



WILDLIFE FORENSIC SCIENCE IN AFRICA



28th November - 01st December, ObsMICE meeting, Niamey, Niger

PLAN

- Introduction to Wildlife Forensic Science
- Development of Wildlife Forensic in W/C Africa
- Conservation genetics

Large illicit financial gains and weaknesses in laws to fight such crimes

1. Drugs
2. Counterfeiting
3. Humans
4. Oil
5. **WILDLIFE**

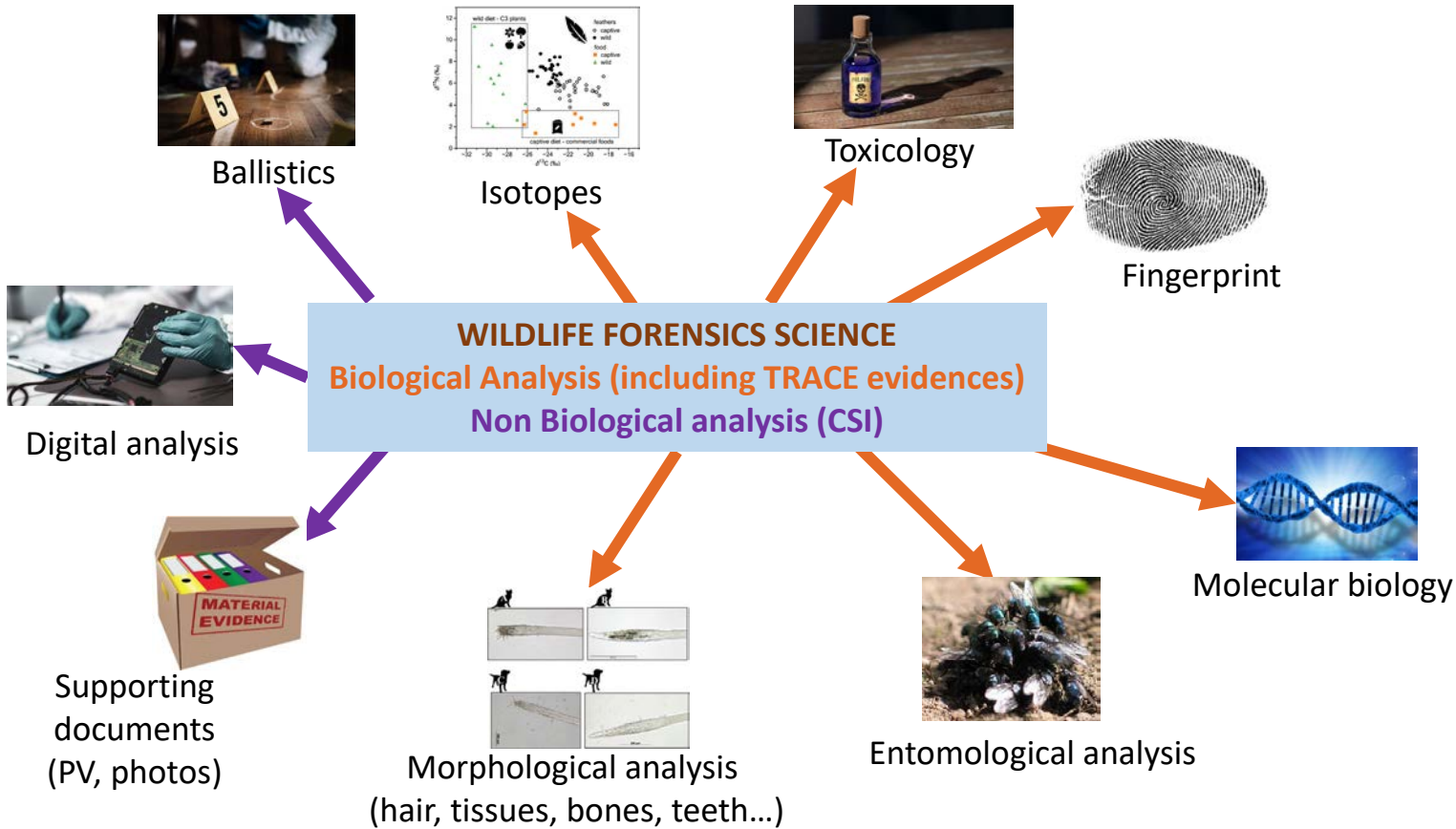
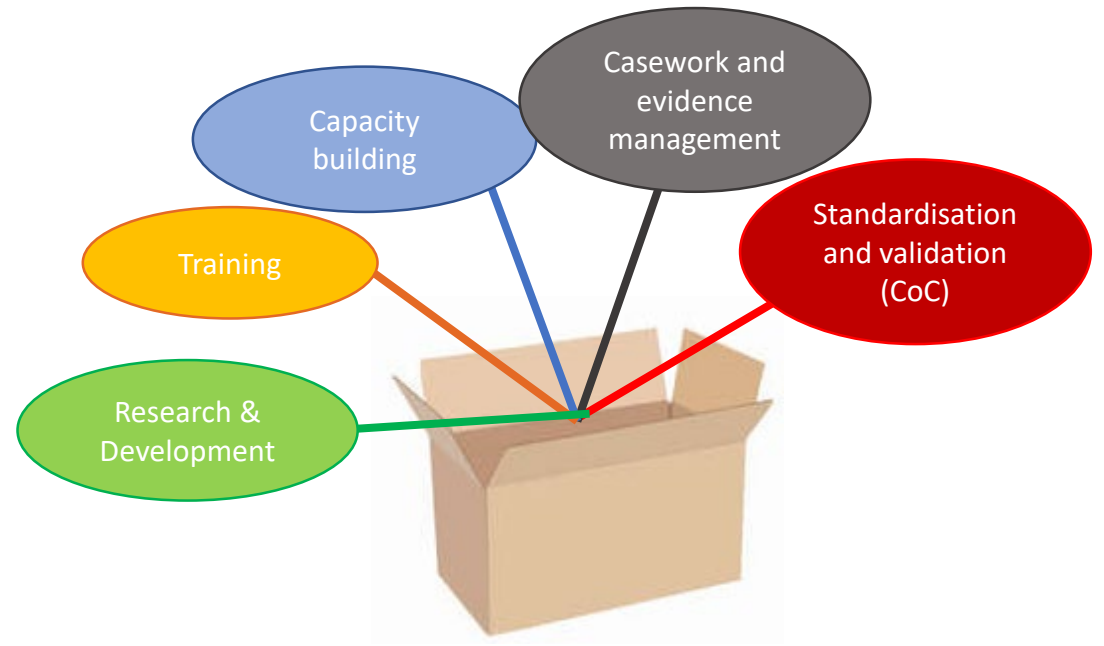
Illegal trade of wildlife is the world's **5th** most lucrative criminal industry.



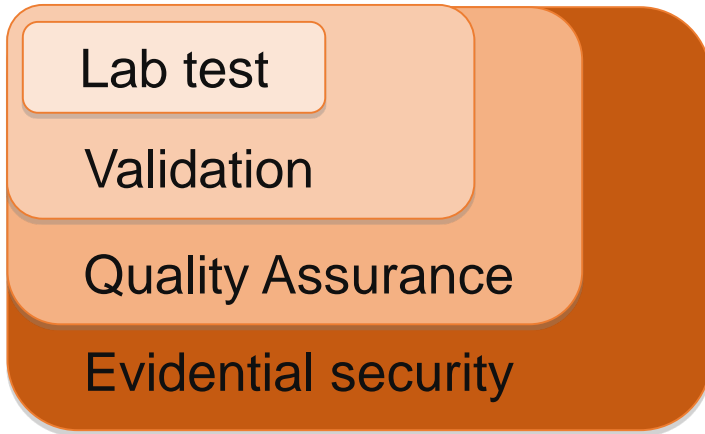
Urgent need to fight these crimes by supporting law enforcement and their applications in countries → **Wildlife Forensic Science**

Wildlife Forensic Science {criminalistic} is the application of scientific methods and techniques to investigate wildlife crime to present **unbiased evidence** in courtroom for **supporting wildlife law enforcement**





Academic research



Casework process (from field to courtroom):

National/international law regulations authorities

→ Evidential integrity is key!

Wildlife CSI

Evidence Collection

Evidence Transfer and management

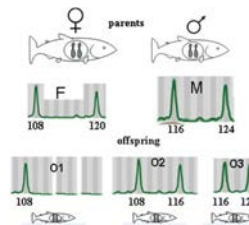
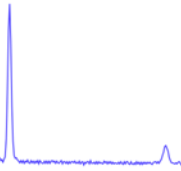
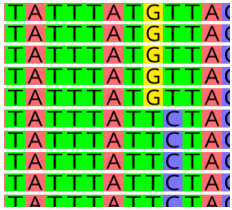
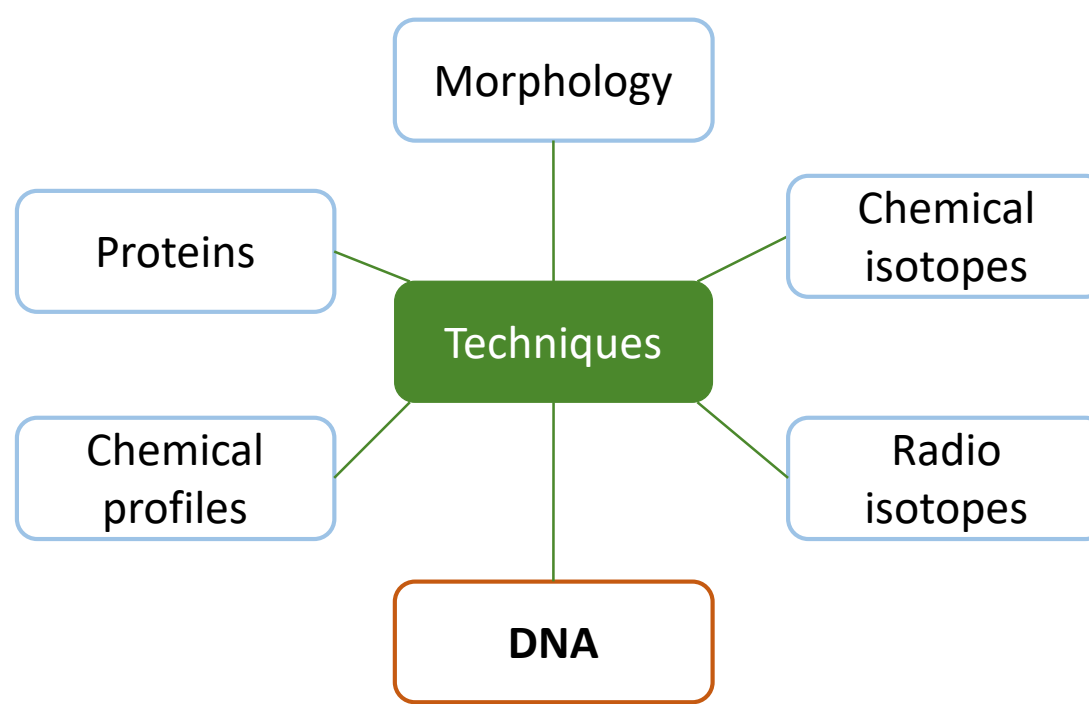
Sample Analysis

Result Interpretation

Reporting

Evidence Presentation

Analytical tools



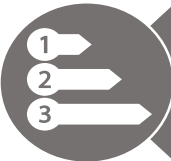
- What species is it (**Species ID**) ?
- Is it a captive bred (**Parentage**) ?
- Where does it comes from (**Geographical origin**) ?
- Was it poisoned (**Cause of death**) ?
- Who is it (**Individual ID – sample matching**) ?



In summary – wildlife forensic science



Wildlife law enforcement increasingly requires forensic scientific evidence



The wildlife forensic community is growing through international partnerships



Capacity building requires activities from crime scene to courtroom



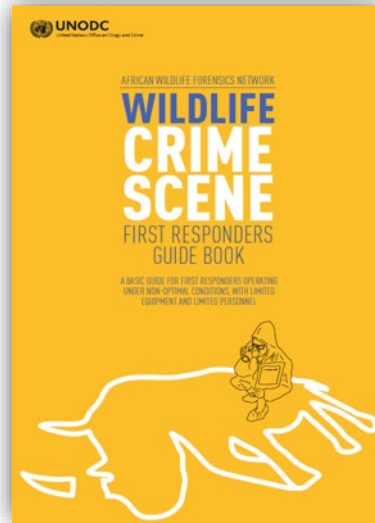
In Africa, activities are implemented by TRACE Wildlife Forensics Network



In Africa, coordination is delivered through the African Wildlife Forensics Network

WCSI awareness, evidence collection and security training

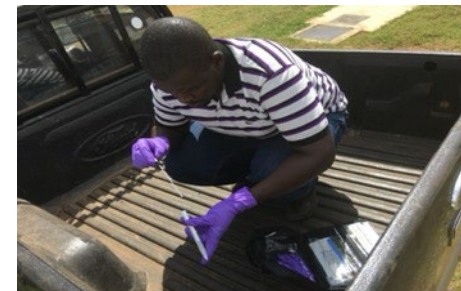
- Train-the-Trainer model
- Expert trainers
- Multi-lingual resources
- Built into national training curricula



Tanzania



CAWM, Mweka



Cameroon



Ecole de Faune Garoua





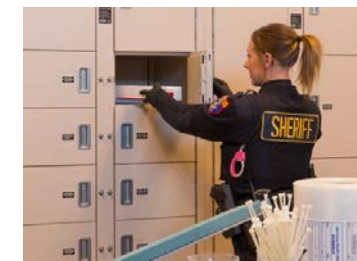
2020-2024 International Narcotics and Law enforcement (INL) project: Development of evidence management SOPs



Evidence security and CoC maintaining



Training and mentorship on evidence management and CoC



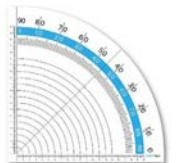
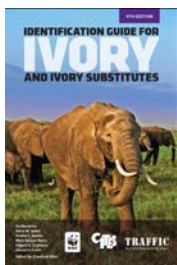
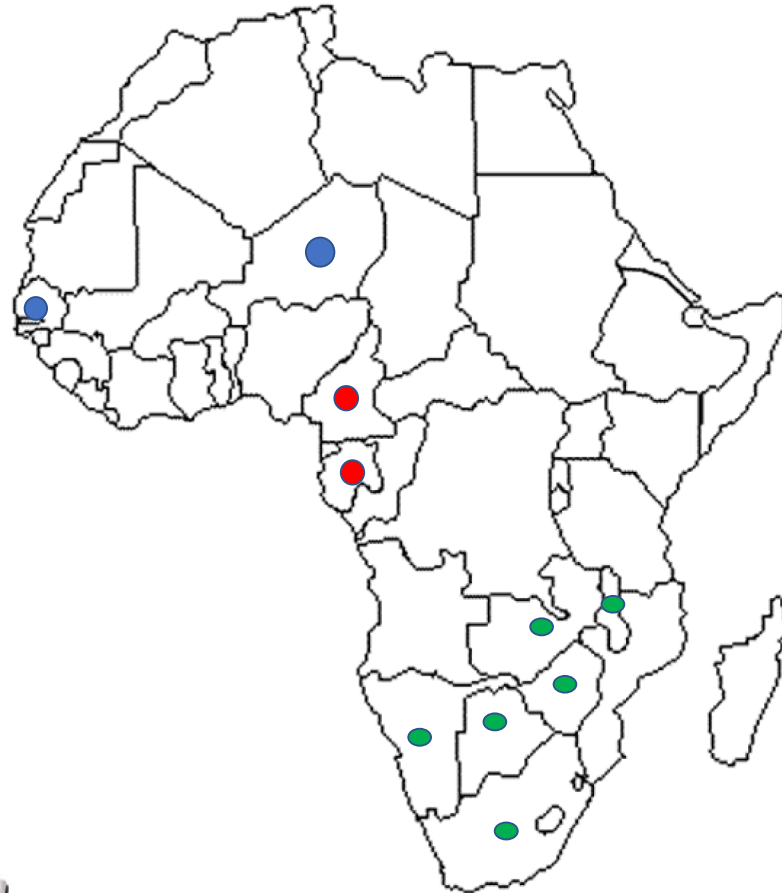
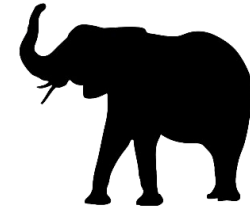
Equipment assistance and support for upgrading evidence lockers/storage



Promote responsible maintenance of limited seized evidence following investigations

To provide technical assistance and training to improve evidence security in wildlife law enforcement throughout the evidence chain, from acquisition to disposal, integrating evidence management with national wildlife investigation procedures.

Morphological Identification of Ivory



Wildlife forensics capacity building



PELTS (Portable Enforcement Lab Testing Service)

Designed for countries without labs or struggling to cope with large seizures

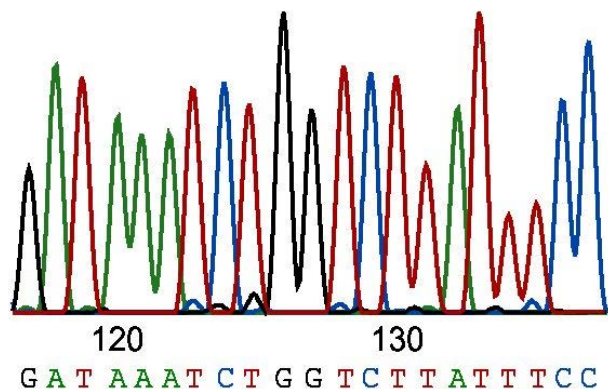


Several countries in Africa have already used PELTS
Two PELTS stations available in Africa (Gabon and Uganda)

FEDS (Forensic and Enforcement DNA Sequencing)

Free ISO 17025 accredited DNA sequencing service for illegal wildlife trade cases

Designed for countries with DNA extraction and PCR but without sequencing facilities



CoA_1110672403.docx	eurofins
Certificate of Analysis (CoA)	1 / 1

Issued and addressed to:

Order number: 11106742403

Order date: 10.02.2020

Submitting Laboratory

Barcode of evidence bag: 01138239

Sample type: PCR product

Sample identification:

TL00248661, TL00248662, TL00248663, TL00248664, TL00248665, TL00248666, TL00248667, TL00248668, TL00248669

Result: Specifications are met

Thursday, 20 February 2020

Eurofins Genomics Europe Sequencing GmbH declares that the samples fulfill all the below criteria

Lion Localizer

Online analysis tool enable user to query unknown mtDNA compared to dataset → Geographic origin



Lion Localizer

QUERY INSTRUCTIONS LABORATORY PROTOCOLS FAQ REFERENCES

Introduction

- Lion Localizer enables users to query an unknown mitochondrial cytochrome b (cytB) against a dataset of known geographic localities from which cytB sequences have been reported for lions, *Panthera leo*, using the dataset described in Bertola et al. 2016
- The outputs include a map showing the localities from which the cytB sequences have been reported
- In the box(es) below you may enter one long cytB sequence, or one short cytB sequence, as described [here](#)
- The description (optional) and sequence of the lion sample will be populated to the output page, but [neither are saved by the lion localizer software](#)

Input Query Sequences

- Choose the type of cytB sequence that you will enter or choose a demo option
Enter one long 1140 bp cytB sequence ▾
- Enter an ID and/or information on the lion sample that you are querying (optional), this will show up on the output page
Enter a description of your lion sample - Ex: LEO0001

<input type="checkbox"/>	Hapl...	Mis...	Matc...	Country	Locality	Publications	GenBank
<input checked="" type="checkbox"/>	LEO0007	0	1140	Ethiopia	Aledoghi WR (9.513; 40.482)	Bertola et al. 2011	AY781207
<input checked="" type="checkbox"/>	LEO0007	0	1140	Ethiopia	Aledoghi WR (9.513; 40.482)	Bertola et al. 2011	AY781210
<input type="checkbox"/>	LEO0006	3	1137	Ethiopia	Kaffa Province	Bertola et al 2016	GU131181 to GU131182
<input type="checkbox"/>	LEO0006	3	1137	Ethiopia	Nechisar NP	Bertola et al 2016	GU131181 to GU131182
<input type="checkbox"/>	LEO0006	3	1137	Ethiopia	Oromia region; Hudet	Bertola et al 2016	GU131181 to GU131182

Awareness of the legal profession



“In my opinion, the three pigs did their share of huffing and puffing.”



Forensic reports obtained from evidences should be communicate in a clear and non ambiguous way allowing ease understand in court



Expert witness training



**2-days workshop after AWFN
2019 annual meeting**

Awareness of the legal profession



What does all this gibberish mean and how it will help me?????



Forensic reports obtained from evidences should be communicate in a clear and non ambiguous way allowing ease understand



Legal professionals training



Training and capacity building workshop for magistrates (December 2020)

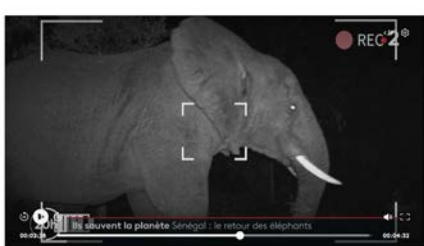
NEED ASSESSMENT

Section A : Détails sur le pays / l'institution / la direction		Section B : Description du rôle de votre institution		Section C : Accès aux services forensiques		
Pays :	<input type="text"/>	Question 1 : Votre agence est-elle chargée d'enquêter sur les infractions liées aux espèces sauvages ?		Question 1 : Votre institution utilise-t-elle actuellement des services forensiques pour soutenir les enquêtes et les poursuites en matière de criminalité liée aux espèces sauvages ?		
Institution :	<input type="text"/>	Oui : <input type="checkbox"/> Non : <input type="checkbox"/>		Oui : <input type="checkbox"/> Non : <input type="checkbox"/>		
Direction / Cellule :	<input type="text"/>	Si oui, veuillez décrire ci-dessous le type d'infraction contre les espèces sauvages.		Si oui, veuillez fournir ci-dessous plus d'informations sur le type de service forensique et le fournisseur de tels services.		
Adresse de la Direction :	<input type="text"/>	Braconnage ou chasse illégale d'animaux sauvages	<input type="checkbox"/>	Technique forensique :	Utilisation des services forensiques ?	Fournisseur de services forensiques : Veuillez fournir des coordonnées telles que le nom de l'institution, le nom et l'adresse e-mail du contact principal.
Nom du contact principal :	<input type="text"/>	Récolte illégale d'arbres et de plantes	<input type="checkbox"/>			
Adresse e-mail du contact principal :	<input type="text"/>	Pêche illicite	<input type="checkbox"/>	<i>Criminalistique des espèces sauvages (preuves d'origine animales et/ou végétales)</i>		
Votre nom :	<input type="text"/>	Autre (s) : <input type="text"/> Veuillez décrire plus en détail : <input type="text"/>		<i>Criminalistique humaine (preuves d'origine humaine)</i>		
Votre fonction :	<input type="text"/>	Question 2 : Au cours des enquêtes sur la criminalité liée aux espèces sauvages, avez-vous besoin d'identifier des preuves provenant d'animaux ou de plantes ?		<i>Toxicologie (identification des poisons)</i>		
Vos coordonnées (email, téléphone) :	<input type="text"/>	Oui : <input type="checkbox"/> Non : <input type="checkbox"/>		<i>Balistique (analyse des armes et des balles)</i>		
		Si oui, veuillez décrire les espèces ci-dessous.		<i>Criminalistique digitale (par exemple, analyse des données sur téléphones portables et ordinateurs)</i>		
		Espèces sauvages	<input type="checkbox"/>			
		Espèces domestiques	<input type="checkbox"/>			
		Poissons	<input type="checkbox"/>			
		Plantes	<input type="checkbox"/>			
		Essences de bois	<input type="checkbox"/>			
		Autre (s) : <input type="text"/> Veuillez décrire plus en détail : <input type="text"/>				

A questionnaire (Section A to E) is provided and is necessary for undertaking in-countries specific needs

Involvement in ongoing projects of interest for conservation genetics in Senegal:

- Specific (**Elephants**) and/or individual identification (**Elands**)
- Population genetics studies (**Lions**)
- Geographical origin analyses (mostly seizures of **Leopard** and **Lions**)



Urgent need for conservation genetics laboratory capacities development → CEGEC S.A.S.U.

Thanks !!!