general turn in 1949 towards clearer warnings to the users of acute poison products.³⁹ From now on, rat poison in Kristiansand was handed out for free to avoid consumer complaints over disappointing lethality.

In the winter of 1952-1953 poison was distributed in Kristiansand only in public areas, and to citizens who requested it. In 1953-1954 a full scale campaign was waged again, this time using the new popular poison Temus W., based on Warfarin, a synthetic medical drug used as a blood thinner. This anticoagulant substance made rats die from internal bleedings.⁴⁰ 300 grams of Temus W. was delivered to each private house in Kristiansand, and also dispersed in public properties and places. This type of public campaigns involved most adult citizens and served to confirm their acceptance of themselves as rat poisoners. The subsequent campaigns, however, appear to have been carried out mainly by professionals.⁴¹ This change is in line with changes in other poison arenas, where more of highly toxic substances from 1953 onwards were to be handled by professionals only, to limit the number of accidents and secure efficiency.⁴² This strategic shift also coincides with gradual changes in public awareness and concern about poisonous substances in the environment, mainly due to a new attention to

³⁸ IKAVA Kristiansand By - “IKAV/1001KG120/D/Dc/L0349/0003.” This was also the case in Oslo according to Bård Alsvik: https://www.oslo.kommune.no/OBA/aktuelt_arkiv/rottekrig.asp

³⁹ Ohman Nielsen, 2014, Ohman Nielsen, 2015, Ohman Nielsen 2017c.

⁴⁰ The drug Warfarin was approved as rat poison in the US in 1948 and for medical use on humans in 1954. In Norway the drug Warfarin have been marketed as Marevan, (Nycomed Pharma).

⁴¹ Statsarkivet i Kristiansand Søgne distriktslege/helseråd. “SAK/1751-0010/D/L0012.”

⁴² Ohman Nielsen, 2014, Ohman Nielsen, 2015, Ohman Nielsen, 2017c.

accidents with pesticides made of chemicals such as parathion and endrin.⁴³ People were still allowed to buy poison to kill rats, but permits were no longer needed. And after 1953 mass-produced rat poison based mainly on allium or Warfarin was sold in hardware stores.

The decline of the big public rat campaigns that involved every property owner had cultural implications: The authorities no longer presented the ideal, responsible and conscientious citizen as a person with poison in his or her hands, or as someone who did not care about which methods for killing rats actually worked and what unwanted side effects and harm this wide distribution of poison might have to other species.⁴⁴ By not forcing everyone to participate and pay for the poison, the authorities also avoided public debate on the issue. There was no opposition to the objectives. Rats were not wanted in any environment. Killing rats was still “essentially good”, although gradually this poisoning took place more discreetly and out of sight, in line with changing public sensibilities.⁴⁵ This is still the case in most urban environments. But today hardly anyone is aware of it, only a professional few administer the poison to the city rats and recently new mechanical methods of rat killing are introduced to reduce the amount of poison distributed in the environment.

Predators.

Many countries have waged extermination campaigns against predators, especially the larger carnivores, like wolves, tigers, lions, wolverines and coyotes. On the British Isles and in Denmark, wolves were made extinct three or four centuries ago. In USA, Japan and India, the extermination efforts on wolves, tigers and other carnivores were especially forceful in the first part of the 19th century, and brought many of these animals to the brink of extinction in the first part of the 20th century. The driving forces presented in these studies are mainly local farmers, colonists and hunters organizations.⁴⁶ In these earlier studies, however, shooting and trapping are presented as the main methods of predator killing, and although some local habits of strychnine poisoning is described, the laws and politics regulating the use of poison, the practices of poisoning and the significance of poisoning as a method of eradication, are not analysed

⁴³ Ohman Nielsen 2014. See also Ohman Nielsen 2017a

⁴⁴ Ohman Nielsen, 2014.

⁴⁵ Ohman Nielsen 2014.

⁴⁶ See for example Coleman, 2004, Walker, 2005, Rangarajan, 1998, Mosley, 2010, p. 13-30, Kardell and Dahlström 2013.

or discussed. Neither are cultural aspects and implications of the *adoption of poison* in wildlife killing, for people, communities and political authorities involved. This is our research objective in the current article. Discussions on population dynamics and eco system implications will be approached forthcoming studies.⁴⁷

Traditionally farmers in Norway had sought to kill predators in situations where predators did damage to their livestock. These were mainly ad hoc actions taken *after* a predator attack on their herds. They often involved sympathizing and skilled neighbours or friends, but going after a specific animal could take much effort and were not always successful. This situation changed in the middle of the 19th century.

As part of the general modernization effort, the Norwegian government took a leading role in a national effort to exterminate all sorts of land based predators. Norwegian legislation in this field started in 1845 with the Law on Extermination of Predators and Preservation of other Game, The Predator Law.⁴⁸ The reasoning behind this law was twofold: 1. To increase the game population and protect the “valuable” game from predators and foreign “sports hunters”, so that hunting could provide a better income for local landowners. 2. To eradicate predators so that farmers could make better use of the vast Norwegian forests and mountain areas as pasture for their livestock. This would also reduce the need for herding and shepherding.⁴⁹ This law was preceded by The Eiderdown Law of 1842 that protected eider birds and eiderdown islands, to help develop a sustainable eiderdown industry that could provide a seasonal income for people living along the coast.⁵⁰ The Predator Law set new conceptual frames and governing ideas of man and nature:

Supported by substantial bounties, the following campaign set out to eradicate predators with the intention to clear the forests, mountains and coast of wolves, bears, lynx, wolverines and foxes, as well as eagles, hawks, falcons, owls, ravens, crows and similar birds.⁵¹ The bounty was paid for each animal killed, regardless of method, as long

⁴⁷ See forthcoming information at <http://deadlydreams.no>

⁴⁸ In Norwegian: Lov av 4. August 1845 om Utryddelse af Rovdyr og Fredning av Andet Vildt, DVF, RA

⁴⁹ The Predator Law of 1845. See also Richardsen, 2012.

⁵⁰ Lov av 30. August 1842 om fredning av egg og dunvær samt edderfugl, with extensions of 3. March 1960.

⁵¹ The Predator Law of 1845. The political background of this law, and consequences for predator populations have been studied by Richardsen, 2012 in his MA-thesis and Søybye et al., 2004. However none of these studies present or discuss the use of poison or the practical hunting methods, and shooting is seen as not only the rule but as the main practice, and bounties are understood as shooting-prices. This we believe to be misunderstandings based on anachronisms, sports hunter ideology and a limited source

as it was legal.⁵² “Price for each Predator’s Destruction” was the exact term in the Predator law, and the word used for bounties were “killed” not “shot”.⁵³

The Predator Law was revised in 1863. The revision shortened the hunting season for some game, extended the number of bird species to be eradicated, and encouraged people to contribute to the eradication campaigns with the help of more bounties. The next revision, in 1866, introduced the new label “nuisance birds”⁵⁴ for this new eradication policy, which was now also to include birds that fed on fruit trees, berry bushes, grain seed and other crops. Coining the term “nuisance birds” was essential to the cultural ideas that constructed this policy. The term was in essence limitless, and a matter of personal opinion based on personal experience or suspicion. Encounters with individuals or groups of one single species, could, within this logic, justify measures to eradicate all the individuals of the same species on your own land, or surrounding it.⁵⁵

In minor revisions in 1879 and 1882 The Norwegian Parliament raised the bounty for the extermination of foxes, but tightened at the same time administrative procedures in order to stop massive bounty fraud.⁵⁶ Foxes were more likely to attack young game and eggs, and even poultry. They tended to hunt closer to farms and houses than the shy wolves, bears and lynx, much in the same way as the predatory birds and the “nuisance birds” that seasonally attacked people’s crops and gardens. This brought the fauna eradication campaigns and their practical measures closer to people’s homes, and thus it was no longer merely a “wilderness issue.”

The Predator Law of 1845, however, did not specify the *methods* for killing predators and “nuisance birds”. This meant that every type of shooting and trapping was

material. The main findings of Richardsen’s MA-study are also presented in Richardsen 2014. Also Gundersen et al. (2012), in their study of the extermination campaigns on northern goshawks in Norway convey the impression that shooting is the normal method and they do not discuss the use of poison or include the practice of poisoning predator birds in the interpretation of their data. We believe this has implications for some of their arguments.

⁵² The two terms “shot,” or “shot or otherwise killed”, were used in all registers and statistics generated at national levels. See <https://www.ssb.no/a/histstat/aarbok/tab-2000-10-18-01.html>. In general the bounties were often referred to as “shooting prizes” (Norwegian: Skuddpremie), this term was almost exclusively used after the restrictions on other methods, from the mid 1950s, and has probably contributed to the blurring of the issue of killing methods. This makes it impossible to detect the relative proportions between the different methods of killing. We need to consult other sources to get information about methods adopted in the extermination campaigns on predators.

⁵³ The Predator Law of 1845.

⁵⁴ Norwegian: “skadefugl” – directly translated meaning: bird types that caused damage.

⁵⁵ The Predator Law of 1863: Lov av 22. Juni 1863 om utryddelse av rovdyr og freding av annet vildt. Lov av 29. Mai 1963 om premie for udryddelse av rev.

⁵⁶ The Predator Law of 1863 Lov av 22. Juni 1863. Lov av 29. Mai 1963 om premie for udryddelse av rev.

legal, including spring-guns, predator and bird traps, snares, nets, pits with spears and also poison baits. It was soon agreed that poison was the easiest method.⁵⁷ At first arsenic, and then strychnine, were the preferred poisons and the ones you could get a license to buy if you intended to eradicate predators.⁵⁸ Placing a poisonous bait that attracted the animals demanded less time and effort. You did not need to be a good shot, you didn't even need to own a gun, invest in a costly trap or attend to snares, nets and spring-gun traps. A great variety of trapping methods appeared in the wake of The Predator Law, and they were applied in unprecedentedly high numbers, all over the Norwegian countryside, around farmhouses and along roads.

Not only wildlife suffered from this. Spring-guns and other traps might injure people, especially children, dogs and cattle. So could strychnine baits. Locals used various kinds of meat as poison bait, depending on the fauna in the area; remains of predator killed reindeer, sheep and game, worthless intestines from slaughtered cattle or pigs, sometimes fish for avian predators, but more often strychnine-soaked cats and birds, killed on purpose to serve as bait.⁵⁹ The quantity of strychnine that one person could purchase at the pharmacy for this purpose was considerable: over 30 grams could be handed out to a single customer in the period between 1845 and 1931. The peak of strychnine as predator poison at Elefantapoteket was reached in the 1890s when 112 purchases of strychnine were made. The amount of strychnine in each purchase varied between 5 grams and 33 grams, and there seems to have been no apparent system to the amount each customer could buy in the more refined metric system adopted from 1875.⁶⁰ The amount most customers bought was 10 grams, a practical metric amount to sell. A lethal dose for humans is today considered to be between 0.1 and 0.2 grams, so an average, and thus a "normal" 10 gram purchase of strychnine would be enough to kill between 50 and 100 people.⁶¹ Proportions like these both reflected and impinged upon people's habitual understandings of risks and safety, their general approach to the

⁵⁷ Poison bait for predator killing had a tradition in other countries in Europe, and the practice was brought to other areas of the globe that the Europeans colonized, like America, Australia, India, South Africa, and also to countries that were inspired by the European in their modernization efforts. See for example Mosley, 2010, p. 13-30, Coleman, 2004, Rangarajan 1998, Kardell and Dahlström 2013, Walker 2005.

⁵⁸ See above.

⁵⁹ DVF archive files on the preparation of the law and the Parliament debate over *Lov av 29. Mai 1886 om selvskudd og annet Gildre samt utleggelse av gift*.

⁶⁰ See above.

⁶¹ The lethal dose of strychnine for humans, (LD50 values) is today estimated at 30-100 milligrams for adults and 15 milligrams for children

concept of poison and their ideas of nature and the environment.⁶² Cultural tolerance for, maybe even acceptance of, the dispersion of these amounts of strychnine in local community bears witness to existing images of man, nature and environment.

To purchase strychnine, you needed a written permit from your local police, sheriff or vicar, saying that you were trustworthy and would handle the poison in a safe manner. This was basically a character reference. Neither the clergy nor the police had any training in toxicology or veterinary matters that would enable them to assess the poison hazards or reasonable dosage.⁶³

However, large dosages were not the only hazards. Eager eradicators, or bounty hunters, might place their traps and strychnine baits on land belonging to others, or where others owned the right to pasture for their cows, sheep or horses. In addition to the accidents that occurred, there were numerous other hazards: abandoned strychnine baits; baits that were moved around by animals or hunters who stole each other's poison baits; baits that were covered with snow, forgotten, and moved with the spring thaw. The following summer farm dogs might eat these baits. There were also reports that cattle died on pasture for no obvious reasons. Strychnine poison left in the grass was suspected as the cause, but would remain unproven far from such laboratories both in time and place.⁶⁴

This rather chaotic situation, and the tragedies that were caused by it, provided the background for the 1886 Law on Spring-gun Trappings and Issuing of Poison, The Trapping and Poison Bait Law.⁶⁵ The problems had been recognized for more than a decade, but an attempt to revise this in a new Hunting Law in the 1870s was rejected by parliament in the heat of the tense political situation.⁶⁶ The new Trapping and Poison Bait Law had, as part of the preparation, had been debated in all county assemblies, and commented upon by all leading county administrators and chiefs of police. Some counties, like the central eastern Akershus, wanted to abolish poison as a means of eradication because farmers had had cattle and dogs killed from poison baits placed by others on their land. Other counties, like Finnmark in the north, demanded a specific exception for their county if poisoning of predators was made illegal. They argued that

⁶² NPM, Kristiansand Elefantapoteket Giftprotokoll, "NF/Ark-1041/D/L0070/0012."

⁶³ Gossel, T. A., Bricker J. D. (1994). *Principles of Clinical Toxicology*, 3rd edition, p. 351. Raven Press, New York.

⁶⁴ See below.

⁶⁶ Oth. Prp. No. 4, 1886: *Angaaende Udferdigelse af Lov om Selvskud og andet Gildre*.

wolves were a serious problem for the Sami reindeer herders, and the best way to eradicate wolves was with poison baits. Most counties decided in favour of poison.⁶⁷

The Trapping and Poison Bait Law of 1886 confirmed the right to trap and use poison to kill predators and “nuisance birds” in accordance with the intention of The Predator Law to eradicate these animals. But the new law set some restrictions on the type of traps that could be set in the summer season, and demanded written approval from the landowner to place poison on another’s land. Furthermore, this law authorized the local councils to issue rules and restrictions on when, where, with what bait and what type of public warnings, predator extermination by trapping and poison should be carried out in their community. The local councils were better suited to set the calendar regulations in accordance with local climatic conditions that defined the game breeding, bird migration and pasture season. They also knew better how to announce where the traps were set and the poison laid, so people could stay away from it and herd their cattle elsewhere.⁶⁸ The later revision of The Hunting Law in 1899, confirmed these paragraphs on poison without debate.⁶⁹

Because the law now placed some responsibility on the local councils, the local councils had to discuss and take a stand on the approbation of poison in the community. This meant approving the practice of strychnine killing of predators and “nuisance birds”, with some exceptions in regards to seasons and shared property. Thus many more people were included in practices involving the cultural and political acceptance of dangerous poison. Most local councils decided that the poison must be placed more than 100 meters from houses and public roads and should not be used in the pasture season.⁷⁰

However, the involvement of local councils also meant that people in municipalities started to hold the council accountable for practices connected with implementation and control. In the 1890s and early 1900s public complaints were mainly filed over strychnine baits near villages and in mountain pasture areas for cattle and reindeer. Harming other wildlife or nature was newer an issue in these complaints. Many local councils set the poison free zone at 300, 1000 or even 3000 meters, and in

⁶⁷ Oth. Prp. No. 4, 1886: *Angaaende Udferdigelse af Lov om Selvskud og andet Gildre*. See also notes and letter exchanges on the preparation of the law in the DVF archive.

⁶⁸ Ot. Prp. No. 4, 1886: *Angaaende Udferdigelse af Lov om Selvskud og andet Gildre*.

⁶⁹ *Lov angaaende Jagt og Fangst av 20. Mai 1899*, § 25. See also the record of the debates in parliament. Almost all the other paragraphs were intensely debated and opposing propositions were put to the vote.

⁷⁰ See numerous reports from local council decisions in DVF archive.

some of the Sami communities in the north, it was set 10 kilometres away from public roads and houses.⁷¹ These council decisions made it compulsory to place public announcements of where the poison was placed, and to repeat these every month, in the local papers, on community poster boards and at Sunday church services. In this way, even more people became familiar or acquainted with this poison practice, making it normal, accepted, yet to be paid attention to.

The Hunting Law of 1899 abolished the regular use of “spring-gun traps” and bear traps due to risks for people and cattle, and after petitions from animal protection organizations who argued the case against animal cruelty in respect to killing methods. The use of poison to exterminate predators was, however, not contested in the political debate in Parliament.⁷² The bounty prices for different predators were raised and Parliament was pleased to note that bounties had been effective as a motivation for killing predators. From The Predator Law in 1845 and until The Hunting Law of in 1899, the reported bounty kills of predators in Norway were 200 000, of which 159 000 were foxes.⁷³

The majority of the subsequent local council documents and decisions from the turn of the century now described the poisoning of predators as *hunting* in according with The Hunting Law § 25, not as national *eradication campaigns* in accordance with The Predator Law, although predator eradication was still the politics.⁷⁴ “Hunting” was the term used in local communities. The councils addressed the community and especially the hunters who had made an income out of hunting predators with poison for bounty and possibly fur prizes and taxidermist purchases of eagles, hawks and owls. Revisions of the poison certificates issued by the police made the hunters promise not to entrust the poison to others and keep it securely locked up.⁷⁵

⁷¹ Copy of municipal council records of Karasjok, November 20th 1896, sent to the county officials and the MA, DVF archive. The council also stressed that those who hunted predators with poison were obliged to show the utmost care and to bury the poisonous bait securely in the spring. See also copies of numerous other local council decisions on these matters in this same archive.

⁷² Lov av XXX 1899 om jakt og fangst. *Stortingsforhandlinger. 1898/1899 Del 8.*

⁷³ Ibid. These are mainland figures, Svalbard excluded.

⁷⁴ Ibid. The NJFF launched a coordinated campaign to make their chapter in many counties pressure the local councils to pass similar and more liberal regulations, with only a 150 meter poison free zone along roads open for public traffic. This would bring the strychnine baits closer to people in most communities and also meant that private roads in principle could be shut off from the public and therefore poison hunting could continue along there. *Utkast til regler for utlæggelse av gift til fangst av rovdyr, særtrykk av N.J.&F.F tidsskrift 6. hefte 1911*, copy in DVF archive.

⁷⁵ Poison certificate, printed form. Copies are found in many of the investigated archives, among them DVF and Risør police.

From around 1910 onwards, however, some local councils in areas where poison bait hunting was an annual event, took steps to stop the distribution of strychnine on the ground altogether, or to issue permits for poison-hunters only for one year at the time to keep a check of them and their practice.⁷⁶ Numerous complaints over dead cattle, dogs and Sami herded reindeer now mounted up because investigated cases had proven the connection. More over, the predator population was clearly in decline. Over the next two decades attitudes were changing too. Increased functional literacy, communications, awareness of health hazards related to poison, animal rights organizations, and, it seems, votes for women, all played their role in a historical process that took place from around 1915 to 1927 when more and more local councils restricted the use of strychnine baits for all types of killing of wild animals. Both the horizon within which the topic was perceived and the formulation used show that the use of poison now was framed as a social and cultural issue, an issue of civilization, and well a question of animal cruelty.⁷⁷

The most extensive campaign to stop the distribution poison bait in the terrain started in Finnmark, the northernmost county in Norway, in 1919. Finnmark was exceptional in matters of land ownership and land users' rights. In Finnmark, all land was owned by the Norwegian state and used as common land. Local people had traditional rights to pasture for cattle and Sami reindeer farming, as well as hunting and trapping, and the predator bounty killing by poison was a part of this culture. This led to other kinds of controversy and negotiation than elsewhere in Norway. The local council in Lebesby took the initiative to the following. The mayor thereafter presented the proposal to the county assembly to gain support from the other local councils in Finnmark for a joint statement and action to make the central authorities ban the use of poison as a method in predator hunting:

“As the use of poison to hunt fur animals in the municipalities of Finnmark has become a danger for the local cattle, because the pastures are increasingly poisoned, one would most strongly urge that this hunting method be prohibited by law.

It is commonly known that a significant amount of the county cattle get sick and die in the summer, a phenomenon that up until now has been inexplicable, but which has been recently linked to the poisoned pastures.

⁷⁶ Attempts made by local councils to restrict the poison hunt were often challenged by hunters with support of lawyers who filibustered the formal and legal sides of the restrictions. See letters in the DVF archive, among them letter to the MA from G. Hannanger, Skien, November 22th, 1922.

⁷⁷ Among educated biologists and nature conservationist there are voices arguing for an end to predator eradication. These are extremely few i Norway at the time, and they are in the pheriphery of the political procsses on the issue of poison hunting.

Furthermore, this ruthless hunting method has caused the near extinction of a valuable income for the county (fur hunting), which implies that the method should be banished by law. As one knows, fox and otter in Finnmark hardly cause damage worth their value, and if one recognizes these animals' natural need for food, one must admit that the use of poison as a hunting method does not correspond to the humane and economic values of our time.

A closer examination of these matters will, among other things, reveal a frightening amount of carcasses, especially foxes, that appear from the melting snow in spring, among them are first class furs which in a prime condition would be worth hundreds of kroner."⁷⁸

A series of coordinated decisions to forbid the distribution of poison baits was passed in the majority of the local councils in Finnmark.⁷⁹ Those councils who voted to continue the use of poison argued like the Kautokeino council: "poison (...) is almost the only method to kill wolves", but hunters had to remove the baits again in the spring and not just leave them around in the summer.⁸⁰

The Ministry of Agriculture, however, rejected all complaints and attempts to establish local bans on strychnine. It claimed that neither the *municipalities* nor the counties had the authority according to The Hunting Law to prohibit the use of poison to kill animals for bounty. However, said The Ministry; in accordance with the new Mountain Law for the state owned common land, passed in 1920, any person with a right to use the land as pasture, had to agree to putting the poison bait there. All of them could reject the poison and protect their cattle.⁸¹ "This would make it practically impossible to place poison bait in Finnmark county," argued the sheriff in Talvik, because it would be impossible to know who to obtain consent from in the common

⁷⁸ Letter to all local councils in Finnmark from the county council, March 24th 1919. The letter quotes the decision of the county council, (fylkesting) of March 19th 1919, The DVF archive chapter on "Utleggelse av gift", contains copies of most of this correspondence.

e. Letter from Finnmark county to The Ministry of agriculture July 14th 1922, stating that Sørøysund local council had prohibited the use of poison baits, with a copy of the unanimous decision, case 36 1922, DVF

⁷⁹ Letter to the MA from Finnmark county, November 29th 1919, DVF. Among the municipalities who supported a ban on poison hunting were; Lebesby and Kjøllefjord, Mehamn, Søyøysund, Talvik, Hammerfest, Kvalsund, Kjeldvik, Berlevåg, Polmak, Nesseby, Vardø, Nord-Varanger. See numerous letters quoting the councils decisions, DVA.

⁸⁰ Letter to Finnmark county from Kautokeino council, May 19th 1919, DVF. Karasjok argues likewise: Poison is the only effective means to eradicate wolves and foxes. Other municipalities who decided against it were Kistrand and Syd-Varanger. See reference above, DVA.

⁸¹ Letter from The Ministry of Agriculture to the County Governor of Finnmark January 13th 1920, DVF. This was further complicated by The Mountain Law of 1920, regulating the activities in the state owned common land and securing the right to use the mountain resources. In 1926 when the state owned common forests of Trøndelag were also placed under The Mountain Law, all the hunters who had acquired the right to hunt in these commons would also have the right to place poison baits in the terrain, and who was then to give permission? Letter to the Forest Administration (skogforvalteren) in Grong, Namsos, from Nordli fjellstyre, December 14th 1927, reply of December 22nd 1927, DVF, stating that "it would probably be very difficult to obtain a permit to place poison bait in the state owned mountains". See also letter from Statens skogvesen, Grong, to the Forest director December 16th 1927, DVF.

land, which everyone was entitled to use. Many locals would not approve of poison hunting in the commons, because there had been many cases of dead cattle that were probably strychnine poisoned.

This might have concluded the matter. But some groups saw it as their right to poison wild animals: “Is a sheriff really entitled to deny a man a poison permit when the use of poison is legal, (...) a person, who in all aspects must be considered to be what is commonly called a trustworthy man?” complained one of the locals, who assured the authorities that he had hunted with poison for many years, and always obtained poison permits from the sheriff. But now, he was denied this in accordance with The Mountain Law of 1920.⁸² Old habits and ideas were not easily altered.

But the killing of cattle was no longer the only issue. Hazardous behaviour and “inhumane killing methods” were now being addressed: “At Kvaløy in Sørøysund municipality poison is used in a completely irresponsible way,” argued the unanimous local council. Cattle were killed due to the misuse of poison and humans might be in danger when picking wild berries.⁸³ “The careless use and handling of the most terrible of all poisons, strychnine, a substance that, with approval from the sheriff, almost anyone can acquire”, wrote the district physician in Maalselv to the Medical directorate, “is threatening to become a social disaster”. (...) “Any dangerous wild beast, that could defend the dispersing of this dangerous poison, is not to be found here.” He asked The Ministry of Social Affairs to consider prohibition against distribution of strychnine in bait.⁸⁴ Some municipalities used their available means to reduce the poison baiting by compelling the hunters to attend to the baits daily and immediately skin and bury the kills at least 60 centimetres underground.⁸⁵

⁸² Letter to the County Governor of Finnmark from the sheriff of Talvik, October 10th 1928, and to the MA from the County Governor of Finnmark, November 1st 1928. Letter to the County Governor of Finnmark from Peder Frostmo, Talvik, October 12th 1928, complaining about not getting a poison permit from the sheriff and telegram to the MA from Peder Frostmo, Talvik, December 4th 1928. Letter to the MJ from Peder Skjelvik, Framnes, January 29th 1930, asking if he could place his fox poison in the tidal zone, between ebb and flow, because there was nowhere else to put the poison anymore, DVF.

⁸³ Sak nr 36 1922: “Andragende fra Sørøysund herredsstyre om forbud mot utlæggelse av gift til fangst av dyr”, Vardø argues also with reference to the “inhumane hunting method”, DVF. See also above.

⁸⁴ Letter to Medicinaldirektoratet, MSA, from the district physician in Maalselv, April 9th 1924, also sent to the chief county physician and the County Governor in Troms, DVF. See also letter to the MA from major D. E. Jackwig, Maalselv, September 3rd 1924 and September 20th 1924 and reply of October 1st 1924, DVF.

⁸⁵ See *Regler for utleggelse av forgiftet åte innen Skogn herred, vedtatt av herredstyret 30. November 1926, aprobert 18. Desember 1925*, poster from Skogn sheriff office January 9th 1926. Letter to the MSA from L.O. Dotterud, Holtålen, November 18th 1928, telling that the local council had voted to forbid poison baiting altogether and questioning their right to do so, DVF.

These decisions triggered lawsuits from hunters who claimed that their legal rights to kill predators with poison were violated. They also caused obstructions against the implementation of the restrictions and this caused lots of bureaucratic complications.⁸⁶ Finnmark county council voted in 1924 to prohibit poison hunting of foxes in Finnmark. Local hunters objected that the state had set bounties on foxes as part of the eradication policy, that poison was the only easy way to kill them off and that the county decision therefore was illegal. The Ministry agreed: The county could not prohibit something that the state explicitly allowed and encouraged. "The distribution of poison itself" could not be decided on by the local councils or counties, only the rules for *how* and *when* to do it and in *what type of* bait, were local council matters.⁸⁷ By always referring to The Hunting Law, The Ministry could avoid discussing other legislation that might support restrictions or prohibition on the dispersion of strychnine, such as laws concerning health hazards.

Other complaints over strychnine poisoning of cattle and pastures and complaints against too liberal practice of poison certification and the suffering inflicted on wild animals came, amongst others, from district physicians in Maalselv and in Nord-Aurdal, and the veterinary surgeon in Nore. The veterinary surgeon, Christian Solberg, put it like this in his complaint to the local council: "I do not think that any member of the local council seriously and honestly can defend the use of poison in its present form".⁸⁸ A coordinated campaign from the animal welfare organizations in 1925

⁸⁶ One of the issues was the concept "public road." People who only owned very little land, along a road, claimed that their legal right to place poison baits on it was violated. Letter from the magistrate of Tana to the MA June 24th 1923 and July 17th 1923, replies of July 6th 1923, July 30th 1923, October 19th 1924, DVF. Letter to Buskerud county from the MA September 25th 1924 on complaints over poison restrictions in Krødsherad municipality, DVF. Letter to the County Governor of Østfold from chief solicitor Einar Mathiesen, March 14th 1924, who wanted to sue Skjeberg council for economic loss due to their decision to set a wider strychnine bait free zone along public roads than 100 meter, DVF.

⁸⁷ Letter from the MA to Finnmark County March 13th 1924, Letter to The Ministry of agriculture from major D. E. Jackwig, Maalselv, September 20th 1924 and reply of September 12th 1924 and October 1st 1924, DVF. Letter from the MA to Sør-Trøndelag county, November 15th 1926: "There is no legal access to forbid the dispersion of poison (in bait) in The Hunting Law of 1899 § 25." Letter to the County Governor of Nord-Trøndelag from the MA December 10th 1929 stating that "there is no legal access to prohibit the dispersion of poison to kill predators", DVF.

⁸⁸ Letter from Christian Solberg, veterinary, to Nore local council, November 7th 1922, and copy of decision to forward the matter from Nore municipality to the County Governor of Telemark, November 14th 1922, DVF. Letter from the MSA to the MA, June 11th 1924 and March 17th 1925, and reply of June 21st, 1924, DVF. Letter to the MJ from the MSA, June 2nd, 1931, DVF. Letter to The Ministry of Agriculture from the MSA, June 2nd 1931, DVF. Letter from the mayor of Rennebu to the County Governor of Sør-Trøndelag, October 23rd 1926, quoting the local council's decision to seek a legal stop to the distribution of "fox poison (strychnine)" in the municipality, because cattle die from this poison in the summer. See also other letters quoting local councils' decision to forbid "fox poison" dispersion in their municipalities, among them Norderhov and Krødsherad, DVF.

criticized both the use of poison, snares and traps as “incompatible with the cultural level of a civilised people.”⁸⁹ In 1927 even the Norwegian Association of Hunters and Anglers advised against strychnine to “hunt” foxes.⁹⁰

The tide seemed to be turning, a new way of thinking. A scientific commission established by the government in 1920 to revise The Forest Law and again in 1926 to evaluate and prepare changes in The Hunting Law, recommended a general ban on poison as a hunting method, with the exception of “nuisance birds”, rats and mice. The Ministry of Agriculture rejected this recommendation because it “would prevent an effective fighting of predators and other vermin”. The Ministry claimed to “recognize that the use of strychnine and other alkaloids” to hunt predators “posed threats to cattle, dogs etc., and inflicted much suffering upon the animals it was used against before they died”. But restrictions on the use of strychnine would make predator control impossible, because there were no “other effective and less dangerous poisons to adopt.” The only concession to critics that The Ministry of Agriculture would consider was to somewhat limit the maximum legal dose for each purchase.⁹¹ The Ministry also rejected a proposal from the district physician in Nord-Aurdal that local veterinaries or physicians, not sheriffs, should decide the dose of strychnine necessary to kill the predators in question and issue the poison purchase permits accordingly.⁹² The rejection confirms the impression that The Ministry now defended the use of strychnine as a hunting right and income for the landowners, more than as a measure of protection against predators.⁹³

⁸⁹ See numerous letters in the DVF archive, boxes on poison bait, among them a letter to the MA from The National Association of Animal Protection Organization, November 2nd 1928. They wanted a revision in accordance with the Danish Hunting Law of 1922 § 50. There appears to have been an upsurge in the use of traps from the WW1 years. More “modern traps” were offered on the market. The Norwegian Association of Hunters and Anglers engaged “walkabout teachers” in predator hunting to hold courses in local communities to attract interest in predator hunting and skills in the use of “modern trapping equipment” which also could be used in the summer season, and not only on snow (like poison bait). A cutting from an announcement in a newspaper on this “walkabout” teaching in 15-16 municipalities in the counties of Hordaland and Sogn og Fjordane, DVF. See also newspaper cuttings from people who criticized this, DVF.

⁹⁰ Letter from NJFF to the MSA, May 26th 1931, DVF. The NJFF wanted to leave room for some exceptions.

⁹¹ Copies of two letters from the MA to the MSA, June 1931, DVA. The Ministry recognized that some of those who sought poison permits from the sheriff claiming they would kill red foxes on their farm, in reality had been hunting white foxes in the mountains, and advised against giving permits in certain areas in 1930. The fur of white foxes had much higher market value, and the mountain fox was now in danger of extinction. Letter to the Chief of police in Vest-Finnmark from the MA, October 1930, reply to letter of October 13th 1930, DVF.

⁹² Letter to the MA from the MSA, June 2nd 1931, DVF.

⁹³ A revised form of poison permits was issued from 1928 on. The main purpose was to clarify that the permit was not valid in Svalbard, where all poison hunting was prohibited from 1928. *Giftattest*, DVF.

Eradication no longer had unanimous public support. Hunting rights, however, interested smaller and more homogenous groups.

Others thought it was high time to stop the strychnine poisoning. Among them were the majority in Parliament. The revision of The Hunting and Trapping Law in 1932, prohibited the poison bait practice as a regular method of predator extermination. However, the local council, the county governor and The Ministry could approve exceptions for specific species in each municipality.⁹⁴ This possibility was mainly used for wolves, lynx and wolverines that might cause injury to cattle and herded reindeer. Not everyone was pleased with the new legislation, and protests kept coming both to the authorities and to the newspapers from people who wanted to continue the strychnine killings, especially of wolves and foxes. "These predators are almost impossible to exterminate with ordinary hunting methods, but hunting with poison bait has proven to be effective". We may expect "an invasion of predators next year" and bounties are necessary to give the hunters economic reward for their efforts, argued local politicians in a proposal to Nord-Trøndelag county council in the summer of 1932. The council decided to allow poison bait eradication of wolves, lynx and wolverines in the reindeer herding areas and set bounties for this. A similar poison permit was given in the reindeer areas of Sør-Trøndelag.⁹⁵

With the new Hunting Law of 1932 the state also abolished the bounty on bears, following the advice of university biologists. The population of bears in Norway was now low, and national eradication was no longer advisable in the biologists' opinion. However, counties and municipalities were not forbidden to set their own bounties, and many continued to pay prices for killed bears, encouraging further eradication. The 1932 law also set separate standards for birds, as we shall see later.⁹⁶

⁹⁴ *Stortingsforhandlinger. 1932 Del 8*

⁹⁵ Copy of letter to Nord-Trøndelag county council from Jæger-Leirvik, Ågård, Østnor and Ornæs, June 20th 1932, and advice from the County Governor of June 21st 1932, DVF. The bounties were paid by the county on the premise that the local councils would pay the other half of it. This way it was up to the municipality if they wanted to reward hunters for eradicating predators in their community or not. This was a way to adapt to local opinion. Letter to the county council of Sør-Trøndelag from the agriculture committee with approval from "lappefogden", of March 30th 1933, on poison hunt permit for the municipalities of Brekken and Tydal, DVF.

⁹⁶ This state abolition has been misinterpreted as a general stop on the bounties on bears, see Richardsen 2014 and Søybye 2004. One example of county's bounty levels can be found in a letter to NJFF from the county administration in Vest-Agder September 28th 1939 and a letter to Fiskerjegermesteren, Oslo from the county administration Vest-Agder February 28th 1945, both in DVF. In both cases the bounty on bear was set at 25 NOK. See also references above.

During the Nazi German occupation of Norway, from April 1940 to May 1945 when supplies of many imported products were scarce and the political situation was tense, the authorities took measures to register and reduce the number of hunting guns in the population to prevent people from using them against the occupiers. The occupiers also imposed more restrictions on the use of strychnine for hunting predators, mainly due to issues of security and securing food supplies, not in order to preserve predators.

Scarcity of food supplies, especially of proteins, made more people hunt to supplement their family's diet or sell meat for good prices on the black market. This put strains on the game population. Again attention was given to the predators who "stole away" food from people in a critical situation. In May 1942 and February 1945 the authorities launched new initiatives to eradicate wolves and wolverines by raising the bounty prices substantially, ending up at staggering NOK 500 for wolves and NOK 3500 for wolverines in the spring of 1945.⁹⁷

After the war many were under the impression that the predator populations were on the rise, or at least that the predators were to blame for the current scarcity of game. Many local councils, in what appears to be a well-coordinated campaign, inspired by the Norwegian Association of Hunters and Anglers (NJFF),⁹⁸ now decided again to permit eradication of predators with strychnine in their communities, and sent their decisions to the Government for approval.⁹⁹ General approvals to disperse strychnine to kill predators were, however, not given in the first years after the war. The Department of Agriculture did not contest the wish or need to eradicate wolves and foxes or the usefulness of strychnine, but some highly toxic substances were in 1945 and 1946 more generally restricted due to post-war policy on health risks for people involved. In most of 1946 there was also a scarcity of strychnine due to import problems, and the government therefore reserved the nationally available strychnine for wolverines, which were considered the most difficult predators to shoot.¹⁰⁰ However, in the 1940s

⁹⁷ Circular from the MA, to "lensmenn, ordførere, fylkesmenn, landbrukskontorene, jegermestrene og statskonsulentene Sæland og Tilren", February 8th 1945, County Governor of Vest-Agder archive, Næringsliv - Landbruk og skogbruk, Jakt og fangst, fiskeri, 1876-1945".

⁹⁸ Norwegian: Norges Jeger og Fiskerforbund (NJFF).

⁹⁹ See numerous letters in the DVF archive chapters on "*Utlæggelse af gift*" in the years 1945-1949, organized county-wise.

¹⁰⁰ Circular from the MJ, to police department, to all chiefs of police, Jnr 31/47. The import of strychnine became easier from December 1946 and The Ministry reported that other vermin could again be exterminated with this poison, but that license to buy strychnine should only be given for six months at

other, more modern, substances were introduced, or applied to new areas.¹⁰¹ Among the latter were narcotics.

Narcotics were introduced to this field by veterinaries. In the 1920s and 1930s groups of Norwegian farmers started fur farming of foxes and mink. Some fur farmers experienced group escapes of foxes. Questions on how to retrieve the animals without killing them or without damaging the value of their fur and the farmers' investments and income, were raised to the authorities. The veterinaries had a more "medical approach". Because these foxes were livestock, not wild, these questions took a different path and ended with the veterinary authorities. The veterinaries recommended narcotics, sleeping drugs, primarily the super-trendy synthetic drug Veronal, a barbiturate, stuffed in bait. The idea was that narcotics were less toxic than strychnine, and in theory only effective for a shorter time. After first putting the fox gently to sleep and then killing it from the overdose, the drug would supposedly leave no significant poisonous effects in the terrain. Veronal was prescribed to farmers as a means of retrieving their farmed foxes. Some of these farmers apparently saw the chance of adding wild foxes to their sales. Authorities distributed circulars, in 1941 and 1942, reminding all sheriffs and pharmacies that Veronal should only be prescribed to farmers who wanted to retrieve foxes that were on their property, not to catch wild foxes.¹⁰²

After the war, when the local councils decision to eradicate foxes with strychnine were vetoed by the government, the councils' tried to work around the veto with decisions to use Veronal. These votes were nearly always unanimous.¹⁰³ Again the chain of similar and almost simultaneous *decisions* in one local council after another had the appearance of a coordinated political campaign.¹⁰⁴ Because the drug was recommended by veterinaries, the DA found neither a professional nor a legal reason to stop it. From 1946 and up to the mid 1950s narcotics like Veronal and later Sovinol were used in fox

the time "and only to known and trustworthy persons". Kristiansand police, "Giftprotokoll, attester giftkjøp 1921-1967."

¹⁰¹ Ohman Nielsen: *Crafting the Concept of Poison in Norwegian Post-War Pesticide Administration*, manuscript, TBP 2017.

¹⁰² "Rundskriv fra Veterinærdirektøren til de praktiserende veterinærer", January 19th 1942, County Governor of Vest-Agder Archive, "Næringsliv - Landbruk og skogbruk, Jakt og fangst, fiskeri, 1876-1945".

¹⁰³ The municipalities Gjerstad, Hornnes, Valle, Høvåg, Bygland, Froland, Vegusdal, Bykle, Iveland, Vegårdshei, Hylestad, Tovdal, Søndeled, Birkenes, Åmli, Eide, Dypvåg, Gjøvdal and Mykland in Aust-Agder county all applied and were granted permission to use Veronal from The Ministry of Agriculture, conveyed in letters from the County Governor in Aust-Agder to, respectively, the chief of police in Kristiansand and to all mayors, sheriffs and police offices, June 15th 1946, June 21st 1946 and July 24st 1946, all in DVF.

¹⁰⁴ The initiative may have come from the same groups as the War on Crows, see below.

eradication in a majority of Norwegian rural communities, from 1947 sometimes in alternation with strychnine in the winter.

The only type of bait that was now approved for this type of fox killing, in combination with drugs or poison, was “whole and half cats or whole and half birds with their fur and feathers on”.¹⁰⁵ This was intended to mimic the fox’s regular prey and put off any children or larger animals that might be curious or tempted to eat the poison if mixed with less disgusting bait. Some argued that these baits were too big for the foxes to swallow in one or a few bites and that the foxes would probably drag the bait with them, displace it and distribute it to other animals. These arguments were ignored.¹⁰⁶

The practice of overdosing predators with narcotics stopped in the mid 1950s, not for nature conservation reasons, but after a series of complaints from farmers, local doctors and veterinarians: Foxes, but also crows, ravens, seagulls and other birds, spread the Veronal-infested baits to other localities where either the bait was dropped or the poisoned birds themselves fell down dead and were eaten by farm dogs who died from the overdose. International medical discussions over barbiturates and human health also interfered with the local practice of overdosing foxes with narcotics. In 1952 and again in 1956 the World Health Organization declared that Veronal and other barbiturates were highly addictive, easily over-dosed and often involved in suicides, and that these drugs should not be distributed without prescription and must always be monitored by physicians.¹⁰⁷ This did not go well with the distribution of Veronal to fox-eradicators, as no one really could ensure that the foxes were administered all the sedatives and that humans did not eat any. This, a true historical irony based on considerations for livestock and international medical arguments, gradually put an end

¹⁰⁵Letter from the County Governor of Vest-Agder to The Ministry of Agriculture January 6th 1948 with applications to use “Veronal/strychnine” to hunt predators in the municipalities Laudal, Holum, Kvinesdal, Fedal, Bjelland, Eiken and Greistad. Letter from the County Governor of Vest-Agder to the Chief of police in Kristiansand, April 8th 1948, stating that The Ministry of agriculture had approved the request from Søgne municipality to kill predators with poison. Numerous documents in the DVF files show that permits were issued, among others, for Fjotland, Hægeland, Øvrebo. Also the sheriffs in the region recommended extermination of predators with poison and bounties. Letter to the mayor of Hægeland from the sheriff, October 22nd 1946, *Bruk av veronal til rovdryrfangst*, DVF. Letter from the sheriff of Kvinesdal to Kvinesdal local council, November 27th 1947, and to the chief of police in Vest-Agder, December 19th 1947, DVF. The only sheriff in Agder who was reluctant to permit poison bait hunting was the sheriff in Åseral, letter to Vest-Agder county from the sheriff of Åseral, February 21st 1947, DVF.

¹⁰⁶ The archives show no action taken on the basis of these complaints.

¹⁰⁷ Francisco López-Munos, Ronaldo Ucha-Udabe and Cecilio Alamo: The history of barbiturates a century after their clinical introduction, *Neuropsychiatric Disease and Treatment* 2005 p 329-343 esp p 339.

to the legal overdose-narcotic killings in Norwegian woods. Strychnine, however, continued to be of some use.¹⁰⁸

For our later discussion it is important to keep in mind that these fox poisonings in the 1950s were not stopped by public opinion, like the strychnine killings of predators in the 1920s. Nor did the efforts to eradicate foxes, wolves and other predators stop.¹⁰⁹ Shooting and trapping were the legal methods. Attitudes that were promoted and supported for more than a century did not disappear quickly. In the next two decades there were many reports that local people would continue to use poison baits for predators, but now in more discreet or undercover ways, and not through the sheriffs and pharmacies. Numerous new lethal synthetic poisons could now be bought freely as pesticides for those who wanted to circumnavigate The Hunting Law.¹¹⁰

By this time, however, massive poison campaigns on other wildlife species had also been compromised. The most spectacular was the “War on Crows”. The preferred poison was phosphorus. It is hard to imagine that none of this phosphorus did not end up as predator poison, in the post WW2 decades when it was culturally acceptable to eradicate predators with poison, while strychnine administration was strict.

Crows and other crow birds.

Other European countries, and countries colonized by the Europeans, also had a history of bounty based eradication campaigns against what was defined as “noxious birds”, mainly crows and ravens. Poison was one of the means adopted.¹¹¹ Crows, ravens, eagles, and hawks, owls and falcons were, as we have seen, among the species targeted by The Predator Law of 1845.¹¹² The revised Predator Law of 1863 introduced the concept of “nuisance birds”, that included a large number of birds, not only birds of prey, but also birds that at times feed on fruit and berries, like magpies and starlings. From around 1920, when public opinion became more negative towards poison distribution to kill predators,¹¹³ the policies towards predators and “nuisance birds,” were divided.

¹⁰⁸ We are currently undertaking a new investigation of this. We have so far found some exceptions to permits up to the 1970s. See info on subsequent publication on <http://www.deadlydreams.no>

¹⁰⁹ Bears were partly exceptions, because few were left. The bounties on bears were stopped from 1932, but people would still hunt them. The Norwegian brown bear was protected and on the brink of extinction in 1972, and so were wolves the following year. Richardsen 2014 p. 15.

¹¹⁰ Ohman Nielsen 2014, Ohman Nielsen, 2017c. See more info on <http://www.deadly.dreams.no>

¹¹¹ Mosley, 2010, p. 21ff.

¹¹² See above.

¹¹³ See above.

Animal welfare organizations appeared more concerned with four-legged animals than with the “nuisance birds.”

The first records we can find in our material on phosphorus mash used to kill crows, appear in 1924, both in the poison protocols and in the archives of the Directorate for Wildlife and Freshwater.¹¹⁴ The idea of using phosphorus to kill crows was not a unique Norwegian one. The Danish hunting law of 1922 abolished the use of poison for killing wild animals, with the exception of phosphorus mash against crows.¹¹⁵ When the first massive and specific anti-crow campaigns, the “War on crows”, was launched in Norway in 1937 the campaign started simultaneously in Norway and Sweden, in both cases with phosphorus poisoning as the main method.¹¹⁶

This phosphorus poison in use consisted of white phosphor, a highly toxic and lethal substance. In humans, swallowing or inhaling a lethal amount of phosphorus would most often lead to death within 2-5 days. The lethal dose for humans is estimated to be 1 milligram/kilo. The lethal dose for fowl is 0,02 milligram.¹¹⁷ White phosphorus could, from the 1910s, be produced industrially in large quantities, and was used both as fertilizer and for military purposes during WW1. White phosphorus was highly flammable, could easily combust spontaneously, and melted at only 44 degrees Celsius. To prevent this, the phosphorus was finely ground into a powder of very tiny grains, which was a complicated process. Stabilizers were then added to the compound. This was, however, not at all safe. The advocates of phosphorus for bird eradication both ignored and hid this information from the users. At the end of WW1, producers of white phosphorus sought a market for the product outside the military industry. They presented phosphorus baits for crow eradication as an advantage for agriculture: it fertilized the soil, instead of permanently poisoning it. In just a few years, phosphorus mash took over the position as “The Bird-poison”.¹¹⁸

From 1924 and onwards phosphorus had been used as poison in baits designated for predator birds and “nuisance birds”. The phosphorus was mixed with meat, potatoes, fish or grain, into a substance called “phosphorus mash”¹¹⁹ in order to attract the birds

¹¹⁴DVF archive and recordings in the poison protocols, see figure 1.

¹¹⁵Jagtloven af 1922 § 30, copy in DVF’s archive.

¹¹⁶“Kråkekrig i Sverige” cutting from paper 1938. DVF’s archive box “Kråkekrig”.

¹¹⁷Satoh 2009, p 266.

¹¹⁸From 1924 and onwards phosphorus figures in all documents in the DVF archives dealing with poison bait. It was the explicit exception in The Hunting Law of 1932, see above, and figures constantly as the main poison for crows in the poison protocol of the pharmacies and the sheriffs. Se figure 2.

¹¹⁹Norwegian expression: fosformos. More on this practice of phosphorus poisoning of birds, see below.

and kill them. Phosphorus was cheaper than strychnine and believed to be less harmful to those who distributed it and more degradable, and thus not prone to leaving lethal doses in the terrain for years to come. In the new 1932 Hunting Law, phosphorus mash for crows and ravens was given an explicit exception from the ban on poisonous bait.¹²⁰ The new legislation thus confirmed and communicated ideas at the time that feathered animals were less deserving of protection for pain and suffering than most mammals.¹²¹ This had significant implications for the following:

In the 1920s, the NJFF inserted the eradication of crow-birds in their political program. Their concept of “crows” included a variety of related species.¹²² In practice, at least from 1937 and onwards, it included almost any bird that ate anything larger than insects on land and thus “stole the food away from humans”, meaning primarily the NJFF members, farmers and landowners.¹²³

The first significant chance to gain massive public support and heavy funding for a general “War on crows”, came during the outbreak of the foot and mouth disease epidemic in Germany and Denmark in 1937. The veterinary and agricultural authorities imposed strong restrictions on the contact between contaminated farms, and between infected areas and areas free of the disease. No Norwegian farmers were allowed to visit infested farms in Denmark or Germany, and people who travelled across the straits of Skagerrak and Kattegat could not bring any goods. They had to have all their clothes disinfected and also take quarantine baths on arrival. But what about migrating birds? The NJFF claimed that crows “who feasted on Danish cow dung dumps before they arrived on the Norwegian coastline in the spring” might very well bring foot and mouth disease across the straits to Norwegian farmers and their cattle. No one could prove that this was not possible.¹²⁴ And public fear could certainly be worked up with a mixture of imminent threats and old antipathy:

¹²⁰ See below.

¹²¹ See above.

¹²² Letter to The Ministry of Agriculture from the NJFF December 8 1938; DVF. See also below.

¹²³ See below.

¹²⁴ Letter to Norske melkeprodusenters landsforbund from the MA, December 22 1938, also referring to letter from same of February 8th 1937, DVF. Group letter to Central Organization of Cooperative Dairies (Norske Melkesentraler), DVS. “Kråken som smittebærer for munn- og klovsyke. Kråkekrig gjennom melkesentralene. Østlandets Melkesentral tar affære” newspaper article in *Nationen*, January 9 th 1939, clip in DVF.

See also letter from the Veterinary director to the Director of Forestry, MA, June 21st 1940, asking for report on the results of the crow war of 1940, letter to Norske melkeprodusenters landsforbund from The Ministry of Agriculture, December 27 1940, DVF. Letter to Dr. O. Olstad, Zoologisk Museum, from Alf Dannevig, The State Fish Hatchery, Flødevigen, March 14 1950, DVS: “We then received a generous

“With the existing fear of foot and mouth disease among dairy farmers, we believe that all milk producers will show great interest in a joint effort to have the crows eradicated. (...) also due to the damage the crows otherwise inflict upon agriculture”.¹²⁵

The NJFF lobbyist put pressure on The Ministry of Agriculture, first to allow the “War on crows”, then to set a bounty, and eventually to co-fund it. The Ministry was reluctant, not towards the crow-killings, or the poisoning or the bounties. A dispensation to handle the large amounts of poison was also obtained through The Ministry’s mediation, but the government’s budget negotiations were closed. So NJFF used most of the available tricks to lobby and push it through the system; personal meetings, newspaper articles and headlines, public pressure, national mobilisation of its organization, cornering the authorities, and repeating appeals to The Ministry to provide the funding:

“It is our duty once again to remind people of the dangers that may come from the great crow migration that takes place from the end of March until the middle of April, from Denmark and southern Sweden to Norway.”¹²⁶

Finally, The Organization of Dairy Farmers and the entire network of dairies and milk farmers put substantial sums of money into a massive phosphorus crow poisoning campaign in all the southern Norwegian counties. Again, this campaign shows the same social and cultural elements as the campaigns against rats and predators. People were urged to join the ranks of poisoners and trained as poisoners, with skills and mind, through concrete participation in the physical work of preparing and placing baits: The poison was distributed through the association of dairy farmers and the dairy

amount of money for this campaign on the premise that the crows were contagion carriers”. Dannevig was former leader of the NJFF in Aust-Agder county at the time of the first “crow war” in 1938 and 1939. See also letter to The Ministry of Agriculture from H. Voigt Hansen, Tønsberg, December 10 1938, DVF. Letter to The Ministry of Agriculture from NJFF December 10 1938, DVF. Letter to Skogbruksdirektøren from Dr O. Olstad, NJFF December 10 1938, DVF.

¹²⁵ Letter to The Ministry of Agriculture from Østlandets melkesentral, December 22 1938, DVF.

¹²⁶ Letter to The Ministry of Agriculture from NJFF, January 25 1939, *Ad. Kråkekrigen og smittefaren*, DVF.

Attached copy of letter from Bergen chapter of NJFF to NJFF, of October 23 1937, where crows were accused, among other things, of damaging stock-fish, spreading tuberculosis, DVF. “Kråken som smittebærer for munn- og klovsyke. Kråkekrig gjennom melkesentralene. Østlandets Melkesentral tar affære” newspaper article in *Nationen* January 9 1939, clip in DVF. *Metoder til bekjempelse av kråka*, special issue of the NJFF membership journal edited by NJFF’s crow committee, 1938, DVF.

Letter from Østlandets Melkesentral to the MA, December 22 1938, asking for help to attain the poison permit from The Ministry of Social Affairs who had to make a dispensation from The Pharmacy Law, DVF. Bounties were set to 0,50 NOK for each killed bird “regardless of the killing method”, letter to The Ministry of Agriculture from NJFF of November 30 1938, DVF. 102 municipalities in 5 counties were included in the bounty system of the crow-wars of 1938-1940. See also letter to The Ministry of Agriculture from the Halden chapter of the NJFF of December 2 1938, DVF. See also different telegrams from the County Governors on bounty prices and financial support to NJFF to purchase crow-poison.

organizations, and the poison baits were placed by the NJFF local members on all farms that delivered milk to the local dairies, unless the farmer had explicitly rejected this.¹²⁷ In addition, anyone interested could join the battle, NJFF and the agrarian national paper appealed. Experience showed that by placing poison on his property “one single man could harvest 50 -100 dead crows”, and that the cost of poison was insignificant compared to “the advantages of mass extermination of our worst nuisance bird”.¹²⁸ And the bounties would give good reward.

This first “War on crows” ran for four years, until the Second World War.¹²⁹ In the early winter of 1941 the regime ordered that no poison should be distributed to kill predators or crows this year.¹³⁰ Security for the occupant forces was now an issue, and again the war industry needed the phosphorus.¹³¹

In 1947 the NJFF launched a more ambitious plan for the “War on crows”, this time to be conducted in every Norwegian municipality. Foot and mouth disease was no longer the pretext. The main arguments were now that crows, ravens and other “nuisance birds” destroyed the economy of individuals and the nation. To “rebuild” Norway after the war, one had to wage a “War on crows”.¹³² The Ministry of Agriculture was strongly in favour of “extermination or decimation of crows” because “crows eat large amounts of grain, and crows and ravens probably also attack lambs on pasture”.¹³³

¹²⁷ Group letter to the dairies from the Central Organization of Cooperative Dairies, (Norske Melkesentraler) 1938, DVS. The only chapter that appears to have rejected this organization, was the dairy central of Telemark county. They supported the intention to kill crows, but wanted this to be organized through the agricultural associations (Landbrukslagene) and did not want to distribute poison through the dairies “who handle and sell the most valuable of foods”. Letter to The Ministry of Agriculture from Telemark Melkesentral, Skien, January 13 1939, DVF.

¹²⁸ “Kråken som smittebærer for munn- og klovsyke. Kråkekrig gjennom melkesentralene. Østlandets Melkesentral tar affære” newspaper article in *Nationen* January 9 1939, clipp in DVF.

¹²⁹ Group letter to the dairies from the Central Organization of Cooperative Dairies (Norske Melkesentraler), 1938, DVF.

¹³⁰ *Forordning om forbud mot å benytte fosformos til utryddelse av kråker*, from The Ministry of Agriculture, April 1941, DVF, and draft for the same from The Ministry of Justice to The Ministry of Agriculture, *ibid.*

¹³¹ See above.

¹³² First the NJFF claimed compensation, NOK 21 000, from the government for damages to their income from the game population due to the poison restrictions on predators during WW2. The Ministry of Agriculture rejected this claim. Then the NJFF sought government support for approximately the same amount to start a big national “war on crows”. Copy of P.M. from The Ministry of agriculture: *Viltfondet – landbruksdepartementet – Norges jeger- og Fisker-Forenings erstatningskrav m.m.*, June 5tf 1948, DVF.

¹³³ Copy of P.M. from The Ministry of agriculture: *Viltfondet – landbruksdepartementet – Norges jeger- og Fisker-Forenings erstatningskrav m.m.*, June 5tf 1948, with added notes, DVF.

The rhetoric resembled that of the “Rat wars” and the imagery used in the introduction of modern synthetic pesticides to Norwegian family gardeners and farmers. It was full of patriotic war rhetoric and heavy references to the emerging cold war.¹³⁴

“In the coming spring Norway will again be invaded. If the weather conditions are right, the invasion will come before the 9th of April. We can expect the first airborne forces to arrive around med March. The question is, are we prepared to meet this invasion. Is our defence in order? Do the troops have the necessary training? Have the defending forces received sufficient funding?”¹³⁵

As part of the rhetorical strategy and the propaganda material distributed to the public, to municipal authorities, as well as to different interest groups like reindeer herders and owners of mountain hotels, who were asked to support the campaign, The Norwegian Association of Hunters and Anglers labelled the crows “rats of the air”. Next the ravens were called “the rats of the air”, and finally all crow-birds were generally referred to as “rats of the air”. The arguments against the crow birds were adapted to the respective audiences, whether these were reindeer herders, dairy farmers or dairy co-operations, sports hunters, farmers or owners of mountain hotels.¹³⁶ In this way the campaign sought to transfer all the negative associations connected with rats to the birds, and encouraged people to perceive the crows as ugly, unhealthy, unfriendly and “the most harmful of all birds”. According to the NJFF crows plundered the nests and eggs of all game birds, killed thousands of chicks of game birds and young hares and picked the eyes out of young deer and reindeer calves. Thus depicting crows as gruesome towards other animals and appealing to growing public sensibilities to four-legged animal sufferings. The organization again applied to the municipalities to set a “so-called shot prize” on crows, and The Ministry of Social Affairs granted more liberal permits to purchase phosphorus glycerine for killing crows.¹³⁷

¹³⁴ “Kråker, krig og samarbeid”, in *Norges jeger og fiskerforbunds tidsskrift*, 1/1949 p 14f. Ohman Nielsen 2014, Ohman Niesen, 2015.

¹³⁵ “Kråker, krig og samarbeid”, appeal and instruction in *Norges jeger og fiskerforbunds tidsskrift*, 1/1949 p 14f. These were questions repeating the criticism against the Norwegian government for the failure to resist the German invasion April 9th 1940.

¹³⁶ Letter to the Mayor of Oslo from NJFF, October 15th 1947, DVF. Group letters to “Honorable reindeer owner”, group letter to “Honorable hotel owner” from NJFF, April 20th 1948, DVF.

¹³⁷ Letter to the Mayor of Oslo from NJFF, October 15th 1947, DVF. The expression “so-called shot-price” (Norw: “såkalt skuddpremie”) is important because it confirm the general impression that the majority of the bounties on crows and predators were not about shooting but about poisoning, although the bounties were called “shooting-prices”. See discussions above. See also *Metoder til bekjempelse av kråka*, special issue of the NJFF membership journal edited by NJFF’s crow committee, 1938, DVF. *Metoder til*

The NJFF distributed numerous letters, posters and advertisements on how to mix the crow poison, called phosphorus mash, and how to place the poison bait. The phosphorus and phosphorus glycerine was mixed with fish, potatoes, blood and offal from slaughter. The NJFF recommended using fox food grinding machines to grind the bait and cement mixers to blend it with the phosphorus glycerine. The proportions were 100 grams of phosphorus glycerine to 6 kilos of bait. For those who preferred a more scientific looking method, “a few drops” of the poison were dripped into the belly of a scalpel-dissected herring using “a so-called pipette” that could be “purchased at any pharmacy”. Then the herring was closed again to look whole and “avoid suspicion”.¹³⁸ Avoiding or overcoming the birds’ suspicion was essential, according to the NJFF, because “the crow was a suspicious bird.” The NJFF recommended emptying one egg in each nest of birds that the crows preyed upon, filling the egg with phosphorus glycerine and gluing the egg together again to make it look real. When the crow hacked the egg, it would be poisoned, and would get what it deserved.¹³⁹

(Illustration: Poster drawing of this method..)

The crow wars of 1948 and 1949 were funded, amongst others, by the Norwegian state grain company, The Dairy Cooperation of Eastern Norway, Norsk Hydro chemical company and a majority of Norwegian municipalities who set bounties.¹⁴⁰ The cultural justification of eradication of crow birds was amplified by the financial support and joint effort of social significant partners like these and of numerous municipal boards often consisting of the most influential members of the local communities. According to the NJFF 300 municipalities had participated, an average of 800-1000 “crows” had been killed in each municipality, bringing the nationwide total to between 240 000 and 300

bekjempelse av kråka, special issue of the NJFF membership journal edited by NJFF’s crow committee, 1938, DVF.

¹³⁸ Letter to dr. O. Olstad, Zoologisk Museum, from Alf Dannevig, The State Fish Hatcery, Flødevigen, March 14th 1950, DVF. See also *Metoder til bekjempelse av kråka*, special issue of the NJFF membership journal edited by NJFF’s crow-comitté, 1938, DVF.

¹³⁹ *Kråkekrig. Ta del i landets gjenreisning ved å støtte opp om kråkerigen*, poster distributed by NJFF, DVF and Kristiansand municipality archive “Bekjempelse av kråkeplagen (1947-52)”. *Bruksrettledning for Forforglyserin til fremstilling av Forformas (kråkegift)*, leaflet from NJFF, DVF and ibid. NJFF circular: *Bruksrettledning for fremstilling av forforåte til kråkegift*, 1948, DVF. See also *Metoder til bekjempelse av kråka*, special issue of the NJFF membership journal edited by NJFF’s crow committee, 1938, DVF.

¹⁴⁰ Letter to the MA from NJFF, June 3rd 1948: *Søknad om bidrag til bekjempelse av kråkefuglene*, DVF. (Norw: Statens kornforretning og Østlandske melkesentraler.)

000 dead “crows”, and around 100 tons of bait with almost 2 tons of phosphorus glycerine had been dispersed to the birds.¹⁴¹

The “crow wars” in 1948 and 1949 were huge. Far too big and partly out of control, according to critics of whom the foremost now was Dr. O. Olstad. Dr. Olstad worked at the Zoological Museum and was a member of The State Commission on Wildlife Investigations, which originally was among the initiators of the “crow wars” in the 1930s. Firstly; The NJFF had in its campaign and propaganda material illegally adopted the word “crow birds” instead of “crows” without asking the authorities permission. The eradication campaign had targeted all members of the crow bird family, including species like the raven, magpie, starling, jay, Siberian jay, nut crow, corn crow, black crow and jackdaw. Some of these were rare and not even nuisance birds. The eradication campaign should be restricted to crows and ravens in Olstad’s opinion. Many migrating birds, including wagtails as well as seagulls and “other birds and smaller mammals” were killed by the crow war.¹⁴² According to Alf Dannevig, former leader of the NJFF in Aust-Agder county, working at the State Fish Hatchery in Flødevigen, this is what happened: On the farms where they put out poison the magpies also died, of course, and numerous cats lurking in the forests, who ate the crows that dropped dead. This was just as well, he said, because the cats eat many small birds too. On one farm even the pig died. It probably ate a poisoned rat. He could not remember that they killed any wild duck.¹⁴³

Based on the zoologists’ complaints the Ministry declared to the NJFF that it would not support a new organized crow war in 1950 before the results of the previous ones had been properly evaluated. They specifically requested figures that showed how many other crow birds beside the “regular crow” had been killed and they stressed that this was not in accordance with the law, nor in agreement with the authorities.¹⁴⁴

¹⁴¹ Copy of P.M. from the MA: *Viltfondet – landbruksdepartementet – Norges jeger- og Firsker-Forenings erstatningskrav m.m.*, June 5th 1948, DVF. – These figures might be somewhat exaggerated In order to highlight the effort and impact as part of the application for funding. They probably also include also ravens, and other crow birds.

¹⁴² Letter to the Director of Forestry, MA, from O. Olstad, January 6th 1950 and March 23 1930 with copies of letters from colleagues at Stavanger Museum March 07th 1950, Tromsø Museum and Statens Utklekkingsanstalt, Flødevigen, Arendal, March 14th 1950, DVF.

¹⁴³ Letter to O. Olstad from Alf Dannevig, Utklekkingsanstalt, Flødevigen, March 14th 1950, DVF.

¹⁴⁴ Letter to NJFF from the MA, January 13th 1950 and March 8th 1950, referring to the application from the former of December 12th 1949, with copy to Dr. Olstad at the Zoological museum in Oslo, DVS. This was not accidental on the part of NJFF. In a letter to the mayor of Oslo from NJFF, October 15th 1947, the NJFF applied for funding for “eradication of these crow birds: raven, crow, magpie, jay and Siberian jay,” DVF.

Secondly; The Ministry wanted to know how many other “innocent” birds of other species had suffered unintended consequences from the campaign. Ornithologists at the University of Oslo had warned The Ministry that the campaign was out of control with respect to the number of species targeted and the wider bird fauna consequences. “It is my impression that the dispersion of bait poisoned with phosphorus glycerine also kills a substantial amount of other birds who in no way deserve it”, wrote Dr. Olstad at the Zoological museum. He collected comments from his colleagues at the museums in Stavanger, Tromsø and the fish hatchery station in Arendal, who confirmed this.¹⁴⁵ Olstad also questioned the NJFF’s reports on the poison distribution itself. According to the central campaign leaders 1200 kilos of phosphorus glycerine for 60 tons of poison bait were distributed. But the reports received afterwards only accounted for 4,5 tons of poison bait, less than 15 %.¹⁴⁶ Where did the rest of the poison go? Was it illegally used for other animal killing purposes? Was it unsafely stored, or just left lying about somewhere? Or did the local NJFF people involved in the campaign just not care about reporting their poisoning activity? The not unlikely problem scenario we can detect was this: Had this authority supported campaign triggered and trained countless animal poisoners and spread poisoning practices all over Norway, attitudes and actions that were now beyond control?

Thirdly; The Ministry questioned whether the method of crow eradication was safe for others. There were complaints that crows and other birds moved the baits around, and dropped them where domestic animals would find and eat them. Furthermore, crows that were poisoned in the morning flew a long way and scattered over a large area before they dropped dead. This made it impossible to retrieve and count them. Dogs could not be used for this because the birds were poisonous. Crows should be poisoned only in the evening when they did not fly a long way, could easily be collected, and most other birds had gone to sleep already, argued the zoologist at Stavanger Museum.¹⁴⁷

Based on the zoologists’ concerns and the unsatisfactory reporting from NJFF The Ministry of Agriculture in January 1950 decided to halt the crow war temporarily to

¹⁴⁵ Copy of joint letter from O. Olstad to his colleagues March 2nd 1950, DVF.

¹⁴⁶ Letter to the Director of Forestry, MA, from O. Olstad, Zoologisk Museum, January 6th 1950, DVF. The NJFF also uses these total figures on the poison in letter to the MA from NJFF December 12th 1949, DVF, but says it is “impossible” to stipulate the number of killed crows in 1949, but that the result was not as good as in 1948 due to snow.

¹⁴⁷ Letter to Dr O. Olstad, Zoologisk Museum, from Holger Holgersen, Stavanger Museum, March 7th 1950.

assess the campaign effect and the methods used. This concern over serious wild life damage was not, however, what finally stopped the massive authorized bird poisoning. Nor was it the Ministry of Agriculture.

The campaigns to kill crow birds in 1948 and 1949 used phosphorus glycerine. The glycerine was added to make the phosphorus more stable and less prone to combustion. The phosphorus glycerine, however, was not stable enough. Eventually therefore, it was The Ministry of Social Affairs and The Ministry of Communal Administration and Work-life, who put a stop to the use of phosphorus and therefor to the massive crow killing campaigns. Fires had started, where the probable cause was phosphorus in crow bait, and the above ministries took steps to investigate the fire hazards of phosphorus glycerine.¹⁴⁸

In July 1950, chemical investigations and extensive laboratory testing performed by The Police Crime Department's laboratory concluded that the phosphorus glycerine used in crow baits, which contained 10 % white¹⁴⁹ phosphorus, was easily combustible, caught fire at 50 degrees C, and that this widely used compound "would easily combust in the bait." It might even combust in animals that ate it, like rats, and they might transport the inflammable compound and start a fire elsewhere. The police report concluded that unless the phosphorus existed in a much more minutely ground form, which was almost impossible to achieve, and to guarantee, the content of phosphorus must not exceed 1-2 %, to avoid auto-combustion of phosphorus in baits.¹⁵⁰

Poison experts consulted by the police stated that a 1-2 % phosphorus content in the bait would make it "ineffective as poison."¹⁵¹ The police department added, that, "from a police perspective it is not desirable to have a strong poison like phosphorus glycerine scattered about". The police laboratory concluded that phosphorus glycerine was dangerous. Only vets or professional exterminators should be allowed to buy it and prepare bait. The bait should always be placed on large metal trays, two meters above

¹⁴⁸ Letter to the MSA from the MCAW (Kommunal- og arbeidsdepartementet), June 30th 1951, referring to documents of July 11th 1950, DVF.

¹⁴⁹ The expressions "white" phosphorus and "yellow" phosphorus, are in this case used of the same substance. <https://sml.snl.no/fosfor>

¹⁵⁰ Letter from Kriminallaboratoriet, til Fornyings- og gjenreisningsdepartementet, 11. July 1950, DVF archive. This phosphorus glycerine consisted of 10 % phosphor, 20 % belus clay and 67 % glycerine.

¹⁵¹ The actual expression was: "ikke er brukbar til forgiftning av åte hvis fosforinnholdet kommer under 2 prosent." Ibid, p. 5 and 6.

the ground, outside the reach of domestic animals and rats.¹⁵² More evidence of the fire hazards of the phosphorus glycerine kept coming in to The Directorate of Health in The Ministry of Social Affairs and The Ministry of Communal Administration and Work-life who were responsible for regulations on fire security and on risks of explosions.¹⁵³ In November 1951 The Department of Social Affairs instructed the Department of Agriculture to take action to revise The Hunting Law accordingly. The issue was presented to The Parliamentary Committee on Agriculture, which would make suggestions to adapt the legislation in accordance with the recommendations.¹⁵⁴

The subsequent legislation change marked the end of the legal use of phosphorus to kill wild animals in Norway, and put an end to the massive public crow bird poisoning campaign conducted by the municipalities, private organizations and the Ministry of Agriculture. It was pushed through by government bodies outside those responsible for wildlife administration. However, other local crow poisoning campaigns may have been conducted for years with or without the tacit or open blessing of the authorities, in garbage dumps, in harbours and on farms. These are harder to trace systematically in the archives.

Values, perceptions and cultural practices persisted legal reforms. The War on Crows was stopped at a time when substantial sums and great efforts had been invested in anti- crow bird propaganda and poison practices. Neither the NJFF nor the authorities made any public efforts to apologize for the intentions, the execution or the excesses, or to adjust people's negative images of crow birds. In the history of poison and poisoning campaigns, this seems to be the rule.

Synthesis and discussion.

Like all forced political retreats on issues of poisonous substances, the ban or heavy restrictions on the use of strong toxins to kill wild animals represented a significant loss of cultural and political prestige on the side of the front line poison promoters. Their mission was always to minimize the damage to their credibility and social position. Like

¹⁵² Ibid., p. 7. 9. July 1951 The Norwegian Organization for Fire Protection (Norsk brannvernforening) presented to The Directorate of Health, MSA, a laboratory test published by The Swedish Fire Protection Organization in May 1951, concluding that even 3 % solutions of phosphorus in phosphorus oil might combust and cause fire.

¹⁵³ DFV archive, "Fosformos som kråkegift." Including statements from The Directorate for Explosion Risk.

¹⁵⁴ Letter from Apotekkontoret, Helsedirektoratet, Sosialdepartementet til Landbruksdepartementet 1951-11-07, "Ad fosformos som kråkegift", with added hand written reply from Landbruksdepartementet 1951-11-13, DVF archive.

the many similar retreats in the field of pesticides and plant protection, industrial poisoning and medical poisoning, the retreat on the issue of wild animal poisoning was covered in a smokescreen and mirrors. The key figures would point at some constructed “third person” who allegedly “went too far”, “was careless and irresponsible” and “did not follow the instructions given by the experts”.¹⁵⁵ Then they would never mention it again. It is virtually impossible to find any sources in the archives, the press or journals where the poison advocates in any way admit or regret the damage done by their actions and arguments. If confronted, or if it was absolutely impossible to avoid the issue, the majority were at best apologetic and continued to argue their case, or attack their constructed opponents. The smoke and mirror tactics have blurred history on these issues, leaving them unnoticed for a long time.

The history of poison killings of rats, predators and crow birds have both similarities and differences. The similarities can be found in the historical development of types of poison used, development of legislation, and the changing organization used. The major campaigns, involving both authorities and “almost everybody” in the communities, appear from the late 1930s, through the 1940s and the 1950s. The period from around 1910 and into the early 1930s also appear as a time of more concern over the effects of poison on humans and animals. In the case of predators and crow birds it is not The Ministry of Agriculture or the DVFF that raised concerns and the need for restrictions in the 1920s and 1950s, but other stakeholders like The Ministry of Social Affairs and The Ministry of Communal Administration and Work-life. Huge similarities can also be found in the changing ideas of man and nature and the arguments adopted in favour of either poisoning these animals or protecting them and others from poison and harm, as well as in the concepts of risk and safety.

The parallel to the histories of pesticides, herbicides, pharmaceuticals, industrial poisons and poisons in consumer products is striking. Scientific research in all these areas was specific; one poison or one chemical at a time, one species at a time, one effect at a time, one domain at a time and one health problem at a time. The important parallels in these histories, however, suggest that scientific results, as such, only played a minor role as a driving force behind the observed changes, and that the driving forces were cultural more than scientific. Domains open to public scrutiny thus experienced both more debate and restrictions than others.

¹⁵⁵ Ohman Nielsen 2014b, Ohman Nielsen 2015b, Ohman Nielsen 2016b.

However, recent research has shown that new and equally harmful chemicals and practices were often introduced behind the smokescreen and mirrors of the public debate and legislative changes, as in the case of DDT.¹⁵⁶ In our case it was the phosphorus crow poison in the 1920s and Veronal fox poison in the 1940s that was introduced immediately after strychnine was restricted due to public complaints over dangers and inhuman killing methods.

The similarities in the historical development in these fields also tell the story of the changing presence of different chemical substances, as well as of the number and amounts of them. This adds to our ability to produce a timeline of the chemical cocktails that humans and other species have been *exposed to* at different times.

Humans produce, administer and accept this exposure, either knowingly or unknowingly, either explicitly or implicitly. Unlike the poison used to deliberately kill wild animals, most of the environmental poisons come with goods and practices people want and value. Harmful chemical substances may be met with acceptance or embrace, scepticism or rejection, and with different ideas of safety and danger. So these are *cultural* cocktails too. Our ambition is to deconstruct this cultural cocktail, and historicise it, in order to understand how we have come to understand environmental poisons the way we have and what lessons we may learn from that.¹⁵⁷

Abbreviations:

DFR	The Directorate for Game and Fresh-water Fish.
NPH	The Norwegian Pharmaceutical Museum
NJFF	The Norwegian Association of Hunters and Anglers
MA	The Ministry of Agriculture
MSA	The Ministry of Social Affairs
MJ	The Ministry of Justice
MCAW	The Ministry of Communal Administration and Work-life

Publications:

Beer, Johannes: *Læren om de livløse naturlegemer*, Malling, 1881.

Berggren, Åke et al: *State of the Science of Endocrine Disrupting Chemicals 2012. Summary for Decision-Makers*, World Health Organization, United Nations Environment Program and IOMC, 2013.

Coleman, Jon T.: *Vicious Wolves and Men in America*, Yale University Press, 2004.

¹⁵⁶ Mart, 2015.

¹⁵⁷ Subsequent publications from this projects will be announced at <http://www.deadlydreams.no>.

- European Environment Agency: *The Impact of Endocrine Disruptors on Wildlife, People and their Environments*, The Weybridge+15 (1996-2011) report, Copenhagen 2012.
- Gundersen, Vegard and Kraabøl, Morten: A review of historical management arguments for Northern Goshawk *Accipiter gentilis* proposed by Norwegian hunters, scientists and conservationists, *Ornis Norvegica* (2012), **35**: 1-15
- Kardell, Örjan and Dahlström, Anna: Wolves in the Early Nineteenth-Century of Jönköping, Sweden, *Environment and History*, 2013, p. 339-370.
- Kortenkamp, Andreas et. al.: *State of the Art Assessment of Endocrine Disruptors. Final Report*, European Commission, Directorate-general for the Environment, 2011.
- Langston, Nancy: *Toxic Bodies. Hormone Disruptors and the Legacy of DES*, Yale University Press, 2010.
- Mart, Michelle: *Pesticides - A Love Story. America's Enduring Embrace of Dangerous Chemicals*, University Press of Kansas, 2015.
- Mosley, Stephen: *The Environment in World History*, Routledge 2010.
- Ohman Nielsen, May-Brith: *Mennesker, makt og mikrober. Epidemibekjempelse og hygiene på Sørlandet 1830-1880*, Fagbokforlaget, 2008.
- Ohman Nielsen, May-Brith: *Norvegr – Norges historie 1840-1914*, vol. 3, Aschehoug 2011.
- Ohman Nielsen, May-Brith: *Norvegr – Norges historie 1914-2011*, vol. 4, Aschehoug 2011.
- Ohman Nielsen, May-Brith: Kverk krekene! Strategier for å selge liv og død til norske hageeiere 1945-1975, in Ohman Nielsen, May-Brith (ed.): *Å selge liv og død. Kommersielle strategier og kulturuttrykk i markedsføring av død og dødsfrykt*, University Press of Eastern Finland, Joensuu 2014.
- Ohman Nielsen, May-Brith: *Små paradiser. Hager gjennom et århundre*, Portal Akademisk 2015.
- Ohman Nielsen, May-Brith: Circulating Silence. The Reception of Rachel Carson's *Silent Spring* in Scandinavian Family Garden Magazines, manuscript, TBP 2017.
- Ohman Nielsen, May-Brith: *Synthesizing Scandinavia. The introduction of synthetic pesticides to the Scandinavian family gardeners, 1945-1955. A comparative study*, manuscript TBP 2017.
- Ohman Nielsen, May-Brith: *Crafting the concept of poison in Norwegian post-war pesticide administration*, manuscript, TBP 2017.
- Predator statistics. - <https://www.ssb.no/a/histstat/aarbok/tab-2000-10-18-01.html>
- Rangarajan, Manesh: The Raj and the Natural World: The War Against 'Dangerous Beasts' in Colonial India, in *Studies in History*, 1998, p. 265-299.
- Richardsen, Karl Martin: *Den stor rovviltkrigen. En undersøkelse av Lov om Udrydding af Rovdyr og om Freding af Andet Vildt (1845)*, MA-thesis in history, University of Tromsø, 2012.
- Richardsen, Karl Martin: Rovdyrenes Ødelæggelse, *Heimen*, 51/2014 p. 3-21.
- Satoh, Tetsuo: *Environmental Toxicology and Human Health*, UNESCO 2008.
- Steinberg, Ted: *American Green. The Obsessive Quest for the Perfect Lawn*, New York 2007.
- Søbye, Espen, et al.: *Tallenes fortellinger: Rovdyrstatistikk 1846-2004. Fra skuddpremier til fredning og irregulær avgang*, <https://www.ssb.no/jord-skog-jakt-og-fiskeri/artikler-og-publikasjoner/fra-skuddpremier-til-fredning-og-irregulaer-avgang>, 2004.

Young Christian C.: *In the Absence of Predators. Conservation and Controversy on the Kaibab Plateau*, University of Nebraska Press, 2002.

Walker, Brett L. *The lost Wolves of Janapan*, XXXX, 2005.

Archives:

- IKAVA Kristiansand By - Formannskapet. Bekjempelse av kråkeplagen. (1947 - 1952).
IKAV/1001KG120/D/Dc/L0760/001
- IKAVA Kristiansand By - Formannskapet. Bekjempelse av rotter. (1941 - 1957).
IKAV/1001KG120/D/Dc/L0349/0003
- IKAVA Oddernes kommune - Formannskapet. Utryddelse av rovdyr. (1960 - 1964).
IKAV/100110D120/D/Db/L0043/0004
- IKAVA Søgne og Greipstad kommune - Formannskapet. Utryddelse av rovdyr. (1850 - 1871)
IKAV/1018SG120/Db/L0001/0008
- KUBEN Grimstad kommune Helseseksjonen. Skadedyr- utrydding. (1961 - 1993). AAKS/KA0904-640d/D02L0018/0007
- KUBEN Risør Politikammer. Diverse dokumenter bla søknader om gift/sprit. (1898 - 1925) AAKS/PA-288/Y01/L0003
- Norsk folkemuseum Farmasihistorisk museum Giftprotokoller Kristiansand Elefantapoteket
Giftprotokoll. (1796 - 1937) NF/Ark-1041/D/L0070/0012
- Norsk folkemuseum Farmasihistorisk museum Giftprotokoller Stavanger apotek. (1827 - 1879) NF/Ark-1041/D/L0086/0006
- Norsk folkemuseum Farmasihistorisk museum Giftprotokoller Giftbog for Lillesands Apotek. (1867-1914) NF/Ark-1041/D/L0087/0002
- Norsk folkemuseum Farmasihistorisk museum Giftprotokoller Svelvik apotek giftbog. (1861 -1866)
NF/Ark-1041/D/L0087/0002
- Norsk folkemuseum Farmasihistorisk museum Giftprotokoller Gressvik apotek. (1895 - 1960) NF/Ark-1041/D/L0087/0004
- Norsk folkemuseum Farmasihistorisk museum Giftprotokoller Drammen apoteket Ørnen giftprotokoll. (1878 - 1942) NF/Ark-1041/D/L0087/0005
- Norsk folkemuseum Farmasihistorisk museum Farmasihistorisk museums arkivmateriale
Protokoller/journaler Evje Apotek Giftprotokoll. (1954 - 1961) NF/Ark-1041/D/L0005/0002
- Norsk folkemuseum Farmasihistorisk museum Giftprotokoller Oslo Apoteket ved Vestbanen. (1901 - 1953) NF/Ark-1041/D/L0087/0006
- Riksarkivet. Direktoratet for vildt og ferskvannsfisk. Utleggelse av gift m.m. 1860-1970.
- Rikarkivet. Landbruksdepartementets giftnemnd. Diverse arkivbokser, 1946-1975.
- Riksarkivet. Statens plantevern. Diverse arkivbokser fra perioden 1933-1980.
- Statsarkivet i Kristiansand Fylkesmannen i Vest-Agder. Jakt og fangst fiskeri. Fangstregulering og skuddpremier. (1876 - 1945). SAK/1271-0004/K/Kb/L0022
- Statsarkivet i Kristiansand Fylkesmannen i Vest-Agder. Regnskap. Premieattester for felte rovdyr +kråkekrig. (1934 - 1935). SAK/1271-0004/F/Fc/L0050/0002
- Statsarkivet i Kristiansand Fylkesmannen i Vest-Agder. Regnskap. Premieattester for felte rovdyr + utryddelse av kråker. (1937 - 1938). SAK/1271-0004/F/Fc/L0057/002
- Statsarkivet i Kristiansand Kristiansand politikammer - 2. Giftprotokoll attester giftkjøp. (1921 - 1967). SAK/1243-0009/N/Na/Naa/L0437
- Statsarkivet i Kristiansand Søgne distriktslege/helseråd. Saksarkiv. Rottebekjempelse utgassing smitte mv. (1940 - 1977). SAK/1751-0010/D/L0012

