



the Jane Goodall Institute

# People, Chimps and Pixels:

## Converting Satellite Data into Conservation Action

Lilian Pintea

1595 Spring Hill Road  
Vienna, Virginia 22182  
[lpintea@janegoodall.org](mailto:lpintea@janegoodall.org)

© Jeff Kerby

1960



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# 1960 - present

## Gombe Long-term Chimpanzee Behaviour Research



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A - 286

Junes

3rd April cont'd.

**I (X)**

9138 Madam Bee moves into another tree about ten feet from the one she and Honey Bee were in. Honey Bee cannot jump so far directly and she looks around for a better place to land. Madam Bee turns her body over to Honey Bee and catches her with her legs. Honey Bee goes in ventral and Madam Bee swings back into her tree (which she grasps with her hands) and Honey Bee hangs on to her tail. For a while, Little Bee is with them. (See *Infant Record*).

**I**

9140 Honey Bee scratches and grooms Madam Bee briefly.

**II**

9147 Madam Bee, Honey Bee dorsal, and Little Bee leave N.

April 4, 1960

Cathy /Suzie/Jane

**I**

9150 The Bees arrive NW, Honey Bee dorsal.

**II**

9155 Give the Bees some bee. Honey Bee collects with Madam Bee. Madam Bee touches Honey Bee's face briefly.

**III**

9160 Little Bee collects after Madam and Honey move away from the trench box.

**I**

Madam Bee carries bee in her pelvic hand.

**II**

9164 Honey Bee takes bee from Madam Bee's lower lip. Honey and Honey climb into a tree at the N. edge of camp. Honey Bee whispers, trying to get some bee, from Madam. Honey Bee presents to Madam Bee who grooms her.

**III**

9167 Little Bee presents to Madam Bee who grooms her.

**IV**

9170 Honey Bee briefly grooms Madam Bee.

**V**

9170 Honey Bee briefly grooms Madam Bee.

**VI**

9174 Flint dorsal, arrives NW. Goes to the trench.

**II**

9176 Give Flint and Flint bee from the trench. Madam Bee and Little Bee also grooming and蜜蜂.

**I**

9177 Flint puts her hand on Flint's penis and then her hand round Flint's penis while she thrusts him in his mouth. He has an open mouth and an erection.

Flint takes bee from Flint's hand.

**II**

9178 Flint touches Flint's penis briefly.

**III**

9179 Flint takes bee from Flint's hand.

**IV**

9180 Flint's troop including Ringo arrives NW.

**II**

Flint walks at some baboons nearby.

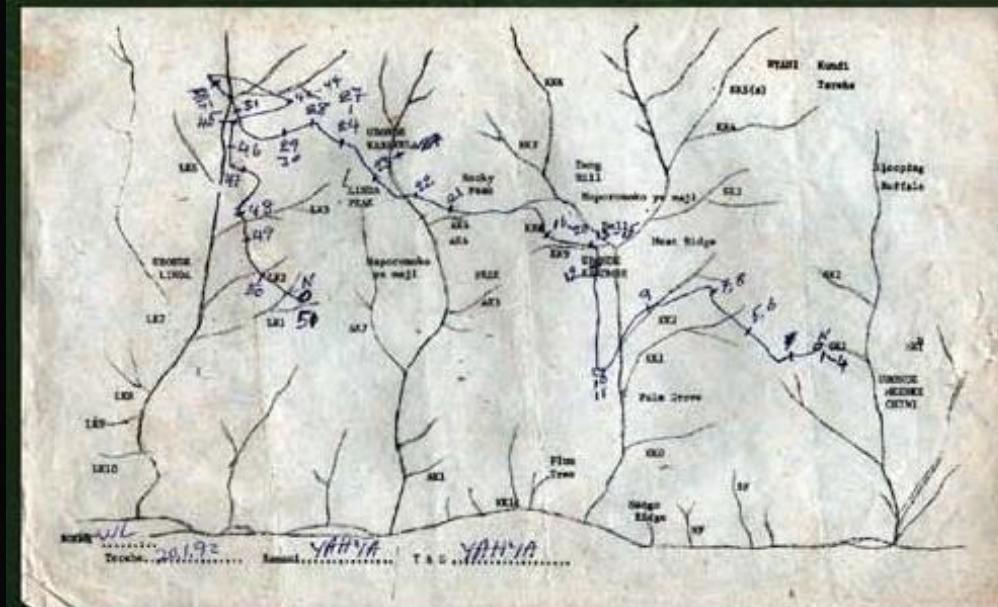
**III**

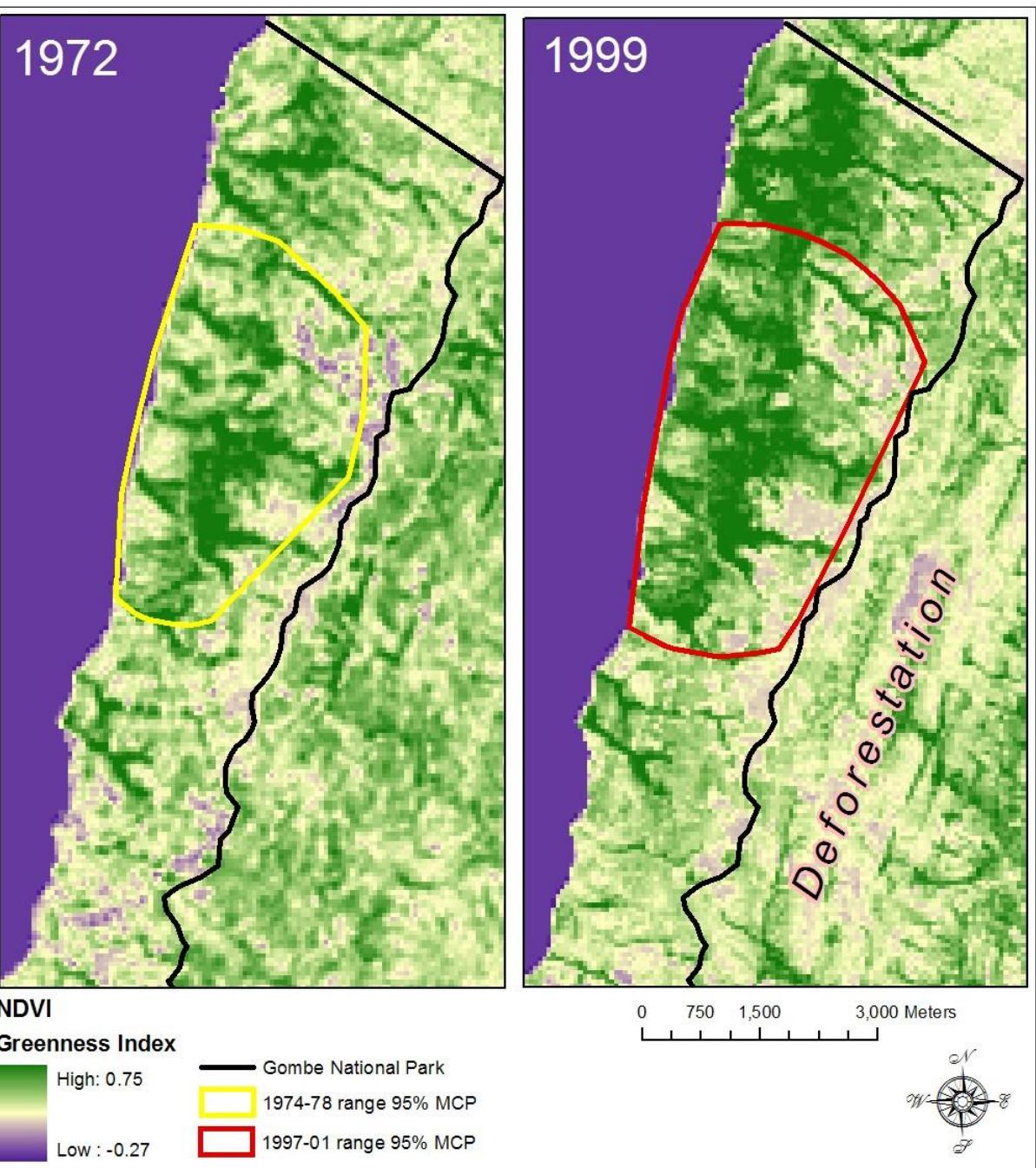
9187 Baboon jumps onto the trench. Flint stands quad and walks. Flint gets up on the trench and walks a couple of times.

**II**

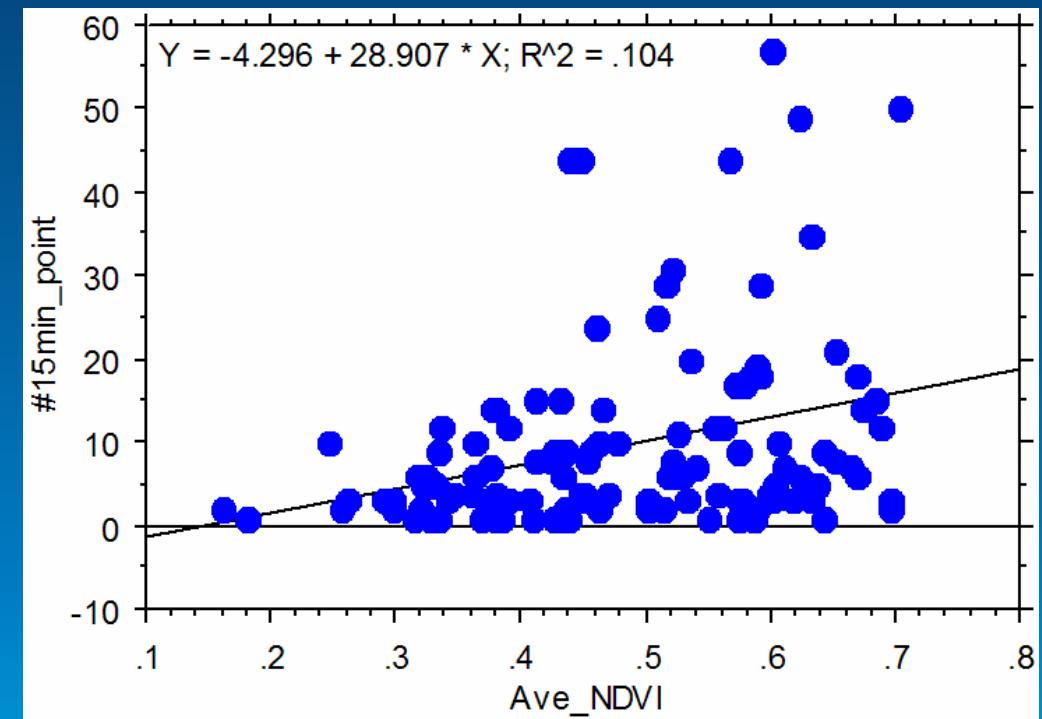
Flint climbs into a trench tree. A baboon goes after and Flint walks. The baboon jumps down. Flint goes for Flint who walks and runs away.

Flint and Flint climb to the top of a trench tree. Baboons sit below including Ringo. Ringo threatens June and another baboon.





## Understanding Chimpanzee Behaviour and Habitat Change as detected from Satellite Images



1986



Oblique aerial view of Gombe National Park boundary in 2000

© the Jane Goodall Institute

"There's no way we can even attempt to save these precious Gombe chimpanzees unless we could improve the lives of the people living around that last little oasis of forest." *Jane Goodall*



© Lilian Pintea

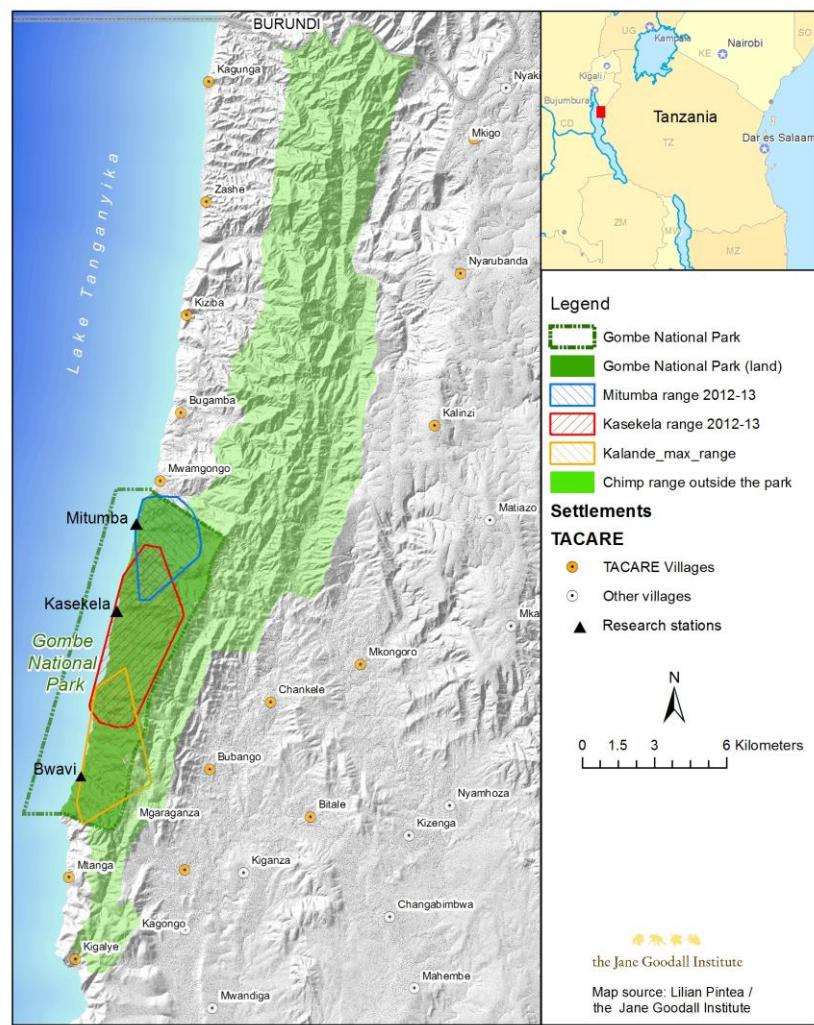
# 1994

## JGI's TACARE - Community Centered Conservation



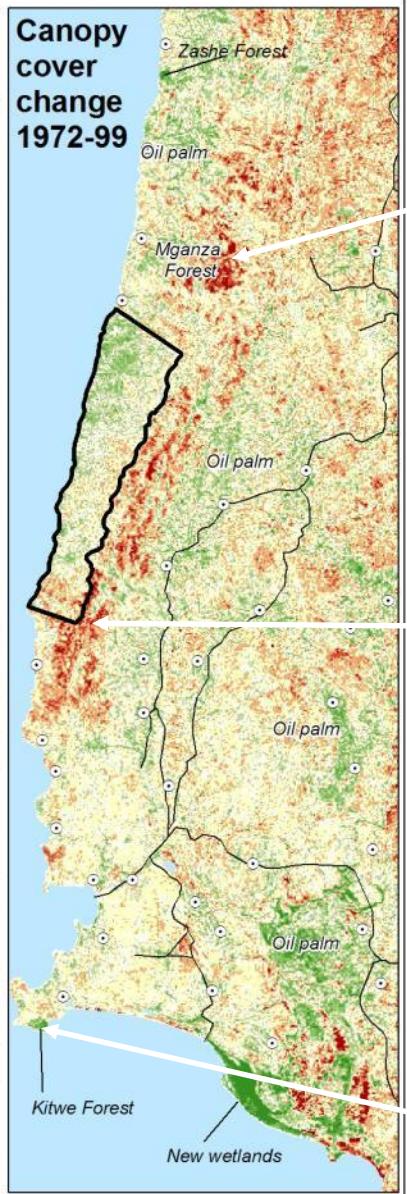
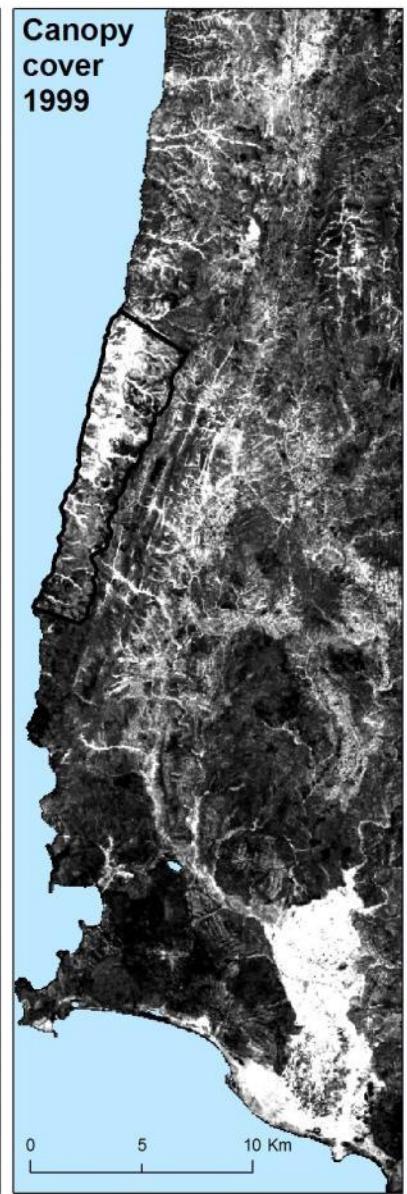
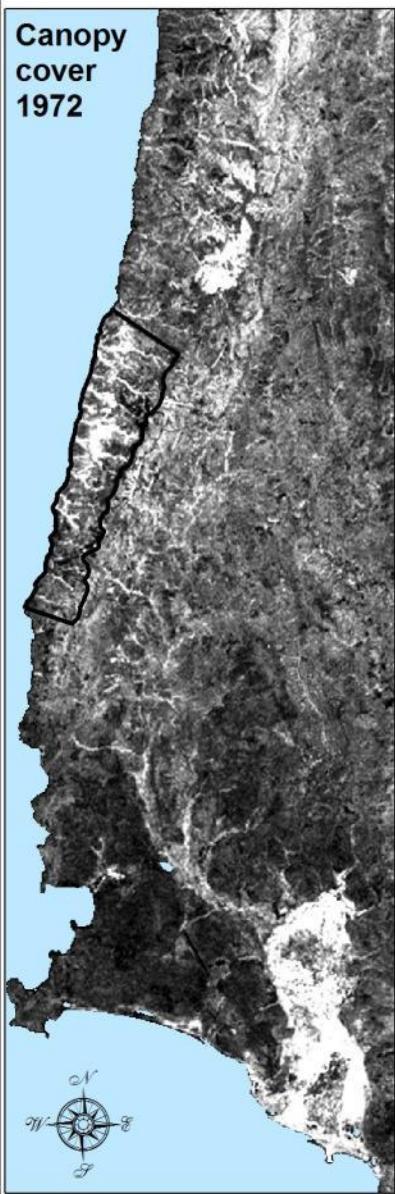
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Gombe National Park and the Greater Gombe Ecosystem



© the Jane Goodall Institute

# 2000



Forest loss in Mganza Forest Reserve



**Canopy cover Percent**

High : 100  
Low : 0

Gombe NP  
Water  
Major roads  
Settlements

**Canopy cover change**

-92 -45 -30 -15 -4 +3 +15 +30 +45 +91

# Gombe – a habitat island

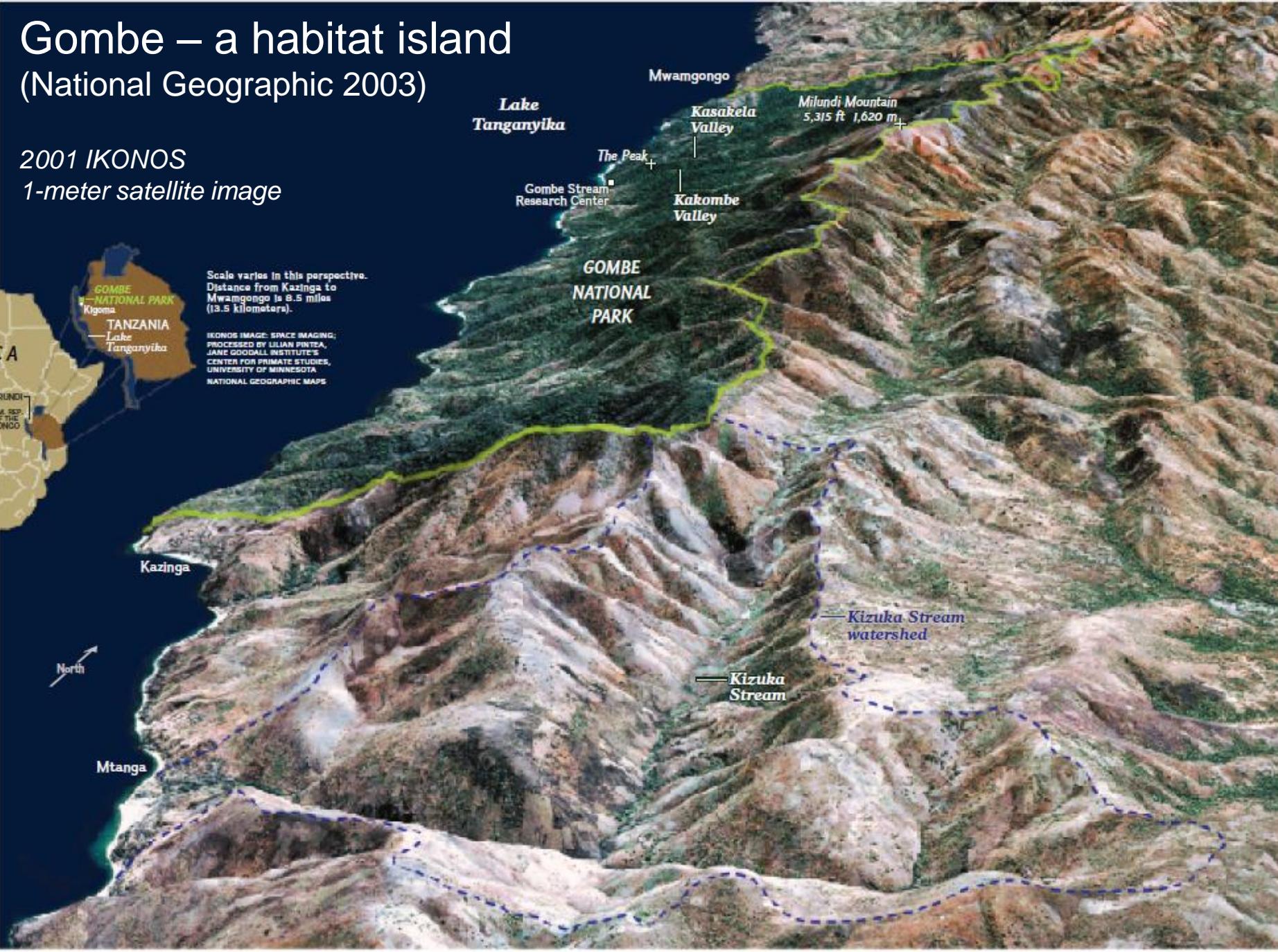
(National Geographic 2003)

2001 IKONOS  
1-meter satellite image

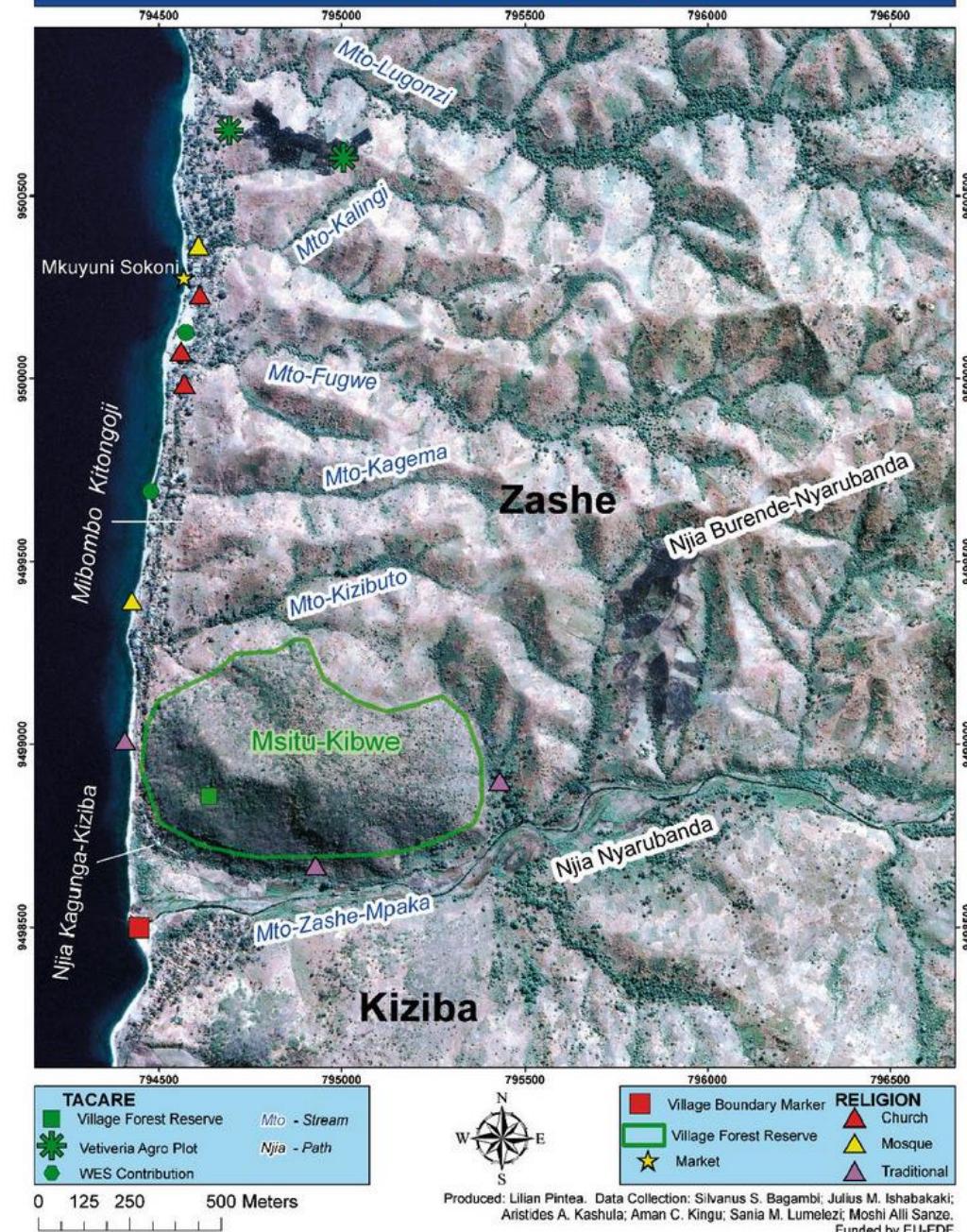


Scale varies in this perspective.  
Distance from Kazinga to  
Mwamgongo is 8.5 miles  
(13.5 kilometers).

IKONOS IMAGE: SPACE IMAGING;  
PROCESSED BY LILIAN PINTEA,  
JAMES H. MURRAY, AND  
CENTER FOR PRIMATE STUDIES,  
UNIVERSITY OF MINNESOTA  
NATIONAL GEOGRAPHIC MAPS



## Zashe Village Participatory Map



2003 - Participatory mapping of village lands using 1-meter IKONOS satellite imagery

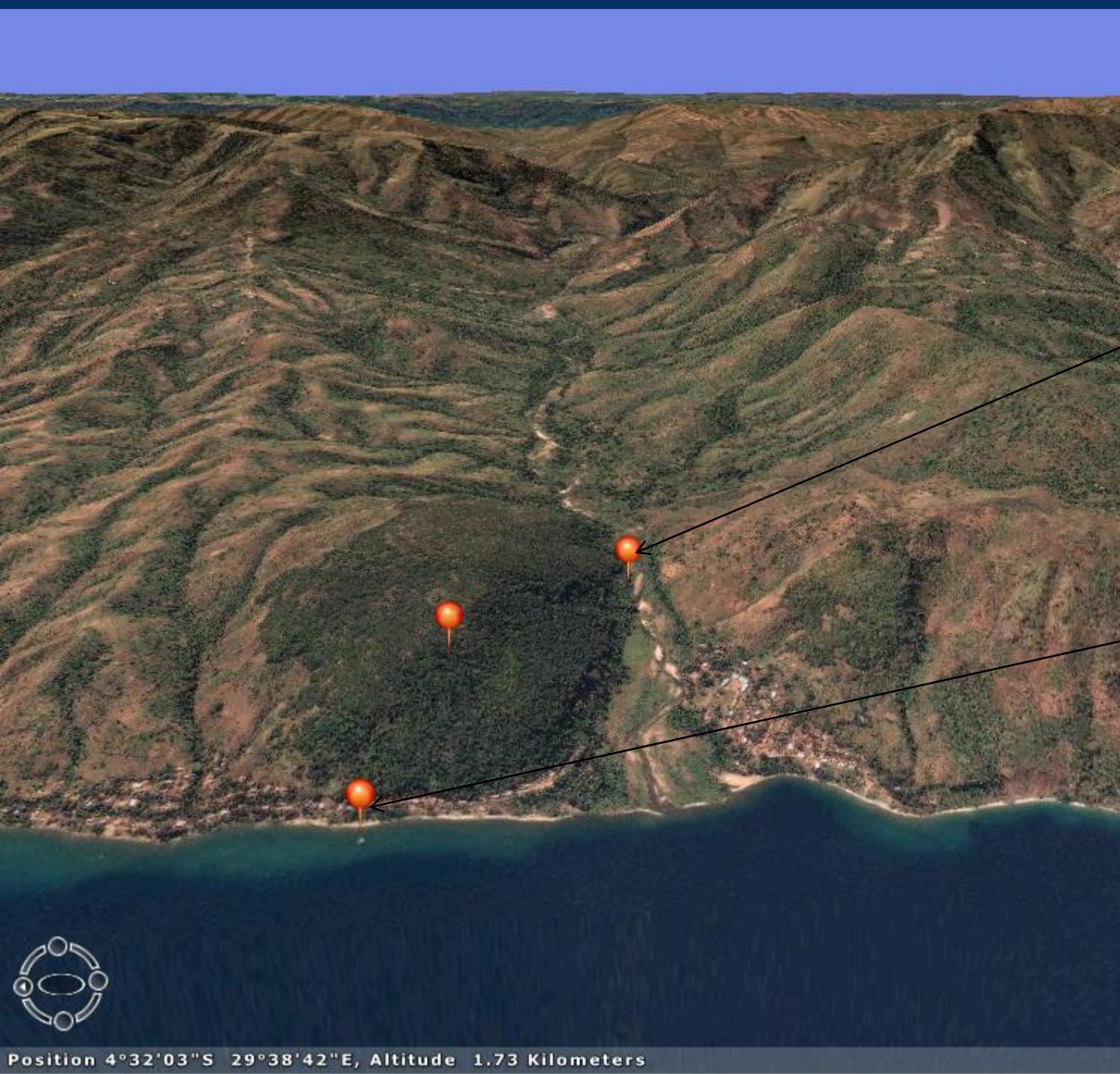


# Zashe Village



Position 4°32'10"S 29°38'47"E, Altitude 1.46 Kilometers

Copyright: © 2009 i-cubed



Position 4°32'03"S 29°38'42"E, Altitude 1.73 Kilometers



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## Jane Goodall Tells Her Story at Esri's 25th User Conference



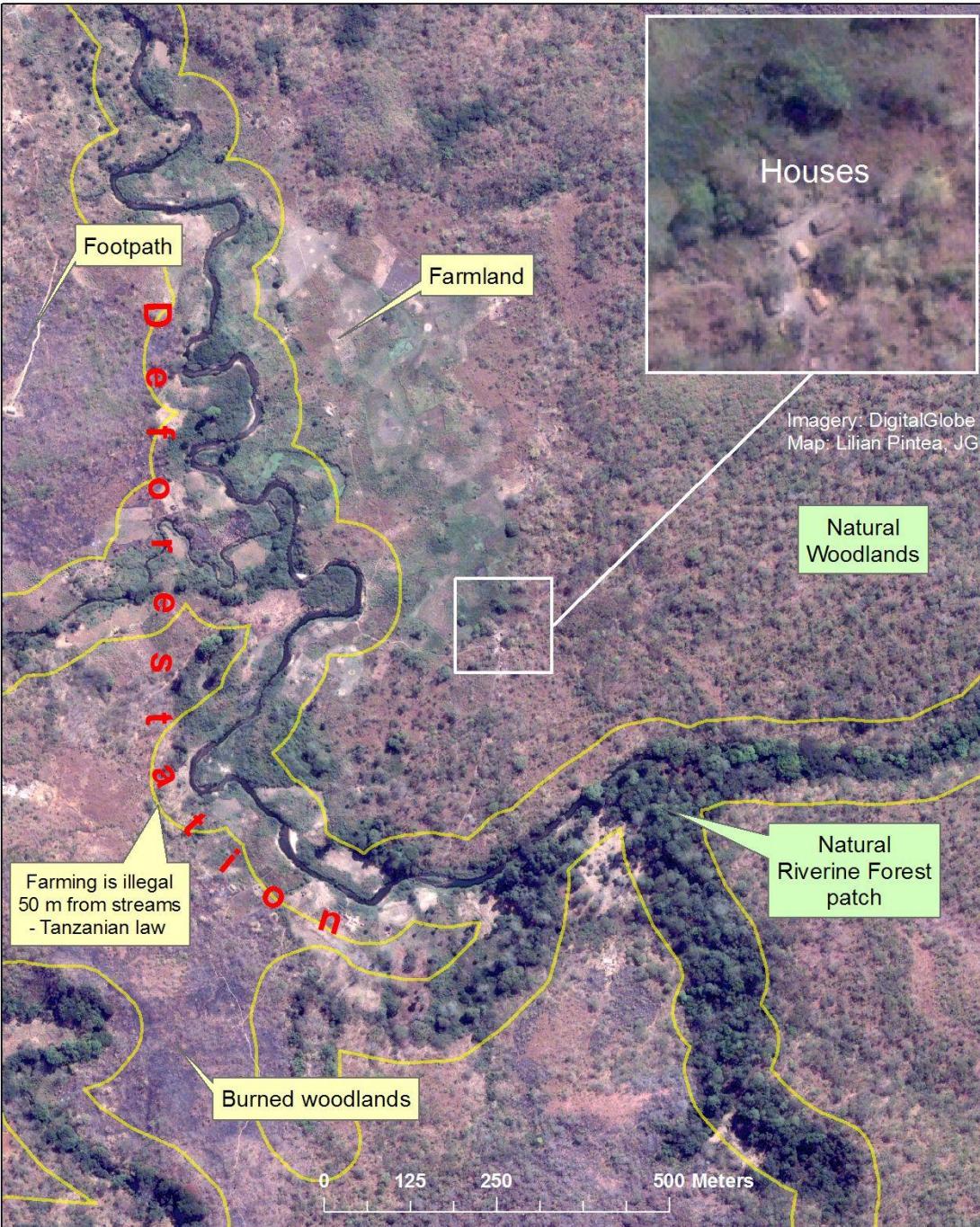
Dr. Goodall and orphaned sanctuary chimpanzee.

(The Jane Goodall Institute does not endorse handling or interfering with wild chimpanzees.)  
Photo © JGI Uganda

You could hear a pin drop—an amazing thing when 14,000 people are gathered in one place. All was quiet among the standing-room-only crowd at the 2005 Esri International User Conference as the audience held its collective breath in anticipation of the opening remarks of Dr. Jane Goodall in her keynote address. Then it came: part screech, part song—a warm "hello" in chimpanzee. The unusual greeting broke the ice and the silence melted into a warm round of applause.

An icon of environmental conservation and sustainability, Goodall told her story. In June 1960, anthropologist and paleontologist Dr. Louis Leakey offered her the opportunity to study chimpanzees in Tanzania (then Tanganyika). Her work at what would become the Gombe National Park would become the foundation of future primatological research and redefine the relationship between humans and animals. After 45 years of study, Goodall and fellow researchers have amassed an extensive collection of behavioral and demographic data on chimpanzees.

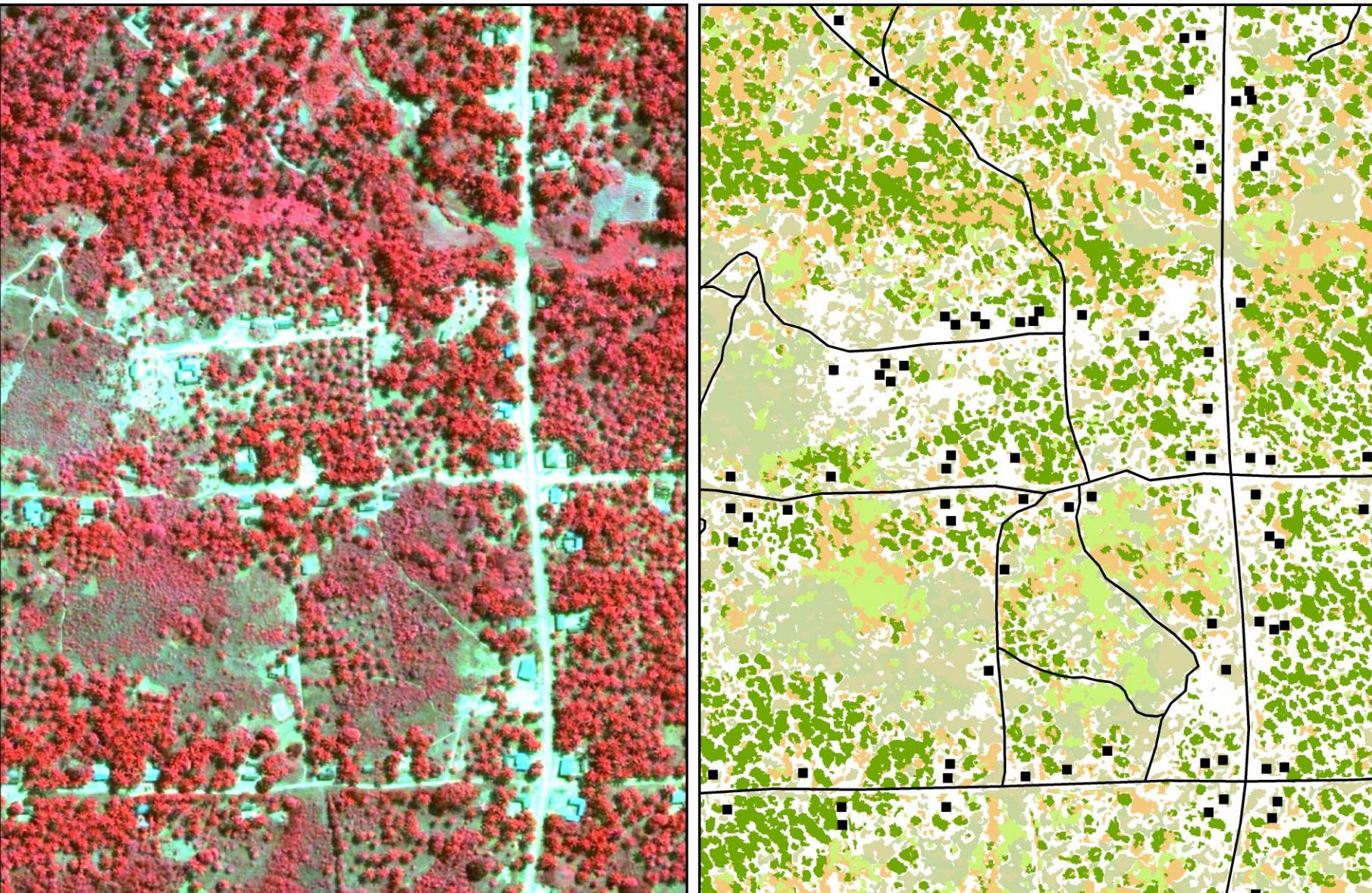




2005 – New Eyes on Chimpanzee Habitats and Threats

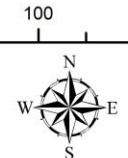


# Village Land Use Mapping in Greater Gombe Ecosystem, Tanzania from 61-cm QuickBird Satellite Imagery



## Legend

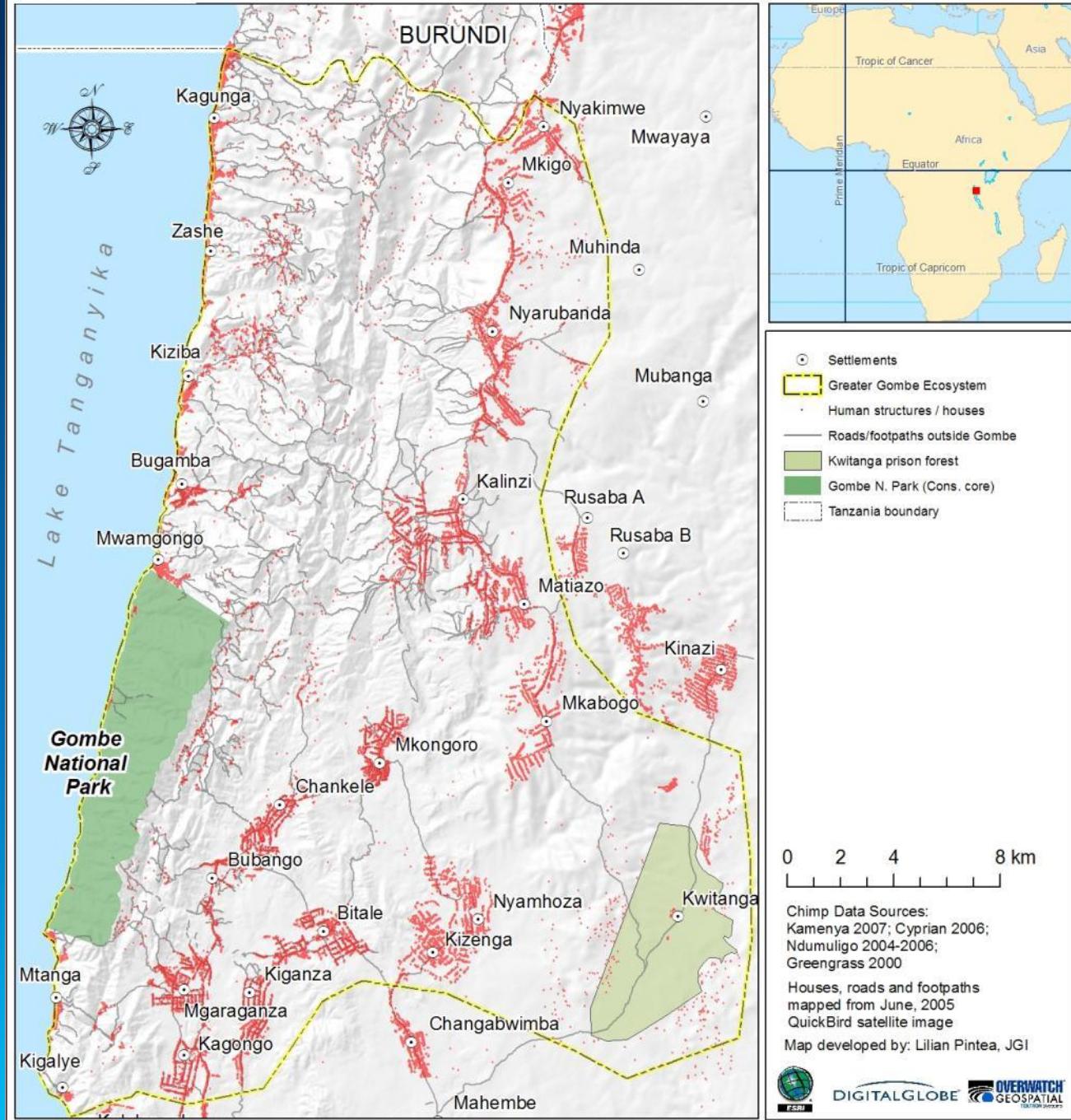
Vegetation	
— Roads/Paths	Oil palm
■ Structures	Shrubs
	Cassava dense
	Other timber
	Cassava & other herbaceous



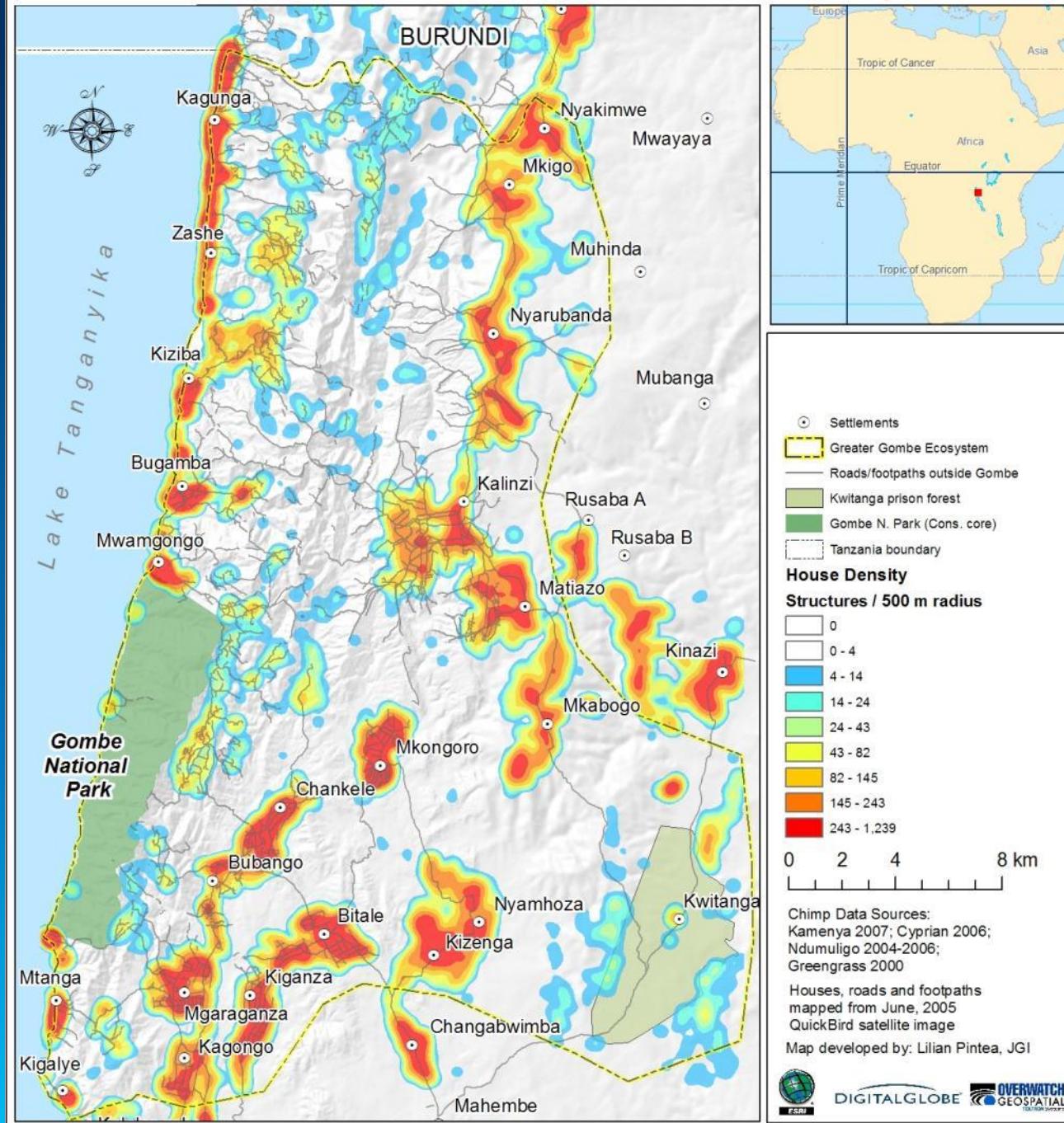
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Native Communities Development Corporation

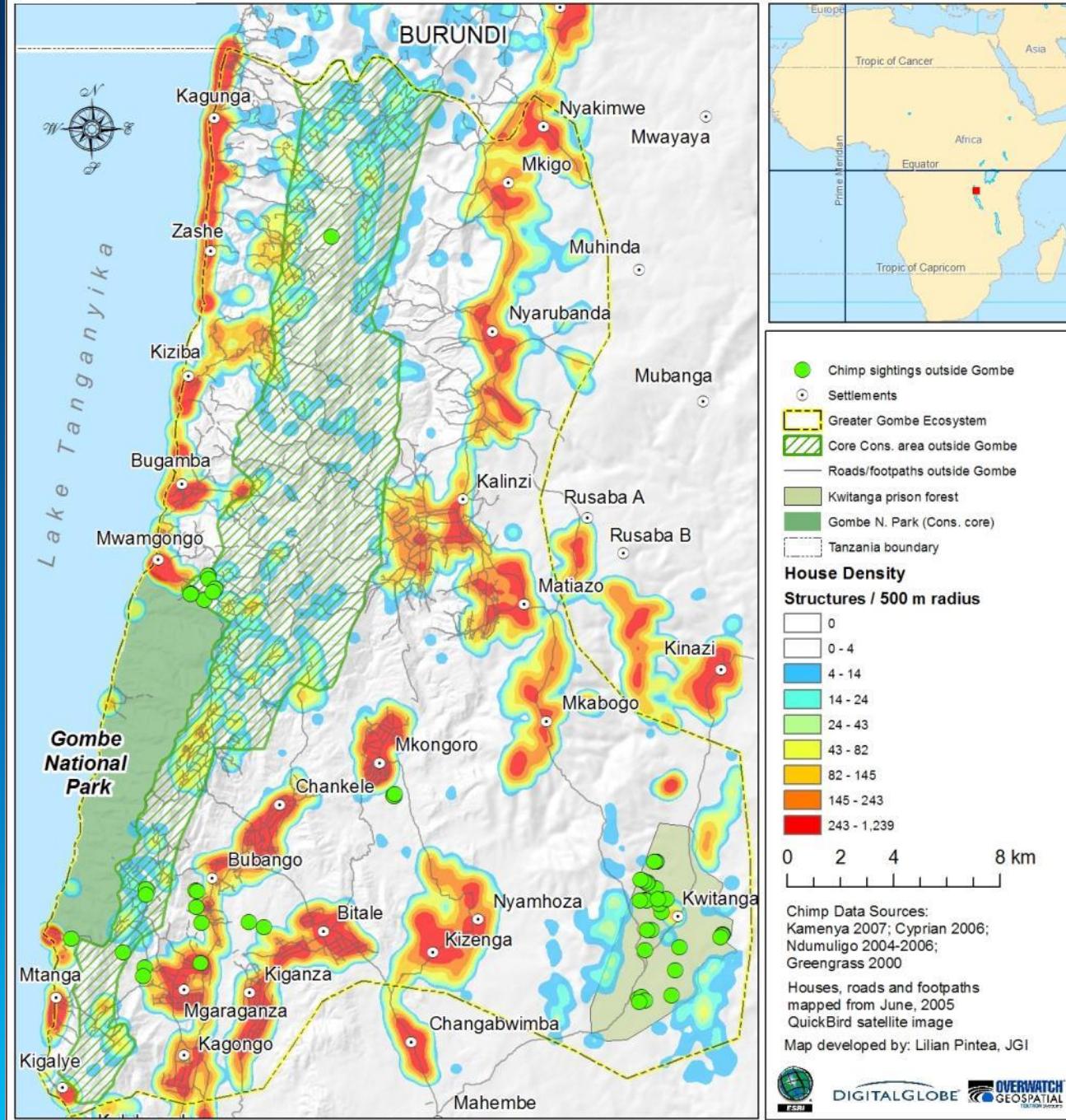
# GREATER GOMBE ECOSYSTEM


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# GREATER GOMBE ECOSYSTEM

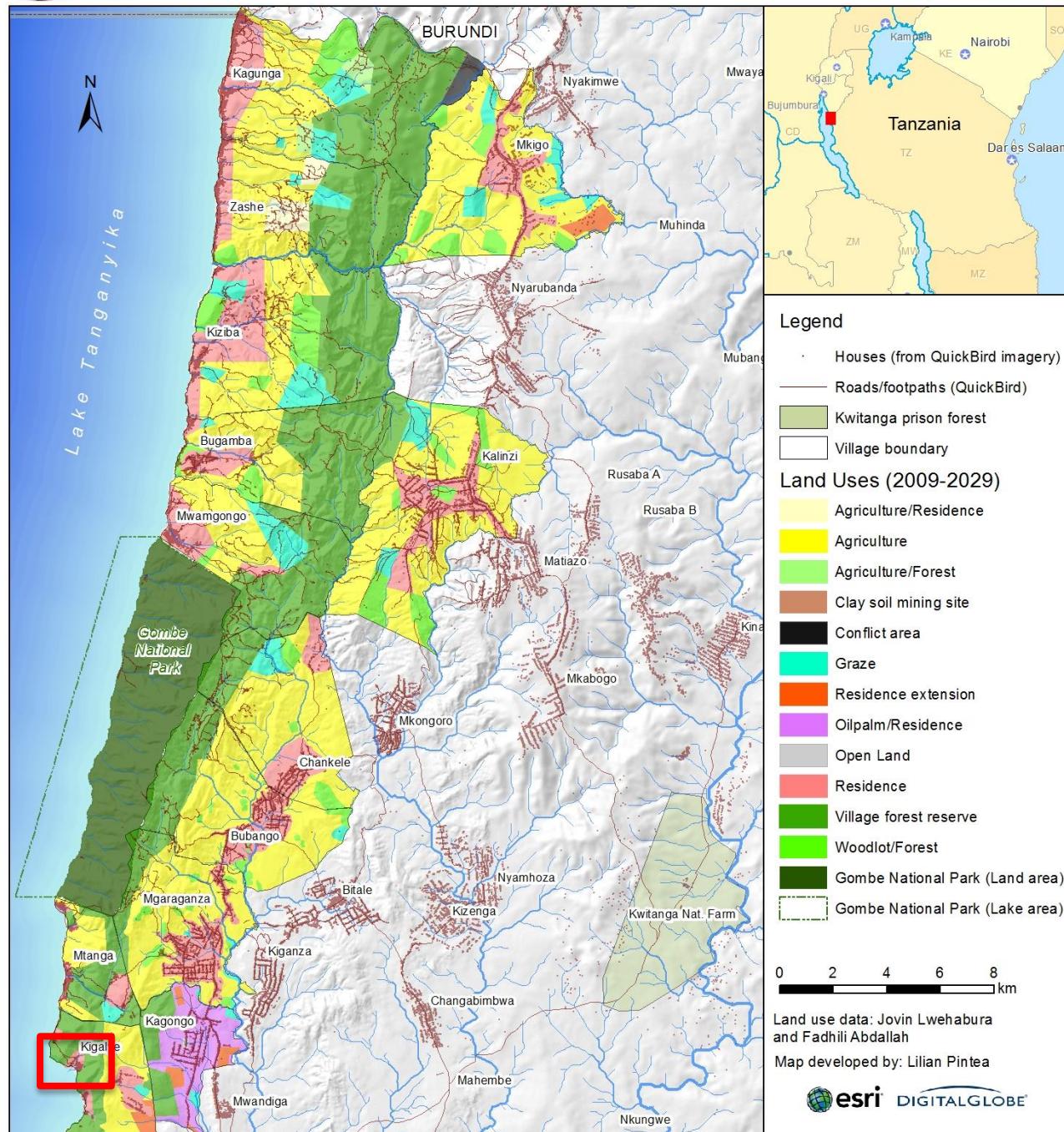
  
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# GREATER GOMBE ECOSYSTEM


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# Participatory Village Land Use Planning



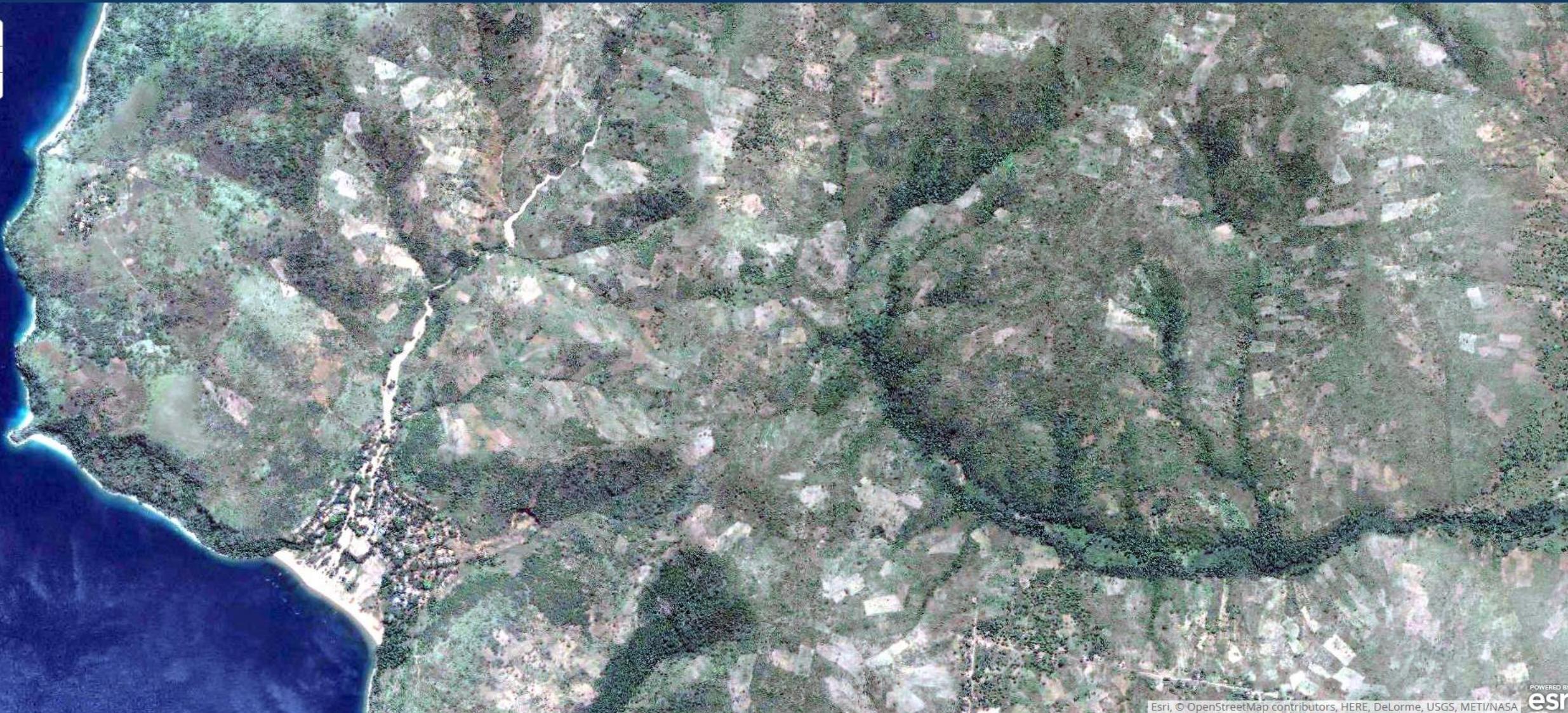


# 2005

2005 - 2014 Digital Globe Imagery of Kigalye Village Forest Reserve



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Esri, © OpenStreetMap contributors, HERE, DeLorme, USGS, METI/NASA

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esri

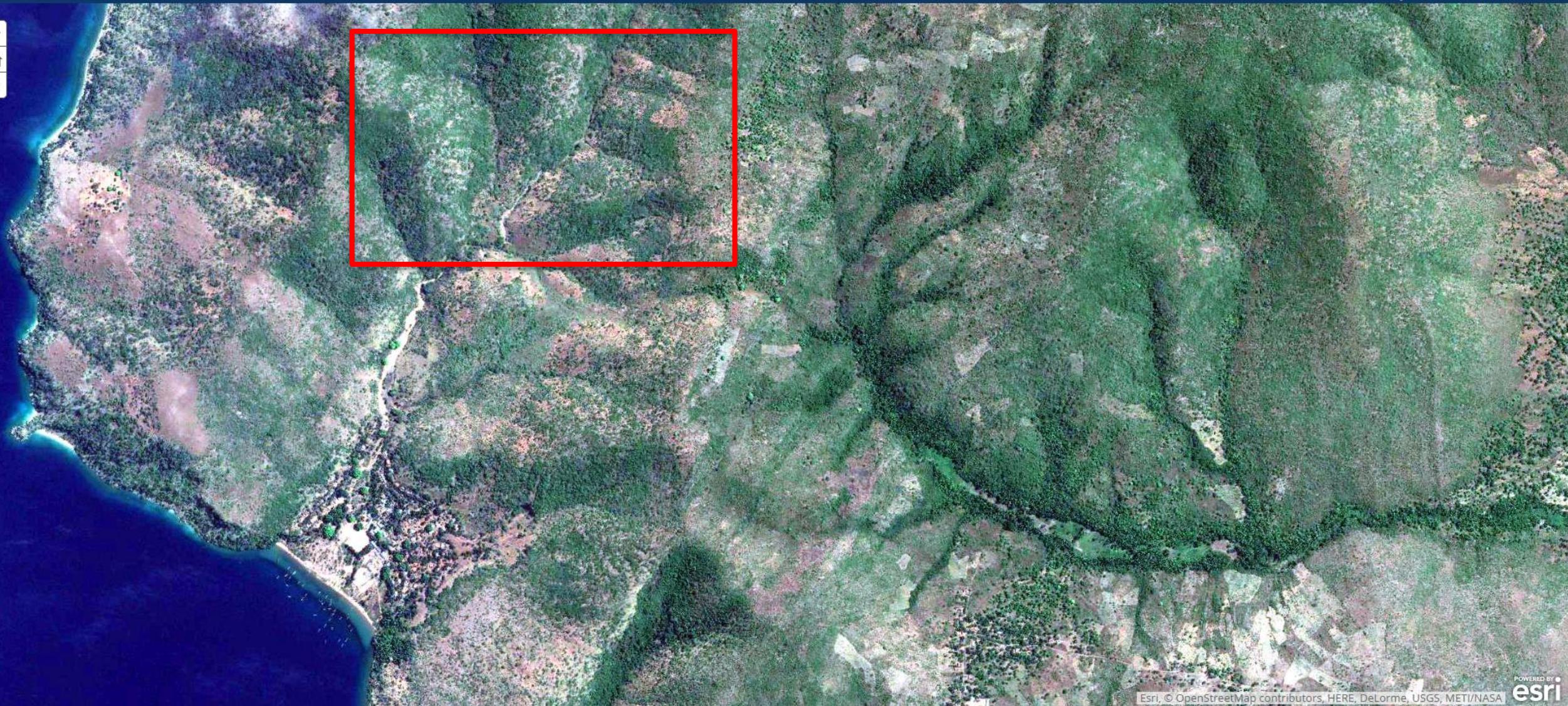
# 2014

2005 - 2014 Digital Globe Imagery of Kigalye Village Forest Reserve



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Home



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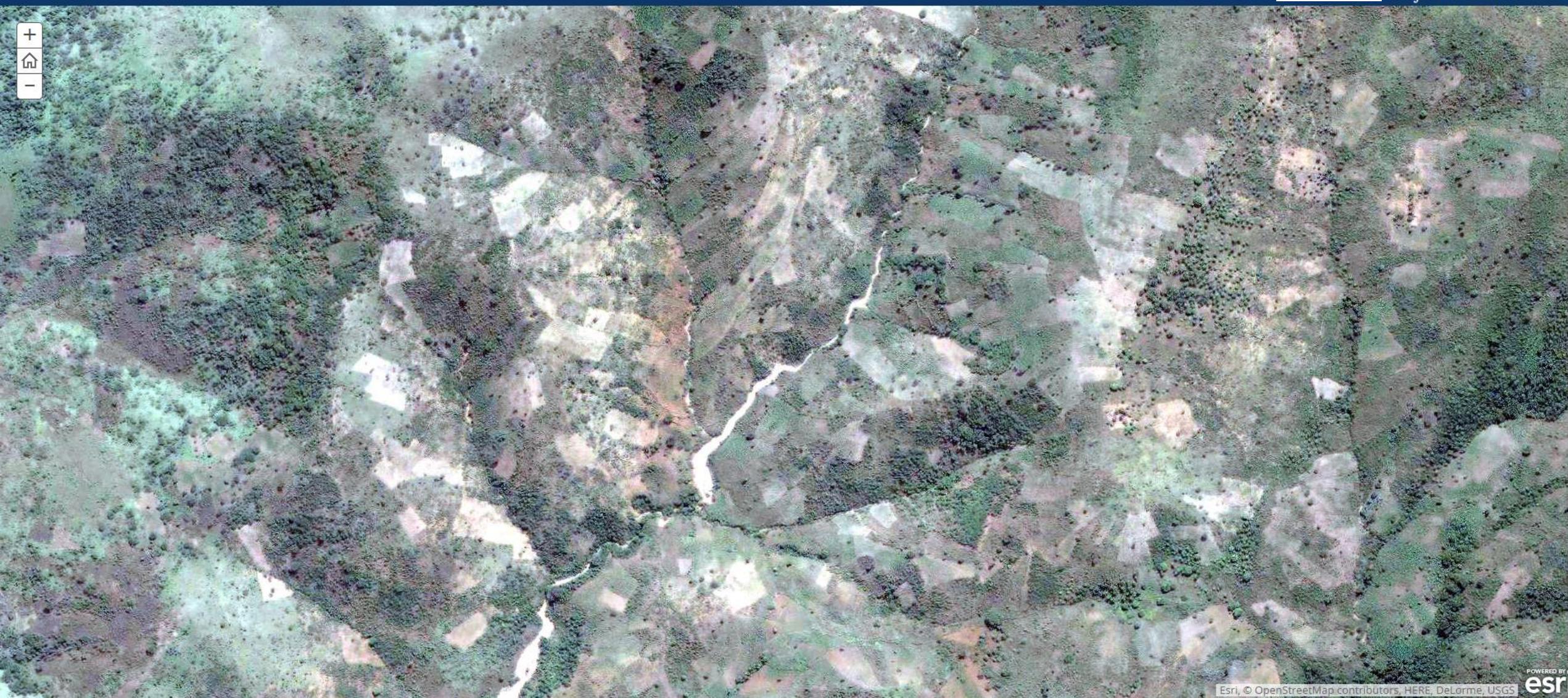
# 2005

2005 - 2014 Digital Globe Imagery of Kigalye Village Forest Reserve



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□



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# 2014

2005 - 2014 Digital Globe Imagery of Kigalye Village Forest Reserve



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Gombe vegetation as detected in near-infrared from WordView-3 satellite and UAV (drone)



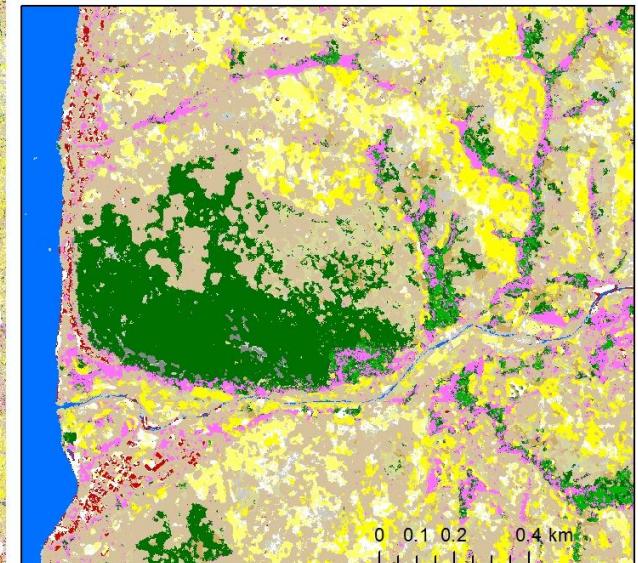
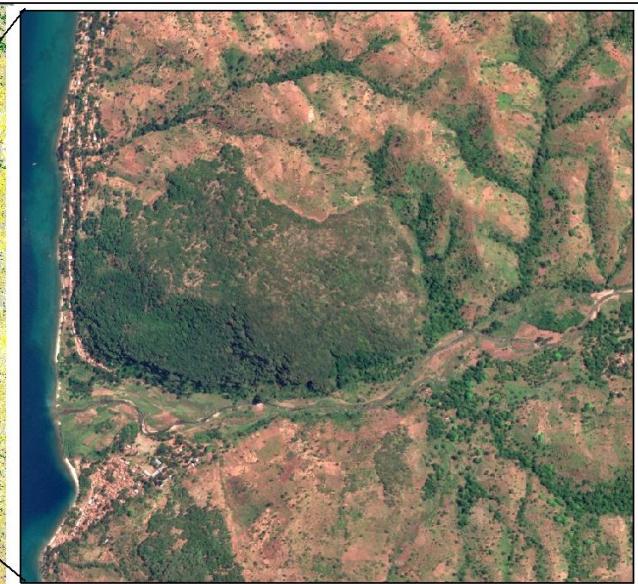
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Greater Gombe  
Ecosystem

2014  
land cover  
from  
DigitalGlobe  
satellite  
imagery

DRAFT  
version  
Jan 16, 2017



Mwamgongo village

Gombe National Park

EXPLORE

DESIGN

EVALUATE

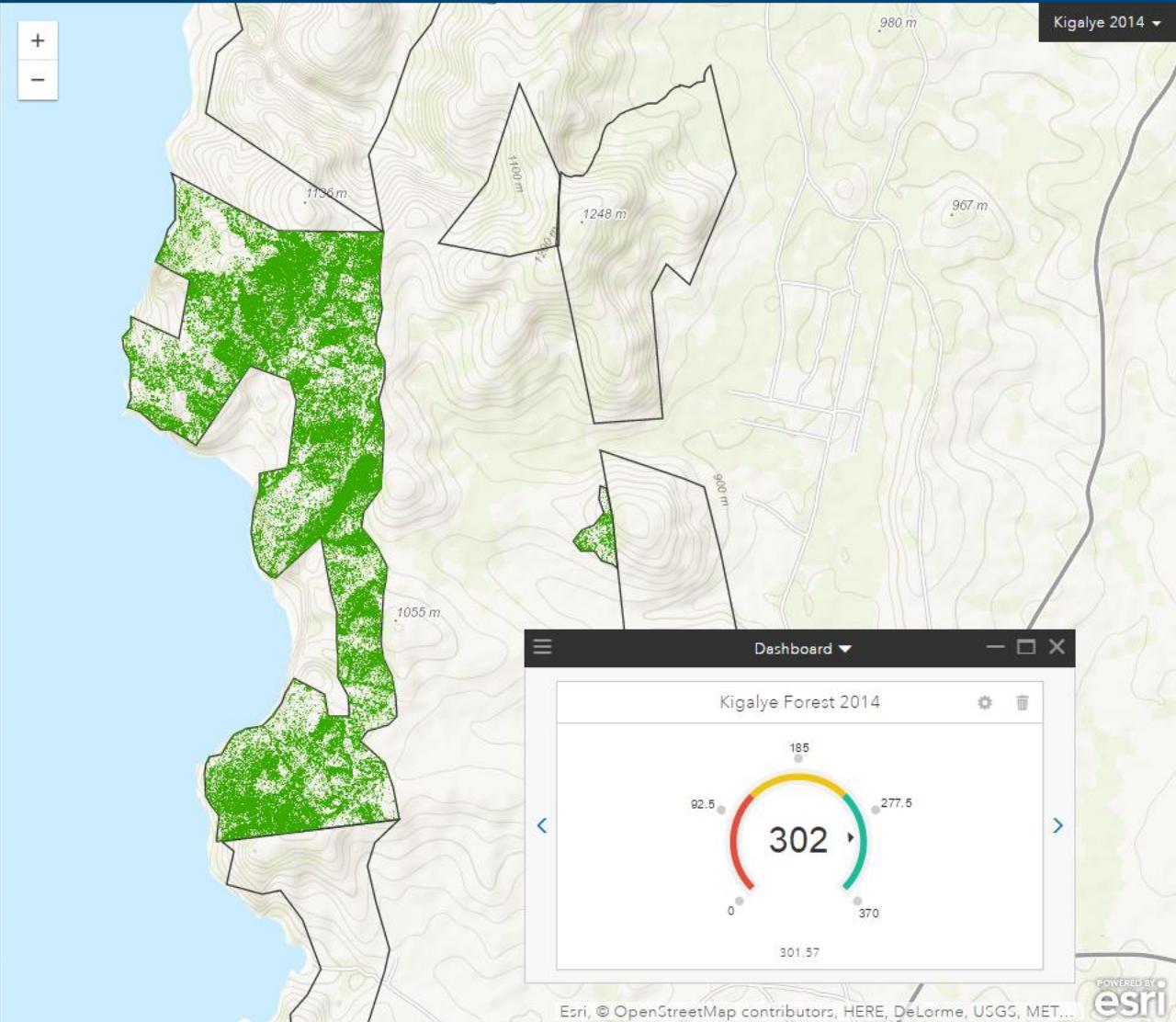
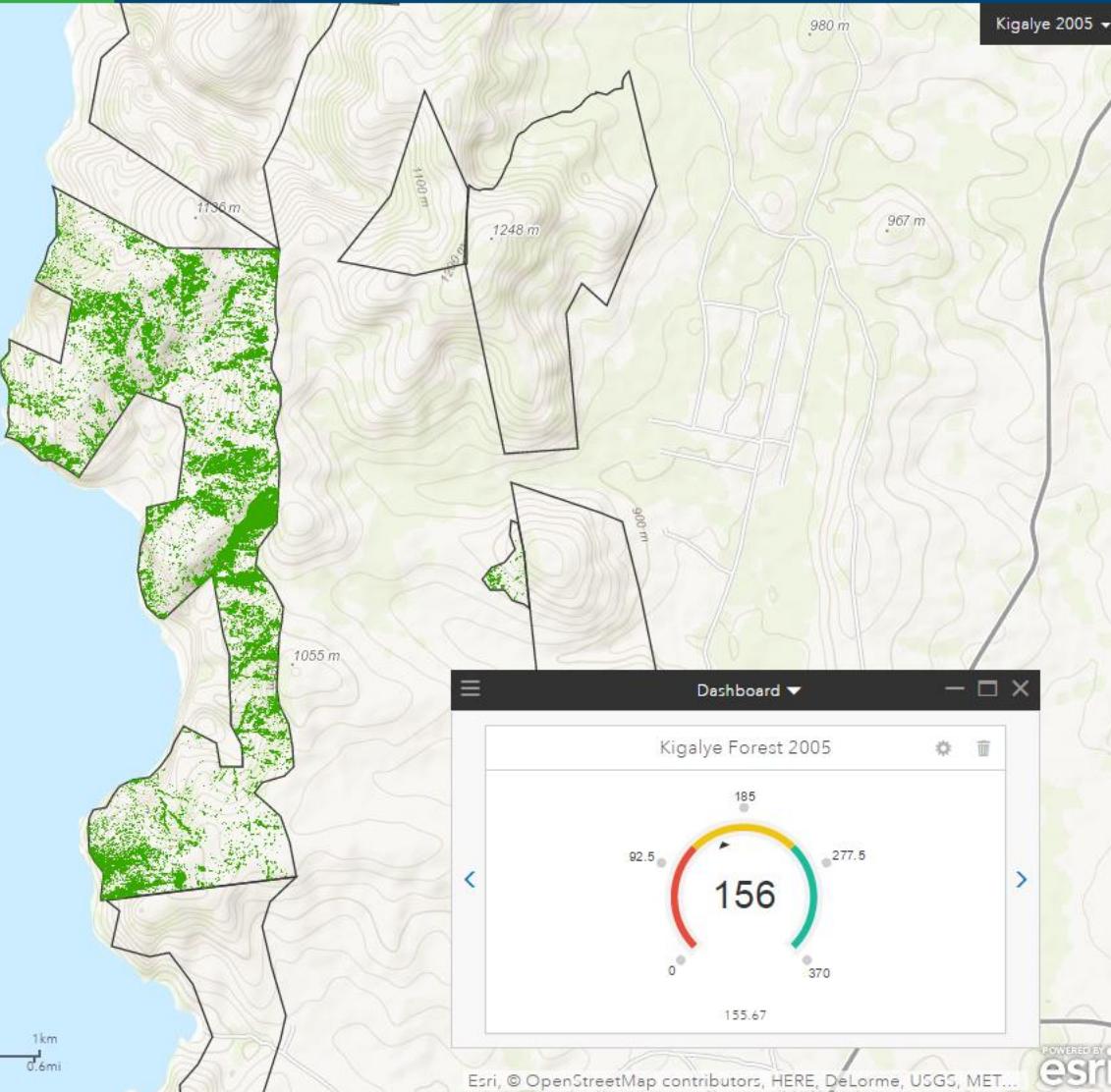
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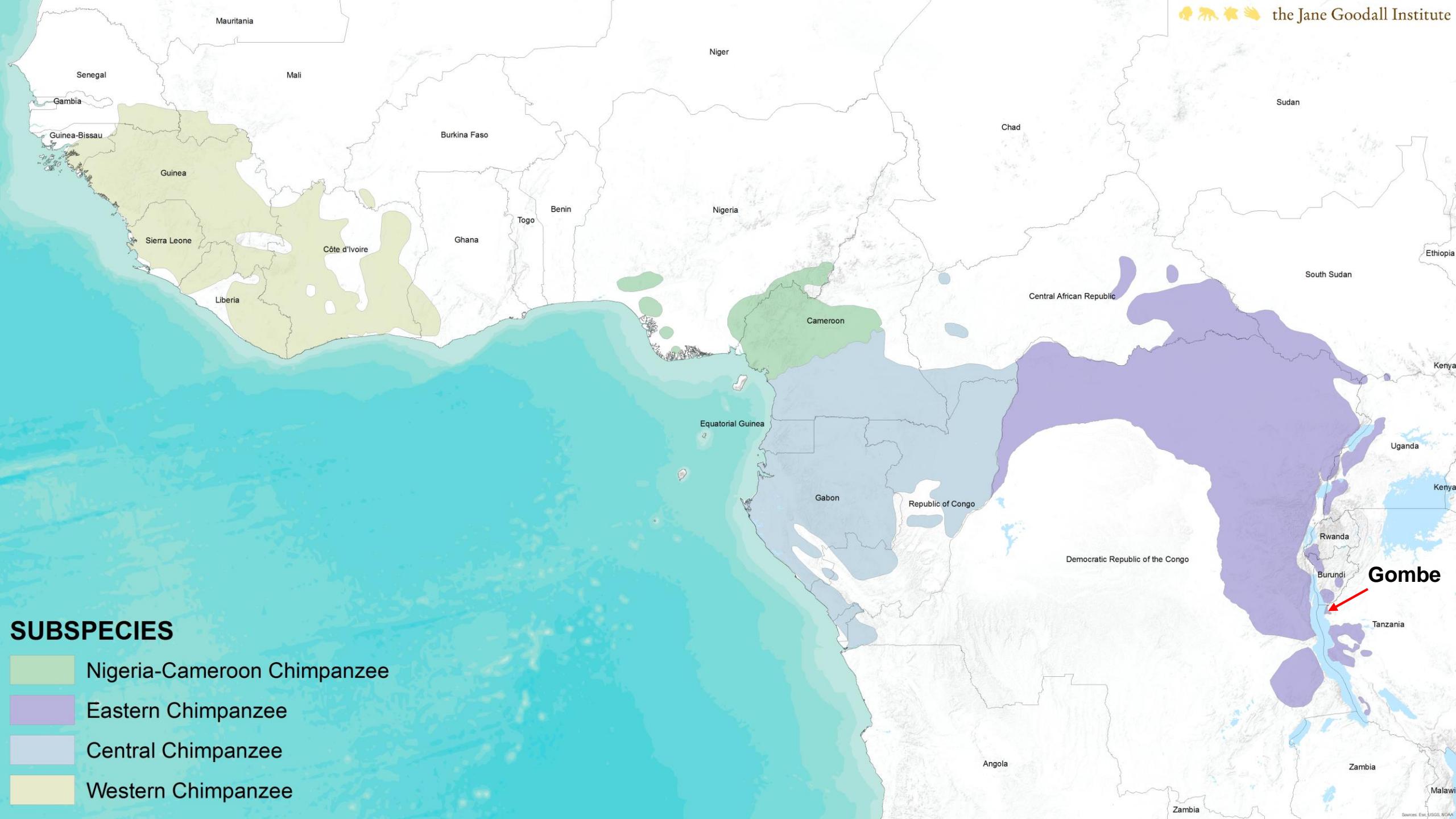
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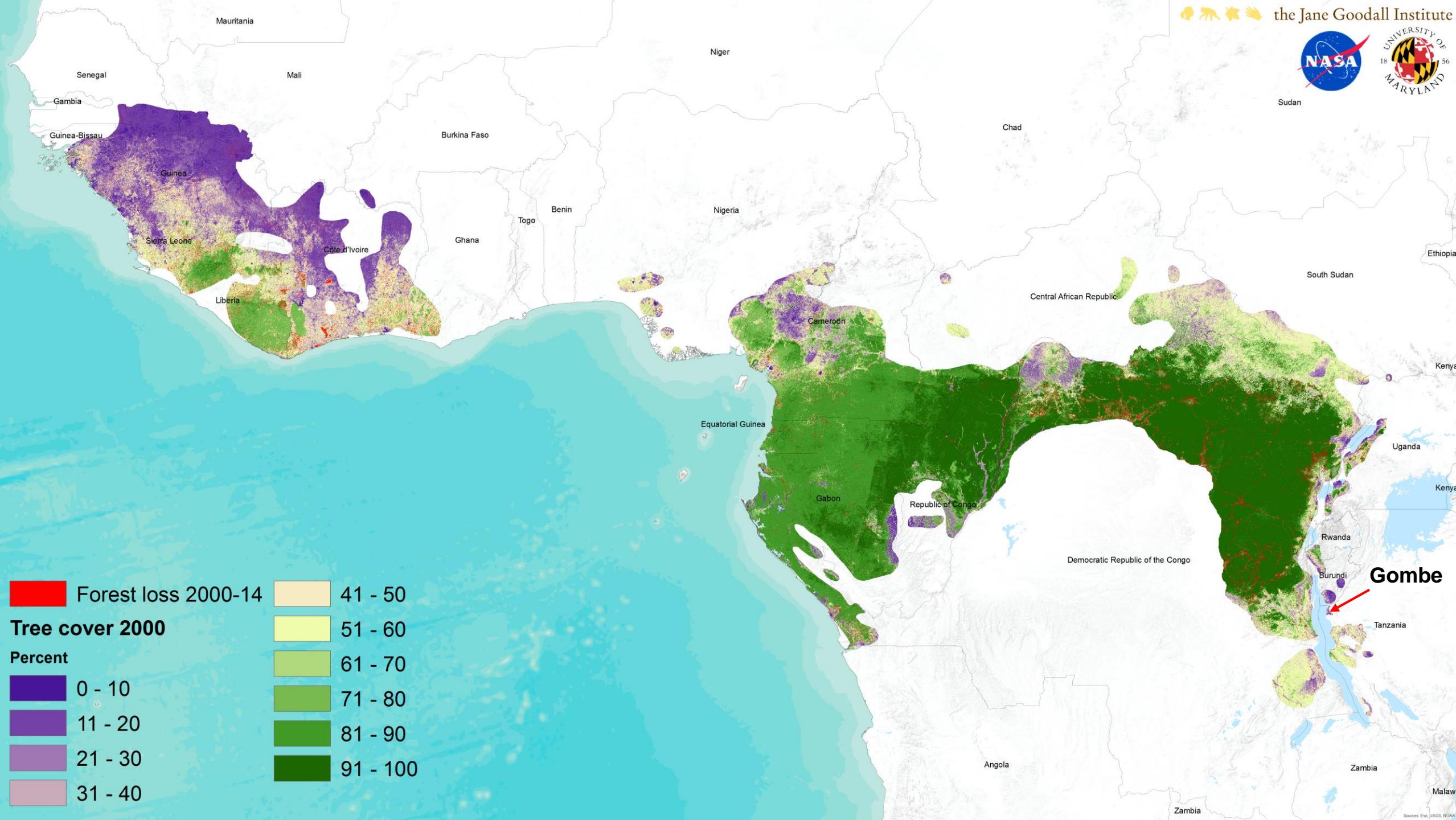
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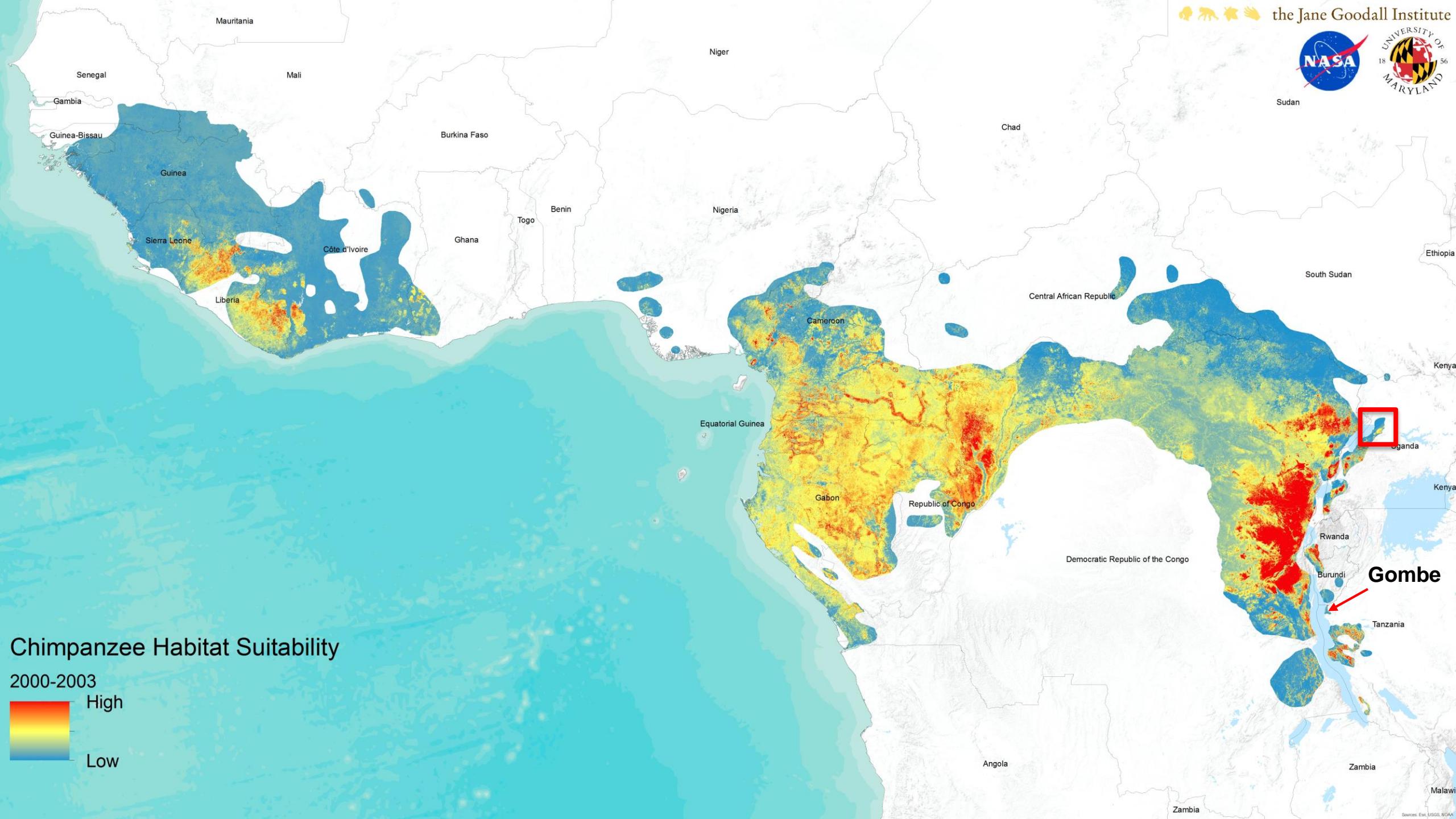
KPI Report

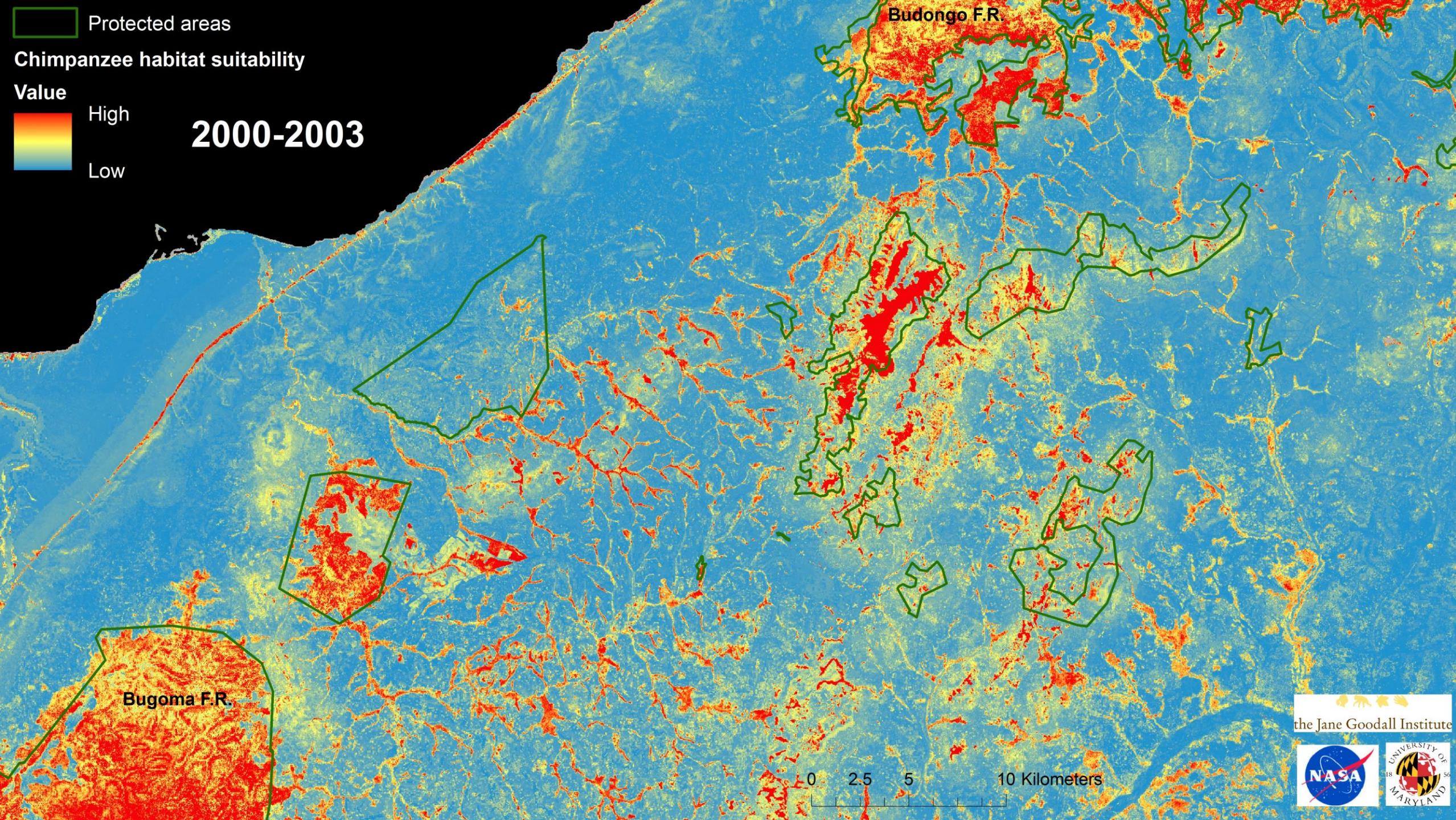
Synchronize Map Extents

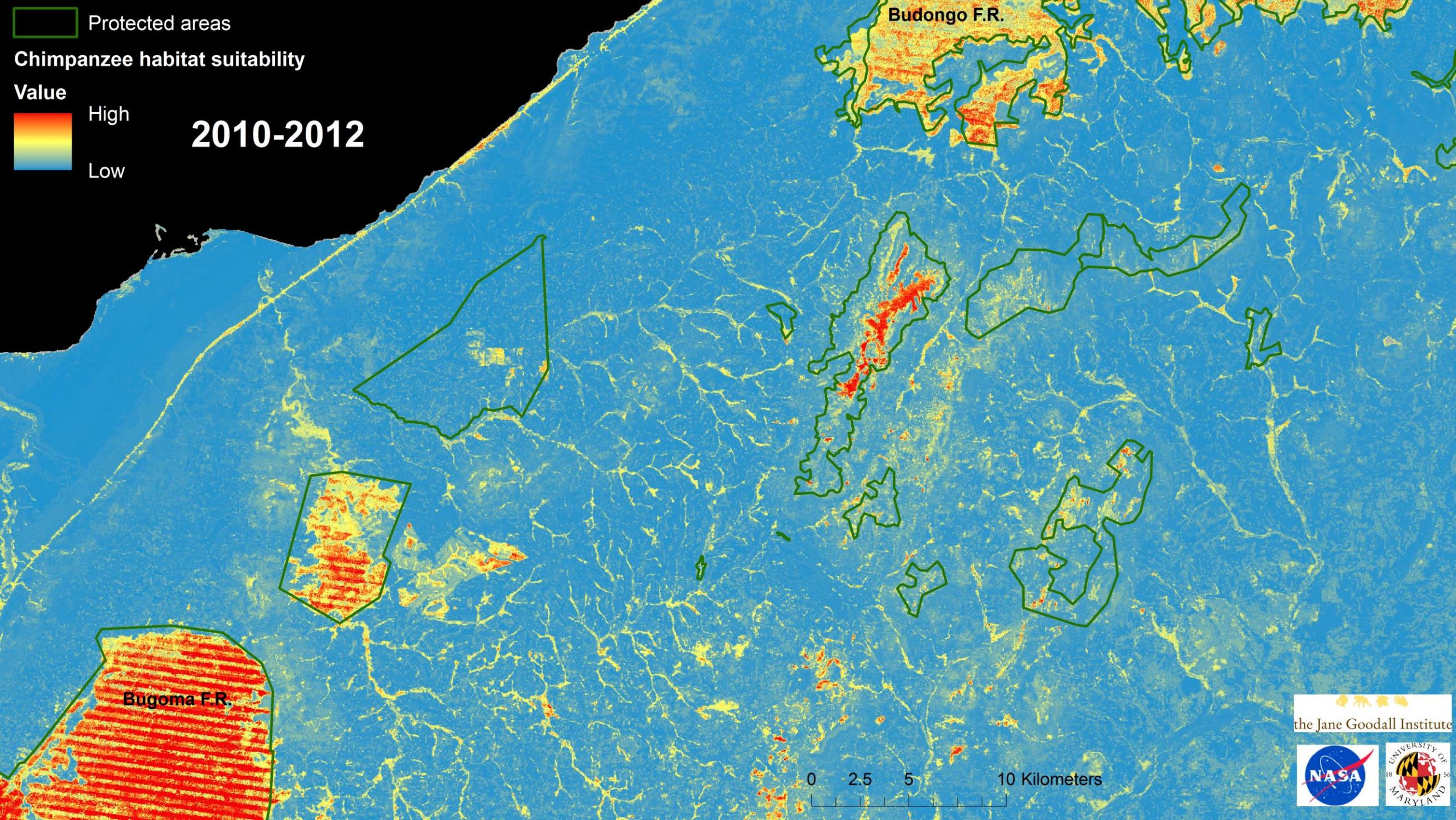














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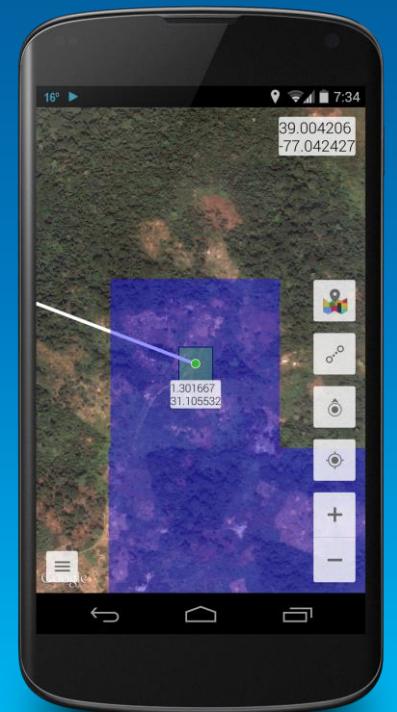
Google

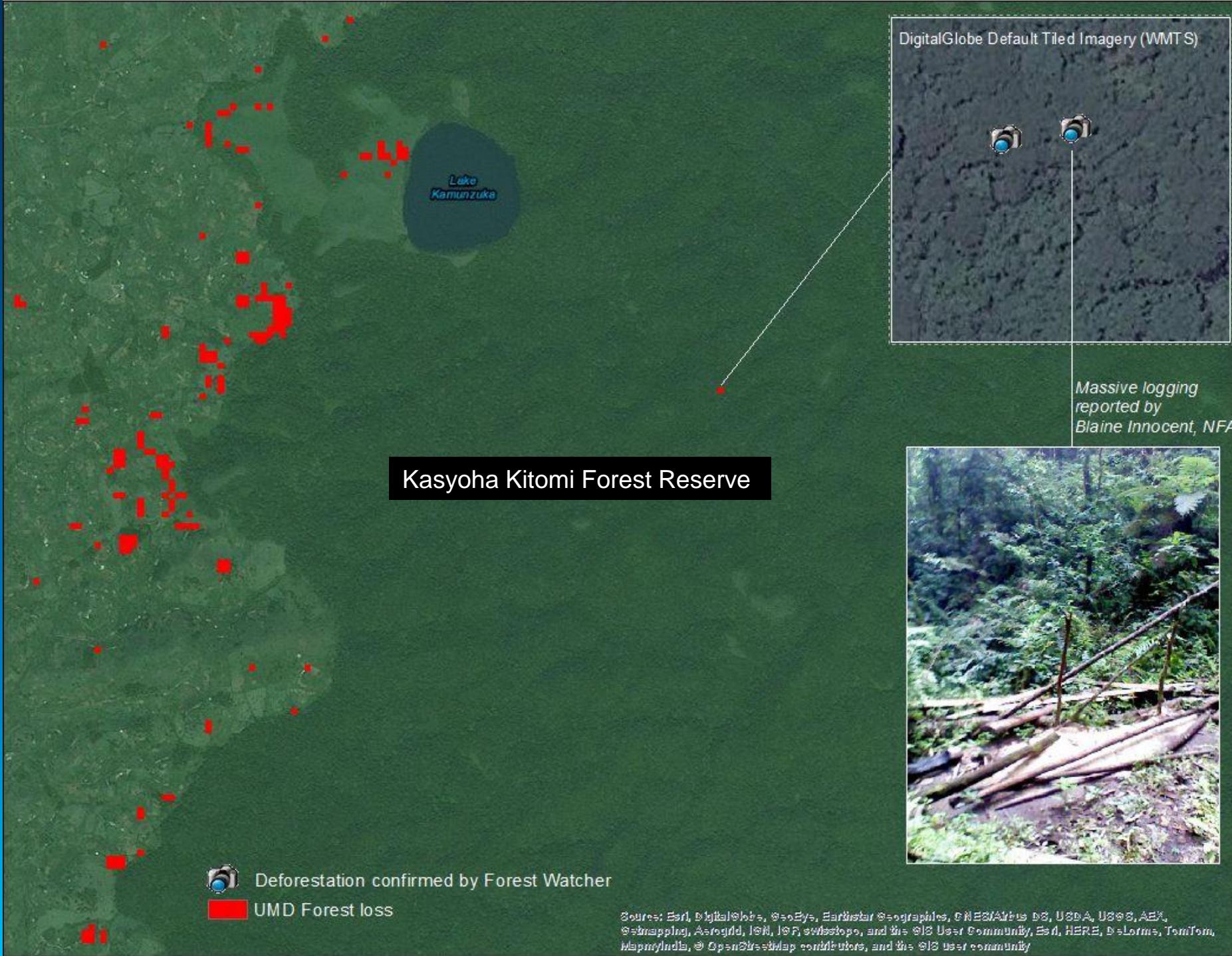
GLOBAL  
FOREST  
WATCH

## Forest Watcher mobile app: putting global forest data into the hands of local decision-makers to inform conservation actions

### Goal:

to improve forest conservation on the ground by enabling local stakeholders with limited and occasional Internet connectivity to access and use forest loss data and support management decisions.





Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, Kadaster NL, TomTom, MapmyIndia, © OpenStreetMap contributors, and the OGC user community.

# Weekly GLAD forest loss alerts

Kibale Conservation Area:

Kibale National Park  
Semuliki National Park  
Tooro Semuliki Wildlife Reserve  
and  
Katonga Wildlife Reserve.

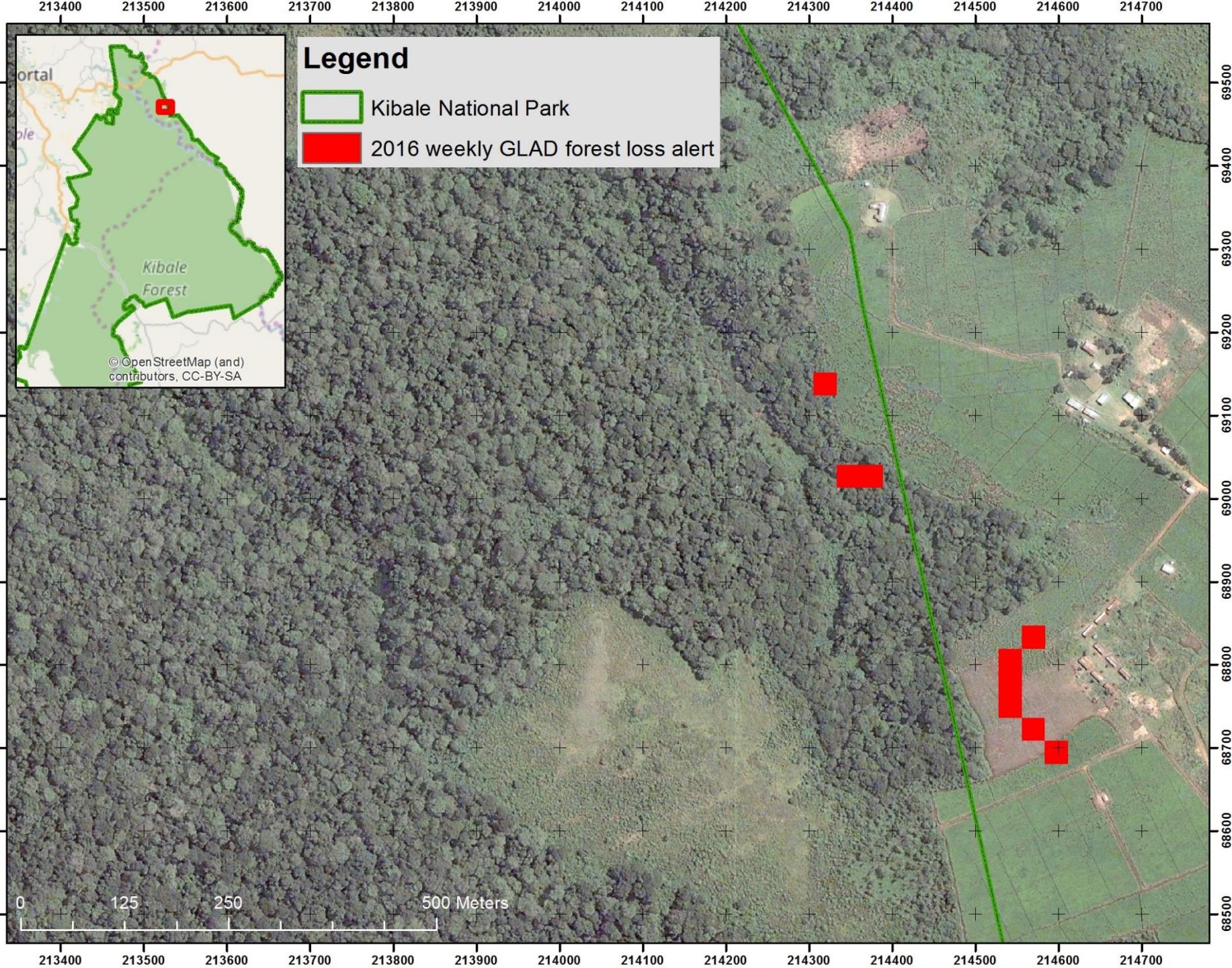


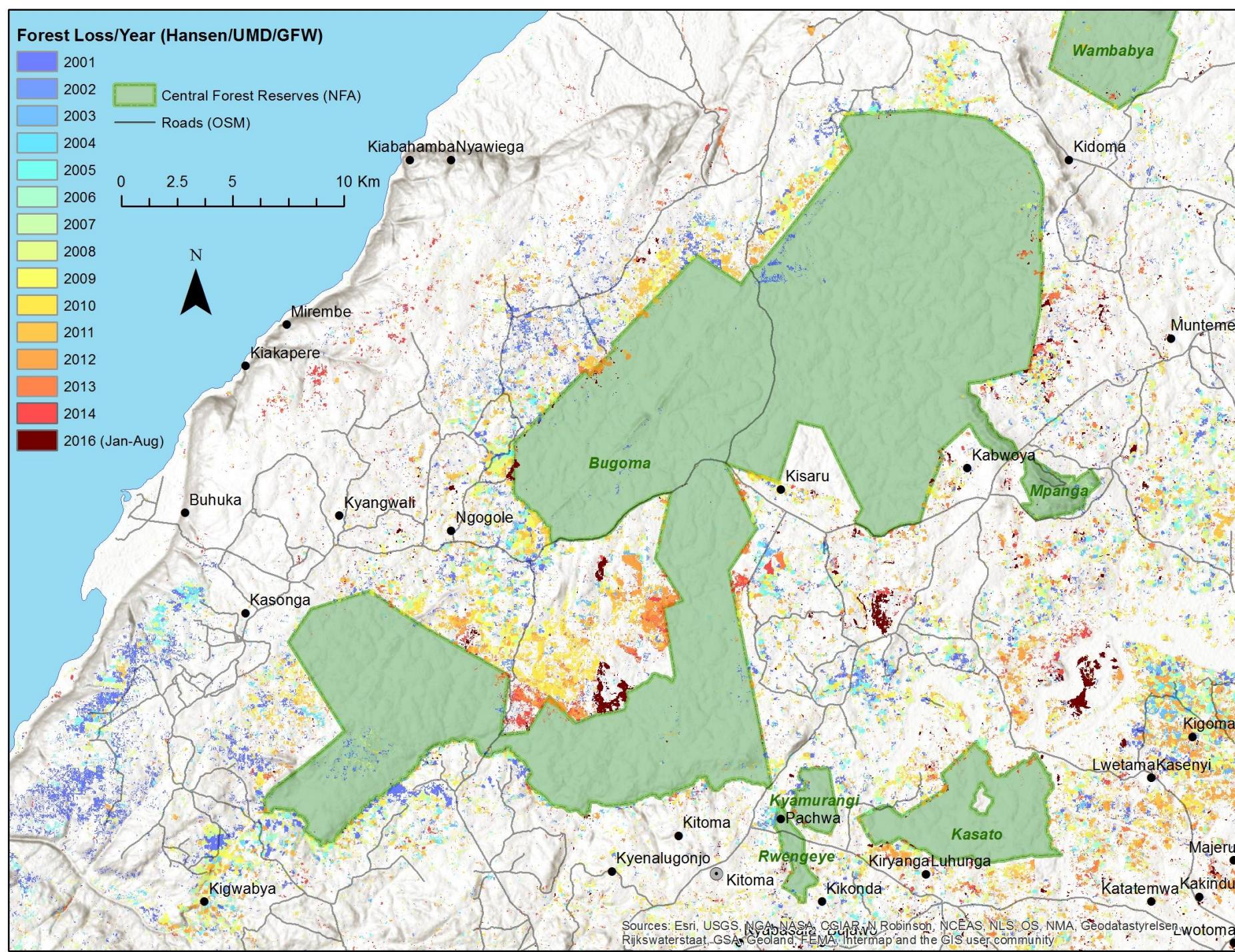
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**RESOLVE**

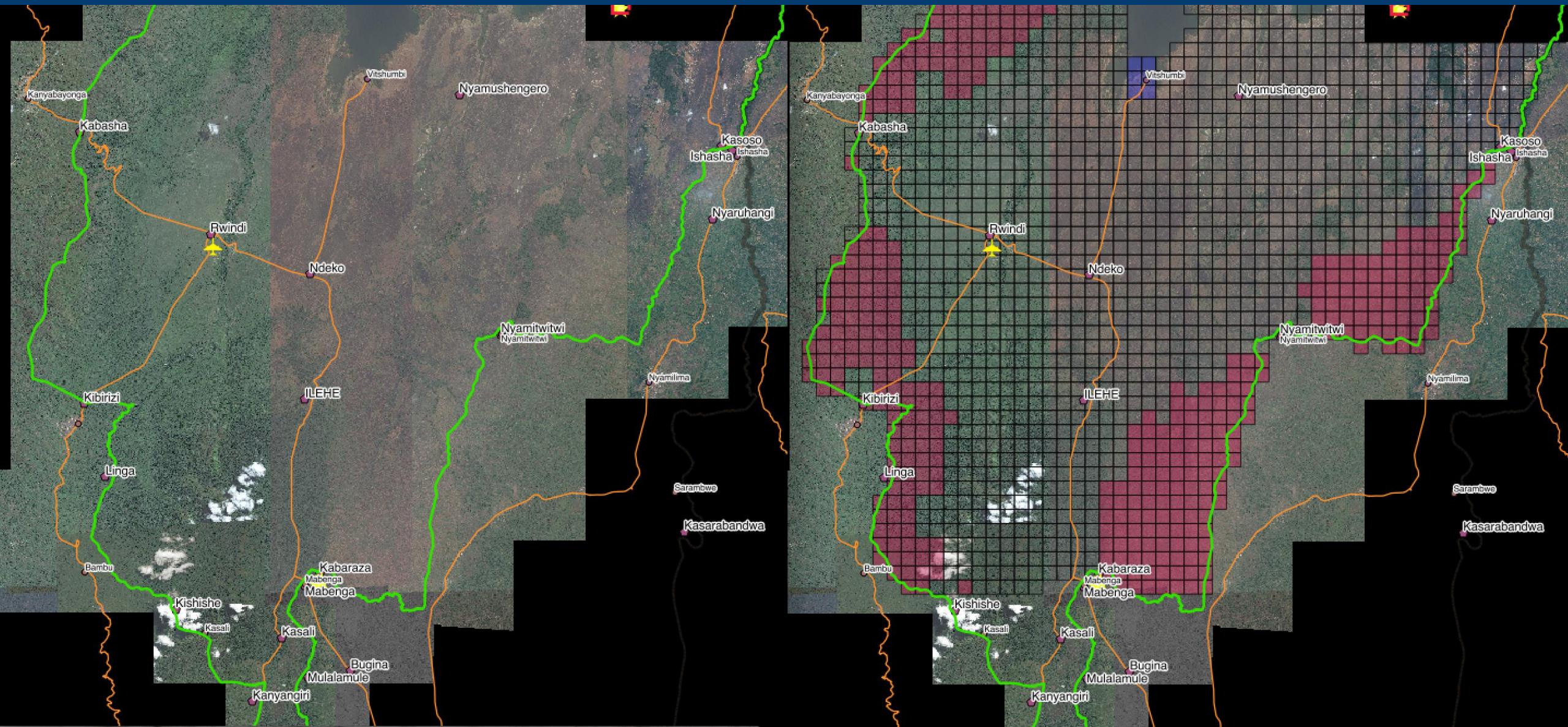


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Identifying areas of the Virunga National Park, DRC that are threatened through the use of the imagery using a grid system. DigitalGlobe & JGI contributed Virunga National Park imagery to National Park as part of the Great Apes Conservation Action Plan

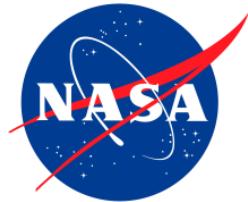




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FOUNDATION



Local communities and  
Governments of Tanzania, DRC,  
Uganda and Republic of Congo

# THANK YOU!

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**esri**

**DIGITALGLOBE®**

**GLOBAL  
FOREST  
WATCH**

**SSC**  
Species Survival Commission

**GRASP**  
GREAT APES SURVIVAL  
PARTNERSHIP

**UNIVERSITY OF  
MARYLAND**

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INSTITUTE**



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In memory of

Charles R. (Chuck) Chaapel