

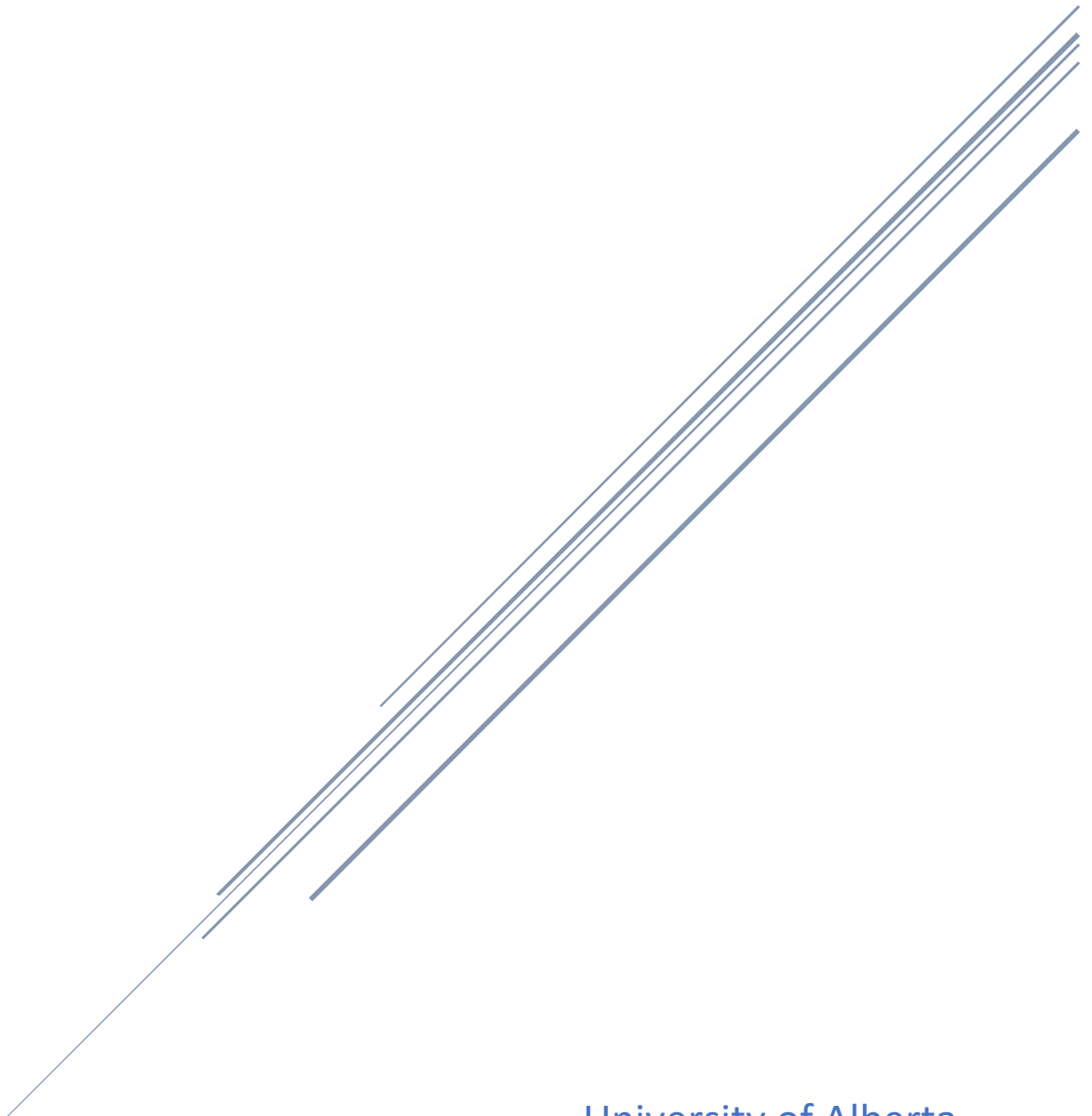
# WILD BOARS IN ALBERTA

A Critical Evaluation Of Policies.

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Wild boars were spotted for the first time in a Canadian National Park. According to Park Canada, wild boars are occupying the Elk Island National Park east of Edmonton, Alberta. In Alberta, these pigs are spotted in 28 counties, and the number is increasing every year. The animal digs up the soil to look for worms and other food sources, and it can digest about any organic matter and live off of it. The animal can also spread several viral and bacterial diseases like African swine fever and could potentially impact the food supply in Canada. Alberta forestry officials are therefore adopting statutes and regulations to trap and eradicate the species in Alberta. According to Perry Abramenko, an inspector and pest specialist with Alberta Agriculture and Forestry, Alberta forestry has completed research with the United States Department of Agriculture and is about to run a pilot project to research the best way to trap the animal. The best policy Alberta forestry has right now to trap these animals is to rely on public reportings. After the reportings, they will set up cameras on that site to trap the whole sounder (group of wild boars with usually two different age groups of juveniles accompanied by an adult). After trapping the animals, they are humanely euthanized.

Alberta has been home to one of the most destructive and widely distributed free-ranging mammals in the world for several decades now. That repellent creature is wild boar (*Sus scrofa*), also known as wild swine, feral swine or simply wild pigs (from here on out in this paper, referred to as wild boar). Wild boars are a mix of European and local pigs. During the last century, sportsmen and ranchers brought Eurasian boars as a huntable game species and let them loose indiscriminately into fenced and unfenced areas (Fogarty 2007). These released wild Eurasian boars have interbred with the local swine populations, and all these combinations of wild hogs are referred to as feral swine or wild boars. (Hamrick et al. 2011; Carson 2013). Wild boars are not native to Alberta. According to the Alberta government, During the 1980s and '90s, these animals came as livestock. Over the last 27 years in Canada, the range of wild boars in Canada has increased exponentially, and the cumulative range of wild boars in Canada is estimated to be approximately 777,843 km<sup>2</sup>, with the majority distribution occurring in the prairie provinces Alberta, Saskatchewan and Manitoba (Aschim et al. 2019).

## **Environmental Problem**

Wild boar is among the top 100 worst exotic invasive species globally (Lowe et al. 2000). It creates negative impacts on crops, pastures, wildlife and the environment. The wild boar population anywhere in the world does visible damage to agricultural crops, native species and ecosystem (Timmons et al. 2012a; Krull et al. 2013). A 2007 US Study suggested the boars caused nearly \$2 billion in annual damages, and the number will be significantly higher because of a much higher population of boars today. Wild boars create a series of environmental problems, especially in North American ecosystems, largely because the animal is not native to these lands and hasn't adjusted for their rooting behaviour (Baber and Coblenz 1987). Wild boars are known as one of the greatest modifiers of natural plant communities (Stone and Keith 1987). A single wild boar can significantly damage around 6.5 ft<sup>2</sup> in just one minute (Anderson et al. 2009). The havoc created by wild boars affects vegetation composition and minimizes the diversity of plants and animal species (Siemann et al. 2009; Krull et al. 2013). Wild boars are largely indiscriminate in their food selection and eat about any organic matters, including invertebrates, snakes, turtles, fish, crabs, rodents, muskrats, frogs, and even sometimes, deer fawns and young livestock (Seward et al. 2004).

The problems are not only limited to landscape and environment. Wild boars carry a pool of diseases. They carry over 20 diseases and 37 types of parasites that transmit to people, livestock, pets and wildlife (Centner 2015 as cited in Corn et al. 2009; Leiser et al. 2013; USDA 2013a). The diseases carried on by wild boars can decimate and endangered species (Plasteres et al. 2013). The most concerning diseases are pseudorabies and brucellosis (Leiser et al. 2013; Musante et al. 2014). *Pseudorabies* is a virus that can spread if non-infected animals come in contact with infected animals. Much attention should also be paid to whether these infected animals are being transmitted to commercial hog facilities (Witmer et al. 2013). The expanding population of Wild boars in the national parks could also spread several infections to other native wildlife species and domesticated animals (Olsen et al. 2010), leading to billions of dollars of losses in reduced beef and milk

production(USDA 2012). So there is a situation where wild boar could impact the food supply in Canada. Wild boars affected with brucellosis are also dangerous to humans(CDC 2009). When dressing and butchering an animal, CDC warned hunters to avoid direct contact as much as possible. The diseases wild boars carry out could be transmitted from water and cultivated fields to other animals and deposited in edible plants such as lettuce and spinach to affect humans adversely(Jay et al. 2007; Benjamin et al. 2013).

### **Evaluation of Policy**

In Canada, The federal government has not enacted a national policy on wild boars, but rather, the regulatory authority resides with provincial governments. According to Alberta Government, "In 2014, Agriculture and Forestry's Wild Boar Minimum Containment Standards were enacted for farmed wild boar. Enhanced fencing requirements were put in place so to prevent boars from escaping and becoming pests at large." <sup>44</sup> According to Pest and Nuisance Control Regulation, wild boars at large are considered a pest under provincial law.

Moreover, under the Agricultural Pests Act, the landowners are bound by law to control the spreading of wild boars on their land. Alberta Agriculture and Forestry plan to trap and eradicate the species from Alberta. Wild boars are non-native to Alberta, and according to many ecologists, if the species is not native to the land, then eradication should be the ultimate control objective. So, Alberta is right on its plans to eradicate the species from its land. However, they are still running projects to determine the best possible way to capture these animals. According to the Article, Alberta forestry would have to rely on public reportings to know where the boars are present. Once they are aware of the animal's presence, they would set up cameras and baits to trap the whole sounder, which is an adult wild boar and usually two different age groups of juveniles. If Alberta wants to eradicate the species from the province, It would be very optimistic to only rely on reporting of sightings. In their study, Massei et al.(2011) showed that, over the years, these animals have become incredibly adaptable to the mild winters and different habitats, which explains their expansion and range in these regions. Not to mention, Wild boars have the highest reproductive rate of any ungulate, and Bieber, in his 2005 study, found

that their annual population growth rate exceeds 2.0. So, any discussion about reducing the local wild boar population has to consider several other methods and a wide range of options and integrate and evaluate them together, not just "hopes of reports."

Trapping is a widely used method to control the Wild boar population. And this is the strategy Alberta forestry is using right now in their eradication project. Trapping could be an effective method to remove large populations in areas of high boar density. It has low social disturbance and is usable in residential areas. If checked regularly, trapping is considered to be humane for wild boars and allows species-specific removal so that if trapped, wildlife and other livestock can be released. However, Alberta forestry should be careful using trapping as the only eradication method. Wild boars are relatively easy to trap when the natural food availability in the area is limited. However, the landscape of Alberta will provide wild boars with ample availability of natural foods. However, many factors play into determining the trapping success rate. It can be heavily influenced on what time of the year the baitings are used, the location of the traps, types of bait used, topography, to list a few. (Hone et al. 1980). Saunders et al.'s (1993) research in New South Wales, Australia, showed that it is essential to do seasonal trapping. Determining a suitable location is a massive factor in trapping success. They concluded that positioning the traps in areas with recent boar activity or along the treeline could increase the trapping success rate rather than setting traps in the forest or the clearings. Historically, trapping has been used in many eradication programs, and some were successful and some not so much. For example, In the Pinnacles National Monument, California, trapping as the sole control method helped eliminate 70% of the boar population; also, the combination of trapping and opportunistic shooting increased the efficiency of wild boar eradication (McCann and Garcelon 2008). However, In Hawaii, trapping as a control method was not as effective because the wild boars got wary of the traps (Reeser and Harry 2005). Traps are also difficult to transport and unrealistic on high slopes or rough terrain. It is also imperative to check

traps regularly, and insufficient staff to monitor the traps could lead to an unsuccessful effort in capturing the species(Coblentz and Baber 1987).

### **Policy Recommendations**

To look for any comprehensive policies that would help Alberta reduce the population of Wild Boars, we have to examine the most and least effective control methods available. There are lethal and non-lethal methods to control the wild boar populations, and Alberta has to decide which approach they want to take. When considering lethal methods, the first option that springs to mind is shooting and hunting, and traditionally this has been the most established method to contain the wild boar population. In fact, hunting has been the most significant cause of mortality for wild boars in most areas(West et al. 2009). To some wildlife managers, sport hunting is a luring control option as it brings in revenue for the landowners and serves as recreation for trophy hunters. However, sport hunting has not been shown to reduce the wild boar population(Barret and Stone 1993). On top of that, wild boar populations in suitable habitats can endure extremely high rates of hunting harvest because of their high fertility rate(Barrett and Pine 1980). Safe to say, in almost all cases, hunting as the only option cannot control the wild boar population. Furthermore, hunting, in this case, is a double-edged sword. Allowing hunting incentivizes recreational and sports hunters to move the population of wild boars to different areas and not eradicate them completely. And this could be very problematic, mainly since the species is not native. In many countries, the translocation of wild boars is illegal as it may encourage irresponsible introductions. Several studies blamed the transportation and release of wild boars into new open areas by trophy hunters as the most important factor explaining the exponential increase of the species in the United States and Australia(Spencer and Hampton 2005). These animals are also incredibly smart and risk-averse. Hunting pressure can cause boars to change their daily foraging patterns and shift their movements to cover and develop nocturnal feeding habits. Alberta could also introduce the Judas hogs technique. It works best when introduced with an existing control strategy. Essentially, this technique is used to find more extensive groups of animals in

one place. First, the managers have to capture any boar by any method, in this case, the trapping cage method that Alberta already has. Once the animal is captured, it is equipped with radio transmitting equipment, marked visibly with paint and released. In due course, the tagged animal will find other wild boars in groups and let the managers locate the whereabouts of large pig herds. National parks cover plenty of areas; finding and hunting down these boars in such a vast land is very difficult and time-consuming. If the current control strategies are not proving to be very effective in capturing these animals, then introducing such a strategy could be very beneficial.

Wild boars are typically known for their trap-shyness, and so they will not be easy to capture at all. With Alberta's current trap and lock strategy, the application will be on a very small scale, and this process will take much time and effort to reduce the population. So, it should be combined with at least one other control method. One might think, in that case, why not poison these animals? The method is cost-effective, and in fact, has been used extensively in other countries and can provide a rapid reduction. Coblenz and Baber(1987) found poisoning to be far more effective than shooting and trapping to reduce the wild boar population in their study in Ecuador. Even though it can produce great results, the problem with this method is that it is often perceived as inhumane. It can affect non-target species, especially in an area such as a National Park, which is a habitat for so many other species. One control method that can be more species-specific, however, is fertility control(injectable contraceptive). It produces antibodies that work alongside hormones or protein essentials responsible for reproduction(Miller et al. 2008). A lot of research has been done on these immunocontraceptives. They can be formulated as a single-shot vaccine. The vaccine increases the production of antibodies against hormones responsible for producing sex hormones that lead to ovulation, and such Injected animals can be rendered infertile for 1 to 5 years(Killian et al. 2008, Miller et al. 2008). Fertility control is a more humane and publicly accepted method and could be effective, particularly in isolated areas. These vaccines have been extensively tested on wild boars without any side effects. (Killian et al. 2006). However,

using these injectable contraceptives is applicable only to a small scale and is a more expensive approach, as the costs of contraceptives will be added to that of trapping. It can be used in specific contexts where lethal methods are not possible or desirable, such as the National parks of Canada, where hunting is not permitted, and lethal methods could be harmful and spread diseases to other species. However, the benefits of fertility Control can be seen only in the long-term, after several years. So it is a relatively slow process. More and more research is going on to develop oral contraceptives, and to avoid the possibility of affecting non-target species, boar-specific feeders are being designed and evaluated. Mathematical models developed to suggest the effectiveness of fertility control on the population dynamics of wild boars indicate that a small proportion of females in the population must be rendered infertile to reduce the population (Cowan and Massei 2008). These models predict that if 30% of the adult females are treated with contraception that leads to permanent infertility, the female population would be halved in 5 years. More research is needed to test this hypothesis in field trials, but this suggests the potential for fertility control to reduce the wild boar population. This is something Alberta forestry and government should look more into and do more research on.

To eradicate wild boars from its province, Alberta needs to have an extensive wild-boar management plan and a decisional framework, which it currently does not have. Although trapping and hunting are important parts of controlling the wild boar population, this must be accompanied by other control methods. For a successful eradication program, Alberta has to develop a spectrum of strategies and employ an integrated management approach, where many different control options are being carried out simultaneously or in sequence. Doing this will ensure that if one method was not effective in removing the targeted animals, other control methods could still remove the animals. Complete eradication process will be difficult and expensive, but this has been achieved in a few parts of the world, mainly on small islands. The program and effective monitoring will be costly. Still, capital spending will be worthwhile contemplating the ecological issues and billions of dollars in crop damages and other concerns from wild boars. Sustained monitoring is also critical and necessary to



determine the effectiveness of the control methods. For now, Alberta is only using the baiting uptake method to monitor the population. Monitoring needs to be thorough and up to date, and it will allow the managers to see the impactfulness of the control methods and if those methods are helping in decreasing the wild boar population. There are several methods available to monitor the effectiveness of these population control measures. Absolute numbers of wild boars are challenging to measure and often rely on abundance indices derived from activity signs and sights of rooting (Engemann et al. 2001). Other methods include monitoring bait by using aerial or ground surveys. Different monitoring methods, however, can lead to different conclusions. Alberta should also introduce different monitoring methods considering that abundance indices based on bait consumption often overestimate population reduction because animals that do not feed on the bait are not calculated in the measurement (Massei et al. 2011). It will be a challenge to keep up-to-date information on a rapidly increasing wild boar population, especially at such a large scale in National Parks but mapping the locations of these species is also incredibly important to determine the effectiveness of the control methods. It will also provide a baseline against which future changes can be evaluated.

Of course, when discussing all these control methods, we also have to address the cost of mitigation. The cost will depend on many factors, including how many animals are actually out there (density of wild boars), the number of people Alberta forestry employs for baiting and monitoring, bureaucracy, topography, technology, and other resources and compliance with environmental requirements. It will also depend on the expectations of the Alberta Government and forestry department concerning the time to resolve this conflict.

Over the last decade, to address this growing ecological issue, there has been an amplified interest in these invasive species in North America. Nevertheless, a significant knowledge gap still remains regarding the animal's basic biology and ecology, the extent of damage they can create, and the effectiveness of several control methods. More research is needed in these areas to advance understanding of these invasive species so

that we can develop more effective and efficient management strategies. Research in biology and ecology will help better understand the animal's physiology and help formulate a species-specific plan to control the population. These species are also evolving, and up-to-date research will help identify their characteristics, diet and behaviour patterns. Several studies have been done on the species in other countries and regions, but as mentioned before, the species reacted differently to each control method in different areas. We are also yet to fully determine and quantify the economic costs of damage from these animals. A better economic assessment will allow fostering the development of strategies that would abate and prevent damages. It would also enable the government to determine policy and the level of funding needed to remediate and prevent damages caused by the species. So, it might be a better idea if Alberta does its original wild boar research to answer the questions.

## **Summary and Conclusion**

Wild boars have been and will continue to be a tricky issue for wildlife management, landowners, farmers, and others involved. Despite ongoing control programs, wild boars have continuously increased their range and population size in other parts of Canada. If wild boar growth continues in Alberta, Alberta forestry will have to increasingly be involved in dealing with problems caused by these animals, which can have an enormous economic impact. The objective of this paper was to (1) Address the wild boar problem, including the ecological damage it can have on Alberta and (2) Evaluate the current Alberta Policy in place dealing with the situation and (3) Evaluation of different control methods Alberta can introduce other than the current approach. This paper reviewed Alberta's current eradication plan and discussed why trapping as the only control method might not be enough for eradication. The review investigated different control methods for reducing the wild boar population and in which situations these methods will be most effective. The review also suggested an integrated management approach for a successful eradication program, where several control methods will be

carried out simultaneously and the need for further research in some key areas to manage the species effectively.

### Article Source:

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