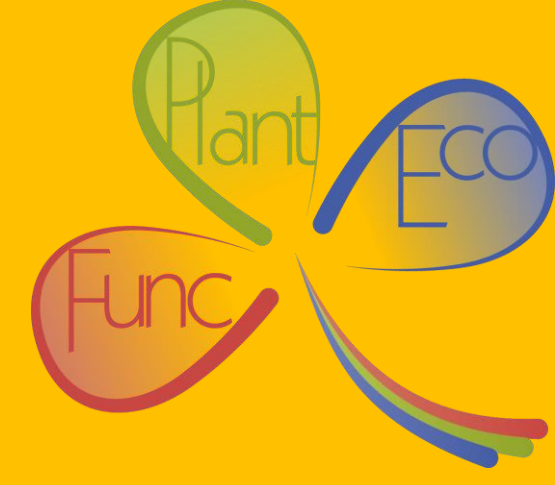


# Inter- and intra- specific trait variability across genus *Carex* at a regional scale

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*Carex* – a perfect model genus

Quantification of intraspecific trait variability (ITV)

## Introduction:

- ✓ *Carex* is a large genus in Czechia (~70 species)
- ✓ Various ecological demands
- ✓ Great differences in niche width
- ✓ Present in majority of habitats (both dominants and rare species)

## Questions

1. What proportion of trait variability can be found between species identity and within species (both between and within populations)?
2. How do the trait response to the environment (Ellenberg indicator values – EIV)? Are trait responses consistent across species?

In total 134 populations sampled

Measured traits and species composition combined

## Methods

- ✓ 68 localities across South Bohemia region
- ✓ 15 species × 7-12 localities × 9-10 individuals
- ✓ Traits:
  - Vegetative height (cm)
  - SLA (mm<sup>2</sup>/mg)
  - LDMC (mg/g)
- ✓ 3 relevés (2 × 2 m) per locality

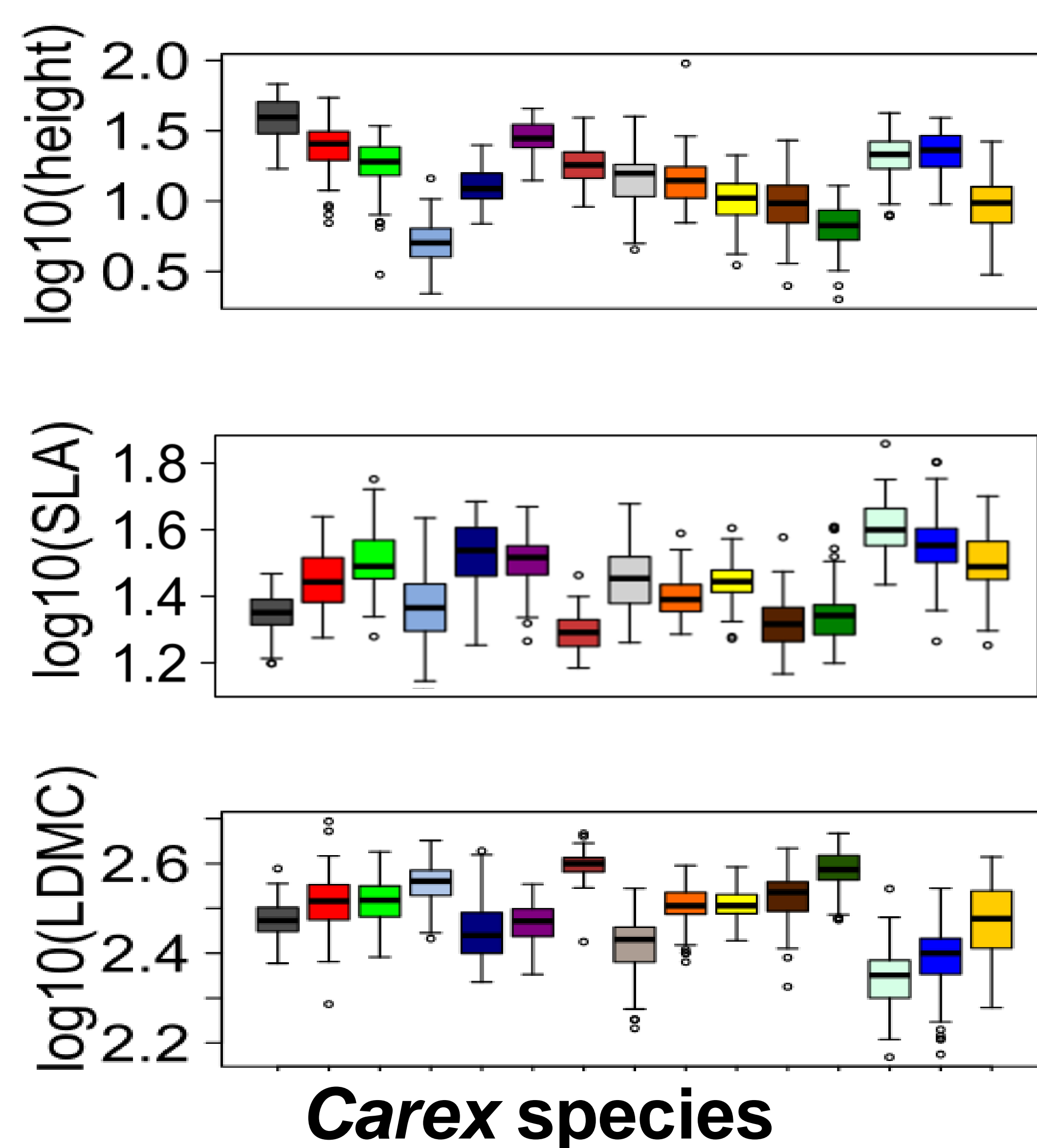
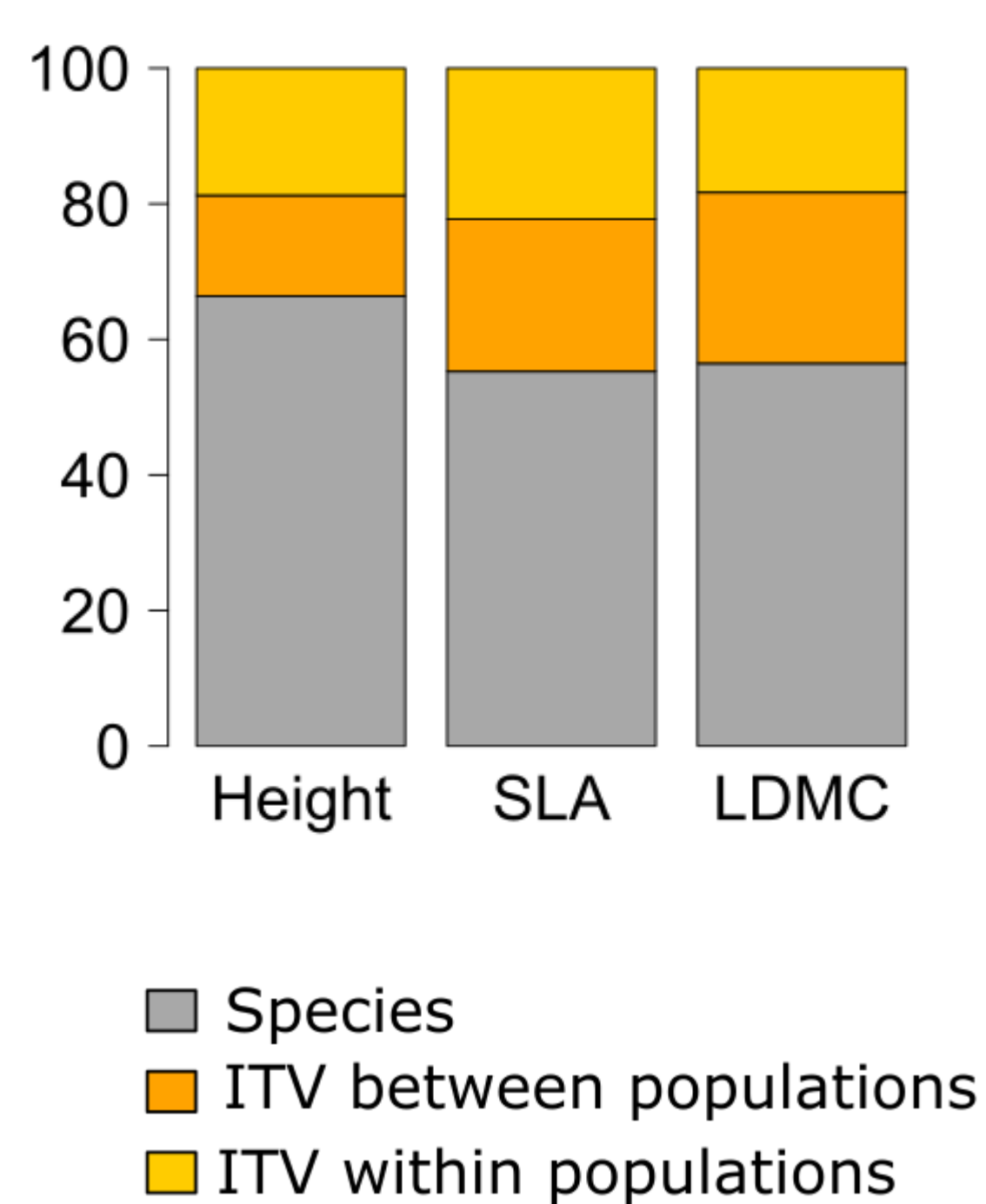
## Statistic analyses

1. Trait variability decomposed at three levels
  - ✓ Between species
  - ✓ Within species between populations
  - ✓ Within species within populations between individuals
2. Relationship of traits and CWM of Ellenberg moisture and nutrients
  - ✓ Regression

## 1. Variability decomposition

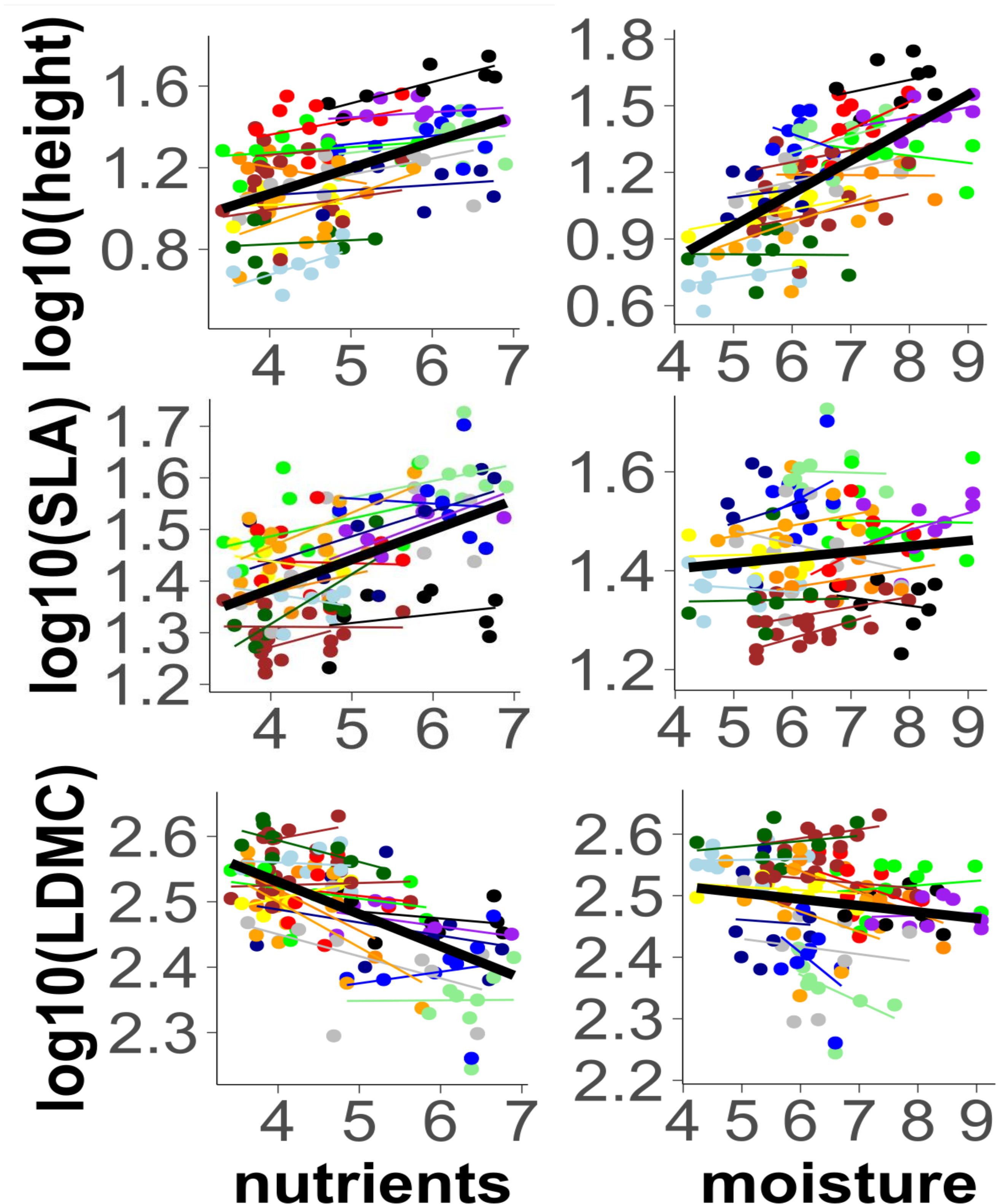
## Species variability

## 2. Relationship of traits and Ellenberg indicator values



*Carex* species

- acuta
- elongata
- panicea
- brizoides
- hartmanii
- pilulifera
- canescens
- hirta
- remota
- caryophyllea
- nigra
- sylvatica
- digitata
- pallescens
- umbrosa



nutrients

moisture

## Conclusions

- ✓ The biggest portion of variability is explained by species
- ✓ Small within species differences -> species traits are consistent across abiotic conditions
- ✓ Leaf traits respond rather consistently to nutrients and less to soil moisture
- ✓ Specific leaf area is less responsive than leaf dry matter content
- ✓ Conservative (unlike aquisative) species (higher LDMC, lower SLA) are in oligotrophic habitats
- ✓ Greater height and SLA while lower LDMC in response to fertility (competition for light)

## Future perspectives

- ✓ Expressing niche width by  $\beta$ -diversity
- ✓ Evaluation of the effect of phylogeny
- ✓ Evaluation of locality properties (e.g. biomass, litter, soil nutrients)
- ✓ Comparison with trait data from databases