

Hunting bounties as a key measure of historical wildlife management and game conservation: Finnish bounty schemes 1647–1975

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Abstract In Finland, hunting bounties for pest animals were first introduced in the 1647 hunting law. Avian pests were included in bounty schemes a century later when a price was put on more than 20 species. The list of bounty species varied widely during the next 200 years. We examined the development of bounty schemes in Finnish wildlife management during 1647–1975 with respect to the prevailing attitudes to nature and hunting practices. We surveyed Finnish hunting legislation from the 1300s to the present, and collected hunting bounty data from hunting associations' archives and from statistics published in hunting magazines during the 19th and 20th centuries. Local municipalities and the government, and also hunters' and fishermen's organizations, paid bounties for pest species. Bounties were considered

justified for direct and indirect economic, religious and ethical reasons. Organized persecution of pests was considered a necessary component of game management. The 'golden age' of bounty schemes from 1898 to the 1920s contributed to local extinctions of both mammalian and avian species. The cessation of law-based bounty schemes in 1975 was preceded by a period of strong environmental thinking, and bounty schemes were widely considered costly, outdated and unethical.

Keywords Birds of prey, Finland, hunting bounties, legislation, pest species, predator control, Sweden.

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Introduction

Finnish hunting legislation has encouraged persecution of so-called pest species since medieval times. From 1647 to 1975 persecution was actively supported by various bounty schemes, which provided monetary rewards for killing pest species. The earliest history of hunting bounties in the Nordic countries has remained obscure. Olaus Magnus (1555), the last Roman Catholic Archbishop of Sweden, mentioned in his *Historia de gentibus septentrionalibus* that in Iceland bounties were paid to young men for killing ravens using bows and arrows; he also claimed that throughout the Nordic countries hunting bounties were also being paid for other pest species, although there are no surviving legal documents to support this statement.

In the 19th and early 20th centuries hunting bounties were considered an essential part of wildlife management. The reasoning was simple: as mammalian and avian predators killed useful game species, they were

assumed to be responsible for declines in game populations and should therefore be killed whenever possible (Aho, 1902). At this time persecution of such predators was also considered ethically justified because of their apparent cruelty towards their prey. Such attitudes can even be found in the early 20th century animal conservation literature. Von Berlepsch (1928), for instance, listed a number of mammal and bird species that should be persecuted in favour of desirable species such as songbirds. It was not until after the Second World War that, probably due to increased scientific understanding of predator-prey relationships, some researchers started to question the usefulness of the persecution of raptors and mammalian predators for maintenance of populations of game species (Latham, 1951).

The payment of bounties has been a widespread practice, applied to many animal species worldwide. Olaus Magnus (1555) mentioned that during his visit to Rome bounties were even being paid for grasshoppers causing damage in fields and gardens. Bounties have also been commonly offered for rats and other rodents in urban environments (Vuorisalo *et al.*, 2001). In England the first bounties were paid for wolves in the 13th century (Harting, 1994). The British system developed to include even such species as the hedgehog *Erinaceus europaeus*, for which bounties were paid during 1566–1863; this may have been because hedgehogs prey on eggs and nestlings of ground-nesting game birds. In New Zealand, where

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hedgehogs were introduced *c.* 1870, the species has been persecuted for the same reason, and between 1939–1948 53,647 hedgehogs were killed under bounty schemes in the North Island alone (Reeve, 1994). Bounty schemes also probably contributed to the extinction of the thylacine *Thylacinus cynocephalus* in Tasmania by 1936 (Paddle, 2000).

In this paper we examine the historical development of Finnish bounty legislation. Since medieval times the hunting and persecution of mammalian and avian pest species has been encouraged by comprehensive state laws as well as by specific forestry and hunting regulations and decrees. Until 1809 the province of Finland belonged to the Kingdom of Sweden, and during 1809–1917 the autonomous Grand Duchy of Finland was under the rule of the Russian Empire. Mykrä *et al.* (2005) provide a brief history of the region. These eras in the history of Finland contributed to the development of bounty legislation, and our aim here is to clarify the bounty systems with respect to the prevailing attitudes to nature and hunting practices.

Material

The material comprises historical legislative documents for 1347–1975 and articles from selected newspapers, journals and magazines for 1771–1930. Legal documents (law giving records and statute laws) were gathered from the archives of Turku University Library. A bibliography for the most important legal texts is given in the Appendix. Statistics on hunting bounties were obtained from national statistical yearbooks and from contemporary journals, magazines and newspapers.

Categorization of species as pests (Fig. 1) is based on legislative documentation for 1347–1962. Wherever possible we used the original legal texts rather than translations, as it appeared that, for example, the translated Finnish versions of the 1664 Royal Decree on Hunting and the 1734 State Law of Sweden included more species as pests than the original Swedish texts (Appendix; Mykrä *et al.*, 2005). When the list of pest species or those for which a reward was paid included such ambiguous group names as ‘hawks’ and ‘owls’, we used contemporary Finnish zoological literature (Mela, 1882; Mela & Kivirikko, 1909) to define the number of species in those groups. Thus the category of hawks comprised 13 species and that of owls 8 species. The term eagle meant two separate species, the golden eagle *Aquila chrysaetos* and the white-tailed eagle *Haliaeetus albicilla*. The ‘buntings and finches’ in the 1741 Royal Decree on Avian Pests was interpreted to include yellowhammer *Emberiza citrinella*, linnet *Carduelis cannabina*, goldfinch *Carduelis carduelis* and tree sparrow *Passer montanus*. These species were assumed to be able to cause the type

of damage described in the legal text. ‘Skuas and grebes’ in the 1898 Decree included five species.

Bounty legislation

Swedish rule over Finland

The oldest national laws in Sweden were the 1347 King Magnus Eriksson’s Law of the Realm and the 1442 King Kristoffer’s Law of the Realm. In both of these laws hunting rights were bound with land ownership. The only exceptions were the killing of grey wolf *Canis lupus*, brown bear *Ursus arctos* and red fox *Vulpes vulpes* as anyone could kill these species anywhere with impunity. Because the aim was evidently to reduce the density of these three species, this can be considered as the first legal categorization of pest species in Finland. The first laws did not mention bounties, but gentry and peasants were obliged to provide equipment and to participate in wolf hunts.

The bounty system was legally established in the 17th century by two Royal Decrees on Hunting, which were part of general forest use regulations of 1647 and 1664. The list of pest species was extended (Table 1), as in addition to wolf, brown bear and red fox, lynx *Lynx lynx*, pine marten *Martes martes*, goshawk *Accipiter gentilis*, kite *Milvus migrans* and ‘birds alike’ were now included. The 1647 Decree was the first law in Finland that mentioned hunting bounties; Section XVIII promised a reward for killing brown bear and wolf. The responsibility of paying the bounty was given over to towns or jurisdictional districts.

The 1734 State Law of Sweden replaced earlier laws and included a long list of pest species. However, only the red fox was added to the bounty scheme. The 1741 Royal Decree on Avian Pests was for ‘extermination of raptors and pest birds’. Even though this law dealt with birds only, it was relevant for ordinary people as it promised bounties on >20 species. Bounties were set for the first time on pest birds such as eagles, hawks, owls and corvids. Rewards were also paid for house sparrows *Passer domesticus* and ‘buntings and finches’ because of the damage they caused to agriculture and thatched roofs. The list of birds was extensive (Table 1), and the law’s effect on avian fauna may have been even more wide-ranging as due to identification problems other species would have occasionally been persecuted. It is notable that bounties were not only set for adults, but also for eggs and chicks. The legislators understood that an effective bounty scheme must also include killing juveniles.

At the beginning of the 19th century, with pest species covered by the legislative acts of 1734 and 1741 and legislation for game species dating from the 1600s, legislators acknowledged the need to revise the outdated hunting

Table 1 Bounty periods for pest species and the key bounty paying organizations from 1647 to 1975. Bounty schemes of municipalities and states were based on legislation, whereas the Finnish Hunting Association followed its own bounty policy.

Species	Municipalities or districts	State	Finnish Hunting Association
Mammals			
Brown bear <i>Ursus arctos</i>	1648–1898	1899–1923, 1935–1953	
Pine marten <i>Martes martes</i>	1869–1898		1895–1898
Wolverine <i>Gulo gulo</i>	1869–1898	1899–1975	
Grey wolf <i>Canis lupus</i>	1648–1898	1899–1975	
Red fox <i>Vulpes vulpes</i>	1735–1898	1899–1923, 1949–1975	1886–1898
Lynx <i>Lynx lynx</i>		1899–1923, 1949–1953, 1956–1962	
Ringed seal <i>Phoca hispida</i> ¹		1909–1918, 1924–1975	
Grey seal <i>Halichoerus grypus</i>		1909–1918, 1924–1975	
Birds			
White-tailed eagle <i>Haliaeetus albicilla</i>	1742–1923		1879–1898
Osprey <i>Pandion haliaetus</i>	1869–1898		
Golden eagle <i>Aquila chrysaetos</i>	1742–1923		1879–1898
Kite <i>Milvus migrans</i>	1742–1898		
Buzzard <i>Buteo buteo</i>	1869–1898		1879–1910
Honey buzzard <i>Pernis apivorus</i>	1869–1898		1904–1905
Sparrowhawk <i>Accipiter nisus</i>	1742–1898		1880s–1910
Goshawk <i>Accipiter gentilis</i>	1742–1923		1871–1898
Hobby <i>Falco subbuteo</i>	1742–1898		
Peregrine falcon <i>Falco peregrinus</i>	1869–1898		1886–1910
Other hawks ²	1869–1898		
Great black-backed gull <i>Larus marinus</i>	1899–1923		1895–1898
Eagle owl <i>Bubo bubo</i>	1742–1923		1879–1898
Snowy owl <i>Nyctea scandiaca</i>	1742–1868		1896–1910
Other owls ³	1742–1868		
Magpie <i>Pica pica</i>	1742–1868		1881–1898
Jackdaw <i>Corvus monedula</i>	1742–1868		1881–1898
Rook <i>Corvus frugilegus</i>	1742–1868		1881–1898
Hooded crow <i>Corvus corone</i>	1742–1868, 1899–1923		1881–1898
Raven <i>Corvus corax</i>	1742–1868, 1899–1923		1881–1898
House sparrow <i>Passer domesticus</i>	1742–1868		
Buntings and finches ⁴	1742–1868		

¹Ringed seal applied at that time to two endemic subspecies, Saimaa seal *Phoca hispida saimensis* and Ladoga seal *Phoca hispida ladogensis*. There was no bounty on Saimaa seal between 1924 and 1928 and bounty ceased in 1947; the species was protected by law in 1955. In the case of Ladoga seal, the Finnish legislation had no relevance after 1944 because the species' range was outside Finnish borders.

²Comprised 13 species.

³Comprised 8 species.

⁴Included 20 species, but a brief description in the 1741 Decree indicates that possibly four species (yellowhammer *Emberiza citrinella*, linnet *Carduelis cannabina*, goldfinch *Carduelis carduelis*, tree-sparrow *Passer montanus*) were considered worth persecuting.

regulations. This resulted in the Hunting Decree of 1808. Von Wright (1905) gives a good description of that period. The decree came into force during the so-called Finnish War between Russia and Sweden (1808–09), but due to disorder came into effect only in parts of Finland, and only for a limited time. Only the provinces where the Swedish army was present (e.g. Lapland) took notice of this last Swedish hunting decree. It is probable that in the following decades there was some confusion over which particular legislation on hunting should be followed. It is not known to what extent bounties were paid in Finland during this period, which lasted until 1868 and the enactment of the next law.

The autonomous Grand Duchy of Finland

Swedish rule over Finland ended in 1809, but hunting regulations were not clarified until the enactment of the Imperial Hunting Decree of 1868. This law is the basis of modern hunting legislation in Finland (Suomus & Mäki, 1968). Species were split into three classes in the decree. 'Useful creatures' were considered worth sustaining and protecting; this class included all edible game species. The second class, 'noxious animals and robbing birds', comprised pest species that were to be exterminated, including brown bear, wolf, lynx, wolverine *Gulo gulo*, red fox, pine marten, eagles, eagle owl *Bubo bubo*, as well

as all hawks and osprey *Pandion haliaetus*. The third class, 'other creatures', included all species not listed above; these species were in practice outside the law, as there were no specific regulations covering their hunting or protection. One of the objectives of this classification was to protect useful species and increase their abundance by eliminating their natural enemies in the pest category. Another motivation for persecution of large predators was the protection of livestock. Although the municipalities were obliged to pay bounties on all species in the second class, the exact sums for each species were not specified in the decree's text. This gave municipalities freedom to organize their bounty schemes, and in some cases they chose to pay nothing (Teperi, 1977).

The Imperial Hunting Decree of 1868 quickly became outdated due to the rapid increase in the quantity and quality of firearms during 1860–1890 and the establishment of hunting societies (Anon., 1887). After a lengthy preparatory phase (Appendix in Mykrä *et al.*, 2005), a committee was appointed in 1896 to draft a proposal for a new decree. The committee suggested that instead of voluntary bounty policies the municipalities should have, particularly in the case of mammalian pests, an obligation to pay a reward high enough to encourage sportsmen to persecute pest species. For avian pests, primarily falcons and hawks, the committee suggested that, because of species identification problems, the municipalities should cease paying bounties on them (Committee Report, 1896). The resulting Imperial Hunting Decree of 1898 encouraged persecution of more pest species than any previous legislation (Fig. 1), and the decree identified each persecuted species individually instead of using the earlier ambiguous groupings of 'hawks' and 'owls'. This may have resulted from the increase in knowledge of the Finnish vertebrate fauna

(von Wright, 1859; von Wright & Palmén, 1873; Mela, 1882).

The 1898 Imperial Hunting Decree was criticized by zoologists and conservationists because it was thought to uncritically encourage persecution of species that were more useful than harmful for sensible game management (Renvall, 1912; Palmgren, 1915; Palmén *et al.*, 1916). In addition to the fact that sometimes the majority of raptors killed were rodent-eating species useful for agriculture (Suomalainen, 1916), the overall number of birds killed was high. In all Finnish provinces the numbers of predatory birds killed clearly increased after the enforcement of the 1898 Decree (Statistical Yearbooks, 1916–1926).

Republic of Finland

A committee was appointed in 1918 to prepare revised hunting legislation. By that time all large carnivores had been extirpated from the most populated areas. However, although the populations of wolf and wolverine had declined rapidly, widespread dislike of these species was considered a sufficient justification to retain bounties. Because viable populations of bear and lynx still caused damage to livestock and reindeer herding in the remote parts of the country, the committee suggested continuing the rewards for their killing. The bounty on red fox was considered unnecessary because of the species' valuable fur. The debate over birds of prey was also intense because species misidentification meant that harmless birds were frequently killed. (Committee Report, 1921)

The first Nature Conservation Act in Finland came into force in 1923. The 1898 Hunting Decree was amended in

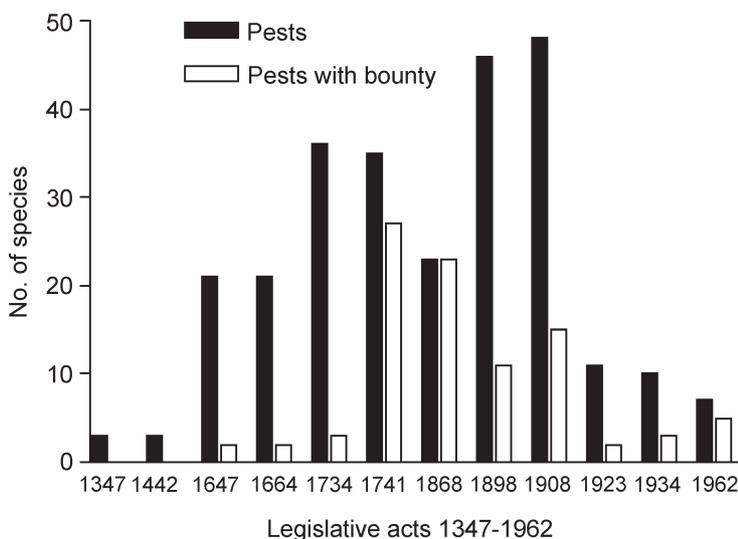


Fig. 1 The number of species classified as pests and pests with bounty in Finnish hunting legislation from 1347 to 1962 (Appendix). The 1741 Decree dealt with avian pests only, whereas regulations for mammals were still according to the 1734 State Law. The Decree of 1908 treated only seal species and it enacted bounties on four species. Thus the 1908 bar depicts the combined species lists of the 1898 and 1908 Decrees.

the same year to meet the demands of the new conservation legislation. The Nature Conservation Act replaced many sections of the old Hunting Decree, and covered all species except game mammals and birds. As a consequence and because of intense criticism, the list of pest species was significantly reduced in the 1923 Amendment. Despite the 1921 committee's opinion that killing of all large carnivores should be rewarded, only wolf and wolverine had a bounty on their heads in the final law. The number of bounties paid by municipalities and the Government declined steeply (Statistical Yearbooks, 1916–1926). However, the bounty system was still considered an important factor in predator control, and bounties remained a method of wildlife management in the later hunting laws and decrees of the 20th century.

In the 20th century law making related to hunting was active. The hunting legislation of 1923, 1934 and 1962 was followed by several amendments (Appendix). After the 1923 Act, bounty schemes still included many mammalian predators, but excluded all avian predators. However, particularly in the 1940s and 1950s, game management districts received state subsidies that were earmarked for pest bird bounties (Anon., 1947). By the early 1970s environmental thinking had spread throughout Finnish society (Nienstedt, 1997), and this also influenced public attitudes towards predators. From 1976 onwards national budget funds were no longer directed to bounty payments (Budget Proposal, 1975).

Bounty-paying organizations

There were also bounty schemes other than those based on specific laws. Hunters' and fishermen's organizations whose interests included control of pest species voluntarily paid hunting bounties on pest animals killed. These were at times financially supported by the Government (Anon., 1899; Viljanen, 1965).

In the mid 19th century large carnivores, especially wolf and bear, took a particularly heavy toll on livestock, and the outdated legislation led to disorganized and ineffective control of increased predator populations (Finnish Official Statistics, 1875). The leadership of the Finnish sporting society recognized a need to improve the situation, and a committee was established. Within a year an appeal was handed over to the Finnish Imperial Senate for approval of the Finnish Hunting Association's bylaws in 1865 (Viljanen, 1965). The first rule, and also one of the main aims of the association, was to accomplish the extermination of predators (Anon., 1908). The association took an active role in game management and pest control. This was accomplished by organizing a nationwide advisory network. The association authorized six advisors to travel across the country to provide

guidance on hunting and trapping methods, preservation of game, persecution of pest animals and species identification. To encourage killing of predators the association awarded distinguished hunters with medals, and published literature on extermination of mammal and avian predators. Because the rewards on pest birds were paid to hunters on the presentation of cut-off legs, the association put out a guidebook for the identification of birds' legs (Viljanen, 1965)

The association also started to encourage sportsmen, with bounties paid mainly for pest birds (Table 1). The association considered that, particularly in the 1868 Hunting Decree, the list of rewarded species was inadequate. It therefore channelled its funds so that the total number of rewarded pest species increased. As a consequence the Hunting Association became the most important voluntary bounty-paying organization in Finland. The state found these voluntary bounties useful, and it supported the association financially in 1889–1898 and again in 1903–1910 (Anon., 1907, 1910; Viljanen, 1965). The most intense bounty period for the association was before the enactment of the Imperial Hunting Decree of 1898. Although the association paid bounties over a period of 40 years, the sums were relatively small, and thus their effect was probably more significant in a psychological than economic sense.

Another bounty-paying organization was the Fishermen's Association of Finland, established in 1891. It set bounties on species considered harmful for fisheries, namely otter *Lutra lutra*, seals *Phoca hispida* and *Halichoerus grypus*, divers *Gavia* spp., and osprey. Due to the organized persecution of seals supported by bounties (the Association paid seal bounties in 1892–1905 and the Government in 1909–1924 and 1928–1947) the endemic Saimaa seal *Phoca hispida saimensis* declined dramatically, from c. 1,000 to c. 200 individuals, within a few decades (Rautiainen, 1998).

Discussion

The introduction of bounty schemes into Swedish and Finnish legislation was partly due to influence from other European countries, but was also a system felt to be necessary for economic, religious and ethical reasons. More recently ecological justifications have also been put forward. The primary motivation for the bounty schemes was perhaps economic. Direct financial benefit was achieved by the killing of large mammalian and avian predators, which were regarded as a threat to human welfare, and occasionally to life. Wolves and bears presented a potential threat to human life, especially to children or those involved in bear hunting with primitive weapons. Although mauling and even eating of humans

was a marginal threat in most areas, it did sometimes happen (Linnell *et al.*, 2002). One of the main reasons for predator persecution was to protect livestock, losses to which were sometimes significant. For example, Pulliainen (1984) stated that in the Pieksämäki region in south-eastern Finland, predators attacked the livestock of 55 houses in 1761 alone, and 41% (198 animals) of the livestock were killed. One reason for this was the commonness of traditional woodland grazing. It was also thought that elimination of predators would increase game stocks, again an economic benefit.

It is possible that religious beliefs contributed to persecution of certain species. The 14th Chapter of the Book of Deuteronomy in the Bible banned the eating of 'unclean' birds, which then included eagles, osprey, hawks, owls as well as many other raptors. Due to the great influence of the Church in Sweden and Finland (at first Catholic, and later Lutheran), and the fact that until independence all hunting laws and decrees were publicly read from the pulpit, it is possible that justification of active persecution of certain species was partly religious.

The ethical outlook is closely connected to the religious outlook, and humans have in the past divided animals into good and bad, and even into moral and immoral. The prevailing views on pest species were reflected by Bishop Olaus Magnus (1555). He described in a picturesque way the supposed nature of the main mammalian predators; for example, the 'deceitful' and 'cunning' red fox and the 'insidious' brown bear. Bounty based pest persecution was partly justified by the character of mammal and avian predators (Committee Report, 1921). The protection of small birds, considered as innocent, cheerful and pretty, included measures to exterminate their 'brutal' enemies such as avian predators and mustelids (Topelius, 1874). It is reasonable to claim that shifting attitudes towards animals over time have strongly influenced the classification of animals into useful and harmful (Mykrä *et al.*, 2005). Animal classifications have certainly affected bounty schemes. The sums paid in bounties varied according to the known or presumed harmfulness of the species. The largest bounties were usually paid for large mammalian or avian predators, reflecting the fact that extermination of these species was considered a priority.

In more recent times ecological factors have played a role in bounty schemes. The adverse effects of introduced or invasive predators have been under particular scrutiny, and bounties or bounty-like incentives have been applied (Allen & Sparkes, 2001). In Finland, bounty-related rewards have recently been paid in order to reduce the populations of two exotic predators, mink *Mustela vison* and raccoon dog *Nyctereutes procyonoides* (Anon., 2002, 2003).

The 'golden age' of bounty schemes from 1898 to the 1920s was entirely of Finnish origin, and was in part motivated by the widely publicized cases of wolves eating children in several parts of Finland in the 1870s and 1880s (Linnell *et al.*, 2002). Experienced wolf-hunters were invited from Russia both to kill animals and to teach their hunting practices to local peasants (Teperi, 1977). The parishes and government increased the size of bounties paid (Finnish Official Statistics, 1880).

Other factors that contributed to the use of hunting bounties were the foundation of national hunting organizations and the emergence of hunting magazines, and the rapid increase in the quantity and quality of firearms in the late 19th century. By this time there were many organized and well-armed sportsmen across the country who were prepared to participate in pest persecution according to the policy enacted in the 1898 Hunting Decree. Organized pest persecution was considered a necessary component of rational game management, as it was generally assumed that decreasing predation pressure led to increasing population density of valuable game.

Bounty systems have a potential to increase extinction risk, although the efficacy of bounties obviously depends on the ecological, behavioural and life history characteristics of the persecuted species. Predictable occurrence, visibility/audibility, or low fecundity make species prone to persecution, and contrasting characteristics can help species to escape. The goshawk is a good example of the latter. This forest dweller has a relatively high fecundity as well as inconspicuous habits. The goshawk was given pest status in 1647, and bounties were paid for it between 1741–1923. It was not until 1989 that the species was granted year-round protection. Mykrä & Vuorisalo (2002) noted that despite official persecution for over three centuries the Finnish population has remained relatively stable. Red fox and corvids, long considered pests, are good examples of species tolerant to persecution. On the other hand, some species, most notably the large carnivorous mammals (grey wolf, brown bear, wolverine and lynx), and two large avian predators (white-tailed eagle and golden eagle) disappeared from large parts of the country during the golden age of hunting bounties.

By the time of Finnish independence and the Civil War in 1918, hunting bounties seemed to have lost much of their importance, as there was a sudden decrease in the numbers of bounties paid (Statistical Yearbooks, 1916–1926). The Nature Conservation Act and the Amendment to Hunting Decree in 1923 were enacted soon after the war, while conditions were still unstable. The Finnish Mark suffered inflation from 1916 onwards, and the value of bounties fell markedly. These circumstances

may have contributed to the end of the golden years of bounty hunting. In the latter half of the 20th century even the supporters of the bounty system began to regard it as ineffective because of the low rewards. The cessation of law-based bounty schemes in 1975 was preceded by a period of strong environmental thinking, which almost certainly contributed to this decision. Bounty schemes were widely considered costly, outdated, and also unethical.

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Appendix

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Biographical sketches

Mari Pohja-Mykrä is carrying out research on historical hunting practices, predator control and attitudes to animals. Her earlier studies focused on the complexity of meeting the demands of the Convention on Biological Diversity in inventorying global biological diversity.

Timo Vuorisalo has carried out research on the evolution and ecology of modular plants, herbivory, conservation history and urban ecology.

Sakari Mykrä is carrying out research on animal categorizations, with a focus on the development of human-animal relations and animal attitudes. His earlier work has related to the effect of boreal forestry on forest dwelling animals.