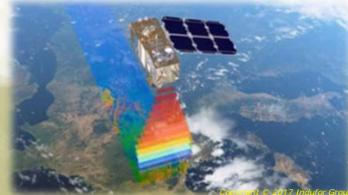


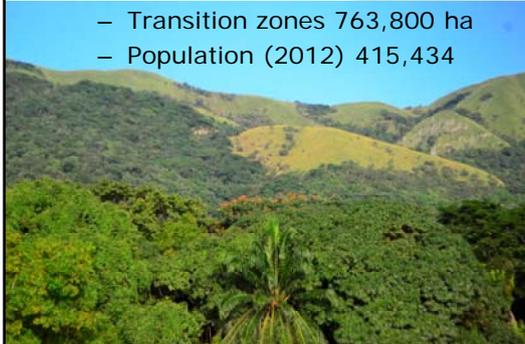
Community engagement and Technology in monitoring of the Gombe Masito Ugalla Biosphere Reserve in Western Tanzania

Prepared by: Paul Mjema
GIS Manager,
The Jane Goodall Institute –Tanzania
November, 2018



The GMU-Biosphere Reserve – Western Tanzania

- Designation date: July 2018
- Surface area: 1,658,466 ha
 - Core area: 5,640 ha
 - Buffer zones 889,026 ha
 - Transition zones 763,800 ha
 - Population (2012) 415,434





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The Gombe Masito Ugalla II Programme 2014 - 2018

- Implementing activities directed towards achieving the overall goal of the program:
"To conserve biodiversity, protect and restore wildlife habitat in critical ecosystems in Western Tanzania"
- The GMU programme operates at Landscape Scale uses the approach of **Community Centered conservation**



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Methodologies and Technology used to monitor the GMU-BR

1. Local Community engagement – VLUPs
2. The use of ODK form by forest monitors
3. The use of high resolution satellite images
4. the use of NASA's fire incidences data
5. Aerial photography
6. The use of Spike tool to collect measurement data about chimp nests (on test)

1. Local Community engagement via VLUPs

- Village Land Use Plans (VLUPs)
 - Community participation
 - Initiating VLUM Teams
 - Develop VLUPs
 - Operationalize VLUPs
 - Forest Monitoring



2. The use of ODK form by village forest monitors



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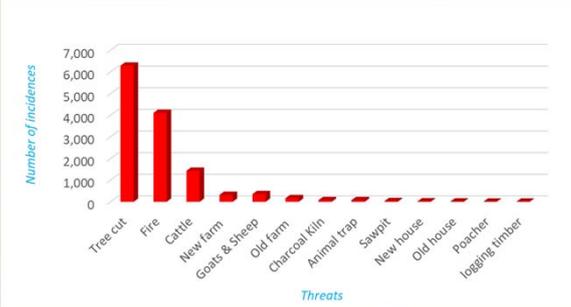
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ODK Aggregate



- ODK form data are then uploaded to the cloud server (ODK Aggregate)
- The data analyst download data and process for reporting to decision makers

Village	Animal seen or signs										
	Monkey (kina)	Baboon (nyani)	Honey badger (nyigene)	Cape bushbuck (porogo)	Dik-dik (djidji)	Warthogs (ngiri)	Impala (swainpala)	Klipspringer (mbuzimawa)	Jackal (mbwenha)		
Kalinzi	78	13	3	-	-	-	-	-	4		
Kigalye	21	-	-	-	-	-	7	-	1		
Kasuku	-	-	-	-	-	-	-	-	1		
Kidea	-	-	1	-	-	-	1	-	-		
Malagarasi	-	-	2	3	-	3	-	-	2		
Mgaraganza	-	4	-	2	14	2	1	-	-		
Mkigo	6	4	-	-	-	-	-	-	-		
Mtanga	-	7	-	-	-	-	1	7	-		
Mwamila	9	-	31	-	-	-	-	-	-		
Songambebe	146	101	-	27	-	18	2	-	3		
Vikonge	-	-	-	2	5	-	-	5	-		
TOTAL	260	129	34	32	22	18	14	12	11		



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Chimp related observations as reported by FMs for the period of July to September 2018



VILLAGE	CALL	NEST	DUNG
Kalinzi	2	1	-
Mkigo	1	5	2
Songambebe	-	3	-
Vikonge	-	2	-
TOTAL	3	11	2



Data source: FM ODK database, 2018

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Legend

- Observation related to chimps
- Village boundary
- Village Forest Reserve
- (proposed) LAFR
- Gombe National Park
- GMU II Project Area

Map developed by Paul Mrema for the Jane Goodall Institute, September 2015

- Observation related to chimp (nest, sound, print, dung).
- Reported by FMs from Mkigo, Kalinzi and Songambelo VFRs

Data source: FM ODK data2018

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Illegal human activities inside VFR reported by FM

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Community Mapping of livestock routes towards Masito UGALLA Landscape

Legend

- Livestock travel routes
- Major Towns
- Other towns
- International Boundary
- Block village
- GMU Project Area
- National Parks
- Game Control Area
- Forest Reserves
- Settles
- Package settlement
- Country boundary
- Region boundary
- International Boundary

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Success achieved so far in some of the villages

Mtanga - June, 2006

Mtanga - June, 2016

Kigalye - May, 2005

Kigalye - June, 2016

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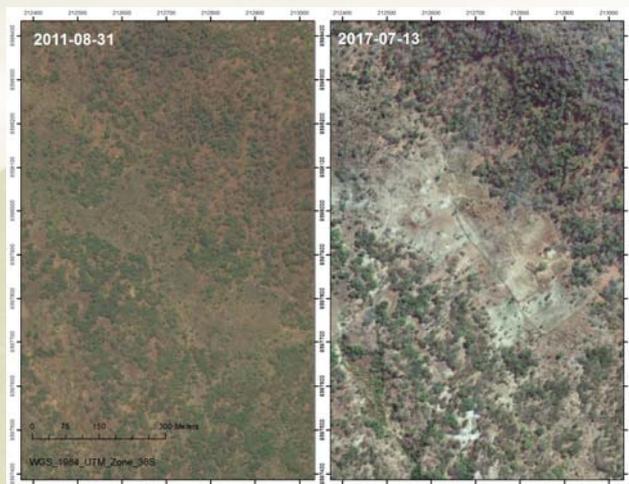
3. The use of high resolution satellite images provided in kind by Digital Globe to JGI

- Satellite Imagery of 30-60-cm resolution for monitoring the GMU landscape.
- To monitor chimp habitat and forest reserves within the GMU landscape within and outside VFRs
- Revealing of encroachment of forest reserves by human activities such as fire, new farm, tree clearing etc.
- To guide village land use plan process

Forest monitoring by Digital Globe Satellite Image

An example of satellite image(s)

- showing encroachment to forest by human activities
- The information is shared by decision makers for planning of forest patrols
- Provide important information for Forest Management Plans

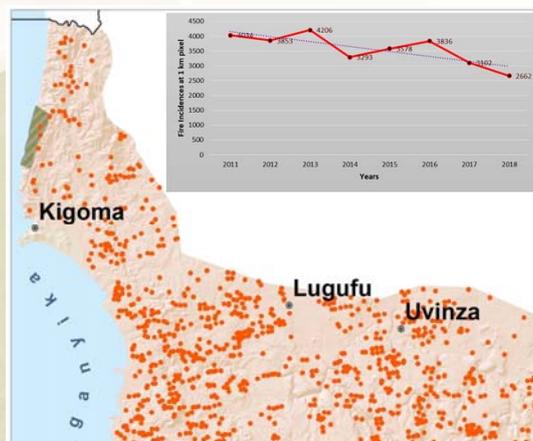


4. The use of NASA's fire incidences data

- GMU project uses fire incidence data extracted from NASA <https://firms.modaps.eosdis.nasa.gov/>
 - Fire data is generated by the MODIS instrument aboard NASA's Aqua satellite
 - It has a spatial resolution of 1-kilometer (pixel)
 - Used to approximate a fire burning in an area.
 - GMU Project uses it's data to monitor fire incidences and trend in the GMU Landscape.
 - Fire incidences data from GMU from the year 2011 to 2018

Years	2011	2012	2013	2014	2015	2016	2017	2018
Fire Incidences	4,034	3,853	4,206	3,293	3,578	3,836	3,102	2,662

LATITUDE	LONGITUDE	BRIGHTNESS	SCAN	TRACK	ACQ_DATE	ACQ_TIME	SATELLITE	INSTRUMENT
-5.384	30.189	318.7	2.1	1.4	01/10/2017	0802	Terra	MODIS
-5.02	29.942	328.8	1.6	1.2	02/10/2017	0845	Terra	MODIS
-5.347	30.873	324.6	1.9	1.3	02/10/2017	0845	Terra	MODIS



5. Aerial photography of the GMU Landscape

- In August to September, JGI in collaboration with TAWIRI deployed a Cessna plane mounted with cameras and GPS for taking photos of the Masito Ugalla Landscape.
- The main aim was to monitor and identify number of cattle, location and distribution in the GMU BR.
- In addition, information about vegetation, human activities and natural features are also captured
- The information will help better planning of conservation strategies within the GMU BR.



Line of transects of aerial survey in GMU-BR

The survey was conducted in August/September 2018



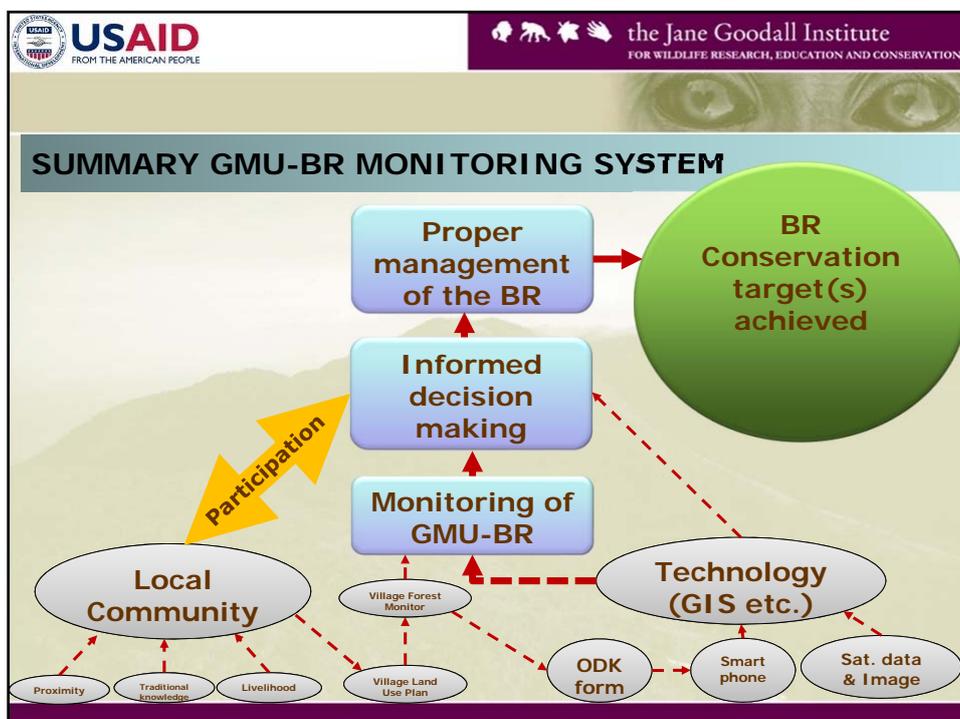
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6. The use of SPIKE tool



- JGI received a spike tool from **IKE GPS** company for testing in conservation activities
 - Spike is a smart laser measurement solution tool
 - It has a built-in laser rangefinder
 - works with the camera in a smartphone or tablet to record and analyze the dimensions of any scene.
 - It takes the real-time laser measurements and integrating them with the photos and data from the GPS in the phone or tablet
 - Spike can record the dimensions and geospatial location (latitude, longitude and altitude) of any object
 - JGI is using it in collecting data about; location of chimp nests and in taking various measurements such as tree DBH, plot size, burnt up area etc.





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GMU – BR, Tanzania



*Striving for
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