



# PandaSat

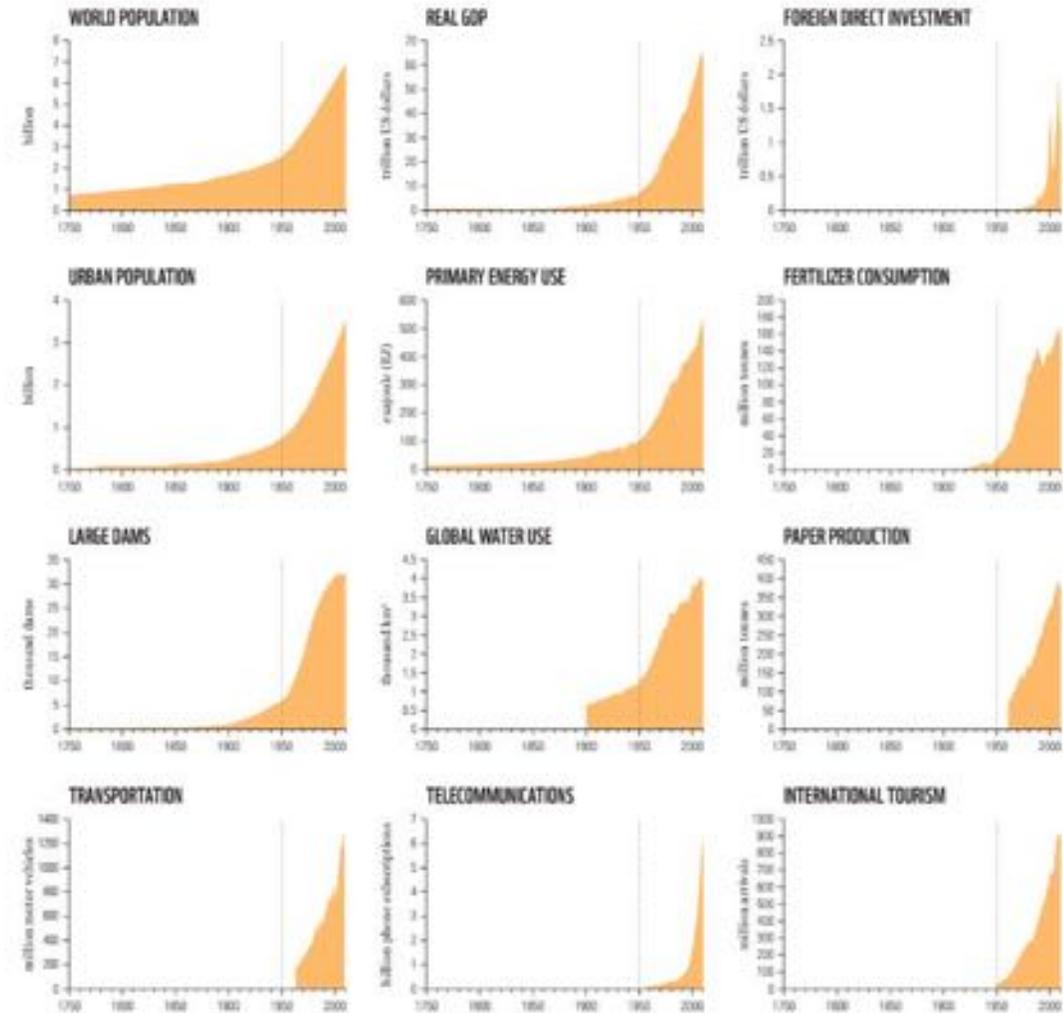
Space Technology for Wildlife Conservation

ESA  $\Phi$ -Week

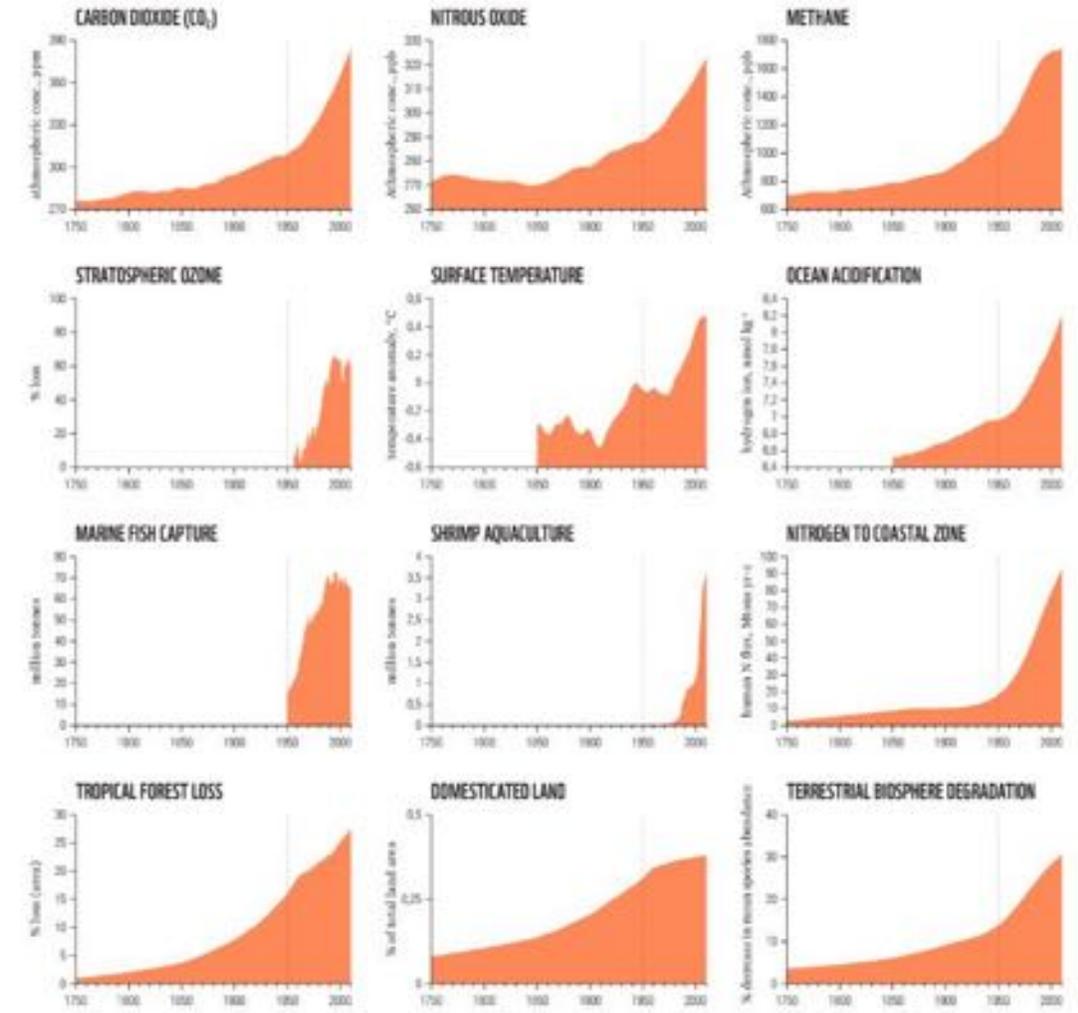
14 November 2018

# WWF Living Planet Report - 2018

## SOCIO-ECONOMIC TRENDS

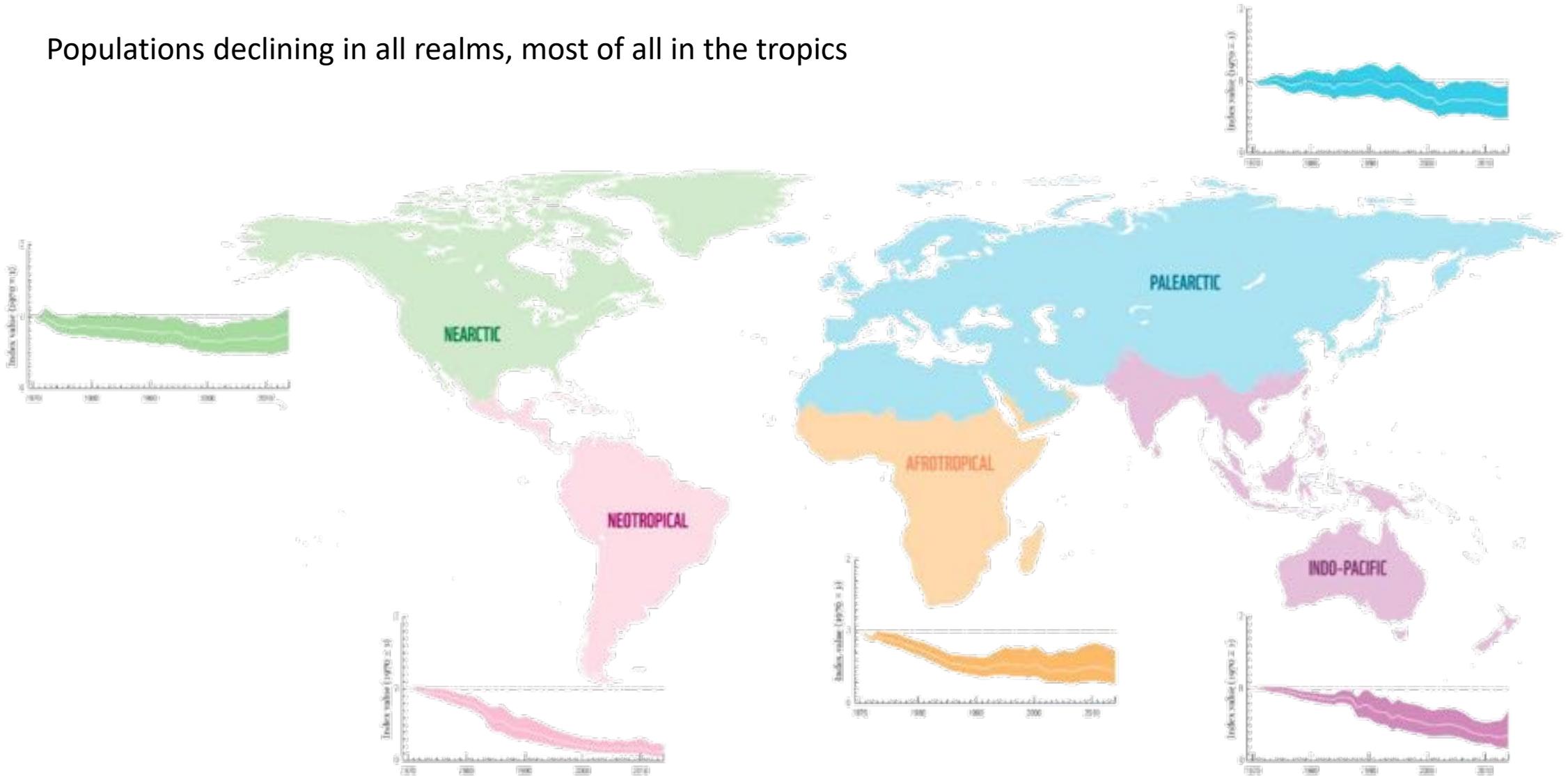


## EARTH SYSTEM TRENDS

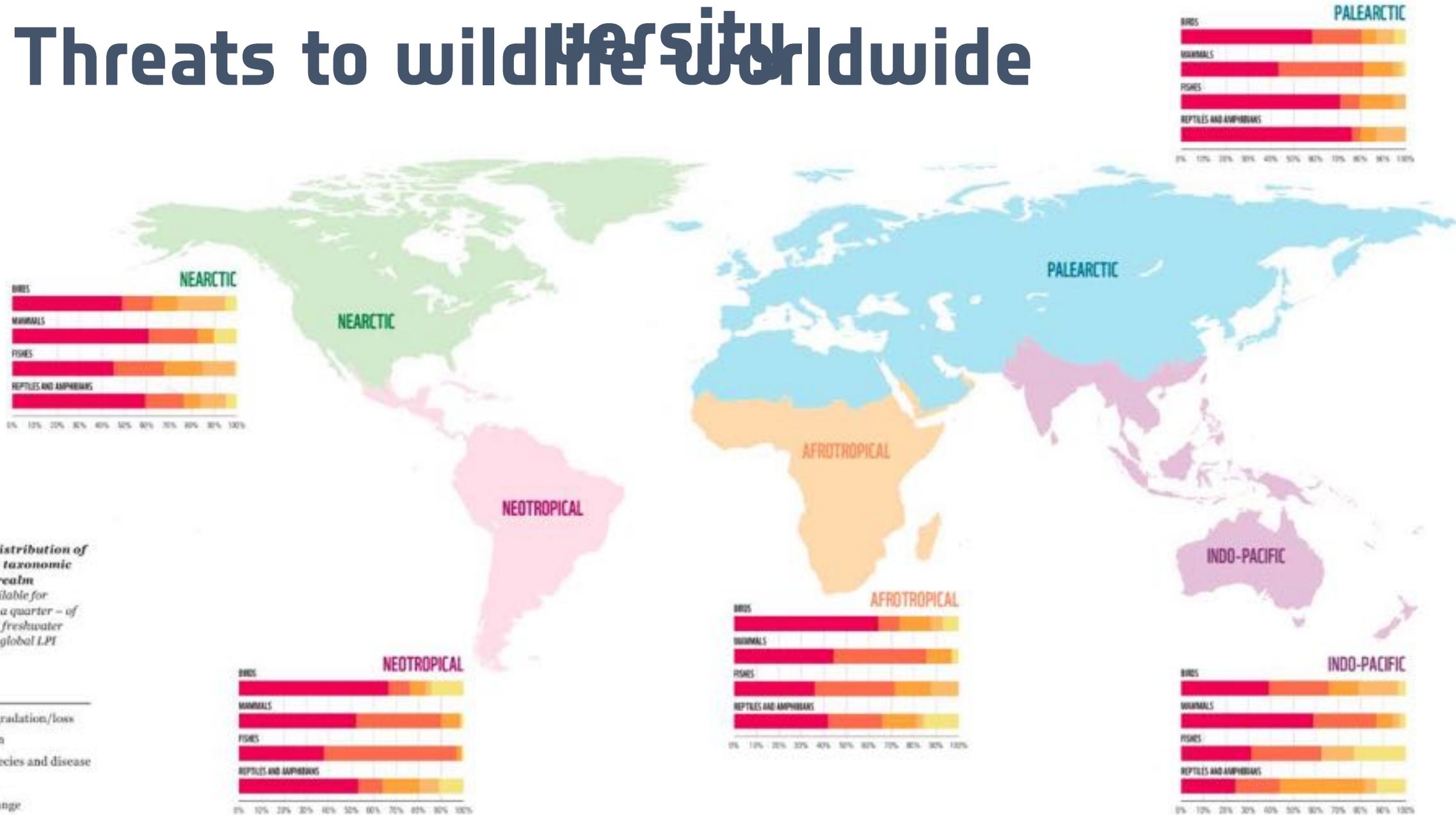


# WWF Living Planet Report - 2018

Populations declining in all realms, most of all in the tropics



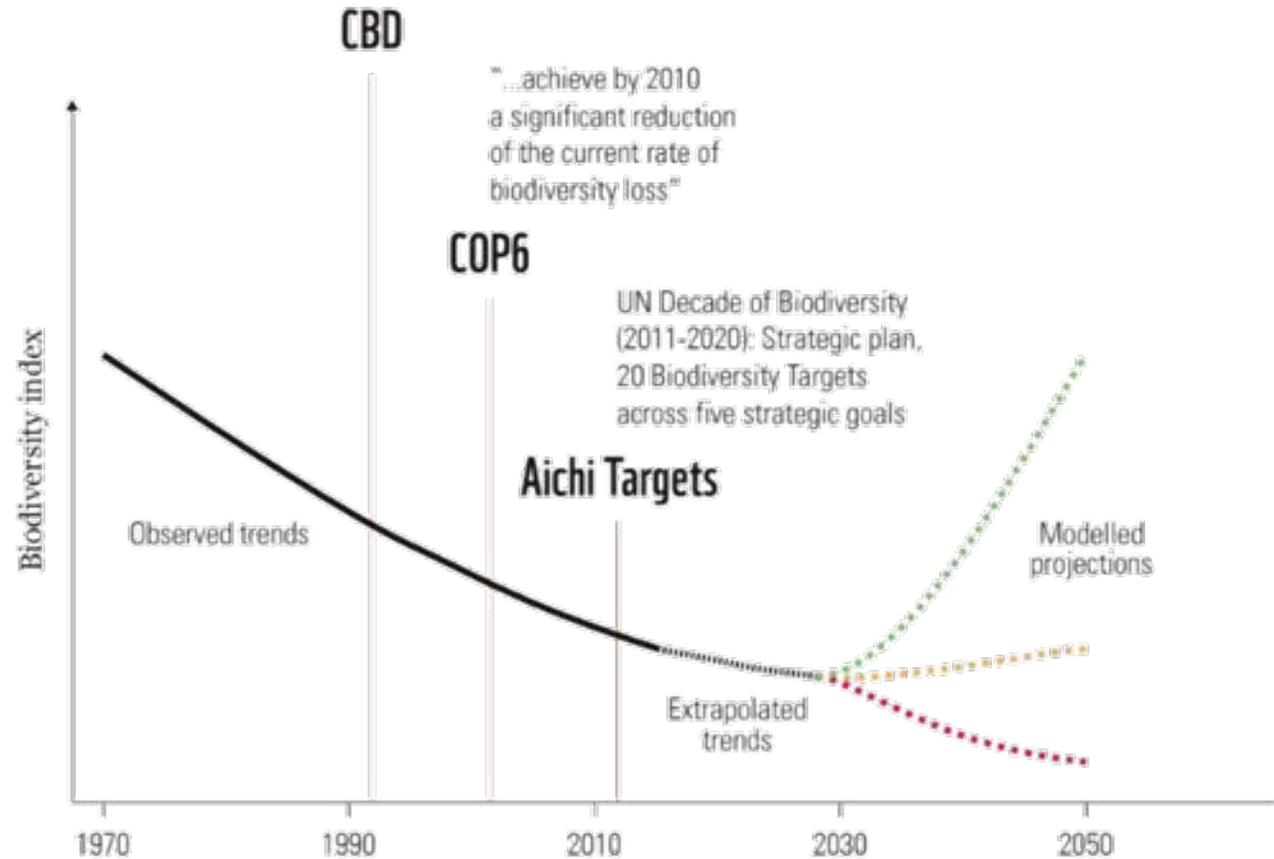
# Threats to wildlife worldwide



**Figure 17: The distribution of threats for each taxonomic group for each realm**  
 Threat data is available for 3,789 – just under a quarter – of the terrestrial and freshwater populations in the global LPI database<sup>10</sup>.

# Bending the curve

"Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity; Integrate [...] the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies"

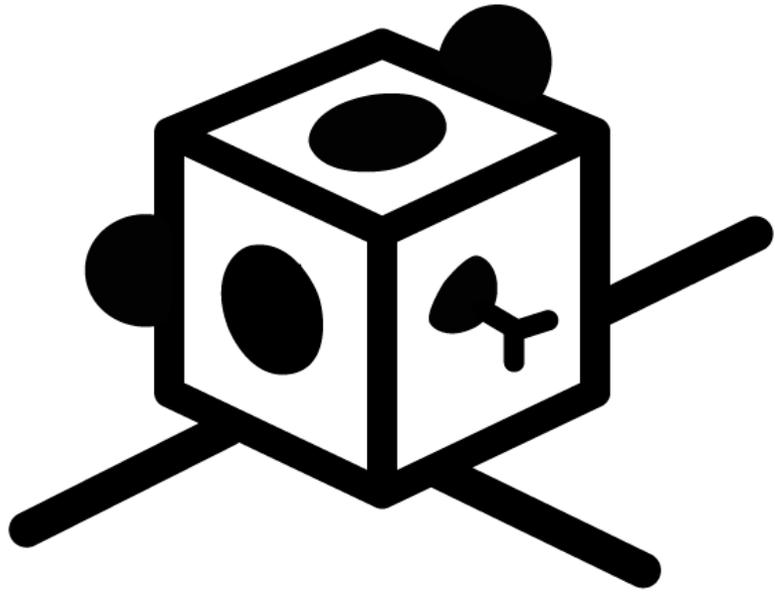


# Why care about wildlife?

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# PandaSat – Innovative partnership for Conservation



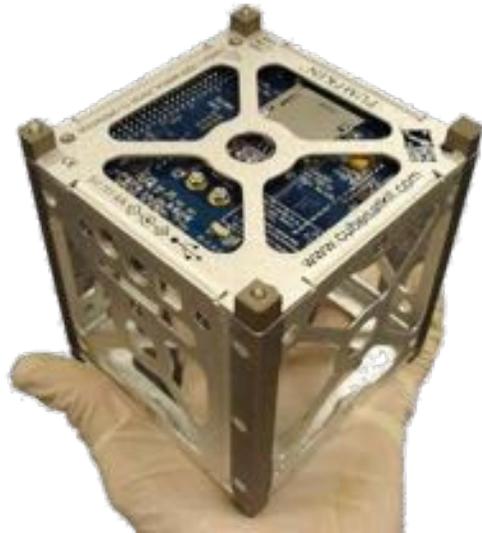
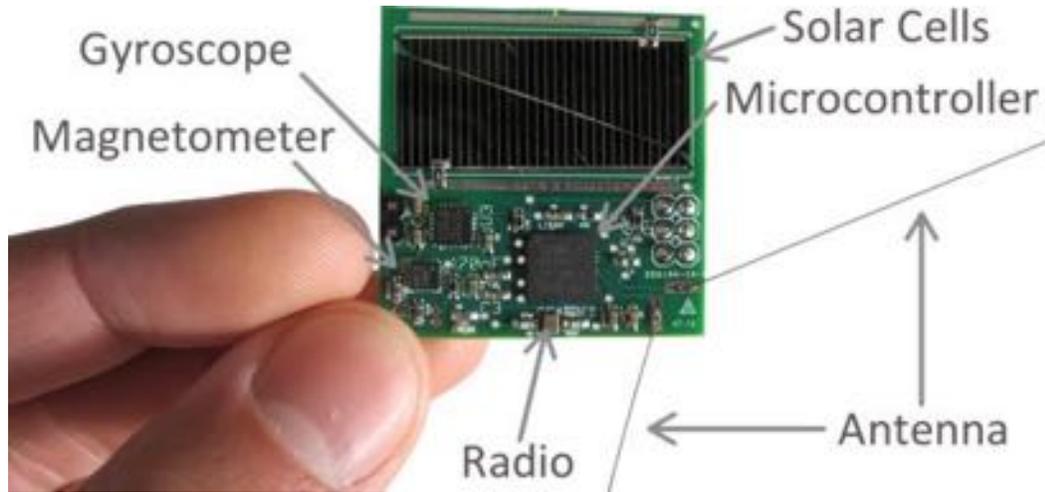
**PandaSat**

- **Global, innovative solutions are needed for this impending crisis**
- **Applying innovation thinking to solve the most pressing needs in conservation**
- **Building strong partnerships to enable expertise and resources used where most needed**
- **Building a Social Enterprise to ensure the technology,**

# New technology to fight wildlife crime

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## Tiny Satellites!

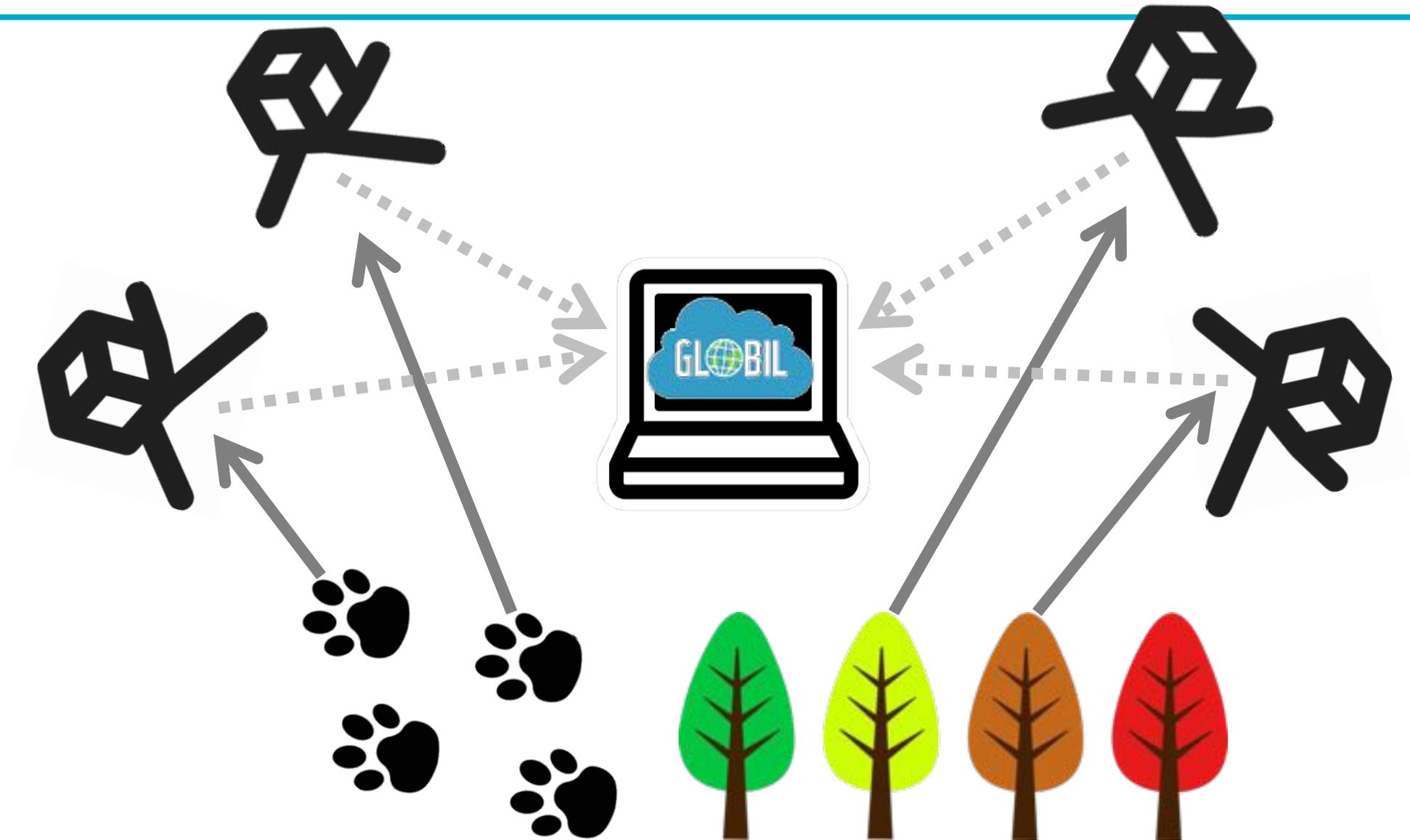


## Tiny Trackers!



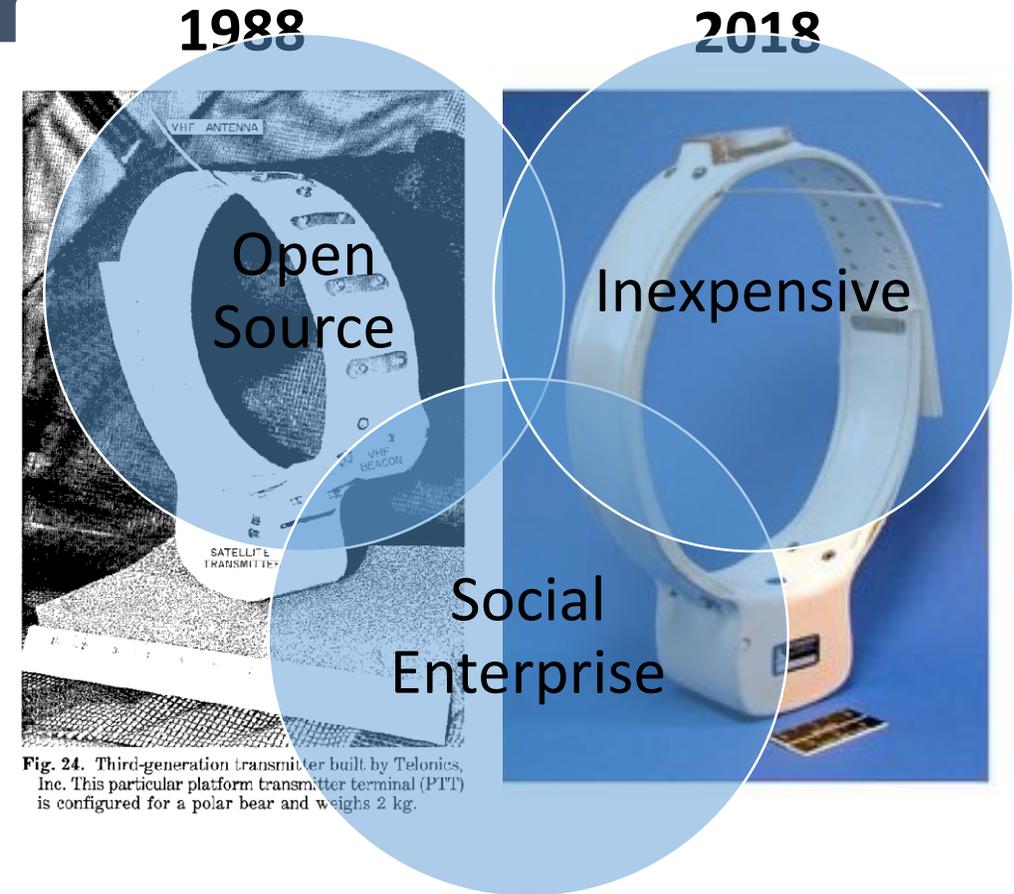
# Nano-Tags & Nano-Satellites

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# The PandaSat Ecosystem

- Technology is getting better and smaller, but lags for many wildlife applications
- Micro trackers allow for many more user cases
- Nano satellites make space accessible
- Lower pricing allows wider use of technology



# Use Cases: Grey Parrots - *Psittacus erithacus*

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- Intelligent, talking bird
- Highly trafficked, endangered, decapitated for rituals and sold as pets
- Little to no information on breeding sites, preferred trees, daily and seasonal movements
- **Where should we protect them?**
- **Can we identify where they are being captured?**



# Use Cases: Giant Pangolin - *Smutsia gigantea*

- Most trafficked species in the world:

1 million pangolins poached in the last 10 years; 20 tonnes every year

- Cure for ailments, delicacy, huge demand
- Vulnerable and decreasing (all Asian species are endangered or critically endangered)
- Solitary, nocturnal burrowers, very little

Short Communication

## Locating Giant Ground Pangolins (*Smutsia gigantea*) Using Camera Traps on Burrows in the Dja Biosphere Reserve, Cameroon

Tom Bruce<sup>1</sup>, Romeo Kamta<sup>2,3</sup>, Roger Bruno Tabue Mbobda<sup>4</sup>, Stephane Talla Kanto<sup>4</sup>, Djibrilla Djibrilla<sup>4</sup>, Ituka Moses<sup>4</sup>, Vincent Deblauwe<sup>2,5,6</sup>, Kevin Njabo<sup>2,5</sup>, Matthew LeBreton<sup>2</sup>, Constant Ndjassi<sup>1</sup>, Chris Barichiev<sup>7,8</sup>, and David Olson<sup>1</sup>

### Abstract

Giant ground pangolins (*Smutsia gigantea*) are poorly known and difficult to study due to their nocturnal and burrowing habits. Here, we test the efficacy of using camera traps on potentially active burrows identified by local Ba'Aka guides to rapidly locate giant ground pangolins in the wild for subsequent observation and tagging for telemetry studies. We deployed nine cameras on potential giant ground pangolin burrows in the Dja Biosphere Reserve, Cameroon. One camera photographed an adult male giant ground pangolin using a burrow within 2 days of camera deployment. The pangolin used the same burrow several times over a 25-day period and possible scent-marking behavior was recorded.

### Keywords

*Smutsia gigantea*, burrow, giant pangolin, Dja Biosphere Reserve, Cameroon

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# Use Cases: Forest Elephants - *Loxodonta africana*

- Different than savanna elephants (likely different species)
- Solitary, elusive, less seasonal migration
- Change their behaviour in response to poaching threat, gunshots
- Human-wildlife conflicts
- We know very little about their movements and ranges over time
- Few tracked individuals
- **How can we observe changes in movements to actively protect them?**



# Future opportunities

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- **Thinking beyond conservation**
- **Humanitarian NGOs**
- **Rural, low income communities**
- **Niche data collection and analysis**
- **Achieve multiple SDGs**



# Next Steps

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- Initial tag/sat build
- Beta supply chain analysis
- Data analysis platform
- Raise funding
- Launch a PandaSat constellation

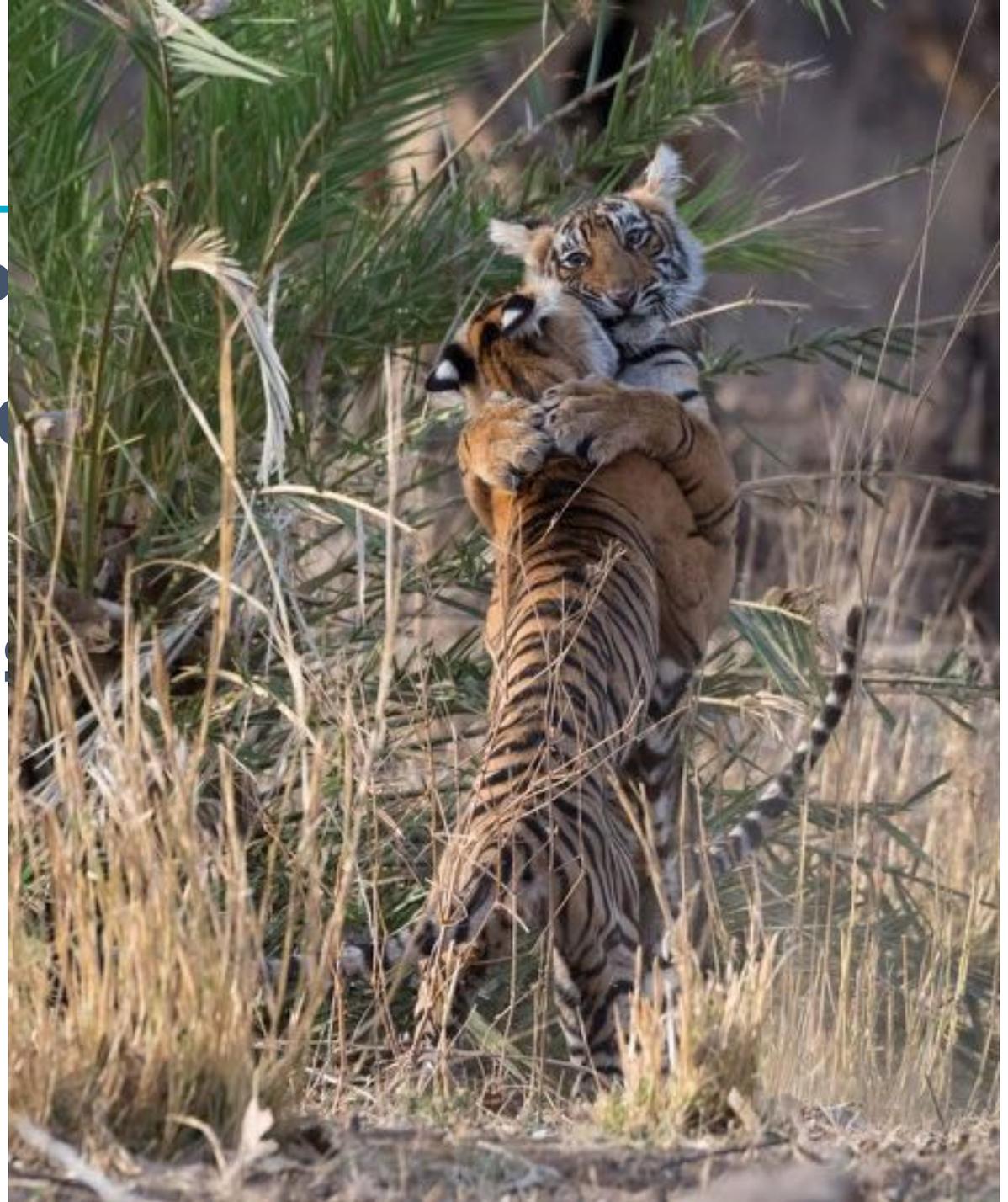


# Why we are here

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- Strategic Funding and P
- We need rides into Space
- Join our Community!
- Help shape our business
- Do something good

**Come talk to us!**



**OFFICES IN  
OVER 100  
COUNTRIES**

**FIRST-HAND  
KNOWLEDGE OF  
LANDSCAPES**

**IN-HOUSE  
WILDLIFE  
EXPERTS**

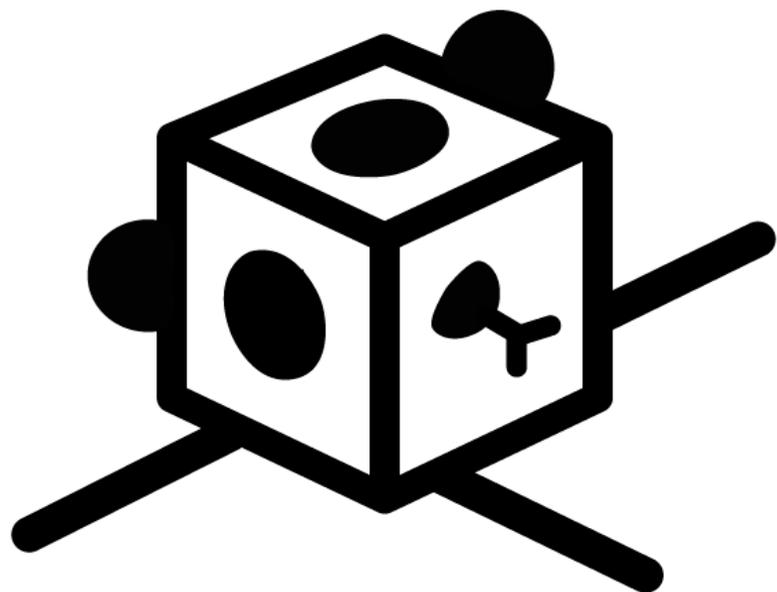
**PARTNERSHIP  
S WITH  
LEADING  
INNOVATORS**

**PROVEN SCIENCE  
AND  
CONSERVATION  
TRACK RECORD**

**GLOBAL  
REACH AND  
COURTIZATO**

**COMMITMENT TO  
CONSERVATION AND  
SUSTAINABILITY**





**PandaSat**

**Aurélie Shapiro**// Senior Remote Sensing Specialist  
**Sam Harper**// Business Developer

**together possible**