“Conserving Neotropical biodiversity in pasture-dominated landscapes”

Summary:

Historic and contemporary conversion of vast swathes of forest to cattle pasture threatens the rich biodiversity of the Neotropics. Because cattle production is an important livelihood throughout Latin America and global beef demand is expected to continue rising, including cattle producers in conservation efforts will likely be necessary to successfully preserve Neotropical biodiversity. Increasing tree cover in pastoral landscapes will be key to conservation efforts because most threatened species in the Neotropics are forest-dependent. Tree cover can be increased by widespread adoption of silvopastoral practices (i.e., the intentional cultivation of high tree densities in active pastures), and reforestation of former pastures, but optimizing the establishment and conservation value of this tree cover depends on developing a better understanding of silvopastoral habitat quality, cattle producers’ ecological knowledge and values, and the broader social-ecological dynamics that shape tree cover trends at regional scales. My dissertation contributed to addressing these needs by 1) studying the foraging behavior of insectivorous forest birds to develop a more mechanistic understanding of silvopastoral habitat quality and identify preferred tree species 2) surveying cattle producers to assess temporal trends in local ecological knowledge and potential consequences to silvopastoral habitat quality, 3) using a role-playing game with cattle producers to test assumptions about the social-ecological dynamics of reforestation in pastoral landscapes, and 4) analyzing tree cover change in a cattle-dominated region to determine whether patterns and drivers of change differ between forest and non-forest tree cover classes. My research provides insights for increasing adoption of silvopastoral practices, improving silvopastoral habitat quality, and optimizing efforts to increase different types of tree cover in cattle-producing regions. Furthermore, my results confirm that forest preservation and restoration is essential for conserving Neotropical biodiversity, but illustrate the potentially critical role that silvopastoralism could play in facilitating conservation efforts.