Excursion
"Ecosystem services and biodiversity in Ecuador"
1 – 10 March 2020

The aim of the excursion was the investigation of the different ecosystem types and the experience Ecuadorian history and culture which is often linked as socio-ecological system. In addition, networking between the participants but also with local Ecuadorian institutions, especially with the Ministry of the Environment (MAE), the National Institute of Biodiversity (INABIO), and Universidad Regional Amazónica (Ikiam) was of importance. The excursion participants from Germany were from Martin-Luther-University Halle-Wittenberg (MLU), University of Regensburg, and University of Marburg.

Figure 1: Plant diversity in Ecuador. Photo credits: Christoph Kurze

In Quito, the participants visited a cultural center where Ecuadorian history and ethnic diversity was presented and we used a cable car (Teleférico) to get to almost 4000 meters to see the geographical location / topography of Quito and to analyse the (disturbed) Paramo. Paramo is an alpine tundra charactertized by species from *Asteraceae, Fabaceae*, and *Ericaceae*. The Paramo is also a very important water supplier for Quito. In Quito, we also presented the project Ecu-MAES in the Ministry of the Environment (MAE), and the National Institute of Biodiversity (INABIO). Aims, expectations, potential collaboration and experiences were exchanged. Also the Botanical Garden was visited and was of special interest for the curator of the Botanical Garden and the curator of the herbarium of MLU. The road through the Andeans from Quito to Tena showed the landscape change and human impact along the road. After heavy rainfalls, landslides can block the road which shows also the relevance of soil erosion control. In Tena, the capital of the province Napo, we visited the infrastructure of the Universidad Regional Amazónica (Ikiam). In the Colonso Chalupas Reserve in Santa Rita which represents the mountain forests of the Andes foothills, we joined a guided tour by the indigenous community of Kichwa through the managed agroforestry landscape where, for example, cocoa *(Theobroma cacao)* was cultivated. We were also shown how to prepare chocolate.

Figure 2: Yasuni National Park, Napo River and clay lick for parrots. Photo credits: Christoph Kurze

The bus tour from Tena to Yasuni National Park reflected the gradient from the Andes foothills to the Amazon Basin. This area is characterized by high biodiversity due to the drastic change in landscape, soil and climate. We used a boat to get to the Napo Cultural Center inside the Amazon rainforest. Along the Napo River, we could see the oil and mining concessions and the high human pressure on the ecosystem. In the Yasuni National Park, we had several tours to see the unique and incredible diversity of plants and animals of the Amazon Basin. At a clay lick, we saw a group of the Blue-headed Parrot (*Pionus menstruus*), Dusky-headed Parrot (*Aratinga weddellii),* and the Mealy Amazon (*Amazona farinosa farinosa*). On a tower, we could watch a family of the Monk Saki (*Pithecia monachus*). We could also see in a night walk different spcies of spiders, snakes, geckos, stick insects, moths and tree frogs. From the cultural perspective, a traditional ceremony of indigenious women was presented in the Napo Cultural Center. This biodiversity is amazing and provides ecosystem services, both on a local and global scale, therefore, conserving Ecuador's biodiversity is key to human well-being.

Figure 3: Cuicocha lake. Photo credit: Christoph Kurze

To understand the changes in protected landscapes, we visited the Cotopaxi National Park. This national park conserves several ecosystems - the most representative ecosystems are the Páramo and volcano landscape. Several participants did a hiking tour to the Refugio Cotopaxi in 4800 meters altitude. Inside the nature reserve, the participants could also see the discrepancy between nature conservation and economy by private tree plantations. A hiking tour around the Cuicocha lake close to Otavalo showed us the plant diversity, tourism and recreation for urban population as ecosystem services.

Figure 4: Medicinal plants as ecosystem services. Photo credit: Pablo Cuenca

Some key considerations:

1. Ecosystems with high levels of biodiversity and population are strongly threatened by resource extraction, land-use change, and deforestation.

2. It is key to understand that changes in biodiversity and ecosystem services affect human well-being at different scales.

3. More research is needed for the effective development of sustainable landscapes, especially in areas where human population depends on the forest for its survival.

Figure 5: Participants of the excursion in front of the Cotopaxi vulcano. Photo credit: German Albuja