



Attacks on humans in Sweden by bear, wolf, lynx, wolverine, moose and wild boar in relation to Swedes' fear for these animals

Attacker på människor i Sverige utav björn, varg, lo, järv, älg och vildsvin i relation till Svenskars rädsla för dessa djur

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Abstract

It is not easy to understand people's fears since they are not always a logical reflection of the danger in certain situations. This study is an attempt to give a scientific view of the potential danger that certain animals in Sweden pose and compare this to Swedes' fear of these animals.

A report shows that Swedes' have a certain amount of fear for being attacked by a wild animal in the forest and this fear has increased for certain animals over the last years. It would therefore be of interest to see if this fear is warranted and if the most feared animals are the ones that pose the biggest threat.

In comparison with other dangers in our society none of these animals seems to pose any considerably large threat to us. Brown bear, wild boar and moose are the ones that could be considered as a threat, if any, because these are the ones that from time to time attack humans.

This study is meant to inspire more scientific research about fear and attacks from different animals and hopefully lessen some of the fear that exists for these animals. Also to elucidate the problem about being afraid of getting attacked and recommend more information about these animals, the danger they pose and how to behave when meeting them in the forest.

Sammanfattning

Människors rädsla kan ibland vara svår att förstå, speciellt när den inte är proportionerlig med den verkliga fara som en situation kan utgöra. Denna studie är ett försök till att ge en vetenskaplig bild över potentiella faror som vissa av våra svenska djur kan utgöra för oss människor och jämföra det med den rädsla som finns för dessa djur.

En rapport från Sverige visar att det idag finns en rädsla för att bli attackerad av vilda djur i skogen och att denna rädsla har ökat under senaste åren. Det är därför av intresse att se om denna rädsla är befogad i förhållande till hur många attacker som sker och om den art som ligger till grund för mest rädsla är den art som utgör det största hotet.

I jämförelse med andra faror i vårt samhälle kan inga av dessa djur ses som något större hot mot oss människor. Rädsla för björn, vildsvin och älg är den rädsla som i vissa fall kan vara befogad då det i sällsynta fall händer att dessa djur attackerar människor.

Denna studie är ämnad till att inspirera till mer vetenskaplig forskning om rädsla och attacker från olika djur samt förhoppningsvis minska rädslan som finns för dessa djur. En ytterligare förhoppning är att belysa problemet med rädsla för attacker och föreslå att det sprids mer information om dessa djur, vilka risker som finns och hur man ska agera vid ett möte i skogen.

Introduction

When planning the management and regulation of their populations, it is important to understand people's fears and opinions about different animals. The public plays a big part in the decisions about these animals (Liska, 1999; Røskaft et al., 2003; Treves, A., & Karanth, U.K. 2003; Prokop & Fančovičová, 2010). Therefore it is both a political and scientific challenge to reach the public with scientifically correct information and at the same time see and understand people's views (Røskaft et al., 2003; Treves, A., & Karanth, U.K. 2003; Prokop & Fančovičová, 2010). The link between nature and modern humans must be restored. Most people live in big cities and have no connection to nature and therefore do not feel the need to conserve it nor understand the problems that rural people face (Liska, 1999; Miller, 2005).

Fear is a central feeling in human evolution that activates different behavioural responses when encountering certain stimuli such as predators (Dozier, 1998; Strucel, 2005; Prokop & Fančovičová, 2010). Fear is the body's way to anticipate and avoid pain and death. It does not work logically it only heightens our senses and makes us ready for fight or flight (Dozier, 1998; Røskaft et al., 2003; Strucel, 2005). Women are more inclined to feel fear for different animals, especially predators, but at the same time place a higher value on wild animals and expresses a higher concern for their exploitation (Tucker & Bond, 1997; Røskaft et al., 2003; Prokop & Fančovičová, 2010). The fear for predators also correlates with the person's perceived body condition (Prokop & Fančovičová, 2010) and increases with age (Røskaft et al., 2003; Karlsson & Sjöström, 2007). People with a lower perceived body condition are more afraid of predators than people with a higher perceived body condition (Prokop & Fančovičová, 2010). According to the same reference men and people with higher fear for certain predators are more inclined to exterminate predators by shooting.

Humans and their ancestors have always been seen as both prey and competition for food sources by different animals, just as many monkeys are today (Prokop & Fančovičová, 2010). To avoid dangerous situations, humans and other animals have evolved a fear mechanism as a behavioural response to certain fear-relevant stimuli (Dozier, 1998; Öhman, 2001; Öhman, & Mineka, 2003; Strucel, 2005). These mechanisms make humans more aware of potentially dangerous animals and quickly learn to associate fear with such stimuli. Fear can be reduced with knowledge and experience but this takes time and does not necessarily imply a positive attitude (Zimmermann et al., 2001). The change of attitude and fear is also presided with a peak of negative feelings which can be so strong that the predator populations are not given a chance to re-establish themselves in the environment (Zimmermann et al., 2001).

A report by Ericsson et al. (2010) which is based upon a survey that was conducted in 2009, show Swedes' fear for being attacked by brown bear, wolf, lynx, wolverine, moose and wild boar. The question asked in the survey was; *Are there any wild animals that you are afraid to meet when you are out in nature?* The answering alternatives were; *No, Moose, Roe deer, Brown bear, Snakes, Lynx, Wolf, Wild boar, Wolverine, Other animal.*

Most people are afraid to be attacked by a brown bear in the wild. In 2009 44% of the Swedish population was, according to the report, afraid to be attacked by a bear in the wild, which is a decrease of 8% compared to 2004. Swedes' are, after the brown bear, most afraid to be attacked by a wild boar, 33% is afraid to be attacked by a wild boar which is an increase of 13% compared to 2004. The fear of meeting a wild boar in the forest has increased drastically over the last years, it almost matches with the increasing wild boar population. In third place

comes the wolf with 25% of the Swedish population afraid to be attacked by a wolf in the wild, this is a decrease of 1% compared to 2004. The fear for bear and wolf is much connected with their distribution, in areas with a larger population of bear and wolf people are more afraid.

The fear of being attacked by a moose in the wild has been quite constant over the years. In 2009 11% of the Swedish population was afraid to meet a moose in the wild which is a decrease of 1% compared to year 2004. Not many of the Swedish population are afraid to be attacked by a lynx or wolverine. 10% are afraid to be attacked by a lynx which is a decrease of 2% compared to year 2004 and 8% are afraid to be attacked by a wolverine which is the same compared to year 2004.

Background

Brown bear (*Ursus arctos*)

After the last ice age, 100,000 -10,000 years ago, two genetically different populations of brown bear wandered into Sweden, one from the south and one from the northeast, and it is from these two populations that the Swedish population originate (Swenson et al., 2008; Viltskadecenter, 2009; Rovdjurscentret De5Stora, 2011). Like with all other predators the brown bear was savagely hunted both because of its predation on livestock and its fur. By the 18th century the brown bear had been exterminated in the southern part of Sweden (Swenson et al., 2008; Viltskadecenter, 2009; Svenska Jägareförbundet, 2010). The persecution continued until 1913 when it was placed under protection and in 1927 it was ruled that all brown bear in Sweden were the property of the crown (Swenson et al., 2008; Viltskadecenter, 2009; Svenska Jägareförbundet, 2010). In 1930 the population was estimated to be around 130 individuals and since then the numbers have continued to grow. Hunting was again permitted in certain areas in 1943 and in 1981 licensed hunting was adopted (Swenson et al., 2008; Viltskadecenter, 2009; Svenska Jägareförbundet, 2010). In 2008, the population was estimated to be around 3000-4000 individuals (Swenson et al., 2008; Kindberg, 2009; Viltskadecenter, 2009). Despite the attempts of extirpation, the brown bear has always been held in high regard and been both envied and admired for its strength and intelligence (Rovdjurscentret De5Stora, 2011). The brown bear has been worshiped as a god, used as totem or symbol amongst different people and the bear hunts of old demanded many different rituals so it would not upset the dead bears' spirits (Rovdjurscentret De5Stora, 2011).

Wolf (*Canis lupus*)

The wolf followed the wild reindeer from the south into Sweden after the last ice age, around 100,000 -10,000 years ago and spread through the country (Larsson, 1988; Persson, & Sand, 1998). Humans settled in Sweden a few thousand years later and since then the wolf population has varied greatly in size due to hunting on both the wolf itself and on its prey (Björvall, 1988; Persson, & Sand, 1998; Brundin, & Kjellström, 1998). According to the same references the domestication of the wild reindeer later contributed to an increasing conflict between humans and wolves. In the 13th century the Swedish law proclaimed that all peasants had to attend wolf batteus and keep with different entrapment and hunting devices (Larsson, 1988; Björvall, 1988; Persson, & Sand, 1998; Brundin, & Kjellström, 1998). In 1647 rewards were given for every hunted wolf and in the beginning of the 18th century the wolves were very scarce (Larsson, 1988; Björvall, 1988; Persson, & Sand, 1998). At this time Sweden was at war and people were occupied with killing each other instead of the wolf which allowed the wolves to increase in numbers again (Larsson, 1988; Björvall, 1988; Persson, & Sand, 1998).

In 1789 a law was set that permitted all landowners free hunting on all game. This also drew focus away from the wolves for a while until the wolves started to take too much livestock in lack of natural prey (Persson, & Sand, 1998; Brundin, & Kjellström, 1998). Around 1830 the wolf population again started to decrease rapidly due to continued persecution which lasted up to 1966 when it was put under protection (Björvall, 1988; Persson, & Sand, 1998; Viltskadecenter, 2009; Sand et al., 2010). According to the same references the estimated population of this time was around 8-10 individuals. Despite the protection law wolves were still hunted and therefore the population never really had a chance to grow (Persson, & Sand, 1998; Svenska Jägareförbundet, 2010; Rovdjurscentret De5Stora, 2011). The same references state that it was not until the 1990's that the population really started to increase and this was because of three immigrated individuals from the Finnish/Russian population which the whole Scandinavian population of today descends from. Today Sweden has a population of around 200 individuals and in 2010 legalized hunting was permitted - the first since 1966 (Svensson, & Hedmark, 2010; Svenska Jägareförbundet, 2010). Throughout history the view of wolves has been very dependent on people's way of living, if it has been seen as a predator of livestock or as a symbol for hunting success (Larsson, 1988; Persson, & Sand, 1998; Brundin, & Kjellström, 1998). With Christianity came a more negative view of the wolf as it was marked as a symbol of evil that represented deceit, gluttony and lust, among other things (Larsson, 1988; Persson, & Sand, 1998; Brundin, & Kjellström, 1998). There are also many myths and stories about wolves and werewolves which mostly present the wolf in a negative way but not all of them. Some of the most famous stories are Little Red Riding Hood, Mowgli and Romulus & Remus founders of Rom (Larsson, 1988; Persson, & Sand, 1998; Brundin, & Kjellström, 1998). It was also believed that different body parts of the wolf could be used as a cure for different illnesses. For example, a wolf heart could cure epilepsy or could be used as painkiller while the meat could help to heal wounds and the colon could cure colic (Brundin, & Kjellström, 1998).

Eurasian Lynx (*Lynx lynx*)

The Eurasian Lynx wandered into Sweden via the then existing land bridge between Sweden and Denmark about 9000 years ago and spread through the country (Jonsson, 1983; Liberg, 1998). The lynx has been hunted for its fur but also because it is a predator to livestock (Jonsson, 1983; Liberg, 1998; Rovdjurscentret De5Stora, 2011). Between the 16th and 17th centuries there were plenty of lynx to be found in Sweden but in the 19th century the hunting had intensified, mostly because of the conflict with livestock owners. Hence population numbers began to decrease (Jonsson, 1983; Liberg, 1998). The same references state that in the 20th century the Swedish government paid a reward for every hunted lynx which led to their near extinction. In 1928 the lynx was placed under protection which made it possible for the population to increase until 1943 when unlimited hunting was once again permitted (Jonsson, 1983; Liberg, 1998). In 1986 the lynx was again placed under protection due to decreasing numbers (Liberg, 1998). Since 1995, the Swedish Environmental Protection Agency regulates hunting of the lynx for population control and for the protection of livestock (Liberg, 1998; Rovdjurscentret De5Stora, 2011). Today Sweden has a population of around 250 family groups totaling around 1250-2000 individuals spread throughout the major part of the country (Andrén et al., 2010; Svenska Jägareförbundet, 2010). In the 16th - 17th century lynx fur was very desirable, especially among the nobility, a fur from a single lynx could be worth as much as 10-12 wolverine skins, 13-16 bear skins or a whole year's supply of rye (Jonsson, 1983; Liberg, 1998;). The lynx was also seen as a bringer of luck and many Swedes wore lynx claws as amulets (Jonsson, 1983). The same source also state that the lynx was

believed to see through walls, that their urine became amber when solidified and that an ointment made from their body fat could cure rheumatism.

Wolverine (*Gulo gulo*)

Up until the beginning of the 1830's the wolverine were quite numerous in the northern parts of Sweden with smaller population clusters in the southern regions (Persson, 2008b; Viltskadecenter, 2009). Because of its highly valued fur and its predation on livestock it was hunted to near extinction until 1969 when it was placed under protection (Persson, J. 2008b; Svenska Jägareförbundet, 2010). Since then the numbers have increased and now Sweden has a population with between 500 and 700 individuals spread throughout Norrland and down to the northern parts of Svealand (Viltskadecenter 2010; Svenska Jägareförbundet, 2010). The wolverine has incorrectly been seen as a ravenous predator that kills out of joy and would devour a whole reindeer in a single sitting (Elander et al., 2002; Rovdjurscentret De5Stora, 2011). This is not true since the wolverine is a poor hunter that mostly scavenges on leftovers of other predators like lynx and wolf (Elander et al., 2002; Rovdjurscentret De5Stora, 2011). Given the right conditions wolverines can hunt larger prey like reindeer and moose, though they do not eat it all at once but hide parts of the carcass to save and feed off over a longer period of time (Elander et al., 2002; Persson, J. 2008a; Svenska Jägareförbundet, 2010).

Eurasian Moose (*Alces alces*)

Moose wandered into Sweden around 100,000- 10,000 years ago, over the then existing land bridge between Denmark and Sweden (Björklöf, 1994; Hammarström, 2004; Behrenfeldt, 2010). They were close to extinction in the 19th century as a result of the hunting law from 1789 that permitted landowners free hunting on all game (Björklöf, 1994; Hammarström, 2004; Behrenfeldt, 2010). In 1808 moose were placed under protection but it was not until the 1970's that the population began to flourish and reached its peak in the 1980's when the numbers were twice as high as the present numbers (Björklöf, 1994; Hammarström, 2004; Behrenfeldt, 2010). Presently there are around 300 000 – 400 000 moose spread through Sweden, and during the annual moose hunt, in the autumnal season, around 100 000 are shot (Jägareförbundet, 2010; Behrenfeldt, 2010). The moose is a national symbol for Sweden and a big tourist attraction (Jägareförbundet, 2010). Three thousand to six thousand years ago in the northern part of Sweden, moose were considered a holy animal and worshiped as a god (Hammarström, 2004). According to Björklöf (1994) and Hammarström (2004) moose has always been seen as a noble animal and said to possess different “magical” abilities. For example, the hide was thought to be impenetrable and therefore often worn under the coat by Swedish soldiers as a type of armor. It was also believed, among other things, that the moose hoof contained a cure for epilepsy (Björklöf, 1994; Hammarström, 2004).

Wild Boar (*Sus scrofa*)

Wild boar wandered into Sweden from Denmark around 8000-10 000 years ago and lived here up until the late 18th century when they were extirpated through hunting and integration with the domestic pig (Göransson, 1987; Tham, 2001; Andersson, & Nordlander, 2004; Vildsvinsförvaltning i samverkan, 2009). In the middle of the 20th century they were reintroduced from Germany and Poland and placed in game pastures, where some escaped. In 1981 the Swedish government decided that the wild boar should once again be extirpated except for a small number for research purposes in Södermanland (Göransson, 1987; Tham, 2001; Andersson, & Nordlander, 2004; Vildsvinsförvaltning i samverkan, 2009). According

to the same references it seemed an impossible task to extirpate the wild boar and in 1988 the Swedish government changed its decision and recognized the wild boar as part of the Swedish fauna. In the Middle Ages the wild boar was seen as a very noble animal and it was classed as royal game (Andersson & Nordlander, 2004). The same source states that the hunts were very spectacular events with orchestras and spectators (Andersson & Nordlander, 2004). Today Sweden has a population of over 150 000 wild boar spread in the southern regions of Sweden, Götaland and up to east Svealand (Vildsvinsförvaltning i samverkan. 2009).

Aim of the study

The aim of this study is to present statistical evidence and the circumstances of attacks on humans by brown bear (*Ursus arctos*), wolf (*Canis lupus*), lynx (*Lynx lynx*), wolverine (*Gulo gulo*), moose (*Alces alces*) and wild boar (*Sus scrofa*) occurring in Sweden. The study also compares the fear of an attack to the actual likelihood of being attacked and put this in contrast with other potentially dangerous animals. Also, to see how the animals are presented by media and what other danger they pose in traffic and to people's possessions.

Questions;

- How many attacks on humans are these animals responsible for?
- When and under what circumstances did the attacks happen?
- Is the fear of attack warranted when compared with statistical evidence of attacks on humans?
- Have the attacks increased over the last years?
- Should we be fearful of walking when in the forest?
- How does the media present the animals described in this paper?

Materials and methods

Information has been gathered from books and the internet. The web pages used are google, scholar.google, ISI Web of Knowledge, Wildlife & Ecology Studies Worldwide, Scopus, Viltskadecenter, Svenska Jägareförbundet, Svenska rovdjursföreningen, Rovdjurscentret De5Stora and Nationella viltolycksrådet.

Words and sentences used to find information are; *Human fear, Human fear of carnivores, Fear (and) Humans, Human fear of animals, Human-carnivore interactions in Sweden, Moose, Alces alces, Älg, Älgattacker, Farliga älgar, Attackerad av älg, Animal attacks, Animal attacks on humans, Animal attacks in Sweden, Wolves in Sweden, Wolf attacks in Sweden, Canis lupus, Vargattacker, Lynx lynx, Lynx in Sweden, Lynx attacks on humans, Lodjur, Lodjurs attacker, Wild boar in Sweden, Sus scrofa, Wild boar attacks, Attacks on humans by wild boar, Vildsvinsattacker, Vildsvin, Galtattacker, Attackerad av vildsvin, Brown bear, Brown bear attacks on humans in Sweden, Ursus Arctos, Björn attacker, Wolverines, Wolverines in Sweden, Attacks on humans by wolverines, Gulo gulo, Järv, Järvattacker.*

In this study an attack is defined as when the animal makes physical contact with a human. Attacks that do not result in physical contact are referred to as feint attacks.

Results

Documented attacks in Sweden by;

Brown Bear (*Ursus Arctos*)

According to Swenson et al., (2008) there have been 75 attacks by brown bear in Sweden from 1750 to 1962, in 27 of these cases the attack resulted in death. Between 1976 and up to 2007 there have been 25 documented attacks on humans by bears in Sweden, two of the attacks had a deadly outcome (Swenson et al., 2008; Rovdjurscentret De 5 Stora, 2008). After 2007 there is no scientific documentation of bear attacks but viewing news articles in local papers there seem to have been around 12 attacks up to today's date, 2011-05-09, that's been reported to the media (Dalanytt, 2008; Söderström, 2008; Ingvarsson, 2008; Gävle dagblad, 2008; Kiruna TT, 2008; Karlsson, 2009; Törnström, 2009; ÖP, 2009; Skånskan, 2010; Svensk Jakt, 2010; Nyberg, 2010; Länstidningen, 2011). The accuracy of events from sources like these does vary and it is hard to verify the facts. Most of the attacks described in these articles have occurred to hunters during a hunt because they have disturbed or wounded the bear in some way. This is also the most common reason for a bear attack, a wounded bear poses the biggest threat (Swenson et al., 1999; Olson, 2001; Swenson et al., 2008; Rovdjurscentret De 5 Stora, 2008). Other attacks from the articles have occurred due to the bear being disturbed in its sleep. One boy accidentally skied into a bear's den (Länstidningen, 2011) and another man was doing clearance work with a chainsaw (Dalanytt, 2008). Other dangerous situations that can result in an attack is a meeting with a female bear with cubs, a bear protecting a carcass, surprising a bear, coming close to the bear at its den or if a dog irritates the bear and then runs back to its owner (Swenson et al., 1999; Olson, 2001; Swenson et al., 2008; Rovdjurscentret De 5 Stora, 2008). Bears are also known to make feint attacks where they first try to scare away the disturbing human (Olson, 2001; Östersund, 2008).

Statistics from 2010 show that there were 64 attacks on various breeds of livestock, two dogs were injured and 29 beehives ruined by brown bears (Viltskadestatistik, 2010b). The same year there were 9 traffic accidents involving a bear (Nationella viltolycksrådet, 2011).

Wolf (*Canis Lupus*)

The only well documented attacks on humans by wild wolves in Sweden were between 1727 and 1763 when four children between the ages of 4, 5-12 were killed (Linell & Bjerke, 2003). The other documented cases of wolf attacks in Sweden were during a three month period between 1820 and 1821 when 12 people were killed and 15 wounded by a wolf that had escaped from captivity (Linell & Bjerke, 2003). The wolf had been taken into captivity as a pup and never learned how to hunt (Linell & Bjerke, 2003).

In 2010 there were 201 attacks on various breeds of livestock and 21 dogs were attacked by wolves in Sweden, (Viltskadestatistik 2010). The same year there were 10 traffic accidents with wolves (Nationella viltolycksrådet, 2011).

Eurasian Lynx (*Lynx lynx*)

There are no scientific documented cases of any lynx attacks on humans in Sweden. There has been one occasion in 1990 when a man was scratched on his sleeve when out walking his dog, the lynx was probably aiming for the dog (Rovdjurscentret De5Stora, 2011).

Lynx is the one predator other than the wolf that kills the most dogs in Sweden, in 2010 14 dogs were attacked by lynx (Viltskadestatistik 2010). In the same year 95 various breeds of livestock were attacked by lynx, (Viltskadestatistik 2010) and 27 traffic accidents occurred involving lynx (Nationella viltolycksrådet, 2011).

Wolverine (*Gulo gulo*)

There are no documented attacks on humans by wolverines in Sweden only faint attacks on researchers when handling cubs close to the den (Elander et al., 2002; Rovdjurscentret De5Stora, 2011).

If confronted by a dog the wolverine can attack but this is very unusual. In 2010 one dog was injured by a wolverine but this is the first attack ever registered in Sweden (Viltskadecenter, 2007; Viltskadestatistik, 2010). No livestock was taken by wolverine in 2010 (Viltskadestatistik, 2010) but two traffic accidents occurred in the same year (Nationella viltolycksrådet, 2011).

Eurasian moose (*Alces alces*)

There are no scientifically documented cases of the numbers of moose attacks that have occurred in Sweden and therefore it is very hard to get an accurate picture. Looking at articles in different local papers there are at least a few attacks every year where people are seriously injured or killed by moose (Rislund, 2004; Karlgren, 2004; Gustavsson, 2006; Hofman, 2006; Sundsten, 2006; Micu, 2006; Frenker, 2008; Stiernstedt, 2008; Gårdsäter, 2008; Gustavsson, 2008; Mossberg, 2009; Fleur, 2010; Kasvi, 2010; Dawod, 2011; Boman, 2011; Hardt, 2011). The accuracy of events described in articles like these are questionable. All these articles tell of attacks either on humans out walking, usually with their dogs, or on humans close to or inside their houses. The attacks occur all through the year. The attacks close to or inside the houses seem mostly to be carried out by moose that have been eating drop-fruit. Drop-fruit ferments on the ground and in the stomach and has an intoxicating effect on moose, making it drunk. Most of the other attacks on people out walking seem to have occurred unprovoked except for one case. Kids had been throwing rocks at the moose that chose to attack a man passing by (Gustavsson, 2006). Even if many of the attacks seem to be unprovoked does not mean that the moose did not find the situation threatening, hence the attack. One high profile case occurred on the 6 of September 2008 when a woman was found dead in the forest in Västervik on the south-east coast of Sweden. At first the husband was suspected of murder but a year after the incident it was found to be a moose that had killed her (Hellberg, 2009). One article tells of an attack in Finland when a moose jumped into a house through the kitchen window. The moose continued through the house and into the bedroom of a two year old boy who got a light kick to the head before the moose left the house through the bedroom window (Taubert, 2004). There are also articles that report of faint attacks when humans have been chased by moose (De Bouczan, 2008; Svensk Jakt, 2009; Lillemägi, 2009; TT, 2010; DN, 2010). Even if these reported cases of moose attacks can seem numerous there are most certainly more that have not been found and all attacks are surely not reported by media. Thus, these numbers should be seen as a minimum but it seems to be at least 1-4 attacks per year.

Every year there are quite numerous traffic accidents with moose, according to Nationella viltolycksrådet (2011) there were 7227 traffic accidents involving moose in 2010. There are also a few dogs every year that get killed or injured by moose. According to Agria, a Swedish Animal Insurance Company, there were six dogs in 2010 that got injured or killed by a moose. These numbers are based only on dogs insured with Agria which is about 40% of all dogs in

Sweden, and not all attacks are registered as moose attacks only as attack by a wild animal (Seidefors, 2011).

Wild boar (*Sus scrofa*)

No scientifically documented attacks on humans by wild boars in Sweden were found. Wild boars often shy away from people but can attack if surprised, cornered or provoked (Tham, 2001; Manipady et al., 2006). There are many rumors of wild boar attacks on humans in Sweden and when googling for attacks by wild boar it is possible to find articles in local papers that tell of such attacks (Moilanen, & Jidesjö, 2007; Pihlblad, 2007; Karlsson, 2009; Nyheter P4, 2010; Hellmyrs, 2010; Svedberg, 2010). Most of the articles report of attacks towards hunters where the wild boar has been disturbed or harassed by a dog. One article tells of a father and his daughter being attacked close to a bus station (Svedberg, 2010). Judging by the article it seems like a sow protecting its young but it is always hard to tell the accuracy of the events from just reading a short article like this. None of the attacks in these articles resulted in any grave injury. There are also reports in local papers of aggressive behavior and potentially dangerous situations and feint attacks by wild boar (Lasso, 2007; Wennerberg, 2009; Andersson, 2010; Rosén, 2010). One article tells of a wild boar attacking two policemen after the wild boar had been hit by a car and the police been called to the scene (Rosén, 2010). There are documented attacks from other countries that have resulted in grave injury and death and even reports of wild boar killing tigers (Manipady et al., 2006; Gunduz et al., 2007; Attarde et al., 2009).

In 2010 there were 2445 traffic accidents involving wild boar (Nationella viltolycksrådet, 2011). According to Agria statistics there were in the same year 93 attacks on dogs by wild boar. This number is only the tip of the iceberg because not all attacks are specified as wild boar attacks and as mentioned before Agria's statistics is based only on dogs insured at their company which is about 40% of all dogs in Sweden (Seidefors, 2011).

Summing up the results show that no attacks on humans by wolves have occurred since 1821. There are about 1-4 attacks on humans per year from brown bear, moose and wild boar each. No documented attacks on humans have ever occurred from lynx or wolverine.

Discussion

With this study I compared the fear in Sweden of brown bear, wolf, lynx, wolverine, moose and wild boar with how many attacks on humans that occur in Sweden.

How many attacks that actually do occur with these animals are hard to find as attacks and statistics are only recorded for the predator species. The time frame for this study also prevented a full statistical compilation for moose and wild boar. What can be said from the information is that brown bear and moose seem to be responsible for the most attacks on humans in Sweden followed by wild boar. Attacks from wild boar also seem to increase which can be due to their increasing numbers (Vildsvinsförvaltning i samverkan, 2009; Bergström & Danell, 2009). For all these three animals there seems to be around 1 to 4 attacks per year. For wolf there have been no documented attacks since 1821 and for lynx and wolverine there are no documented attacks at all in Sweden.

The circumstances in which the attacks occur vary between the different animals but in most cases seem to occur because the animal feels threatened or cornered in some way. The attacks occur all year round with slight peaks in autumn and spring. No obvious reason for these slight peaks has been found but speculations can be made and most likely it is a combination of different reasons that make the attacks occur. It could perhaps be because people spend more time out in the forest this time of the year or that the animals are more active. One reason could also be that the hunting season for brown bear and moose are in the autumn and for wild boar in the spring (Svenska Jägareförbundet, 2010). The brown bear also start preparing for hibernation in the autumn and can probably be more protective of areas close to its den. In the spring when the bears start to wake up they could possibly be more irritable and especially if they are disturbed while asleep. Spring is also when most animals have their offspring and are therefore usually more aggressive in an attempt to protect their young. Most attacks from brown bear and wild boar happen to hunters, when out hunting either the same species as the attacking animal or another animal species. The attacking animals are then under pressure and threatened, usually by the hunter's dog, or injured by the hunter. There are reported attacks that seem to be unprovoked but it is always hard to determine how the animal perceives the situation. Moose seem from my research to be the most liable animal to attack without much provocation.

The fear that people do feel for bear and wild boar could perhaps be seen as warranted, if not a bit too high. These animals do pose a threat and can easily attack if they are taken by surprise but most of the time they probably notice the human presence first and then hide or shy away. The considerable low reported fear for moose compared with the other animals is noteworthy as moose seems to be the most dangerous animal that is most likely to attack. Without comparing with the other animals the fear for moose could be considered as a reasonable level. The low fear for moose could perhaps be a combination of its high regarded and symbolic value to Sweden and because it is a highly valued hunting game, the moose hunt alone has an annual turnover of several million Swedish crowns (Svenska Jägareförbundet, 2010). The mythology and magical abilities that the moose was once believed to have can perhaps also contribute to the fact that people seem to be less fearful of moose. The relatively high fear for wolves is not statistically warranted since the last attack on humans by a wild wolf was in 1763. The other attacks after that was by the same wolf that had been brought up in captivity without learning to hunt, it probably associated humans with food. The wolf is one of few animals that can stir up so many different emotions in people. It is both hated and loved. The fear for wolves could perhaps partly be explained by all the myths and stories with

dangerous and evil wolves and werewolves. Also because of the negative symbolic value that the wolves have through Christianity, it is still in many ways a mystical creature connected with the night and the full moon which in itself can cause fear. Perhaps some of the fear from the past days with persecution lingers and the fact that the wolf has not yet fully re-established itself in the Swedish fauna, the population is not very wide spread and with few individuals. According to Røskoft et al., (2003) people that live in rural areas without predators are more afraid than people in rural areas where predators are present. The same reference also states that people without interests in outdoor activities and lower education are more fearful than people with higher education and interests in outdoor activities such as hiking and hunting. This information is on the other hand questionable or might just apply to Norway since Ericsson et al. (2010) had found the quite opposite in Sweden. It can perhaps also be dependent on how long the predators have occupied the area, if they are seen as something natural that has always been there or something new that does not really belong. The fear of getting attacked by wolverine or lynx is also not statistically warranted compared to the risk of being attacked. The fear could be explained by rumors and myths about the animals and also because of ignorance about the physics and behaviour of the animal. There have been many times at Zoos that I have heard very surprised comments about their small stature.

The attacks seem to have increased over the years with around 1-2 more attacks per year, at least for wild boar and bear but this could be explained by the growing populations of all species (Bergström & Danell, 2009). With more animals in the forest the more chance encounters are bound to happen. Still there is no need to be fearful of walking in the forest. The risk of an attack is still very small and as long as you have respect for the animals and educate yourself about how to behave when out in the forest the chance of an attack by any of the animals is minimal. The risk of getting attacked must also be put in relation to other dangerous animals or situations.

In relation to other dangers that exist in our society the risk of getting attacked by any of these six animals is close to nonexistent. For taking some examples; sexual crimes and crimes against life and health has increased drastically over the latest 60 years (Brottsförebyggande rådet, 2011). In 2010 there were 17 167 sexual crimes in Sweden and of these 5960 were rapes (Brottsförebyggande rådet, 2011). The same year there were 93 030 crimes against life and health and 329 of these had a deadly outcome (Brottsförebyggande rådet, 2011). According to Arbetsmiljöverket (2011), there were 59 work related deaths in 2010 and according to Myndigheten för samhällsskydd och beredskap (2011) 122 people died in fires the same year. The same reference state that between 1997 and 2009 it was on average 530 people per year that had to be treated at a hospital after contact with a poisonous animal or plant. In the same years there were 9000 people that visited different emergency rooms after having gotten bitten by snakes, wasps, bumblebees, mosquitoes, ticks etc and 31 people died due to bites from poisonous animals (Myndigheten för samhällsskydd och beredskap, 2011). There are also about 400 children every year that are taken to the emergency room because of dog bites, about 75 of these have to be admitted because of their grave injuries (Schyllander, 2008). According to the same reference there are around 200 adults that have to be hospitalized every year because of dog bites. Hunting accidents do occur but are very rare (D, Lignér, Svenska Jägareförbundet, personal communication June 8, 2011). The same reference state that about two people every year die during hunting but not due to shooting instead the two most common causes of death is heart attacks and traffic accidents. According to Körkortonline (2011) there are about 300-450 deaths every year due to traffic accidents.

The most common and the most dangerous situation to meet any of these animals, especially moose and wild boar, are on the road. Here the moose poses the biggest danger with around 5000-8000 accidents per year and also because of its heavy weight and body structure (Nationella viltolycksrådet, 2011; Körkortonline, 2011). On a frontal crash the tall legs of the moose places the body through the windscreen on most cars and is then pushed on towards the passengers (Körkortonline, 2011). The wild boar is also a big danger in the traffic with around 2000-3000 accidents per year (Nationella viltolycksrådet, 2011). Traffic accidents with any of the predator species are more unusual with around 2 to 30 accidents per year and lynx being the most common one (Nationella viltolycksrådet, 2011).

These animals can also pose a threat to our possessions, mainly our domestic animals such as dogs and livestock. With more than 100 attacks per year wild boar is the one animal that injures and kills most dogs in Sweden (Seidefors, 2011). Around 10-40 dogs are injured and killed by wolves every year, the big variation in numbers are dependent on different wolf individuals that are more inclined to attack dogs and on the weather if many people are out hunting with their dogs (Karlsson, 2006; Viltskadecenter, 2007; Viltskadestatistik. 2010). Lynx and moose each attack around 6-20 dogs every year and bear around 2 dogs per year (Karlsson, 2006; Viltskadecenter, 2007; Viltskadestatistik. 2010; Seidefors, 2011). Bears on the other hand ruin around 30-70 beehives every year (Viltskadestatistik, 2008, 2009, 2010) and wild boar ruin crops for several million Swedish crowns every year (Viltskadecenter, 2011). Wolves and lynx are the two animals that kill or injure most livestock with numbers varying between 100-400 animals per year and bears attack around 100 animals of different species of livestock every year (Viltskadestatistik, 2006, 2007, 2008, 2009, 2010).

Media plays a big part in people's views and fears for these animals. According to Liska (1999) and Miller (2005) we have with urbanization become distanced from wild animals and their environment. Our survival does no longer depend on our awareness and understanding of wild animals, instead it is mostly human *predators* that we need to be watchful for (Liska 1999). Our closest interactions with wild animals are mostly through zoos, aquariums, museums, TV, films, radio and newspapers (Liska 1999; Havula, 2006). This puts a certain pressure on media to present a truthful and correct picture to the public about different animals. Media unfortunately turns our attention and shapes our view of the world through big selling headlines and not through scientific facts (Liska 1999; Havula, 2006). The objective view disappears with editing, twisting of information and pressure from advertisers which is dependent on where in the country you live, different counties get different information (Liska 1999; Havula, 2006). Media also has a tendency only to report when attacks do happen and not when they do not happen (Karlsson & Sjöström, 2007). This can also shape people's views since violent material affects people more and increases their fear for different animals (Webb & Davey, 1992). This information also stands as ground to different political decisions that the public votes for about the fate of these animals (Liska, 1999). It is also hard to estimate how many attacks are not reported to the media or if the media chooses not to report about them. According to a report by Havula (2006) media seldom report about the ecological importance of our predators when this would lessen the fear and increase the acceptance for these animals (Prokop & Fančovičová, 2010). There is also a lot of biased and misleading information about these animals, especially the wolf. One example of this is the homepage of Svensk Jakt that has a whole tab named *Dogs killed by wolves (Vargdödade hundar)* with a lot of pictures of killed dogs and grief-stricken owners. This gives a very bad view of the wolf and even worse since nothing is mentioned about the large numbers of dogs that are killed by wild boar and lynx. Also many films and TV-series contribute in forming our different views

and fear for these different animals. They do not only shape our views and fears by presenting different animals as good or bad but also because of their anthropomorphic narrating where they prescribe different human feelings and fears on different animals. Zoos can also sometimes give the wrong picture of these animals since the animals often can seem very nice and cuddly behind the fence even if information and warnings are presented. Frequent visits to zoos can perhaps familiarize the animals so that some of the respect for these animals as wild and dangerous creatures can disappear with seeing them at the zoo playing and looking almost harmless.

I consider the method used for this study as a good one for answering my questions. The time frame on the other hand was not optimal since it hindered a full compilation of all attacks. I wished to get a better statistical view of attacks from moose and wild boar and think this is an area that needs to be further studied. I think scientific documentation of attacks from all different species is necessary to diminish the fear for these animals and give a fair view of the potential danger they pose. It is also important to remember that fear and attitude are two different things and influencing one thing for the better does not necessarily mean that the other will turn for the better. People living in areas with these different animals are perhaps less afraid but have a more negative attitude and vice versa (Røskaft et al., 2003; Prokop & Fančovičová, 2010). The same references state that time and experience combined with information is the best way to lessen the fear and get a more positive attitude towards different animals. This is one reason for why I think more work should be put to this question. I hope that my small study can be found as a starter for more scientific research about fear and attacks from different animals.

Conclusions

The aim with this study was to give an overview of how many attacks that occur in Sweden by brown bear, wolf, lynx, wolverine, moose and wild boar and compare this with the fear that Swedes feel for these animals.

There are about 1 to 4 attacks on humans per year from brown bear, moose and wild boar each. The attacks from bear and wild boar seem to have increased with 1-2 attacks per year while the moose attacks seems to be at a quite constant level. There is still no need to fear an attack when out in the forest as long as you educate yourself on the different species, how to behave when encountering any of them and show them respect. In relation to other dangers in our society such as dog attacks, traffic accidents, rapes, murders etc the chance of getting attacked by any of these six animals is minimal. It is also very important to be critical towards media since they have such a strong input in how we perceive different animals.

I think it is necessary to provide the public with more information about these animals and how to behave when meeting them in the forest. Also, I think it is important to give the animal populations, especially wild boar and wolf the time to fully re-establish in our fauna since this might lessen the fear for them. I hope my study has inspired to more research in this area and that Swedes' fear for these animals will diminish and that they will be perceived as something very natural and desirable in our fauna.

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