

LOCAL SPOTLIGHT

Santa Cruz Valleys, Bolivia—Promoting health through Watershed Funds



Photo: © Steffen Reichle



The challenge

The Santa Cruz valleys of eastern Bolivia are among the most biodiverse regions on Earth, spanning an altitudinal range of nearly 3,000 meters and lying at the intersection of three major ecosystems: Amazonia, the Andes and the dry forests of central South America. The forests of this area are home to numerous species, including conservation icons such as the Andean spectacled bear (*Tremarctos ornatus*) and the endangered endemic red-fronted macaw (*Ara rubrogenys*). However, pressure from agriculture in the region has led to forest degradation and fragmentation, as well as contamination and pollution of the aquatic environment, with implications for aquatic species, forest animals and local communities.

Communities in the area obtain water for drinking, cooking, washing, sanitation and irrigation from water bodies in the forest near settlements. While this makes them independent and largely self-sufficient in terms of water supply, it also means that water quality in those communities is dependent upon land use in the surrounding area upstream of water sources as chemical water treatment in the area is extremely rare.

Farmers in the area allow their cattle to roam freely through the forest during a large part of the year. During this period, cattle have direct access to these water bodies for drinking, but they also contaminate them with their feces, which contain pathogenic viruses, bacteria and protozoa. The consequence of this is a public health crisis in many of the communities: widespread diarrhea, often affecting babies, young children and the elderly.

One case, from the village of Pucará, demonstrates the problem. Almost immediately after the village relocated its drinking source to a larger mountain stream, incidences of gastrointestinal disease increased dramatically (Figure 3.15). The source of the contamination was easy to identify: the new water source was situated in a catchment of 116 hectares used as rough grazing for cattle. None of the watercourses upstream of the outtake were protected and there was little conserved forestland within the catchment. Unsurprisingly, monitoring found heavy *E. coli* contamination.

Cases of diarrhea attended at the Pucará Health Centre, Bolivia

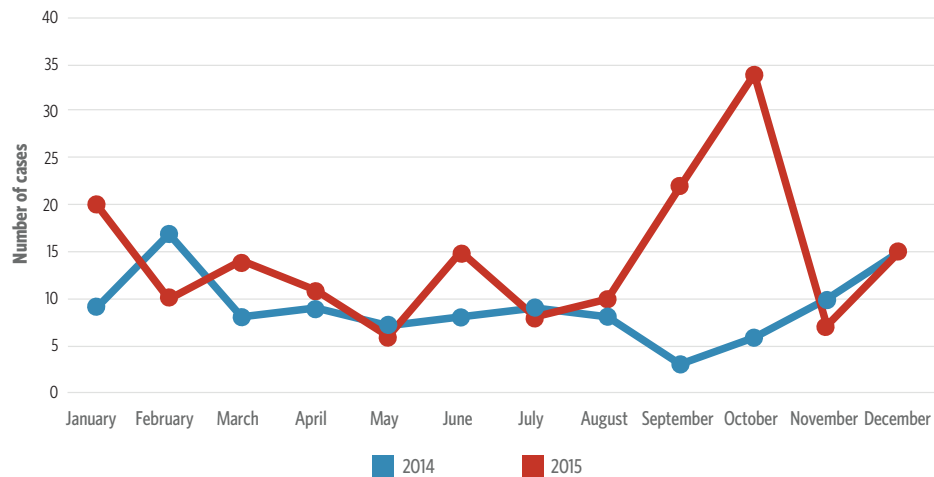


Figure 3.15. Cases of diarrhea attended at the Pucará Health Centre. The new water system was connected in August 2015.

Action and opportunity

As in many other communities in the region, the mayor of Pucará is working with a Watershed Fund, as well as landowners and the local water committee, to determine how to remove cattle from the watershed and to protect the watercourses from intrusion. Watershed is an initiative of more than 125 municipal and regional governments across the Andes to protect their upstream water sources by conserving their forests. Municipal water funds are one of the initiative's primary mechanisms. In Bolivian Watershed Funds, farmers who protect lands and streams receive compensation with a value of US\$10 per hectare per year if they comply with their contract, and in the form of productive goods such as beehives, fruit trees, irrigation tubing and cement for construction of irrigation systems and water troughs for cattle. Conserved land is monitored yearly for compliance to ensure that cattle continue to stay out of forests and watercourses. Municipal Watershed Funds, made possible by contributions from local governments, water user associations and Fundación Natura Bolivia (a conservation NGO), pay for program implementation, compensation and monitoring.

Researchers from Fundación Natura Bolivia and collaborating universities have conducted water quality studies in the community to monitor changing levels of *E. coli*, an indicator of fecal contamination. In the worst cases, levels of *E. coli* at water outtakes can reach 30,000 colony-forming units per liter, greatly increasing the risk of infection by people consuming this water. Colonies are enumerated using a field-friendly technology, Coliscan™ Easygel, that allows bacteriological work in contexts without laboratory equipment.

Monitoring is showing that real improvements in health outcomes can be achieved through investment in both upstream conservation and water infrastructure, of which there are many examples. Experiences of the Watershed Funds suggest that delivering water of high quality, sustainably and through locally appropriate technology, is achievable and requires creating and/or strengthening local institutions.

SANTA CRUZ VALLEYS DASHBOARD

Water fund start date

2003

Number of upstream participants to date

6,560

Number of potential downstream beneficiaries

300,000

Number of partners to date

70

Primary funding sources

Utility
Public
Water user associations
NGO

Activities



Anticipated co-benefits

