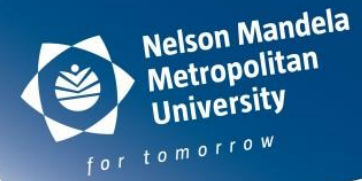


WETLAND VULNERABILITY IN NELSON MANDELA BAY



IMPACTS OF SOCIETY AND CLIMATE CHANGE

Phumelele Gama and Denise Schael



WETLANDS AND ECOSYSTEM SERVICES



Flood control – discharge mitigation, sediment & nutrient trapping

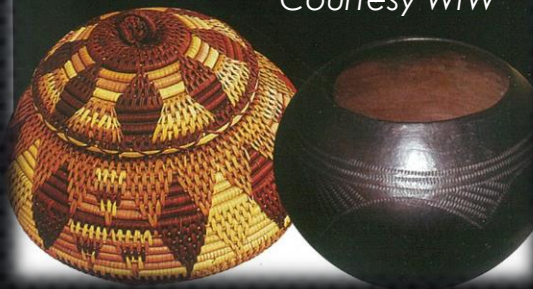
Cultural – recreation, spiritual activities, tourism

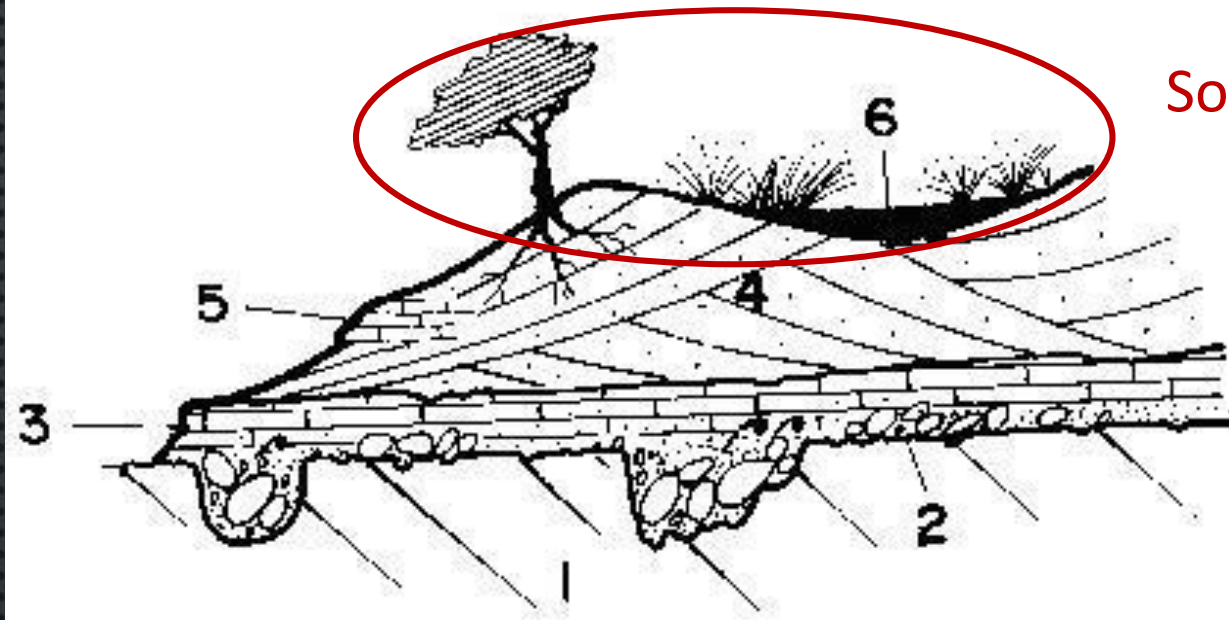
- Provisioning – food, fibre, water, & subsistence farming

- Biodiversity – water depended flora & fauna



Courtesy WfW





Soil formation

GEOLOGY OF NMB COASTAL PLAIN

Courtesy NMMU Website

- 1-TABLE MOUNTAIN QUARTZITE
- 2-WAVE-CUT PLATFORM
- 3-BEACH ROCK
- 4-VEGETATED SAND DUNE
- 5-CALCRETE HORIZON
- 6-MORDEN SOIL HORIZON



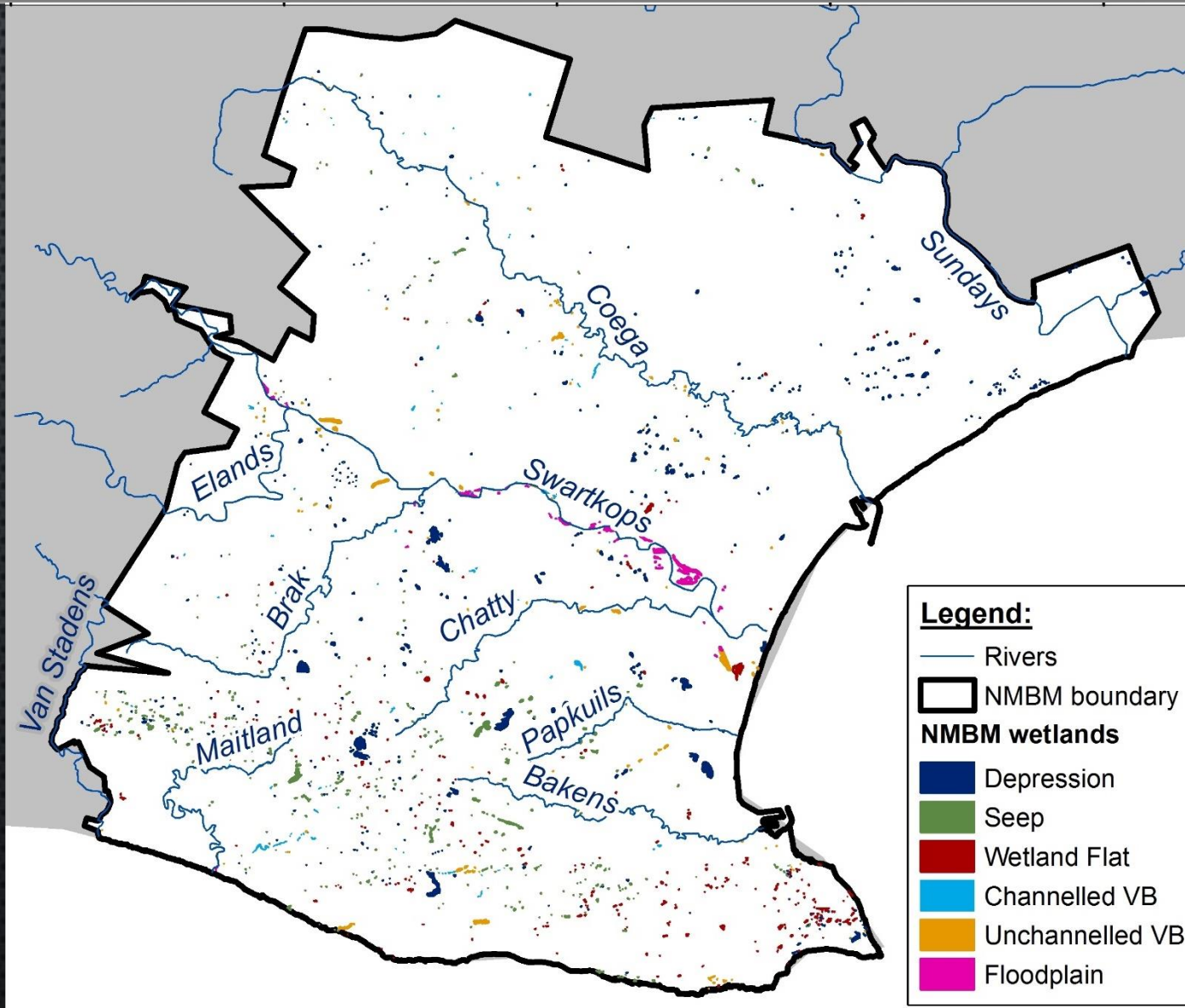
~140 – 500 Mya

~0,01 – 65 Mya



Triops longicauda

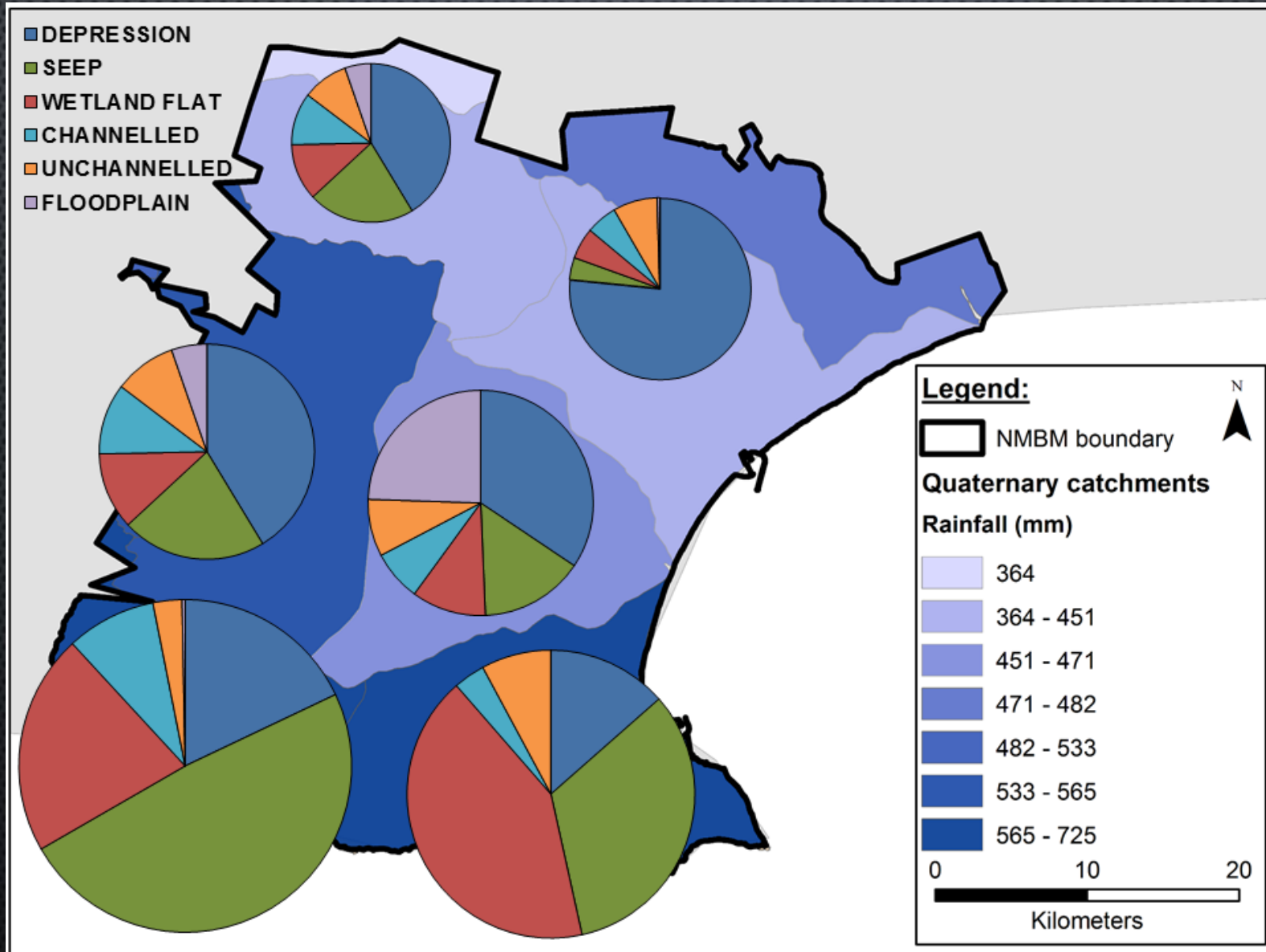
Delineation and Classification



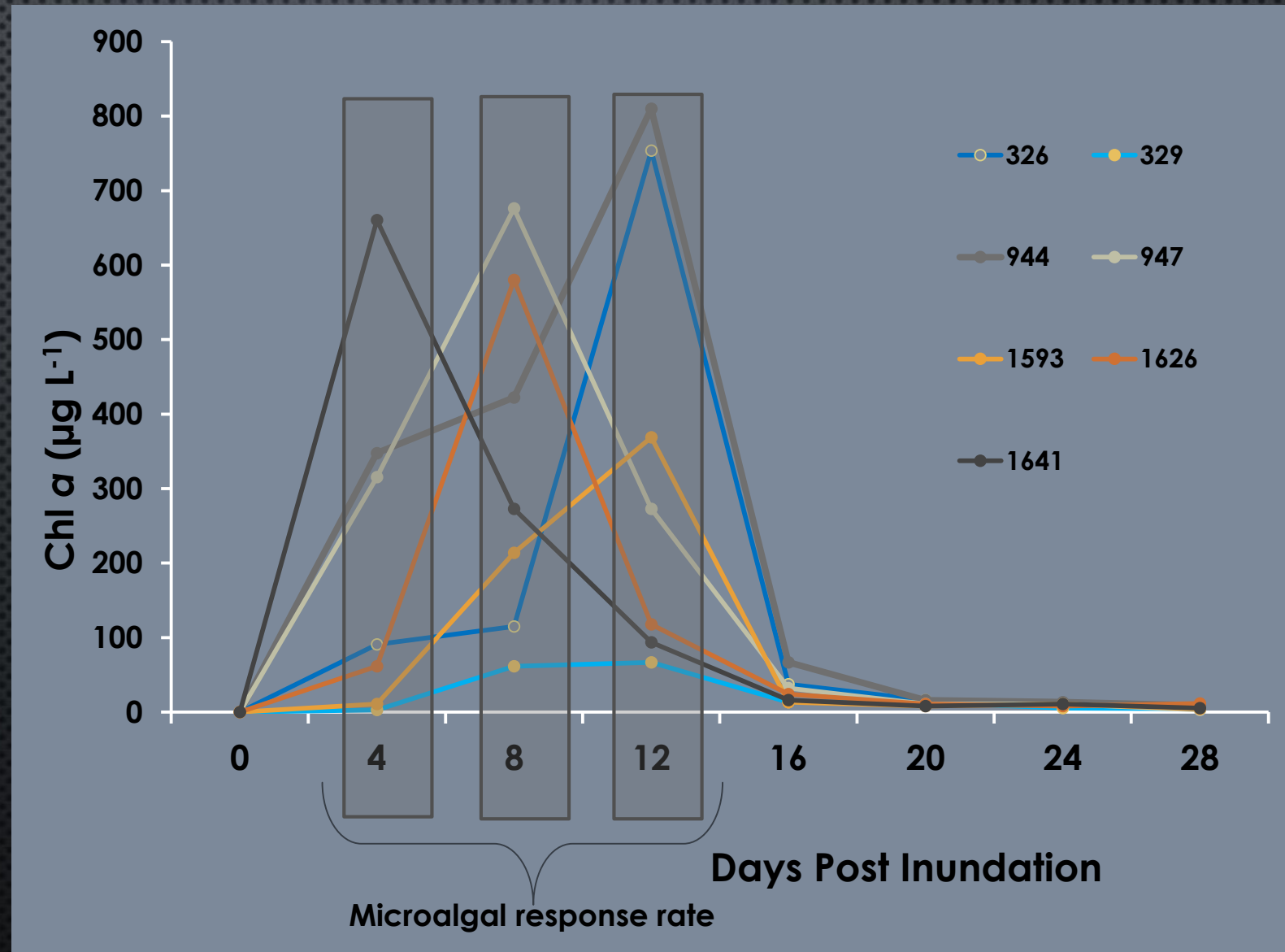
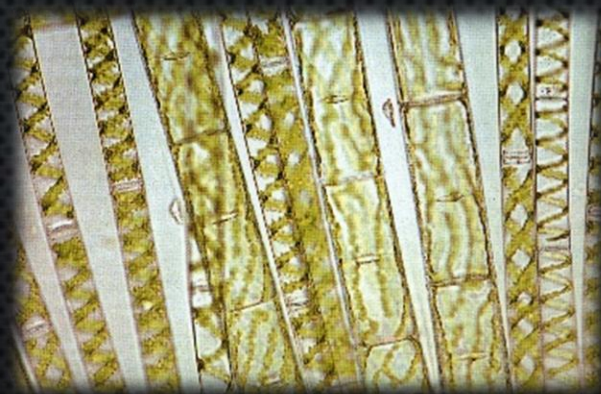
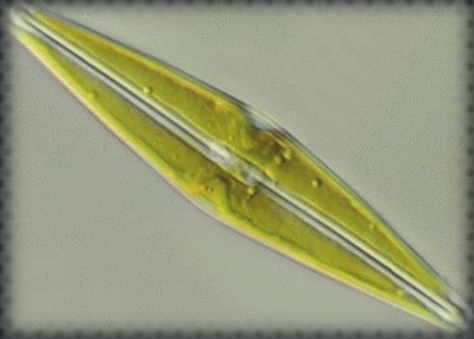
- 1712 wetlands
- Majority ephemeral & small size <0,1ha
- Depression, > seeps, >wetland flats

WRC Project No: K5/2181

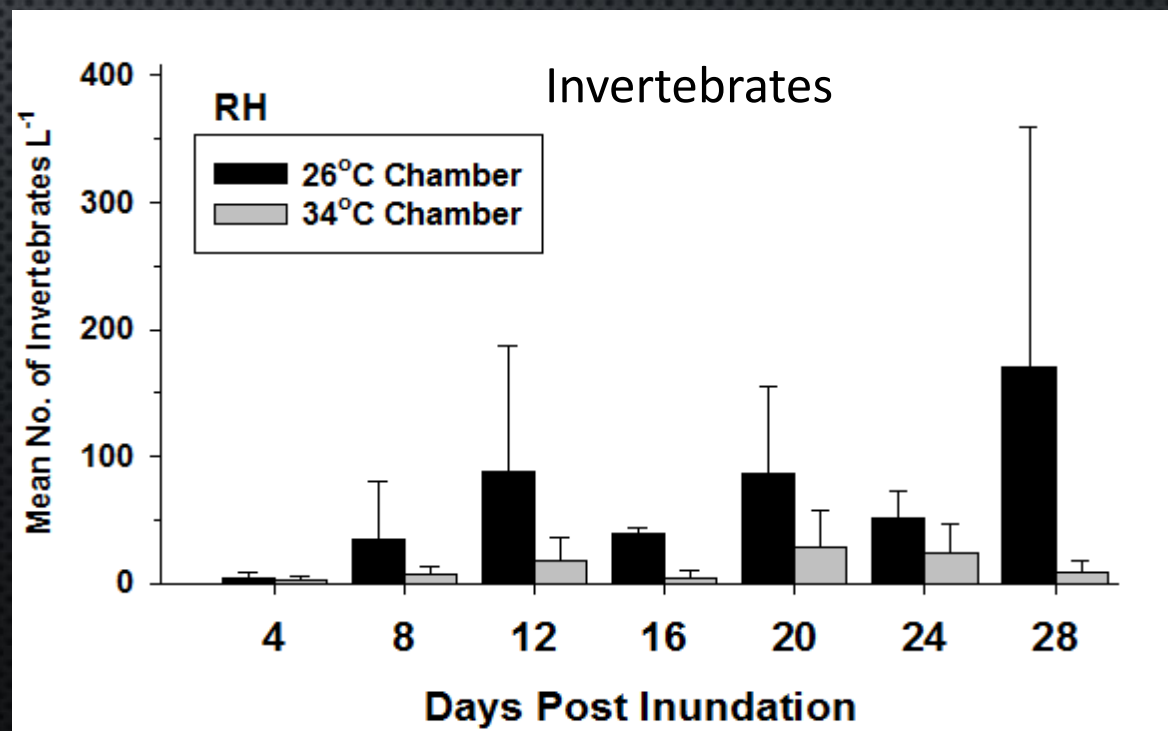
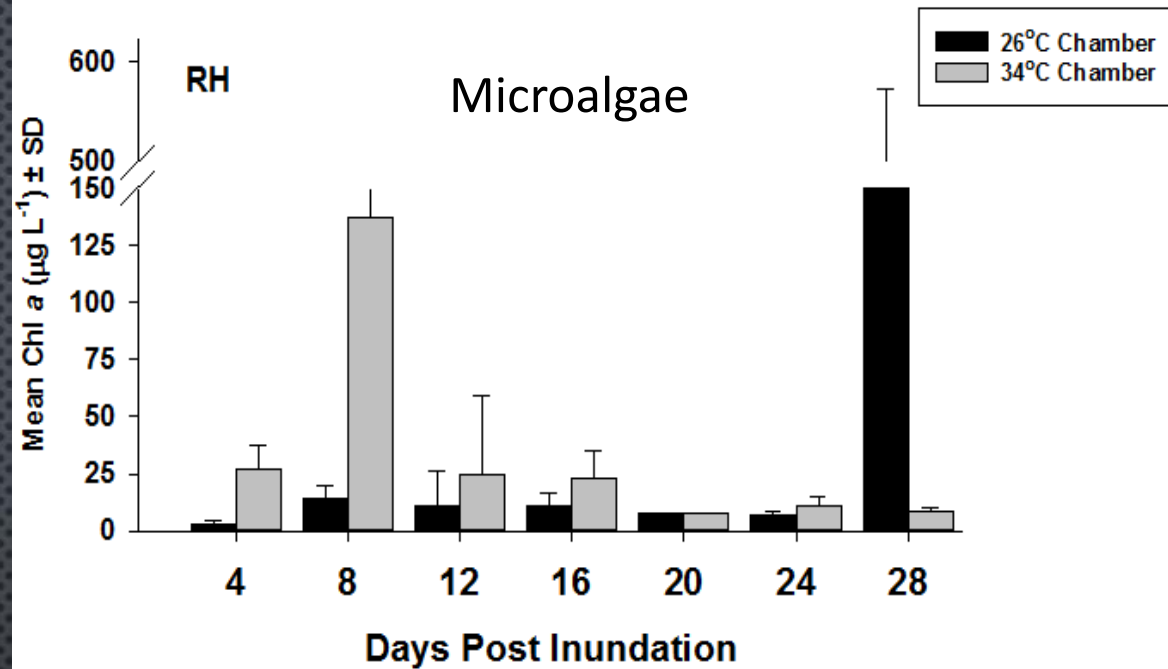
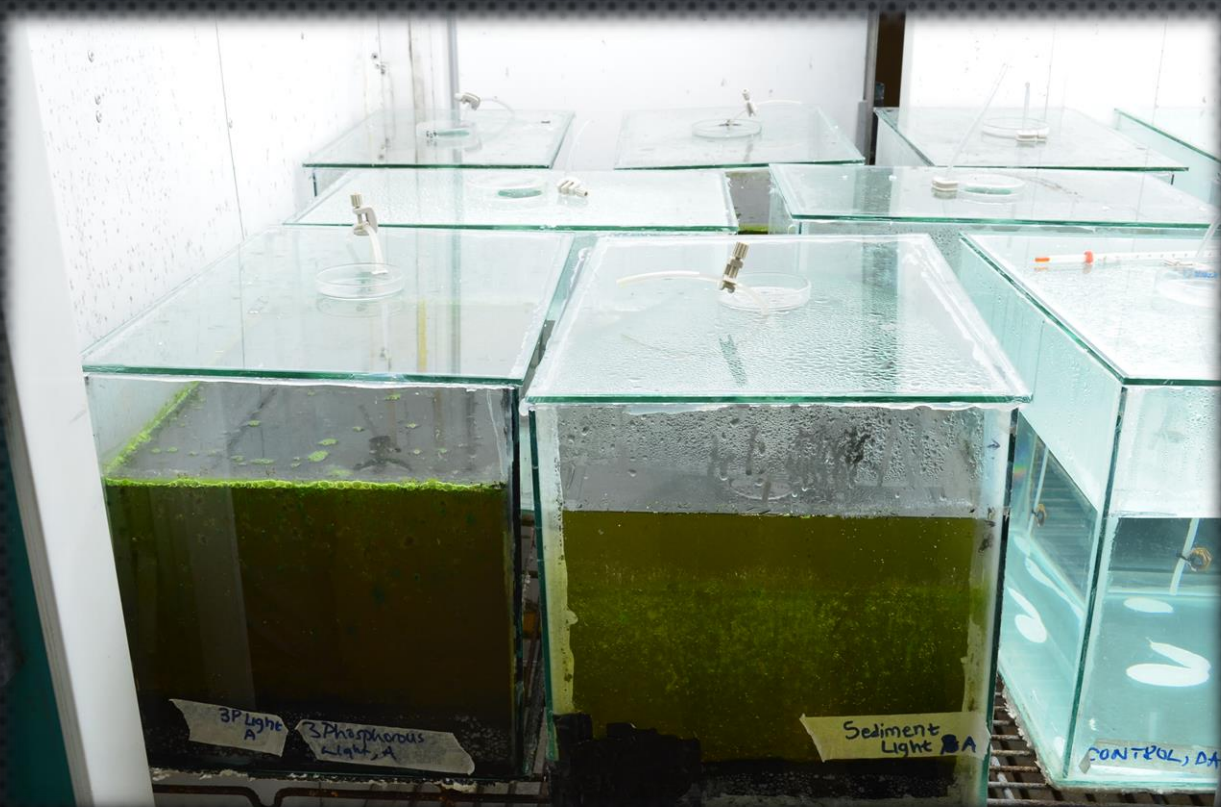
Rainfall Pattern & Wetland Distribution



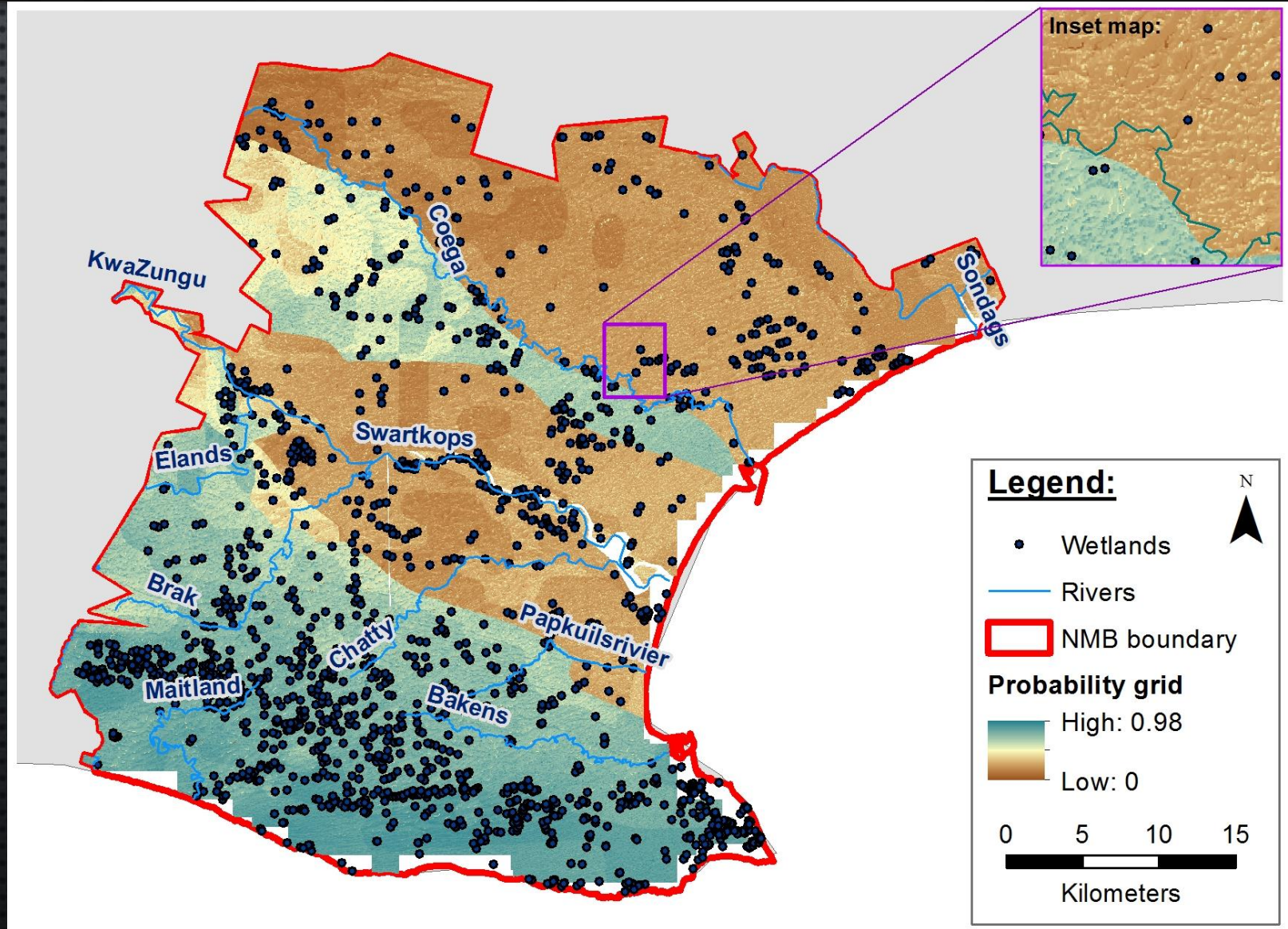
Microalgal Germination



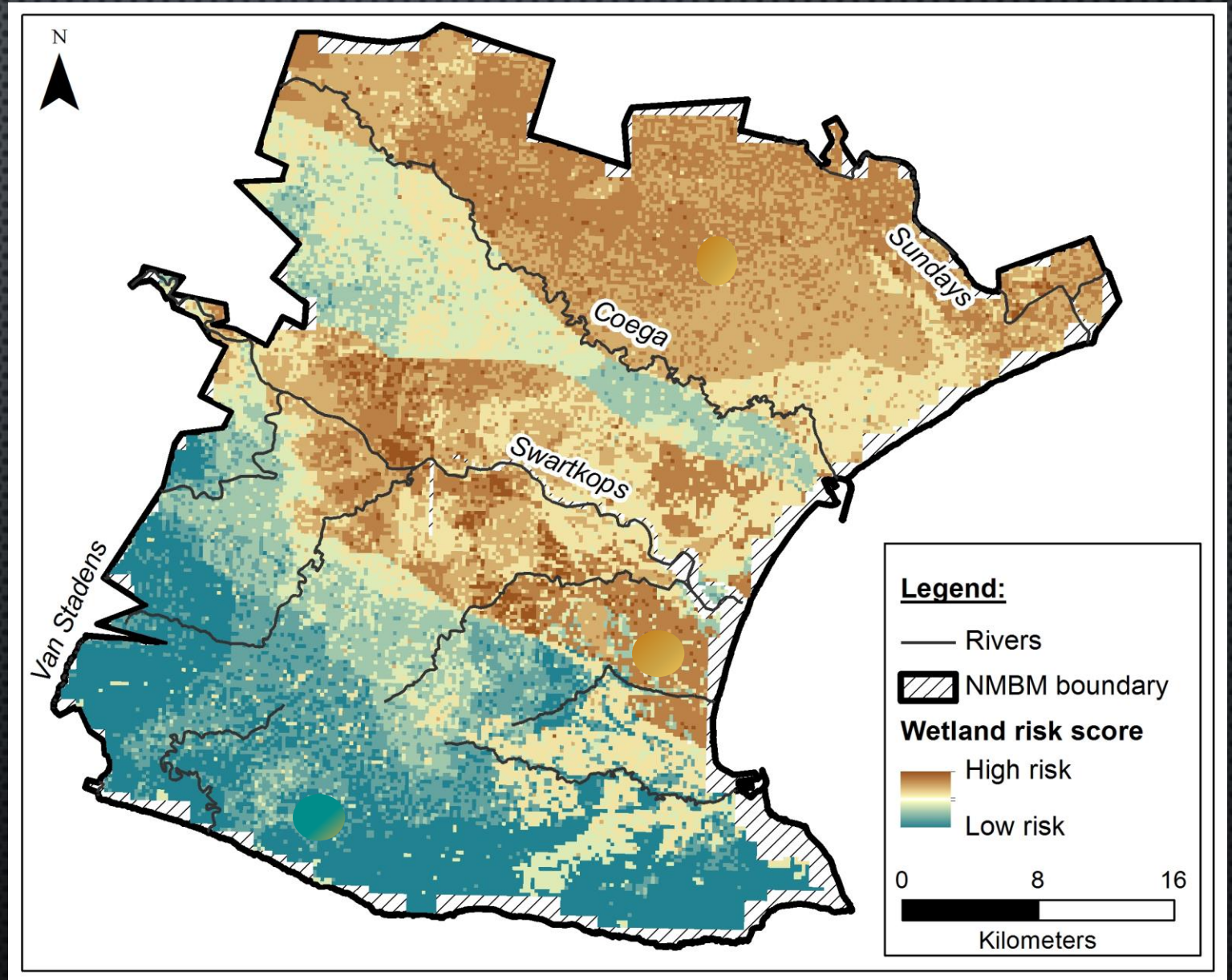
TEMPERATURE EFFECTS



MODELLING LIKELIHOOD OF OCCURRENCE



IDENTIFYING AREAS OF HIGH RISK



Organisms of interest & special concern



FLORA

FAUNA



URBAN WETLANDS



1/1/2004

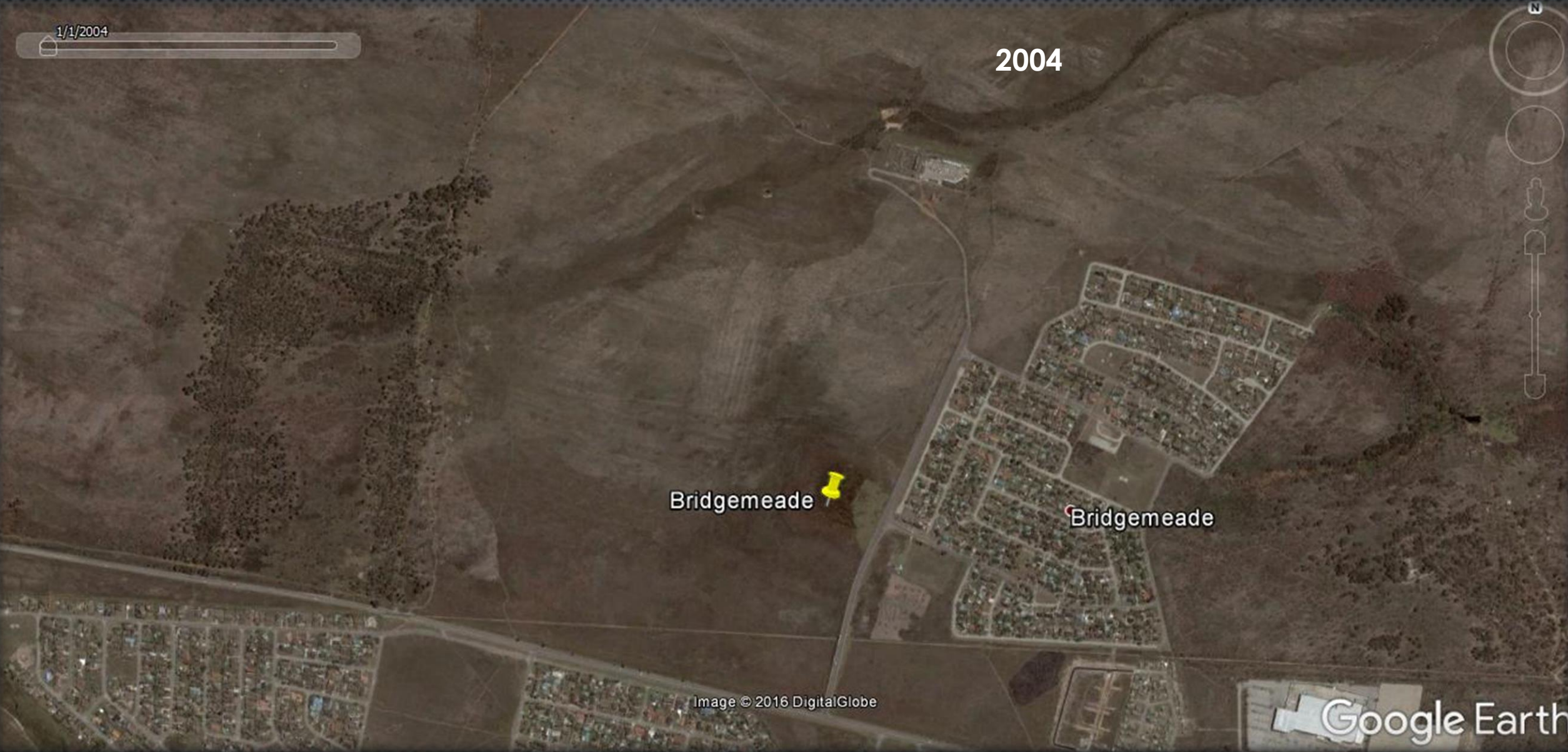
2004

Bridgemeade

Bridgemeade

Image © 2016 DigitalGlobe

Google Earth



5/15/2016

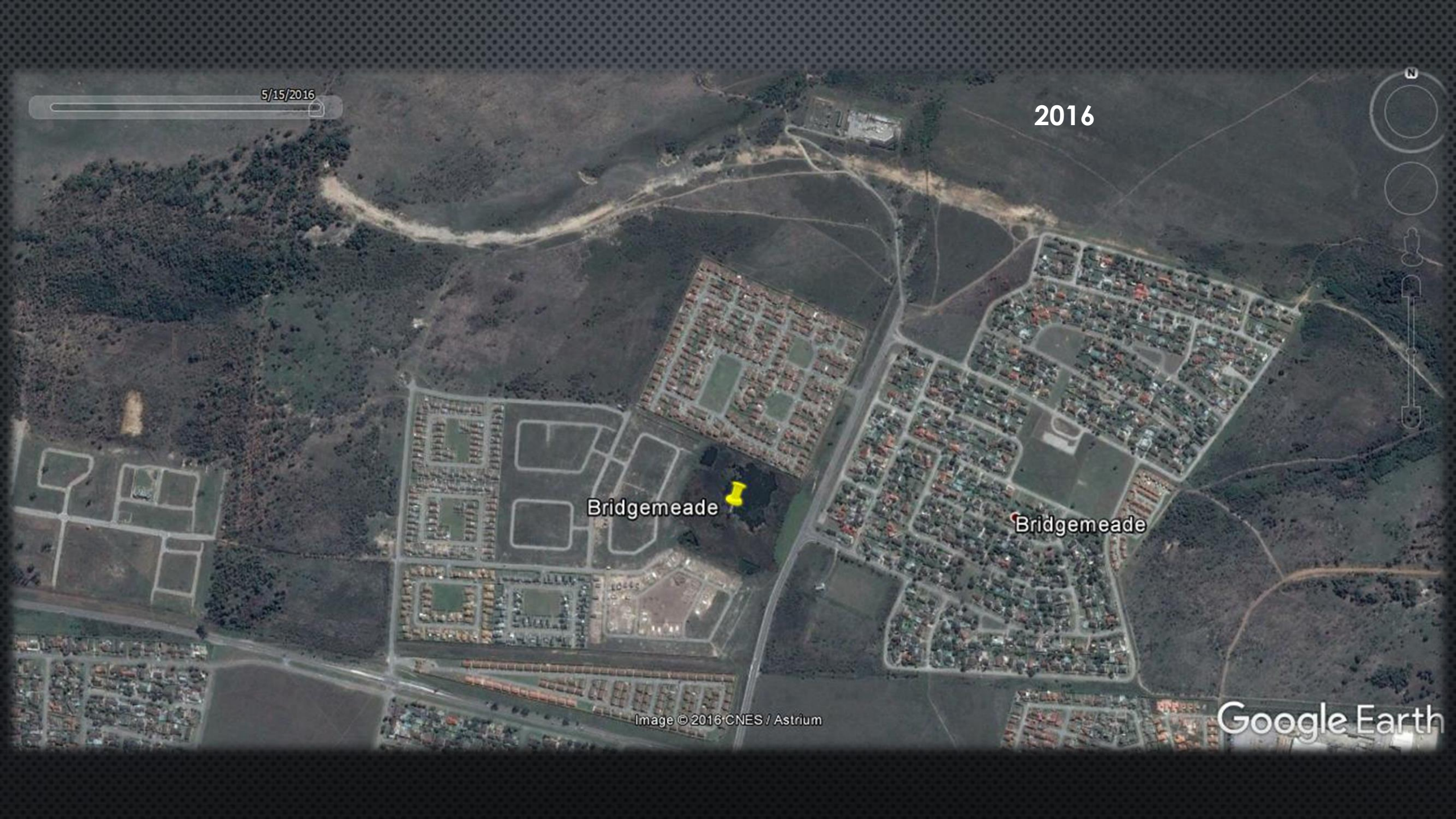
2016

Bridgemeade

Bridgemeade

Image © 2016 CNES / Astrium

Google Earth



3/13/2004
2004 2016

2004



Kwazakele

Pond-6

Donkinvale

Kwazakele 1

Image © 2016 DigitalGlobe

Google Earth

5/12/2016

2016



Deal Part

Kwazakele

Pond-6

Donkinvale

Kwazakele 1

Image © 2016 DigitalGlobe

Google Earth

THEESCOMBE



URBAN WETLANDS

SEEKOEI



POSITIVE ASPECTS

- RECREATIONAL & TOURISM VALUE
- FLOOD ATTENUATION
- BIRD LIFE
- BIODIVERSITY
- COMMUNITY INITIATIVES

CHALLENGES

- ALTERATION OF HYDROLOGY (SEASONAL – PERMANENT PANS)
- POLLUTION – LITTER AND REFUSE
- POOR WATER QUALITY
- LOSS OF BIODIVERSITY

BRIDGEMEADE



POND 6



CONCLUSION

- LOSS OF EPHEMERAL WETLANDS = LOSS OF HABITAT & LOSS OF BIODIVERSITY
- USE OF MODELLING TECHNIQUES CAN AID IN IDENTIFYING WETLANDS AT RISK
- URBAN WETLANDS ALSO CRITICAL IN ECOSYSTEM INFRASTRUCTURE, BIODIVERSITY AND COMMUNITY HEALTH



**THANK YOU
NGIYABONGA
ENKOSI
BAIE DANKIE**

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