

Field report on the digitization of a biology excursion to Costa Rica

Report: Felix Przesdzink (PhD student UOS) and Sebastian Holt (student UOS)

Together with Professor Klaus Mummenhoff from the Department of Botany in the Department of Biology, we decided to test the concept of a "digital excursion" on his Costa Rica excursion "Environment, Vegetation and Life Forms of the Neotropics", which is scheduled to take place every two years but has been cancelled since 2020 due to the Corona crisis. The digitalization of as much excursion content as possible allows the module to be carried out despite travel restrictions, and the creation of "virtual reality" teaching materials and numerous teaching videos should enable the highest possible immersion of students in the ecosystems of this distant country, which they unfortunately cannot experience themselves.

In February 2022, the two of us traveled to Costa Rica together with Prof. Mummenhoff to digitize the planned excursion there using action cam, 360° and drone recordings. The primary focus here was to depict the different vegetation types as well as adaptations within Costa Rica's ecosystems. Due to different topographical, climatic and edaphic factors, Costa Rica has a very high biodiversity of life forms, but also of ecosystems.

We were able to document evergreen tropical rainforests of the lowlands and mountains, high alpine tropical mountain vegetation above the tree line, seasonally almost defoliated dry forests, mangroves and numerous anthropogenically shaped agricultural landscapes. Since the Central American country has an area of only 51,180 square kilometers (and is thus only slightly larger than Lower Saxony) and has a good infrastructure, it is also attractive from a logistical point of view for geobotanical and biological excursions. Due to the more than twenty years of experience of Prof. Mummenhoff and Dipl. Biol. Rolf Blancke, his local contact partner, there is also a wealth of information on the biology of Costa Rica.

During our documentary trip, we captured 12 different tropical ecosystems in several days of filming with six different cameras, producing several hours of footage. The audiovisual recordings will be used to support the practical phases in the tropical house of the Osnabrück Botanical Garden, the presentation of differences in vegetation forms, the anatomical analyses of adapted organs of tropical plants as well as simple physiological experiments. Thus, they will be optimally interlinked with the contents of the module that can be implemented on site in Osnabrück.

Furthermore, we plan to use the recordings for a follow-up project by members of the Costa Rica Research Center, which will be carried out in cooperation with two local schools.



small anteater/tamandua and blossom (photo: S.Holt)