Human-wildlife conflict (HWC) is a pervasive global phenomenon that negatively affects human livelihoods and the economic stability of nations, the conservation of many wildlife species, and coexistence between humans and wildlife. Yet, our understanding of factors that drive and mediate human-wildlife conflict is still limited. Most studies that address this topic tend to focus on one aspect of the conflict situation, thus providing only a limited understanding of how multiple factors can interact to dynamically alter the process of conflict. My study attempted a comprehensive understanding of HWC by assessing the role of different factors from human, environmental and species dimensions and examining how they interact to operationalize conflict. I investigated this through a case study of human-rhesus macaque conflict in Himachal Pradesh, northern India. Human-rhesus macaque conflict in India is primarily due to crop-raiding by macaques and is present across much of the rural-agricultural gradient in the country. It has resulted in a substantial financial loss to farmers and hence has reduced human communities’ tolerance towards the presence of the species, leading to lethal retaliatory actions in some regions. The specific objective of my study was to assess the role of multiple factors such as human social factors, resource management, landscape composition and species behavior on the development of conflict and its mitigation in the region.

Occurrences of human-wildlife conflict incidences are non-random in nature and knowledge about their spatial and temporal patterns help us identify the geographical locations and time periods that are particularly vulnerable to conflict incidences. Hence, I began my investigation into human-rhesus macaque conflict by characterizing the spatial and temporal patterns of crop damage by rhesus macaques in Himachal Pradesh. Perceptions of human communities affected by conflict influence their views of the conflict species and their acceptance of mitigation measures. Hence as part of my second phase of investigations into the human dimensions of the conflict, I studied how farmers’ perceptions of rhesus macaques and macaque crop depredations influence the development of human-primate conflict in Himachal Pradesh. Wildlife managers constitute one of the major stakeholder groups in human-wildlife conflict scenarios, yet their role has received limited attention in the research on human dimensions of conflict. Therefore, in the second part of my investigations into the human dimensions of conflict, I analyzed the attitudes and perceptions of state forest department personnel with respect to the management of rhesus macaque crop-raiding.
conflict in Himachal Pradesh. Landscape characteristics shape the quality and distribution of resources across different habitats. Therefore, under the environmental dimensions of conflict, I investigated how rhesus macaques utilize different components of the habitat and how landscape composition may act as a potential driver for rhesus macaque crop-raiding. The behavior and social organization of crop-raiding wildlife species determines the intensity of raiding events by influencing the number and age-sex profile of individuals involved in crop-raiding. Therefore, under the species dimensions of conflict, I analyzed rhesus macaque crop-raiding behavior and the nature of collective group movements that lead to crop-raiding events in the species.

I conducted my study in Solan district, Himachal Pradesh, India and used a combination of research methods – phenological monitoring, behavioral sampling, GIS-based spatial analyses, and questionnaire surveys – to address my research questions. I followed and observed two troops of rhesus macaques, monitored their crop raiding behavior, evaluated the landscape structure, crop availability and natural resource availability and interviewed farmers and forest department personnel on their perceptions regarding rhesus macaque conflict. My findings showed that crop depredations by rhesus macaques showed specific spatial and temporal patterns and these patterns were influenced by crop type and crop-availability. Although farmers thought of the species as an agricultural pest, they were still unwilling to physically harm the species. The disparate views of farmers and forest department personnel bring about an element of human-human conflict in the human-rhesus macaque conflict in Himachal Pradesh. The presence of intra-organizational differences in conflict perception may also critically impact the implementation and overall success of mitigation measures. Landscape composition and structure critically determine crop-raiding intensities in the study area. The heavy dependence of rhesus macaques on natural resources that are located in the crop-field complexes increases the potential for crop damage and makes the mitigation of crop-raiding in the fragmented landscape an extremely challenging task. Finally, the raiding behavior of rhesus macaques showed that they were aware of the risks involved in crop-raiding and modified their raiding behavior accordingly. Decision making for collective group movements that lead to crop-raiding in study macaques tended to be of democratic in nature. There was a tendency for younger individuals to initiate raid collective movements, which has not been reported for the species previously.
The findings of my study on human-rhesus macaque conflict in Himachal Pradesh show that a number of factors are responsible for the onset, development, and intensification of the human-wildlife conflict. This suggests that mitigation measures cannot just aim to reduce costs of wildlife-caused damage; they must also address the building blocks of conflict. There is an immediate need to increase farmers’ awareness regarding low-cost mitigation measures that can be implemented at the household level. Efforts must also be put in place to increase communication between farmers and forest department personnel and thus reduce the element of human-human conflict. The costs and benefits of land management practices must be re-valuated in the context of crop-raiding to understand what changes may be required to be made with respect to the planting of tree species. Finally, more research into the different dimensions of conflict is urgently required to manage human-wildlife conflict in an effective, socially acceptable, and sustainable manner.