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BEYOND FEAR AND FURY: HOW CONSERVATION EDUCATION CAN CHANGE FARMERS' RESPONSES TO WILDLIFE DAMAGE

Drawing on field insights, Hridya Sasikumar, Sreedhar Vijayakrishnan, and B. S. Meena explore how extension-led conservation education fosters informed farmer–wildlife coexistence.

CONTEXT

Kuriakose, a 54-year-old farmer from Nenmeni in Wayanad, Kerala, cultivates coffee, coconut, and rubber on his 3.5-acre land while rearing four cattle. Yet much of his produce rarely reaches harvest. Spotted deer (*Axis axis*) consume fodder, while Malabar giant squirrels (*Ratufa indica*) and bonnet macaques (*Macaca radiata*) take coconuts before maturity. "I don't even get to see them mature," he explains in despair. When coffee ripens, macaques pluck the berries, leaving damaged branches and scattered fruit. Repeated raids by wild boar (*Sus scrofa*) have forced him to abandon banana and cassava. "There is no point! They will dig it up before harvest." Even young coconut saplings are destroyed, with boars burrowing from below before they can establish. He also lives with the constant fear of losing cattle to predators such as tigers or leopards.

Wild elephant Chinnathambi seen near farmlands in Udumalpet, Tamil Nadu

For farmers like Kuriakose, wildlife damage is not a singular dramatic event but a gradual erosion of effort, income, and hope. Beyond economic loss, it produces chronic fear. When such experiences persist, and institutional responses remain slow or inadequate, fear often hardens into frustration, resentment, and hostility, directed not only at wildlife but also at the institutions involved in managing it.

HUMAN–WILDLIFE CONFLICT: A GOVERNANCE CHALLENGE

Human–wildlife conflict (HWC) is a global challenge, particularly acute in tropical and developing countries, where agriculture sustains livelihoods and communities live near forests and protected areas. These interactions are rooted in long-term landscape transformations shaped by changing land use.

Coconut bunch damaged by Malabar giant squirrels

In recent years, however, conflicts have intensified. Habitat loss, forest degradation, and changing climatic conditions have reduced the availability of food and water within forests, increasing overlap between wildlife habitats and human-use landscapes. In Kerala, where plantation agriculture has expanded alongside forested areas over decades, these pressures are particularly visible. As of March 2024, about 4,975 hectares of forest land remain under encroachment, largely in high-range regions. At the same time, some species increasingly use agricultural landscapes, often finding crops more accessible and palatable than wild forage.

Consequently, crop loss and livestock predation have become routine challenges for small and marginal farmers with limited resilience. In the absence of reliable support systems, repeated losses can push farmers towards defensive or retaliatory practices, undermining conservation efforts. At its core, HWC is not only ecological but also institutional, a challenge of governance, trust, and communication. Expecting coexistence without addressing farmers' emotional and structural vulnerabilities is unrealistic.

Cassava crop damaged by wild boars

FROM FEAR TO FURY: UNDERSTANDING FARMERS' RESPONSES

Humans and wildlife have shared spaces since early human history, as depicted in the ancient texts and cave paintings. Long before the Neolithic Revolution, humans lived as hunter-gatherers, coexisting with or subsisting upon wild animals. Survival depended on the fight-or-flight response, a physiological reaction triggered by fear when confronted with danger. Despite millennia of interaction, this instinct continues to influence human responses towards wildlife.

Field interaction captures the personal narratives behind wildlife damage.

In ecology, "*landscape of fear*," a concept popularised by Joel S. Brown and colleagues, explains how prey species alter their movement, feeding, and habitat use in response to predation risk. Fear restructures behaviour. For farmers living along forest fringes, a similar landscape of fear exists. Fields become spaces of uncertainty. Nights demand vigilance. Fear is often the first response, fear of losing crops nurtured for months, livestock that sustain households, sleep interrupted by night guarding, and at times, personal safety.

When damage becomes chronic and unpredictable, fear gradually transforms into frustration resulting from:

- Inadequate or delayed compensation
- Complex and time-consuming procedures
- Rising financial and labour costs for protection
- Perceived inequalities in conservation costs and benefits
- Feeling unheard or blamed for living near wildlife habitats
- Perceptions that wildlife is valued above livelihoods
- Institutional inefficiency or inaction

Farmers' association posters reflecting protest and perceived injustice in wildlife governance

Over time, this emotional strain may manifest as hostility towards wildlife, government officials, conservation organisations, and even researchers, resulting in resistance to conservation initiatives, disengagement from formal reporting systems, and non-cooperation in conflict management. In some cases, it escalates into defensive practices such as poisoning, electrocution, habitat destruction, or illegal resource extraction.

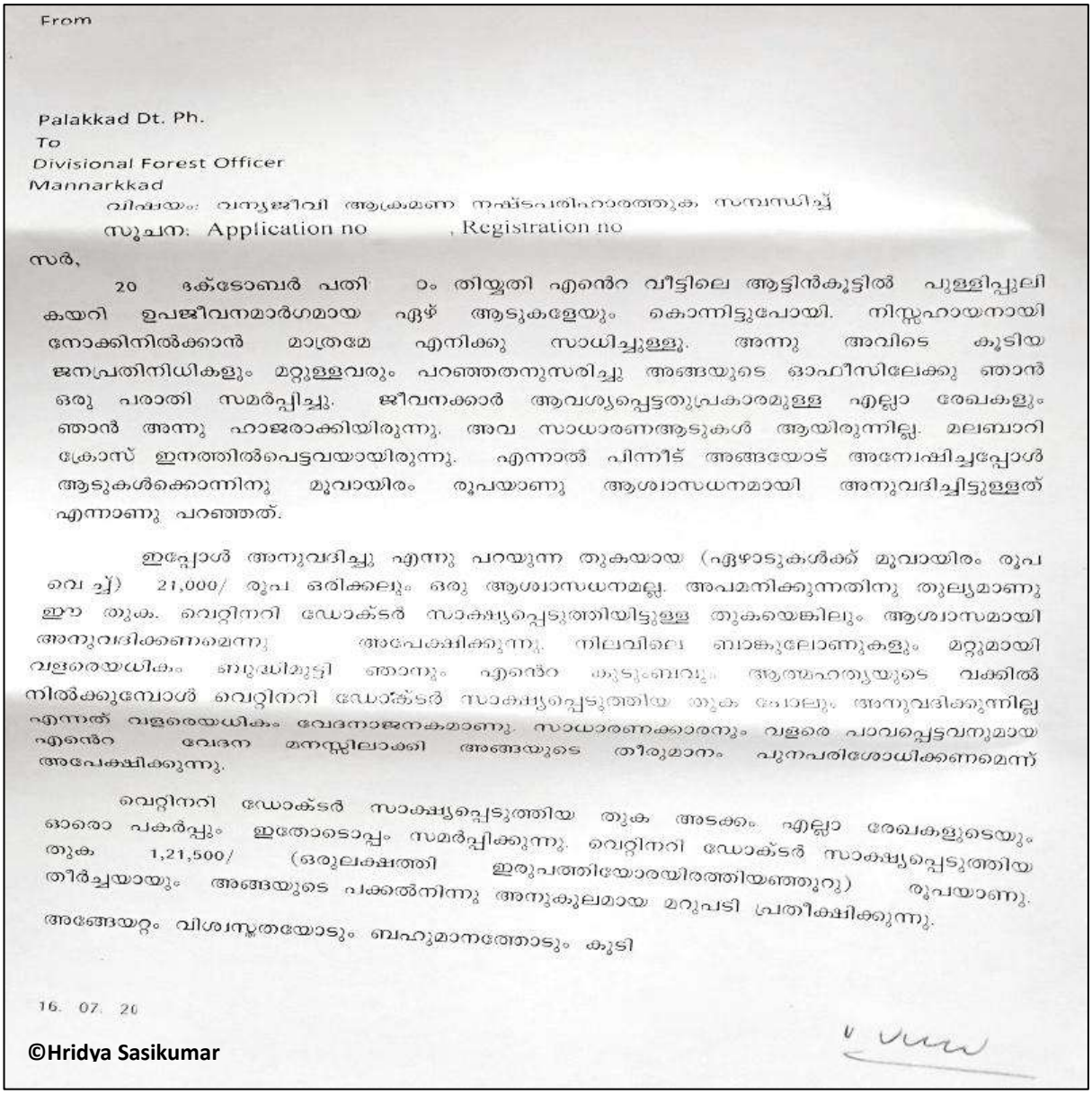
Recognising this emotional trajectory is critical for designing effective interventions. Farmer responses are not impulsive reactions; rather, cumulative outcomes of repeated loss and unaddressed anger and mistrust tend to make conservation actions perceived as coercive rather than collaborative.

WHY CURRENT MANAGEMENT TOOLS ARE NOT ENOUGH

Policy responses typically rely on physical barriers, ex gratia payments, strict regulation, and occasionally the translocation of "problem" animals. While necessary, these measures are insufficient. Fences and trenches require regular maintenance and cooperation, while compensation is often

delayed, partial, or procedurally cumbersome. Although wildlife laws are essential for conservation, they can leave farmers feeling less valued than the wildlife involved.

More importantly, such approaches neglect the psychological dimensions of conflict – fear, anger, mistrust, and perceived injustice. Also, policy frameworks often overlook investing in *communication*, *learning*, and *behavioural change*. Without addressing these dimensions, even well-funded technological solutions may fail in the long run.



From

Palakkad Dt. Ph.
To
Divisional Forest Officer
Mannarkkad

വിഷയം: വന്യജീവി ആക്രമണ നഷ്ടപരിഹാരത്തുക സംബന്ധിച്ച്
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20 ഒക്ടോബർ പതി ാം തിയ്യതി എന്റെ വീട്ടിലെ ആട്ടിൻകൂട്ടിൽ പുള്ളിപ്പുലി കയറി ഉപജീവനമാർഗമായ ഏഴ് ആടുകളേയും കൊന്നിട്ടുപോയി. നിസ്സഹായനായി നോക്കിനിൽക്കാൻ മാത്രമേ എനിക്കു സാധിച്ചുള്ളു. അന്നു അവിടെ കൂടിയ ജനപ്രതിനിധികളും മറ്റുള്ളവരും പറഞ്ഞതനുസരിച്ചു അങ്ങയുടെ ഓഫീസിലേക്കു ഞാൻ ഒരു പരാതി സമർപ്പിച്ചു. ജീവനക്കാർ ആവശ്യപ്പെട്ടതുപ്രകാരമുള്ള എല്ലാ രേഖകളും ഞാൻ അന്നു ഹാജരാക്കിയിരുന്നു. അവ സാധാരണആടുകൾ ആയിരുന്നില്ല. മലബാറി ക്രോസ് ഇനത്തിൽപെട്ടവയായിരുന്നു. എന്നാൽ പിന്നീട് അങ്ങയോട് അന്വേഷിച്ചപ്പോൾ ആടുകൾക്കൊന്നിനു മൂവായിരം രൂപയാണു ആശ്വാസധനമായി അനുവദിച്ചിട്ടുള്ളത് എന്നാണു പറഞ്ഞത്.

ഇപ്പോൾ അനുവദിച്ചു എന്നു പറയുന്ന തുകയായ (ഏഴാടുകൾക്ക് മൂവായിരം രൂപ വെച്ച്) 21,000/ രൂപ ഒരിക്കലും ഒരു ആശ്വാസധനമല്ല. അപമനിക്കുന്നതിനു തുല്യമാണു ഈ തുക. വെറ്റിനറി ഡോക്ടർ സാക്ഷ്യപ്പെടുത്തിയിട്ടുള്ള തുകയെങ്കിലും ആശ്വാസമായി അനുവദിക്കണമെന്നു അപേക്ഷിക്കുന്നു. നിലവിലെ ബാങ്കുലോണുകളും മറ്റുമായി വളരെയധികം ബുദ്ധിമുട്ടി ഞാനും എന്റെ കുടുംബവും ആത്മഹത്യയുടെ വക്കിൽ നിൽക്കുമ്പോൾ വെറ്റിനറി ഡോക്ടർ സാക്ഷ്യപ്പെടുത്തിയ തുക പോലും അനുവദിക്കുന്നില്ല എന്നത് വളരെയധികം വേദനാജനകമാണു. സാധാരണക്കാരനും വളരെ പാവപ്പെട്ടവനുമായ എന്റെ വേദന മനസ്സിലാക്കി അങ്ങയുടെ തീരുമാനം പുനപരിശോധിക്കണമെന്ന് അപേക്ഷിക്കുന്നു.

വെറ്റിനറി ഡോക്ടർ സാക്ഷ്യപ്പെടുത്തിയ തുക അടക്കം എല്ലാ രേഖകളുടെയും ഓരൊ പകർപ്പും ഇതോടൊപ്പം സമർപ്പിക്കുന്നു. വെറ്റിനറി ഡോക്ടർ സാക്ഷ്യപ്പെടുത്തിയ തുക 1,21,500/ (ഒരുലക്ഷത്തി ഇരുപത്തിയോരായിരത്തിയഞ്ഞൂറു) രൂപയാണു. തീർച്ചയായും അങ്ങയുടെ പക്കൽനിന്നു അനുകൂലമായ മറുപടി പ്രതീക്ഷിക്കുന്നു.

അങ്ങേയറ്റം വിശ്വസ്തതയോടും ബഹുമാനത്തോടും കൂടി

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Formal appeal for fair compensation following livestock loss to wildlife, capturing farmers' administrative and emotional burden

WHERE CONSERVATION EDUCATION COMES IN

Conservation education is not merely awareness-building about ecological significance or wildlife laws, nor about persuading farmers to become wildlife enthusiasts. Rather, it enables farmers to understand, anticipate, and respond to wildlife interactions in ways that minimise harm and restore a sense of control.

Studies suggest that conservation education can improve knowledge, attitudes, and behavioural responses in HWC contexts by enabling affected communities to:

- Understand wildlife behaviour and conflict hotspots
- Learn how institutions regulate wildlife populations
- Adopt locally applicable preventive measures
- Access compensation and insurance mechanisms confidently
- Engage constructively with authorities
- Recognise cultural dimensions of wildlife conservation
- Understand trade-offs inherent in conservation policy

When uncertainty declines, fear often reduces, even if losses do not completely stop. Better understanding also improves compliance with regulations and reduces the likelihood of retaliation.

What Changes with Education?

Conservation education may not prevent or eliminate wildlife damage, but it can shape how farmers perceive and respond to it. Evidence from research and field experiences shows that better-informed and supported farmers are more likely to:

- Adopt non-lethal deterrents consistently
- Report wildlife movements
- Distinguish between species and risk levels
- Use formal compensation channels
- Participate in collective mitigation efforts
- Communicate effectively with institutions
- Demonstrate tolerance even in high-risk landscapes.

WHY AGRICULTURAL EXTENSION IS IMPORTANT IN CONSERVATION EDUCATION

Agricultural Extension and Advisory Services (EAS) are well placed to support conservation education in conflict-prone regions. As increasingly pluralistic multi-actor systems, they facilitate knowledge exchange among farmers, government agencies, research institutions, and non-governmental organisations (NGOs), enabling the co-creation of locally relevant solutions. This networked positioning, along with their evolution beyond technology transfer, enhances their capacity to address complex challenges such as HWC.

Although HWC is not a core mandate of most public extension systems, local innovations are emerging. For instance, in Kerala, local governments, in coordination with Forest and Agriculture Departments, promote less palatable crops (e.g., ginger, turmeric, pepper) and build trenches under schemes such as Rashtriya Krishi Vikas Yojana. This highlights the potential for extension systems to play a more proactive role.

Strengthening this role requires:

- **Improved coordination** between Forest, Revenue, Agriculture, and allied departments for timely information sharing.
- **Capacity-building of extension staff** on wildlife ecology, behaviour, and mitigation strategies.
- **Integration of wildlife risk management and conservation literacy** into routine agricultural advisory and farmer training (e.g. Farmer Field Schools), in collaboration with forest departments and NGOs (Box 1).
- **Farmer-to-farmer knowledge exchange platforms** to share practical mitigation experiences and locally tested solutions.

- **Stronger community-based conflict preparedness**, enabling collective planning and coordinated responses at the village level.
- **Establishment of structured communication channels** between EAS and farmers to foster dialogue, trust, and timely grievance redressal.

While forest departments focus on regulation and wildlife management, extension personnel maintain more frequent, livelihood-oriented engagement with farmers. These differences shape perceptions—extension agents are seen as approachable and supportive, while forest officials are viewed as regulatory authorities.

Box 1: Conservation Education for Human–Wildlife Coexistence – Global Efforts

Nature Conservation Foundation (NCF) (India): Engages communities, students, and citizens through Education and Public Engagement initiatives, fostering ecological awareness and empathy through multilingual resources, curriculum integration, and citizen science.

Wildlife Trust of India (WTI) (India): Integrates conservation and education through school and community outreach near protected areas, promoting coexistence through interactive learning, conflict-awareness training, and capacity building under programmes such as Animal Action Education, Gaj Yatra, and Sundarban Education Centres.

Centre for Conservation and Research (CCR) (Sri Lanka): Implements evidence-based, community-driven coexistence strategies in high human–elephant conflict areas, combining GPS tracking with community-managed solar fencing.

African People and Wildlife (East Africa – Tanzania): Adopts the ACTIVE (Access, Connect, Team, Implement, Verify, Evolve) model to build local conservation capacity, focusing on youth education, practitioner training, and community-led stewardship.

Wildlife Conservation Society (WCS) (Global): Operates in over 55 countries, building conservation capacity through scholarships, graduate programs, and field-based training, while linking New York zoos with global field sites and collaborating with Indigenous and local communities.

Street play organised by NCF engaging plantation workers and school children on human–wildlife coexistence

Such variations in trust and communication highlight the need to leverage the complementary strengths of all extension actors. Building trust requires regular interaction through joint meetings, village-level consultations, and coordinated outreach, improving transparency and engagement with farming communities. Although mechanisms such as district-level committees and rapid response teams exist, they are often reactive, underscoring the need for more regular and institutionalised platforms for information exchange.

Globally, organisations such as the FAO, IUCN, and the Indo-German Biodiversity Programme emphasise education, community engagement, and capacity-building in conflict management. However, their resources remain insufficiently integrated into routine agricultural extension systems. Evidence from Sri Lanka further shows that extension training often ignores wildlife-related risks, prioritising conventional crop constraints even in high-conflict areas due to centrally designed, poorly localised training frameworks.

Students pledge for wildlife conservation following Gaj Yatra organised by WTI with Forest Department and local partners

HOW SHOULD WE DESIGN A CONSERVATION EDUCATION PROGRAMME

There is no universal, one-size-fits-all curriculum that can adequately address HWC. For conservation education to be effective, it must be:

- **Context-specific:** tailored to local agroecological systems (crops, livestock, and wildlife);
- **Empathetic:** attentive to the emotional and psychological dimensions of human responses;
- **Practical:** grounded in realistic, locally applicable solutions that farmers can easily adopt;
- **Institutionally linked:** integrated with grievance redressal mechanisms, compensation schemes, insurance, subsidies, and other financial support systems.

When education disregards structural challenges, it risks becoming yet another source of frustration. When aligned with policy reform and institutional accountability, it can strengthen conflict mitigation and long-term conservation outcomes.

CONCLUSION

Human–wildlife conflict is not merely an ecological problem; it is deeply social and emotional. Fear may be the initial response, but sustained frustration and fury often define the long-term behaviour. Addressing this reality requires more than fences and finances. Conservation education, delivered through empathetic and participatory extension systems, offers a pathway to reshape how farmers perceive and respond to wildlife damage. While it may not eliminate conflict, it can rebuild trust, restore a sense of control, and encourage informed behavioural change. In doing so, conservation education may represent one of the most practical and meaningful pathways towards sustainable farmer–wildlife coexistence.

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