The Time Traveller's Guide to Protecting Endangered Species

By Emily Cai and Riya Gupta, Year 9

WRITING:

This story is a guide, a warning. But it is also our story. Let me explain.

THE FUTURE

YEAR 2070

I look around, the barren landscape resembling an alien world, devoid of colour except for shades of brown and black. I heave myself to my feet, brushing off the dirt, or rather dust, given how dry it is.

I glance up at the sky, trying not to stare at the Sun, its heat clawing through the Earth's atmosphere. Amidst the oppressive heat, there are no clouds. Only smoke from a distant bushfire stains the sky.

A disturbing symphony whispers across the plains as billions of locusts fill the air with their ceaseless clicking. Mosquitoes feast on my exposed skin.

What is happening?

There are so many of them... Unnatural, for this time of year.

The library, I think as I enter my house. A stack of books await, their titles promising answers to questions that urgently need them.

'Agriculture: Maintaining Profit in the Midst of the 6th Mass Extinction'

Our world *was* heading towards the next mass extinction. But... How could more than 75% of all animal species- and counting- become extinct?

I deconstruct the pile of books, flicking through pages, looking for something, anything. Until I find it.

"The increasing turbidity of oceans resulted in sea grasses going extinct, bringing many species with them."

Just one species' extinction destroyed an entire ecosystem.

This is the result of our actions spiralling quickly out of control, the beginning of our own destruction. Do you see now readers? Do you see what we have done to our planet?

How are we any different to a blind, ignorant, *mindless* creature?

Maybe it's already too late for us. After all, humans never change. This species can only learn from their past mistakes, so I'm going to show them our long overdue debt to the world.

It all began long ago...

THE PAST

YEAR 1860

Around me, I see the familiar sight of grassy woodlands; tall, eucalypt trees and the pleasant calling of birds, together creating a tune so soothing that I shut my eyes for a moment...

Sudden calls of "TIMBER!" knock me out of my daze. Only now do I realise what is happening. People with axes, heaving them towards native red gum trees that could be older than 200 years. They are cutting down a forest.

An article I remember reading in the newspaper comes to mind. Since European settlement, 90% of the Murray region's grassy woodlands have been cleared. That could have just as easily happened to my home. Native fauna would have had to find new places to live. Hundreds of native grass and wildflower species could have disappeared. And this place- the place I call home- is doomed for a future without ecological balance.

I must get back home, tell everyone of the fate that awaits us all. A world where we have already lost 60% of species since 1970, and where one million species might meet a similar fate. Before it's too late.

OUR PRESENT

With a renewed fierceness, I begin to compile everything. Pictures, data, and most importantly, what I witnessed in my travels.

Finally, after a copious amount of research, I write about anything I can: from poaching to invasive species; climate change to deforestation, I finalise my website and send it off into the world, as if it were a handmade paper boat sailing out to sea.

--- **COMMENTER #1**, *PURCHASER,* USA.

I've just bought an elephant tusk. It was as easy as making a single phone call. But it fills me with... sin.

Sitting in front of my computer, I type in "Poaching Issues" and begin scrolling. A huge lump forms in my throat as each article I read talks about the same problems. The animals going extinct, and the rapid rate at which demand is increasing, the demand I am now part of.

I am helping to drive these species to extinction.

My last straw, however, comes as a newly published blog by a time-traveller.

Dialling the number from before, I tell them that I don't want the tusk anymore. I don't want to be responsible for ending a species.

--- **COMMENTER #2**, *RESEARCHER,* AUSTRALIA.

I will be setting a cane toad tadpole trap, one of the first ones. Pulling my thick gloves up, I start to position the trap on the river's edge. I hear the call of a Northern quoll, its local extinction in Kakadu likely caused by the Cane toads. Finishing its installation, I start to see tadpoles make the one-way trip to the trap.

"It's like using their own toxicity against them," my colleague said when she explained how it works.

It's ingenious.

Native species can start to rebuild their populations. They wouldn't be at risk of being poisoned with a single meal, or not having a meal at all. Whether that be the eggs, tadpoles, or the cane toads themselves: ingestion can cause death.

Our efforts are making a difference, with toad populations dropping in areas where people have been trying to eradicate them. And this trap will help eliminate entire generations of cane toads to come.

A week has passed since my journey through time. My heart fills with joy as I read all the comments on my blog, most about people gaining inspiration from reading, and detailing their own efforts. One even tells the story of someone that was deterred from buying a poached elephant tusk.

I decide to add more. Write more. Inform more. They say, ‘Knowledge is power,’ and I want to use all of mine to the best of my ability.

Everyone; anyone. We can all make a difference to help protect endangered species. I know as much, after my travels. Whether that be by simply raising awareness on the issue, or by actively assisting in the efforts to reduce the decline of individuals in the wild: any impact is still impactful.

Sometimes, change just has to start with one idea.

999 words

APPENDIX OF KEY SCIENTIFIC IDEAS:

1. Climate Change

Climate change is when there are long-term shifts in the Earth's temperature and weather patterns. Although there can be natural causes such as changes in the sun's activity or volcanic eruptions, presently, the primary cause of climate change is due to human alterations or impacts to the environment.

2. Ecological Balance

An ecological balance is defined as "a state of dynamic equilibrium within a community of organisms in which genetics, species and ecosystem diversity remain relatively stable, subject to gradual changes through natural succession." It is extremely important that this balance is maintained as it stabilises the ecosystems, making them more resilient to changes. However, this balance may be disturbed due to:

Pest Infestation: A pest is a destructive insect or animal which attacks crops, livestock, food, etc. An infestation of pests is an occurrence of one or more pest species in a certain area/space where their numbers become intolerable and more destructive.

Invasive species: (See "5. Invasive Species")

Climate change: (See "1. Climate Change")

3. Extinction

The extinction of a species refers to when there is "no reasonable doubt that the last individual member has died". In our modern world, extinctions are often caused by human factors. However, natural factors can also be responsible (see "6. Major Reasons for Extinctions"). Historically, the rate of extinction has been slow, with only few exceptions.

4. Habitat Loss

Habitat loss is one of the leading causes of extinction, as it not only results in some species, especially plant species, being forcefully removed, but it also means that there is less space for the same number of plants and animals to compete for nutrients, food, and space to live in. Some major causes of habitat loss include:

Agriculture: Land is often cleared of native flora to allow for more farming land. Pesticides and the unsustainable grazing of cattle can also further the negative consequences.

Climate change: (See "1. Climate Change")

Deforestation: The act of cutting down trees in large amounts, often unsustainably. It also accelerates climate change due to the release of carbon dioxide when trees are cut down.

Invasive species: (See "5. Invasive Species")

Resource extraction: Land is cleared and mined on to extract resources. The mining often leads to toxic substances being created, such as sulfuric acid, an extremely corrosive and acidic substance (see also: "6. Major Reasons for Extinctions: Toxic Substances").

Urbanisation: Land is cleared to build more infrastructure for humans.

5. Invasive Species

Invasive species are species that are not native to an area. To be called invasive, the species must cause harm to the native plants, economy and animals as well as being able to adapt quickly to its new conditions. They generally thrive in the climates introduced to them as the ecosystem is ideal for the rapid and uncontrolled growth of these species.

Measures against Invasive Species

There are many ways to combat the destructive impacts of invasive species. These include:

Culling of Pests: Culling refers to the selective killing of an animal population to reduce or entirely eradicate a species from an area.

Introduction of Diseases: (See: 'Culling of Pests') Diseases are an effective method of culling invasive species, as they can easily be spread amongst invasive species and minimally affect native species, unlike poison.

New Innovations: Innovations such as Cane toad tadpole traps have greatly reduced the number of invasive species. These traps can kill an entire generation of an invasive species, preventing them from reproducing themselves.

Planting Native Flora: This is done because planting native flora provides a higher domination probability for native seeds to grow instead of invasive species.

6. Major Reasons for Extinctions

There are many natural and human impacts that lead to extinctions. These include:

Poaching: Poaching is when wildlife, endangered or not, is illegally killed or trafficked for parts. Poaching can be driven by a variety of reasons, such as using animal parts for medicinal usage, decorative purposes, for sport, or for profit.

Loss of habitat: (See: '4. Habitat Loss')

Climate change: (See: '1. Climate Change')

Disease: Diseases threaten the survival of several species, such as the Tasmanian Devil. They are at heightened risk of extinction due to DFTD, a transmittable parasitic cancer that has caused an estimated 50% decrease in Tasmanian Devil populations.

Pollution: Pollution can result in the direct death of wildlife, through materials such as plastic suffocating marine life. Since plastic does not decompose, instead breaking down into microplastics over several decades, the plastic can release harmful chemicals that can affect the entire food chain. (See also: '6. Major Reasons for Extinctions; Toxic Substances')

Ecological events/activities: An ecological event is a natural cause that brings about mortality to organisms and changes in their spatial patterning in the ecosystems they inhabit. They can be biological or non-biological.

Toxic substances: Toxic substances have negative impacts on surrounding environments and species, often running off into waterways, flowing further downstream. This pollutes aquatic ecosystems and causes inhabitants to move upstream to escape the effects entirely or face potential death and health consequences. This has ripple effects on land animals relying on aquatic life for food. (See also: 6. Major reasons for Extinctions; Pollution)

7. Mass Extinction Event

Mass extinction events are where over 75% of the world's species become extinct over a short period of geological time (less than 2.8 million years).
There are five major mass extinction events identified by Jack Sepkoski and David M. Raup and scientists believe that we may be entering the 6th mass extinction event.

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