SERVIR Africa Workshop
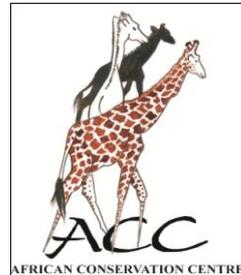
Assessing the Vulnerability of Biodiversity to Climate Change

Southern Sun Mayfair Hotel, Nairobi

29th November 2011

Workshop Report

WORKSHOP ORANISED BY AFRICAN CONSERVATION CENTRE

P O BOX 15289, 00509
Nairobi, KENYA

In collaboration with:

With kind support of:

Workshop Rapporteurs: Anna Sakellariadis and Preetika Bhanderi (ACC)

Workshop Overview

The ACC-SERVIR/AFRICA project on Biodiversity was started as a follow up to an initial assessment of the vulnerability of sample plant species to climate change. The SERVIR/Africa project sought to expand the scope of taxa and species and asses their vulnerability to climate change, while beginning to build a database and a spatial web-based interface of these key indicator species. Progress on the project was presented at the 2010 International Conference on Biodiversity, Climate change held in Nairobi on September 15-17, 2012 and drew on previous collaborations and partnerships ACC had built in its climate change program ie National Museums of Kenya, ACC, Yale University USA, University of York UK and Missouri Botanical Gardens.

ACC together with various partners had in 2010 and 2011 in support of the SERVIR/Africa project and other similar ones, organised successful trainings on biodiversity Informatics to equip the holders of biodiversity information with the requisite skills and tools for capturing, storing and sharing this information and knowledge according to international interoperable standards.

This workshop consolidated the various analysis undertaken by the partners with a display of presentations of the preliminary results and discussions to chart the way forward for further engagement.

Highlights of Presentations

Andre Kooiman, RCMRD, introduced the workshop as an opportunity for "two-way traffic," where both presenters and participants in the group discussions addressed the progress since the 2010 Biodiversity, Land Use, and Climate Change conference, focusing especially on how to share data and information amongst institutions and researchers.

Laban Odhiambo, representing Dr. Japat Agatsiva, the director of DRSRS, delivered the opening speech, describing Kenya's rich biodiversity, and emphasizing the importance of using good data in making policy decisions.

Andre Kooiman then presented the SERVIR Regional Visualization and Monitoring System, which aims to strengthen capacity of governments and stakeholders to integrate earth observation and geospatial technologies into development decision making in order to improve environmental management and resilience to climate change.

Dr. David Western, chairman of the African Conservation Centre, contextualized the issues at hand, pointing out the rapid development in East Africa alongside massive environmental change. "Natural ecosystems require maintenance," he said, cautioning against the tendency to discount the future. The ability of institutions to share their information will determine whether Kenya as a nation will race ahead of the development curve or not. "What you'll see today is some of the best science from some of the best institutions," he concluded, "The challenge is to move from science given to planners, to planners asking for science."

Lucy Waruingi, head of programmes at ACC, outlined the Biodiversity and Climate Change project, and set goals for the workshop to:
1.) share outcomes of the pilot phase of the project and get feedback,
2.) showcase a range of tools, and
3.) broaden partnerships.

Several presentations were made as outlined below and group discussions followed thereafter.

Theme 1: Biodiversity Databases
- Dr. Malombe, National Musuems of Kenya, presented on Databasing Botanical Records and the progress made in digitization of Biodiversity Indicator Species for Climate Change Modeling
- Nickson Oteino, National Musuems of Kenya, presented on Zoological Specimen Records for Climate Change Modeling that had been converted to digital format.

Theme 2: Climate Change Models for Biodiversity Scenarios
- Simon Kangethe presented on Climate Models for the Plant Indicator Species which focused on using the digitized records to predict East African Plant Distributions Using Climate Data
- Dr. Jeffrey Worden, on behalf of Yale University, presented the climate scenarios for vertebrates based on the digitized National Museums of Kenya data and some compiled global datasets

Theme 3: Analytical and Visualization Tools
- Peter Kariuki, ACC, presented various methods and tools used to assess Land Cover Changes in Climate Sensitive Habitats ie Wetlands which are known to be good Indicators of Change
- John Giatu , RCMRD, presented on Visualization Tools Decision Support as developed on the SERVIR-Africa platform for
- James Wanjau, ACC, presented on Visualization Tools for Species Distribution Modeling

Regional Initiatives Presentations
- James Lyindo, representing Tanzania, described climate change related programs there, from building African capacity for conserving biodiversity in a changing climate in the Albertine Rift, to strengthening local agricultural innovation systems to adapt to the challenges of climate change, to assessing the impacts, vulnerability, and adaptive capacity of natural and social systems.
- Prosper Karame, representing Rwanda and the Association for Conservation of Nature in Rwanda, presented on Biodiversity, Conservation, and Climate Change initiatives that work with local Rwandan communities
- Innocent Akampurira, representing Uganda, demonstrated the Uganda Biodiversity Information Facility website, which allows users to browse species information and serves as a database of national capacities in biodiversity informatics and climate change while linking to the global GBIF network.

Group discussions
The participants were divided into 3 group with thematic questions to discuss as follows:

(i)   Content and User needs
(ii)   Capacity building
(iii)   Emerging technologies and Institutional networking

The highlights from the group discussions are as outlined below:

Group 1	Group 2	Group 3
Content and User needs • Identify priority application areas • What gaps and opportunities exist • What new ways of collecting information exist? • How do we create demand for biodiversity information and how best do we disseminate the data and results? • Chart way forward	**Capacity building** • Institutional capacity needs for data mobilisation, synthesis, analysis and visualisation • Recommend strategies for applying tools and visualisation techniques • Chart way forward	**Emerging technologies and Institutional networking** • How best do we engage with other national, regional and international initiatives • Incorporating biodiversity informatics initiative • Other emerging technologies that would benefit these initiatives • Other possible partners in the region
Priority application needs a. Access to primary information/data is a great challenge b. Target specific education e.g. farmers c. Ministry of Environment to lead national action plans d. Conservation organizations for planning and management e. Universities f. Educate children in schools - they are the ones who will deal with climate change g. Communication to media h. Extension workers i. Legislators/political players	**Institutional capacity needs** a. Institutional capacity needs for data mobilisation, synthesis and analysis, visualisation b. Training: taxonomy, new data collection, data mining, data entry, data management, data mobilisation; data visualisation tools and making data accessible/freely available c. Participation: university students, local communities and citizen science d. Standardisation: data collection/ storage methods e. ICT infrastructure: computers, scanners, cameras, software, servers, good bandwidth f. Partnership instruments: accessibility, MOU, agreements, data sharing protocol	**Other regional and international initiatives** a. Nature Kenya hotspots b. Natural Capital Project – Uganda c. Albertine Rift: Capacity building in Biodiversity Conservation – Institute Resource Assessing d. East Africa Biodiversity Informatics Project e. Mapping biodiversity hotspots in the Eastern Arc – FAO f. MEMR – mapping, biodiversity and social economics of wetlands
Gaps and *opportunities* a. Lack of data sharing agreements b. Lack of user friendly data outputs c. Poor interface between biodiversity and livelihoods d. Poor quality of data e. Poor linkage with ongoing national processes f. Limited funding g. Lack of proper publishing mechanisms h. Advancement in technologies j. Availability of fast, accessible internet k. Enabling policy environment: Vision 2030 l. Build capacity of data handlers	**Strategies for applying tools and visualisation techniques** a. Central portal/system e.g. government, where data can be accessed from different databases hosted by different institutions b. New techniques for accessing information e.g. mobile phones c. Linking with social networking tools d. Data sharing MOU and agreements e. Partnerships	**Incorporating biodiversity informatics initiatives to expand knowledge base of biodiversity, climate change and land use** a. Cloud technology – ESRI and Google b. Rapid land cover mapping tool – SERVIR c. Land cover change model d. Niche based modelling
New ways of collecting information and creating demand a. Increasing visibility (media) b. Developing targeted applications c. Developing online tools e.g digital libraries d. Data mobilization strategy e. Use other platforms such as camera, mobile, phone, PDAs	**Way forward** a. Training program/strategy: Identify the institutions/partners who will train and support capacity building b. Central portal: Develop a central portal which will bring together the various institutions and	**Way forward** a. Visualization tool utilization b. Identify gaps in current information on biodiversity and partner with relevant organisations c. Data sharing policy

f. Use local communities to collect data	partners	
Way forward		
a. Data sharing between partners and stakeholders		
b. Media outcome		
c. Strengthen partnerships		
d. Transform data to information and knowledge		
e. Mobilize more resources		
f. Develop targeted applications for livelihood, land-use, climate change, and food security		
g. Capacity building for data handlers, users		
h. Make KENBIF work		

Main Outcomes

Group discussions

Lack of access to primary data and information of good quality has been the greatest challenge, linked to lack of data sharing agreements and proper publishing mechanisms. Consequentially most of the outputs being produced lack user-friendly features. To address these, development of target-specific applications, use of open-source online tools and other platforms (e.g. digital cameras and mobile phones) were suggested. Additionally, promoting citizen science was seen to provide a major milestone to involve the wider community and enhance local livelihoods.

Recommendations, Follow-up Actions

Several tools to detect and mitigate climate change were highlighted within the presentations which can be expanded to international level. There is also need to build on the successes of the initiative so far, and broaden the scope to the wider eastern African region so there is better collective understanding of the environment and the challenges it faces.

Closing Remarks

In Conclusion, Stella Simiyu representing the National Council for Science and Technology, highlighted that the importance of information is to be able to influence decision making. The National Council is taking seriously matters related to biodiversity and biological resources and information on the same and they have just finished a draft policy on bioscience and the development of a policy framework for biodiversity, bio-security, bio-safety, bioinformatics and Biodiversity Informatics. Once such a policy is in place then financial support and sustainability is secured as the process becomes a legitimate government process with agencies mandated to follow through on initiatives such as has been displayed at this workshop. The Council is thinking of using Science as an agent of change and not undertaking science for science sake.

The institutions from the neighbouring countries in attendance which were Uganda, Tanzania and Rwanda expressed their gratitude at being invited to this workshop in which they had learnt alot and they looked forward to a permanent and fruitful collaboration. Rwanda highlighted that it had recently established the Rwanda Environment Information Network and the Albertine Rift Conservation Society, ARCOS was contributing to the capacity building of all concerned stakeholders with regard to Biodiversity Informatics on technical side, the

APPENDIX:

    i.   **Workshop Agenda**

SESSION 1	**CHAIR: Andre Kooiman - RCMRD**
0906	Introduction and opening remarks: Andre Kooiman – SERVIR Africa
0915	Opening Speech: Laban Odhiambo (representing Dr. Jaspat Agatsiva, Director DRSRS)
0927	Keynote Address: Andre Kooiman (SERVIR Africa), Dr. David Western (ACC)
	Theme 1: Biodiversity Databases
0949	A background of the SERVIR-AFRICA biodiversity project, including all the project partners, objectives, activities and results Lucy Waruingi
0957	Databasing botanical records: NMK Botany Dept - Dr. Malombe
1018	Databasing zoological records: NMK Zoology Dept -Nickson Otieno
1050	Tea Break
SESSION 2	**CHAIR: David Western (ACC)**
	Theme 2: Climate Change Models for Biodiversity scenarios
1116	Climate models for plant indicator species: Simon Kangethe for University of York (UK) and Missouri Botanical Gardens (USA)
1134	Climate change scenarios for Vertebrates: Jeff Worden for Yale University, USA
	Theme 3: Analytical and Visualisation tools
1155	Assessing land cover changes in climate sensitive habitats – Wetlands: Peter Kariuki

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1239
	Web based platforms (RCMRD/ACC)
	   - visualization tools for decision support: John Gitau
	   - visualisation tools for species distribution modelling: James Wanjau

1315	Lunch
SESSION 3	**CHARI: Dr. Malombe (NMK)**
	Regional Initiatives James Lyindo, Tanzania Prosper Karame, Rwanda Innocent, Uganda

1455	Group Discussions
	Group 1: Content and User needs
	   a) Identify priority application areas
	   b) What gaps and opportunities exist
	   c) New ways of collecting information and creating demand for biodiversity information
	   d) Way forward....
	Group 2: Capacity building
	   a) Institutional capacity needs
	   b) Recommend strategies for applying tools and visualisation techniques
	   c) Way forward....
	Group 3: Emerging technologies & Institutional networking
	   a) Other regional and international initiatives
	   b) Incorporating biodiversity informatics initiatives to expand knowledge base of biodiversity, climate change and land use
	   c) Way forward....

1600	Feedback presentations from groups Way forward – Recommendations
1643	Closing remarks – Stella, National Council of Science and Technology
1645	Vote of thanks: Lucy Waruingi
1700	Closing remarks – Frank Oguya