



Priority Areas Identification for Conservation Actions in the South of Ecuador

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Introduction

- During 50 and 60 decades, biological ecosystems were considered stable and predictable.
- Researches related to Tropical Ecosystems Functioning (nature is unstable and dynamic).
- Conservation networks with the capacity to maintain ecosystems processes and capacity of resilience.
- Priority areas as tools to preserve and manage natural and disturbed areas.



Objectives

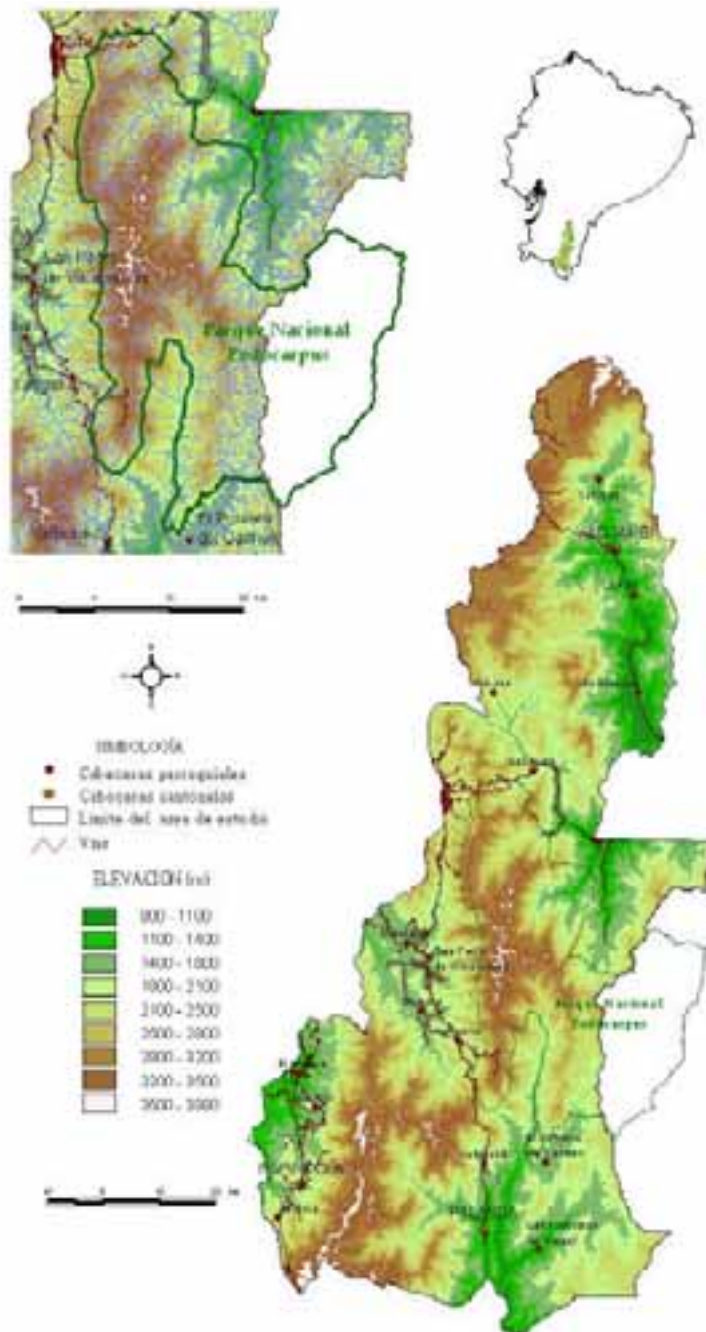
General

- Identify Priority Areas for Conservation Actions in Podocarpus –Yacuambi -Sabanilla zone

Specifics

- Ecological Analysis
- Pressures-Threatens Analysis
- Study area Priorization
- Nucleo Zones Identification

Study Area



- South- east of Ecuador
- 638,510.60 ha.
- 800 - 3,880 m.
- 64% denso, and chaparro forest; 10% herbaceous and shrubby paramo, and the remaining is disturbed area.
- 8°C - 20°C.
Paramo 0°C.
- 71% of PNP is inside.



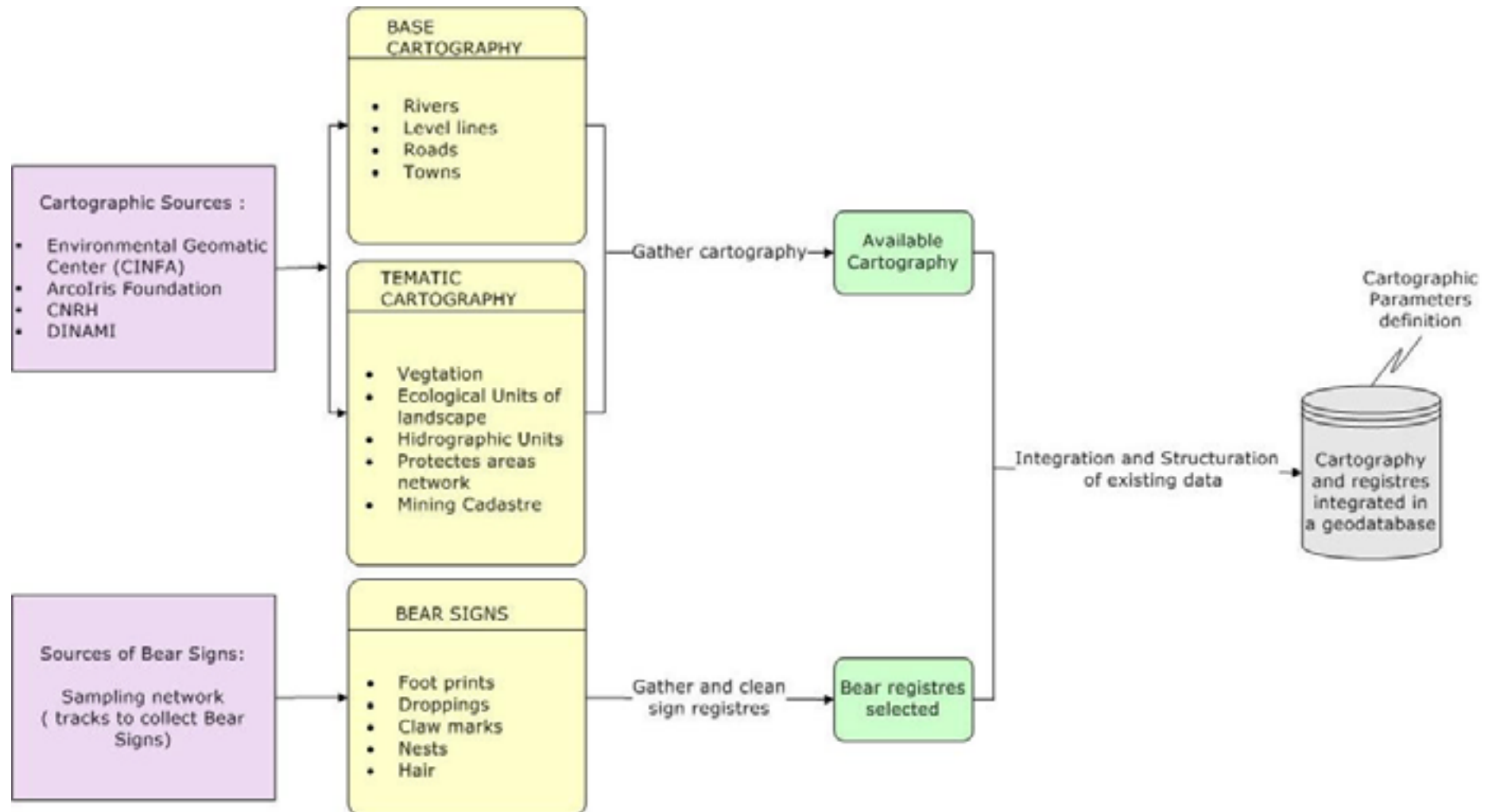
Study Area

Podocarpus National Park

- Unique protected area in the south of the country.
- Floristic composition different from Norther and Central Andes.
- Relevant importance of endemism and biodiversity: 4% species are endemic of Ecuador of which 23% are exclusively in this area
- 628 bird species, Important Bird Area (IBA)
- One of the most important areas to preserve viable populations of Andean bears

Methods

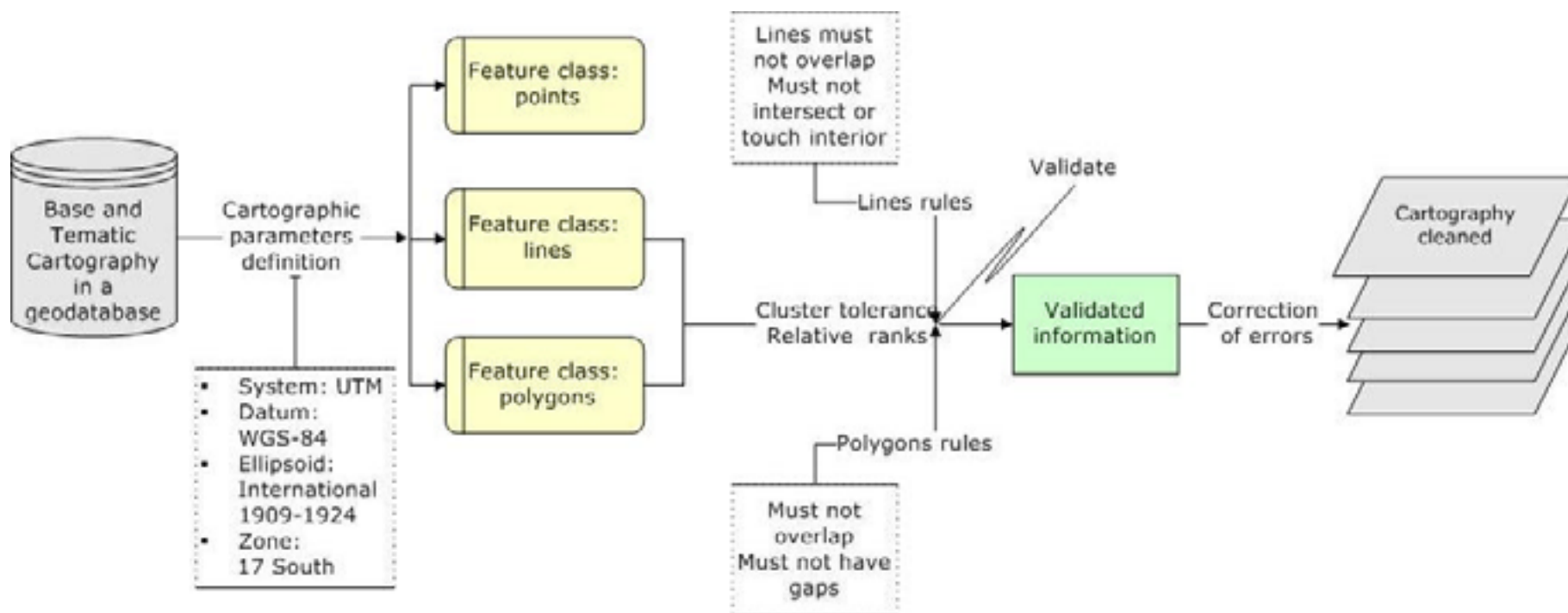
Information compilation





Methods

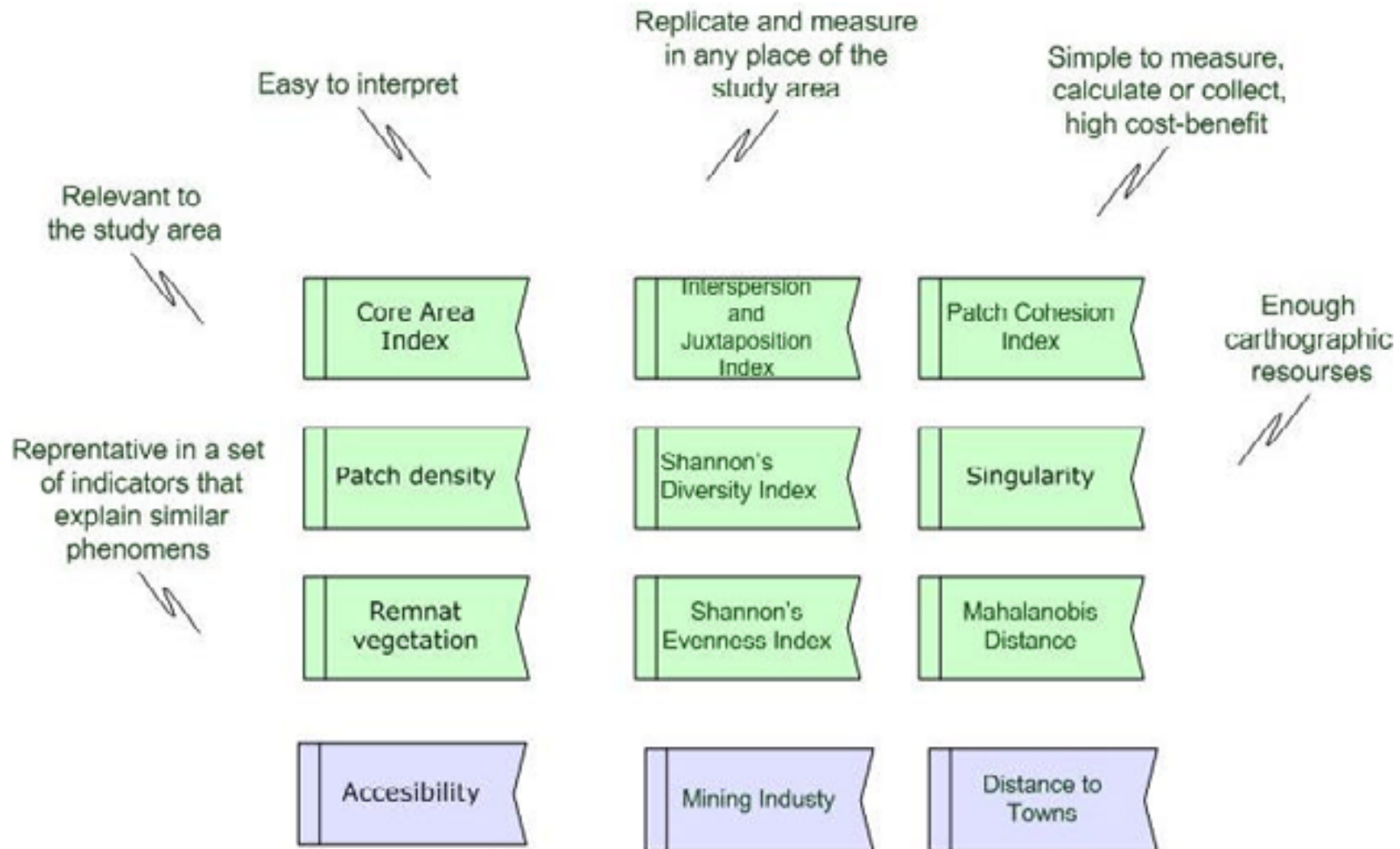
Cartographic Edition





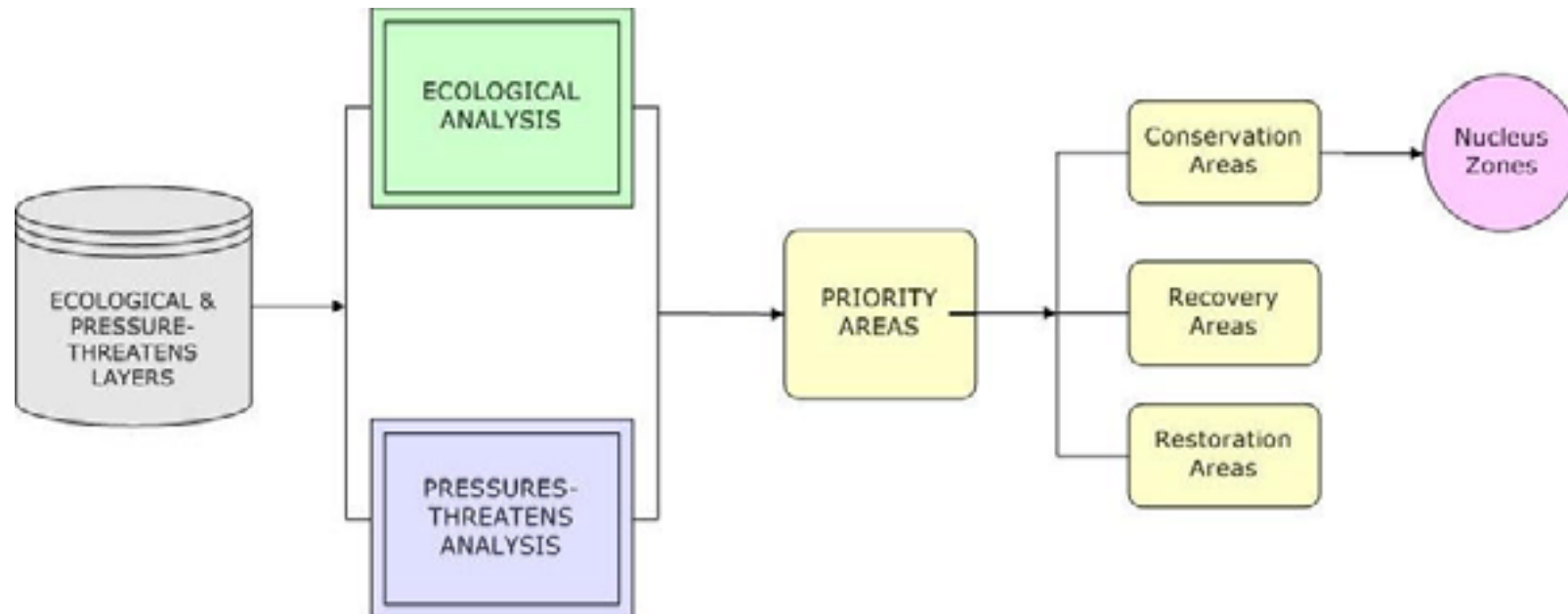
Methods

Indicators Selection



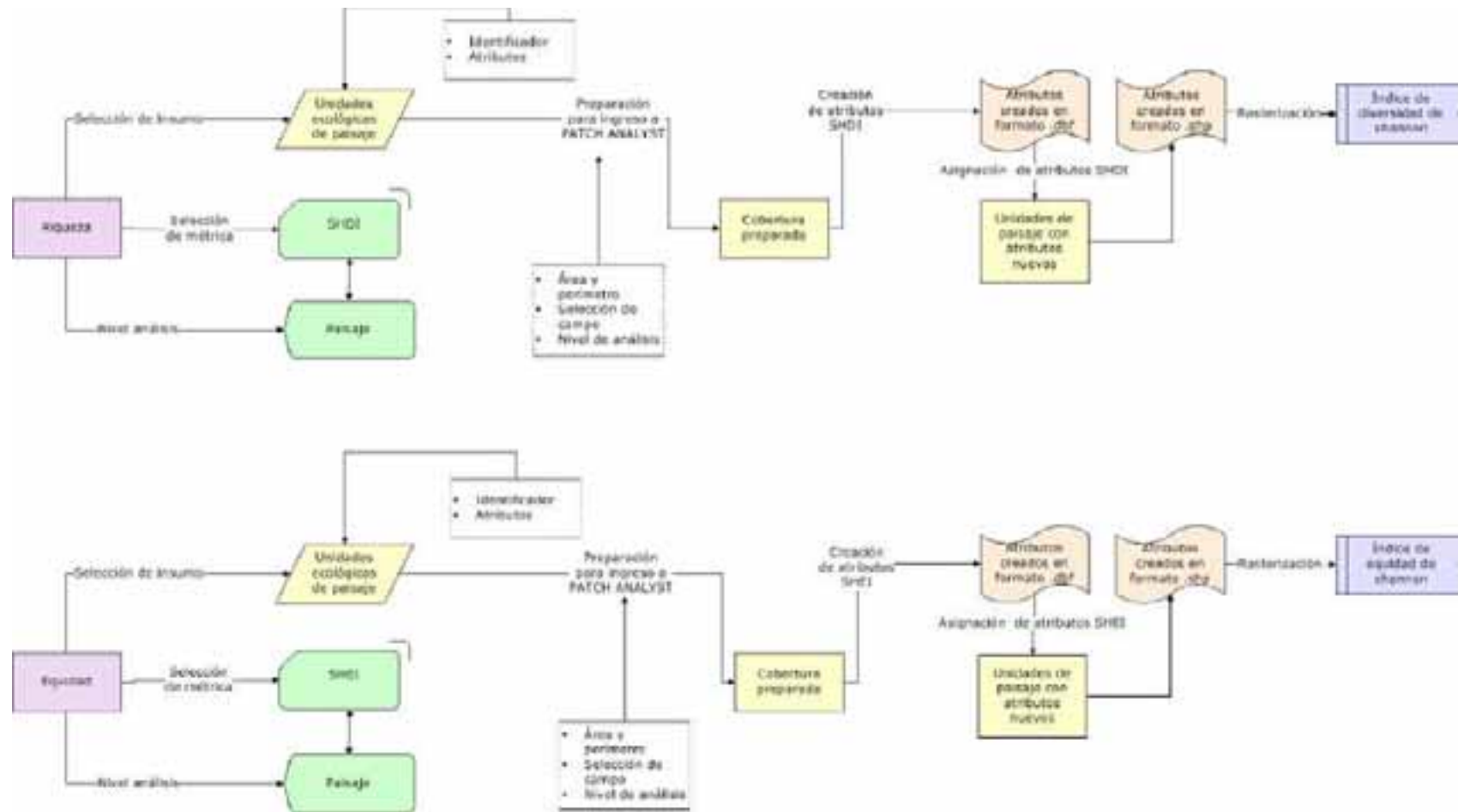
Methods

Analyses



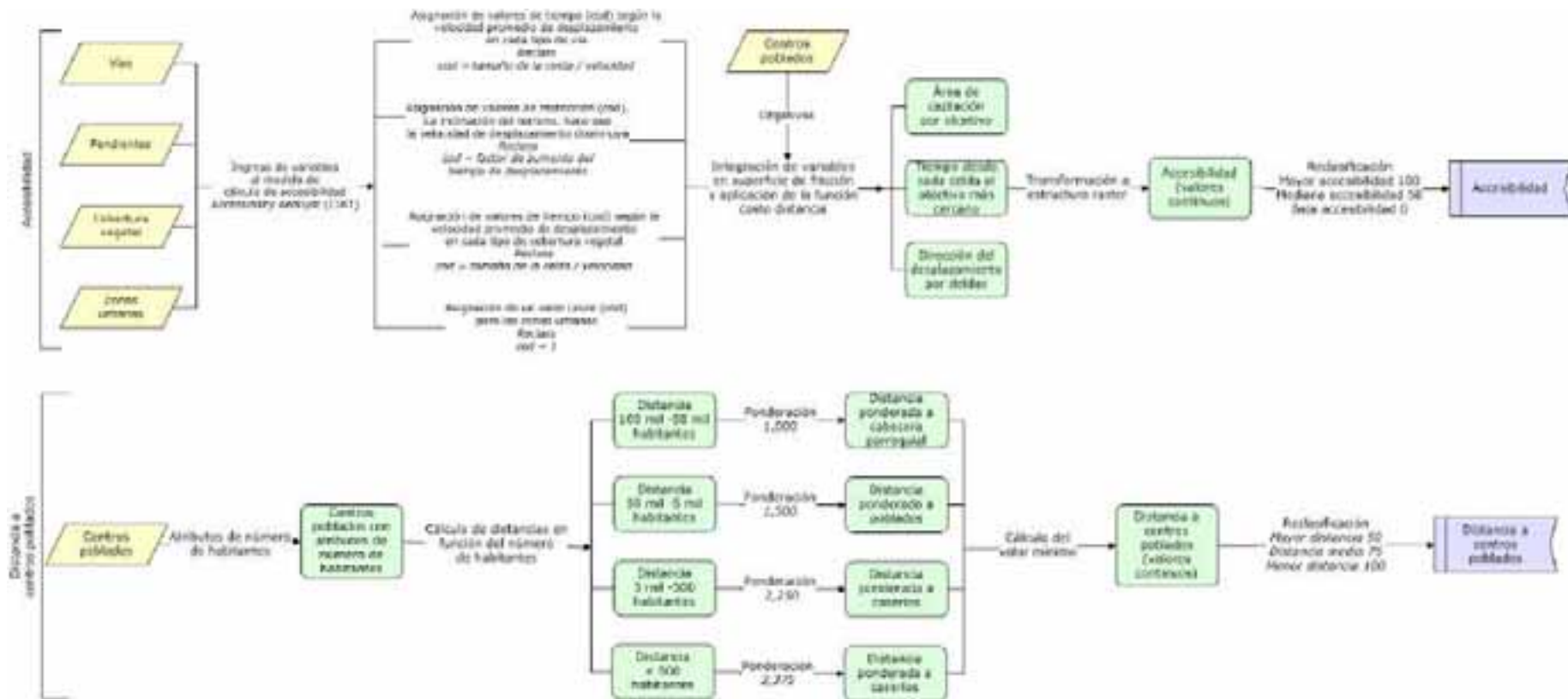
Methods

Ecological Variables Analysis (example)



Methods

Pressures-Threatens Variables Analysis (example)





Results

Ecological Analysis

<i>Analysis</i>	<i>Metric</i>	<i>Ranges</i>	<i>Obtained Ranges</i>
Ecological Integrity	Core Area Index (CAI)	0 = CAI < 100 PD > 0	0 – 97,00
	Patch Density (PD) * Radius of gyration (GYRAYE_MN)	GYRATE = 0, without limit PD*GYRATE = 0, without limit	0 – 9,41
	Remnant vegetation (REM)	0 = REM = 100	0 – 100,00
	Interspersion and Juxtaposition Index (IJI)	0 < IJI = 100	0 – 98,39
	Shannon's Diversity Index (SHDI)	SHDI = 0, without limit	1,17 – 4,08
	Shannon's Evenness Index (SHEI)	0 = SHEI = 1	0,78 – 0,89
	Patch Cohesion Index (COHESION)	0 = COHESION < 100	0 – 99,90
	Singularity (SING)	SING > 0	0,16 – 0,50
	Mahalanobis Distance (d ²)	d ² > 0	1,10 – 9513

Ecological Integrity



<i>Identified zones</i>	<i>Integrity level</i>	<i>Area (ha)</i>	<i>Percentage (%)</i>
Zone I	Very High	168,984.90	40.40
Zone II	High	146,677.23	35.07
Zone III	Moderate	79,027.00	18.89
Zone IV	Low	23,603.85	5.64



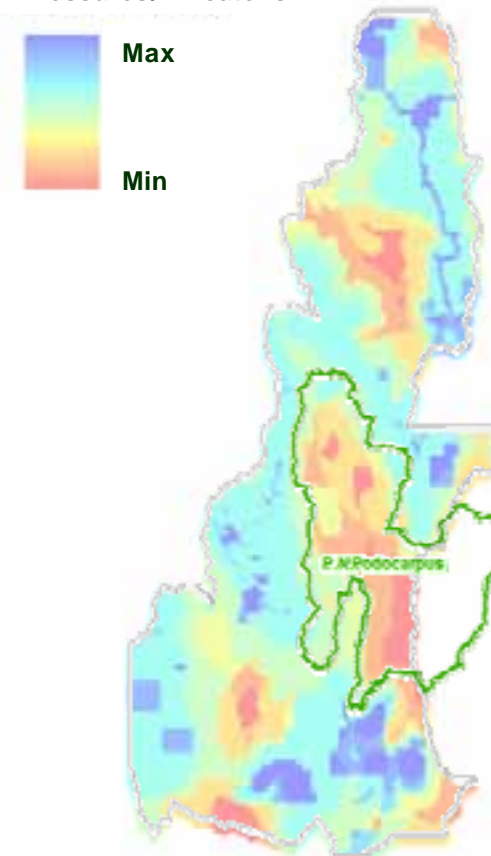
Results

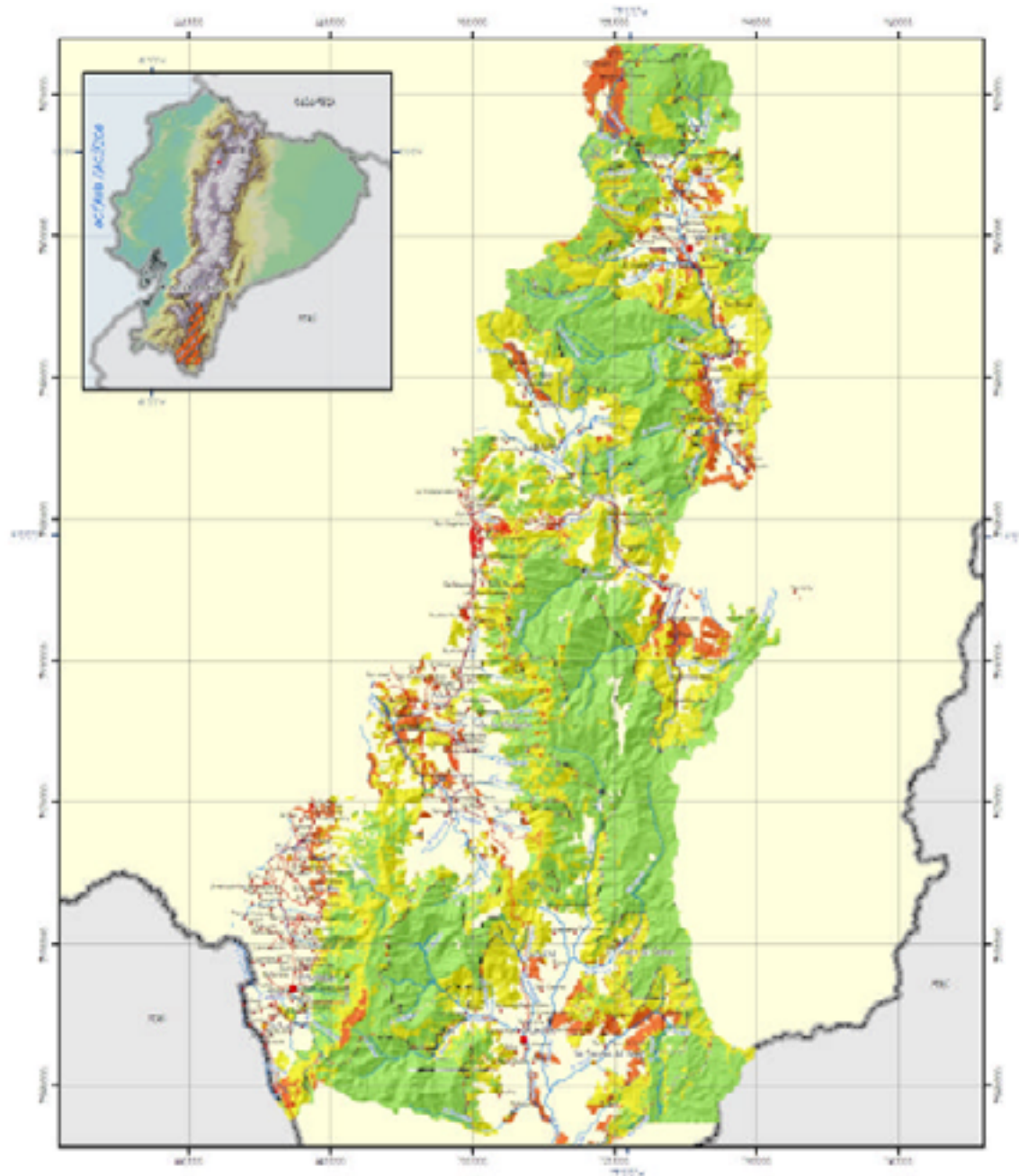
Pressures-Threatens Analysis

<i>Identified zones</i>	<i>Presssures Theartens level</i>	<i>Area (ha)</i>	<i>Percentage (%)</i>
Zone I	High	66,509.55	10.42
Zone II	Moderate	405,237.78	63.52
Zone III	Low	166,273.56	26.06

<i>Analysis</i>	<i>Metric</i>	<i>Ranges</i>	<i>Obtained Range</i>
Pressures /Threats	Accessibility (ACC)	ACC = 0, without limit	0,00 – 2,00
			2,01 – 6,00
			> 6,00
	Distance to Towns (DT)	DT = 0, without limit	0 – 9538,27
			9538,27 – 19076,58
			> 19076,58
	Mining Industry (MI)	MI = 0, without limit	3,00
			2,00
			1,00

Pressures/Threatens





Results

Priority Areas

-  Restoration Areas
-  Recovery Areas
-  Conservation Areas



Results

Priority Areas - Conservation

Aim: To implement management, protection and/or preservation action to maintain ecological integrity.

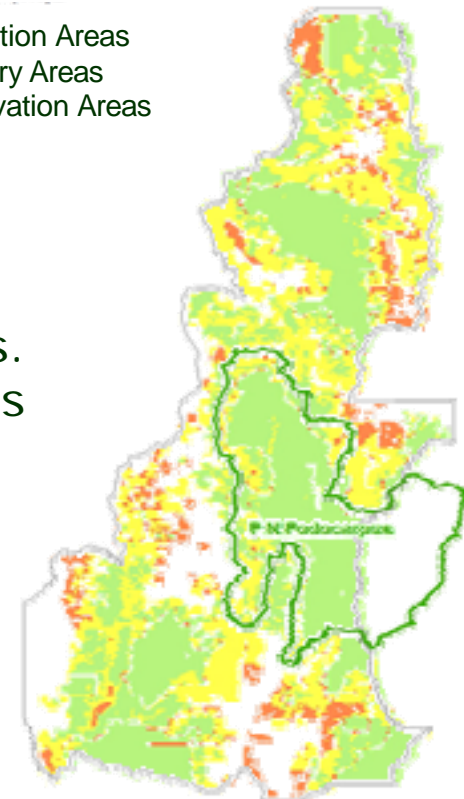


Very high integrity zones, with low, moderate and high threats.
High integrity zones, low threats enclosed in very high and moderate integrity zones.

It covers 224.659,35 ha.
158.477,22 ha (70,54 %) are not in the category of protection.

Priority Areas

-  Restoration Areas
-  Recovery Areas
-  Conservation Areas



Results

Priority Areas - Recovery

Aim: To take actions to recover or regenerate native vegetation. They surround high integrity zones, so they are buffer zones.

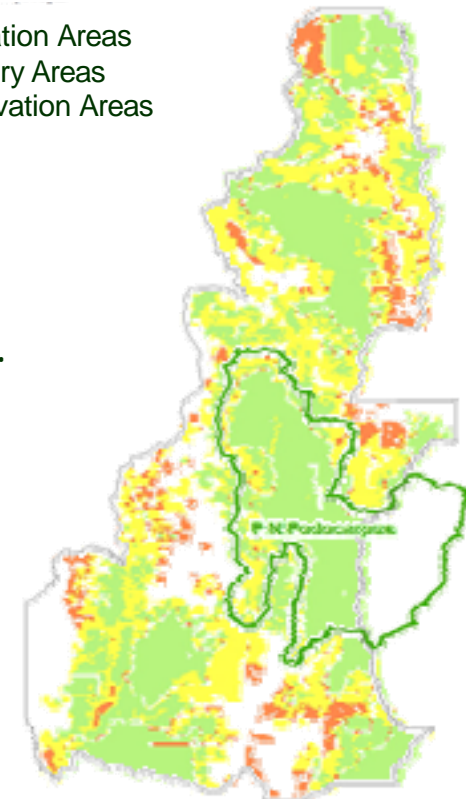
Priority Areas

- Restoration Areas
- Recovery Areas
- Conservation Areas



High integrity zones, with high and moderate threats.
Moderate integrity, with low and moderate threats.

It covers 160.123,59 ha.
158.477,22 ha (70,54 %) are not in the category of protection.



Priority Areas - Restoration

Aim: Reforestation and revegetation with native species that were extracted from the area.



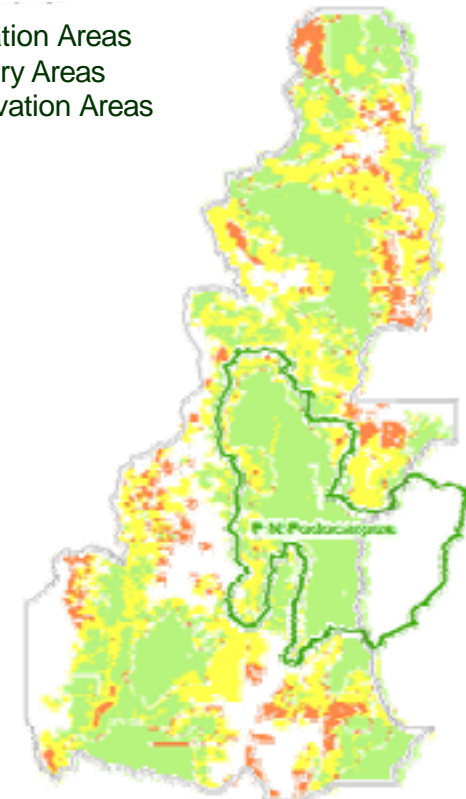
Moderate integrity zones, high threats.

Low integrity, with high, moderate, and low threats.

It covers 33.497,82 ha.
30.499,20 ha (91,05 %) are not in the category of protection.

Priority Areas

- Restoration Areas
- Recovery Areas
- Conservation Areas





Critical importance zones identified inside of the conservation areas.

Their propose is to consolidate and strength conservation zones through short term decision proposals

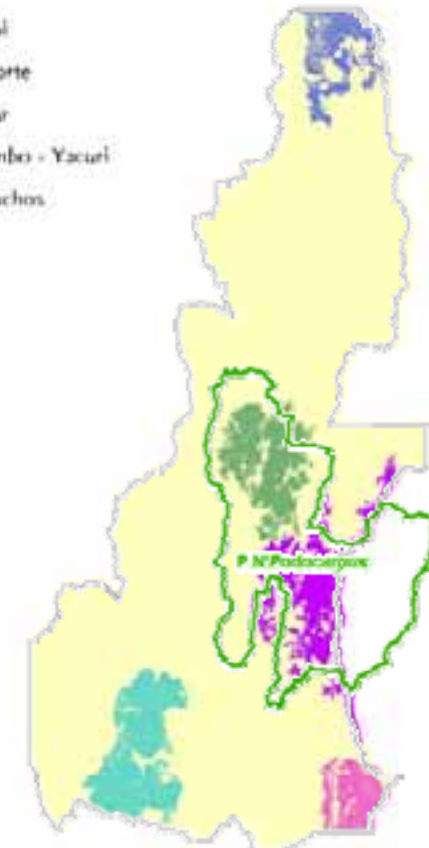
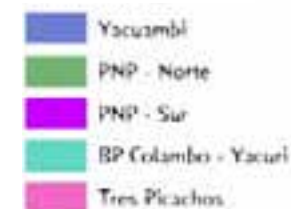
- 108.396,39 ha
- Good connectivity
- 50% nucleus zones are inside of PNP.

<i>Nucleus zones</i>	<i>Area (ha)</i>
Yacuambi	14,385.37
PNP - North	23,305.44
PNP - South	31,227.70
Colambo – Yacuri P.F.	28,646.82
Tres Picachos	10,830.07

Results

Nucleus Zones

Nucleus Zones





Discussion

- Importance to maintain the viability of umbrella species (Andean bear).
- Socio-economic information is needed.
- Integrity areas is better in Amazon basines than in Pacific basines.
- High Integrity values are isolated.
- There are three fragments of remnant vegetation.

