

## BARCODE OF WILDLIFE PROJECT KENYA LEGAL STANDARDS PLANNING WORKSHOP REPORT

[Barcode Of Wildlife Project Kenya](#) National Project Committee organized a legal standards planning workshop entitled 'Legal Standards and Admissibility of DNA Barcode Evidence', at Kenya Wildlife Service Training Institute, Naivasha, Kenya, on Monday 19<sup>th</sup> August 2013 (see program, Annex A).



Participants included representatives from enforcement agencies, DNA analysis and library construction experts, forensic analysis experts and members of National Project Committee. The participants came from institutions involved in Biodiversity research, ivory identification, evidence preparation and prosecution of wildlife crime and judiciary (see participants list, Annex B)

The agenda for the workshop was: Introduction to Wildlife Forensics in Kenya; Procedure for Ivory Identification in Kenya; DNA analysis for human forensics at Government Chemist; Admissibility and Standards of Proof during prosecution of wildlife crimes in Kenya; Chain of Custody and Expert Reports for prosecution in Kenya; DNA barcoding in prosecution of wildlife crimes: Case study from Hebrew University, Israel

Plenary discussions involved: 1) Collection of Samples, 2) Chain of custody and storage of Samples, 3) DNA Barcode and 4) Legal status of forensic laboratory in Kenya

The key outputs from the workshop were:

- Planning workshop for enforcement agencies successfully held
- Awareness creation on use of DNA barcoding during prosecution of wildlife to Directorate of Public Prosecutions and Judiciary representatives
- Deliberations on key legal issues regarding chain of custody, use of Museum samples vs fresh samples for DNA library construction, requirements for admissibility of DNA barcoding as evidence for prosecution of wildlife crimes in Kenya and status of DNA forensics laboratory in Kenya
- A report on key outcomes of the legal standards planning workshop in Kenya

The workshop began with an overview of DNA barcoding and Barcode of Wildlife Project (BWP) by David Schindel, Consortium of Barcode of Life executive secretary. This was followed by presentations and discussions on:

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- I. Wildlife Forensics in Kenya that highlighted on getting information from a specimen (barcode) and linking it to scene of crime, victim (wildlife) and suspect
- II. Ivory identification in Kenya that highlighted on the common ivory in Kenya and identification procedures used to prepare expert reports for use in court
- III. DNA analysis at Government chemist that summarized how samples from scene of crime are analyzed using short tandem repeats and evidence that is acceptable under the evidence act
- IV. Admissibility and Standards of proof in Kenya, showing 'DNA evidence as one of the most reliable forms of forensic evidence today'. Although the burden is usually on the prosecutor to produce concrete evidence, forensic evidence is accepted in Kenyan courts
- V. Chain of Custody and Expert reports that emphasized on what can be produced as exhibit. A chain of custody establishes the location, handling and care of an object/exhibit between the time of recovery and time of trial. It should prove that an item in court is the same one arrested with suspect, and was not tampered with security-wise and during storage

A presentation by Dr. Gila Bargal on 'DNA barcoding of the Southern Levant- mammals and implication for conservation and Wildlife forensics in Israel' illustrated how to receive samples, analyze them and produce evidence in court and the exchange of information between the involved parties

**The forum further discussed key aspects of legal standards in Kenya as follows:**

1. **Collection of samples:** The key question was whether Museum samples could be used in DNA library construction for legal standards or only fresh samples were required?
  - Fresh samples were recommended to avoid accusation of mixing ancient and modern DNA, (Ancient DNA defined as over 3 days old degrading material to several thousand years old). Fresh samples provide entire DNA sequence at once while ancient DNA involves very short fragment amplification. DNA from carcasses can also be used. Whenever veterinarians are treating an animal, they can collect samples for use in building up the library. Samples from Kenya Wildlife Service sources can also be used as long as the voucher specimens are readily available. Five samples of DNA will be required per species, for pure breed animals. Botanic gardens will also be a source of plants. Old samples can meet legal standards as long as the barcode generates correct identification
  - Having samples with complete chain of custody can take a very long time. Options should be allowed for museums samples e.g. for plants where some of them may not be readily available in the field. The officers who will be collecting samples from scene of crime and exhibits will need training on sampling techniques to avoid contaminations
2. **Chain of custody for stored samples:** *The main question was whether sample for DNA isolation in library construction must undergo complete chain of custody process or scientific standards suffice?*

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- Because complete chain of custody is expensive and time consuming, scientific standards will suffice for DNA library construction. For exhibits, chain of custody is crucial but for reference library, scientific protocol is sufficient. If every sample for library construction has to go through chain of custody, progress will be very slow. Under Kenyan law, KWS officers use chain of custody procedure for evidence but for veterinarians, the scientific standards are good enough
  - New samples collected for forensic evidence DNA isolation need to have chain of custody. Identification process must be done correctly to avoid the rest of the process being faulty. The chain of custody adopted should show that the item in court is same as collected, was stored in a secured place and was not tampered with during the investigation period. Opinion of expert is sought for identification from skilled people. The exhibits have to be stored under lock and key. Standard forms signed and shared between the investigating officer and experts doing analysis should be filled every time the specimen is being handed over to the other party and Laboratory forms should be filled every time the specimen has been touched. The defense attorney will not contest expert evidence unless there is evidence to the contrary
  - Electronic vouchers will be important for linking to the DNA barcode library. Protocols are being developed on standards, as E-vouchers could be used where there are poorly collected samples
  - DNA process should go hand in hand with taxonomic process. It is still very necessary to have a parallel forensics process to complement DNA evidence
3. **DNA barcode:**
- DNA barcode answers taxonomic question and is not forensic evidence. The best forensic method to use will always depend on the case. A general provision in law to cover the role of DNA barcoding will be necessary, and should be done if possible. It is not necessary to specifically legislate for the Kenyan DNA barcode database because it is only one of the tools in forensics. It should be captured in a way that is general enough to allow for other forensic tools. We can also borrow from the South African legislation on the rhino. Another alternative is to take judicial notice for certain existing scientific procedures for expert evidence. We should refer to the narcotics act, and how other countries are handling the matter. A committee of legal minds should be constituted to look deeper into the issue
  - The DNA barcoding experts should be gazetted by the responsible Minister and a certificate of ownership issued
  - All the barcode DNA generated from this project will be global and not just Kenyan. The specimens in the library will be global – The reference library created should be global
4. **The forensic laboratory:** Kenya Wildlife Service (KWS) is establishing a wildlife forensic laboratory to be based at its headquarters in Nairobi. The establishment of the laboratory is critical to sustain convictions in courts of law and eventually deter wildlife crimes. This

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laboratory will utilize DNA barcoding library for identification of bush meat and wildlife products. Its paramount important that the new Kenya Wildlife Service forensic laboratories must be able to develop expertise and criterion for such scientific analysis to make timely prosecutions in all wildlife crimes in the country. Due to the fact that wildlife crimes are strict liability crimes, the standard of proof is lowered compared to penal crimes because the prosecution does not have to prove the criminal intent of the accused person. In criminal cases the burden of proof for forensic evidence is the prosecution relying on the evidence meaning that all procedural aspects relating to that evidence must be followed to avoid any doubt being raised as to the credibility of that evidence

### Closing remarks

- Photographs taken with film based cameras are accepted as evidence in court. Digital camera-photographs are not allowed for photographic evidence because they can be edited
- When a container is impounded with trophies, a sample is accepted as evidence in court and not necessarily the whole container
- Once forfeited trophies are handed to KWS for destruction, it is recommended that the court needs to follow up and ensure destruction has taken place to avoid the same trophy ever showing up in court as evidence. Possibly need a pen with indelible ink to label a trophy to avoid re-use as evidence in court. Destruction of ivory is as hard as burning iron. The KWS has an elaborate system for all ivory received and has a clear chain of custody for confiscated trophies
- A more tangible system for proving an exhibit the accused was arrested with is required
- Equipment used to examine an exhibit must be well calibrated and of good quality
- *How does Kenyan law treat expert testing as would be used during DNA barcoding evidence?*
  - The court is more interested in the conclusion and the judges don't question the process used since it was by an expert. Defense can question but they must bring evidence from another expert. In fact the contrary evidence should be from a better expert. It is dangerous to surrender your DNA in court for fear of contamination. It is better the tests are done in your lab under your supervision
- Poaching is worst in Central Africa followed by East and Southern Africa. Most poaching is elephant ivory and rhino horn
- One challenge is open ended convictions with lenient penalties in Kenya compared to South Africa. Wildlife crimes are treated very leniently, whereas killing a goat could attract heavier punishment than killing a one ton elephant
- DNA barcoding will provide laboratory evidence that differentiates morphologically similar exhibits like meat
- The Legal Standards Workshop was a collaborative undertaking to oversee that no species go extinct under the government watch because of crime. The workshop was

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one of the four objectives of the Global Impact Award from Google funding. The project is working with six partner countries to demonstrate the use of DNA barcode evidence in investigations, prosecutions, convictions by 2014. Also the projects aims to construct reference Barcode libraries to support partner countries priorities which in the long run will formally adopt, implement, and fund barcoding project

**Way forward:**

- A committee to refine further the revised wildlife act should be constituted because there is still a window for improvement to include DNA barcoding evidence



**Annexe A**

**BARCODE OF WILDLIFE PROJECT LEGAL STANDARDS WORKSHOP  
HELD AT KENYA WILDLIFE TRAINING INSTITUTE ON THURSDAY 19<sup>TH</sup> AUGUST 2013**

**PROGRAM**

<b>Date</b>	<b>Time</b>	<b>Subject</b>	<b>Presenter</b>
18/08/13	1700HRS	Arrival Of Participants, Check-in and Dinner	Secretariat
19/08/13	0800 - 0815HRS	Registration	Secretariat
	0815 - 0830HRS	Introductions	Dr Charles Musyoki
	0830 - 0845HRS	Opening Remarks	Dr Beatrice Khayota
	0845 - 0905HRS	Introduction and Overview of Project	Mr. David Schindell
	0905 - 0930HRS	Wildlife Forensics in Kenya	Mr. Moses Otiende
	0930 - 1000HRS	<b>Plenary</b>	<b>Solomon Kyalo</b>
	<b>1000 - 1020HRS</b>	<b>HEALTH BREAK</b>	
	1020 - 1040HRS	Ivory Identification in Kenya	NMK
	1040 - 1100HRS	DNA Analysis at Government Chemist	Government Chemist
	<b>1100 - 1130HRS</b>	<b>Plenary</b>	<b>Dr Hastings Ozwara</b>
	1130 - 1150HRS	Admissibility and Standards of Proof in Kenya	Ms. Didi Wamukoya
	1150 - 1215HRS	Chain of Custody and Expert Reports	DPP
	<b>1215 - 1245HRS</b>	<b>Plenary</b>	<b>Samuel Wahome</b>
	<b>1245 - 1400HRS</b>	<b>LUNCH BREAK</b>	
	1400 - 1430HRS	"Barcoding mammals of the southern Levant-implication for conservation and wildlife forensic"	Dr Gila Kahila Bargal

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	1430 – 1500HRS	Brainstorming on Legal Standards for: 1. Collection of Samples. 2. Chain of custody and storage of Samples. 3. DNA Barcode 4. Discussion on legal status of forensic laboratory.	Metrine Wakhungu
<b>1600 – 1630HRS HEALTH BREAK</b>			
	1630 – 1730HRS	Way Forward	Moses Otiende/Didi Wamukoya
	1730 – 1745 HRS 1745 – 1815HRS	Remarks Closing Remarks	Julius Kimani Patrick Omondi
20/08/13	0730HRS	Breakfast and Departure	Secretariat

Annex B: **Participants list**

No.	Name	Title	Email address
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*Report compiled by Dr. Beatrice Khayota, Dr. Hastings Ozwara, Ann Mwaura and Obed Mule*