



Zoo Visitor Experience - perceived learning, knowledge and attitude at a wolf enclosure in Sweden

*Svenska djurparksbesökarens upplevelse
- upplevt lärande, kunskap och attityd vid ett varghägn*

Matilda Evengård

Skara 2014

Etologi och djurskyddsprogrammet



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Studentarbete 597, Skara 2014

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Abstract

There is a great deal of knowledge about the factors that influences peoples' learning and knowledge. But how zoos should pursue their educational goal of the public to accomplish them by increase visitors knowledge and create positive attitudes towards wildlife and conservation seems both little assessed and understood. This study provides results about visitors zoo experience and perceived learning as knowledge and attitude towards wolves (*Canis lupus*) and the Swedish wolf population. The majority of the participants stated that they learned something new from the visit as well as that they had a satisfying overall experience at the wolf enclosure. Most visitors also had a good knowledge about wolves and the Swedish wolf population and a positive attitude towards their existence and conservation in Sweden. However, more research is necessary to assess zoos impact on visitors knowledge and attitude as well as their ability to meet their educational goals. Future research questions could be to further study zoo visitors' experiences associations with learning outcome. As well as how zoos educational goals are met considering people under the age of 18. Another area to focus on could be the research on the connection between knowledge, attitude and intention to act regarding conservation of species.

Introduction

Since 1966 the wolf (*Canis lupus*) has been a protected species in Sweden and the population is mainly distributed in mid Sweden (Swedish Environmental Protection Agency, 2013). In 2013 the Swedish government decided that the wolf should exist in Sweden and should so in a number that benefits its conservation (Swedish Environmental Protection Agency, 2013). The same year the Swedish Environmental Protection Agency decided that the number of wolves in Sweden should not go below 270 individuals. However, the public still sees the wolf as the least popular of Sweden's big predators (bear, wolverine, lynx and wolf) (Sandström & Ericsson, 2009).

Zoos and aquariums impact on visitor knowledge and attitude is an important issue that until now has received little attention (Marino *et al.*, 2010). Zoos today have several main goals: education, recreation, conservation, research and animal welfare (Anderson *et al.*, 2003; AZA, 2009). Out of these goals is especially conservation education is especially of great importance (WASA, 2005; Moss & Esson, 2013). When it comes to increasing the public's knowledge about animals, biodiversity and nature is it clear that zoos and aquariums play an important role (WASA, 2005). This is especially true for people that grow up in cities, since zoos often provide them with their first experience with wildlife and nature (WASA, 2005; Steiner, 2007) but it is equally important to take on the educational role for all people at all ages (WASA, 2005). With zoos around the world having over 700 million visitors every year (WASA, 2014) and European zoos visited by over 140 million (EAZA, 2011) there is a great opportunity to increase the public's knowledge of animals, nature and conservation. By studying the attitude, behaviour and understanding of zoo visitors zoos can progress with the goals of education and recreation be measured and assessed (Anderson *et al.*, 2003).

Learning in general

Most of our learning is according to Falk and Dierking (2010) a result of so-called free-choice learning. This type of learning is based on personal motivation and that the learner chooses when and where to take part in learning and also what to learn (Falk & Dierking, 2010). Further, for learning to occur the learner has to be motivated (Pettersen, 2008). According to Sherwin (2010) motivation is "the process within the brain controlling what behavioural changes occur and when". Pettersen also states that to get learners motivated and engaged there must be something in the situation that triggers the motivation and in turn triggers learning. In addition Pettersen (2008) says that in a learning situation, it is equally important with motivating learning environments as with motivated learners to achieve the goals with the education situation. A learning environment that is motivating also lets the learner activate and use knowledge and experiences from the past and initiate further learning (Pettersen, 2008).

Learning environments that could increase motivation is according to Pettersen (2008) often characterized with the five C:s (1) *curiosity* – situations that trigger the learners curiosity and will to find out more, often problem situations where there is no given answer, (2) *challenge* – situations where the task challenge the learners previous knowledge and experience, (3) *choice* – situations that include learners' possibility to have options and opportunity to follow own interests, (4) *control* – situations that require and give the learner opportunities to self regulation, (5) *collaboration* – situations that enable the learner to collaborate with others. By using collaboration and authentic problems in a so called problem-based learning situation can improve both the learners motivation and learning process (Wijnia, 2011). In these situations the learner is responsible in finding the

new knowledge and the teacher is supporting in the process without giving all the facts and answers (Hmelo-Silver, 2004). This method gives people the opportunity to use previously gained knowledge and experiences as well as gaining new knowledge and so enhance the learning input (Hmelo-Silver, 2004; Pettersen, 2008). By reflecting on the newly gained knowledge as well as prior knowledge (Hmelo-Silver, 2004) both individual and in a group also has a positive effect on the learning process (Sambell *et al.*, 1997).

Learning at zoos

Education is something many zoos focus on by taking on an educational role and especially when it comes to conservation education (Patrick *et al.*, 2007). These goals are apparent in most zoos missions and it is therefore arguable to say that it is important to manage both education and conservation for zoos (Patrick *et al.*, 2007). This should be done by offering both informal (free-choice) and formal education for the public (WASA, 2005).

When visitors arrive at zoos they all enter with previously gained knowledge and experiences as well as a personal interest and motivation for visiting (Falk & Dierking, 2010). All of these factors strongly influence the visitors experience at the zoo (Falk & Dierking, 2010). Also a number of studies has been done at zoos with focus on visitors learning, knowledge, attitude and conservation behaviour, however the results are not consistent and do not give a complete understanding on their impact on visitors regarding education and conservation (Marino *et al.*, 2010; Pearson *et al.*, 2013). In Balmford *et al.* (2007) it is argued that they did they not see any differences in visitors knowledge and understanding of conservation and threats towards threatened species before and after the zoo visit.

Making people more aware and concerned about animals and nature can only be done if they are aware about the threats against wildlife and conservation (Patrick *et al.*, 2007; Smith & Broad, 2008), which in turn is crucial when it comes to achieving the goals with environmental education; that is increasing peoples knowledge and getting them to adapt a more sustainable behaviour that the wildlife and nature can benefit from (Vaughan *et al.*, 2003). According to Hwang *et al.* (2000) a person with a more positive attitude is more likely to make his or hers intentions to act. Same authors also state that the very best way to impact on a person's willingness to act is by positively influencing their perception on who has the control in the learning situation. This in turn affects a person's attitude and in the end the intention to act (Hwang *et al.*, 2000). One way to put this to practise is to construct learning situations were the learner can critically look at his/her own choices and actions (Hwang *et al.*, 2000). Pearson *et al.* (2013) also saw that people with higher understanding scores, in the knowledge test, had a significant more positive attitude. For example, having a more positive attitude towards orangutans and their conservation, by having high scores on the attitude scale, led to a significant higher willingness to change behaviour (Pearson *et al.*, 2013). Sterling *et al.* (2007) also states that attitudes and behaviours can change as a result of received information and increased knowledge.

Falk *et al.* (2007) says that zoos can have a long-term positive impact on visitor's attitudes towards animals and the environment. This is because zoos enhance visitors understanding regarding animals as well as conservation of wildlife and their natural habitat (Falk *et al.*, 2007). However, Marino *et al.* (2010) argue that Falk *et al.* (2007) lack validity regarding their methodology and therefore cannot base this conclusion on the result.

According to Smith and Broad (2008) television and documentaries are factors that could lower zoos role as educators of the public since they can act as sources for information about wildlife and conservation. However, in those cases zoos still have a value of an

important place for reinforcement of previous knowledge and in that way enhance visitor's knowledge (Smith & Broad, 2008). Since it is important with several reinforcing experiences of previous knowledge to affect peoples' actions (Chawla, 1999) it can also be seen as a compliment in educating the public.

The wolf in Sweden

In the winter of 2012/2013 the Scandinavian grey wolf (*Canis Lupus*) strain consisted of around 380 individuals (Svensson *et al.*, 2013). The individuals were distributed with around 300 in Sweden, 30 in Norway and 50 at the border (Svensson *et al.*, 2013). The Scandinavian wolf strain is most likely too small to stand viable in the long term (>100 years) (Sand *et al.*, 2010) and the main reason for this is the populations decreased genetic variation due to its narrow genetic base and the lack of new individuals immigrating (Sand *et al.*, 2010).

Because the main source of conflict between humans and wolves involves the killing of domesticated animals, the Swedish government decided that the presence of wolves where reindeer are herded should be limited to areas where they have the least impact (Swedish Environmental Protection Agency, 2013). Other factors are the competition with hunters about quarry and peoples fear of wolves (Swedish Environmental Protection Agency, 2013). The competition of quarry is largely a cause of conflict because it is threatening an important part of people's lifestyle, which is of both cultural and social value for many people (Swedish Environmental Protection Agency, 2013). Hence Sandström and Ericsson (2009) saw in their study between 2004 and 2009 that wolves are the least popular of the big predators in Sweden. In the counties with most presence of big predators a majority does not accept the goals of wolf management that is set by the government (Sandström & Ericsson, 2009). The distance between people's residence and the closest wolf territory is clearly affecting people's attitude towards wolves (Kleiven *et al.*, 2004; Karlsson & Sjöström, 2007). People living further away from wolf territories have a more positive attitude and larger acceptance towards the conservation of wolves in Sweden and Norway (Kleiven *et al.*, 2004; Karlsson & Sjöström, 2007). Although Williams *et al.* (2002) found, in their assembly of 14 surveys from around the world, that 51% had a positive attitude towards wolves and their conservation. However the public's positive attitude towards the wolf in Sweden has increased between 2004 and 2009 to 71% of the population having a positive attitude (Sandström & Ericsson, 2009). Yet, in the county's where the wolf exists the number of people with a positive attitude towards wolves has decreased (Sandström & Ericsson, 2009).

Main objective

The main objective with this study is to investigate visitor's experience, learning outcome, knowledge and attitude from zoo visits in grown-ups.

Research questions:

Do visitors have a satisfying experience at the wolf enclosure?

Do visitors perceive learning anything new?

Do visitors have a positive attitude towards the Swedish wolf population?

Material and method

This study is a pilot study for a research project regarding learning at zoos – effects on visitor behaviour, attitudes and emotions.

Site and animals

Data was collected through the distribution of a questionnaire at the wolf enclosure at Skansen in Sweden, in April 2014.

The wolf pack consisted of three related males, father and sons, that were available for visitors to view at all time. The observer stood at one end of the enclosure at a crossroad with one viewing area on each side. Both viewing areas had information signages but one viewing area had considerable more information and was called “the wolf house”.

Procedure

The questionnaire that was used for this study was adapted from Pearson's *et al.* (2013) study at three orangutan enclosures in Australia. The questionnaire was for this study modified after the wolf enclosure and its signage at Skansen. Questionnaires in both Swedish and English were distributed for six days on two consecutive weekends in April, 2014 (Friday, Saturday and Sunday) between 12 and 16 p.m.

Participants had to speak either Swedish or English and be of 18 years or older. Visitors who crossed an imaginary line and stopped and looked over the enclosure for at least five seconds, were approached. Visitors were approached when leaving the viewing area or after they had viewed the enclosure for a minimum of 5 minutes. They were then invited to take part in this study through an anonymous questionnaire after they had finished watching the enclosure. They were also instructed to leave the questionnaire in a specific box at the enclosure. During the invitation there was no specific information about the questionnaire given and after the whole invite visitors acceptance or decline were recorded. Afterwards the observer turned away from the participant to avoid influencing them. It was also recorded if the participant had viewed the enclosure at the “wolf house” area with most signage.

Questionnaire

The questionnaire (appendix I) consisted of five sections; A) general experience, B) knowledge, C) attitude, D) behaviour and E) background information.

Under section A the visitor graded their general experience at the wolf enclosure on a scale with 5 options, from dissatisfied to satisfied. Participants were asked about their general experience with the viewing of the wolves and their enclosure, experience regarding the activity of the wolves and the size and features of the enclosure. They were also asked if they had learned anything new about wolves from that visit, what they were most likely to remember in the future from that visit and what, if any, emotions they experienced while viewing the wolves.

The knowledge part in section B consisted of ten multiple-choice questions based on the information at the viewing areas at the enclosure. Three of the questions (no 6,8 and 9) were based only from the information from the viewing area with the most signage, since the information at the other viewing area was less extensive. One question was removed after the first weekend and was not included in the results. This part was to evaluate the visitors' understanding of the Swedish wolf population's behaviour, ecology and threats against them.

In section C, the visitors' attitude towards the Swedish wolf population was assessed through an 11-item scale. One of the items (no 7) was neither positive nor negative and not included in the visitors attitude score. It was only included because it was an interesting question, with respect to zoo learning.

The visitor graded their response on a 5-point scale ranging from strongly disagree to strongly agree, where 1 was strongly disagree and 5 was strongly agree. The statements in the scale were both positively and negatively worded. The negative statements were reverse-scored when calculating the total score of a minimum of 10 and maximum of 50.

The behaviour part (D) assessed if the participants' future behaviour were affected as an effect from their visit to the wolf enclosure. It also evaluated their own and their family and friends' view on wolf conservation in Sweden and finally they were asked if they were a member in any organisation that focuses on conservation of species.

The final section (E) collected background information about the visitor. They were asked about gender, age, education, if they resided in a rural location, if they were vegetarians, pet ownership and if they had visited a zoo in the past 12 months.

Results

A total of 364 visitors were approached and 261 questionnaires were distributed. Out of these 72 % accepted and 28 % declined to participate in the study. Of the 261 questionnaires the distribution was as follow; 97 (wolf-house: 75) in Swedish and 164 (wolf-house: 148) in English, with a return rate of 100 %. 223 of the participants stopped at the viewing area “wolf house” and it was these questionnaires that served as the base for the analysis.

Experience and perceived learning

Visitors’ satisfaction with their experience (tab. 1) at the wolf enclosure were for the majority regarding the overall experience slightly satisfying (28,3 %). 19,5 % were dissatisfied or slightly dissatisfied, and 53 % were slightly satisfied or satisfied. Regarding the wolves’ activity most visitors were neutral (36,3 %) with 30,4 % dissatisfied or slightly dissatisfied and 30,9 % slightly satisfied or satisfied. The majority (56,1 %) of the visitors were slightly satisfied or satisfied with the size and features of the enclosure, 24,7 % was neutral and 16,6 % dissatisfied or slightly dissatisfied.

Table 1. Percentage of visitor satisfaction regarding their experience at the wolf enclosure (missing answers were excluded).

	Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Satisfied
Overall experience	5,6	13,9	26,5	28,3	24,7
Wolves activity	15,2	15,2	36,3	13,0	17,9
Enclosure	5,8	10,8	24,7	30,5	25,6

When asked if they perceived that the visit at the wolf enclosure had made them learn anything new, 61,4 % replied that they had received new knowledge about wolves. 35,9 % of the participants replied no to this question and 2,6 % gave no response.

Table 2. Percentage of visitors' satisfaction regarding their learning outcome (missing answers were excluded).

	Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Satisfied
Overall experience					
Yes (%)	2,2	8,1	13,5	19,7	17,5
No (%)	3,6	4,9	13,0	7,2	6,7
Wolves activity					
Yes (%)	8,1	10,8	21,1	9,0	12,1
No (%)	7,2	4,5	13,9	4,0	4,5
Enclosure					
Yes (%)	3,1	6,3	14,3	19,7	17,0
No (%)	2,2	4,5	9,4	10,3	7,6

Of the visitors that answered “yes” 37,2 % stated that they had a slightly satisfied or satisfied overall experience compared to the 13,9% that answered “no” (tab. 2). 10,3 % of those who answered “yes” were slightly dissatisfied or dissatisfied compared to the 8,5 % who did not have the perception of learning anything new. Regarding the wolves' activity 21,1 % of those who answered “yes” were slightly satisfied or satisfied, which was as many as those who were neutral, compared to the 8,5 % that answered “no”. On the experience of the enclosure the majority who answered that they had learned something new (36,7 %) were slightly satisfied or satisfied and 17,9 % of those who felt that they did not learn anything were also slightly satisfied or satisfied.

Knowledge

Most visitors (91 %) knew that wolves live in packs and this was also the question with the highest percentage of correct answers (tab. 3). What species wolves are and that it is a protected species was also answered correctly by the majority of the visitors. The question with least amount of correct answers was the one asking where in Sweden the wolf population mainly is distributed. Remaining questions receiving the correct number of answers ranging from 45 to 53 % and the visitors mean value on this test amounted to 5,3 correctly answered questions (tab. 4).

Table 3. Visitor percentage answering each knowledge question correct (missing answers were excluded).

Knowledge questions		Correct answers (%)
1.	Wolves are a species of (<i>canids</i>)	76
2.	Swedish wolves hunt primarily (<i>elk</i>)	47
3.	The largest threat against the Swedish wolf population is (<i>inbreeding</i>)	52
4.	In Sweden wolves are (<i>a protected species</i>)	74
5.	Wolves live (<i>in packs</i>)	91
6.	The number of domestic animals that are killed by wolves in Sweden every year reach a number of (<i>hundreds</i>)	45
7.	The Swedish wolf population is mainly distributed in (<i>mid Sweden</i>)	43
8.	The puppies stay with their parents (<i>at least 1 year</i>)	48
9.	Wolves are not permitted in reindeer grazing grounds that are used all year round in Sweden (<i>true</i>)	53

The group with highest mean (5,9) also answered that they had a slightly satisfying overall experience (tab.4). The highest mean regarding the wolves' activity (5,6) was the group that was dissatisfied and in terms of the experience of the enclosure the groups dissatisfied and slightly dissatisfied had the highest mean value of 5,7.

Table 4. Percentage of visitors in each satisfaction category regarding their experience and mean value of the knowledge test (missing answers were excluded).

	Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Satisfied
Overall experience					
Visitors (%)	5,8	13,9	26,5	28,3	24,7
Mean value	4,9	5,3	4,9	5,9	5,2
Wolves activity					
Visitors (%)	15,2	15,2	36,3	13,0	17,9
Mean value	5,6	5,1	5,4	5,1	5,3
Enclosure					
Visitors (%)	5,8	10,8	24,7	30,5	25,6
Mean value	5,7	5,7	4,9	5,4	5,5
Total mean value of the knowledge test = 5,3					

Attitude

The total score for each statement was between 1 and 5, where 1 was strongly disagree and 5 was strongly agree (tab. 5). Higher scores represent a more positive attitude towards wolves. Statements number 3, 5 and 11 were so-called negative statements; a low number represented a positive attitude.

The statement about keeping wolves in zoos was neither positive nor negative and was only added because it was an interesting question, with respect to zoo learning. The mean score for that statement however was 2,7 which best indicates that people were undecided regarding that issue. All of the negative statements had a low mean score. The statement that hunting wolves is a part of our culture had the highest of them. Regarding the other statements, the one regarding conservation work on wolves had the highest mean (4,5) and indicates that the majority of the visitors thought that this is important. The positive statements with the lowest scores (3,3) were regarding the hunting of wolves because they kill domestic animals and limiting the number of wolves in the wild. Finally the participants mean value for the whole attitude scale (exclusive statement 7) was 36,7 (tab. 6) with the score 50 representing the most positive attitude towards wolves.

Table 5. Mean score for each statement in the attitude scale (missing answers were excluded).

Attitude statements		Mean score
1.	It is wrong to hunt wolves for sport or because they compete with huntsmen for quarry.	4,4
2.	It is important to manage conservation work on wild wolves.	4,5
3.	The wild wolf population is of little importance since they are kept in zoos.	1,7
4.	The extinction of the Swedish wolf population would be an ecological and moral disaster.	4,2
5.	Hunting wolves is a part of our culture.	2,4
6.	It is important to accept wolves around were one lives.	3,5
7.	We should keep wolves in zoos.	2,7
8.	It is wrong to hunt wolves because they kill domestic animals.	3,3
9.	It is wrong to limit the number and distribution of the wolf.	3,3
10.	It is important to have wolves in Sweden.	4,4
11.	Basically, humans have the right to use wolves as we see fit.	1,8

The highest mean value regarding the overall experience was the group that had slightly dissatisfied (36,94) and for the experience of the wolves' activity the group that was satisfied had the highest mean (36,58). Looking at the satisfaction of the enclosure the group that was dissatisfied had the highest mean of 37,38.

Table 6. Percentage of visitors in each satisfaction category regarding their experience and mean value of the attitude score (missing answers were excluded).

	Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Satisfied
Overall experience					
Visitors (%)	5,8	13,9	26,5	28,3	24,7
Mean value	33,08	36,94	35,88	35,17	34,51
Wolves activity					
Visitors (%)	15,2	15,2	36,3	13,0	17,9
Mean value	33,79	36,50	35,38	33,69	36,58
Enclosure					
Visitors (%)	5,8	10,8	24,7	30,5	25,6
Mean value	37,38	34,79	34,27	34,18	36,04
Total mean value of the attitude score = 36,7					

When asked about the importance of wolf conservation in Sweden (tab. 7) 84 % answered that they consider it to be important. However, when asked if today's visit to the wolf enclosure had an impact on their future behaviour regarding conservation the majority (59,2 %) believed that it did not.

Table 7. The response that most closely represents the visitors' view toward wolf conservation in Sweden (missing answers were excluded).

Response	(%)
Wolf conservation is highly important	45,7
Wolf conservation is important	38,1
You are indifferent toward wolf conservation	8,0
Wolf conservation is not important	1,8
Wolf conservation is not at all important	0,4
Unsure	1,8
No response given	4,0

Background information

The visitors were evenly divided between females and males (tab. 8) with the majority being between the age of 18 and 30. Postgraduates were the most represented of the education groups. 59,2 % of the participants had owned a pet and 36,7 % were currently owners of pets. Both categories 64,4 % considered their pet to be a part of their family. Of all visitors that participated in this study less than half (39,5 %) had visited a zoo within the last 12 months.

Table 8. Visitor background information (missing answers were excluded).

	(%)
Gender (female)	48,4
Gender (male)	46,2
Age (18-30)	54,2
Age (31-50)	35,0
Age (51-70)	6,7
Education (high school)	16,1
Education (diploma)	20,2
Education (trade)	1,3
Education (undergraduate)	17,0
Education (postgraduate)	39,0
Education (other)	2,2
Lives in rural location	18,3
Raised in rural location	26,9
Vegetarian	7,6
Pet owner (currently)	36,7
Pet owner (previously)	59,2
Consider pet as part of family	64,4
Zoo visit in the last 12 months	39,5

Discussion

This study will be applied as a pilot study for a future research project about visitor learning at zoos. This pilot study will form the base for a future research project, which will be improved from these results as well as the experiences with the questionnaire and execution of the study. This study can also be seen as a contribution for an issue that is becoming more and more central for zoos; visitors experience, perceived learning, knowledge and attitude. Since the reason for zoos educational program is to increase peoples' knowledge and promote positive attitude towards wildlife and conservation (Sterling *et al.*, 2007). This is of great importance because most zoos have education of the public as one of their main goals, but how and if this is being met is not clear. Until now the zoos' role as educators and their impact on the publics' knowledge, attitude and willingness to act regarding animals, biodiversity and conservation have been little evaluated (Reading & Miller, 2007). The studies that have been done on the subject have not provided consistent results (Pearson *et al.*, 2013), i.e. using different methods could be a reason for that when in comparison.

A majority of the approached visitors, 72 %, accepted to participate in this study and out of those 85% visited the viewing area "wolf house", which had the most signage. However, a large number of visitors visiting the other viewing area barely stopped to view the wolf enclosure and the visitors that did stop were less willing to participate. Those visitors were perhaps less interested in wolves than the visitors entering the "wolf house". Therefore, it could be that the visitors that went to the "wolf house" were more willing to participate in this study because of their greater interest.

The return rate for the distributed questionnaires was 100 %, which indicates that the box to put the completed questionnaire in was placed in the right spot at the enclosure. Of the questionnaires that were distributed the majority (63 %) were in English and my perception here was that international visitors were more likely to participate in this study compared to the local residents. I also had the perception that most families with children were less willing to participate, because answering a questionnaire and at the same time keeping an eye on the children and entertaining them is probably not the easiest. The group of participants that represented the majority in this study were between the ages 18 and 30 and most had the educational level of postgraduate. This was expected since several people that accepted to participate stated that they did so because they also had been in the same situation (performing a bachelor thesis) during their education. With these considerations in mind, it would for future research projects be interesting to also register why a person accepts or declines to participate, and whether or not the approached visitor is international or local. It would also be interesting to further examine the reason to and their expectations on the zoo visit. This to better understand how to reach all zoo visitors and how to create different learning situations that can enhance their knowledge about animals, biodiversity and conservation. Since perhaps only using one type of learning situation i.e. signage's is not optimal for all visitors when it comes to having an impact on their learning outcome. In addition it would be beneficial to study people under the age of 18, which this study was not within the scope of this study. This to better understand how to reach all zoo visitors and thereby obtain a more accurate assessment of the visitors' experience and perceived learning, knowledge and attitude towards animals. Since one goal with zoos educational role is that it should include people of all ages (WASA, 2005).

Since only 53 % stated that they had had a slightly satisfying or satisfying overall experience it would be interesting to further investigate which factors influence a positive experience. Despite not all having a satisfying experience some visitors still accepted to participate in this study and contribute with their experience at the wolf enclosure. The majority of the participants stated that their visit to the wolf enclosure had provided them with new knowledge and the majority of those had satisfying or neutral experiences at the wolf enclosure. Interestingly some visitors had more dissatisfied experiences but still stated that they learned something new. Altman (1998) stated that visitors gaining new knowledge about animals are more likely to occur if the animal or its behaviour is of the visitors focus. In turn this is more likely to occur if the animal is active and in a way that is lively and with a lot of movements (Altman, 1998). So perhaps by looking more at visitors' satisfaction with the animals' activity we can better predict zoo visitors' learning outcome. However, in this study only 30,9 % of the participants were slightly satisfied or satisfied with the wolves activity, despite the 61,4 % that stated that they learned something new at the wolf enclosure. But in Altman's (1998) study it was the researchers that assessed the visitor's focus on the animals as well as the animals behaviour, contrary to this study where it was the visitors themselves that assessed their experience regarding the wolves' activity. However, making changes in the environment to enhance visitors' experience could as an effect provide both recreation and education for visitors at the same time and thereby provide a learning situation through entertainment (Anderson *et al.*, 2003). Ways to enhance visitors' experience as Altman (1998) suggests by active animals and according to Anderson *et al.* (2003) is animal training with and without information talks is the best way to increase visitors experience to be more positive. In connection with the public otter training sessions visitors both stayed longer at the exhibit and had a more positive experience compared to situations without animal training (Anderson *et al.*, 2003).

In the knowledge test the participants were tested on their knowledge about wolves and the Swedish wolf population. The mean value of correctly answered questions was 5,3, which is more than half of the knowledge questions. Consequently, most participants had a good knowledge about wolves and the Swedish wolf population. Most visitors knew that wolves live in packs and that they are a species of canids. The question with the least amount of correct answers was the one asking where in Sweden the wolf population mainly is distributed. Thus most people could answer general information questions about wolves but fewer knew the answers to the questions specifically regarding the Swedish wolf population. However, this test does not provide any information about the visitors' previous knowledge and what actually was gained from that visit. To further investigate this in future research projects it might be beneficial to ask the visitors to take the test before and after viewing the animals and their enclosures, as well as using a control group. It would also be interesting to examine if the visitors actually enter the zoo with the goal to gain more knowledge about animals and conservation and further how important it is for them to gain more knowledge from a zoo visit.

Waller *et al.* (2012) came to the conclusion that the signage did not have an impact on the visitors' learning but that the presence of a scientist increased both visitors' interest and learning. The use of videos and other visual presentations that present information about the animal and the threats against the species as well as their conservation can also have a positive impact on visitors knowledge, attitude and future behaviour regarding conservation (Pearson *et al.*, 2011). This is why it would be interesting to further study different learning situations for visitors and evaluate them. For example, one such instance could be around animal feeding, shows or displays with animals with and without the

presence of a staff member as well as different types of signs. This would be a good attempt in implementing Pettersen's (2008) five C:s to create learning situations that could make zoo visitors more interested and thereby increase motivation to learn, as well as the learning outcome.

Regarding the questionnaire itself there are some changes in the knowledge section of this questionnaire be done if it should be used again. First it would be favourable to have ten knowledge questions just as Pearson *et al.* (2013) have, to make it easier to compare studies and also in a future research project compare visitors at different enclosures without having to make their knowledge score into percentage. Also, the question regarding that the wolf in Sweden is a protected species is one alternative "too many", which actually could be something that a person thinks and is not fact related and should therefore be replaced.

When participants were asked about the importance of wolf conservation in Sweden over 80 % did answer that they consider it to be important. Since the similar statement in the attitude scale also had the majority of visitors being positive about it, it seems right to state that the majority of these visitors think conservation of wild wolves in Sweden is important. Over all, the scores from the attitude scale indicate that the visitors have a positive attitude towards the Swedish wolf population. When it comes to positive attitudes Clayton *et al.* (2009) found an association between that and self-reported learning as well as visitor's willingness to learn more. But when it comes to attitudes towards wolves did Ericsson and Heberlein (2003) found that the group of people that had highest knowledge about the species also had the most negative attitude. This group of people were all hunters with a personal interest that perhaps affect their attitude. Since one of the main reasons for the conflict between humans and wolves in Sweden according to the Swedish Environmental Protection Agency (2013) is the competition about quarry. So perhaps it is more complex than to say that you make people adapt to a more positive attitude towards animals just by increasing their knowledge about them, perhaps personal interests and other factors have a great impact on attitudes.

Regarding the used sources used in the introduction in this study, Sandström and Ericsson's (2009) work does have the weakness of not being a scientific article as for instance Kleiven's *et al.* (2004) peer reviewed article. However, Sandström and Ericsson's (2009) method is relevant and surely therefore provides usefull results. As Kleiven's *et al.* (2004) states much research on attitudes towards big predators has mainly been done on a global level and Sandström and Ericsson's (2009) report has the strength of having done that on a local level and therefore probably better reflect the attitudes of the Swedish population. Both these studies were done by using questionnaires. Sandström and Ericsson (2009) had 7 199 respondents compared to Kleiven's *et al.* (2004) 3 134. Both had a large sample but the fact that Sandström & Ericsson (2009) had more than the double of Kleiven's *et al.* (2004) participants as well as carrying it out it in Sweden makes me consider their results more representative of the Swedish people. Also Sambell's *et al.* (1997) study was conducted in 1994 and even if a change in the way to teach has occurred it can still be regarded as a valuable source since little research has been carried out on the subject. Pearson's *et al.* (2013) study has the strength of the use of the Animal Attitude Scale that has been accepted regarding both reliability and validity when it comes to measuring attitude. Karlsson and Sjöström (2007) however did not use questions with accepted reliability and validity and based a person's attitude on the their opinion regarding the importance on having wolves in Sweden.

Even if the majority of the participants in this study considered wolf conservation important the majority also stated that the visit did not have an impact on their future behaviour regarding wolf conservation. Regarding the participants' experiences and the mean value of the attitude score, those who had slightly dissatisfying and dissatisfying experiences concerning the overall experience and the enclosure have the highest mean. However the group with the highest mean regarding the wolves' activity stated that they were satisfied.

The attitude section of the questionnaire does have some limitations. It measures a person's attitude towards wolves after the visit to the enclosure but it does not say anything of the person's attitude before the visit. It is therefore not known if any of the participants changed their attitude towards wolves as an effect of that visit. Also in the attitude section of the questionnaire some changes should be done for future research, namely that three statements (no. 1,4,9) include two statements instead of just one. The attitude scale statements are not completely adapted from the Animal Attitude Scale (Herzog *et al.*, 1991) that Pearson *et al.* (2013) used. Therefore this attitude scale lacks the reliability and validity of the Animal Attitude Scale. It would be beneficial for future research to use the Animal Attitude Scale so that it actually measures what is wanted and that the result would be the same if measured again.

The data for this pilot study was as previously described collected by random selection of respondents and self-completion forms. The method provided comparative measures with previous studies (see below) and relevant indicative results. Advantages with the used method are that it was the only practical and economical solution as well as it provided indicatively results. The methodology is copied from Pearson's *et al.* (2013) study. In effect, which leads to not having to take in consideration the methodological nature when comparing results with previous studies. In that way the outcome of zoos educational goal can be better assessed. The method's disadvantage is however that there is no control over the sample since there is no way to know who visits the zoo and when. So the method's reliability is affected by the selection of approached visitors since it is not certain that the people that visited the zoo on the days when the data was collected is representative for all the zoos visitors.

Conclusion

The participants of this study had a positive attitude towards the Swedish wolf population with the perception that it is important to manage conservation work on the wild wolves living in Sweden. The majority of the participants also stated that the visit to the wolf enclosure gave them new knowledge about wolves. At the same time only about half of the visitors had a satisfying overall experience at the enclosure. However this study does not provide any information of the participants prior knowledge and attitude towards the Swedish wolf population and does not take in consideration the participants' prior experiences, interest and reason for visiting zoos. More research is necessary to be able to fully assess zoos impacts on visitors' and how to best create learning situations that has a positive impact on visitors experience, knowledge and attitude.

Populärvetenskaplig sammanfattning

Sedan 1966 har vargen varit fridlyst i Sverige och vintern 2012/2013 utgjordes den skandinaviska vargstammen av omkring 380 individer, varav omkring 300 i Sverige. Konflikten som finns mellan människor och varg beror främst på dödandet av tamdjur, konkurrensen om bytesdjur samt rädsla för varg. Dessa faktorer påverkar det faktum att vargen är det minst populära stora rovdjuret bland Sveriges befolkning och att många som bor i rovdjursområden inte accepterar riksdagens bevarandemål för varg. Trots detta har den svenska befolkningen generellt sett en positiv attityd till varg.

Djurparkernas inverkan på besökarens kunskap om och attityd till djur och deras bevarande har hittills fått lite uppmärksamhet på forskningsfronten. Detta är viktiga ämnen då ett av djurparkernas syfte är att utbilda allmänheten om djur, biologisk mångfald samt bevarandet av arter. Det finns en ganska stor kunskap om faktorerna som påverkar lärandet samt attityder, men hittills har man inte kunnat bedöma hur och om djurparkerna faktiskt har lyckats med utbildningsmålen. Det har gjorts några studier inom detta område men resultaten är inte överensstämmande med varandra.

Denna studie undersökte svenska djurparksbesökarens upplevelse samt upplevt lärande, kunskap och attityd vid ett varghägn och är tänkt som pilotstudie för ett större forskningsprojekt. Totalt samlades 261 enkäter in varav 223 användes till dataanalysen och de som tillfrågades att delta var 18 år och äldre. Resultatet visade att majoriteten av deltagarna var nöjda med upplevelsen vid varghägnet samt att de flesta upplevde att de lärde sig något nytt. Deltagarna hade också en god kunskap om varg och den svenska vargpopulationen samtidigt som de allra flesta hade en positiv attityd till varg och dess existens samt bevarande i Sverige. Trots detta ger studien ingen information om deltagarnas kunskap och attityd till varg innan besöket. Varför den inte kan säga något om hur mycket deras förståelse och kunskap om varg ökade, om det gjorde det, samt om det skedde någon attitydförändring.

För framtida forskning föreslås att man tittar närmare på associationen mellan besökarens upplevelse och läranderesultat samt sambanden mellan kunskap, attityd och beteende när det kommer till bevarande av arter. Detta för att bättre kunna utvärdera hur djurparksbesökare bäst tar till sig ny kunskap samt ändrar attityd till mer positiv. Därtill är den mesta forskningen gjord på vuxna så jag föreslår att man framöver också tittar djurparksbesökens effekt på personer under 18 då målet är att bedriva utbildning för personer i alla åldrar.

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Appendix



Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Department of Animal Environment
and Health

No: _____



Zoo Experience Questionnaire

Section A

1. Using a circle, please rate your overall experience viewing the wolves and their enclosure today:

Dissatisfied Slightly Dissatisfied Neutral Slightly Satisfied Satisfied

Please explain why?

2. Please indicate your satisfaction with the following by circling the appropriate response:

How active the wolves were

Dissatisfied Slightly Dissatisfied Neutral Slightly Satisfied Satisfied

The size and features of the enclosure

Dissatisfied Slightly Dissatisfied Neutral Slightly Satisfied Satisfied

3. What, if any, emotions did you experience whilst observing the wolves?

4. Did you learn anything new about wolves from your visit to the zoo today?

Yes No

Please explain further:

5. What are you most likely to remember in the future from your visit to see the wolves today?

Section B

Please circle your response

1. Wolves are a species of:

- a) canids b) felids c) mustelids

2. Swedish wolves hunt primarily:

- a) deer b) reindeer c) elk

3. The largest threat against the Swedish wolf population is:

- a) hunting b) inbreeding c) traffic

4. In Sweden wolves are:

- a) too many b) extinct c) a protected species

5. Wolves live:

- a) in packs b) alone

6. The number of domestic animals that are killed by wolves in Sweden every year reach a number of:

- a) tens b) hundreds c) thousands

7. The Swedish wolf population is mainly distributed in:

- a) northern Sweden b) mid Sweden c) southern Sweden

8. The puppies stay with their parents:

- a) at least 1 year b) less than 1 year c) their whole life

9. Wolves are not permitted in reindeer grazing grounds that are used all year round in Sweden:

- a) true b) false

Section C

Please respond to the following statements by circling the appropriate number where:

1 = Strongly Disagree (SD)

2 = Disagree

3 = Undecided

4 = Agree

5 = Strongly Agree (SA)

		Response SD-----SA				
1.	It is wrong to hunt wolves for sport or because they compete with huntsmen for quarry.	1	2	3	4	5
2.	It is important to manage conservation work on wild wolves.	1	2	3	4	5
3.	The wild wolf population is of little importance since they are kept in zoos.	1	2	3	4	5
4.	The extinction of the Swedish wolf population would be an ecological and moral disaster.	1	2	3	4	5
5.	Hunting wolves is a part of our culture.	1	2	3	4	5
6.	It is important to accept wolves around were one lives.	1	2	3	4	5
7.	We should keep wolves in zoos.	1	2	3	4	5
8.	It is wrong to hunt wolves because they kill domestic animals.	1	2	3	4	5
9.	It is wrong to limit the number and distribution of the wolf.	1	2	3	4	5
10.	It is important to have wolves in Sweden.	1	2	3	4	5
11.	Basically, humans have the right to use wolves as we see fit.	1	2	3	4	5

Section D

1. Do you believe that today's visit to the wolf enclosure impacted on your future conservation behaviour?

Yes No

Please explain further:

2. Which response most closely represents your view toward wolf conservation in Sweden?

Wolf conservation is highly important

Wolf conservation is important

You are indifferent toward wolf conservation

Wolf conservation is not important

Wolf conservation is not at all important

Unsure

3. Which response most closely represents the view of your friends and family toward wolf conservation in Sweden?

Wolf conservation is highly important

Wolf conservation is important

They are indifferent toward wolf conservation

Wolf conservation is not important

Wolf conservation is not at all important

Unsure

4. Are you currently a member in an organisation that focuses on conservation of species?

Yes No

If yes, please list all organisations here:

Section E

Gender: Female Male

Age: 18-30 31-50 51-70 >71

Education: High school Diploma Trade Undergraduate degree
Postgraduate degree Other

Do you currently reside in a rural location: Yes No

Were you raised in a rural location: Yes No

Are you a vegetarian: Yes No

Do you currently own a pet: Yes No

If so please list all species
here: _____

Have you owned a pet: Yes No

If so please list all species
here: _____

Do you consider your pet to be a member of your family: Yes No

Prior to today, have you visited a zoo in the past 12 months: Yes No

THANK YOU!
For your contribution 😊

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