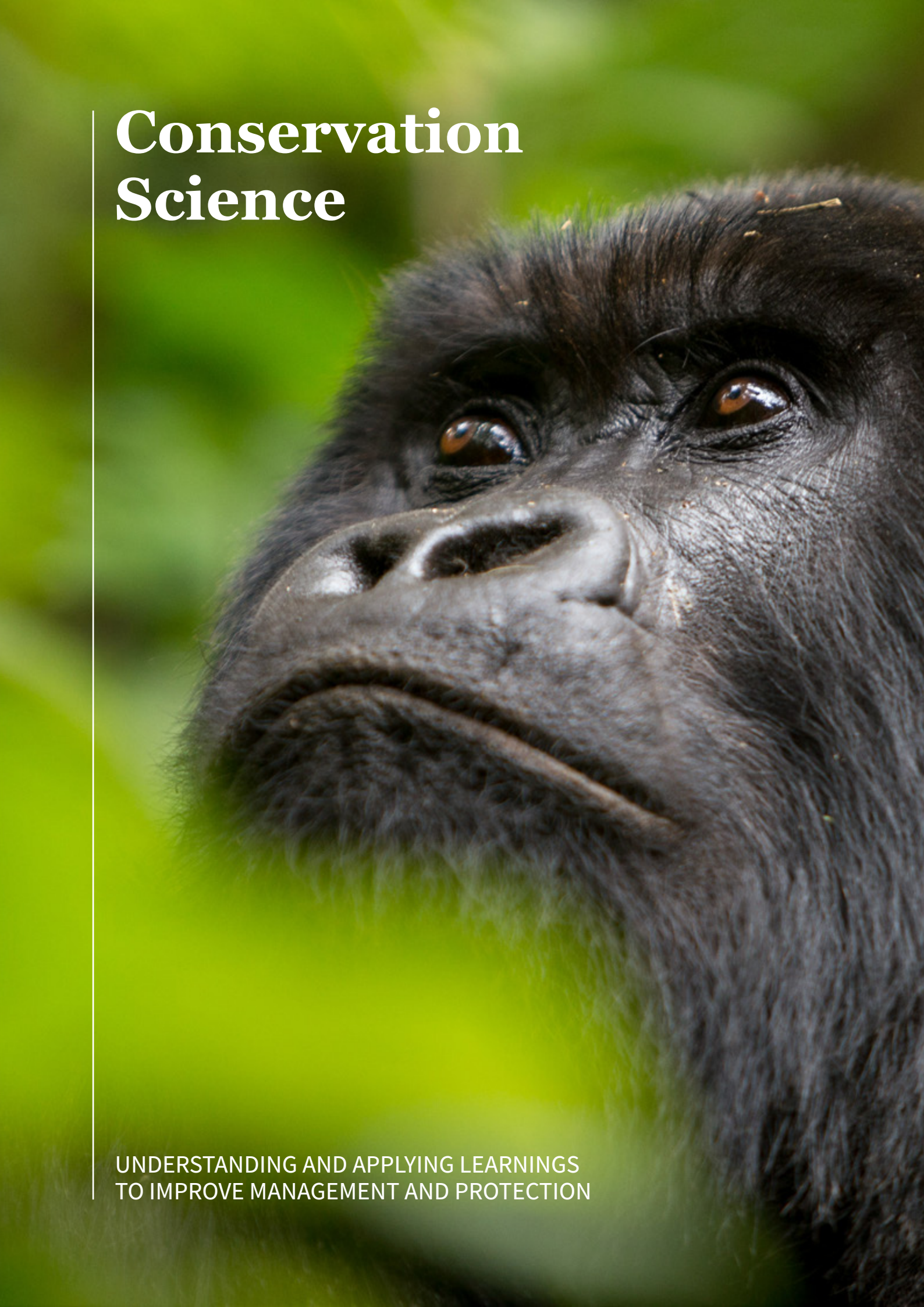
Conservation Science



UNDERSTANDING AND APPLYING LEARNINGS
TO IMPROVE MANAGEMENT AND PROTECTION

Background

Conservation is primarily about people and the choices they make. It is a human endeavour, designed and initiated by people and intended to modify human behaviour to achieve a socially desired objective - conserving biodiversity. Biology alone cannot provide the answers. Conservation is also social and political. Interdisciplinary science therefore lies at the heart of our approach.

Evidence informs all of our work and this is anchored by our Conservation Science Department. We use research to ask and answer critical and often controversial questions about the conservation challenges we face: about the behaviour of people, wildlife and their interactions, how people and wildlife use landscapes in space and time, and the values, governance, political and social contexts which determine the types and effectiveness of conservation interventions that society is willing to implement. We measure and assess our impact to refine our approach and develop new solutions. One of the greatest challenges of today is to understand and manage people's impact on nature in the face of development and climate change.

In other words, the better we understand nature, its threats and its value to people, the more effective and adaptable we are in our work - and the deeper our impact.

Our Approach

The Conservation Science department is the scientific engine room of Space for Giants, made up of two core areas:

Research

For close to two decades, we have studied how people and wild animals live together, and how that relationship is changing in the modern world. Through our research we:

- Interrogate our understanding of the human and natural systems that underpin conservation in Africa (in terms of political, ecology, equitability, sustainability, human-wildlife interaction, animal behaviour, ecology, the diversity and value of nature) through research and monitoring, and disseminate this globally to improve conservation practice.
- Serve as a hub for cutting edge conservation research, knowledge sharing and thought leadership on the continent and in global fora.
- Connect a diverse research community and foster research collaborations.
- Create leaders in conservation research.

Our research approach is:

- **Interdisciplinary:** Conservation is ultimately a social process that is not only concerned with the protection and management of species and habitats but also with understanding how nature affects human wellbeing and prosperity. This requires insights that emerge from a wide range of disciplines.
- **Collaborative:** Our scientific understanding is strengthened by respecting and learning from other diverse disciplines, expertise and visions of reality.
- **Reflective:** By critically assessing our own practice and position we build our conservation approach.

Monitoring and evaluation

Ongoing, on the ground monitoring and evaluation enables us to:

- Be equipped with facts and knowledge to understand, reflect upon and refine our approach.
- Develop innovative solutions to the conservation challenges that we face.
- Support wildlife authorities with decision-making.
- Shape policy in our countries of operation.

Our Approach

We use:

1 Innovative technology:

A Mobile phone-based real time monitoring (SMART), to collect qualitative and quantitative data on ranger patrols, people's perceptions of conservation, human-wildlife conflict incidences and management, wildlife distribution, threats to wildlife.

B **EarthRanger,** a spatial platform developed collaboratively by Vulcan to collect, integrate, and display historical and remote sensing and real-time data from the field to provide one unified view of collared elephants, rangers, human-wildlife interaction in all areas of operation.

C **Satellite GPS collars** to understand how elephants move in time and space. Each collar takes an hourly fix of the elephant's location.

D **Camera traps** along electrified fences to understand how and which elephants interact with fences built to protect farmers' crops.

2 Long-term elephant identification:

To understand how the socioecology of elephant family and bull groups changes over time and space. Our trained elephant trackers have built a database of known elephants that move through Laikipia's conservancies in Kenya. He recognises them through their unique body, ear and face shape and features and has built a model in SMART so that the location of these individuals is recorded every time he/other elephant trackers encounter them.

3 Social science:

We believe social science is integral to understanding the impact of our work. We design social surveys and focus groups to understand people's behaviour in relation to nature and wildlife and their perceptions of conservation interventions. We also use standardized assessment tools to understand the impact of protected areas, including IMET (Integrated Management Effectiveness Tool), SAPA (Social Assessment for Protected and Conserved Areas), GAPA (Governance Assessment for Protected and Conserved Areas).

Our work and Achievements

- Key publications authored and co-authored by various members of our team:
  2021 - 'Moving through the mosaic: identifying critical linkage zones for large herbivores across a multiple-use African landscape' in Landscape Ecology;
  2019 - 'Building a wildlife economy paper: 'Developing nature based tourism in African state protected areas';
  2018 - "Elephants as actors in the political ecology of human–elephant conflict" the top 5 most downloaded paper in Transactions of the Institute of British Geographers;
  2017 - 2019 - 'A human-elephant conflict strategy for Gabon";
  2016 - "An assessment of human-elephant conflict for the Greater Amboseli Ecosystem";
  2016 - "Fencing elephants: The hidden politics of wildlife fencing in Laikipia, Kenya" in Land Use Policy.
- Building the world's longest and most in-depth datasets on human-elephant conflict, for
- Laikipia including on the identity of individual known crop-raiding and fence-breaking elephants.
- Rolling out systematic monitoring of wildlife, threats and ranger effort across 1917km2 of key wildlife habitat within 19 of Laikipia's conservancies - 52% of Laikipia's conservation compatible habitat.
- Deploying 61 collars over key elephant landscapes (55 in Laikipia, Kenya and six in Kavango-Zambezi Transfrontier Conservation Area (KAZA region)).
- Monitoring our impact across all areas of operation.

61
Number of Collared Elephants
55 Kenya | 6 Angola

40,305KM
Walked by 6 elephants in Angola

25,350KM
Walked by 7 elephants in Kenya

Distance covered by collared elephants from Jan 2020 - Mar 2021

2,132KM²
Landscape covered by to date
252% up since 2019

20 Properties in Laikipia
reporting on Smart

LANDSCAPE PATROLLED

2020	**384,000** ACRES	86%
2019	**206,000** ACRES	110%
2018	**98,000** ACRES	33%
2017	**56,000** ACRES	

Endorsement from key partner

‘Space for Giants’ has done pioneering research in the way elephants move through landscapes that they share with local people. Their studies on the effectiveness and politics of electric fences, and the ways in which elephants respond to them, has made a major contribution to tackling the problem of crop raiding and reducing human-elephant conflict’.

BILL ADAMS
Emeritus Chair of Conservation and Development, University of Cambridge

2025 Strategic Roadmap

1. Carry out research, disseminate it in high impact academic publications and popular science blogs, communicate our research through conferences, workshops and social media, and use it to guide decision making and policies for conservation. Please see below for details on our key research areas.

2. Establish a diverse, interdisciplinary community of research that collaborates with key African and global institutions and scholars to ask crucial questions that interrogates, tests and innovates conservation solutions. We will have relationships and partnerships with world class African and global scientists and will collaborate with leading global research institutions.

3. To create a systematic model for monitoring across African protected areas in which we operate through the roll out of mobile phone and GIS monitoring and reporting mechanisms. Through the use of platforms, such as Earthranger, we will develop a standardised ‘data analysis hub’ for monitoring and evaluating our work and applied research.

4. Regularly, systematically and accurately monitor, evaluate and refine our impact across all areas of operation.

Key research areas

Space for Giants key research areas in the next five years include understanding:

A The role and management of individual elephants in human-elephant coexistence:

Most literature on the conflict between people and elephants, particularly crop-raiding, is ecological: elephants raid crops at specific times, in specific places. However we are examining this conflict through individuals: crop-raiding is not carried out by all elephants at random, it is carried out by specific elephants (invariably bulls) with specific histories and experiences living, eating and interacting with people and other elephants in specific ways in specific places. We have collected data on the identification and behaviour of individual elephants (invariably bulls) that are involved in human-elephant conflict in Laikipia for almost 20 years, through GPS collars to understand how they use landscapes in space and time; through direct observation of elephants by our elephant trackers; through camera traps; and through interviews with farmers, pastoralists and wildlife managers. Individual elephants can be detusked, translocated, driven to designated elephant spaces, and even killed by wildlife authorities. We are examining how individual elephants and the complex male social groups they interact with respond to these various efforts.

B Comparing the human-elephant relationship and its management in forests and savannas - Gabon and Kenya:

Space for Giants research grew out of studying human-elephant interactions and the management of conflicts in a savanna landscape in Laikipia, Kenya. We continue to monitor this, adding to study that is almost 20 years old. Since 2016 we have worked with the Government of Gabon to achieve human-elephant coexistence there. Very little has been documented in Central and West Africa on the human-elephant relationship. The contexts are markedly different: Kenya is largely a human-occupied landscape, with extensive settled cultivation lying next to pockets of elephant habitat within conservancies and protected areas. Gabon is a sea of elephant habitat within pristine rainforest with small islands of slash and burn, rotational cultivation. Yet in both contexts human-elephant conflict is highly destructive to people's livelihoods, highly emotive and highly political. Through interviews, camera traps, establishing systematic collection of data on human-elephant conflict incidences through mobile-phone reporting, and the performance of human-elephant conflict mitigation measures (including electrified fences), we seek to understand the nature and distribution of human-elephant conflict in Gabon, the histories, contexts and complexity of the human-elephant relationship.

Key research areas

C The impacts of livestock on wildlife and how human livelihoods can be maintained in a way that supports wildlife:

Cattle and other livestock graze more than a quarter of the world's terrestrial area and are widely regarded to be drivers of global biodiversity declines. In Laikipia cattle are grazed, commercially and for subsistence, alongside wildlife across a mosaic of private and community conservancies and cattle ranches. Recent enclosure studies in Laikipia have suggested that the presence of cattle actually enhanced the diversity of wildlife. We seek to unpack this further by answering the question 'how can we alter the stocking rates, compositions and grazing regimes of domestic animals to support biodiversity?'. We are using data collected from mobile-phone based monitoring of both wildlife (sighting frequency) and livestock (location of bomas) across Laikipia's ranches and conservancies, aerial census data, and cattle stocking rates across Laikipia, camera traps and GPS collared wildlife.

D The role of the criminal justice pathway in strengthening wildlife crime:

With increasing elephant and rhino poaching in the last decade, conservationists have sought urgent solutions to the illegal wildlife trade - one of which is the increased militarization of conservation. Considerable conservation funds and effort has been focused on frontline protection and 'boots on the ground'. Furthermore this militarisation has led to questions of human rights abuses when the law is played out by rangers on the ground. We argue that militarisation is the thin edge of the wedge of the criminal justice system. To truly understand how to achieve a deterrent to wildlife crime, we have to critically understand how the judicial pathway is performing as a whole. We have court monitors collecting data on wildlife crime cases and their progress through the courts in two key regions in Kenya. We are using these data to critically understand the nature of wildlife crimes and failings and challenges along the judicial pathway to guide conservation investment in deterring such crime.

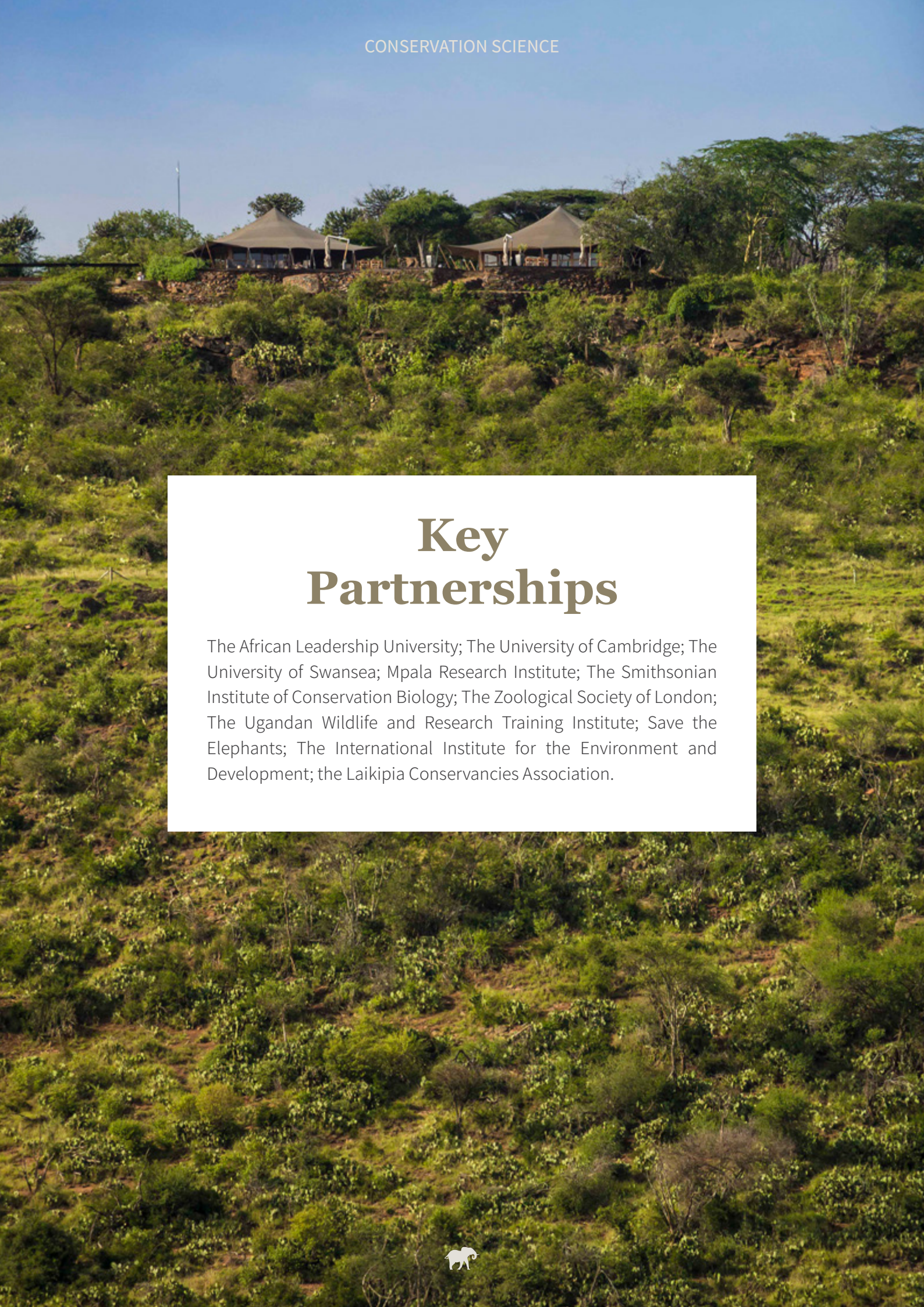
E The barriers and opportunities for African nations to unlock their wildlife economies:

Conservation was in crisis before Covid-19 hit. Yet Covid-19 has had a huge negative impact on conservation globally: most significantly its impact on the global tourism industry which was an important source of conservation revenue. The pandemic could amplify the conservation crisis to catastrophic effect. We recognise that governments, NGOs, civil society organisations cannot tackle the threats facing wildlife, their habitats and people that depend on them, alone. We are establishing a 'Wildlife Economy Dialogue' with the International Institute of Environment and Development (IIED) to define and mobilise action that will secure wildlife and the places they exist in a way that benefits people first. The dialogue will be between African governments, other governments where a wildlife economy has been successfully established;

Key research areas

civil society conservation organisations, technical experts in key areas relating to the wildlife economy and investors, with the following objectives:

- To articulate national-level visions for an African wildlife economy, reflecting perspectives and priorities of different stakeholders and providing the starting point for country-driven (rather than investor-driven) identification of investment needs and opportunities.
- To ensure different perspectives and priorities can be heard in a “safe” and neutral setting, and conflicting priorities articulated and discussed.
- To introduce new evidence on the opportunities (and failings) for developing a wildlife economy.
- To build capacity to identify action that can change behaviour at a societal level so that a nation’s citizens, particularly those living within or near to wildlife areas are active shareholders rather than passive stakeholders in the wildlife economy.
- To create a ‘Wildlife Economy Coalition’ that can collectively raise awareness of the role of wildlife in sustainable economic development.



Key Partnerships

The African Leadership University; The University of Cambridge; The University of Swansea; Mpala Research Institute; The Smithsonian Institute of Conservation Biology; The Zoological Society of London; The Ugandan Wildlife and Research Training Institute; Save the Elephants; The International Institute for the Environment and Development; the Laikipia Conservancies Association.

Required Funding Support

The investment to undertake our work as well as to achieve our strategic goals is as follows:

Departmental programme	Description	2021 Annual Budget (USD)	3 Year Budget (USD)
Monitoring and evaluation	Wildlife mobile phone-based monitoring: Roll out to 13 additional Laikipia conservancies, Kenya includes operational and capital expenditure for laptops, cameras, smart phones, office equipment, travel and training costs. Equipment and training costs for mobile phone monitoring in Uganda Elephant collaring: Purchase of collaring equipment and deployment of collars for 3 elephants in Kenya and 2 elephants in Uganda, 6 elephants in Angola/KAZA including plane and helicopter hire, veterinary support services, vehicle support, import duties, travel and subsistence Long-term elephant monitoring: Purchase of monitoring equipment, including cameras, GPS units, smart phones, battery packs, laptops. Recruitment, training and management of elephant monitors, including expenditure for vehicle maintenance and operations. Spatial data management: ArcGIS licenses, training costs, support software costs and management of EarthRanger software platform	190,000	654,000

Required Funding Support

The investment to undertake our work as well as to achieve our strategic goals is as follows:

Departmental programme	Description	2021 Annual Budget (USD)	3 Year Budget (USD)
Research	Development and dissemination of key reports, articles, conference papers (see key research areas for details). Costs include: Field work costs, data analysis, staff resource costs, travel and subsistence Travel to events to communicate research and be a prominent presence in thought leadership Supervising students and interns / fellows to undertake research Development of practical human-wildlife conflict, protected area management and species-specific management strategies: Development of Pian Upe Wildlife Reserve (Uganda) protected area and species management plan, including staff resource costs, travel and subsistence Development of Suyian Ranch (Laikipia, Kenya) conservation and species management plans, including staff resource costs, travel and subsistence Development of a metric system to demonstrate the impact of Space for Giants' work in accordance to the strategic objectives of the organisation. Includes programme personnel and consultancy fees for system development.	142,000	493,000

Required Funding Support

The investment to undertake our work as well as to achieve our strategic goals is as follows:

Departmental programme	Description	2021 Annual Budget (USD)	3 Year Budget (USD)
Building a Wildlife Economy Dialogue	Carrying out a series of inter-governmental dialogues into the barriers and solutions for building a wildlife economy and drafting a report of findings for African governments and investors. Costs include: Establishment of technical committee, draft dialogue questions and scope, travel provisions, personnel fees and consulting fees Draft paper and peer review of reports Design and printing fees of final reports Maintaining www.wildlifeeconomy.com as a resource portal	168,000	583,000
	Total	$500,000	$1,730,000