

# REGENERATIVE AGRICULTURE

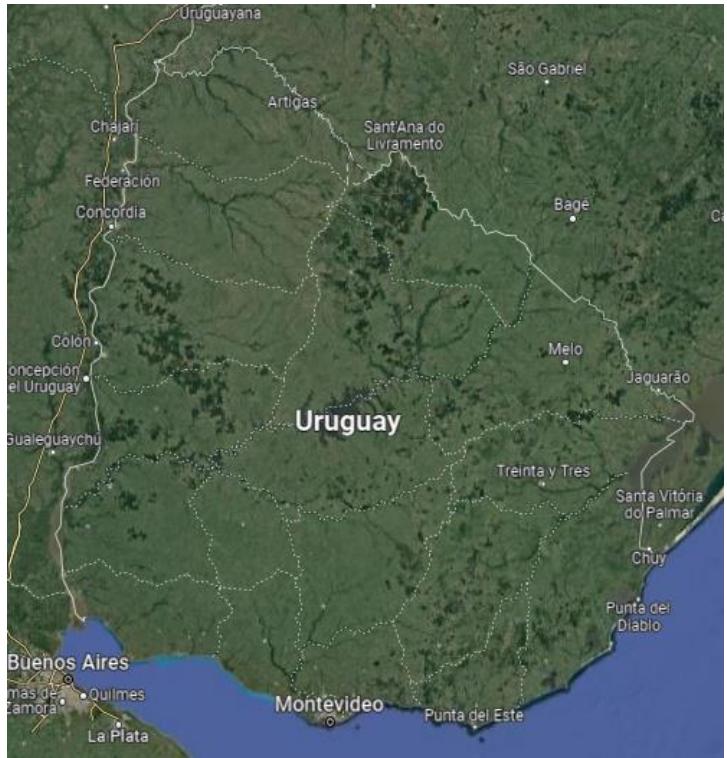


The Gaucho's style



Presentación Chargeurs – GUCCI kickoff  
3 November 2022

# Country & Project level



XX farms, XX producers,

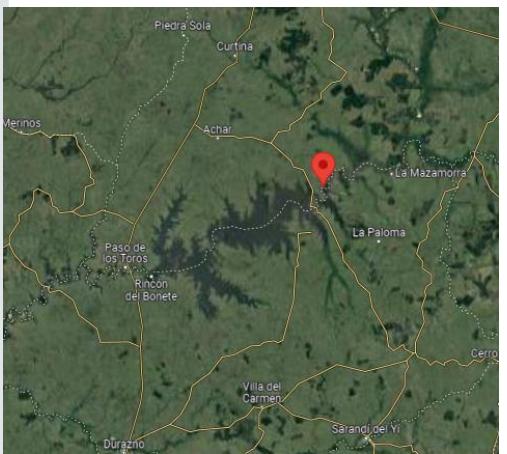
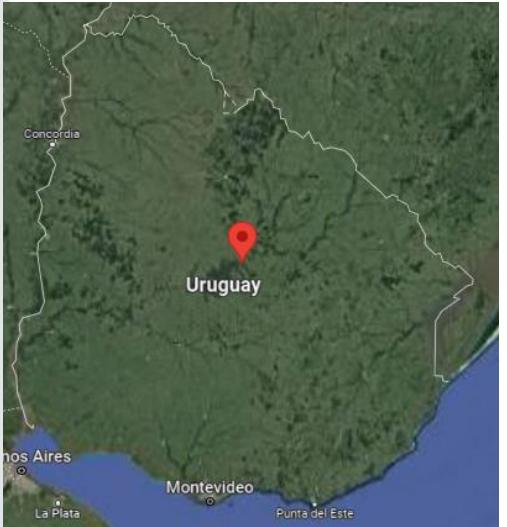
Xx Area hectareas

XX Sheep

XX kg of wool

XX Quality

# Farm level: The initial picture



# At farm Level: ONE picture FIVE points vision

1

System (LCA)



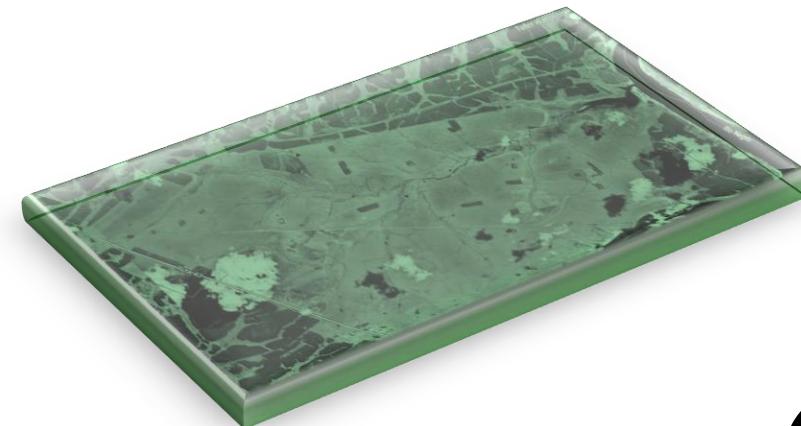
2

Ecosystem (EII)



3

Soil: Carbon Stock



4

Biodiversity (birds)



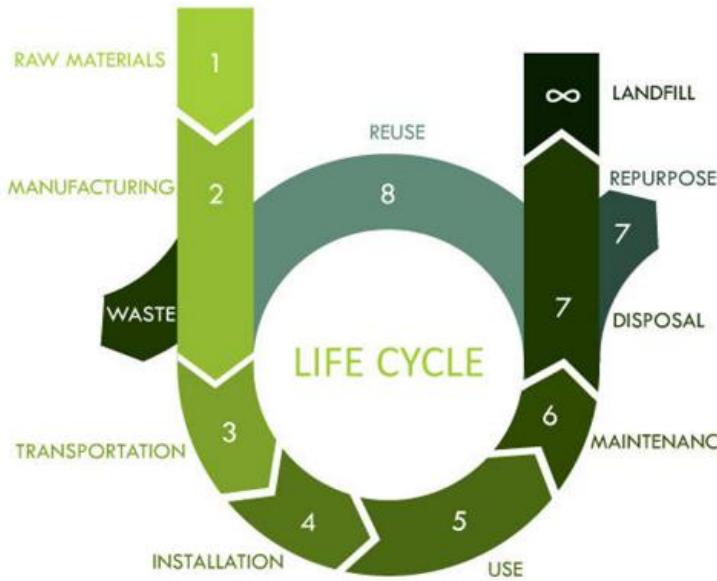
5

Predictomics

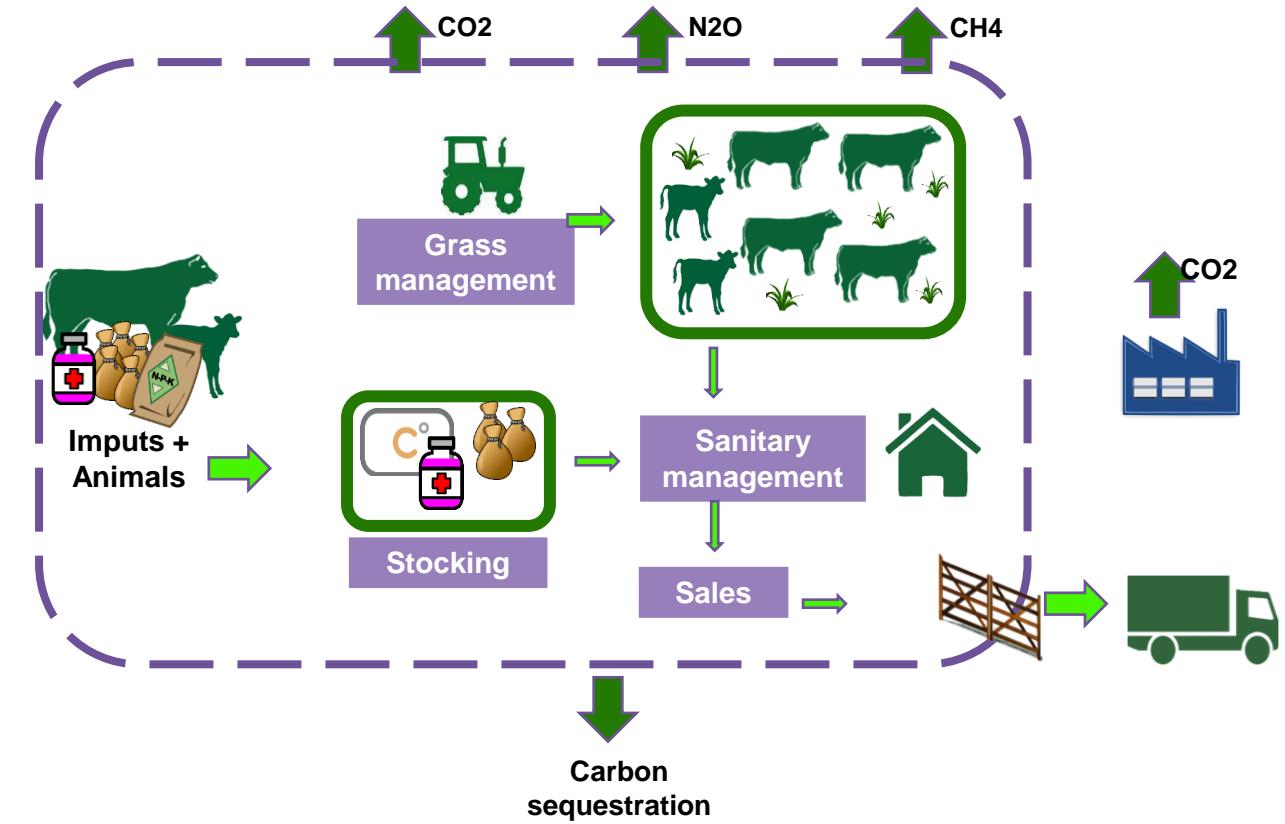


# Classic carbon footprint report

LCA greenhouse gases emission



LCA (Limits of the system)



# LCA greenhouse gases emission

Farm	Total emisión (kg CO <sub>2</sub> eq farm year <sup>-1</sup> )	Total Emision (kg CO <sub>2</sub> eq ha <sup>-1</sup> year <sup>-1</sup> )	Emisions by co-product		
			Meat Bovine	Meat Ovine	Wool
F1	2,954,209	2,264	15.2	9.8	45.8
F2	12,438,706	2,338	16.0	13.6	63.6
F3	8,523,498	1,872	19.4	7.6	35.7
F4	1,807,326	2,410	11.4	8.7	40.7
F5	979,029	2,040	19.9	11.0	51.4
F6	1,382,324	2,048	13.1	12.5	58.2
La Soledad (Quantis)	2,208,000	2,260			40
Los Manantiales (Quantis)	2,249,000	2,120			34

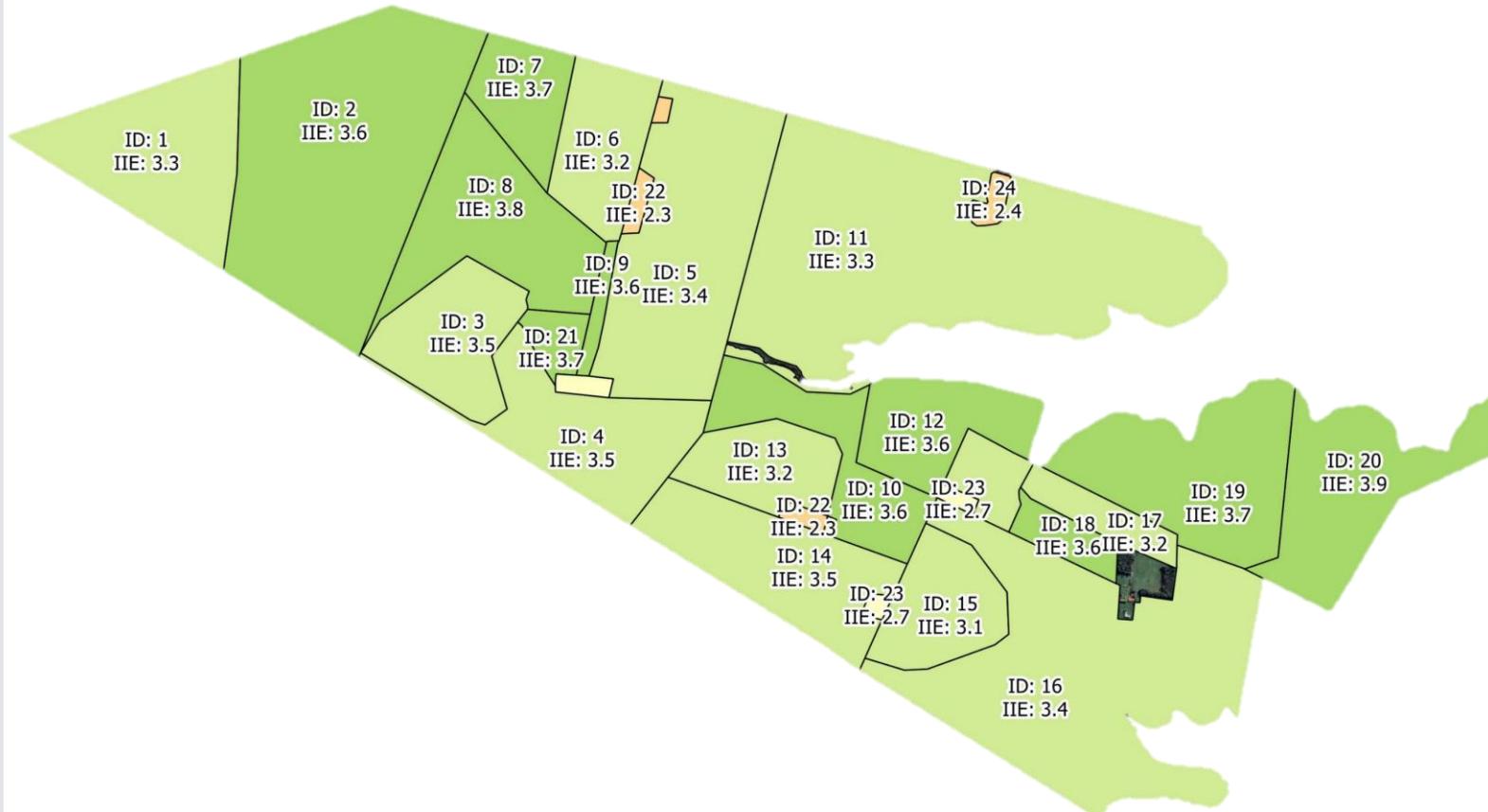


## 2

# Ecosystem Integrity Index (EII)

Four components evaluated

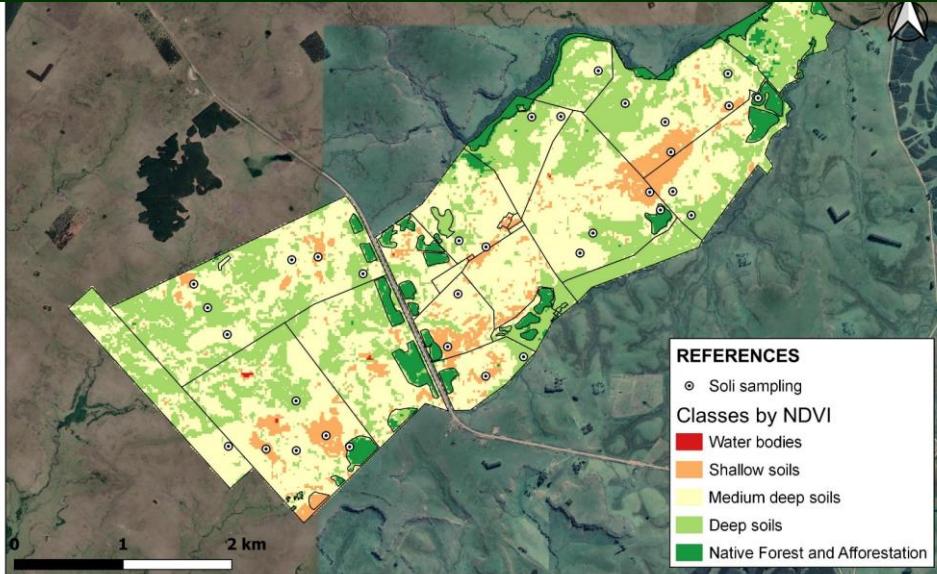
Global EII	3.5
Vegetation structure	3.9
Plant species	2.3
Soil	4.4
Riparian areas	3.2



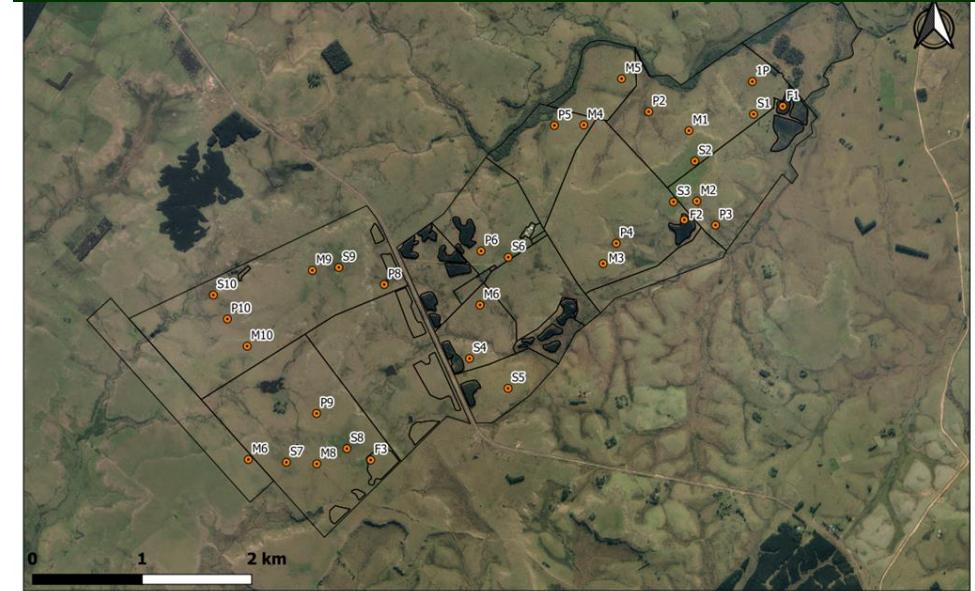
# 3

# Soil Organic Carbon Stock

## Tele-detection categorization of soils



## Sampling design



## Field Sampling



## Laboratory analysis



## 3

## Soil



## Organic carbon stock Sandstones soils farm:

UNIT	AREA_ha	C (Mg/ha)	C (Mg)	
CN_7.1	52.4	49.3	2,582	
CN_8.14	535.7	58.5	31,320	
CN_8.4	266.1	64.8	17,244	
CN_G03.21	150.4	60.1	9,034	
forestry	11.1	62.8	698	
ryegrass	41.6	52.5	2,185	
<b>TOTAL</b>	<b>1,057.3</b>		<b>63,062</b>	

C (Mg/ha)  
**59.6**

## Organic carbon stock Basaltic soils farm:

UNIT	AREA_ha	C (Mg/ha)	C (Mg)	
deep	457.8	135.8	62,172	
intermediate	634.7	76.0	48,255	
superficial	105.4	25.8	2,718	
forestry	64.6	77.3	4,995	
<b>TOTAL</b>	<b>1,262.4</b>		<b>118,140</b>	

C (Mg/ha)  
**93.6**

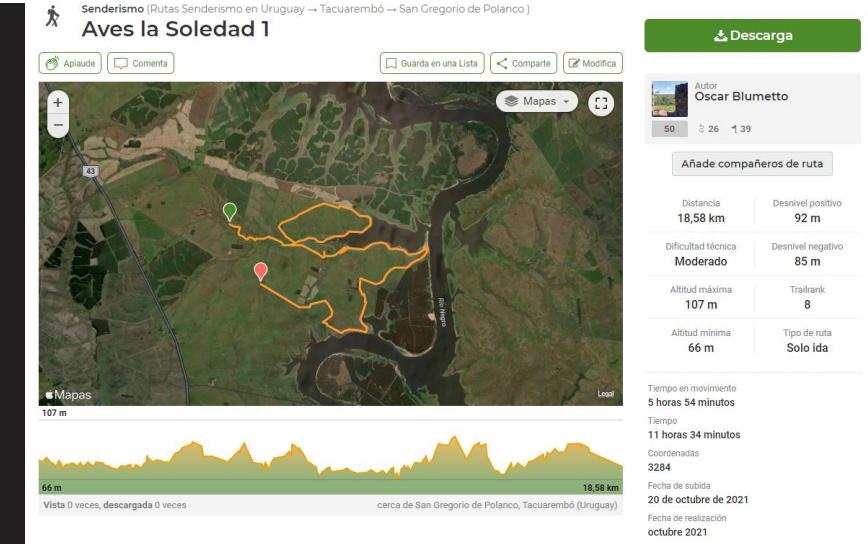
Native forest	21.5	117	2,515.5	C (Mg/ha) 117
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Roots biomass	1,262.4	8.3	10,478	C (Mg/ha) 8.3
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Source: REDD+

Source: Castagna and Blumetto (2017)

# Birds assemblages



Farm	Richness	Shannon Index	R Chao
Los Manantiales	119	4.46	160
La Soledad	103	4.27	154



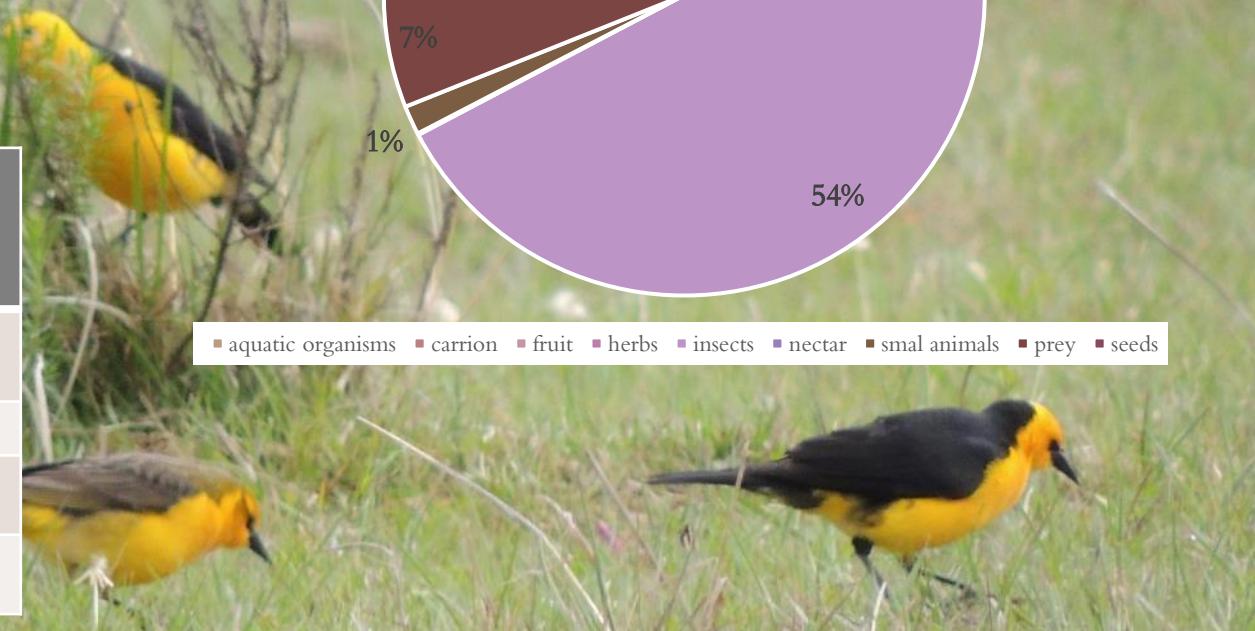
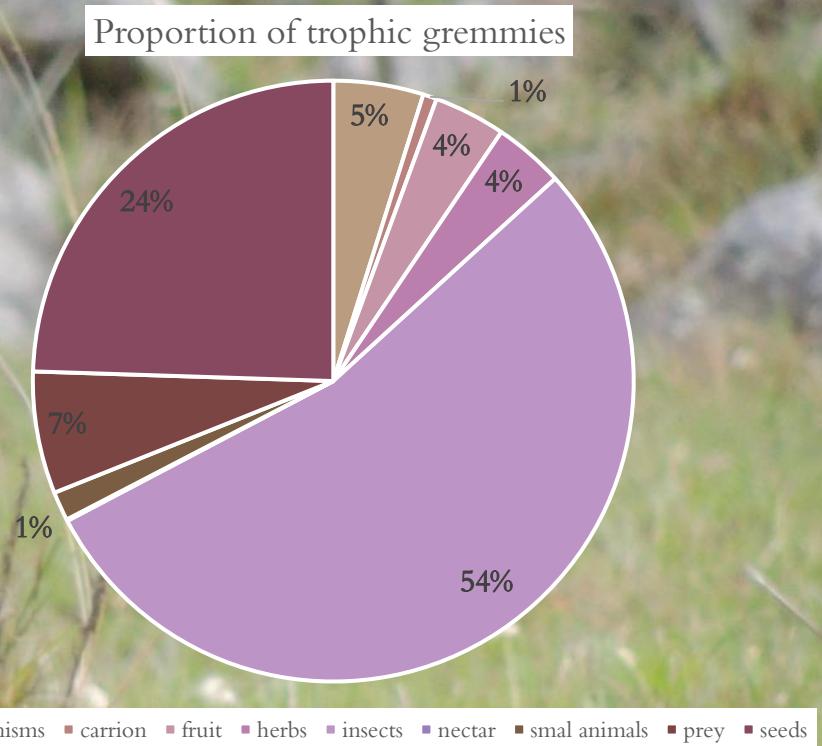
Methodology: Mackinnon lists (MacKinnon & Phillipps, 1993)

MacKinnon, S. & Phillipps, K. 1993. A Field Guide to the Birds of Borneo, Sumatra, Java and Bali, Oxford University Press, Oxford, 491 p.

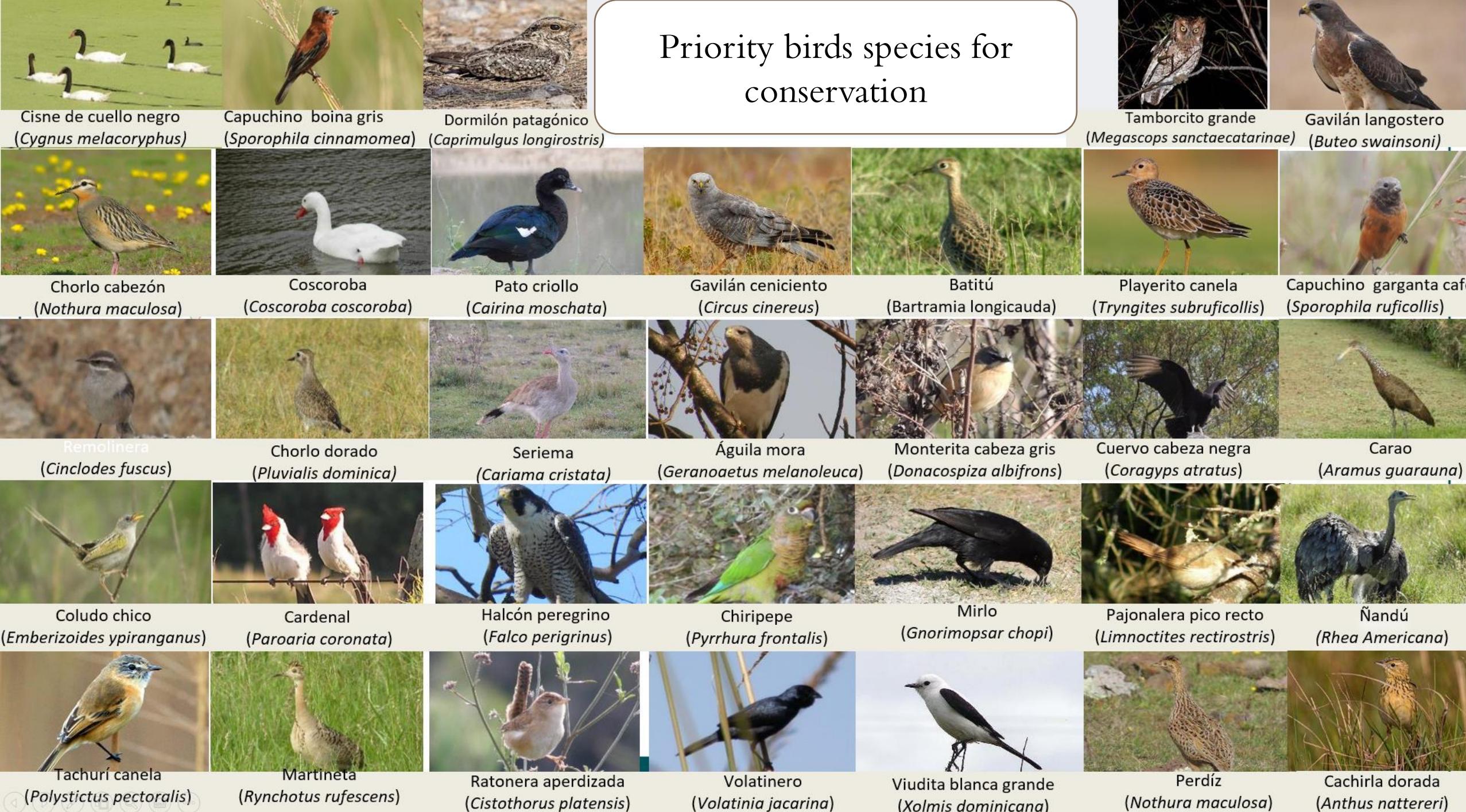
# Richness and diversity of birds

	Richness	Shannon-Weaver Index
TOTAL	171	4.51
Case 1	135	4.56
Case 2	50	3.57
Case 3	92	4.18
Case 4	96	4.26
Case 5	70	3.98
Case 6	69	3.98
Case 7	73	3.98
Los Manantiales	119	4.46
La Soledad	103	4.27

Land cover	Richness $\pm$ SE	Shannon-Weaver Index $\pm$ SE	Time for list (min) (media $\pm$ DE)
Native grasslands	131 $\pm$ 3.1	4.28 $\pm$ 0.03	21 $\pm$ 9
Pastures	39 $\pm$ 2.2	3.46 $\pm$ 0.08	31 $\pm$ 19
Eucalyptus plantation	12 $\pm$ 1.2	2.58 $\pm$ 0.13	69 $\pm$ 36
Native forest	91 $\pm$ 3.2	4.03 $\pm$ 0.03	25 $\pm$ 11



# Priority birds species for conservation

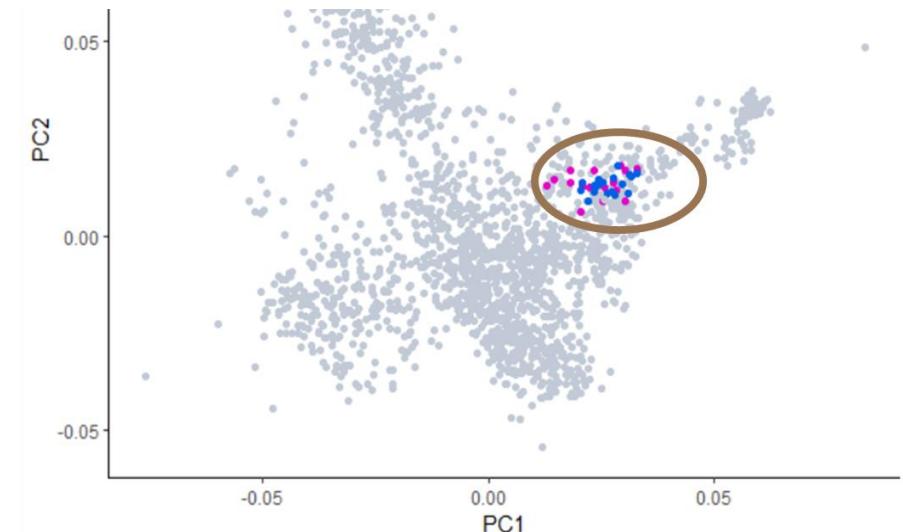




## Prediction of genetic level for main traits:



- Wool production
- Resistance against gastrointestinal parasites
  - ✓ Based in national genomic estimations
  - ✓ Close related Merino populations
  - ✓ 20 rams per farm
- Methane emissions (GHG)
- Residual Feed Intake

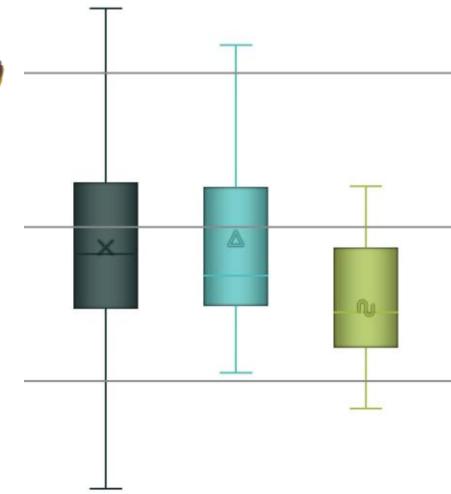


## 5

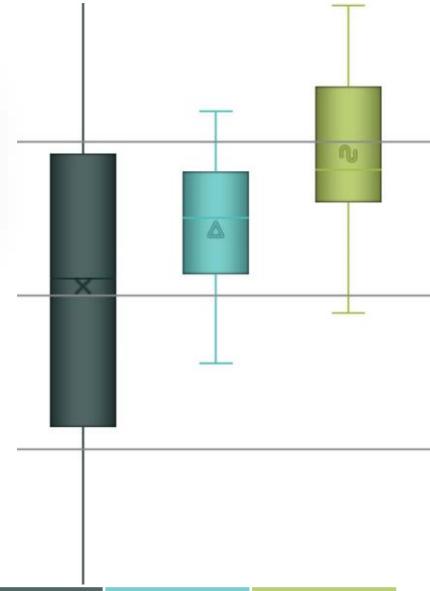
## Predictomics



0.185	0.245	0.131
INIA	LS	M



-0.03	-0.01	-0.11
INIA	LS	M



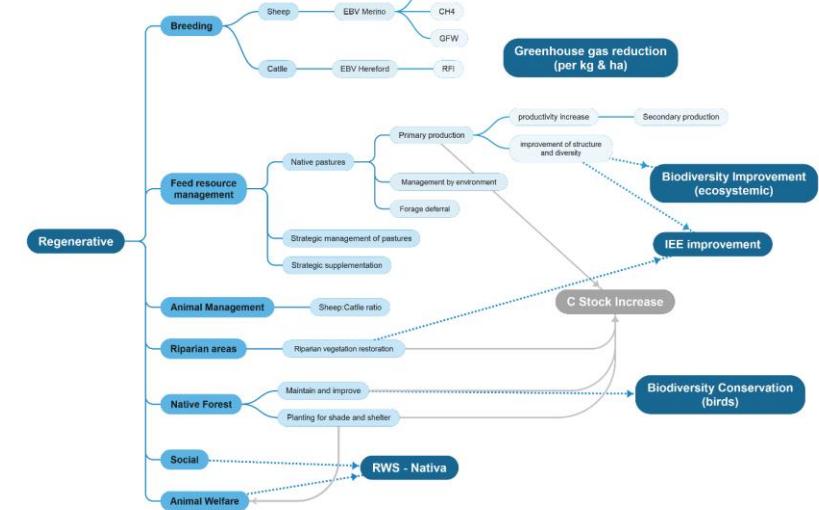
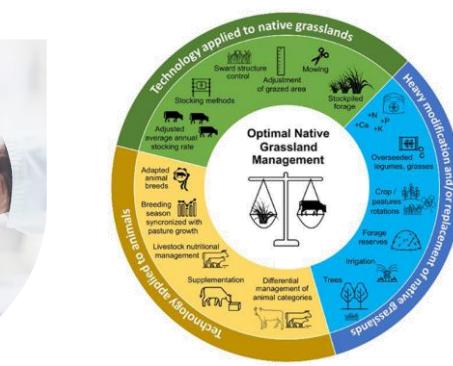
0.06	0.43	0.92
INIA	LS	M

# From the picture to the Movie

First picture  
(5 points)

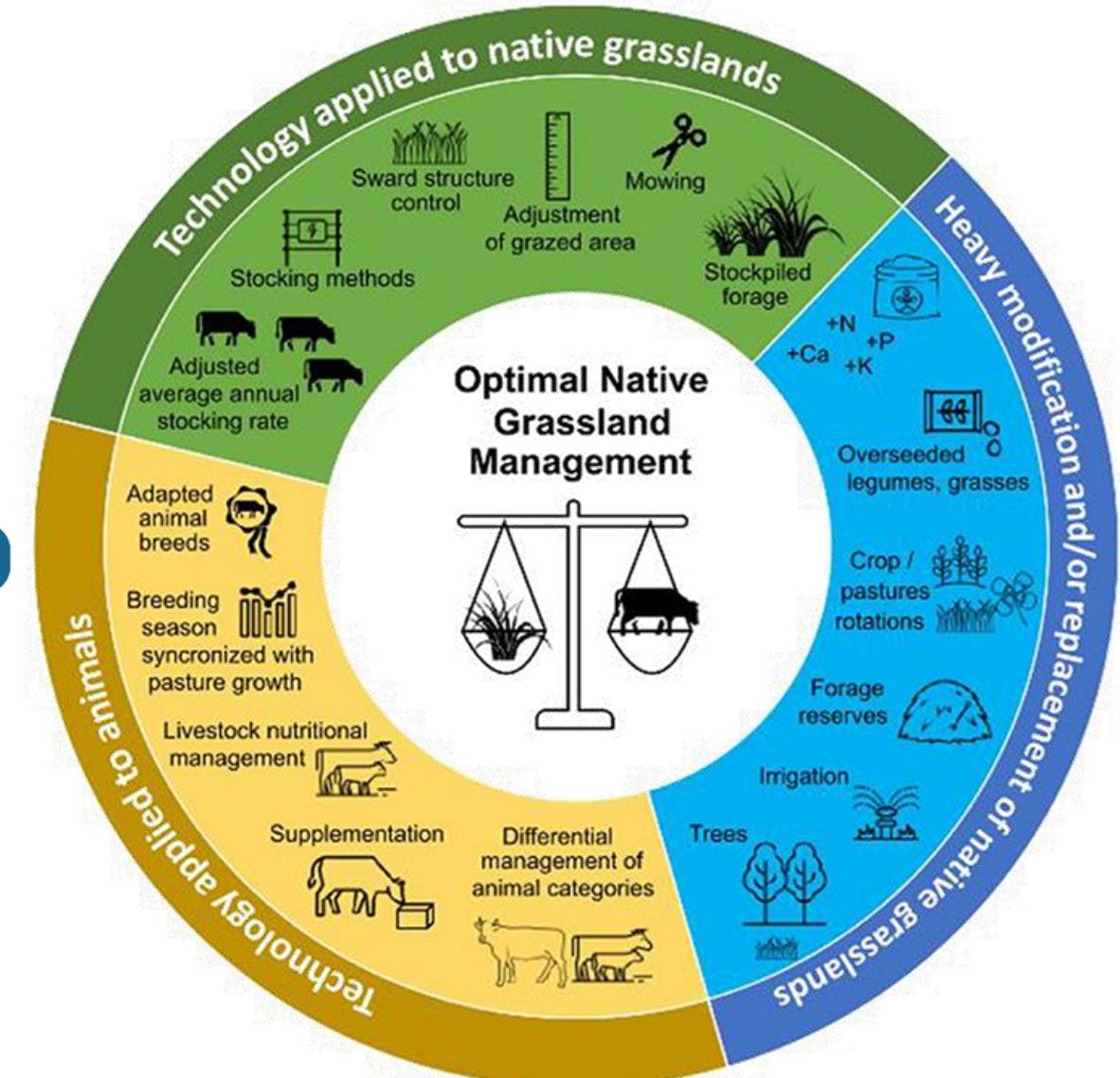
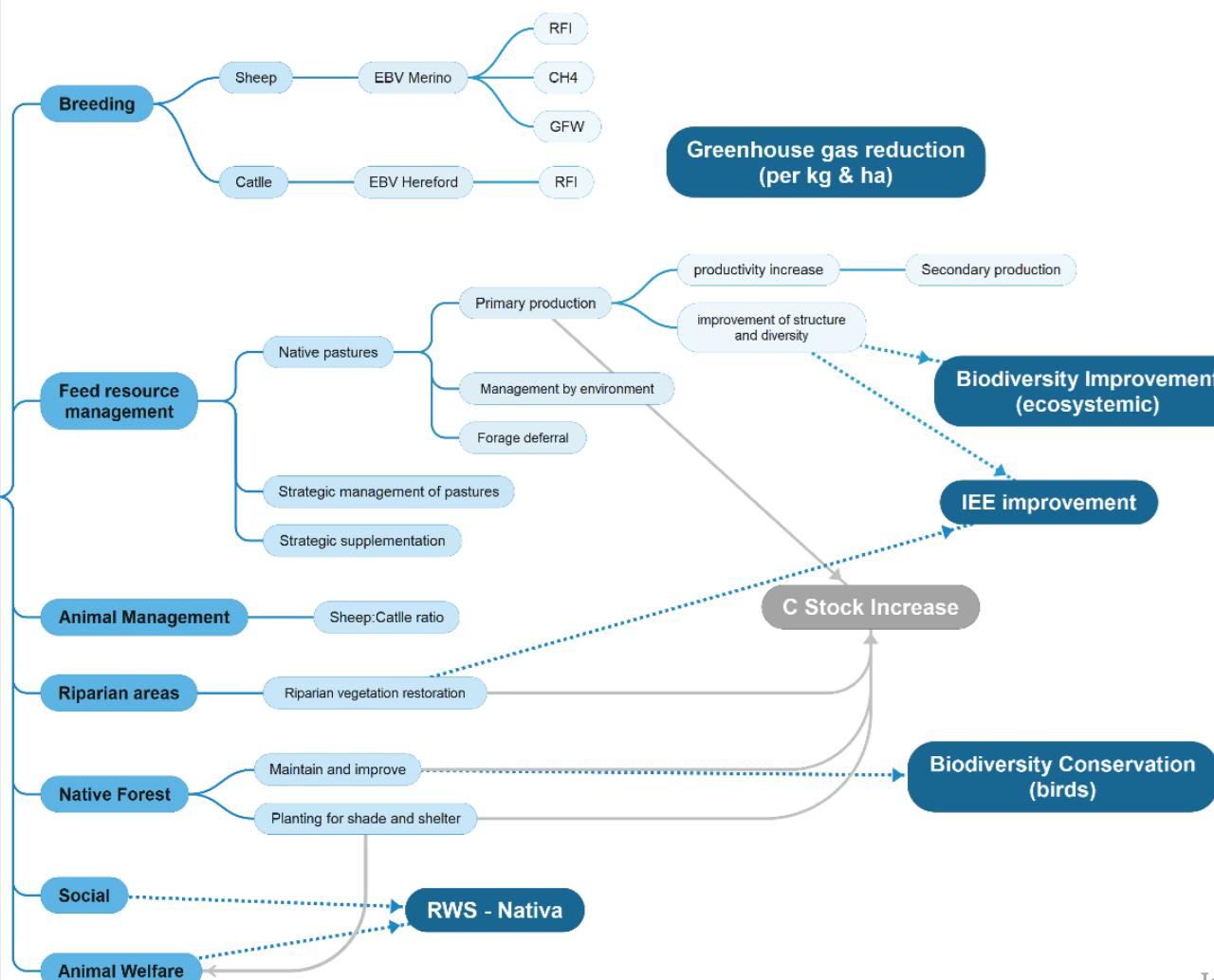


## Co-innovation process



Second picture

# Productive proposal: to apply INIA's recommended good practices and to develop new ones



# REGENERATIVE AGRICULTURE

## FIVE POINTS VISION



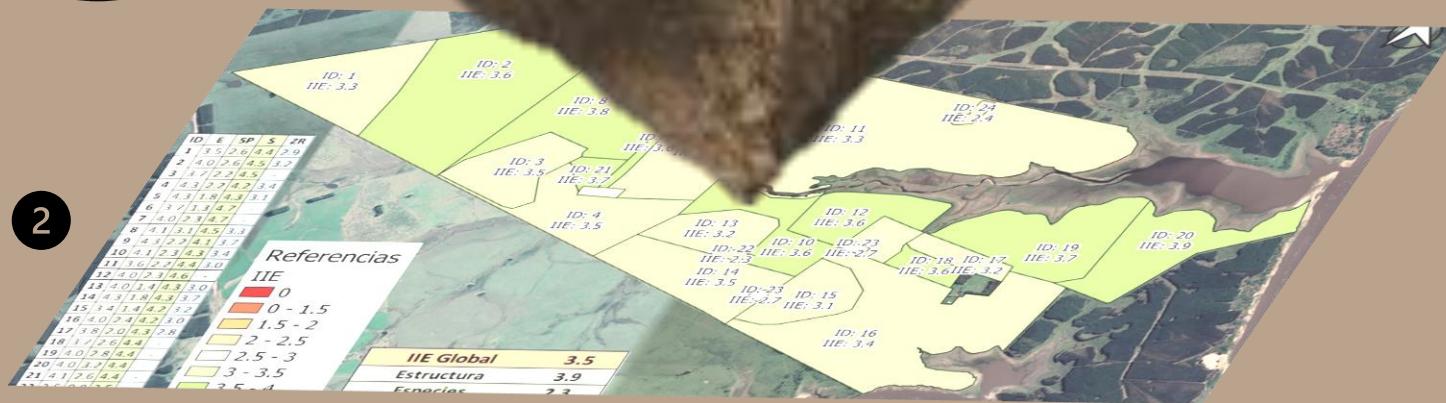
1

D&amp;E

5



2

*The Gaucho's style*