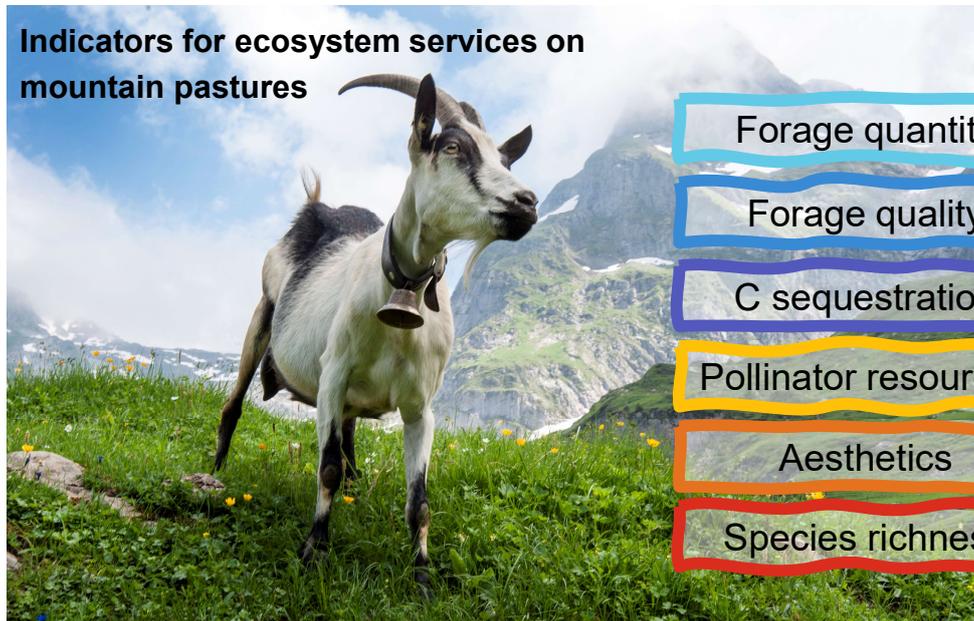


# Trade-offs and synergies among ecosystem services in mountain pastures



Caren Pauler<sup>1</sup>, Andreas Lüscher<sup>1</sup>, Hermel Homburger<sup>1,2</sup>, Michael Scherer-Lorenzen<sup>2</sup>, Manuel Schneider<sup>1</sup>  
<sup>1</sup> Agroscope, Switzerland, <sup>2</sup> University of Freiburg, Germany



Indicators for ecosystem services on mountain pastures

- Forage quantity
- Forage quality
- C sequestration
- Pollinator resources
- Aesthetics
- Species richness

**Questions**

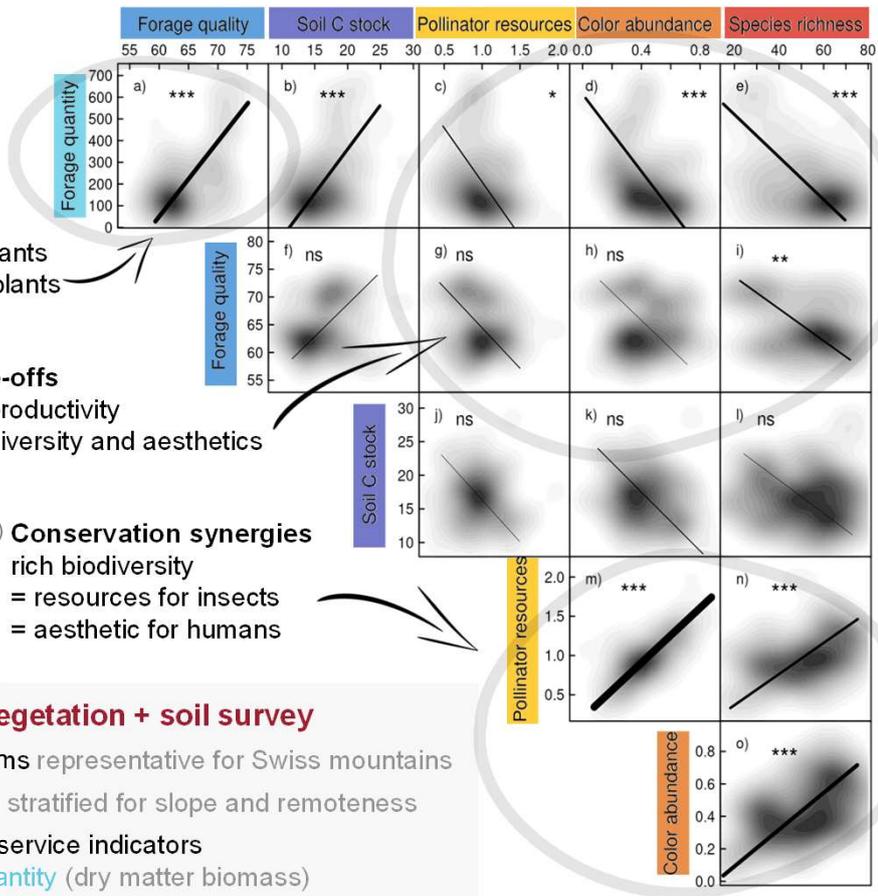
How are ecosystem services related?

Can they be promoted jointly?

Are there trade-offs and synergies?

## Results

**Significant trade-offs + synergies among ecosystem services**



😊 **Production synergies**  
productive plants = digestible plants

☹️ **Trade-offs**  
high productivity ≠ biodiversity and aesthetics

😊 **Conservation synergies**  
rich biodiversity = resources for insects = aesthetic for humans

### Methods: Vegetation + soil survey

6 summer farms representative for Swiss mountains

66 study plots stratified for slope and remoteness

6 Ecosystem service indicators

- Forage quantity (dry matter biomass)
- Forage quality (digestible organic matter)
- C sequestration (soil organic C content)
- Pollinator resources (floral reward indicator)
- Aesthetics (flower colour abundance)
- Species richness (plant species)

Figure: allometric lines scaled to determination coefficients, shading: Kernel density

And yes, of course, site and management influence ecosystem services, too. But that's another story...



**Conclusions**

Synergies exist *within* production and conservation services but not *between* them.

▼

Not all services are realised at the same place, but all at the same farm.

Agroscope good food, healthy environment

