



Enzyme patterns in topsoil and subsoil horizons along a latitudinal transect in Western Siberia

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Topsoil vs Subsoil

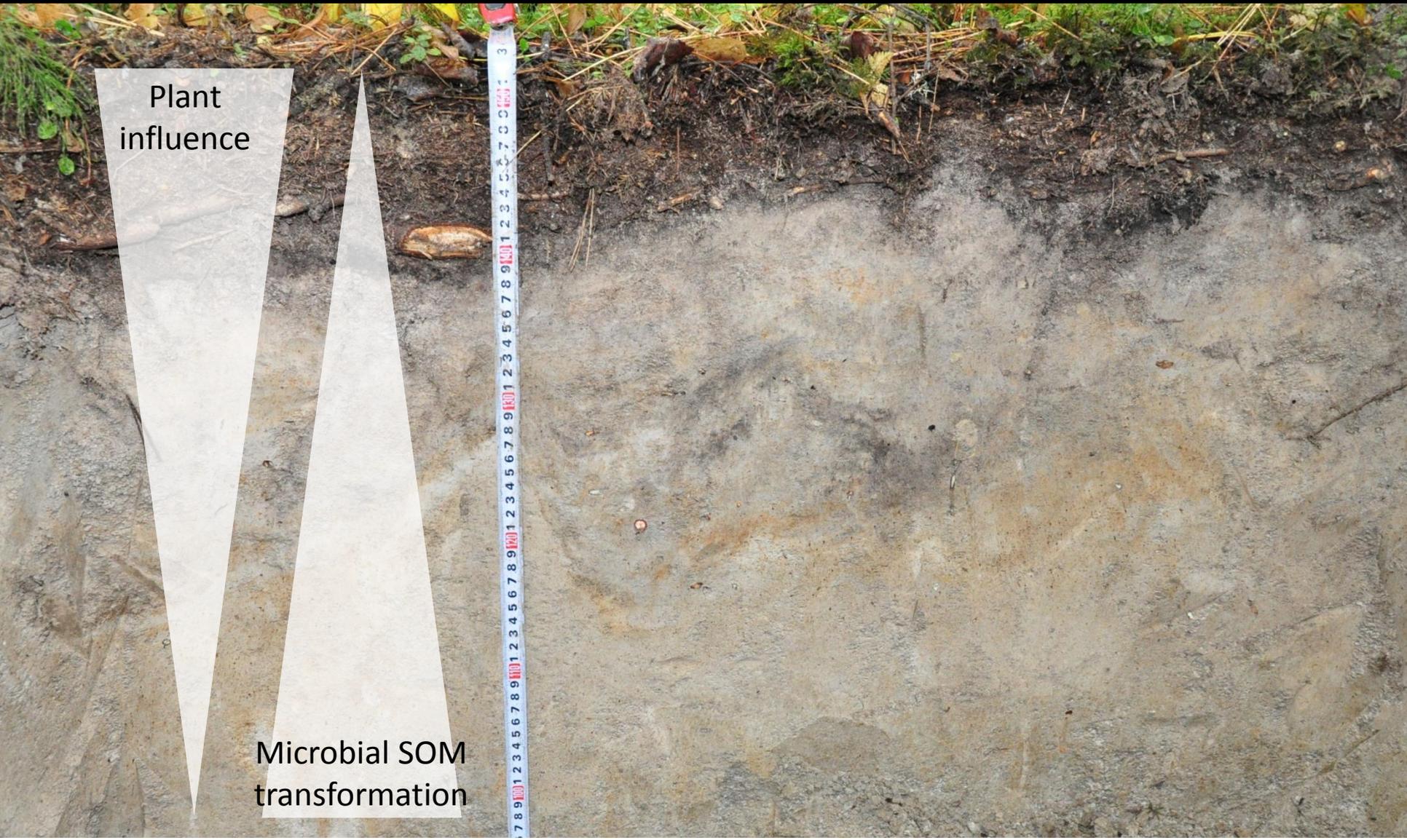


Topsoil vs Subsoil



Plant
influence

Topsoil vs Subsoil

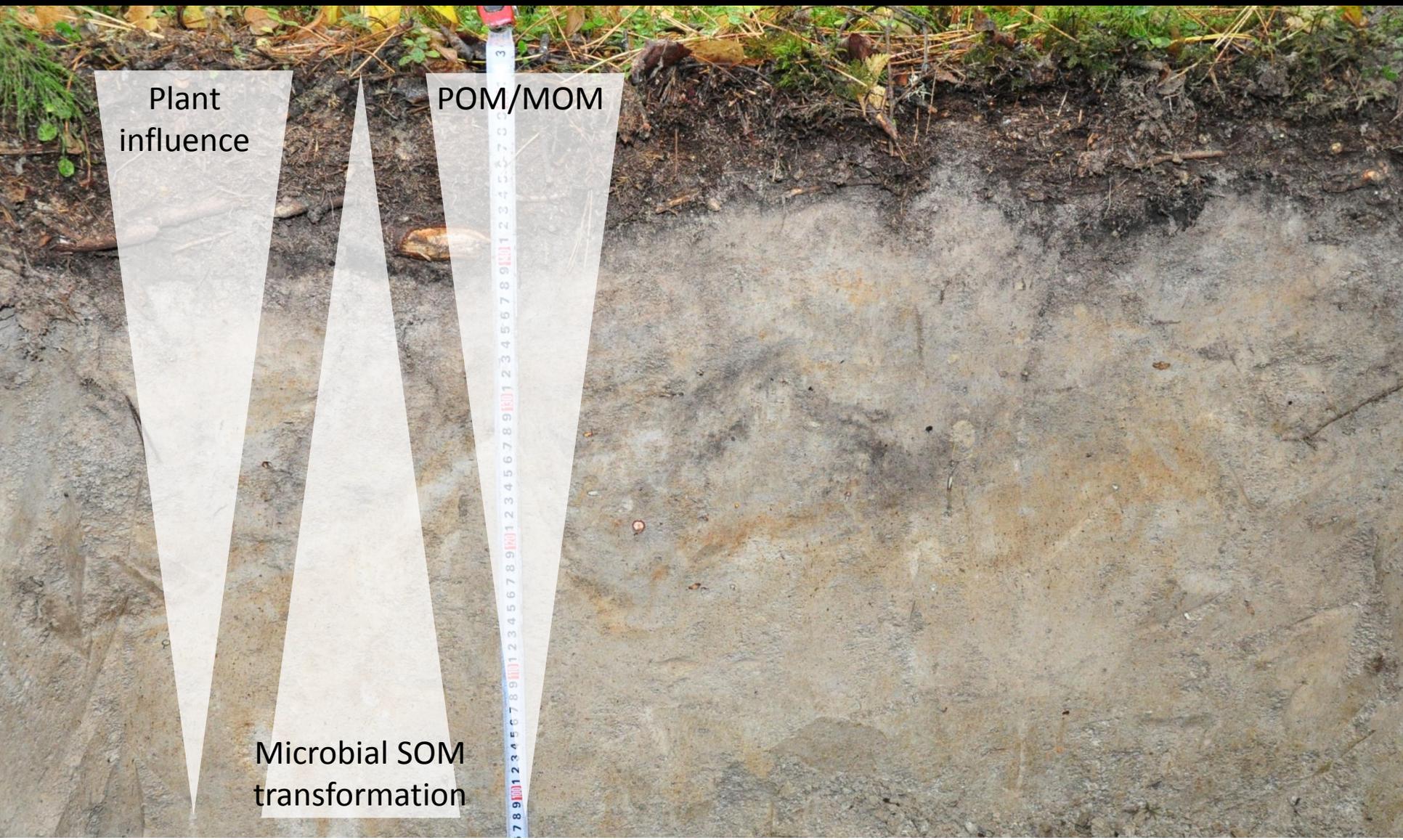


Plant
influence

Microbial SOM
transformation



Topsoil vs Subsoil



Plant
influence

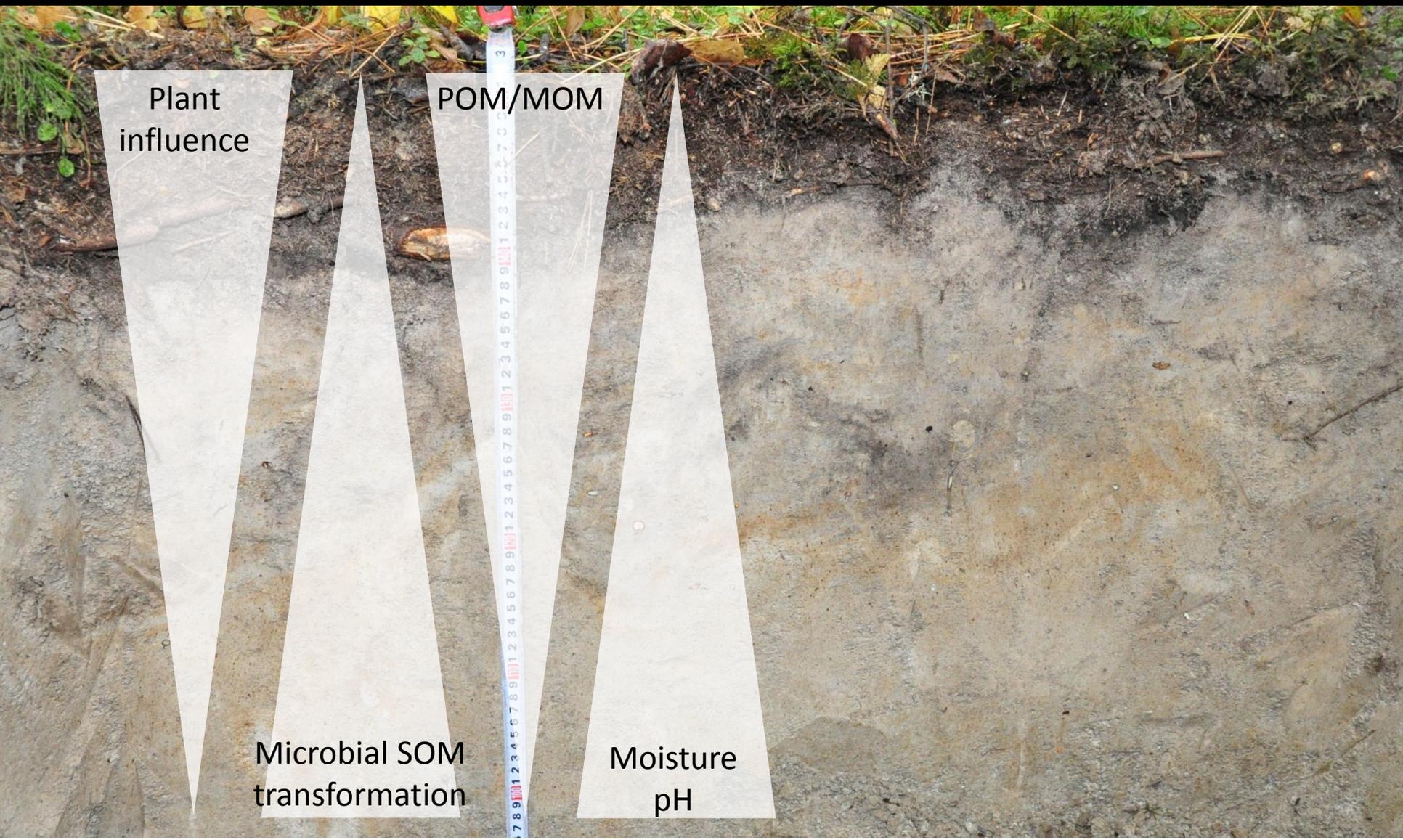
POM/MOM

Microbial SOM
transformation





Topsoil vs Subsoil



Plant
influence

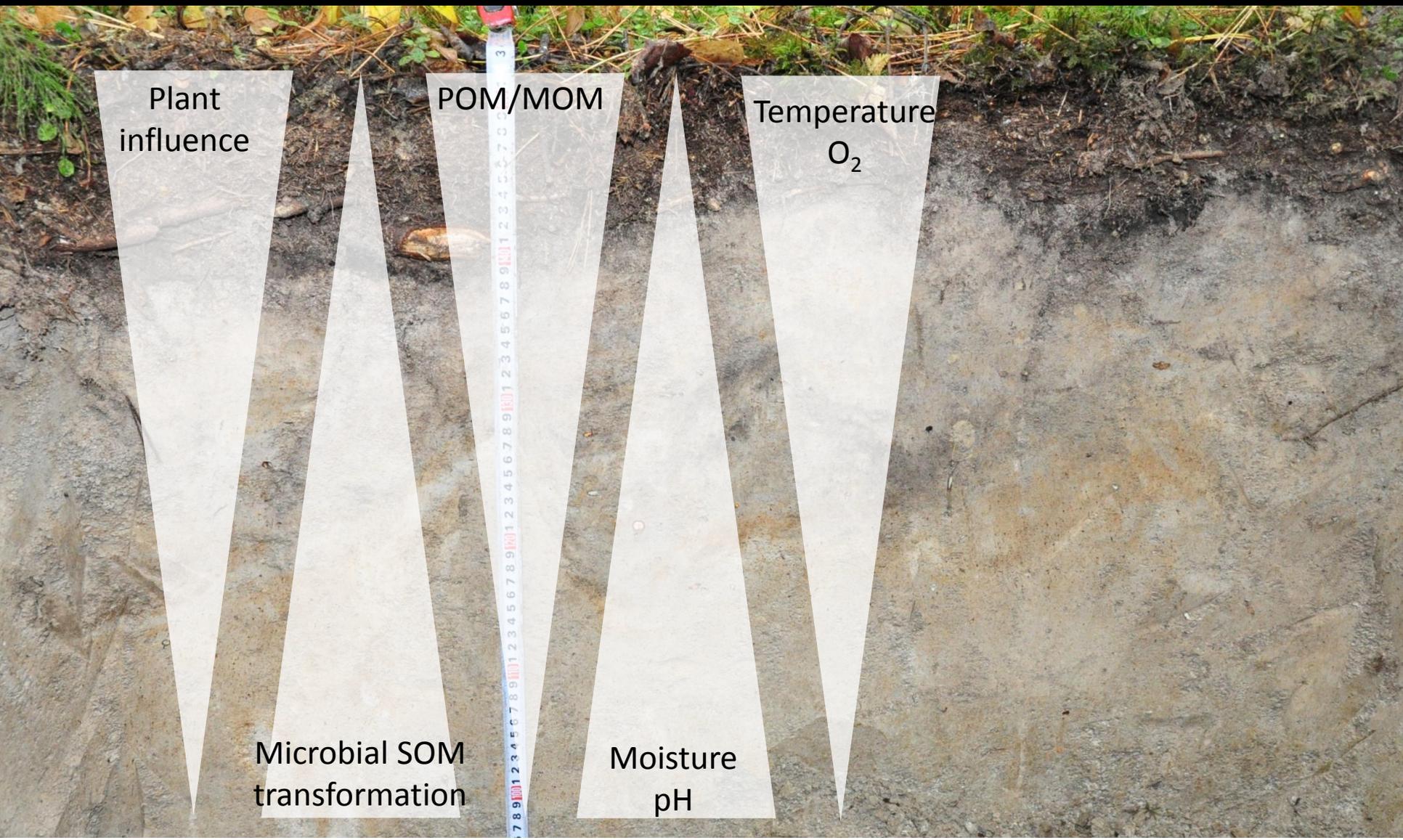
POM/MOM

Microbial SOM
transformation

Moisture
pH



Topsoil vs Subsoil



Plant
influence

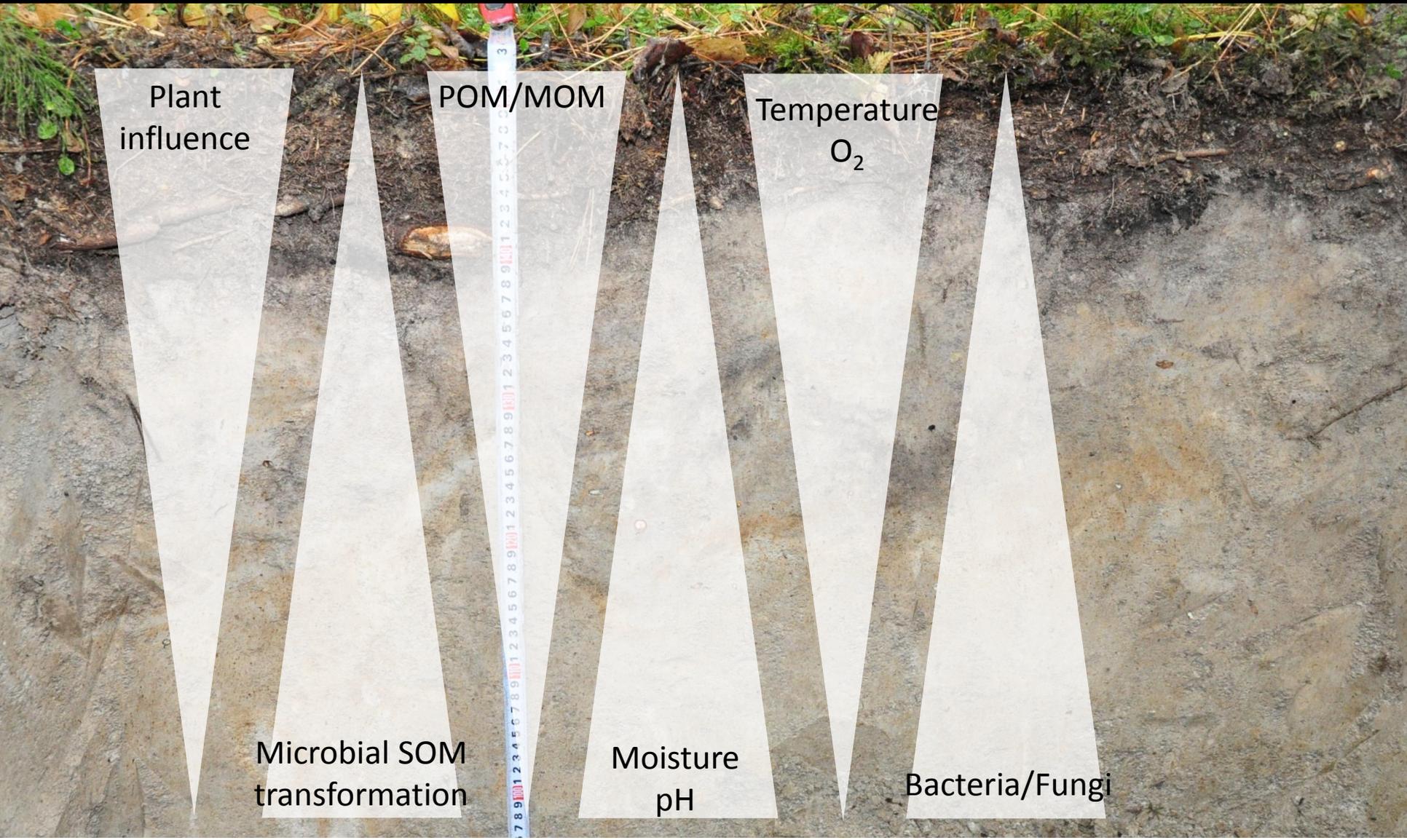
POM/MOM

Temperature
 O_2

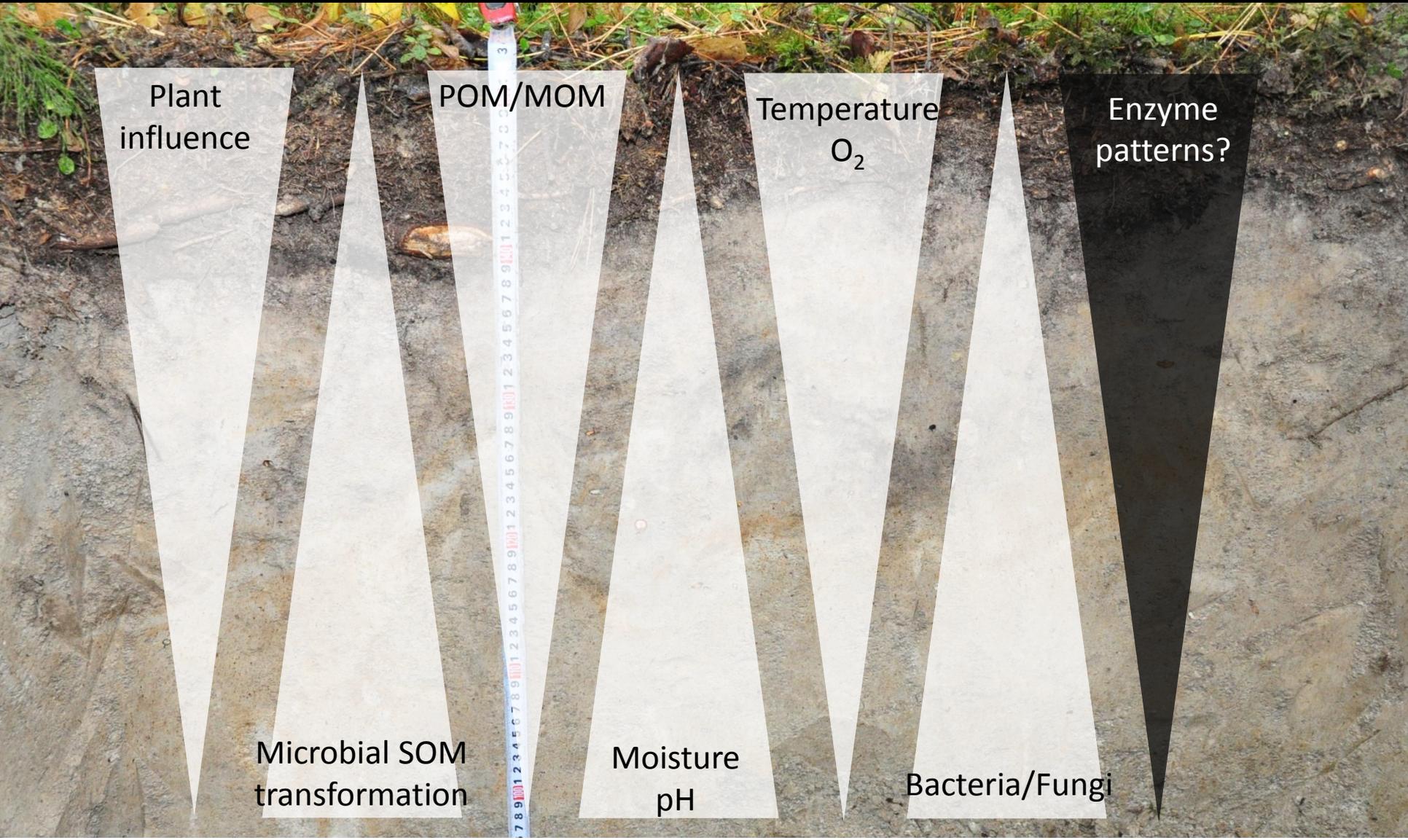
Microbial SOM
transformation

Moisture
pH

Topsoil vs Subsoil



Topsoil vs Subsoil

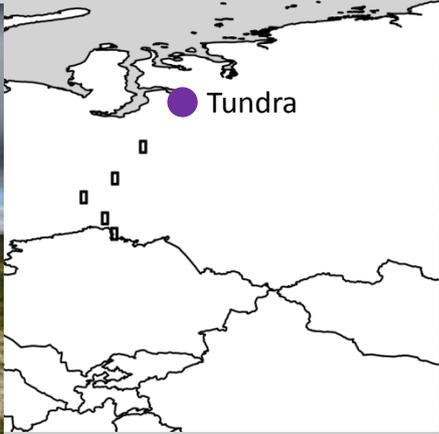




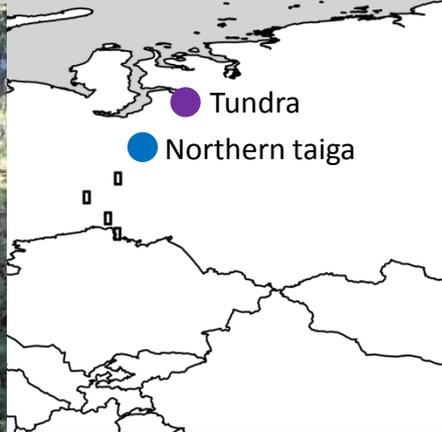
Sites



Tundra



Northern

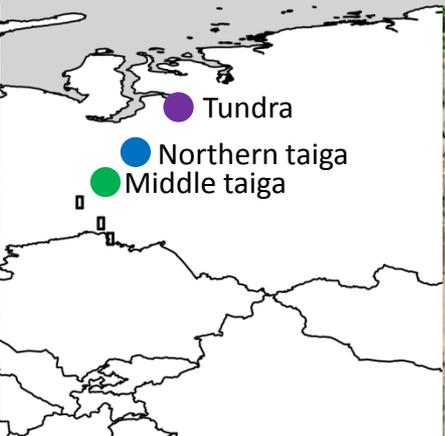


● Tundra





Middle taiga



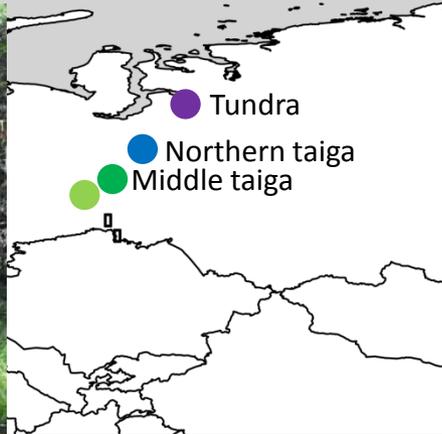
● Tundra



● Northern taiga



Southern taiga



● Tundra



● Northern taiga

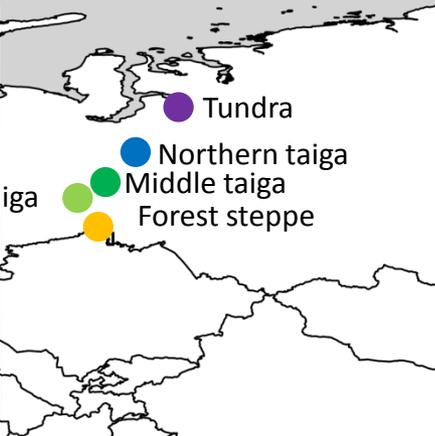


● Middle taiga





Forest steppe



● Tundra



● Northern taiga



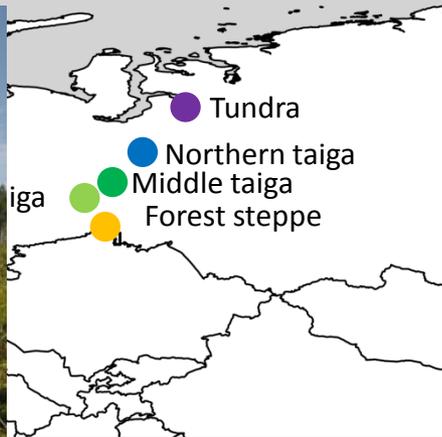
● Middle taiga



● Southern taiga

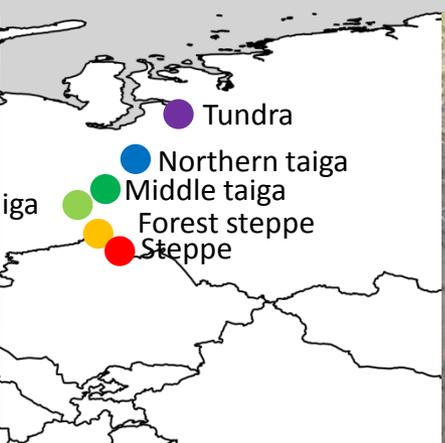


Forest steppe





Steppe



● Tundra



● Northern taiga



● Middle taiga



● Southern taiga



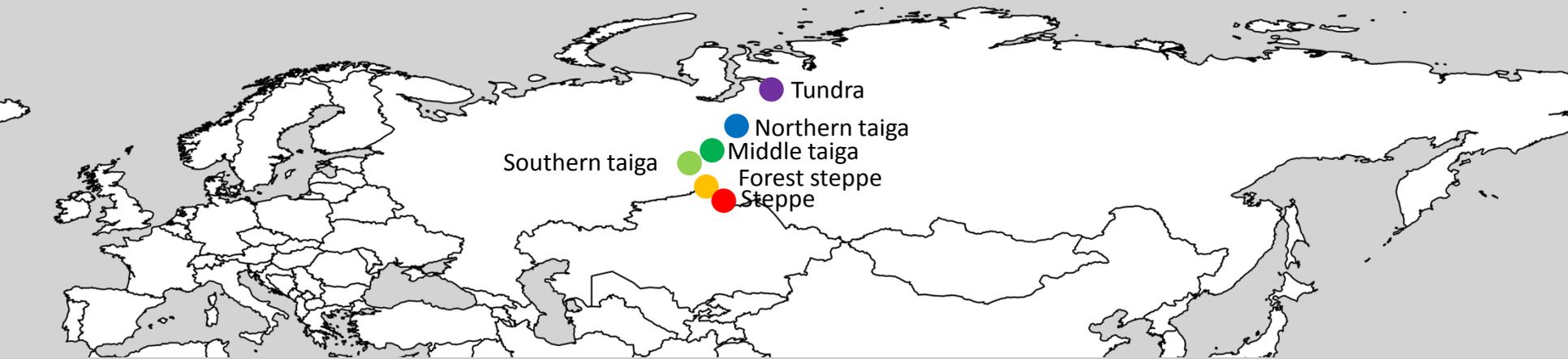
● Forest steppe -meadow



● Forest steppe -forest



Sites



● Tundra



● Northern taiga



● Middle taiga



● Southern taiga



● Forest steppe -meadow



● Forest steppe -forest



● Steppe

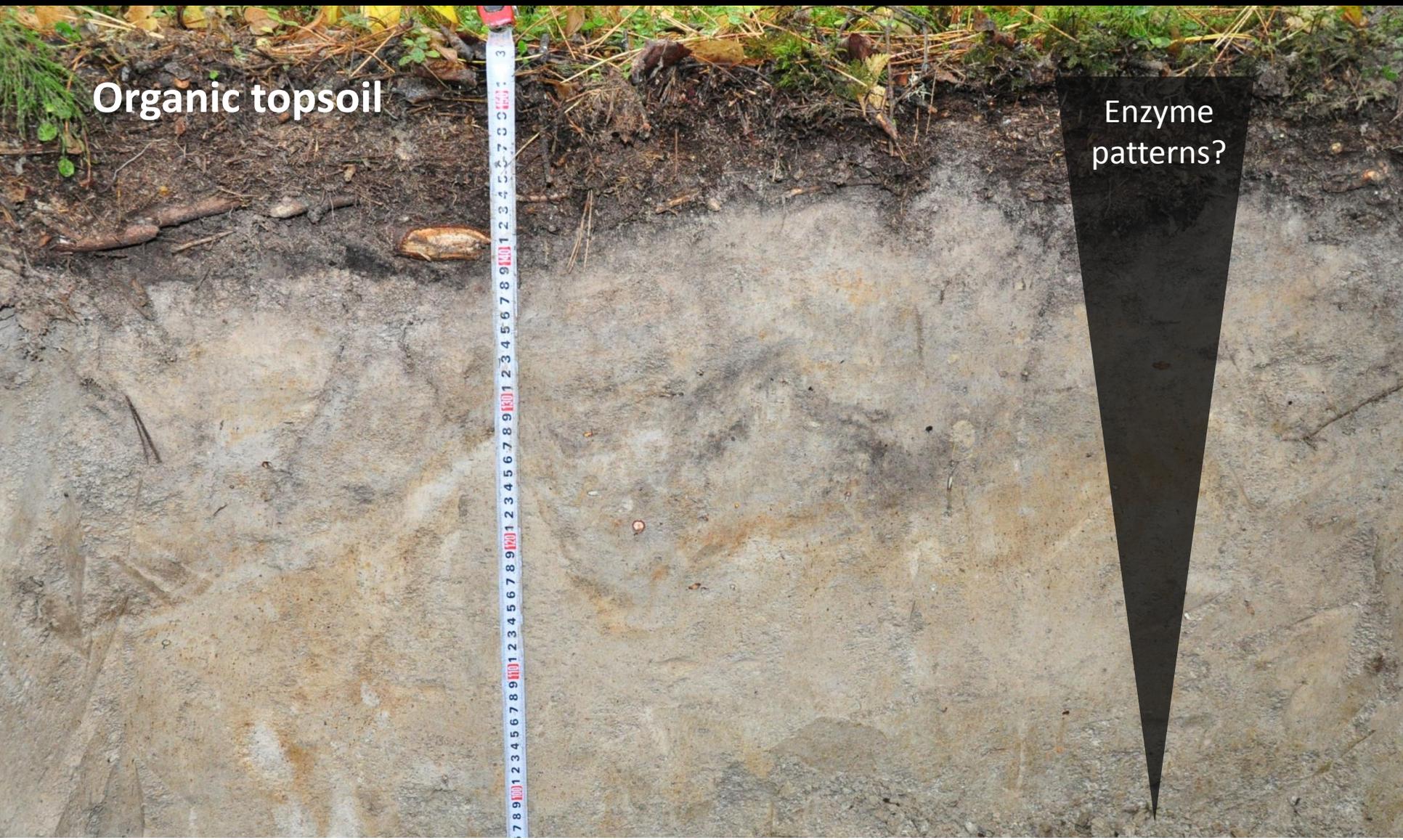


Topsoil vs Subsoil



Enzyme patterns?

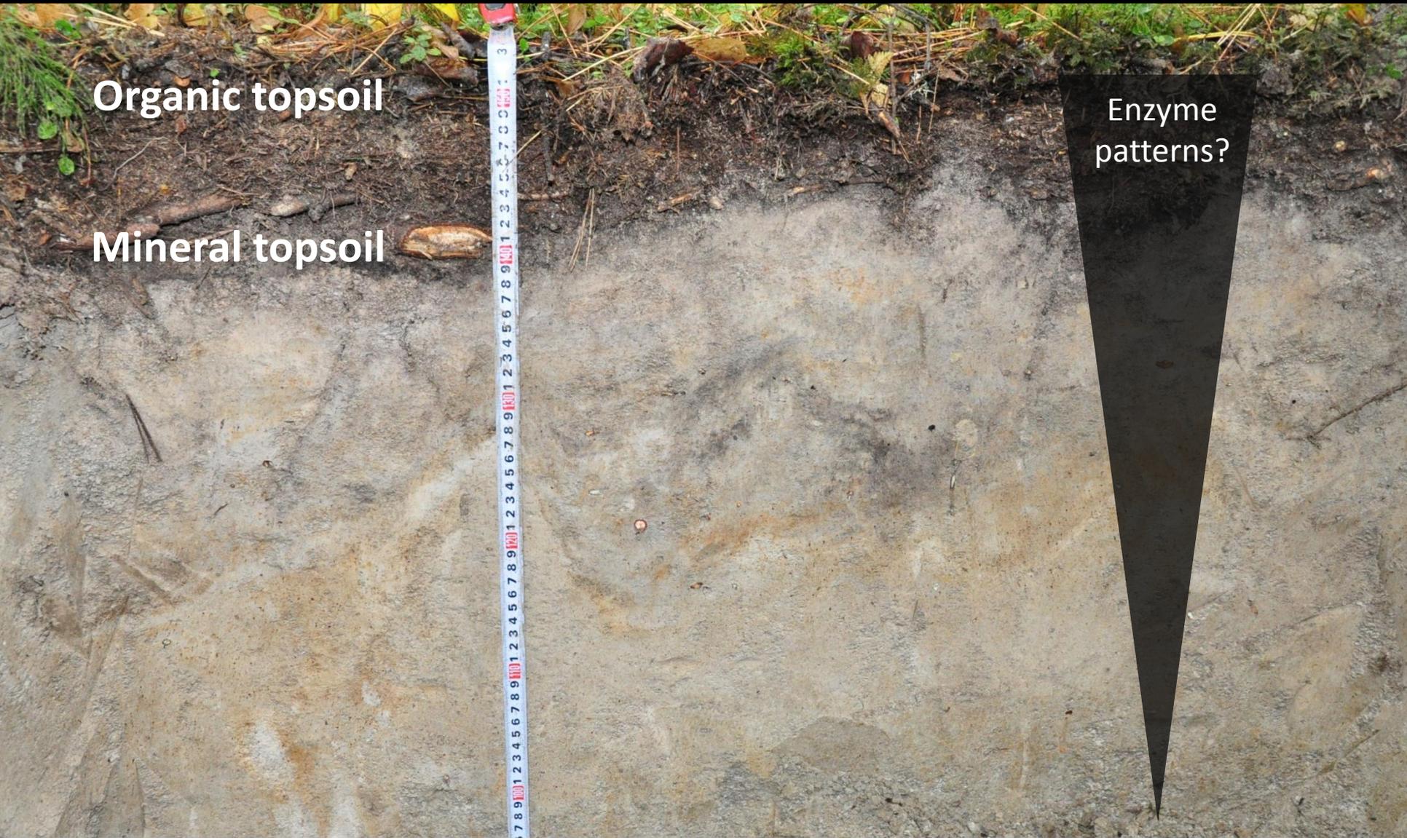
Topsoil vs Subsoil



Organic topsoil

Enzyme patterns?

Topsoil vs Subsoil



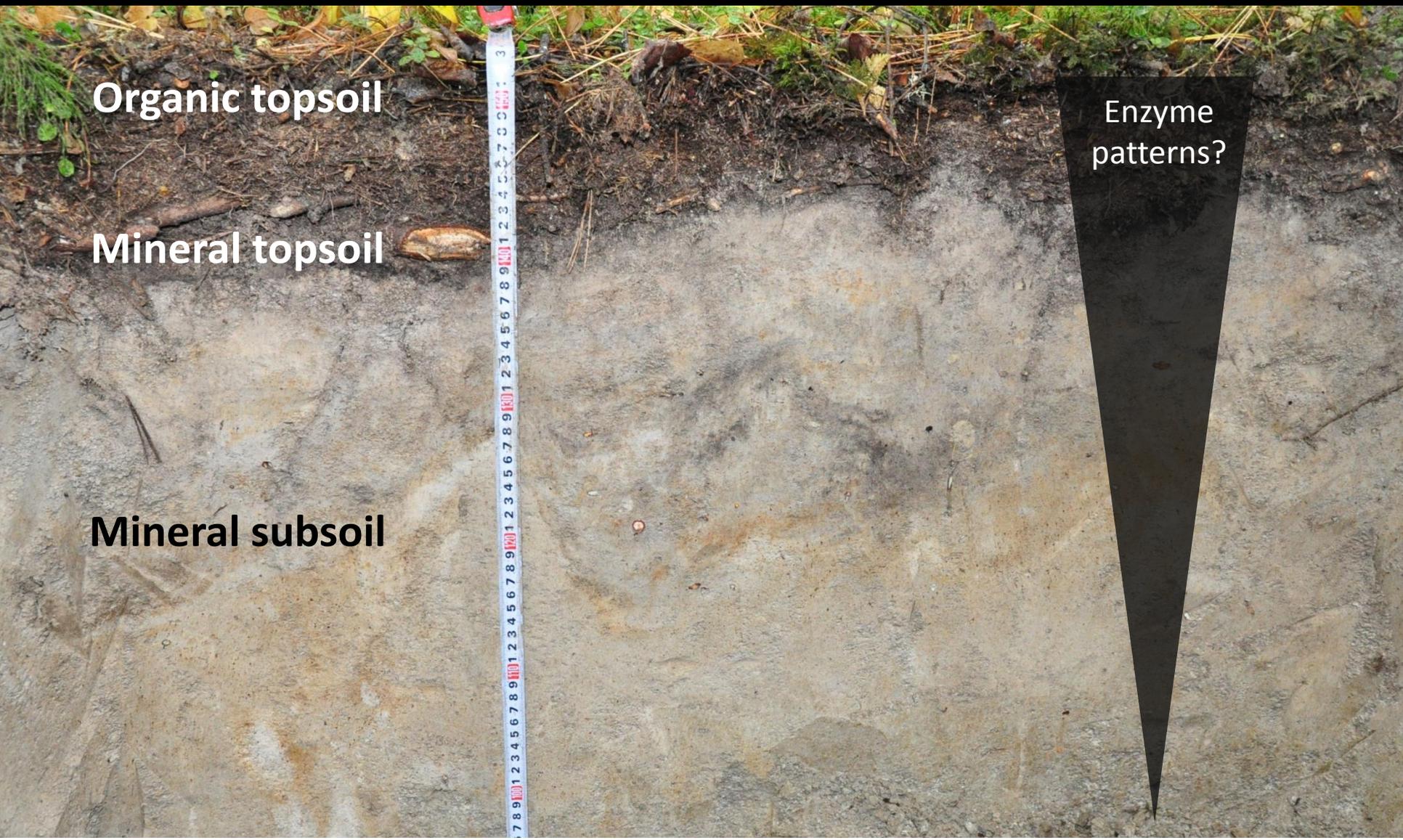
Organic topsoil

Mineral topsoil

Enzyme patterns?



Topsoil vs Subsoil



Organic topsoil

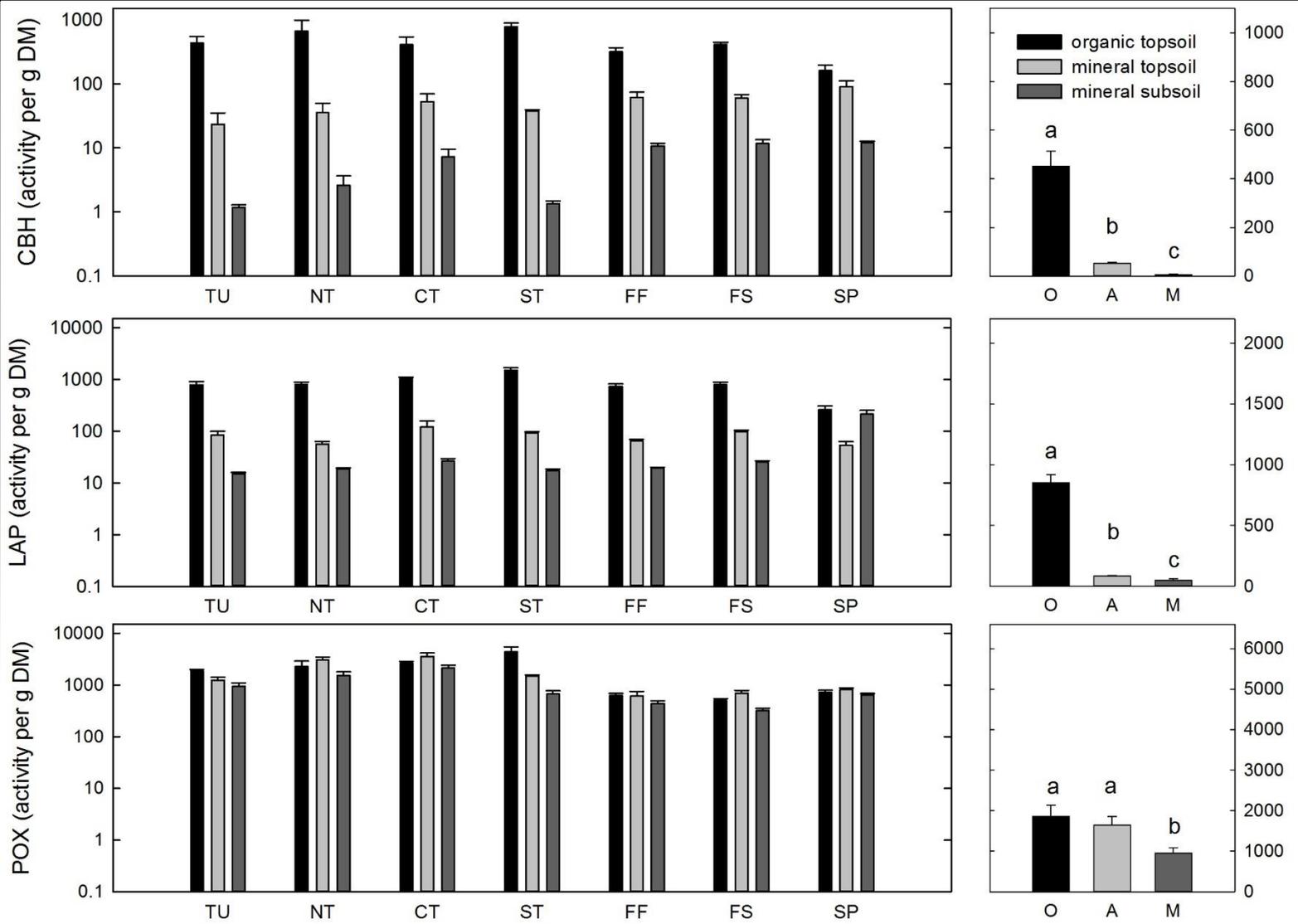
Mineral topsoil

Mineral subsoil

Enzyme patterns?

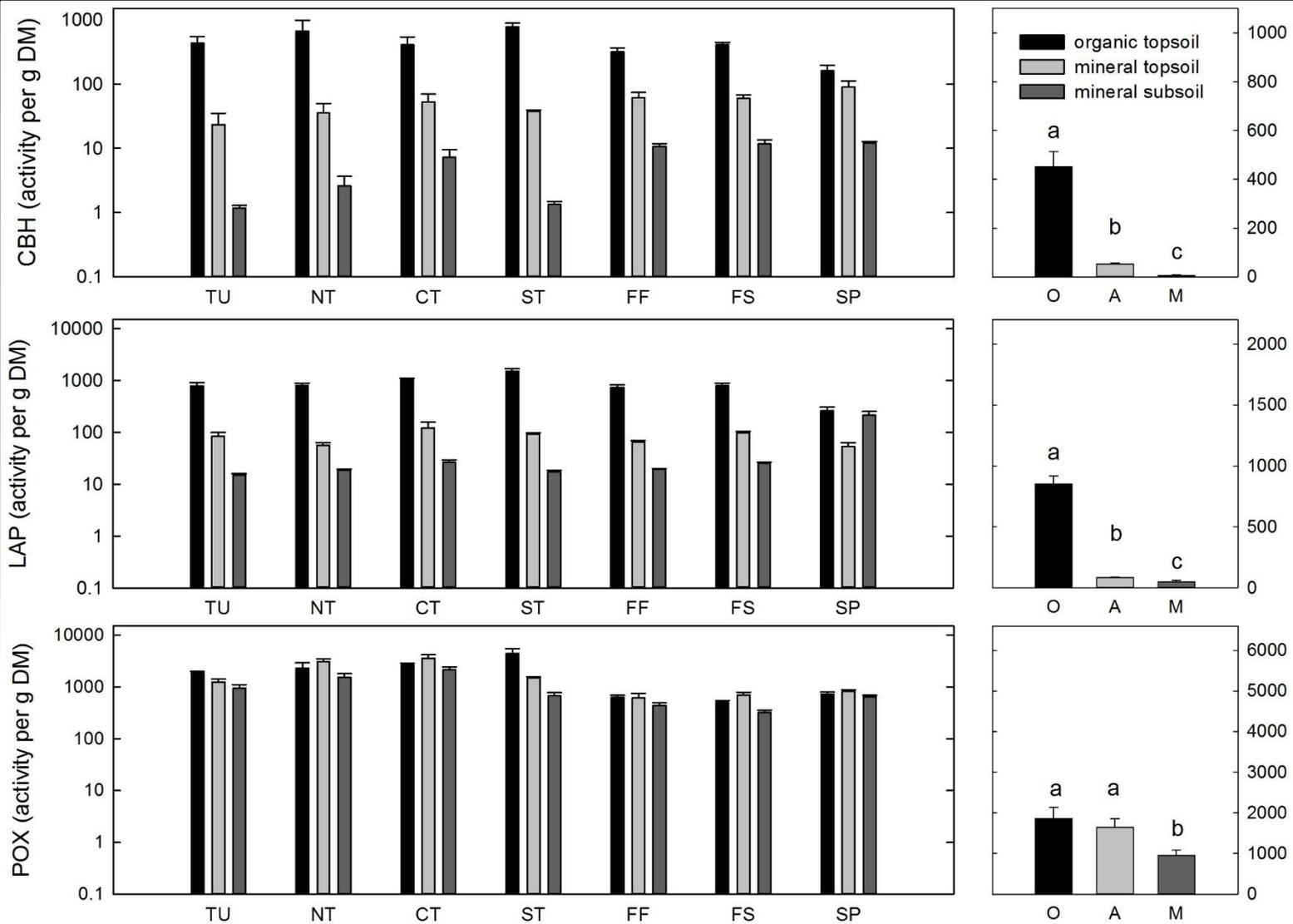


Enzyme activities per g dry soil



Enzyme activities per g dry soil

C

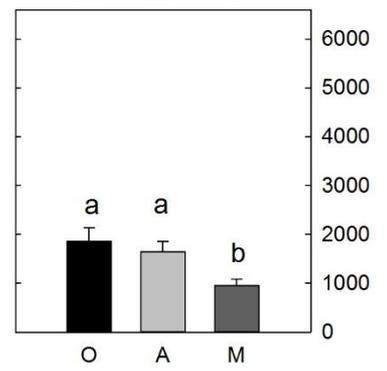
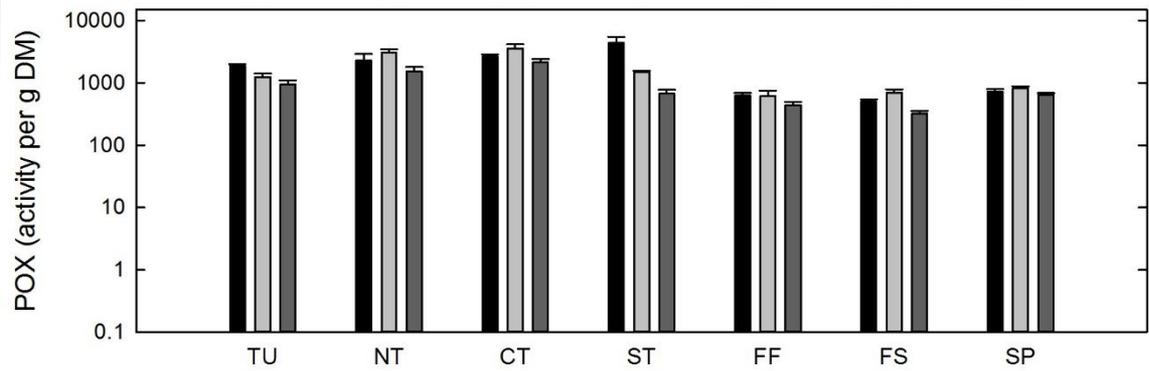
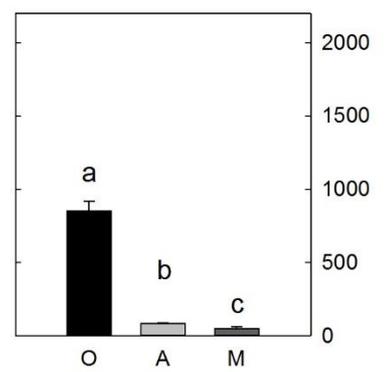
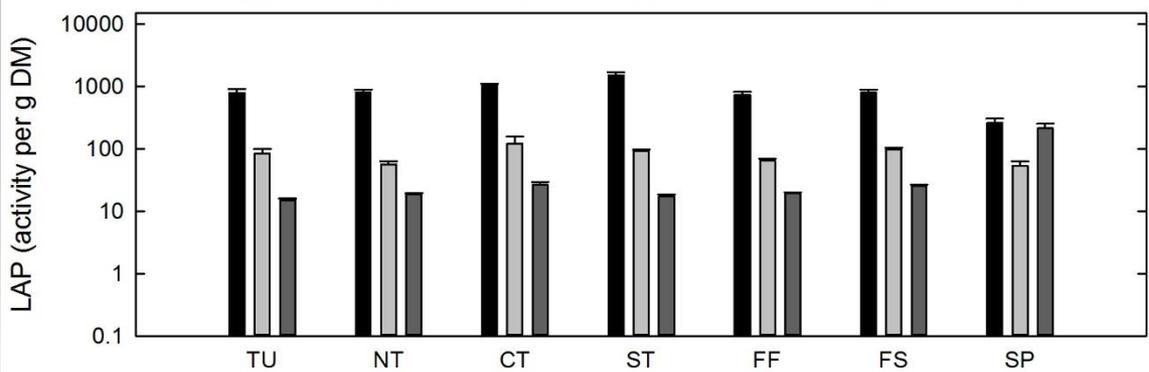
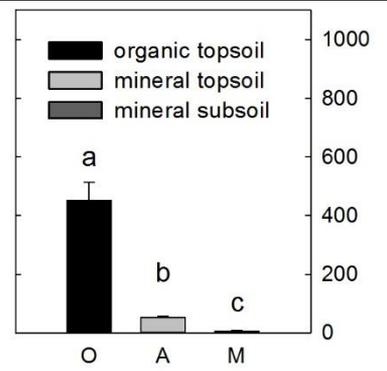
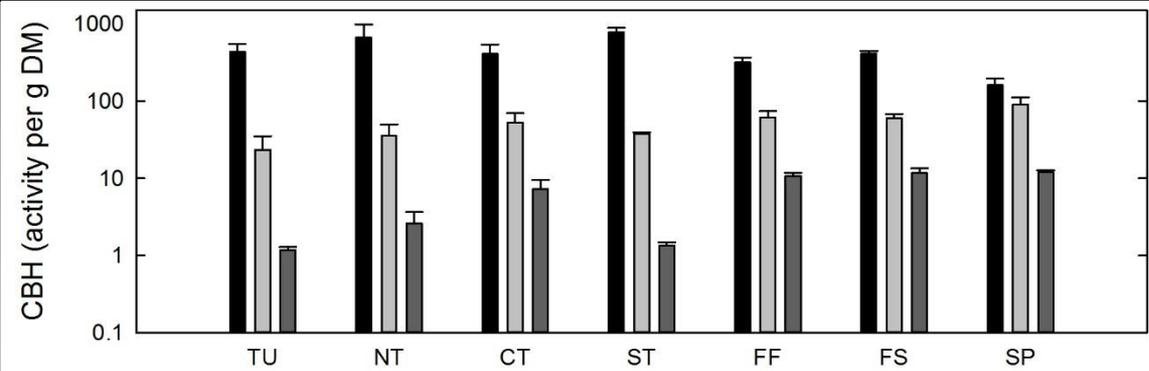




Enzyme activities per g dry soil

C

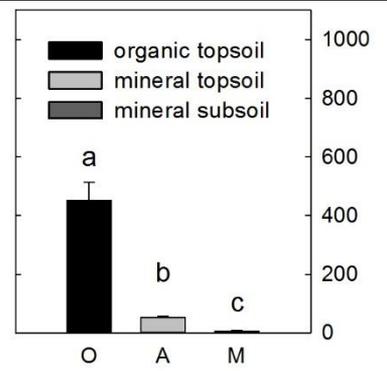
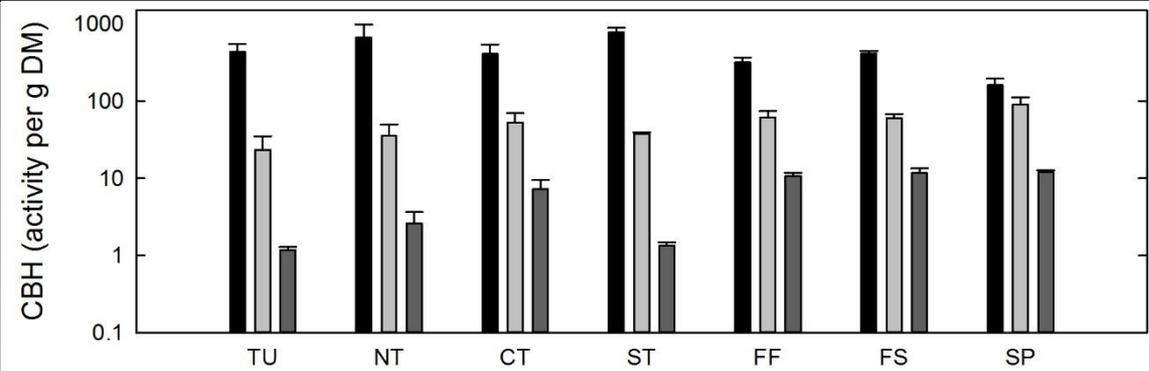
N



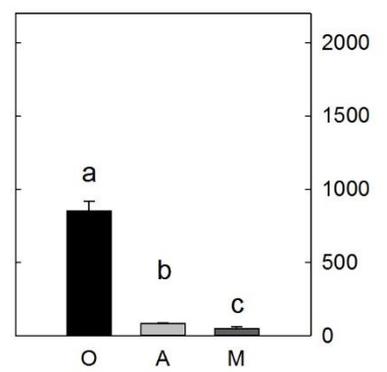
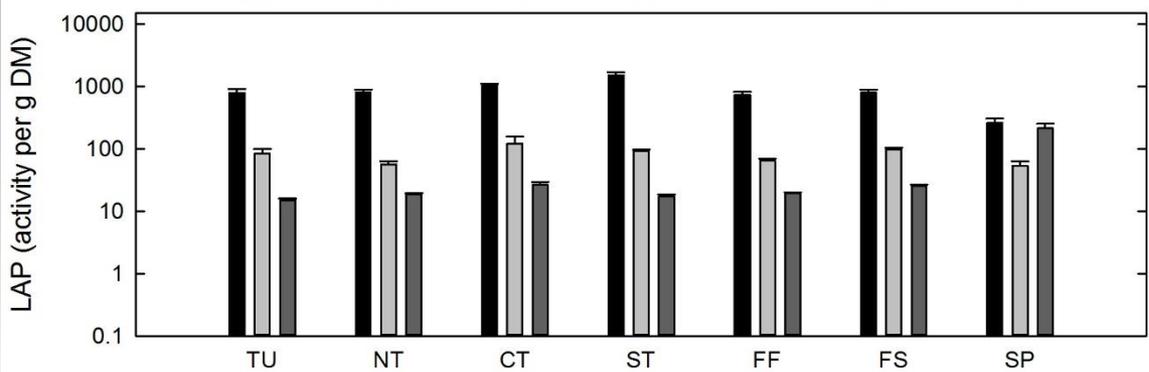


Enzyme activities per g dry soil

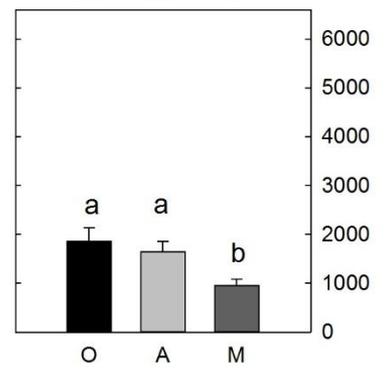
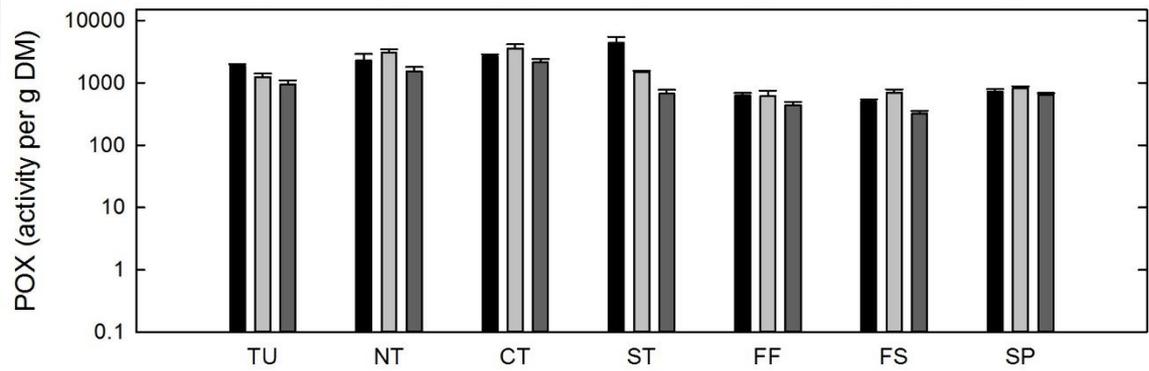
C



N



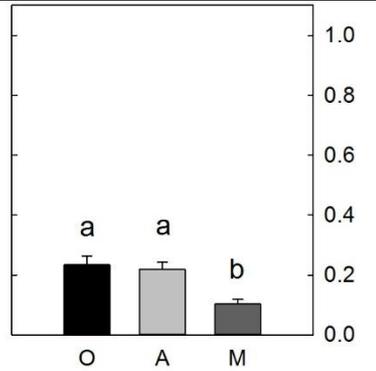
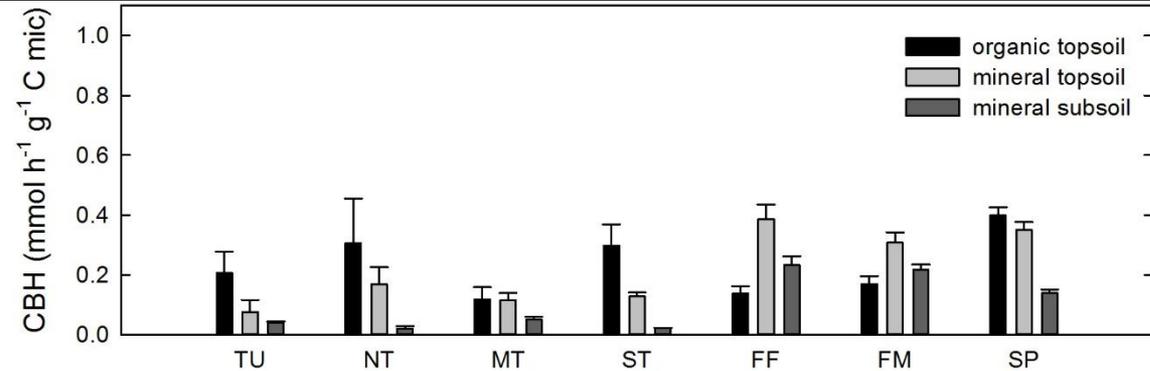
Ox



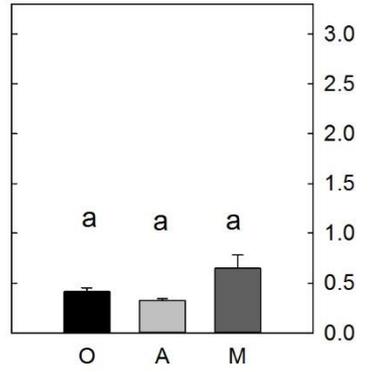
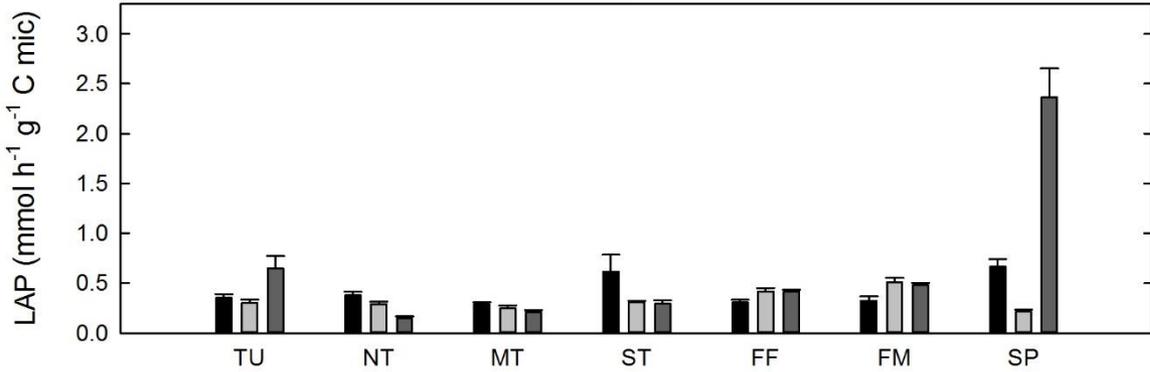


Enzyme activities per g mic C

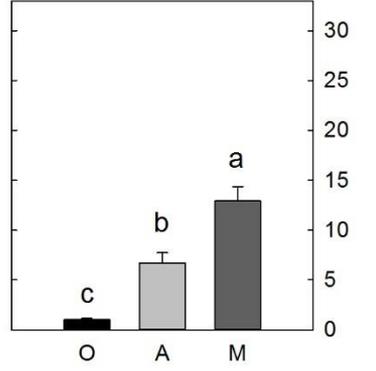
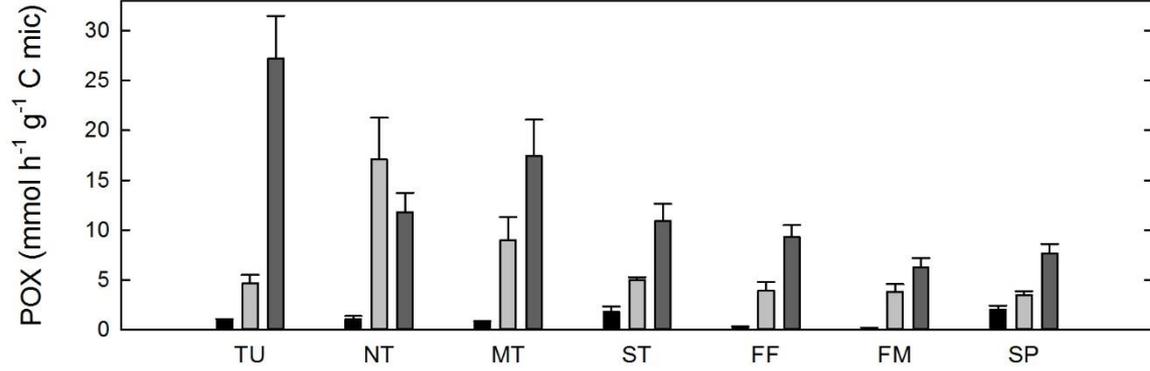
C



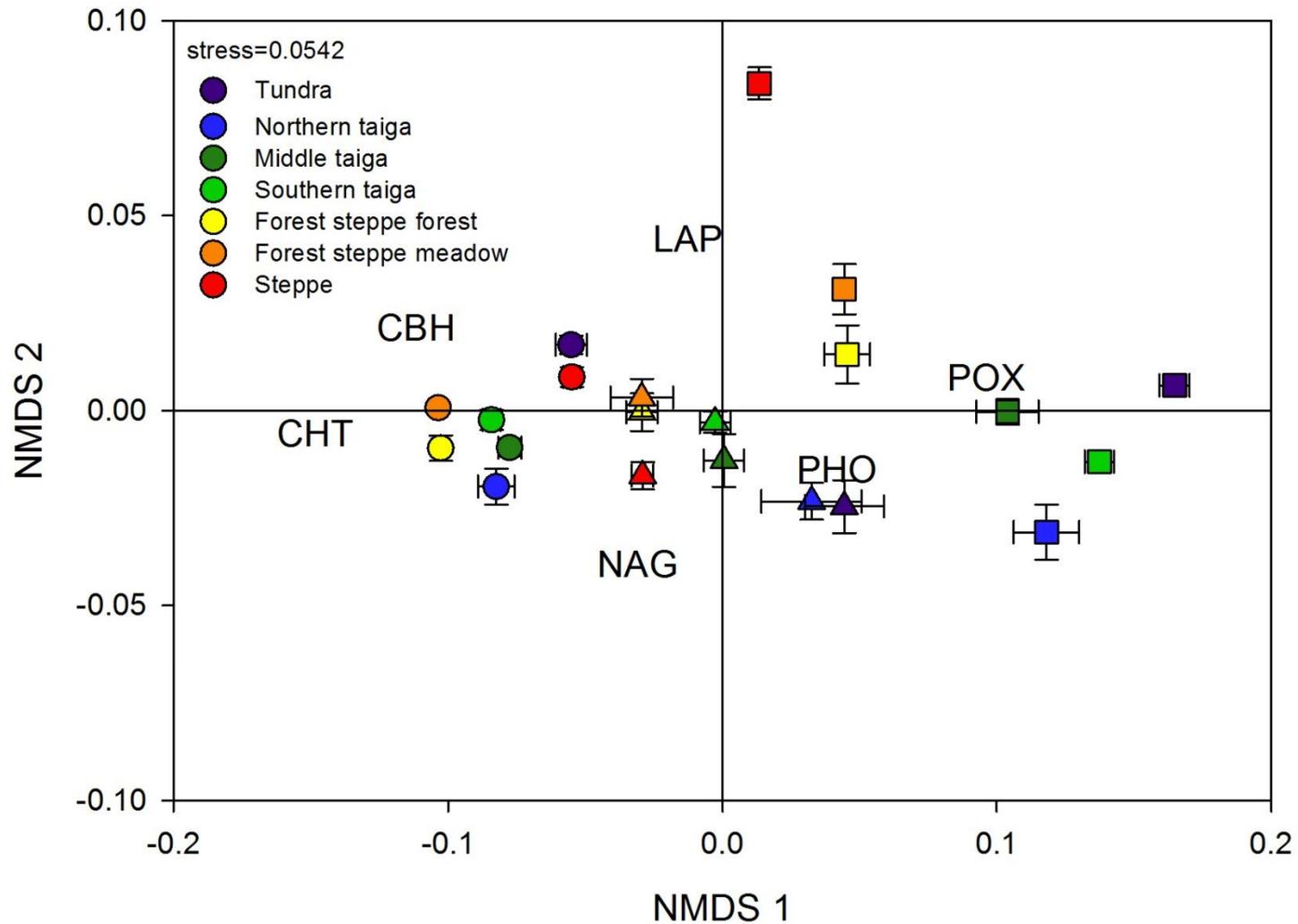
N



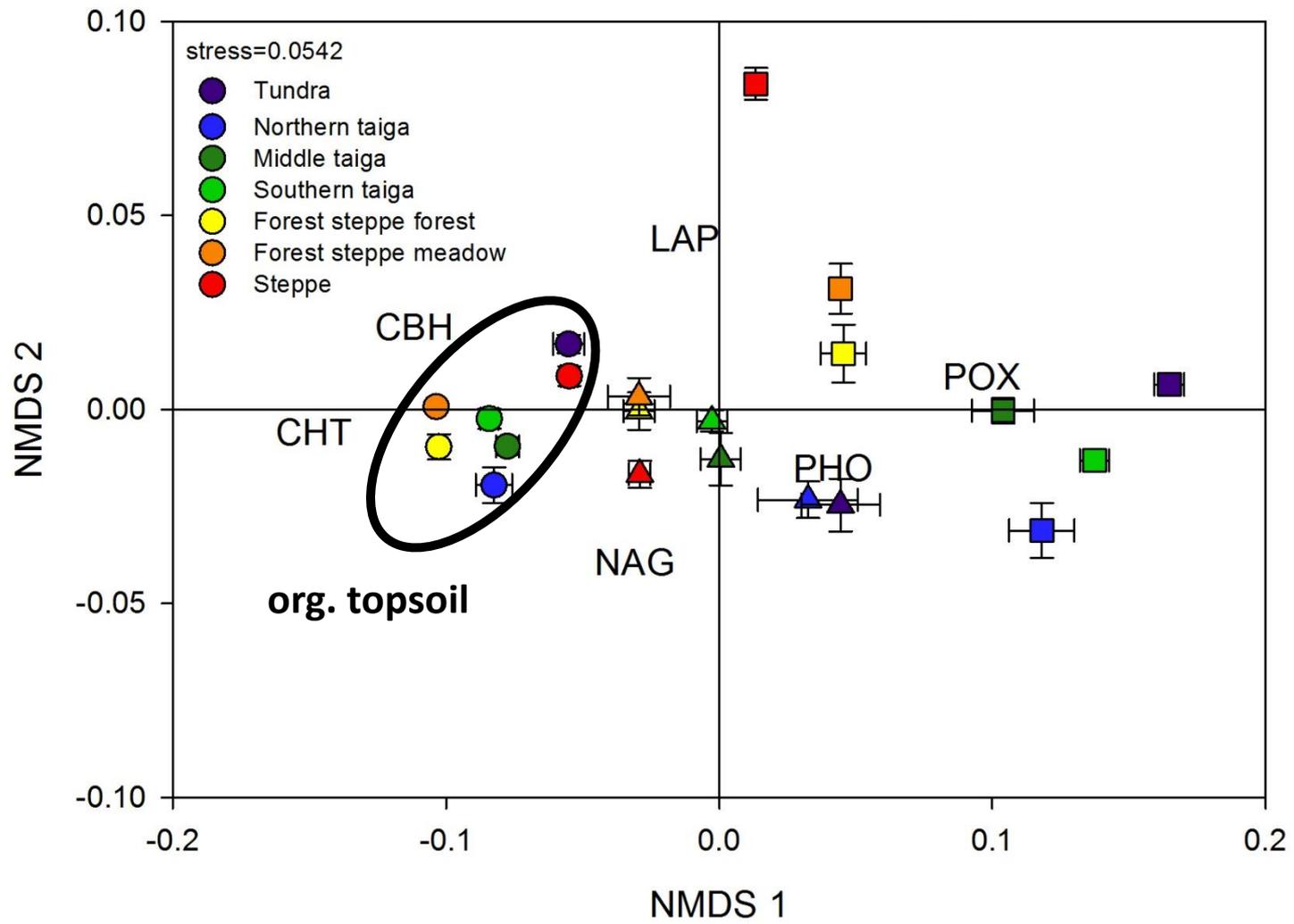
Ox



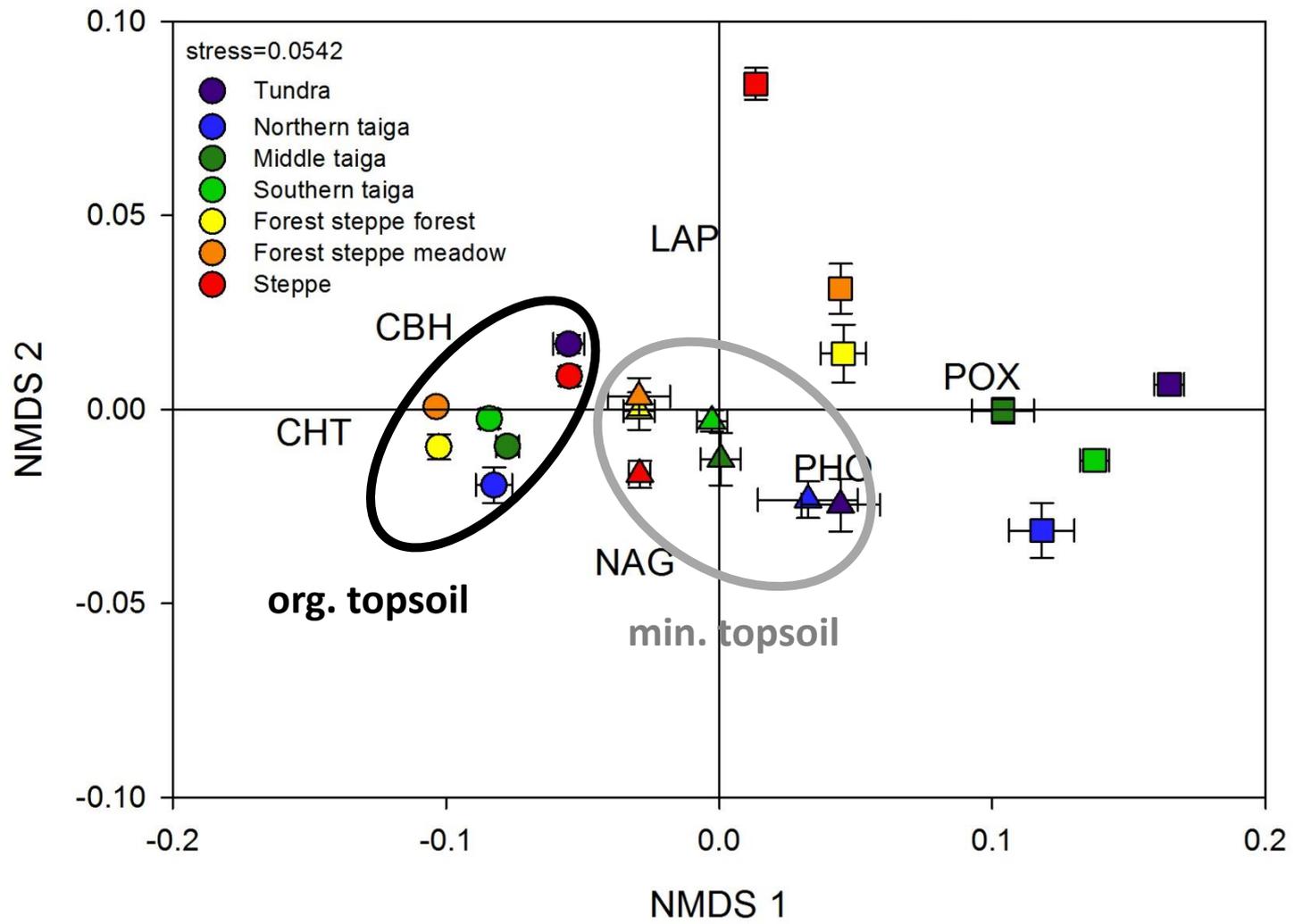
Enzyme patterns



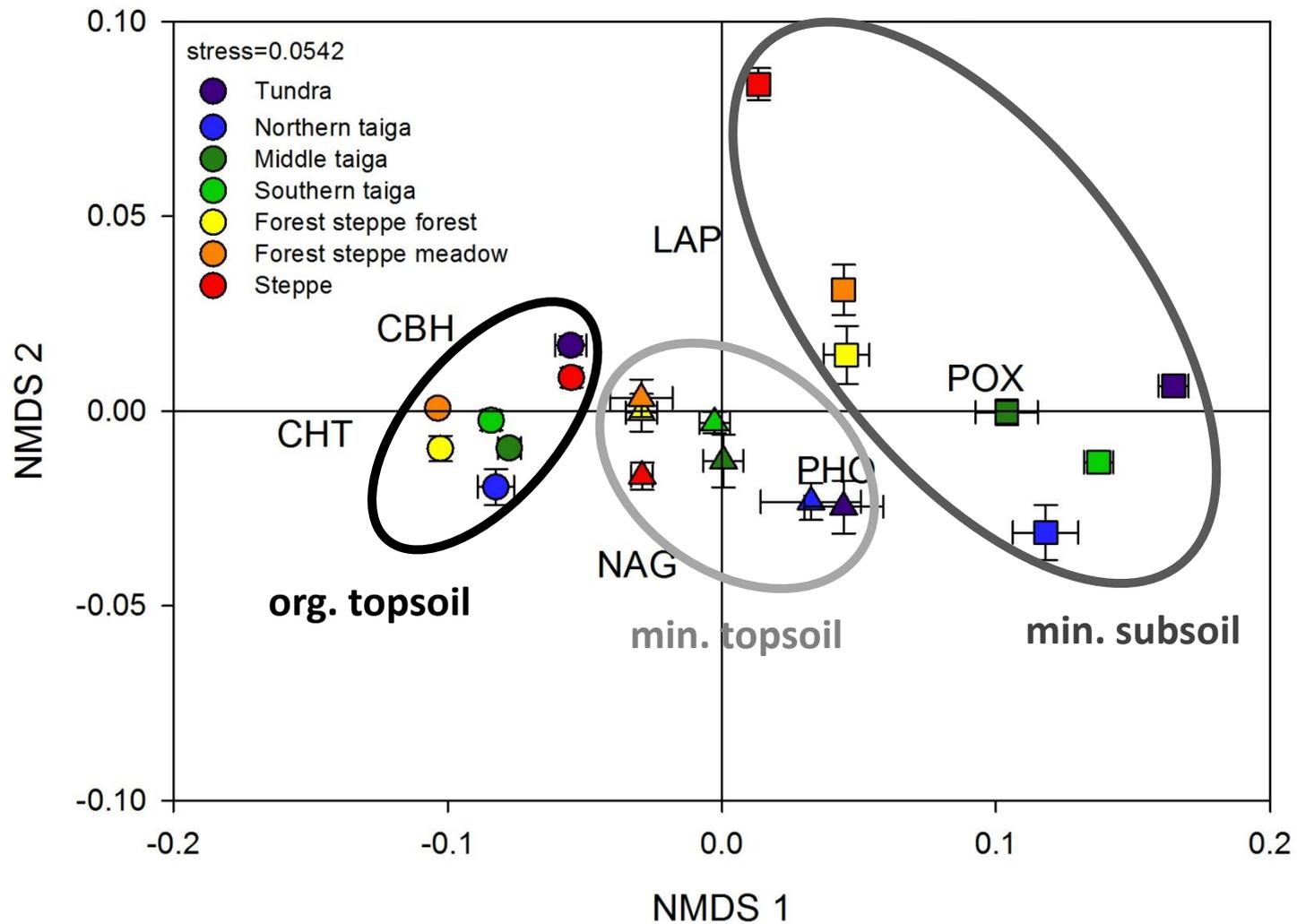
Enzyme patterns



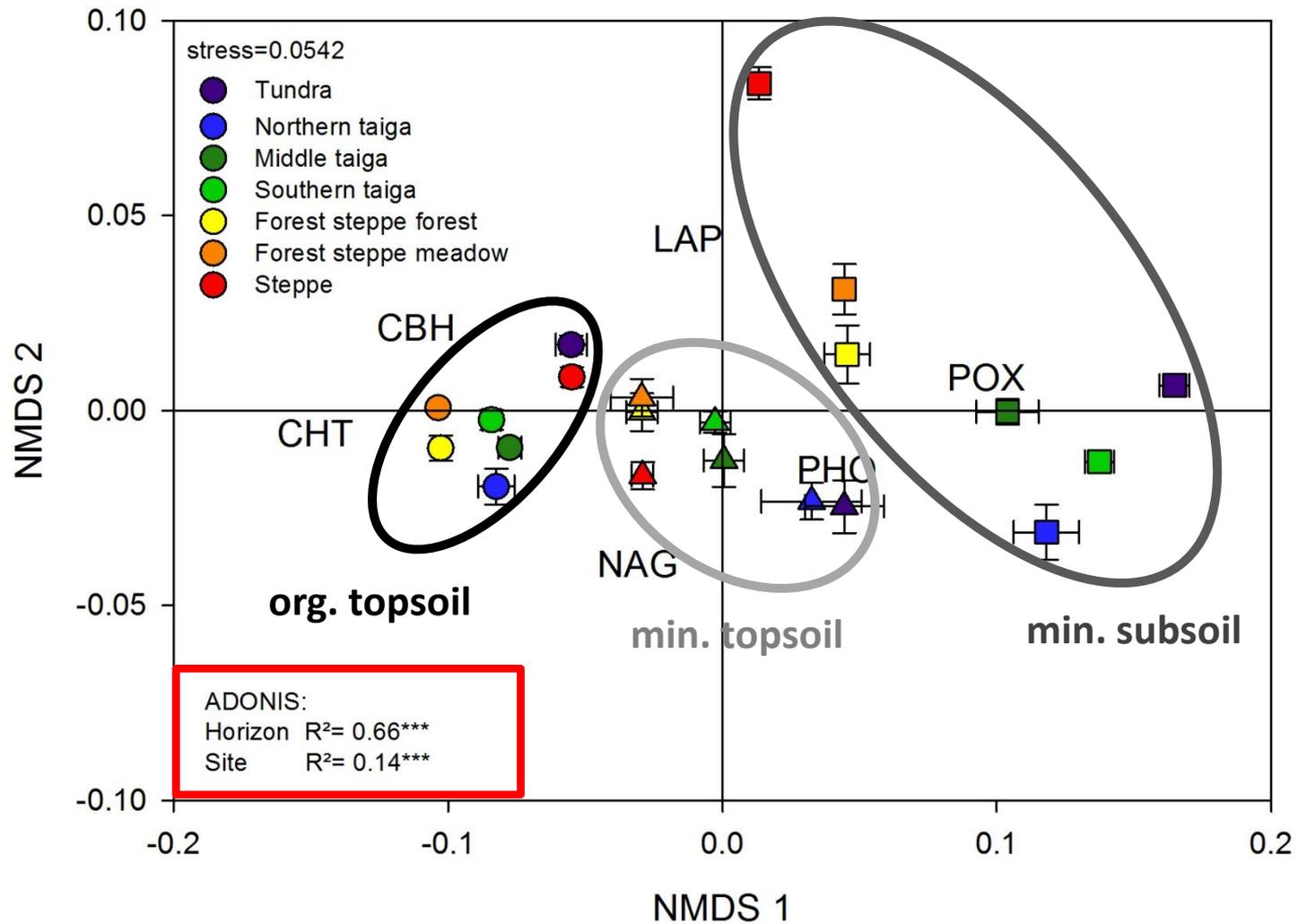
Enzyme patterns



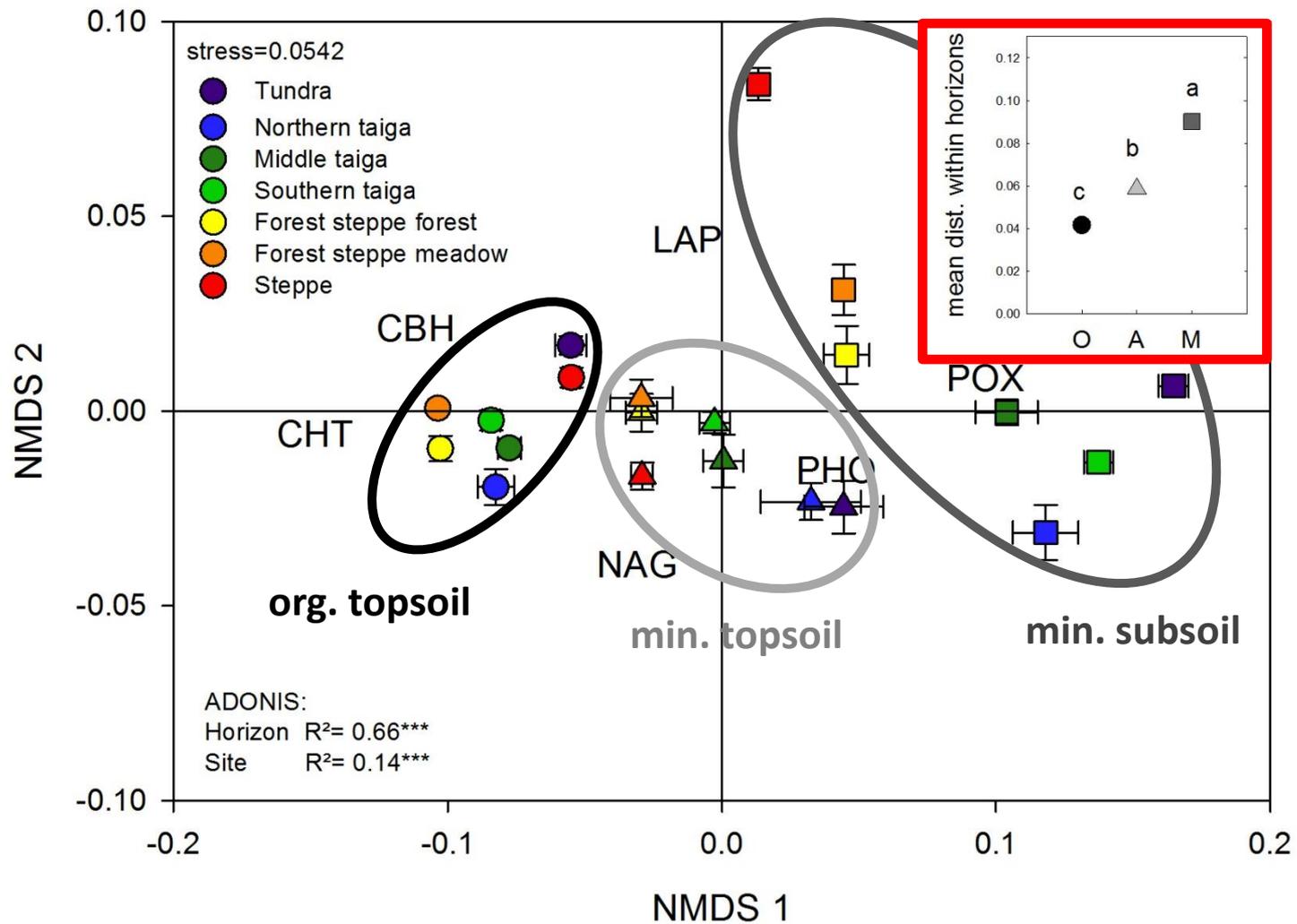
Enzyme patterns



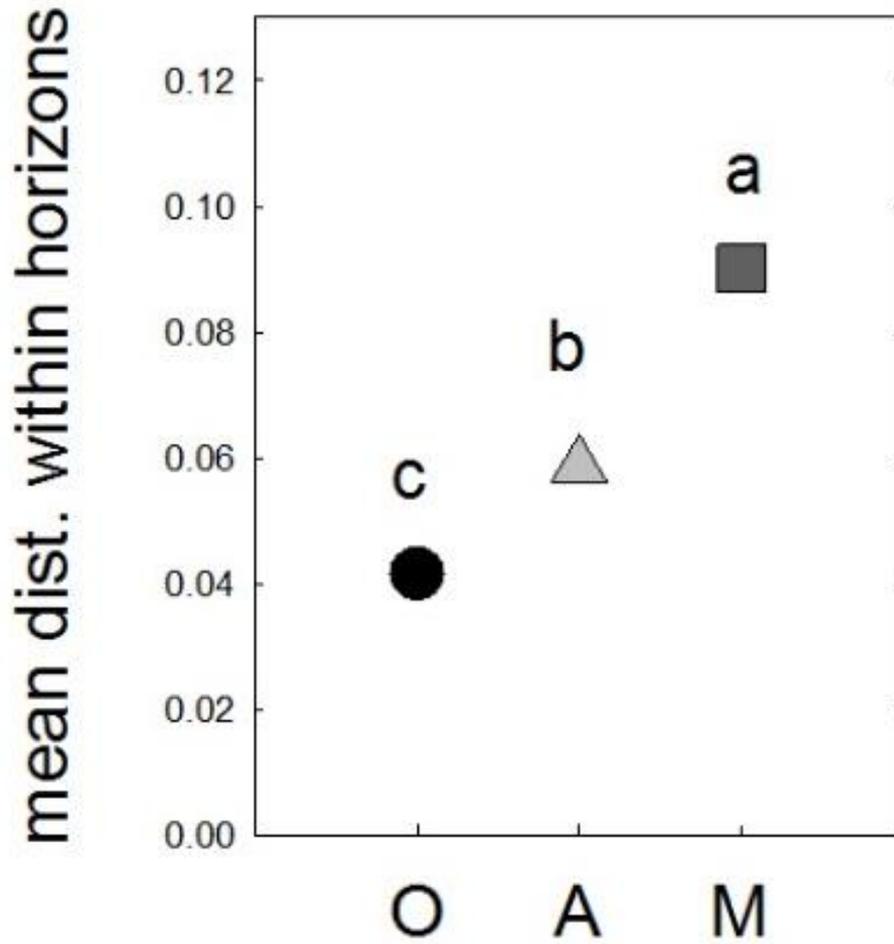
Enzyme patterns



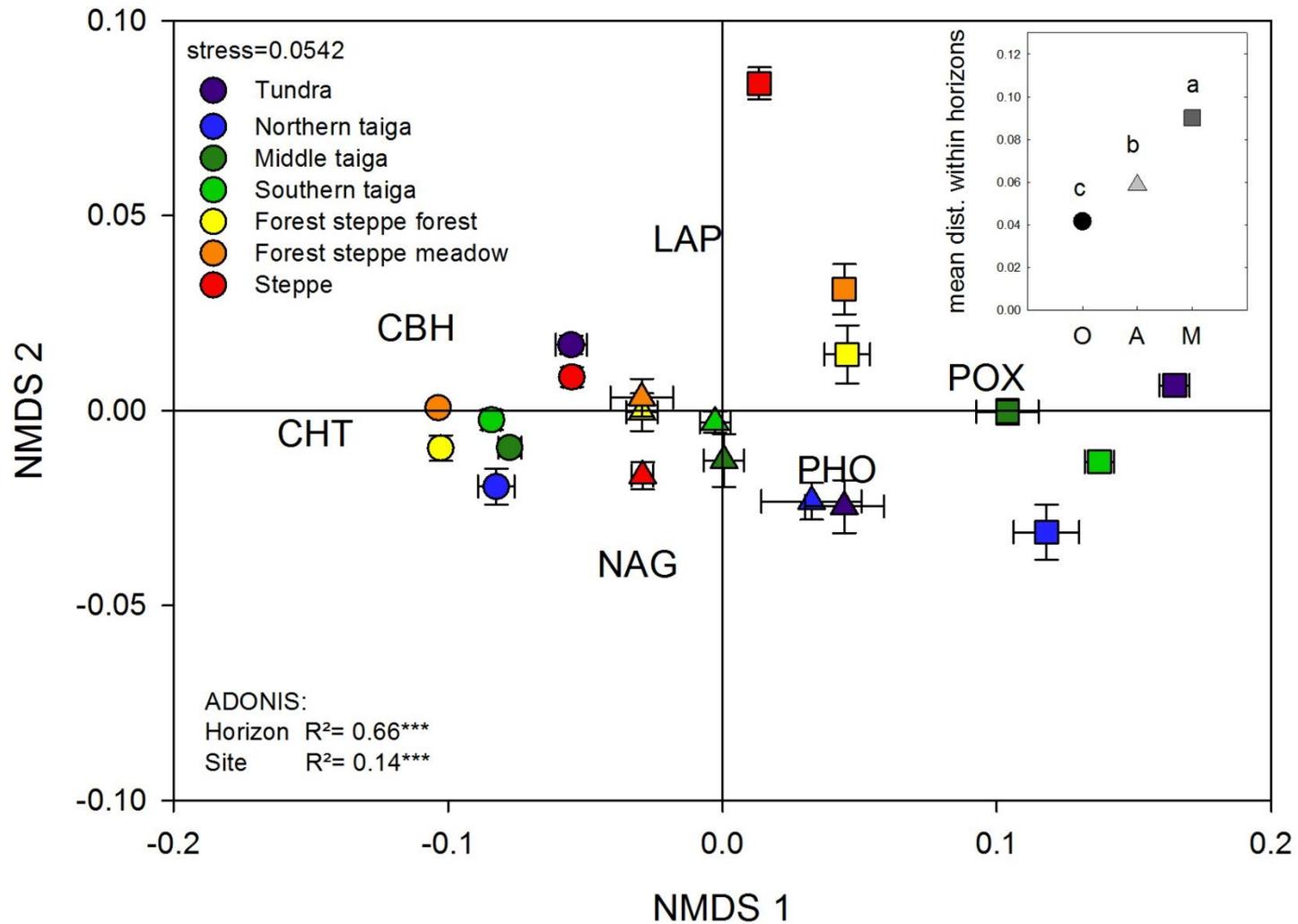
Enzyme patterns



Enzyme patterns



Enzyme patterns





Mantel tests

soil C

soil N

soil CN

microbial C

microbial N

microbial CN

pH

mic. comm. comp.

fungi:bacteria



Mantel tests

	organic topsoil
soil C	0.06
soil N	0.22
soil CN	0.05
microbial C	
microbial N	0.03
microbial CN	
pH	0.02
mic. comm. comp.	0.16
fungi:bacteria	0.10



Mantel tests

	organic topsoil	mineral topsoil
soil C	0.06	
soil N	0.22	
soil CN	0.05	0.04
microbial C		
microbial N	0.03	
microbial CN		0.05
pH	0.02	0.03
mic. comm. comp.	0.16	0.04
fungi:bacteria	0.10	



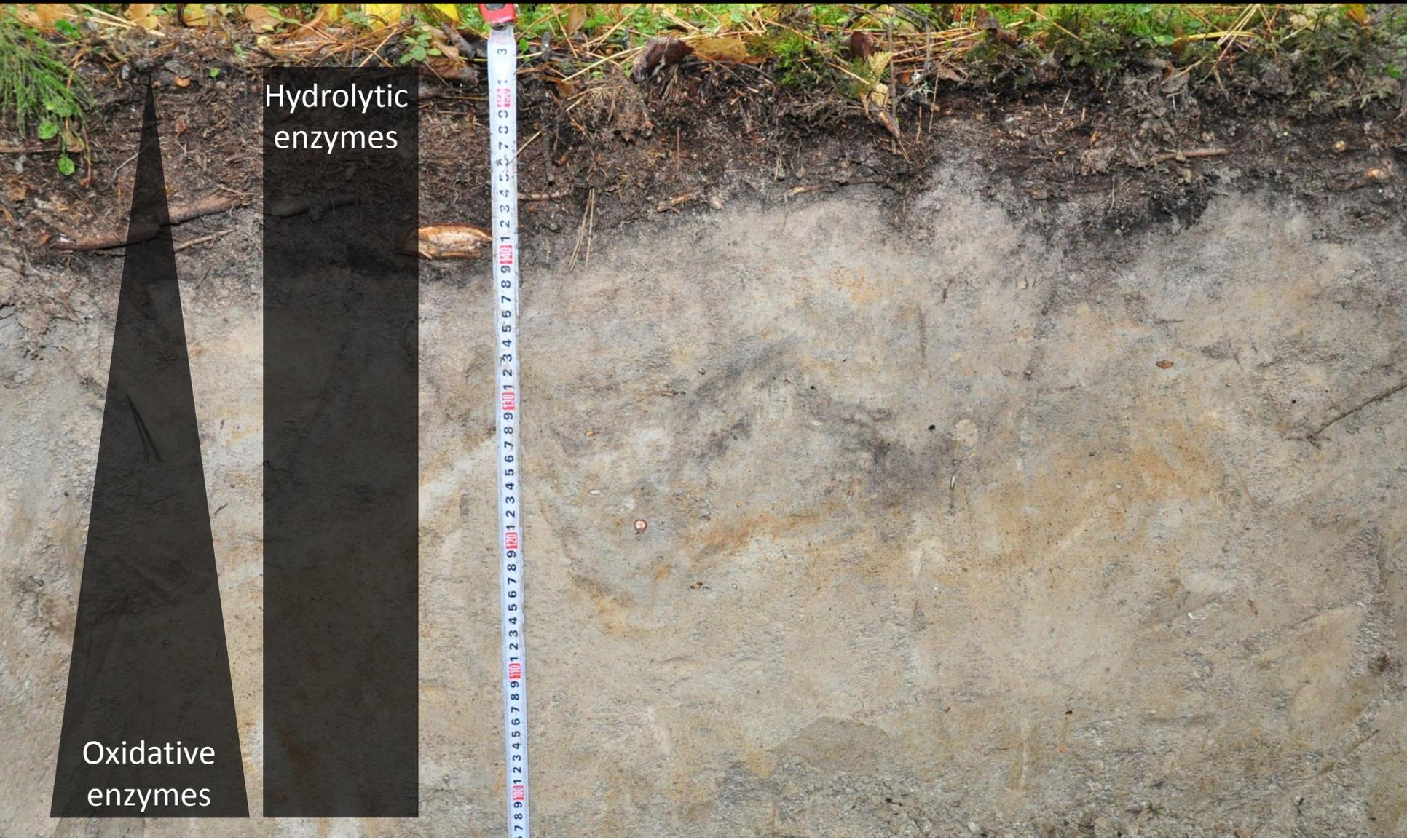
Mantel tests

	organic topsoil	mineral topsoil	mineral subsoil
soil C	0.06		
soil N	0.22		
soil CN	0.05	0.04	
microbial C			
microbial N	0.03		0.02
microbial CN		0.05	
pH	0.02	0.03	0.29
mic. comm. comp.	0.16	0.04	0.17
fungi:bacteria	0.10		0.24

Mantel tests

	organic topsoil	mineral topsoil	mineral subsoil
soil C	0.06		
soil N	0.22		
soil CN	0.05	0.04	
microbial C			
microbial N	0.03		0.02
microbial CN		0.05	
pH	0.02	0.03	0.29
mic. comm. comp.	0.16	0.04	0.17
fungi:bacteria	0.10		0.24

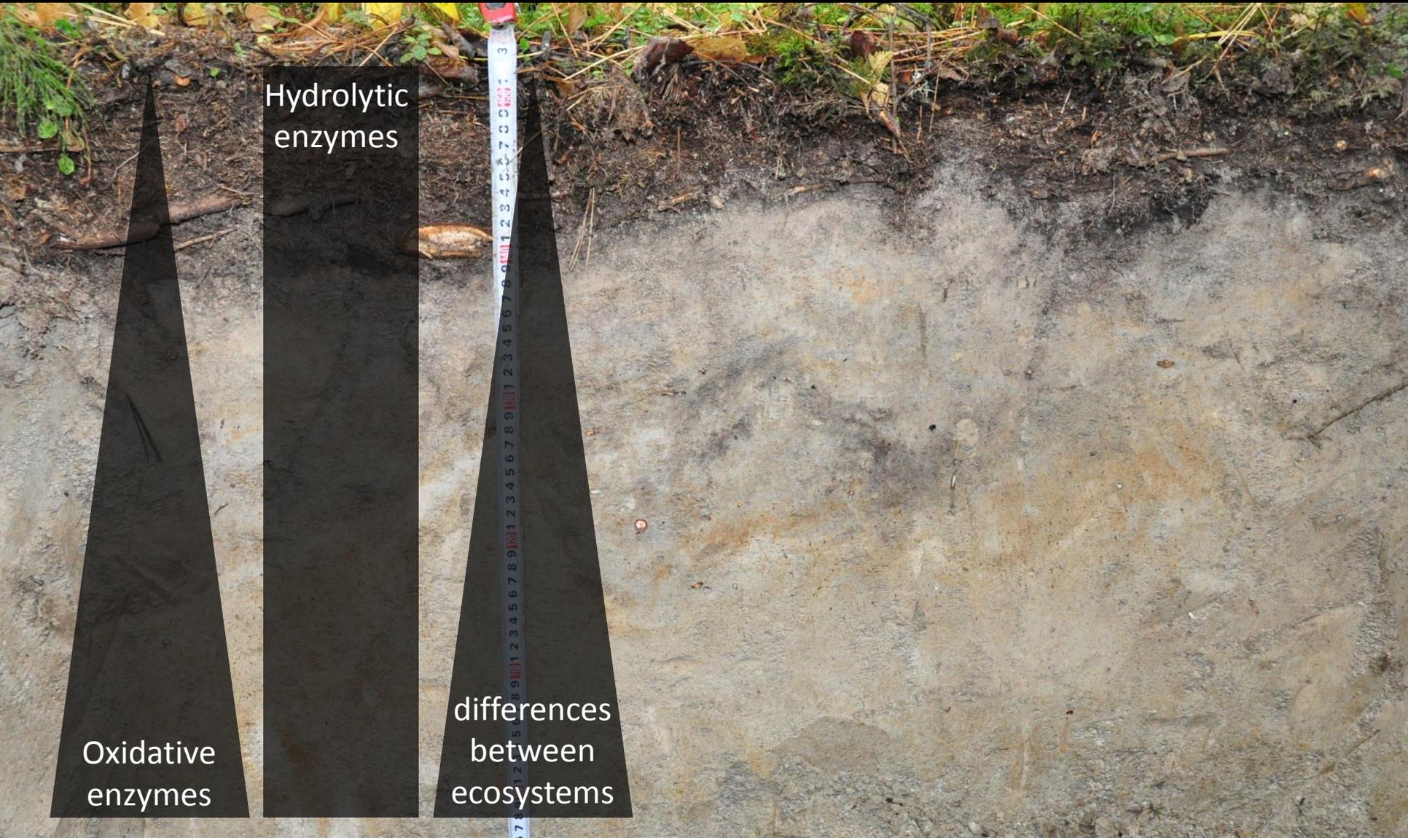
Summary



Hydrolytic
enzymes

Oxidative
enzymes

Summary

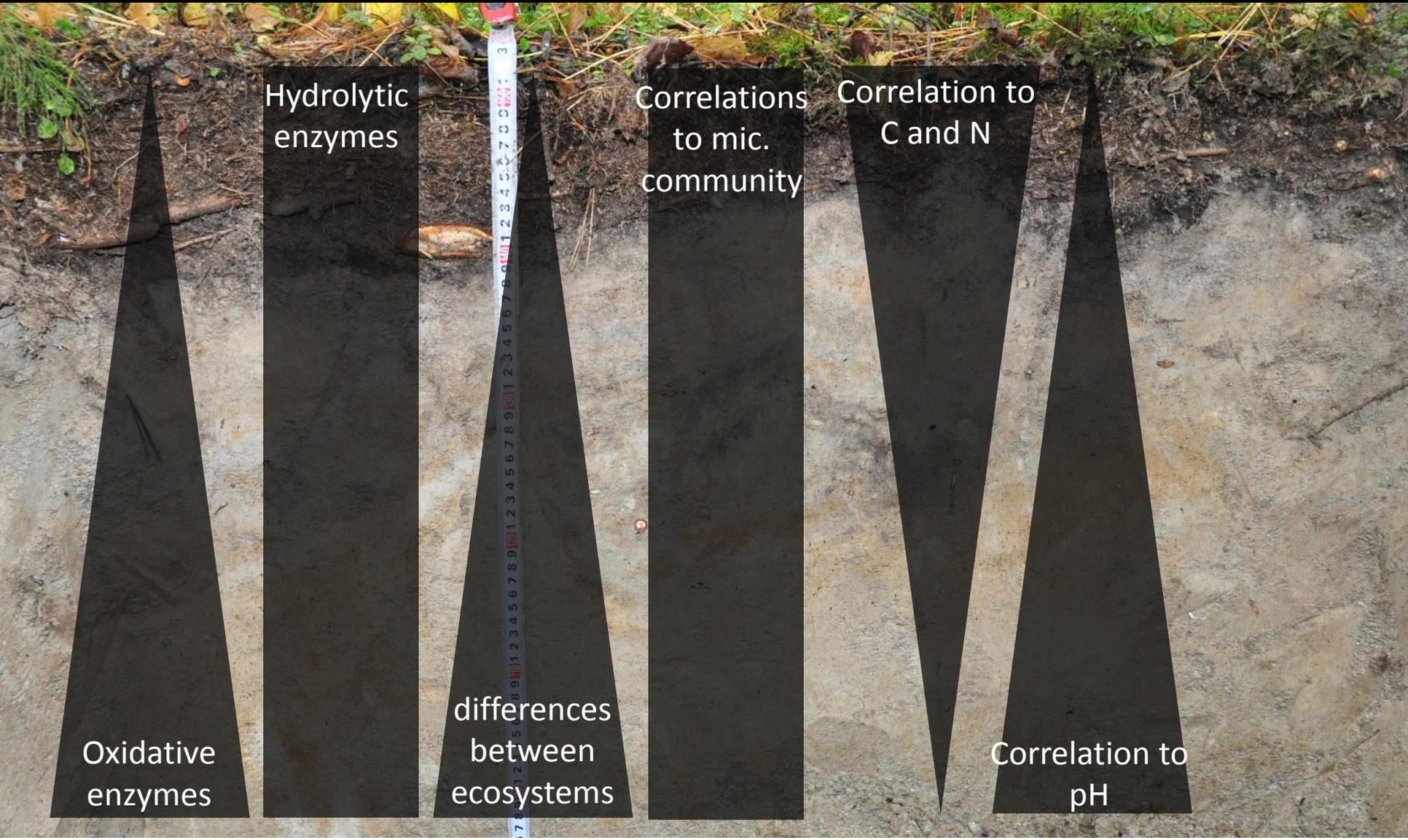


Hydrolytic
enzymes

Oxidative
enzymes

differences
between
ecosystems

Summary



Hydrolytic
enzymes

Correlations
to mic.
community

Correlation to
C and N

Oxidative
enzymes

differences
between
ecosystems

Correlation to
pH



Conclusions





Conclusions

Microbial community composition determines how soil organic matter is decomposed.



Conclusions

Microbial community composition determines how soil organic matter is decomposed.

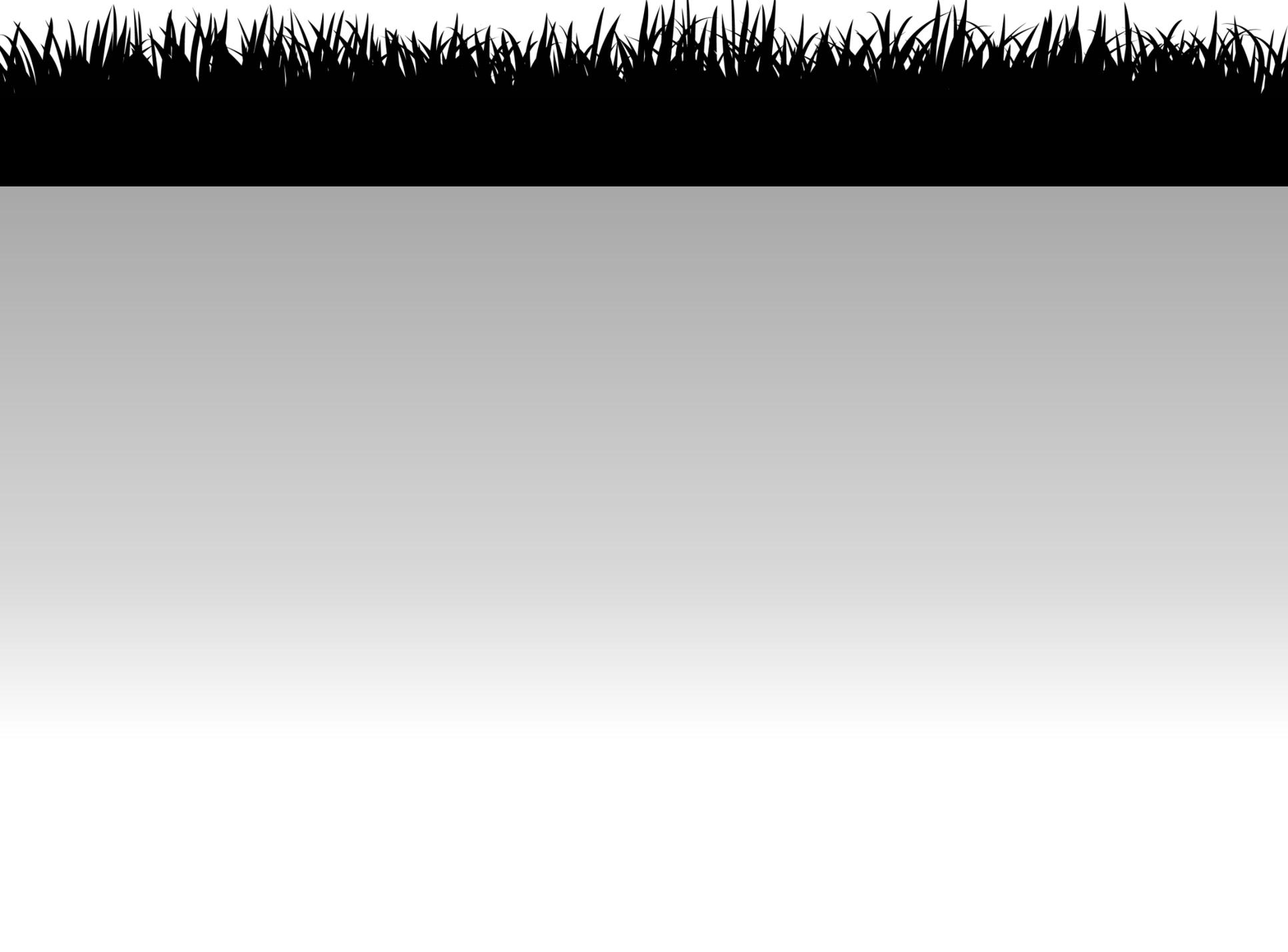
In mineral subsoils C and N are weak predictors for how soil organic matter is decomposed.



Microbial community composition determines
how soil organic matter is decomposed.

Thank you for your attention.

In mineral subsoils C and N are weak predictors for
how soil organic matter is decomposed.



Microbial community composition

