



Section 5: conflict resolution



Annoyed farmers complaining to Park Manager, F. Osborne, WCS

Introduction

Human-wildlife conflict situations often have a long history. Past efforts to resolve the conflict may have failed or there may be political issues that exacerbate the situation. No solution will work without site-specific knowledge of what is possible, practical, or acceptable in any particular area. Unfortunately human-wildlife conflict situations are often complex so are unlikely to be resolved quickly and cannot be solved solely by technical means. A common problem to date is that most interventions have been planned and implemented by organisations from outside an affected community without clearly defined goals and objectives. This section addresses some of the problems faced when developing schemes to reduce crop loss to wildlife. The main group of points that need to be considered prior to any study and/or intervention programme is;

1. Should a study be undertaken if there is no practical intervention planned?
2. Is one raising expectations for a solution by conducting a study and
3. What will be the tangible benefits for the farmers?

Goals of an intervention

It is important to identify the project's goals prior to the development of any form of intervention. For instance, is the goal of an intervention to resolve the conflict by just reducing crop loss or might there be other, equally appropriate goals? These other goals may include increasing farmers' tolerance to crop raiding by wildlife by developing ways in which local communities might stand to benefit financially through living alongside wildlife. A further, important consideration is whether managers are interested in, or able to provide a

short or long term solution to a conflict situation. It is also necessary to consider whether the research goals and management goals concur.

Once a conflict area has been identified and it has been agreed with local people that some type of intervention should be made, the goal of any intervention should be decided upon before field work begins. The specific goals of any particular intervention scheme are likely to vary depending on the details of the situation concerned, but possible goals for conflict resolution schemes include:

- Reducing the amount of crop losses to wildlife
- Improving local people's attitudes towards, and perceptions of, a protected area and its wildlife
- Helping affected farmers to improve agricultural production
- Increasing the amount of crops being harvested locally, through improved local yields (via improved cultivation & plant husbandry techniques, use of different crop types, improved harvesting and/or storage techniques for example)
- Reducing levels of poaching

Each of these aims requires different approaches, tools, and budgets, but as outlined on the previous page, the ultimate goal of any intervention should be to improve the livelihood security of the farmers concerned.

Community involvement

Once the individual goals have been established and the availability of the necessary resources ascertained, then discussion with the communities can begin. Communities living around protected areas are different from those in other areas as they often receive a disproportionate amount of interest from the conservation and development donors (due to the desire to conserve a protected area or a rare or endangered animal). In many such areas a 'culture of dependency' has developed due to the often-competing motivations of these organisations. This can influence people's expectations with respect to who should take responsibility for developing, implementing and/or maintaining any control scheme, thus it is very important that farmers be involved in the process of developing new solutions from the beginning. Not only does this foster a sense of commitment and involvement amongst them, but it is also vital that they be involved from very early on because they understand how the situation affects them and what kinds of intervention are likely to be acceptable and feasible within the local culture, providing there is adequate representation from the different types of

stakeholder involved (for example, women-headed households, poorer households, farming households from minority ethnic groups).

Reducing crop losses

Table 5.1 gives a brief overview of different pest species commonly encountered around agricultural areas in Africa. A problem animal can be repelled, removed or tolerated. In some cases, for large valuable animals, live removal is an option, but this will never be cost effective. The most viable options include:

- (i) Increasing vigilance by farmers – this has been shown to make a considerable difference in the amount of crops lost,
- (ii) Increasing farmer tolerance for a pest species and lost crops – but where losses are high, tolerating crop losses may result in increasing poverty and hardship for the farming community,
- (iii) Increasing the ability of farmers to repel crop pests using existing local methods – this has a number of obvious benefits,
- (iv) If these methods do not make a considerable impact on crop loss, then larger impact interventions such as electric fencing, lethal control of pest animals or moving farmers from the conflict zone can be considered.

Many traditional repelling techniques are fairly effective if formalised, but are labour intensive and in certain circumstances are perceived locally as being increasingly ineffective and therefore no longer appropriate or adequate. But where an animal can be repelled adequately using these methods, then it seems inappropriate, and certainly not particularly cost effective, to try to introduce more expensive techniques, or strategies requiring greater technological input or backup.

Table 5.2 is presented as an example to show different methods for reducing crop loss to elephants. It is apparent from this table that there are both advantages and disadvantages associated with different crop protection strategies, therefore any manager needs to carry out a careful and thorough cost/benefit analysis to identify the most effective short and long-term strategies/options for reducing conflict.

Table 5.1: Some pests, which raid crops in Africa

Crop pests	(Viruses, mites, slugs, snails, etc., are beyond the scope of this paper and are the responsibility of a country's agricultural extension programme)
Insects	Insects are the most widespread and destructive of the crop pests. A vast amount of literature exists on this subject which can help in this discussion. It is difficult to deal with insect pests 'by hand' as they tend to invade in large numbers and reproduce quickly. Most control efforts have focused on chemical controls to reduce their numbers.
Rodents	Rodents have similar characteristics as insects in that they reproduce quickly and can invade in large numbers but they can be controlled by poison (which is expensive and renders the meat useless) or by traps.
Wild Pigs	Natural barriers such as Mauritius thorn and or Sisal/cactus can deter wild Pigs and warthogs. Hunting is also an option where they are classified as a pest species.
Birds	Damage by grain-eating birds is also a considerable problem to food crops such as millet and sorghum. Noisemakers and scarecrows can help, but are very time consuming.
Small Mammals	Smaller ungulates cause damage to crops and can be trapped and used for meat; however, in many areas they have protected status. (E.g. Duiker, impala, etc.). Barriers are often quite effective for these species
Primates	Primates are particularly difficult to control because they are intelligent and fast. Fortunately the species that raid are diurnal. They can be chased using simple techniques such as slingshots or rocks, and, in most cases, are not dangerous. Children and old women can chase them. Research indicates that primates tend not to move more than a couple of hundred meters away from the forest boundary. Loss is regular and can be substantial over a season. Considerable time/energy costs in constant patrolling are needed to keep primates at bay. Killing is not very effective unless you kill the alpha male and this may have an impact on troop viability.
Large Mammals	Animals such as elephants, buffalo, and hippo are the most dangerous of pests and require a considerable amount of planning if an intervention is to be considered (see Table 5.2).

Table 5.2: The advantages and disadvantages of different methods to reduce conflict between elephants and people

METHOD	ADVANTAGES	DISADVANTAGES
Working with affected farmers	<ul style="list-style-type: none"> Necessary to solve problem Good public relations Get ideas for new methods 	<ul style="list-style-type: none"> Raise expectations Create trouble for managers Misuse of methods
Killing problem elephants	<ul style="list-style-type: none"> Good public relations Remove problem animal Compensation for loss of crops through meat Revenue for community 	<ul style="list-style-type: none"> Drain on a natural resource Ineffective for stopping other crop-raiders Open to abuse
Translocation	<ul style="list-style-type: none"> Removes the 'problem' 	<ul style="list-style-type: none"> Problem moved to another area Expensive equipment and personnel
Fences Traditional fences (branches, sticks or strings)	<ul style="list-style-type: none"> Inexpensive to erect Easy to maintain Psychological barrier 	<ul style="list-style-type: none"> Not very effective Requires cutting bushes/trees
Standard fences (Cable wire fences)	<ul style="list-style-type: none"> Maintenance cost is low 	<ul style="list-style-type: none"> Expensive to erect Not always effective Must be maintained Forms a 'hard edge' Theft of wire for poaching
Electric Fences	<ul style="list-style-type: none"> Can be very effective Good for public relations 	<ul style="list-style-type: none"> Expensive to install and maintain Usually funded by donors Forms a hard edge Ineffective if not maintained daily Theft of wire for poaching
Vegetation barriers e.g. Mauritius thorn	<ul style="list-style-type: none"> Inexpensive to erect Can act as a cash crop Spreads easily Psychological barrier 	<ul style="list-style-type: none"> Effectiveness not documented Spreads easily
Trenches	<ul style="list-style-type: none"> Some effectiveness reported Material costs low 	<ul style="list-style-type: none"> Limited effectiveness if not maintained Expensive to maintain Can cause erosion
Sounds gunfire	<ul style="list-style-type: none"> Can have short term effect Easy to train people Good public relations 	<ul style="list-style-type: none"> Expensive Dangerous Open to abuse Elephants habituate to the gunfire
Fire crackers	<ul style="list-style-type: none"> Can have short term effect Easy to train people Good public relations Inexpensive 	<ul style="list-style-type: none"> Dangerous Can cause fires Elephants habituate to fire crackers Labour intensive
Drums/tins/whips	<ul style="list-style-type: none"> Can have short term effect Easy to train people Good public relations Inexpensive 	<ul style="list-style-type: none"> Elephants habituate to noisemakers Labour intensive Access to material can be limited
Experimental Sirens and infra sound	<ul style="list-style-type: none"> Effectiveness not proven, but may be useful (more research needed) 	<ul style="list-style-type: none"> Elephants may habituate Expensive Theft of equipment
Dried pepper (burned)	<ul style="list-style-type: none"> Extremely irritating to elephants history of use by rural farmers 	<ul style="list-style-type: none"> Winds dependant Access to pepper Irritating to farmers

METHOD	ADVANTAGES	DISADVANTAGES
<p>Experimental (contd)</p> <p>Capsaicin spray</p>	<ul style="list-style-type: none"> Extremely irritating to elephants Application technology available Proven effective as a repellent 	<ul style="list-style-type: none"> Wind dependant Expensive (imported)
Dogs	<ul style="list-style-type: none"> Could be useful for guarding if trained well but untried 	<ul style="list-style-type: none"> danger they may attract elephants towards dog owner when dog flees
Elephant pheromones	<ul style="list-style-type: none"> Could be effective 	<ul style="list-style-type: none"> Untried, expensive

Implementation of an intervention

Before developing and implementing an intervention a number of points need to be addressed. The reasons for the conflict must be considered in the context of other issues of protected area management. Second, information needs to be gathered about the type of conflict issue, farmers’ perceptions of the situation, and perhaps their expectations as regards a potential intervention programme. Third, the manager should understand the ecology of the pest species. Fourth, as already outlined, the goals of the intervention must be clearly defined. Fifth, a decision should be made regarding the deterrence or removal of the crop pest and finally, farmers need to be involved to ensure their support for and acceptance of the intervention. In conclusion, these points are discussed further below:

Social context

Prior to developing an intervention programme it is vital that the complexity of the situation be recognised and considered in adequate detail. For instance, it is important that the people assigned to resolving any conflict situation have the necessary expertise. Other factors that also need to be considered at the very early stages in any procedure include whether the particular conflict issue could be described as a crisis situation therefore creating great pressure to react. A further point that must be considered early on is whether the conflict issue is linked politically to other issues regarding protected area management (e.g. poaching, hostility toward other aspects of conservation efforts). Furthermore, it is very valuable to know whether the farmers feel powerless to deal with the problem, or whether they are using the crop raiding issue to achieve other goals. Information such as this will help a manager to determine the appropriate goals and priorities in any consequent intervention strategy? A final area to think about prior to the onset of any project is whether the local politics, and history of development in the area, affect the issue because this may have significant implications for understanding and identifying areas for possible conflict between members of the local community, political authorities, and Wildlife Authority and Parks personnel. Such

information may prove invaluable when trying to negotiate with local farmers as well as local political figures.

As outlined in earlier sections of this document information is needed in regard to the actual crop losses, farmers' perceptions of the problem, and what they would like to see implemented. It may also be relevant to determine the way people dealt with the problem in the past; such information may provide ideas about possible ways in which to intervene, or may help explain why the issue has become more pressing in recent years, if that is the case

Ecology of pest species

Information about the ecology of the pest species concerned is vital prior to beginning any intervention. Having some understanding of why animals crop raid is useful when trying to devise ways of reducing crop damage. For example, are crops attractive to pest species because they need them nutritionally or is it because they are an easy, nutritious, energy dense, source of food? Factors such as seasonally, feeding, breeding and movement patterns may also need to be taken into consideration to help build up a useful behaviour profile of the species concerned. This information can then be used during the design phase of the intervention programme to facilitate the development of effective intervention options.

Crop protection strategy

Once an understanding of the pest species has been developed options that are effective against that species can be implemented. The type of crop protection strategy a farmer or community can adopt from either an ethical or logistical point of view must then be considered. In order to make this decision a manager will have to consider a wide range of issues from both an economic and food security perspective. As lethal control or removal of pest species is not an option in most situations, farmers will have to depend on a range of deterrence methods. Table 5.2 gives an outline of a range of traditional and experimental methods used against elephants. Some of these methods may be useful against other pest species, but new research will need to be carried out to find methods useful for crop pests such as primates.

It is apparent that there are both advantages and disadvantages associated with different crop protection strategies; therefore any manager needs to carry out a careful and thorough cost/benefit analysis to identify the most effective short and long term options for reducing conflict.

Summary

- Any intervention strategy must have clearly defined goals
- The resources needed to carry out an intervention must be secured before the introduction of any programme to affected communities
- Any intervention must incorporate wide ranging community consultation and support before any programme is embarked on
- Methods used should first include the most basic methods (vigilance and traditional methods) before any more technological methods are introduced.

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