GITEC-IGIP Consulting Group

Consulting & Engineering Services Worldwide

8th Field-Map International and Educational Users' Conference

8 – 10 June, 2022

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Biodiversity monitoring for development of sustainable production chains in Latin America

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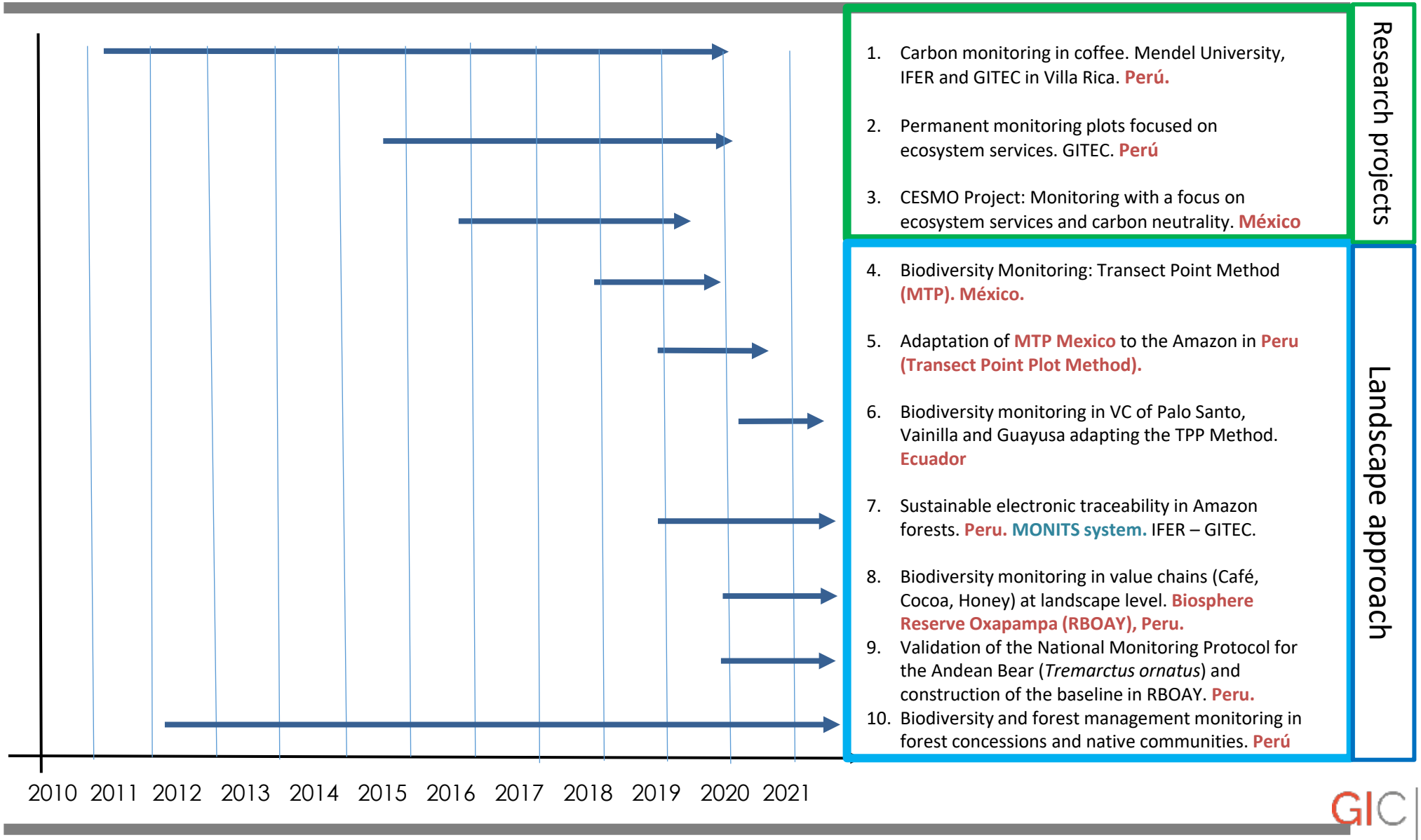
GIC | Content

1. Overview
   - Monitoring initiatives in Latin America
   - What are we monitoring?
   - Why are we monitoring?
2. Approach
3. Methodology
4. Results: Examples from Mexico, Ecuador and Peru

Overview | Our monitoring initiatives in Latin America



Research projects

1. Carbon monitoring in coffee. Mendel University, IFER and GITEC in Villa Rica. **Perú.**
2. Permanent monitoring plots focused on ecosystem services. GITEC. **Perú**
3. CESMO Project: Monitoring with a focus on ecosystem services and carbon neutrality. **México**

Landscape approach

4. Biodiversity Monitoring: Transect Point Method **(MTP). México.**
5. Adaptation of **MTP Mexico** to the Amazon in **Peru (Transect Point Plot Method).**
6. Biodiversity monitoring in VC of Palo Santo, Vainilla and Guayusa adapting the TPP Method. **Ecuador**
7. Sustainable electronic traceability in Amazon forests. **Peru. MONITS system.** IFER – GITEC.
8. Biodiversity monitoring in value chains (Café, Cocoa, Honey) at landscape level. **Biosphere Reserve Oxapampa (RBOAY), Peru.**
9. Validation of the National Monitoring Protocol for the Andean Bear (*Tremarctus ornatus*) and construction of the baseline in RBOAY. **Peru.**
10. Biodiversity and forest management monitoring in forest concessions and native communities. **Perú**

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Overview | Project overview

MEXICO: Integrated Landscape Management for Biodiversity Conservation in Sierra Madre Oriental II

General project information

- **Financing:** BMZ
- **Client:** GIZ
- **Consulting budget:** 1.431.000 EUR
- **Investment:** 7.000.000 EUR
- **Project duration:** 2016 - 2021

PERU: ProAmbiente - Contributing to Environmental Goals of Peru I+II

General project information

- **Financing:** BMZ
- **Client:** GIZ
- **Consulting budget:** 7.688.519 EUR
- **Investment:** 34.000.000 EUR
- **Project duration:** 2018-2022

PERU: ProAmbiente - Implementation-Oriented Environmental and Forestry Management

General project information

- **Financing:** BMZ
- **Client**: GIZ
- **Consulting budget:** 1.329.800 EUR
- **Investment:** 8.000.000 EUR
- **Project duration:** 2022-2024

ECUADOR: Bioeconomy - Conservation and sustainable use of natural heritage

General project information

- **Financing:** BMZ
- **Client:** GIZ
- **Consulting budget:** **2.500.000 EUR**
- **Investment:** 10.000.000 EUR
- **Project duration:** 2019-2021
- **Partner(s):** WWF

Overview | What are we monitoring?

Habitat monitoring

- Tree layer structure
- Structure of the shrub layer
- Structure of the herbaceous stratum
- Soil occupation and fallen woody material
- Associated fauna community: Mammals and birds

Monitoring of conservation objects

- Phenology
- Regeneration
- Presence of pests/damage

Management monitoring

- Harvesting methods
- Management practices
- Associated potential uses
- Organizational processes

Overview | Why are we monitoring?

Promoting biodiversity conservation

- Promote research
- Provide technical tools for monitoring to key stakeholders
- Encourage bio-entrepreneurship and business-academia partnerships

Promoting sustainable use of natural resources

- Improving user capacities
- Empowerment of producers/ scientific inputs to adapt management practices
- Diversification of income (tourism)
- Improving the quality of life of communities

Strenghtening governance of value chains

- Transparency of the data management process
- Provision of inputs for decision making and policy-making
- Strengthen public policy

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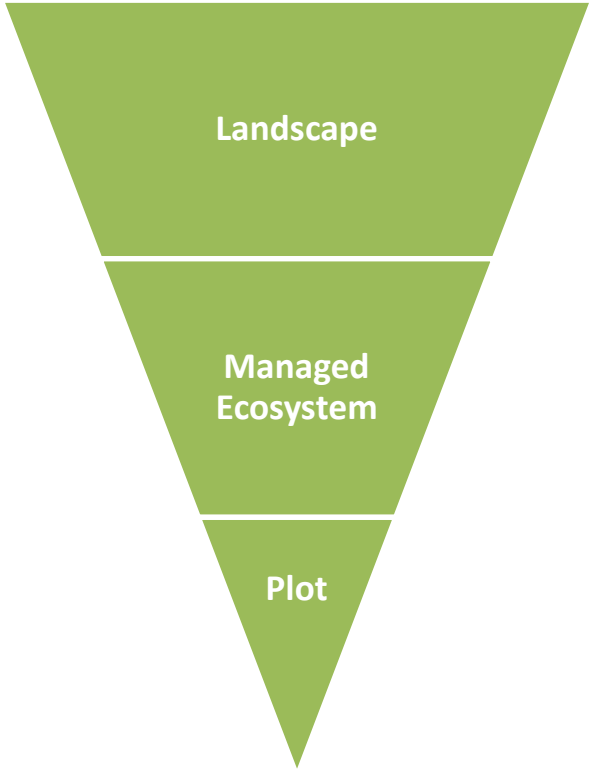
Approach | Ecosystem and multi-level/multi stakeholder approach

Multi-level



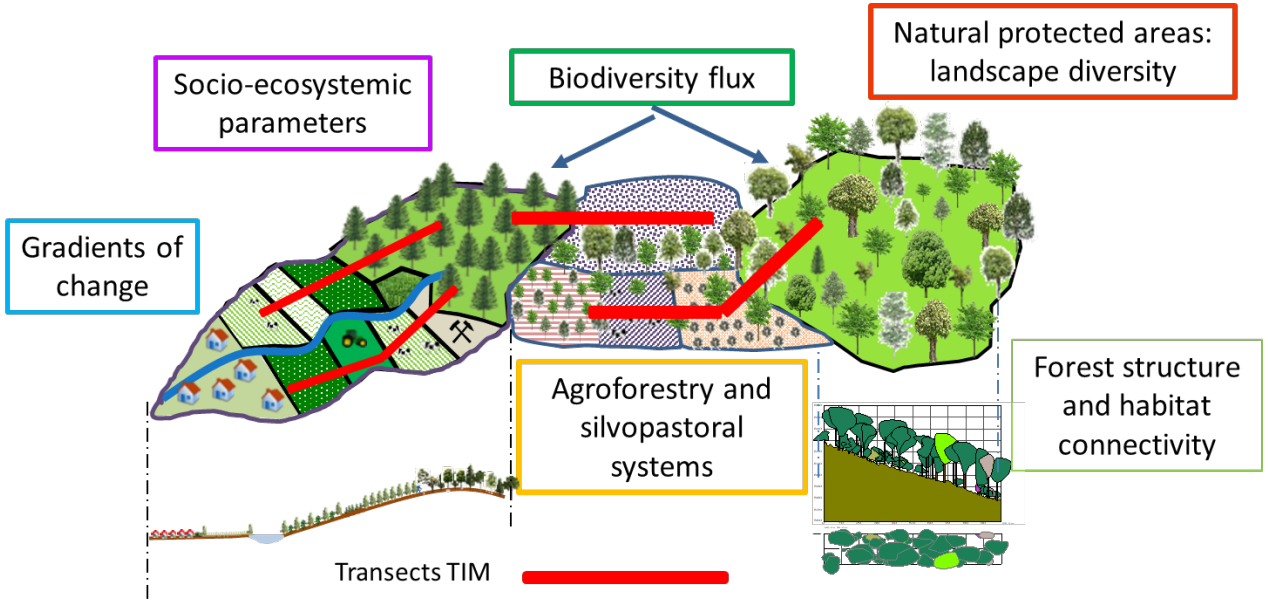
Source: own elaboration

GIS WEB

Field-Map

Mobile App

Integrated monitoring transects (TIM)
with a vision of territorial articulation for landscape sustainability and human health

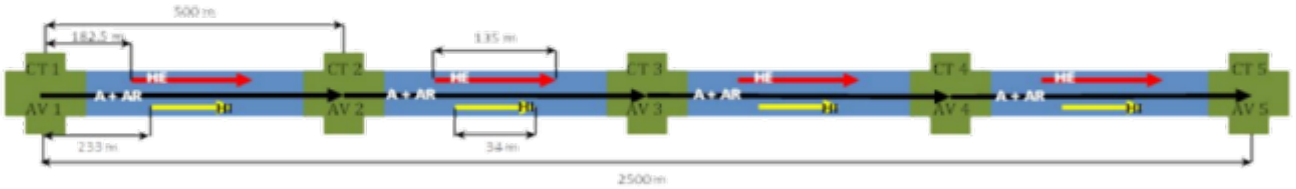


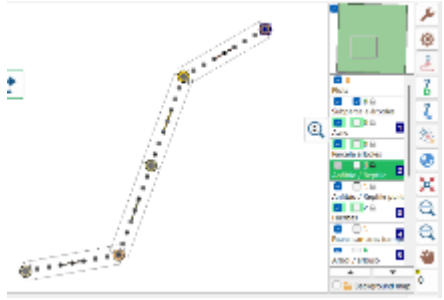
Gradients of change along the production ecosystem

- Soil, vegetation and fauna
- Biodiversity flow
- Production (quality, productivity)
- Effectiveness of management practices at the landscape level

Methodology | Adaptation of the transect to different ecosystems

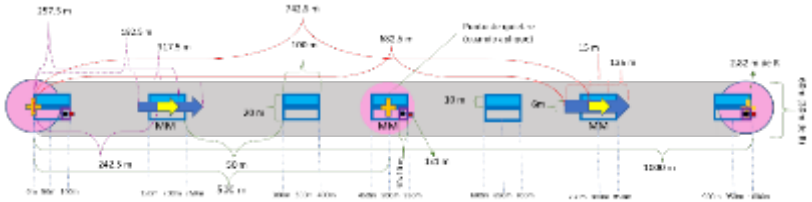
México: MTP - Articulated biodiversity monitoring

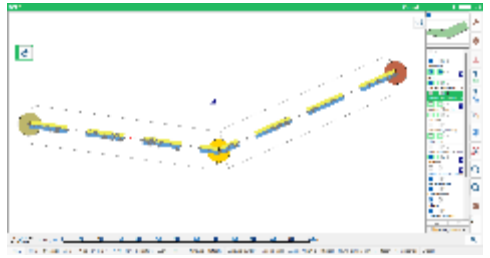




Transect 2 Km

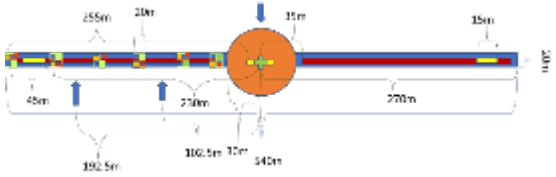
Peru: TPP - Biodiversity monitoring in forest management (tropical forest)

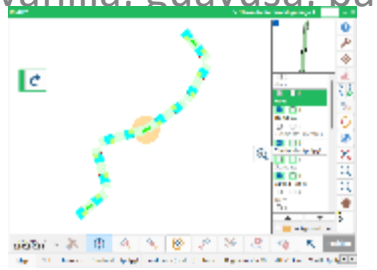




Transect 1 Km

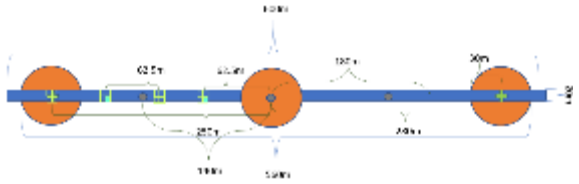
Ecuador: TPP – Biodiversity monitoring in productive value chains (vanilla, guayusa, palo santo)





Transect 540 m

Peru: TIM - Biodiversity monitoring in productive value chains (coffee, cocoa and honey) in the RBIOAY Biosphere

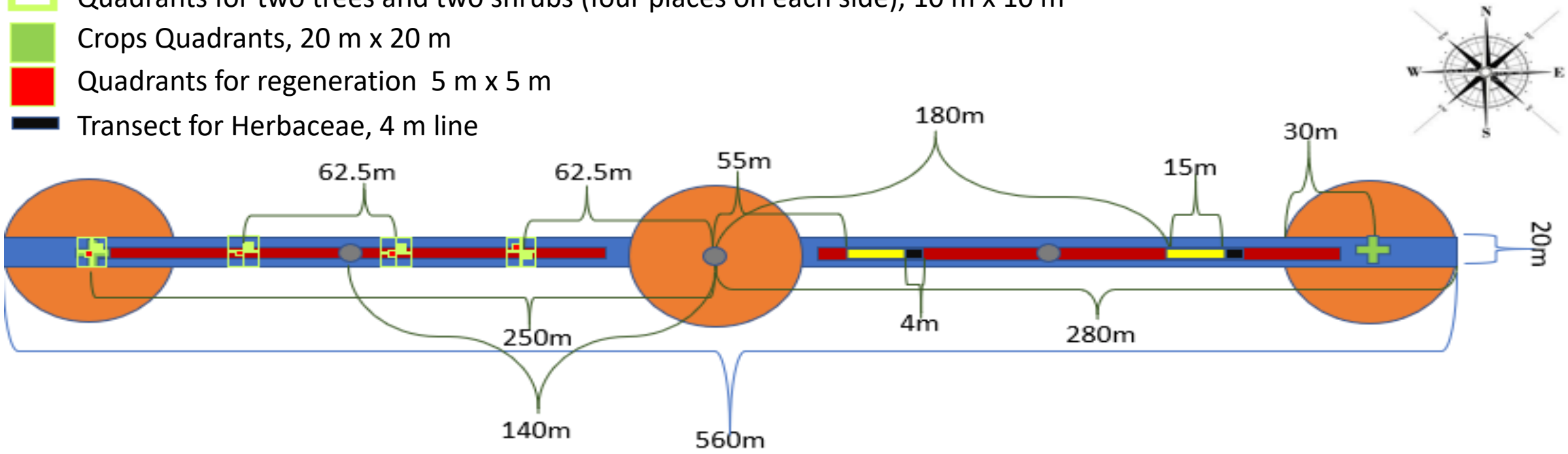


Transect 600 m
Includes bear monitoring

Methodology | Example of Monitoring Transect

- Transect of 20 m x 560 m
- Breaking point 140 m from the center
- Birds, 30 m = radius
- Mammals
- Dead wood and herpetofauna

- Quadrants for two trees and two shrubs (four places on each side), 10 m x 10 m
- Crops Quadrants, 20 m x 20 m
- Quadrants for regeneration 5 m x 5 m
- Transect for Herbaceae, 4 m line



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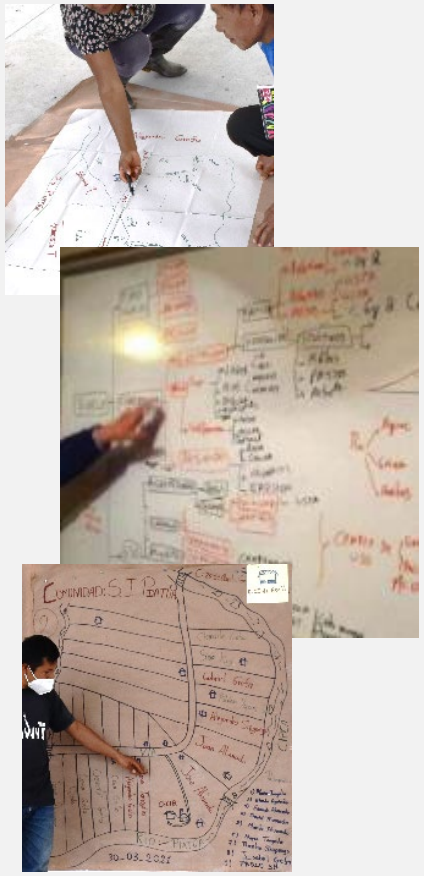
Methodology | Monitoring design in Mexico, Ecuador and Peru

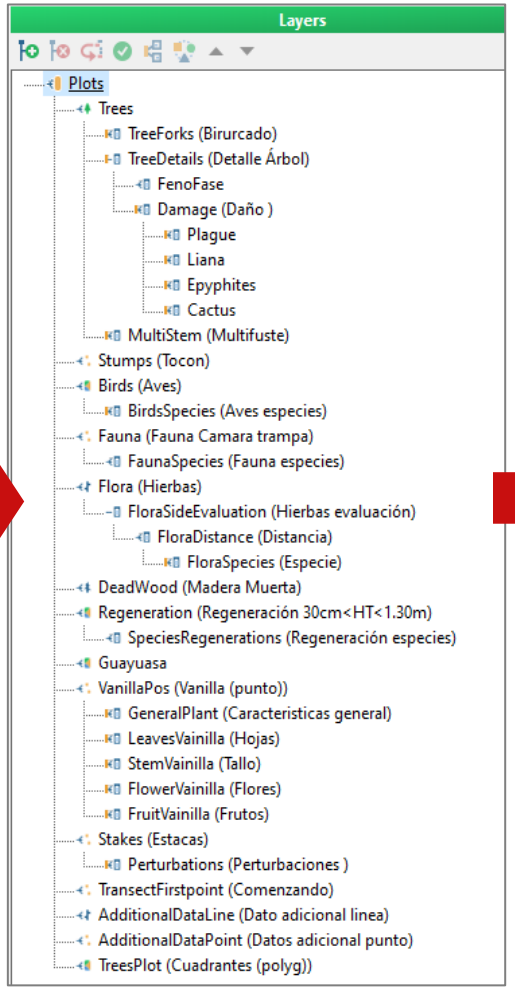
Design of the database structure and participatory transect mapping

Participatory DB design

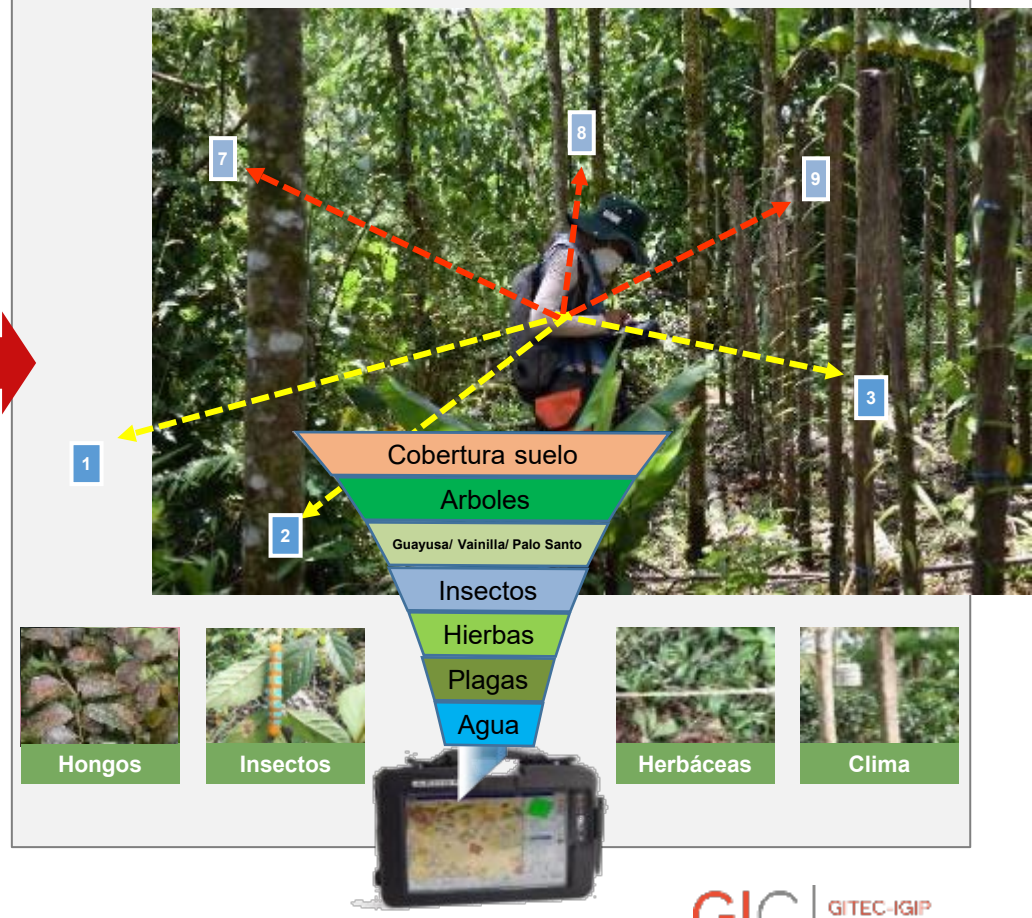


Structure of DB

- **Bosque**
  - Tipo Bosque
  - Árbol
  - Especie
  - Liana
  - Liquen
  - Musgo
  - Epifitas
  - Guayusa/ Vainilla
  - Plagas
  - Enfermedades
  - Frutales
  - Palmeras
- **Cuerpos Agua**
  - Ríos
  - Lagunas
- **Suelos**
  - Tipo suelo
  - M.O



Measurements of variables with Field-Map



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Methodology | Mexico: Model for monitoring implementation

Establishment of an MIP (*Integrated Landscape Management*) based monitoring system using Method MTP

Counterpart activities

1 **2013** Needs of the farmers

2017 Puebla

CONAFOR

SEMARNAT

State Law " Provision of environmental information"

2

Development of the MTP protocol

Development of GIS WEB (MIPPS)

Validation State Forest Council

Support GIZ/ GITEC

Integrated Monitoring System

TRANSECTS

Integration of field data - MTP in the GIS -WEB platform

5

GIS WEB platform

3 Field validation CONAFOR - SEMARNAT

GITEC support

4 Strengthening of monitoring capacities

6 Institute of Technology Sierra Norte de Puebla de Zacatlan, (ITSSNP)

Institutional Anchorage

Use of data

- CONAFOR
- SEMARNAT
- CONANP
- Producers
- Universities
- Private sector

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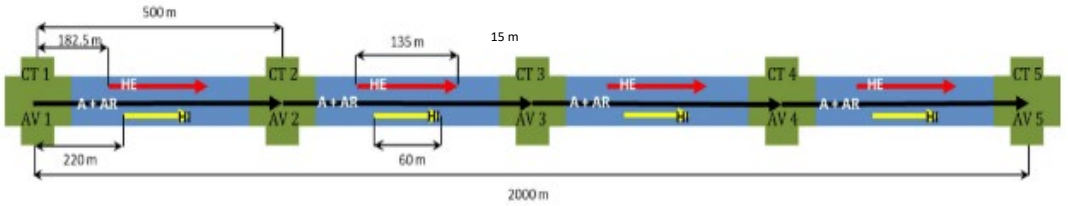
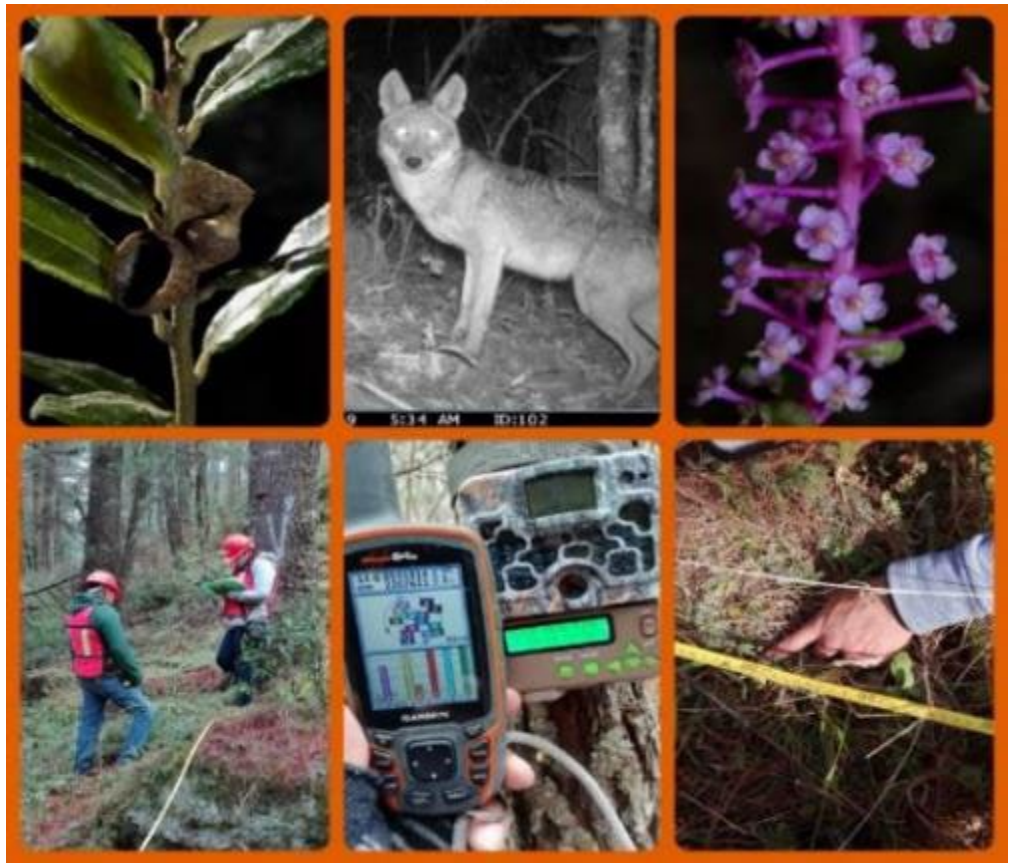
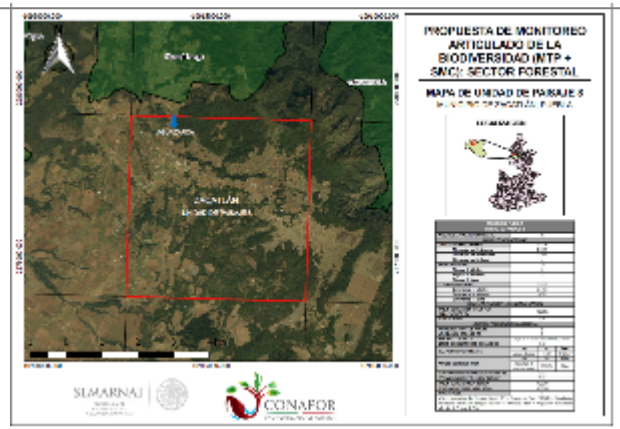
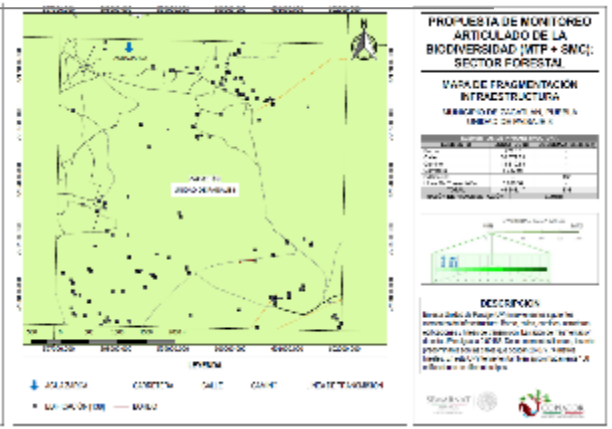
Results 1 | Mexico: Results of biodiversity monitoring MTP

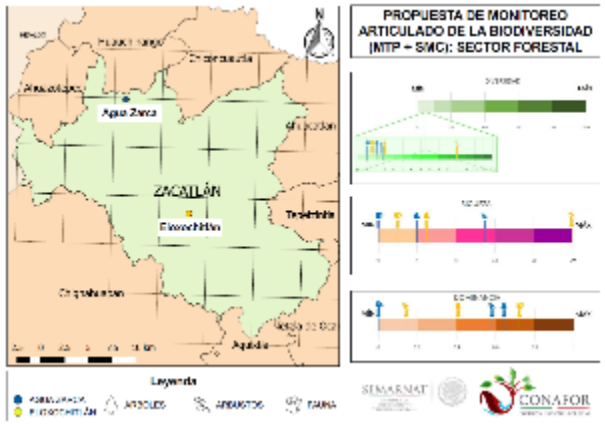
Articulated biodiversity monitoring baseline



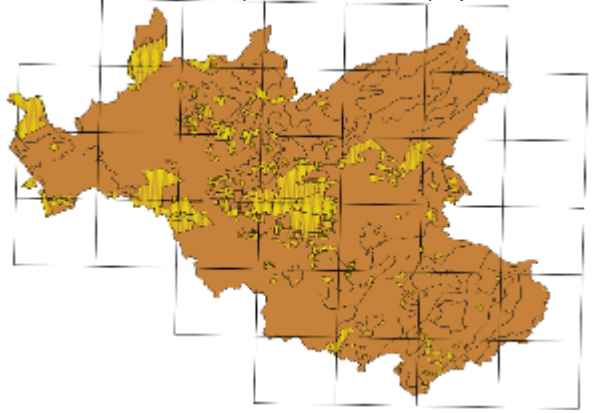


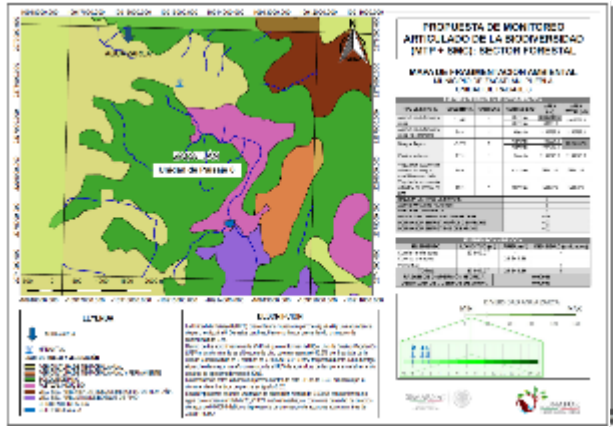


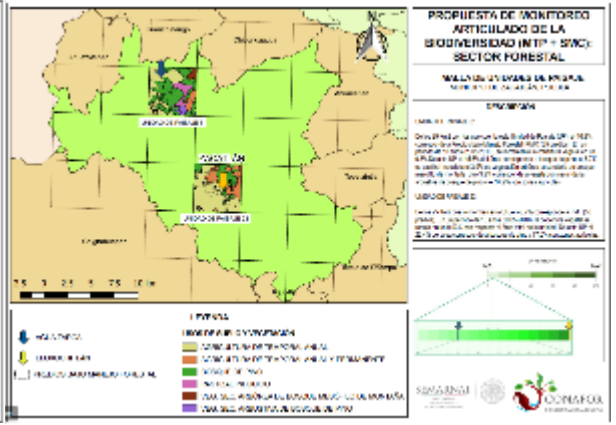




Modelo de análisis espacial basado en unidades de paisaje

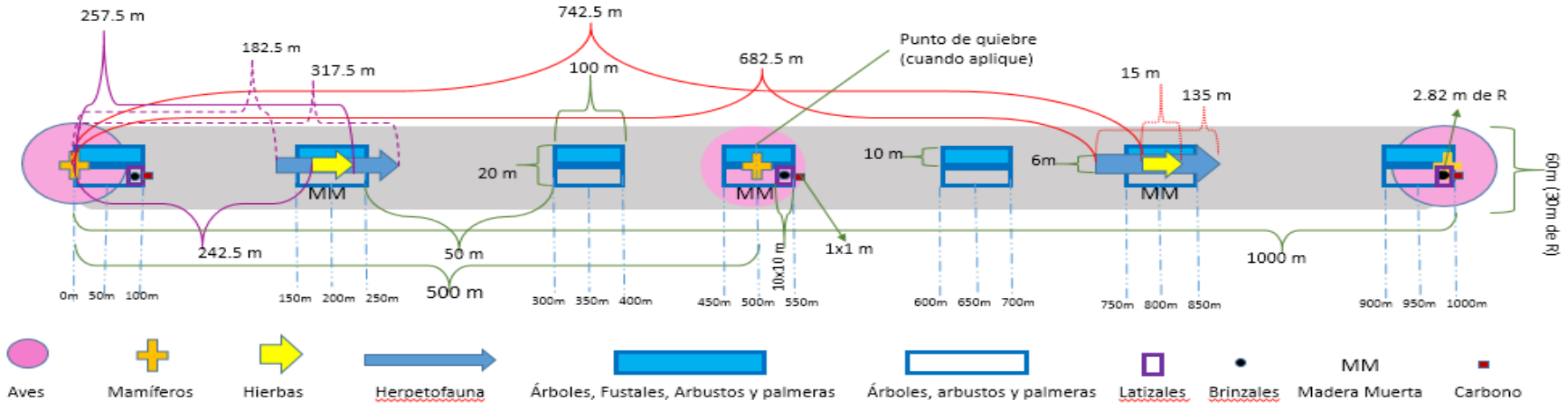






Results 2 | Peru: Biodiversity monitoring in forest concessions

Mastofauna: 3 cameras were installed in concessions with different duration of management



N°	Familia	Especie	Nombre Común	PARCELAS								
				1	2	3	4	5	6	7	8	9
1	Dasyproctidae	*Dasyprocta sp.*	Añuje			x						
2	Canidae	*Atelocynus microtis*	Perro de orejas cortas			x						
3	Felidae	*Panthera onca*	Jaguar			x						
4	Callitrichidae	*Saguinus mystax mystax*	Pichico Barba blanca								x	
5	Atelidae	*Lagothrix lagothricha poeppigii*	Mono Choro de Poeppig									x

Vulnerable Species:

- The silvery woolly monkey (Mono choro de Poeppig - *Lagothrix lagothricha poeppigii), is categorized as Vulnerable (VU) nationally and internationally*;
- The Jaguar *(Panthera onca)* categorized as Near Threatened (NT) and listed at CITES level I;
- The Perro de orejas cortas (*Atelocynus microtis*) categorized as Near Threatened (NT) by the IUCN and Vulnerable (VU) by the Peruvian government.

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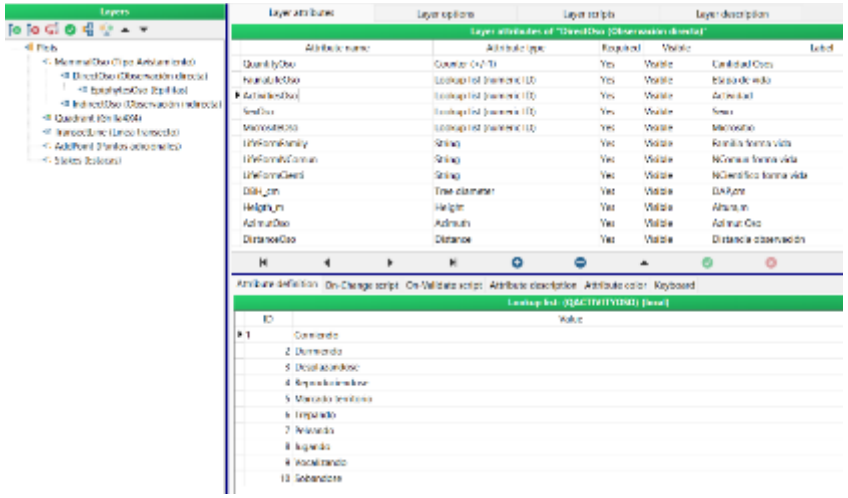
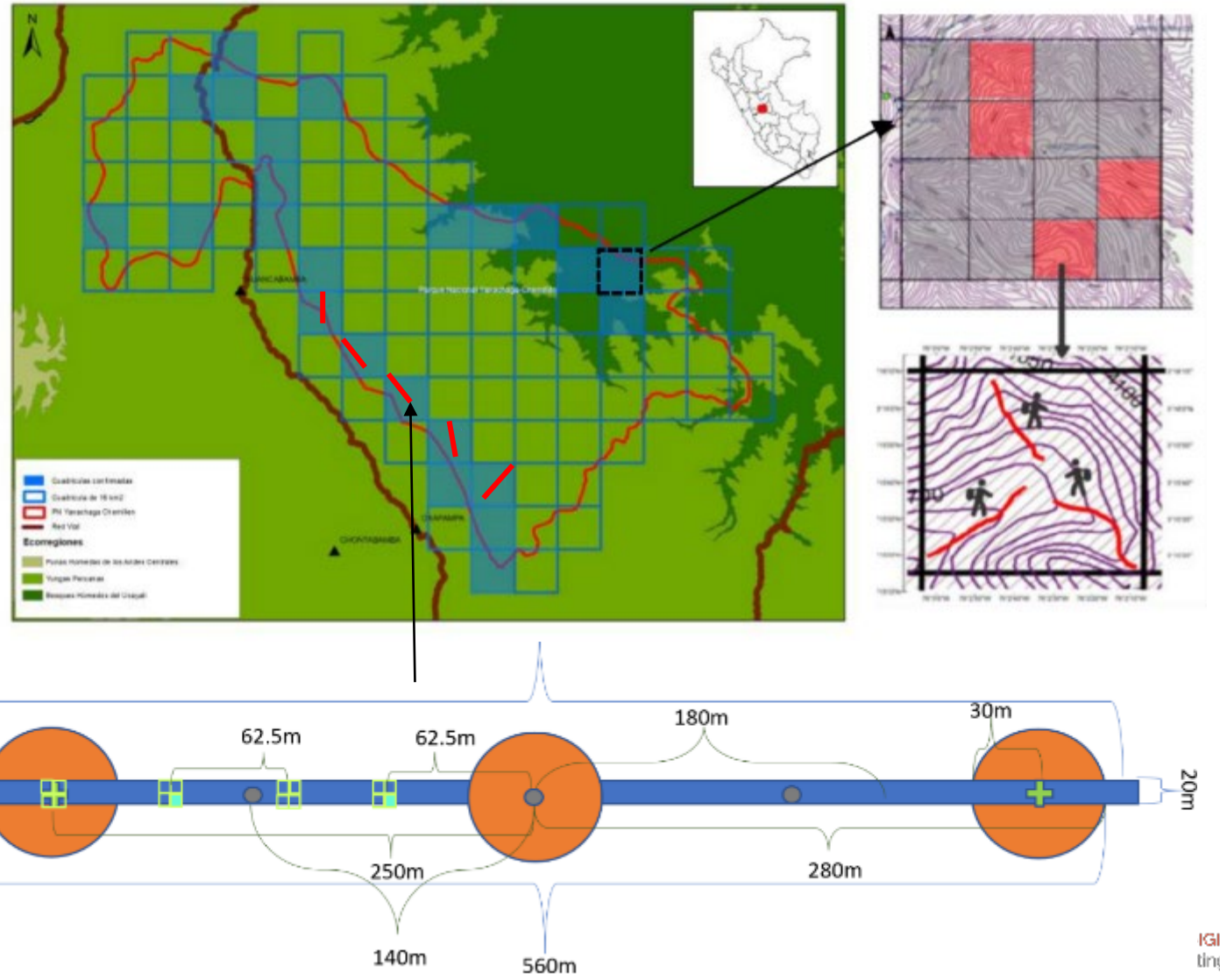
Results 3 | Peru: Monitoring of the Andean Bear (*Tremarctos ornatus*)

Database structure: TIM Bear



4x4 km grid for bear sampling



Results 4 | Ecuador: Vanilla, Guayusa and Palo Santo management practices

Data collection from **11 transects and with 6 camera traps**

- **6 transects in the Palo Santo VC** (1 PPM in Agua Blanca, 3 PPM in Santa Elena and 2 PPM in Joaz)
- **5 transects in Amazonia** (located in farms of Kichwa producers of **Guayusa**, with trials of adaptability of ***Vanilla*** *odorata* and *pompona* with a focus on the chakra system, located in the community of San Juan de Piatúa, Pastaza Province).
- **9 mammal** and **31 bird species** on the farms of Kichwa producers (data from the coast in the process of being collected).
- **130 plant species:** 42 in Palo Santo and 88 in the farms of Kichwa

20 Partnerships

- **5 Universities:** Technical University of Manabi, Universidad del Sur de Manabí, Universidad Península de Santa Elena, Universidad Estatal Amazónica UEA, Puyo - Pastaza and Universidad Regional IKIAM, Tena - Napo.
- **8 Public entities**: Machalilla National Park; Decentralized Autonomous Government (GAD) Jipijapa, GAD Puerto López, GAD Santa Elena; Agua Blanca Community, San Marcos Community; Pastaza Prefecture; Santa Clara Municipality.
- **3 Companies:** Ecuadorian Hands, El Artisan, L'Herborea
- **2 Associations:** Agroforestal Palo Santo; Asociación Wiñak
- **2 NGOs:** Heifer; Fundación Pachamama

60 persons trained

- 24 in the **Palo Santo VC**: 6 in Joas, 7 in Santa Elena, 11 in Agua Blanca (Machalilla)
- 36 i**n Amazonia**: 7 kichwas monitors, 2 value chain advisors, 2 field technicians (Wiñak), 3 workshops with 25 persons.

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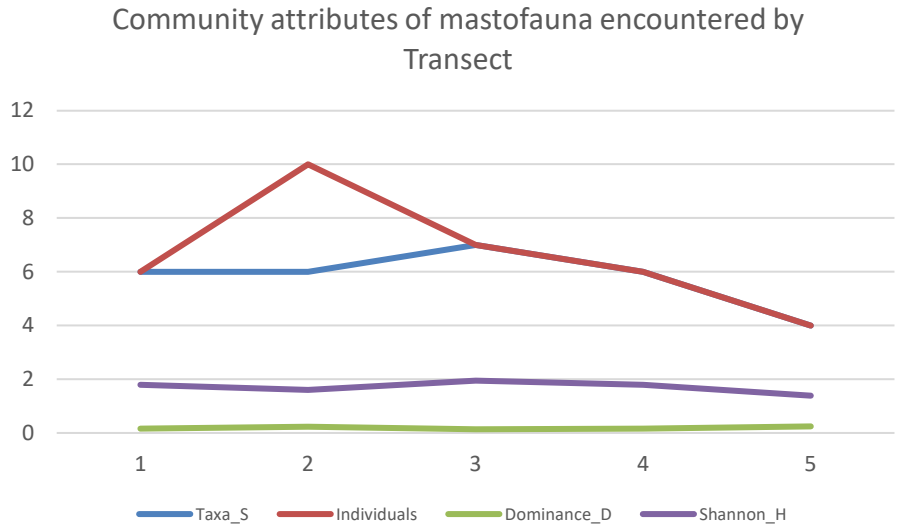
Results 4 cont'd| Ecuador: Vanilla, Guayusa and Palo Santo management practices

Monitoring Transects show the impact of good production practices in Vanilla, Guayusa and Palo Santo



Atributos comunitarios Mastofauna	PPM 1-5
Taxa_S	9
Individuals	34
Dominance_D	0.1522
Shannon_H	2.003

The presence of large mammals is associated with good ecological integrity (*Mora, 2017*). In the case of the Chakra - Guayusa system all plots report this faunal group.

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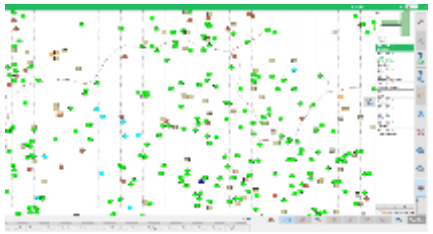
ACERCA DE MONITS

- MONITS is a GIS-interactive information system for Sustainable Forest Management (SFM) developed by IFER, GITEC and CFU.
- GIS integrated database related to census, logging, skidding, clearing and transport to industry.
- Records all forest harvesting activities and generates Government Operations Book (LO).
- Prepare log and GTF list (forest transport guide).
- It will allow the generation of height and volume equations to be integrated into the following Operational Plans (OP).

Results 5 cont'd | Peru: Participatory Forest Management - MONITS

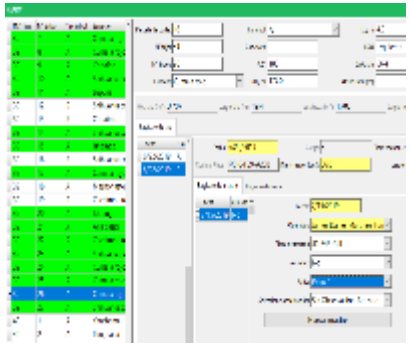
Analysis and control during entry of traceability information (Forest harvesting)

Logging register

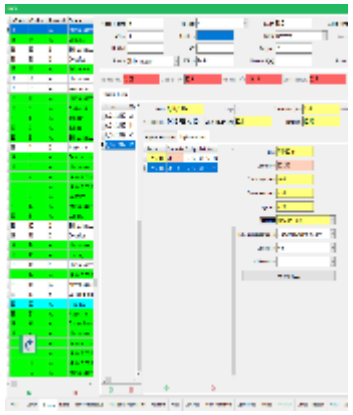


Logging tree with blue color

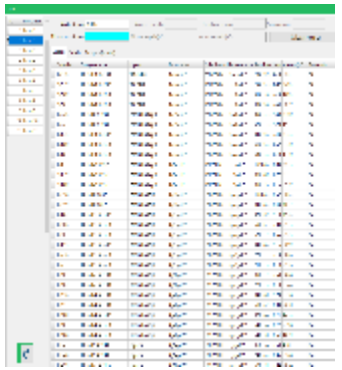
Drag register



Log clearing



Patio Register



Transport register

Transport guide

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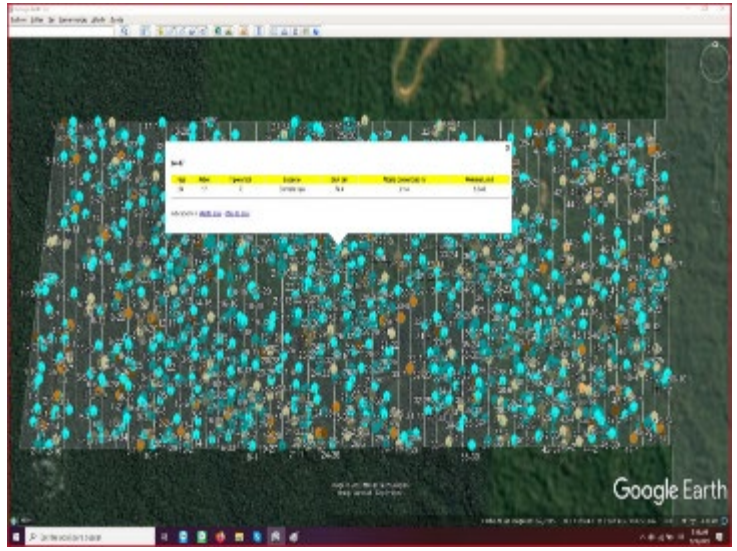
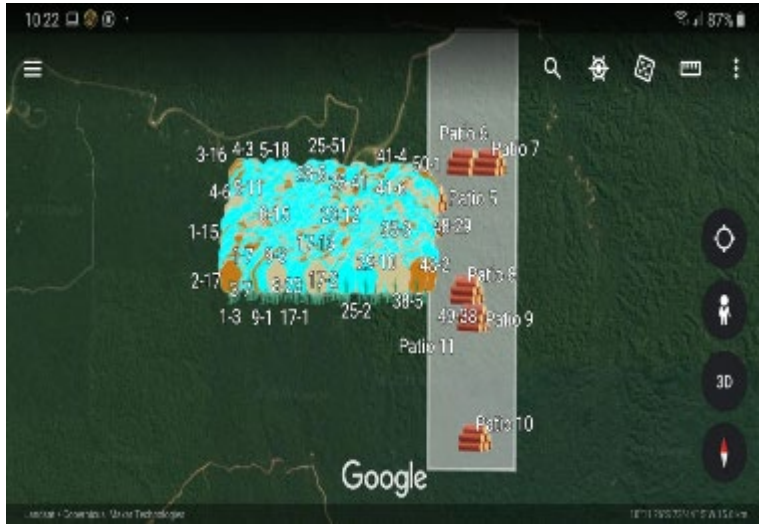
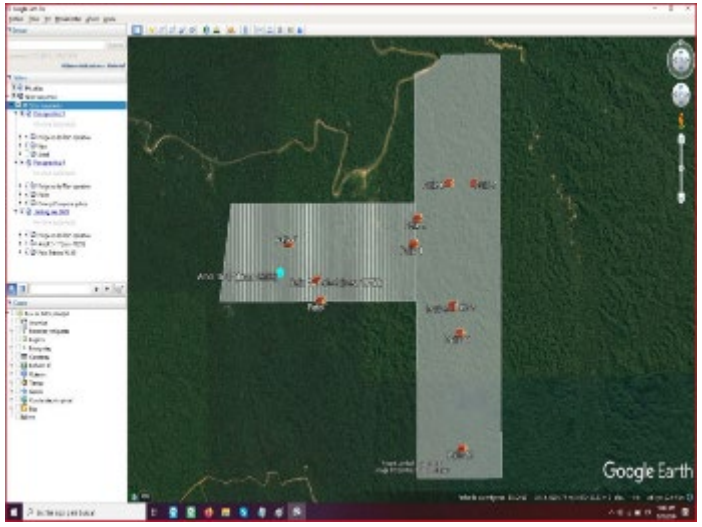
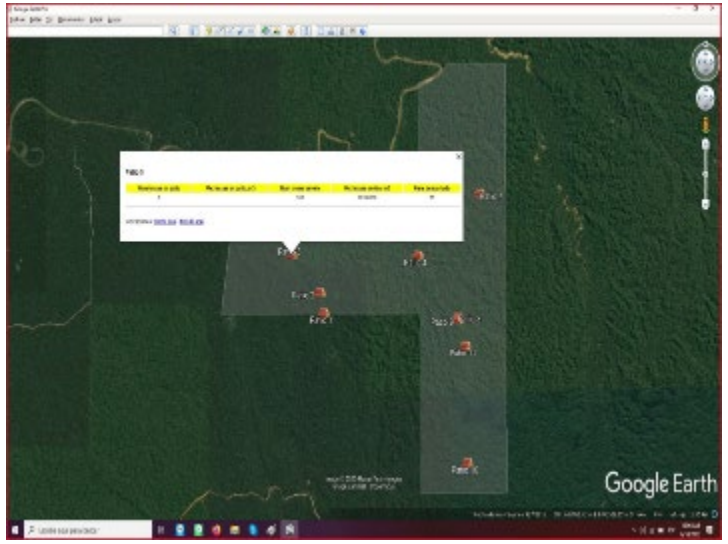
Results 5 cont'd| Peru: Participatory Forest Management - MONITS

Data reporting in Google Earth for forestry entrepreneurs









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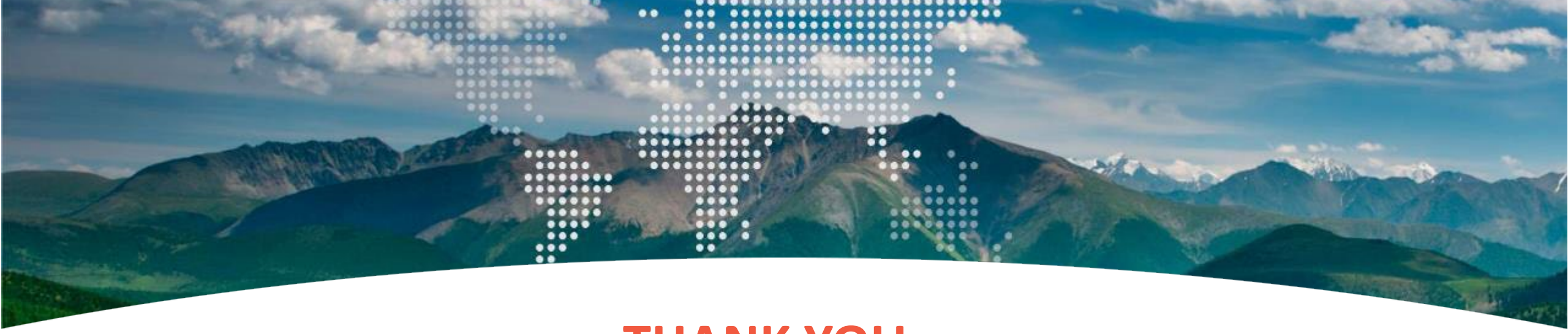

THANK YOU

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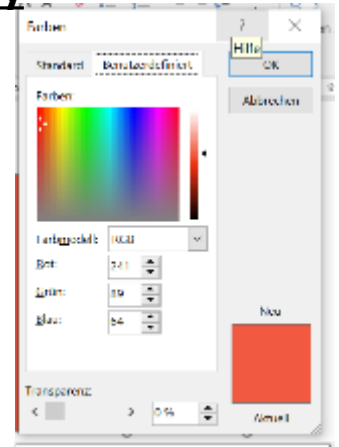
ILUSTRATOR-Website Agency

Orange:
CMYK: 0 C / 80 M / 80 Y / 0 K
RGB: 253 R / 52 G / 31 B
WEB: #FD341F
Pantone: 7417

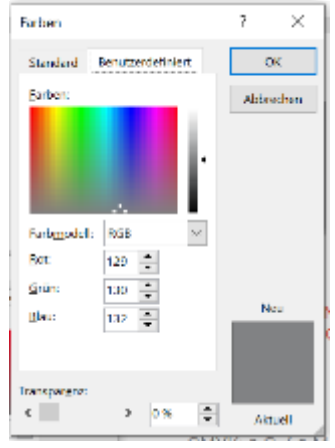
Grau:
CMYK: 0 C / 0 M / 0 Y / 60 K
RGB: 102 R / 102 G / 102 B
WEB: #666666
Pantone: 419

PC-Code-should be used internaly

Orange:
RGB: 241 R / 89 G/ 64 B



Grey:
RGB: 129 R / 130 G / 132 B



Country | Project Example

Project title	**XXX**
Client	XX
Counterpart	XX
Partner	XX
Duration	XX
Contract Value	XX

Main project features and services

- ✓ Good financial Governance of Woreda administrations implementing SLM budgets
- ✓ Building and maintaining SLM infrastructures
- ✓ Livelihood support, biodiversity and climate change linkages
- ✓ Large scale Baseline Studies in 3 Regions