

# Understanding conservation conflicts between herding communities and large carnivores in a shared landscape in Kyrgyzstan

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## Abstract

Livestock depredation by wild animals is the main cause of conflict between humans and wildlife, posing a threat to the peaceful coexistence of people and animals worldwide by triggering retaliatory killings and economical losses. In Kyrgyzstan, a country heavily reliant on pastoralism, these conflicts are particularly pronounced due to the presence of key predators such as snow leopards (*Panthera uncia*) and wolves (*Canis lupus*). Climate change exacerbates these conflicts by altering ecosystems, reducing prey availability, and forcing livestock to graze in areas with higher predation risks. Evaluating conflict occurrence over a range-wide habitat use requires information on conflict occurrence over broad geographic regions. I employed key-informant interviews and participatory mapping with 85 herders in the Alatau landscape and gathered data on livestock presence and livestock depredation events during the summer of 2023. Using single-species occupancy models I analysed the distribution of conflicts while accounting for imperfect detection across interviewees. This approach allowed to identify the spatial patterns of depredation by large carnivores and explore herders' perceptions of how climate change is affecting their livelihoods and conflict intensity. Across 25 km<sup>2</sup> cells, I recorded 354 instances of livestock presence and 266 conflict occurrences (site use). In the Alatau region, a high probability of site use was observed for livestock in 98 % of cells and for conflict in 96 % of cells. Occupancy models revealed that distance to protected areas, NDVI and TRI were the main determinants of conflict occupancy. The results of the qualitative content analysis of the interviews revealed that herding communities in the Alatau are experiencing increased vulnerability in livestock management due to extreme climate variability. With migration to higher altitudes as the key adaptation strategy, competition with wild prey and increased conflict with predators are likely to increase in the future. The findings can provide critical insights into the evolving dynamics of human-wildlife coexistence in the region, and inform conservation strategies that balance the needs of pastoral communities and threatened wildlife under changing environmental conditions.

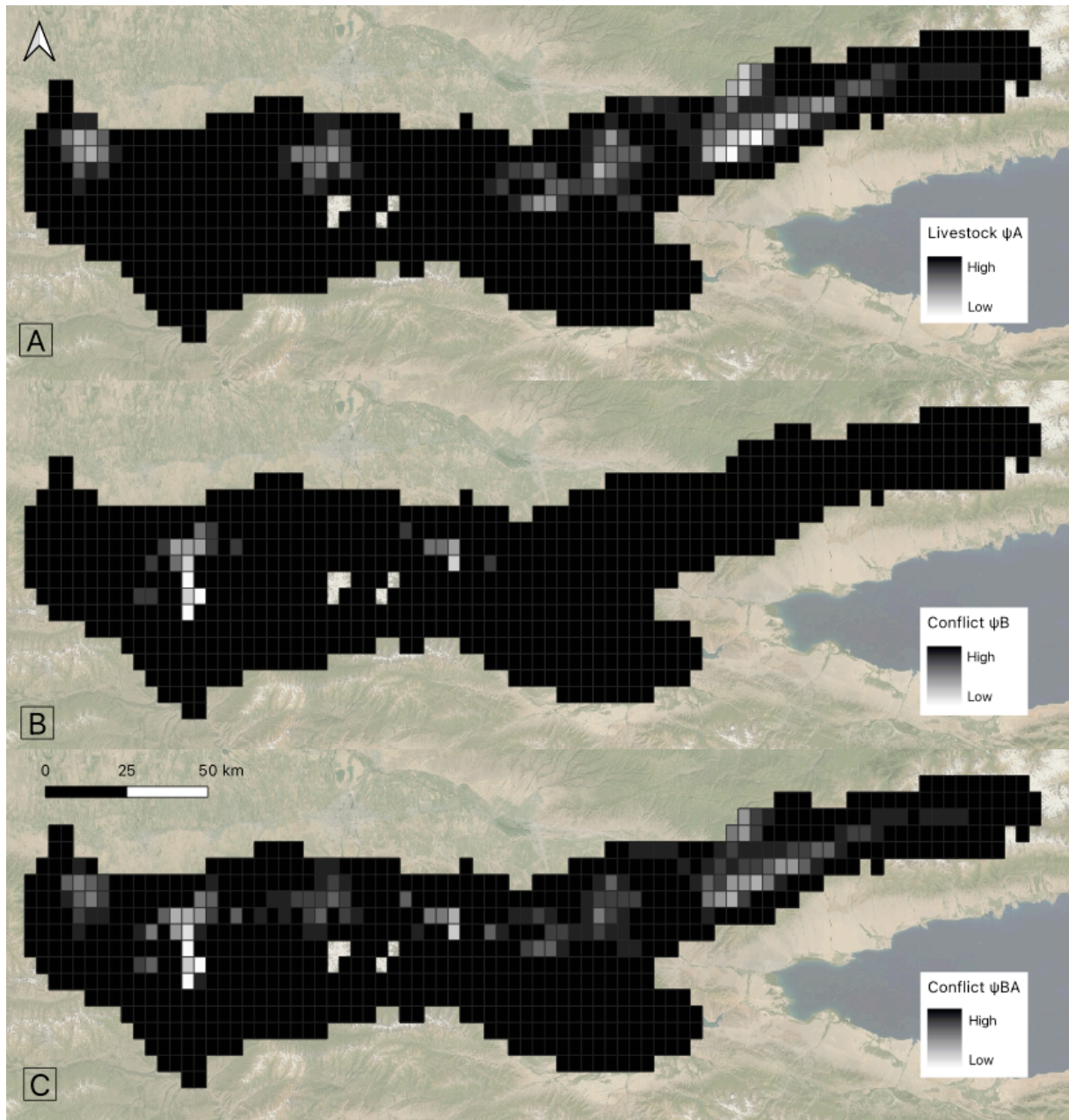


Fig. 1. Estimated probabilities of site use of livestock ( $\psi_A$ ) A, conflict ( $\psi_B$ ) B, and conflict given livestock presence ( $\psi_{BA}$ ) C in the Kyrgyz Alatau