

Drawing Ecosystems: Negotiations between Science and Politics around the Delimitation of *Páramos* in Colombia

Paula Ungar

Páramos are tropical mountain ecosystems that occupy less than 5 percent of the country's upper Andes but play a key role in the regulation and provision of water for more than 70 percent of Colombia's 47 million inhabitants. These "strategic ecosystems" have also fascinated naturalists, as they are home to species and communities adapted in extraordinary ways to the extreme conditions of heights above 2,800 meters. Furthermore, *páramos* are sites of symbolic and practical significance for Indigenous and peasant communities who have venerated, inhabited, and used them for centuries. More recently, multinational mining companies and the agro industry have occupied many of their territories, often supported by state incentives. During the last few decades, Colombian legislation has simultaneously been promoting the conservation of *páramos* by restricting production activities in them.

For the last three years, I have worked with the Alexander von Humboldt Institute, the Colombian institute for biodiversity research. I coordinated a group tasked with producing relevant knowledge to inform the "delimitation of *páramos*" by the Ministry of the Environment. We worked on the production of maps of *páramos* at a scale of 1: 25,000 and in social-ecological studies, as input for the implementation of such legislation. "Ecosystem," however, is perhaps the most poorly defined term in the ecological literature (Sarkar 2002). As can be deduced from a standard definition (ecosystems are units that are organized in time and space, formed by interrelated biotic and abiotic components), drawing precise limits to them is an artificial procedure in what actually behaves as dynamic and permeable transitions between complex systems. The procedure becomes even more complex if one sees ecosystems as an emerging result of social-ecological interactions.

This difficult scientific undertaking (drawing official *páramos*) called unprecedented public attention to the Humboldt Institute, traditionally a "neutral actor" in the Colombian environmental arena, putting its name in the middle of social confrontations and newspaper headlines. We dealt with urgent demands and pressures from different stakeholders, often with opposing interests, to which we had to respond with "objective science" in order to produce the much expected *páramo* line.

As a result of tensions, conflicts, and alliances between scientists, politicians, extractive industries, environmentalist movements, historical characters, landscapes, plants and animals, and maps themselves, at different temporal and geographic scales, *páramos* were delineated, both in physical maps and in people's imaginaries.

During my stay at the RCC I will write a critical account of the shaping of official *páramos* based on my experience, focusing particularly on coproduction of science and politics/policy. Particularly, I am interested in telling the story of how *páramos* were drawn in the public sphere and in maps. I aim to do this from two perspectives: first, I will tackle the issue of the roles of actors—their values, forms of knowledge, power relations—and their interactions in the delineation of *páramos*. Second, I will look into the scientific practice itself, aiming to answer the question of how ecosystems were defined and drawn: which theoretical frameworks, methods, and variables were chosen by scientists (by us!) and what these choices reveal about science as a political endeavor.