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Capacity building for management of livestock owners-wildlife conflict

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Abstract
Livestock owners–wildlife conflict is a global issue, which has been extensively studied all over the world. Conflict between livestock owners and wildlife is one of the most urgent wild animal conservation issues worldwide, yet efforts to synthesize knowledge about these conflicts have been few. For management strategies to be effective a thorough understanding of the dynamics of livestock owners-wildlife conflicts (LOWC) is necessary.Evidence of conflict affecting over 75.00% of the world's felid species. The severity of conflict increases with felid body mass and is of greatest conservation significance to nine species: caracal, cheetah, Eurasian lynx, jaguar, leopard, lion, puma, snow leopard and tiger. This paper also reveal specific gaps in knowledge about LOWC and required actions within this aspect of wildlife conservation. With only 31.00 % of implemented management strategies having been evaluated scientifically, there is a need for greater and more rigorous evaluation and a wider dissemination of results. Also urgently required are standardized reporting techniques to reduce the current disparity in conflict reporting methods and facilitate resolution of patterns and trends in the scale of LOWC worldwide.

Keywords: Conflict, livestock owners, wildlife, management strategies

Introduction
The word 'wildlife' is usually associated with "non-domesticated vertebrates", but has broadly related to all wild animals, plants and other organisms. All undomesticated animals and uncultivated plants are scientifically known as "wildlife". The term wildlife was first noticed in year 1913 in a book, "Our Vanishing Wildlife" written by William Hornaday, The Director of The New York Zoological Park. In country like India LOWC is a contentious issue among conservation initiatives, authorities, personnel, and local communities. Inspite of numerous protected areas in India, the wildlife is facing many problems in terms of survival by way of habitat loss, human invasion of inviolate spaces and developmental related activities obstructing the natural corridors of migrating animals. LOWC is a common phenomenon from the past and has become a significant problem throughout the world (Wang & Macdonald, 2006). Human-wildlife conflicts also undermine human welfare, health and safety, and have economic and social costs. In India, there is no particular definition for a protected area; any area that is considered by the central government or state government to be important for conservation is designated a status under the Wild Life (Protection) Act, 1972 and is then legally considered a protected area. Until 2002, the WLPA only had two main types of protected areas, National parks and wildlife sanctuaries. Wildlife is well protected within these Protected Areas (PAs) by the umbrella Wild Life (Protection) Act, 1972 and the respective wildlife laws of the State governments. The scheduled Species of wild fauna and flora also enjoy the protection even if they are outside the PAs. The Environment (Protection) Act, 1986 and the Biodiversity Act, 2002 aid in overall protection of the environment and conservation of biodiversity respectively. With all these laws in hand, wildlife management is difficult even in PAs because of pressures of grazing of livestock, encroachments, poaching, extraction of Non Timber Forest Produce (NTFP), and religious gatherings by local people. Outside the PAs the situation is alarming, since most of the wild populations like spotted deer, Chinkara, black buck, Indian hare, wild boar venture out of forests are falling prey to local people or poachers. Leopard, tiger, sloth bear, wolf, jackal, hyena etc. are also persecuted because people feel they have to kill them to protect themselves. To protect the wildlife outside PAs, the Governments should undertake measures which would be beneficial to wildlife and people.

Driving forces to livestock owners' wildlife conflicts:
There are so many cases of human-wildlife conflicts (HWC) recorded where wildlife threatens, attacks, injures or kills human or destroys their livestock, agricultural crops or

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property. A set of global trends has contributed to the escalation of HWC worldwide. These can be grouped into human population growth, rapid urbanization, land use transformation, species habitat loss, degradation and fragmentation, growing interest in ecotourism and increasing access to nature reserves, increasing livestock populations and competitive exclusion of wild herbivores, abundance and distribution of wild prey, increasing wildlife population as a result of conservation programmes, climatic factors and stochastic events. HWC also occurs when humans deliberately injure, abuse or kill wildlife because of distinguish or actual threats to their property, livelihoods, lifestyle, person or family.

Human wildlife conflict scenario: Worldwide Retrospect

HWC is a serious threat to the survival of many endangered species and serious obstacles to wildlife conservation efforts worldwide and causes both direct and indirect costs for human beings. Conflicts are becoming more prevalent as human populations increase and diversify, development expands, resources shrink, the global climate changes, and other human, societal and environmental factors put people into greater potential for conflict with wildlife. Human-wildlife conflict occurs when wildlife requirements encroach on those of human populations, with costs both to residents and wild animals (IUCN, 2005). Destruction and loss of food crops, livestock depredation and human harassment are direct costs of livestock owners -wildlife conflict (LOWC). LWC is not restricted to particular geographical regions or climatic conditions, but is common to all areas where wildlife and human population coexist and share limited resources. Dense human populations in close vicinity to nature reserves seem to pose the greatest challenges in many countries (Western, 1989). If solutions to conflicts are not adequate, local support for conservation of wildlife declines. All continents and countries whether developed or developing, are affected by human wildlife conflict.

Building Management Capacity for Individuals, Groups, Organizations, and Institutions:

Most broadly, in a global context, "capacity" refers to the ability of individuals and institutions to make and implement decisions and perform functions in an effective, efficient and sustainable manner. More narrowly, the GEF (UNEP) defines environmental capacity as the ability of individuals, groups, organizations and institutions to address environmental issues as part of a range of efforts to achieve sustainable development. Further, the GEF (UNEP) defines capacity building (also called capacity development) as the process by which capacity in environment and appropriate institutional structures are enhanced. Capacity building, whatever the sector, encompasses a country's human, scientific, technological, organizational, institutional, and resources capabilities.

Capacity building addresses at least three levels: individual, organizational, and societal level. Individual capacity is the ability of individuals to learn, gain knowledge and skills that can be expanded when new opportunities arise. Individual capacity also address the not insignificant problem of ensuring that the right people are in place, that is, highly motivated, decent individuals who are committed to excellence. Organizational capacity is about people working together on a common cause, including building institutional capacity and reforms that are owned and driven by countries themselves. Organizations can be formal, such as a government agency or NGOs, or informal such as people's cooperatives, network of associations, and business or professional groups. Societal capacity refers to the overall incentive environment as well as the rules and norms under which people and organizations operate. Societal capacity also refers to the broader political and cultural environment, and the civil engagement of societal actors. It includes the ability of societies as a whole to allow and support the use and growth of individual people's capacities and to prevent loss of skills or brain drain of countries.

With the wild animals as the focus of concern and an umbrella species like tiger, leopard, elephant etc. capacity building refers to investment in people, organizations, and societies so practice and policy enable countries to achieve their biodiversity conservation and environmental sustainability objectives. It requires a coordinated process of deliberate interventions at all levels. Too often, training at the individual level, however effective in enhancing knowledge and skills, is wasted because the organizational structures are not in place to allow individuals to implement what they have learned, and/or society insufficiently values the results. For example, a protected area manager may successfully interdict poachers but the justice system may not work to effectively prosecute offenders and society may not value wildlife enough to impose meaningful punishments.

Approaches to Managing Human-WildlifeConflict

There are two basic approaches to managing livestock owners-wildlife conflicts: prevention and mitigation. A rather different approach is represented by changing attitudes to wildlife through education and by ensuring that affected communities and individuals are active participants in, and enjoy tangible benefits from, wildlife management.

Preventive Measures

Measures that can prevent or minimize the risk of conflicts arising between people and animals include the extreme one of completely removing either the people or the animals, physically separating the two by the use of barriers, managing by a variety of means the numbers of animals to reduce the risk of conflict, and employing a variety of scaring and repelling tactics.

Eradication

In the past local people were removed from large tracts of land when these were formed into national parks and other protected areas. Eradication of animals such as lions, leopards, elephants, buffalo, rhino and the larger species of antelope has been undertaken in the past over large areas of Africa.

Exclusion by Use of Physical Barriers

Exclusion of wild animals by use of physical barriers can, in many situations, be an effective method of settling human-wildlife conflicts. If they are properly designed, constructed and maintained, fences can be completely effective in preventing conflict between people and wild animals.

Fear-Provoking Stimuli

Fear-provoking stimuli, be they visual (such as scarecrows), auditory (such as exploders, bangers, and distress calls) or olfactory stimuli (used to repel predators) have all been applied to resolve human-wildlife conflicts. Though widely used, these methods face a common problem because the animals soon learn that they pose no real threat and then

ignore them. Traditional methods such as chasing, lighting fires at the edge of fields, beating drums and throwing objects at animals also face the same problem of habituation. A method commonly used by wildlife authorities is disturbance shooting, that is firing shots over the heads of crop raiding wild animals, but this too becomes less effective over time.

Guarding Crops and Livestock
Watchtowers that provide good vantage points, built around fields of crops, increase the farmers' chances of their being alerted to the presence of potentially harmful wildlife before damage has occurred. Simple alarm systems, using string and cowbells or tins, can also be effective and avoid the farmer having to be alert all night long. Dogs can be effective in protecting homesteads and livestock from attack by predators. Donkeys have also been used in many parts of the world, including against cheetah in Namibia, to protect flocks of sheep and goats from predation.

Chemical Repellents
Another way to alter animal behavior with the goal of resolving human-wildlife conflicts is the use of chemical repellents. Area repellents are designed to keep wildlife out of an area, contact repellents are attached or sprayed to a food item and systemic repellents incorporated within the food plant or item.

Landscape Management and Land-Use Modification
Human-wildlife conflicts can be reduced, perhaps in some cases totally prevented, by implementing changes to the natural resource that causes the conflict or to its surroundings. This can be achievable by altering the resource itself, the way it is managed, modifying the resource's habitat, or making changes to the surrounding landscape. This can include planting crops that are less palatable to wildlife, such as substituting chilies for maize (www.africanow.org), changing the timing when a crop is planted or harvested, altering animal husbandry practices to reduce risk of predation and designing and building predator-proof livestock bomas (stockades). Damage by wildlife can be reduced by making changes near the resource so that the problem wildlife is more vulnerable to predation, easier to spot by people and dogs, and generally less at ease in the area. For example, a livestock keeper can remove thick cover from near animal holding areas. Small islands of crops scattered across a wildlife inhabited landscape are more vulnerable to destruction than those that are clustered together. A landscape approach to reducing human-wildlife conflicts might therefore involve growing crops in large communal fields with straight edges, fences or thorny or spiny hedges, and also removing nearby cover and habitat for wildlife

Mitigation Approaches
Although prevention is clearly the best option, at times reactive approaches are required after human-wildlife conflicts have occurred. The main approach under this heading is Problem Animal Control (PAC), most often undertaken by the national wildlife authority. The 'problem animal' can either be killed or captured for translocation

Lethal PAC
In lethal control it is obviously desirable to focus on those individuals actually causing the problem (the culprits) or at least to target the group of animals whose home range includes the site where the problem is occurring. In reality, often the problem animal is not identified, but rather any individual is killed to satisfy the demand for action and revenge by the aggrieved community – especially in the case of loss of human life or the killing of livestock. In such a situation the action by the wildlife authority rangers may have public relations value but in all probability the culprit will survive and continue to inflict damage.

Translocation
Translocation has been used to remove individual animals responsible for depredations and also, in some cases, to reduce populations in specific areas by removing relatively large numbers of animals. Translocation can be an appealing method to the general public, especially those who are particularly concerned about animal welfare, as they perceive that it gives the affected animal a second chance at a new site. Unfortunately the reality is often not so positive and translocation can be a controversial means of resolving human-wildlife conflicts, associated with a number of problems

Effective Managerial Capacity Building
The Division of Global Environment Facility Coordination (DGEF) of UNEP has identified key characteristics that facilitate capacity development. These key characteristics can become strategic targets with actionable goals and objectives to improve managerial capacity at all levels.

Public Sector Institutional Setting:
Clear rules that facilitate action and encourage problem-solving and innovation by organization and officials; Public service systems for recruitment and promotions that reward merit and performance, not patronage and seniority; sufficient budgetary resources to support the sector activity as well as salaries that are attractive to highly motivated people.

Organizations
Strong mission mystique held widely within the organization; Recruit motivated and competent staff; Raising salary levels and competitiveness with private-sector salaries; Strong sense of professional identity within the organization; High prestige of the organization and links to high-prestige domestic and international peer groups or organizations; Equity, participation, and flexibility in work assignments; Participation in organization decision making; Managers focused on performance, incentives, participation, and problem solving; Ability to demote and fire unproductive or unprofessional staff; Adequate physical environment and equipment vis-a-visa rewards and recognition system for high performance.

Human Resources
Links between training institutions and task-orientated organizations; Training in management; Training opportunities linked to commitment to the organization; Recruitment managed by the organization (rather than by the civil service); Open and competitive recruitment procedures; Meaningful jobs assigned to those with appropriate skills and levels of training; Job satisfaction; Professional identification among staff, reinforced by professional associations; Contracts of limited durations with clear links to performance criteria.

Building Core Competencies in Protected Area Management

Effective protected area management is fundamental to wildlife conservation. We can turn for guidance to the recent global study of management effectiveness in protected areas. Study found that 65% of the assessed protected areas had management with significant deficiencies. Only 21% scored in the sound management range. We don't have baseline studies of management in all protected areas across the tiger, leopard and other carnivore's animal's range from which we can derive a gold standard for protected area management to support wildlife. There are 702 protected areas that contain 4.88% of the land area of country.

The most unsatisfactory aspects of protected area management include:

Lack of appropriate programs of community benefit and assistance with lack of security and reliability of funding. Inadequate current funding and low management effectiveness evaluations causes inadequacy of building and maintenance programs, lack of effective communication programs which causes lack of involvement of communities and stakeholders in setting clear goals and objectives in implementation plans.

The Larger Context for Building Capacity for Wildlife Conservation Management

To provide a complete program of capacity building, one must build capacity in the knowledge institutions that are responsible for educating the target audiences. These range from governmental organizations, such as the Wildlife Institute of India (WII), to NGOs across the country, and even to public schools and universities. In this context, capacity building can mean many things. For example, for WII it may mean harmonizing the technical and teaching skills of its faculty, re-imagining and re-energizing its mission, and improving recruitment efforts to meet emerging conservation challenges. For NGOs, it may be more along the lines of providing more financial and logistical resources to expand excellent work that is already being undertaken. For general education, it may mean harmonizing the science and conservation curricula in schools and universities to meet emerging environmental challenges. In some countries, it may be a matter of supplementing and enhancing existing institutions, and in other countries, it may be a matter of actually helping to create them from scratch. These national and local knowledge institutions will have responsibility for delivering conservation capacity building in their own areas or countries. Many other organizations offer capacity building programs and tools relevant to tiger conservation. We will achieve the best and most rapid results through cooperation to create synergies, reduce redundancy, and share best practices.

The objectives of the Capacity building for management of livestock owners-wildlife conflict:

To identify, coordinate and build synergies between existing and future efforts as well as to encourage and enable developing countries to identify and address their capacity building needs to access, use and produce earth observation data and products on a sustainable basis. With enhance access to data and information, especially on a real-time and near real-time basis and encourage information and infrastructure sharing.

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