

# Use of thermal drones for the conservation of endangered primates

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# 19 years contributing to biodiversity conservation

Peruvian-Based Nonprofit

Our mission is to promote the sustainable development of territories and the conservation of nature, helping to mitigate the effects of climate change and improve social well-being.

We collaborate with international partners, the Peruvian government, regional and local authorities, Indigenous peoples, rural communities, the private sector, academic institutions, and organized civil society.



Sustainable socioeconomic development.



Conservation, management, and territorial governance.

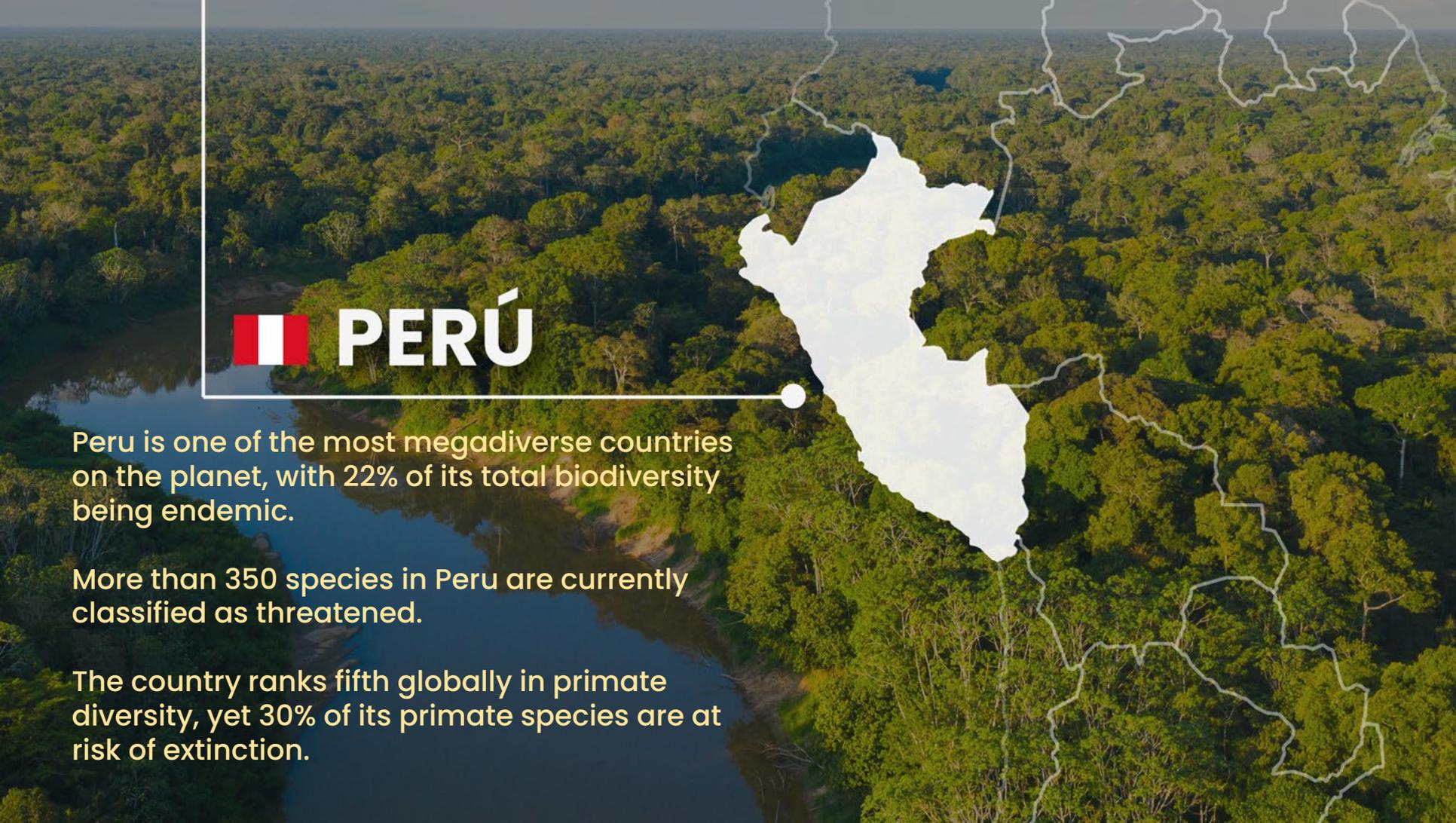
Conservation must be integral.



Participatory research and innovation.



Environmental communication and education.



# PERÚ

Peru is one of the most megadiverse countries on the planet, with 22% of its total biodiversity being endemic.

More than 350 species in Peru are currently classified as threatened.

The country ranks fifth globally in primate diversity, yet 30% of its primate species are at risk of extinction.

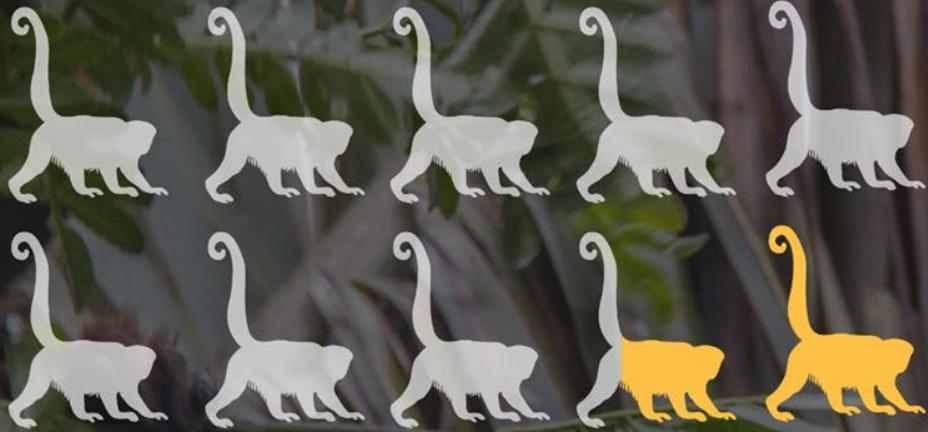


## YELLOW-TAILED WOOLY MONKEY

*Lagothrix flavicauda*

Largest endemic vertebrate of the country.

Symbol of Peru's threatened biodiversity.



WE HAVE LOST MORE THAN **80%** OF ITS POPULATION

# Habitat

Cloud forest of northern  
and central Andes of Peru





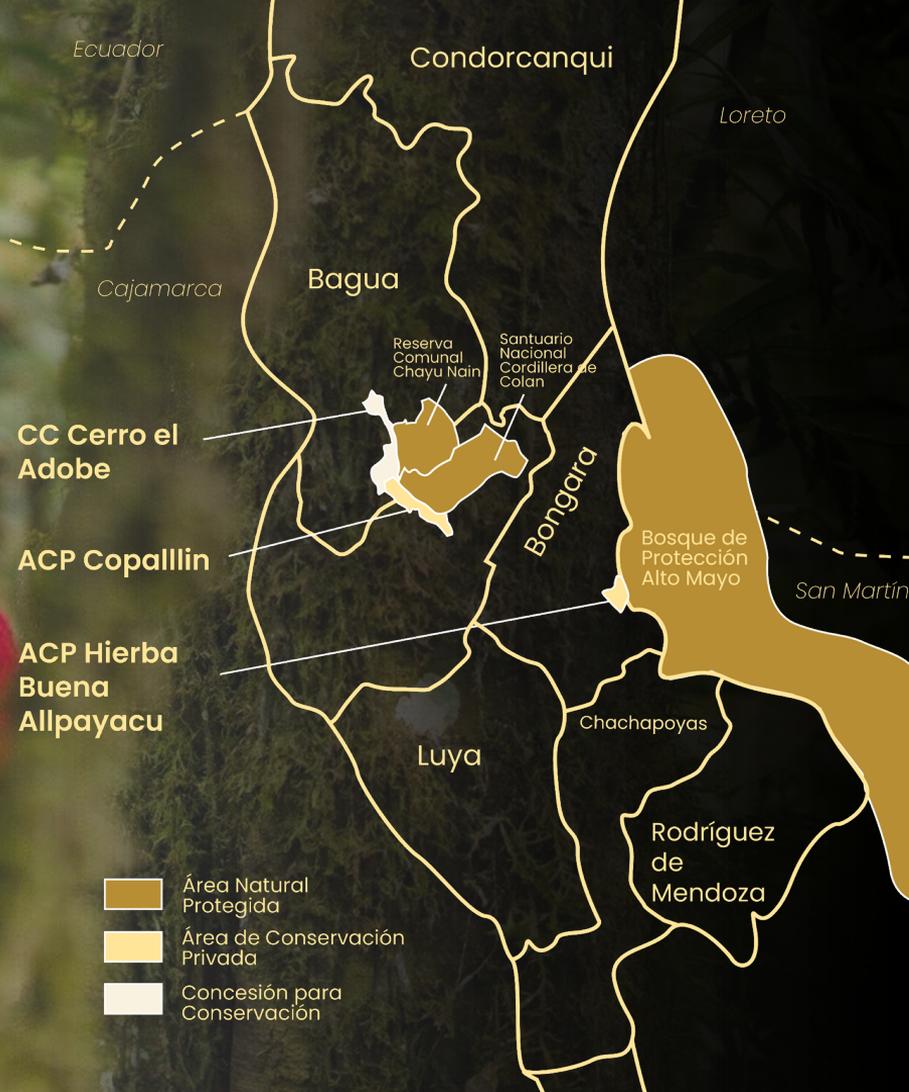
Little information available about population status and trends at different sites.



In 2018, a new population was discovered in central Peru's Andes, ~200km south of its known location



There is limited information about its population ecology and other natural history data.



# Using Thermal sensors to find and count monkeys

Theoretically, we can use less resources (\$\$\$ and people) and reach inaccessible places

Model: DJI Mavic 3T



Weight: ~ 1 kg.

Battery: approx. 25 min in real flight time

Thermal camera: 640 × 512 pixels / 56X hybrid zoom

# Abundance estimates

Foot censuses vs “drone censuses”  
in 1 site with habituated monkeys.

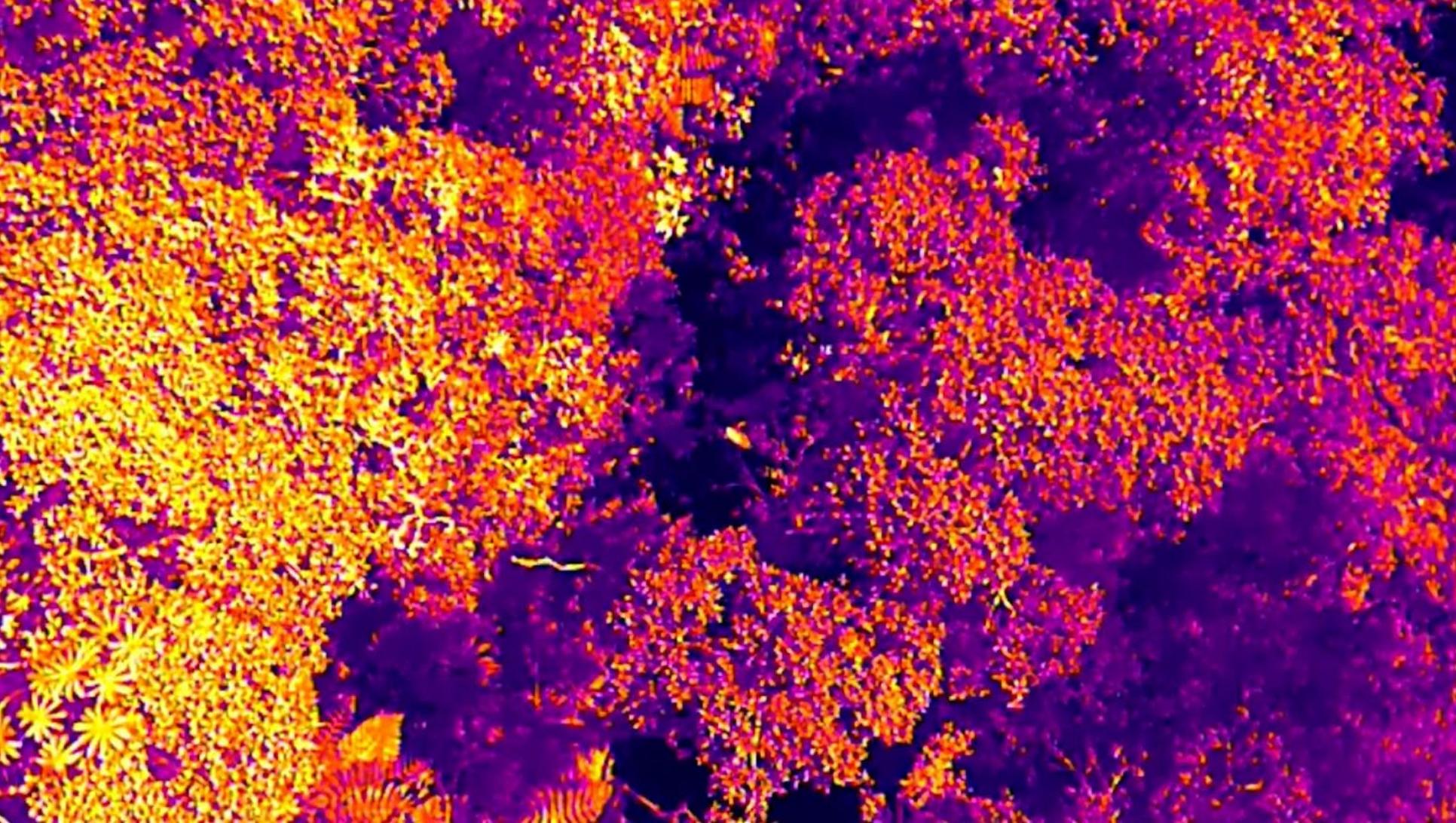
Both census methods were conducted  
along 4 pre-established transects.

When possible we flew modified  
mapping missions

- 50M above ground level (drone follows landscape)
- 250 x 500m grid
- 3 m/sec speed
- Rec both visual and thermal video footage

When weather/signal failed or guides  
had already identified monkeys, we flew  
manual flights.





# Abundance estimates

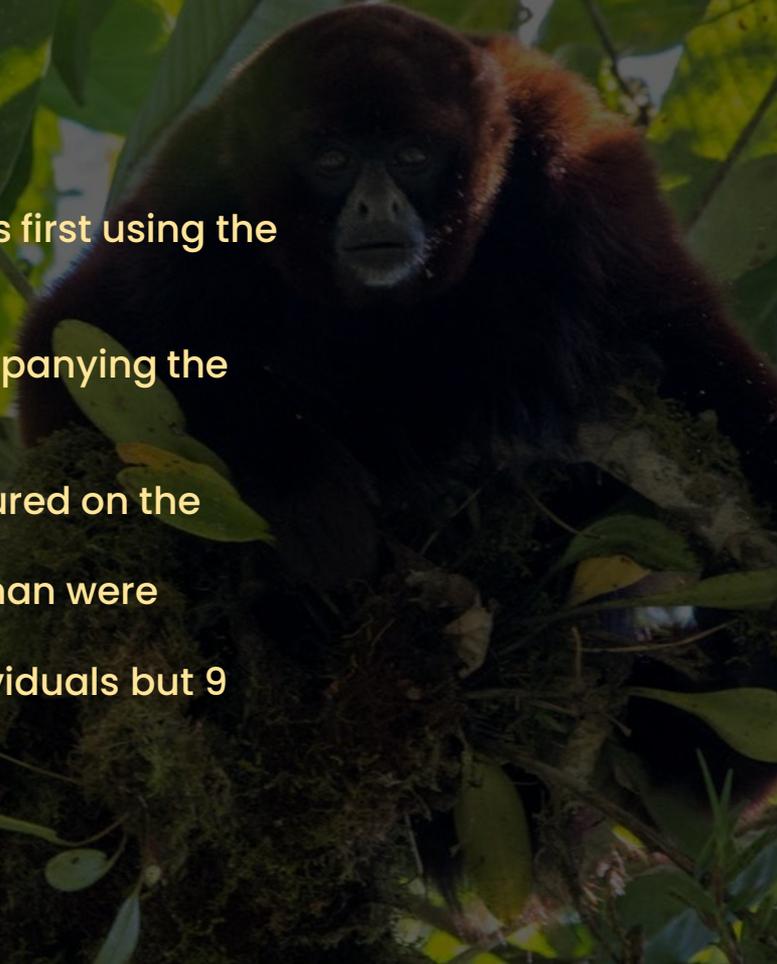
Over 8 months, we conducted both assessments.

There were **no occasions** where we spotted the monkeys first using the drone.

Monkeys were always spotted by the local guide accompanying the drone pilot

- In 3 of these instances the monkeys were not captured on the drone footage
- On one occasion the guide saw more individuals than were captured in the footage
- On another occasion the guide counted just 5 individuals but 9 were visible in the drone footage

Only in one assessment weather was not an issue.









# Searching for monkeys

In free flights to search for monkeys, in **no instance** monkeys were found solely by the drone.

Humans always found the monkeys through noises, movement of branches, eaten fruits.

The drone complemented information of number of animals, age, etc., with unhabituated groups.



# Challenges to overcome for this technology



1. Battery-life

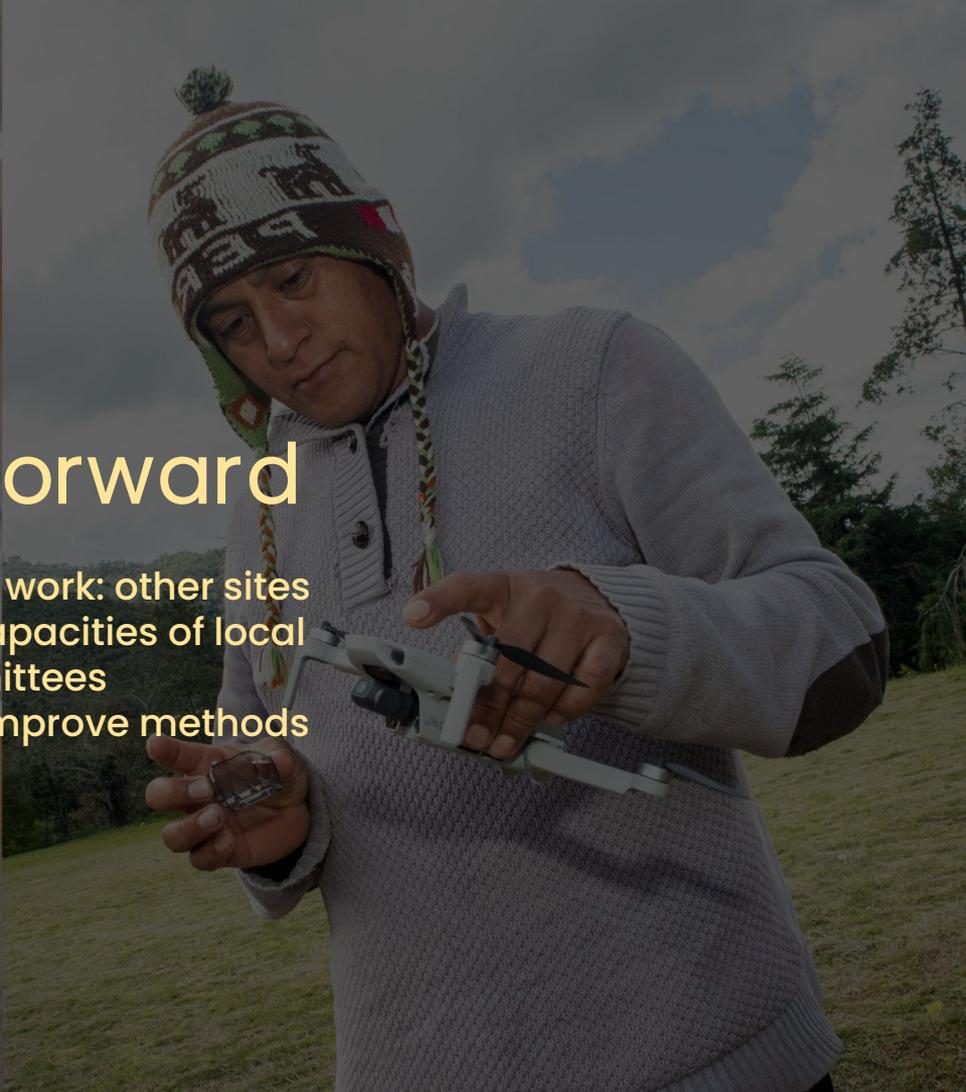
1. Cloud forest: topography

1. Cloud forest: weather

A woman with dark hair tied back, wearing a light-colored vest with a logo, is focused on operating a drone controller. The vest has a circular logo with text that includes 'COMITÉ DE...'. The background is a blurred outdoor setting with other people.

# Moving forward

- Continuity of this work: other sites
- Strengthening capacities of local committees
- Partnerships to improve methods



# Acknowledgments





YUNKAWASI

Conservation for the people



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[www.yunkawasiperu.org](http://www.yunkawasiperu.org)