

# *Flying Gardeners*

## Hornbill & Flying Fox Conservation Project

*Peninsular Malaysia*



*Male Helmeted hornbill*

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Marisa Boyd, [mboyd@phoenixzoo.org](mailto:mboyd@phoenixzoo.org)  
Senior Keeper/Graduate Student



# Objective

*Empower rural Malaysian communities to save hornbill and flying fox species through impactful research and awareness-raising activities*

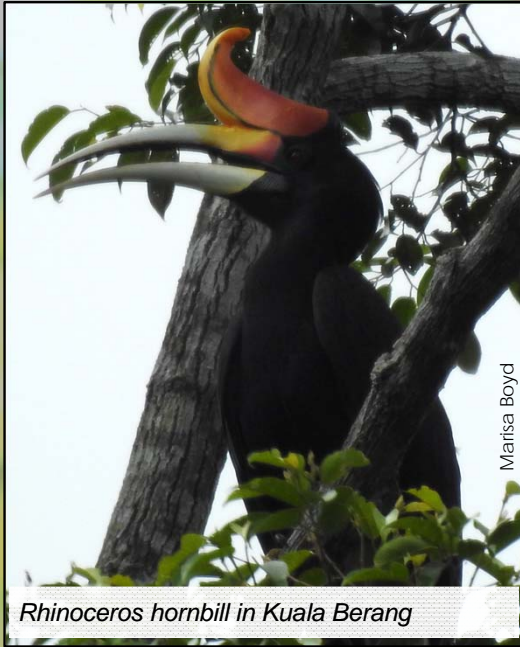


Ravinder with field team, including Bateq trackers

Multi-prong approach to conservation:

- 1) Research
- 2) Outreach
- 3) Community Education
- 4) Capacity Building

# Collaborators



## HORNBILLS

- GAIA (Ravinder, Sanjitpaal, Zikry)
- Malaysian Nature Society (Anuar)
- HUTAN (Dr. Marc)



## ANTHROPOLOGICAL

- Panthera Malaysia (May)



## FLYING FOXES

- Project Pteropus (Dr. Sheema)
- Nature Based Solutions (Dr. Rueben, Mohammed)
- MariCet (Dr. Louisa)

# Species scope

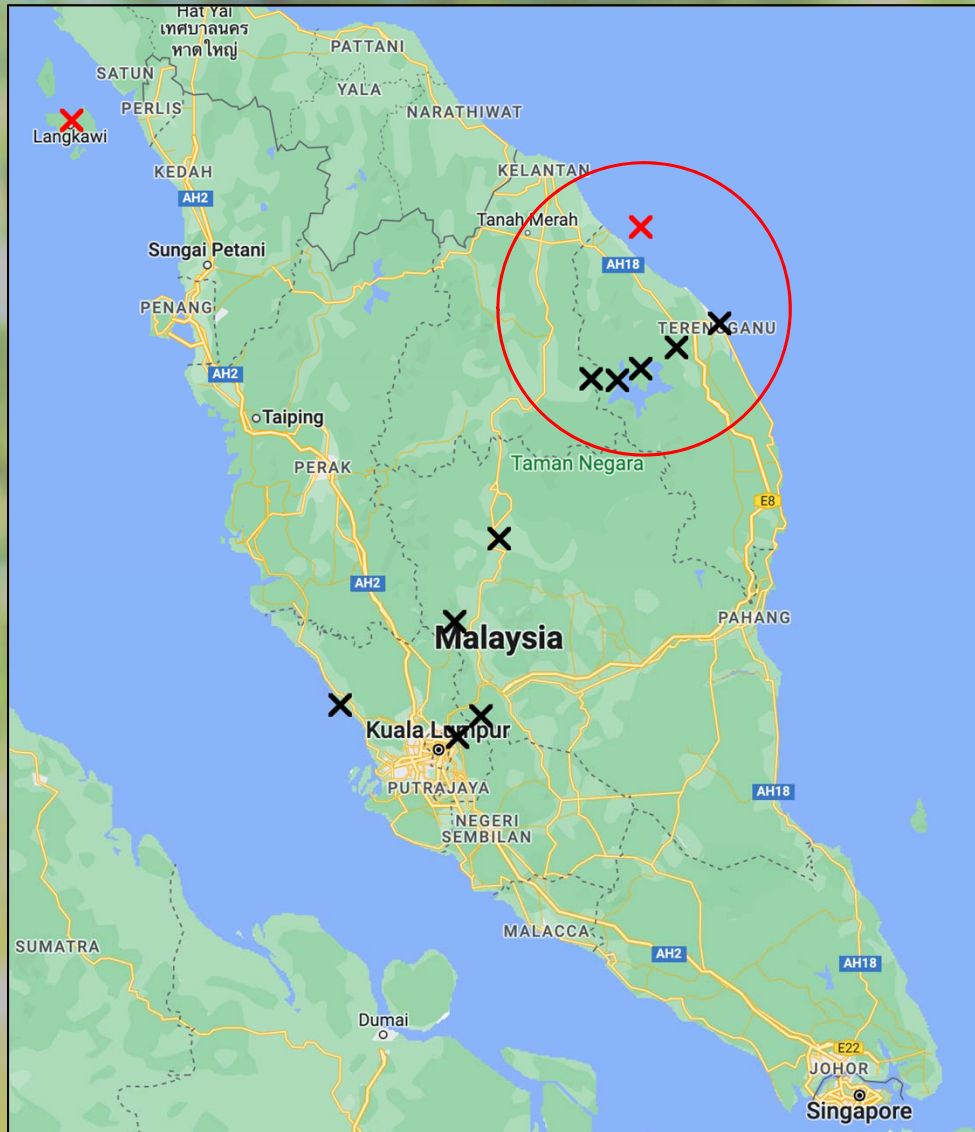
COMMON NAME	SPECIES	IUCN STATUS	TREND
Helmeted hornbill	<i>Rhinoplax vigil</i>	Critically Endangered	Decreasing
Wrinkled hornbill	<i>Rhabdotorrhinus corrugatus</i>	Endangered	Decreasing
White-crowned hornbill	<i>Berenicornis comatus</i>	Endangered	Decreasing
Plain-pouched hornbill	<i>Rhyticeros subruficollis</i>	Vulnerable	Decreasing
Wreathed hornbill	<i>Rhyticeros undulatus</i>	Vulnerable	Decreasing
Rhinoceros hornbill	<i>Buceros rhinoceros</i>	Vulnerable	Decreasing
Black hornbill	<i>Anthracoceros malayanus</i>	Vulnerable	Decreasing
Great hornbill	<i>Buceros bicornis</i>	Vulnerable	Decreasing
Bushy-crested hornbill	<i>Anorrhinus galeritus</i>	Near Threatened	Decreasing
Oriental pied hornbill	<i>Anthracoceros albirostris</i>	Least Concerned	Stable
Large flying fox	<i>Pteropus vampyrus</i>	Endangered	Decreasing
Island flying fox	<i>Pteropus hypomelanus</i>	Near Threatened	Decreasing



Island flying fox

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# Project coverage



- TERENGGANU  
Tasik Kenyir  
Kuala Terengganu  
Bukit Maras  
Batuk Rakit  
Kampung Raja  
**Pulau Rhu**  
Kuala Berang
- KELANTAN  
Kuala Kho
- SELANGOR  
Ampang Jaya  
Kuala Selangor
- PAHANG  
Bukit Fraser  
Raub  
Bentong
- KEDAH  
**Langkawi**

# Kenyir State Park

*(Taman Negeri Kenyir)*

- Formed in 2018
- 30,000 ha (116 mi<sup>2</sup>)
- Greater watershed 200,000 ha (772 mi<sup>2</sup>)
- Connect fragmented forests
- High quality lowland & hill Diptocarp forests
- First project to survey for hornbills & flying fox
- Home to indigenous Bateq people



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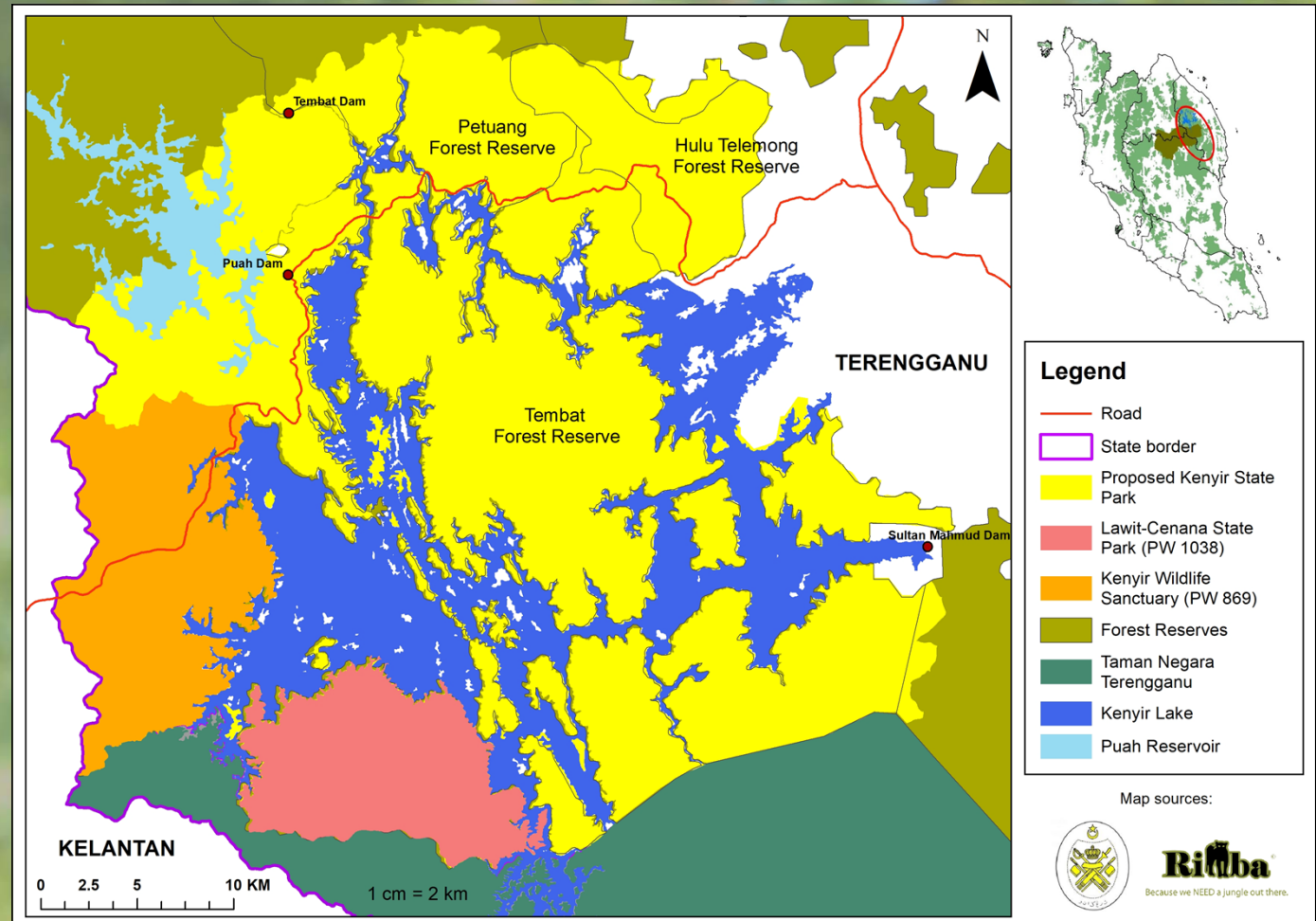
Marisa Boyd  
mboyd@phoenixzoo.org

**ASU** Arizona State University

phoenixzoo  
ARIZONA CENTER for NATURE CONSERVATION

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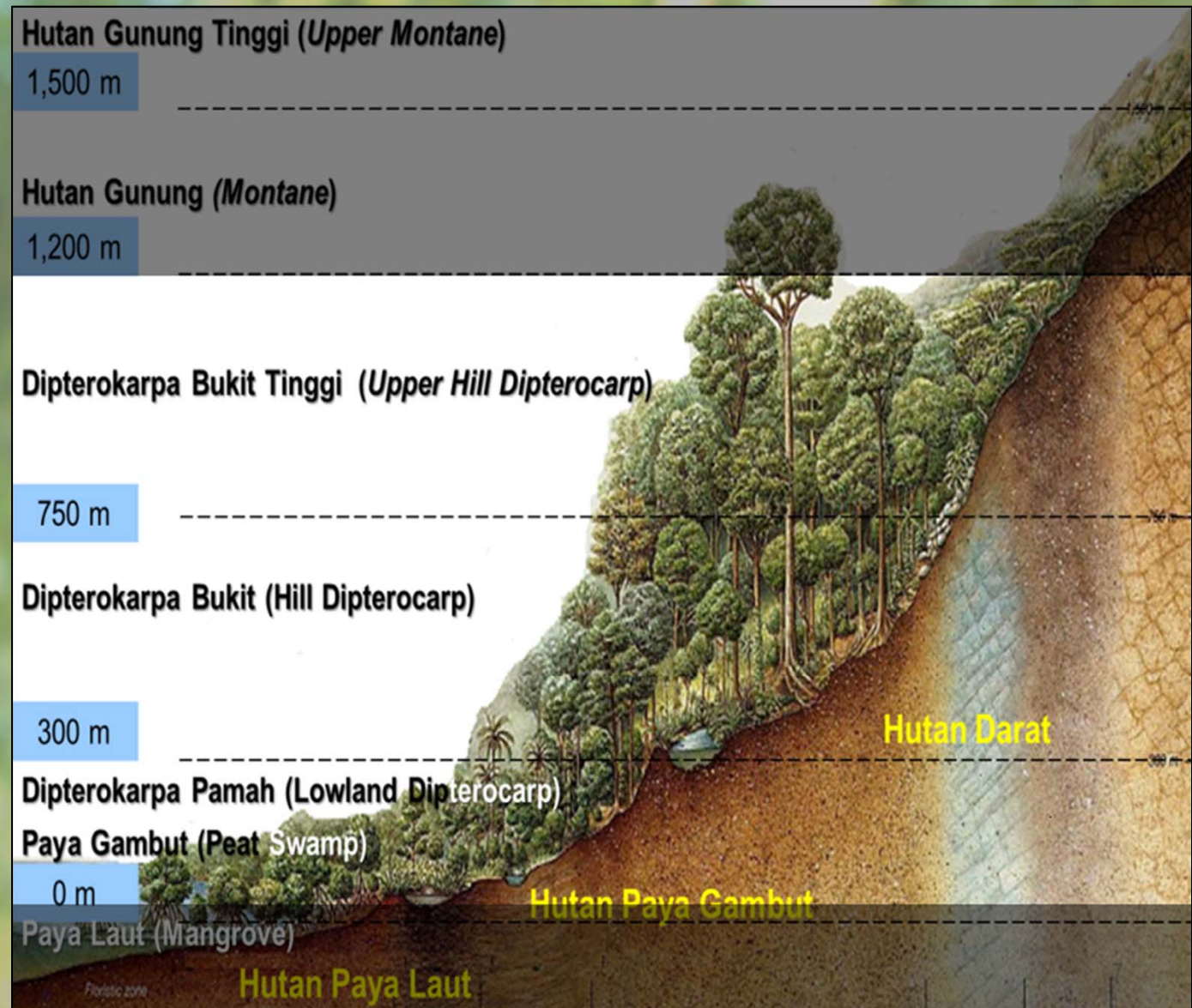
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State of Terengganu/Rimba

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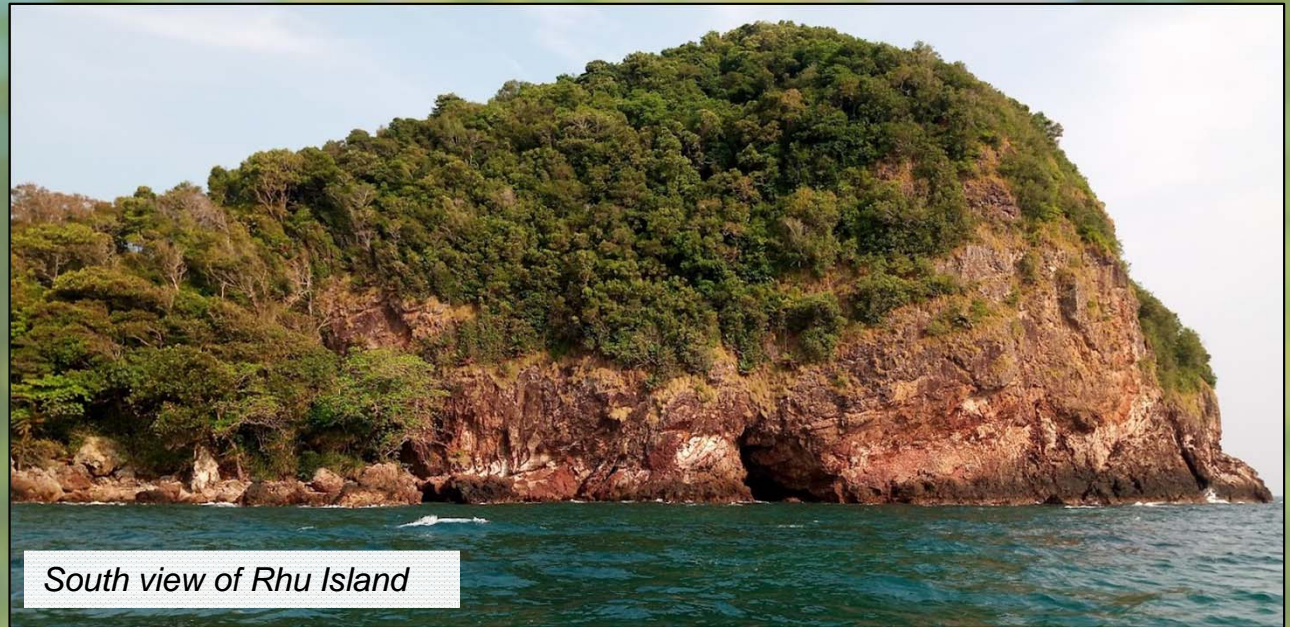
# Research

*Inform stakeholders of biological trends to help guide the development of data-driven policies*

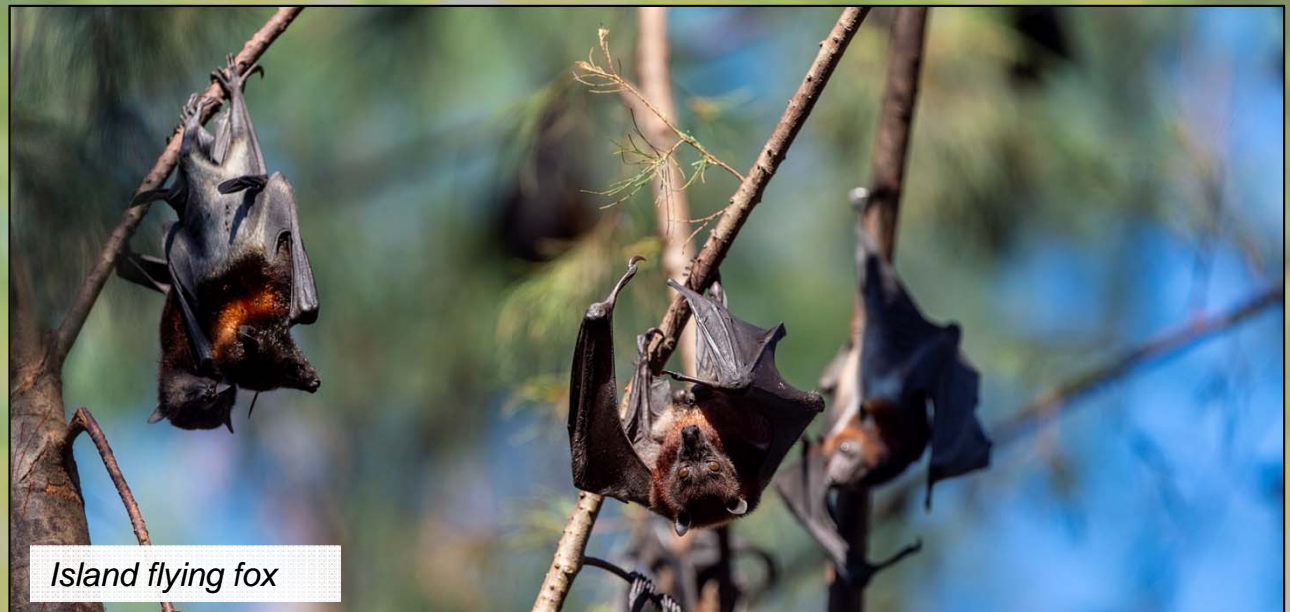
- **Population studies:** Dr. Ravinder Kaur, Gaia Scientific Director, Sunway University
- **Biodiversity survey:** Marisa Boyd, MSc Biological Data Science, Arizona State University
- **Hornbill parastic load:** Universiti Malaya – Department of Parasitology
- **Population genetics:** Mr. Wilhelm Eng Wei Han, Monash University Malaysia

## Rhu Island (Pulau Rhu)

- 24.3 ha (0.09 mi<sup>2</sup>)
- 2.3 km (1.4 mi) offshore
- Flying fox roost
- Protection status pending
- No current biodiversity survey
- Camera trap and bioacoustics array



Muhamad Farid



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# Outreach

## *Public engagement through awareness-raising activities*

### 1) National Zoo of Malaysia (*Zoo Negara*)

- Love Hornbill Day activities and talks
- Hornbill photo gallery installation

### 2) Fraiser's Hill (*Bukit Frasers*)

- Promote ethical birdwatching

### 3) The Datai Langkawi

- Hornbill nature talks
- Gift shop space

### 4) Social Media

- 90% of pop. on social media
- Top 3: WhatsApp, Facebook, Instagram



# Community Education

- Increase educational opportunities for schools
- Increase accessibility to formal education
- Educational materials for Customs agency

# Capacity Building

- Employ local Malay
- Pilot program: Bateq “Hornbill Guardians”
- Stewardship of their land and resources

## Orang Asli Bateq

Pop: 1,500-1,600

Nomatic hunter-gatherer

Primary range in Taman Negara



*Ravinder with Bateq child*

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## Challenges

- Poaching
- Trafficking
- Conflict zones

## Considerations

- Working in conservative states
- Working with indigenous people

## Needs? Funding!

- Connect US funders to NGOs in range countries
- Cultivate mutually beneficial relationships between AZA facilities and research universities



*Representative tail feather*

Thank you!

- ASAG
- SAFE  
Asian Hornbill
- Coraciformes &  
Bucerotiformes  
TAG



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