Poultry, Fisheries & Wildlife Sciences

ISSN: 2375-446X

Bhatta et al., Poult Fish Wildl Sci 2018, 6:2
DOI: 10.4172/2375-446X.1000195

Research Article Open Access

Community Based Anti-poaching Operation: Effective Model for Wildlife Conservation in Nepal

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Abstract

The study was conducted with the aim of assessing the effectiveness of community based anti-poaching operation as well as perception of local people towards CBAPO in the buffer zone of Shuklaphanta Wildlife Reserve, Kanchanpur, Nepal. Purposive sampling was adopted for selection of CBAPO unit. Key informant interview (n=21), structured multiple response questionnaire survey with CBAPO member (n=94), focus group discussion, review of the records of concerned stakeholders were used to obtain data. Non-parametric Friedman Test was used for ranking different issue and Chi-Square test was used to see the association in their perception of CBAPO members on different aspect at 5% level of significance. Unemployment (μ= 2.44) and low awareness level among the people (μ=3.27) were seen as the key cause of poaching and other illegal activities. Patrolling, surveillance and information gathering against illegal activities, rescue of wildlife and awareness raising activities were the major activities of CBAPO which has significantly contributed in wildlife conservation. Poaching was found to be decreased consequently. Success behind CBAPO was due to support of park and other supporting agencies, however financial dearth was observed as the greatest hindrance to strengthen operation. People's perception differs significantly ($P<0.05$) regarding performance of CBAPO. The morale of the CBAPO members needs to be boost up through motivation, incentives, proper guidance, anti-poaching trainings, proper equipment's, security assurance, reward and encouragement for the better conservation results in days to come.

Keywords: Poaching; Illegal activities; Wildlife

Introduction

Wildlife Conservation has been one of the most heavily budgeted natural resource management programs in Nepal since the 1970s [1]. Establishment of protected area is one of the important steps aimed at wildlife conservation. Although Nepal has met with the fair amount of success in conserving wildlife with the establishment of the protected area system, balancing conservation and human needs still remains a major challenge [2]. Nepal has developed a superior system of wildlife conservation through the enactment of National Park and Wildlife Conservation Act (NPWCA) in 1973 and its various amendments, but poaching still remains one of the major threats to wildlife Conservation throughout Nepal including all of the protected areas [3]. Poaching has become the major threat to bio-diversity conservation in Nepal. Poaching of wildlife and illegal collection of rare, threatened and endangered plant species has been the serious problem in and outside of the protected areas in Nepal [4] which is one of the major engines driving species to extinction [5]. The threat is particularly severe for some vertebrates driven in particular by demand for wildlife products in international markets. Rhino (*Rhinoceros unicornis*), tiger (*Panthera tigris tigris*), musk deer (*Moschus chrysogaster*), pangolin (*Manis* spp.) are some of the species that are especially at risk from poaching [6]. Besides the poaching of large mammals; fish poisoning has become a serious threat to the survival of the aquatic fauna [3]. The poaching records show that the prime target for the poachers is the one- horned rhinoceros followed by the spotted deer, wild boar, and then the tiger [7]. Illegal grazing, fuel wood collection, timber collection, timber theft, grass and fodder cutting, over fishing, non- wood forest products (NTFPs) collection and boundary encroachment are obvious along the park edge [8]. There has been major threat to biological diversity due to surrounding human pressure [9]. Very often middlemen snare local residents to pull the trigger of poaching and illegal activities. Generally poor and ethnic groups are engaged in poaching for their livelihoods [10]. The major factors contributing the poaching are unemployment, lack of awareness, poverty, political turmoil etc. [5,11]. There has been a major shift in management paradigm of protected areas in Nepal i.e., protective to collaborative with the introduction of conservation area and buffer zone. After recognizing that government based anti-poaching operation through the involvement of park staff and security personnel is insufficient to control poaching and illegal activities, Government initiated anti-poaching activities through the involvement of local community in collaboration with park staffs and supporting agencies [12]. Community- Based Anti-Poaching Operation (CBAPO) is the unique community- based initiatives of wildlife conservation that involves local people in the process of managing their own natural resources. CBAPO is an initiation by the local youths residing in Buffer Zones and Community Forests in and around National Parks/ Wildlife Reserves who work voluntarily to curb illegal wildlife trades and support park authorities in anti -poaching operation [13]. As poaching increased, the youth of buffer zone became more concerned about the issue and in effect organized themselves in groups to mitigate illegal poaching, thus bringing about the establishment of the CBAPO concept. CBAPO was started first in Nawalparasi district in 2002/03 where the youths collectively and actively participated to declare the district as poaching free area [13]. Community based anti- poaching units (CBAPUs) was originally set up to reduce the level of poaching of tigers and rhinos but at present has involved in monitoring trafficking of other wild flora and fauna. CBAPO is a sub-committee of Buffer

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Received April 16, 2018; **Accepted** August 13, 2018; **Published** August 20, 2018

Citation: Bhatta KP, Bhattarai S, Aryal A (2018) Community Based Anti-poaching Operation: Effective Model for Wildlife Conservation in Nepal. Poult Fish Wildl Sci 6: 195. doi: 10.4172/2375-446X.1000195

Zone User Committee (BZUC) that is under Buffer Zone Management as the provision of sub-committee formation maintained on Buffer zone management Directives 1999. Today, there are more than 400 units working throughout the country with their regular activities which include patrolling, surveillance, vigilance and collecting information against illegal activities and providing vital information to PA authorities and organizing capacity building trainings. Due to the inclusion of local poachers in the CBAPU and forests monitoring team, they can be self- motivated and morally discouraged to do such illegal activities [1]. The CBAPOs have worked well with other anti-poaching personnel based in protected areas and have effectively controlled poaching of tigers and their prey base in corridors and bottlenecks. For example, In Bardia, the CBAPO of Khata Corridor apprehended four poachers from India and also seized a number of weapons and traps as a result of local community intelligence [14].

Since the establishment of CBAPU in Nepal, it came into existence in Shuklaphanta as well with the establishment of anti-poaching unit in Arjuni, eastern sector of SWR [15]. In Shuklaphanta Wildlife Reserve (SWR), up to this date nine CBAPO exist under each user committee as their sub-committees. CBAPO in SWR have played vital role in conservation of tiger same as "Operation pathera" operated in Chitwan National Park [16].

Four CBAPUs under Sundevi User Committee covering Kasraul, Simpalphanta, Juda, Kalapani, Jhandabhoj had played vital role in blackbuck conservation at SWR along with shrinkage in the cases of illegal activities [17]. Nepal has proved to the world that zero poaching can be achieved through the participation of local people. With the active involvement of CBAPU, Nepal has achieved 365 days of zero poaching twice: in 2011 for rhinos, and for 12 months ending February 2014, for rhinos, tiger and elephants (Figure 1).

SWR embraces the buffer zones which share the common boundary of Nepal and India. Thus it acts as the easy and most viable area for the illegal trade of wildlife and wildlife products. Motivation of CBAPO unit in these areas can be prolific in reduction of illegal activities related to wildlife. In this regards, the study is expected to assess the effectiveness of those units established in every ward of buffer zone to cope with the wildlife trade and to ensure better environment for wildlife conservation. Hence the paper highlights the trend and cause of poaching and illegal activities in SWR as well as, the perception of the people towards CBAPO.

Materials and Methods

Study site

The study was conducted in Shuklaphanta Wildlife Reserve of Kanchanpur which covers an area of 305 sq.km. The Syali River forms the eastern boundary southward to the international border with India which demarcates the reserve's southern and western boundary. The reserve supports about 700 species of Flora, 28 Fishes, 12 reptiles, 46 mammals (18 protected under CITIES), and 423 species of birds. The area provides shelter for around 2,000 swamp deer, around 50 wild elephants and 30 tigers. Other animals found here are spotted deer, blue bulls, barking deer, hog deer, wild boars, leopards, jackals, and rhesus monkey. Behind this, SWR is the second protected area of Nepal where Black buck is protected as it is relocated there in 2012 AD from Krishasar Conservation Area. It is the only one protected area of Nepal where MIKE (Monitoring of Illegal Killing of Elephants) is operated. It is also the first wildlife reserve where MIST (Management Information System) is operated [18]. Buffer zone of Shuklaphanta wildlife reserve covering an area of 243.5 sq. km was established in May 2004 (IUCN Category: VI). The study site was selected where the CBAPO had been functioning. In the consultation with park officials and buffer zone management committee 2 municipalities and 1 VDC were selected as the intensive study area. The municipalities/VDCs were selected based on:

1. Existence of CBAPU.
2. Their vulnerability to poaching and illegal activities.
3. Their linkage to core area of reserve as well as India border.

Barasingha CBAPU, Trishakti CBAPU of Jhalari-Pipladi Municipality, Bedkot CBAPU of Daijee VDC and Shuklaphanta CBAPU of Bhimdatta Municipality were the intensive study area (Figure 2).

Sampling design

Purposive sampling was adopted for the research. The susceptibility to the poaching and illegal trade as well as the linkage to India border, their existence and vulnerability to poaching and illegal activities were prioritized as the criteria for the sampling. For the selection of these CBAPUs discussion was made with park official and BZMC office. 4 CBAPU out of 9 CBAPU in SWR were selected as these were the most

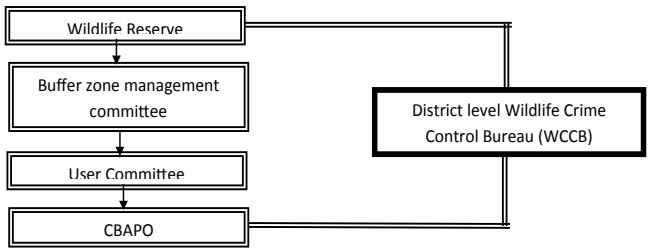

Figure 1: Institutional Framework of CBAPU.

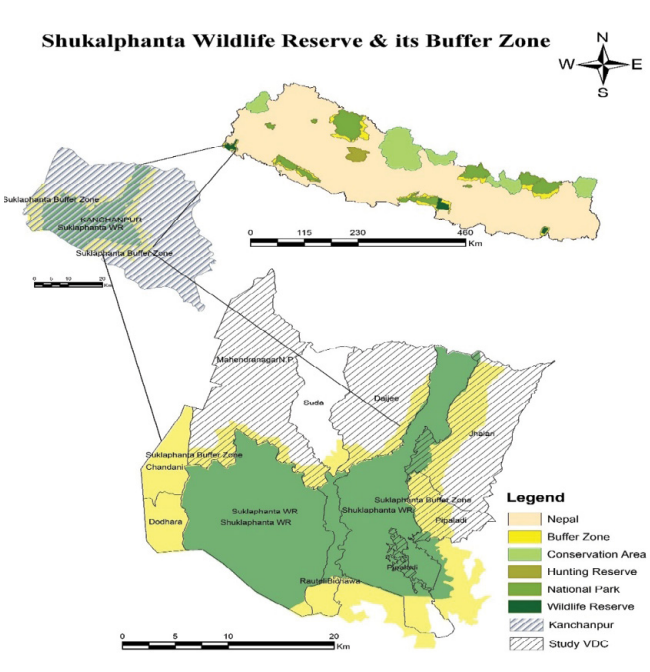

Figure 2: Study Area.

established CBAPU that have been working against poaching for many years that helped to gain the information about the effectiveness of CBAPO during different phases of time which is the main significance of this research.

Data collection

Personal interview: Personal interviews with 94 member (13 member from Trishakti CBAPU, 25 from Barashinga CBAPU, 25 from Bedkot CBAPU and 31 from Shuklaphanta CBAPU) was carried out with the structured multiple response questionnaire to find the major causes of poaching, area liable to be targeted, ongoing management activities of CBAPO, perception of people towards effectiveness of CBAPO and methods to promote CBAPO units.

Key informant interview (KII): KII was conducted by interviewing those people having special knowledge and understanding about the anti-poaching mechanism. 21 Key Informant (Chief warden, 2 assistant warden, 2 from donor agencies (TAL, NTNC), 3 local leader, 4 teachers, president of BZMC, 4 president of different user committee, 2 media person, head of Regional Investigation Team and head of park security battalion) were interviewed.

Focus Group Discussion (FGD): It was carried out with *Women Group,* Tharu community, Dalit community and Youth Club to collect more information and know the perception of different classes of society, a group of people involving female, low caste, marginalized etc.

Similarly, related and relevant secondary data was derived from record investigation as well as journals, articles, newspapers, documents, annual reports and other publications collected from the concerned stakeholders.

Data analysis

Computer software, SPSS (Statistical Package for Social Studies) and Microsoft Excel was used for Data analysis. The quantitative data was analyzed through frequency distribution, mean and percentage whereas qualitative data was analyzed through descriptive mean. Non- parametric Friedman Test was used to rank different issues while Chi-square test was used to see the association in perception of CBAPO members regarding different aspect of CBAPO at 5% level of significance. The perception of people was measured in disagree to agree (Three point scale) Likert Scale format while the results were presented in the form of tables, bar diagram, pie-chart and text.

Results and discussion

Cause of poaching and illegal activities in SWR

Since, the concept of CBAPO evolved because of the incidence of poaching and other illegal activities, it is quite necessary to know about the factors triggering these activities. Table 1 shows the rank response of respondents regarding different various socio-economic causes of poaching and illegal activities as well as their mean rank.

Using non-parametric Friedman test, unemployment (mean rank=2.44) was seen as the major cause of poaching and illegal activities. (P<0.05) denotes that different causes of poaching and illegal activities were perceived significantly different by respondents.

Shrestha [5] explored lack of awareness was the main cause of poaching and illegal activities in Bardia National Park which is different to the findings. It is because effective awareness program organized by CBAPUs of SWR have significant contribution in the increment of knowledge and awareness level of the local people while major problem unemployment remain unaffected. Whereas, Acharya [10] highlighted unemployment, lack of awareness, poor punishment system and easy access in core areas as the triggering factor of poaching, which is similar to this finding.

Trend of poaching and other illegal activities in SWR

From fiscal year 2067/08 to 2071/72, 5 registered cases of poaching are found in SWR office. There is a slight oscillation in the poaching incidences. In the year 2067/68, maximum number of poaching (3) was recorded. But the number of poaching cases reduced after the increment in the number of security post (21 posts) along with number of CBAPU in the year 2068/69. Finally, the number of poaching becomes nil in the year 2070/71. There was no any case of poaching registered after year 2071/72. Timber smuggling was the main illegal activity recorded in SWR. There is fluctuation in incidence of timber smuggling as well as other illegal activity. In the year 2067/68, 10 cases were registered of timber smuggling but it is increasing continuously. The maximum number (n=19) of timber smuggling was registered in the year 2071/72 (Figure 3). Only a single case of encroachment and fishing was registered in the year 2070/71 and 2071/72 respectively. In the year 2071/72, 5 cases of wildlife trade was registered. Mainly the border area (i.e., Dodhara, Chandani) was seen as the prominent area of wildlife trade. Open border with India is seen as the main constraint in controlling illegal trade.

S.No.	Causes	Response % (N=94)							
		Rank I	Rank II	Rank III	Rank IV	Rank V	Rank VII	Mean Rank	χ^2 value
1	For quick money ^	8.5	19.1	14.9	24.5	13.8	7.4	3.8	127.593*
2	Unemployment ^	39.4	19.1	21.5	5.4	7.4	5.3	2.44	*- P<0.05
3	Lack of awareness #	13.8	21.3	25.5	20.2	7.4	6.4	3.27	
4	For survival #	19.1	16	10.6	28.7	7.4	11.7	3.56	
5	Retaliation #	7.4	6.4	11.7	7.4	43.8	11.7	4.56	
6	Poor law enforcement @	6.4	5.3	8.4	5.3	8.5	18.1	5.26	
7	Superstitious belief #	5.4	12.8	7.4	8.5	11.7	39.4	5.11	
	Total	100	100	100	100	100	100	-	

Index: ^: Economic factor; #: Social factor; @: Legal factor; * - (P < 0.05): Statement is perceived significantly different by respondents.

Table 1: Causes of poaching and illegal activities.

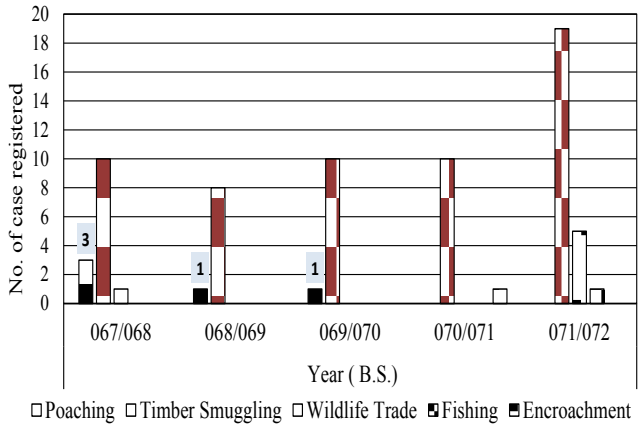

Figure 3: No of poaching cases & illegal activities registered since 2067/68 to 2071/72.

Trend of illegal activities was seen increasing because CBAPU have played vital role in the exploration of such activities though they were already in existence but not recorded due to absence of government as well as community based organization in all wards of buffer zone which is similar to findings of study of Shrestha [5].

CBAPU activity

Patrolling: CBAPUs patrol the buffer zone community forest, border of park as well as the buffer zone to control illegal activities such as illegal logging, encroachment, poaching etc. CBAPU patrol along with park staffs using MIST (Management Information System) patrolling system. The habitats of wildlife as well as places with vulnerability of poaching and illegal activities were marked in GPS and the routes for poaching were finalized. CBAPU used to patrol all area of buffer zone which lowered government expense as well as motivated local people towards participation (Table 2).

The schedule of patrolling is not fixed it can be irregularly or fortnightly too because the fixed schedule can help to poachers to detect the presence of CBAPU. The presence of patrolling teams is enough to deter poachers (Figure 4).

Information collection and surveillance: CBAPUs regularly patrol protected area as well as buffer zone and provide imperative information to protected area authorities, which allow the park staff to surprise the poachers, dealers and traders. This process of anti-poaching has proved to be very effective. Their information has really helped to detect poaching and even apprehend the poachers and smugglers.

Park staffs were seen as the main source of information regarding illegal activities followed by CBAPUs. Information flow from CBAPUs is increasing year by year. In the year 2067/68 CBAPUs provided only one information while it increased to 10 in the year 2071/72. This data shows that CBAPUs are emerging as the reliable source of information (Figure 5).

Animal rescue: Apart from other activities of anti-poaching, CBAPU also rescue the wildlife, which were seen accidently in the buffer zone of the reserve in search for different purpose i.e. food, water, habitat loss etc. CBAPU captures the wildlife with local material available and then inform to reserve for their re-establishment in original habitat/suitable habitat. Usually IUCN red listed endangered animals like – Nilgai, Python, Swamp deer, wild boar, crocodile etc. were rescued (Table 3).

Skill Development training and income generating activities: CBAPUs also organize the skill development training like: - mobile repairing, house-wiring, plumbing etc. to make the marginalized community self-reliant who are likely to be involved in poaching and illegal activities. Indirectly, it will minimize the pressure on natural resource as well as help to raise their economic level too (Table 4).

Shrestha [5] also found similar finding in Bardia National Park; regular activities of CBPAU like patrolling, raising awareness, information gathering etc. dignifies their effectiveness for biodiversity

CBAPU	Zone of Responsibility (ZOR)
Barashinga	18.61 sq.km.
Daijee	30 sq.km.
Shuklaphanta	19 sq.km
Trishakti	30.68 sq.km.

Table 2: CBAPUs and ZOR.

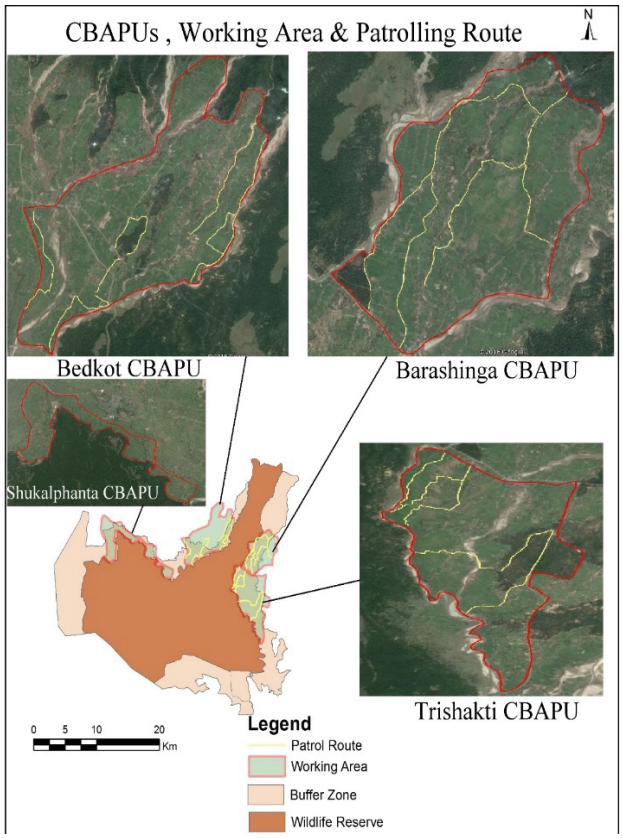

Figure 4: CBAPUs, Working Area and Patrol Route.

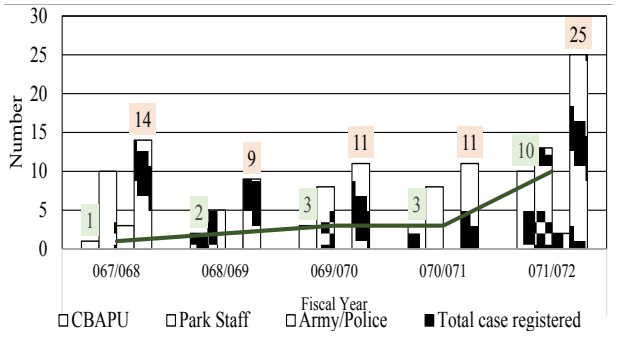

Figure 5: Total case registered and source of information.

Year	No. of rescued animal
069/070	6
070/071	20
071/072	14

Table 3: No. of animal rescued by park with help of CABPU.

S.No.	Training	Beneficiaries	Organizer
1	Mobile Repair	15 youths	Bedkot
2	Masonry	4 youths	Barashinga
3	Bio-gas fitting	7 youths	Barashinga
4	Webbing	6 women	Barashinga
5	Leadership Development	20 women	Shuklaphanta

Table 4: Skill Development Programs and Beneficiaries.

conservation. Similarly Acharya [10] highlighted that government has formed anti-poaching units which carryout regular patrolling, interaction with communities and effective implementation of law in local level to combat poaching, which support the findings of this study.

Achievement of CBAPO

When the members were asked about their achievements, majority of the respondents, (27.2 %) said that they were successful in raising awareness of local community while a very few respondents (1.1 %) said that their achievement was seize of wildlife parts. From the above data, we can say that CBAPO are found to be effective especially in raising awareness and seizure of traps placed for wild animals and birds as well as rescue of wildlife. CBAPO- Daijee seized and handed over tractor trolley loaded with illegally harvested timber/logs also played important facilitation role on evacuating 38 ha (nearly 1000 households) in Jhilmilaphanta of Autelibichuwa and 1 ha (300 households) in Baisebichuwa. In addition, they chased 3 poachers groups and destroyed 25 tiger iron traps [19]. Barashinga CBPAU conducted wall painting illustrating reintroduced black buck conservation in 5 wards of Jhalari VDC which has been successful to motivate people towards it conservation [20]. CBPAUs of SWR were seen impressive with their effort towards wildlife conservation with their different conservation activities. Above mentioned results supports the members response on their achievement explored by this study (Table 5).

Response on benefit perceived

To function any program praiseworthy, there is a need to encompass local people in the program. People will participate in the program only if they will be benefited from it. Table 6 shows the response of respondents in different rank for the different benefits as well as their mean rank.

Response on different aspects of CBAPO

Respondents were asked to rate their level of agreement with statements about various aspects of CBAPO, using a series of Likert scales with ratings ranging from 1="Agree" to 3="Disagree."

For the statement "Existing networking system of CBAPO is adequate" the weighted mean was 2.45 indicating that the respondents were disagreed to the statement. They are not satisfied with current mechanism of CBAPO.

The weighted mean for the statement "CBAPO is receiving adequate help and assistance from external agencies", was 2.44, indicating that the overall responses of the respondents lean towards disagreement. They are not satisfied with the support being provided to them (Table 7).

For the statement "More CBAPO should be institutionalized in this area", the weighted mean was 1.31. This shows that the response on the given statement lean towards agreement. The weighted mean for the statement "Women and marginalized should be motivated for active participation" was 1.30 indicating that the respondents were agreed to the statement.

S.No.	Achievement	Response %
1	Seize of wildlife parts	1.1
2	Seize of trap places of WL	20.2
3	Capture of poachers with arms	13.8
4	Rescue of various wildlife	18.1
5	Awareness to community people	27.2
6	Skill development	19.6
	Total	100

Table 5: Achievement of CBAPO.

S.No.	Benefit	Response%(N=94)								
		Rank I	Rank II	Rank III	Rank IV	Rank V	Rank VI	Rank VII	Mean Rank	χ^2 value
1	Increased awareness and knowledge	34	20.4	12.8	7.4	9.6	7.4	6.4	2.81	123.147*
2	Monitory	14.9	29.7	29.8	5.3	5.3	6.4	7.4	3.1	*-P<0.05
3	Stuffs (cycle, cloths)	21.3	19.1	31.9	7.4	5.3	9.6	6.4	3.13	
4	Self-satisfaction	11.7	6.4	6.4	39.5	16	10.6	10.6	4.2	
5	Social respect	5.3	7.4	5.3	23.4	32.9	18.1	8.5	4.61	
6	Training/ Tours	7.5	7.4	7.4	11.7	24.5	30.9	10.6	4.65	
7	Rewards	5.3	9.6	6.4	5.3	6.4	17	50.1	5.51	
	Total	100	100	100	100	100	100	100	-	

Table 6: Perception on benefits perceived from CBAPO.

S.No.	Statements	Response %			Weighted Mean	χ^2 value
		Agree (1)	Neutral (2)	Disagree (3)		
1	Management actions of CBAPO are satisfactory	63.8	23.4	12.8	1.48	40.9*
2	CBAPO is able to give result in wildlife conservation	67.1	25.5	7.4	1.41	52.6*
3	Trend of poaching &other illegal activities decrease after CBAPO introduction	75.5	14.9	9.6	1.34	75.7*
4	CBAPO is receiving adequate help & assistance from external agencies	11.7	31.9	56.4	2.44	28.2*
5	More CBAPO should be institutionalized in this area	77.6	12.8	9.6	1.31	83.2*
6	CBAPO should work jointly with army/ park staff	66.3	22.1	11.6	1.45	46.6*
7	Women & Marginalized should be motivated for active participation	81	7.4	11.6	1.30	95.7*
8	Existing Networking System is adequate	5.3	43.6	51.1	2.45	33.9*
Index - *: Statement is perceived significantly different by respondents.						

Table 7: Perception on different aspects of CBAPO.

Way to enhance effectiveness of CBAPO

Regarding the ways to enhance the effectiveness of CBAPO, majority of the member (40.4%) cited financial support to the CBAPUs can upscale the anti-poaching activities in the buffer zone along with maximum participation of local community. Wildlife Times [13] also illustrated that with sufficient funding and training CBAPO can be the best solution for anti-poaching at local level. Similarly, institutional development and capacity building of CBAPUs is very important for wildlife conservation. Rokaya [21] revealed that CBAPO need financial support to run anti-poaching activities as well as strengthening of security measure to CBAPO member, reward system, sufficient trainings and joint patrolling with army can be best way to make CBAPO more effective (Figure 6).

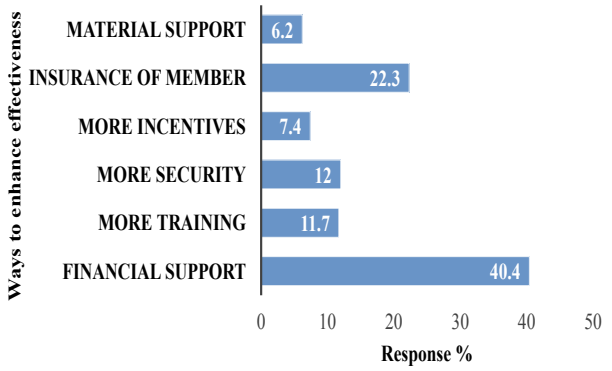

Figure 6: Ways to enhance effectiveness of CBAPO.

Conclusion and Recommendation

Unemployment and awareness level are the major cause for poaching and illegal activities. Patrolling, surveillance and information gathering, rescue of wildlife and raising awareness were the main activities of CBAPO which has significantly contributed to achieve the zero poaching at SWR. Increasing trend of case registration of illegal activities dignifies the effectiveness of CBAPO. Increased level of awareness in community is the major achievement of CBAPO, which have marked high level of participation of local people in conservation activities. Lack of financial resource with CBAPO was seen as the greatest hindrance for carrying out their tasks in a more organized and effective way. More skill development training should be provided to the people of buffer zone to make them self- reliant as well as grass root level awareness program should be encouraged. There should be a sustainable source of finance to CBAPO. Park allied agencies should extend their financial supports to CBAPO. Proper documentation of CBAPU should be maintained at park office as well as BZMC. Women and marginalized community should be encouraged for active participation in operation. The morale of the CBAPO members needs to be boost up through incentives, rewards, anti-poaching training, security assurance, for the better conservation results in days to come.

Acknowledgements

The authors greatly acknowledge Mr. Yajna Prasad Timlsina, Mr. Bir Bahadur Khanal Chhetri, Mr. Bikash Adhikari, Prashant Ghimire and Bhuwan Singh Bist for their generous support, guidance, advice and encouragement to complete this research. WWF, Nepal is acknowledged for the financial support for this study.

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