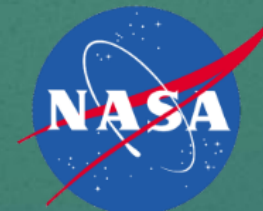
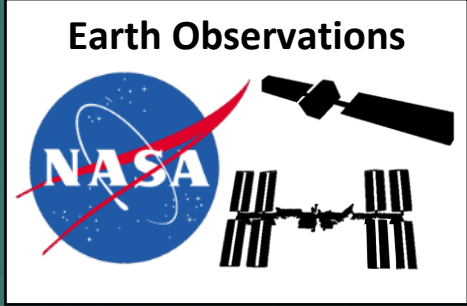


Strengthening Natural Resource Management with New Protected Area Connectivity Tools

Patrick Jantz, School of Informatics, Computing, and Cyber Systems, Northern Arizona University, Zaneta Kaszta (NAU, WildCru, U. Oxford), Scott Goetz (NAU), Beth Hahn (USFS-IP), Sam Cushman (USFS, WildCru, U. Oxford), Kathy Zeller (USFS), Erin Landguth (U. MT), David Macdonald (WildCru, U. Oxford), Nyambe Nyambe (KAZA), Andrew Loveridge (WildCru, Wildcat Trust), Saw Htun (WCS)
NASA A.39 Grant No. 80NSSC21K1942



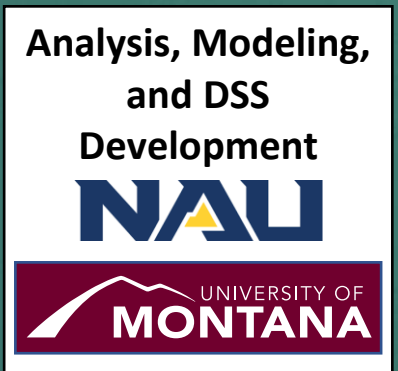
Project Structure



+



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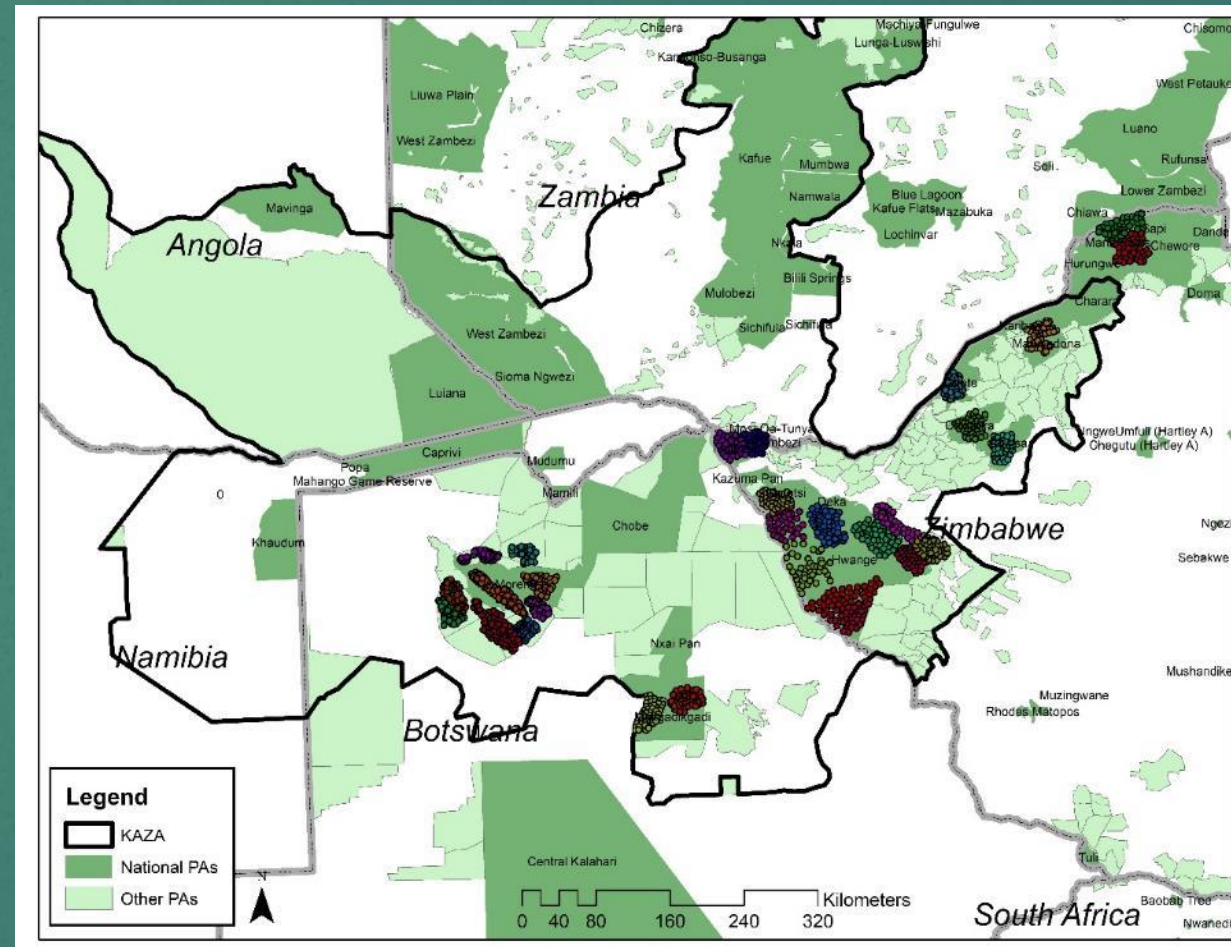
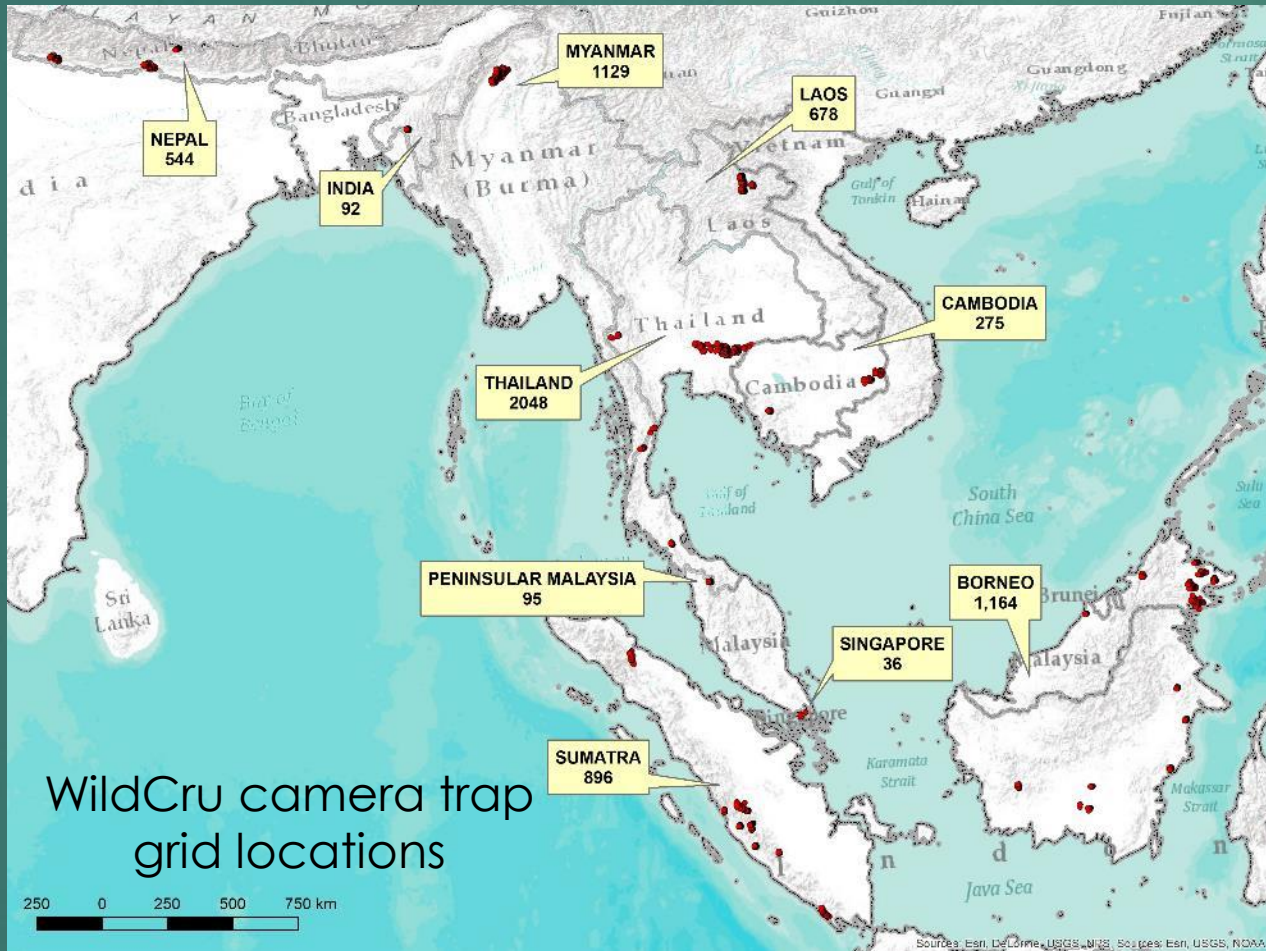


Top - Participatory watershed management planning exercise led by USFS, Mount Elgon, Kenya. Bottom - Participatory land use planning facilitated by WCS and USFS, Tanintharyi Region, Myanmar.

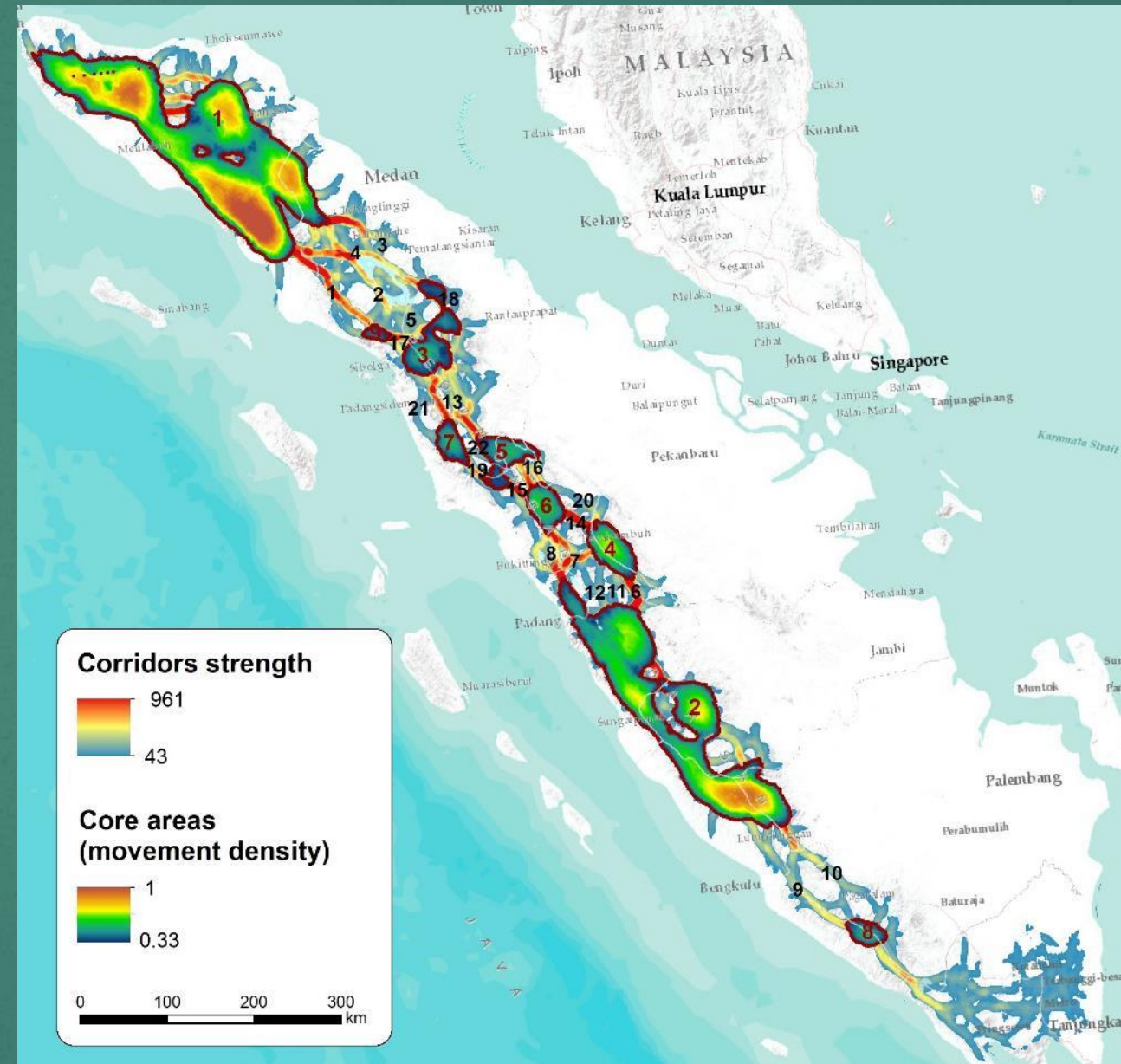
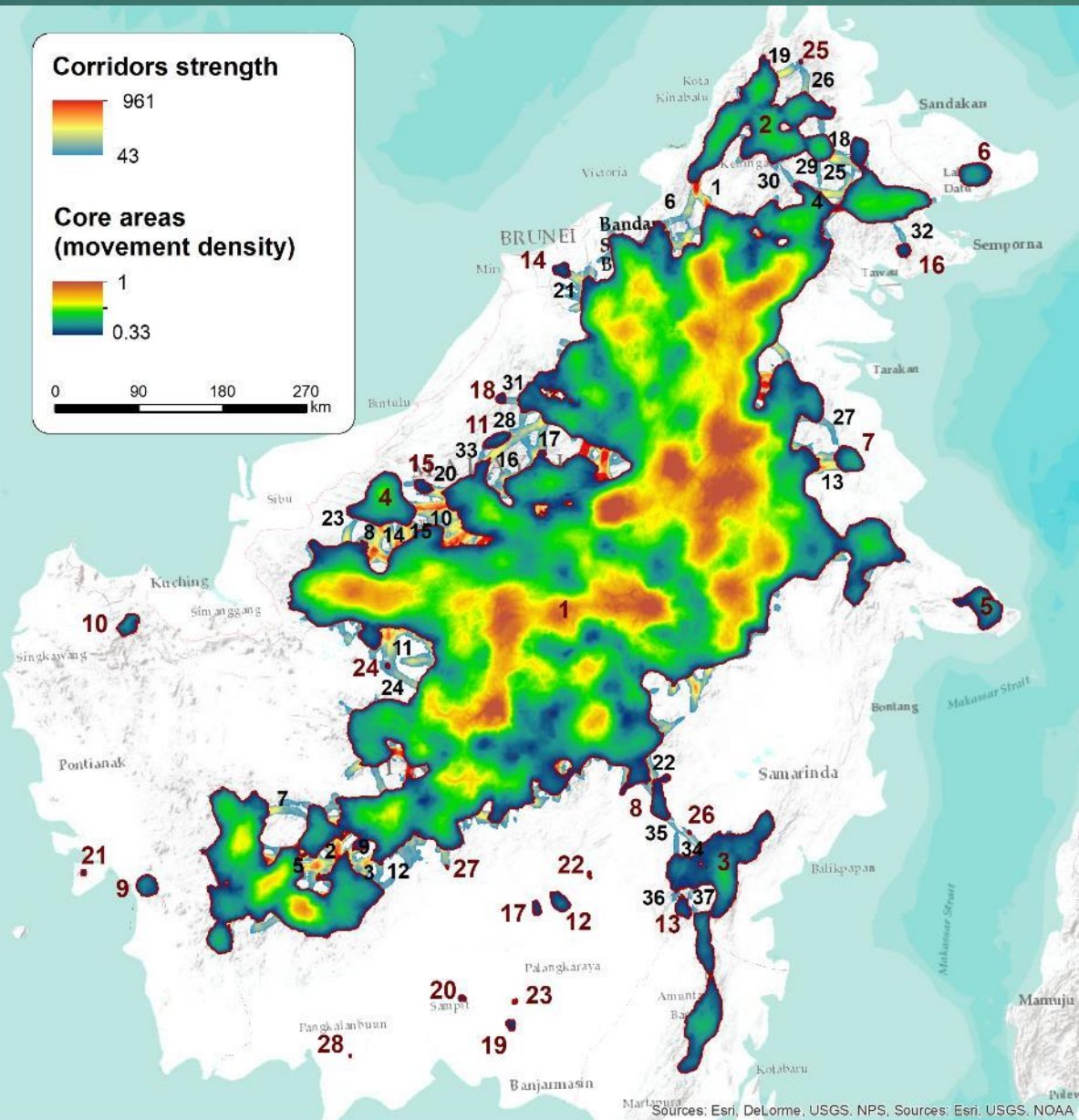
Study Areas

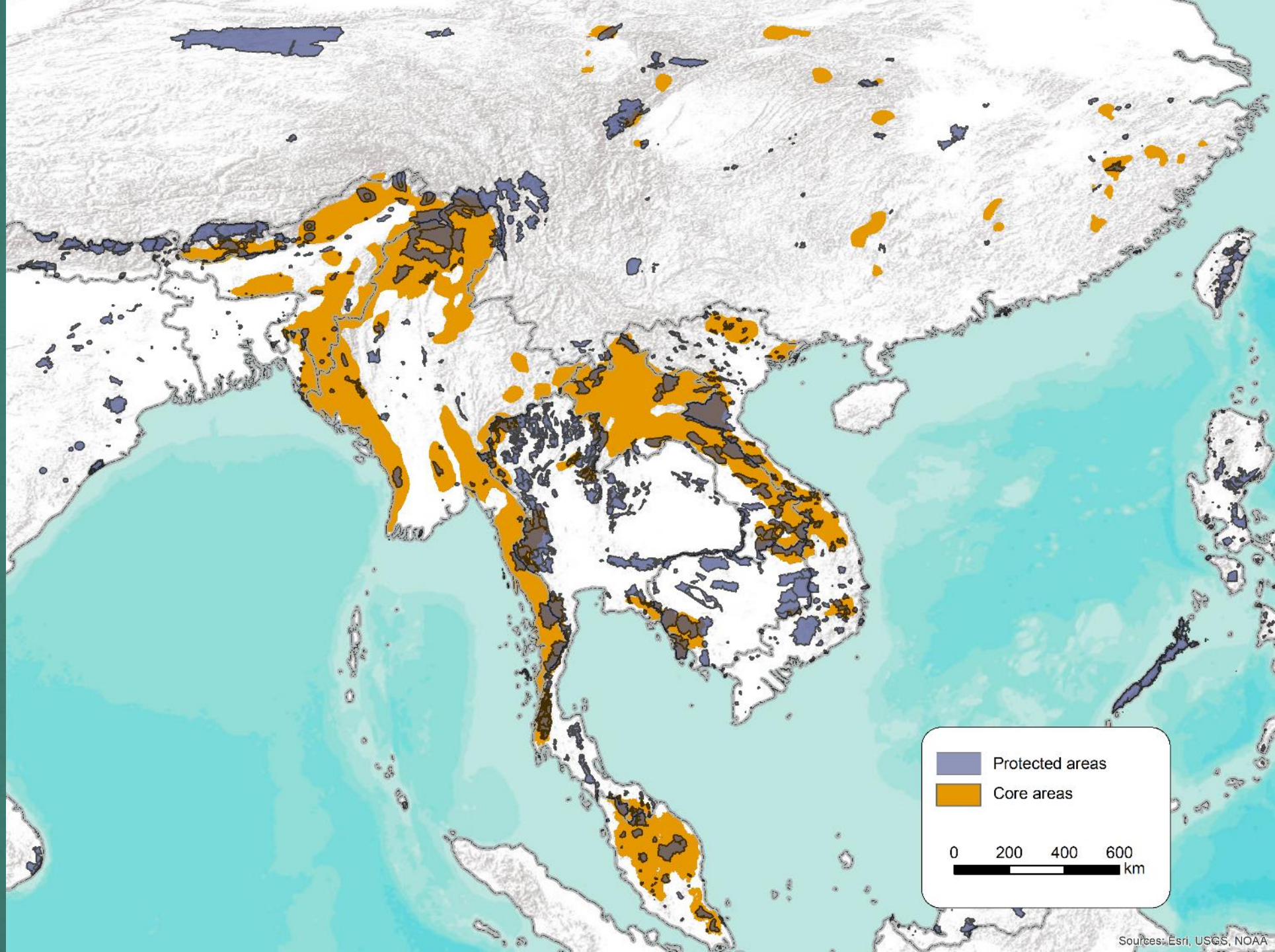
Southeast Asia

Kavango-Zambezi Transfrontier Conservation Area



Scenario Planning and Decision Support

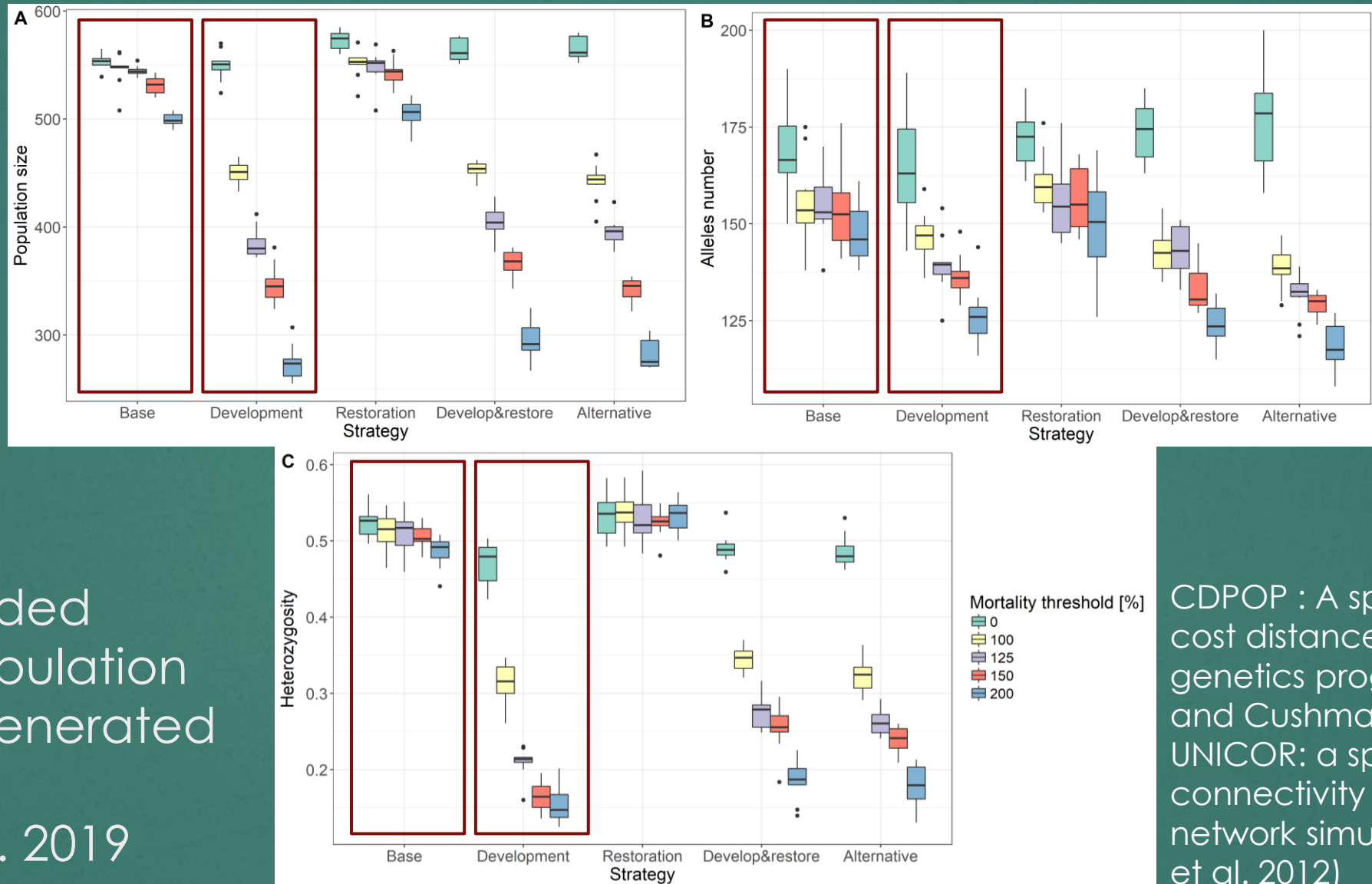




Protected areas
Core areas

0 200 400 600 km

Scenario Planning and Decision Support



Sunda clouded leopard population scenarios generated by CDPOP
Kaszta et al. 2019

CDPOP : A spatially explicit cost distance population genetics program (Landguth and Cushman 2010)
UNICOR: a species connectivity and corridor network simulator (Landguth et al. 2012)

Project Progress

Project performance metrics

-8 focused on access to connectivity info, planning processes, law enforcement

USFS-IP facilitated meetings with KAZA Wildlife Working Group

Project concept endorsed by Directors of Wildlife from the five KAZA countries - Angola, Botswana, Namibia, Zambia, Zimbabwe

Project Progress

CDPOP

- Transitioned to python3
- hdf5 interoperability for large landscape analysis

Habitat structure mapping with GEDI and GEE for habitat suitability modeling

EE app

Focal Species

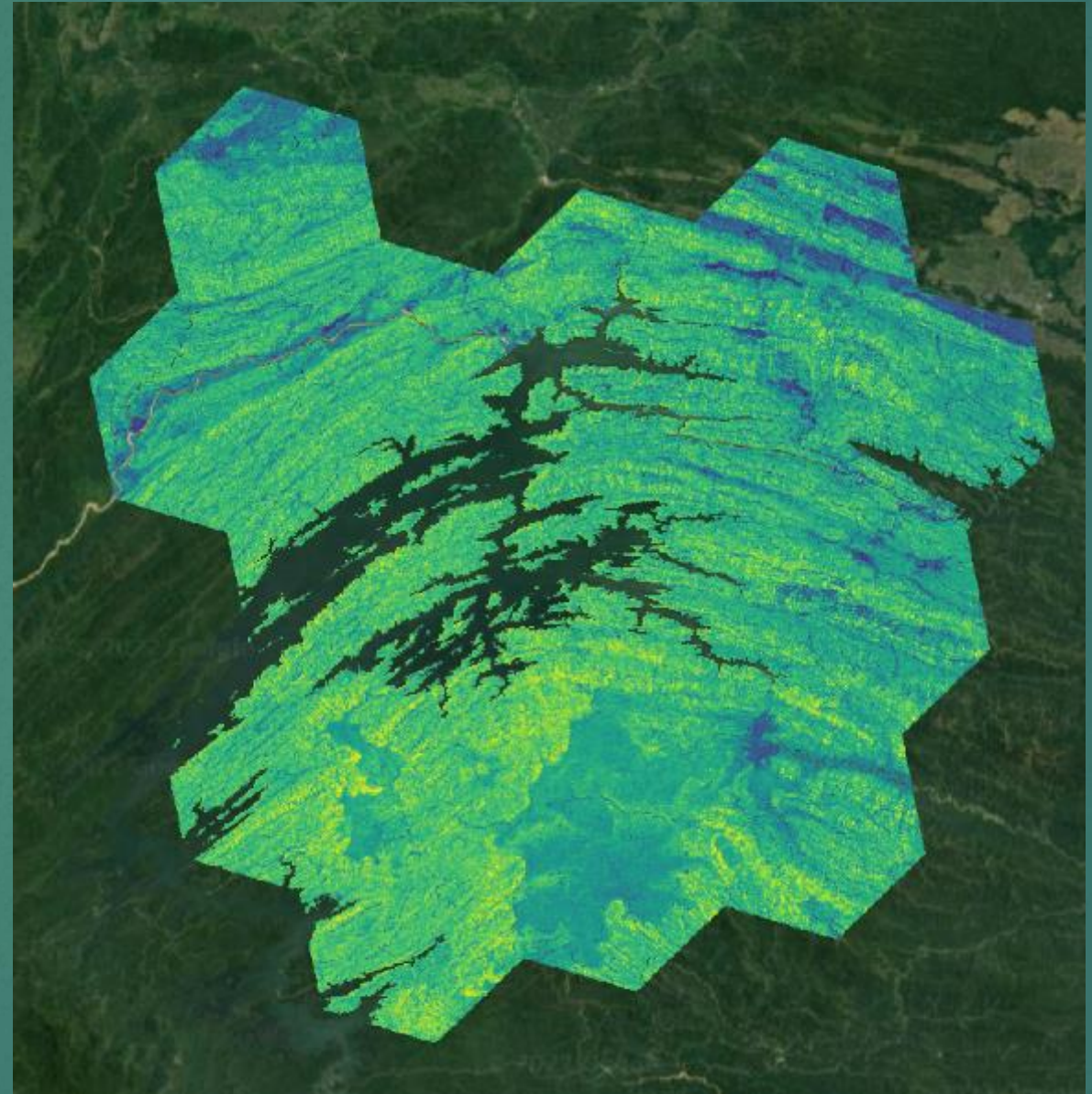
Southeast Asia

wild boar, northern red muntjac, Malayan porcupine, leopard cat, Asian elephant, large Indian civet, Asian palm civet, sun bear, northern pig-tailed macaque, yellow-throated marten, gaur, sambar, clouded leopard, dhole, Asiatic brush-tailed porcupine

Africa

lion, elephant, wild dog, leopard, buffalo, eland, sable, giraffe, zebra, wildebeest, red lechwe, waterbuck, roan, cheetah, gemsbok

Canopy Height Mapping



EE Viewer

Earth Engine Apps

🔍 Search places



Layers

Map

Satellite



Clouded Leopard Core Habitat and Connectivity

This tool maps clouded leopard (*Neofelis nebulosa*) core habitat and connectivity for baseline and development scenarios in Myanmar. Use the tools below to explore differences in core habitat and connectivity.

For more information see

Kaszta et al. 2020

Select layers to display

Habitat-Connectivity Legend

Low High

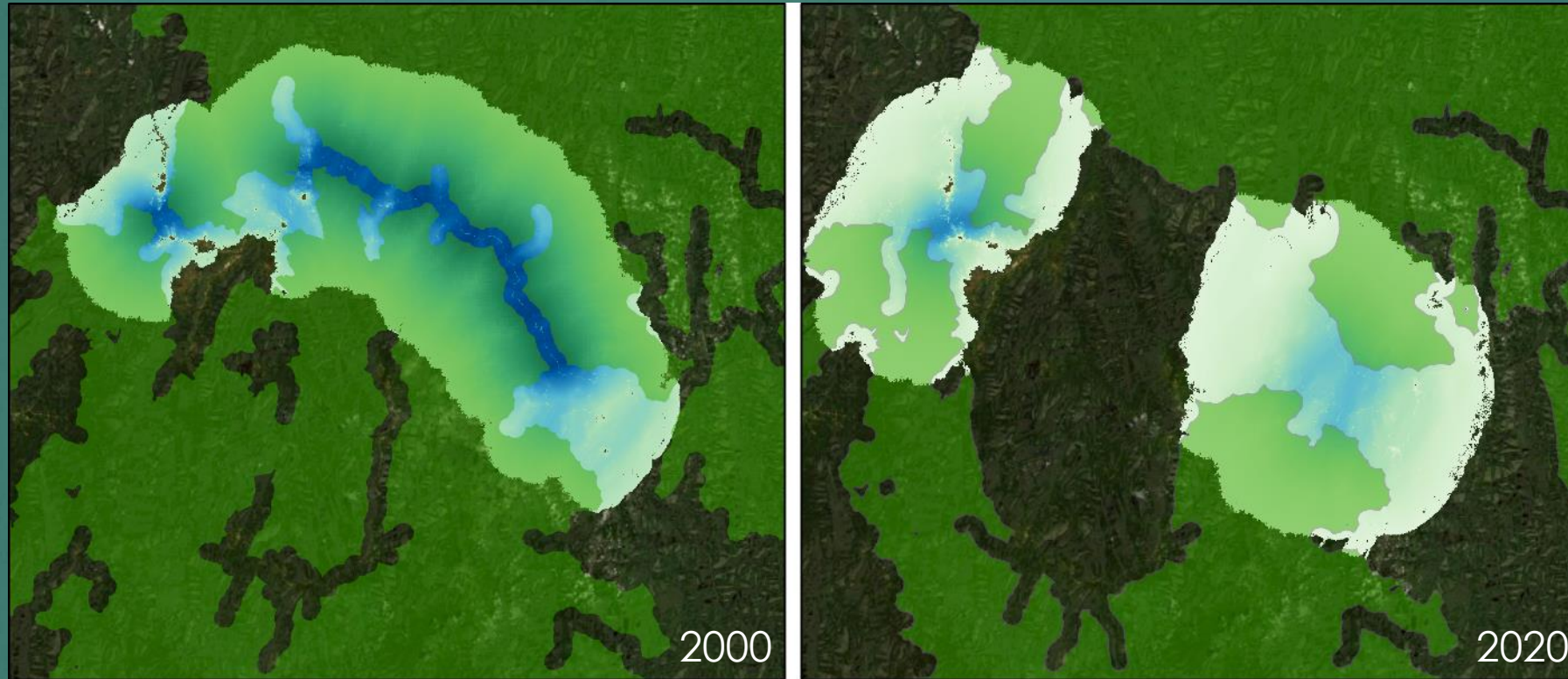


Protected Areas 1

Habitat Suitability 1

Core Habitat (baseline) 1

Structural Connectivity Mapping



Next Steps

Identify scientific, governmental, and other collaborators in the KAZA landscape to form a working group e.g. Okavango Research Institute, U. of Botswana; Univ. of Namibia; Lupane State U.; U. of Zimbabwe

Build on existing WildCru relationships for outreach to ministries in Malaysia, Indonesia, Laos, Thailand

Continue software development to integrate habitat structure -> suitability -> landscape genetics -> habitat connectivity -> scenarios

Thank You!!



Patrick.Jantz@nau.edu

Global Earth Observation & Dynamics of
Ecosystems Lab

<https://goetzlab.rc.nau.edu/>