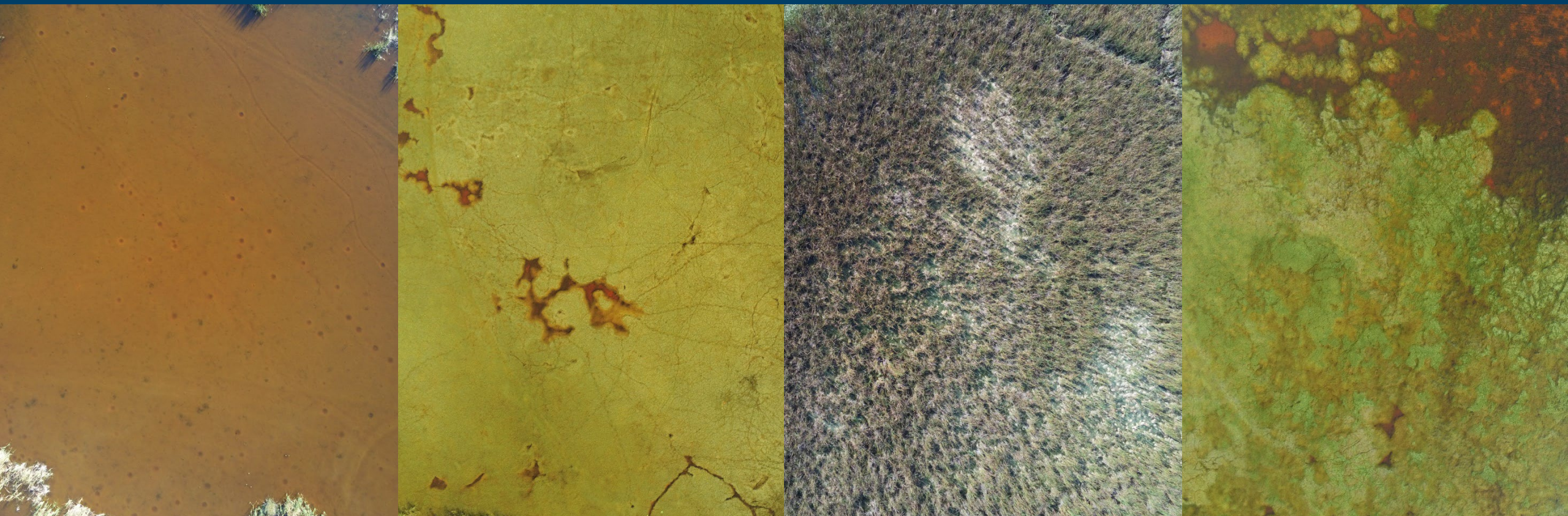


Phosphorus Retention of STA Ecotopes

Matt Powers
Lead Scientist SFWMD

GEER
April 21-24, 2025

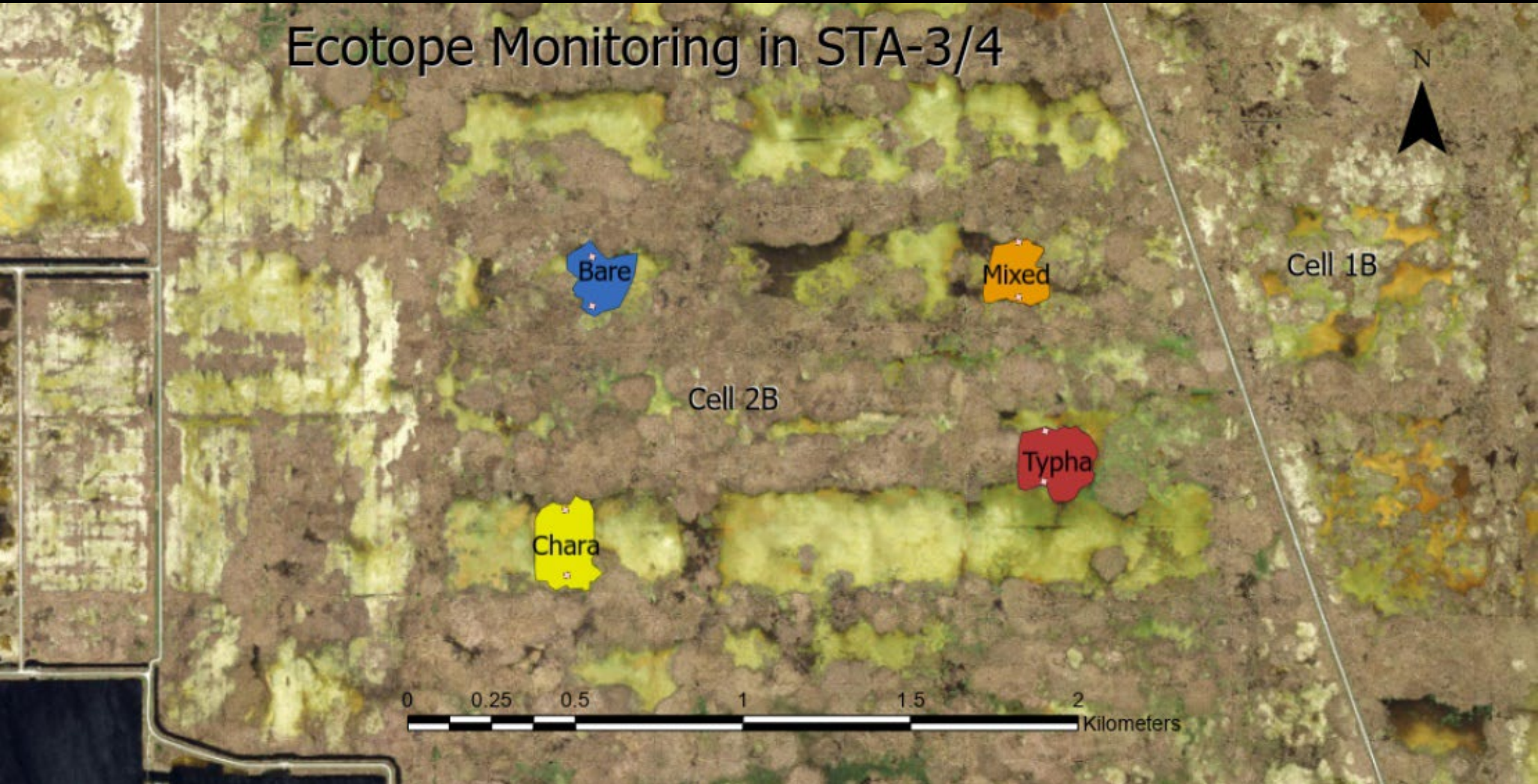


What is an ecotope?

Definitions

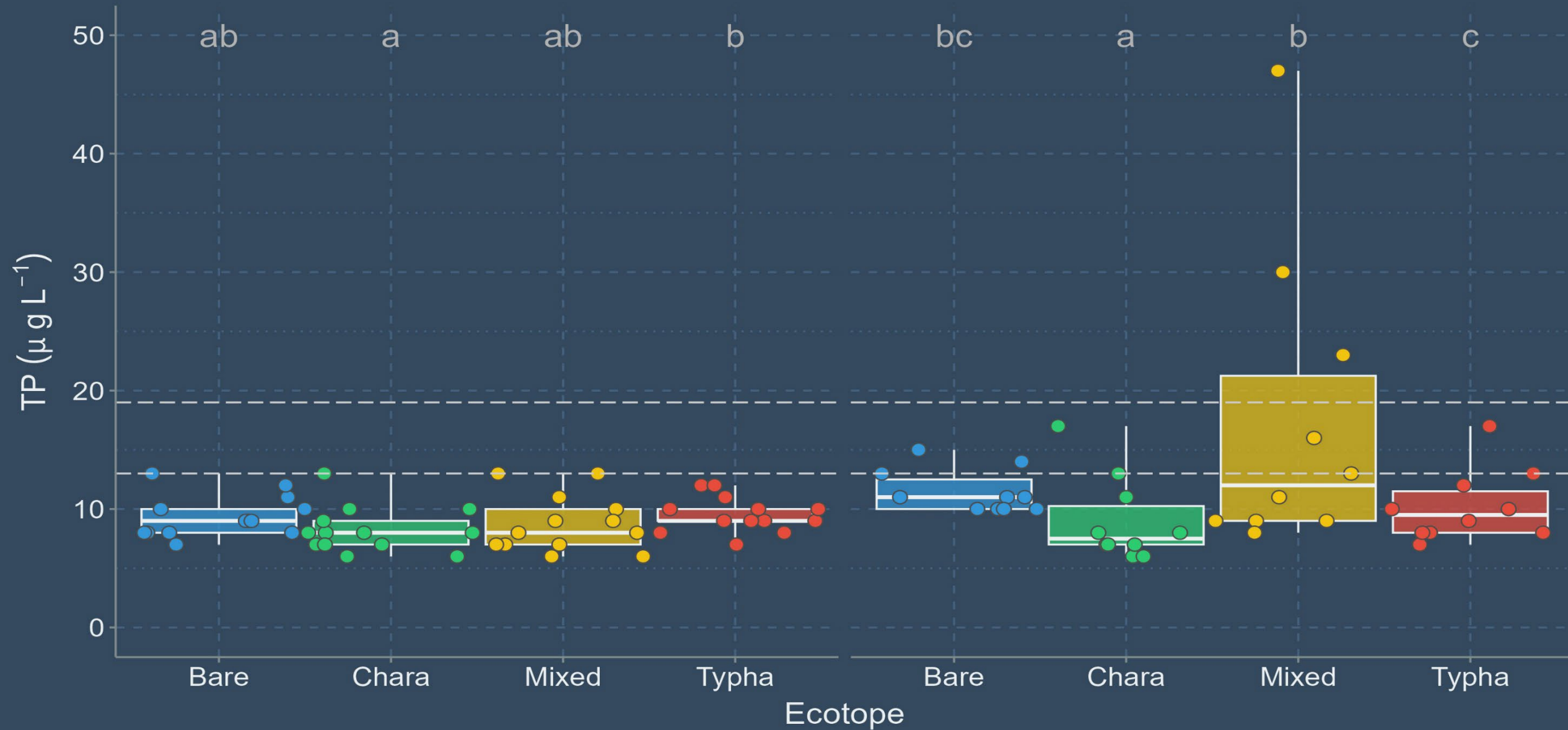
- **Contiguous homogeneous autotrophic community under similar abiotic conditions**
- Smallest ecological land unit relevant in landscape ecology, with relative homogeneity regarding vegetation structure (Klijn, 1994)
- Smallest homogeneous mappable unit of land (Forman, 1995))
- Ecologically distinct features that are potentially stable over ≥ 2 years and are consistently and repeatably identifiable by both ecologists and land managers in the field and in ≤ 1 m resolution imagery (Ellis et al., 2006)

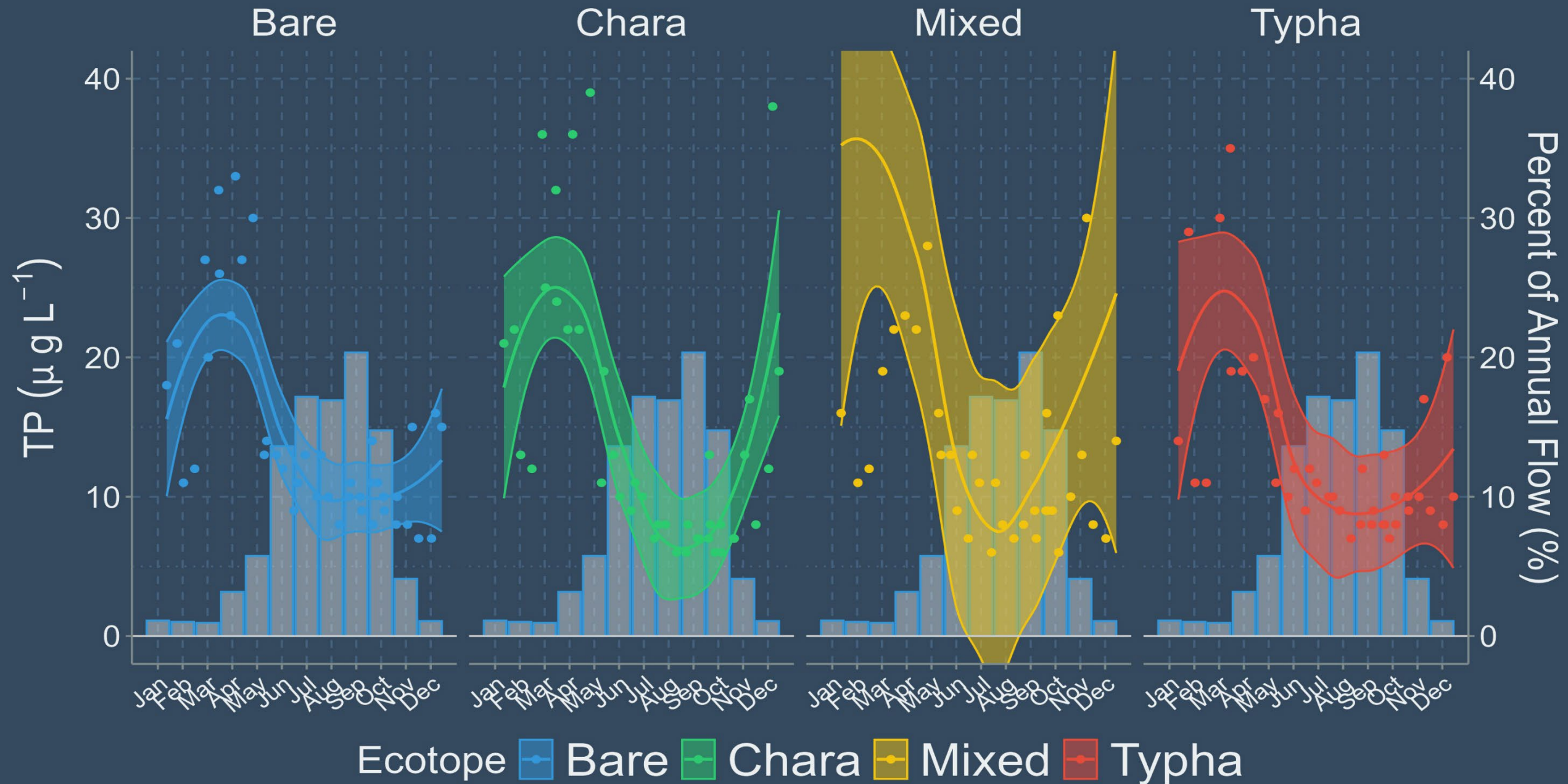
Ecotope Monitoring in STA-3/4



Wet Season Year 1

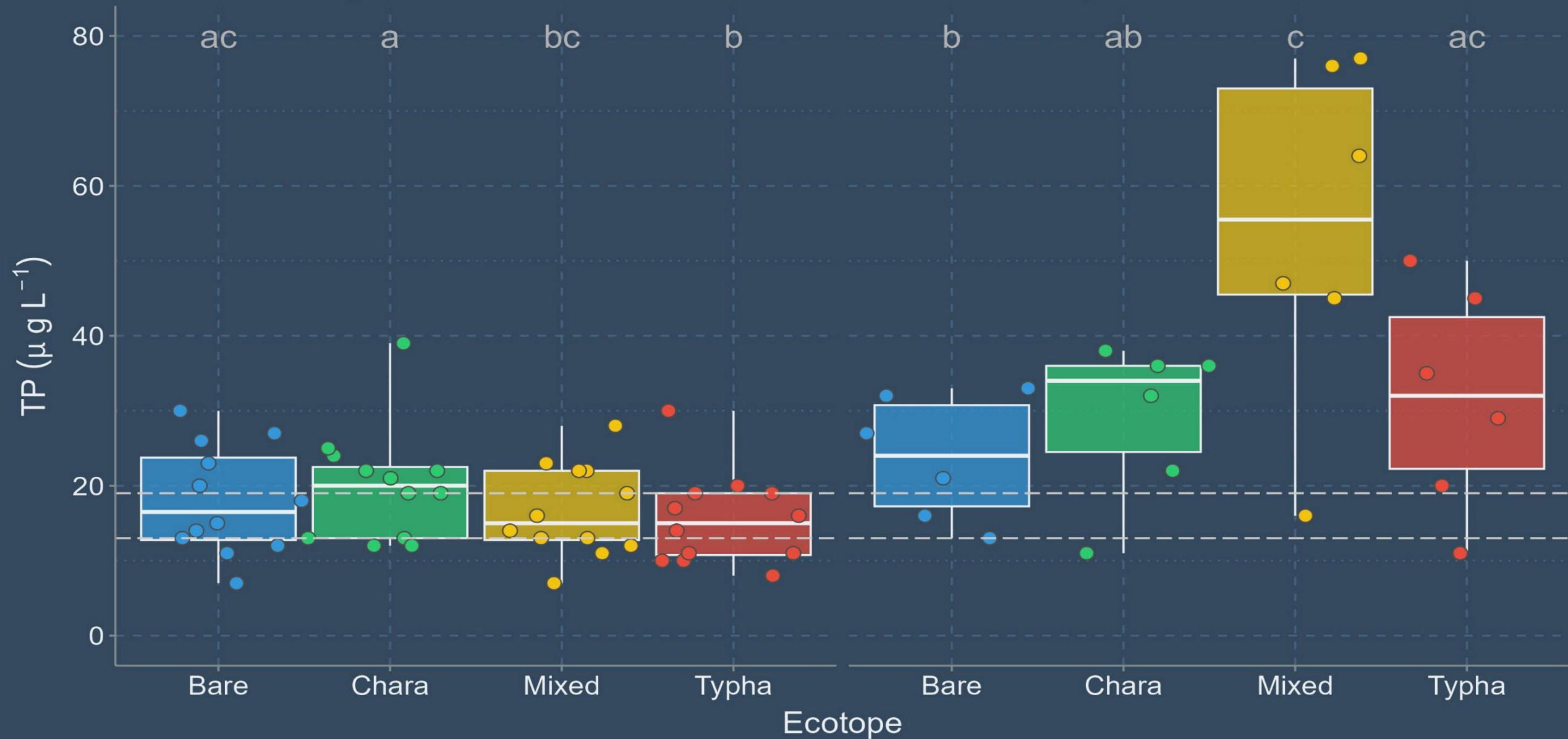
Wet Season Year 2

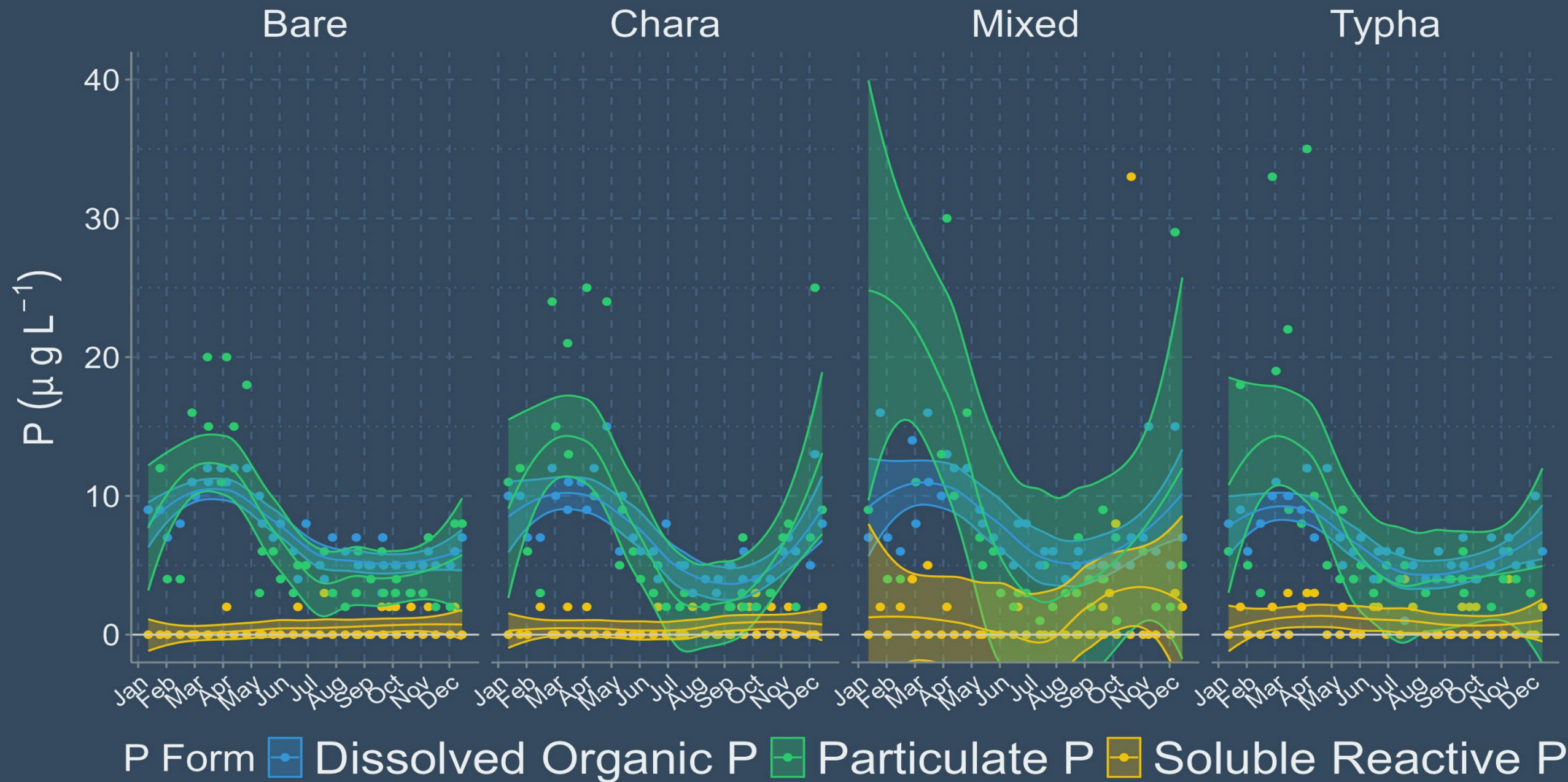


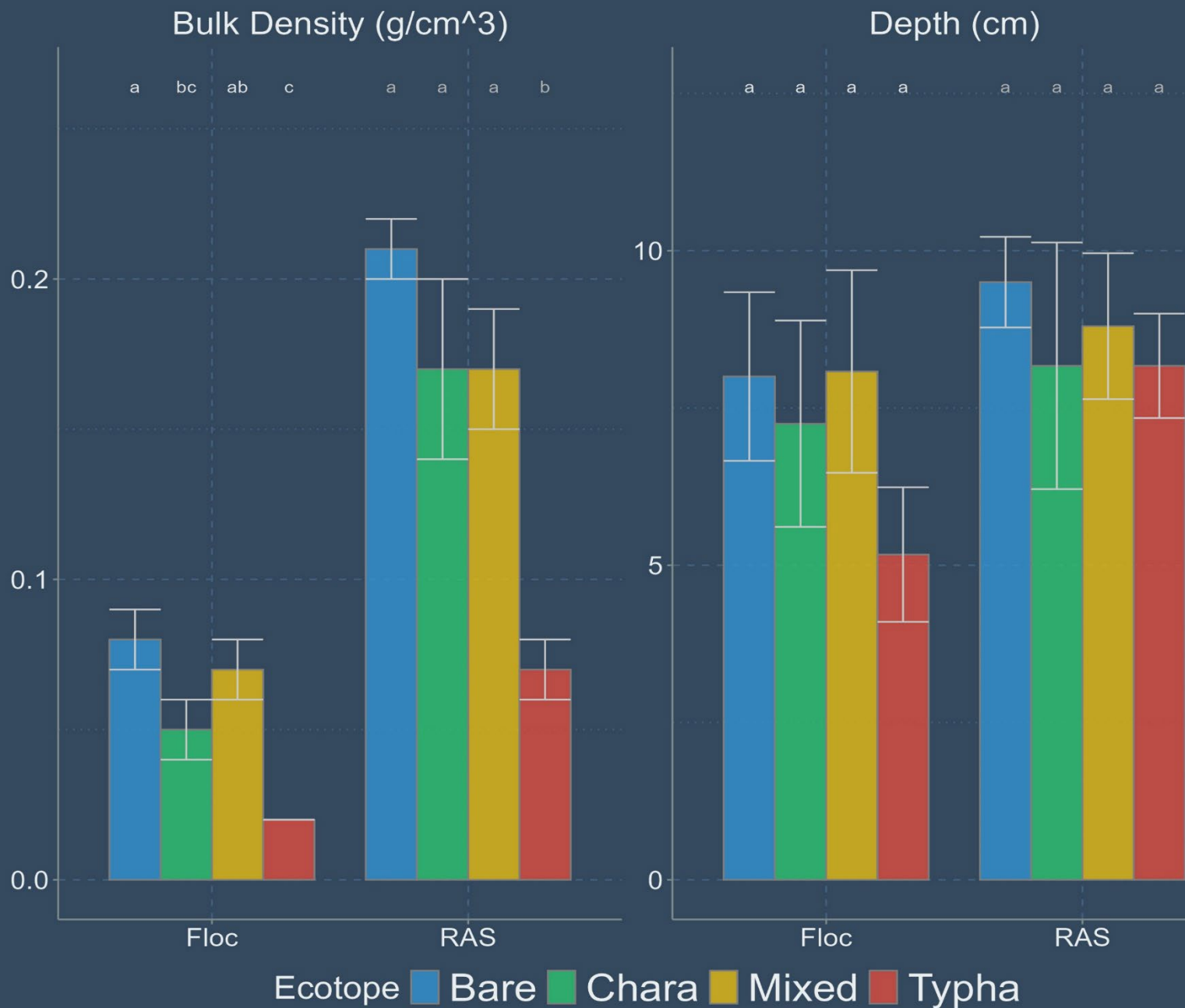


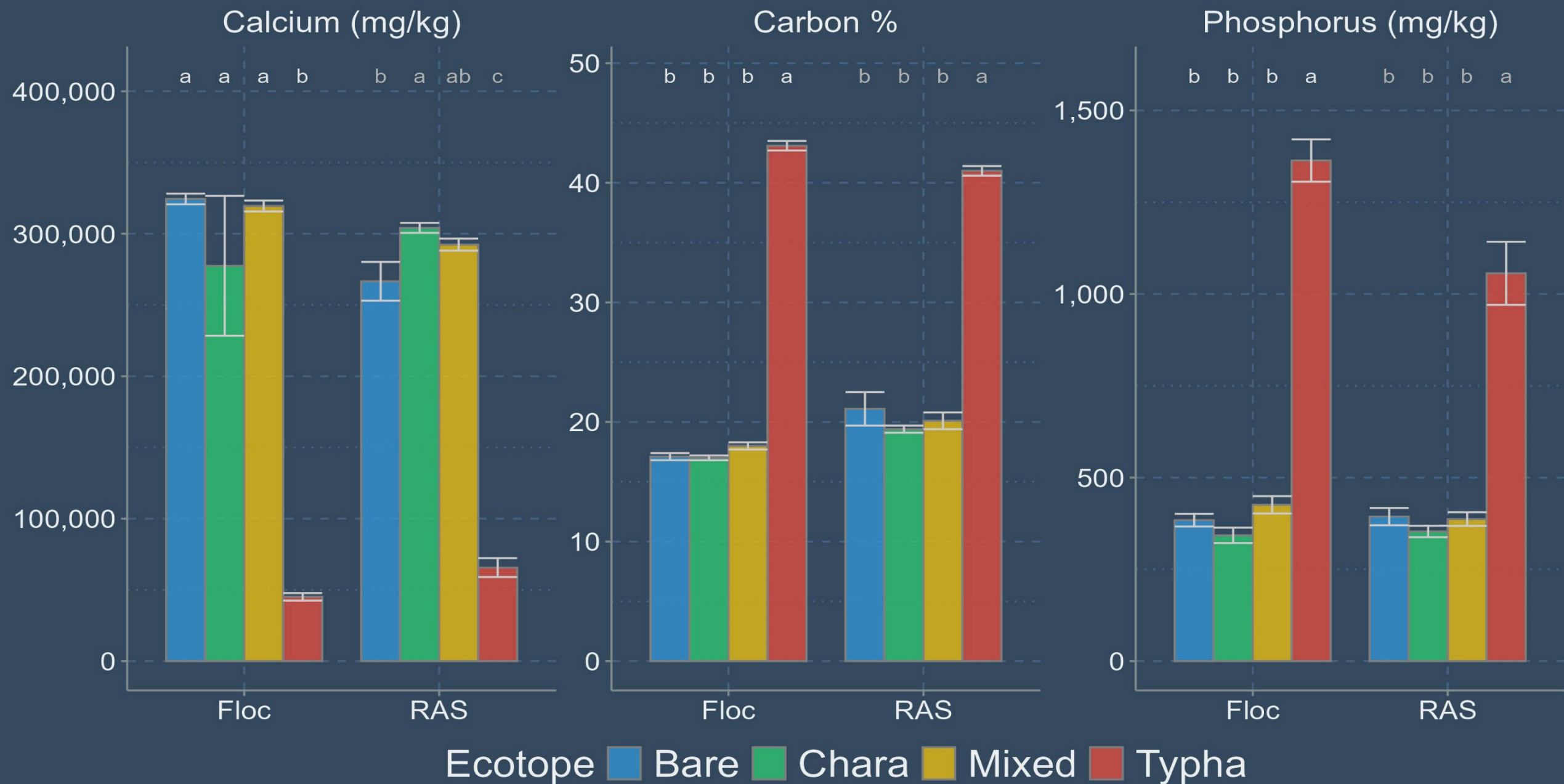
Dry Season Year 1

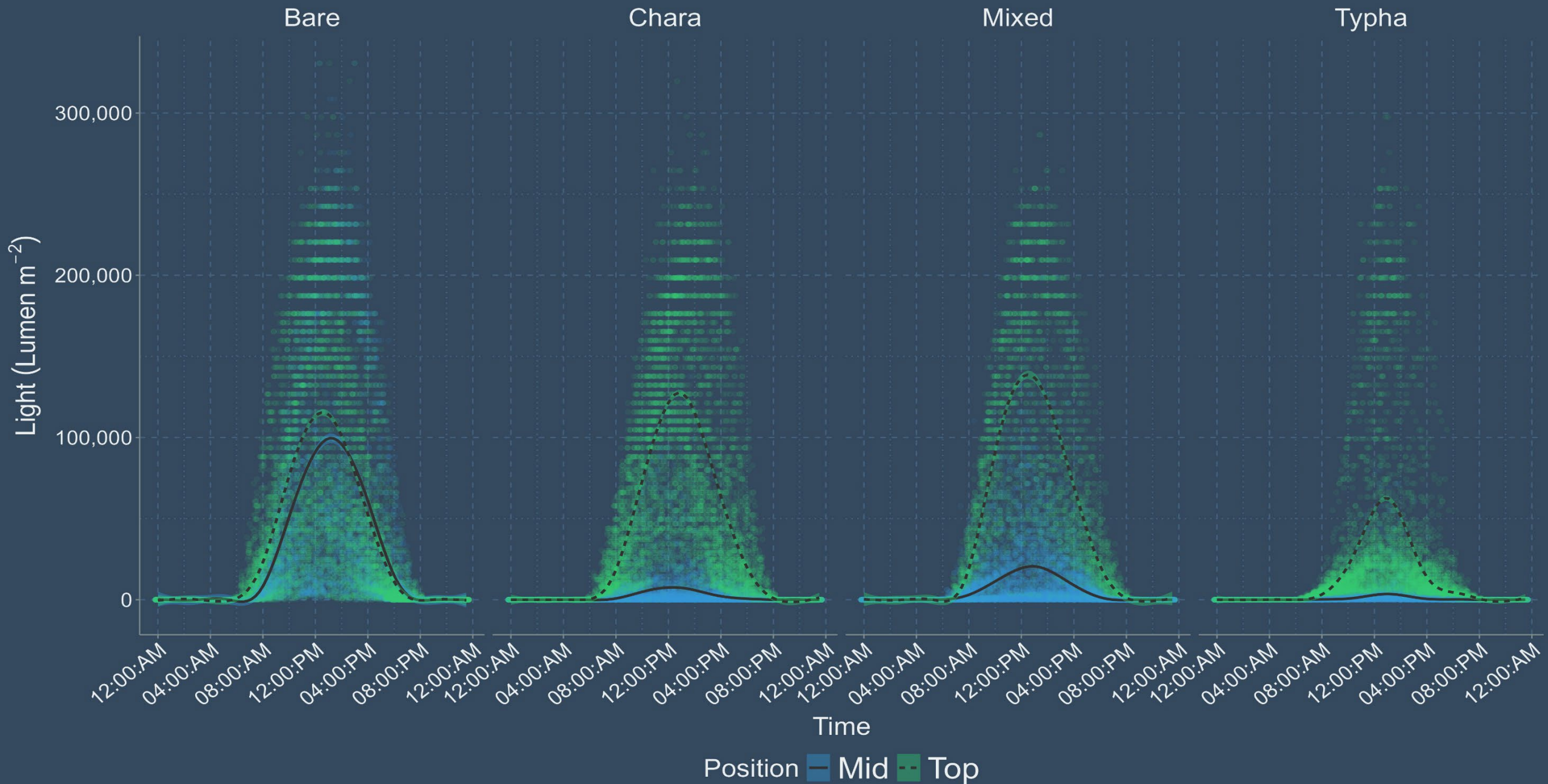
Dry Season Year 2









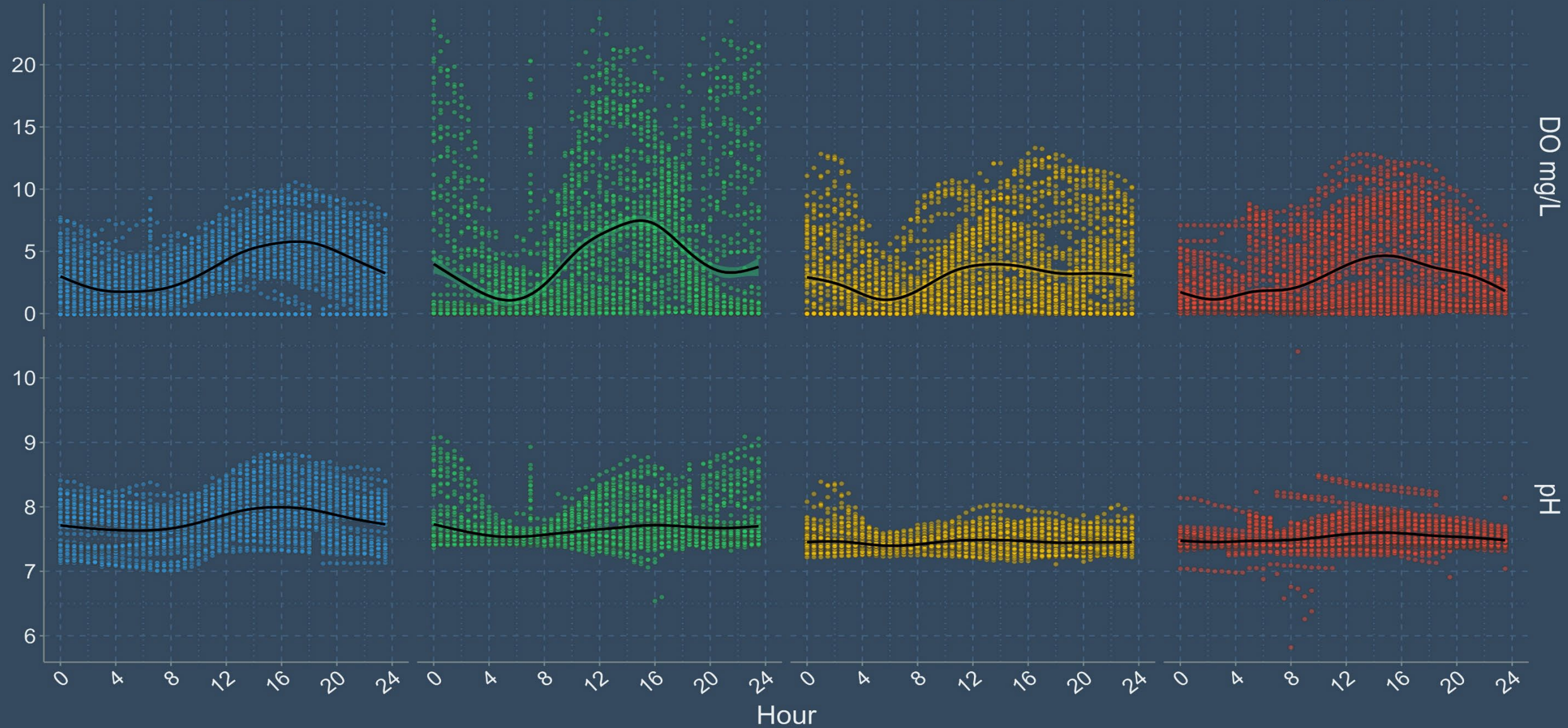


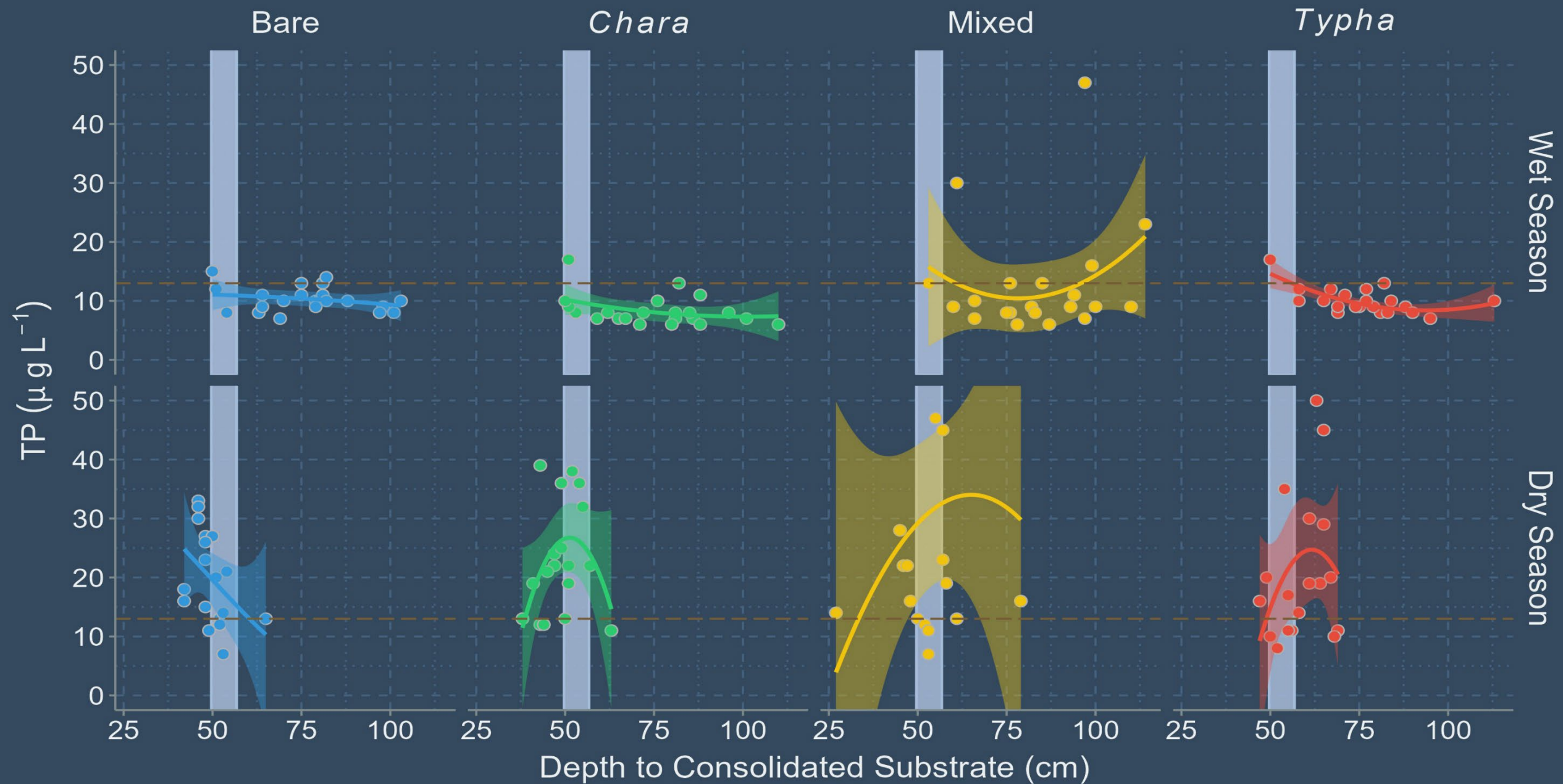
Bare

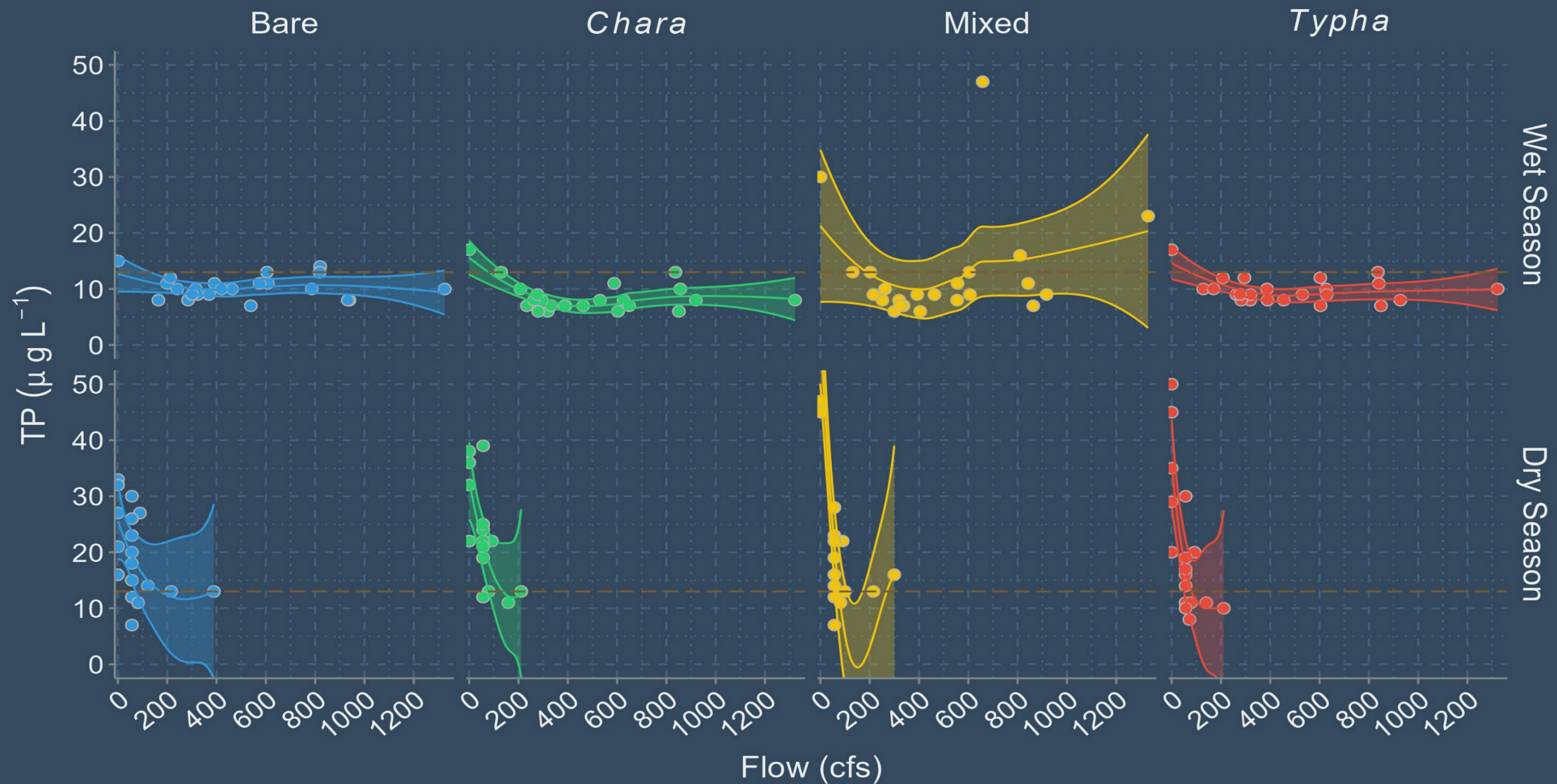
Chara

Mixed

Typha







Do Ecotopes affect key P processes?

Have an effect

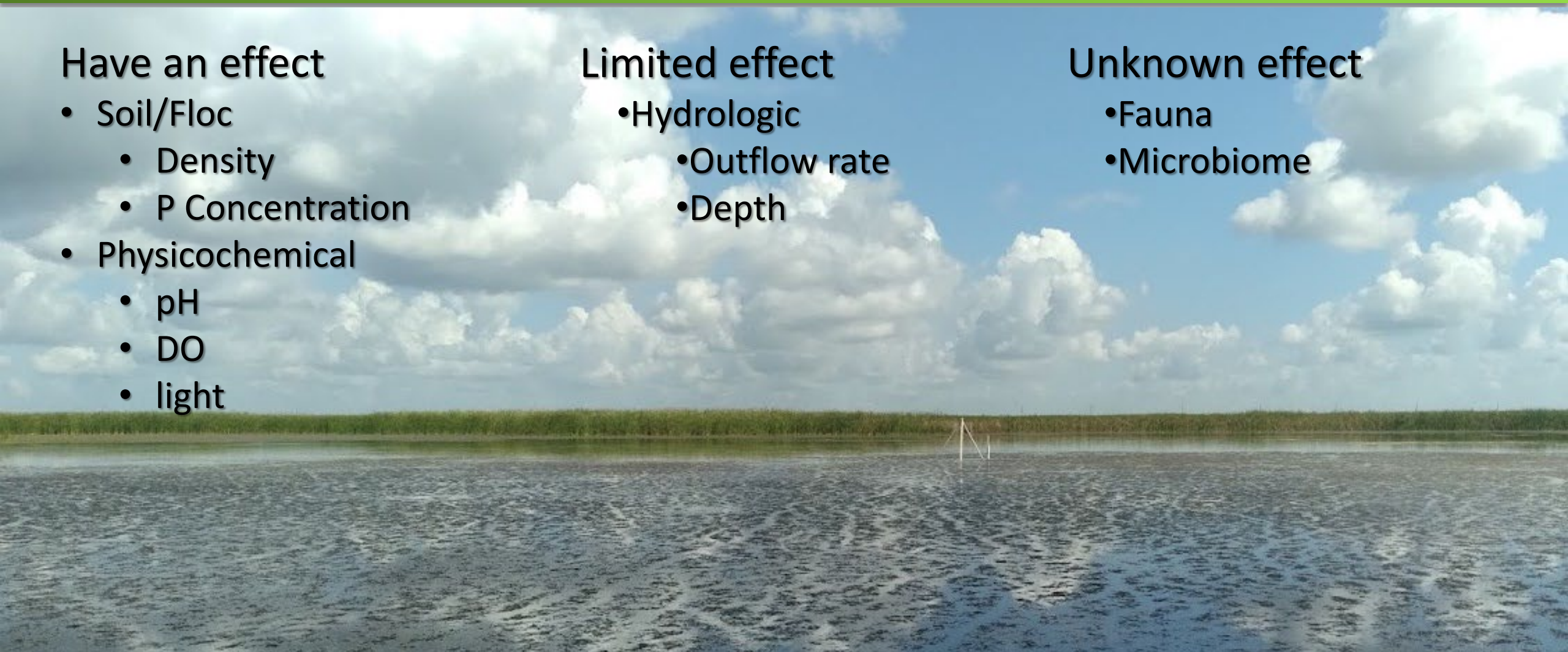
- Soil/Floc
 - Density
 - P Concentration
- Physicochemical
 - pH
 - DO
 - light

Limited effect

- Hydrologic
 - Outflow rate
 - Depth

Unknown effect

- Fauna
- Microbiome



Conclusions

- Ecotope type affects P concentration in low P environment
- Chara < Typha $\approx$ Bare $\approx$ Mixed
- Differences are small, less than 2 $\mu\text{g/L}$
- Seasonal changes in P concentration greater than ecotope effects
- Higher discharge rates correlate with lower P
- Higher stage correlates with lower P

Acknowledgements

Contributors

Ellen Ashford
Camille Herteux
Jess Wilson
David Cox
Nathan Gavin
Ryan Goebel