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UNIVERSITY OF LIVERPOOL

NERC SCIENCE OF THE ENVIRONMENT

Decision support for restoring ecological connectivity in rapidly developing, biodiverse countries

NERC-funded Innovation Project

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UNIVERSITY OF LIVERPOOL

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- Aims & objectives
- Case Study 1: Enhancing Sabah's protected area network
- Case Study 2: Prioritising corridor restoration in Java
- Case Study 3: Expanding shade cocoa in western Ghana
- Next steps

Aims & objectives

AIM: *to facilitate sustainable land-use planning for tropical developing countries under climate change*

OBJECTIVES:

i. Create new, accessible **methods for supporting decisions in land-use planning**

ii. Demonstrate how conservation decisions can be supported in our partner organisations through **three collaborative case studies**

iii. Create a **freely available web application** for our decision support tool and ensure its long-term accessibility, especially for users in developing countries

CASE STUDY 1 - Enhancing Sabah's Protected Area network

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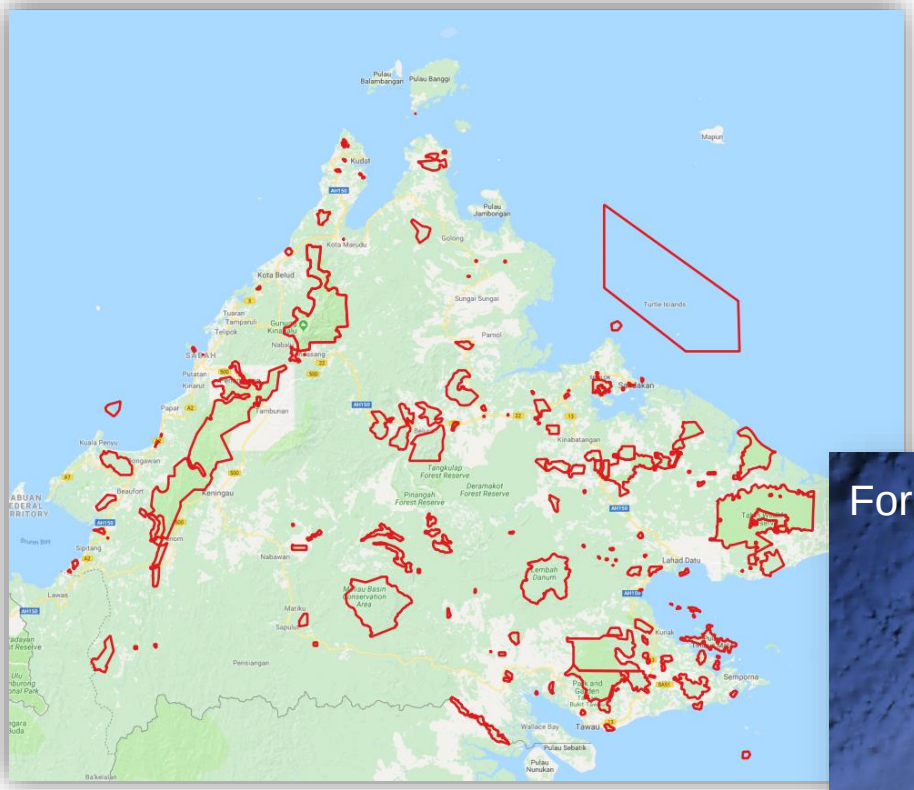
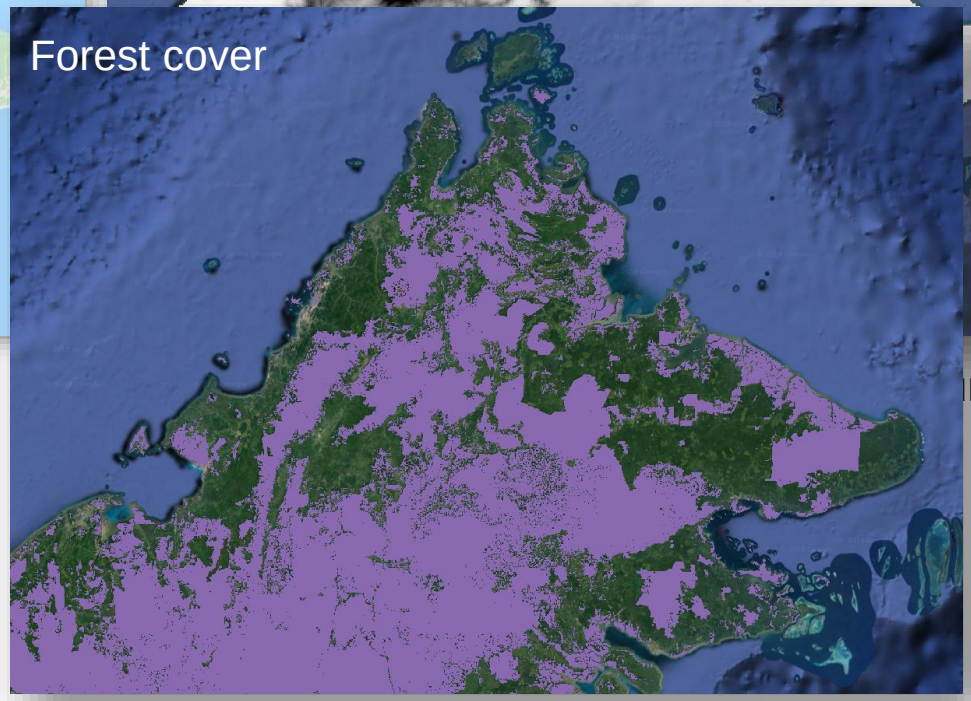


Sabah's Protected Areas



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CASE STUDY 1 - Enhancing Sabah's Protected Area network

- GOAL: Aid decisions on where to extent the protected area network to maximise connectivity between multiple lowland and upland protected areas (PAs) in Sabah, Malaysia.

- TECHNOLOGICAL ADVANCE: prioritisation in multiple directions

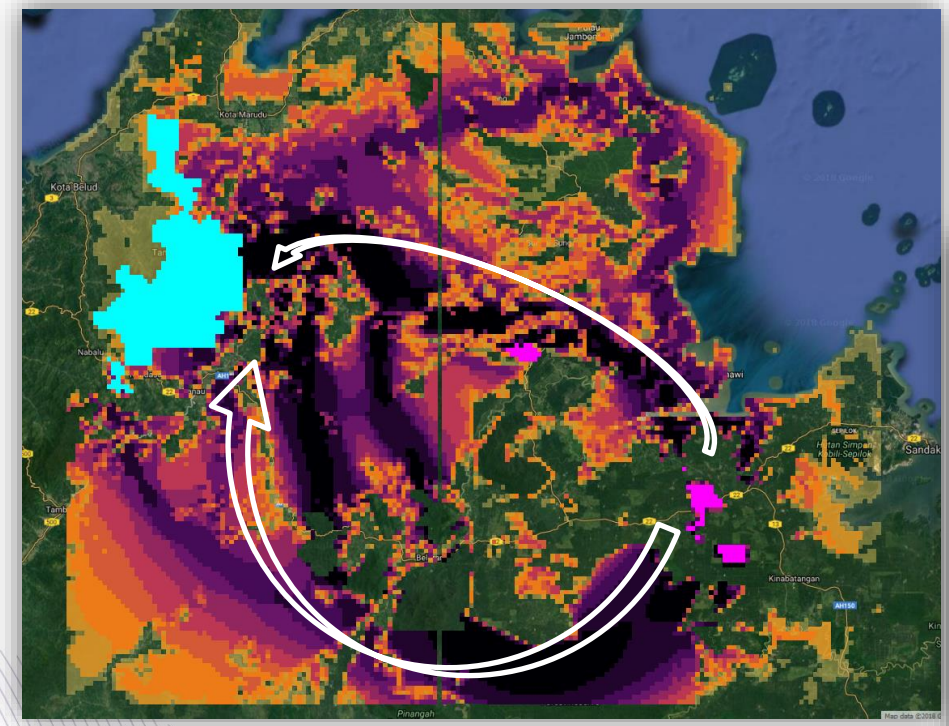
What kind of species are you interested in?	**Multiple** – long-distance & short-distance dispersers
What is your source and target?	Sources are lowland PAs; target is upland PAs
Why do your species need to move between the focal source and target?	**Climate change** – to track habitat of suitable temperature
What constitutes habitat?	**Forest (currently unprotected)**
What kind of prioritisation are you performing?	Identifying the most important habitat patches to **conserve/protect** formally, to enable connectivity between multiple lowland & upland PAs
Who will be interested in the results?	Various Government agencies in Sabah

SEARRP South East Asia Rainforest Research Partnership

UNIVERSITY of York

CASE STUDY 1 – Modelling key dispersal routes

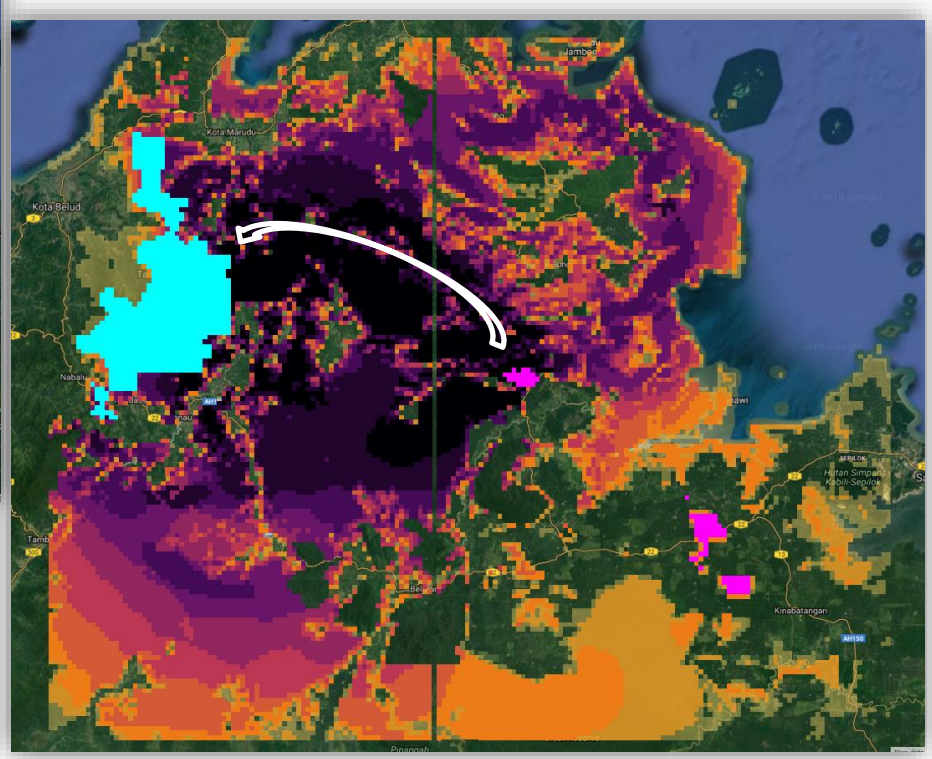
Given limited resources for conservation, which habitat patches are the most important to protect for long-term connectivity between lowland PAs and Mount Kinabalu?



PA2

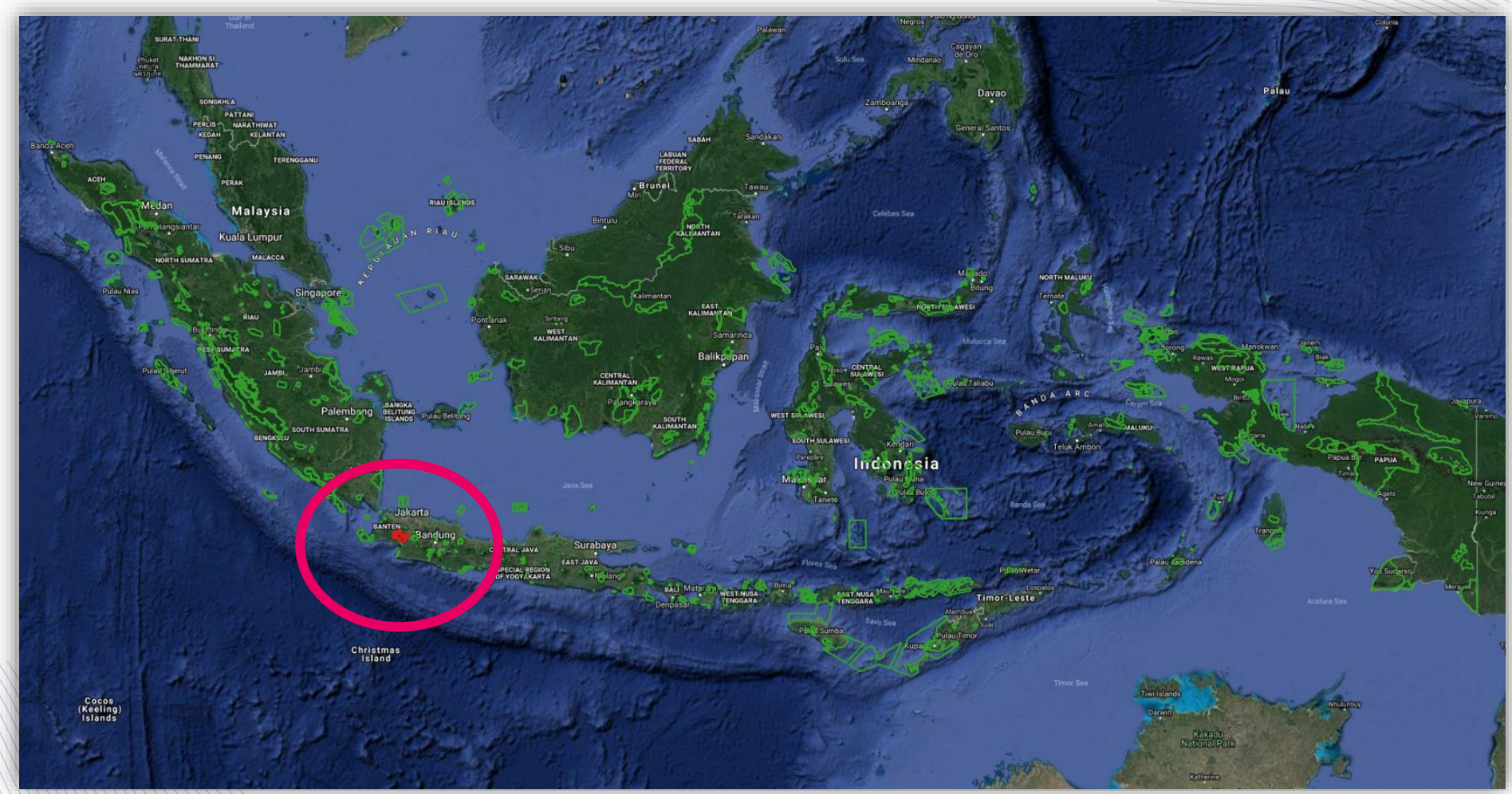
Dropping Rank output

PA4



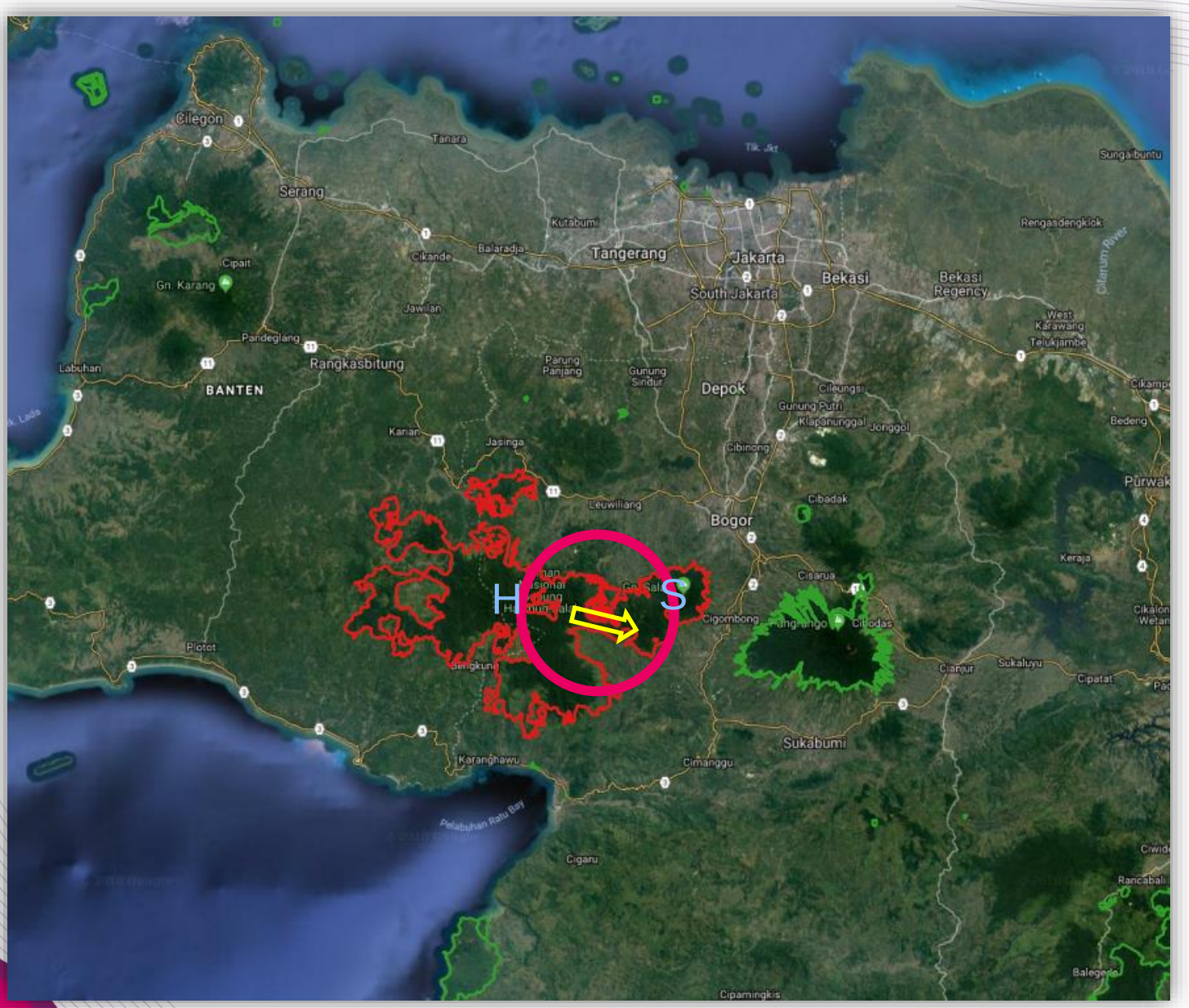
CASE STUDY 2 – Prioritising corridor restoration in Java

CASE STUDY 2 – Mount Halimun Salak National Park

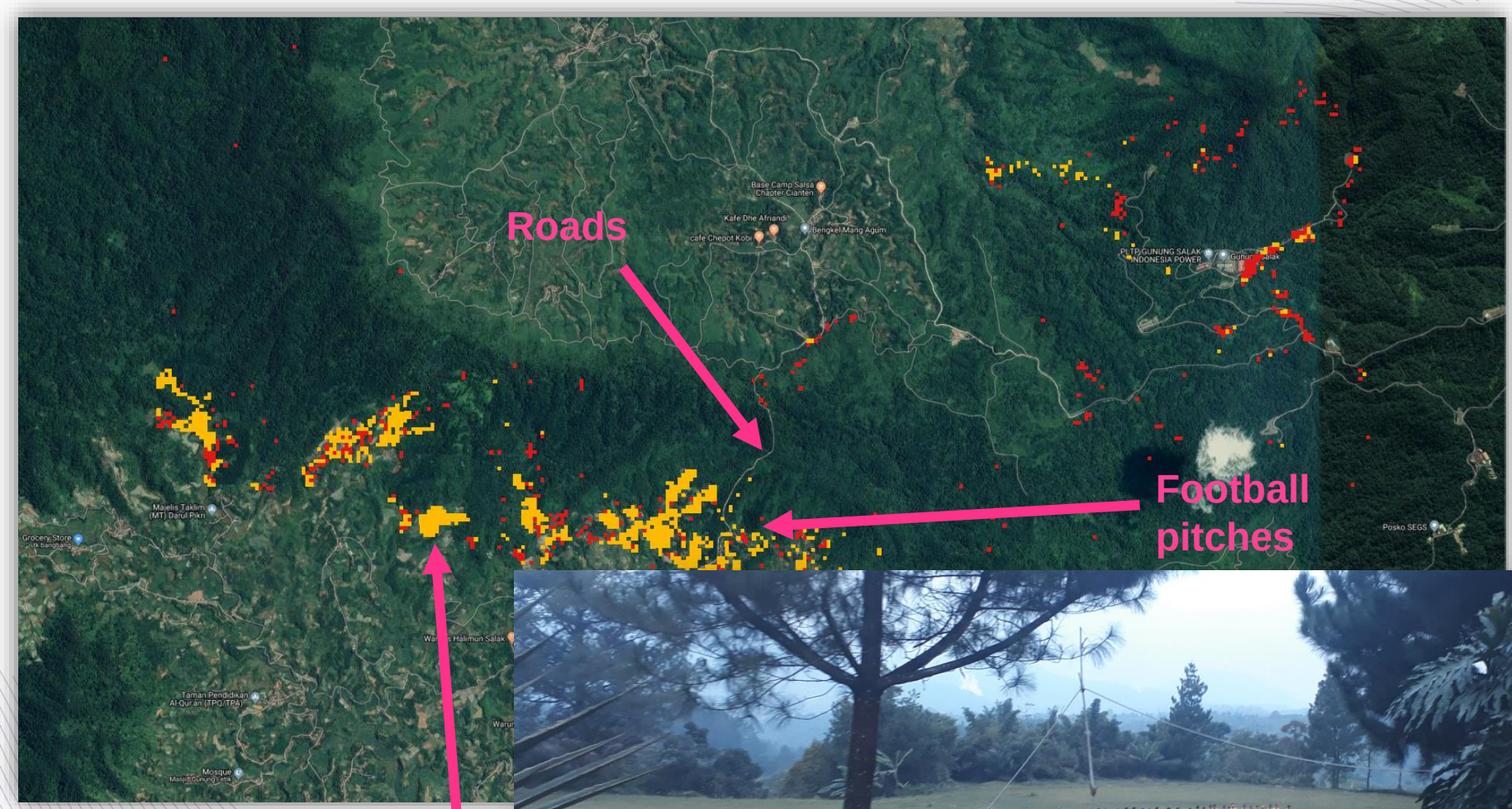


Protected Planet - https://protectedplanet.net/country/ID

CASE STUDY 2 – Mount Halimun to Mount Salak



CASE STUDY 2 – Fragmentation within the corridor



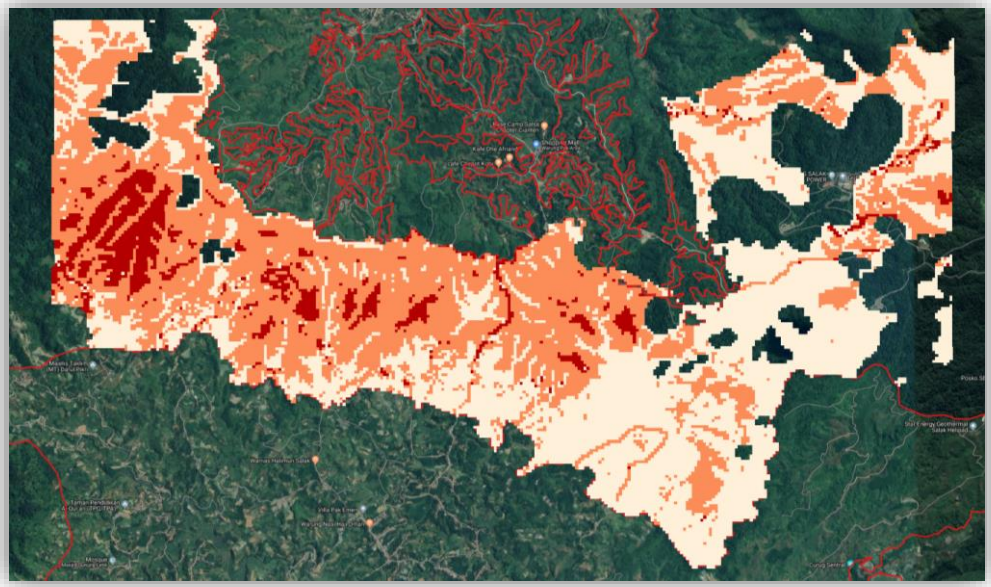
CASE STUDY 2 – Prioritising corridor restoration in Java

- GOAL: Aid the prioritisation of restoration of degraded tropical forest in and around a ‘corridor’ between two mountains in Java, Indonesia.

- TECHNOLOGICAL ADVANCE: inclusion of habitat quality effects

What kind of species are you interested in?	**Javan gibbon** and **Javan leopard**
What is your source and target?	Source is **Mount Halimun**; target is **Mount Salak**
Why do your species need to move between the focal source and target?	Habitat **fragmentation** & **climate change**
What constitutes habitat?	**Forest**, or varying stature & quality
What kind of prioritisation are you performing?	Identification of key locations for **restoration** of degraded forest habitat
Who will be interested in the results?	Taman Nasional Gunung Halimun Salak

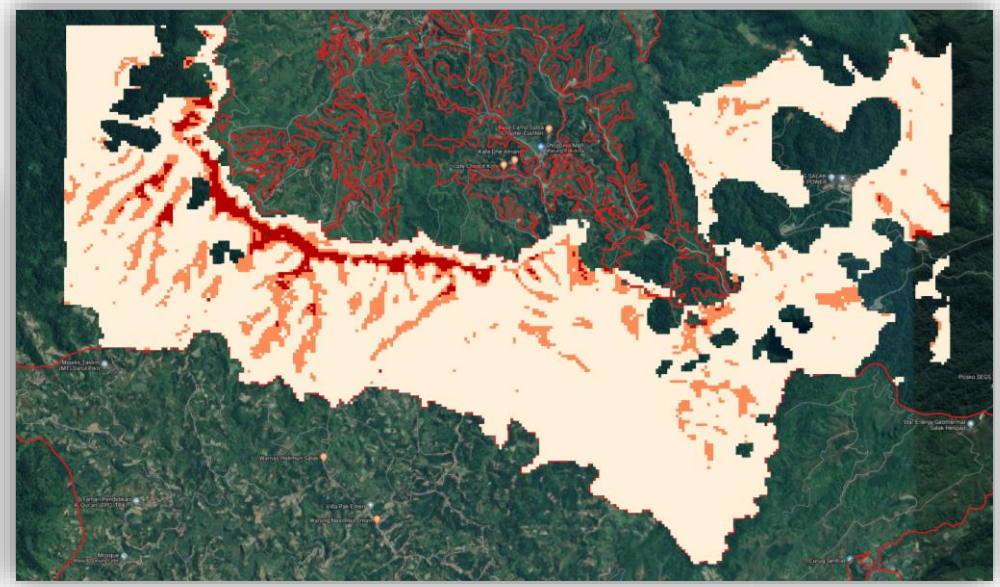
CASE STUDY 2 – Species & habitat quality



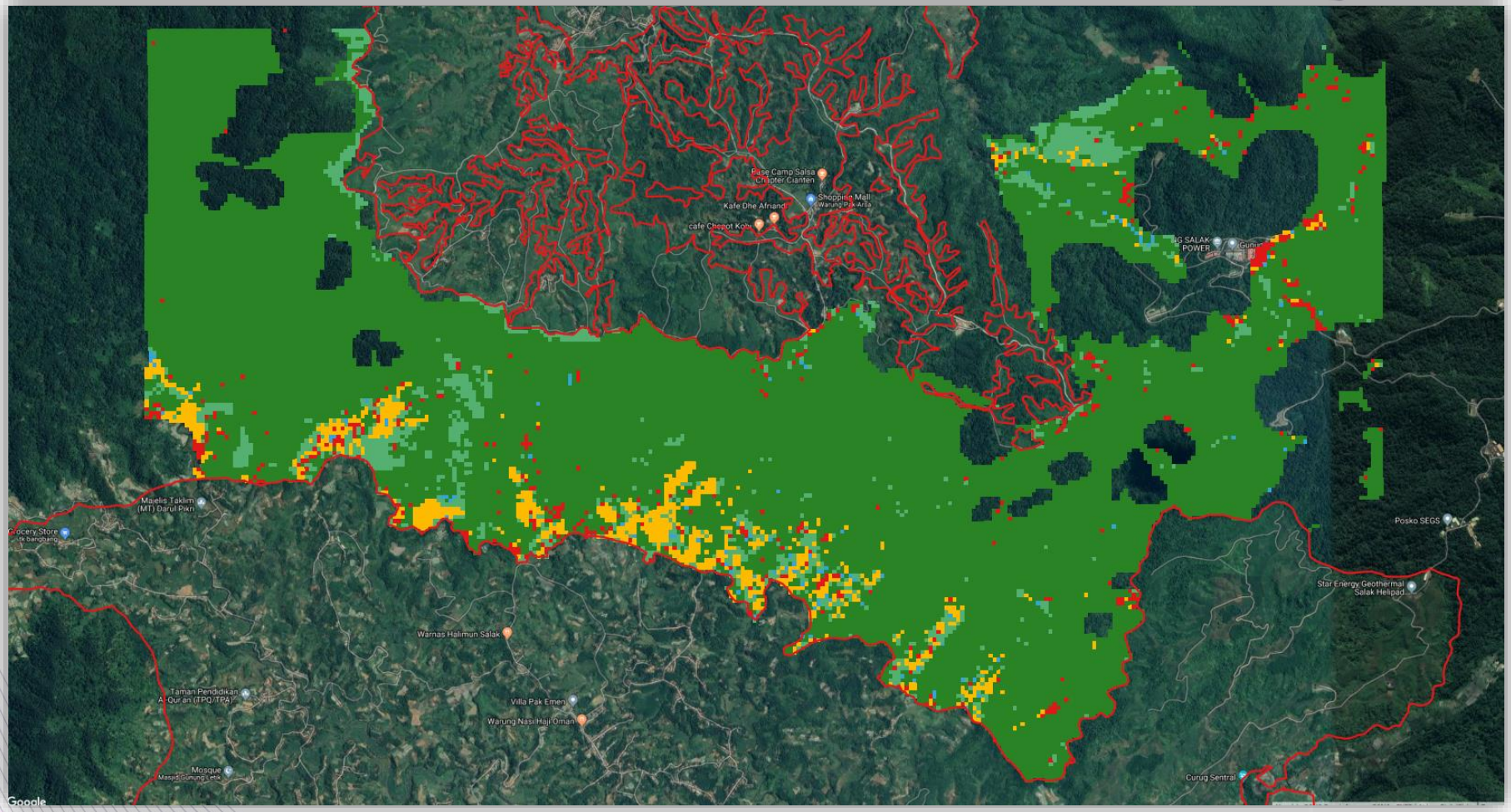
Javan Gibbon
(*Hylobates moloch*)

Species-habitat associations

Javan Leopard
(*Panthera pardus melas*)

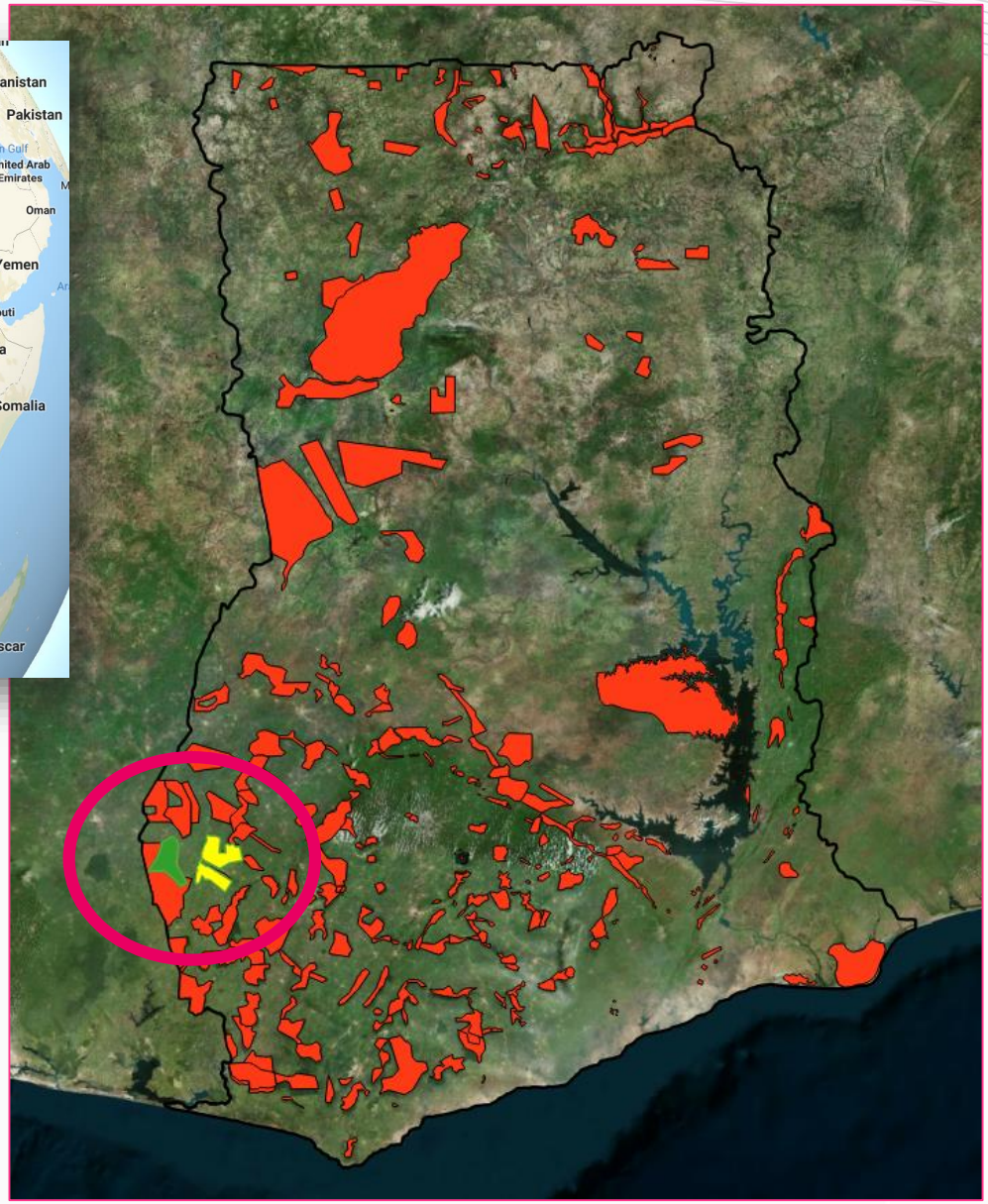


CASE STUDY 2 – Next steps....



CASE STUDY 3 – Expanding shade cocoa in western Ghana

CASE STUDY 3 – Krokosua Hills & Bia National Park



CASE STUDY 3 – Land use change in the matrix

CASE STUDY 3 – Connectivity opportunities through cocoa agroforestry (?)

Shade cocoa

Sun cocoa

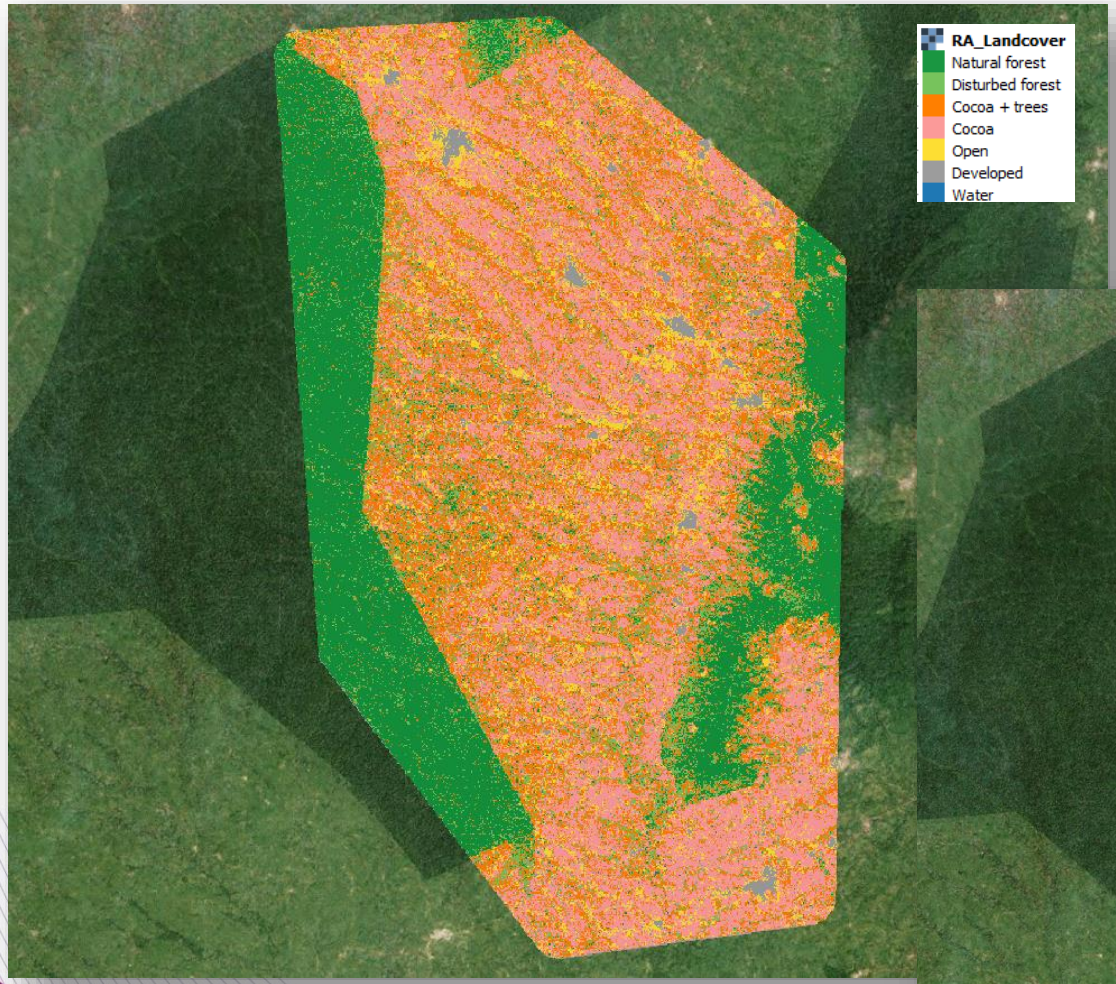
CASE STUDY 3 – Expanding shade cocoa in western Ghana

- GOAL: Aid decisions on the most efficient areas for conservation action in a landscape in Ghana threatened by multiple socio-economic changes.

- TECHNOLOGICAL ADVANCE: exploring inclusion of cost and stakeholder preference

What kind of species are you interested in?	**Forest-dependent taxa** (sp. indicative of forest habitat/associated with shade cocoa)
What is your source and target?	Source is **Krokosua Hills**; target is **Bia National Park**
Why do your species need to move between the focal source and target?	Habitat **fragmentation** & **climate change**
What constitutes habitat?	**Shade cocoa**
What kind of prioritisation are you performing?	Identification of key locations for **restoration** of cocoa agroforestry
Who will be interested in the results?	National REDD+ Secretariate, Forestry Commission of Ghana

CASE STUDY 3 – Next steps....



Land cover classes for *Habitat* dis

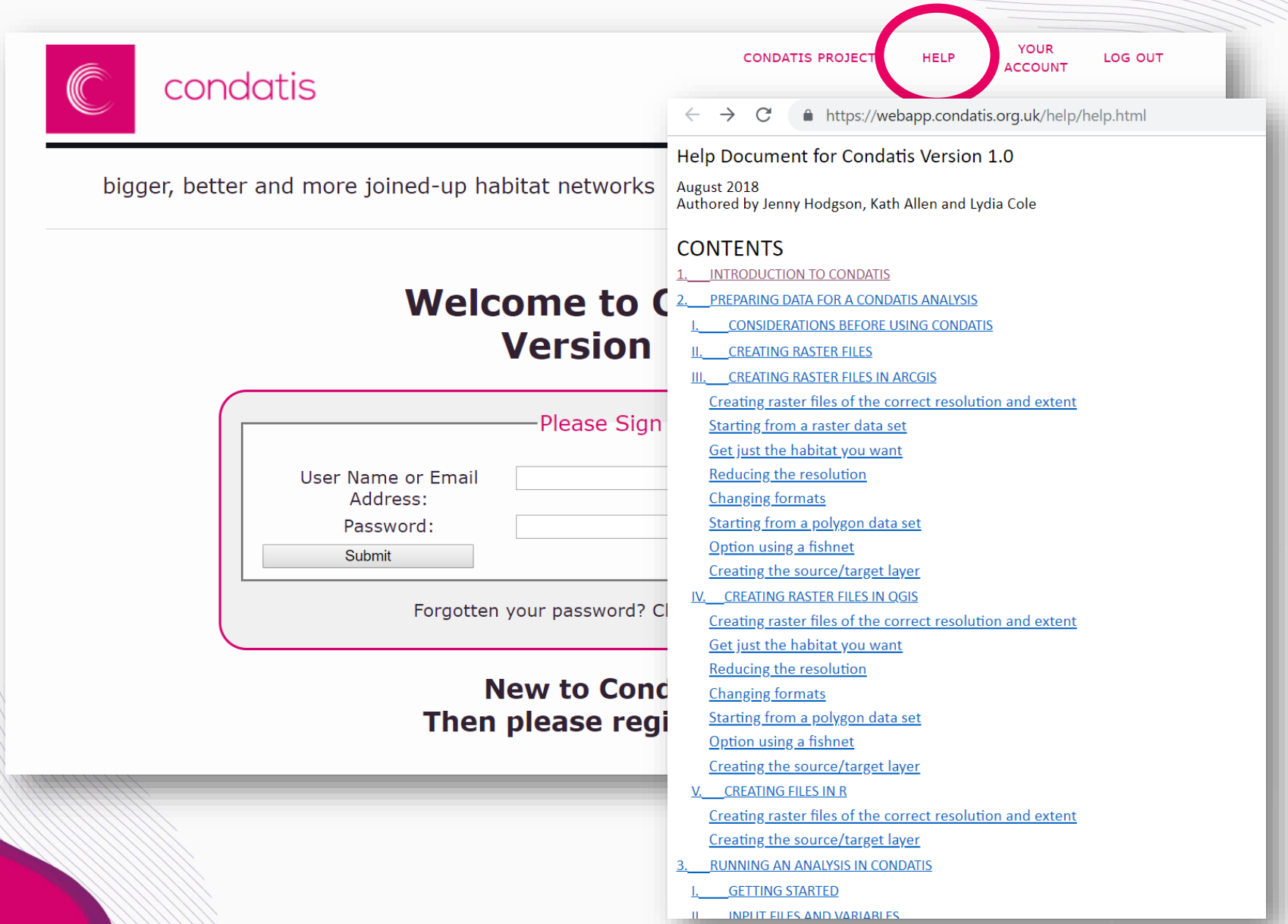
Restoration opportunities

sun cocoa

Rainforest Alliance

OBJ. III: Training workshops &....

OBJ. III: ....materials



Many thanks to:

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