Word Count: 995 (Not including the after note/epilogue)
Topic: I am an endangered species and humans are tracking me using eDNA.

Hunted: A Pangolin's Story

By Grace.H

"YES!" Morren Vonnner was a myth in the area, a mad scientist that children only whispered about, but here he stood, yelling in the small library. "THAT'S IT!" People shuffled away from the strange sight, a man of Vietnamese origin holding a withered book, lab coat sleeves flying everywhere, a sardonic grin on his face. "None of you understand! This could make me billions! If I use eDNA to track pangolins and sell their scales, I could have more money than *anyone* else! But first, I need a book or two, one on pangolins, a few on eDNA, and gel electrophoresis, labs, money, black markets, poachers, pangolin scales, hiring random people, weapons..." Morren continued to list off books as Miss Finch (the librarian) slapped her forehead, *What did I do to deserve this???*

Two Years Later…

"Did you catch any?!"
"Y-yes, I- we, did…" The short man trembled before the lean figure of Morren Vonner. Outside birds chirped noisily, reminding the men that they were situated in a hidden lab deep inside the Philippine jungle.
"How many?!" Morren practically growled,
"F-f-f-, Five sir…" At this, Morren's face turned into one of pure astonishment, he hadn't even dared to hope that the hired men would catch even one pangolin, let alone five! *It's working! I can sell these for...who knows how much!*
"Good work, now get the lab workers and tell them to double their pace!"
"Umm, well Sir, I have some m- more information…"
"Hmm?" Moren said, continuing when the small man failed to reply, "Yes?! What is it?!"
"S- sorry sir, um, er, well there is one pangolin we found that, er, eluded us sir…" Moren looked at him curiously,
"Eluded you?"
"Yes, well sir, we can't be completely sure but it, er, had t- t- tail spikes, sir!"
"Tail spikes?"
"Yes, er, well as I said, we can't be sure but…" Moren nodded thoughtfully,
"Do you, by any chance, have a DNA sample from this, 'tail spike', pangolin?" Hastily, the short man rummage through his pockets, finally pulling out a large, dusty-brown scale,
"H- here, this is a scale from the pangolin, it fell off while we were chasing it, sir,"
"Perfect," Moren purred, "*I* have a plan…"

Two burly men, in casual but mud stained clothes, entered with an escort of three lab workers in pristine lab coats.
"Now, this is the lab, it is where we take the eDNA samples and put them through one of these," One of the scientists explained, holding up a gel electrophoresis kit.

“We put in the DNA collected from this scale and eDNA from other pangolins into this and compare it, ” The second scientist elaborated,
“With this lab, we can find *exactly* which pangolin we’re looking for! ” The final scientist added. The darker-haired large man nodded,
“That makes more sense than before, but how does all this tell us where to find the pangolin with the tail spikes?” The scientist who had spoken first clarified for him,
“Ah, yes, if an area has a lot of the, ‘tail spiked’, pangolin’s DNA, you can safely assume that the pangolin has been in the area, it's basically a form of tracking, but just super specific. But be warned, it will still be hard to track the pangolins down, due to the solitary nature of this species,”
“And that’s why I hired you two! I had heard of your tracking abilities and thought of it as a great opportunity,” Morren Vonner declared, entering the lab, “Now that you have all the information, go forth my pangolin poachers, go forth and find them for me!”

“Slowly, slowly, easy does it…”
“I’m trying, ok?!” Calix hissed, creeping up on the nest. It was a mound of mud and saliva mixed together to create a home for the tiny, delicious (In Calix’s opinion), termites. Rufus nodded slowly as his son reached the nest and stuck out his tongue, the sticky, pink surface catching the termites unaware. Now that he had started, Calix licked furiously, Rufus joining him on the left. The pangolins were scaly, four legged animals with long tails and cute snouts, those similar to an anteater's. They looked pretty average, except for Calix’s tail, or rather, the large spike-like scales protruding from it. The sunlight glinted off them, highlighting the sharp edges, sharp enough to draw blood. Rufus, himself having only slight signs of the tail spike mutation, stopped licking and peered through the trees…

“Aha! I see ‘em!” A deep voice half shouted, half whispered, “Come ‘ere pangolins, hereee, pangolin, pangolin,” Calix stared through the trees at the intruder, a beefy man with a dark hair and even darker clothes,
“Calix! Run for it! These people mean us harm!” Rufus started to move, winding through the trees without looking back, quickly, Calix followed,
“Where do we go?!” Calix yelled frantically, “Home?!”
“Just GO!” Rufus shouted back, running straight towards a small, crouched man. Calix gasped, a small sound, and saw Rufus curl into a ball, his scales overlapping each other to form a barrier. But Travis (the smaller man) just smirked and picked up the, now motionless, Rufus easily. Rushing forwards, Calix swung his tail at Travis, attempting to distract him, but he spikes sliced through skin as easily as a hot knife through butter, and blood welled in the wound as Travis yelled,
“HEY!” He swore and continued, “That, *thing*, attacked me!” The other man jogged up to the scene and gaped, his jaw swinging twenty feet below where it should be. Rufus had escaped and was quickly moving into the cover of a cluster of trees. Seeing a small hole, the pangolins dived in, rolling to a stop at the bottom. Soon the poachers passed their hiding spot, muttering to themselves about what, ‘the boss’ would do to them when he found out. Rufus noted Travis cradling his injured arm, but left the brooding Calix in peace, they were alive, and safe… For now…

Epilogue/After Note (200,000 years later…)

Many things caused the population of pangolins to evolve tail spikes, luck, a duplication event in the thread of DNA responsible for the scales at the base of the pangolins tails, the isolated lives of pangolins and poachers killing all pangolins without the protection (natural selection). Now, poachers don’t even try to fight pangolins, many say it really isn't worth it. But we can all agree (hopefully) that the slaughter of pangolins was wrong, and it should never, ever, happen again.

Appendix

Environmental DNA:
EDNA can be collected from a variety of things, including, but not limited to, water, soil and air samples. It is collected from the samples and ‘looked up’ to identify different animals. EDNA is used in real life to find out more about animals living in different ecosystems.

Evolution:
Think of evolution as two hourglasses, one for extinction, and one for speciation. Different factors can change the speed of the hourglasses, for an instance, if a tigers habitat was destroyed, eg: the trees were cut down, then the tigers extinction hourglass will go faster. But this could cause the local goat’s speciation clock to go faster if there was now more room for grass to grow and more space for it to roam, leading to the diversification and evolution of that goat species.

Natural Selection:
Natural Selection is about factors that lead to one variation of a species to go extinct, an example of this is: white peppered moths used to thrive due to the white bark and lichen of the trees, meaning that birds couldn’t see them as easily, so they survived. But once the industrial revolution happened the once white hiding places became dark. Luckily for the moth species, a mutation had already occurred in about 2% of these moths, giving them a darker pigmentation. This enabled the moths to continue on hiding on the trees, except for the moths that had already been spotted and eaten, of course.

Mutations:
There are multiple types of mutations but some more common ones are duplication events and point mutations. A duplication event is when a gene is duplicated during the gene creation of a baby animal, this duplicated gene can then have small mutations causing it to create an entirely new thing, used for a new purpose or for doing a better job at its former process. A point mutation is a small change in the genetic code of an animal, this is usually just a switch in the letters of a DNA strip, and is fairly common.

Gel Electrophoresis:

Gel Electrophoresis is a way to compare DNA strands with one another based on their size and electrical charge. This is achieved by placing the DNA pieces in small ‘wells’ in a certain type of gel (agarose) that is then electrically charged. DNA will move faster if it is more charged and small, and slower if it is less charged and large.By getting a person’s/animal’s DNA and comparing how fast it goes with the ‘suspects’ DNA, you can track a specific person/animal!

Bibliography

- Wild, Andrea, ***eDNA explained: unlocking nature's hidden biodiversity CSIRO*** (December 8, 2023)
- Philippine pangolin (Updated 9-3-2024) Philippine pangolin - https://en.wikipedia.org/wiki/Philippine_pangolinWikipedia (Accessed 8-5-2024, 2:40 PM)
- Pangolin - Mammal (Updated 14-3-2024) Pangolin | https://www.britannica.com/animal/pangolin (Accessed 8-5-2024, 2:55 PM)
- What is a pangolin? (N.D) What is a pangolin? | Stories | https://www.worldwildlife.org/stories/what-is-a-pangolin (Accessed 9-5-2024, 6:30 PM)
- How Evolution Works (And How We Figured It Out) (Updated 12-6-2019) https://www.youtube.com/watch?v=dyiZaHIRM6w&t=12 (Accessed 9-5-2024, 6:40 PM)
- Natural Selection - Crash Course Biology #14 (Updated 1-5-2012) https://www.youtube.com/watch?v=aTftyFboC_M (Accessed 9-5-2024, 6:50 PM)
- Part 1: How Does New Genetic Information Evolve? Point Mutations (Updated 8-9-2015) https://www.youtube.com/watch?v=DlhpvcgK_28 (Accessed 11-5-2024, 1:20 PM)
- Part 2: How Does New Genetic Information Evolve? Gene Duplications (Updated 11-3-2016) https://www.youtube.com/watch?v=G4VINRUe_o4 (Accessed 11-5-2024, 1:40 PM)
- Gel Electrophoresis (Updated 27-9-2017) https://www.youtube.com/watch?v=ZDZUAleWX78 (Accessed 17-6-2024 11:40 AM)

Acknowledgement

I would like to acknowledge Miss Cooper (My science teacher) for her help and support during the making of this story.