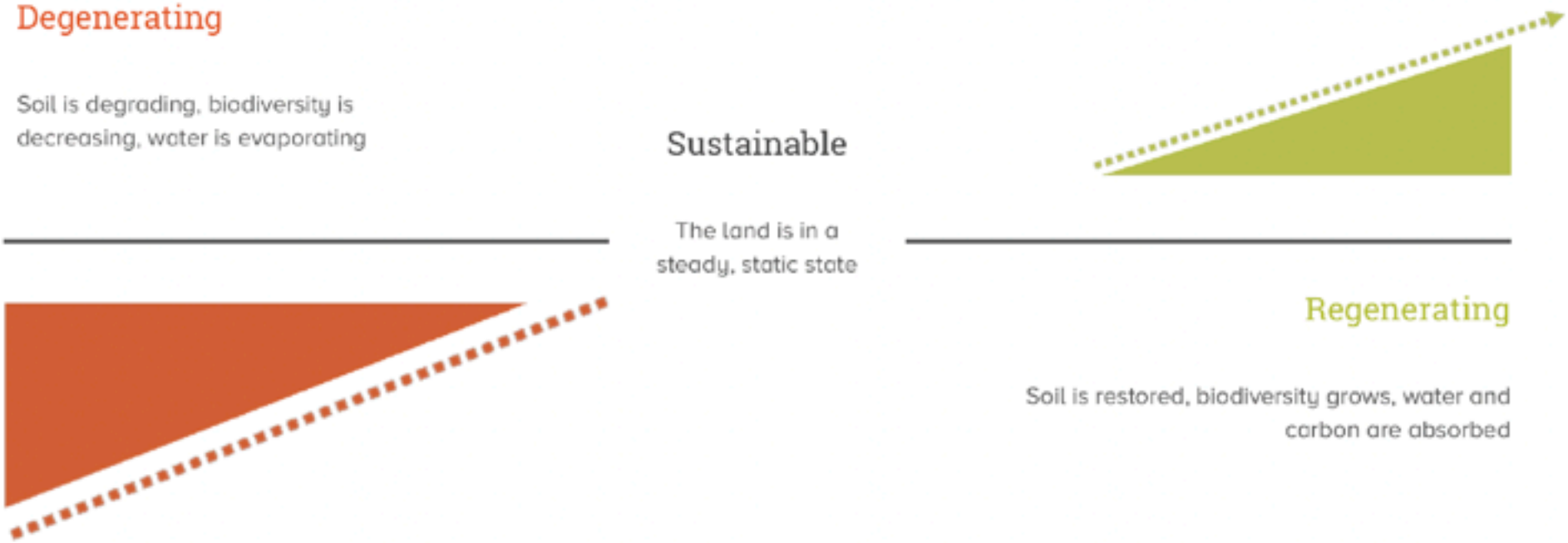
Ecological Outcomes Verification (EOV) for land regeneration

Ulf Ullring, Regenerativt Norge

9. Dec 2021

SUSTAINABILITY IS A BRIDGE.
REGENERATION IS THE DESTINATION.



Regenerative agriculture is both process and result, but no metode.
Regenerativity can be measured!

EOV MEASURES THE HEALTH OF THE LAND AS A LIVING SYSTEM

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Soil Health

Healthy soils absorb more carbon, retain more water, and are richer in fertility

Biodiversity

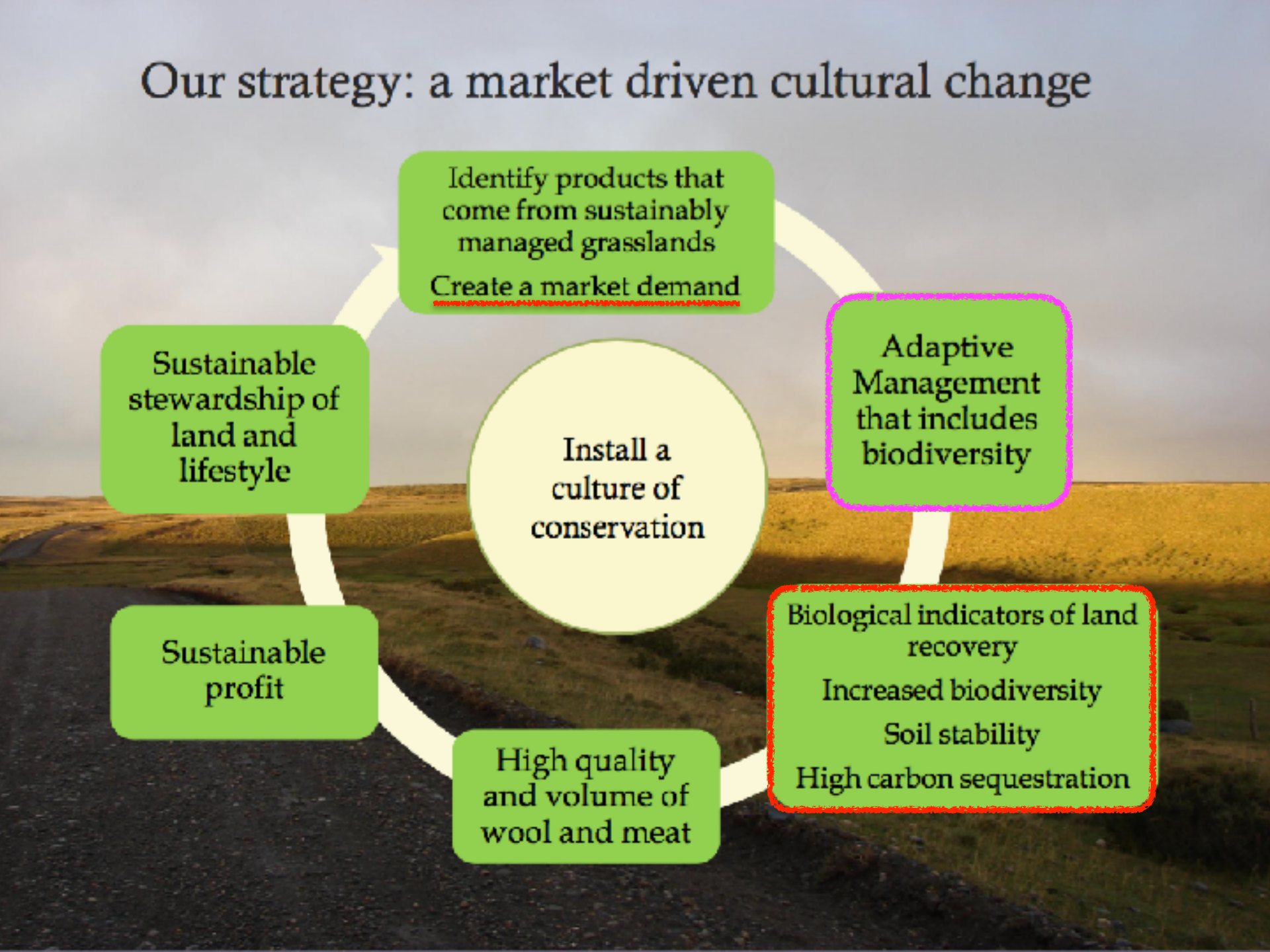
Plants are more varied and resilient, domestic animals and wildlife are more plentiful

Ecosystem Function

Water, minerals, nutrients and energy are cycled through a continual process of birth, growth, death and decay and back to birth again

https://savory.global/land-to-market/

Our strategy: a market driven cultural change




✓ soil health
✓ biodiversity
VERIFIED
2018
✓ ecosystem function
Farmers + ranchers receive Ecological Outcome Verification
Brands + retailers get access to verified regenerative supply
Consumer demand for regeneratively-sourced products grows
Land Regenerates
LAND to MARKET™

Land to Market

Land to Market is the world's first outcome-based, verified regenerative sourcing solution for meat, dairy, wool, leather, and ecosystem services. It offers a unique value proposition that is authentic, effective, and scalable. L2M packages the empirical data derived from EOV, connects conscientious brand partners directly to EOV supply, and supports them with education, storytelling, and communications strategies.

409 LANDBASES VERIFIED

963,647 HECTARES
2,381,224 ACRES

60+ PARTNER BRANDS

1,000+ PRODUCTS VERIFIED

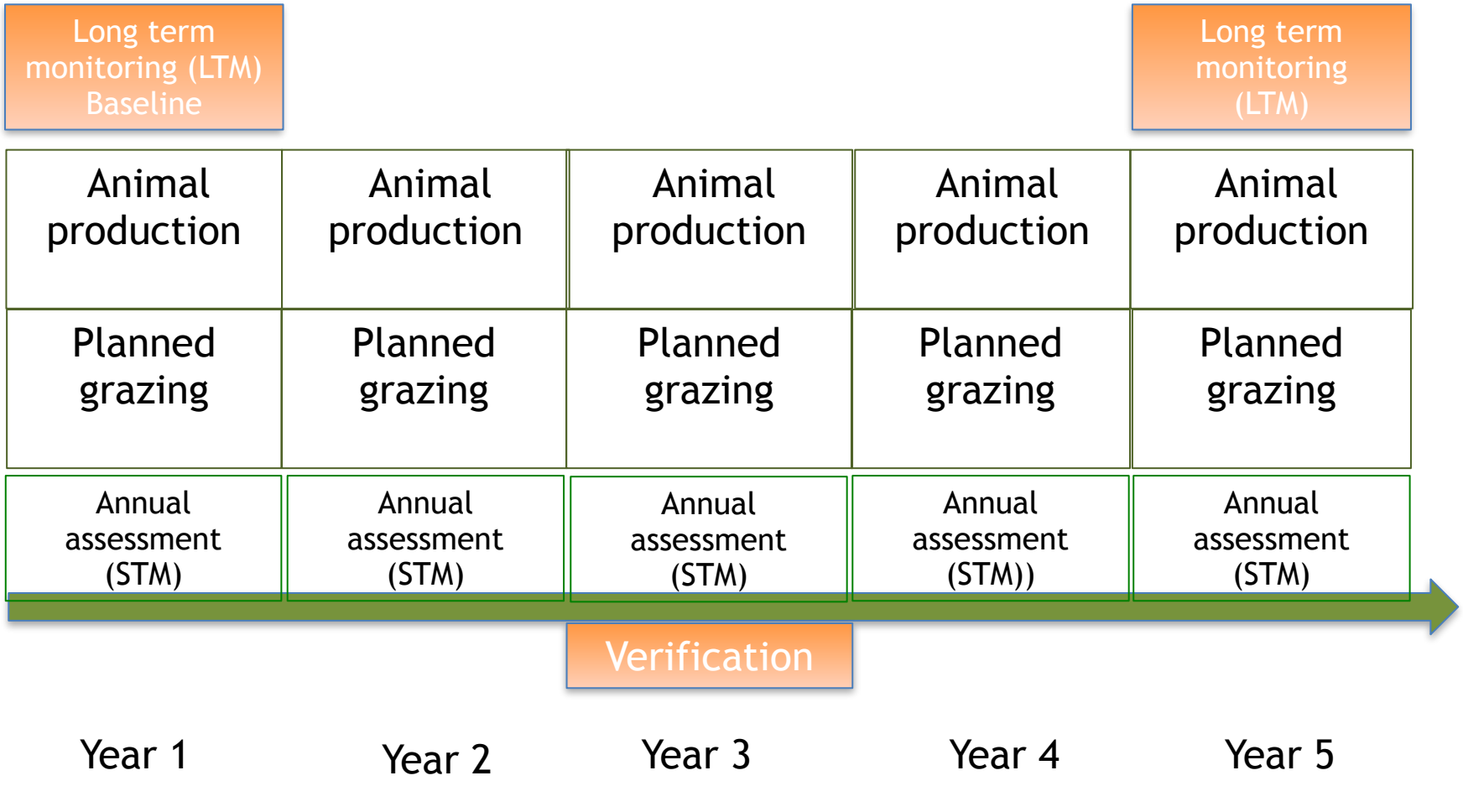
How we do it

- **Outcome based** - results, not methods
- **Contextually relevant** within ecoregions
- **Farmer first** - high value knowledge with minimal cost and effort

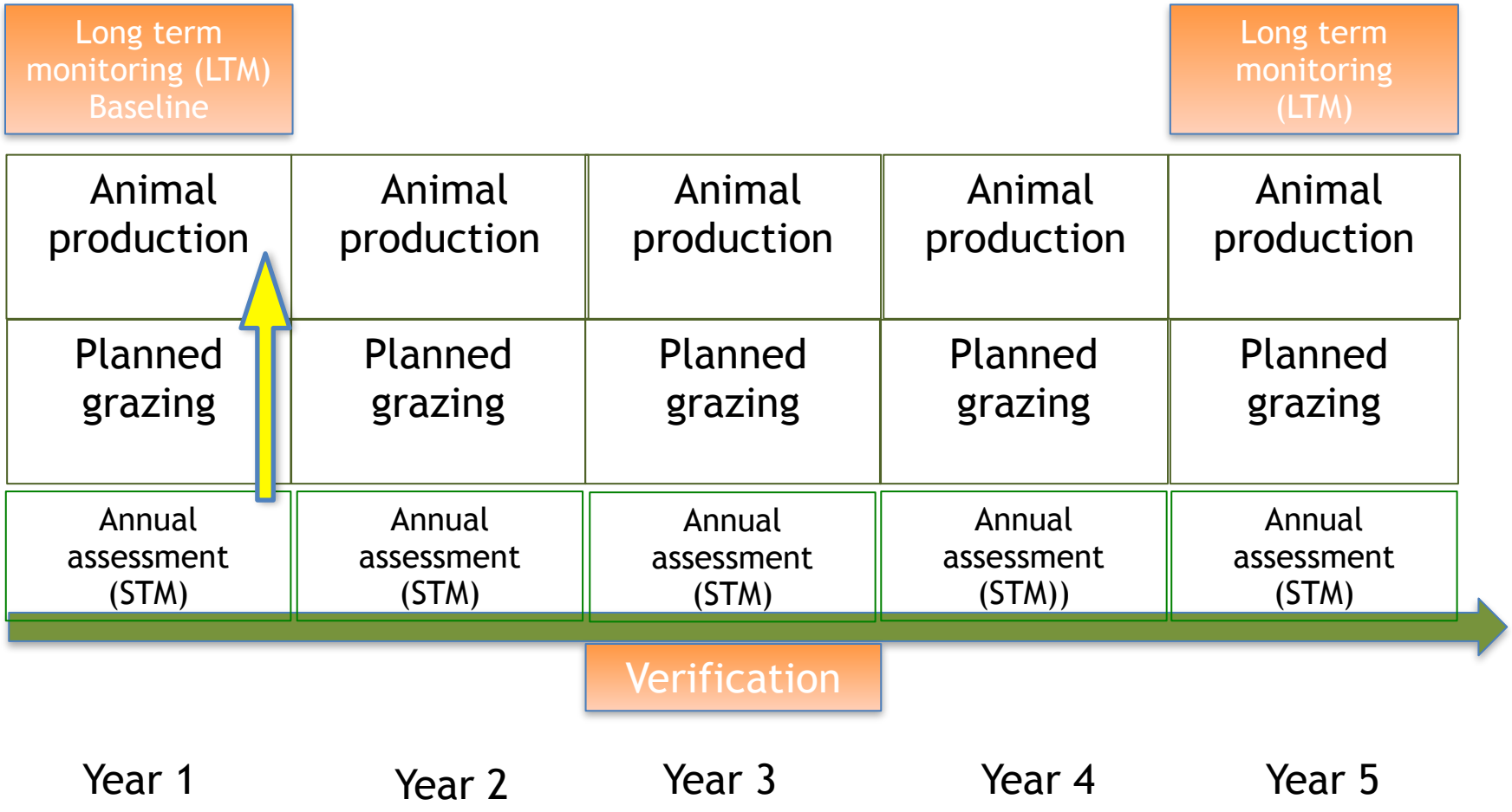
Key indicators

	Leading indicators	Lagging indicators
Soil and vegetation	Ecological health index (EHI)	Infiltration Soil development Soil carbon Living organisms Plant biodiversity index Biomass
(Livestock production)	Forage availability Production Body condition Fertility	Herd productivity Length of season
(Wildlife population)	Abundance % juvenile recruitment	Population density

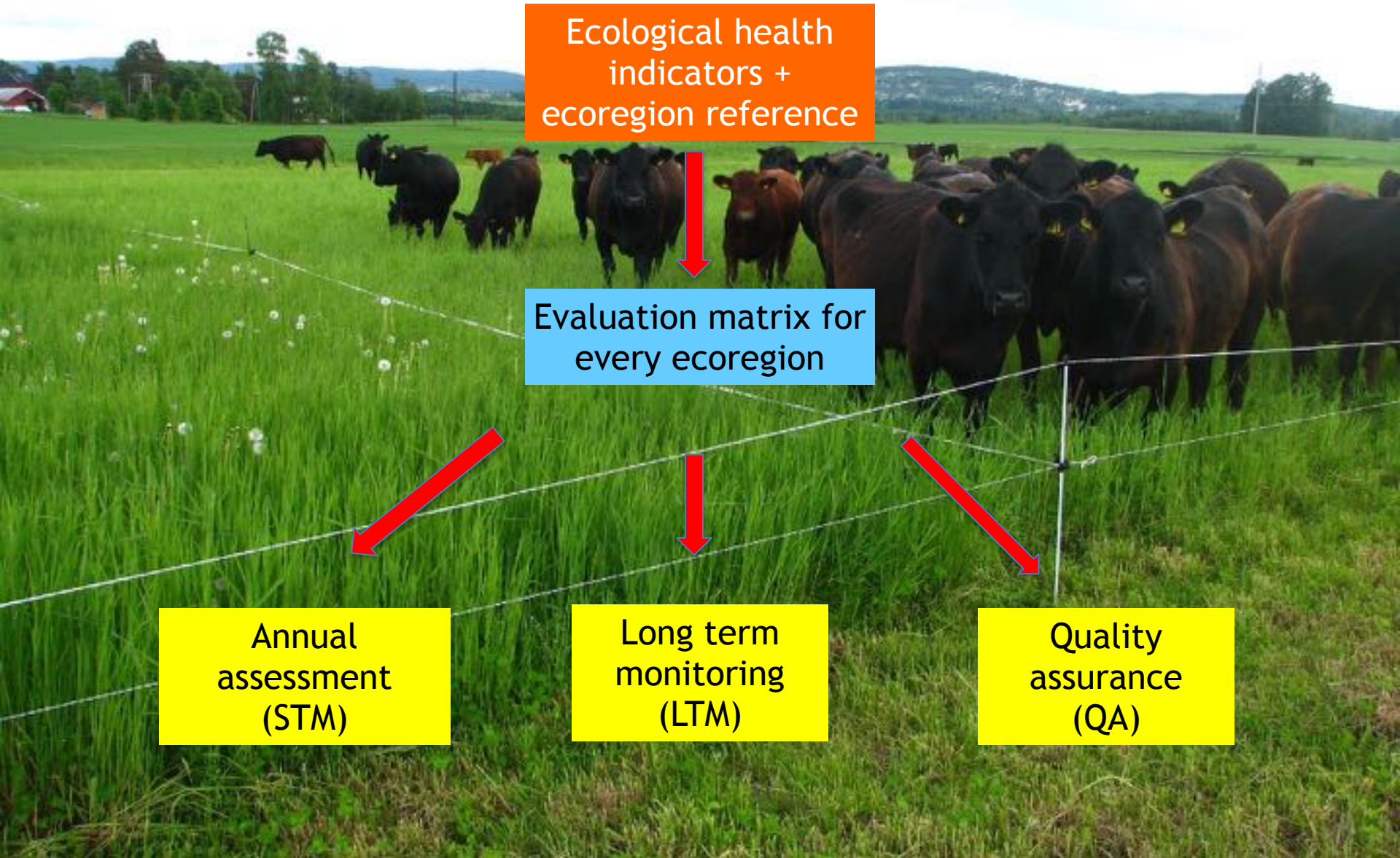
EOV on the farm



EOV on the farm



Ecological health index (EHI)



				Ecosystemprocesses			
	Indicator	**Unit**	**Type**	**Water**	**Minerals**	**Energy**	**Community dynamics**
1	Live canopy abundance	*Biomass, % of site potential*	Rel.				
2	Living organisms	*Evidence*	Abs.				
3	Warm season grasses (C4)	*Vigour, reproduction & crown integrity*	Rel.				
4	Cool season grasses (C3)	*Vigour, reproduction & crown integrity*	Rel.				
5	Forbs & legumes	*Vigour, reproduction & crown integrity*	Rel.				
6	Trees & shrubs	*Vigour, reproduction & crown integrity*	Rel.				
7	Contextually desirable sp.	*Frequency*	Rel.				
8	Contextually undesirable sp.	*Abundance & reproduction*	Rel.				
9	Litter abundance	*% cover*	Rel.				
10	Litter incorporation	*Litter/soil contact*	Abs.				
11	Dung decomposition	*Age & structure*	Abs.				
12	Bare soil	*% cover*	Rel.				
13	Capping	*Surface soil resistance*	Abs.				
14	Wind erosion	*Active blowouts & pedestaling*	Abs.				
15	Water erosion	*Litter movement, flows, rills & gullies*	Abs.				


GRASS
BIOMASS
UNDESIREABLE SPECIES
LIVING ORGANISMS
LITTER
FORBS
CAPPING
BARE SOIL
EROSION
LEGUMES
DUNG

SCIENTIFIC ROBUST:

environments

MDPI

Article

Ecological Health Index: A Short Term Monitoring Method for Land Managers to Assess Grazing Lands Ecological Health

Sutie Xu [1], Jason Rowntree [1,*], Pablo Borrelli [2], Jennifer Hodbod [3] and Matt R. Raven [3]

[1] Department of Animal Science, Michigan State University, East Lansing, MI 48824, USA; scu@msu.edu
[2] Ovis 21, Belgrano 1385, Trevelin, Chubut 9203, Argentina; pborrelli@ovis21.com
[3] Department of Community Sustainability, Michigan State University, East Lansing, MI 48824, USA; jhodbod@msu.edu (J.H.); mraven@msu.edu (M.R.R.)
* Correspondence: rowntree1@msu.edu; Tel.: +1-517-974-9539

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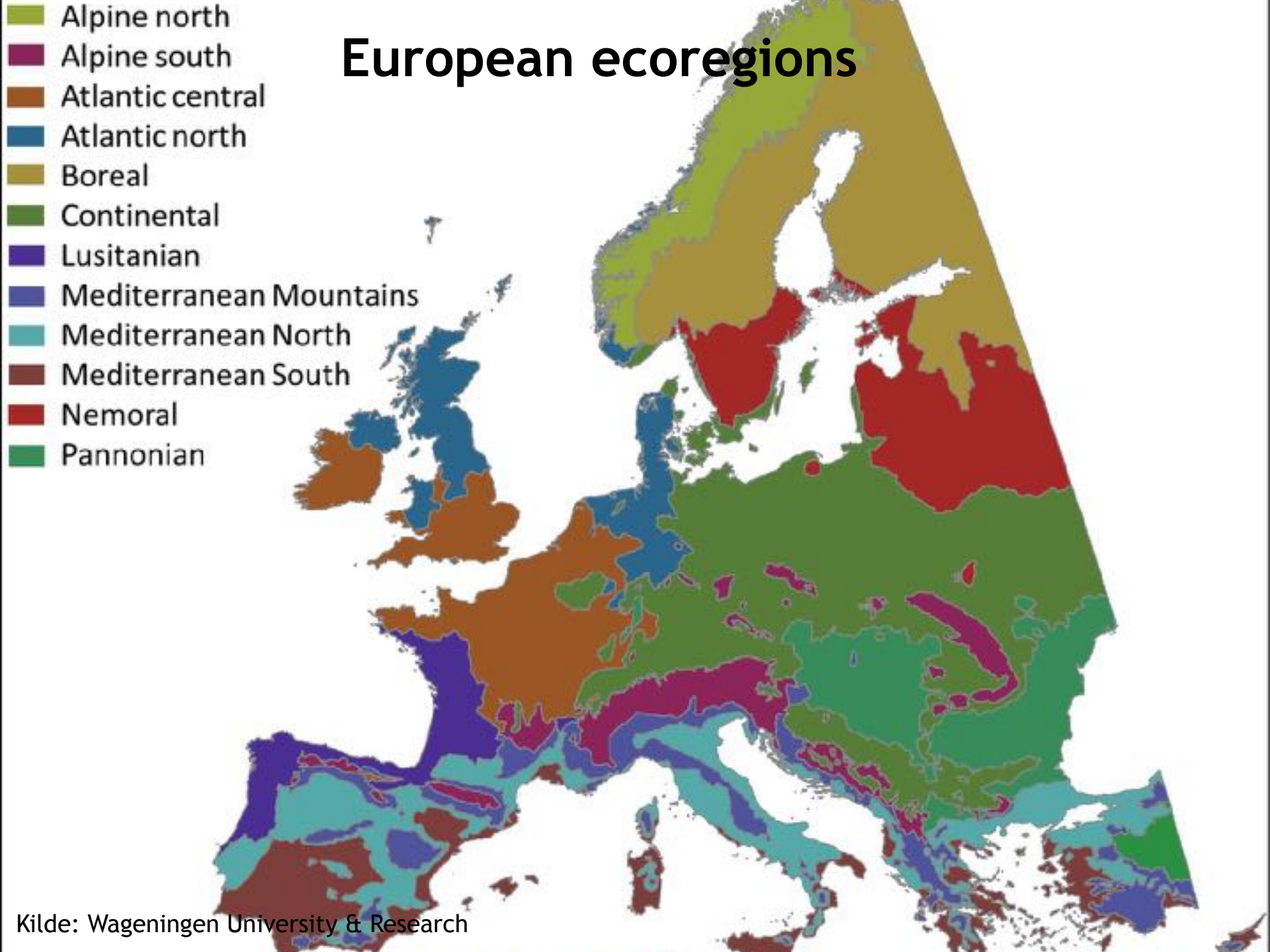
check for updates

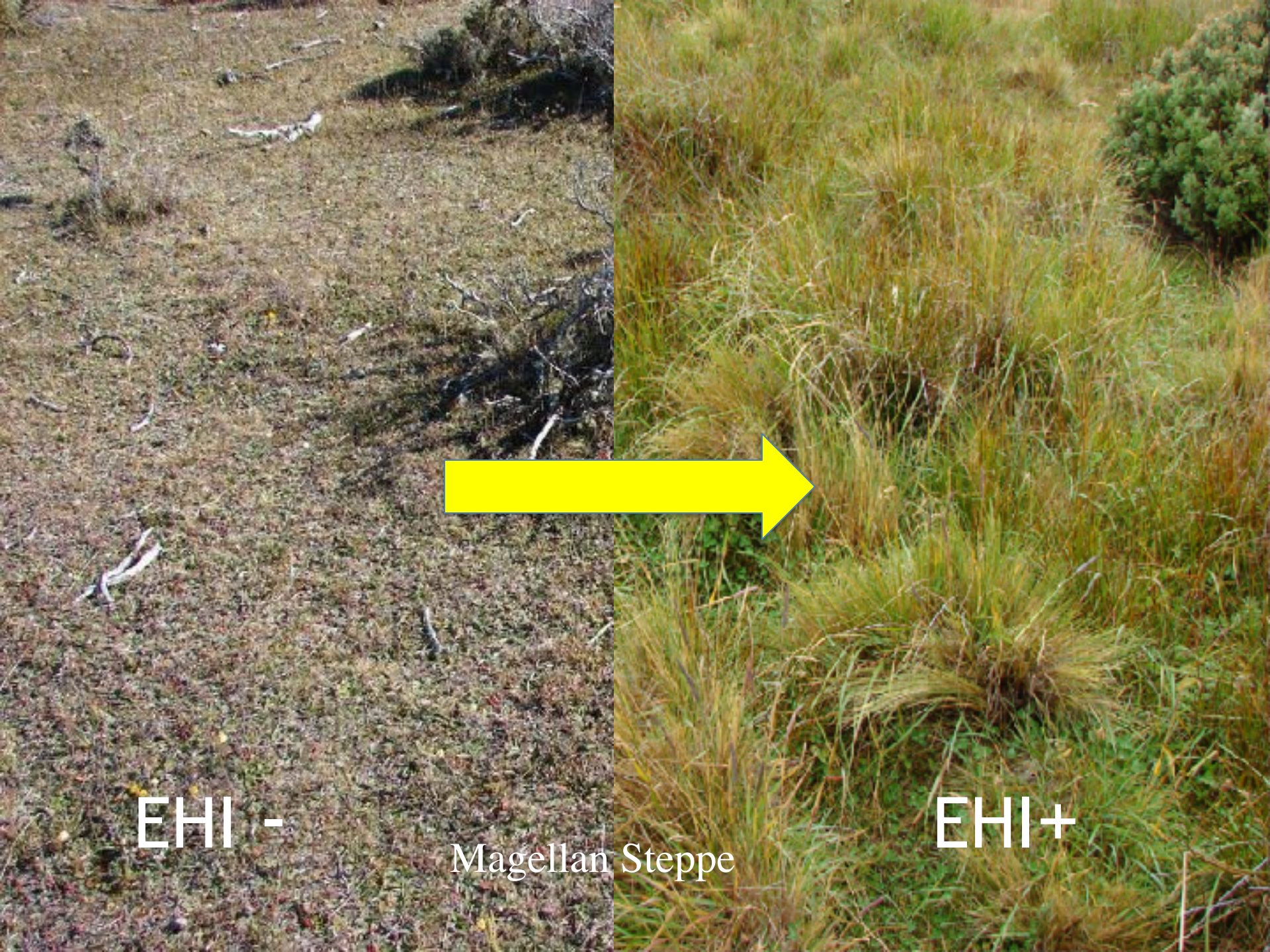
Abstract: Grazing lands should be monitored to ensure their productivity and the preservation of ecosystem services. The study objective was to investigate the effectiveness of an Ecological Health Index (EHI) for assessing ecosystem ecological health in grazing lands. The EHI was developed by synthesizing existing vegetation and soil cover indicators. We implemented long-term transects at 44 farms from two ecological regions in Patagonia, the Humid Magellan Steppe (HMS) ($n = 24$) and Subandean Grasslands (SG) ($n = 20$), to collect data on established quantifiable vegetative and soil measurements and the EHI. Using known quantifiable measures, the HMS had numerically greater species richness compared to SG. Similarly, the average percentage of total live vegetation was more favorable in HMS. Correlating the EHI with these known quantifiable measures demonstrated positive correlations with species richness, the percentage of total live vegetation and carrying capacity and was negatively correlations with bare ground. These results suggest that EHI could be a useful method to detect the ecological health and productivity in grazing lands. Overall, we conclude that EHI is an effective short-term monitoring approach that ranchers could implement annually to monitor grazing lands and determine the impacts of ranch decision-making on important ecosystem indicators.

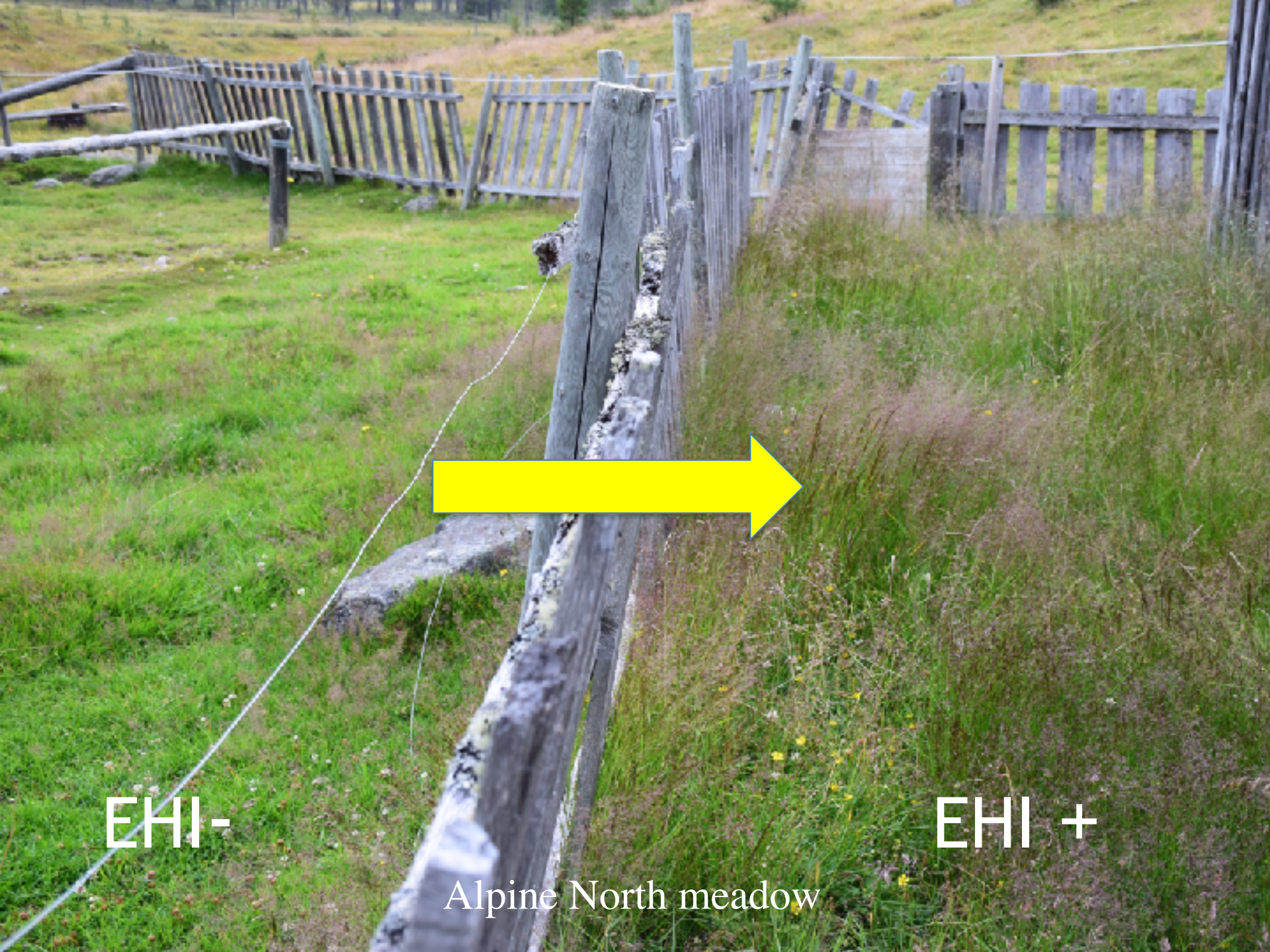
European ecoregions



Kilde: Wageningen University & Research

Nemoral reference meadow


EHI -
Magellan Steppe
EHI+


EHI-
EHI +
Alpine North meadow


EHI-
EHI +
Boreal meadow

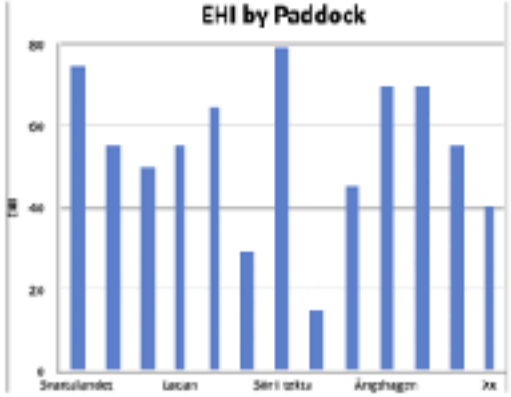
EOV SHORT TERM EVALUATION

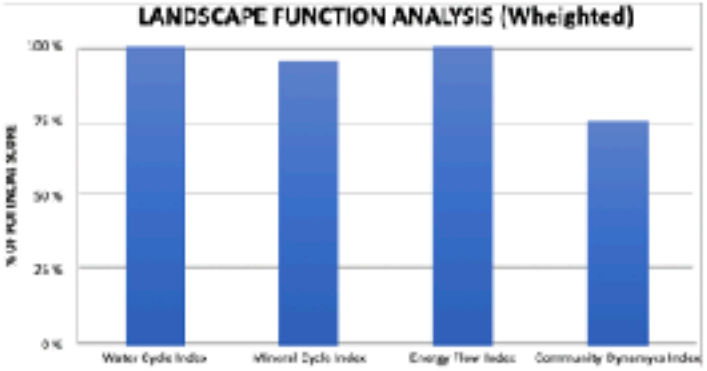
TABLE OF RESULTS

Results come from input data sheet. Up to 30 paddocks. If more, you may need to create a second file or add new paddocks in input data sheet and create links with this table
Hide lines or columns that are not necessary (leaves paddocks or soil evaluation attributes)
Do not overwrite grass cells

			FORAGE ESTIMATION				EHI Average / Paddock	LANDSCAPE FUNCTION ANALYSIS			
#	PADDOCK NAME	AREA (HA)	VISUAL DC AE	BIOMASS	QUALITY	Use intensity		Water Cycle Index	Mineral Cycle Index	Energy Flow Index	Comm.Dyn Index
1	Snarlulendet	38	25,00		4,00	0	75	100 %	94 %	100 %	75 %
2	Nylandet	0			5,00	0	50	100 %	98 %	75 %	75 %
3	Ängs	0			6,00	0	60	66 %	97 %	76 %	71 %
4	Ladan	0			3,00	0	55	100 %	83 %	80 %	75 %
5	Ost i lekta	0			4,00	0	80	100 %	96 %	92 %	75 %
6	Skogtunda	0			4,00	0	30	60 %	94 %	90 %	75 %
7	Sör i lekta	0			4,00	0	80	100 %	94 %	100 %	75 %
8	Andera Ors	0			5,00	0	10	60 %	96 %	96 %	60 %
9	Jordan Tesshage	0			4,00	0	65	66 %	96 %	100 %	62 %
10	Ängshagen	0			4,00	0	70	100 %	100 %	80 %	75 %
11	Kullen	0,3			4,00	0	70	100 %	100 %	90 %	71 %
12	Sjolandet	0			4,00	0	50	100 %	92 %	81 %	67 %
13	Ax	0			4,00	0	40	66 %	92 %	67 %	66 %
	Totals	38									

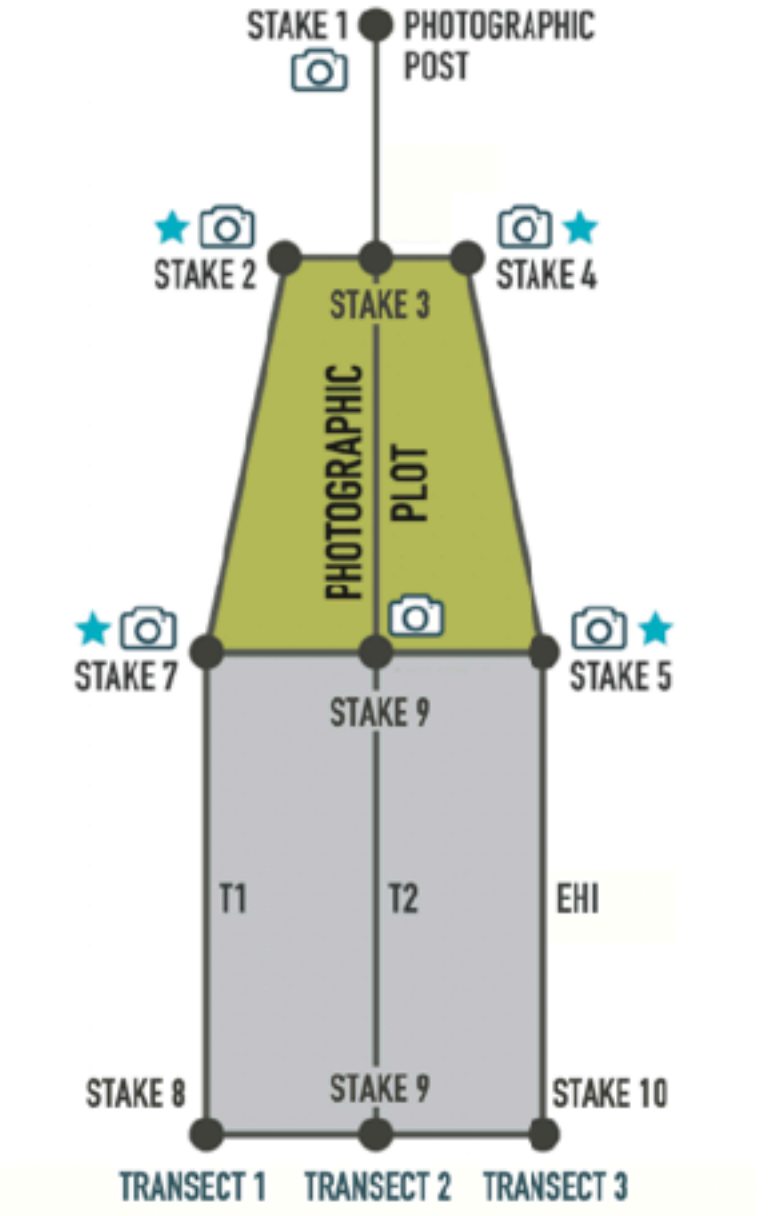
TOTAL Landbase Records:		EHI Landbase Weighted Average	LANDSCAPE FUNCTION ANALYSIS (Weighted)			
			Water Cycle Index	Mineral Cycle Index	Energy Flow Index	Community Dynamyca Index
38	AREA (HA)	35.0	100 %	94 %	100 %	75 %





Boreal meadow

LONG TERM MONITORING SITE DIAGRAM



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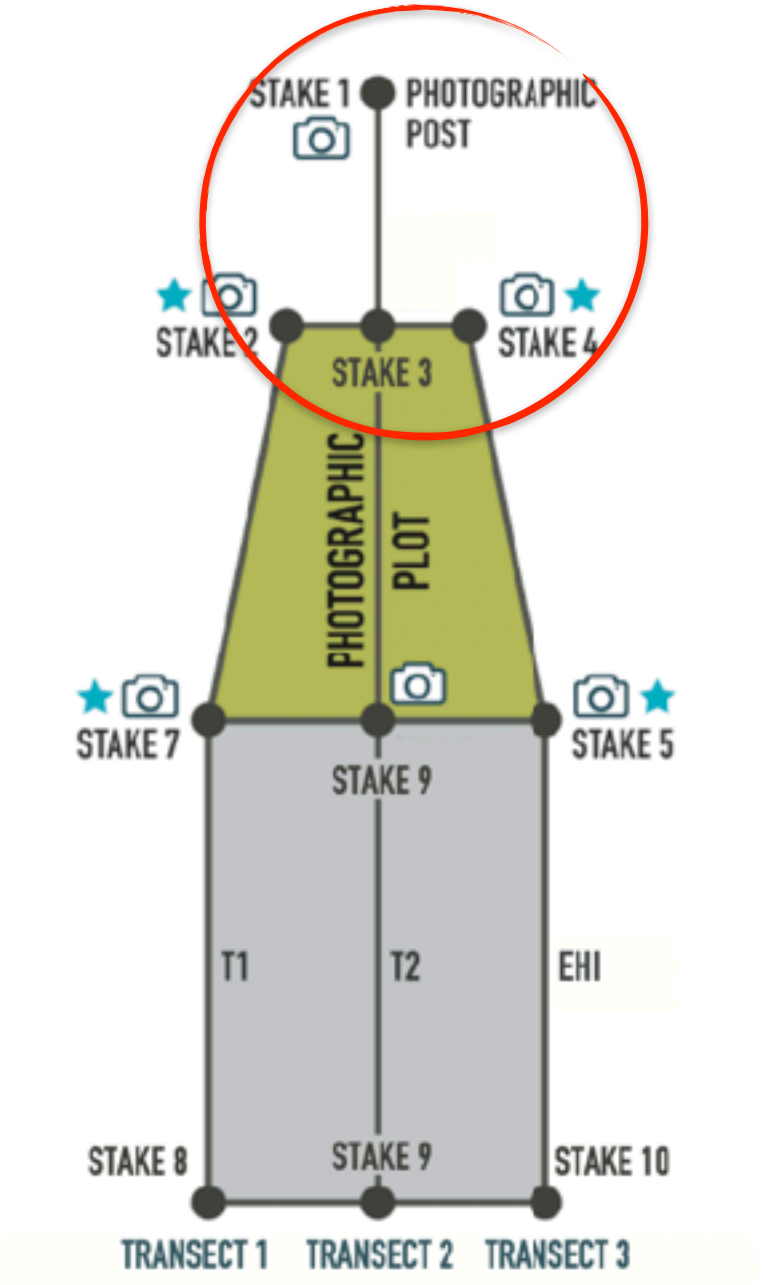

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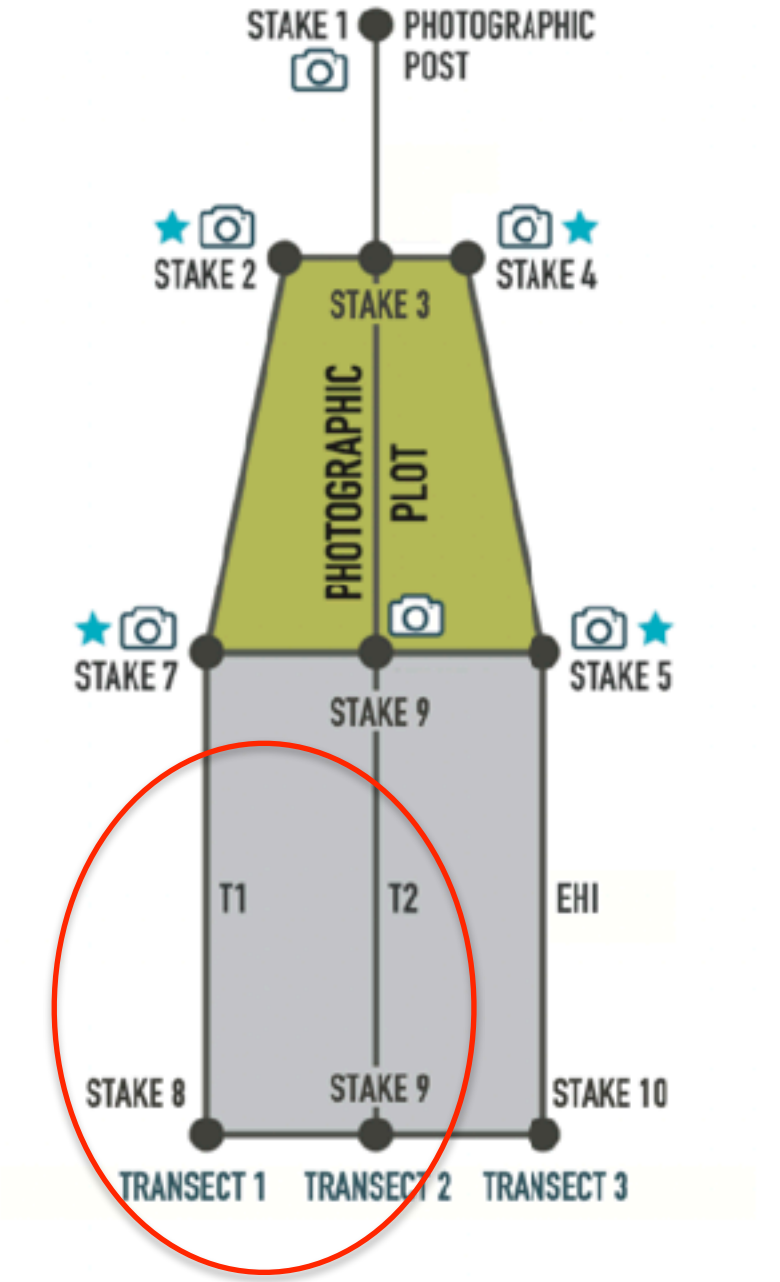
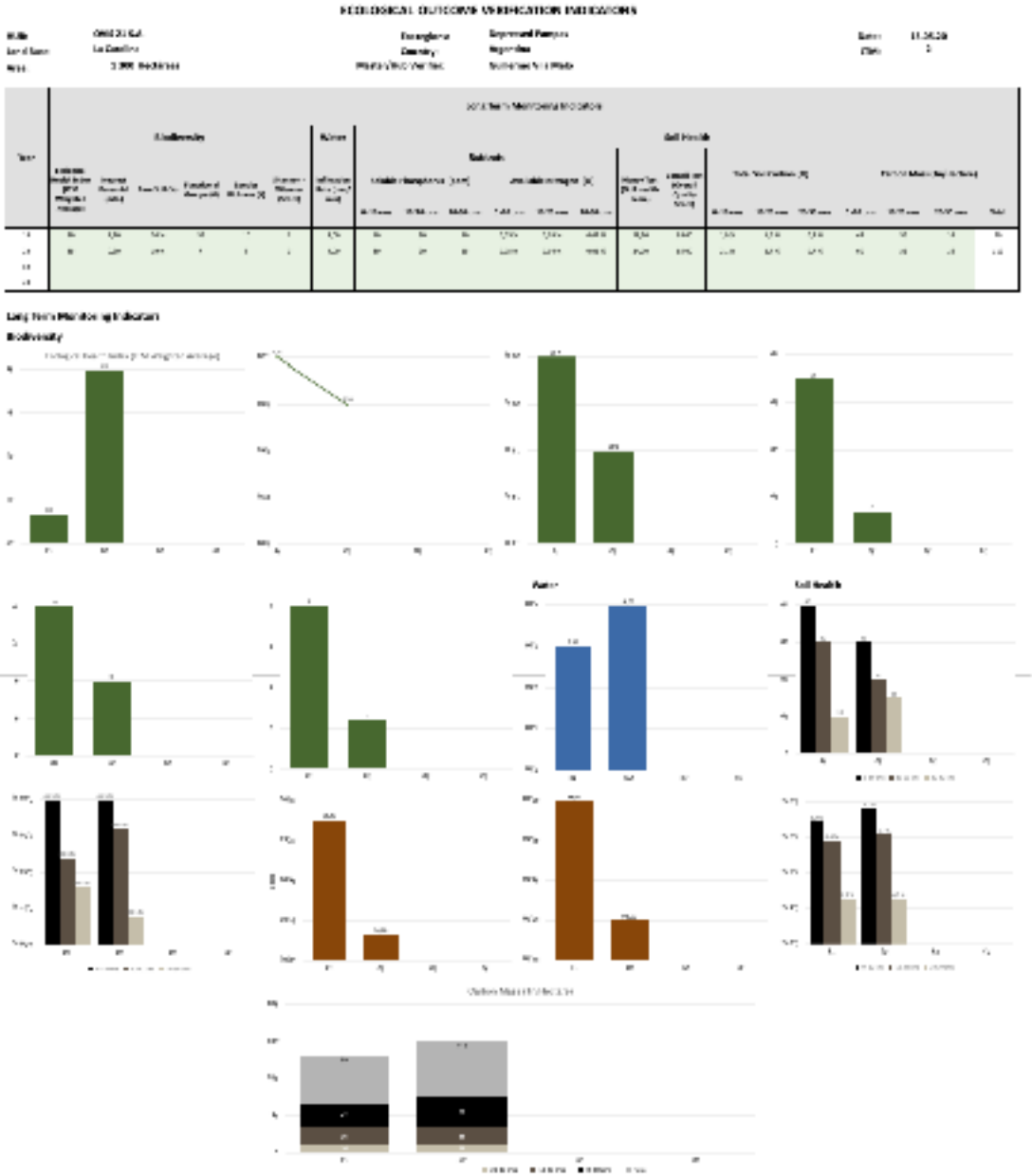


Comprehensive LTM report



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