



## Understanding the fragility of the fynbos in the Cape's biodiverse ecosystem

This is the fourth of five study articles on Biodiversity written by Annabel Ryder for Thrive's 2019 inter-schools Enviro Quiz and Art Competition, which will take place on Friday September 6<sup>th</sup> at Kronendal Primary School, Hout Bay. All primary and high schools are invited to register to participate by emailing [enviroquizart@thrive.org.za](mailto:enviroquizart@thrive.org.za). Entry is free.



Last month's article explored the concept of **trophic cascades** where the imbalance of a key apex predator can impact the health of the entire ecosystem, not just in relation to the food chain but also given the behaviours and other "services" the predator brings to its environment. And we discussed how "**rewilding**" has helped restore the balance in places such as USA's Yellowstone National Park. So how does any of this relate to you, here in Cape Town, and why should you care?

Please see Sentinel Article link:

<https://www.sentinelnews.co.za/news/save-threatened-species-from-extinction-29490339>

Well, Cape Town is the **most biodiversity rich city** in the world! Situated in the heart of the Cape Floral Kingdom, which is the smallest of only six floral kingdoms on earth and yet the one with the **highest density of plant species**, Cape Town is a **global biodiversity hotspot**. Many species that occur in Cape Town – in your "hood" – are **found only here and occur nowhere else on earth**. The scientific term for this is "**endemic**". A sixth of South Africa's flowering plants grow in Cape Town – over 3 000 species. This is a remarkable figure considering that the city covers less than 0.1% of the country's surface area. Cape Town has some 19 major vegetation types, of which 11 belong to the highest threat class, i.e. "critically endangered" on the IUCN Red List and are at an extremely high risk of becoming extinct in the wild. So whilst millions of people come every year to see the incredible flora and fauna of Cape Town and to enjoy its beautiful surrounds, we need to be consciously protecting this biodiversity if it is to remain intact, in future years. As Cape Town is home to over 50% of South Africa's most threatened ecosystems as well as 318 threatened plant species, it is ironically also known as one of the **earth's mega-disaster areas** – areas that are on the verge of losing a significant part of their biodiversity. Only by saving these ecosystems can we save these threatened species from becoming extinct, and we are all only too aware of the pressures population growth places on local areas.

In higher biodiverse areas, there are more individual parts or species and there are more of nature's "experiments" taking place all the time, which makes the area more resilient to threats, such as drought and climate change. Cape Town has known and experienced severe drought often, the most recent being last year, and the very real need to protect our biodiversity is increasing all the time. Hopefully, we've all heard about the damage to and deforestation of the rainforests - the lungs of the earth along the equatorial corridors of the Americas, Africa and Asia – through the extension of monoculture agriculture such as palm oil which is used in the manufacturer of shampoo, food, snacks, cosmetics and as cooking oil.

Watch <https://www.youtube.com/watch?v=JdpspllWI2o> and <https://www.youtube.com/watch?v=0Lev1mnonUM>

So, perhaps think of Cape Town's indigenous fynbos along the length of the Cape Peninsula's mountain chain to be our very own special and unique "rainforest", the destruction of which will have devastating consequences for creatures large and small, from Western Leopard toads to tortoises, civets, caracals and Cape Mountain Leopard, and cause the collapse of many ecosystems. With reduced biodiversity, this will impact us all. The Cape Honey Bee is the **most endangered bee species in the world**, and plays a vital role in our Western Cape Province's agriculture and the economy by pollinating crops and producing honey in the Western Cape region. No bees means no crops, which means no exports of our grapes, wines and citrus to name a few, and no jobs. It also means no food. Biodiversity is the foundation for a **healthy planet and healthy people**, and well managed natural areas offer sustainable harvesting, as well as recreational and educational nature-based tourism opportunities and hence biodiversity assists in job creation.

**Thrive 2019 | Study Article 4:  
Biodiversity | Publication Friday July 20<sup>th</sup>**

**Invasive aliens** are plants that have been introduced to an area (and did not occur there naturally), and that quickly establish themselves. They multiply and affect indigenous species, often crowding them out or stealing precious water and mineral resources. Invasives have no natural pests and parasites to control them, and these invasive alien species pose significant threats to human livelihoods, economic development and biodiversity. Dense alien vegetation can also provide plenty of fuel for veld fires, making them exceptionally hot, which damages the burnt area's soil structure.

Fynbos is particularly susceptible to invasion by alien trees, mostly Australian Acacia, Hakea and Eucalyptus, and pines from the Northern Hemisphere. The Department of Environmental Affairs' Working for Water Program is key to managing the spread of such aliens. The Early Detection and Rapid Response program (EDRR) asks individuals to report sightings of any listed alien species (full list on [www.plantZAfrica.com](http://www.plantZAfrica.com)), with details of the exact locality and/or GPS coordinates as well as photographs. Further, people are asked NOT to dig up, remove or break off any part of the plant, as these simple actions alone can trigger the reproductive spreading of the alien species, such as the Formosa Lily, Rooikrans, Black Wattle and Port Jackson. Cape Nature also have an extensive alien-vegetation removal program, training up people from local disadvantaged communities in plant identification, chainsaw use, health and safety, herbicide use, personal finance, nutrition, drug awareness, site management, educating peers, and field safety / survival, thereby also creating jobs in these local communities. You can read more about Cape Nature's efforts here <https://www.capenature.co.za/care-for-nature/conservation-in-action/integrated-catchment-management/alien-vegetation-management/>.

Remember Biodiversity offers many "invisible" services to humankind – like the filtering of run-off water and air pollution; replenishment of groundwater; climate change mitigation and adaptation – as well as more 'visible' benefits such as sustainable livelihoods; harvesting of materials for example, for thatch, fish, flowers, rooibos tea and many others; job creation for tourism, agriculture, harvesting, fishing and alien vegetation clearance programs. The main cause of species extinction is human destruction of natural habitats, and secondary threats such as water and air pollution, invasive species and habitat alteration are usually the result of too much human activity.

*"The single biggest threat to the city's biodiversity is without doubt, the increasing demands for residential land and services by a burgeoning urban population. It is therefore imperative, that our urban nature reserves continue to be relevant to surrounding communities. Because without their support, our natural spaces will surely disappear under rapidly expanding informal settlements or will face repeated threats of land invasions. So urban conservation today cannot only be about the protection of our biodiversity assets. We have to continue to develop the social values of all our nature areas and make them more accessible, relevant and desirable to neighbouring communities, so that they become the first line of defence to secure these precious resources,"* says Howard Langley in the CoCT Biodiversity Report 2018.

So, to restore the balance, we all individually and collectively need to "give back" to nature, in return for all that nature gives us. One of the immediate, everyday actions that will make a big difference to biodiversity, is to make sure we do not litter (rubbish or cigarette stubs, or to dump illegally), and to recycle items to divert them out of the waste stream, keeping plastic and oil away from these highly fragile and vulnerable trophic cascades. There is no quick "silver bullet" but if everybody takes small steps and changes Just One Thing, then Cape Town will be well on its way to conserving and caring for its indigenous biodiversity. The next and final study article will share more ideas as to what you can do to protect your local Biodiversity both at home, at school and in your local neighbourhood. In the meantime, you can enjoy the story of The Lorax by Dr Seuss <https://www.youtube.com/watch?v=EdWesdMfyd4>.



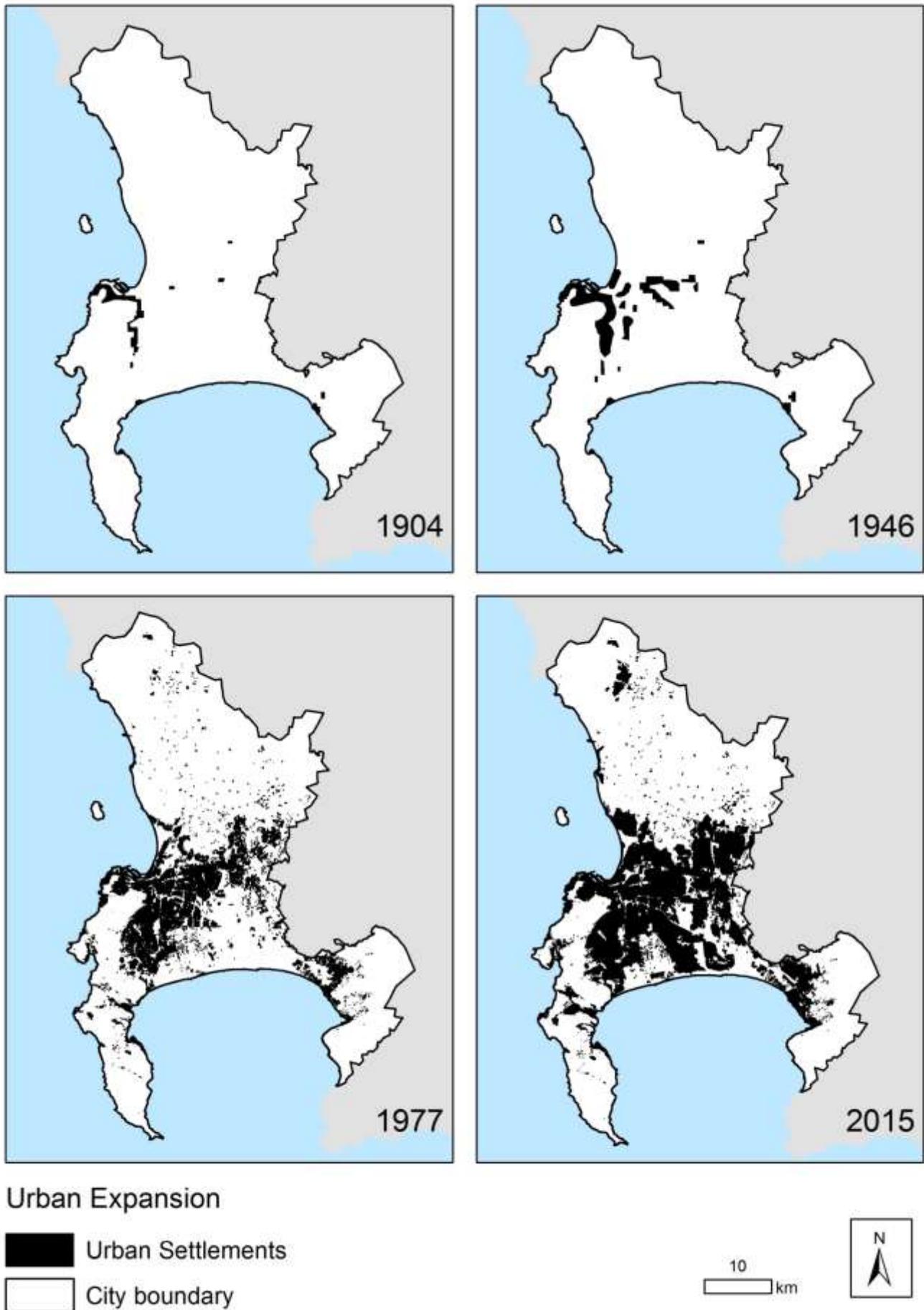
King Protea, (*Protea cynaroides*), South African national flower



Red Disa (*Disa uniflora*), Western Cape emblem



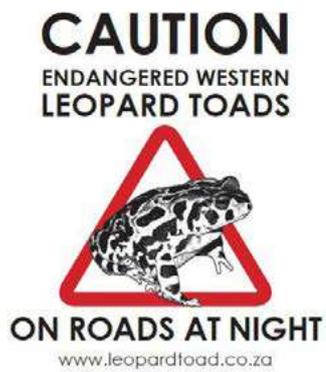
**Geometric Tortoise (*Psammobates geometricus*)**



Urban expansion in Cape Town 1904 to 2015



Expanded Public Works Program (EPWP) clearing invasive alien Acacia



Western Leopard Toads warning side



The City of Cape Town nestled amidst its rich biodiverse heritage

## **QUESTIONS**

1. Which city is the most biodiversity rich city in the world??
2. A species found only in one place and occurring nowhere else on earth is referred to as a?
3. Cape Town has what proportion of all the plants in South Africa?
4. Name 3 things that are made using palm oil.
5. Name 3 species whose habitats are severely under threat
6. Name 3 invasive alien species
7. What does the Early Detection and Rapid Response program (EDRR) asks individuals to do on spotting an invasive alien?
8. Name 3 benefits of biodiversity in Cape Town.
9. What is the number one cause of species extinction?
10. What is the one simple, immediate, and everyday action that will make a big difference to biodiversity?

## **ANSWERS**

1. Cape Town
2. An endemic species
3. One sixth (that's about 16% vs 0.1% of SA's land area)
4. Shampoo, food, snacks, cosmetics, cooking oil
5. Western Leopard toads to tortoises, civets, caracals and Cape Mountain Leopard, Cape Honey Bee
6. Australian Acacia, Hakea and Eucalyptus, Pines, Formosa Lily, Rooikrans, Black Wattle and Port Jackson
7. To provide exact locality and/or GPS coordinates as well as photographs. People are asked NOT to dig up, remove or break off any part of the plant, as this can actually spread the plant and not kill it.
8. Filtering of run-off water and air pollution; replenishment of groundwater; climate change mitigation and adaptation; allowing sustainable livelihoods; harvesting of materials for e.g. thatch, fish, flowers, rooibos tea etc.; and job creation for tourism, agriculture, harvesting, fishing and alien vegetation clearance programs
9. The main cause of species extinction is human destruction of natural habitats, and secondary threats such as water & air pollution, invasive species and habitat alteration are usually the result of too much human activity!
10. To not litter (rubbish or cigarette stubs, or to dump illegally), and to recycle items to divert them out of the waste stream, keeping e.g. plastic and oil away from these highly fragile and vulnerable trophic cascades.