Environmental Programmes

NRM Long Term Monitoring Using Open Source Software Collect Earth

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environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

EXPANDED PUBLIC WORKS PROGRAMME

2030 NDP

Introduction

- The natural resource management programme started out in 1995 and was only known as Working for Water
- The main focus was to create jobs for the unemployed and address the ever increasing problem water scarcity.
- To do this the programme focused on the removal of invasive alien species that consume large amounts of water.
- Doing this resulted in the release of millions of litres of water in strategic places.

Introduction

- NRM captured all the data on an system called the Working for Water Information Management System, or in short WIMS
- Data has been captured since around 1998 that gives us almost 20 years of data.
- The Data on the system gives us an idea of what the sites looked like at a specific point in time. This was captured by staff members in field
- The programme then appointed and trained unemployed participants to remove the invasive aliens.
- The information was then updated on the system and a picture of that area could be created.
- Information included the species, density, cost, time and number of people.
- This gives the user a good idea of what happened on the ground.
- This information could then be used to calculate the gains

The Problem

- Calculating the densities is not an exact science at the scale it was needed
- Data is captured at a specific time and once the work is done no follow up capturing is done for that site
- The site could be in 3 states, cleared, not cleared, Follow up.
- Point in time specific
- The data is accurate at one point in time and decreases as time passes.

The Problem

- So what has happened over time??

  - Regrowth
  - Still clear
  - Other condition, Flood, Fires

- These factors would effect the delivery of water

Monitoring of Historic work

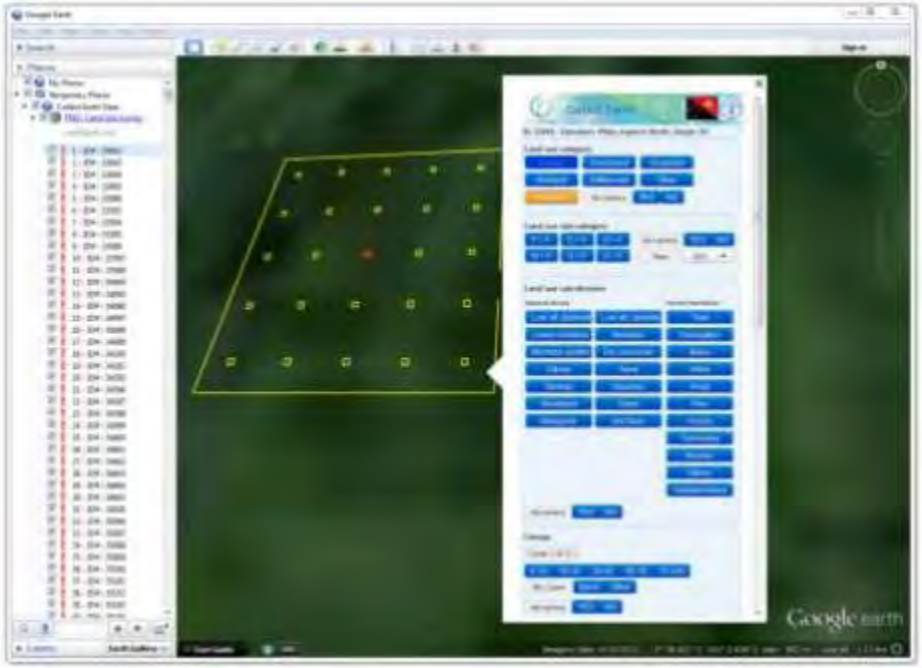
- Monitoring and comparing WIMS data becomes essential when calculating impacts
- Best solution would be to do this in real-time, something that we are working on.
- Looking back at historic data will also help us to improve the way we work in the future

Open Source Software: Google Earth and Collect Earth

- Google earth has images dating back to 2003 (South Africa)
- GE does not allow manipulation of the images and can therefore not be used in a GIS
- Collect earth partially solves this problem.
- Making use of visual ques you can map the change of a specific plot.
- https://www.youtube.com/watch?v=3cxyFXt15aM

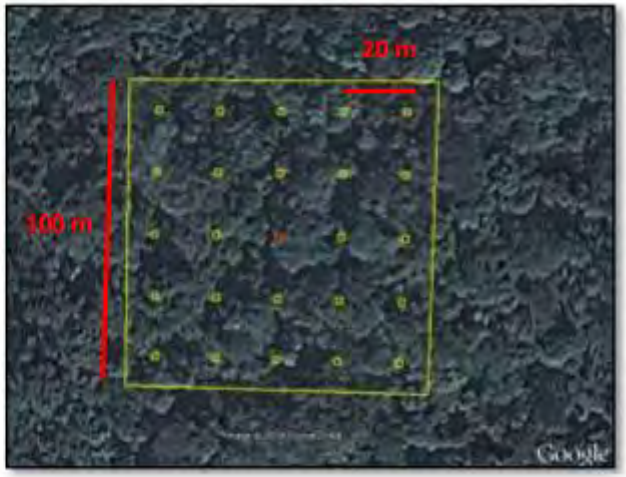
NRM Specific Monitoring

- Collect earth needs to be customised to fit what we are trying to achieve.
    - Mapping change over time in a WFW cleared site
    - Comparing this to our WIMS data
- We need to build custom forms to collect the appropriate data.
- Need to identify some historic sites, where work has been completed



NRM Specific Monitoring

- Then we need to sit and capture the data for the selected site, going as far back as possible.
- This process is very time consuming and will not work for very large area
- The results will then be analysed and compared



Results

- What do we expect/Hope to see
  - A declining infestation relegating to when resources were allocated.
  - A Direct correlation between WIMS and Collect earth.

Results

- Any anomalies can then be identified and investigated
- This could assist us to improve the way we implement in the future
- This will give us an indication regarding the accuracy of our WIMS data
- Will assist us to improve the way we capture data
- Other uses might include monitoring effects of biocontol in the long term.

- This project will start mid October 2017 and should have its first results In December.

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