COLLABORATIVE STRATEGIES TO PROMOTE LOCAL CONSERVATION OF WILDLIFE

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Regional Management Section
Fish and Wildlife Branch
Renewable Resources

Miscellaneous Report

Yukon
Renewable Resources

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A Thesis Presented to
The Faculty of Graduate Studies of
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the degree of Master of Science.

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ABSTRACT

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University of Guelph, 1992

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This thesis is a three stage investigation into the effectiveness of strategies which stress collaboration, voluntary change and local control, in promoting local conservation of wildlife. The first stage of the study identified 277 potentially useful strategies through a multidisciplinary literature review. These were grouped into nine categories related to the design goals of collaborative wildlife conservation programs. The second stage of the study determined, via a mail questionnaire sent to respected wildlife conservationists, the effectiveness of a subset of these 277 strategies. One hundred and fourteen individuals from 39 countries rated the effectiveness, if used, of 74 strategies from the frame of reference of a specific project. Most useful strategies were those which allowed local people to personally learn and assess the issues and program, and to acquire more local responsibility. The third stage of the study determined, via the same mail questionnaire, effective strategies used with important target groups and to reduce the costs associated with conservation programs to local people. The findings were discussed in relation to previous conservation education syntheses, recent work in wildlife extension and interpretation, and theory of human system change and common property resource management.

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CHAPTER 1: INTRODUCTION

Wildlife has traditionally been conserved and managed using processes based on biological research and regulations, which have been designed and implemented by national or regional governments (Case, 1989). Recently, alternative approaches have been described. Economic incentives have been useful to promote sustainable use of natural resources by industry and individuals (McNeely, 1988). In other situations, wildlife has now been inexpensively and effectively conserved through collaboration and cooperation with local people. These latter situations ranged from farmers setting aside land for conservation to communities allocating nearby fishing rights, and from Inuit co-managing parks to Maasai conservation of rangelands and wildlife (Hilts, 1989; Carpenter et al., 1991; Berger, 1989). In the United States and Canada, collaborative strategies stressing voluntary change and local control provide a set of approaches uniquely well suited to allocation, land stewardship, and cooperative management with aboriginal peoples. In less developed countries, collaborative strategies may be essential to achieve a more sustainable pattern of rural development that allows for economic benefits from natural areas to accrue to local people. These approaches do not diminish the need for ecological study, or the use of regulatory controls and economic incentives in many settings, but rather they offer an additional approach which often works effectively in situations where other approaches have not been effective or supported.

Collaborative approaches stressing voluntary change and local control have received comparatively little attention in terms of research and synthesis in the wildlife conservation field, particularly in North America (Jacobs et al., 1986). There is a shortage of well-evaluated case studies upon which to base a synthesis (Pomerantz and Blanchard, 1992). There has been little linkage to other disciplines with experience in change in rural human systems such as agriculture or health, or to theories of human system change. There has been an emphasis on education-based strategies but little attention given to other systems change-oriented strategies. People doing this work are partitioned into fields such as conservation education, environmental education, interpretation, wildlife extension, and co-management, which makes integration difficult. Although there has been innovative work, it is not widely known across these different fields. Synthesis is needed.

The study described in this paper contributes to this synthesis across these fields and disciplines, and examines some of the theory of system change. It assembles a set of strategies which have already been established as being effective in wildlife conservation. It adds to this list, innovative strategies which have been found to be useful in changing rural human systems in disciplines such as agriculture, health, and energy conservation. Through a survey completed by 114 wildlife conservationists working in 39 countries who were respected by their peers as being

effective in this work, the research examines the use and perceptions regarding the effectiveness of 74 strategies, biased towards those anticipated to be less well known and less frequently used by conservationists. Finally, these wildlife conservationists identified any strategies they had found to be particularly effective with specific target groups, and particularly effective in reducing various costs of wildlife conservation programs to local people. Finally, it draws some linkages to the earlier syntheses.

Objectives

The primary objectives of this study were:

1. To assemble a set of low-control, communicative intervention strategies having potential application in wildlife conservation from the recent literature in disciplines that promote local change, and from suggestions made by a sample of conservationists.
2. To describe the degree of use and the perceptions of effectiveness of a set of low control strategies, biased towards those less frequently used, by an international sample of respected wildlife conservationists .
    a. To determine the frequency of use of each strategy and, when used, how effective each strategy was perceived to be.
    b. To identify characteristic differences between most and least useful strategies.
    c. To identify which strategies were perceived to be most useful in different types of conservation situations which were defined on the basis of barriers to conservation.
3. To identify target groups which were perceived to be most important by this sample of conservationists in projects they were involved in and identify strategies which they perceived to be most effective when used with these target groups.
4. To identify strategies which conservationists perceived to be most useful in reducing the costs of conservation to local people.

Significance of the research

The study is significant to the field of wildlife conservation, the broader field of sustainable development, and to collaborative conservation with rural, particularly northern, communities in Canada. In the field of wildlife conservation, the subject of collaboration and local control is timely. While the use of adjectives like 'participatory', 'advisory', 'collaborative', 'responsive', and 'co-operative', is common, true voluntary change and local control are not common, because they involve giving up power and control, and because they are not part of the natural resource management paradigm. In a global sense, two recent international and multi-agency reports have cited the significance of collaborative conservation. The 1990 paper "Conserving the World's Biological Diversity" stressed the urgency of conservation concerns and the need for approaches

which integrated many sectors and local people (McNeely et al. 1990). In the 1991 report " Caring for the Earth", 19 of the 123 action recommendations concern voluntary local change and greater local control as an avenue to solve the urgent global needs to shift to more sustainable uses of biodiversity (WWF/UNEP/WRI, 1991). The study has personal and immediate practical significance as well. As a wildlife biologist in Northern Canada, the author has worked with rural communities and aboriginal nations who place much value on wildlife conservation and are eager to obtain greater control. In the Yukon Territory, legislation enabling and requiring collaborative wildlife conservation has been recently introduced through the settlement of aboriginal claims. Studies such as this one will help to develop this new process of conservation to ensure it is truly collaborative and cooperative.

Definitions

Before proceeding much farther it is prudent to define some of the terms used in this paper. Wildlife conservation refers to the conservation of all natural lifeforms and areas. It differs from the conservation of biodiversity by not considering all living organisms not just natural ones, and all ecological complexes. Sustainable Development is defined as a pattern of social and structural economic transformations (i.e., "development") that optimizes the economic and other societal benefits available in the present without jeopardizing the likely potential benefits in the future (McNeely et al. 1990). A strategy is a a conceptually rigorous collection of methods, tactics, or procedures, logically linked to the achievement of a vision, goal, and objectives. Control is defined from a national or regional perspective. High control wildlife conservation strategies are those which enforce change at local levels by sanctions. Medium control strategies compel change by incentives. Low control approaches have a high degree of local control, not necessarily individual control, over the process and content of wildlife conservation. Low control strategies facilitate voluntary change. This control is separate from the degree of structure in the process. A knowledge system refers to the persons, networks and institutions, and the interfaces and linkages between them, which engage in, or manage, the generation, transformation, transmission, storage, retrieval, integration, diffusion and utilization of knowledge, and which potentially work in a synergistic fashion to improve the goodness of fit between knowledge and environment, and the technology used in a specific domain of human activity (Röling, 1988). An intervention is a deliberate, planned interference into a system. A system change, in the context of this study, is a collective change in the norms of a human system which can influence the use of natural resources.. Problem posing illustrative codes include a variety of visual communication forms that illustrate norms in a local human system. They are used to facilitate, through group discussion, the development of a critical awareness in individuals of the appropriateness of the norm. An example

could be a line drawing by a local artist of an elephant raiding a crop (Berger, 1989), or a role-play of an interaction between a local farmer and a park official.

Background- Effecting changes in human systems

The processes of enhancing the conservation of wildlife are processes of introducing change into human systems. To be effective, these processes must be based on behavioural knowledge of change and must utilize people technologies based on such knowledge (Chin and Benne, 1985). Because of this, the assumptions made by conservationists regarding the process of effecting change in human systems can be critical to the success of conservation programs.

Chin and Benne (1985) determined three broad groups of strategies used to effect change in human systems. In the Power/Coercive model of change, the implicit assumption is that people with knowledge are legitimate sources of power. Moral power, political power, and economic power, through benefits and sanctions, are used by whichever group is best able to mass political and economic power to change goals. Conservationists making this assumption acquire information and make convincing arguments to influence the policies and power of dominant institutions. Under this model, conservationists function as experts, distant from the community, who make new rules that people must abide by.

In the Empirical/Rational model of change, the implicit assumption is that people are guided by reason and will utilize some rational calculus of self interest in determining needed changes in behaviour. Conservationists making this assumption provide information that will convince individuals that it is in their best interest to conserve, and will work to change the system to achieve this. Under this model, conservationists function as information disseminators and persuaders, who package the message in a variety of different ways to different audiences. The 'best interest' can range from a short-term economic self interest to a long term opportunity for one's children's children to appreciate a natural area. Where national economic incentives are applied to modify an individual's self interest, or buffer the risk or costs associated with a behaviour change, the process involves the power/coercive model as well.

In the Normative/Reeducative strategies of change, the implicit assumption is that change to more conserving behaviour at the individual level is not possible without changes in socially communicated meanings, norms, and values, as well as changes in cognitive and perceptual orientations. Conservationists making this assumption a) collaborate with groups in the definition and solution of problems, b) address the non-conscious elements which impede problem solution, and c) help people learn methods and concepts that will help them solve similar problems in the future. Under this model, conservationists function as facilitators who personally use a variety of strategies to catalyze change in the way the local group normally operates. Dimock (1981,1992) has developed an intervention and collaborative change process model which falls within the

reeducative/normative model of human system change. The components of this intervention and collaborative change process include a deliberately planned and systematic ongoing intervention, a focus on changing the norms or culture (the usual ways of doing things), in an open process which involves the members of the system as equal collaborators in the intervention and change process.

The assumptions that conservationists make about the nature of the barriers to change in the human social system can also influence the selection of the approach and its effectiveness. Zaltman (1977) developed a topology of factors resisting change. They grouped these factors under cultural, social, organizational, and psychological barriers. This resistance provides conservationists with information about the system and errors that they may be making, and, as well, helps to stabilize new more conserving behaviours in the system. West (1983) explored the specific barriers to the collective adoption of natural resource practices in developing nations. He stressed the differences in equity issues between individual, or optional, and collective adoption, the importance of property rights considerations, the problems that community factions present, and the role of indigenous leadership in collective adoption.

Background- Contemporary wildlife conservation

The two traditional western paradigms of conservation draw heavily from the 'experts know best' approaches of the power/coercive model above. These paradigms involve a) saving pristine landscapes, untouched landscapes, untouched ecosystems, and rare species from the onslaught of development, and b) a moral injunction of governments to act as a steward of the landscape (Jacobs et al., 1986). This has led to the creation of parks and reserves, on paper if not in practice, and adversarial struggles to defend them against local people or resource extraction interests.

Awareness grew among international conservationists in the late 1970's and early 1980's that reliance on reserves alone to achieve conservation was unwise. More attention was needed to control human influences on local ecosystems. The only viable motivation for conservation was seen to be a broad awareness of benefits to be derived from 'prudent' resource use in the satisfaction of individual and group needs. Achieving this 'prudent' resource use would require substantially different paradigms, institutions, institutional structures, and methodological tools than had been considered adequate before (Jacobs et al., 1986; McNeely et al., 1990). Five basic requirements were seen. Conservation needed to be integrated with development. . Basic human needs had to be satisfied. Equity and social justice had to be achieved. Provision was needed for self determination and cultural diversity. Ecological integrity needed to be maintained (Jacobs et al., 1986).

This thinking was widespread among conservationists working with post colonial societies in lesser developed countries, aboriginal societies in North America, and more developed Western societies. In post colonial societies throughout the world

> ...new legislation has been enacted which redefines the rights of the state and duties of the individuals. In particular, land and water resources have been nationalized in the interests of the state. Villagers have seen customary rights replaced, local organizations superseded, and their incentives to conserve resources removed. Governments have acted as if they had the capacity to manage resources at the local level. However, this has created conflicts between local and national interests which individuals rationally exploit...(Gibbs and Bromley, 1989:30).

Resolution of these problems by these societies and genuine adoption of environmental policies was seen as impossible

> ...until they are stripped of Euro-American ethnocentricity and until they are conceived and applied through the specific culture of the people. In the Third World, protection and management of the environment can only be successful if popular participation is extensive: neither financial aid of laws are effective by themselves. (Bugnicourt, 1986:104)

International conservation organizations following these guidelines have been effective in many contexts (for example, Thailand, McNeely and Dobias, 1991).

Similar problems exist in North America on lands used by aboriginal people where

> ...conservation ethics, practices, and strategies leave northern peoples on the periphery of decision making, ...distain their traditional knowledge, ...seek to preserve rather than conserve, and...attack the ethical basis of their existence. (Keith and Simons, 1986:220)

New institutions which have arisen following settlement of outstanding land claims have been successful in resolving these conflicts (for example, Carpenter et al., 1991).

Similar problems also exist in southern Canada and the United States where the public interest in wildlife conservation is becoming more diverse and intense (Decker et al., 1987, 1992). Biological considerations are no longer the primary determinant of management decisions. In response to this there has been an increase in the involvement of stakeholders (Bryson, 1988) and social science research (Decker et al., 1987). New institutions comprised of stakeholders are achieving innovative solutions to long standing disputes (for example northwest Pacific salmon fisheries (Dale, 1989)).

In conclusion, conservation by national government mandate, based on regulation and enforcement, has been an accepted approach to conservation, but it is increasingly clear that it is not working well in many settings, and efforts to make it work in these settings can have great economic and political costs. The growing edge of the state of the art in conservation is decentralized, 'low control', stakeholder-oriented planning.

Background-"Low control", stakeholder-oriented planning

Low control, stakeholder-oriented planning is called by many names, and is increasingly common in many fields (Table 1). It involves decentralization of responsibility, as well as control and

Table 1. Low control strategies common in other fields.

Field	Low control strategies and methods
Education	Child focused learning; Self directed learning; Students select curriculum; Parents select principal and teachers.
Business	Quality circles; Participatory management; Giving employees voting shares.
Aboriginal groups	Band councils and networks replace Federal government in managing activities.
Political parties	All members vote for party leader
Voluntary organizations	Stakeholder involvement in strategic planning.
Community development	Full community involvement in planning; Community soundings; Participatory theatre.
Agriculture	Local farming futures groups; Farmer directed agricultural research.
Health care	Collaborative community health care centres.
International development	Exchange, upon request, of traditional knowledge between geographically distinct local cultures

authority, to new and diverse types of institutions and groups who are directly impacted by these plans and decisions. In natural resource management, this process is fundamentally different and more creative than the hearing process where advocates compete to convince a legal figure, appointed technical expert, or politician of the relative merit of their position. It also requires fundamentally different skills on the part of natural resource managers who must provide unbiased, useful information and facilitate consensus (Figure 1). Stakeholder-oriented planning is well suited to planning efforts like those in conservation which involve multiple goals, continuous effort, and a search for common ground (Bryson, 1988). This type of planning remains oriented towards changing human systems, but not directed change which is decreed and enforced, promoted through incentives, or persuasively communicated by central government experts. It also makes explicit three sources of tension in natural resource management, generally, and wildlife conservation, specifically. First, compromise is needed between conservation management at the macro environmental level and localized application of national, regional, or local norms at the micro environmental level. Second, compromise is needed between national versus local resource

Figure 1. Amount of control conservationists might expect to have in a system based on the different roles they adopt, after Dimock, 1981.

	Director -Gives orders and makes non-negotiable demands. -Uses power to create change.
	Expert -Gives answers and demonstrations, and tells what to do. -Uses authority and superior knowledge or experience to control.
	Consultant -Provides data, makes suggestions, and shows alternatives. -Uses knowledge and experience in consultation with system.
	Resource - Helps group collect and analyze their own data. - Trains group in developing skills and using resources.
	Facilitator - Helps with group process and serves as catalyst. - Has special status in group, often trying to be neutral and objective.
	Collaborator - Joins system as a regular member. - Provides own resources and makes suggestions. Any influence and control comes from the value of contributions.

needs. Third, related to this, the involvement of local stakeholders offsets the increased political power of the larger urban proportion of the population, and the political power of vested economic interests. These three sources of tension are part of many contemporary wildlife conservation problems. While collaborative approaches which are low control and involve stakeholders offer no panacea to these problems, they can be substantially more innovative because different knowledge systems are involved, and there is greater institutional flexibility (Dale, 1989; Rettig et al., 1989).

Background- Contemporary research and practice in conservation education and wildlife extension

In the United States and southern Canada, natural resource managers (and the institutions they work for, and the institutions that train them) lack experience with collaborative, persuasive, educational, and empowering or 'low control' strategies because of the strong emphasis on strategies of research and regulation (Case, 1989). Few learning resources are available. Technical journals contain little reference to this work (for example one review found that only 1.2 percent of 7571 wildlife journal articles referred to education (Adams and Thomas, 1986)), despite the reference to information and education in 12 of the 24 policies of The Wildlife Society (1988), and a long history of papers stating the importance of educational strategies in wildlife resource management dating back to Leopold (1933). There is no integrated extension function as there is in agriculture to promote voluntary, enduring change and innovation. Instead communication activities are partitioned into narrow discrete functions such as interpretation (often a natural history education function), information and education (often a public relations and hunter education function), extension specialists (often an animal damage control function), field services (largely a regulatory function), and formal environmental education (often an experientially based function in the school system). Non-governmental conservation organizations (NGCO's) in North America have well developed advocacy strategies to lobby governments to adopt conservation policies (for example, Hummel, 1989). Stewardship programs on private lands are one of the few conservation approaches with a strong tradition of education and persuasion (Hilts, 1989; Van Patter et al., 1990). Conservation is seen a distinct activity from rural community development, with a separate set of strategies.

Outside the US and southern Canada, particularly in Africa, Asia, and Latin America, conservation is seen as being much more closely linked with rural community and economic development. NGCO's are developing innovative and collaborative programs for conservation and sustainable development with receptive governments and communities. Similar programs are being implemented in arctic North America with First Nations. NGCO's are often too busy to document strategy effectiveness, particularly those approaches that were unsuccessful, and successful strategies are passed along informal networks. When this work is reported, it is often in the rural development field.

There have been recent attempts to assemble case studies, however and to undertake some preliminary syntheses of this work. Much of this has been done within the field of conservation education and environmental education. Most notable among these is the work by Kathleen Blanchard who has worked on seabird and cultural conservation in maritime Canada for over 15 years. This work is well documented (Blanchard and Monroe, 1990; Blanchard, 1991), has

been compared to waterfowl recovery programs in Alaska (Blanchard,1987), and has been compared to five other well evaluated environmental education programs that led to community conservation action in the United States (Pomerantz and Blanchard, 1992). Blanchard's work demonstrates the importance of cultural norms, experiential learning, and long term personal commitment to achieve community conservation action. She was instrumental in compiling the proceedings from a conference sponsored by the Quebec Labrador Foundation/ Atlantic Center for the Environment in 1986 on, "Building Support for Conservation in Rural Areas" which describes 66 conservation education case studies (QLF/ACE,1987).

Susan Jacobson's work has described strategies to build and evaluate public support for protected areas in Malaysia and Central America (Jacobson 1987, 1988, 1989, 1991). Her work stresses the importance of stakeholder involvement in design and evaluation. She is currently compiling a set of 20 international case studies of communicative and educational approaches to conservation to facilitate broader understanding of these approaches within the conservation and academic community (Jacobson, in prep).

Lou Ann Dietz has developed a community conservation program to assist the recovery of a Brazilian primate, the Golden Lion Tamarin. Recently she synthesized her work with that of eight others, and outlined a process that conservationists could use to build local support for conservation programs (Dietz, 1988).

David Wood and Diane Walton Wood compiled a manual on the planning and management of conservation education programs for a broad audience in 1990, expanding on an earlier manual prepared for U.S. Peace Corps volunteers. A quote from their Introduction is revealing,

> It has been our experience that conservation education programs are often designed without precise planning. Their goals and objectives have been weakly defined; their target audiences have been talked to but not heard; their content and strategies have been randomly selected; their evaluation criteria have not been established. As a result, conservation education programs have often been ineffective in bringing about change." (Wood and Wood, 1989:9)

Their manual contains many useful design ideas, specifies the limitations of educational approaches[1], and identifies the strengths and weaknesses of seven methods to convey the message.

The First Pan American Congress on Conservation of Wildlife through Education in 1990 in Caracas, Venezuela, compiled a set of case studies of conservation education studies primarily from

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[1] Specifically they include only conservation projects in which individuals can be educated that the shift to conserving behaviour is in their self interest. Conservation programs requiring coercion, economic incentives or social pressure to be effective are seen to be outside conservation education.

the Caribbean and Central and South America. These provide insight into specific progams in the region, and their integration with formal environmental education. There was no synthesis in the proceedings related to collaborative local conservation (I.I.A.S., 1991).

Collectively, the syntheses by Dietz, Wood and Wood, and Pomerantz and Blanchard, have been deductive in their orientation, looking at design elements which were common to successful conservation and environmental education programs. Thirty-five strategies from these syntheses are listed in appendix 1.

In contrast to these researchers, several others have looked at community level conservation from other theoretical frameworks. J. Dhyani Berger (1989) approached the issue from a perspective based on radical adult education, and participatory action-research approaches to rural development. Her work with the Maasai in southern Kenya suggested that empowerment and organizational development were important prerequisites to local conservation. The work of Berger and her colleagues in the African Wildlife Foundation is having much influence in east African wildlife management (Berger pers. comm., 1992). Sam Ham approached the issue from more of a social marketing/communication psychology perspective. He has published several papers exploring the differences in United States versus Latin American approaches to the promotion of environmental ideologies. In the latter settings, much more integration is needed between extension, interpretation, and formal environmental education (Ham and Sutherland, 1992, In Press). Finally, there is the work underway in the application of common property resource management theory. Fikret. Berkes has compiled a collection of case studies and essays examining the local institutions which support sustainable, locally-regulated use of shared natural resources (Berkes, 1989; Berkes and Farvar, 1989; Berkes et al., 1991). Evelyn Pinkerton (1989) has explored the evolving institutions involved in modern cooperative management of local fisheries. These contributions from theoretical frameworks outside of those in environmental or conservation education are important.

Despite this useful research, no work available or ongoing taps the experience of the broader set of field-level wildlife conservationists who have been effective in promoting action at the local level. Researchers contacted (all those noted above) felt that a review of strategies and an inductively-based synthesis would be a valuable contribution.

Organization of the thesis

The thesis is set out in eight chapters. Following this introductory chapter, an inventory of strategies is developed through a literature search in chapter 2. The procedures used to sample and determine the perceptions of the conservationists is described in chapter 3. The most and least useful strategies are identified in chapter 4, with an examination of their characteristic differences. Patterns in the opinions of conservationists as to the best strategies to reach specific target groups

are presented in chapter 5, and to reduce the costs of conservation programs to local people in chapter 6. Patterns in the use of strategies in various types of conservation contexts are discussed in chapter 7. A discussion on which strategies are best, on linkages to previous work, and on the limitations of the methods used follows in chapter 8. Conclusions from the study are outlined in the final chapter.

Chapter summary

In this chapter the study has been introduced. Collaborative approaches to wildlife conservation, which stress voluntary change and local control, have been poorly documented, inadequately linked to theories of human system change, and infrequently evaluated in a form that would permit deductive synthesis. Because there is innovative work underway, and knowledge of this innovative work would benefit wildlife conservation, as well as other disciplines, this study was undertaken. The objectives stressed compilation of an inventory of strategies of human system change from many rural disciplines, an analysis of patterns in a survey of respected conservationists of the effectiveness of a set of these strategies which are infrequently used, and a description of conservationist's recommendations as to the most effective strategies for different target groups and for reducing the cost of conservation to local people. Definitions are provided. By way of providing some background, three different models of the process of human system change are outlined, which if assumed, would result in very different strategies being selected by conservationists. Finally, contemporary work in this subject area is summarized. Existing syntheses describe strategies which are common to successful conservation education programs.

CHAPTER 2: INITIAL STRATEGY INVENTORY

Introduction

In this chapter the processes are described which were used to search the literature and select 277 strategies which have potential application to the human dimension of wildlife conservation. Next, the process is outlined of grouping these identified strategies into nine categories based on common design goals is outlined. Each design goal is then defined and common aspects of the strategies within each goal are identified. The chapter concludes with a discussion of concerns regarding how this inventory should be used. Appendices 2A to 2J outline the specific strategies.

Background

Wildlife conservationists need to select different strategies to respond to different contexts, problems, and target groups. The selection of low control strategies has been limited by the absence of a summary which lists such collaborative, co-operative, and educational approaches. One aspect of this study was to review literature from a variety of other disciplines where listings, guidebooks, and studies were available. Various strategies needed to be extracted from these sources which could have potential application in wildlife conservation. Then, these strategies needed to be grouped and presented in a format which was useful to conservationists, and to later aspects of this investigation.

Objective

To assemble a set of low-control, communicative intervention strategies having potential application in wildlife conservation, from the recent literature in disciplines that promote local change.

Procedures

This section outlines how the literature and strategies were selected, the definition used to determine a 'strategy', how the identified strategies were grouped, and where the lists and origins of these strategies could be found.

Sources of strategies

Based on conversations with academics and literature reading during graduate study in Rural Extension, disciplines were identified which likely had strategies with potential application in wildlife conservation. These included wildlife extension, conservation advocacy, agricultural extension, energy conservation, environmental education, conservation education, co-

management, common property resource management, community resource management, non-profit marketing, political campaigning, sustainable development, primary health care, planned change, and strategic planning. Within each discipline, one or more of the more recent syntheses were read, particularly those which provided design advice to practitioners. This review, while not exhaustive, included several hundred books and articles, and extended over a nine month period. As potentially useful design ideas were encountered, they and the literature source were recorded. The determination as to which strategies were potentially useful in wildlife conservation was a subjective decision based on personal experience in the field over a 20 year period. In a few cases, design ideas useful in some fields could not be translated into the wildlife conservation field. For example, many strategies related to the distribution of agricultural inputs were not included because they had no direct application to wildlife conservation.

What is a strategy?

The review of the above material produced long lists of what can be best described as useful design ideas, from which it was necessary to tease out a set of 'strategies'. In this study 'strategy' was defined as 'a conceptually rigorous collection of methods, tactics, or procedures, logically linked to the achievement of a vision, goal, and objectives', a definition synthesized from those in a number of dictionaries and papers. To provide a consistent format from which to evaluate whether a 'useful design idea' qualified as a strategy, the design ideas were reworded. By transforming the verb into an active and present tense, generalizing the target group or object of the strategy, and eliminating the intent of the strategy, it was much easier to evaluate. Most but not all of these useful design ideas qualified as strategies. If an idea merely improved the effectiveness of an underlying strategy it was deemed to be a tactic, technique or procedure and was excluded . Similarly, if the idea did not indicate a specific action it was deemed to be a goal and was excluded. An example regarding video use may clarify this process. The original quote obtained from the literature may have been "providing villagers with video equipment and instructions on how to use it, resulted, within four days, in the evening showing of a 10 minute video, created by village women, illustrating their concerns regarding soil erosion". This was rewritten as "Encourage local film/video production regarding conservation issues." The goal of the design idea was to facilitate communication regarding conservation issues. A tactic or procedure of the design idea may have been related to the method of instruction in camera use. As a strategy, this was a specific method logically linked to an implicit goal.

A total of 277 strategies were identified and selected using the above method. In order to facilitate the use and understanding of these selected strategies, it was necessary to group them according to the implicit design goal of each strategy.

Grouping by design goals

Strategies were grouped according to their implicit design goal. This form of classification was used for a number of reasons. Had the chronological program planning framework been used, the majority of strategies would have been grouped under a 'situational analysis' or 'stakeholder review' category. Or, if they had been grouped by target groups, the majority would have been organized under a 'peasant farmer' category. And, had they been grouped under wildlife taxa, most would have been unclassified. Grouping the strategies by their implicit design goal, none of which had much resemblance to biophysical terms, provided a useful reminder to wildlife conservationists that the process of promoting local conservation of wildlife was a process of promoting change in human social systems. This does not deny the importance of ecological investigation and technical monitoring to ensure that exploitation is sustainable. However, altering human behaviour to fit within these biological constraints is a human social process, particularly if it is done collaboratively.

The nine design categories selected, emerged in large measure from design goals in the field of extension, although many are similar to the design needs for sustainable development identified by Jacobs et al. (1986). These design goals were carefully worded to be as clear and specific as possible. The terms 'empowerment', 'participation', and 'human resource development', while attractive and popular in the literature, were avoided because they were too broadly defined. The design goals included collaboration, consensus, increasing individual human potential, institutional strengthening, system change, uncertainty, innovation and learning, equity, spiritual and cultural maintenance, and advocacy. These categories are defined below. A summary of the 277 selected strategies, grouped by design goals, is presented in appendix 2A to 2J.

Strategy group descriptions

In the following section, for each design goal a definition and an example are provided, the number of strategies is identified, and the objectives are outlined. In some cases a lengthy definition with examples was necessary.

Designing for collaboration

Collaboration, to a greater extent than participation or involvement, conveys a sense of contribution, representation, cooperation, and shared power (Khosla, 1986). Collaboration is assumed when involvement is indicated, but the commonly held perception in the articles reviewed was that it needed to be a deliberate design goal. An example of this was, "Live in community before starting to design project". The 60 strategies which design for collaboration had implicit objectives to create relationships, identify differences in perception, culture and language, define power, control, and ownership of the program, build confidence and trust, establish norms of operation, and share goals and information.

Designing for consensus

A consensus is a collective opinion. Achieving consensus implies that people feel that their viewpoints have been fairly included in the process of coming to a consensus, and that people agree with or can live with elements in the final plan Designing for consensus promotes individual skills and group processes which contribute to collective decision making which is consensual. An example of a strategy would be to "demonstrate strong capacities in conflict resolution." The review suggested that the notion that rural people collaborate and make consensual decisions was a romantic on which was not usually seen. The major design themes in the review concern a) how to balance the difference between consensual and existing decision-making processes regarding local land and resource uses, b) how to assist local people to select and practise procedures to manage tension productively and arrive at decisions which are accepted by the group and which constrain future options as little as possible, and c) how to work with local officials to make them feel less threatened by participative rather than more unilateral forms of making decisions.

The important questions of how expansive are the set of stakeholders or individuals involved in the consensus, and how equitably they are treated, are separate design considerations which are addressed below in "designing for equity" . The remaining 15 strategies which design for consensus addressed as objectives the distribution of conflict resolution skills, and the design of group norms that anticipate and resolve potentially divisive issues.

Designing to increase individual human potential

Increasing individual human potential involves an acquisition of power, capacity, and self reliance at the personal level to assist individuals direct their own change. It differs from Human Resource Development because while vague, HRD often includes institutional strengthening (Röling, 1986; Shute, 1988). Increasing human potential is more oriented towards personal growth than deliberately increasing, or 'banking', skills and knowledge to increase the potential of the human 'resource' to participate in conservation. The three design processes to achieve this are reviewed below, followed by a discussion of several issues.

The first design process provides opportunities that allow local men and women to pause in their busy daily lives to look at their existence and their reality from a more distant, critical, abstract, and systems perspective. Freire (1970) described a four stage process to achieve this 'critical consciousness', and used literacy and illustrative problem posing codes as vehicles. Conservationists typically recommended that people not be persuaded to adopt a particular point of view, although some recommended a strong advocacy role which emphasized inequity.

The second design process assists people to develop a personal 'locus of control' for conservation. This involves transferring the responsibility for the local environment from external

sources (for example, " this environmental problem is a government problem and my efforts will be futile") to the individual (for example, "my action will make a difference and will improve the future for may family"). An example of a strategy to achieve this would be "Use video to help facilitate communication between less literate people, and to develop their self confidence by seeing themselves."

The third design process provides opportunities, or reduces barriers, to allow individuals to develop skills and acquire knowledge to help them realize their potential. This includes such areas as assertiveness, leadership, facilitation as well as professional, technical skills. Strategies to achieve this include training programs, formal education, and experiential (learning by doing) activities.

Several issues were raised in this review. When local people perceive that their change efforts would be fruitless, resource extraction activities creating environmental damage function with little local opposition. Increasing human potential with respect to conservation in these situations may be perceived as radical and threatening ,and may be resisted by those who are part of the economic system benefitting from this pattern of resource use.

Another issue concerns the assumption that self development can lead to system change. While this is possible, evidence suggests that this is infrequent, and that design for system change involves a distinct set of activities directed at groups and systems rather than individuals (Dimock, 1992).

Yet another issue concerns whether human potential can ever be 'realized'. Advanced agricultural leadership programs catering to university-educated, professional farmers that are common in the United States and Canada suggest that human development is never 'realized'; people can continue to benefit from such training opportunities, and design for lifelong learning is important.

In lesser developed countries, the issue of academic colonialism was raised (Vulliamy, 1986). In order for students to receive recognized academic credentials to allow a few to have an opportunity for a career in the formal sector or to study in western settings, the majority receive a science education that is irrelevant to solving the environmental problems around them. In terms of realizing local human potential to solve local environmental problems in developing countries, there is a need for greater flexibility in science curriculum and evaluation systems, and local, diploma-level, technical training. Berger (1989) showed that participatory approaches to research increased human potential with the Maasai, and this increase in human potential was essential for organization for conservation work to occur.

Twenty-nine strategies are listed which design for increasing individual human potential.

Designing for institutional strengthening

Virtually every article reviewed stressed the importance of building the capacity of local organizations and institutions. Strengthening these local institutions involves increasing their capacity to a) respond to new stresses, opportunities, and needs, b) improve efficiency in the flow of knowledge, resources, and labour, c) establish fruitful linkages with other groups and institutions, and d) defend their integrity, legitimacy, and authority.

As Korten (1990) discusses, providing funding too soon can kill an emerging organization. However, the training, ongoing support, and catalyst role provided to local and national institutions by international conservation and development organizations was effective in building the capacity of organizations in LDC's in the 1980's . Berkes (1989) discusses delegation of control and responsibility to local institutions to promote cost-effective, locally responsive, sustainable use. Much academic attention is now focussed on understanding the institutions associated with traditional common property resource management systems, in a search for alternatives.

The 34 strategies which design for strengthening institutions that were identified in the review have objectives that range from assisting user groups to build financial management and leadership capabilities, to designing interim institutions so that they can be taken over. The institutions range from local rural groups to national resource policy institutions. There were no guidelines regarding the best conditions under which to work with existing or new structures. This design category is conceptually broad. Almost any other category contains strategies that would result in strengthened institutions.

Designing for system change

For changes to take place in the way things happen in a system, more than self-development of individuals needs to take place: the culture of the system, or the normal ways of doing things, needs to change (Dimock, 1992). In conservation, social system shifts can be provoked by the following interventions or events:

a) documentation of a resource crisis (for example, study identifying decline in a valuable wild herd),

b) political restructuring of conservation responsibility (for example, aboriginal land claims settlements),

c) change in availability or type of resource-based markets (for example, selling elephant meat),

d) collapse of state resource management systems (for example, allocation of fishery),

e) the use of confrontational techniques (for example, timber harvest protest),

f) advocacy efforts (for example, rainforest protection),

g) experimentation and demonstration (for example, testing new management systems), and

h) the provision of alternative types of foreign aid (for example, debt-for-nature swaps).

In large part successful conservation initiatives which have been designed for system change have relied on interventions related to community or organizational learning. An example of a powerful systems intervention consisted of strategic experiential learning directed at youth (Blanchard, 1991). Local teenagers lived for a week on seabird colonies (a traditional cultural activity), assisted in seabird banding (where they felt part of a community seabird recovery effort) and assisted in guiding nature tourists (where they felt part of an alternate conservation-based community economy). Later at home, they discussed with their families, the traditional seabird harvesting activities (where there was discussion of the appropriateness of community norms regarding harvest when the populations of seabirds were so depressed). The community values of sustainable use were reinforced which reduced illegal seabird harvesting, the cultural activities associated with visiting islands was retained, and the community norms associated with harvesting were in large measure replaced with tourism activities that allowed young people, who would have otherwise had to leave to find employment, to remain in the small communities. This is an excellent example of a strategic learning intervention into a community social system to conserve culture as well as seabirds[1] .

There are many leverage points other than planned learning experiences to design for system change. This can be seen in the list of 'provoking factors' above. The 31 strategies which design for system change identified in this review reflect some of this diversity in such strategies in which local people collaborate. This diversity will undoubtedly increase.

Designing for uncertainty, innovation, and learning

Knowledge systems which function well make good decisons even under uncertain conditions, they acquire knowledge and efficiently network information, and they create innovative

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[1]This use of education as an intervention to change community norms highlights the differences between how education is used in conservation. Education can be considered as a tool to increase individual human potential. It can be method to persuade people that a new conserving behaviour is in their best interest, following the usage by Wood and Wood (1990). Finally, it can be used as a systems intervention when used with a strategically critical target group, as in this example, to facilitate a process of critical review of the appropriateness of existing norms within the community at large. These differences are significant in terms of the design of conservation programs. Education as a system intervention can be extremely effective, but is much more complex than education to raise awareness, or to persuade individuals of their best interest. It is important to specify the objectives of the educational activities carefully.

solutions to problems (Wagemans, 1990/1; Röling and Seegers, 1991). Because sustainability, rural economic development, and wildlife conservation involve learning processes and knowledge systems, designing for learning and collaboration at the level of the knowledge system is critical. Individuals living in environments that are heterogeneous with respect to topography, climate, biodiversity, and social processes have knowledge systems well adapted to making decisions under uncertain conditions. To generate locally relevant alternatives, anticipate possible futures, maintain options, and make decisions, It is important to collaborate with these local knowledge systems, rather than rely on scientific knowledge systems (Thrupp, 1989; Funtowicz and Ravetz, 1990).

Röling and Seegers (1991) have described the process of designing agricultural knowledge systems to promote innovation. Collaboration of knowledge systems to solve particular problems can also introduce different 'stakeholders' and a new dynamic to conservation program design. This has been reported in Alaska where state, Inupiat and academic knowledge systems were linked in a Bowhead whale co-management program (Freeman, 1989a). An example of a strategy to facilitate collaboration between knowledge systems would be assisting similar peer groups living in different areas to discuss conservation problems. Forty-nine strategies were identified in the review.

Designing for equity

Equity is one of the most complex of the design goals because of the number of dimensions that need to be considered. Conservation programs design for greater equity between groups, species and generations. They do not have to be equitable in all dimensions in order to be effective, and in most cases this may not be possible. The choice of which dimensions of equity to include in a program can be difficult, as the following examples suggest:

Age: Berger (1989) dealt with different Maasai age-sets, particularly the warrior age set who hunted in Amboseli park. Employees in this program had to meet age criteria in order to be able to speak to both the elders and the warrior age-sets.

Gender: Hunter et al. (1990) describe gender differences in wildlife use in southern Africa. For women some conservation programs had direct and indirect negative impacts and few positive impacts. Women often felt excluded from the design process.

Ethnicity: Resource use partitioning and collaborative management systems designed to be equitable can be profoundly inequitable along racial lines. This can be due to ethnic inequity in access to credit. Richardson and Green (1989) discuss attempts by the Canadian Department of Fisheries to collaborate with licensed fishermen, however no Haida Gwai were licensed (due to credit restrictions) despite generations of use of the shellfish under discussion in the Haida culture.

Social class: The social class of farmers has been shown to be one of the strongest predictors of farmers' attitudes towards aspects of sustainable agriculture (Filson, 1992). For example, high control conservation farming practices to prevent land degradation were more frequently opposed by capitalist farmers in Ontario than by petit bourgeois and worker-farmers. In Zimbabwe's CAMPFIRE program, capitalist and professional social classes from North America comprise an important market and source of support for conservation programs that emphasize trophy harvest.

Culture: Conservation efforts to save a species of ritual importance to a culture can be perceived by that culture as a threat or insult. For example, the Japanese perceive western whale conservation as an attack on their culture which places high value on medicinal and ritual uses of whale products (Fitter, 1986).

Caste: In India caste differences are firmly embedded in the cultural patterns of resource us. Some castes have exclusive responsibilities to care for sacred forests (Agarwal and Narain, 1989; Gadgil and Iyer, 1989).

The following six observations that may be useful in the design process for equity in conservation programs.

1. Ecological systems are not necessarily equitable. For example, predation, parasitism, competition, and territoriality, are by definition not equitable. Traditional resource management approaches modelled on ecological systems may not be equitable in a number of dimensions.
2. Tension exists in the access to resources issue. 'Equitable' open access systems under state control may be much less conserving than 'inequitable' closed access systems under local control. Preferential allocation of conservation benefits to local people seems to be a rule-of-thumb.
3. Consensual and collaborative systems are not by definition equitable. In fact they may be profoundly inequitable unless analyses of the impact of strategies on all equity dimensions are made.
4. There may be cultural differences in the prioritization of equity dimensions. This will result in different sets of strategies within National Conservation Strategies, and differences between local communities and NGCO personnel from outside the culture.
5. Conservation goals must include intergenerational and interspecies equity, and to some extent, international equity.
6. Equity concerns of rural people, particularly marginalized poor and women, must have high priority in conservation programs, and can be a critical place to start.

The 39 strategies which design for equity focus on including diverse and especially marginalized stakeholders in the planning group in an effort to ensure that equity concerns are not overlooked.

Designing for spiritual and cultural maintenance

To religious and cultural leaders in a remote, non-western setting, the influx of western ideologies and values may be perceived as a threat. As people with a conservation project start to instill in children and others a new conservation 'faith', there may be a sense of loss, and growing resistance. In contexts such as these designers need to facilitate conservation within the existing spiritual and cultural framework. It is also important to demystify aspects of the research process such as imagery and telemetry from space, apparently irrefutable evidence, ritual language, and ownership of the truth.

The nine strategies which design for spiritual and cultural maintenance identified in this review attempt to a) build linkages with spiritual and cultural leaders, b) minimize disruption to community traditions and values, c) provide and opportunity for local people to ground their perceptions of westerners and conservationists, d) provide opportunities for project personnel to learn about the spiritual and cultural importance of landscapes to local people, and e) utilize existing spiritual and cultural values to promote conservation goals.

Designing for advocacy

From a strategic perspective, it is prudent to accelerate the diffusion of wildlife conservation practices by a) promoting widespread acceptance of the environmental and sustainable development ideology (Ham and Sutherland, 1992), b) advocating pro-conservation policy changes (Hackman, 1988; Hummel, 1989), and c) establishing coalitions with related peoples' movements (Korten, 1990). Many advocacy strategies may involve collaboration with local conservation groups, but are not low control strategies because conservation action at the local level may not be voluntary.

Advocacy strategies are necessary for three reasons. First, these strategies complement and accelerate the work within the local community. Second, conservationists can reasonably expect to achieve success over time in a small community, but multiplying these successes over a large area is a very different strategic challenge. If care is taken to include advocacy strategies, conservation action taken at one local level can promote changes elsewhere. Finally, the effective use of advocacy strategies by the by the Animal Rights movement can compromise the effectiveness of conservation efforts, and may need to be countered (Decker et al ,1991).

Promoting widespread acceptance of environmental ideologies often draws on social marketing theory (Kotler, 1982). Katzev and Johnson's (1987) synthesis of experimental

approaches to energy conservation quantitatively evaluates many strategic options of the marketing genre.

Broadly based people's movements linked to concern over environmental degradation can catalyze action when they a) build communicative and supportive linkages to emerging environmental movements in other countries, b) demonstrate their size and vigor at international conferences, and c) build coalitions to other people's movements (for example, where the rainforest protection issue has linked movements concerned with threats to the global biosphere, indigenous peoples survival, and endangered species) (Korten, 1990). The social change resulting from broadly based people's movements such as the peace or women's movement has been remarkable over the past two decades.

The 23 strategies which design for advocacy identified in this review represent a preliminary list. The range in strategies, particularly the collaborative as opposed to the confrontational approaches, is noteworthy.

Concerns regarding strategy selection by conservationists

In the following, 11 concerns are described that conservationists need to consider when selecting strategies, if they hope to meld them into an effective approach for a particular conservation context.

1. Their popularity. Collaborative approaches with decentralized control are popular with a) local people who have been denied a voice, b) leaders eager to rid themselves of the responsibility for controversial decisions, and c) vested interests who see this option as long term, low cost, and little threat. Corresponding to this, a shift to low control strategies can create unrealistic expectations on the part of local people, generate much tension, and yield little conservation action. Low control strategies are long term strategies for enduring change. Collaboration on controversial management problems is not easy. Care needs to be taken that the process is not derailed.

2. Blueprint planning . The implication may be drawn that low control strategies dovetail into a conventional 'blueprint' style of planning, where the project strategies and timetable are selected at the start of the project. In fact, in many cases these strategies would be most effective if used in a 'process' style of planning where the project is continuously evaluated and modified as needed. The former style is often criticized as being 'too centralized' or 'top-down', implying a rigid, high control approach that may not adequately involve or meet the needs of local people, or respond to the unpredictable dynamics of system and individual change (Sweet and Wiesel, 1979). The process style of planning is often criticized for creating scheduling difficulties with financial and personnel allocation. Returning to the philosophical commitment implicit in the use of 'low control' approaches to conservation may offer a pragmatic solution to this. In low control interventions, the control must rest with the local people whose lives will be affected by the conservation activity, and

whose voluntary changes in behaviour will be critical to meeting conservation goals. This does not preclude establishing at the outset, community and conservation criteria by which to measure program success (Dietz, 1988), or attempting to schedule allocation of funds and personnel, as long as these decisions are made collaboratively with local people.

4. Positive and negative interaction between between low control strategies. Some sets of strategies would be expected to lead to greater synergy than other sets of strategies, in particular conservation programs. While most low control strategies should complement each other, many authors stressed the importance of timing, and initially keeping the set small, simple, and understandable. They also stressed designing into the program, activities that would result in immediate, tangible successes.

5. Defining the level of control. This is more complicated than it may appear. 'Involvement' and 'participation' of the public, and 'consultation with users' does not imply low control unless the decision is collaborative, and in many societies, consensual. Dimock (1981) notes that individuals tend to prefer to perceive their actions with people as being more collaborative and cooperative ('low control') than they really are. The appropriate locus of control in collaborative, low control interventions is the individuals and groups affected by the changes.

6. Interaction among high, medium, and low control interventions. Individuals who feel manipulated by incentives, or feel coerced by legislation may be unwilling to place much credibility in opportunities to collaborate to solve the same problem. They may also be unwilling to place much credibility in any individuals they associate with previous manipulative or coercive programs. Hence, serious interaction is likely between interventions with different levels of control. Adding high control strategies to low control programs may seriously compromise them. Adding medium control strategies may generate a false sense of support for the program and create dependence.

7. Target group specificity. Strategies that may be successful with one group may be inappropriate, or damaging when used with other groups. Through a census of the issues raised by a broad set of stakeholders, and their collaboration in program planning, the danger is reduced of selecting inappropriate strategies.

8. Metaphors. Rubin (1988) believes that metaphors may be more important than we realize in guiding our thinking about strategic planning. The use of military, sports or courtroom metaphors in conservation needs to be carefully considered, because these metaphors imply simple goals, single battles, mutually exclusive viewpoints, and competition for power (for example, bringing groups onside, winning this round, outflanking them, neutralizing the opposition). The language of conservation, particularly those adopted by media, includes words of this genre (for example, campaigns, battleground) as does extension (for example, change agent, target group, force field analysis). These terms do not connote a collaborative relationship. Collaborative work needs to address complex multiple goals, continuous effort, and emphasis on common ground.

Alternative metaphors may include metaphors of cycles (for example, death and rebirth or weather), or metaphors of unfolding (for example, human development or metamorphosis), or metaphors of motion (for example, streams).

10. Collaborative selection of strategies Major projects could benefit from a collective approach to strategy selection. This could take two forms. One would involve a set of conservation strategists with little local knowledge. The other would involve a set of local change strategists with little conservation knowledge. Both sets have their advantages and could be complementary.

11. Training. The complexity in the use of some of these strategies suggests the need for training workshops for a variety of audiences, including policy makers and local conservationists. It also suggests the need to include professional with "process" specialities in the planning and implementation team.

Chapter summary

Two hundred and seventy seven strategies with potential application to wildlife conservation were identified through reviews of related literature in the disciplines such as wildlife extension, conservation advocacy, agricultural extension, energy conservation, environmental education, conservation education, co-management, common property resource management, community resource management, non-profit marketing, political campaigning, sustainable development, primary health care, planned change, and strategic planning. Strategies in this inventory were grouped into the following nine design themes, these were: collaboration, consensus, increasing individual human potential, institutional strengthening, system change, uncertainty, innovation and learning, equity, spiritual and cultural maintenance, and advocacy. The strengths and weaknesses of this inventory, and 11 concerns that conservationists need to consider when selecting these strategies were discussed.

CHAPTER 3: STRATEGY ASSESSMENT PROCEDURES

Introduction

In this chapter the procedures are described which were used to select 74, of the 277 strategies identified in the review, which were clear, specific and understandable, and which, for the most part, did not include the 'motherhood' strategies used most frequently by wildlife conservationists. The steps are then outlined which were employed to design and administer a survey procedure to collect data which would support later evaluation of the degree of use and effectiveness of these 74 strategies, and inquiries related to three other aspects of strategy selection. The chapter concludes with a brief description of the reliability of the survey instrument and patterns in the distribution of the 114 respondents. Details of the results are presented in chapters 4, 5, and 6, followed by a discussion of these findings in chapter 7.

Background

No source is available to wildlife conservationists which outlines and discusses the potential effectiveness of a large number of collaborative, co-operative and educational strategies which could potentially have use to promote local conservation action. Accordingly, as part of this study, 277 of these low control strategies were identified, following a process described in chapter 2. High and medium control strategies, such as regulatory strategies or economic incentives, were not included in this set of 277 strategies. While these strategies were recommended as being effective and are now standard practice in other fields, and were mostly collected from sources outside the wildlife conservation field, the effectiveness and degree of use of many of these strategies remained unknown within the field of wildlife conservation. It was suspected that the effectiveness of these 74 strategies varied in different types of conservation programs, and that strategies in addition to these 74 were used with success by wildlife conservationists with different target groups and to minimize different costs of conservation to local people.

Objective

The survey procedure was designed to collect information that would facilitate the achievement of the following objectives:

1. To describe the degree of use and the perceptions of the effectiveness of a set of low control strategies, biased towards those anticipated to be less frequently used in wildlife conservation, by a sample of experienced and successful international wildlife conservationists.

    a. To determine the frequency of use of each strategy and, if used, how effective each strategy was perceived to be.

b. To identify any characteristic differences between most and least useful strategies.

c. To identify which strategies were perceived to be most useful in different types of conservation programs which were defined on the basis of awareness, knowledge and motivational barriers to conservation.

2. To identify target groups which were perceived to be most important by this sample of conservationists in projects they were involved in and identify any strategies which they perceived to be most effective when used with these target groups.

3. To identify strategies which conservationists perceived to be most useful in reducing the costs of conservation to local people.

Research strategy overview

A mailout questionnaire was selected to efficiently collect data in a standard format. To make the results most useful to the field of wildlife conservation, strategies were selected which were biased towards those which were less frequently used. It was also important to word strategies in as direct, simple and consistent a manner as possible. To provide a credible evaluation of the degree of use and effectiveness of these strategies, they had to be examined by a sample of field level conservationists with experience in as many contexts as possible, and who were recognized by their peers as being effective at promoting local conservation. Hence a purposive procedure was used to identify a sufficient number of these individuals to obtain a sample of at least 100 respondents. Recognizing that some of these individuals might not feel qualified, or might have been inappropriately identified, an opportunity was provided for respondents to deselect themselves. To compare the perceptually-based ratings of the effectiveness of particular strategies, respondents were asked to focus on a single wildlife conservation program. To focus on elements of the conservation context that were relevant to the process of social change, a set of questions were used that explored the relative significance of various knowledge and motivational barriers to conservation in the specific project, in the hope that strategy selection and effectiveness could be examined in light of these patterns. Open ended questions were included to provide respondents with an opportunity to identify particularly useful strategies for specific target groups, and for reducing economic and other costs to local people associated with shifting to more conserving behaviour.

Selection of strategies

Seventy-five strategies were included in the survey questionnaire. The 277 strategies included 30 to 40 which were widely used in successful conservation education programs, plus innovative strategies used in other fields which were not widely used in wildlife conservation. There was little to be gained by a detailed exploration of the use and effectiveness of the widely used

effectiveness of strategies which were new to them. If only 75 could be tested, most should be the new ones, rather than those old 'tried and true' strategies. However, by providing a few with which they were familiar, conservationists could more easily interpret the strategy effectiveness statistics. Second, the useful information to conservationists on the 'tried and true' strategies was how they were used by successful international conservationists. If they were truly useful, this information would emerge in the open ended questions regarding effective strategies for specific target groups and for reducing costs of conservation to local people. Finally, a study showing conservationists that their peers had success when using innovative strategies from outside the wildlife conservation field would prompt conservationists to read more widely. By comparison, a study which documented that a large sample of wildlife conservationists concurred that the 'tried and true' strategies identified in three other studies were useful would have contributed relatively little.

The 75 strategies in part one were selected from the 227 in the strategy inventory using a two stage selection process. First, three individuals scored strategies on three point scales for question clarity and probable variance in responses. From this, a list of the 150 clearest and most potentially variable strategies were selected and included in the pretest[1]. Second, based on pretest responses, 63 strategies least confusing to respondents and having the greatest distribution in responses were selected for the final survey. In addition, to minimize respondent fatigue in this question, and to avoid confusion that might arise when relatively few commonly use strategies were encountered, 12 traditional strategies were interspersed and became more frequently encountered as the respondent progressed. These 12 strategies were those which had high ratings for clarity and low ratings for probable variance in responses, in the first stage of the selection process. Four of the 12 popular strategies were among the 35 strategies recommended by conservation educators in the three syntheses (Appendix 1), but this was not a criterion for their selection. In error one of the 63 strategies was listed twice, hence only 74 strategies were tested.

Survey instrument design

The design of the eight page mail questionnaire (Appendix 3) followed the Total Design Method (Dillman, 1978). The first of the three sections of the questionnaire evaluated whether each of 75 strategies had been used "in a specific wildlife conservation program in which local people were an important element.". If the strategy had been used, the respondent rated on a five point scale, how effective it had been. The second section evaluated, using a six point scale, the relative significance of barriers to conservation in the specific program that were related to knowledge, motivation, and control, at the level of the individual, community, national government, and

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[1] Thirteen individuals examined the survey and provided useful design suggestions, and seven individuals with conservation experience completed the pretest survey.

international agencies. The third section sought written responses identifying effective strategies for specific target groups in this specific project, strategies to minimize the costs of conservation programs on local people, and general comments.

Strategy statements in part one were carefully worded. The objective of the strategy was deleted to focus attention on the action of the strategy. Statements began with a concise, active verb in the past tense to make the statements clear and dynamic, and followed the statement "In this program we" to emphasize collaboration. Finally, the target of the strategy was deleted or generalized to prevent strategies being "not used" because an inappropriate target group was specified.

The design of this instrument was based on the following six assumptions:

a) Conservationists could accurately perceive the long term effectiveness of particular strategies, and express this effectiveness on a five point scale,

b) Conservationists were able to interpret the instructions and statements in a consistent manner,

c) Conservationists kept their focus on a single project,

d) Conservationists had a similar perception of the word "effective" as it applied to strategies,

e) Conservationists took the survey seriously,

f) Conservationists could accurately evaluate the relative significance of nine knowledge and motivational barriers, and four authority related barriers in the specific project.

Survey instrument reliability

The reliability of the survey instrument was determined using the "test-retest" procedure which determined how consistently individual conservationists rated the survey on two different occasions approximately six weeks apart. The first forty survey respondents were sent a second, numbered copy of the survey one month later and a form letter requesting that they "circle the numbers again", with a letter indicated that the reliability measure was important to evaluate the survey, to permit the results to be published, to strengthen the thesis, and to assist others doing similar work. A list of recent references in this subject area, and a personalized comment were also included to thank respondents for their time. Their program title from the respondent's first questionnaire was written on the reliability survey to ensure that individuals used the same program as their frame of reference.

Only fifteen respondents provided usable returns. This small sample yielded a reliability coefficient, r, of 0.32 using a product-moment correlation between the two sets of responses. While this data may be spurious because of the small sample, it is noteworthy that the variation

between responses came from inconsistencies in the repondents descriptions of strategy usage, rather than inconsistencies in the ratings of strategy effectiveness[1].

Sampling frame

A purposive sample was used to efficiently capture the necessary diversity in conservation contexts and to capture the innovators active in promoting local cooperation and collaboration in wildlife conservation.

The purposive sample of 387 conservationists was obtained in four ways: a) authors of recent articles in conservation journals or reports (n= 110), b) individuals recommended by 40 international and national conservation organization leaders who were each requested to supply 10 names (n=147), c) individuals leading conservation programs that involved local people (n=83), and d) individuals in positions in organizations where they would be expected to be knowledgeable about promoting conservation awareness and action (n=38). Conservation project leaders were identified from the November 1991 edition of the World Wildlife Fund project list (WWF, 1991). These individuals were selected if the written project description clearly identified involvement of local people in the conservation effort. Where possible local as well as WWF project leaders were sampled. The sample was biased towards individuals who work for international conservation organizations, particularly the World Wildlife Fund, rather than government natural resource managers or academics, although the latter two groups were represented.

Surveys were mailed to 68 countries[2], and approximately 67 women and 320 men. Conservation projects ranged from insects to marine mammals, tropical to arctic ecosystems, and from academic research teams to citizen groups.

The use of a purposive sample was ideally suited to efficient sampling of the opinions of innovative men and women from diverse nationalities and backgrounds, working on diverse conservation programs. This sample allowed exploratory, non-parametric analysis of patterns in the similarity of their experience in strategic approaches to conservation that could be compared

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[1] On average 15.1 of the 74 strategies were reported as being used in the program in one survey and not used in the same program in the other survey completed by the same respondent. The average difference between these ratings was 3.00 for each of these discrepancies, making this a major cause of the variation between the two sets of responses. Strategies which were consistently described as being used had ratings which were usually identical, and in a few cases differed by one rating.

[2] This included 20 countries in Africa, 15 in Asia and the Middle East, 3 in North America, 16 in South and Central America and the Caribbean, 15 in Europe, and 2 in Australia and New Zealand.

between contexts. This type of sample prevented generalizations as to typical conservationists, and inferences outside the sample from comparisons among independent variables. To make such generalizations and inferences it would be necessary to select randomly from an appropriate sampling frame of international conservationists who have had experience in program design and management at the field level. Such a sampling frame was not available.

Survey procedure

The survey distribution procedure generally followed the Total Design method (Dillman, 1978). The initial mailing was a white business envelope, with a logo of a Peregrine falcon and "Promoting Local Conservation of Wildlife". It contained a cover letter on University of Guelph letterhead, a survey, and a numbered addressed, airmail return envelope without return postage. Cover letters varied between categories of respondents. Where possible the name of the person who had recommended in the survey was mentioned. The letter indicated that the results would be applied to community conservation in northern Canada, would be shared with fellow conservationists, and that the research was undertaken by an experienced biologist. With samples from Wildlife Conservation International a sentence was inserted at the request of the president indicating that individuals need not feel obligated by the organization to respond to the survey. Confidentiality promises stressed no mention in reports of respondent's name, species of attention, or nationality. Individuals could mark and return cover letters if the survey did not apply to them, and could return cover letters with the survey to obtain a copy of the study results. Stamps were selected with a natural history theme. Seven to 12 days later a card was mailed thanking respondents or reminding them to complete and return the survey. On February 12, 21 surveys were mailed to authors whose abstracts from the IV Congress on Parks and Protected Areas in Venezuela, Feb 12-20, 1992, were particularly relevant to this study. These requests included a letter on IUCN letterhead requesting that individuals complete and return the survey. No reminder cards were sent to this sample.

Response quality, quantity

By April 22, 70 to 84 days after mailing the 387 surveys, 172 responses had been received, 46.5% of those mailed (Table 3-1). Of these responses, 114 were usable, comprising 29.5 % of the total sample. Of the 58 returns that could not be used, 40 were from respondents who deselected themselves because the survey did not apply to them. If the proportion of 'did-not-apply-to-me' respondents of all respondents, 40 of the 172, or 21.6 %, applies to the entire 387 individuals who were sent surveys, then the potential number of suitable respondents drops to 297. The 114 usable returns received represent 38.4 % of these that could have been received from these 297 potentially suitable respondents. No directly comparable data for this type of survey population was

found to allow comparison of these response patterns. Based on Miller (1977) and Dillman (1978), the observed response rate of 46.5% was above average, given the remote settings in which these individuals work, the inneficient postal systems in some countries, the survey-plus-followup-post

Table 3A. Distribution of respondents within survey response categories

Response class	Frequency	Percent of sample	Percent of returns
Deselected	40	10.3	23.3
Usable	114	29.5	66.3
Away	3	0.8	1.7
Incorrect address	3	0.8	1.7
Too busy to fill out	4	1.0	2.3
Responded but not usable	8	2.1	4.7
TOTAL	172	46.5	100.0

-card method used, the need for the respondent to provide return postage, and potential language problems. Unfortunately the proportion of unusable responses was larger than anticipated.

Response rates, calculated as percentage usable out of total mailed, for females was 31.3 (n =21), and for males, 28.8 (n =92), plus one individual whose gender was unknown. By continent, these percentages were 31.8 from Africa (n = 21), 21.3 from Asia (n = 13) , 30.8 from Europe (n = 24), 40.0 from Australia (n = 6), and 22.2 (n = 10) from Central and South America and the Caribbean. The low response rates for Asia and South America may have related to language or postal difficulties. Responses came from 39 countries[1].

The high quality of the survey responses was apparent, particularly the detailed responses to the open ended questions. Comments from some survey respondents indicated that the survey took between 30 to 90 minutes to complete. There were only three cases where the responses to the open ended questions suggested that these respondents did not interpret the question as

[1] In a few cases surveys were returned from different individuals or from different countries than they were mailed to, hence these results are approximate. In addition, not all conservationists were nationals of the countries in which they worked. Confidentiality clauses in the cover letter sent to respondents prevent presentation listings of results by country, by conservation project, by species of attention, or by conservation agency.

anticipated, likely because of their lack of proficiency with the English language. This high quality in responses was expected because of the peer-to-peer flavour of the cover letter, the relevance of the survey material to the respondent, and the infrequency with which this group receives mail questionnaires.

Analysis procedures

Frequencies and arithmetic means were generated for all variables within the survey instrument using SPSSX Frequency program software (Norussis, 1988). Because of the small sample sizes most comparisons were based on proportions of respondents with similar ratings. No parametric tests were used to compare these averages, no scales were generated, and no inferences were made. The goal was to describe the inductively generated patterns in survey responses. The clustering procedure used was suitable for ordinal data (Romesburg 1984), and is described in detail in chapter 7.

Much of the analysis involved determining common themes in lists of strategies within groups with high averages, and similar target groups or conservation cost groups. This critical examination of the data utilized subjective sorting of xeroxed individual comments by respondents, determining the frequencies in the groups which emerged, and grounded theory-oriented approaches to determine themes which were common to these groups (Kirby and McKenna, 1990). In some cases comparison of these groups involved characteristic difference analysis (Dimock, 1979). There was considerable overlap in content between a) the 'most effective strategies' identified by respondents for use with specific target groups (question 1 in part III), b) the strategies identified by respondents which were used to minimize the economic and other costs of conservation programs to local people (question 3 in part III), and c) the 74 strategies which had been selected mostly because they were potentially useful but uncommon, which had 1 to 5 scale ratings of strategy effectiveness (part I). This triangulation, or coverage of the topic in three different directions of questioning, allowed for comparison between the sets of responses, and a more complete understanding of the broader question of strategy effectiveness.

Chapter summary

Described here are the strategies and procedures used to obtain perceptual data on the usage and effectiveness of 74 strategies, including 62 of the strategies which were selected because they were anticipated to be least used and most variable and 12 which were selected because they were more traditional and commonly used, from the 277 identified in the inventory. The design and survey procedures associated with the mail questionnaire followed recommended procedures. The method is outlined that was used to purposefully select a sample biased towards those known by their peers to be effective in promoting conservation action at the community level

in international settings. The response rate of 46.5 percent to the 387 surveys mailed is interpreted to be above average for this type of questionnaire, but because 40 respondents deselected themselves, 21 women and 92 men, 114 total, are left as the total sample. They come from 39 countries; 15 respondents from Asia, 6 from Australia, 24 from Europe, 21 from Africa, and 40 from North America. The response rate from Asia and South and Central America is lower than other continents, suggesting that language or postal difficulties may have been a problem. The quantitative sections of the survey had a reliablitiy coefficient of 0.32, based on 15 responses, to a test-retest procedure. This low value was primarily due to inconsistencies in reported use of an average of 15 of the 74 strategies by each respondent in the two surveys. Analysis procedures included comparison of proportions of effectiveness ratings, and a variety of qualitative analysis procedures for the.data from the open ended questions.

CHAPTER 4: STRATEGY EVALUATION RESULTS

Introduction

This chapter outlines some key findings and locations of specific data related to the use and effectiveness in wildlife conservation contexts of 74 strategies recommended as being useful in other disciplines, as determined through 114 responses to a mailed questionnaire. It lists 10 most useful, and 10 least useful strategies, an interpretation based on the proportions of various effectiveness ratings assigned by the conservationists. It concludes with an outline of the characteristic differences between the most and least useful strategies. These results, along with those in chapters 5 and 6, are discussed in chapter 7.

Background

An assessment is not available of the effectiveness of many low control strategies with potential application to wildlife conservation. The two evaluations currently available outline only the strategies common to successful conservation education programs, which, while useful, comprise a smaller set of strategies than the set of strategies which could potentially be used. This aspect of the study expands this evaluation.

Objective

1. To describe patterns in the use and perceived effectiveness of a set of low control strategies, biased towards those anticipated to be less frequently used, by a sample of experienced international wildlife conservationists.

    a. To determine the frequency of use of each strategy and, when used, how effective each strategy was perceived to be.

    b. To identify characteristic differences between most and least useful strategies.

Overall use and effectiveness

The striking finding in this analysis was that once they were used, all 74 strategies were considered on average to be effective. The use of these strategies varied greatly among the 114 respondents, from 12.2 to 93.9 percent. Every strategy was perceived as being 'very effective' when used in some programs. The proportion of respondents who rated individual strategies as 'very effective' (rating 5) varied from 10.9 to 53.3 percent for different strategies. A much smaller proportion of respondents rated individual strategies as 'not effective' when used. This ranged from 0 to 14.3 percent for different strategies. Appendix 4 summarizes statistics on usage and effectiveness perceptions for the 74 strategies in the questionnaire.

Most useful strategies

Conservationists wish to learn about the best strategies. While "best" can be interpreted in a number of ways, here it is based on conservationists' perceptions of their own experiences, specifically which 10 of the 74 strategies tested were consistently most useful. These consistently most useful strategies were interpreted to be those 10 with both the highest proportion of ratings that were 'quite' or 'very' effective (ratings 4 or 5) and the lowest proportion of 'not effective' ratings (rating 1). Both proportions were based only on the number of individuals who used each strategy because not all 114 respondents employed every strategy (Appendix 4). The ten 'most useful' strategies of the 74 tested included the following:

1. Developed close personal relationships with local people;
2. Included program activities that met local needs;
3. Lived in the community before starting to design the project;
4. Involved children in conservation activities;
5. Stated program objectives in terms of benefits to be reaped by local people;
6. Supported local film/video production on conservation issues;
7. Determined age/sex/social class differences in conservation knowledge and attitudes;
8. Supported community control over its local environment;
9. Supported leadership training initiatives; and
10. Used local people's conservation language, analogies, and metaphors.

Two of these strategies (2, 7) were among the four strategies in the questionnaire which had been identified in the three conservation education syntheses. Three strategies (1, 3, 10) were among those 12 traditional, commonly used, strategies which had been interspersed into the questionnaire.

Least useful strategies

The 10 least useful strategies were interpreted as those having both the lowest proportion of 'quite' or 'very' effective ratings (ratings 4 or 5) and the highest proportion of 'not effective' ratings (rating 1). These least useful strategies included the following:

1. Publicly supported opponents when they supported conservation;
2. Had dual leadership with symbolic traditional governance and actual governance under group leadership;
3. Used media advertisements that modeled desired conservation behaviour;
4. Established a new power elite who supported program goals;
5. Planned for all possible contingencies in advance to the greatest extent possible;

6. Trained community members to collect and look for patterns in conservation information;
7. Reduced economic disincentives to conserve;
8. Found innovative ways for politicians to 'save face' while supporting conservation measures;
9. Used romantic and patriotic appeals to sustainable development; and,
10. Developed the capacity of local organizations to demand government services.

It is important to note that these were the least effective of a very good set of strategies, a set of strategies that had been recommended in other rural change disciplines. All the strategies in this set were rated as 'quite' or 'very' effective by over 42.1 percent of the respondents who used them and as 'not effective' by less than 14.3 percent of respondents who used them. None of these were among the 12 traditional, commonly used, strategies which were interspersed in the survey. None of the 4 strategies included in the survey which arose from the three conservation education syntheses were in this group of 10 least useful strategies

Characteristic differences

While the 20 strategies above are a heterogeneous set, the following characteristic differences emerged between the "most" and "least" effective sets of strategies, as follows:

1. "Better" strategies were those that emphasized direct, personal, living contact between conservationists and local adults and children.
2. "Better" strategies were those that maximized opportunities for adults and children in the community to personally learn about the conservation issues and to personally evaluate the sincerity and integrity of those advocating conservation.
3. "Better" strategies were those that stressed local control over resources, local control over media, local control over language, and local control over benefits.

The 'middle 52' strategies

Conservationists found the strategies other than the top ten and the lowest ten to be useful and very effective in many programs. A detailed discussion of each strategy was not possible in this paper,however. Statistics describing the use and effectiveness of all strategies can be found in appendix 4. Appendix 2 provides an inventory of all 277 strategies.

Chapter summary

The survey generated a rich set of data regarding the degree to which 74 strategies were used in 114 conservation programs by individuals deemed to be effective by their peers, and the degree to which these individuals perceived these strategies to be effective. The striking findings were that they reported that all strategies were useful when used. The use, however, varied greatly.

The 10 strategies interpreted from this perceptual data as being most useful, differed from those perceived to be least useful in their emphasis on a) direct, personal, living contact with local adults and children, b) providing opportunities for the same individuals to personally learn about the issues and the integrity of the conservationists, and c) providing local control over resources, media, language, and benefits.

CHAPTER 5: STRATEGIES RECOMMENDED FOR IMPORTANT TARGET GROUPS

Introduction

This chapter provides a description of the 19 target groups categories which emerged when 103 international wildlife conservationists identified the three most important target groups in their programs. For each target group, a summary is provided of the strategies which they perceived to be most effective. The linkages between these findings, those from other aspects of this study, and findings from other syntheses are discussed in chapter 7. Specific strategies that respondents identified, that had not been identified in the literature search described in chapter 2, have been added to the appropriate strategy inventory in appendix 2.

Background

An important aspect of overall design in wildlife conservation is the strategic partitioning into target groups of the people whose patterns of decisions will affect the achievement of conservation goals. These target groups have in common certain attitudes, values, knowledge, and concerns, such that they respond differently to certain sets of strategies than other target groups. The strategies that will prove to be effective with one target group may be inappropriate, or worse, damaging to the conservation cause,with another target group. An important aspect of this study was to allow wildlife conservationists a relatively unrestricted opportunity, through an open-ended question, to identify these important target groups, and to invite them to identify any strategies they had found to be useful, not just the 277 or 74 mentioned in chapters 2 and 3 .

Objective

To identify target groups which were perceived to be most important by a sample of respected international wildlife conservationists in the specific conservation program they were involved in and identify strategies related to these target groups which they perceived to be most effective.

Target group categories

One hundred and three respondents provided 269 target group responses with associated strategies. These target group responses fell into 19 target group categories Twelve target group descriptions indicated that five respondents (five percent) did not understand this question.

The 19 target group categories were not necessarily mutually exclusive (for example 'men', 'poachers', and 'hunters') but were retained to maintain the direct linkage between target groups and their recommended strategies Over 80 percent of these responses were in the following eight

target groups: governments, local leaders, local people, school children and teachers, business interests, youth, and hunters. These are discussed in detail below. The 10 remaining target groups follow with more terse descriptions.

Strategies recommended for each target group category

National/ regional government agencies

Almost half (48 percent) of the respondents identified government politicians and officials at regional and national levels, and local representatives of national agencies as being one of the top three target groups in their programs. This is not surprising given the large number of respondents who worked for NGCO's. The strategic themes that emerge from their comments were all non-adversarial and included a focus on professionalism, cooperation, and advocacy, plus some specific recommendations directed at working effectively with funding and regulatory agencies.

The emphasis on professionalism was strong. Conservationists needed to be well informed and prepared, provide useful feedback when requested, supply data on conservation from the program and also on the needs of the community to guide policy shifts, to network extensively with government staff, to invest time in communication with and gaining acceptance for important results from independent scientists, and to widely, openly and regularly share program information through such mediums as well designed newsletters.

Cooperation as a broad strategy was seen on many fronts as well. In addition to the strategies mentioned above, tours to the study sites, providing funding for training, sharing credit for joint work, providing employment security for conservation guards, encouraging participation in community activities, conveying respect, encouraging the formation of joint management bodies were mentioned, and providing officials with materials or funds to facilitate their conservation work. Advocacy was generally non-adversarial and at many levels. As one respondent described

> The results of the project were compiled and published as newspaper articles written by student participants and an exhibit held for the public - Local government departments were stimulated to respond to creative solutions.

Other strategies included supporting regional and national indigenous peoples' organizations, lobbying through associations of resource users, creating publicity (positive or negative) in the local press, finding win-win solutions for politicians, and increasing international pressure.

The specific strategies directed at regulatory agencies stressed rational use of resources within conservation limits, and emphasizing conservation rather than protection. The specific strategies directed at assisting local groups to acquire government funding emphasized politically-correct language and well-developed community proposals. One respondent stressed need for 'Western' biologists to recognize and respect traditional knowledge.

Local leaders

Leaders at the local level were identified by 38 percent of respondents as being one of the three most important target groups in their program. This was a broad target category[1], but strategically narrow in that it addressed sharing of power, ideas, benefits and risks. The first strategic theme examined communication. Strategies stressed personal, honest, direct, respectful, and constant communication. Humor was seen as being important. The second theme addressed collaborative decision making by establishing a local coalition or working group. One respondent mentioned

> giving recognition and authority and continuously but gently keep reminders and pressure on that responsibility accompanies authority - they must act. Cautiously warn of dire consequences of backlash from environmental extremists..

Strategies found to be effective included exploring values at risk in addition to conservation values, collaboratively defining the problems to be solved in the project and integrating the conservation program into local goals. The fourth theme contained strategies to market the program to local leaders and organizations. These included institution building, stressing economic benefits, "demonstrating to local politicians that the approach takes care of all different interest groups and that there will be peace in their community", and mutual benefits, including " green tourism". These strategies are integral parts of extension and community development.

Local people and communities

The local community or local population living adjacent to the conservation area was identified as one of the three most important target groups by 37 percent of respondents. These individuals recommended strategies that fell into four themes. The first, and most frequent theme, was disseminating information. Strategies included making conservation information available through regular radio programs and other media (occasionally these were parallel to school programs), enlisting religious leaders to promote conservation at church sermons, providing behind the scenes advice, having students make presentations, holding open public meetings, having students take home information to families, and having personal meetings with dispersed individuals

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[1] Most of the "target groups" identified by respondents were quite general, for example "local leaders", although it is suspected that the characteristics of a target group described as local leaders in one conservation program might be very different from the characteristics of a similarly named target group in another conservation program. In future surveys of this type it would be useful to request respondents to describe the awareness, attitudes, knowledge and motivational characteristics of specific target groups.

in the community to diffuse information. The next most frequent design theme was helping or supporting the community in ways that were often unrelated to conservation. Examples of this included constructing community gardens or curio shops, becoming a member of the community as much as possible, providing assistance by transporting or repairing damaged equipment or structures, promoting community development organizations, introducing technologies to minimize wildlife-caused damage, and providing good wages for assistance in conservation work. One respondent stressed linkage of support to the community with conservation action through "direct involvement in joint (but guided) development of priorities for improving living conditions linked to conservation measures." The third theme was action-oriented. It included arranging opportunities for positive interactions with park officials, group cleanup activities, improving educational activities with funds from wildlife utilization schemes, involving the community in field activities of the conservation project, and establishing a network of people to facilitate rescue and rehabilitation of individual animals. The last and least frequent theme was listening.

Children and teachers in the formal education system

Children, teachers and educational authorities were identified by 36 percent of respondents as being one of the three most important target groups in their conservation program. Strategies respondents identified as being most effective when targeted at local and national education authorities included a) demonstrating and donating relevant curriculum materials, and b) stressing economic and other advantages of participation to the individual school, individual administrators, and the country. Strategies identified as being effective with teachers included supplying teaching aids and follow up materials and advice, providing decentralized pre- and inservice training organized jointly with the education ministry, stressing the challenges of new experiences and the recognition for doing something special, identifying possibilities of professional and academic progress, demonstrating of how materials and activities fit into curriculum, and providing teachers with assistance by program staff with knowledge of teaching. It was also important to "stress imaginative use of teaching methods to create awareness, knowledge, skills and attitudes towards being motivated to do something and participate in solving problems, and taking personal and social responsibility for actions".

Strategies targeted directly at children fell into three broad groups. The first strategy challenged students to participate in conservation through such things as conservation clubs, painting competitions, environmental newspapers, anti-litter campaigns (also soil and water conservation), drama, school tree nurseries, and preparation of reports on traditional ecological knowledge. The second strategy attracted student interest in conservation through stimulating learning media including large image A/V, badges, stickers, television, comics, drama, puppets, discussions, creative work, and older students teaching younger students. The third strategy was

related to experiential learning about conservation issues through field trips and involvement in conservation programs.

Farmers / landowners

Twenty-four percent of respondents identified farmers and landowners as among the most important target groups. Three broad strategic themes were evident in the strategies they reported were effective. The first theme dealt with the emphasis on direct, personal, honest, oral communication rather than visual slide show or videos, or booklets. Two strategies are noteworthy: "Casual afternoon teas with no particular agenda" and "Tell straight forward what the consequences are of measurements concerning nature conservation, especially if they are radical." Attending meetings with groups (for example. Women's Institutes, Young Farmers Clubs, Youth Fellowship groups, and agriculture organizations), where researchers attended as listeners or facilitators, was also an effective strategy. The focus of these meetings was practical, recognizing economic constraints and proposing alternative techniques, providing feedback on research, indicating consequences of land uses for native species, how pollution could be controlled, and the importance of conserving national heritage. The second strategic theme valued local knowledge and innovativeness. One of these strategies involved "identifying specific persons with skills needed by group who have capacity to teach fellow land owners and encourage group as a whole to recognize and value these skills". Another effective strategy was to "develop solutions at local level without linkage with authorities", and finally, to obtain comments from the farming community on a draft form of management strategies document. The final strategic theme involved transferring responsibility for part of project to farmers or farmer's groups, acknowledging their assistance, and providing economic incentives.

Business sector

The business sector identified as one of the three most important target groups by 14 percent of respondents. Their strategies fell into four themes. The first was to "provide the business community with platforms to enhance their social status and involve them in decision making in the project". The second was to engage in co-operative research to develop procedures to reduce any impact of extraction activities on conservation goals, and publicly acknowledging their support and co-operation. The third and most common theme was related to training of resource extraction workers and managers about the specific conservation goal, and identifying potential benefits for protecting the environment or adopting alternative development strategies. The fourth strategic theme was related to lobbying for government policy changes to ensure extraction activities did not compromise conservation interests.

Hunters

Hunters were identified as one of the three most important target groups by 13 percent of respondents. There was much diversity in the types of hunters (traditional native, young native, non-native adult, sportsmen hunters, renowned local hunters, and wealthy land-leasing hunters). There was also a corresponding diversity in strategic themes. The first strategic theme was primarily informational. It stressed the following: a) personal contact in the field, b) employing and training local hunters from particular communities to share facts on issues with others, c) distributing posters, booklets, popularized versions of harvest surveys, videos, collaboratively produced educational and sensitization material, d) public meetings, e) field trips, and f) employment of renowned hunters as guides during surveys. The second strategic theme involved acquiring information from hunters and using it in the conservation program. The third strategic theme involved assisting hunters to form organizations to build a consensus on sustainable wildlife hunting and to lobby local and national governments. The final strategic theme involved hunters in program evaluation and implementation, had them work with conflicting interest groups to resolve problems, and provided recognition for their voluntary harvest constraints.

Youth

Although many of the strategies directed at school children applied to youth as well, 11 percent of respondents specifically identified youth as one of the three most important target groups in their conservation program. The strategies identified as being effective by respondents fell into three themes. The first responded to the need to provide youth with experience in the natural environment and conservation activities to affirm conservation values. The second strategic theme addressed the vulnerability of youth to lucrative and glamorous work associated with unsustainable land uses. Strategies relating to this included demonstrating sustainable or conservation-oriented employment, providing grants for additional training, promoting international contacts, and stressing personal benefits of conservation. The third theme targeted education programs and conservation messages through mediums of communication used by youth such as music, music videos, church youth group discussions, specific class activities, and club meetings.

Other target groups

The following target groups had fewer than seven percent of respondents indicate they were one of the top three target groups in their programs. In declining order these were as follows:

1) Conservationists / naturalists- Three strategic themes in these comments were noted. The first related to the co-operative development of detailed action plans by local and national or international conservation organizations. The second theme was to "engage conservationists in

changing world views and community involvement in conservation". The third strategic theme involved training local conservationists in how to become more effective in advocacy activities.

2) Women- Three strategic themes were evident. One included strategies to provide agricultural seed, and tree germplasm and seedlings, to support women's food production and wood biomass energy systems. The second strategic theme increased women's power, influence, and income-generating potential that tended to decline as males assumed dominance in conservation-oriented development. Strategies included special efforts to keep women informed (for example. tours of parks), motivating groups of women through facilitated problem solving and skills training, identifying and supporting small income generating activities of women's groups, and training women in farming and household income generation. Compared to all the target groups identified by respondents, strategies found to be effective with women as a target group had the strongest emphasis on training. A third theme was primarily social in nature, getting groups of women together to undertake a conservation activity as a social and co-operative activity.

3) Tourism sector- The strategies were directed towards developing local tourist potential as one of the spin-offs of a sound environmental management programs. This was achieved by a) changing on-site interpretation, b) involving tourists in conservation efforts, and c) training guides, through their associations and involvement with conservation programs, in non-disruptive tourism activities.

4) City dwellers / general public- Effective strategies were all informational, through "television and shows and newspaper articles that play on the uniqueness of studied endemic species and instill national pride to work for conservation", regular radio broadcasts on local wildlife and conservation needs, and popular articles accompanied by stunning pictures and school projects. Scientific papers and participation in symposia and conferences were also noted as important strategies for this target group, perhaps to increase the legitimacy of the conservation concern in the public mind and in response, prod agencies to conserve.

5) Commercial fish and fuel wood harvesters- The dominant strategic theme was to promote cooperatives, and with these cooperatives, establish agreements respecting harvest and enhancement.

6) Indigenous / subsistence / campesino farmers- Strategic themes included incorporating their good understanding of local ecology in the search for alternate forms of income, providing more secure land tenure, and reaching them through music, role playing and large image slide show. The temporal importance of strategies was noted by one respondent "regular visits to assess needs, - Bring direct assistance to improve day-to-day life, - then start working on conservation activities...".

7) Poachers- Three strategies were proposed including a) making poachers and others aware of the consequences of poaching, b) requesting others to report observation of possible poaching and c) arresting and jailing poachers, a high control strategy.

8) Immigrants- Strategies recommended by respondents included specific educational programs to curtail land use practices that are not locally sustainable and to direct immigrants to alternate income-generating activities.

9) Religious institutions-The most effective strategy for religious institutions was the "examining conservation needs in the context of religion."

10) Men- One strategy involved sponsoring a traditional feast to encourage people from surrounding areas to participate and holding separate men's workshops during the feast.

11) Hostile adults in the community- One respondent with more than two decades of community conservation experience identified hostile adults as an important target group and reported success using a community event strategy, "especially plays involving their children".

Similarities and differences in the strategies across target groups

Several observations of similarities in the strategies between themes may be useful. Paramount in this was the tone of honesty, respect, professionalism, and sharing. There were no mention of adversarial strategies. Consistent strategy themes across most target groups included information dissemination, support provided in a manner that target groups valued and that allowed them to retain leadership and authority, the use of voices other than that of the conservationist to convey the conservation concern, and the collaborative flavour.

Several notable differences were also observed. The emphasis on training varied greatly, with the deliberate training only described for women, the business sector, and local conservationists. Skill and knowledge acquisition was likely a high priority for these groups. Co-operative knowledge creation was seen with government and industry. High control strategies were only noted as being used with poachers, and medium control economic incentives were only mentioned with farmer landowners. There was a pronounced contrast between farmer landowners and city dwellers in the method used to convey information. In the former direct, honest, non-entertaining and largely oral strategies were recommended, while strategies for information dissemination to city dwellers were via their school children and television. The specific mention of youth and the unusual media and strategies employed make this group one of the most significant from a strategic design perspective. Finally, the strong emphasis on strategies to create and maintain truly collaborative, supportive, and nonthreatening relationships was particularly strong with governments. This in not unexpected given the high proportion of NGCO personnel in the sample.

Chapter summary

One hundred and one respondents provided 269 target group responses with associated strategies. Effective strategies for the 48 percent of respondents who indicated government agencies were one of the top three target groups stressed professionalism, cooperation, and advocacy. Strategic themes for the 36 percent of respondents who saw local leaders as important included sharing of power, ideas, benefits, and risks. The 37 percent of respondents who saw local people as a critical target group saw as useful strategies oriented toward listening, information dissemination, community-supportive action, and experiential learning activities associated with conservation. The 36 percent who saw as useful children and teachers in the formal education system as important stressed teacher support in a variety of dimensions, challenging students, innovative approaches to attract student interest in conservation, and providing experiential learning opportunities.

The remaining 15 target groups were seen by fewer than one quarter of respondents as being one of the top three target groups. The consistent themes in the strategies related to honesty, respect, professionalism, providing support valued by the target group, and information dissemination. Differences were seen in the strategic emphasis on managing the power relationship, generating new conservation knowledge, skill and knowledge training, and the emphasis on different media. Coercive strategies were only seen with poachers, economic incentives were only noted for farmer landowners, and brochures were not mentioned for any target group.

CHAPTER 6: REDUCING ECONOMIC AND OTHER COSTS OF WILDLIFE CONSERVATION TO LOCAL PEOPLE

Introduction

In this chapter a summary is provided of the eight categories of costs to local people that were identified by 86 international wildlife conservationists who responded to the question in the questionnaire described in chapter 3. The themes in the strategies that they used to minimize these costs in each cost category are outlined. Next, similarities and differences in these strategic themes are identified. These findings are discussed in chapter 7. Strategies that conservationists identified in responding to this question which had not been encountered in the literature review described in chapter 2 have been added to the inventory in appendix 2.

Background

Conservation programs often involve economic costs to local people such as increased fencing or reduced access to cropland, and non-economic costs such as diminished access to sites of cultural significance, as well as benefits such as increased income from tourism. Examining the costs and strategies used to minimize them was an important aspect of this study for two reasons. First, costs associated with conservation can be a serious force acting to restrain conservation action. Secondly, from a strategic design perspective, effort devoted to minimizing the intensity of forces restraining change generally achieves more than an equivalent amount of effort expended to maximize the intensity of supporting forces (Dimock, 1992). Hence, knowing what the problems and costs to local people are likely to be, and planning to reduce them is important to the success of a wildlife conservation program.

Objective

To identify strategies which conservationists perceived to be most useful in reducing the costs of conservation to local people.

Categories of conservation costs

Eighty-six wildlife conservationists provided 173 responses which consisted of an individual conservation cost to locals with associated strategies to minimize them. These conservation costs fell into eight categories. These categories included the following, listed in order of decreasing numbers of respondents who identified them: direct economic costs, labour and time, problems caused by wildlife, cultural costs, travel, response to new regulations, unmet expectations, and environmental impacts of large group meetings. Several respondents challenged the statement in

the introduction to the question that "conservation programs often involve costs to local people". This sentiment was well expressed by one respondent who indicated

> A conservation program will never work if it involves costs to local people, except, maybe in rich developed countries. Part of our strategy is precisely to bring benefits to local people through appropriate sustainable development.

Themes in the strategies used by wildlife conservationists to minimize costs to local people are outlined for each of the major cost categories below.

Strategies to reduce costs per category

Direct economic costs

Over half of the responses (53.2 percent) identified a large range in direct economic costs (for example. from new fences to tree seedlings, from xeroxing to tractor rental) but a narrow set of solutions. The overriding strategy in these solutions was that actions should involve no economic costs, only benefits. These strategies included borrowing equipment, having items donated, providing it from govemment or the project, organizing and assisting groups to apply for grants, providing paid employment, fundraising events, training people to generate and sell seed and seedlings, selling small goods with the program logo, selling seedlings to the community, and loans where "input costs [were] reduced from revenue at 25% per annum over a long time period."

Labour and time costs

Labour and time costs were identified as being important in 15.3 percent of responses. An example of a time cost would be foresters not cutting down certain types of standing dead trees to provide habitat for cavity nesting birds. Those who must bear the travel time to training, training time, tree identification time, and the increased time to harvest the same volume of lumber, must all support the conservation cause. The respondents suggested four broad strategic themes. The first was effective organization of volunteers so that individual time contributions were low and efficiently used. The second was providing individual benefits (educational, prestige, experiential) to those making time sacrifices. The third was to provide volunteer assistance from outside the local area. Finally, it was important to stress relevance of the activity in terms meaningful to the participants. Two quotes are useful "On site talks on company time, after-work workshops oriented to worker's fun activities" and

> Sometimes we do things for them to ease this [time] burden, but that can be counter productive. Difficult problem-conservation historically for people with leisure time to run projects; income.

Bunch (1982) stressed the importance of not creating local economic dependence for employment income by providing only part-time employment with the project to local people.

Wildlife damage costs

Significant conservation-related costs caused by wildlife damaging fences, foraging in crops, and preying on or scattering livestock were identified as important in 9.2 percent of responses. Strategies to counter these costs stressed working with people to facilitate local development of solutions, and developing schemes to promptly compensate all or partial material and labour costs of solutions. These included experimental electric fences, food and seeds for replanting, telemetry to locate livestock, assistance constructing fences and barriers, and salary for 'crop watchers'.

Cultural costs

Costs of a cultural nature were identified in 8.7 percent of responses as being important. Their comments were left in the respondent's own words to capture the nuances in the meaning, in table 6-1.

Travel costs

Travel associated with conservation planning and action was identified as a cost by 5.8 percent of respondents. Strategies to counter these costs included subsidy through funds raised from larger conservation bodies, donations, lotteries, sales of local crafts, sponsorship by an organization or management structure, providing free food, and decentralized meetings. These strategies suggest that face-to-face communication was so valued that funds had to be secured for travel.

Other costs

Each of the following costs were identified by one to three respondents.

1) New Regulations: No strategies were provided to minimize the various costs of this high control conservation strategy.

2) Disappointment when expectations not met: Encourage local communities to use traditional fora to negotiate for better conditions. The comment, while unclear, raises the important issue of the cost of uncertainty and how to manage risks faced by local people in transition to a more sustainable, conserving local land use system.

3) Environmental impacts of large group meetings: Hold more meetings with fewer participants, at the local level to disperse impacts.

Table 6-1. Cultural costs associated with conservation programs and strategies recommended by respondents to resolve them.

Cultural cost to local people	Strategies recommended
Inconvenience losses of spiritual values (384)	"Negotiate agreements on right of way, modalities of permitted access."
Change from old lifestyle and way of treating resource/ attitude (308)	"Workshops, meetings, importance of long term benefits through illustration."
Under gov't control, local people lost rights to manage and benefit from their own natural resources (70)	"Re-empowerment to share in all decision making re natural resources. Note: Empowerment has turned out to be more important than benefits (although these are necessary)."
Deviation from traditional means of forestry practises (374)	"Reinforce importance of conservation, and that project will contribute to changes in guidelines to harvesting practises."
Community stature (280)	"By creating cooperative projects, local people are drawing strength from knowing other clubs support conservation."
Decreased freedom of action (277)	"Convince through education that benefits in preserving values exceeds costs."
Increased responsibility for actions of others in group (277)	"Encourage individuals to act as role models and leaders."
They lose control over their daily lives (343)	"Provide viable acceptable alternative."
Loss of local control (258)	"Don't give outside agencies effective power."
They can lose dignity (343)	"Create situations in which they appear as expert and you the student. Reduce status generalization."
Behaviour change that they may not usually want (237)	"Emphasis on benefits to their children and children's children."
Decreased possibility of transferring traditional knowledge/skills (256)	"Work with elders association develop a cultural training program."
Required changes at variance with accepted traditional norms (73)	"Encourage local people and institutions to accept project as a tool for process of change for the better."

Similarities and differences in strategies across costs

There was strong convergence that attention to direct and indirect costs was a critical design activity in conservation planning. In affluent societies, costs related to time, labour and supplies were a deterrent to participation, particularly if they were used inefficiently. Hence there was need for machinery and equipment to facilitate efficient voluntary conservation action. In LDC's sustained conservation action had to provide short and long term economic and cultural benefits to

individuals. The strategies used to minimize cultural costs were somewhat different. They involved face to face communication and trusting relationships to detect these cultural costs, allowing a large measure of community control over the project to "empower" people in the process of self-directed action towards greater sustainability that was culturally appropriate. The cost of unmet expectations is another cost that was different, and suggested the need for strategies that address the risk that change poses.

Chapter summary

Eighty-six respondents provided 173 conservation cost responses that included strategies they used to minimize them. The 53.2 percent of responses concerning direct economic costs eliminated these costs by a variety of mechanisms other than providing funds to individuals directly from the program. The 15.3 percent of responses concerning labour and time costs, minimized these costs by making labour use as efficient and dispersed as possible, by providing individual benefits of an educational, experiential or prestige-oriented nature, and by stressing the relevance of the work. The 9.2 percent of responses concerning problem wildlife costs, minimized these costs by providing assistance in the purchase and installation of protective technology and by providing compensation for losses. The 8.7 percent of responses concerning cultural costs minimized these costs by building trust and effective communication so they could be sensitive to these needs during design, and by allowing a large measure of program design control to rest with locals. Other costs to locals associated with conservation programs included travel, new regulations, unmet expectations, and environmental impacts of large group meetings.

CHAPTER 7: STRATEGY EFFECTIVENESS IN DIFFERENT TYPES OF WILDLIFE CONSERVATION PROGRAMS

Introduction

In this chapter the process is described by which the respondents and their wildlife conservation programs were grouped according to similarities in the levels of certain barriers to conservation each respondent had rated for their specific program. Next, within each group of wildlife conservation programs sharing similar barriers, the most effective strategies are outlined. The chapter concludes with a description of the sets of strategies which were most and least consistently effective between these different types of conservation programs. These findings are discussed in chapter 8.

Background

Effective strategic design reduces the effect or intensity of forces restraining change (Dimock, 1992). Hence it was important to identify these forces restraining change and identify which strategies were effective in reducing their intensity. In section II of the survey questionnaire, respondents provided information on the relative significance of three barriers to wildlife conservation at three levels in the projects they had selected. This relative significance was rated on a scale from zero, which was not significant, to six, which was extremely significant. The three barriers were lack of awareness of conservation concern, lack of knowledge of how to conserve, and lack of motivation to conserve (Hines et al., 1986). The three levels were individual, community, or national government. By sorting the respondents, and their conservation programs, into groups based on the similarities in ratings assigned to these nine variables (three barriers by three levels), it was possible to look for differences in strategy effectiveness in different types of conservation programs.

Objective

To determine differences in strategy effectiveness in different groups of conservation projects which have been defined on the basis of nine barriers to conservation change.

Procedure

The first task was to separate the conservation programs which the respondents had described and kept in mind as they completed the survey into separate groups. Each group

needed to be as similar as possible with respect to nine variables[1] rating the significance of human barriers to conservation change. A cluster analysis was selected to sort the conservation programs into these groups because it was an analytical tool designed for this purpose, and because it could effectively use ordinal data (Romesburg, 1984). The stepwise hierarchial agglomeration or sorting procedure allowed precise selection of the level of grouping or number of clusters, to result in groups which were meaningful in terms of conservation and in terms of the number of programs being sorted. One hundred and one respondents provided complete data in all nine variables.

The specific clustering procedures employed, and reasons they were selected, are described below:

a) The data were not standardized because the scales were identical and would be weighted equally in the sorting;

b) The Euclidean Distance Coefficient was used because it measured the literal distance between clusters as the average of all pairs of cases where one of the pairs was in each cluster. It was recommended by Romesburg (1984) for analyses that need to be most sensitive to size, rather than shape, differences among the data profiles;

c) The UPGMA (unweighted pair-group method using arithmetic averages) clustering agglomeration method was selected for four reasons. It treated all cases equally in cluster formation because it used the Euclidean distance coefficient, a simple coefficient with no power function to distort the similarity differences. It rejected programs with missing values in the nine variables so it gave an equivalent separation for each program. Finally, it was suitable for ordinal data (Romesburg 1984); and,

d) A Q-analysis was used to sort the cases (respondents = programs) by the attributes (the nine barrier variables) using the SPSSX Cluster program software (Norussis,1988)

The smallest level of agglomeration which resulted in a useful classification (defined as a classification that teased apart the largest group comprising 60 percent of the programs) sorted the conservation programs into eight groups (Figure 7-1). Two of these groups contained only one program

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[1] Five additional control related questions had been asked and the intention had been to include these with the nine other variables to determine the different groups of conservation programs. In reading the comments which respondents wrote in the margins beside these questions, however, it was clear that respondents had interpreted these five questions in different ways. For example, respondents sometimes assumed that it was the absence rather than the presence of control or authority at a particular level which was important. Because of this variation in interpretation, data from this question is not presented in this study, despite the importance given to control by respondents and other conservationists.

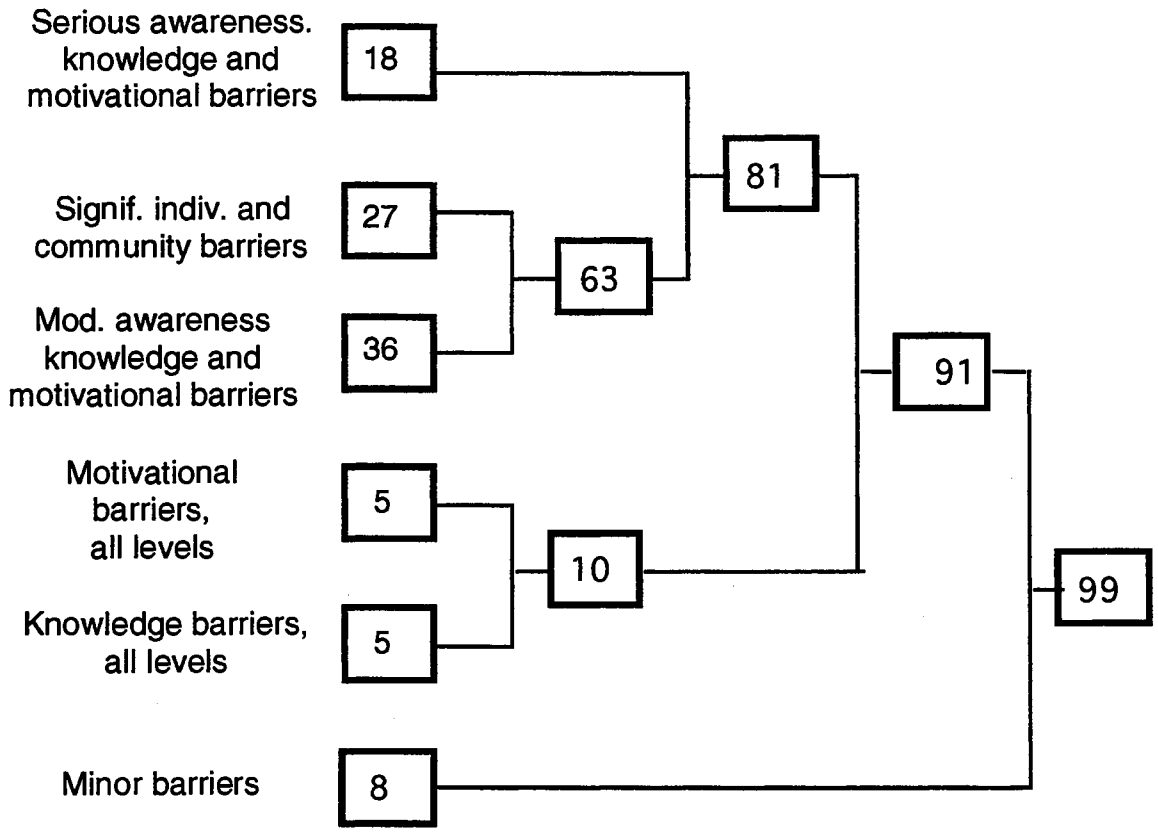

Figure 7-1. Tree diagram summarizing similarities and linkages between conservation programs, based on cluster analysis. Two clusters of one program each are not shown. Numbers refer to the number of conservation programs.

and were deleted. The rest of the groups contained from four to 36 programs each.

The next task was to describe each conservation program group. Arithmetic means of each of the nine variables were determined and the groups were described by identifying which barriers at which levels were most significant (Table 7-1).

The most effective strategies within each group were determined on the basis of arithmetic means of the ratings assigned to each strategy by the conservationists who used them within their programs (Appendix 5). Patterns in the similarities and differences between the most effective

strategies in each group were determined by inspecting the sets of strategies rated, on average, as being quite or very effective.

Description of conservation program groups

The 101 surveys describing conservation programs were sorted into eight groups. Two of these groups contained only one survey. The remaining six groups included those with insignificant barriers to conservation, those with significant individual and community barriers, those with significant motivational barriers at all levels, those with significant knowledge barriers, those with moderate widespread barriers, and those with serious widespread barriers (Table 7-1). Most of the programs that respondents described in their surveys had widespread barriers rather than a particular barrier type or level.

Effective strategies within different conservation program groups

In the following, for each group, the three strategies with the highest average effectiveness ratings are identified. Average strategy effectiveness ratings for each strategy for each group of conservation programs are summarized in appendix 5.

1. Minor barriers at all levels: The three strategies with the highest average effectiveness ratings included a) living in the community before starting to design the project, b) giving local organizations authority for aspects of the project even if they were not quite ready for it, and c) planning for all contingencies in advance, to the greatest degree possible. Thirty-nine strategies, were rated, on average, as 'quite' or 'very' effective (rating 4 or 5) by this group of eight respondents.

2. Significant motivational barriers: In this group, local people, communities and national governments were aware of the conservation concern and knew how to conserve but were not motivated to do so. The three strategies with the highest average effectiveness ratings were those with a strong economic flavour, and included a) stated program objectives as benefits, b) emphasized practical income-generating activities that utilized all renewable resources, and c) reduced economic disincentives to conserve. Thirty-nine strategies rated, on average as 'quite' or 'very' effective by this group of five respondents.

3. Significant individual and community barriers: In this group national governments were aware, knowledgeable and motivated, but effort was needed to achieve this awareness, knowledge and motivation at the community and individual level. The three strategies with the highest average effectiveness ratings were a) living in community before starting to design project, b) implementing the program only after it had been approved by a local association, and c) stating program objectives as benefits. These convey information, credibility, some measure of control, and reasons to support the program. Twenty-seven strategies were rated, on average, as 'quite' or 'very' effective by this group of 27 respondents.

Table 7-1. Cluster barrier variable means which describe each cluster

4. Significant knowledge barriers: In this small group, all levels were aware of the conservation concern and were motivated to conserve, but the barrier was a widespread lack of knowledge of how to conserve. Eight strategies had average ratings of 'very effective' (5). Those with an educational or learning component included a) supporting leadership training initiatives, b)

assisting people to look at their situation from a more abstract perspective, c) including program activities that addressed local peoples' needs, d) using local people's conservation language, e) living in the community before starting to design project, and f) involving religious leaders in the conservation effort. Over half of the strategies had an average effectiveness rating of 'quite' or 'very' effective (4+).

5. Moderate awareness, knowledge and motivational barriers at all levels.: In this group, comprising over one third of respondents, barriers were widespread but moderate, on average. The three most effective strategies included a) developing close relationships with local people, b) supporting local production of film or video on conservation issues, and c) using a high profile animal, logo, or slogan as a symbol of the conservation project. Only eleven strategies, were rated, on average, as 'quite' or 'very' effective.

6. Serious awareness, knowledge, and motivational barriers at all levels.: This group of 18 respondents faced a significant strategic challenge. The three most effective strategies on average that they reported included a) living in the community before starting to design project, b) involving teachers in the conservation project, and c) developing close personal relationships with local people. Fourteen strategies were rated, on average, as 'quite' or 'very' effective.

Similarities and differences

Several patterns are suggested by these findings. Building trust and personal linkages at the local level was an important prerequisite to program success, particularly as the barriers to conservation became more intense. Most of the respondents worked in contexts where barriers at the local level were significant. The small group with significant motivational barriers provided a clear indication of the success of strategies which reduced the costs and emphasized practical benefits of conservation.

Six strategies which had consistently high average ratings across most groups (average over 4.00 in 5 of 6 groups). These included a) involving children in conservation activities, b) implementing the program only after local approval, c) encouraging respected elders to assert leadership, d) including program activities that meet local needs, e) using a high profile animal, logo, or slogan as a symbol of the conservation project, and f) developing close personal relationships.

There were also several strategies which were consistently mediocre in their average effectiveness across most groups. These included a) having all social classes participate, b) exploring probable outcomes of alternative land uses, c) illustrating practices damaging to conservation, d) using patriotic appeals to sustainable development, and e) developing the capacity of local organizations to demand government services.

Chapter summary

Eight groups of respondents were derived based on similarities between the nine variables that describe the significance of three barriers (awareness, knowledge, and motivation) at three levels (individual, community and national government). The six of these with over five respondents each included programs which had in common a) minor barriers at all levels, b) significant motivational barriers, c) significant individual and community barriers, d) significant knowledge barriers, e) moderate awareness, knowledge and motivational barriers, and f) serious awareness, knowledge, and motivational barriers. One trend appeared to be a decline in the number of strategies rated as effective as the barriers became more intense. A second trend was that the strategies became increasingly focussed on building trusting local relationships as the intensity of barriers increased. Another trend was related to the increased emphasis on practical benefits as motivational problems became more intense. The majority of respondents worked in contexts in which local and community barriers to conservation were significant. Generally awareness of conservation problems was perceived as one of the least significant barriers.

CHAPTER 8: DISCUSSION AND CONCLUSIONS

Introduction

In this chapter the findings are discussed and conclusions are drawn in terms of the methodologies employed, the most useful strategies to promote collaborative local conservation of wildlife, and implications to the practice of wildlife conservation beyond strategy selection. Conclusions are outlined, and then discussed.

Conclusions with regard to the methodology used in this study

It is useful to reflect on the appropriateness of some of the choices made in the selection of methods used in this study. In the following, conclusions associated with nine of the most important choice points in the methodology are discussed.

1. It was concluded that the inductive approach was worthwhile in obtaining a personal sense of the approaches used that might have been lost in the formality of case reports, and in increasing the sample size of conservation programs. The fundamental design choice point was to use an inductive survey-oriented approach rather than deductive, case study-oriented approach to the problem. The five fold increase in sample sizes that resulted, the capability to look at so many more questions and the opportunity to obtain relatively[1] unambiguous 'not used' data were of value. The perceptual and subjective nature of the evaluations of strategy effectiveness would not have differed in either program, except that in the written case studies it could be assumed that the conservationist might have taken more time to consider the relative effectiveness of each strategy, and that others in the program might have reviewed this effectiveness rating. With the exception of Berger's (1989) 346 page and Blanchard's (1991) 40 page project descriptions, most journal article case reports provided too little detail to allow a good understanding of strategy selection.

2. It was concluded that the purposive sampling strengthened the study, but that future work should include local collaborators. The fundamental sampling choice point concerned the selection of the purposive sample, biased towards those recognized by peers as being effective in promoting local conservation. Had randomly selected individuals from the WWF project list or the IUCN Species Survival Commission been used, it would have resulted in a higher proportion on 'does not apply to me' responses, a higher proportion of 'research-oriented conservationists' rather than 'action-oriented conservationists', and a higher proportion of responses from individuals who were not particularly effective. This would have allowed generalization to other members of the sampling frame, and to conservationists in general, if the assumption was made that these sampling

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[1] Notwithstanding the results relating to the reliability of parts I and II of the survey.

frames were representative. But this sample would have increased the variation in responses, and weakened the ability to answer the key questions. Focusing on individuals who were respected by national conservation organization leaders or who were hired as specialists to do this type of work likely added much credibility to the findings in the eyes of other wildlife conservationists. Another addition that would enhance the credibility of the findings, particularly in the eyes of potential local collaborators, would involve interviewing local people who had collaborated with and were influenced by the program. This would allow exploration of the effect of different cultural dimensions on strategy use and effectiveness.

3. It was concluded that the mail questionnaire approach was a useful and cost effective way of collecting information from international wildlife conservationists. The selection of a survey versus a structured telephone interview, or both, was undoubtedly more efficient in terms of data per unit cost, however, follow-up telephone interviews could have been beneficial had funds been available. International telephone conversations would likely take much time unless the content of the call was prearranged. In subsequent studies it would be useful to examine a subsample of the cases in more detail, particularly those that employed highly successful, yet rarely used strategies, to learn more about procedures in which the strategy was used.

4. It was concluded that having conservationists focus on experience rather than conjecture when evaluating strategies, strengthened the study but that further examination into reasons for the discrepancy in usage indicated on the reliability surveys would be useful. Forcing conservationists to reflect on a single project was a choice designed to allow evaluations to be based on real experience and allow a later linkage to control variables. A more conjectural format could have been effective also, asking how they thought the strategy might have worked, but ratings based on speculations are of much less quality than ratings based on experience. The inconsistency in strategy usage between the original and the 15 reliability surveys suggests that problems remain in interpreting some strategy statements in the light of a conservationist's experience with a specific program.

5. It was concluded that the collection of use and effectiveness data was prudent but that future work should examine effort and target groups for each strategy. A choice was made to collect less data from more strategies, hence only use and effectiveness data were collected. The omission of 'relative importance given to this strategy' data recommended by committee member H. Dimock, in retrospect was significant, as this would have been useful in the understanding of how strategies were used. One respondent noted that a strategy may have been less effective than it could have been precisely because too little effort was afforded to it. The influence on response rate on apparent survey complexity as viewed by respondents is an issue in this decision as well (Dillman, 1978). In retrospect, it is probable that response rates would not have dropped much if relative effort ratings had been included.

6. It was concluded that strategy wording could have had a significant effect on the degree to which conservationists evaluated strategy usage and effectiveness. Strategy wording was an important choice point. The intent was to have people rate the effectiveness of a concept, a design idea, but wording undoubtedly influenced their rating. Despite the effort at simplicity and consistency in working, usage would be rated more highly if the object of the strategy was less precise (for example, 'local people' versus 'children'), if the verb was less precise (for example, 'supported' versus 'demonstrated'), and if the subject was less precise (for example, 'illustrative media' versus 'film/video'). Effectiveness may have been increased if the object was less specific (for example, 'people' versus 'children') because it was likely highly effective with some target groups. Strategies would also tend to be rated as more effective if they were 'pet' strategies of the respondent in which a vested interest was held in its success. They would have tended to be rated as less effective if the respondent could not keep one program in mind, or if the strategy was evaluated before it had come to fruition.

7. It was concluded that synergy between some strategies employed in a program was likely, and that subsequent work should examine this in more detail. With the exception of the cluster analysis, the analysis assumed little synergy between strategies, as if a strategy would be equally effective when used with different combinations of other strategies. While this may be true for some strategies, others may depend strongly on synergy. The cluster analysis attempted to compensate for this by focussing on which of strategies were most effective in each cluster. However, to examine this in detail a larger sample would be useful, plus a measure of overall program effectiveness in several categories (for example, what were the set of strategies, when employed in this type of wildlife conservation program, which yielded the highest score in a specific dimension of the program?)

8. It was concluded that the human system change approach to describing conservation programs had merit, and that case reports of conservation programs should provide this information. The choice of a descriptive model and component variables to categorize the context from a social change perspective had value in describing projects, but it had little predictive value. Based on the findings it may be useful for case study reports to address these relative significance of these barriers to conservation in some detail.

9. It was concluded that the combination of open and closed question formats, and the opportunity for conservationists to describe important strategies, provided complementary information which enhanced the understanding of the usefulness of various strategies. The open ended format of the questions in part III provided useful information on target group selection and reducing costs to conservationists. The overlap of subject content in these questions to those in part I, allowed a richer understanding of strategy use and effectiveness.

Conclusions with regard to which strategies were most useful

Conservation programs sampled in this survey fell mostly into the reeducative/normative model of human system change because their objectives were related to a collective decision to change the usual ways of doing things and to adopt new, conserving norms. In these approaches, the turning point was the perception that an individual could and should act, and that action would make a difference; a personal locus of control was established. Also important was the the sense that the new action was acceptable to peers; that it fit within a new normative framework of their reference group. The strategies within this model as applied to community level wildlife conservation, focus on carefully designed interventions directed at assisting individuals and organizations develop a personal locus of control for wildlife conservation issues. These personal loci of control range from a willingness to support a cause, to obtaining a decision-making role. The interventions are also directed at establishing a willingness in the group to explore alternative practices outside the traditional norms, but within the basic value system. The collaborative element of the programs ensured that these changes remained largely within the local value system, and that local net benefits were likely. Based on the three sources of data collected from conservationists in this study, the following conclusions were made, and are discussed below in relation to previous findings.

1. It was concluded that useful strategies provided tangible information from credible, committed, and trustworthy people. This was supported by the characteristic differences between the most and least effective strategies where adults and children had an opportunity to informally learn about the credibility and integrity of the conservation cause and advocates. Other strategy examples included opportunities to meet and discuss conservation issues with peers living in different areas,support of local production of film and video, and residence in the community prior to designing the program. Humor was mentioned as being important in developing this trust and effective communication linkages. In terms of similar findings in previous work, the greatest similarities were seen in the conservation education synthesis by Pomerantz and Blanchard (1992), and the wildlife extension work by Berger (1989). It was implied, but not explicitly stated in the other syntheses. Observations of a similar but negative nature in previous work identified the perceived arrogance of western trained scientists as an impediment to effective working relationships with northern aboriginal people (Usher, 1986; Oreshenko, 1988; and Freeman, 1989a,b). It was noteworthy in this study that as the significance of of the barriers to conservation increased in the different types of conservation programs, the more frequently this personal trust and communication were seen as being among the most effective strategies.

2. It was concluded that useful strategies developed critical consciousness. New, more critical perceptions of reality held by local people were important. Some conservation situations

seemed to be futile, where people were downtrodden and environmental degradation was rampant. It would be tempting to concentrate effort elsewhere where success would be more likely (the elite bias (Röling, 1988)). Efforts can be futile until individuals collectively develop a critical consciousness, which is a more distant abstract perspective of their reality in relation to that of others, and begin to trust that their own efforts can improve things. This was one of the 10 characteristic differences between the most and least effective strategies. Puppet shows, play-acting, problem-posing illustrative codes, local production of videos were all processes that worked to achieve this. Training in leadership and facilitation were important to carry the momentum. Similar findings were seen in the previous work by Berger (1989) described earlier. This was basically a Freireian approach to assisting oppressed people who believe that external forces control their lives. No similar strategies were seen in the other papers cited in the introduction to this study.

3. It was concluded that useful strategies provided control and authority. The issue of local control over resource use (not necessarily local ownership of resources), and contribution of local knowledge to the process was identified as a characteristic difference between the 'most' and 'least' effective strategies. This control had to be real, not advisory or participatory, but decision-making for this sense to occur. Research into common property resource management systems makes an important contribution as it identified different avenues for this control to be exercised. The issue here was not to romanticize traditional knowledge or apply indigenous systems to current practise, but to determine the underlying principles in cooperative human behaviour and social organization that can be applied to natural resource management. In this regard it was interesting to note the Inupiat's inclusion of academic knowledge systems, as well as their own, when they became involved in cooperative management of Bowhead Whales (Freeman, 1989a). A similar emphasis on providing local control and authority was seen most strongly in the work in the common property field (for example, the numerous case studies in Berkes (1989), and Agarwal and Narain (1989)), in the wildlife extension work by Berger (1989), and to a limited extent in the conservation education synthesis by Pomerantz and Blanchard (1992). Dietz's (1988) and Wood and Wood's (1990) syntheses emphasized local investment in the conservation program through involvement in planning and implementation but not local control over resources.

4. It was concluded that useful strategies substituted conserving norms within the local value system. It was essential to facilitate local people's search for alternate behavioural norms which were oriented towards conservation and sustainable resource use, within the local value systems . This involved building communication networks, and fostering innovation. Facilitating local people's search for alternate norms also required buffering the risks associated with trials, and altering certain situational variables, such as policies of resource use. This search for alternate norms was one of the most challenging activities, because it could cost vested interests who benefitted from the existing resource-use system, as well as individuals and communities to make the change.

Finding the balance in buffering these costs and risks without creating dependence was difficult. Remaining in a facilitative role was also difficult. Often funding was provided for demonstration projects. Strategies to facilitate this process included peer group networking, building early recognizable successes, training local people in how to conduce experiments, and providing support for group initiatives. Often the linkage back to spiritual and cultural maintenance and their implicit conserving values provided additional motivation. Respondents frequently mentioned the importance of not rushing the process, allowing local people to generate options and make decisions, and eliminating, to the greatest extent possible, conservation-related costs in time and materials to participants.

In terms of the similarity of this finding to previous work, it was most clearly emphasized in Blanchard's (1991) work which described a useful survey procedure to monitor change towards more conserving group norms. Agricultural extension experience in this area suggests that it is important to link knowledge systems (Röling and Seegers, 1991), to not create economic dependence on the program (Bunch, 1982), and to disperse training opportunities as broadly as possible (Bunch, 1982; Röling, 1988). Conservationists need to be mindful that not all sustainable use innovations will be sustainable, and that natural systems need to be monitored (Edwards, 1990).

5. It was concluded that useful strategies minimized the risks and costs associated with the shift to more conserving behaviours. Support for this came primarily from the responses to the two open-ended questions. People's perceptions that such a conservation shift would be in their best interest was important, but often this best interest did not need to be a substantial economic advantage. Elimination of as many economic costs as possible was essential, particularly in lesser developed countries. Non economic benefits which respondents identified as being important to local people included prestige, community pride, greater local control over resource use, opportunities to learn, achievement of community development goals, a sense that volunteered labour made a meaningful contribution, a greater sense of equity among the marginalized, and a sense that the future was more secure and sustainable.

The need to promote conservation through the economic self interest of individuals was not seen as a prerequisite for shifts to more conserving behaviour. This finding appears to contradict McNeely's (1988) theme which stressed economic self interest as an essential driving force to promote conservation of biodiversity. However, the broader non-economic factors which local people perceived as benefits would likely have less effect in motivating conserving behaviours in commercial harvesting operations which are not locally owned. The conservation approach described by Wood and Wood (1990) was only advocated where benefits existed and could be demonstrated. In Dietz (1988), particularly, and in Berger (1989), Blanchard (1991), and Ham and Sutherland (1992), there was an effort to increase the benefits associated with the conservation

program which ranged from fuel wood plantations to nature tourism. Bunch's (1982) advice to initially concentrate on aspects of the program which quickly result in recognizable success and local benefits, and to base programs on results not promises, are useful in this regard.

7. It was concluded that strategies which were a) impersonal and persuasive in their orientation, b) oriented towards motivating conservation through direct economic payment, or c) coercive were very infrequently used by these conservationists. These approaches may be not have been included because they were not effective in the long term, because they were associated with the natural resource management paradigm common in many governments, or because they may not have been available to the NGCO personnel who were so prevalent in this sample.

These seven conclusions provide conservationists with direction as to what kinds of strategies might be effective in catalyzing the perceptual and normative changes needed to achieve enduring local conservation of wildlife.They also emphasize how complex the low control process of wildlife conservation could be, particularly the transition from state to greater local control. As the programs become more collaborative and more oriented towards the creation of social pressures to support substitution of norms, and particularly greater emphasis on increasing human potential and strengthening local institutions to sustain and direct future conservation, the complexity of the program increases greatly. The process model switches from a circle as in Pomerantz and Blanchard (1992) to a spiral as in Berger (1989). The number of strategies increases from those in a comparatively directed program like that in Wood and Wood (1990) to the complexity of programs like Berger's (1989). The 114 respondents in this study, on average, applied 42 of the 74 strategies which were rated in the questionnaire in their wildlife conservation programs. Since these 74 strategies favoured the least frequently used strategies among the 277 identified, it is likely that the total number of strategies in these programs was much greater.

Emerging then is a trend towards an increase in the strategic complexity of programs as they become less directive and more collaborative. This increase in strategic complexity reflects the diversity of learning processes associated with acquisition of responsibility for greater control, equity, consensus, collaboration, system change- in short, all nine design goals identified in the review. The question of which are the best strategies, as if concentration on a few really good strategies would yield results, is probably a naive one.

Conclusions in terms of conservation practice

Six conclusions were drawn from this study regarding the processes in collaborative conservation in addition to the selection of useful strategies. None were explicitly identified in previous syntheses.

1. Collaborative conservation requires extensive and continuing personal contact with local people and a special emphasis on individuals who can use their unique personal qualities to facilitate change. This was implied but not explicitly stated in the previous syntheses. Congenial, trustworthy, committed people are needed to engender local respect and trust. There are no magic tactics to make messages more persuasive-local people must first respect and trust, and sense the integrity and commitment of the messenger. Needed are individuals who are able to a) understand their own feelings and empathize with the feelings of others, b) work in a variety of roles as leader, expert, consultant of facilitator (Figure 1), c) learn form others in an open-minded fashion, and d) quickly respond to new situations. In addition they need to be technically competent in collaborative change and other group processes, and willing to take risks in terms of behaviours, ideas, controversies, and emotions (Dimock, 1992). Dietz's (1988) recommendation that wildlife researchers have a responsibility to build local support for conservation should be conditional on the presence of these humanistic personality strengths and skills.

2. The assessment of local values, attitudes, and behavioural norms which impact conservation should be a collaborative process designed to transfer skills and develop a collective critical awareness of conservation concerns. The emerging standard practice recognizes the many values in collaborative assessment using participatory and other action research techniques. Within this set of respondents this practice was still not frequent, although acquiring this information was recognized to be a very effective strategy. Useful design approaches can be seen in Couch (1984), Berger (1989), Bryson (1988), Craig (1988), Blanchard (1991), and Dimock (1992). A collaborative approach to the acquisition of this information may be important, particularly if rural women are involved, in terms of spin-off benefits which may indirectly affect local conservation and sustainability in the future. Collaborative approaches may permit rapid and broad local understanding of the systemic roots of unsustainable practices in rural systems.

3. Target groups should be narrowly and strategically defined with particular emphasis on identifying new target groups and potential collaborators outside the local area who have an influence on the long term success of local conservation efforts. Some of the target groups identified by respondents such as women, hostile adults, and landowning farmers, revealed large differences between effective strategic approaches. Others such as resource agency personnel suggested a need for conservationists to target training institutions. Generally, however, the targets specified by many respondents were too broad to be strategically useful (for example, 'local people' and 'general public'). McNeely et al. (1990) and Ham and Sutherland (1992) provide useful suggestions on less-typical target groups such as western tourists, upper class nationals, and military officials. Decker et al. (1991) identify the threat to conservation posed by sophisticated animal rights advocates who target many of the same groups. Members of the animal rights movement may increase in importance as an critical target group for local conservation programs.

4. Formal delegation of control and responsibility to local collaborative institutions should be a priority early in the program. It is unrealistic to promote local awareness of conservation problems, local knowledge of conservation action, local motivation , and yet retain centralized control. Decentralized control, emphasizing responsibility is more consistent with these efforts. Patterns in this decentralization need to be carefully considered in terms of the sense of 'groupness'. In India, Agarwal and Narain (1989) described many examples where villages of up to several thousand people were able to manage local resources, but they found no examples of multi-village or watershed-level communal resource management regimes. Yet these communal resource management regimes have been achieved in collaborative arrangements between two arctic aboriginal groups, spanning over a dozen communities, and several million square kilometers (Nageak et al., 1991). This suggests that the critical issue lies outside area or numbers of people, and relates to a sense of 'groupness'. The maintenance of a sense of 'groupness' in control and the regulation of outsiders access to local resources are likely critical to the effectiveness of local conservation programs. The early preparation of enabling legislation to legitimize local control may be one of the strongest catalysts to promoting local conservation of wildlife.

5. Some potentially effective strategies may currently be underutilized because wildlife conservationists are not aware of them. Here the inventory may be a useful tool to make conservation program design teams aware of strategies which may be available, for their evaluation and possible adaptation to their context. The frequent admonitions related to the direct transfer of strategies between programs suggest that adoption without assessment is unwise, despite the relatively high effectiveness reported by wildlife conservationists for the strategies recommended in other rural change fields. Conservationists could benefit from reviewing this literature, particularly Bunch (1982) and Werner and Bower (1982), and collaborating with change specialists in other disciplines.

6. An important aspect of the design process involves determining with greater precision the boundaries of effectiveness, or the recommendation domain, of low control collaborative conservation systems. By way of criteria there must be reasonable grounds for local people to believe that a secure sustainable future is possible, that human ingress into local areas can be controlled, and that outside forces are not likely to impact the local resource base and compromise benefits. There is also some ceiling on the number of competing land uses and potential stakeholders above which the process becomes unwieldy, dysfunctional or easily derailed. Low control systems may vary in their resilience to the addition of economic incentives and high control approaches, corruption, uncertainty in resource availability, and external economic interests. Finally, while the need is clear to link these local systems to conservation systems at the regional, national, and biome levels, the mechanisms are not and deserve further study.

Chapter summary

The strengths and weaknesses of the methodology were first examined. The set of nine conclusions regarding the methods used in the study suggested that the design was appropriate for an exploratory study, but that further work in specific areas would require more refined design of some of the data collection procedures. The chapter then discussed the findings in relation to the different sources of information in the study, in relation to previous work, and in relation to the broad models of human system change. It was concluded that most of the conservation programs sampled were based on the reeducative/normative model of human system change, and that useful strategies provided tangible information from trustworthy people, developed critical consciousness, provided local control and responsibility, substituted conserving norms within the same value system, and minimized economic and other costs and risks while providing a broad spectrum of locally relevant benefits.

Collaborative conservation programs were strategically complex, particularly during the transition to greater local responsibility, due to all the learning processes involved. A number of conclusions were advanced regarding aspects of the process of collaborative conservation other than the selection of strategies which were distinct from those mentioned in earlier syntheses. Close attention was needed to the personal qualities of the collaborative conservationist as opposed to attention to new ways to be more persuasive. There was need for increased emphasis on collaborative assessment of information on the human and ecological systems requirec to design programs (with particular emphasis on skill transfer to rural women). It was seen as important to partition existing, and seek additional, target groups. Local responsibilities for communal conservation programs needed to be formalized as quickly as possible. Investigation was needed into potentially effective, yet underutilized strategies. The boundaries of effectiveness of low control approaches need to be determined and described.

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APPENDIX 1

STRATEGIES RECOMMENDED IN RECENT CONSERVATION EDUCATION SYNTHESES

Appendix 1. Strategies recommended in conservation education programs from syntheses by Dietz (1988) (**D**), Wood and Wood (1990) (**WW**), and by Pomerantz and Blanchard (1992) (**PB**). Numbers in parentheses refer to to question numbers in the survey used in this study.

Strategy	Source
• Involve wildlife researchers in taking initiative in conservation education programs.	D
• Use people's anthropomorphic understandings of animal behaviour to carry conservation message.	D
• Make parks financially self sufficient through tourism (A49)	D
• Develop alternate sources of nearby fuel wood	D
• Improve law enforcement activities of guards through training(A61)	D
• Encourage landowners to protect forests on private land.	D
• Establish specific program objectives and document results to demonstrate success to maintain support and funding	D
• Conduct surveys of knowledge and attitudes regarding local wildlife and protected areas (A11)	D
• Plan project so it capitalizes interests that the target population has in common with conservation objectives (A23)	D
• Create pride in local natural resources	D
• Emphasize tourism as a source of foreign currency	D
• Encourage community involvement in planning, implementation, and investment in program educational activities (local language)	D
• Build a constructive relationship with local community leaders	D
• Develop program into valued community resource	D
• Facilitate observation of wildlife by local people	D
• Personally request landowners to establish permanent reserves on their land	D
• Re-introduce animals and have local landowners monitor them	D
• Focus on a specific, identifiable conservation problem for which there is a feasible solution.	WW
• Direct conservation education efforts at target groups who can contribute to an environmental problem's solution and perceive the changes advocated by the educational program as being in their own best interest.	WW

Strategy	Source
• When people must be convinced to do something not in their best interest, education is not the tool to use; instead use law enforcement, financial compensation, or social pressure.	WW
• Present practical alternatives that meet local needs.	WW
• The education program should be straightforward, simple, informative, and attention-getting. Accuracy is crucial.	WW
• Develop people's awareness of an issue into an understanding of how they are both affected by and are affecting the environmental situation.	WW
• If people are not motivated to implement the solution, investigate why.	WW
• Design communication and education programs as part of a comprehensive strategy which also includes research, management practices, and law enforcement.	PB
• Convey the expectation that education is a slow process that can work with other management strategies to achieve a long-lasting goal.	PB
• Respond to specific problems quickly	PB
• Design opportunities for experiential learning	PB
• Provide and maintain opportunities for direct contact with decision makers and program leaders	PB
• Train program personnel to be sensitive to the cultural norms and educational backgrounds of their constituents, and in biological information about the species of concern.	PB
• Empower local people with leadership roles in the program	PB
• Use mass media to raise awareness and engender public support	PB
• Present printed materials personally or in conjunction with another educational strategy.	PB

APPENDIX 2

INVENTORY OF LOW CONTROL STRATEGIES WITH POTENTIAL APPLICATION TO WILDLIFE CONSERVATION

Strategies in this inventory came from three sources. Those which were identified in the initial literature review are identified by a citation to a paper, although this may not necessarily reflect the source of the idea. The second source was from conversations and courses which cannot be linked to a specific source. The third group, contributed by the survey respondents in open ended questions, and included in the list because they were in addition to those identified earlier, are identified by a survey number.

Appendix 2A: Inventory of low control strategies with potential application to wildlife conservation when designing for collaboration.

- Allow time for personnel to develop close relationships trust with people. (Bunch, 1982)

- Live in community before starting to design project. (Werner and Bower, 1982)

- Begin by listening and observing within communities. (Berger, 1989)

- Avoid military or sports metaphors in program, use family, medical , nurturing metaphors instead. (Rubin, 1988)

- Return results of analyses of data collected locally to local people as quickly as possible. (Bunch, 1982)

- Encourage informal reporting systems that maintain a continuing flow of candid information. (Bunch, 1982)

- Early in the program, publicize a definite phaseout date for outsiders and the program. Force people to 'get things done while there is still time' and to consider 'what will happen when the project ends' (Bunch, 1982.)

- Provide freedom for people to set their own conservation goals. (Bunch, 1982)

- Proceed slowly, only introduce a few changes in the first year. (Bunch, 1982)

- Combine ethical and religious goals with conservation goals. (Bunch, 1982)

- Delay the design until the local people are fully prepared to make their needs and preferences known. (Korten,D., 1986)

- Pose problems to the community rather than propose solutions. (Berger, 1989)

- Avoid importing solutions from other projects. (Werner and Bower, 1982)

- Avoid directing the project from the position as an expert. (Dimock, 1981)

- Identify and listen to the skeptics, the "laggards", and the cultural stalwarts who resist change. (M. O'Neill Pers. Comm.,1991)

- Carefully consider and balance the relative support to the project from the community, elite, government, and International NGO's.-Allow no more than half the funding to come from outside the area served. (Werner and Bower, 1982)

- Minimize apparent outside-community direction over project.

- Understand and respect the customary rules and conventions for the management of resources (Gibbs and Bromley, 1989)

- Use community conservation language, metaphors, and analogies. (Dietz, 1988)

- Include extension professionals at the start of a program, rather than add them in midstream to sell a plan. (Case, 1989)

- Have group select representative by consensus. (Uphoff, 1986)

- Obtain voluntary conservation commitments. (Hilts,1989; Katzev and Johnson, 1987)

- Develop the idea that conservation measures are an idea worth trying, not a guaranteed success. (Bunch, 1982)

- Have group openly discuss criteria to select group representative. (Uphoff, 1986)

- Maintain moral consistency between personal behaviour and expected conservation behaviour. (R. Schweinsburg, Pers. Comm.1985)

- Allow local people to select from various options.

- Select staff with technical competence in the process of intervention and collaborative change (Dimock, 1981)

- Ensure that all project personnel are, and appear to be, competent and working for the peoples' benefit. Bunch, 1982)

- Design incentive systems in program to strengthen the accountability of project staff to assisted groups. (Korten, 1986)

- Promise something only when you are absolutely certain that the project can keep the promise. (Bunch, 1982)

- Treat opponents with respect, love, positive energy. (May, 1989)

- Develop appreciation of the strengths and limitations of indigenous, scientific, and state resource management systems. (Wolfe et al ,1991)

- Select workers who have already shown themselves willing to work voluntarily for the good of the community. (Berger, 1989)

- Disseminate information through commonly used community communication channels. (Blanchard, 1991)

- Select a community that is willing to work together. (Bunch, 1982)

- Select a community that is willing to work voluntarily for the common good. (Bunch, 1982)

- Select a community where the attitudes of honesty, reliability, and trust predominate. (Bunch, 1982)

- Select a community where leaders work hard. (Bunch, 1982)

- Select a community where there is land security.(Bunch, 1982)

- Select a community that has good local institutions and good programs. (Bunch, 1982)

- Select a community that has higher literacy rates. (Bunch, 1982)

- Start conservation efforts from within the community unless there is a widespread felt need within government leaders. (Berger, 1989)

- Provide resource users with decision making roles. (Oreshenko, 1988)

- Design checks and controls from within the community. (Werner and Bower, 1982)

- Promote agency role as a service agency in support of local resource management groups. (Korten, 1986)

- Identify interests that the community has in common with conservation organizations.

- Support local production of film or video on conservation issues (Michaels, 1992)

- State program objectives in terms of specific benefits to be reaped by local people. (Bunch, 1982)

- Train widely in how to locate and access information

- Persuade people and groups that it is possible for them to solve specific problems. (Bunch, 1982)

- Describe conservation alternatives to the community, particularly different models of protected area management that have been designed in developing and indigenous societies. (Ham and Sutherland, In Press)

- Keep village leaders well informed of the progress of the program and experiments. (Bunch, 1982)

- Concentrate on problems that people want solved; Develop aspects of project that address community needs; Combine socioeconomic goals with conservation goals. (Bunch, 1982)

- Design and manage each community group project as a distinct project activity. (Korten, 1986)

- Involve the project in supporting community activities (eg soccer teams festivals) (Dietz, 1988)

- Work with small groups of people. (Berger, 1989)

- Disperse the training of technical skills within the community.

- Promote local ownership and control over productive assets. (Korten, 1990)

- Promote the value of ecological knowledge that exists within the community.

- Decentralize project administration.

- Develop policies to enable collaborative control before developing management programs.

- Avoid contaminating extension program with regulatory or monitoring role, or personalities (Moore, G.A.B., Pers. Comm., 1990)

- Begin the process of involvement by meeting people on their own ground, listening and observing. (Berger, 1989)

- Know the area well using a diversity of techniques. (Bunch, 1982)

• Apply conscious and constant effort to help people learn how to participate constructively. (Bunch, 1982)

• Welcome and act on criticism. (Werner and Bower, 1982)

• Assume that cultural and linguistic barriers are much more significant than is generally perceived (Oreshenko, 1988; Usher, 1987)

* Emphasize through examples the disasters caused by not conserving and what benefits conservation can bring, and leave the decision to the local community. (5)

* Recruit volunteers and project staff to assist teachers. (367)

* Secure international NGCO support by demonstrating commitment, knowledge, willingness, consistency, and collaboratively prepared action plans. (145)

* Share overall direction and accountability with central authorities. (374)

* Educate forestry planners of the effects of harvesting techniques on wildlife and conduct experiments to determine wildlife/forest relationships. (374)

* Provide business community with platforms to increase their social status and involve them in decision making in the project. (374)

* Obtain cooperation by being straight forward, honest, sharing decision making, and allowing authority for some decisions to be vested in local partners. (342)

* Discuss the conservation approach and project strategies in joint meetings with local authorities. (209)

* Involve native governments in the project from start to finish. (282)

* Provide constant feedback of biological research information and conservation option information to local people. (263)

* Participate in community organizations, activities, and media. (43)

* Provide partial support for conservation costs (eg fences) (43)

* Have research team attend community meetings as listeners and facilitators. (44)

* Prevent use of natural resources by non-locals as this is often perceived as trespass by local people. (384)

* Compensate promptly to counter damage or losses caused by wildlife (384)

* Raise funds locally (346)

* Network extensively with regional governments. (288)

* Regularly visit local people to assess needs. (116)

• In multi-community conservation programs, treat each community group as a distinct program. (Korten, 1986)

• Undertake systematic, long-term, attention to debureaucratize agency systems and procedures, to make agencies function more in the role of a service agency in support of local resource management groups. (Korten, 1986)

* Design project to be long term. (356)

* Use volunteer labour as efficiently as possible and use machines to accelerate the sense of conservation action by local groups. (356)

* Place the onus on the local level to initiate conservation of wildlife. (260)

Appendix 2B: Inventory of low control strategies with potential application to wildlife conservation when designing for consensus.

• Appreciate and respect the limitations on the representative's authority which has been granted by the group. (Wolfe et al ,1991)

• Demonstrate strong capacities in conflict resolution.

• Use indigenous ways of reaching collective decisions rather than majority rule. (Oreshenko, 1988)

• Avoid polarizing the community. (Werner and Bower, 1982).

• Disperse conflict resolution skills throughout the community.

• Develop a sense of community pride in the wildland and conservation programme. (Dietz, 1988)

• Have group define what constitutes membership. (Gibbs and Bromley, 1989).

• Have group define what constitutes agreement. (Gibbs and Bromley, 1989).

• Have group define on what basis rights apply over time. (Gibbs and Bromley, 1989).

• Have group determine how rights are transmitted between generations. (Gibbs and Bromley, 1989).

• Have group define exactly where control resides. (Gibbs and Bromley, 1989).

• Have group decide how compliance with agreed rules is to be maintained. (Gibbs and Bromley, 1989).

• Have group decide how departures from rules are to be corrected and sanctions imposed. (Gibbs and Bromley, 1989).

• Have group define how disputes are to be settled. (Gibbs and Bromley, 1989).

•Use video to assist groups dispassionately consider the perceptions and opinions of other groups. (Snowden et al. (undated); T. Williamson, Pers. Comm. 1992)

• Include educational programs in a coordinated strategy of research, enforcement, and education, that involves government agencies, NGCO's and local people. (Blanchard, 1991)

• Advance women with a well developed feminine [feminist?] consciousness into positions of leadership to bring their distinctive values and orientations to bear on the issues (Korten, 1990).

* Prepare a management strategy document in draft form for comment by local community members (44)

* Encourage group as a whole to recognize conservation values and skills for the good of the community. (44)

* Cautiously warn of dire consequences from environmental extremists if specific, high profile animals used by people are not seen to be managed responsibly. (292)

* Formally establish a joint management board. (383)

Appendix 2C: Inventory of low control strategies with potential application to wildlife conservation when designing to increase individual human potential.

- Develop facility to rehabilitate injured members of species for education/release. (Dietz, 1988)

- Tell stories rather than give advice. (Werner and Bower, 1982)

- Improve law enforcement activities of conservation guards through training. (Dietz, 1988)

- Collaborate with leadership training initiatives in other projects. (Berger, 1989)

- Test assumptions regarding information flows that "trickle down" (elite to other adults) or "trickle up" (school children to parents). (Röling 1988; Ham and Sutherland, In press)

- Involve teachers in research projects. (Dietz, 1988;Ham and Sutherland, In press)

- Build training programs around several simple sentences that are supportive of traditional practices. (Bunch, 1982)

- Train community members to collect and analyze socioeconomic and conservation data. (Berger, 1989; Jiggins Pers. Comm., 1991)

- Transfer people's concern from personal problems alone to the fundamental causes of justice and inequity. Help people see the broader picture. (Berger, 1989)

- Maintain an open door policy during training. (Werner and Bower, 1982)

- Do not stress practices damaging to conservation , instead demonstrate alternate, conservation oriented practices. (Werner and Bower, 1982; Katzev and Johnson, 1987)

- Adapt design of learning so that it is based on customary ways of learning.

- Use the same methods that you want people to learn. (Werner and Bower, 1982)

- Design learning as a series of planned experiences. (Bunch, 1982)

- Alter student academic evaluation away from memorization of facts to creative teamwork to solve local environmental problems. (Vulliamy, 1988)

- Provide opportunities for continued learning. (Bunch, 1982)

- Enlist the support of other educators and change agents in promoting the environmental conservation message. (Ham and Sutherland, In press)

- Training and responsibilities should be cumulative and dispersed so the loss from dropouts is minimized. (Drucker, 1986)

- Develop skills to appropriately apply knowledge of conservation issues, and how to act on these issues. (Hines et al ,1986/7)

- Increase local peoples' awareness of the practical values of protected areas. (Ham and Sutherland, In press)

- Persuade people that changes are needed by demonstrating their effectiveness. (Dimock, 1981)

- Use educational tactics if achieving the goal depends on changing skills and behaviour. (Dimock, 1981)

- Respected, trustworthy individuals should be identified with training materials (Blanchard, 1991)

- Build a thematic universe: a complex system of interacting themes of a particular place, era, and people which have meaning in everyday life. (Berger, 1989).

- Collect and display images (artistic and photographs) that build appreciation. (Broadhead, 1989)

- Provide positive feedback from many prestigious sources (Bunch, 1982).

- Develop peoples skills to write simply and clearly, to organize ideas, and to say powerfully what they feel.

- Use video to help facilitate communication between less literate people , and to develop their self confidence by seeing themselves. (Michaels,1992; Williamson, Pers Comm. ,1992)

• Use learning experiences which address both affective and cognitive experiences. (Hines et al., 1986/7)

• Develop opportunities for local people to view and learn about species of concern. (Dietz, 1988)

• Release captive-born and translocated wild-born animals on land registered as permanent reserve by landowners and involve them in monitoring. (Dietz, 1988)

• Provide training, particularly to women, in the skills needed for motivation. leadership, entrepreneurship, and decision-making. (Peters, 1986).

• Demonstrate and stress immediate improvements in the peoples 'economic and physical well-being, while stressing sensitivity to their way of life. (Ham and Sutherland, 1992)

•Develop conservationist's understanding of group process and situational leadership. (H. Dimock, Pers. Comm., 1991)

• Schedule training meetings to dovetail into natural resource use calendar of activities. (Bunch, 1982)

* Provide field experiences including hiking and camping to local students of ecology to get them used to the forest. (223)

* Promote international contacts and study opportunities to local students (223)

* Provide conservation guards with job security, training and knowledge. (383)

* Draw youth into programs by benefits and job opportunities. (70)

* Tell farmers specific consequences of data on nature conservation. (3)

* Focus on hands-on training where people teach each other. (367)

* Provide training in dispersed local settings. (182)

* Provide child care to allow women to participate in education and training programs. (182)

* Hire and train local people to explain issues to others. (274)

* Hold on-site talks on company time to counter interruption to work/social time. (374)

* Make after-work workshops oriented to workers fun activities to counter interruptions in social time. (374)

* Produce an environmental magazine for school children and their teachers. (209)

* Sponsor, organize conservation related competitions for students. (151)

* Encourage landowners with recognized skills in natural history to teach fellow land owners. (44)

* Provide one-on-one contact with business interests involved in natural resource harvest. (374)

* Develop youth work camps on a conservation theme. (52)

* Encourage individuals to act as role models and leaders (277)

* Create situations where local people appear as experts and you as the student. (343)

* Train teachers in the use of conservation education training materials and activities. (371)

* Provide educational and research facilities to students of schools, colleges, and universities. (339)

* Provide a library with easy access, and donate conservation books to existing libraries. (305)

Appendix 2D: Inventory of low control strategies with potential application to wildlife conservation when designing for institutional strengthening.

- Build the capacity of local organizations to exercise authority by giving them authority, even if they are not quite ready for it. (Korten, F., 1986)

- Support rights to resources being owned by the scheme, and managed by the community. (Deshpande et al., 1986)

- Build alliances with other peoples' movements that deal with related concerns. (Korten, 1990)

- Develop capacity of local institutions to demand government services. (Röling, 1988)

- Start small and build on successes. (Uphoff, 1986)

- Challenge people not government. (Berger, 1989)

- Develop awareness of women's' work and socioeconomic status. (Jiggins and Chambers 1984; Peters 1986)

- Develop broadly based leadership.

- Implement the project only after it has been formally accepted by a local association.

- Select workers who have already proven themselves willing to work voluntarily for the good of the community. (Bunch, 1982)

- Create strong user groups

- Develop leadership skills

- Develop facilitation skills.

- Provide opportunities for people to work together, for mutual support. (Bunch, 1982)

- Train people to participate constructively. (Bunch, 1982)

- Develop skills to locate and use information.

- Contract / support students/ academics/ specialists from region to do research related to conservation project. (P. Martin, Pers Comm., 1991)

- Develop efficient office environment in local organizations. (J. Jiggins, Pers. Comm., 1991)

- Get group t openly discuss criteria to select group representative. (Uphoff, 1986)

- Design credit systems so that they can be turned over to a more permanent organization: always charge credit and administrative fees. (Bunch, 1982)

- Promote community tree nurseries (Berger, 1989), but delay planting until cooperators are numerous and the program is running smoothly. (Bunch, 1982).

- Delay providing organization with funds until their financial administrative skills are developed. (Korten, 1990)

- Provide assistance to group schemes (Deshpande et al., 1986)

- Implement the project only after it has been formally accepted by a local organization. (A. Hackman, Pers. Comm., 1991)

- Exhaust all possibilities before forming a new institution. (Bunch, 1982)

- Develop broadly based leadership, rather than concentrate leadership in a few individuals. (BRAC, 1986)

- Encourage a rich diversity of voluntary organizations. (Korten, 1990)

- Adapt traditional systems rather than create new ones. (Odell, 1986)

- Charismatic leaders are fine for the "crusading phase" but ensure good organizers are available to assume leadership as the movement passes into a managerial stage. (Kotler, 1982)

- Assign simple, single, different tasks to each cooperator to minimize loss from dropouts. (Drucker, 1986)

- Award contracts to community organizations to allow them to subcontract and oversee work of importance to them. (Calavan, 1986)

- Encourage local institutions to supply needed services if it will not overload their administrative capacity. (Bunch, 1982)

- Engage in a steady, continuous effort to build trust, cooperation and sharing between programs active in a region. (Berger, 1989)

- Gradually transfer leadership from the project team to the community. (Berger 1989)

- Do not subsidize program inputs as this makes it impossible to turn over to a local organization. (Bunch, 1982)

- Build the capacity of local organizations to sustain programs by providing funding, technical expertise, networking, advice and morale boosting. (Blanchard, 1991)

- To the largest extent possible, implement programs through an association of beneficiaries. (Korten, 1986)

- Train community conservation leaders as social activists as well as technically competent leaders. (Berger, 1989)

* Develop cooperatives and negotiate the conditions of resource use. (384)

* Transfer responsibility for part of the project to local groups, particularly aspects they are most concerned about. (286)

* Attend local council meetings to increase awareness of importance and status of project. (286)

* Provide financial and human resources training and assistance in planning to local resource management councils. (26)

* Hold open public meetings prior to implementing project organizational structures. (73)

* Emphasize institution building role of project to local government institutions associated with project implementation and continuity. (345)

* Allow for effective involvement of community (bu way of their selection of participants) in all aspects of the development of the plan. (345)

* Do not challenge the community's authority-integrate program into their agenda and process.(256)

Appendix 2E: Inventory of low control strategies with potential application to wildlife conservation when designing for system change.

- Determine if the desired goal is determined by the behaviour and skills of the people, or if it is chiefly determined by the normal way that things are done by the group. If the former, an educational intervention is called for, in the latter a systems intervention is needed. (Dimock, 1981)

- Develop the power and support to carry out necessary interventions (low control?) (Dimock, 1981)

- Develop community capacity to monitor practices damaging to conservation effort. (Werner and Bower, 1982)

- Build public awareness of the need and potential to transform critical institutions. (Korten, 1990)

- Present the future implications of current actions in a shocking or dramatic way.

- Advance women with a well developed feminist consciousness into positions of leadership.(Korten, 1990-note he used "feminine")

- Focus on changing norms and values rather than individuals. (Dimock, 1981)

- Promote 1 or 2 innovations or changes only and wait until a critical mass to achieve a new consensus has been reached (25-44%) before introducing new changes. (Bunch, 1982)

- Support measures to increase local human survival and curb local population growth.

- Select conservation actions that decrease female workloads to make available this source of support for family and community renewal (Peters, 1986)

- Legitimize customary rules and conventions for managing resources. (Berkes and Farvar, 1989)

- Integrate conservation extension programming with literacy, development, health, and agricultural extension programming. (Berger, 1989)

- Build coalitions wherever possible. (Broadhead, 1989)

- Increase rewards for people collaborating with program. (H. Dimock, Pers. Comm., 1992)

- Identify and eliminate economic disincentives to conserve through persuasive education at the national policy and political level (McNeely 1989; McNeely and Dobias, 1991)

- Document linkage between extension/ conservation action/ community development.

- Build enthusiasm by planning early recognizable successes. (Bunch, 1982)

- Anticipate strong reactions to marketing schemes from already established businesses. (Bunch, 1982)

- Counter negative perceptions of tourists seeing natural area protection that includes sustainable resource use. (Ham and Sutherland, In press)

- Include government personnel as participants/observers in the process of public dialog, facilitation, and teamwork related to conservation project. (Berger, 1989)

- Support community control over its local environment.

- Emphasize strategies to to reduce the strength of forces acting against change . (Dimock, 1981)

- Promote the movement of people (peers) and ideas between similar communities facing related ecodevelopment challenges. (J. Jiggins, Pers. Comm. 1991)

- Establish a group norm which legitimizes subsequent peer pressure to reinforce each other's conservation behaviour. (Katzev and Johnson, 1987)

- Develop interorganizational communication and trust to facilitate synergy, and prevent conflict over roles between organizations. (J. Matowanyika, Pers. Comm., 1991)

- Involve catalyst organizations who have a sustained commitment to support organizational and policy change at the regional and national level. (Korten, 1990)

- Establish new norms through information and education activities. (Oreshenko, 1988)

- Improve the feedback system: collect and quickly disseminate information about project status. (Dimock, 1981)

- Use make-believe acting on stage in home-made, open-ended village theatre that explores

possibilities for action and change. (Werner and Bower, 1982)

* Change nature conservationists opinions about how to achieve change by tearing down misperceptions. (3)

• Set up a process which reviews alternate futures for communities that are sustainable and conserve and benefit from local wildlife conservation.

• Determine the stimulus elements which distinguish a 'crisis' from 'no crisis', and use these elements to help communities become motivated to change. (Marshall and Oskamp, 1985/6)

* Communicate to, and get acceptance from, other scientists for important results. (286)

* Force government officials to recognize problems and values at risk. (302)

* Hold symposia, conferences. (303)

* Improve security of land tenure to locals. (204)

* Research 'green' tourists who visit area to learn about their needs and values and expenditures. Promote 'green' tourism. (105)

* Develop community support for hunters' self control. (256)

* Invite local leaders and officials to seminars and show them erosion, etc., and encourage them to join conservation organizations. (205)

* Counter loss of income from illegal activities which are common practices by providing early demonstrations of benefits to encourage a belief in anticipated long term benefits. (73)

* Present well thought out community proposals to government departments with resource responsibilities. (263)

*Develop opportunities for commercial harvest. (260)

* Encourage use of revenue to community from wildlife utilization schemes to develop educational facilities and clinics. (79)

* Emphasize hands-on programs with practical projects such as soil reclamation, water conservation, and litter. (79)

* Make it easy for people to conserve by helping them easily identify conservation opportunities and needs. (358)

* Show to local governments increases in income to the community that result from changes to more conserving practices. (352)

* Break down perception that government authority owns wildlife. (70)

* Provide phased and generously financed resettlement and new residences during transition. (384)

* Create demonstration projects that are self supporting, provide financial assets to local people from conservation and sustainable harvesting. (339)

Appendix 2F: Inventory of low control strategies with potential application to wildlife conservation when designing to accommodate uncertainty, innovation, and learning

- Allow the community to generate potential solutions.

- Have people look at their situation from a different , more abstract perspective through a 'problem posing ' illustrative form such as a picture, or play. (Freire 1970; Berger 1989)

- Promote the value of ecological knowledge that exists within the community. (Werner and Bower, 1982)

- Anticipate and research age/ sex/ social class differences in conservation knowledge and behaviours. (Berger, 1989)

- Emphasize practical income-generating activities that utilize all natural resources. (Hunter et al., 1990)

- Collect some information on previous interventions with the group to predict group response to different interventions. (Dimock, 1981)

- Research traditional common-pool faunal resource management systems in this and similar areas. (Berkes and Farvar, 1989)

- Emphasize conservation of biodiversity not particular species. (McNeely, 1988)

- Identify income to communities from conservation measures.

- Recognize habits and traditions that are conserving. (Berger, 1989)

- Know the area well by using a variety of approaches and sources of information. (Bunch, 1982)

- Identify economic values for species.

- Prioritize work in a community where the conservation concerns are most apparent or demonstrable.

- Understand the social system in the village, particularly if you anticipate extensive corruption. (BRAC,1986)

- Help the group determine alternate, sustainable futures that conserve and benefit from wildlife/ protected areas.

- Get people to help plan and thereby identify with programs. (Bunch, 1982)

- Diagnose conservation problems by looking at the knowledge system, not just the ecological system. (Röling and Seegers, 1991)

- Consider the impact that every aspect of the program will have on the achievement of the broader goals of human necessities. (Bunch, 1982)

- Research the psychological, economic, political and cultural forces that support and reinforce environmentally destructive behaviours. (Kotler, 1982; Wood and Wood, 1990))

- Establish groups who consider the implications of future trends on the community system. (Röling and Seegers, 1991)

- Support experimenting users' groups. (Röling and Seegers, 1991)

- Allow people to explore the outcomes of different patterns of resource use via simulations (Holling, 1978; P. Bunnell, Pers. Comm., 1984)

- Facilitate ongoing discussion of conservation practices between similar people living in different areas, to share experiences and innovations.

- Involve children's innate curiosity by having them collect data, as a game. (Drucker, 1986)

- Develop techniques to increase the efficiency of utilization and decrease the frequency of use of resources as well as curtailing consumption. (Katzev and Johnson, 1987)

- Implement a few select activities rather than getting bogged down in the politics of all at once comprehensive plans . (Marshall and Oskamp, 1985/6)

- Withdraw experimental conditions gradually, in an intermittent fashion to enhance maintenance of newly learned behaviours. (Katzev and Johnson, 1987)

• When in doubt, act, do something, and learn, rather than delay, predict, and study. (Uphoff, 1986)

• Put the program into operation on an experimental basis.

• Select, to go on field trips or peer exchanges, those who have helped others the most. (Bunch, 1982)

• Write reports regularly to collect and reflect on relevant data. (Berger, 1989)

• Welcome, and act on, criticism (Werner and Bower, 1982)

• Measure conservation knowledge and attitudes as start of project. (Dietz, 1988; Jacobson, 1987)

• Document all spin-off benefits, even those outside conservation and anticipated community development.

• Involve landowners in monitoring animals released on land they have registered or committed as permanent reserve. (Dietz, 1988)

• Establish measurable behavioural change objectives at the start of the program. (Dietz, 1988)

• Work to broaden the choices of methods and techniques to solve problems. Do not focus on proven solutions. (Ham and Sutherland, In press)

• Select design strategies that compare the relative impact of 2 or 3 strategies within a program , and several levels of a particular strategy . (Katzev and Johnson, 1987)

• Include all stakeholders in identifying criteria to measure program success, and in frequent and periodic evaluations of these criteria. (Bryson, 1988; Patton, 1986)

• Closely supervise trials early in the project. (Bunch,1982)

• Develop and promote technologies to control wildlife's destructive tendencies. (Berger, 1982)

• Teach adults, to avoid the conflict that can arise when youth receive training but the older men and women retain the power. (Bunch, 1982)

• Concentrate training on those who are accustomed to hard work and who have experienced first hand the suffering caused by poor resource management. (Bunch, 1982)

• Train to increase a person's repertoire of potential conservation behaviours.

• Extend people's cognitive structures on which a person may base a specific behaviour.

• Obtain credible scientific evidence and supporters to document conservation concern (Broadhead, 1989)

• Train people to conduct and monitor small scale experimental trials (Bunch,1982; Röling, 1988)

• Train individuals in technical conservation activities and issues. (Berger, 1989)

• Encourage people to identify and discuss their mistakes. (Uphoff, 1986)

* Develop solutions at the local level without linkage to authorities. (12)

* Attract (endangered) wildlife to farmers' lands so they can experience animal and gain a sense of proprietary concern. (12)

• Have group developing management plan include long term planning for community interests.

* Establish an animal rescue and rehabilitation center and information network [marine birds and mammals]. (58)

* Encourage input to solutions from resource workers at workshops of small groups that recognize the limited formal education of many participants. (374)

* Measuring processes should be innovative, but not necessarily based on standard elements. (256)

* Anticipate and counter scientist's opposition to new directions in preserving ecosystems. (3)

* Counter costs to local people arising from changes in the environment by giving them the best quality information about the change. (3)

Appendix 2G: Inventory of low control strategies with potential application to wildlife conservation when designing for equity.

- Advertise conservation training opportunities throughout community. (Berger, 1989)

- Distribute conservation benefits equitably- per family or in proportion to work. (Deshpande et al., 1986)

- Do not promote the availability of financial subsidies. (Bunch, 1986)

- Put the people most influenced by non-conserving behaviours (eg children) in charge of monitoring. (Drucker, 1986)

- Involve local women in conservation fieldwork; Involve women in every aspect of the project; (Peters, 1986)

- Do not use contests or competitions to motivate people as they damage 'groupness'. (Bunch, 1982)

- Use competitions between groups to promote the development pf conserving group norms. (Katzev and Johnson, 1987)

- Select 2 or 3 leaders from each community rather than just one (Bunch, 1982; BRAC, 1986)

- Disperse training across gender, age groups, social classes, occupations.

- Require partial or full payment, rather than fully subsidize training opportunities, because people value what they pay for. (Bunch, 1982)

- Demonstrate immediate improvements in the economic and physical well -being to people living adjacent to protected areas. (Ham and Sutherland , In press)

- Direct romantic and patriotic appeals to sustainable development. (Ham and Sutherland, In press)

- To the degree that women are making decisions about resource use or are doing the work, training should be directed toward and eventually run by women. (Bunch, 1982)

- Identify the main conflicts of interest within the community. (Werner and Bower, 1982)

- Ensure that marginalized members of the community are involved in project. (J. Jiggins, Pers. comm.,1991)

- Promote community involvement in nature tourism.

- Assume that local businesses are as efficient as possible and work with them. (Bunch, 1982)

- Do not subsidize program inputs. (Bunch, 1982)

- Design project to raise net family income by 50-150%. (Bunch, 1982)

- Invite military to visit protected areas and support conservation cause. (Ham and Sutherland, In press)

- Minimize sudden dramatic increases in the income of cooperators. (Bunch, 1982)

- Create informal constructive relationships with local leaders.

- Provide steady and secure funding of participants in co-management regimes to assure continued partnership. (Oreshenko, 1988)

- Employ one half-time paid worker per 3-4 unpaid project workers. (Bunch, 1982)

- Get all people to participate in the program's work so they sense a feeling of accomplishment. (Bunch, 1982)

- Increase power holders' knowledge of their power and responsibility regarding resource stewardship. (Korten, 1990)

- Look critically at local leadership.(Werner and Bower, 1982)

- Offer credit only if it is absolutely necessary. (Bunch, 1982)

- Motivate people through results, not promises. (Bunch, 1982)

- Encourage leaders respected for honesty, integrity, and sense of judgement to assert their leadership. (Ali, 1986)

- Design dual leadership into programs that includes symbolic governance under traditional

leadership and actual governance under group leadership. (Russell, 1986)

• Hire part time so that local employees retain their identity as [farmers], and do not become dependent on project. (Bunch, 1982)

• Make it as easy and convenient as possible for people to carry out conservation action by ensuring supplies, equipment, labour -saving machinery are available when needed. (Kotler, 1982)

• Explore, in an open fashion, the differences strengths and weaknesses of the science based perceptions of truth and the perceptions of truth of local people. (Wolfe et al 1991; Freeman, 1989b)

• Emphasize people's responsibility to the community (Berkes and Farvar, 1989)

• Counter feelings of exclusion from protected areas felt by local people (Ham and Sutherland, In press)

• Prepare contingency plans to buffer peoples' risk during transition to new ecodevelopment . (R. Moccia, Pers. Comm., 1992)

• Develop peoples' understanding that their actions, as individuals, can have an impact.(Hines et al., 1986/7)

* Counter loss of immediate economic benefits with alternate programs. (363)

* Encourage increased resource use in underutilized areas. (33)

* Make it difficult for one person to assume a dominant role, which may be used to his personal benefit. (BRAC, 1986)

* Balance water needs of park with irrigation needs of local people. (91)

* Have a co-management body sponsor travel and living expenses for local people participating in program. (345)

* Counter high expectations that will lead to disappointment.

* Provide equipment to counter wear and tear on cooperators' equipment. (342)

* Assist local farmers in organizing a community group to apply for the funding to implement the program as a way to counter costs to locals.

* Obtain funding and organize volunteers to counter time and materials required for conservation by landowners.

* Increase awareness of funding programs. (358)

* Ensure that people have continued access to resources but on a managed basis.

* Do not worry about costs to middle class, urban industrialists due to environmental restrictions. (39)

• Select strategies which result in a decrease in women's workloads in lesser developed countries. (Peters, 1986).

* Take women on guided tours of protected areas. (92)

Appendix 2H: Inventory of low control strategies with potential application to wildlife conservation when designing for spiritual and cultural maintenance.

• Implement simple, labour intensive, soil conservation measures where soil depletion and erosion are problems, to demonstrate conservation principles, and recover once-lost conservation and cultural practices. (Bunch, 1982)

• Involve local, respected religious leaders in the design and implementation of the conservation program.

• Stir peoples' religious imagination by having them sit alone in the wild areas in question. (Broadhead, 1989)

• Explore the potential of sacred areas and life forms in conservation. (Agarwal and Narain, 1989)

• Cultivate qualities that are noble in the local culture [eg Buddhist]: 1. Loving kindness towards all living beings,2. Compassionate actions that help those in need, 3. learning to bring dispassionate joy when bringing happiness to others who are in need, and 4. Developing a mental capacity to accept both loss and gain, fame and blame with equanimity. (Ariyaratne 1986; Dissanayake, 1984)

• Do not develop strategies in isolation from the area's history; draw comparisons to resource use practices during periods in the area's history where resource use was sustainable (Dissanayake, 1984)

• Build conservation program on traditional values, and philosophies of communication. (Dissanayake, 1984)

• Reinforce and encourage traditional communication forms such as song, folk drama, and story telling. (Peters, 1986)

• Adopt rather than replace traditional systems. (Odell, 1986)

• Identify elders in village respected for their honesty, integrity, and sense of judgement, and impartiality, and encourage them to assert conservation leadership. Ali, 1986)

• Mobilize children to undertake all kinds of conservation tasks, including surveillance. (Drucker, 1986)

• Build a strong linkage between the co-management regime and the community to meld the indigenous system into the regime. (Oreshenko, 1988)

* Counter loss of wildlife as meat resource by direct benefits such as tourist levies, craft markets, and meat cropping schemes, and provide job opportunities. (70)

* Negotiate agreements to locations and modalities of access to resources of cultural and spiritual significance. (384)

* Restore natural water supplies to communities. (20)

* Have group discuss activity and drama relating to conservation needs in the context of religion. (151)

* Build conservation program around fulfilling the interests of local population and if these initial needs can be met, more sophisticated goals can be attempted as people get more interested and involved. (91)

* Select a local person to be project leader. (105)

* Do not rush, focus on listening and documenting at first, respect other cultural values. (256)

* Develop a cultural training program to counter decreased possibility of transfer of traditional knowledge and skills. (256)

* Promote exchange of natural foods with other areas to counter loss of or decreased access to a food item. (256)

* Use innovative channels for communication that are relevant to local communities such as religious and cultural institutions. (115)

* Highlight to religious institutions the direct relationship of the environment and religions. (115)

* Counter perception of changes being at variance with accepted traditional norms by encouraging local people and institutions to accept project as a tool for the process of change for the better. (73)

* Hold personal discussions with traditional local leaders. (73)

* Counter the costs to local people of planting and protecting tree plantations by making them communal (churches, cooperatives, schools). (209)

* Conduct many interviews with local people and show obvious respect for their knowledge. (263)

* Keep control within community in the hands of the most committed users to counter watering down of traditions. (258)

* Broaden volunteer base to share workload. (258)

* Provide viable, acceptable alternatives to counter the loss of control people feel over their daily actions. (343)

Appendix 2I: Inventory of low control strategies with potential application to wildlife conservation when designing for advocacy.

- Speak passionately about the conservation cause. (Fleishner, 1990)

- Link charismatic sports or entertainment celebrities with conservation ideologies. (Ham and Sutherland, In press)

- Create critical mass of people concerned about conservation issue. (Broadhead, 1989)

- Be persuasive, build support for conservation. (Wood and Wood, 1990)

- Publicly credit opponents when they support conservation. (May, 1989)

- Design interpretive programs as a strategic element of a national EE program. (Ham and Sutherland, 1992)

- Determine if a high profile animal, logo, or slogan can serve as a project symbol. (Dietz, 1988)

- Find innovative ways to help politicians save face while supporting conservation. (May, 1989)

- Plot the election of new representatives who would support conservation program goals. (H. Dimock, Pers. Comm., 1991)

- Establish a new power elite who support program goals. (H. Dimock, Pers. Comm., 1991)

- Keep conservation advocacy non-partisan, despite the temptations (A. Hackman, Pers. Comm.,1991)

- Hang on and wait for the miracle-if you give in the miracle will never come. (May, 1989)

- Constantly expand personal and group networks. (May, 1989)

- Obtain strong visible support from local political leaders. (Marshall and Oskamp, 1985/6)

- Motivate people through results, not promises. (Bunch, 1982)

- Document effectiveness of collaborative and educational approaches to conservation to support the more frequent use of these strategies. (Jacobson, 1991)

- Train community conservation leaders as activists as social activists a well as technically competent teachers. (Berger, 1989)

- Develop support for conservation program from influentials within community. (Rogers, 1971)

- Provide inservice training in conservation extension techniques, and experiential learning opportunities to agency personnel (Berger, 1989)

- Develop a communication channel and appropriate administrative structures to have actions taken at the policy and administrative level that are often necessary to resolve local conservation problems. (Berger, 1989)

- Coalesce and energize self managing networks through the power of well articulated ideas, values, and communication links. (Korten, 1990)

- Build alliances with other "people's movements" that deal with related problems. (Korten, 1990)

- Promote a diverse array of non-formal environmental education activities. (Ham and Sutherland, 1992)

- Design interpretive programs in protected areas as a strategic element of a national environmental education program. (Ham and Sutherland, 1992)

- Direct sustainable development messages to middle and upper class nationals who are tourists to their parks, in developing countries. (Ham and Sutherland, 1992)

- Include social incentives which increase the benefits to participants(eg public recognition, plaques, visits by dignitaries,) (Renard, 1991)

- Distribute a coffee table book of images of the landscape for those people who you cant take to the area. (Broadhead, 1989)

- Develop conservation projects as a community resource in an educational, economic and social sense. (Dietz, 1988)

- Develop criteria which will be used to decide when to expand the program to other communities (eg, will start when 20 people sign up). (Bunch, 1982)

* Work through local users' organizations to reach target groups. (277)

APPENDIX 3

COVERING LETTER AND QUESTIONNAIRE

APPENDIX 4

SELECTED STATISTICS DESCRIBING THE USE AND EFFECTIVENESS OF 74 STRATEGIES BY 114 WILDLIFE CONSERVATIONISTS

Appendix 4. Selected statistics describing the use and effectiveness of 74 strategies as perceived by 114 conservationists in 39 different countries in a specific project in which they were involved. Listed in order of declining average effectiveness.

Survey no.	Strategy	% Use	% Not effective	% Quite and very effective	% Very effective	Mean
A4	Developed close personal relationships with local people	93.9	0.9	80.7	53.3	4.36
A23	Included program activities that addressed local peoples' needs	86.7	0	78.6	37.8	4.14
A10	Lived in the community before starting to design the project	56.6	1.6	78.1	57.8	4.31
A12	Determined patterns in women's work and socioeconomic status	28.1	6.3	78.0	21.9	3.59
A64	Implemented the project only after it had been approved by a local association	66.4	6.7	77.4	46.7	4.05
A34	Involved children in conservation activities	69.0	0	76.9	42.3	4.18
A46	Stated program objectives in terms of benefits to be reaped by local people	71.7	2.5	74.0	40.7	4.07
A5	Supported local film/video production on conservation issues	49.1	3.6	73.2	39.3	4.00
A11	Determined age/sex/social class differences in conservation knowledge and attitudes	39.4	2.2	71.9	28.9	3.80
A68	Invested in conservation experiments undertaken by groups in the community	37.2	9.5	71.4	26.2	3.88
A67	Supported community control over its local environment	83.3	3.2	70.5	31.6	3.92
A6	Used high profile animal, logo, or slogan as a symbol of the conservation project	57.9	6.1	70.2	48.5	4.21

Survey no.	Strategy	% Use	% Not effective	% Quite and very effective	% Very effective	Mean
A28	Supported leadership training initiatives	40.7	2.2	69.6	37.0	4.00
A27	Had people look at their situation from a different, more abstract,perspective, through 'problem posing' illustrative forms such as plays or pictures	37.1	7.1	69.1	38.1	3.88
A65	Obtained voluntary conservation commitments	73.7	7.1	69.0	36.9	3.87
A59	Involved women in every aspect of program	56.6	7.8	68.8	37.5	3.88
A1	Used local people's conservation language, analogies, and metaphors	78.8	2.2	68.6	37.1	3.99
A21	Integrated conservation programs with agricultural, health,literacy, or community development programs	64.0	1.4	68.5	38.4	3.97
A40	Encouraged elders respected for honesty, integrity, and sense of judgement to assert their leadership	60.5	4.3	68.1	43.5	3.96
A54	Directed program from position as expert	69.6	7.7	68.0	24.4	3.73
A69	Built alliances with other people's movements that dealt with related elements of the conservation problem	66.4	2.7	68.0	29.3	3.85
A22	Designed recognizable successes early in the program	67.2	1.4	67.6	25.7	3.85
A3	Involved teachers in conservation project	69.0	0	67.0	37.2	3.96
A53	Increased people's understanding of the practical values of protected areas	85.0	1.0	66.7	37.5	3.93
A2	Returned study results to local people within days or weeks	54.3	1.6	66.2	32.3	3.84
A60	Delayed design until local people were ready to make their needs known	43.9	8.0	66.0	24.0	3.52

Survey no.	Strategy	% Use	% Not effective	% Quite and very effective	% Very effective	Mean
A33	Illustrated practices damaging to conservation	77.8	6.8	64.8	31.8	3.76
A30	Demonstrated improvements in the economic and physical well-being of people due to conservation	72.6	6.1	64.6	31.7	3.76
A13	Had local people generate potential solutions	87.7	3.0	64.0	34.0	3.87
A37	Developed broadly based leadership	54.4	1.6	63.9	26.2	3.82
A47	Emphasized practical income-generating activities that utilized all renewable resources	50.9	0	63.8	29.3	3.83
A15	Explained research plans and possible implications with local people before research	76.3	3.4	63.2	32.2	3.79
A26	Advertised training opportunities	44.1	2.0	63.2	26.5	3.78
A8	Facilitated discussion of conservation practices between people living in different areas	61.9	0	62.9	30.0	3.80
A58	Provided resource users with decision making roles	56.6	6.3	62.5	29.7	3.73
A55	Gave local organizations authority for aspects of the conservation project, even if they were not quite ready for it	78.9	4.4	62.3	25.6	3.68
A18	Designed program as it evolved	78.9	2.2	62.2	24.4	3.74
A51	Identified income to communities from conservation measures	55.3	1.6	61.9	31.7	3.87
A72	Documented all spin-off benefits, even those outside conservation goals	48.2	9.1	61.8	27.3	3.64
A9	Identified economic values for species	61.9	4.3	61.5	32.9	3.74

Survey no.	Strategy	% Use	% Not effective	% Quite and very effective	% Very effective	Mean
A50	Developed local capacity to monitor practices damaging to conservation effort	58.8	4.5	61.2	26.9	3.67
A52	Awarded contracts to community organizations	36.0	2.4	61.0	22.0	3.63
A17	Evaluated probable impact of project on the achievement of basic human necessities	70.2	1.2	60.0	27.5	3.83
A73	Had people from all segments of the community social structure participate in the program	39.8	5.3	59.2	30.3	3.68
A48	Provide positive feedback from many, including prestigious, sources	57.9	1.5	59.1	31.8	3.82
A49	Involved community in nature tourism	61.4	2.9	58.6	30.0	3.77
A61	Improved law enforcement activities of conservation guards through training	36.6	4.9	58.6	22.0	3.61
A29	Presented the future implications of current land-use practicves in a shocking or dramatic way	58.0	3.1	58.4	21.6	3.59
A32	Had people explore possibilities for action and change through make-believe acting on stage	25.2	3.6	57.1	21.4	3.64
A42	Involved religious leaders in conservation effort	38.6	2.3	56.8	25.0	3.66
A25	Restricted cooperators to part-time employment with project	33.3	5.4	56.7	21.6	3.73
A70	Increased powerholders' knowledge of their responsibility regarding resource stewardship	74.6	2.4	56.5	20.0	3.55
A44	Used traditional methods to reach collective decisions	64.6	2.7	56.2	31.5	3.74
A66	Had community select preferred options	58.4	4.5	56.1	27.3	3.67

Survey no.	Strategy	% Use	% Not effective	% Quite and very effective	% Very effective	Mean
A16	Evaluated previous efforts at changing practices in the target group in other disciplines	40.1	8.9	55.6	20.0	3.44
A62	Minimized apparent 'outside' control over project	67.9	1.3	55.2	26.3	3.63
A43	Determined traditional common-pool resource management systems in this and similar areas	37.5	7.1	54.7	33.3	3.67
A35	Explored with people the probable outcomes of different patterns of land or resource use	68.8	3.9	54.6	19.5	3.56
A14	Determined patterns in the flow of conservation information and sources of knowledge	63.1	4.2	54.2	25.0	3.64
A45	Distributed conservation benefits per family or in proportion to work	23.0	3.8	53.8	19.2	3.50
A56	Developed capacity of local organizations to demand government services	61.6	7.2	52.2	14.5	3.42
A31	Used romantic and patriotic appeals to sustainable development	41.6	10.6	51.1	14.9	3.28
A74	Established measurable behavioural change objectives at start of the program	39.4	4.9	50.0	18.3	3.41
A71	Found innovative ways for politicians to 'save face' while supporting conservation measures	40.4	6.5	47.9	10.9	3.35
A38	Had group openly discuss criteria to select group representative	43.0	2.0	47.0	32.7	3.59
A24	Reduced economic disincentives to conserve	39.8	6.7	46.7	20.0	3.40
A57	Trained community members to collect and look for patterns in conservation information	50.9	6.9	46.6	19.0	3.45

Survey no.	Strategy	% Use	% Not effective	% Quite and very effective	% Very effective	Mean
A19	Planned for all possible contingencies in advance to the greatest extent possible	68.4	7.9	46.5	19.7	3.47
A63	Established a new power elite who supported program goals	37.2	14.3	45.2	11.9	3.17
A7	Used media advertisements that modeled desired conservation behaviour	33.6	5.3	44.7	18.4	3.34
A36	Altered student evaluation to accommodate team projects to solve environmental problems	20.5	0	43.4	21.7	3.52
A20	Selected strategies that decreased workloads of local women	12.2	0	42.9	29.6	3.50
A41	Had dual leadership with symbolic traditional governance and actual governance under group leadership	30.7	8.6	42.9	22.9	3.37
A39	Publicly supported opponents when they supported conservation	33.3	10.5	42.1	18.4	3.21

APPENDIX 5

AVERAGE EFFECTIVENESS OF 74 STRATEGIES IN SIX CONSERVATION PROGRAM GROUPS

Appendix 5. Average effectiveness of each strategy within six conservation program groups.

Survey no.	Strategy	Minor barriers	Motiv. barriers	Local & commun barriers	Knowl. barriers	Mod. wide-spread barriers	Serious wide-spread barriers
A1	Used local people's conservation language, analogies, and metaphors	3.83	4.00	3.86	5.00	3.97	4.27
A2	Returned study results to local people within days or weeks	4.17	3.33	3.55	4.67	3.64	4.25
A3	Involved teachers in conservation project	3.50	4.25	4.11	3.75	3.67	4.58
A4	Developed close personal relationships with local people	4.40	4.40	4.38	4.00	4.43	4.41
A5	Supported local film/video production on conservation issues	3.00	3.25	4.36	2.67	4.40	3.82
A6	Used high profile animal, logo, or slogan as a symbol of the conservation project	4.25	4.33	4.15	3.33	4.17	4.90
A7	Used media advertisements that modeled desired conservation behaviour	-----	------	3.44	3.50	3.08	3.56
A8	Facilitated discussion of conservation practices between people living in different areas	3.17	4.00	3.88	3.75	4.04	3.50
A9	Identified economic values for species	4.50	4.50	3.81	4.00	3.70	3.44
A10	Lived in the community before starting to design the project	4.75	3.80	4.63	5.00	4.00	5.00
A11	Determined age/sex/social class differences in conservation knowledge and attitudes	4.50	3.50	3.71	-----	3.85	3.78
A12	Determined patterns in women's work and socioeconomic status	3.00	3.50	4.14	3.00	3.75	3.17

Survey no.	Strategy	Minor barriers	Motiv. barriers	Local & commun barriers	Knowl. barriers	Mod. wide-spread barriers	Serious wide-spread barriers
A13	Had local people generate potential solutions	3.57	4.25	3.88	4.50	3.97	3.67
A14	Determined patterns in the flow of conservation information and sources of knowledge	4.00	3.50	3.50	3.25	3.68	3.80
A15	Explained research plans and possible implications with local people before research	4.17	3.50	3.71	4.75	3.75	3.67
A16	Evaluated previous efforts at changing practices in the target group in other disciplines	1.00	3.67	3.50	4.00	3.36	3.44
A17	Evaluated probable impact of project on the achievement of basic human necessities	4.00	3.25	4.28	4.00	3.57	3.67
A18	Designed program as it evolved	4.00	3.33	3.90	3.25	3.55	3.93
A19	Planned for all possible contingencies in advance to the greatest extent possible	4.60	3.75	3.65	3.25	3.22	3.23
A20	Selected strategies that decreased female workloads	----	----	4.00	3.00	3.60	3.25
A21	Integrated conservation programs with agricultural, health,literacy, or community development programs	4.00	4.33	3.94	4.00	3.80	4.15
A22	Designed recognizable successes early in the program	3.80	4.00	3.94	3.00	3.71	4.15
A23	Included program activities that addressed local peoples' needs	4.57	4.40	4.12	5.00	3.90	4.27
A24	Reduced economic disincentives to conserve	3.25	5.00	3.50	2.50	3.47	3.27
A25	Restricted cooperators to part-time employment with project	3.67	3.33	4.10	3.50	3.73	3.60

Survey no.	Strategy	Minor barriers	Motiv. barriers	Local & commun barriers	Knowl. barriers	Mod. wide-spread barriers	Serious wide-spread barriers
A26	Advertised training opportunities	4.50	4.00	3.75	4.00	3.74	3.50
A27	Had people look at their situation from a different, more abstract,perspective, through 'problem posing' illustrative forms such as plays or pictures	5.00	4.00	3.89	5.00	3.69	3.50
A28	Supported leadership training initiatives	4.33	4.50	3.92	5.00	3.93	3.56
A29	Presented the future implications of current land-use practices in a shocking or dramatic way	4.50	4.00	3.67	3.50	3.57	3.20
A30	Demonstrated improvements in the economic and physical well-being of people due to conservation	3.67	3.50	4.00	3.25	3.61	3.54
A31	Used romantic and patriotic appeals to sustainable development	3.00	3.50	3.00	3.00	3.58	3.17
A32	Had people explore possibilities for action and change through make-believe acting on stage	4.00	4.50	3.00	4.00	3.75	3.50
A33	Illustrated practices damaging to conservation	3.00	3.60	3.83	3.50	3.73	3.62
A34	Involved children in conservation activities	4.00	4.75	4.37	4.50	3.86	4.23
A35	Explored with people the probable outcomes of different patterns of land or resource use	3.20	3.33	3.57	3.50	3.71	3.33
A36	Altered student evaluation to accommodate team projects to solve environmental problems	3.50	---	3.75	4.00	3.43	3.50
A37	Developed broadly based leadership	4.00	4.00	4.00	3.75	3.85	3.50

Survey no.	Strategy	Minor barriers	Motiv. barriers	Local & commun barriers	Knowl. barriers	Mod. wide-spread barriers	Serious wide-spread barriers
A38	Had group openly discuss criteria to select group representative	3.60	4.00	3.29	4.33	3.60	3.36
A39	Publicly supported opponents when they supported conservation	3.50	4.00	3.00	1.00	2.93	3.50
A40	Encouraged elders respected for honesty, integrity, and sense of judgement to assert their leadership	4.00	4.25	4.00	4.33	4.09	3.33
A41	Had dual leadership with symbolic traditional governance and actual governance under group leadership	4.25	2.50	3.50	3.00	3.30	2.67
A42	Involved religious leaders in conservation effort	-----	4.67	3.90	5.00	3.00	3.73
A43	Determined traditional common-pool resource management systems in this and similar areas	2.67	3.00	4.00	3.00	4.08	2.60
A44	Used traditional methods to reach collective decisions	4.00	4.75	4.19	3.00	3.57	3.46
A45	Distributed conservation benefits per family or in proportion to work	3.67	3.50	3.86	4.00	3.25	3.14
A46	Stated program objectives in terms of benefits to be reaped by local people	4.00	5.00	4.40	4.50	3.77	4.00
A47	Emphasized practical income-generating activities that utilized all renewable resources	4.00	5.00	4.08	4.25	3.56	3.75
A48	Provide positive feedback from many, including prestigious, sources	4.25	3.33	3.73	4.00	3.96	3.64

Survey no.	Strategy	Minor barriers	Motiv. barriers	Local & commun barriers	Knowl. barriers	Mod. wide-spread barriers	Serious wide-spread barriers
A49	Involved community in nature tourism	4.50	3.50	4.31	3.80	3.52	3.53
A50	Developed local capacity to monitor practices damaging to conservation effort	3.83	2.67	3.65	4.33	3.39	4.13
A51	Identified income to communities from conservation measures	3.25	4.25	4.07	4.00	3.58	4.15
A52	Awarded contracts to community organizations	4.33	4.00	4.00	5.00	3.18	3.40
A53	Increased people's understanding of the practical values of protected areas	4.17	5.00	4.05	3.60	3.79	3.75
A54	Directed program from position as expert	4.33	4.50	3.80	4.00	3.46	3.86
A55	Gave local organizations authority for aspects of the conservation project, even if they were not quite ready for it	4.75	3.67	3.75	4.00	3.64	3.19
A56	Developed capacity of local organizations to demand government services	3.00	3.25	3.56	3.20	3.45	3.18
A57	Trained community members to collect and look for patterns in conservation information	4.00	1.50	3.36	3.75	3.38	3.36
A58	Provided resource users with decision making roles	4.40	4.00	3.89	2.80	3.81	3.00
A59	Involved women in every aspect of program	3.80	4.00	3.91	4.00	4.00	3.67
A60	Delayed design until local people were ready to make their needs known	4.00	3.67	4.00	4.50	2.94	3.56

Survey no.	Strategy	Minor barriers	Motiv. barriers	Local & commun barriers	Knowl. barriers	Mod. wide-spread barriers	Serious wide-spread barriers
A61	Improved law enforcement activities of conservation guards through training	4.00	4.50	3.60	1.00	3.36	4.00
A62	Minimized apparent 'outside' control over project	3.50	4.00	3.77	3.75	3.56	3.86
A63	Established a new power elite who supported program goals	2.67	3.50	4.13	2.00	2.93	2.57
A64	Implemented the project only after it had been approved by a local association	4.20	4.00	4.50	4.00	4.04	3.46
A65	Obtained voluntary conservation commitments	3.25	3.50	4.14	3.40	4.16	3.21
A66	Had community select preferred options	3.40	4.00	3.73	5.00	3.77	3.08
A67	Supported community control over its local environment	4.14	3.75	3.72	4.20	4.07	3.60
A68	Invested in conservation experiments undertaken by groups in the community	----	----	3.88	4.00	3.89	3.63
A69	Built alliances with other people's movements that dealt with related elements of the conservation problem	3.75	4.00	3.82	4.00	3.92	3.71
A70	Increased powerholders' knowledge of their responsibility regarding resource stewardship	3.25	4.00	3.78	3.00	3.70	2.86
A71	Found innovative ways for politicians to 'save face' while supporting conservation measures	3.00	4.00	3.11	2.00	3.67	3.00
A72	Documented all spin-off benefits, even those outside conservation goals	4.00	2.50	3.75	4.00	3.84	3.18

Survey no.	Strategy	Minor barriers	Motiv. barriers	Local & commun barriers	Knowl. barriers	Mod. wide-spread barriers	Serious wide-spread barriers
A73	Had people from all segments of the community social structure participate in the program	3.20	3.00	3.82	3.20	3.81	3.80
A74	Established measurable behavioural change objectives at start of the program	4.00	4.50	4.00	3.00	3.44	3.00