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## **Invasive species in South Africa: Their threaten to communities and biodiversity**

*By Robert Owen, Geosphere / Community Conservation Resilience Initiative- South Africa*

South Africa, as with much of the world, is facing an enormous social and biodiversity issue. The problem of invasive alien flora and fauna is a global concern that has increased over the years, and has wide-reaching impacts. In South Africa, invasive alien plants (IAP) are a major threat to native biodiversity, as it often outcompetes indigenous plants and have limited natural predation. Invasive trees are also some of the heaviest users of water, and in a semi-arid country, these impacts are felt by communities and natural systems. It is estimated that invasive vegetation reduces South Africa's surface water runoff by 7%, and if left uncontrolled this number will grow drastically. With the uncertain impacts of climate change, such a large usage of water is concerning.

The degradation on natural ecosystems by IAP lead to less water, which also reduces the quality of drinking water to communities. The Inkomati-Usuthi catchment management agency found that *E. coli* counts in Sabi-Sand River catchment has increased as a direct result of less water, caused by industrial timber plantations which consist of invasive pine and eucalyptus trees. Traditional Health Practitioners are also severely impacted by IAP as their practice depends on natural areas, which are now often infested with invasive plants. Grazing capacity of grassland are also negatively impacted, where certain alien plants often leave entire tracts of land unusable. In communities where cattle grazing forms the backbone of their existence, this problem cannot be ignored and will only increase over time.

South African communities and government have been investing a lot of time and resources into combating the problem over the last 20 odd years. This collaboration is needed as addressing the problem is extremely labour and resource intensive. The Working for Water Program (WfW) employs and educates thousands of unemployed South Africans in the correct procedures on removing and following up on the problem of IAP. Progress is being made, but slowly, and unfortunately it is something we will have to persist with for many years to come.

There is hope, as a lot of the established invasive alien plants can potentially be used to unlock value-added services and serve as a potential income source for communities in their efforts to remove and manage it. Plants such as *Lantana camara*, a devastating invasive plant that is poisonous to livestock, and that grows prolifically throughout South Africa, can be steam distilled to provide a highly medicinal essential oil. This is the same with invasive trees such as the Pine and Eucalyptus species. Woody invaders are also being used as biomass for cooking and heat. With thorough research and dedicated programs, it is possible to remove IAP and find alternative uses for the biomass.

The problem is major, and with lack of management will only increase. But communities and government are fighting together to reduce the impacts. Globally it is important to educate people on these impacts, and on responsible management of invasive flora and fauna. Only through working together and on a larger landscape scale can we truly eradicate, reduce and manage the spread of invasive species.

## **The problems with Target Malaria's Mosquito Gene Drive in Burkina Faso**

Target Malaria, a consortium that receives its core funding from the [Bill and Melinda Gates Foundation](#) and from the [Open Philanthropy Project](#) (funded largely by Facebook co-founder Dustin Moskovitz) is proposing to use gene drives to engineer the genetics of the malaria-transmitting *Anopheles gambiae* species by a single release of an organism with engineered genes.

The Gene Drive Files, a trove of emails and records discovered by civil society organizations and released in December 2017, [revealed](#) that the US Military took the lead in pushing forward research on gene drives. This in itself should raise alarm bells, but there are many other reasons to be wary of gene drives. Scientists have [warned](#) that there are dangers in the unintended consequences of altering one part of a complex ecosystem – a decrease in one species for instance often leads to an increase in or alternatively, a gene drive could spread between species causing potentially devastating effects. Edward Blumenthal, the Chair of Biological Sciences at Marquette University noted that the *anopheles* mosquito could develop a mutation (a phenomena known as gene drive resistance is already

being noted). Researchers have also warned that “a gene drive would be remarkably aggressive: and could give rise to invasive species, making real world experiments “extremely risky.”

On June 2 2018, farmers and peasants gathered in Ouagadougou, Burkina Faso, to protest Target Malaria's genetically modified mosquitoes. They want the risks of GM technologies to be properly evaluated and a moratorium on gene drives put in place in the meantime. The group COPAGEN (Collective pour la protection du patrimoine génétique Africain), has criticized Target Malaria's use of Burkina Faso for its experiments saying that “Burkinabes are being used like guinea pigs” and has appealed to the National Centre for Biosecurity not to authorize the release of the mosquitoes. Burkina Faso's biosafety regulation does not have specific guidance for conducting risk assessment for GM mosquitoes, and it is unclear what kind of public consultation is required.

It is noteworthy that Paraguay, and before that, Sri Lanka, eliminated malaria entirely and the WHO has said that Algeria, Argentina and Uzbekistan could be malaria-free later this year. None of these successes required gene drives. Far more can be done if millions of dollars were instead invested in strengthening public healthcare systems in West Africa.

## Digital Sequence Information: The Earth BioGenome Project and the Earth Bank of Codes

*Lili Fuhr, Heinrich Boell Foundation*

While delegates are discussing implications of digital sequence information for the three objectives of the convention and for access and benefit sharing under the Nagoya Protocol, talks are expected to get controversial and heated. But it is important to realize that as complicated as this issue might seem: we are only beginning to scratch the surface of a broad paradigm shift under way when it comes to the future of biodiversity and life on Earth. The convergence of new biotechnology tools, computing power, algorithms, blockchain technology and artificial intelligence threaten to bring about a new wave of commodification of nature and corporate control.

At the World Economic Forum in Davos earlier this year, two major endeavors were launched that CBD delegates should be aware of to understand the depth of the transformation proposed: The Earth BioGenome Project describes itself as a *moonshot for biology* that aims to *sequence, catalog and characterize the genomes of all of Earth's eukaryotic biodiversity over a period of ten years*. Its sister, the Earth Bank of Code, aims to *make nature's biological and biomimetic assets visible and accessible to scientists and innovators around the world*. The Amazon basin is going to be the test ground for both

initiatives that are paving the way for a trillion dollar industry.

But are we really expected to put our trust in a new “facebook for nature” where data on life itself will be accessed and controlled by the most powerful corporations and governments in the world? The message at the World Economic Forum was very clear: In the view of those driving the Inclusive Bio-economy and Fourth Industrial Revolution “Indigenous Peoples and local communities with rights over land, territories and resources, including the associated knowledge, do not have the same rights as a holder of a patent or intellectual property asset. We can all guess who will win... If we don't act now but delay action, we might wake up one day soon and realize that all DNA of living beings is decoded, put into one single database and exploited for commercial profits and the creation of synthetic organisms in crypto-currency markets – and there will be no nature left to conserve and no benefit to share.

## Ripe for Transformative Change

*Faris Ahmed, USC Canada*

We welcome doc CBD/SBSSTA22/8 and wish to underscore to this assembly the importance of the links between biodiversity and climate change.

[As we've heard in plenary] climate change, biodiversity, land degradation and land use change are among the biggest challenges facing us. Climate change is strongly interwoven with all 3 pillars of the Biodiversity Convention – conservation, sustainable use, and equity. [We heard that] local communities that are the most vulnerable because of serious land degradation, and fragile ecosystems. They have the least resources, and are often the most marginalized. Yet, these local communities – including smallholder farmers, fishers, pastoralists, indigenous and forest peoples, and food gatherers – many of whom are women and young people – are **not without** any agency and power. They're in a *unique* situation: They are the *frontline* of protecting biodiversity – which is our best insurance policy against climate change. They safeguard biodiversity not only for their own future, but for the entire world. As *keepers* of *biodiversity* and its associated *knowledge*, as those who *nurture* precious soils, protect pollinators, conserve community territories and waters, *in-situ* and through *sustainable use* -- they are NOT at the *margins* of biodiversity – but rather they're in the *strongest* position to *create* and *implement* solutions that are most appropriate to their needs and build on their sophisticated knowledge systems.

For example, in the Andes, in Bolivia and Peru, indigenous communities are enhancing agricultural biodiversity, food security and climate resilience through active breeding and conserving thousands of varieties of

potatoes. The same with Honduras, Guatemala, Mexico and other central American countries – that are the centre of diversity for *maize* and *beans* -- where farmers have conserved *hundreds* of varieties in community seed banks. The same in Ethiopia with *teff* and *sorghum*, and in West Africa and South Asia with *millets*, *pulses*, and *less* utilized farmers varieties of crops.

These communities, some of whom are supported by my organization, USC Canada, and are examples of biodiversity harnessed to respond to climate change. Their work involves a *wide* range of time-tested, *scientific*, agro-ecological principles and practices, proven to be *highly cost-effective*, and with system-wide benefits - for climate resilience, livelihoods, food security and nutrition, gender. In other words, the benefits are *right across* the SDGs.

If the much-talked about *transformative change* is going to happen, it will *only* happen when we turn our attention to the *critical* work of farmers, women's and Indigenous Peoples, and give them our full support.

Chair, we therefore urge parties to **accelerate** actions and policies to favour *systemic* approaches and *equitable* solutions driven by smallholder farmers and local communities, that are based on *agro-ecology*, and uphold the rights of these communities.

Furthermore, we encourage parties to avoid approaches that tend to be narrow in scope and offer a *singular*, often technological response to one *specific* problem, but they *fail* to account for significant *unintended consequences*, both to ecosystems and to the rights of local communities.

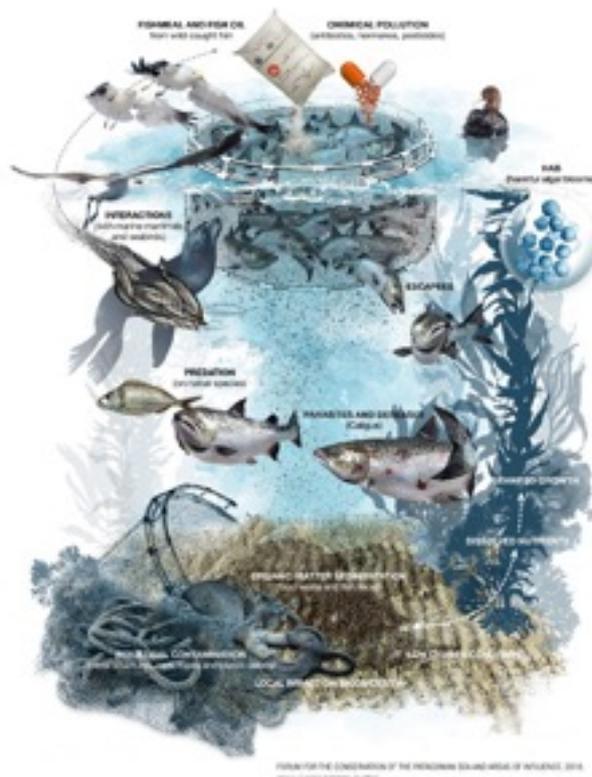
## Impacts of salmon farming in marine ecosystems

Ana Di Pangraco, FARN

Invasive alien species (IAS) are considered to be main direct drivers of biodiversity loss across the globe. COP to the CBD affirms that IAS pose a serious hazard not only to biodiversity, but to human health and sustainable development too. COP 6 adopted "*Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species*" (Decision VI/23), including the **precautionary approach to IAS**. The work of the CDB on IAS continues to this day and deepens. In addition, under UNCLOS, States are required to protect and preserve the marine environment from intentional or unintentional introduction of alien species.

Despite this, worrying news is coming from the Southern Cone of America. In March 2018, **Argentina** signed an agreement with **Norway** to evaluate salmon farming in the Beagle Channel (Patagonian Sea), with the aim to expand it to other coastal areas in the near future.

**Argentine civil society organizations firmly oppose salmon farming, both in inland waters and the sea.** Salmonids are exotic species in the region. This initiative would mean an ecological disaster, undermining the very much valued nature tourism in the area. There is a tragic experience with aquaculture of salmonids of which to learn from, in nearby Chile. Argentina and Chile already collaborate to attend the profound impacts of another IAS: beavers. *Salmon could become the beaver of the sea*. It is time for countries to put aside this kind of destructive initiatives and focus on sustainable use projects such as tourism and responsible fishing, towards achieving international commitments.



## Statement on Digital Genetic Information

La Via Campesina

The first SBSTTA-CBD plenary was on digital genetic information (DSI). This technology makes it possible to carry genetic information on a digital support, like the genome for example. Thus, there is no need for a physical sample to study DNA and even to modify or create new living organisms.

Some countries have argued against scientific evidence that this digital genetic information does not itself constitute genetic material, arguing that it is not "tangible" genetic material. They question the very

relevance of addressing this topic to the CBD and treating it according to the Nagoya Protocol. We are shocked that some countries in the European Union, for example, are using double language to serve their interests. When it comes to access to genetic information, these countries say that it is independent of the physical genetic resource, in other words the physical "matter". But when it comes to applying their patents, they say exactly the opposite. (see Article 9 of the European Directive 98/44 on the legal protection of biotechnological inventions:

#### Article 9

The protection conferred by a patent on a product containing genetic information or consisting of genetic information extends to any material, subject to Article 5 (1), in which the product is incorporated and in which the genetic information is contained and performs his function).

Thus, on a legal basis, genetic resources consist of tangible and intangible material. We are witnessing a political assertion disguised as scientific affirmation by some countries. This questioning of digital genetic information as genetic material by some industrialized countries does not arise from a real concern for accuracy, but serves specific interests. If it is accepted that digital genetic information is not subject to the Nagoya Protocol, its uses will not be regulated or monitored. For us, it seems that the particular position of these governments is motivated by the fact that they are controlled by transnational corporations that already own the mega servers that can store and analyze such data. It must be understood that it is a handful of privileged countries that have the technology to process these data, and they do not want this data to be subject to the Nagoya Protocol. Without regulation, it will be possible to use this digital genetic data to create and patent living material without having to share the benefits, the principle of informed consent and traceability among others. Thus, we are witnessing a new phase of biopiracy. We can even say that it is digital colonialism, since these technologies are not accessible to less privileged countries, and they will be used as guinea pigs.

Fortunately, some parties such as China, India, Bolivia, Morocco, youth, women and Indigenous Peoples representatives have strongly reaffirmed that genetic information remains genetic material, which is tangible or not, and that it is important that their use is framed by the Nagoya Protocol.

La Via Campesina reaffirms that the issue of digital genetic information should be addressed to the CBD, but as the chair of the session did not give us the floor at that time, we could not support that position. It is imperative to ensure that the Nagoya Protocol can regulate the use of these digital sequences.

#### SYN-BIO KARAOKE NO GENE DRIVES !

(to the tune of "I will survive" – apologies to Gloria Gaynor)

At first I was afraid, I was petrified  
about the U.S. mili-tary funding gene drives  
Now we're taking our demands to SBSTTA CBD  
Lets stop these crazy gene drives and demand F-P-I-C !

NO GENE DRIVES! WE WILL SURVIVE!  
If we defend biodiversity and let wild nature thrive  
There are reasons to be fearing  
population engineering  
NO GENE DRIVES! NO GENE DRIVES!

Go on now: lets close the door!  
No Gene Drives in terri-tories: - you aren't welcome anymore.  
Time to dump those DARPA dollars  
we want precaution not PR  
No more corporate extinc-tors  
In the wild or on the farm!



Hey Hey!  
No GENE DRIVES!  
As long as there are Peoples and peasants nature thrives  
let us be all quite succinct on  
opposing gene extinct-ion  
its not right! : NO GENE DRIVES!

Hey! Hey! NO GENE DRIVES!  
No more Synthetic Fiction, technofix and hype  
Yes, we're taking our demands to SBSTTA CBD  
To stop these crazy gene drives and demand F-P-I-C

Hey Hey! NO GENE DRIVES!  
You can dump your DARPA dollars  
we want precaution not P.R.  
No more corporate extinc-tors  
In the wild or on the farm!  
NO GENE DRIVES!!  
NO GENE DRIVES!! NO GENE DRIVES!!

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