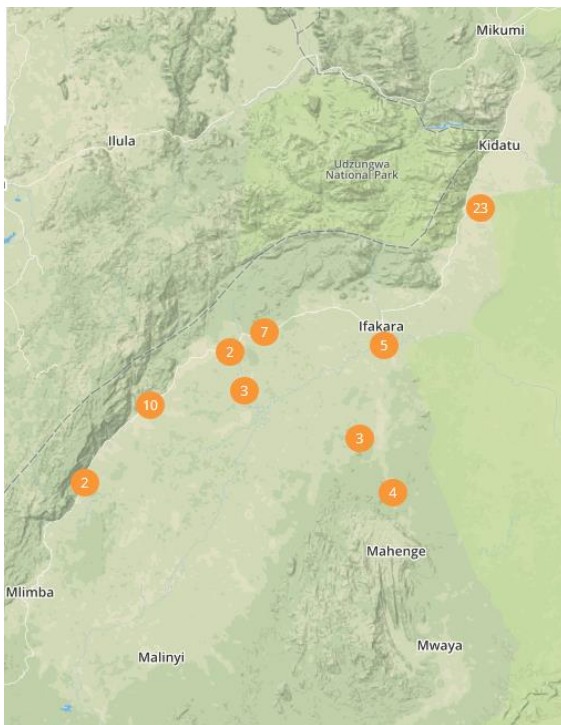


# Climate Change Response Survey: Kilombero Valley, Tanzania April 25, 2019

## OVERVIEW

Climate change has direct impacts on ecosystems and biodiversity, but may also indirectly impact nature through human adaptation responses. For example, farmers in Madagascar are responding to perceived changes in rainfall by increasing hunting activity. In Namibia, farmers are expanding their cropland to cope with decreased production. Through its Managing Global Change Impacts (GCI) working group, the Africa Biodiversity Collaborative Group (ABCG) has surveyed coping responses of human communities to climate change in 10 African countries as well as the biodiversity impacts of those responses. This report details findings from African Wildlife Foundation-led field surveys in Tanzania's Kilombero Valley. The valley sustains a vibrant agricultural sector, is home to a Ramsar site, and abuts the Selous Game Reserve and the largest block of Eastern Arc Mountains which features several protected areas.



**Figure 1.** Locations of key informant interviews

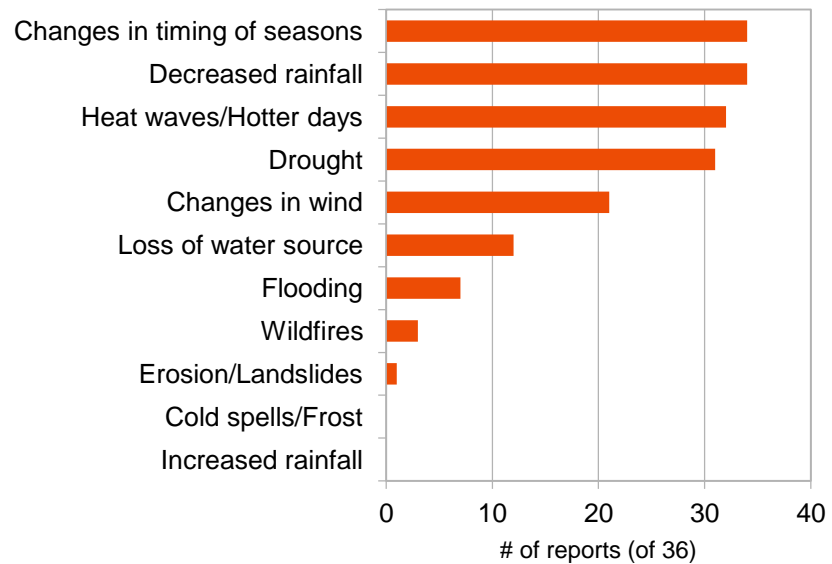
The aim of the GCI working group was to answer the following questions: What changes in weather and climate are communities facing in sub-Saharan Africa? How are those communities responding to changes in weather and climate in this region? How are those responses negatively impacting biodiversity? Findings from these surveys informed analyses to help ABCG gauge what locations may experience such impacts in the future and what alternative responses should be promoted and implemented to benefit both people and biodiversity in this region. To answer these questions in the Kilombero Valley, AWF interviewed 36 key informants across the valley using an GCI-designed questionnaire (Figure 1) in February-March 2017. Key informants included farmers, village and business leaders who were selected for their ability to offer an overview of community circumstances.

## CHANGES IN WEATHER/CLIMATE

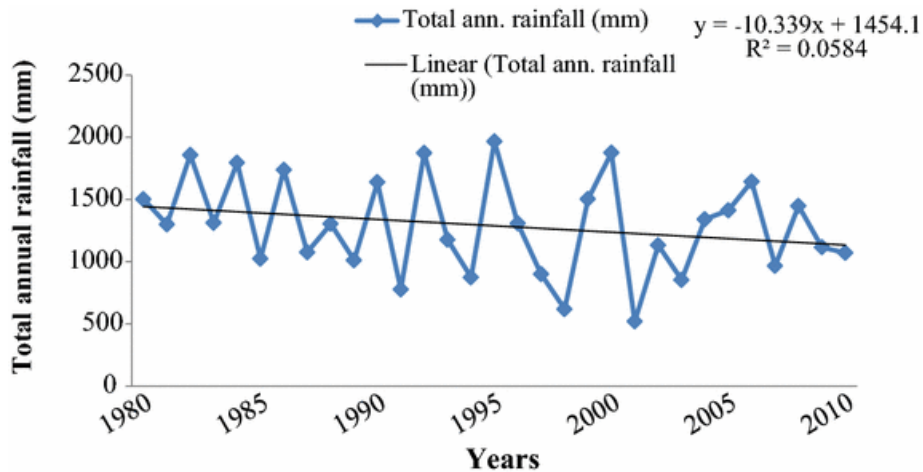
Survey respondent observations profile a climate that is becoming hotter, drier, windier, and with unpredictable seasonality (Figure 2). These conditions contribute to more wildfires and drying up of ponds. More intense storms contribute to more flooding.

Respondent observations are consistent with recent Kilombero District climate trends for precipitation (Figure 3) and temperature<sup>1</sup>.

## Reported Changes in Weather/Climate



**Figure 2.** Reported changes in weather/climate



**Figure 3.** Total annual rainfall recorded between 1980 and 2010 in Kilombero District, Tanzania<sup>1</sup>

## IMPACTS ON COMMUNITIES

The community reports that trends towards a warmer, drier, more turbulent climate impacts them as followed:

- Crop failure/significant production decline (100% of respondents)
- Reduced freshwater availability (37% of respondents)
- Increased human-wildlife conflict due to crop-raiding, water shortages (37% of respondents)

<sup>1</sup>Balama, C., Augustino, S., Eriksen, S., & Makonda, F. B. (2016). Forest adjacent households' voices on their perceptions and adaptation strategies to climate change in Kilombero District, Tanzania. *SpringerPlus*, 5(1), 792.



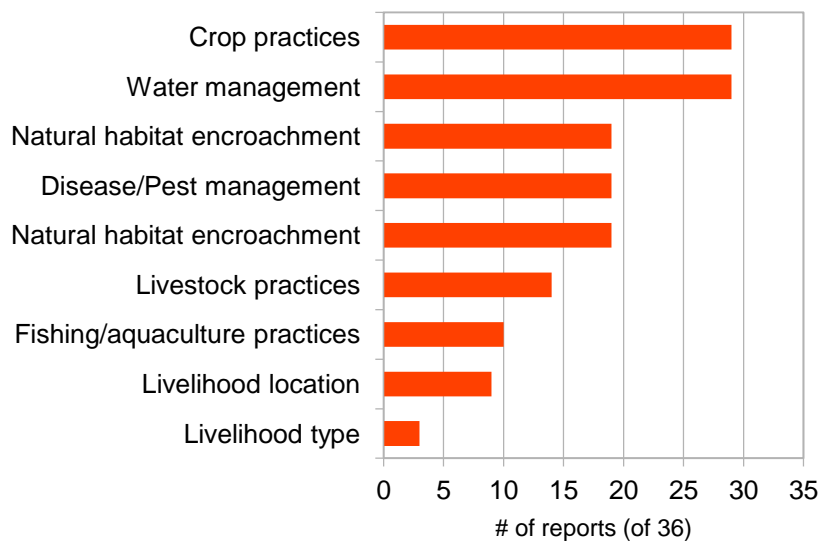
- Wind destroyed homes/fruit trees (26% of respondents)
- Increased prevalence of diseases in humans/livestock (21% of respondents)
- Decreased fish harvest (16% of respondents)
- Livestock loss/malnourishment (10% of respondents)
- Decreased bush meat (10% of respondents)

### COMMUNITY RESPONSES TO CHANGES/IMPACTS

With no external assistance, communities are responding to the aforementioned impacts by:

- Changing crop practices such as adding cropland, irrigation, or drought resistant crops
- Improving water management by planting trees and prohibiting grazing along water sources
- Expanding cropland into formerly natural habitat
- Walking longer distances in search of fish
- Diversification from agriculture into livestock management (ducks, chickens, goats, etc.) and fuelwood production.
- Illegal hunting of wildlife
- Tree-planting for water management and timber

### Responses to changes in weather/climate



**Figure 4.** Responses to changes in weather/climate

Changes in crop practices and water management are the dominant community responses (Figure 4).



## IMPACTS ON BIODIVERSITY

As profiled below, current community responses emphasize cropland expansion at the expense of natural land cover leading to losses of wildlife habitat and reduced populations:

- Habitat loss due to expansion/shifting of cultivation (motivated principally by low productivity) and expanded timber harvesting (100% of respondents).
- Degradation of habitat due to overgrazing.
- Reduced local wildlife populations (e.g., Puku) and species diversity.

## NEXT STEPS

In mid-2019, AWF will convene key informants and other community members in a workshop to present the survey findings, address gaps, and receive updates. This will provide a basis for discussions to identify a community-led, AWF-supported adaptation action to be implemented in the target site to help communities adapt to climate change, while minimizing negative impacts on natural resources and biodiversity.

## AFRICA BIODIVERSITY COLLABORATIVE GROUP

The Africa Biodiversity Collaborative Group (ABCG) is a consortium of seven U.S. based international conservation non-governmental organizations (NGOs): African Wildlife Foundation (AWF), Conservation International (CI), the Jane Goodall Institute (JGI), The Nature Conservancy (TNC), Wildlife Conservation Society (WCS), World Resources Institute (WRI) and World Wildlife Fund (WWF). ABCG is supported by USAID to advance understanding of critical conservation challenges and their solutions in sub-Saharan Africa.