EDUCATIONAL EXPLORATION
BIODIVERSITY AND SAVING FOREST ELEPHANTS

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TYPE OF DOCUMENT EDUCATIONAL ILLUSTRATED STORY FOR CHILDREN AND YOUNG PEOPLE

Main theme :

• Raising awareness of the need to protect biodiversity

• Protecting forest elephants

Target audience: Young people and children

Approach used: Accessible illustrated story combining learning and imagination

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CONTENTS

ACRONYMS AND ABBREVIATIONS

CR	Critically Endangered (according to the IUCN Red List)
EN	Endangered (according to the IUCN Red List)
GPS	Global Positioning System
AI	Artificial Intelligence
ISDR	Institut Supérieur de Développement Rural (Higher Institute for Rural Development)
NGO	Non-Governmental Organisation
PNKB	Kahuzi-Biega National Park
DRC	Democratic Republic of Congo
IUCN	International Union for Conservation of Nature
VU	Vulnerable (according to the IUCN Red List)

FOREWORD

In a world where biodiversity is under increasing threat, it is vital to educate young people about the importance of nature and species protection. This illustrated manual has been designed to raise awareness among children and young people of the richness of living things and the central role played by certain species, such as the forest elephant, in maintaining the balance of ecosystems.

Through an engaging and accessible narrative, carried by the characters of Mugisho, Nathalie, Jordan, Baraka, Mirella and their guide Papa Jacque, this story immerses readers in a lively educational exploration. The simple dialogues, evocative images and concrete examples make it possible to tackle complex themes such as biodiversity, conservation, poaching and climate change in a fun and understandable way.

This manual is also a tool for raising civic awareness. It shows that every child, whatever their age or where they live, can take action to protect nature: by learning, by raising awareness, by respecting the environment, and by becoming an ambassador for biodiversity.

We hope this book will arouse curiosity, wonder and commitment, and inspire a new generation of wildlife protectors, here in the DRC and everywhere else.

SUMMARY

This manual follows a group of curious children - Mirella, Mugisho, Baraka, Nathalie and Jordan - guided by Papa Jacque, a wise former park ranger with a passion for nature. Through educational exchanges and a visit to the Kahuzi-Biega National Park, they learn about the threats to flora and fauna, such as poaching and deforestation, and discover the importance of conservation.

The story encourages young readers to take action to protect nature through education, reforestation and community involvement. It is an awareness-raising tool designed to promote the protection of biodiversity and forest elephants, while inspiring children to become agents of change.

CHAPTER 1: THE WEB OF LIFE

The aim of this chapter is to help children understand biodiversity in a very simple, lively and accessible way. Through a dialogue between familiar characters, it introduces the idea that biodiversity is not limited to visible animals, but encompasses all forms of life, from plants and insects to fungi, microbes and humans themselves. It shows that every living thing plays an important role in the balance of nature.

Source: Image generated by AI (DALL-E, OpenAI), based on a text description created by the authors

Mugisho: Papa Jacque, what exactly is biodiversity?

Papa Jacque: Biodiversity, my children, is the richness of all life on Earth. It's the big family of all living beings:

Papa Jacque:

- Plants, which purify the air and feed us,
- Animals, which fly, swim, crawl or gallop,
- Insects, like bees, that pollinate flowers,
- Mushrooms and even microbes, which we can't see but which are essential to life.vie.

Nathalie: And us humans, are we part of this too?

Papa Jacque: Of course, my daughter! Humans are a link in this great chain. Every species, big or small, has a role to play. Like in an orchestra, if one instrument disappears, the music changes... or stops.

Mugisho: So, biodiversity isn't just about the animals we, see?

Papa Jacque: Exactly! It's *all* life, visible and invisible, on land, in the water, in the air and even in the soil. It's this diversity that makes the planet alive, beautiful and balanced.

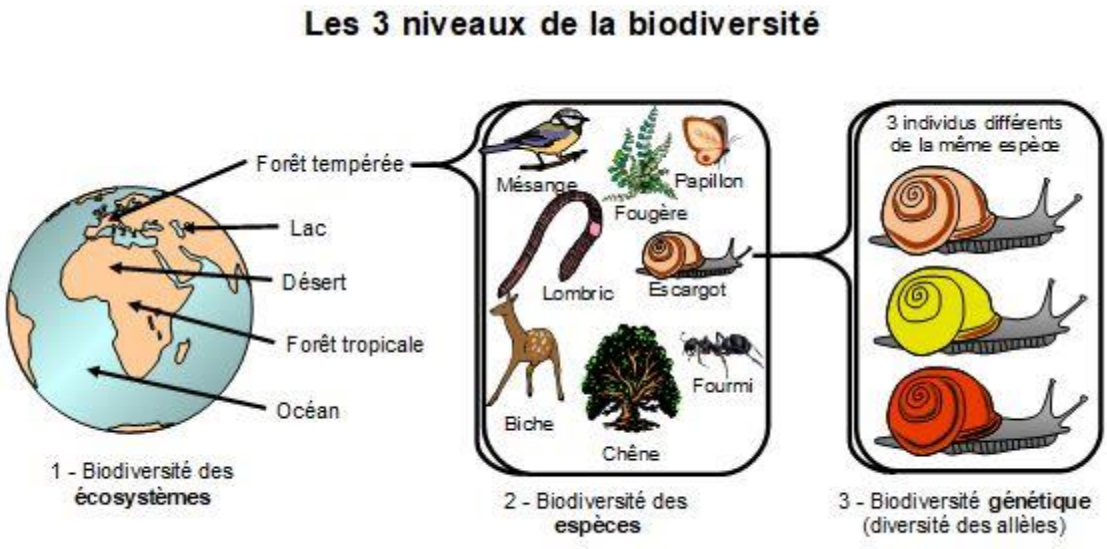
Nathalie: So, we have to protect this big family?

Papa Jacque: Yes. Because if one element disappears, for example, the whole balance of nature could be threatened. Protecting biodiversity means protecting life, including our own.

- ✓ What is biodiversity?
- ✓ Who is part of biodiversity?
- ✓ Why is it important to protect biodiversity?

CHAPTER 2: LEVELS OF BIODIVERSITY

Having discovered what biodiversity is as a whole, it is now important to understand that it exists at several levels. Biodiversity is not just the number of different species on Earth, but also the variety within species and the richness of the natural environments in which they live. This chapter will help you explore these three essential levels to better understand the complexity and beauty of living things.



Source : https://svtlyceedevienne.com/wp-content/uploads/2023/06/3-niveaux-debiodiversites.jpg

Nathalie (curious): Papa Jacque, earlier you told us that biodiversity is all life on Earth... But are there different types or levels of biodiversity?

Papa Jacque: That's a very good question! Yes, there are **three main levels**.

Mugisho: Three? Which three?

Papa Jacque:

1. **Species biodiversity**: that's the variety of animals, plants, fungi, insects, etc. For example: elephants, ants, palm trees, frogs...
2. **Genetic biodiversity**: this is the diversity within the same species. For example, not all humans look alike, and the same goes for dogs and bananas.
3. **Ecosystem biodiversity**: all the different living environments: forest, savannah, river, mountain, desert, etc.

Nathalie: So, biodiversity isn't just the species we, see?

Papa Jacque: Exactly. It exists within species, between species and in the environments where they live.

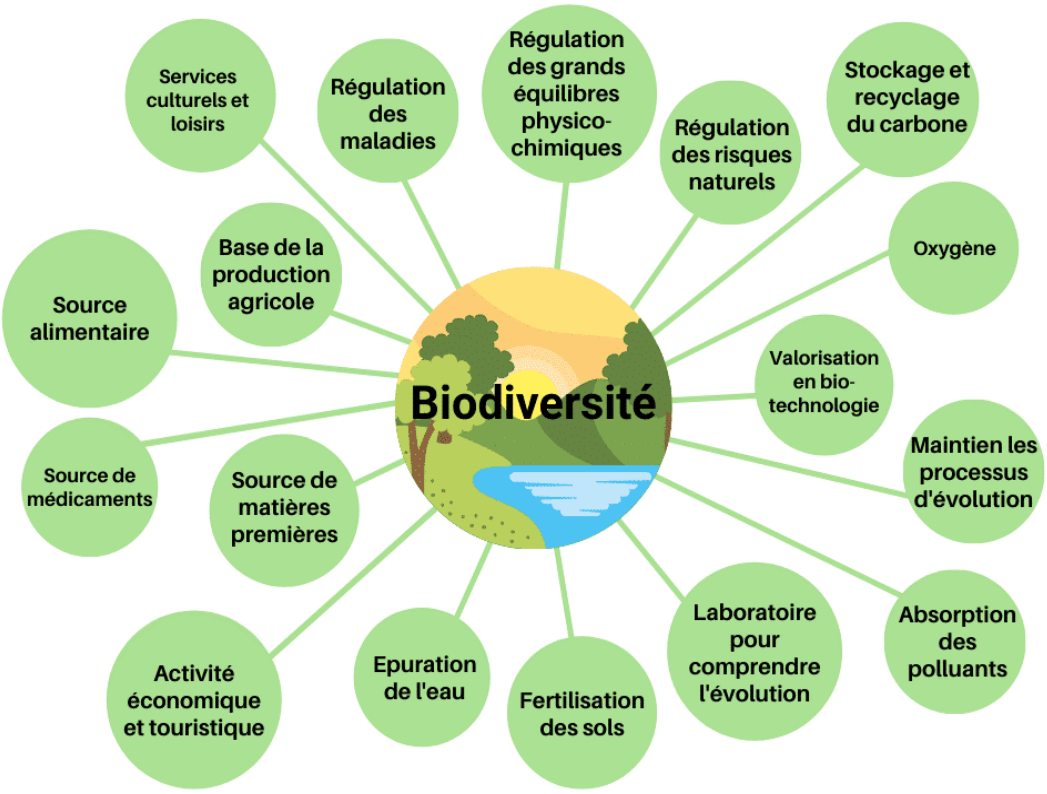
Mugisho: Wow... It's bigger than I thought!

Papa Jacque (smiling): Yes, and to protect it properly, we need to understand all its levels.

- ✓ What are the three levels of biodiversity?
- ✓ What does genetic biodiversity mean?
- ✓ Why is the diversity of ecosystems important?

CHAPTER 3: THE BENEFITS OF NATURE

Nature doesn't just look beautiful or impressive: it works silently for us, every day. Thanks to biodiversity, we breathe, eat, drink and stay healthy. Yet many of these benefits go unnoticed. In this chapter, children will discover how each level of biodiversity, from species to genetics to ecosystems, plays an essential role in the smooth running of the planet. Understanding these 'ecological services' will help them to see why it is so urgent to protect nature... and to start looking at large animals like elephants in a different way.



Source: https://www.connexion-nature.com/wpcontent/uploads/2021/02/bienfaitsbiodiversite.png

Papa Jacque (calm and smiling): Ah, that's an essential question. Nature provides us with enormous, often invisible, services. Without biodiversity, human life would simply be impossible.

Nathalie (intrigued): What services, for example?

Papa Jacque: Each species plays a role. For example, plants produce the oxygen we breathe, bees pollinate flowers so we can have fruit, birds eat harmful insects, and animals like monkeys and elephants disperse seeds in the forest. Even predators help to keep the balance by controlling certain populations. If one species disappears, it can throw the whole system out of balance.

A case in point is bees, which play an essential role in the pollination of plant species.

Source: Image generated by AI (DALL-E, OpenAI), based on a text description created by the authors.

Mugisho: So, it's like a jigsaw puzzle: if one piece is missing, the whole thing falls apart?

Papa Jacque: Exactly. And within the same species, diversity is just as important. It enables certain plants or animals to resist disease, drought or climate change. The more genetic diversity there is, the stronger and more adaptable nature becomes.

Nathalie: What about environments like forests or rivers?

Papa Jacque: Entire ecosystems provide us with incredible services. Forests purify the air and store carbon, wetlands filter water and prevent flooding, living soils nourish crops, and oceans regulate the climate. You can't necessarily see them with the naked eye, but these functions are vital.

Mugisho: It's like nature is working for us, without us knowing it...

Papa Jacque: That's right, those are the hidden benefits of nature. As long as everything's working well, we don't realise it. But if we destroy these balances, we'll pay the price sooner or later.

Nathalie: And what about the elephant? What does it do?

Papa Jacque: Oh, the elephant... he's a real gardener of the forest. In the next chapter, you'll find out just how precious he is, not just for biodiversity, but for the survival of an entire ecosystem.

- ✓ What are the three levels of biodiversity
- ✓ What does genetic biodiversity mean?
- ✓ Why is ecosystem diversity important?

CHAPTER 4: CONSERVING BIODIVERSITY

Nature is in danger, and many species are in danger of disappearing if nothing is done. That's why it's important to talk about **conservation**, i.e. all the actions taken to protect biodiversity. Certain species, such as the elephant, are essential for maintaining the balance in the forests. By learning about them and protecting them, we are also helping all the other living creatures that share their habitat. This chapter explains why certain species are priorities and where they can still be found today.

Source: *Image generated by AI (DALL-E, OpenAI), based on a text description created by the authors*

Mugisho: Papa Jacque, you told us that the elephant is like a gardener in the forest. But why are we talking so much about it? Is it in danger?

Papa Jacque: Yes, unfortunately. Elephants are an endangered species. And that's why today we're talking about **conservation**, in other words all the actions we're taking to protect biodiversity before it's too late.

Source :
https://cdn0.planeteanimal.com/fr/posts/0/0/5/biodiversite_definition_types_et_caracteristiques_3500_600.webp

Nathalie: But why do we need to protect them in particular?

Papa Jacque: Because certain species have **priority**. We call them **key species** or **umbrella species**, because by protecting them, we also protect the whole ecosystem around them. Elephants are one of these: as they move through the forest, they open up paths, disperse seeds and enable other species to live.

Mugisho: And how do you know when a species is endangered?

Papa Jacque: There's a major world organisation called **the IUCN**, the International Union for Conservation of Nature. It has created a very important tool: the **Red List**. This list classifies species according to their level of threat:

- ✓ **Vulnerable** species **(VU)**,
- ✓ **Endangered (EN)**,
- ✓ and **critically endangered (CR)**.

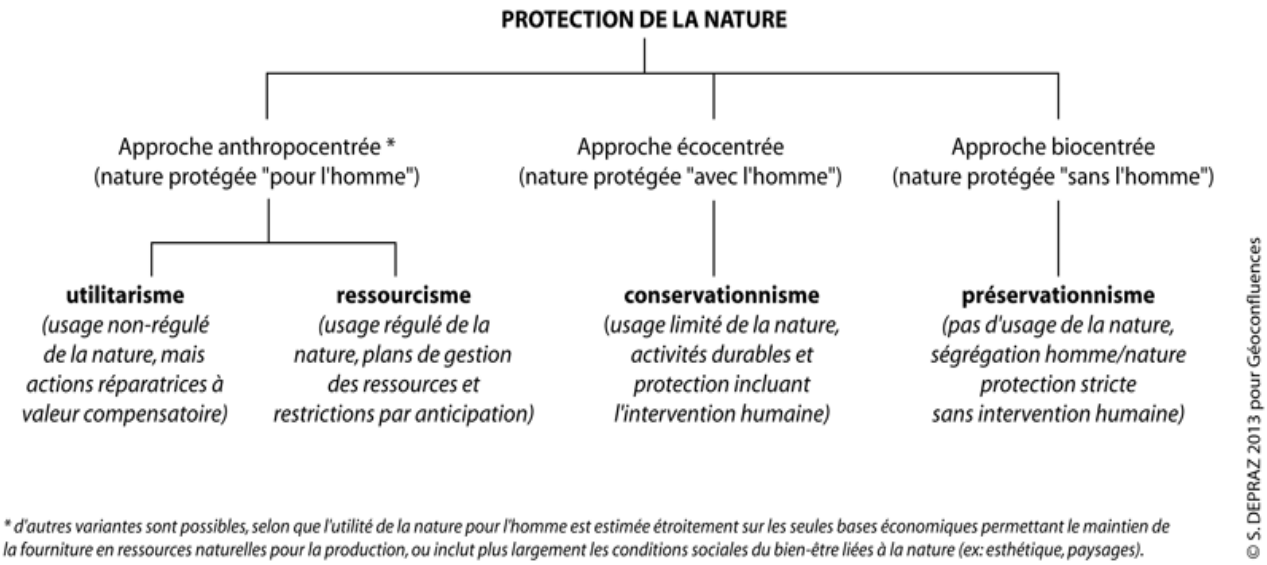
Mugisho: Are elephants on this list?

Papa Jacque: Yes... Our **forest elephants** are classified as **endangered (EN)**. This is serious, because their numbers are declining rapidly due to **poaching** and the **destruction of the forests**.

Nathalie: But they can still be saved?

Papa Jacque: Yes, fortunately. There are several solutions.

Jordan : But how can we protect them?



Source : https://geoconfluences.ens-lyon.fr/informations-scientifiques/a-la-une/notion-a-la-une/images/protegerschema-1.gif

Papa Jacque: By taking a number of very practical steps:

- **Creating parks and nature reserves** to provide a protected area for wildlife,
- **Combating deforestation, poaching and pollution**,
- **Educating people**, especially young people, to love and respect nature,
- And **scientifically monitor threatened species** to protect them more effectively.

Source: Image generated by AI (DALL-E, OpenAI), based on a text description created by the authors

Nathalie: Can we do something too?

Papa Jacque: Of course! Everyone can do something. Even you. By **learning**, by **sharing what you know**, by **respecting animals and forests**. Conservation is **everyone's business**.

Baraka (curious): Papa Jacque, what's the difference between forest elephants and savannah elephants?

Papa Jacque: That's a very good question. **Forest elephants**, like those found here in the east of the DRC, **are smaller** than savannah elephants. They have **round ears**, **move more discreetly** and live in **dense tropical forests**. They can be found in countries like the Democratic Republic of Congo, especially in protected areas like the **Kahuzi-Biega National Park** and the **Salonga Park**.

Nathalie: Does it look like they're hiding?

Papa Jacque: Yes, that's why they're sometimes called the **invisible giants**. They're **shy**, **silent**, but **extremely intelligent**. They play an **essential** role **in the balance of the forest**.

Source : https://storage.canalblog.com/85/92/1074976/108745182_o.jpg

Jordan (puzzled): But if elephants don't harm anyone, why do we hunt them?

Papa Jacque (serious): That's a very good question, Jordan. Elephants are victims of **poaching**, in other words they're killed illegally by people who want to make a profit from certain parts of their bodies.

Source: *Image generated by AI (DALL-E, OpenAI), based on a text description created by the authors*

Mugisho (shocked): What do they take home?

Papa Jacque: Mainly three things:

- Their **ivory tusks**, used to make jewellery, sculptures or decorative objects.
- Their **skins**, sometimes made into bags, bracelets or traditional medicines.
- And in some cases, their **meat**, although this is banned in many countries.

Source : https://d1jyxxz9imt9yb.cloudfront.net/medialib/1994/image/p1300x1300/ivory-confiscated-HongKong.webp

Nathalie: It's horrible... But there's nothing we can do?

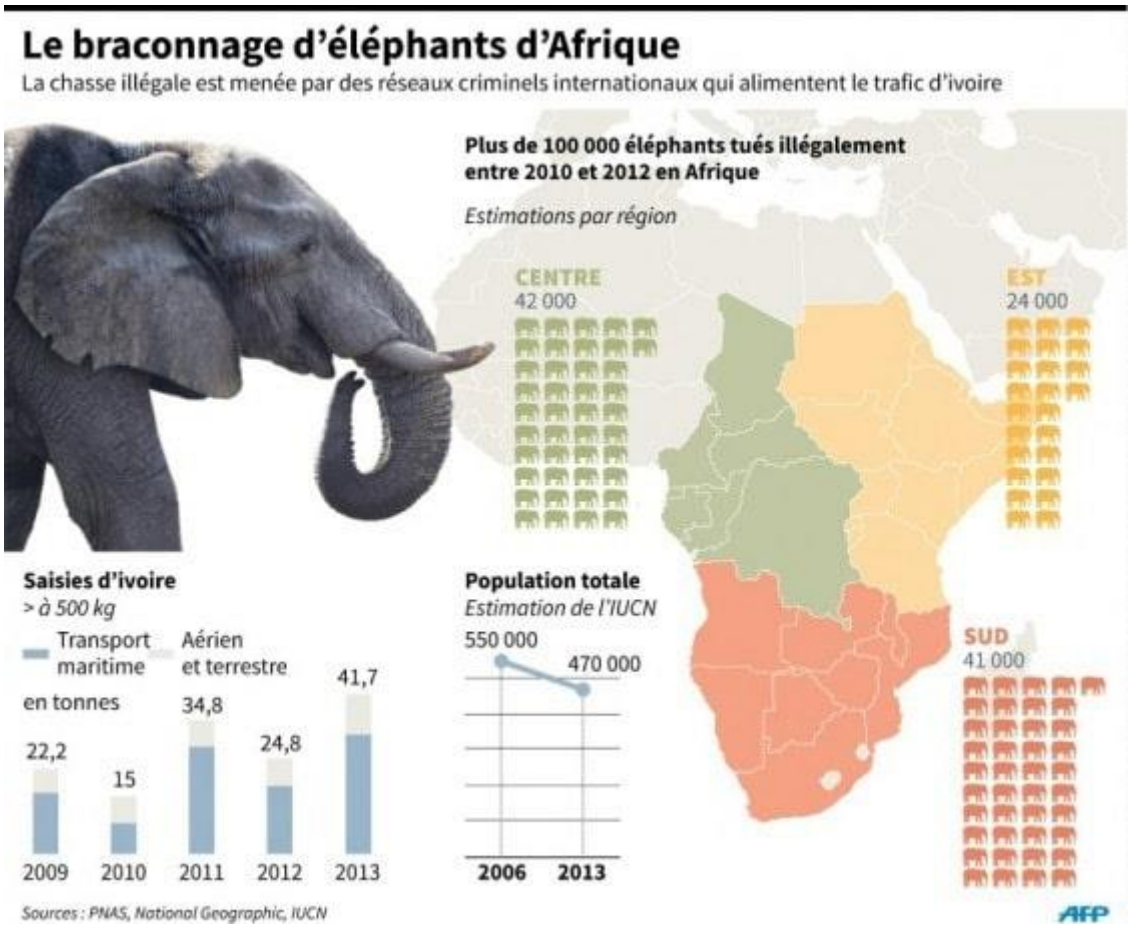
Papa Jacque (smiling): Of course there is! Thanks to **science**, we now have **synthetic** materials that look a lot like ivory, without coming from an animal. And above all, **each of us can refuse to buy** objects made from wild animals.

Baraka: So, we can help just by being careful about what we buy?

Papa Jacque: Exactly, Baraka. By **choosing carefully**, **informing others** and **respecting nature**, you too can become a **protector of biodiversity**.

Mugisho (admiringly): So, at Kahuzi-Biega National Park, we protect these elephants?

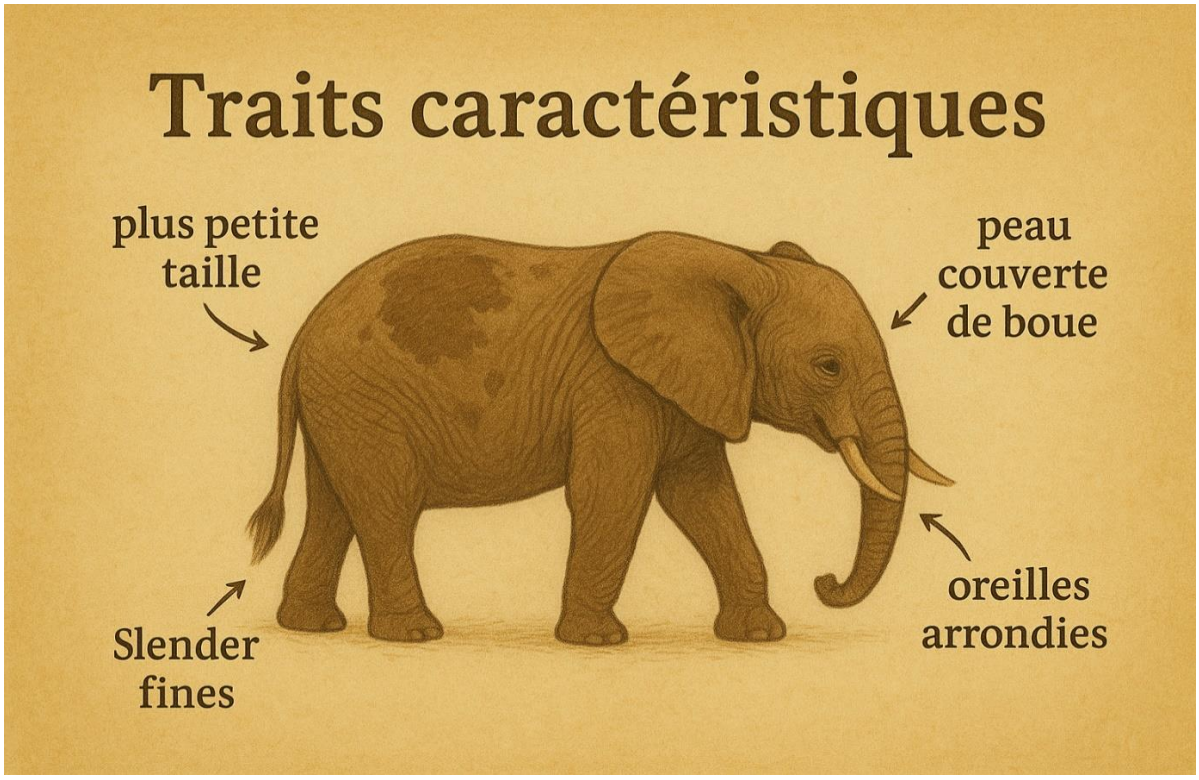
Papa Jacque (proudly): Yes. The **KBNP** is one of **the few places in the world** where you can still find these **discreet giants**. They are a **unique treasure** for our country and for the whole planet. Protecting them means **protecting our future**.



- ✓ What is the IUCN Red List?
- ✓ Why are forest elephants important to nature?
- ✓ How can we help protect biodiversity?

CHAPTER 5: ANATOMY OF A FOREST ELEPHANT

Before we can understand the role of elephants in the forest, we first need to get to know them better. Forest elephants are different from their savannah cousins. They are specially adapted to life in dense tropical forests, and each part of their body has a specific purpose. Let's find out what makes them so unique.



Source: *Image generated by AI (DALL-E, OpenAI), based on a text description created by the authors*

Mugisho (curious): Papa Jacque, what makes these forest elephants so unique? Are they really different from the ones you see in documentaries?

Papa Jacque: Yes, and that's what makes them fascinating. Our forest elephants **are smaller** than their savannah cousins. Their **tusks are thin and curved**, perfect for squeezing between the tightly packed trees of tropical forests.

Nathalie: But their skin is full of mud... is that normal?

Papa Jacque: Yes, it's **their natural way of protecting themselves**. By covering themselves in mud, they keep insects away and their skin fresh.

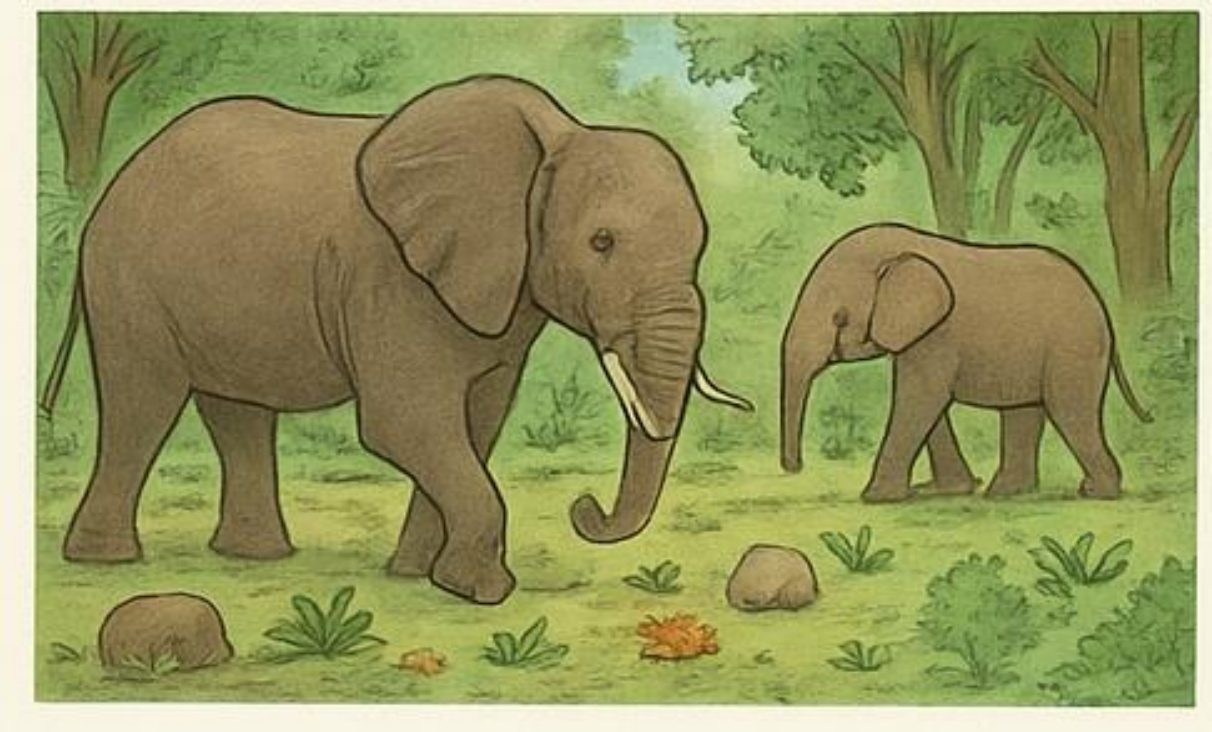
Mugisho: And is it true that they have a good memory?

Papa Jacque: An **extraordinary** memory! They remember **secret paths in the forest**, **waterholes**, even **danger zones**. This memory is passed down from generation to generation. It's what enables them to survive in such a complex environment.

- ✓ What is the difference between forest elephants and savannah elephants?
- ✓ Why do elephants cover themselves in mud?
- ✓ What do they use their exceptional memory for?

CHAPTER 6: THE FOREST GARDENERS

Elephants don't just live in the forest: they play an active part in its regeneration. They eat, they walk, they dig, and in all these ways they help the forest to stay alive. So we call them the forest gardeners. But what exactly do they do? Let's listen to Papa Jacque.



Source: *Image generated by AI (DALL-E, OpenAI), based on a text description created by the authors*

Papa Jacque: Now you'll understand why they're called **rainforest gardeners**.

Mugisho (intrigued): Do they really garden?

Papa Jacque: In a way, yes. They eat the **fruit of big trees** like the moabi, then **scatter the seeds** far and wide through their droppings. As they walk, they **fertilise the soil**.

Mugisho: It's as if they plant trees as they walk!

Papa Jacque: Exactly! And without them, some trees wouldn't grow back at all. They ensure the **natural renewal of** the forest.

Nathalie: Their role goes even further, doesn't it?

Papa Jacque: Good point. They also create **natural paths** that other animals use, they **dig holes in the ground** that become **watering holes during the dry season**, and they **maintain the diversity of** species. They make the forest **more alive, more resistant, more balanced**.

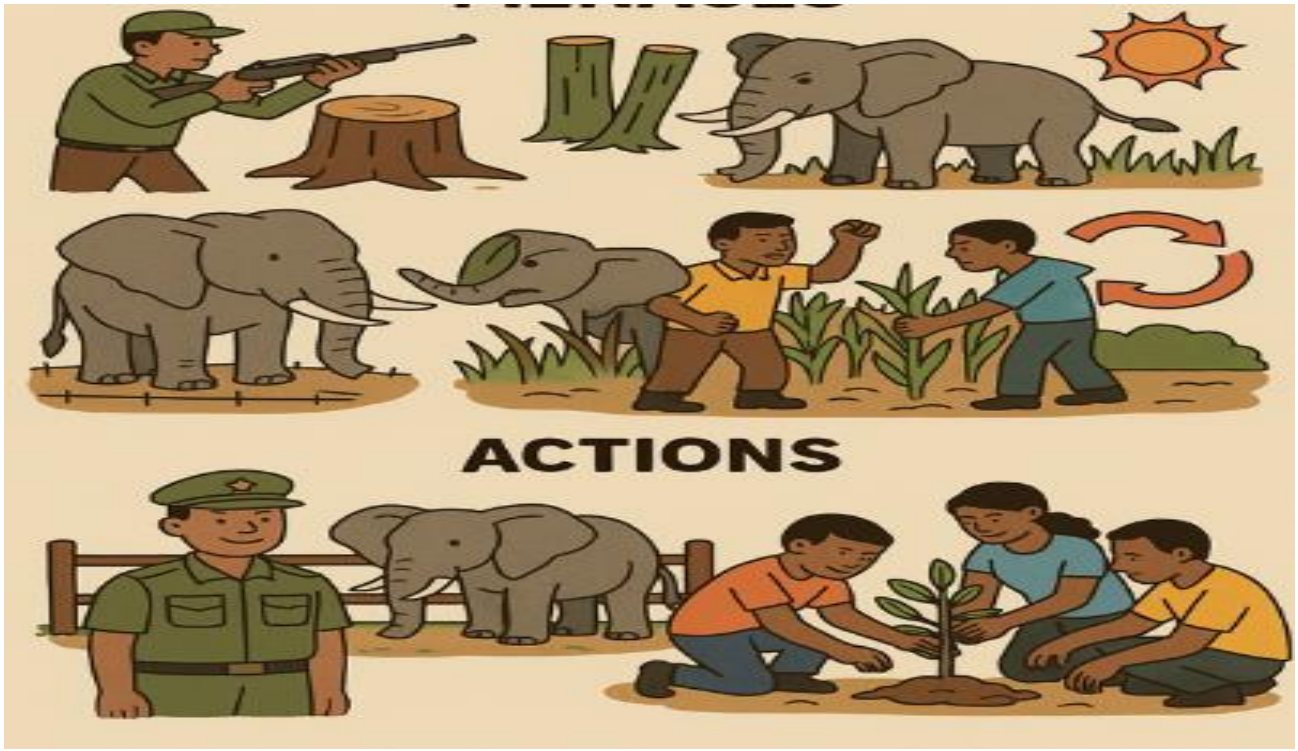
Mugisho: So... they're the real protectors of the forest?

Papa Jacque: Yes, and their work is silent, constant, but vital. They are **natural builders**, **doctors of the soil**, **guides for other animals**. Without them, the forest would lose much of its strength and beauty.

- ✓ How do elephants help trees to grow back?
- ✓ Why are they said to create waterholes?
- ✓ What would happen if elephants stopped walking in the forest?

CHAPTER 7: THREATS TO ELEPHANTS AND HOW TO PREVENT THEM

Forest elephants are real living treasures, but they are under serious threat today. Poaching, habitat loss, conflict with humans... There are many dangers. Fortunately, there are solutions! This chapter invites children to understand the threats facing elephants and to think together about what can be done to protect them. It also opens up avenues for studying elephants and getting to know them better.



Source: *Image generated by AI (DALL-E, OpenAI), based on a text description created by the authors*

Mugisho: Papa Jacque, if elephants are so important to the forest, why are they in danger?

Papa Jacque: Unfortunately, there are several reasons. Here are the main threats to them:

- ✓ **Poaching**, for their ivory tusks, which fetch a high price.
- ✓ **Destruction of their habitat** through deforestation, roads and plantations.
- ✓ **Conflicts with humans**, when they leave the forests to look for food in the fields.
- ✓ **Climate change**, which is altering their environment and reducing their water and food resources.

Nathalie: It's sad... And what can we do to protect them?

Papa Jacque: There are lots of things we can do. Some are carried out by governments or NGOs, others by local communities. And even children can get involved!

Here are a few examples:

- ✓ **Stepping up surveillance** in parks to prevent poaching.

- ✓ **Creating ecological corridors** to link forests and allow elephants to roam freely.
- ✓ **Planting trees** and restoring degraded habitats.
- ✓ **Organise awareness campaigns** to explain to everyone why elephants are precious.
- ✓ **Educate children and young people**, like you, to become protectors of nature.
- ✓ **Work with farmers** to avoid human-elephant conflicts.

Jordan: Can we also do research on elephants?

Papa Jacque: That's a very good question! Yes, research is essential. There's still a lot to learn about forest elephants.

Here are a few important avenues of research:

- ✓ Understanding **their movements** and habits in the forest.
- ✓ Studying **their diet** and their role in tree regeneration.
- ✓ Monitoring **their reproduction** and the way in which elephant families are organised.
- ✓ Analyse the **impact of climate change** on their way of life.
- ✓ Observe how **they communicate with each other**. Elephants use very low-pitched sounds, sometimes inaudible to the human ear.
- ✓ Use modern tools such as **GPS collars**, **camera traps** or **drones** to observe them better without disturbing them.

Nathalie: So you can become a researcher, even here at home?

Papa Jacque: Of course! We can study elephants in our own forests. The Kahuzi-Biega National Park is an ideal place for that. We need to train young researchers, eco-guards, vets, educators, communicators... all these jobs are important to protect elephants.

Mugisho: And what can we do right now?

Papa Jacque: First of all, you do something important: you inform yourself. Then you can talk about it around you, respect the animals, take part in nature clubs, or even help to replant trees. Every gesture counts.

Nathalie: So we can all be friends of elephants?

Papa Jacque: Yes! If everyone does their bit, elephants will have a future. And with them, the whole forest will live better

- ✓ What are the main threats to forest elephants?
- ✓ What concrete action can be taken to protect elephants?
- ✓ Why is it important to research forest elephants?

CONCLUSION

Through these chapters, the children have discovered that biodiversity is not just a list of animals or plants, but a large, complex and interconnected living network. Each species has a role to play in this fragile balance. Among them, the forest elephant stands out as a central player, a true engineer of the ecosystem.

They learned that elephants are the largest land mammals on the planet, capable of eating up to 150 kg of vegetation a day and drinking around 100 litres of water. Thanks to their movements, they open up paths in the forests, disperse seeds, create watering holes and even modify the landscape, making it richer for other species. This is why they are said to be essential to the health of their environment.

The young readers also discovered that the forest elephant, with its rounded ears and more discreet size, lives in dense tropical forests, particularly in Central Africa, as in the KahuziBiega National Park in the DRC. It lives in a troop, led by a matriarch, communicates through sounds, gestures and vibrations, and displays astonishing emotional capacities: it plays, remembers, and even mourns its dead.

But the children have also realised that these silent giants are in danger: poaching for ivory, habitat loss, conflict with humans and climate change are all threatening their survival. Fortunately, there are practical solutions: the creation of nature reserves, laws against the ivory trade, raising awareness in schools, and the use of artificial alternatives to ivory. This document invites children to open their eyes to the beauty, intelligence and vulnerability of elephants, but also to their own power to act:

- ✓ By talking about what they have learned around them,
- ✓ By respecting nature,
- ✓ And by becoming true ambassadors for biodiversity.

Because protecting elephants is not just about saving a species. It's about preserving a balance, protecting a habitat, and ensuring a better future for the whole planet... including us humans.

THANKS

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Our thanks also go to the authors' affiliated institutions for their logistical and academic support, and to all those who contributed in any way to the success of this work.

AN EDUCATIONAL BOOK TO RAISE AWARENESS OF BIODIVERSITY AND THE PROTECTION OF ELEPHANTS