A Gap Analysis of the Andean Bear Distribution in Peru

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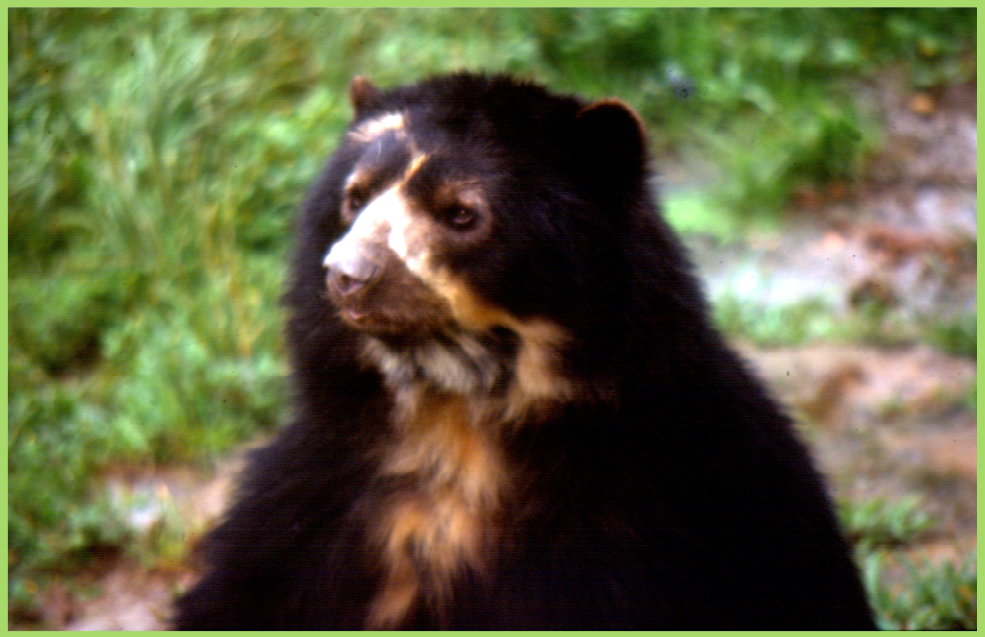
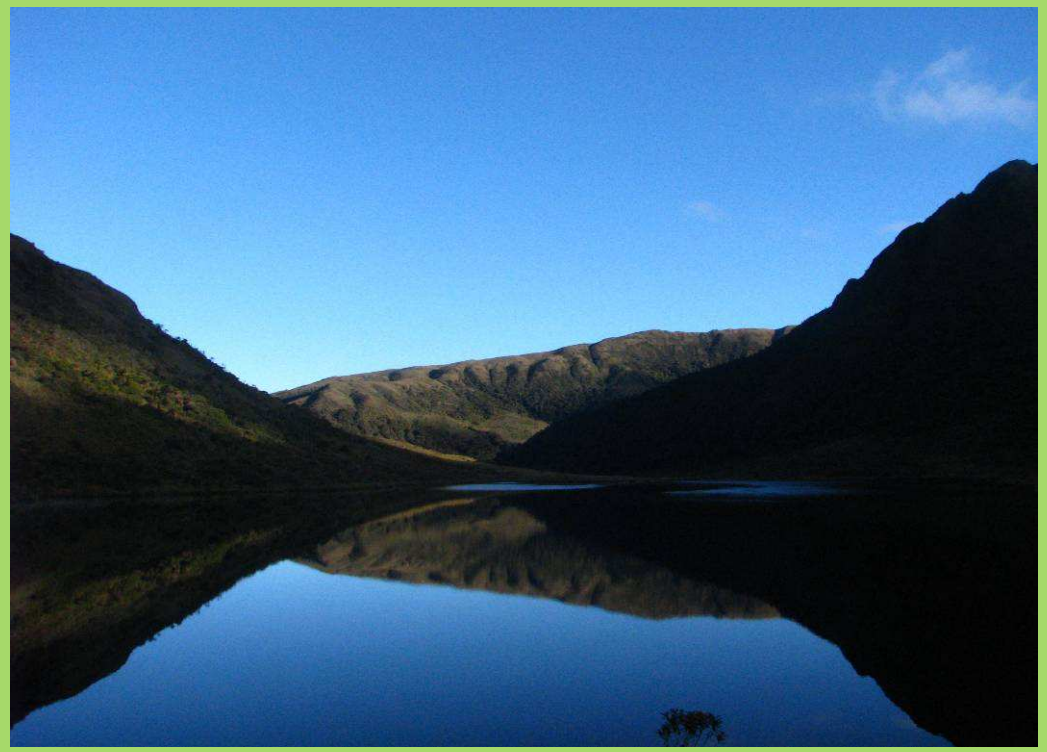
Second International Andean Bear Symposium
Lima – Peru
Nov 2008

Andean Bear Conservation

- Why should we conserve the andean bear?
- What should we do to contribute to conservation actions?

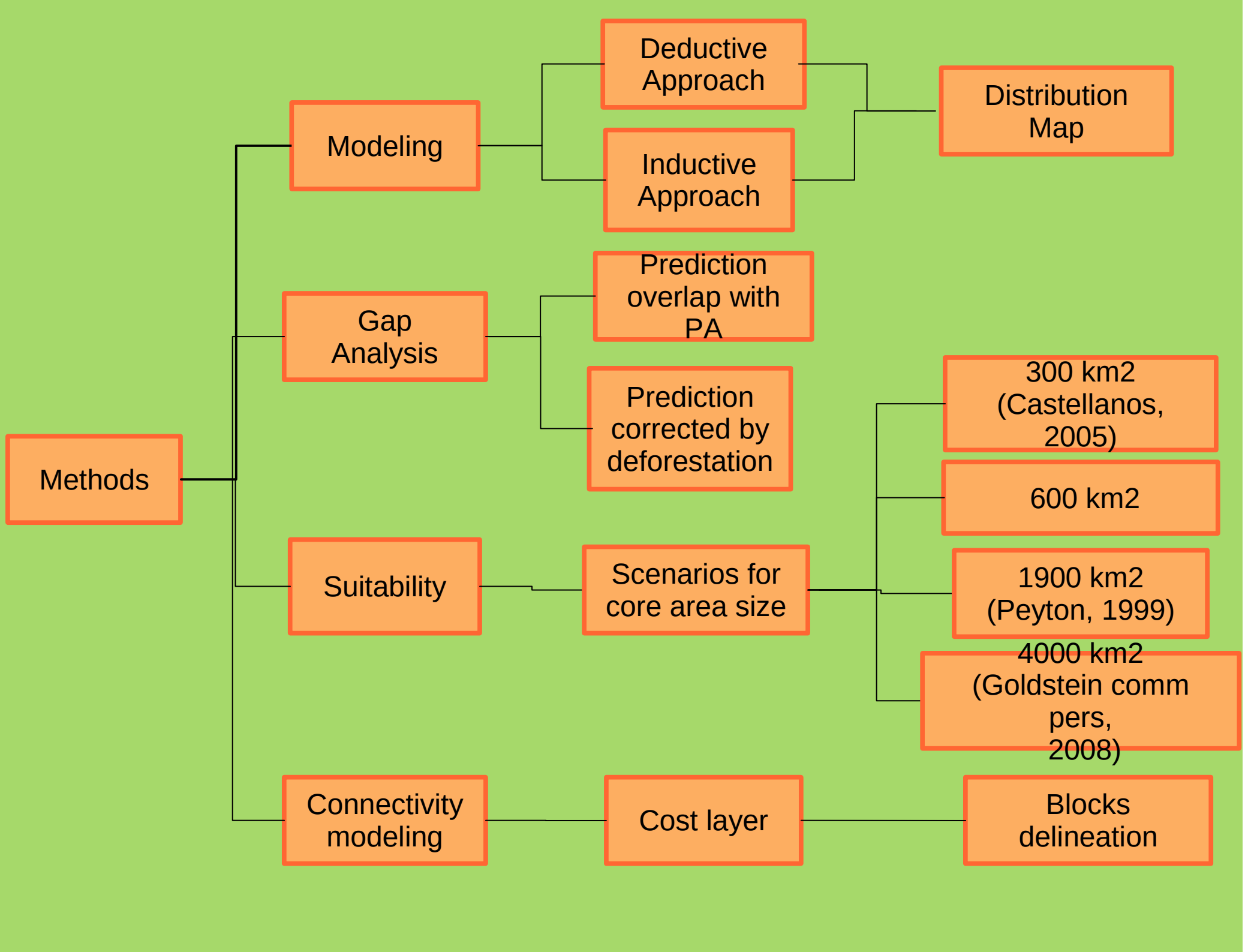




Which are the suitable habitat gaps in the Peruvian Protected Area System in order to ensure long term persistence of the Andean Bear?

Study Area

- Peru 12 850 sqkm
- Greatest range of habitat types and elevations (AB 200 - 4750m)
- 74 protected areas under different land designation types (LDT)
- 49 potential protected areas
- Information gaps


Methods
Modeling
Deductive Approach
Inductive Approach
Distribution Map
Gap Analysis
Prediction overlap with PA
Prediction corrected by deforestation
Suitability
Scenarios for core area size
300 km2 (Castellanos, 2005)
600 km2
1900 km2 (Peyton, 1999)
4000 km2 (Goldstein comm pers, 2008)
Connectivity modeling
Cost layer
Blocks delineation

Predictive distribution modeling (PDM)

- Selected tool: Maxent

- 155 occurrence sites used for training the model

- Selected Features:

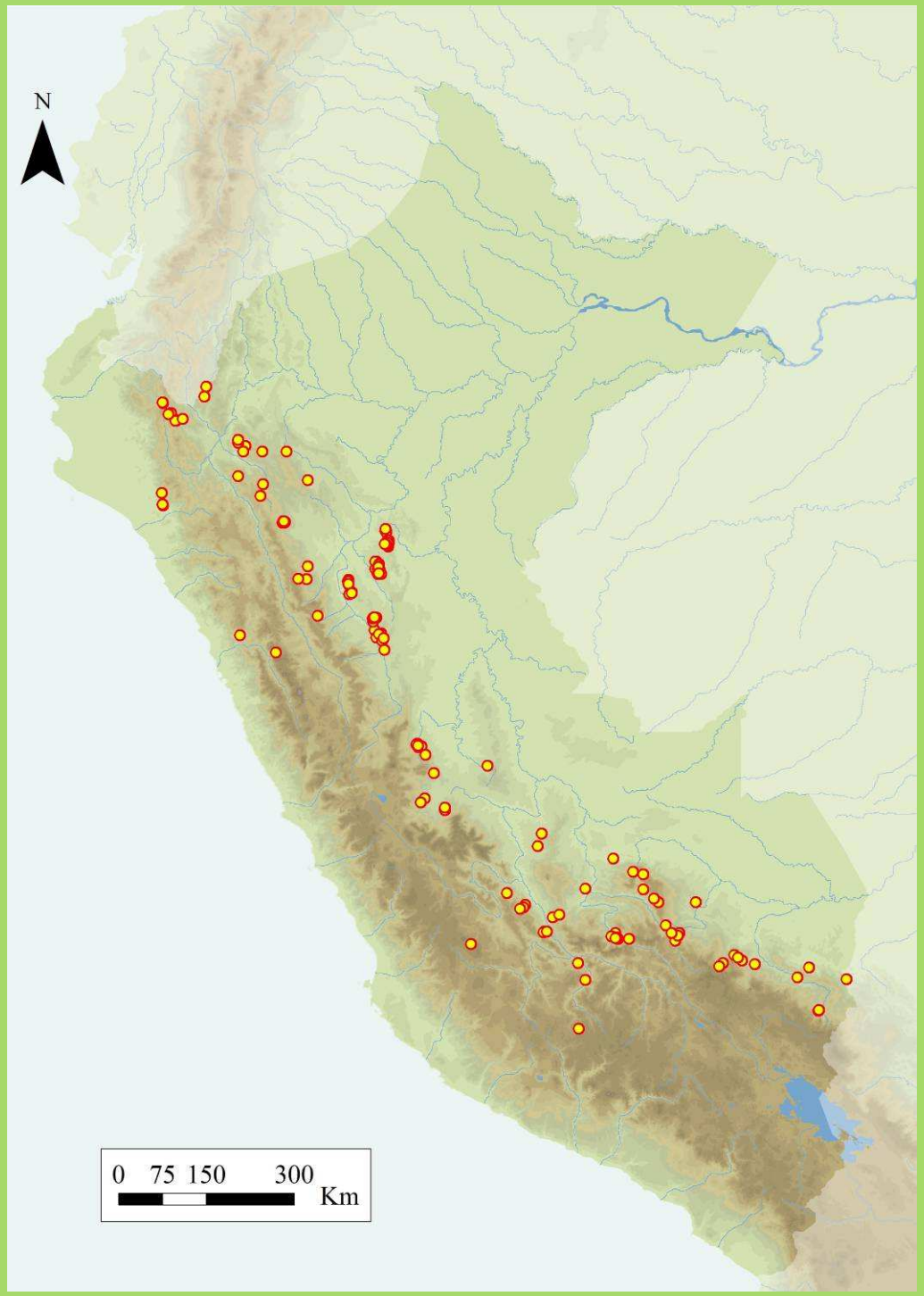
  Altitude – meters

  Relative humidity - percent

  Number of wet days – days with >0.1mm rain / month

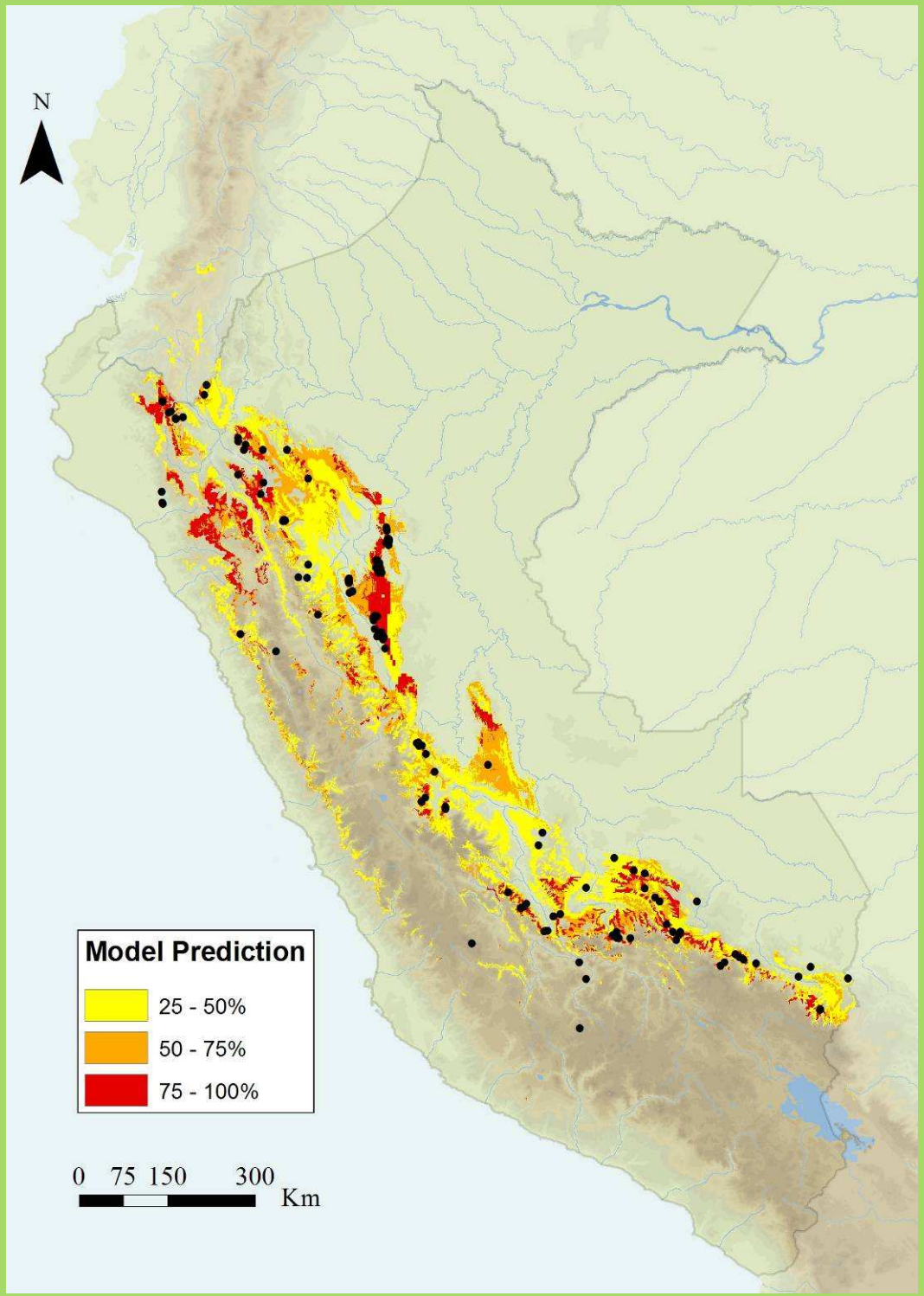
  Life zones (Holdridge)

- 30% of records used for testing the model



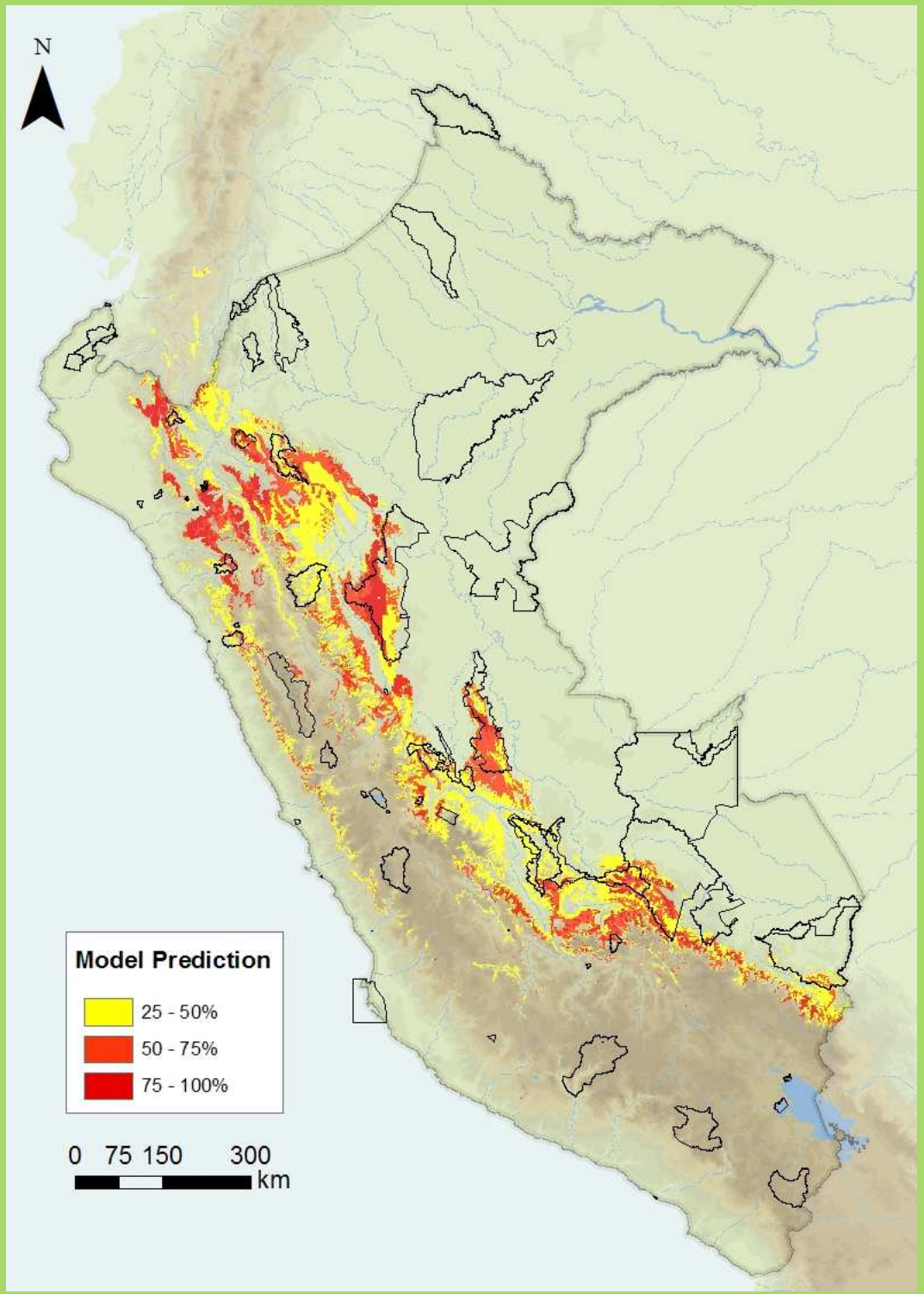
PDM Results

- Probability distribution
- 25% threshold
- Prediction close to the coast (historical distribution)
- Improvement through deductive approach



Gap Analysis

- Protected areas boundaries overlaid with model prediction (18.2%)

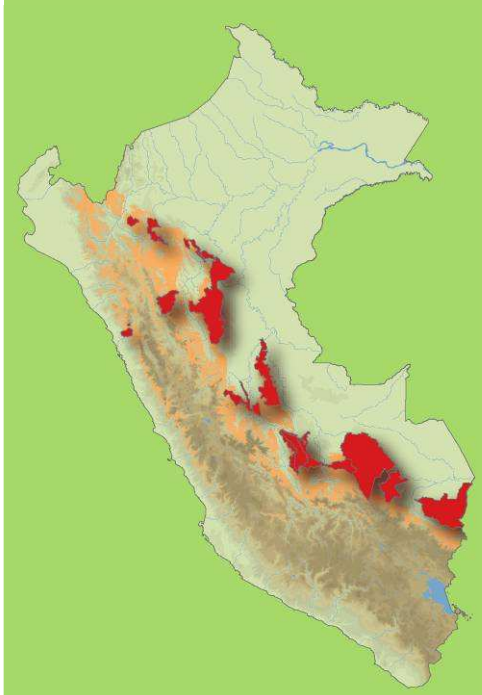


Integrity Analysis

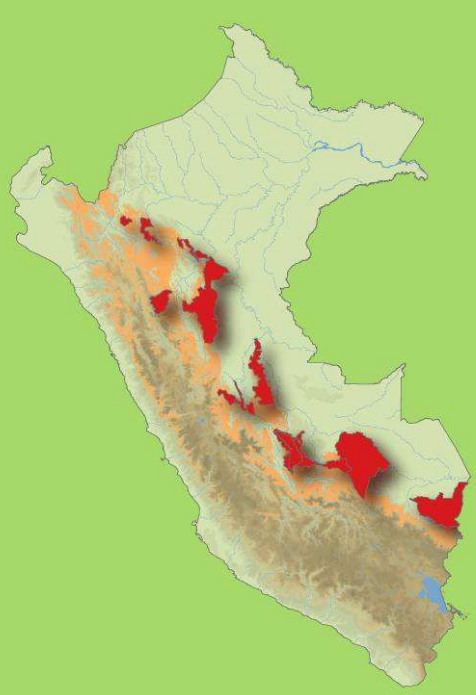
Land Designation Types	Original model prediction		Prediction corrected with deforestation	
	Predicted area overlap (sqkm)	Predicted area percent	Predicted area overlap (sqkm)	Predicted area percent
Strict protection	20571.3	11.4	20022.6	12.3
Sustainable use	10461.6	5.8	10268.3	6.3
Reserved zones	742.7	0.4	742.7	0.5
Private conservation areas	1093.8	0.6	1063.5	0.7
Total	180369	18.2	162968	19.7

Deforestation data – Global Land Cover 2000 European Commission

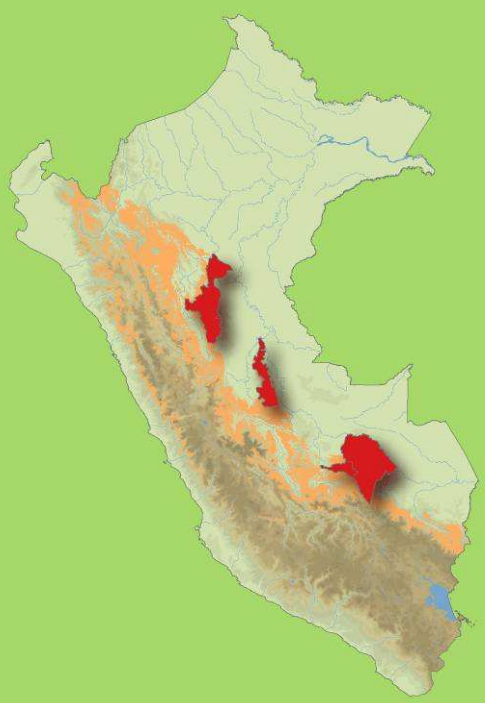
Suitability analysis



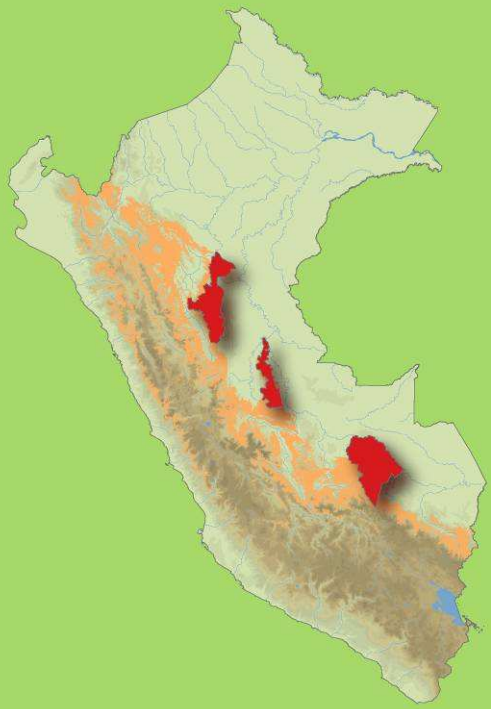
300 sqkm
Castellanos, 2005



600 sqkm
Goldstein
comm pers,
2008

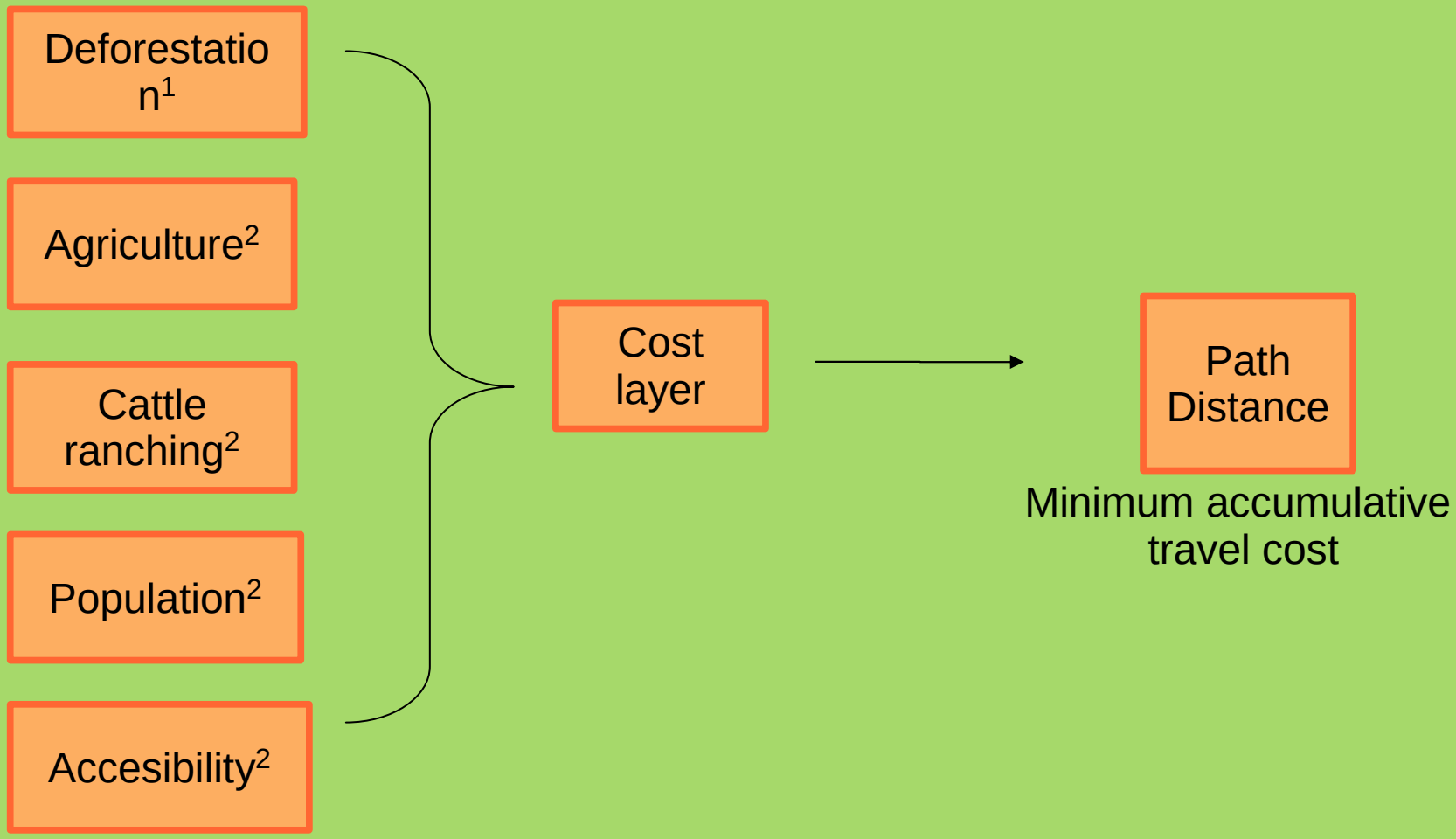


1900 sqkm
Peyton, 1999



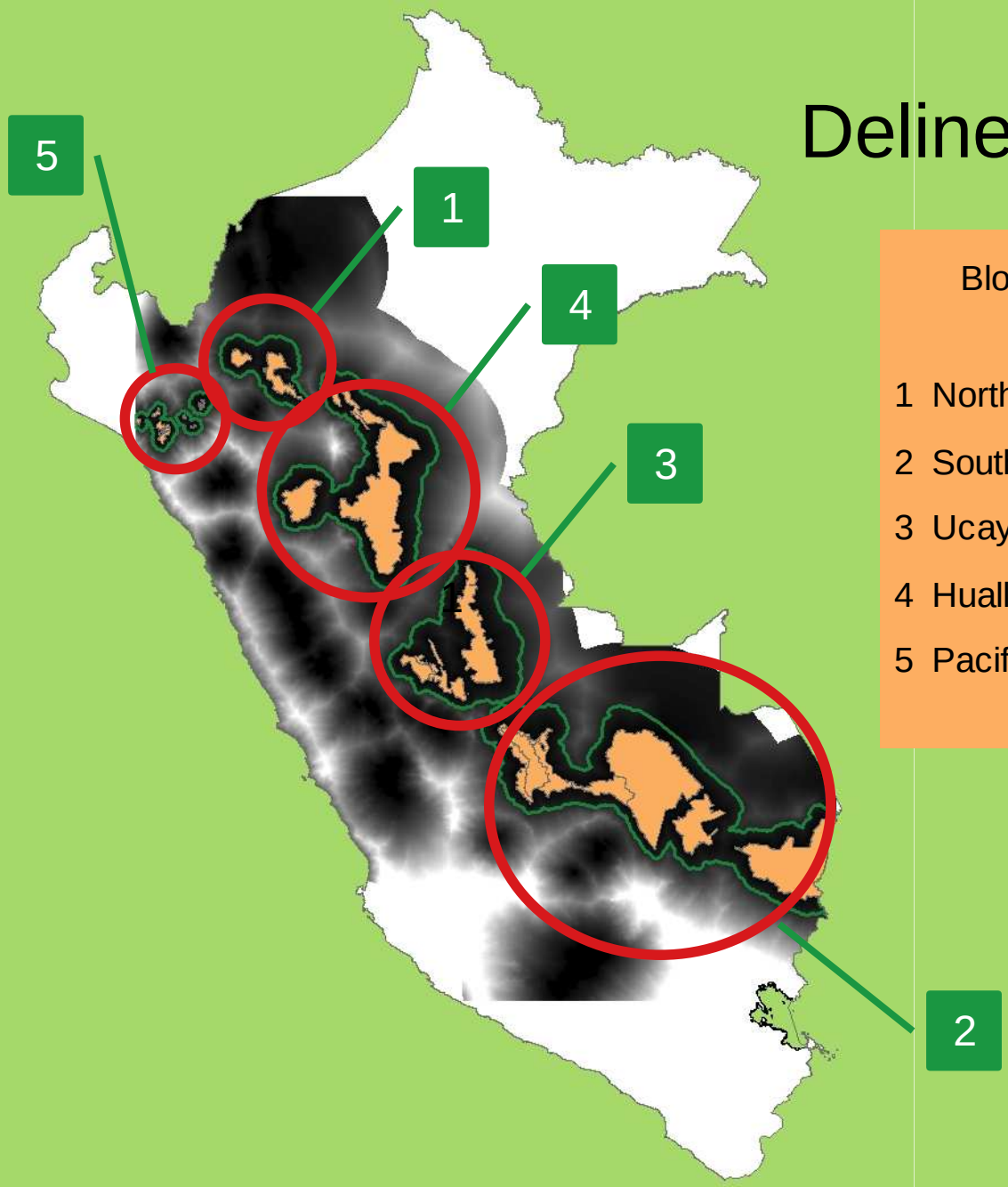
4000 sqkm
Goldstein
comm
pers, 2008

Connectivity Analysis



- Global Land Cover (GLC2000) – European Commission[1]
- International Center for Tropical Agriculture (CIAT)[2]

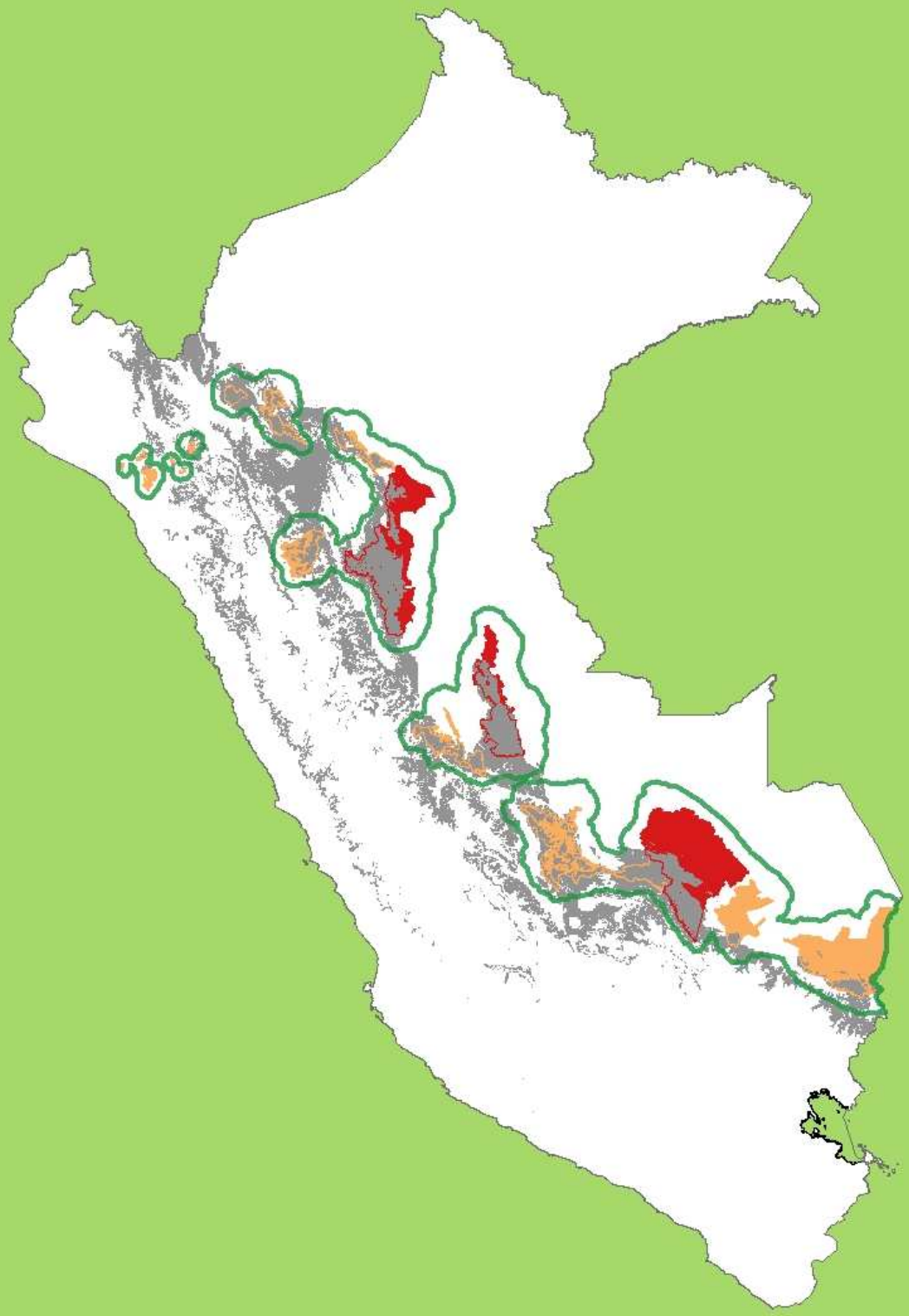
Habitat Blocks Delineation



	Block Name	Model Prediction overlap (sqkm)	Percent overlap
1	North Eastern	6808.7	4.18
2	South Eastern	24522.95	15.05
3	Ucayali	12896.6	7.91
4	Huallaga	18711.04	11.48
5	Pacific	961.34	0.59
			39.21

Summary Map

- Preliminary identification of critical areas for conservation
- Core areas
- Complementary areas
- Critical areas for connectivity
- Manu NP

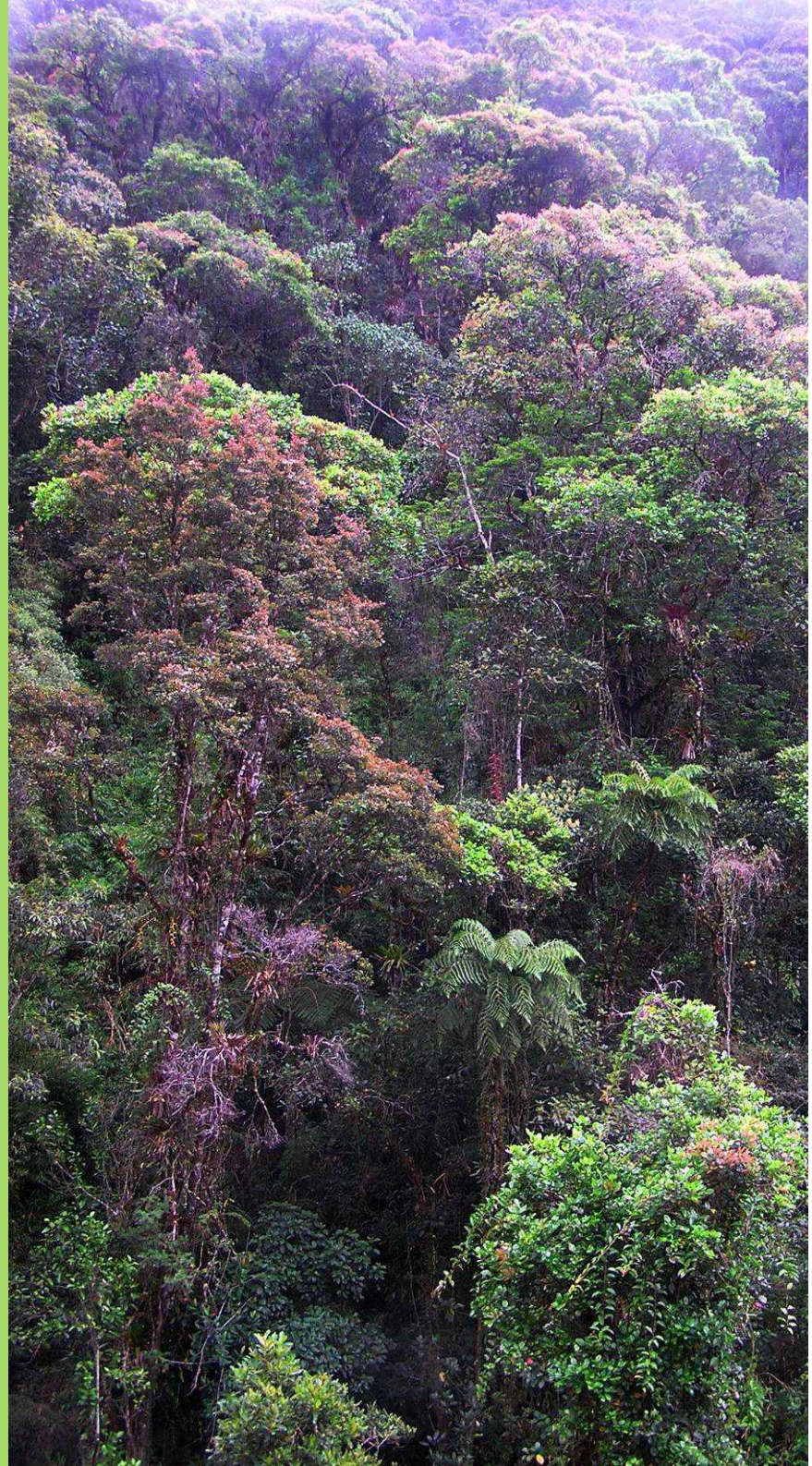


Next steps

- Detailed blocks suitability analysis and boundary refinement

- Incorporate additional LDT such as Indigenous Territories for AB conservation

- Test the PDM with a larger dataset and modeling AB historical distribution



Credits

CDC
CIMA
Blanca Rengifo
Daniel Rodriguez
Alessandra Quiñones
Isaac Goldstein
WCS – Alicia Kuroiwa, Susana Cárdenas
INRENA : CANP, BSNP, MNS, TNNS

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