Intergovernmental Authority on Development (IGAD)

Biodiversity Management Programme (BMP) In the Horn of Africa

Project Title: Tana-Kipini Laga Badana Bush Bushle Land and Seascapes

Training on Quantum Geographical Information System (QGIS) for the Kenya-Somalia IGAD Biodiversity Management Program (BMP)

Report prepared by:

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Venue: Kyaka Hotel, Machakos, Kenya

Date: April 25th to May 6th 2016.

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List of Abbreviations

BMP	Biodiversity Management Programme
COMMS	Community Conservation Monitoring System
CSA	Conservation Solution Africa
EU	European Union
ICRAF	World Agroforestry Centre
IGAD	Intergovernmental Authority on Development
IUCN	International Union for Conservation of Nature & Natural
KFS	Kenya Forest Services
KWS	Kenya Wildlife Service
NRT	Northern Rangeland Trust

Acknowledgment

The World Agroforestry Centre would like to acknowledge support provided by the National Museums of Kenya and CORDIO in the organization and facilitation of the two week QGIS that was held in Machakos,Kenya. Specific accolades go to the IGAD-BMP project management team for the managerial and administrative support that led to the success of the training. Specific appreciation goes to Maimbo Malesu, Jonathan Muriuki, Josephat Nyongesa, Dr. Dorothy Wanja, Dr. Melta Samoilys and Eunice Wamwangi.

Introduction

The Biodiversity management program (BMP) which is funded by European Commission (EC) through Intergovernmental Authority on Development (IGAD) aims to build capacity of stakeholders of biodiversity from governmental and non-governmental agencies, protected area managers, local communities and civil servants. The World Agroforestry (ICRAF), the lead organization in the BMP project organized a two-week training on Quantum Geographical Information System (QGIS) from the 24 April to 6 May 2016, with an objective to;

- Build the capacity of stakeholders on Geographical Information System (GIS) software and its application in biodiversity conservation
- Enable stakeholders map their biodiversity resources, analyze their status and propose possible action to ensure their sustainable use
- Share with the participants to different data formats to enable them manipulate available information for specific use. This was necessary because in some areas it is not possible to get real time information though old maps are available. Participants were trained how to digitize the information from the old maps..

Capacity building in GIS is linked to activity 2.2. *Two local planning units (Lamu & Badhadhe) supported with equipment and training by Q2 2015 and activity three - Institutional support to planning – Results: LFI 2.2 "Two (2) local planning units (Lamu & Badhadhe) supported with equipment and training by Q2 2015" (already covered) And LFI 2.3. "The ongoing Spatial Planning process (LUP) for Lamu County being led by County Government is technically supported by BMP to be more participatory and supportive of biodiversity, and draft Spatial Plan is transmitted to relevant authorities by Q3_2016"*

To achieve the set objectives, ICRAF selected various stakeholders for the training. Participants were selected to equitably represent partner organizations from governmental and non-governmental agencies, non-governmental organizations as well as research institutions

Participants were drawn from Lamu County Planning Unit, National Museums of Kenya, Kenya Wildlife Service, Kenya Forest Service, Northern Rangeland Trust, Ministry of Livestock Forestry

and Range, Somali Wildlife and Natural History Society, ICRAF and conservation solution Afrika. The trainers were from ICRAF, NMK and CORDIO.

Based on the complexity and expensiveness of other GIS software such as arc GIS, the facilitators decided to focus on Quantum GIS which is freely available to users. The training on Quantum GIS was further based on agreements reached upon by the Land Use Planning Committee of the IGAD-BMP. This committee tasked ICRAF to lead in the organization of the course but supported by the National Museums of Kenya and CORDIO. The aim of the course was to build capacity of project partners so that those trained can add value to the biodiversity management of the Laga Badana and Tana Kipini transboundary sites..

It was anticipated that in the two weeks of training, participants would have basic knowledge of Quantum GIS to enable them process elementary products for each of their related work packages in the project.

Day 1: Monday 25 April 2016

GIS overview Jane Wanjara

Mrs. Jane Wanjara theGIS expert at World Agroforestry Centre led this session and trained the participants on;

- Definition of GIS terms
- Why GIS
- Functional GIS components
- Benefits of GIS
- Components of GIS
- GIS Processes
- Customized Applications related to GIS
- Short Comings of GIS
- Spatial Data and non-spatial data

Detail information about the contents discussed during the session on GIS overview can be accessed at https://www.dropbox.com/s/m2rcogrwc6t2w7l/GIS%20OVERVIEW.pptx?dl=0

GIS Software Packages and Data Types Session

In this session, Dr. Dennis Milewa trained the participants on the GIS software packages. His training covered:

- an overview of categories of available GIS software packages
- Insight on choosing the right package
- A list of some popular GIS software packages

Detail information about the contents discussed during the session on GIS Software Packages can be accessed at

https://www.dropbox.com/s/e7m7e8lug92el0j/GIS%20software%20packages.pptx?dl=0

Dr. Dennis Milewa highlighted the various GIS data types

https://www.dropbox.com/s/t9m499z58cwptl2/Data%20Types.pptx?dl=0

. More specifically he focused on:

- Types of Spatial data used in GIS

The structure of the datasets **Introduction to Quantum GIS**

In this session, Jane Wanjara introduced the quantum GIS software, how to install, the plugins, advantages, disadvantages and types of data that could be analyzed and managed using quantum GIS. https://www.dropbox.com/s/gwe159t1ija802l/Introduction%20to%20QGIS.pptx?dl=0

Day 2: Tuesday 26 April 2016

Introduction to data sources and data conversion

Dr. Dennis Milewa took participants through the various data sources and procedures for converting data from different sources into required format desired by the user https://www.dropbox.com/s/iaiewqqk1p67fu7/Data%20source.pptx?dl=0

His training focused on:

- Identifying data
- internal and external sources
- checking for completeness and quality
- new data via field or aerial surveys
- Fixing problems in the data source
- map scrubbing
- coding source documents with unique IDs
- Converting to digital form
- scanning or digitizing
- raster to vector conversion strategy
- entry of attribute data
- Data conversion specifications
- horizontal and vertical control
- projection coordinate system

  accuracy requirement

Coordinate systems

Further to data sources and conversion, he also trained the participants on the coordinate systems https://www.dropbox.com/s/6lgygowidwxyyc0/Coordinate%20Systems.pptx?dl=0

Global Positioning Systems (GPS)

After familiarizing themselves with the data sources and coordinate systems, the participants were then trained on the GPS by Jane Wanjara https://www.dropbox.com/s/dojgbrbz0tcwcii/GPS_overview.ppt?dl=0

Day 3: Wednesday 27 April 2016

Collecting GPS coordinates- Jane Wanjara,

Mrs. Jane Wanjara briefed the participants on the procedures for collecting GPS coordinates https://www.dropbox.com/s/9v6msr576fgsgg5/Collecting%20GPS%20points.docx?dl=0.

Adding the first data

Mrs. Jane Wanjara further trained the participants on data visualization and procedures for adding vector data to the table of content **https://www.dropbox.com/s/sly5rjynxoetem4/Adding%20the%20first%20data.pptx?dl=0**

Adding spatial data types

The training on adding spatial data types covered the following aspects

- Non-Spatial and Spatial Data
- Spatial Data Types and GIS Layers
- Role of Spatial Database and its Functionality
- Basic GIS Analysis

The detailed information on the listed aspects is found at https://www.dropbox.com/s/h195zc8jgixdv10/Adding%20spatial%20data%20type%20and%20conversion.pptx?dl=0

Day 4: Thursday 28 April 2016

Database management system

Dr. Dennis Milewa trained the participants on different types of Databases, database management, linking databases and use of databases

https://www.dropbox.com/s/26ycqdkx1v5f1za/Database%20Management%20Systems.pptx?dl=0

Day 5: Friday 29 April 2016

Remote sensing

Dr. Dennis milewa trained participant on remote sensing. The specific aspects that were captured were;

- The Importance of Remote Sensing in GIScience
- RS Methods Used in GIS Data Acquisition
- Digital Orthophotos & Satellite Imagery
- Radar Data: DEMs
- The Future of GIS and Remote Sensing

Detailed description of the training on remote sensing can be accessed at **https://www.dropbox.com/s/cwl81i54815s8o5/RemoteSensingGIS.pptx?dl=0**

Key Points

The main items that were emphasized during the training included data quality, type verification, and validation and sourcing. Participants were informed that once data is validated, it should be filed or stored in safe custody of specific folders to avoid confusion during its retrieval especially given that data collection is an expensive venture. During discussion sessions, a number of questions were raised by the participants to enlighten further in a bid to demystify QGIS. The key ones are tabulated here below:

Table 1; plenary session based on GIS training

Question/comments	Responses
Why use QGIS?	It is freely available and user friendly. Most of the other GIS software such as ArcGIS is expense to purchase and maintain.
Is QGIS any better than ArcGIS?	Yes, QGIS allow the user to install plugins and convert data into required format easily.
Which are the main sources of data?	There are open layer data sources which are web based and one can also use secondary data sources such as old maps.
Which are the main types of data layers and what is the difference?	Line data source such as road Polygon such as rivers Point such as town
Has ICRAF had an experience with remote sensing?	Yes, water engineers have used remote sensing to design water infrastructure, they use quick bird imagery for the design
Which is the best remote sensing data base?	All the remote sensors are useful, some are licensed while others are freely available, choice depend on the user
Is remote sensing applicable to all field?	Yes, remote sensing can be used in all fields. the only challenge is legal issues surrounding remote sensing i.e. who can access what

Practical sessions Monday 2 May 2016- Thursday 5 may 2016

Steps in the production of a map

In addition, participants were taken through all the basic tools of QGIS in a bid to capacitate them in the generation of a map. The following are theoretical and practical steps in the production of map;

1. Creating folders for each data types e.g. soil data, water bodies, roads, towns & protected areas
2. Gathering data from internet sources. Examples include the Diva-GIS.org, Maspawio.net, ILRI, ICRAF etc
3. Saving each data in its right folder
4. Opening QGIS
5. Using Vector tool to add layers for appropriate shapefiles
6. Clipping the layers within the Lamu boundary i.e. using the Vector, then Geo-processing tool to clip.
7. Once this is achieved, participants were trained how to use the layers panel, highlighting on properties and changing items to the desired styles
8. Once step seven is achieved, CRS Transformation is enabled to ensure that the scale conforms to the manipulation of the map.
9. The final map should have; legend, Scale-bar, North Direction, Inset for location and Title.

Below is an example of a finished product of Lamu map by one of the group during the training:

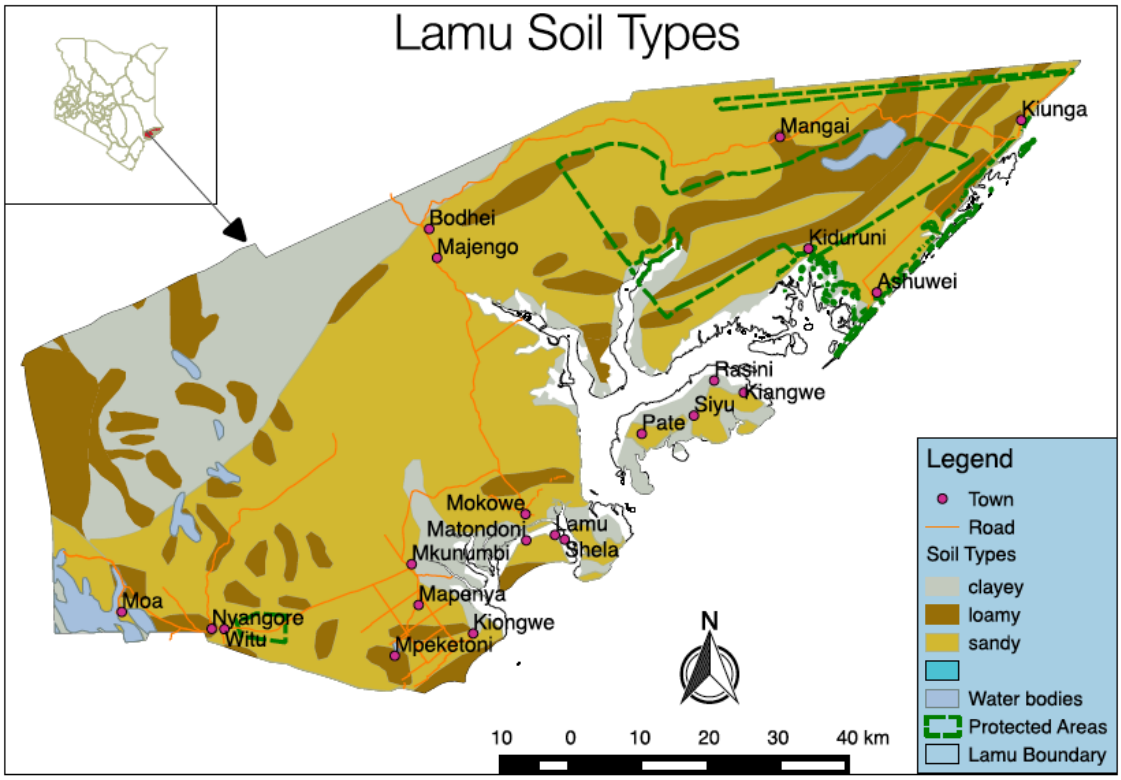

Figure 1 Lamu map showing the various soil types generated by workshop participants during the GIS training

Participants comments on the training

The participants were asked to summarize how they would use GIS in their respective organizations. The following are feedback from them based on the organizations they represent.

Northern Rangeland Trust

Mohammed Yassin who represented NRT said that experiences gained from QGIS course will be used to train rangers and scouts in the mapping of the migratory corridors; Community Conservation Monitoring System (COMMS); Mapping areas of increased human wildlife conflict to be used in informing the agencies responsible for its management; Improving wildlife monitoring; monitoring illegal logging and in land use mapping to inform on conservancy management. NRT will not have to wait for the GIS specialist from Lewa to do their maps.

Kenya Wildlife service

Comments on behalf of KWS was made by Jillo Katello who informed participants that the skills gained from the QGIS course will be used for mapping: Different zones of marine ecosystems, identification of control and dissemination zones of marine wildlife; Nesting sites of sea turtles and the coral cover.

Kenya Forest Service

The Kenya Forest Service was represented by Alex Munyoki who informed the participants that the training will be instrumental in the following: Estimation of carbon stock in mangrove ecosystem; Support in forest management plan; Increase efficiency of land use planers and support in zonation; Mapping out rate of forest cover change to inform policy makers; and mapping out site that require urgent rehabilitation.

National Museums of Kenya

Edward Njagi and Mohamed Mwenje represented national museums of Kenya. They said that the skills gained in the QGIS course will be applied in the following areas: Mapping species distribution and its richness to inform on status and advise policy makers accordingly; and Monitoring trends in habitat, plants and animal species to help inform the policies and decision makers to take the necessary measures.

Ministry of Livestock Forestry and Range- Somalia

Abdihakin Jimaale represented the Ministry of Rangelands and informed members that he will use the information to undertake the following activities: Support the ministry in land use planning; Generate maps of protected areas to inform potential investors and policy makers on pertinent issues that would help them to plan for the conservation of their resources; Train other colleagues to build their capacity in information management; and digitize old maps to make them easily available to research and train institutions also to government agencies working with conservation to be able to locate the potential areas for conservation

Conservation Solution Afrika

David Ouma represented conservation solution Afrika. He noted that the training will be useful to the organization in the following ways: Creation of a database of biodiversity information in Witu forest; Supporting the land use planning unit in Kenya in the zoning of different regions. As a person, Ouma felt that the training has helped him open up his mind, and that the skills gained from QGIS will be used to support the community in mapping, implementation and advocacy activities.

The National Environmental Management Authority (NEMA)

Dr. Issak Elmi from NEMA alluded to the fact that his job is very sensitive given that he deals with diverse stakeholders. He felt that experiences gained from the QGIS course would enable him prepare evidential documents and convince senior government officials on better tools to argue environmentally related cases.

Given that he is the Overall Chief Researcher for NEMA; Dr. Elmi felt that anything to do with research directly falls under his docket. Although he is conversant with other research tools, he realized that without GIS, his outputs would not be well informed. However, with utilization or incorporation of GIS in his work, the level of policy analysis in NEMA will be more accurate than before. In other words, environmental protection, conservation and legitimate judicious opinions have been enriched.

In particular, Dr. Issak Elmi noted that the training will be beneficial in the following areas: Mapping of wetlands; Monitoring pressures and threats faced by wetlands; providing evidence for use in court in case of encroachment; Monitoring land use changes; Tracing marine pollution; Estimating carbon sequestration; and developing species inventory and their IUCN status.

Somali Wildlife and Natural History Society

Dr. Osman Gedow promised to use the skills gained to support the local community at large. He will also help in organizing the training of University staff in GIS. Specifically, Dr. Gedow informed other participants that the acquired skills will help him and his institution to undertake the

following: Create a database of plant and animal species in Laga Badana proposed protected area and train other colleagues who are dealing with conservation related aspects.

The World Agroforestry Centre (ICRAF)

Alex Oduor and Grace Koech who represented ICRAF noted that the training will complement the work of Jane Wanjara, who is currently handling GIS related issue for the BMP, as well as partners working on different items of the project. Specifically, the duo alluded to the fact that the training will be useful in mapping conservation core in the project demonstration sites.

General comments based on the training and practical sessions

- Facilitators to share sites for data sources
- Mode of training by the facilitators was awesome,
- There was openness and ease among all participants
- There is need for a follow up on training especially on data analysis
- Image processing and remote sensing is very important as an additional skill.

Way forward

The following was proposed after the training;

i. The facilitators; i.e. Dennis Milewa, Jane Wanjara & James Mbugua to be retained or maintained for future capacity building in QGIS. They should also be available for consultations by trainees.

ii. After adequate practice on GIS, students need capacity building in remote sensing image processing. ICRAF to explore possibilities of a second training for this group on this GIS subject area which is pertinent in evaluations or assessments of various issues.

iii. The trainers to share the link on Remote Sensing basics (by xxxx time) which takes two weeks to learn.

iv. ICRAF to explore the possibility of supporting the trainees with hardware for storing data. The main item so far requested is external drives which should cost in total US$. 1300 for all the trainees.

v. Mapping degraded lands that are urgent to rehabilitation and restoration; Analyzing habitat change; and biodiversity resource mapping in Lamu county to inform policy makers on conservation planning issues.
vi. ICRAF to develop a platform for exchanging information on GIS among the trainers to keep the momentum.
vii. The trainers to simplify the training course to accommodate need of various students.
viii. Trainees are encouraged to volunteer or go for internship to gain more knowledge. They should also take advantage of online / internet based tutorials.

Friday 6 may 2016; Closing remarks

Closing remark was delivered by the ICRAF Country Representative; Dr. Jonathan Muriuki, who thanked all the participants for attending the training.

In order to evaluate the level to which the training skills and knowledge on GIS had been imparted to trainees, Dr. Muriuki randomly asked participants to present what their group had developed as a QGIS product. From the presentation, Dr. Muriuki was impressed and noted that the training has been successful.

In his remarks he noted that research alone does not work and there is need for to understand, inform policy makers by generating enough evidence through use of data. The best approach to do this is by capacity building which motivated ICRAF to train stakeholders on data management, handling, analysis and reporting to inform the decision and policy makers in making evidenced based decisions.

After his remarks, Dr. Muriuki handed over certificates to participants for successful completion of the training course on geographical information system.

Annex 1: List of participants

Name	**Affiliation**	**Email**
David Ouma	Conservation Solutions Africa	conservation@csa.or.ke
Osman Gedow	Somali Wildlife and Natural History Society	Osmangedow10@gmail.com
James Mbugua	CORDIO	jmbugua@cordioea.net
Jilo Katello	KWS	jikatello@gmail.com
Alexander Muyoki	KFS	lexthuku2012@gmail.com
Abdikahim Jimcale Aden	Ministry of Livestock Forestry and Range-Somalia	allaqabe28@gmail.com
Grace Koech	ICRAF	g.koech@cgiar.org
Mohamed Yassin	NRT	m.yassin@ncc-kenya.org
Mwenje Mohammed	NMK	mamwenje@yahoo.com
Edward Njagi	NMK	enmukuru@gmail.com
Alex Oduor	ICRAF	A.ODUOR@cgiar.org
Jane Wanjara	ICRAF	J.Wanjara@cgiar.org
Ndiema	NMK	
Dennis Milewa	NMK	milewa@africamail.com

Annex 2: Training programme

Training Course on GIS application for the Kenya-Somalia IGAD Biodiversity Management Programme (BMP)

Jane Wanjara, Alex Oduor, Grace Koech, Maimbo Malesu, Josephat Nyongesa & Dennis Milewa,

April – May 2016

Sunday 24 April 2016: Travel to Machakos

Facilitator: Grace Koech

Monday 25 April 2016:

Moderator: Alex Oduor

Official Opening Session

08.00 – 08.30 Registration *Grace Koech*

08.30 – 09.00 Introductions of participants: *Alex R Oduor*

09.00 – 09.30 Official opening: *Alex Odour*

09.45 – 10.30 GIS keynote: demystifying GIS and its applications *Dennis Milewa*

10.30 – 11.00 Tea Break

Course Introduction

11.00 – 11.15 Presentation of the Course Programme *Alex Oduor*

11.15 – 12.30 Participants experiences in respect to GIS *Alex Oduor*

Course expectations

12.30 – 14.00 Lunch Break

Module 1: *Spatial Orientation of the Biodiversity Management Programme*

14.00 – 15:00 Work Packages with Spatial orientation *Alex Odour*

Case Study: Rwanda

15.00 – 15.30 GIS overview *Jane Wanjara*

15.30 – 15.50 Tea Break

15.50 – 16.30 Introduction to GIS tools: Data sources, RS, GPS *Dennis Milewa*

Tuesday 26 April 2016:

Moderator: Alex Oduor

Module 2: *Introduction to QGIS and Spatial Data Management*

08.30 – 10.00 Coordinate systems and projections *Dennis Milewa*

10.00 – 10.30 Tea Break

10.30 – 11.30 Coordinate systems, Image projections *Dennis Milewa*

& use of GPS (Practicals)

11.30 – 12.30 Basic GIS *Jane Wanjara*

12.30 – 14.00 Lunch Break

14.00 – 14.30 Different GIS Softwares *Dennis Milewa*

14.30 – 16.30 Creating working environment: Introduction to *Jane Wanjara*

software interface, Software installations

& Systems configuration (practical's)

Wednesday 27 April 2016:

Moderator: Alex Oduor

Module 3: *Introduction to QGIS and Spatial Data Management*

08.00 – 09.00 Introduction to QGIS: *Jane Wanjara*
09.00 – 10.00 spatial data types *Dennis Milewa*
10.00 – 10.30 Tea Break
10.30 – 12.30 Adding Spatial data types & conversion: *Jane Wanjara &*
(Adding focal area data) *Practical exercises Dennis Milewa*
12.30 – 14.00 Lunch Break
14:00 – 14:30 Spatial Planning as a tool to Biodiversity Management *Jane Wanjara*
14.30 – 15.00 Map data sources: Data quality & Meta data *Jane Wanjara*
15.00 – 15.30 Tea Break
15.30 – 16.30 Demonstrations / Practical exercises on spatial data *Jane Wanjara*

Thursday 28 April 2016:
Moderator: Alex Oduor
Module 4: *Spatial & Attribute Data Input*
08.30 – 09.30 Spatial & attribute data input: Demonstration *Jane Wanjara*
09.30 – 10.00 Data Base Management Systems (DBMS) *Dennis Milewa*
10.00 – 10.30 Tea Break
10.30 – 12.30 Spatial & attribute data input: Practical exercises *Jane Wanjara*
12.30 – 14.00 Lunch Break
14.00 – 16.45 Spatial & attribute data input (DBMS): *Dennis Milewa*
Practical exercises (Continued)
Friday 29 April 2016:
Moderator: Grace Koech
8:30 – 10.00 Depart for field visits to conduct transect walk for Biodiversity assessment in Malindi
10.00 – 12.00 Downloading of data and assessment
Saturday 30 April 2016:
Moderator: Grace Koech
Module 5: *GIS Field Exercises*
8:30 – 12.00 Find GPS points in Machakos 4

Sunday 1 May 2016:

Free day

Monday 2 May 2016:

Moderator: Alex Oduor

Module 6: *Introduction to remote sensing and spatial data analysis*

08.30 – 10.00 Remote Sensing and image analysis *Dennis Milewa*

10.00 – 10.30 Tea Break

10.30 – 12.45 Remote Sensing and image analysis (practical's) *Dennis Milewa*

12.45 – 14.00: Lunch Break

14.00 – 15.00 Discussions on Spatial Data Analysis: *Jane Wanjara*

15.00 – 15.30: Tea break

15.30 – 16.30 Demonstration / Practical on: *Jane Wanjara*

Measurement & retrieval of spatial data

Overlying / MCA

Buffering

Connectivity functions

Tuesday 3 May 2016:

Moderator: Alex Oduor

8:30 – 10:30 Overview: GIS application on Hydrology *Jane Wanjara*

10:30 – 11:00 Tea break

11:00 – 12:00 Practical on watershed delineation *Jane Wanjara*

12:00 – 13:30 Lunch break

13:30 – 15:00 Practical's continued *Jane Wanjara*

15:00 – 15:30 Tea break

15:30 – 16:30 Practical's continued *Jane Wanjara*

Wednesday 4 May 2016:

Moderator: Alex Oduor

8:30 – 10:00 Practical's continued from previous day *Dennis Milewa*

10:00 – 10:30 Tea break

10.30 – 11.30 Data Visualization (demonstration) *Dennis Milewa*

11.30 – 12.30 Data Visualization (practical's) *Dennis Milewa*

12:30 – 14:00 Lunch break

14:00 – 15:00 Demo on how to make: *Dennis Milewa*

GIS and maps

Map elements and Cosmetics

15:00 – 16:30 Practical on: *Dennis Milewa*

Mapping techniques

Map and layout design 5

Thursday 5 May 2016:
Moderator: Alex Odour
08:30 – 10:30 Practical on: (continuation) *Dennis Milewa*
Mapping techniques
Map and layout design
10:30 – 11:00 Tea break
11:00 – 12:30 Practical on: (continuation) *Dennis Milewa*
Mapping techniques
Map and layout design
12:30 – 14:00 Lunch break
14:00 – 15:00 Presentation of practical's *Dennis Milewa*
15:00 – 15:30 Tea break
15:30 – 16:30 Presentation of practical's (continuation) *Dennis Milewa*
Friday 6 May 2016:
Moderator: Alex Oduor
08:30 – 09:30 Plenary discussions and questions *Dennis Milewa*
09:30 – 10:00 Tea break
10.00 – 10.30 Way forward *Alex Oduor*
10.30 – 11.00 Certificates presentation *Dennis Milewa*
11.00 – 11.30 **Official closing**

Annex 3: Training evaluation sheet

BIODIVERSITY MANAGEMENT PROGRAMME (BMP) IN THE HORN OF AFRICA-KENYA

GIS TRAINING; Dates: 25th April-6th MAY, 2016, EVALUATION SHEET

ICRAF would appreciate to get your personal feedback on the concluded training workshop. Your comments will be useful for future planning of related activities.

1) The workshop planning (Rating 1=poor; 2=Fair; 3=Good; 4=Very good; 5=Excellent)

Item	Rating				
	Poor	Fair	Good	Very good	Excellent
Meeting Venue was					
Meals served were					
Hotel hospitality					
Meeting organization					
Presentations were					
	short	Very short	sufficient	long	Very long
Time allocated for the training was					

2) Any General comment on workshop planning?

……

……

……

3) The GIS training workshop met my expectation

1) Not at all, 2) somewhat, 3) Average 4) Above average 5) Exceed my expectations

4) The training was

[1] Very relevant [2] Fairly relevant [3] Not relevant

5) Please explain how

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4) Did you receive any additional GIS knowledge and skills?

[1] Yes [2] No

5) What did you learn?

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6) Mention briefly how such information could be;

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7) Any suggestion for improvement

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Thank you!