

# WELGEVONDEN

GAME RESERVE · SOUTH AFRICA

## Conservation Innovation Fund: Information pack

*Please take note that the official documentation for publication on web-based platforms is still in the development process. This document serves to provide more information of the CIF and its activities and current funding requirements but is in no way an official document.*

**Preamble** – Innovation is at the heart of modern society. There are several fields in society where innovation is rapid, for example; engineering, robotics, health care and information technology. Other fields such as food technology, aviation and agriculture, move somewhat slower. However, in fields like education, social engineering, law and nature conservation, innovation moves at a very slow pace compared to the frontiers of innovation. In its essence conservation strives to keep ecosystems in their original, unchanged condition thus preserving nature is traditionally viewed as the quintessential opposite of innovation. With society changing so swiftly and the increase of humanity's footprint at breakneck speed, it is imperative that nature conservation modernises too. For that innovation (specifically conservation innovation) is needed, for which – like for any innovation – finances are desperately needed.

**The Conservation Innovation Fund ('CIF')** – the Board of the Welgevonden Game Reserve ('WGR' or 'Reserve') established the CIF in 2019, as an independent not-for-profit company, under South African law. WGR started experimenting with innovative concepts of land transformation and nature preservation in 1999. The CIF was set up to disseminate the innovative insights, techniques and use of technology, developed by the Reserve, to areas where nature conservation opportunities exist. For example, spaces where land cannot be used for farming, or land left barren after human intervention (e.g. mining), as well as other protected areas where underfinanced reserve authorities struggle to preserve nature in their custody.

**WGR, a Living Laboratory** – This Reserve has embraced innovation and its Board and Members (owners) have decided to view this ~36,000 ha reserve in the Waterberg Area of South Africa as a "living laboratory". A laboratory is a place where experimentation takes place to gain insight into how things work. It has the explicit aim to translate the outcome of experiments and insights thereof to real world situations. Through landscape scale experimentation, in close cooperation with Wageningen University (the Netherlands), WGR gained insight into how economically marginal farmland could be restored to a thriving game reserve; and how fire-dominated vegetation could be transformed into grazer-driven systems carrying lower risk of fire storms. They

further discovered how nutrient and micro-nutrient supplementation systems could be deployed to increase carrying capacity on marginal lands; and also how to implement and monitor a rhino-rescuing management system, in which “farm rhinos” are reintegrated into a natural, wild rhino social system. This knowledge can be disseminated to other areas in Africa and the world. WGR with its university partners believes that such knowledge should be freely available, and while distribution of information may be easy, funding resources for teaching and the facilitation of learning is not. The CIF is set up to enable this dissemination and for financing (a) hands-on training in WGR and (b) the set-up of new, similar experiments elsewhere.

**Welgevonden Joint Operation Centre (WJOC)** – WGR developed and set up a JOC where much automated information is integrated through modern computer systems. This includes information on public traffic, drivers, movements of wild animals (such as elephants), rangers, electric fence information, car tracking inside the reserve, remote sensing from space, and intelligence, etc. The aim of the JOC is to make security and anti-poaching much more effective. It is supported by South African National Parks (focussed on Marakele National Park), other adjacent neighbours to WGR, and in collaboration with other private game reserves and landowners. If this knowledge can be disseminated to other reserves throughout Africa, anti-poaching security can function as a network with each JOC performing a function within a bigger team, but dissemination of knowledge is costly. In this regard, the CIF aims to finance (a) the development of simulations for other reserves in which personnel can be trained in anti-poaching operations and (b) setting-up new, similar JOCs elsewhere. WGR will, of



*Photo: A pangolin recovered from the boot of a vehicle in Vaalwater. Just one example of how the JOC aids conservation, to read the full story (click [here](#))*

course, not share security information from the local area under operation by its own particular JOC.

**Automated Poacher Detection** – South Africa holds almost 80% of the global rhino population and is the hardest hit country by rhino poaching. As it stands today two and a half rhinos are still killed every day in South Africa. This is however not the only threat, elephant poaching is on the rise in Africa, as is lion poaching and pangolin trafficking. WGR strongly believes that the best way to protect our game and our rangers from poachers, is early detection.

Working together with Wageningen University (the Netherlands), WGR developed a system in which wild animals (such as eland or zebra), spread out over a large area, act as sentinels of poaching activity. Sentinel animals were fitted with a satellite tracking system communicating with a real-time information transmission system. Movement data of these sentinel animals led to the development of algorithms with high predictive power, to localize intruders (potential poachers) in the reserve. The aim of this system is to provide tools for de-escalating the risk of violence by poachers and ambushing of rangers. The high predictive power of the algorithms enables pre-emptive interception of potential poachers by rangers, so that rhinos, elephants and other threatened plants and animals are not uprooted or killed. An arrest after a rhino kill is not what one should aim for because there are far more potential poachers than living rhinos. This automated animal sentinel system has proven viable at a Proof of Concept scale (2000 ha) in WGR. The CIF's top priority is to scale up this Proof of Concept to a Proof of Production scale (~36,000 ha) in WGR. The cost is estimated at € 3 million.

Click [here](#) to watch an informative video about the program.



*Photo: Sentinel zebras gather to forage on an open plain*

The second priority of the CIF is the development of a robotic drone: an eagle-sized drone fitted with image recognition, visual and infrared photography and a flapping flight system. The design of the drone will resemble a Steppe eagle, the most ubiquitous of all African raptors which is present year-round in all protected areas of Africa (excepting rain forests), where high value, threatened large mammals occur. The idea is that this drone, without a propeller, will inconspicuously blend into the environment. It will not be heard or noticed by poachers as eagles circling at an altitude of 200 m or more are commonplace in these protected areas. The development of such a drone and the production of the first batch of four is estimated to cost € 0.5 million.

**Your donation** – Innovation is notoriously expensive. The partners mentioned above have absolutely no intention of using the innovation they have developed or will develop for profit. Nature must be preserved, but productive land will be needed more and more for agriculture to feed people as global populations continue to rise. It is estimated that within the next 30 years, the African population will grow by another 1.5 billion people, who will also need their place under the sun. This makes economically marginal lands particularly important as they will serve as a place where wildlife can be sustained without competing with the needs of humanity. It is the underprivileged and the uneducated that are driven to become poachers. If we can make the chances of detection so high that people are not tempted to poach, and if we can effectively share this knowledge in the conservation industry, wildlife protection will become safer for all. In a world where too much violence exists, these pre-emptive mechanisms funded by the CIF will minimise poaching conflict thus protecting those that protect wildlife. Your money is needed to make conservation innovative.

