Wildlife Conservation Society- Rwanda Program

Program description

Title: Monitoring Ecosystem Services, Agriculture and Livelihoods in Rwanda

Funded by: Conservation International, MacArthur Foundation

Partner institutions: REMA; RNRA/ IWRM; RMC, RAB; REB; RDB, Districts, Schools

Overall term: 2012 to 2013

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Context: Analyses of 19 global climate models suggest immense change in the global climate that is expected to affect much of the tropics and subtropics, which is coincidentally where the majority of the world's poor live. To plan effective adaptation strategies for both people and ecosystems, it is necessary to understand the geographic patterns of these changes at a range of scales. In Rwanda, for example, although total annual rainfall may not change significantly rainfall is likely to become more unimodal, i.e., shift from two rainy seasons per year to one. Such a change will affect natural systems, such as forests, as well as human systems, particularly agricultural production.

Monitoring and research efforts by WCS will acquire data that will be made freely available, with intended used by policy makers and planners to evaluate the effectiveness of climate change adaptation strategies in Rwanda. Reports on the status of biodiversity and ecosystem services will be produced and shared with partners.

Objectives of the program:

WCS is a member of Tropical Ecology Assessment and Monitoring (TEAM) Network. The objectives of the TEAM Network are to quantify and forecast changes in biodiversity in tropical forests at local, regional and global scales, and to understand the intrinsic dynamics of biodiversity and its responses to anthropogenic drivers of change (e.g., climate change, habitat conversion, habitat degradation, overexploitation of species). The purpose of the Monitoring Ecosystem Services, Agriculture, and Livelihoods Project in Rwanda is to collect data for TEAM using the most current versions of the TEAM Protocols. The project's objectives are to design and implement a system to measure baseline levels of ecosystem services in support of sustainable land management and biodiversity conservation and make all data freely available online through the TEAM data portal. The project is also intended to serve as a pilot for assessing the potential for future participation in an Africa-wide network of sites committed to monitoring of ecosystem services.

Approach:

To effectively monitor ecosystem services, agriculture and livelihoods in Rwanda, we have two primary components to our data collection process:

1. Acquire baseline biophysical data (e.g. temperature, humitidity, rainfall, solar radiation, soil data, wildlife data, water depth, water pressure, water temperature, etc.)
2. Acquire baseline socioeconomic data at the household level

The combination of these data will help us to better understand our baseline through systematic monitoring. This monitoring will also provide quantitative data on ecosystem health, ecosystem services, and livelihoods, with the ultimate goal of disseminating this integrative data to enable policy makers to explicitly evaluate tradeoffs among agricultural development, biodiversity, and ecosystem services.

Achieved Results:

Sample sites were selected according to the following six criteria: water balance; representation of major types of agriculture; agricultural intensification; presence of natural land cover; elevation and predicted future climate, resulting in the selection of two landscapes for data collection.

To date, two climate stations, four water sensors and one atmospheric sensor were installed in each landscape, from which data are collected every 6 weeks. Additionally, camera trap arrays are currently being deployed in the Nyungwe landscape within the National Park boundary to monitor mammals and ground birds. Preliminary data were from the water and atmospheric sensors and climate stations has been downloaded (see below) and is undergoing analysis.