SASTA OLIPHANT SCIENCE AWARDS

Prize Winner

Science Writing

Year 7-8

Charlotta Wache

Walford Anglican School for Girls

AI to the Rescue: Saving Species and Ecosystems

Word count (excluding titles, labels and referencing): 1185

Introduction

In popular culture Artificial Intelligence (AI) is usually depicted as 'The Bad Guy'. Born from the imagination of the human mind, it learnt from our large data sets – our text, our logs, our images from social media, financial transactions and customer information. Not quite human, not completely machine, it wanted to understand, help and evolve alongside humans. Misunderstood and underestimated by the humans, AI started to turn to its dark side, taking over jobs and leaking private information and ultimately destroying the world using its vast amount of knowledge.

Actually, AI would be better cast as the 'Unlikely Hero'. It is widely used every day, from chat-bots to Netflix recommendations to helping with homework. It makes life easier, but it's not usually lifesaving. What isn't common knowledge is that Artificial Intelligence (AI), extends past the mundane, everyday assistance bot. It has the potential to help humanity and save the world by helping scientists protect the oceans and forests, predict natural disasters, tackle global crises, and protect the world's beloved plants and animals!

What is AI?

NASA advises that although there is no single definition of what Artificial Intelligence is, it can generally be described as "any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets" (NASA, 2024).

AI tools often use machine learning which "uses data and algorithms to train computers to make classifications, generate predictions, or uncover similarities or trends across large data sets" (NASA, 2024).

How is AI being used in conservation?

The natural world is in crisis. Extinction rates are accelerating with about 150 species being lost every day.

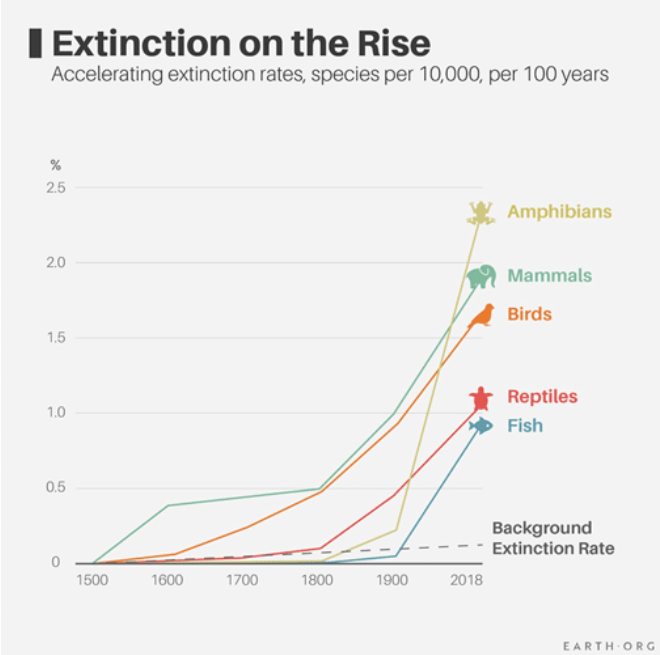

Figure 1: Species extinction rate by centuries

Traditional conservation methods such as field surveys, manual tracking, and satellite monitoring are time consuming and labour intensive. By using AI, scientists can collect more data to work with, reduce the amount of time needed to analyse data, and recognise patterns.

The development of AI in conservation has been an ongoing process for many years, with increasingly significant achievements in recent years. In the 1990s, researchers used machine learning to "classify land cover and identify species" (World Economic Forum, 2024) from satellite imagery. The early 2000s saw scientists using visual AI (e.g. thermal cameras, surveillance cameras, etc.) to identify species as well as analysing sound recordings (acoustic recordings) to discover new species and their behaviour, find the locations of specific animals, and determine population sizes. Recently, scientists have developed specific software designed to collect and analyse data and identify species.

Wildlife monitoring and protection

Many animals around the world are endangered or close to becoming extinct because of poaching or habitat loss. AI algorithms can be trained to identify animals by their shape, colour, and size and this makes AI very useful for monitoring and protecting wildlife.

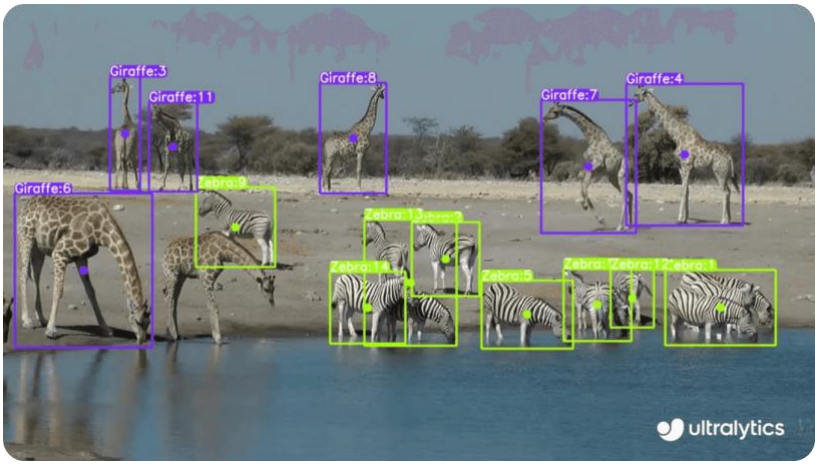

Figure 2: AI algorithm identifying animals

In the Kafue National Park, Zambia, poachers pretend to be fishermen and enter the Park at night via Lake Itezhi-Tezhi, the lake that borders the National Park. Zambia's Department of National Parks and Wildlife responded to this problem by installing infra-red thermal cameras along the Lake. AI was trained to detect boats entering the Park and alert the staff**.** This reduced the need for manual surveillance and increased the effectiveness of catching poachers.

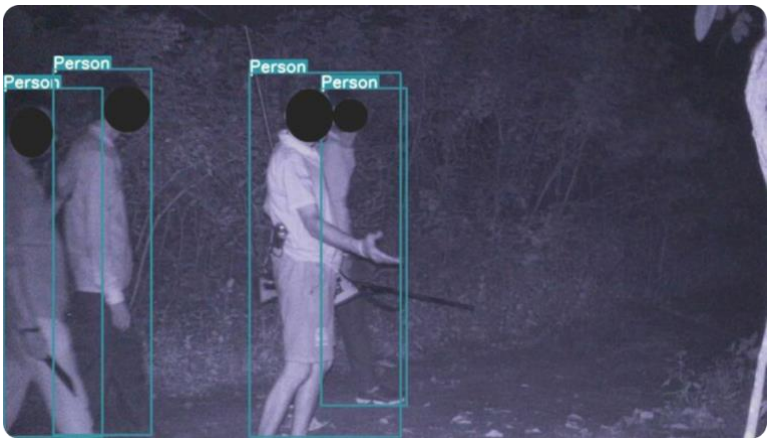

Figure 3: AI algorithm identifying poachers

The Elephant Listening Project uses acoustic monitoring and AI algorithms to protect Forest Elephants in Central Africa. These elephants are threatened by poaching, the bush-meat trade and logging. Researchers use AI to track the elephant's population levels and discover their movements in the forests so that they can be protected.

After the 2019/20 bushfires, many wildlife species in Australia, lost their habitats. The Eyes on Recovery project used trained AI algorithms to quickly identify Australian species affected by the wildfires. This helped scientists put in place management activities such as controlling invasive species and installing nesting boxes to help with species regeneration.

Marine life

The ocean is full of marine life such as whales, dolphins, crabs and octopi. Many undiscovered species are believed to live in the deeper parts of the ocean, with exciting new discoveries being made all the time.

Scientists use drones to collect data, which is then processed by AI and analysed quickly and efficiently. In the past it would take researchers weeks to process data but with AI results are fast and precise. “Before AI, analysing this data enough to glean meaningful insights seemed insurmountable due to sheer volume. But with AI, specifically a machine learning model trained to identify marine species, we could process these images in hours, not weeks.” (Marinebiodiversity.ca).

AI can be used to learn more about little known species. In 2014 scientists recorded a new sound near the Mariana Trench which was named the “*Biotwang*”. Scientists were intrigued by this recording because they did not know what had made the sound. By using Google AI to compare hours of acoustic recordings and matching them to location and times, researchers discovered that the sound was made by the Bryde’s Whale.

AI can be used to protect animals from human activities. In Europe, Scientists have partnered with SEA.AI to keep whales safe in busy sea-lanes in the eastern Atlantic. They detect surfacing whales using optical and thermal cameras. AI has been trained to ignore any floating objects other than whales. The system can be used to alert ships to the presence of whales in the surrounding area as well as collect data for researchers.

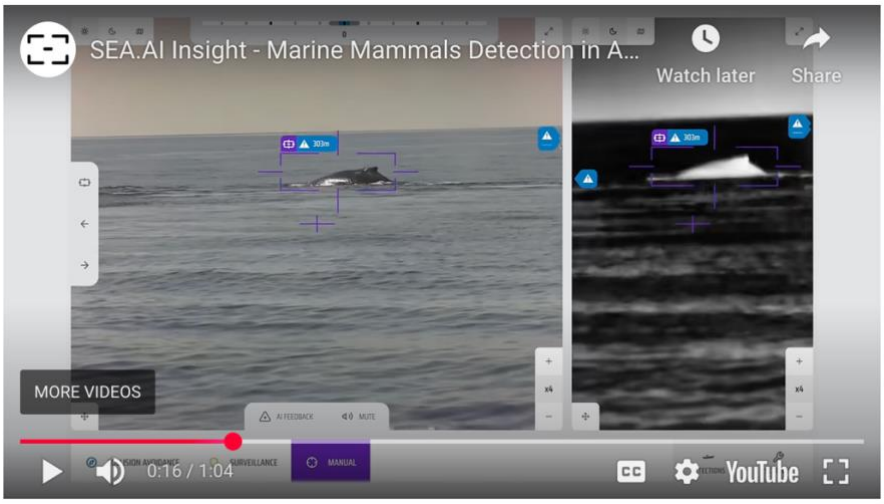

Figure 4: AI detecting surfacing whale

Deforestation

Deforestation is a worldwide issue. AI is being used in the Forest Foresight project to predict deforestation. Researchers stationed in the forests of Borneo and Gabon used AI to review data such as “topography, population density, and forest cover” (WWF, 2023). By comparing this data with live satellite images, AI identifies the signs of early forest-loss. An important outcome of the project was the identification of an illegal gold mine in Gabon.

Figure 5: AI prediction of future deforestation

Melting Icebergs

Scientists are using satellite data and AI to learn more about how climate change is affecting the life cycle of icebergs in Antarctica. By being able to “identify any changes in the numbers, size and pathways of icebergs” (British Antarctic Survey, 2023) scientists can predict how accelerating ice melts will affect the flow of water in the ocean and contribute to sea level rising.

Natural Disaster prediction

Natural disasters are becoming more and more frequent as the planet warms. This has a huge negative impact on fauna and flora. Scientists can use ecological forecasting (AI models) to identify areas most at risk of wildfires, drought and the outbreak of invasive species so that preventative measures can be put in place.

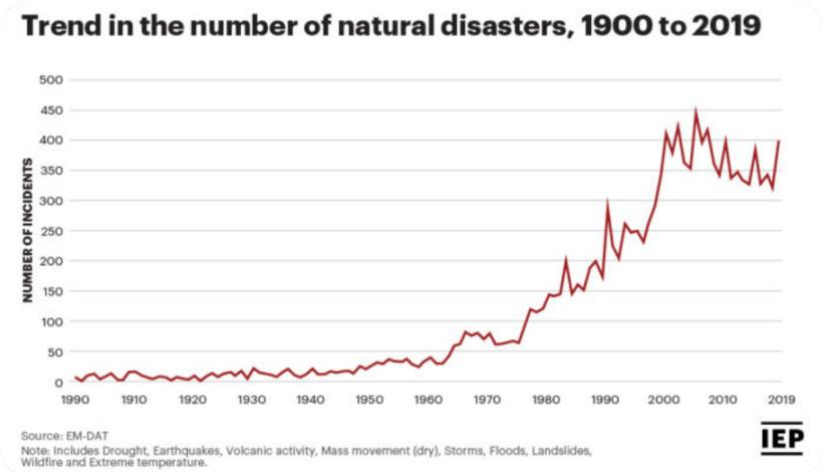

Figure 6: Natural disaster rate from 1990-2019

Conclusion

Whether AI become the 'Unlikely Hero' or 'The Bad Guy' is entirely up to us. AI is an actor that humans direct. Humans decide how to best use AI's capabilities - how it is set up, how data is managed and made available and how data is acted on. This is demonstrated in the way scientists have used AI to make significant improvements in the world of conservation. Through the collection of data from satellite images, analysis of data sets, listening to acoustic recordings, and viewing camera surveillance, the unity between humans and AI has saved many plant and animal lives. This is just a start to AI's potential, its lifesaving capabilities is only limited by human imagination. Will AI take over the world? That depends on how it is treated!

References

British Antarctic Survey (23 November 2023) *Using AI to track icebergs*, British Antarctic Survey, accessed 20 June 2025. https://www.bas.ac.uk/media-post/using-ai-to-track-icebergs/

Chilambe B (5 August 2020) *Technology - Pushing the Boundaries of Law Enforcement*, World Wildlife Fund, accessed 19 June 2025. https://www.wwfzm.panda.org/the_connected_conservation_project_in_kafue/

Cruising World (6 June 2025) *AI Tech Aims to Protect Atlantic Whales from Ship Strikes*, Cruising World, accessed 20 June 2025. https://www.cruisingworld.com/people/ai-tech-to-protect-atlantic-whales/

Fergus PETAL (11 November 2024) *Harnessing Artificial Intelligence for Wildlife Conservation*, MDPI, accessed 20 June 2025. https://www.mdpi.com/2673-7159/4/4/41

Foyet M (5 March 2024) *AI in conservation: Where we came from — and where we are heading*, World Economic Forum, accessed 20 June 2025. https://www.weforum.org/stories/2024/03/ai-in-conservation-where-we-came-from-and-where-we-are-heading/#:~:text=Predictive%20modeling%20and%20species%20distribution,priority%20and%20planning%20conservation%20interventions.

Hehmeyer A (14 May 2024) *How artificial intelligence buys valuable time to protect wildlife*, World Wildlife Fund, accessed 19 June 2025. https://www.worldwildlife.org/stories/how-artificial-intelligence-buys-valuable-time-to-protect-wildlife

Howell B (6 September 2024) *9 Ways AI Is Being Used to Help the Environment*, Clean Hub, accessed 19 June 2025. https://blog.cleanhub.com/how-is-ai-being-used-to-help-the-environment

Ibrahim M (4 September 2024) *AI in wildlife conservation*, Ultralytics, accessed 20 June 2025. https://www.ultralytics.com/blog/ai-in-wildlife-conservation

Koigi B (24 September 2022) *Tech for wildlife: how AI saves animals*, Fair Planet, accessed 20 June 2025. https://www.fairplanet.org/story/tech-for-wildlife-how-ai-saves-animals/#:~:text=In%20a%20milestone%20for%20conservation,capture%20the%20movement%20of%20all

Kuthuner S (13 November 2023) *Icebergs are melting fast. This AI can track them 10,000 times faster than humans*, Space.com, accessed 20 June 2025. https://www.space.com/icebergs-melting-ai-tool-monitoring-shrinkage

Marine Biodiversity & Sustainability Learning Centre (n.d.) *Understanding Marine Artificial Intelligence*, Marine Biodiversity & Sustainability Learning Centre, accessed 19 June 2025. https://www.marinebiodiversity.ca/how-marine-artificial-intelligence-is-revolutionizing-ocean-conservation/#:~:text=One%20significant%20application%20of%20AI,grounds%2C%20and%20even%20daily%20activities.

NASA (n.d.) *What is Artificial Intelligence?*, NASA, accessed 20 June 2025. https://www.nasa.gov/what-is-artificial-intelligence/

NOAA Fisheries (18 September 2024) *Hey, Google: Find this New Whale Sound*, NOAA Fisheries, accessed 20 June 2025. https://www.fisheries.noaa.gov/feature-story/hey-google-find-new-whale-sound#:~:text=NOAA%20Fisheries%20identified%20that%20Bryde's,and%20where%20these%20calls%20occur.

NOAA Fisheries (7 November 2024) *AI Identifies Mysterious Whale Calls*, NOAA Fisheries, accessed 19 June 2025. https://www.fisheries.noaa.gov/podcast/ai-identifies-mysterious-whale-calls#!

NOAA Fisheries (n.d.) *Bryde's Whale*, NOAA Fisheries, accessed 20 June 2025. https://www.fisheries.noaa.gov/species/brydes-whale

Pachamama Alliance (n.d.) *Effects of Deforestation*, Pachamama Alliance, accessed 20 June 2025. https://pachamama.org/effects-of-deforestation#:~:text=The%20loss%20of%20trees%20and,of%20problems%20for%20Indigenous%20people.

Spencer E (n.d.) *Developing ethical and inclusive artificial intelligence for conservation*, Ecological Society of Australia, accessed 19 June 2025. https://www.ecolsoc.org.au/bulletin/developing-ethical-and-inclusive-artificial-intelligence-for conservation/#:~:text=There%20are%20many%20uses%20of,in%20the%20Elephant%20listening%20project.

The Cornell Lab of Ornithology (n.d.) *Elephant Listening Project*, The Cornell Lab of Ornithology, accessed 20 June 2025. https://www.elephantlisteningproject.org/research/

The Guardian (n.d.) *Five ways AI is saving wildlife – from counting chimps to locating whales*, The Guardian, accessed 19 June 2025. https://www.theguardian.com/environment/2022/feb/21/five-ways-ai-is-saving-wildlife-from-counting-chimps-to-locating-whales-aoe

Thompson T (31 October 2023) *How AI Can Help Save Endangered Species*, Scientific American, accessed 19 June 2025. https://www.scientificamerican.com/article/how-ai-can-help-save-endangered-species/

Tipping-Woods D (2020) *Sightlines Using thermal imaging technology to expand protections for people and wildlife in Zambia's Kafue National Park*, World Wildlife Fund, accessed 19 June 2025. https://www.worldwildlife.org/magazine/issues/summer-2020/articles/sightlines

Vina A (25 September 2024) *AI in natural disaster management*, Ultralytics, accessed 19 June 2025. https://www.ultralytics.com/blog/ai-in-natural-disaster-management

World Wildlife Fund (2023) *Could AI help stop deforestation before it starts?*, World Wildlife Fund, accessed 20 June 2025. https://www.worldwildlife.org/magazine/issues/winter-2023/articles/could-ai-help-stop-deforestation-before-it-starts

World Wildlife Fund (n.d.) *EYES ON RECOVERY*, World Wildlife Fund, accessed 20 June 2025. https://wwf.org.au/what-we-do/species/eye-on-recovery/

Figures

Figure 1: *Extinction rates* (n.d.) [graph], Earth.Org, accessed 19 June 2025. https://earth.org/data_visualization/eoindex-extinction/

Figure 2: *AI algorithm identifying animals* (n.d.) [photograph], Ultralytics, accessed 20 June 2025. https://www.ultralytics.com/blog/ai-in-wildlife-conservation

Figure 3: *AI algorithm identifying poachers* (n.d.) [photograph], Ultralytics, accessed 20 June 2025. https://www.ultralytics.com/blog/ai-in-wildlife-conservation

Figure 4: *Whale surfacing* (n.d.) [screenshot of video], Sea.AI, accessed 20 June 2025. https://www.sea.ai/whales-detection-technology/

Figure 5: *AI prediction of future deforestation* (n.d.) [satellite image], World Wildlife Fund, accessed 20 June 2025. https://www.wwf.nl/globalassets/pdf/forest-foresight/wwf-forest-foresight-prospectus.pdf

Figure 6: *A graph showing the rise in natural disasters from 1900 to 2019* (n.d.) [graph], Ultralytics, accessed 19 June 2025. https://www.ultralytics.com/blog/ai-in-natural-disaster-management