

# Monitoring wildlife with camera traps at a global scale: challenges and opportunities

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Tropical Ecology  
Assessment & Monitoring



CONSERVATION  
INTERNATIONAL



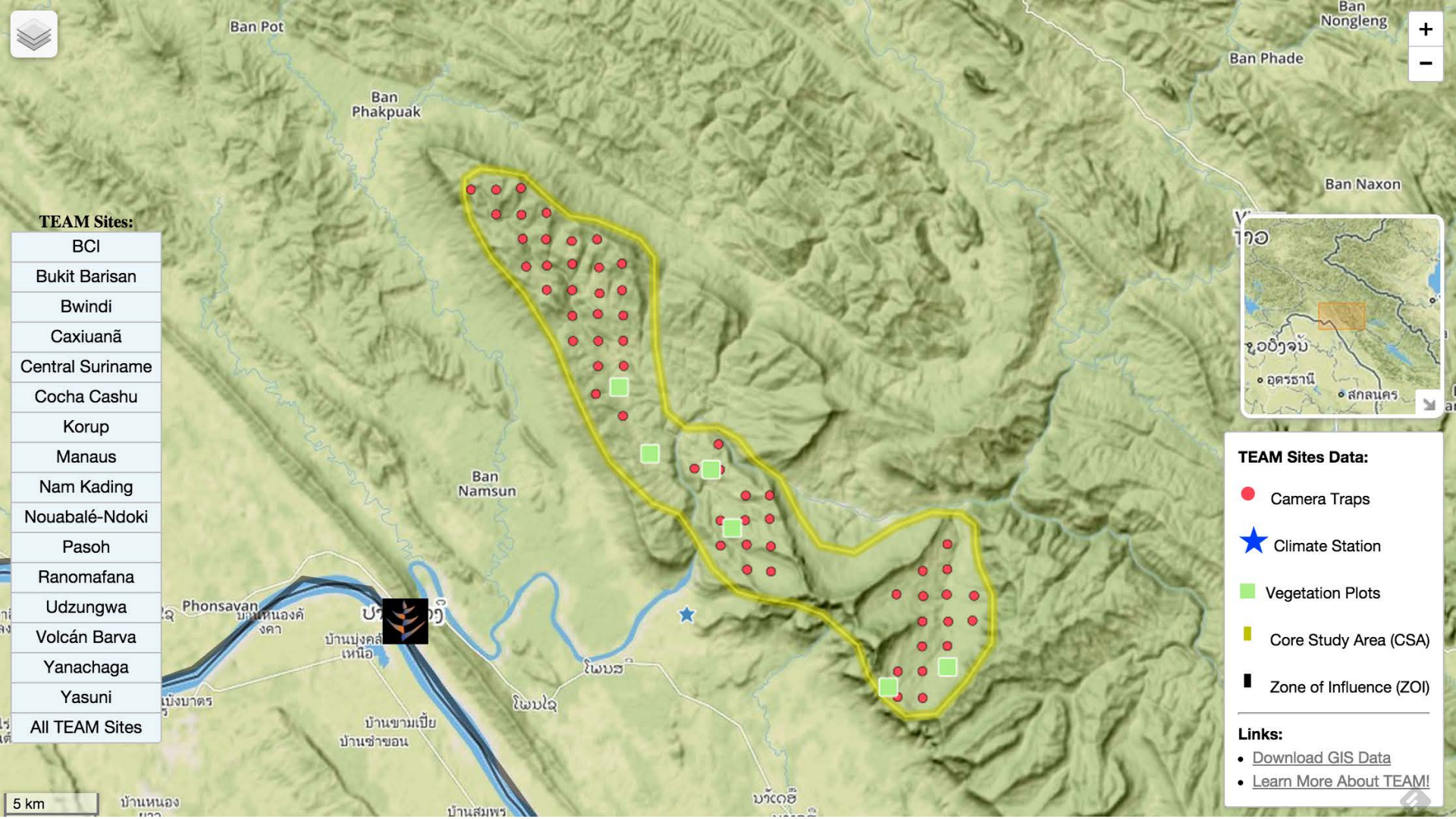
Smithsonian



# Tropical Ecology Assessment and Monitoring (TEAM) Network







**TEAM Sites:**

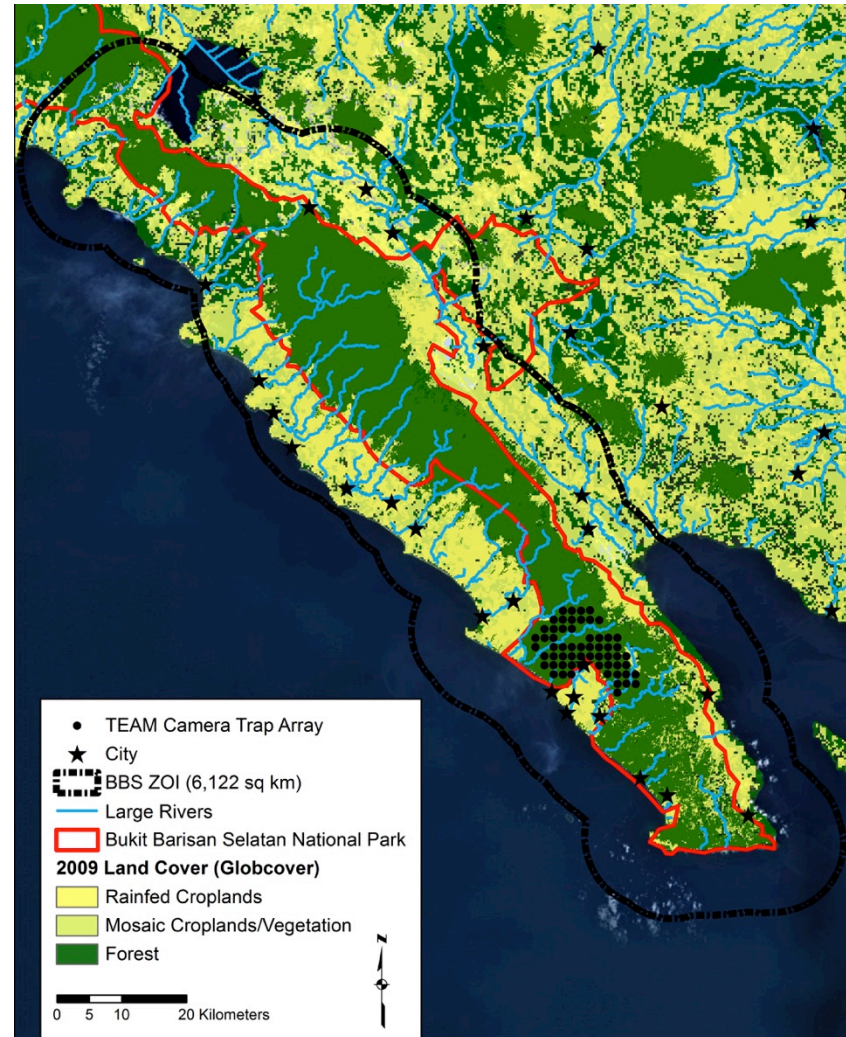
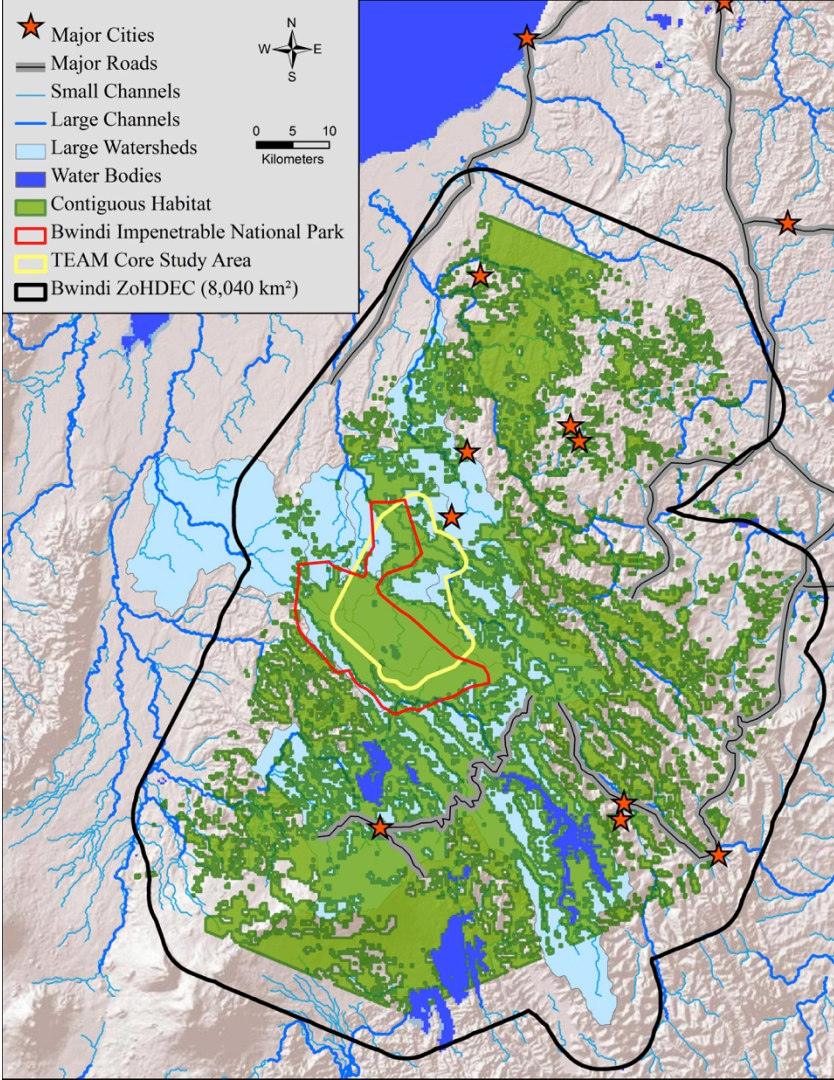
- BCI
- Bukit Barisan
- Bwindi
- Caxiuanã
- Central Suriname
- Cocha Cashu
- Korup
- Manaus
- Nam Kading
- Nouabalé-Ndoki
- Pasoh
- Ranomafana
- Udzungwa
- Volcán Barva
- Yanachaga
- Yasuni
- All TEAM Sites

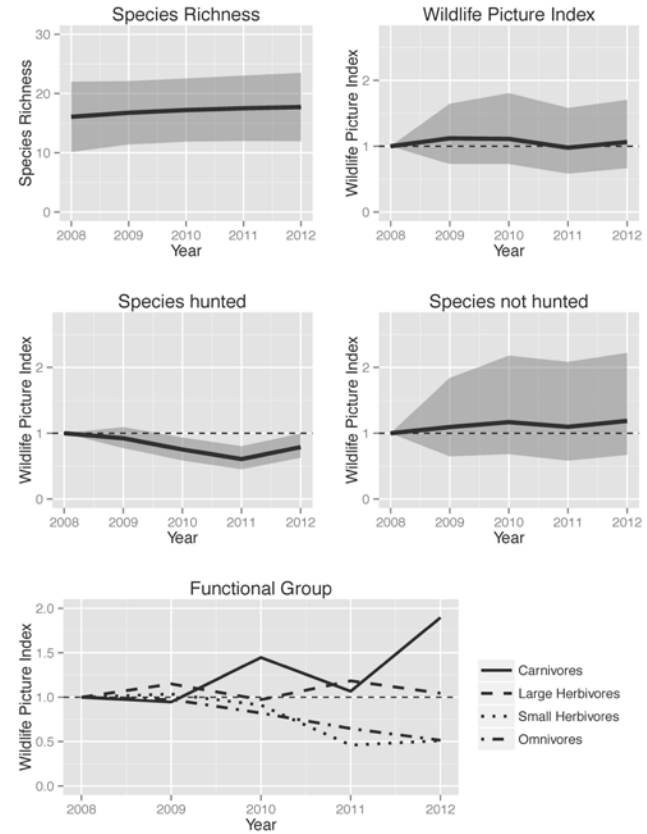
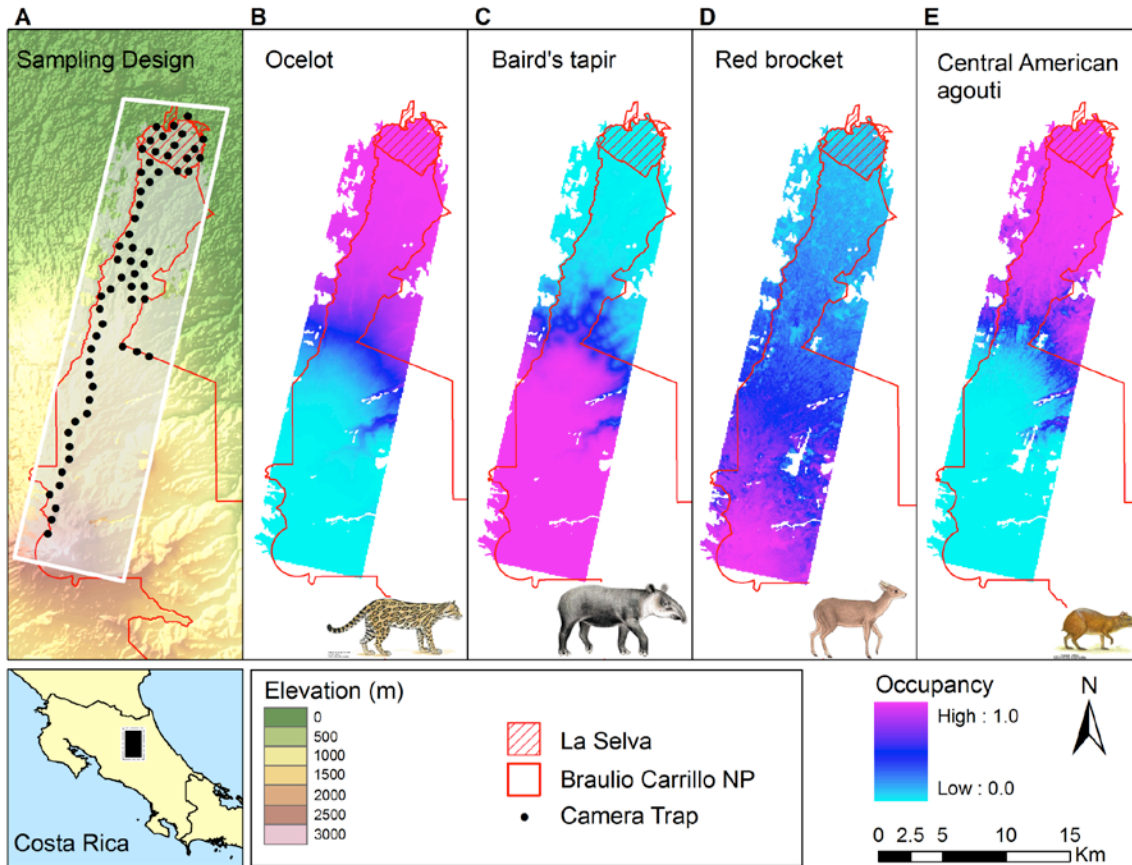
**TEAM Sites Data:**

- Camera Traps
- ★ Climate Station
- Vegetation Plots
- Core Study Area (CSA)
- Zone of Influence (ZOI)

- Links:**
- [Download GIS Data](#)
  - [Learn More About TEAM!](#)

5 km





# Quick stats

- Tropical forest network – 17 sites in 16 countries
- More than 2.5 M images, 4-8 years of data/site
- Half million images added every year
- Ground-dwelling mammals birds, ~300 species
- Software to quickly process field images (OpenDesk TEAM)

# Challenges

A photograph of a person in a forest setting, crouching and adjusting a camera trap mounted on a tree trunk. Another person is partially visible in the foreground, looking towards the camera trap. The scene is outdoors with dense green foliage.

- Data management: camera trap data accumulates quickly



# Challenges

A person in a light-colored shirt and dark pants is kneeling in a forest, adjusting a camera trap mounted on a tree trunk. The camera trap is a grey, rectangular device with a lens and a small display. The person is looking down at the device. The background is a dense forest with green foliage and tree trunks. The image is semi-transparent, allowing the text to be overlaid.

- Turning camera trap data into useful indicators for policy makers

# Challenges

A person in a light-colored shirt is crouching in a forest, using a handheld device to monitor a tree trunk. A sensor is attached to the tree trunk. Another person in a light-colored shirt and khaki pants is standing next to them, looking at the device. The background is a dense forest with green foliage.

- Sustainable funding: everybody needs data but nobody wants to fund 'just monitoring'

# Opportuniti

es

- Standardized, cost-effective and verifiable
  - \$30-40K per year/PA
  - Camera traps are getting cheaper
  - Images allow for easy verification

# Opportuniti

es

- Available indicator (Wildlife Picture Index) can be calculated through a specialized analytics system (WPI AS). WPI can be easily aggregated/disaggregated starting at the species level

# Opportuniti

es

- Methods and analyses are scalable to the level of national protected area networks or other relevant national and regional networks

# Opportuniti

es

- Represent some key Essential Biodiversity Variables
  - species distribution
  - population abundance
  - taxonomic diversity trends.

# Opportuniti

es

- Many countries (in particular tropical) need monitoring systems for wildlife and not sure where to start

# Opportuniti

es

- Images of animals are a key asset for communication and education at local, regional and national levels

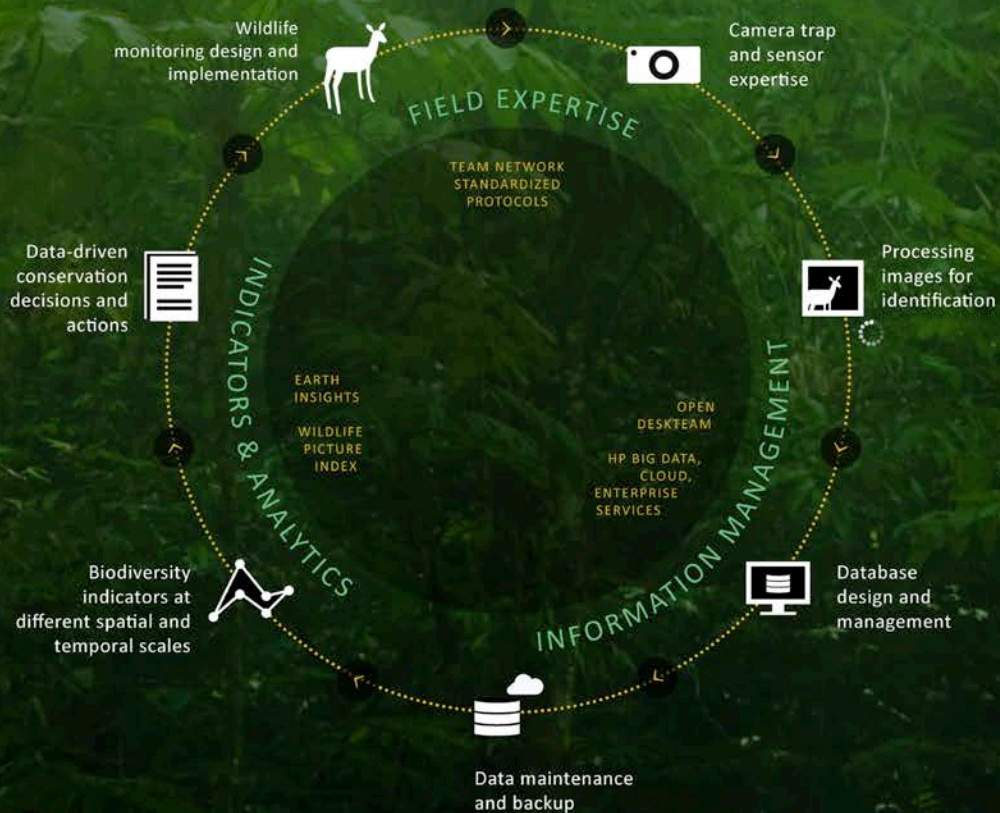


# Opportuniti

es

- Protected area effectiveness indicators (e.g. METT scores) need more quantitative ways to assess biodiversity outcomes

# A comprehensive biodiversity monitoring solution to improve protected area effectiveness



Learn more at  
[www.teamnetwork.org/solution](http://www.teamnetwork.org/solution)

# Wildlife Picture Index Analytics System

## Explore WPI

★ Save selection ↺ Reset selection

Year Range Selection  
2007-2014

Site Selection  
1 Selected

Species Group Selection  
1 Selected

### Global WPI > Species Trend

Click on navigation menu above to go back to WPI



#### Species Trend for Bukit Barisan

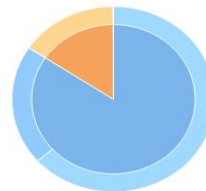


- Hystrix Brachyura — Tapirus Indicus — Sus Scrofa — Lutra Lutra — Paradoxurus Hermaphroditus
- Tupia Tana — Prionailurus Bengalensis — Muntiacus Muntjak — Muntiacus Montanus
- Prionodon Linsang — Lariscus Insignis — Macaca Fascicularis — Cuon Alpinus — Arctictis Binturong
- Panthera Tigris — Argusianus Argus — Rusa Unicolor — Elephas Maximus — Pardofelis Marmorata
- Rollulus Rouleou — Tragulus Javanicus — Cynogale Bennetti — Tragulus Komohi
- Pardofelis Taminckii — Chalchophaps Indica — Paguma Larvata — Macaca Nemestrina
- Hemipatus Derbyanus — Manis Javanica — Tragulus Napu — Echinorex Gymnura
- Herpestes Brachyurus — Gallus Gallus — Helarctos Malayanus — Neofelis Nebulosa
- Trichys Fasciculata

#### Impact Analysis

Macaca Nemestrina

#### Summary of Impacts



- Climate
- Human Presence
- Forest Edge
- Elevation/baseline
- Survival/min temp
- Survival/max temp
- Survival/rainfall
- Colonization/min temp
- Colonization/max temp
- Colonization/rainfall
- Human Presence
- People/baseline
- Survival/people
- Colonization/people
- Edge/baseline

Impact Analysis approach



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# Camera Trap Data Network

The Camera Trap Data Network is an archive for camera trap images and metadata for use by researchers and conservationists trying to discover and save wildlife communities around the world. Camera trappers can use this network to ensure their data properly archived, protected from loss, and available for global studies (at a range of access levels). Biodiversity data analysts can use the network to ask new scientific questions and track population trends. Animal lovers can enjoy millions of unique pictures.



## “Data driven Wildlife Monitoring and Management”

How Wildlife Monitoring Works ?



### Upload Camera Trap Data

Share your data with collaborators around the world by synchronizing with the network's data standard...



### Compute Analysis

Camera Trap Images and survey data are analyzed and computed for various analytics on new data arrival from the parks and ...



### View Camera Trap Data

View, analyze and download globally shared camera trap data by individuals and organizations

