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Does community-based conservation matter?

A case study in Cambodia

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ABSTRACT

Wildlife trade, sale and exchange of wild flora and fauna, is the second largest threat to the world's biodiversity. The illegal wildlife trade is most acute in south-east Asia and has far-reaching effects. Not only does it affect the species being exploited but it also directly affects the livelihood of millions of people. To deal with disappearing habitats and wildlife populations, conservation organisations are more and more using an approach known as community-based conservation. The aim is that local people shall benefit from the conservation of the species and habitats in their area. However, a major challenge for all conservation programs is to evaluate how effective the program is at both conserving species and creating awareness among the community. By having an understanding of the level of awareness among the community and the effects of community work this will give an idea of the importance and need for this kind of conservation tool. This study seeks to assess whether the presence of a community-based program changed people's level of knowledge and perception toward conservation issues and law enforcement. Interview studies were carried out at four specific sites across Cambodia, where each site has a different management strategy. The results show that people in the area that is not under any kind of protective management regime, have a more negative attitude towards law enforcement and the current wildlife legislation. Their knowledge and perception on conservation issues are also significantly lower than the other sites. My results clearly show that the respondents that have received wildlife-related benefits along with education have a greater understanding for conservation and their attitude towards law enforcement are overall positive.

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1. INTRODUCTION

Wildlife trade is any sale or exchange of wild animal and plant resources made by people. The trade is a big business, worth billions of dollars and involves hundreds of millions of plants and animals from a wide range of species. While some part of the trade is legal and conducted at sustainable levels, a large part is illegal and unsustainable, and may lead to over-exploitation of species (Oldfield 2003). Wildlife trade is, second to habitat destruction, considered to be the largest threat to biodiversity. The illegal trade in wildlife is believed to be the third largest contraband business followed by the black market in drugs and weapons (Davies 2005). Unsustainable, and often illegal, exploitation of wildlife has a devastating effect on the biodiversity of the world.

The illegal wildlife trade is of global concern but the problem is most severe in south-east Asia. This region acts as the main consumer as well as the key supplier of wildlife products (TRAFFIC 2008). As the Asian middle and upper class grows and becomes richer, the demand for rare wildlife products will increase (Venkataraman 2007). There are indications that China acts as the major consumer of wildlife (TRAFFIC 2007) while countries like Cambodia, Vietnam, Lao DPR, Indonesia and Myanmar act as the major source of wildlife in trade (TRAFFIC 2008).

The illegal wildlife trade in south-east Asia has far-reaching effects. Not only does it affect the species being exploited but it also directly affects the livelihood of millions of people (Oldfield 2003). The impact is most severe for the world's poorest, which depend on local wildlife for food, fuel and medicine. Many of those surviving below the national poverty line in Cambodia, Indonesia, Myanmar, Lao PDR and Vietnam depend on natural resources for their welfare and survival. Moreover, it has considerable implications for conservation and development at local, national and international levels. Illegal trade undermines countries' efforts to protect and sustainably manage their natural resources, because it is depleting valuable natural assets (TRAFFIC 2008).

To deal with the disappearing habitats and wildlife populations, governments establish national parks and protected areas but for centuries efforts have been focused on separating the pristine from the people. The areas were often established with very little input from people living in the area. Local people, who had lived and used the land for generations, were often relocated outside the park. (Rechlin et al. 2008). Despite strict enforcement by the various governmental agencies, habitat and wildlife populations have continued to decline in many areas (Mehta and Kellert 1998). Because of this it is becoming clearer that long-term management of protected areas is dependent upon the cooperation and support of local people.

An alternative approach known as community-based conservation, assumes that by being involved in the decision making process and receiving wildlife-related benefits, local communities will recognize that a sustainable use of the wildlife resources is in their own economic and social interests (Rechlin et al. 2008). The main idea is that local people shall benefit from the conservation of the species and habitats in their area. Local communities are often unable, or at least unwilling, to conserve habitats or species unless there are economic incentives that compensate them for losses or preferably benefit them more than if they would have poached/collected the protected species, so the benefits to the community must be very clear (Gillingham and Lee 1999).

The purpose with community-based conservation is to have a win-win situation, in which both conservation and community development goals are achieved. It is increasingly recognized that local communities are the key for the success of a conservation program (Western 2001). However, a major challenge for all conservation programs is to evaluate how effective the program is at both conserving species and creating awareness among the community. It is imperative that studies are undertaken and reliable surveys are conducted, not only to evaluate which “program” that is best at conserving species but also to evaluate public understanding and acceptance for conservation. Surveys made for evaluating attitudes among the public have proven to be an easy and fairly reliable method to assess effectiveness of different programs (IIED. 1994). Understanding the communities’ level of awareness combined with monitoring the effectiveness of the community based initiatives will gage the benefit of the specific conservation tools used.

2. AIM OF THE STUDY

This study aims to assess the knowledge level and perception of local inhabitants regarding wildlife management and conservation issues in Cambodia. I have investigated four sites across Cambodia where each site has a different management strategy. Through interview studies I have examined if the presence of a community-based program changed people’s level of knowledge and perception of conservation issues, wildlife legislation and law enforcement. I hypothesize that the presence of a community-based program will increase the local people’s knowledge on conservation issues and improve their understanding towards the current wildlife legislation.

3. METHODS

3.1 Study site

This study was carried out in Cambodia from 1st February through 30th April 2008. The locations for the surveys were decided together with my supervisor Annette Olsson (Research Advisor), the community working group at Conservation International (CI) and the World Wide Fund for Nature (WWF). In total four sites were chosen. The sites were chosen depending on certain variables, including: level of protection of the area, proximity to the forest, presence of community based conservation and proximity to ranger stations.

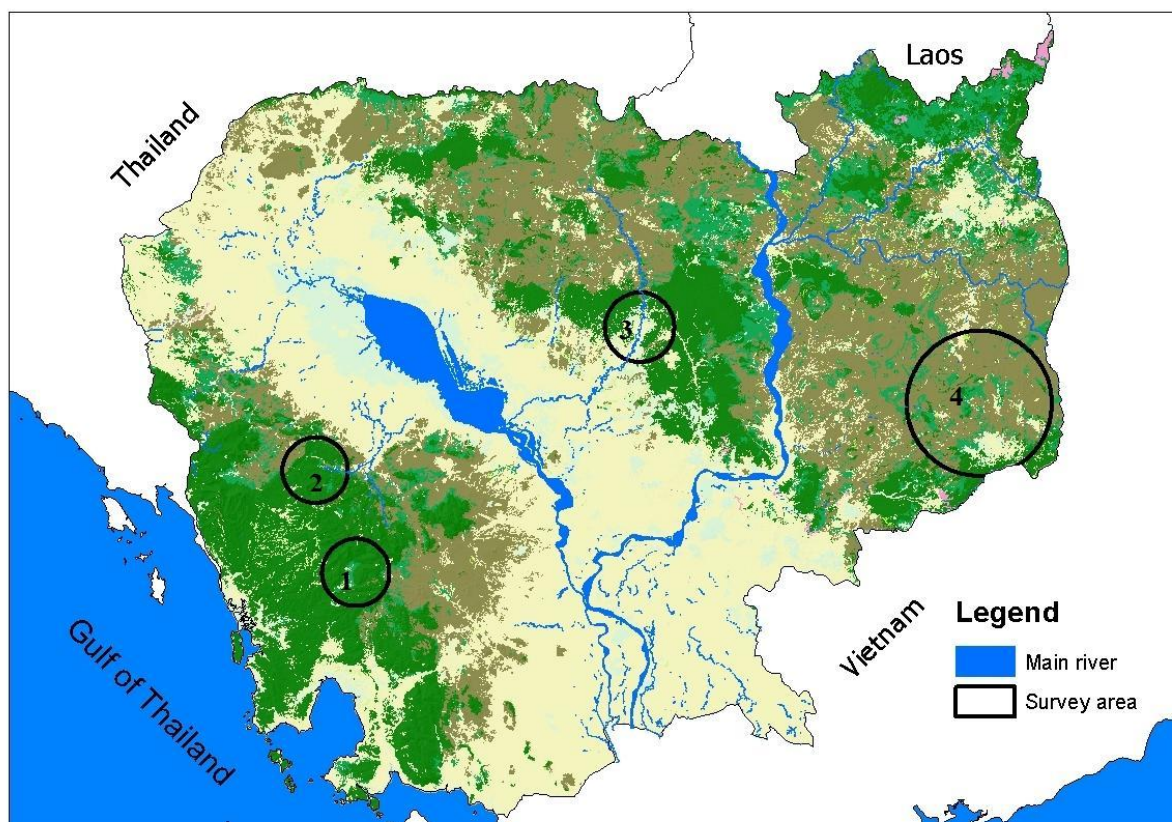


Figure 1; Map of Cambodia showing the location of the survey sites.

Two of the sites are within the Central Cardamom Protected Forest (CCPF). The CCPF is located in Koh Kong, Kampong Speu, and Pursat provinces in southwest Cambodia, and the area covers 401,313 ha of pristine wilderness. Since there are variations in altitude, geology and hydrology there is a wide variety of vegetation types. The major vegetation types include lowland evergreen, sub-montane evergreen, dwarf evergreen forest, pine forest, and bamboo and vine thickets. The CCPF varies in elevation from 800 m a.s.l. to more than 1300 m a.s.l. The CCPF became a protected area when the Cambodian Government signed the sub-decree, entitled “*The Establishment of the Central Cardamom Protected Forest for Watershed Protection and Biodiversity*” in July 2002. The area is under the management of Forestry Administrative (FA) and The Ministry of Agriculture Forest and Fishery (MAFF) with support from CI since 2000. (Management Plan for Central Cardamom Protected Forest, 2008). The CCPF conservation program currently has seven ranger stations throughout the three provinces, where the staff consists of 11 unarmed FA rangers, and for their protection, more than three dozen Cambodian military policemen. The FA, which receives technical and financial support from CI, has oversight of the Central Cardamoms. In the CCPF there is a close cooperation among government staff (FA, Military Police, and demobilized military), CI, and local communities. The three main components for the conservation program are law enforcement, research & monitoring, and community engagement.

Survey site 1 is located in the southwest part of the CCPF in Thma Bang district. At this site there is both a community based program with community rangers, which is people in the community that are engaged through on-the-ground conservation activities, and government rangers patrolling the area. The Community Program, which has been running since 2003, involves a range of activities that aim to increase the involvement of the community in the management of the natural resource as well as to improve the livelihoods of local communities in ways that reduce pressures on biodiversity. CI has designed a conservation

agreement that provides the community with support for teachers and schools, lowland rice production, new tools for agriculture, pig and buffalo banks. In return, the community agreed to stop slash-and-burn agriculture, and also committed itself to have community rangers that patrol the area in order to reduce the illegal wildlife poaching and trading. The rangers get wages, equipment and training.

Survey site 2 is located in the north parts of the CCPF in Phnum Kravanh district. At this site there is no community based program running but CI have tried involving the community by having community rangers patrolling the forest; the rangers get wages, equipment and training. In the area there is also a government ranger station with FA rangers and military policemen.

Survey site 3 is situated in the central part of Cambodia, in Sandan district, Kompong Thom province. It is located in proximity to two important forest areas, the Prey Long forest landscape, and the Boeng Peae Wildlife Sanctuary. The vegetation is mainly lowland dry evergreen and semi-evergreen forest but large areas have been subject to logging activities and the land has been converted into rice and cashew nut plantation. The forest and wildlife in the area is under the jurisdiction of FA but without support from any major conservation organisations. There is a government station with rangers that patrol the area, but it is currently not under any kind of protective management regime and there is community forestry project in the area. Community forestry is a village-level forest activity, decided on collectively and implemented on communal land. Here local people participate in the planning, establishing, managing and harvesting of forest crops, and so receive a major proportion of the socio-economic and ecological benefits of the forest.

Survey site 4 is in the northeast parts of Cambodia within the Mondulkiri Protected Forest (MPF) in Mondulkiri Province. MPF, known as Srepok Wilderness Area (SWA), was established by the Cambodian Government in July 2002 and consists of 370,000 hectares of dry forest (dry Forests refers to open deciduous forest, and the associated mosaic of mixed, denser deciduous forest, and semi-evergreen forest) with an intensively protective zone of 120,000 hectares. WWF Cambodia is managing the area alongside with FA. The majority of the people that live in Mondulkiri are Phnong, which is an ethnic minority that is indigenous to Mondulkiri Province. The interviews were conducted in villages were WWF Cambodia run a community-based natural resource management project (CBNRM) and there are community rangers patrolling together with the police and FA. The community team has been working in MPF since 2005 and the objective is to develop alternative livelihoods and sources of income for local people, and these alternatives must have a clear link with conservation and sustainable use of wildlife and their habitats. The program mainly provides training courses, where they among other things inform the community how to sustainably harvest non-timber forest products (NTFP) such as honey and resin and how to more effectively keep chickens and other livestock.

To summarize, at survey sites 1 and 4 international NGOs are running community based programs, although they have slightly different approaches. At survey site 2 there are only community rangers working alongside the government rangers and at survey site 3 there are no international NGOs involved in the protection of the wildlife, only government rangers in charge of the law enforcement.

3.2 Data collection

3.2.1 Choice of method: qualitative interviews

In research situations, two kinds of interview methods can be used, either qualitative or quantitative. Since no single method is suitable for all kinds of research, the choice of method should be based upon the purpose of the study (Carlsson 1991). For this specific study I chose

to do qualitative interviews. The goal of the interview is to get a deeper understanding of the respondent's point of view, feelings and perspectives. Qualitative interviewing is a research technique that involves conducting thorough individual interviews with a small number of respondents to explore their perspectives on a particular subject (Kvale 1997). It will provide more detailed information than what is obtained through other data collection methods, such as surveys. The qualitative interview is a useful method for gathering data, but it is full of difficulties and problems, both when conducting the interview and when analyzing the data. When conducting a qualitative interview it is assumed that there is a certain trust between the interviewer and the respondent. If there is a lack of trust the respondent might choose not to reveal information that he or she considered to be sensitive (Myers 2007). Also it is important that the respondent understands that it is his or her views and feeling that are sought for. Otherwise the respondent might try to give the “correct” answers only to please the interviewer. By choosing a qualitative method I will not be able to make any statistical analysis of the result or make any conclusions about frequency in the population I am studying (McCracken 1998). When interpreting the data, different researchers might form different conclusions, thus make the results more easily influenced by the researcher’s personal biases (Kvale 1997). When I have analysed my data I have chosen to mention the percentage of the respondents that answered in a specific way as well as illustrate some answers in tables and figures. I have done so because this makes it easier to get an overview of the results.

3.2.2 The Interview Questions

There are some key characteristics that should be included when constructing a questionnaire and performing the interview. Questions should be open-ended, that is the respondent should not be able to simply answer yes or no, but instead have to evolve the answer. The interview should work almost like a normal conversation, but with a specific purpose and a specific structure so you should have some pre-planned questions to ask during the interview (Kvale 1997). My questionnaire was made in collaboration with my supervisor, Peov Somanak (Research and Monitoring Manager), and the community team at CI. The community team has extensive experience in writing questionnaires and performing interviews in remote villages. In addition to helping me develop the questionnaire they also gave me advice on how I should act to gain people’s trust and get a friendly conversation going.

3.2.3 Number of interviews

The number of interviews included in the study was not predetermined. It is not possible to decide the numbers of interviews beforehand; instead the number is decided based on when theoretical saturation is achieved. That is when new information no longer is found (Glaser & Strauss 1967). The interviewees were selected randomly, both women and men in the ages of 18-80 were interviewed, and I tried to keep an even sex distribution.

3.2.4 The Interview

When arriving at the survey site I first met with the commune chief to explain my purpose in the village, show necessary permits and obtain general information about the villages. Since all interviews were made in Khmer I had an interpreter with me who asked the questions and translated them directly to me. When working with an interpreter it is important that he or she has great knowledge about the topics being discussed in the interview (Bragason 1997). My interpreter had under the previous year conducted qualitative interviews for CI so he was well acquainted with the technique and before the first interview we sat down and talked about the aim of the study and went through the questionnaire. To establish a good relationship with the respondent every interview started with general questions about their lives and livelihood.

Since wildlife trade is a sensitive subject I was sure to clarify that I was a student and that my visit was in academic purpose only. I think I got a high level of honesty in the interview answers. For example, I got answers were the respondents knew that hunting and trading wildlife is illegal but they answered that they still hunt because they are poor and need the money. The interviews lasted 20-55 minutes. The person interviewed had not been informed in advanced about the interviews. They were all asked in the field to participate in the interviews. In the case of households, only one person per household could participate. The interview questions can be found in a questionnaire in Appendix A.

4. RESULTS

The following section summarizes the most significant results of this research.

Question 1/2/3: *How long have you lived in this area?*

Is this area a protected area, if yes, for how long?

Is there any conservation organization working in this area, if yes, which one?

Survey site one: In Thma Bang district a total of 15 people were interviewed (7 women and 8 men) and the majority of the interviewees have lived in the district for 9-10 years. All of the respondents were aware that the area is protected and they all answered that there are three conservation organizations working there (Conservation International, Flora and Fauna International and Save Cambodia's Wildlife). However, there was some confusion of how long the area had been protected, with answers ranging from 2002 to 2005.

Survey site two: In Phnum Kravanh district 28 people were interviewed (14 women and 14 men) and the interviewees have lived in that area in the range 2-20 years. 82% were aware that the area is protected and thought that it had been so since 2004-2005. The majority of the interviewees said that there is a conservation organization working in the district.

Survey site three: In Kompong Thom district 38 people were interviewed (18 women and 20 men) and all except 3 were born in the area. 47% of the respondents said that part of the area is protected, 42% did not know and 11% answered that the area is not protected. The majority said that there is a forestry community that works in that area.

Survey site four: In Mondulkiri district 32 people were interviewed (15 women and 17 men) and all except 5 were born in the area. 66% of the respondents answered that the area is protected, but none knew for how long. The remaining 34% whereof the majority was women answered that they did not know. 72% said that there is a conservation organization working in the area and 22% knew that the name of the organization was WWF or, as they referred to it, the "bear" organisation.

Question 4: *Do you think hunting/trading wildlife is legal or illegal?*

Survey site one: All of the respondents knew that hunting and trading wildlife is illegal but many of the respondents thought that hunting and trading was banned by the conservation organizations and not by the government as the following quote will exemplify.

"Hunting and trading wildlife is illegal because organizations want to keep wildlife here. There are a lot of people that come here to protect the forest and they set rules for the area."

Survey site two: All of the respondents knew that hunting and trading wildlife is illegal but there were 18 % that said that hunting and trading was banned by the conservation organizations.

Survey site three: 92 % knew that hunting and trading wildlife is illegal but of these many stated that they hunt anyway because they are poor, this is their occupation and they need food and money. Many of the respondents were clearly frustrated and upset over the fact that hunting is banned since the community depends on hunting for their livelihood. Some also said that hunting and trading were banned only because the forestry community told them so. The remaining 8 % answered that they did not know whether it is illegal or not. The following quote is from a woman who said:

“I have heard that it is illegal to hunt wildlife but so many people go hunting so I don’t know.”

Survey site four: The majority of the respondents knew that hunting and trading wildlife is illegal but of these many said that they hunt anyway because they are poor, this is their occupation and they need food and money. Some said that hunting for their consumption is allowed but trading wildlife is not. However, there are traders coming frequently from the province capital who try to buy wildlife from them.

Question 5/6: *Are there any wildlife species you are allowed to use? If yes, which ones?
Are there any wildlife species you are not allowed to use? If yes, which ones?*

Survey site one: All respondents answered that you are allowed to hunt and put snares out around your farm but you must only hunt common species like wild pig and red muntjac. They also answered that it is allowed to collect non-timber forest products (NTFP), fish and timber to build their houses. However, hunting in the forest, killing rarer species like tiger, elephant and pangolins, and trading wildlife and timber are strictly banned.

Survey site two: All but one answered that all wildlife is banned. However, you are allowed to hunt and put snares around your farm but only for common species like wild pig and red muntjac. It is also allowed to collect NTFP, catch fish and birds.

Survey site three: 66% of the respondents answered that all wildlife is banned. However, you are allowed to hunt common species like wild pig and red muntjac. They also answered that it is allowed to collect NTFP and catch fish. However, of these 25 respondents 8 said that it does not matter that all wildlife is banned because they hunt anyway because it is their occupation so they have to. The remaining 34% answered that they did not know.

Survey site four: 84% of the respondents answered that all wildlife is banned but said that they are allowed to hunt species like tortoises, turtles, wild pig and red muntjac. They also answered that it is allowed to collect NTFP and fish. The remaining 16% were all women and they answered that they did not know.

Question 7: *Has anyone informed you what you are allowed to take from the forest and what restrictions there are? If yes, who?*

Survey site one: 87% of the respondents felt that they had been informed about what they are allowed to take from the forest and what restrictions there are. They received this information from Conservation International's community group and the commune chief. Only two women said that they had not been informed but the reason for it was that they did not attend the meetings.

Survey site two: 89% of the respondents felt that they had been informed about what they are allowed to take from the forest and what restrictions there are. They received this information from Conservation International, the Forestry Administration and the commune chief.

Survey site three: 71% of the respondents said that they had been informed that it is forbidden to cut the forest but only 4 of these felt that they had been informed about which restrictions there are for hunting wildlife. They had received the information from the forestry community and the commune chief. 29% felt that they had not been informed what they are allowed to take from the forest and what restrictions there are.

Survey site four: 62.5 % of the respondents said that they had been informed not to hunt or to cut the forest by conservation people, who also gave them training on how to collect NTFP sustainably and how to keep bees. The 37.5% that remain said that they had not been informed but some said that they just did not go to the meetings and others said that they know that you should not cut the forest and hunt wildlife but they had heard it from other villagers.

Question 8: *Have you been informed about the current wildlife legislation, the forestry law, and/or the species list?*

Survey site one: Only 20% felt that they had got information about the current wildlife legislation and felt that they knew something about the forestry law and the species list. The remaining 80 % had difficulty comprehending the concept of laws and referred to the previous question that they had been informed what you are allowed to take from the forest. They also referred to a species list with pictures found in the house of the commune chief that showed which species you are not allowed to hunt.

Survey site two: None of the respondents felt that they had been informed about the current wildlife legislation or the forestry law and the species list. They had difficulty comprehending the concept of laws when the interpreter tried to explain it.

Survey site three: None of the respondents felt that they had been informed about the current wildlife legislation or the forestry law and the species list. They had difficulty comprehending the concept of laws when the interpreter tried to explain it.

Survey site four: None of the respondents felt that they had been informed about the current wildlife legislation or the forestry law and the species list. They had difficulty comprehending the concept of laws when the interpreter tried to explain it

Question 9: *Is there strict enforcement on hunting and trading wildlife in this area?*

Survey site one: All respondents thought that the enforcement in the area is strict. The main reason that was given was that the rangers that patrol the area would confiscate any wildlife,

snare or guns they might find. Since many of the respondents are involved by working as community rangers I got the impression that many approved of the strict enforcement. Several of the respondents wanted to tell me how often they went on patrol, where they went and what they did.

Survey site two: 50% of the respondents, the majority men, answered that the law enforcement is strict because now there are many rangers patrolling the forest and this makes it difficult to hunt wildlife. The remaining 50% had no opinion whether the law enforcement is strict or not. There were only a few of those I interviewed that were involved as community rangers.

Survey site three: 58% of the respondents felt that the law enforcement is not very strict, hunting is banned but a majority still does it and the risk of getting arrested is low. 34 % answered that the enforcement is strict but these respondents seemed more annoyed that hunting is banned and the fact that there is law enforcement altogether. One man said;

“The law enforcement is strict; if they see you they will confiscate our equipment, even if we’re just doing farming. People should be able to go in the forest and collect wildlife because we are poor and need the money.”

Survey site four: 81% of the respondents felt that the law enforcement is very strict, though the majority still go hunting and the risk of getting arrested is low. One man said;

“If they see us with snares or wildlife they will confiscate it but people still go hunting. Some people are scared. The people that go hunting the most are the police and army. “

Most of the women I interviewed answered that they did not know anything about law enforcement; they said that they only stay in the village.

Question 10: *What do you know of the punishment for hunting/trading wildlife?*

Survey site one: All of the respondents said that you either could be fined or get sentenced to prison but the amount of money, time spent in prison and for what you could be sentenced differed between all the respondents. One woman said;

“You can get a fine or get sentenced to jail, how much or how long depends on the crime. Normally rangers only punish outside traders.”

Many of the respondents mentioned that the rangers viewed outside traders as the main problem and had a more severe punishment for them. If the rangers caught anyone in the village they would just confiscate the wildlife and his weapon but with outside traders the rangers would fine those people or arrest them. One man felt that there is a good cooperation between the community and the rangers, where they had established their own set of rules. He said:

“The community has their own rules; punishment will be based on those rules. If they catch hunters they will give them a fine and if they can't give them the money they will have to go to jail.”

Survey site two: 53 % of the respondents said that you would be sent to prison although the circumstances varied. One man said;

“The first and second time you get caught the rangers will confiscate the wildlife and give you a warning but the third time they will make you go to court and then you will risk going to prison but I do not know for how long.”

11 % said that you would get your wildlife confiscated and have to pay a fine if the rangers catch you with any wildlife. One man mentioned that the punishment is more severe if you trade rare species.

“First time they will give you a warning but the second time you will get a punishment according to what wildlife you're trading. If you are trading a rare species like pangolin then you get a severe punishment.”

The remaining 36% of the respondent felt that they did not know anything about the punishment for hunting and trading wildlife.

Survey site three: 32 % of the respondents said that rangers or police confiscated the wildlife and then either released it or sometimes kept it for themselves. A man said the following:

“There is no punishment; they just release the animals. Sometimes the people that confiscate the wildlife just take it to be able to sell it themselves.”

26% said that you have to pay a fine, but the amount of money differs between the respondents. Some of the respondents argued that the amount of money differs depending on who catches you. When I asked if there is a difference whether it is FA, police or military who catch them, the majority answered that it is more a matter of the individual ranger.

“Normally they just punish the trader and not the hunter. The punishment is fines, but how much depends on who caught you.”

13% answered that you will be sentenced to prison and the remaining 29% answered that they did not know.

Survey site 4: The majority of the respondents answered that you either have to pay a fine or go to prison if you hunt or trade wildlife but as with the other sites there were uncertainties surrounding the details. Most of the women answered that they did not know anything about the punishment and of those who did the majority were scared or confused. The following quote is from a woman who expressed her distrust in the law enforcement

“They will confiscate the wildlife and you will have to pay money to them but if you can’t then they take you somewhere, but I don’t know where and that frightens me.”

The next quote is from a man who argued that the punishment depends on how well you can negotiate with the law enforcement and that it depends on which animals you are hunting.

“Depends on the negotiations between law enforcement and the people, sometimes if we give them money we will get the wildlife back. If you hunt big mammals then you will get a more severe punishment.”

Question 11: *Has the legislation and law enforcement (conservation work) affected your livelihood?*

Survey site one: How the law enforcement has affected the respondents’ livelihood differed some between women and men, which is shown in table 2 in Appendix B. The main concern for both the women and men who answered that the law enforcement had affected their lives in a negative way was that the land where they grow their crops would get exhausted and since the land is protected they will not be allowed to cultivate new land. The men that thought that the law enforcement had affected their lives in a positive way all mentioned the help they get from the community group as the main reason why. The following quote is from a man that felt that the effect on his livelihood had changed from negative to positive.

“At the beginning it affected me negatively. I didn’t know what I could or could not do in the forest and what was illegal. But now it is better, the community project gives us information and they also give buffalos to help the people.”

Survey site two: Only 14 % of the respondents said that they had been affected by the current law enforcement, and they felt that the effect had been negative because of the fear of getting arrested when they go hunting.

Survey site three: Only 10.5 % of the respondents felt that the current law enforcement had affected their lives, and they thought that the effect was negative. The following quote is from a man who was very frustrated over the situation.

”Since hunting is banned now we are forced to do illegal things because we have to hunt for our survival.”

The other 89.5% said that they had not been affected by the law enforcement. The reason that was given was either that they still go hunting as much as they used to or that it does not affect them because they do nothing wrong.

Survey site 4: 25% of the respondents felt that the current law enforcement had affected their lives in a negative way. This quote is from a man who felt that the law enforcement makes him loose a lot of money and thereby affecting his life negatively.

” Yes, it has affected me negatively because hunting is our main occupation, so we have no other choice then to hunt. They confiscate my wildlife when I try to sell it which means I loose a lot of money.”

44% said that the law enforcement has not had any effect on their livelihood and the remaining 31%, where all were women, did not understand the question.

Question 12: *What do you think are the prime threats to wildlife?*

Survey site one: 80% declared that hunting using snares is the main threat to wildlife, and 4 of these also included habitat destruction and trading wildlife.

Survey site two: 54% of the respondents declared hunting to be the main threat to wildlife, even though the effect of hunting differed. 14% of the respondents argued that hunting makes the animals run away to other areas. The remaining 46% answered that they did not know or have never given it much thought.

Survey site three: 55% of the respondents declared that hunting is the main threat to wildlife. 13% believed that the reason why wildlife has decreased is that the animals have run away to another area because there are so many people in the forest now and the remaining 32% did not know.

Survey site four: 44% declared that hunting is the main threat to wildlife; however, many of these argued that it is especially the hunting done by the police and army that forms the largest threat to wildlife. One man said the following.

“The main threat to wildlife is the hunting being done by the police and the army. They have guns and are not afraid of the law while poor people are. Wildlife is also decreasing because of habitat destruction, big companies come and cut down the forest and make rubber plantations. “

16% said that there is no threat to wildlife because not that many people go hunting anymore and the remaining 41% did not know or did not understand the question. One man said

“There is no threat to wildlife anymore. The former generation hunted a lot; maybe that is the reason why wildlife has disappeared. But now there is not that many people hunting so I do not know why there is no wildlife now.”

Question 13: *Do you think it is important for humans to protect wildlife?*

Survey site one: All but one of the respondents thought that it is important for humans to protect wildlife. Why they thought it is important differed between the respondents and is showed in figure 2 in Appendix B.

Survey site two: As shown in figure 3 Appendix B, 57% felt that it is important for humans to protect wildlife. The main reasons were to keep it for the next generation and because it is a part of Cambodia’s natural heritage, but 43% did not know or had never given it much thought.

Survey site three: The majority, 42% felt that it is not important for humans to protect wildlife and 37% answered that they did not know. Only 21% felt that it is important for humans to protect wildlife and the reason that was given was that they wanted to have wildlife for the next generation to see. The result is shown figure 4 in Appendix B.

Survey site four: The majority, 60% of the respondents said that they did not know or did not understand why it would be important for humans to protect wildlife. In total 41% felt that it is important for humans to protect wildlife, but 16% of these did not understand how they could protect it when they are dependent upon it for their survival. The result is shown in figure 5 in Appendix B.

Question 14: *Do you think law enforcement and community rangers are important for protecting wildlife?*

Survey site one: 87% of the respondents said that law enforcement and community rangers are important to protect wildlife. The main reason why is that they uphold the law, remove snares, catch hunters and traders and provide information.

Survey site two: 43% of the respondents thought that law enforcement and community rangers are important to protect wildlife. The main reason why is that they confiscate guns and snares and make people too scared to go hunting. The remaining 57% of the respondents (whereof the majority were women) answered that they did not know if rangers are important for the protection of wildlife.

Survey site three: Only 8% of the respondents said that government rangers are important to protect wildlife. 42% of the interviewees, whereof the majority were women, answered that they did not know if they are important or what they do. 50% answered that the law enforcement is not effective or even useless. The main reason that was given was that they just want money for themselves; they either go hunting themselves or confiscate and sell the wildlife. The following quote is from a man who felt that the law enforcement was of no use in the protection of wildlife.

“People that should protect the wildlife also go hunting or they just confiscate from us and sell it themselves. And people here still go hunting like before so the law enforcement is useless.”

Survey site four: Only 12.5% of the respondents said that law enforcement and community rangers are important to protect wildlife. 62.5% whereof the majority were women answered that they did not know if they are important or what they do. One man said.

“Can’t say if they are important or not because I do not know what they do. When my father was young, people hunted a lot but there were still lots of wildlife but now when there are only few people that go hunting and conservation people working in the area there is no wildlife in the forest. Why is that?”

25% answered that the law enforcement and community rangers are not effective and the main reason that was given was that they do it for their own benefit; however, the respondents differentiate between WWF and the police and army. They stated that whereas WWF wants to

protect the forest and help the community, the police and army only do it for their own benefit. One man said

“WWF are important because they want to protect the wildlife but people from the government are not good, they do not want to protect the forest because all the care about is to get more money. “

Question 15: *Has the number of people depending on hunting increased or decreased?*

Survey site one: According to all respondents the number of hunters in the district had decreased and the reason is mostly the strict law enforcement and increased knowledge but also because animals are rarer now and the benefit people get from the conservation organizations.

Survey site two: According to 86% of the respondents the number of hunters in the district had decreased and the main reason is the strict law enforcement and increased knowledge but also because wildlife are rarer now and the lack of hunting equipment because of previous confiscations. The remaining 14% said they did not know.

Survey site three: The answers were very scattered as shown in table 3 in Appendix B. The main reason given why the number of hunters is decreasing was that there is not that much wildlife in the forest anymore and the reason given why the hunters are increasing was that the wildlife has a very high value on the market.

Survey site four: 78% believed that the number of hunters is decreasing. The reasons why there are fewer hunters now are; that there is a lack of guns because of previous confiscations, there is not that much wildlife in the forest anymore and that people are scared of the punishment if they get caught by the rangers. The remaining 22% answered that they did not know.

Question 16: *What do you think of the future for this area and its wildlife resources?*

Survey site one: All of the respondents have a positive attitude towards the future, and all think that the wildlife in the area will increase, and 27% mentioned that the area will develop and tourists will come to see the wildlife which will give money to the village.

Survey site two: 71% of the respondents had a positive attitude towards the future, and they thought that the wildlife in the area will increase and that that would mean that NGOs would come and support the area and its people, but the remaining 29% of the respondents had a more indifferent view towards the future of the area and its wildlife resources and said that they had never given it much thought

Survey site three: 55% of the respondents had a negative attitude towards the future, they think that the wildlife in the area will decrease further and even disappear if the hunting does not cease. The remaining 45%, whereof the majority was women, answered that they did not know or have never given it much thought

Survey site four: 59.5% of the respondents had an indifferent attitude towards the future of the area and its wildlife resources and answered that they did not care and have never given it much thought. 28% felt that the wildlife resources might increase in the future but it will

depend on how much help the community will get from NGOs. 12.5% had a more negative attitude towards the future and they said that big companies will come and clear the forest for rubber plantations and the wildlife will disappear because people will not stop hunting.

5. DISCUSSION

As mentioned earlier, the overall aim with this study was to examine if the presence of a community-based program change local people's knowledge and perception on conservation issues, wildlife legislation and law enforcement. Attitudinal surveys done in Africa have shown that the perception among communities that receive wildlife-related benefits is more positive, and people then become more likely to support conservation efforts than those who experience higher costs associated with protected areas (Gillingham and Lee 1999; Holmes 2003; Kideghesho, Røskoft and Kaltenborn 2006). But there are also studies that imply that wildlife-related benefits not by themselves will lead to support for a conservation program by the communities (Parry & Campbell 1992).

I hypothesized that the presence of a community-based program would increase the local people's knowledge on conservation issues and improve their understanding towards the current wildlife legislation. The results support my hypothesis and show that the respondents at survey site three has a more negative attitude towards law enforcement and the current wildlife legislation. Their knowledge and perception on conservation issues are also significantly lower than at the other sites. The results from respondents at survey site one strongly indicate that when local participation is high, awareness and positive interaction with rangers are greatly increased. The focus on incentives in the form of financial and educational benefits to the local community has increased the economic value of the wildlife and hence created incentive for the locals to protect it. By making sure that the rangers meet regularly with village leaders to explain new forest laws and describe the difference between legal and illegal activities CI have increased the local participation. The communities' involvement was evident, for the majority of the respondents were participating in conservation work for the different NGOs. People at survey site two had a slightly lower perception than at site one. This result further indicates the importance of providing villagers with benefits that are sufficient enough to make up for the major cost associated with protecting wildlife and provide education as a way to create awareness and changing attitudes.

The result I obtained from survey site four did not support my hypothesis. There is a community-program in this area but the respondents' perception was still very low. One thing that was notable was that I got a lot of "I do not know" answers. This could be explained by cultural differences. My interpreter is Khmer and the people that live in the survey site are Phnong, the indigenous people of Mondulkiri. Khmer and Phnong peoples have different traditions and the majority of Phnong have not learned Khmer. My interpreter complained at several occasions that he had a hard time making himself understood and this might have influenced my results.

Questions 1-6 deal with the respondents' overall knowledge and the answers did not differ that much between the sites. Most of the respondents were aware whether or not they lived in a protected area and if hunting and trading are legal or illegal. However, even though the respondents at survey site three and four knew that hunting and trading is illegal and knew to a certain degree which species they were allowed to hunt in the forest they still answered that they go hunting. When I asked them why, the majority answered that they hunt because they are poor and hunting is their only occupation. Another thing that was notable was that many of the respondents had difficulty separating between the government and the NGOs, where many stated that hunting was banned by the NGOs. The danger in this might be that if the respondents have a negative attitude towards conservation and think that wildlife management is to the villagers' disadvantage they might begin to question why they should obey rules made by international organisations. Newmark *et al.*, 1993 stated that attitudes towards a protected area are a result of individual and community perceptions. The perceptions are

affected by the interaction between community members and the staff of the protected area. Hence it is critical to provide the villagers with correct information and to develop a trust between the NGO staff and the local residents to ensure the success of the conservation program. In Cambodia conservation of wildlife is governed by the Forestry law. This law was approved by the Cambodian parliament in 2002 and came to replace the old forest law which was believed to be ineffective in practise. Chapter 10 in the Forestry law states that all wildlife in Cambodia is state property, including all species of mammals, birds, reptiles, amphibians, insects, other invertebrates, and any eggs or offspring. The wildlife is divided into endangered, rare and common species and the criteria for each category and the species list can be found in a separate guideline (known in khmer as Prakas). According to article 49 it is strictly forbidden to hunt, harm or harass any wildlife by use of dangerous methods; hunting during the closed season; and in protected zones and special public areas. I have tried to find when it is open season for hunting but have not been able to find any special dates. Hunting or trading rare and endangered species is prohibited; you are allowed to hunt the common species during open season though it is not allowed to trade or transport them.

Questions 7 and 8 deal with the information flow and the majority of all the respondents felt that they had been informed what you are allowed to take from the forest. However, all respondents, except at site one, had a very hard time comprehending the concept of laws, they had never heard of a list of species and could not tell the difference between common, rare or endangered species. I think that my results demonstrate that there is a lack of awareness on wildlife legislation. Even though they understand that certain activities are illegal, they are not aware of the existence of laws governing such activities. This fact might also enhance the respondents' view that it is the NGOs that create the rules. One easy and inexpensive way to show which species locals are allowed to hunt is to hand out posters with pictures of the endangered wildlife. Similar actions are being undertaken in the areas where CI works.

Questions 9- 11 deal with the respondents' perception on law enforcement. It is among these questions that the major distinction between the different sites can be found. The majority of the respondents, except at survey site three, felt that the law enforcement is strict. At survey site three most of the respondents said that they can go hunting without any risk of getting caught by rangers. An interesting fact was that at survey site four the respondents answered that the enforcement was strict but people still go hunting because the risk of getting caught is relatively low. Provided that the respondents understood the question the most likely interpretation is that they view the punishment as strict but the risk of getting caught is so low and the benefit is high enough to be worth the risk. According to the Forestry law, people charged for hunting, transporting or trading species listed in the wildlife list prakas, can be subjected to a fine from two times the market value of the species and up to 100,000,000 Riels, or imprisonment for between one month and ten years. The severity of the punishment depends on the rarity of the species. Whereas most of the respondents knew that you either could be fined or sentenced to jail for hunting or trading wildlife it was interesting to find that they were so misinformed about the punishment level.

Surprisingly few of the respondents answered that the law enforcement had affected their livelihood in any way. This can be considered as positive if the respondents felt that they can go about their everyday lives as usual. It could also mean that the law enforcement is inefficient and that people go hunting as usual and that the incentives given to improve the livelihoods of the local communities are inadequate. Of the ones that felt they had been affected only those at survey site one answered that there had been a positive effect to their livelihood. The respondents that felt that there had been a negative effect said that hunting is their occupation and they have no other source of income. This result is to be expected since at site one, CI's community group have tried to improve the livelihood of the community with village-level services (e.g. school and health service) and other benefits in hope to

demonstrate the value of a protected area. Studies have shown that the presence or absence of such services often influences community attitudes (Songorwa, 1999; Infield & Namara, 2001).

Questions 12-16 deal with the respondents' perception on conservation issues. At site two and three many of the respondents did not fully understand the connection between peoples' hunting and trading habits and the disappearing of wildlife. They simply believed that the animals run away to other areas. At site one and four the respondents said that hunting is the major threat together with habitat destruction and the making of plantations. One noteworthy thing is that the respondents at site four argued that it is mostly the police and army that go hunting. This was also noticeable on the perceptions of the importance of rangers and law enforcement, where the respondents at site three and four said that they are useless because they only do things for their own benefit. However, the respondents at site four separated between WWF and the police and army, saying that WWF wants to protect the forest and help the community. Corruption is widespread throughout the world and especially in the developing countries. This is a major challenge for all conservation work and it is known that government officials or personnel working with conservation get involved in illegal activities where they deplete the protected area for their own profit (Laurance, 2004). This is a major problem since it undermines the credibility of the organisation and the protection of the area or species. It should be pointed out that I have no data on whether corruption occurs or not in the study area. It could be that the villagers' claim that the police and army are corrupted is an excuse to justify that they still hunt and trade the protected wildlife.

The majority of the respondents at all the sites, except site three, felt that it is important for humans to protect wildlife, even though a large percentage at site two and three answered in a neutral way, that they did not know if it is important or not. The main reason given to protect wildlife was for the generations to come and because humans are dependent upon wildlife resources for their livelihood. This answer reveals how intimately the villagers' livelihood is connected to the wildlife. One could interpret it as if they want to continue utilizing protected species, since they have done so for generations. They also stated that ecotourism is a reason to preserve the wildlife, and the respondents believed that an increase in ecotourism would bring more economical benefits to the community. Establishing ecotourism can provide new jobs and financial benefits to the community, which in turn will increase the economic value of the wildlife and create reasons to protect it (Mehta and Kellert 1998). However, ecotourism can also, if not managed properly, bring unwanted effects to local lifestyles and traditions as well as to the wildlife (Allan 1992).

The majority of the respondents believed that the number of hunters in the village had decreased and the main reason given was that there is no wildlife left in the forest. This might be an alarming indication that there is a major loss of wildlife across Cambodia. This would not be unexpected since south-east Asia is considered to be the major hot-spot for the illegal wildlife trade and it is believed that the trade is draining forests of its biodiversity (TRAFFIC 2008). At sites one and two there was a relatively positive view towards the future, saying that the community would prosper and the wildlife would increase if there is a continued collaboration with NGOs. The respondents believed that an increase in wildlife would lead to more tourists visiting the area. At both site three and four there was a rather indifferent or negative view towards the future, but the respondents at site four that had a positive view said that it would depend entirely on the collaboration and help provided by NGOs

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APPENDIX A

Basic respondent characteristics

Sex:

Age:

Main occupation:

Additional activity to support the household:

Conservation and legislation

1. How long have you lived in this area?
2. Is this area a protected area? If yes for how long?
3. Is there any conservation organization working in this area? If yes which one?
4. Do you think hunting/trading wildlife is legal or illegal?
5. Are there any wildlife species you are allowed to use? If yes which ones?
6. Are there any wildlife species you are not allowed to use? If yes which ones?
7. Has anyone informed you what you are allowed to take from the forest and what restrictions there are? If yes who?
8. Have you been informed about the current wildlife legislation, the forestry law, and/or the species list?
9. Is there strict enforcement on hunting and trading wildlife in this area?
10. What do you know of the punishment for hunting/trading wildlife?
11. Has the legislation and law enforcement (conservation work) affected your livelihood?
12. What do you think are the prime threats to wildlife?
13. Do you think it's important for humans to protect wildlife? Explain
14. Do you think law enforcement and community rangers are important for protecting wildlife?
15. Has the number of people depending on hunting increased or decreased?
16. What do you think of the future for this area and its wildlife resources?

APPENDIX B

Table 2: Distribution of the answers given by the respondents at survey site one on how their livelihood has been affected.

	Yes, positively	Yes, negatively	No affect
Women		20% (3)	27%(4)
Men	27% (4)	13% (2)	13%(2)

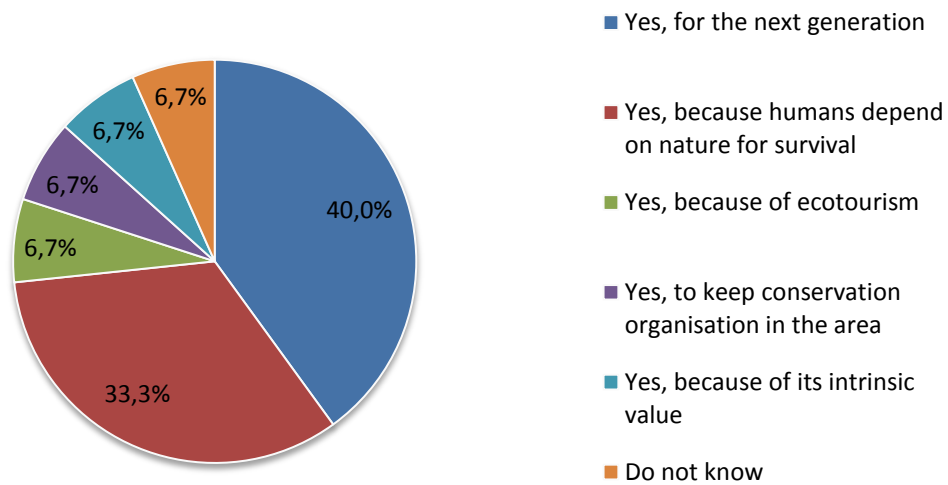


Figure 1: The distribution of the answers given by the respondents at survey site one on how they feel about protecting wildlife.

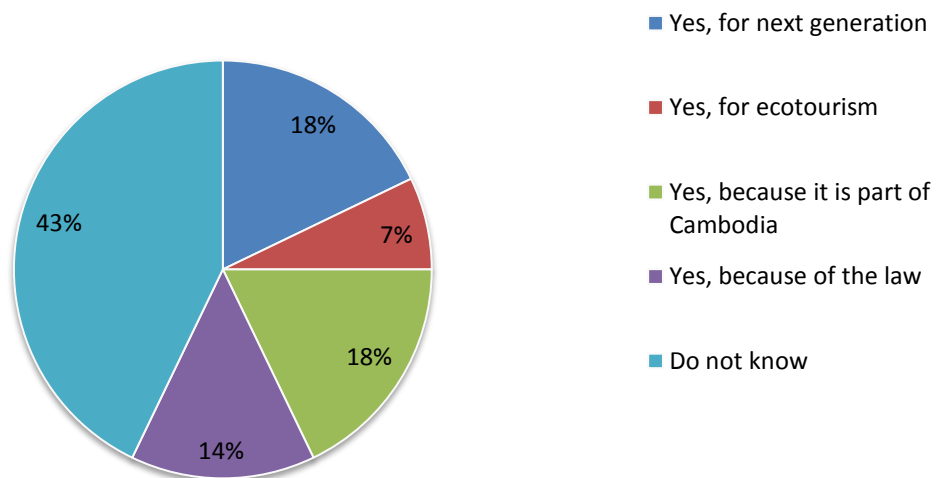


Figure 2: The distribution of the answers given by the respondents at survey site two on how they feel about protecting wildlife.

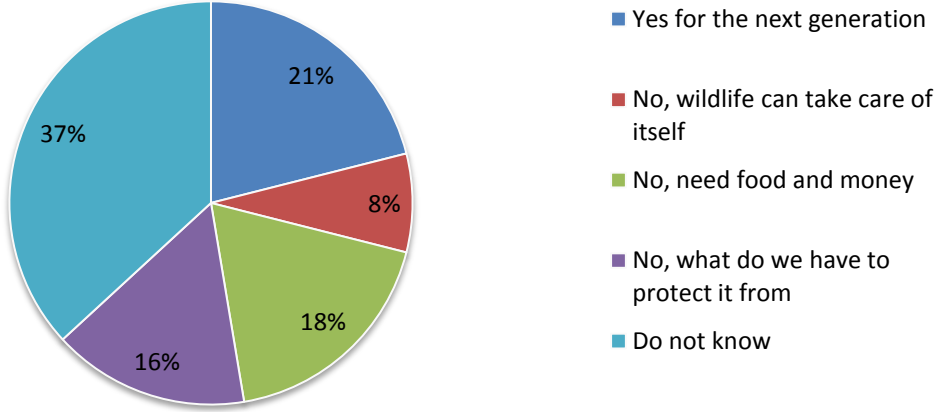


Figure 3: The distribution of the answers given by the respondents at survey site three on how they feel about protecting wildlife.

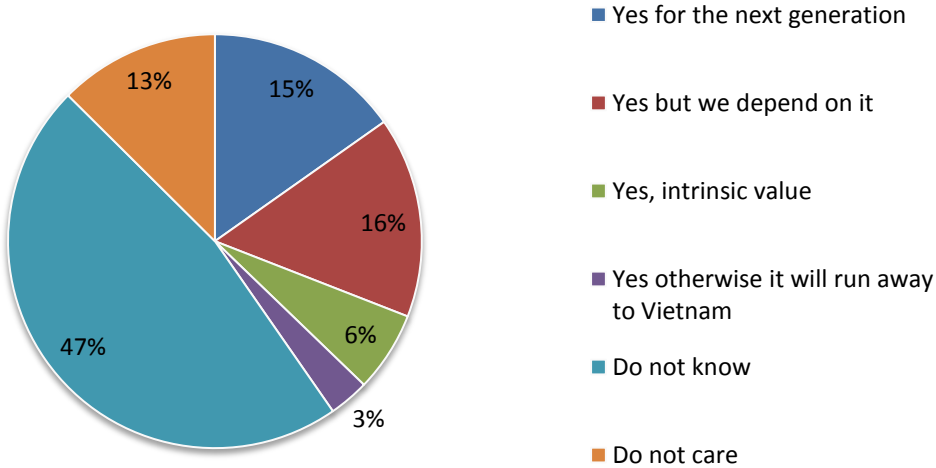


Figure 4: The distribution of the answers given by the respondents at survey site four on how they feel about protecting wildlife.

Table 3: The distribution of the answers given by the respondents at survey site three on their opinion on the number of hunters in the area.

	Decreasing	Increasing	Same	Do not know
Women	16% (6)	8% (3)	3% (1)	21% (8)

Men	26% (10)	18% (7)	5% (2)	3% (1)
Total	42% (16)	26% (10)	8% (3)	24% (9)