



**United Nations / Kenya
Conference on**

**“Space Technology and Applications for Wildlife
Management and Protecting Biodiversity”**

Programme

Co-hosted By

Ministry of Environment and
Natural Resources



Co-sponsored by



Nairobi, Kenya

27 – 30 June 2016

Honorary Committee (in alphabetical order):

Simonetta Di Pippo	Director, Office for Outer Space Affairs, United Nations
Erik Solheim	Executive Director, United Nations Environment Programme
Judi Wakhungu	Cabinet Secretary, Ministry of Environment and Natural Resources, Kenya
Johann-Dietrich Woerner	Director General, European Space Agency

International Programme Committee (in alphabetical order):

Werner Balogh	Office for Outer Space Affairs, United Nations
Jean-Charles Bigot	European Space Agency
Julian Blanc	The Convention on International Trade in Endangered Species of Wild Fauna and Flora
Remi Chandran	National Institute for Environmental Studies, Japan
Lorant Czarán	Office for Outer Space Affairs, United Nations
Bonaventure Ebayi	Lusaka Agreement Task Force
Faith Karanja	University of Nairobi, Kenya
Elizabeth Mrema Maruma	United Nations Environment Programme
Margaret Maimba	National Commission for Science, Technology & Innovation, Kenya
Javier Montano	United Nations Office on Drugs and Crime, Kenya Office

Local Organizing Committee (in alphabetical order):

Godfrey Bihembo	Ministry of Environment and Natural Resources
David Chege	Kenya Forest Service
Lauren Friedman	United Nations Office on Drugs and Crime, Kenya Office
Gideon Gathaara	Ministry of Environment and Natural Resources
Ignatius Gitonga	Kenya Meteorological Department
Paul Jinaro	Kenya Wildlife Service
Faith Karanja	University of Nairobi
Stephen Kiama	Kenya Forestry Research Institute
Margaret Maimba	National Commission for Science, Technology & Innovation
Boniface N. Maingi	National Police Service
Stephen Manegene	Ministry of Environment and Natural Resources
Allan Meso	United Nations Environment Programme
Javier Montano	United Nations Office on Drugs and Crime, Kenya Office
Solomon B. Mpapale	Office of the President
Winnie Musila	System for Land-based Emissions Estimation in Kenya (SLEEK)-MENR
Wycliffe Mutero	Kenya Wildlife Service
Faith Mutwiri	Kenya Forest Service
Esther Mwaura	Ministry of Interior and Coordination of National Government
Jamleck K. Ndambiri	Kenya Forest Service
Lucy Nganga	Ministry of Agriculture, Livestock and Fisheries, State Department of Agriculture
Shadrack Ngene	Kenya Wildlife Service
Andrew Nyawade	Ministry of Defence
Michael Ololuaa	Government Reception
Gordon Ojwang	Department of Resource Surveys and Remote Sensing
Eric Rotich	Directorate of Immigration and Registration of Persons
John Ringera	Lusaka Agreement Task Force
Tom Tiriongo	Lusaka Agreement Task Force

Afternoon

13:30

Session 1: Wildlife Management and Protecting Biodiversity: Issues and Space Technology Solutions

Chairperson: Jake Wall, Save the Elephants, Canada

Rapporteur: Sammy Matara, University of Nairobi

13:30

Space technology for biodiversity

*Jean-Charles Bigot
European Space Agency*

13:50

Space technologies (geo-positioning and data collection, Earth Observation, radar technology) for improved monitoring of wildlife movements, rosewood management and humanitarian help

*Aline Duplaa
Collecte Localisation Satellites (CLS)
France*

14:10

Earth Observations for wildlife management and protecting biodiversity

*Alex Fortescue
Manager, South and East Africa
Digital Globe*

14:30

ICARUS Initiative – system and applications

*Walter Naumann
Max Planck Institute for Ornithology
Germany*

14:50

Enhancing awareness in Africa to use space technology for development and protection of the environment

*Ghislain de la Sayette
Airbus Defence and Space*

15:10

Animal monitoring platform

*Maria Alonsoperez
IETEch Ltda.
Uruguay*

15:30

Coffee/Tea Break

16:00

Application of space technology in weather forecasting in support of wildlife management

*Ignatius Gitonga
Kenya Meteorological Department*

16:20

Panel Discussion

Space Technology Solutions for Wildlife Management and Biodiversity

*Moderator: Lorant Czarán, United Nations
Office for Outer Space Affairs*

Panel participants

- *Ghislain de la Sayette, Airbus Defence and Space*
- *Aline Duplaa, Collecte Localisation Satellites (CLS), France*
- *Alex Fortescue, DigitalGlobe*
- *Walter Naumann, Max Planck Institute for Ornithology, Germany*
- *Jake Wall, Save the Elephants, Canada*

17:45

Adjourn

18:00

Reception - Welcome cocktail

Tuesday, 28 June 2016

Morning

- 8:30 *Arrival of participants to the conference venue*
- 9:00** **Session 2: Biodiversity Assessment**
Chairperson: Samuel Kasiki, Kenya Wildlife Service
Rapporteur: Sammy Matara, University of Nairobi
- 9:00 UNEP Live *Neeyati Patel*
UNEP
- 9:15 What should we measure: Essential Biodiversity Variables provide guidance to the observation system (Remote Presentation) *Gary Geller*
Group on Earth Observations (GEO) Secretariat
Switzerland
- 9:30 The possibility of using Earth Observation (EO) to support biodiversity assessments in Africa *Tobias Landmann*
International Center of Insect Physiology and Ecology (ICIPE)
Kenya
- 9:45 Integrated evaluation of ecosystem services and biodiversity by using remote sensing *Makota Ooba*
National Institute for Environmental Studies (NIES)
Japan
- 10:00 Mapping Blue Carbon - a triple win for climate, community, and biodiversity *James Kairo*
Kenya Marine and Fisheries Research Institute
- 10:15 Spatial assessment of land-use change and biomass distribution for effective utilization of ecosystem services in Fukushima *Takuya Togawa*
National Institute for Environmental Studies (NIES)
Japan
- 10:30 The gnu frontier: Advancing behavioral ecology with remote sensing *Hughey Lacey*
University of California
United States of America
- 10:45 *Coffee/Tea Break*
- 11:00** **Session 3: Ecosystem and Wildlife Habitat Management**
Chairperson: Stephen Kiama, Kenya Forest Research Institute
Rapporteur: Dickens Odeny, National Museums of Kenya
- 11:00 System for Wildlife Management and Protecting Biodiversity by using Satellite Data *Kyoichi Ito*
Remote Sensing Technology Center of Japan (RESTEC)
Japan
- 11:15 Wildlife in space and time: an ecosystem perspective *Erastus Kanga*
Kenya Wildlife Service

11:30	Monitoring wildlife habitats from space: understanding the interplay between land use / land cover change and land degradation	<i>Erick Khamala LocateIT Kenya</i>
11:45	The movement and migration pattern of 107 satellite GPS collars mounted on 9 different wildlife species in the Boma-Gambella Landscape	<i>Kasahun Abera Biodiversity Management Programme Horn of Africa Regional Environment Center and Network, Addis Ababa University Ethiopia</i>
12:00	Population status of elephants in Kenya	<i>Sospeter Kiambi Kenya Wildlife Service</i>
12:15	Bridging the gap between conservation practitioner and remote sensing science	<i>Grace Nangendo Wildlife Conservation Society Uganda</i>
12:30	<i>Lunch</i>	
<i>Afternoon</i>		
14:00	<u>Session 4: Wildlife Monitoring and Tracking for Law Enforcement</u> <i>Chairperson: Bonaventure Ebyai, Lusaka Agreement Task Force (LATF)</i> <i>Rapporteur: Martha Nzisa, Kenya Wildlife Service (KWS)</i>	
14:00	A comparative analysis of various enforcement information models used in wildlife enforcement	<i>Remi Chandran National Institute for Environmental Studies (NIES) Japan</i>
14:15	The Rhino project – Towards Smart Wildparks	<i>Paul Havinga University of Twente The Netherlands</i>
14:30	MIKE and ETIS	<i>Julian Blanc CITES Secretariat</i>
14:45	Drone for conservation - Antigua and Barbuda's contribution	<i>Ruth Spencer GEF/SGP, East Caribbean Marine Managed Areas Network (ECMMAN) Antigua and Barbuda</i>
15:00	Use of GIS and remote sensing to model suitable locations of new ranger patrol bases in Tsavo Conservation Area, Kenya	<i>Shadrack Ngene Kenya Wildlife Service</i>
15:15	EU and Africa-TWIX information platforms	<i>Nick Ahlers TRAFFIC South Africa</i>
15:30	<i>Coffee/Tea Break</i>	

16:00 **Panel Discussion**
 Integrated Solutions for Wildlife and Biodiversity Management – Opportunities and Challenges for Using Space Technology-based Solutions

Moderator: Remi Chandran, National Institute for Environmental Studies (NIES), Japan
Panel participants:

- *Julian Blanc, CITES Secretariat*
- *Bonaventure Ebayi, Lusaka Agreement Task Force (LATF), Congo*
- *Christopher Dole, United Nations University*
- *Klairoong Poonpon, Ministry of Natural Resources, Thailand*

18:00 *Adjourn - Transfer to the hotel*

18:30 *Free Time/Organized Evening Event*

Wednesday, 29 June 2016

Morning

8:30 *Arrival of participants to the conference venue*

9:00 **Session 5: Addressing Wildlife Crime**

Chairperson: Nick Ahlers, TRAFFIC

Rapporteur: Fredrick Lala, Kenya Wildlife Service

9:00 UNODC's Global Programme to combat wildlife crime *Jose Vila del Castillo
 United Nations Office on Drugs and Crime (UNODC)*

9:15 ICPO-database & Ecomessage: INTERPOL's Environmental Security Programme (ENS), remit and current activities of ENS Project Wisdom *Henry Fournel
 INTERPOL*

9:30 Use of satellite-linked Instant Detect systems to report on poacher movements in real-time *Chris Gordon
 Wildlife Conservation Society
 Zoological Society of London*

9:45 Wildlife Enforcement Monitoring System (WEMS) in Africa *Rwegasira Theotimus
 Lusaka Agreement Task Force (LATF)
 Tanzania*

10:00 Wildlife Enforcement Monitoring System (WEMS) in Asia *Naveed Anwar, Manesh Lacoul
 Asian Institute of Technology
 Thailand*

10:15 Monitoring system for wildlife enforcement and compliance *Klairoong Poonpon
 Ministry of Natural Resources
 Thailand*

10:30 *Coffee/Tea Break*

11:00	<u>Session 6: Legal, Governance and Policy Challenges in Information Sharing for Wildlife Management</u>	
	<i>Chairperson: Klairoong Poonpon, Ministry of Natural Resources, Thailand</i>	
	<i>Rapporteur: Julius Mwangi, National Commission for Science, Technology and Innovation (NACOSTI), Kenya</i>	
11:00	Donors confidence and trust to support regional and national wildlife law enforcement agencies	<i>Steve Njumbi International Fund for Animal Welfare (IFAW)</i>
11:15	Information gaps in addressing wildlife crime – challenges and solutions	<i>Henry Fournel INTERPOL</i>
11:30	Infrastructure and capacity development needs for Africa	<i>Charles Musyoki Kenya Wildlife Service</i>
11:45	Challenges faced by African institutions in addressing science-based policy-making	<i>Stephen Manegene Ministry of Environment and Natural Resources</i>
12:00	Space Technology and Governance: Great Ape Preservation	<i>Johannes Refisch UNEP-Great Apes Survival Partnership (UNEP-GRASP)</i>
12:15	<i>Lunch</i>	
<i>Afternoon</i>		
14:00	<u>Time set aside for poster session, demonstrations, hands-on training and working groups</u>	
	<ul style="list-style-type: none"> • <i>Setting the Stage: “Google Elephant: application of cloud-based computing to elephant conservation” Jake Wall, Save the Elephants, Canada</i> • <i>Poster Session</i> • <i>DigitalGlobe and other presentations and demonstrations</i> • <i>WEMS Training Session (closed meeting)</i> 	
17:30	<i>Transfer to hotel</i>	
18:00	<i>Free Time/Organized Evening Event</i>	
Thursday, 30 June 2016		
<i>Morning</i>		
8:30	<i>Arrival of participants to the conference venue</i>	

9:00	<u>Session 7: Capacity Building, Awareness Raising and Outreach</u> <i>Chairperson: Alvin Etang Ndip, World Bank</i> <i>Rapporteur: Erick Khamala, LocateIT, Kenya</i>	
9:00	Space technology programmes at the Kenyan universities	<i>Faith Karanja</i> <i>University of Nairobi</i> <i>Kenya</i>
9:15	Capacity building for strengthening regional enforcement networks	<i>Bonaventure Ebayi</i> <i>Lusaka Agreement Task Force</i> <i>Congo</i>
9:30	Enhancing capacity of rangers in the use of technology to strengthen patrols: case study of Mount Kenya ecosystem	<i>Wycliffe Mutero/Simon Gitau</i> <i>Kenya Wildlife Service</i>
9:45	Capacity building for operational Earth Observation data	<i>Turcia Busakwe</i> <i>SCS Space</i> <i>South Africa</i>
10:00	Capacity building in space technology by experimental nanosatellites for wildlife monitoring	<i>Fabio Santoni</i> <i>Universita' di Roma "La Sapienza"</i> <i>Italy</i>
10:15	United Nations Programme on Space Applications and UNISPACE+50	<i>Werner Balogh</i> <i>United Nations Office for Outer Space Affairs</i>
10:30	<i>Coffee/Tea Break</i>	
11:00	<u>Session 8: International Experiences and Cooperation Opportunities</u> <i>Chairperson: Moses Rugutt, National Commission for Science, Technology and Innovation (NACOSTI), Kenya</i> <i>Rapporteur: Andrew Nyawade, Ministry of Defence</i>	
11:00	COPERNICUS – A global Earth Observation system to address global issues	<i>Jean-Charles Bigot</i> <i>European Space Agency</i>
11:15	Challenges of biodiversity conservation in Murchison Falls National Park	<i>Grace Nangendo</i> <i>Wildlife Conservation Society</i> <i>Uganda</i>
11:30	Listening to Africa - World Bank presentation	<i>Alvin Etang Ndip</i> <i>World Bank</i>
11:45	The role of spatial planning in securing Biodiversity with specific focus on Masai Mara Ecosystem	<i>Zachary Maritim</i> <i>World Wildlife Fund</i>
12:00	Mobilising resources for wildlife conservation in Kenya beyond the 21st century	<i>Edwin Wanyonyi</i> <i>Kenya Wildlife Service</i>

- 12:15 Leveraging results from interagency partnerships *Brian Otiende
USAID*
- 12:30 *Lunch*
- Afternoon*
- 14:00** **Session 9: Observations, Recommendations and Way Forward**
Chairpersons: Werner Balogh, Lorant Czaran, OOSA; Remi Chandran, NIES
- 14:00 Round Table Discussion and Conference Review followed by discussion of the observations and recommendations to be included in the report to the United Nations Committee on the Peaceful Uses of Outer Space *OOSA
All Conference Participants*
- 16:00** **Closing Session**
Master of Ceremony: Paul Gathitu, Kenya Wildlife Service
- 16:00 Closing remarks
 - *Co-Sponsors*
 - *United Nations Office for Outer Space Affairs*
 - *Margaret Maimba, NACOSTI, Kenya*
- 16:30 *Adjourn – end of conference*

Friday, 1 July 2016

All Day Optional excursion to Nairobi National Park

Poster Presentations

Chairperson of the Poster Session: Paul Baki, NACOSTI, Kenya

No.	Name	Institution	Country	Poster Title
UN-01	Peter Hongo	Kenya Wildlife Service	Kenya	Application of Space Technology Solutions in Wildlife Management and Protecting Biodiversity
UN-02	Yusuf Watol, Shadrack Ngene	Kenya Wildlife Service	Kenya	The currency of forage site choice is nutrients for male elephants and biomass for female elephants.
UN-03	Parinaz Rashid	University of Twente	Netherlands	A bayesian spatial approach for identifying elephant poaching hotspots in Kenya
UN-04	Stephen Kiama	Kenya Wildlife Service	Kenya	Optimizing scale for landscape-level observation & modeling of water and carbon fluxes in wooded savanna ecosystems: a multi-scale approach in designing an observing system in Mpala and Ilmotiok sub-catchments in Laikipia, Kenya
UN-05	Faith Mutwiri	Kenya Wildlife Service	Kenya	Forest Monitoring using Earth Observation Data: Forest Resource Mapping in Kenya Periods 1990, 2000, 2010
UN-06	Rwegasira Theotimus	Lusaka Agreement Task Force	Tanzania	Not presented
UN-07	Peter Maina	Kenya Wildlife Service	Kenya	Land cover/land use change mapping and image time series analysis
UN-08	Simon Gitau/Wycliffe Mutero	Kenya Wildlife Service	Kenya	Strengthening patrols in Mount Kenya ecosystem
UN-09	Ibrahim Lubia	Kenya Wildlife Service	Kenya	Challenges faced by African Institutions in addressing science based policy making
UN-10	Dickens Odeny	National Museums of Kenya (NMK)	Kenya	Projected Impacts of Climate Change on Carbon Storage of Agroforestry Tree Species (<i>Albizia Gummifera</i> , <i>Mangifera Indica</i> , <i>Persea Americana</i>) Along the Elevation Gradients of Mount Kilimanjaro and Taita Hills
UN-11	Shashank Srinivasan	World Wildlife Fund (WWF) India	India	Mitigating the Impacts of Linear Infrastructure on Wildlife - Using Satellite Imagery and Wildlife Data in Geographic Information System

No.	Name	Institution	Country	Poster Title
UN-12	Mutaz Alawi	Ministry of Nature Conservation	Jordan	The use of multi-criteria evaluation and expert knowledge in developing protected area zoning plans in Jordan
UN-13	Isla Duporge	UNODC-Policy Analysis and Public Affairs branch	Austria	Analysing strategies that use remote sensing technology to combat wildlife & forest crime in Eastern and Southern Africa
UN-14	Fiona Sinnet-Smith	Environmental Consultant	Australia	WorldView-2(WV2) satellite imagery and Object-based analysis: preliminary investigation for mapping threatened seagrass communities
UN-15	Benard Kuloba	Kenya Wildlife Service	Kenya	Application of GIS and remote sensing to model cheetah <i>Acinonyx jubatus</i> fundamental niche in Kenya
UN-16	Saroj Koirala	World Wildlife Fund	Nepal	Ecological monitoring in biological corridor using camera traps and geospatial tools: case study from Khata Corridor, Terai Arc Landscape
UN-17	Gaston Buh Wung	World Wildlife Fund, Central Africa	Cameroon	Use and application of satellite images in monitoring forest cover dynamics in the southeast of Cameroon
UN-18	Jesus Romero Ruiz	Mexican Space Agency	Mexico	What are the protected natural areas and how are they established?
UN-19	James Kairo	Kenya Marine and Fisheries Research Institute (KMFRI)	Kenya	Mapping of mangrove resources: opportunity and challenges
UN-20	Alexandra Negoescu	Vienna University of Technology	Romania	Big Data, ICT and Space Technologies in Biodiversity Preservation: benefits and obstacles
UN-21	Macharia N. Anthony	Dept. of Geography, Kenyatta University	Kenya	Modeling Stable Isotope Attributes of Wildlife Habitats Using Geospatial Technologies for Wildlife Forensic Applications
UN-22	Abednego Gbarway	WEMS Focal Point, Forestry Development Authority	Liberia	Status of Wildlife Management and Biodiversity Protection in Liberia
UN-23	Shantosh Karki	Go Green	Nepal	Population and Habitat Assessment of Lesser Adjutant Stork (<i>leptoptilos javanicus</i>) in Eastern Lowlands of Nepal
UN-24	No Author listed	Africa Mission – Leave a Legacy	Kenya	Using Space Technologies to Protect Water and Land Ecosystems

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