



# The Bushmeat Crisis

# What is Bushmeat?

- ~ Bushmeat refers to all wildlife species used for meat, including threatened and endangered species
- ~ One million metric tons of wildlife is killed for food each year in Central Africa





# Why Eat Bushmeat?



## ~ Bushmeat as a cheap protein source

- ♦ Wildlife seen as “free for the taking”
- ♦ Limitations in raising livestock



## ~ Bushmeat as a preferred protein source

- ♦ Cultural taste preferences
- ♦ No history of pastoralism

# Why Eat Bushmeat?

~ Bushmeat as a source of income

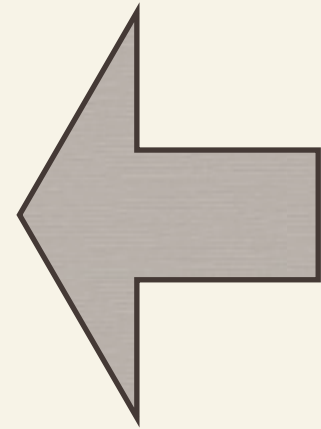


For families living in rural areas, declining crop prices have left them with few options to make ends meet. Hunting bushmeat offers a relatively easy and profitable source of income.

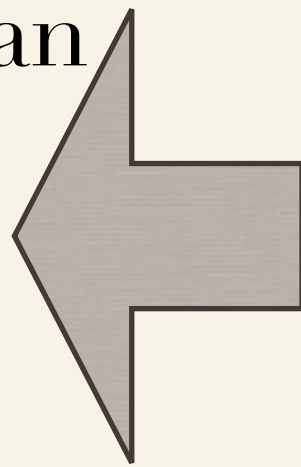


# Why Eat Bushmeat?

- ~ Only available source of protein for rural villages
- ~ Cheaper than domestic alternative (“free for the taking”)
- ~ Traditional appeal to urban upper and middle class people
- ~ Religious significance



**Economic**  **Reasons**



Rise in hunting for bushmeat falls into two categories: economic and cultural

# The Bushmeat Crisis

~ Harvesting wildlife for food is harmful if:

- ✦ Illegal methods of hunting are used (e.g. wire snares)
- ✦ Species killed are threatened/endangered
- ✦ Animals are taken from protected areas
- ✦ Too many animals are taken (commercial hunting)



Hunting has existed for likely millions of years. It hasn't always been sustainable. About 10,000 years ago, most large mammal species in North America went extinct, and human hunting may have been responsible. Now we are seeing this repeated in modern day Africa. Hunting can be done in a non-harmful way, but there are a few major practices that make harvesting wildlife harmful. Indiscriminant and wasteful means of trapping, threatened/endangered species targeted, hunting in wildlife/nature preserves, overharvesting (hunting for commercial, not subsistence, purposes)



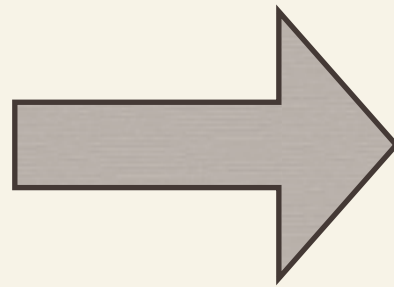
# Why a “Crisis”?



- ~ Subsistence hunting makes up small proportion of harvested wildlife. Commercial hunters attracted by large profits to be made from selling of bushmeat.

Sadly, many of these destructive hunting practices have now come to pass.

# Why a “Crisis”?



- ~ Logging roads allow access to previously remote areas, and make it easy to transport meat from forests to urban markets.

Logging itself takes away valuable habitat. Access to remote areas increased due to logging roads. Quick transport to market facilitated by logging roads.



# Why a “Crisis”?



- ~ Wide-spread corruption, little or no enforcement

Lack of infrastructure means there is very little money to pay rangers and other officials to guard protected areas, and essentially no penalties for being caught with bushmeat. Often times, government officials are bribed to “look the other way”, or they turn around and sell meat that they have confiscated from hunters.



# Who is Affected?



- ~ Duikers make up 40-80% of meat available in bushmeat markets across Central Africa
- ~ 28 million bay duikers killed each year

So how bad is this for wildlife??



# Who is Affected?



- ~ Rodents such as great cane rat, giant pouched rats and porcupines are commonly hunted
- ~ Resulted in local extinctions (*eg.* giant pouched rat extirpation from Democratic Republic of Congo)

# Who is Affected?

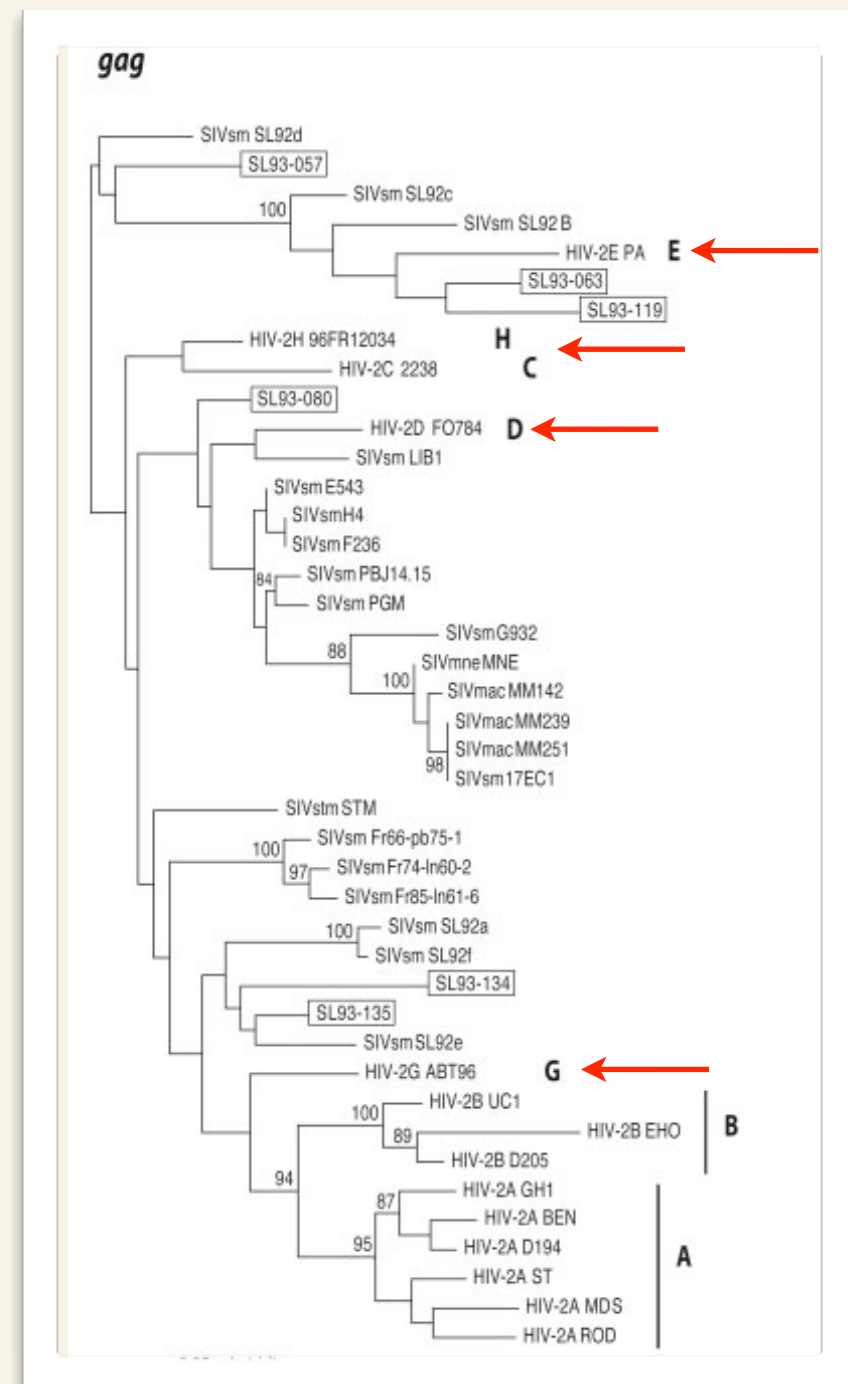
- ~ Primates may consist of as much as 15% of meat sold in bushmeat markets
- ~ Often fall victim to snare traps
- ~ Infants not profitable enough to sell for meat are sold as pets, or left to die





# Who is Affected?

- ~ Consumption of bushmeat linked to diseases like HIV/AIDS, Ebola, SARS, Anthrax, and Lassa fever
- ~ Loss of wildlife threatens food security of indigenous and rural populations

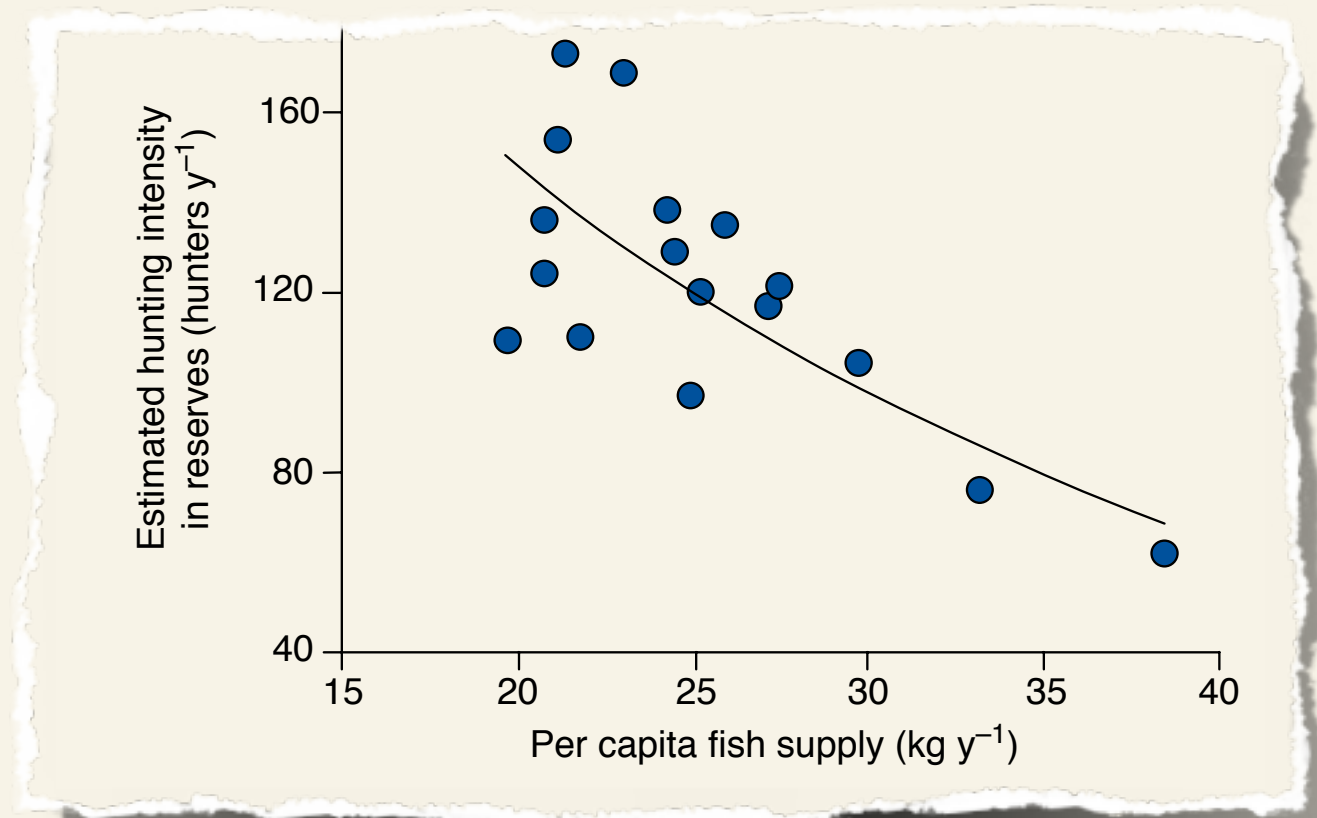


Humans affected too!

# Solutions

## ~ Protein substitutes

- ◆ Constraining supply of bushmeat without providing alternative will drive up prices



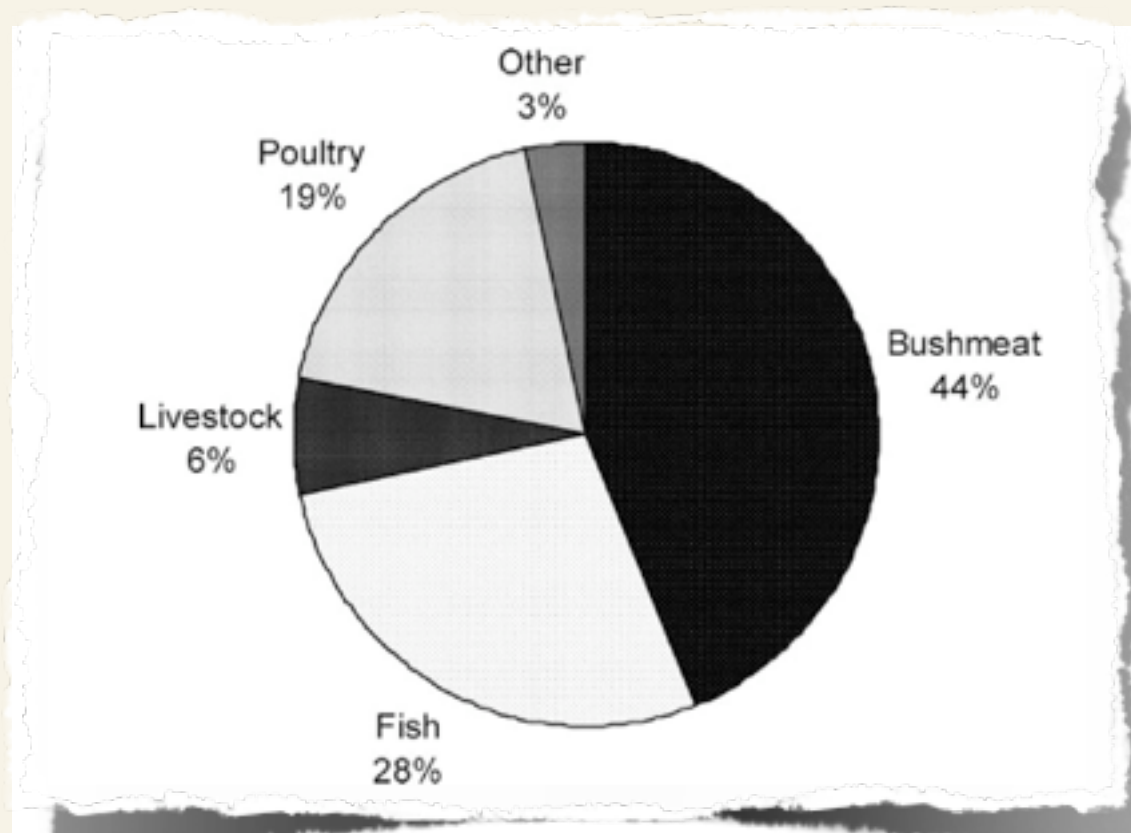
One thing most scientist agree cannot be done is simply trying to stop the trade of bushmeat without providing an alternative protein source. This would have the short-term affect of driving down supply, but if demand were still present, would only succeed in driving up the price of bushmeat.



# Solutions

## ~ Protein substitutes

- ♦ In study conducted in Gabon, 44% study subjects reported primary preference for bushmeat



Unfortunately, if the primary taste preference for bushmeat remains high, offering a protein alternative will not have a large effect.

# Solutions

- ~ Law Enforcement
- ~ Protected Areas
- ~ Public Awareness
- ~ Research & Monitoring
- ~ Education & Training



**Tuer, Manger, Capturer,  
Acheter, Vendre ou Posséder  
un Chimpanzé**



**c'est ILLÉGAL**

Les chimpanzés sont une espèce en voie de disparition.  
Ils sont protégés par les lois nationales et internationales.  
**La possession ou le trafic de chimpanzé, vivant ou mort,  
sont punis par une amende et/ou une peine de prison.**

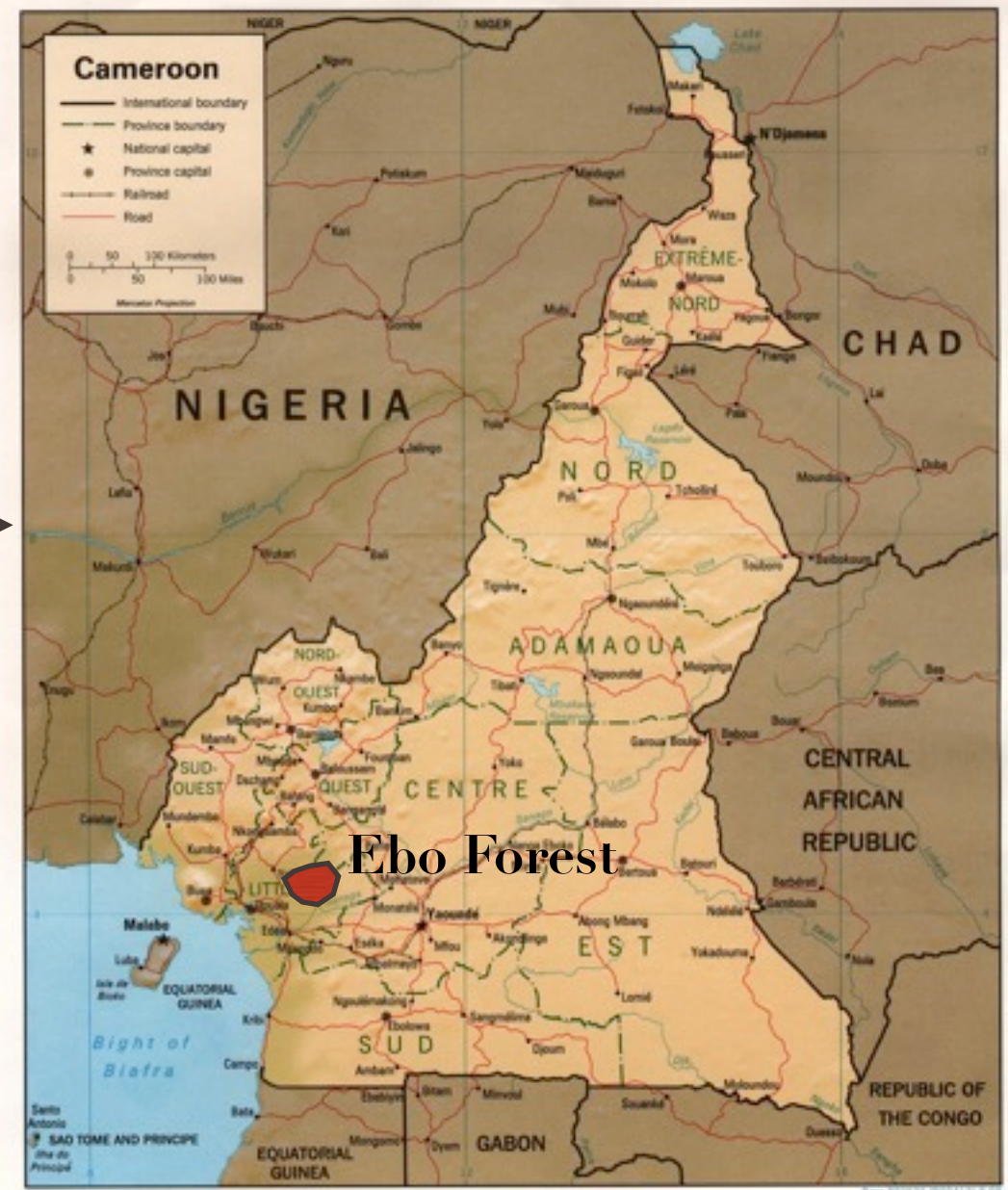
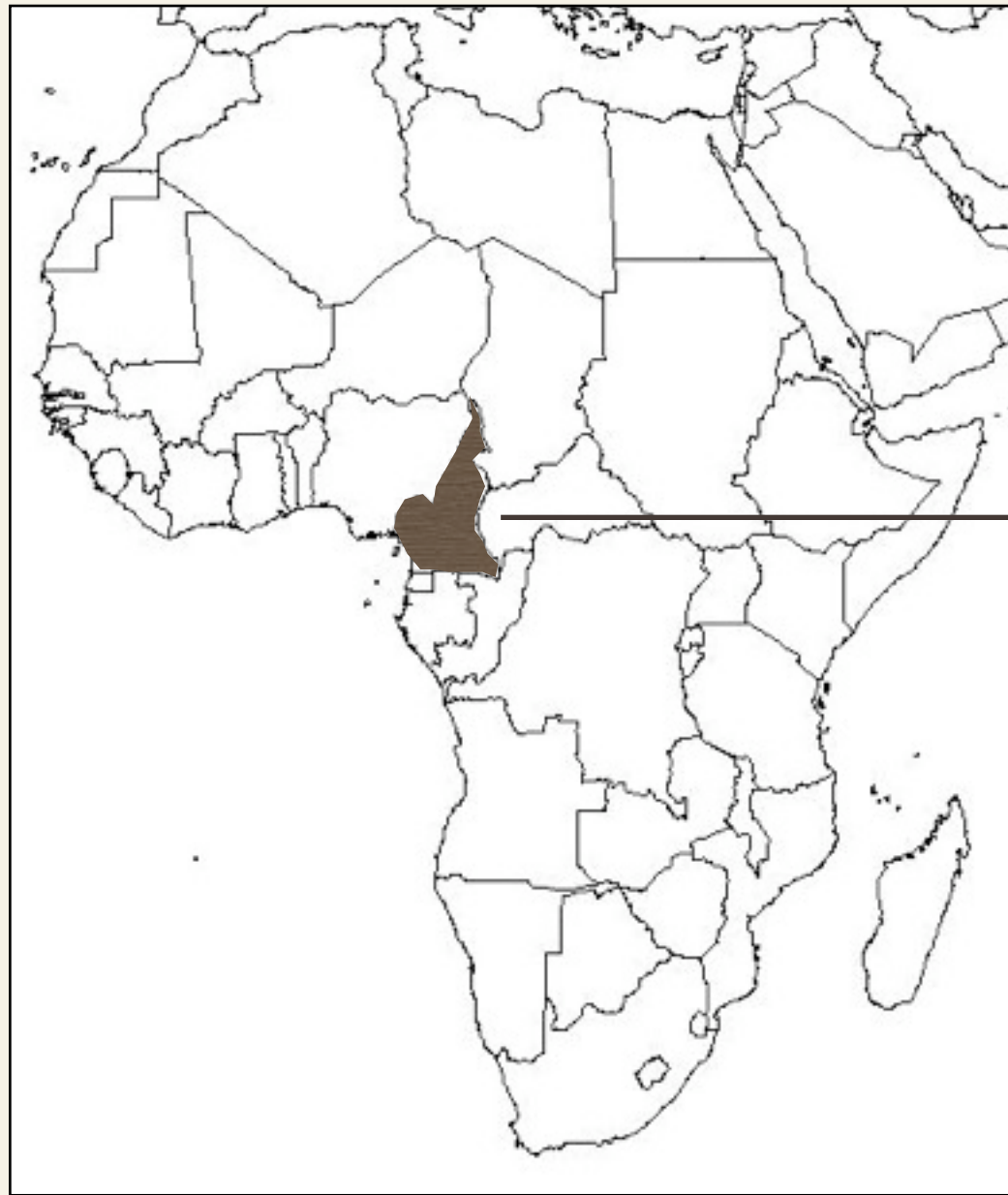
project  
primate inc.

Direction Nationale des  
Eaux et Forêts de Guinée





# What is the San Diego Zoo doing to help?



## ~ Regional Conservation Program in Cameroon

Two research stations in the Ebo Forest to study plants, insects, primates, birds and elephants.

# Education in Cameroon

- ~ Hunter workshops bring hunters from around Ebo to Limbe
- ~ Discuss science behind loss of certain species from forest
- ~ Learn about viable income alternatives





# Education in Cameroon

- ~ School-age children attend bi-annual workshops
- ~ Value of biodiversity
- ~ Experience up-close the animals at the Wildlife Refuge





# Genetic Work in Cameroon



~ DNA barcoding of confiscated meat

~ allows identification of species from unrecognizable samples of blood, bone, meat, hair, feathers or feces





CCTTTATGATCATCTCCCTAATTAG  
CTTTCTAGTCCTATACGTCTTATCA  
TCAGTACTTACAACAAAATTA ACT  
AGCACTAATATTACAGATGCCCAA  
GAAATAGAAACTATCTGAACAATC  
TTACCCGCAATTATTCTAGTCCTA  
ATTGCCCTCCCATCTCTACGCATT  
CTTTACTTAACAGATGAAATCAAC  
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TTGGCCACCAATGATACTGAACTT  
ATGAATATACAGACTATGGGGGCC  
TAATTTTAAATTCTTATATACTCCC  
CCCGTTATTCTTAAATCCAGGGGA

DNA Extraction → PCR → Sequencing

# Identifying Bushmeat Samples

1. Open folder on your computer labeled “Bushmeat samples”
2. Find the sample number corresponding to your mystery sample (on your envelope)
3. Copy and paste your DNA sequence into BLAST
4. Google the species BLAST identifies the sequence as to find the common name, and find a picture in Google Images
5. Look inside your envelope to see if you are correct