MITIGATING HUMAN-WILDLIFE CONFLICT BY RESTORING THE HARMONY BETWEEN HUMAN AND NATURE: A CASE STUDY OF ANAMALAI TIGER RESERVE, VALPARAI, TAMILNADU

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Abstract

Human-wildlife conflicts are getting more and more frequent, intense and critical. People from the forest fringes are facing crises due to the continuous loss of lives, crop damage, property damage, livestock damage etc. as part of wildlife attacks. Long-standing conflicts between human and wildlife show that current centralized approaches and unilateral solutions are inadequate to understand and deal with the complex nature of the situation facing by both society and the wildlife. Conflicts can be successfully resolved using the integral approaches of modern techniques with the traditional knowledge of tribal and rural communities who have coexisted with wildlife for many years. The participation of such tribal communities and their traditional knowledge should be ensured throughout the mitigation strategies such as planning stages and their effective execution. Therefore, a conflict resolution approach that encompass decentralized forms of governance and mitigation measures for promoting coexistence between these two actors is needed, along with the formulation of strategies for resolving the existing conflicts between human and wildlife at the grassroots level. Getting people involved in such remedial practices is the only way to improve their reluctant and hostile attitudes toward wildlife and conservation. Thus, it is necessary to improve ties between tribal communities, local farmers, plantation employees, and the government authorities for unified approaches in finding effective solution for the human-wildlife conflicts. Some efforts to reduce human-wildlife conflict initiated by the local people are being practiced in conflict zones. A community-led initiative in the forest of Anamalai Tiger Reserve of Tamil Nadu is one such attempt to resolve the issue. Indigenous and low-cost dealing methods have been used to prevent wildlife invasion and attack which were initiated and practised by local farmers and tribal people. Such decentralized efforts are more efficient than the large-scale mitigation programs by the forest department and other agencies. The broken links of harmonious coexistence between human and nature were being explored to reconnect both of them in Valparai. In this context, a thorough investigation of human-wildlife conflict in the Valparai forest areas of Anamalai Tiger Reserve and the traditional mitigation approaches will improve the conflict mitigation strategies and methods. The purpose of this study is to explore how local communities can work together along with govt. officials and voluntary organizations to develop ideas and strategies for mitigating and resolving conflicts between people and wildlife while maintaining the harmony with the nature.

Keywords: *human-wildlife conflict, harmony between human and nature, people participation*

Introduction

Human-wildlife conflict is become a national issue of India that needs to be tackled with utmost importance as India's forest resources are shared by millions of people and animals equally. At this stage, it is impossible to address the issue just from human or ecological or wildlife conservation perspective. Human-centric approaches in solving this problem did not address these issues completely and they have proved partially successful. There is an urgent need for remedial measures in this matter, which will ensure that there is no loss of life and other damages to the people as well as wildlife and the forest. Due to the possibility of a human being killed or having their livelihood destroyed by the attack of wildlife, human attitudes toward wildlife are becoming more fearful, angry, and hostile (Rohini et al, 2017). People think that the only agencies responsible for preventing or eradicating human-wildlife conflict are the government agencies and the forest department. The people who had to live in close contact with the forest and wildlife have had to face many hardships only in the last few years.

As these encounters become more frequent and the complete dependency on Government agencies in handling these issues have completely diminished the long-standing relationship and interdependence between people and wildlife. The main reasons for the conflict are due to reasons like deforestation, illegal logging and migration, expansion of human development projects which have severed the inseparable relationship between humans, wildlife and the environment. Bridging the gaps in the ecological relationship that local communities have with the forest and wildlife is one of the ways to resolve the existing human-wildlife conflict. Expeditious resolution of the existing human-wildlife conflict is a matter of survival for the communities that depend on the forest resources as a means of livelihood.

Although there has been much research on human-wildlife conflict and conflict management from a technical perspective, most of these studies have focused on some particular perspectives of protecting forests and their assets. Additionally, some scientific studies have revealed that one of the useful and significant approaches in resolving human-wildlife conflict is the policy of coexistence (Thinley et al., 2022). Therefore, in order to coexist with nature, we must embrace people participation in all the preventive and mitigating strategies (Kanagavel et al., 2014). It is also true that local tribal communities, settled farmers, government and non-government organizations, and forest authorities still need to clarify policies, strategies, and processes for encouraging coexistence with wildlife (Madden, 2004).

Valparai, which is close to the Anamalai Tiger Reserve of Tamil Nadu, is a region which is highly affected by human-wildlife conflict (Thangavel & Shokkalingam, 2022). Contrary to other places, the forest department and NGOs like the Nature Conservation Foundation (NCF is an NGO which aims to reduce human-wildlife conflict and work for wildlife conservation with innovative research and

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inclusive solutions in many regions) have made effective interventions in this subject, and the people can get involved in the efforts to reduce conflicts between people and wildlife. Unlike other places, the forest department and the NCF also understood the role of the people and additionally, numerous decentralized initiatives were attempted and found succeeded in Valparai during this time. Although the planning process was centralized, after it became clear that local residents needed to be involved, the activities in Valparai began to become more transparent so that everyone could contribute their ideas, comments, and experiences (Beatrice Frank, 2016). Here, people do more than just provide labor to carry out the initiatives that the forest department and NGOs have planned.

It is also noteworthy that the Forest Department along with the NCF have already initiated efforts to use the traditional skills and knowledge and involvement of local indigenous people who lives there longtime to provide information to others about the presence and movements of wildlife, give early warnings, provide necessary strategies, technical assistances, projects and other suggestions to the people to avoid and reduce direct conflicting encounters between people and wildlife.

Valparai is a prime example of how effective community-based projects may be accomplished; by taking into account of the contributions made by the Forest Department and NCF. The participation and leadership of the affected people is very important here. Often it is through such participatory activities that open up the possibility that such problems can be solved with complete participation of the affected people (Smith & Sutton, 2008; Walston et al., 2010). The lack of participation is also considered as one of the main reasons for the ineffective implementation of the schemes imposed by the central and state governments or the forest departments. The needs and features of the region and its community should be taken into consideration while developing any mitigating strategies. But the current reality is that none of the existing unilateral and centralized schemes are not good enough to address the real problem. Prolonged human-wildlife conflict reveals the fact that programs so far implemented in this way lack the capacity to recognize the true nature of the conflict and its complexity. When local people participated in the activities to mitigate human-wildlife conflicts, conflicts not only decreased, but also brought out the weakness of the efforts put forth so far. It also helped to identify the reasons for struggles and obstacles in the interaction between human-wildlife and nature and the broken links and disjuncture for the harmonious coexistence in Valparai. As a result, the Forest Department and NGOs like NCF have come forward to plan and implement a few projects that fully involve people's participation.

In this context, a detailed enquiry of human-wildlife conflict in forest areas of Valparai of Anamalai Wildlife Sanctuary, Tamil Nadu is undertaken. This area-based study is analyzing the role that local communities could play in formulating strategies and implementing them to deal with conflicts between people and wildlife. This study also focuses on how the government forest department and NCF could collaborate with each other in evolving some comprehensive programs which integrate and assure the

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participation and responsibilities of local communities. It also attempts to study how a few initiatives and alternatives developed by the forest department and other voluntary organizations by incorporating the local people's knowledge, expertise and experience have helped those who were sick of elephant attacks find answers to their issues.

Objectives of the study

1. To understand how the local community have approached the human-wildlife conflict by ensuring their full participation with the help of NGOs and the Forest Department.
2. To examine whether such participatory efforts are beneficial in restoring the ecological relationship between man and wildlife.

Methodology

The nature of this study is descriptive. This study is based on qualitative methodology. Both primary and secondary sources were used to compile the data for the paper. The case study method was used to gather primary data by interviewing the officials from the forest department, coordinators from Nature Conservation Foundation and from the affected people. Secondary data was mainly based on research articles, newspapers, government reports, and journals.

Profile of the study area

This study was carried out in the Valparai plateau of Anamalai Tiger Reserve, Tamil Nadu. (Kumar et al., 2004). This region borders a number of protected areas in Kerala and Tamil Nadu which are part of the Southern Western Ghats (Myers et al., 2000). Plantation crops have a significant role in the economy of Valparai. Tea and coffee estates are widely distributed in Valparai (Kumar et al., 1995; Kapoor, 2008). The mid-elevation tropical wet evergreen forest that once covered the undulating plateau of the Valparai region was converted into plantations of commercially significant crops, including tea, coffee, cardamom, and eucalyptus, in the late 19th and early 20th century (Mudappa & Raman, 2007). The vast majority of local residents work on these estates. Elephants, tigers, leopards, wild pigs, Indian gaur, bonnet macaques, etc. are among the animals that have their habitat in these region. On the other hand, human-induced disruptions and interferences have an effect on practically all wildlife and their habitat on the human-wildlife conflict side (Newmark, 1993).
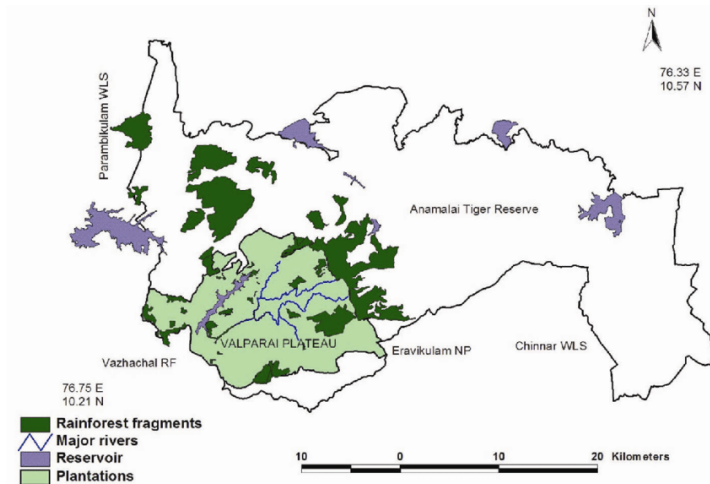
Figure 1: Map of Valparai Plateau

Population

Valparai has a population of 70,859 as of the 2011 census (Census of India, Ministry of Home Affairs, 2011). Eight forest villages with populations from the Kadar, Muthuvar, and Malai Malasar communities can be found surrounding the Valparai plateau in the Anamalai Tiger Reserve, but the majority of the estate workers are non-tribal (Chandi, 2008). Valparai is a fragmented area which comprises the core area of 958.59 sq. km. It encompasses the districts of Coimbatore and Tiruppur. High levels of human-wildlife conflict occur in Anamala Tiger Reserve (ATR) and estate regions including Valparai, Manambolly, Ulandi, and Pollachi. Although secondary data gathered from the forest department indicates that the conflict is more prevalent in these four ranges, the study here is intended to be exclusively focused on Valparai.

Results and Discussions

Even though many researchers have focused on a specific aspect of conserving forests and their resource, some studies have revealed the fact that one of the useful, significant and long-lasting approaches in resolving human-wildlife conflict is creating the atmosphere for the coexistence of both. Therefore, in order to coexist with nature, we must embrace a holistic and meaningful lifestyle. The local tribal community, settled farmers, government and non-government organizations, and forest authorities have yet to define respective policies, strategies, and procedures for enhancing coexistence with wildlife.

Official data says that in the last ten years, man-animal conflict has resulted in 49 deaths and 82 injuries in the Pollachi division. In addition, 75 elephants perished between 2012–2013 and 2021–2022. The latest reported human death from an elephant attack occurred on June 4, 2021. Only twice in the past

20 years has Pollachi Division reported no human casualties in 12 months (Tamil Nadu Forest Department). Elephant attacks are the most common cause of death here. The majority of killings in Valparai happen because people can't spot the elephants hiding in the plants. Most of the victims were plantation workers who had to face the elephants and people returning from other places of work. During the winter of 2021, records of 270 elephants were recorded, as opposed to the normal 50 or more elephants who consider Valparai home. Four of the five elephant pathways that have been discovered in the ATR pass through the Valparai region. Compared to other areas, the damage (property loss, crop damage, etc,) caused by elephant attacks was less, but the danger to human life was much higher here (Kumar et al., 2004). Elephants in particular have a lot of difficulty moving through the tea plantations to access water sources and feeding grounds.

Human-wildlife conflict is unavoidable in the plantation area due to the large number of human settlements. Elephant-human conflict derives from the fact that both the communities as well as elephants were equally dependent on tea and coffee plantations for existence (Kumar et al., 2004). The best solution to end the conflict between humans and elephants on the plateau is to increase people's awareness of elephant presence and encourage improved practices that will foster coexistence between humans and elephants.

"It was extremely risky for elephants to pass through human settlements. Although human settlements have been constructed along elephants' traditional corridors, the forest authorities and the local community have treated elephants like criminals. We were the ones that provoked the elephants, tempting them, making them fearful, and frightening them with fire and fireworks. But we soon realized that this wouldn't make things better. We are confident that by maintaining the elephants' freedom of movement, we can lessen the intensity of our losses. None of us will go there if we learn that there are elephants there. They will go if we leave them alone after they have eaten and had some water. If we didn't freak out, it would be better for us". Ramesh from the Urlikkal colony added.

"Elephants are mostly attracted to populated areas by the smell of cooked food and grains. In Valparai, ration shops are the primary targets of elephant attacks. As they travelled in search of food, several people had died. Elephants become more violent when they are frightened and hear noise. This panic leads to the destruction of homes, farms, and other properties". Rukmini from Kanjamalai tea estate share her views.

Animals were once a part of our lives. But eventually, the only choice we had was to close the gap that had been created between humans and animals. However, it was impossible for the populace or the forest service to restore this equilibrium. For that, a thorough intervention was needed. Collaboration between the affected parties, the forest department, and nonprofit organizations is needed in the region.

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The study in Valparai is convincing that human-wildlife conflict can be dealt with by joining the hands of local people, the forest department, and voluntary organizations.
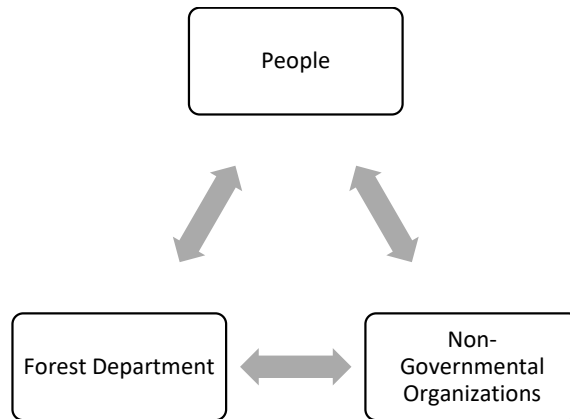
Figure 2: Collaboration between the people, the forest department, and nonprofit organizations

This study discusses that any problems can be resolved, when people are involved into activities initiated by the Forest Department and NCF. This study reveals that any local problem can be solved only by working together. The role of people in the initiatives carried out by the forest department and the NCF is examined here.

1. Role of people in the activities initiated by Nature Conservation Foundation

From 1994 to 2013, 39 people died in elephant attacks alone. Of them, 35 people were unaware that an elephant was nearby (Tamil Nadu Forest Department). The people of Valparai were convinced that no solution like fencing and trenching, which usually cost crores of rupees, could solve the existing conflict. The failures of the existing systems have convinced us that the technologies that are built from somewhere do not have the capacity to address and solve local problems. This puts to the test the idea that locals should determine their own needs by analyzing the severity of the issue they are facing and developing solutions. At present, NCF, headed by M. Ananda Kumar, is the first to discuss the necessary systems in Valparai. Realizing that the only way to do this is to avoid face-to-face encounters with elephants, the organization has empowered local people to find places where elephants are present, identify the exact locations, and pass on information about them to the organization and people. The role played by the NCF was to use various techniques to disseminate information throughout the region based on the information provided by the locals.

"The NCF and Forest Departments are the primary actors who supported us in solving the issue. Every initiative used to be planned with our input. We were most concerned about this because elephant

interactions have been the leading cause of deaths in Valparai. When people could not see the elephants going through the plantations, deaths happened during their attacks. Elephants become frightened when they see people and attack everyone in their path. We had the solutions in our heads, but we lacked the systems. NCF helps us in this circumstance. They started by making it simpler to locate and notify others about the locations where elephants might be found". Saravanan share his experiences about NCF.

Elephant Monitoring Network and the Conflict Response Team (CRU) was the major coordination lead by NCF. As part of it, they initiated many strategies with the participation of the local community. They created an early warning system (EWS) which includes Cable TV Announcement, Bulk SMS Service, Warning lights, Announcements in Bus (Venkatraman et al., 2005; Hedges & Gunaryadi, 2009; Davies et al., 2011).

1. Cable TV Announcement
"The idea emerges during a private conversation with a plantation owner in Valparai. He recommended creating some sort of mechanism so that anyone who approaches elephants without knowing they were there will be aware of their presence. That's how we approach cable TV operators in Valparai as a way to inform the local people about the places where elephants are present. People used to watch Valparai cable TV channel regularly all those days. We scrolled the information through the channel with the place where the elephants were seen and the phone number to be called if they saw the elephants". Said M. Ananda Kumar

It was a most effective method for spreading information about elephants. Based on the information scrolling through the channel, people started being cautious. People who knew the information on the channels started passing it on to their relatives and friends who were traveling through their respective areas without knowing the information. Every evening around 5 o' clock they would scroll through the places where the elephant had been spotted. Accordingly, the people had to deal with elephants and the confrontation began to decrease. Slowly it was growing as a network. People from each colony participated in this. The first project began to see success as they themselves began to exchange information with each other.

2. Bulk SMS Service
But as people switched to satellite televisions, this plan through cable TV began to fail. Many people traveling without information on the channels were later attacked. *"That's when we decide to use the possibilities of mobile phones to bring information to more people. We sent SMS and flash messages to mobile devices with information about elephant movements. For this, we went from house to house and directly talked to people and collected their phone numbers. We started the initiative after gathering*

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the data of more than 600 people and as of now, we are in contact with 4,000 people". M. Ananda Kumar continued.

Compared to cable TV, this system has spread rapidly. More than half of the total population received personal messages. The information was provided in the native language Tamil and English so that local people can understand (Kumar & Raghunathan, 2014). *"At first, we used to give information about the places where elephants were seen, but slowly we got information about the places where elephants were seen and about the number, types, time, appearance, and gender of the elephants. Again, this network expanded".* M. Ananda Kumar *added* to this.

3. Warning lights

There is still one more issue has to be resolved. Travelers who failed to get messages came under attack. Many people who are unaware of the whereabouts of the elephants are in danger after coming from the bus stops. The installation of warning lights at the bus stops was considered by the public as a solution to this issue. If there are any elephants around, a warning light will be flashed in red at each bus stop and junction to let passengers know. When someone notices the light is on, they recognize there is an elephant there and they may return or wait or seeks shelter somewhere or returns home with a bit more precaution. In 35 locations, we put warning lights (Kumar & Raghunathan, 2014). This system is also beneficial thus encounters with elephants are greatly reduced.

4. Announcements in bus

The announcement systems built right into the buses themselves are yet another invention developed exclusively for bus passengers. This is another way that a traveler might know about elephants. *"We have done many such activities in Valparai. This information is still being exchanged in Valparai in the form of WhatsApp messages, voice calls, and pictures and videos of the elephants".* Ganesh Raghunathan, one of the NCF coordinator explained.

The main reason behind the success of Valparai is that by sharing information about the elephants, people became more aware and also started participating fully in all the activities. Knowing about elephants in advance made them very confident and caring. They are used to being cautious where elephants appear and waiting until the elephants leave. In this way the excessive fear and aversion towards elephants has been reduced. Elephants had slowly become a part of their lives. Now it can be said that people live here by interacting with elephants. Due to these facst that elephants are not scared and disturbed, elephant attacks have also decreased. During this period from 2021 to October 2022, not a single death occurred in Valparai due to elephant attacks. Zero deaths have been reported (Tamil Nadu Forest Department). This is something that has only happened because of people's participation and coexistence between people and elephants (Western, 2001; Bremner & Park, 2007).

1st International Conference on Harmony and Reconciliation (ICHR)

2. Role of people in the activities initiated by forest department

During the same period, similar systems were implemented in Valparai under the guidance of the forest department. The forest department had tried to provide the necessary assistance by verifying the information about the elephants received from the NCF gathered from the direction of the people.

1. Rapid Response Team

Rapid Response Team was established in order to manage the conflicts in the valparai region. These team members received training in elephant monitoring, crisis management, and the protection of plantations (Kumar et al., 2020). Early warning systems with voice announcements and sensor detectors also have been installed in many public places. For those who cannot read or write, they have also started a voice call announcement system. And while passing the messages through bulk SMS system, the Rapid Response Team will reach the respective areas and led the elephants into the forest. This approach got initial failure because it took too long for the team from the forest department to reach the spot.

2. Centralized Disaster Monitor System

Following this, satellite points were identified where forest wardens were posted and these activities were monitored through a centralized disaster monitoring system. A highly trained squad arrives there immediately after knowing about elephant presence and drives the elephants into the closest forest. The squad comes back to station only after the elephants have safely gone to the forest.

3. Wireless trip system at elephant boundaries

The specialty of this system was that the message was sent automatically when the presence of elephants was detected through the invisible beam of the wireless trip system, which is usually installed at the borders where an elephant passes. The neighboring people will also announce the presence of elephants in the area through loudspeakers installed in the specific locations. Separate coordinators from the local community will be put up in each zone to press the announcement button. The information will be distributed to the locals there under their direction. This enables the information to be delivered to everyone within a kilometer radius.

4. Sophisticated remote camera set-up

The forest department has also developed a system to collect information about the movement of wildlife by installing remote cameras at various locations which can be operated from the range head courts. Although it has been started on an experimental basis, this approach has shown to be successful. Local community also benefited from this.

5. Anti Poaching Watcher

Another reason for reducing elephant-human conflict is the appointment of anti-poaching watchers in areas where regular elephant movement was found. Not only the designated watchers but also the people of the area are passing on information about the presence of elephants to the forest department. They alert the elephants when they see them. Local youth volunteers also participated in all these activities.

These are the initiatives lead by forest department in the study area where people can participate and benefited from their services. As an alternative to centralized and unilateral remedial efforts, Rajiv K Srivasthava, the then Chief Director of Anamalai Tiger Reserve, spearheaded comprehensive projects integrating people and other voluntary organizations. This comprehensive approach tells that none of the traditional preventive strategies like fencing, guarding and relocation could have reduced the severity of the conflicts in Valparai. This indicates that mitigation measures implemented without the knowledge or participation of locals are ineffective. To rebuild the ecological bond between wildlife and people, a variety of awareness seminars, meetings, and outreach initiatives are being conducted under the guidance of the Forest Department as well as NCF.

Win-Win approach: restoring the harmony between human and wildlife

Realizing that wildlife lives with them, people are now participating in all the activities being implemented (Treves , 2007). With the help of technology and mutual communication, new possibilities of coexistence have emerged in Valparai. It's also important to realize that, despite being surrounded by forest, it's not always feasible to coexist peacefully with wildlife (S, Mekonen, 2020). Since it is impossible to completely eradicate wildlife, the only viable option is to coexist peacefully with it (Sidhu et al., 2017). By including local people in these kinds of activities, the lost harmony is restored in Valparai.

"In my experience, elephants won't harm humans if we let them have their way. We can live comfortably when we attempt to understand and incorporate them into our daily lives. Whatever happens, we have taken their space. Humans have only recently begun to live here. But aren't the wild animals living here for centuries...isn't it humans who have transgressed the boundaries... The only option then is to co-live with them. We can live here too if we get to know them". It was said by Rajani.

Conclusion and Recommendations

Comprehensive efforts in Valparai show us that human-wildlife conflict can be eliminated and reduced by working hand-in-hand with local people, local government bodies, NGOs, forest department and other government agencies. The people of Valparai testify that there is no other way than to adapt and co-exist with the wildlife (Kumar & Raghunathan, 2014). Efforts in Valparai reveal that only using the knowledge and experience of the people and working with the help of technologies and other systems

will be better than centralized projects and no project will succeed by avoiding the participation of the people. The collective efforts in Valparai can be considered as a win-win approach because both the local community and the wildlife benefited from them equally. These are the effective strategies and actions that can be used to lessen damage, de-escalate conflicts, address risks to people's lives and property, and develop long-lasting solutions (Mekonen, 2020). The actions of the Forest Department and the NCF, by successfully utilizing the opinions, knowledge, and experiences of the people, are a very good model for resolving the present conflict situations.

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