

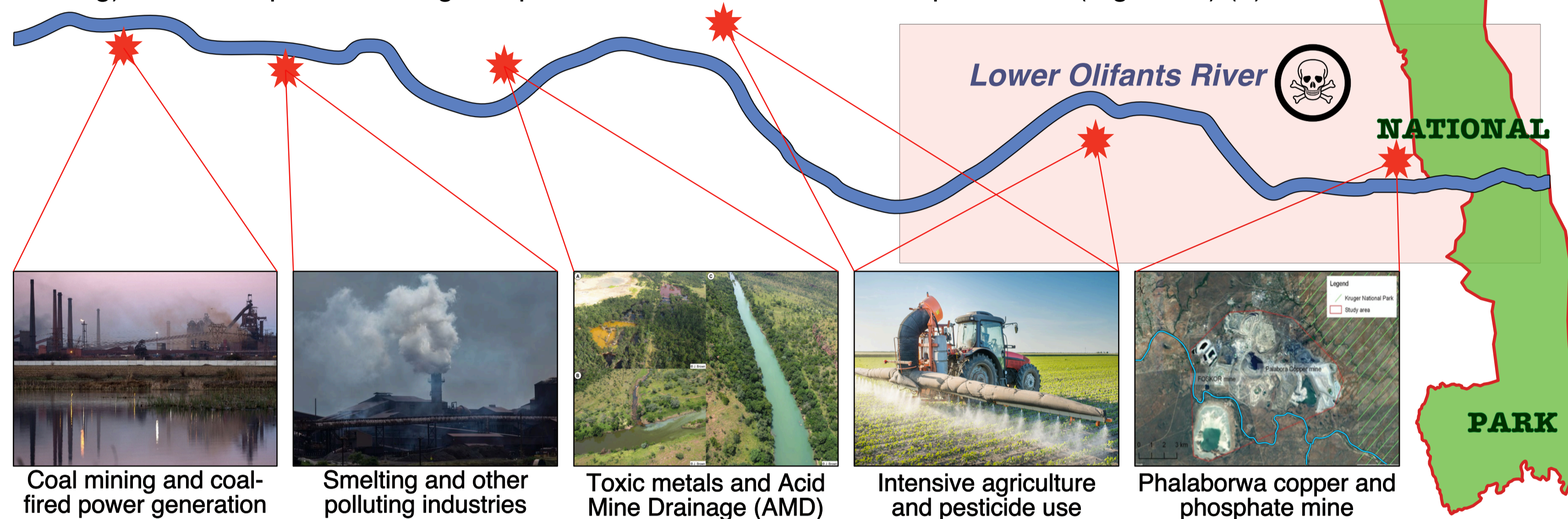
Assessing the Impacts of Environmental Contaminants on the Olifants River, Kruger National Park: from Sediments to Crocodiles

Calum Ramage¹, Matthew Johnson², Liz Bailey³, Kerstin Baiker¹, Chris Vane⁴ and Lisa Yon¹

¹ School of Veterinary Medicine and Science, ² School of Geography and ³ School of Biosciences, University of Nottingham, ⁴ British Geological Survey, Keyworth, Nottingham NG12 5GG

1. Introduction: Kruger National Park (KNP), South Africa, is one of the largest and most biodiverse game reserves in Africa and is home to hundreds of species of great conservation importance. However, its geographic location downstream of the Olifants River, one of the most polluted rivers in Southern Africa, present many threats to the wildlife.

The Olifants flows through intensive mining, agricultural and industrial landscapes before reaching KNP, acquiring on the way a diverse cocktail of highly toxic and persistent trace elements (e.g. Pb and Hg), industrial persistent organic pollutants and numerous toxic pesticides (e.g. DDT) (1).



2.1. Problem: Several large-scale fish and crocodile mass mortalities have occurred since 2007 (2). Disease, infections and ill-health are also commonly observed amongst the aquatic wildlife.

Toxic contaminants are accumulating in the sediments and aquatic organisms of the Olifants. These toxicants can ultimately threaten survival, population viabilities and ecosystem function (3,4). Very few studies have investigated the relationship between environmental contaminants and wildlife health in the Olifants.

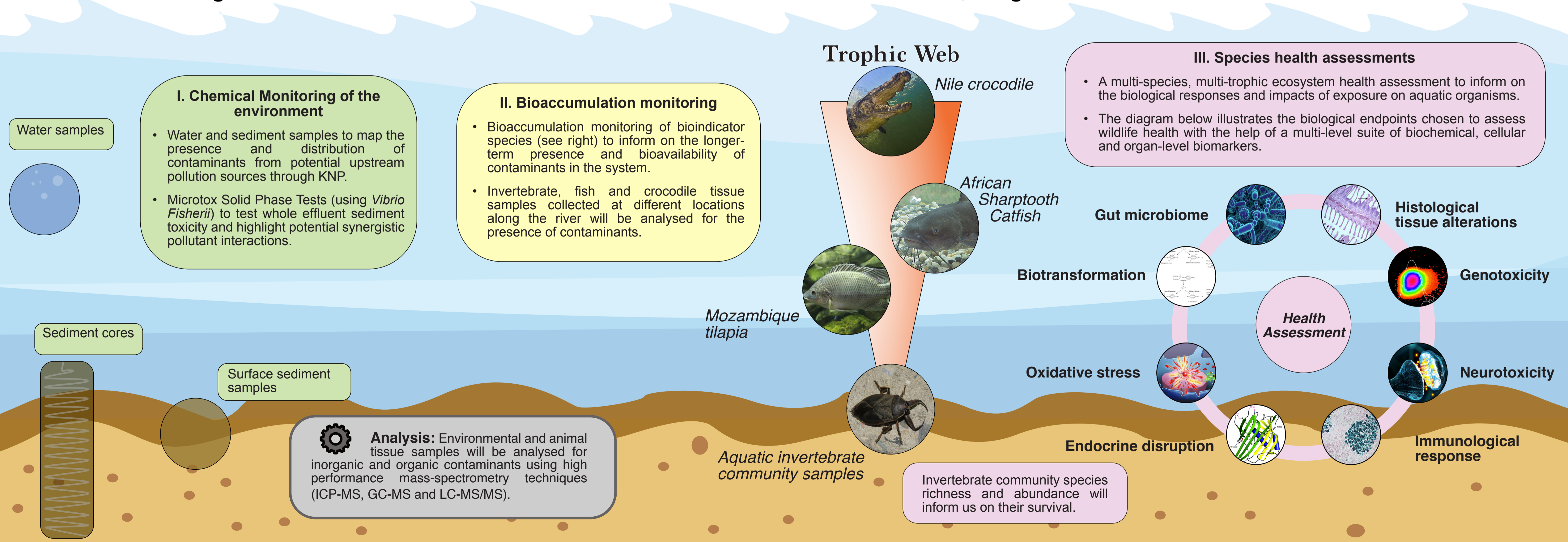
Environmental monitoring has also fallen short: regular sediment monitoring is not conducted, and hundreds of potentially toxic pesticides and chemicals have rarely or never been measured in the Lower Olifants River.

2.2. Main objectives:

- Assess the current state of environmental contamination of the Lower Olifants River leading into KNP, focusing on trace elements and pesticides.
- Determine the health implications of exposure to contaminants for the aquatic organisms of the Lower Olifants River.



3. Methods: An integrated and holistic environmental assessment of the Lower Olifants River, Kruger National Park



References:

1. Heath et al. Water Research Commission, 2010, WRC No. TT 452/10.
2. Ashton. Aquat Conserv. 2010, 20, 5, 489-493.
3. Gerber et al. Sci. Total Environ. 2016, 550, 522-533.
4. du Preez et al. Ecotoxicol. Environ. Saf. 2018, 148, 930-941.