


Interaction between moose (*Alces alces*) and willows (*Salix phylicipholia*)

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Stohler et al. 2005, *Stohler's press*
Ecol. Manage.





The study area

Abisko,
Northern Lapland,
Sweden,
68°21'N, 18°49'O










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Food composition of moose in winter in relation to primary and secondary components of *Salix phylicifolia*



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Chemical characteristics

Investigation of willows with different browsing degree.

Investigation of differences in the content of

a) primary plant compounds

- nitrogen
- fibre (ADF, NDF)

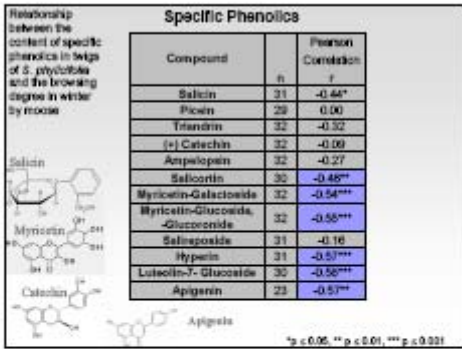
b) secondary plant compounds

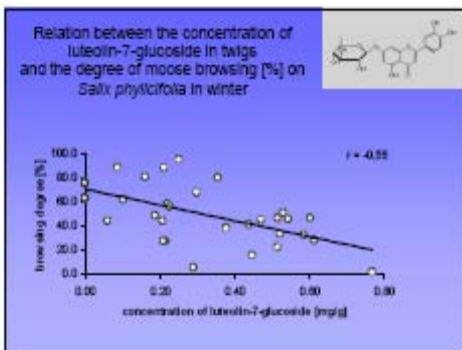
- condensed tannins
- phenolics

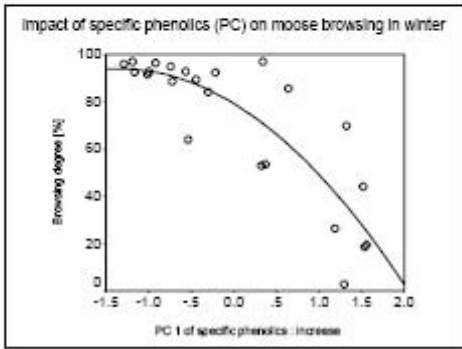
Relationship between plant compounds in willow twigs in winter and the degree of moose browsing

Compound	n	Pearson-Correlation r	GLM	
			plot F	browsing F
Nitrogen	28	0.05	18.74***	0.43
Total phenolics	35	-0.53**	8.29***	4.12*

*p < 0.05, **p < 0.01, ***p < 0.001







Results: Food Selection on Twigs in Winter

Nitrogen not important
Phenolics explain 47% of the variability in food selection.



Response of *Salix phylicifolia* to moose browsing



Relationship between moose browsing in winter and changes in the concentrations of primary compounds in willow twigs between sampling 1 and 2

A. Primary compounds

Compound	n	Pearson-Correlation r	GLM	
			plot F	browsing F
Nitrogen	23	0.19	3.32	0.44
ADF	39	0.06	2.89*	0.40
NDF	37	-0.13	1.76	0.35

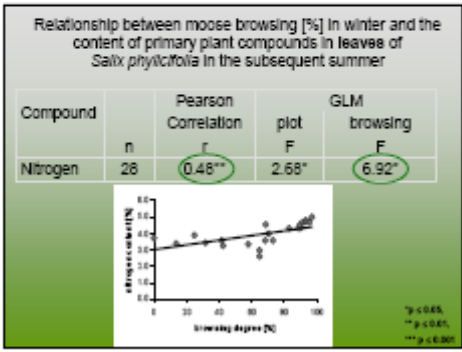
*p < 0.05, **p < 0.01, ***p < 0.001

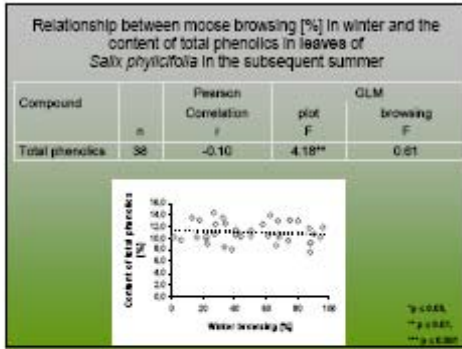
Relationship between moose browsing in winter and changes in the content of secondary compounds in willow twigs between sampling 1 and 2

B. Pooled secondary compounds

Compound	n	Pearson-Correlation	GLM	
		r	plot F	browsing F
Condensed tannins	33	-0.04	1.04	0.01
Total phenolics	36	0.38*	2.60	6.05*







Plant response of *Salix phylicifolia* to moose browsing

Twigs
No changes in concentration of primary plant compounds.
Significant increase in total phenolics after browsing

→ Induced defence

Plant response of *Salix phylicifolia* to moose browsing

Leaves
Significant increase in nitrogen in relation to browsing.
No significant relation between total phenolics in leaves and the degree of browsing

→ No defensive response
→ Compensation growth ("outgrow the moose")

