Resource allocation in two selected *Carex* species along climate gradients

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Master of Science in Biology - Biodiversity, Evolution and Ecology

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Carex capillaris, Gudmesdalen July 2009

Carex pallescens, Veskre August 2009

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Abstract

Climate will change and is already changing and all organisms are going to react to it, as it is a limiting factor to their lives. To be able to have an idea how plants might respond to climate change, it is important to understand how they respond to current climate. Patterns of growth, allocation and germination in correlation with temperature and precipitation were investigated in a species pair of *Carex* along a climate gradient in western Noway. The aim was to find similarities and differences in growth patterns and allocation strategies between an alpine specialist, *C. capillaris* and a lowland generalist, *C. pallescens*, species. The species were collected as a whole (above ground parts and root system) at eight different sites within the climate grid, plant parts were subsequently measured and weighed. Seeds were counted, weighed and, from *C. pallescens*, used further in a germination experiment. The two species reacted very differently to climatic variables in respect of growth. While *C. pallescens* showed a strong positive response to higher temperature in several growth traits, *C. capillaris* was not found to show any significant reaction to temperature. The increase of precipitation provoked negative reactions in both species, in the case of *C. capillaris* concerning plant size as leaves grow shorter, in *C. pallescens* concerning lower seed production. Neither with temperature nor precipitation specific allocation patterns became evident for either of the species. Germination of seeds of *C. pallescens* from sites with different climate showed strong differences in percentage and patterns. Precipitation has an overall negative effect on germination, whereas temperature has a positive effect on germination percentage and makes seeds germinate faster, but slow down after a while. Increasing seed mass also has a positive effect on germination, but precipitation together with seed mass still shows a negative germination effect. In the context of climate change this might lead to a disadvantage in competition for *C. capillaris*, as bigger growing plants might outcompete a smaller species. For *C. pallescens* an overall negative reaction in reproductive traits to higher precipitation may be the effect that could lead to an overall diminished success in wetter areas.

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1. Introduction

Climatic trends and the distribution of species are strongly connected, partly through species' tolerance of climatic factors such as temperature and precipitation, but also through other factors. Climate affects development and phenology of species directly, but it also affects the interactions and dynamics of communities (Walther, G.-R. et al. 2002). Growth, reproduction and other life processes of individual plants are influenced by climatic factors such as light, temperature and moisture along with soil conditions and other organisms (Moen, A., Lillethun, A., & Odland, A. 1999). All together the distribution of vegetation types, communities and species are determined by the environmental conditions which fit the species' requirements best (Larcher, W. 2001). And as plants, unlike animals, cannot move they have to endure the local weather conditions throughout the year and their life span (Körner, C. 2003).

Over the last century the global average air temperature has increased by approximately 0.6°C (Walther, G.-R. et al. 2002) and for the next two decades a warming of about 0.2°C per decade can be expected (IPCC AR4 2007). Towards higher latitudes the temperature increase is predicted to be more extreme (IPCC AR4 2007) and its effects also seem to be proportionally greater (Roots, E.F. 1989).

While much of the climate change research in northern areas has focused on temperature, precipitation has also increased significantly over the course of a century in several parts of the world, including northern Europe, whereas it decreased in other areas (IPCC AR4 2007). Within a decade the increase was as much as 0.5-1%; in the mid and high northern latitudes mainly as autumn and winter precipitation (Walther, G.-R. et al. 2002).

Within the global macroclimate exist independent local climates depending on differences in, for instance, landscape and geomorphology, and within those, on an even smaller scale, the micro- or bioclimate the plant experiences (Larcher, W. 2001). Individual plants and populations therefore do not actually react to the global climate or changes of it, but rather to regional climate or local variances (Walther, G.-R. et al. 2002).

For Norway in particular climatic warming is predicted to be relatively high towards the northern and continental areas and be less pronounced along the coast. The precipitation is expected to increase in oceanic regions, mainly through autumn precipitation (Hanssen-Bauer, I. et al. 2003).

As a reaction to the changing climate species of plants might shift their ranges further polewards or to higher altitudes, time spring events such as shooting and flowering earlier, or experience a growing season that is extended by several days (IPCC AR4 2007; Walther, G.-R. et al. 2002). Similarly with increasing precipitation, species may be expected to shift their ranges towards relatively more continental regions.

Plants at high latitude and also at high altitudes are specialized to cope with the environmental conditions present (Roots, E.F. 1989). Even though change is an important characteristic of alpine ecosystems, a general warming and associated changes in precipitation and therefore snow cover will have influence on vegetation there (Körner, C. 2003). For those reasons mountain regions are considered to be one of the systems especially affected by climate change (IPCC AR4 2007).

The response of individual plants to climate change depends on inherent physiological behaviour, reproductive structures and leaf morphology. These characteristics vary strongly among species but are often relatively similar within functional groups; therefore responses can be expected to be relatively similar in these groups as well (Arft, A.M. et al. 1999). Plants with a more pronounced functional flexibility and genetic plasticity are more likely to persist at a site than species without these characteristics (Larcher, W. 2001).

Each plant can allocate resources either to vegetative growth or to sexual reproduction (Stenström, A. & Jonsdottir, I.S. 1997). This biomass allocation has been reported to vary with environmental conditions and growth; and reproductive success and survival depend on this variation (Fan, J.W. et al. 2009). Investigating the variation of allocation of resources through the measurement of different plant traits can give valuable information on plants' reaction to climate and, as a consequence, on their probable performance under climate change.

There are few studies that try to link biomass allocation to climate variables, and further information is needed to better understand how one affects the other in order to understand how ecosystems might be able to adapt to a changing climate (Fan, J.W. et al. 2009; Ursino, N. 2009).

In this study the aim is to investigate how climate affects growth, allocation and germination in a selected pair of one lowland generalist and one alpine specialist *Carex* species (see below for more detailed description).

More specifically the following questions were considered:

Questions/Aims

- do different climatic conditions lead to differences in growth?
- are those reactions similar or different in the two species (lowland – alpine)?
- are there differences in strategy within and among species?
    - growth vs. reproduction
    - sexual vs. vegetative reproduction
    - differences in germination

To address these questions two species of the genus *Carex* with two different specialisations, one alpine specialist and one lowland generalist, were chosen to assess patterns in growth and allocation in relation to climate. A climate grid, established in grassland ecosystems in western Noway, was used to sample populations of these species growing under different climates, specifically under different combinations of temperature and precipitation.

Plant individuals were sampled and measured, and measurements, weights and germination numbers obtained as well as additional data from other sources were analysed for relationships to climate variables and/or differences between the sites.

We expect the *Carex* species to show differences in growth, allocation and germination in reaction to different climate variables.

Heide, O.M. (2004) found a large variation in size and growth between plants from southern Norway and those from higher latitudes in a greenhouse experiment with *C. flava*. These different responses of genetically different populations from different latitudes would suggest that also populations from different altitudes could show differential adaptations leading to structural differences. The origin of this variation – plastic or genetic – would not be answered with the investigations from this study, however.

It might also be expected for the two species to react differently as a more climatically specialized species might be less flexible in its growth.

For plants growing under harsher climatic conditions it might be a disadvantage to have a high

degree of plasticity (Callaghan, T.V., Carlsson, B. Å., & Svensson, B.M. 1996). Finding differences in reaction would be very interesting as more specialized species might have low capacities to adapt and also to disperse, and under changing climate an asymmetry might occur, with species migrating faster from lower elevations or latitudes than the species present there are able to "flee" upward or toward higher latitudes (Walther, G.-R. et al. 2002).
One would also expect precipitation to have a unimodal effect on plant performance, as very low levels might lead to problems with drought, whereas higher levels might cause nutrient washout and/or problems with fungal attack, rot or anoxic conditions. Drought would typically be assumed to reduce above ground productivity, but if annual precipitation is very high (in this region above 1500-2000 mm) precipitation decrease might have a beneficial effect on productivity. In wet soils nutrient availability might be limited and partial pressure of oxygen is reduced making less oxygen available for respiration (Gilgen, A.K. & Buchmann, N. 2009).

Temperature is generally seen to be a positive factor for plant growth, but it might therefore also increase competitive interactions and lead to limitation by other resources (e.g. light). Stenström, A. & Jonsdottir, I.S. (1997) found a positive response to warming in many quantitative traits of *C. bigelowii* in an experimental study with generally taller plants and a greater reproductive effort, though it was not clear whether that affected vegetative growth negatively. Competition on the other hand leads to reduced plant growth regardless of what the plants are competing for (Cahill Jr., J.F. 2003).

Germination behaviour would also be expected to differ between seeds from different sites due to climatic differences. Generally germination biology can vary greatly between populations, sites and also years (Milberg, P., Andersson, L., & Noronha, A. 1996) and this variation in dormancy levels within the same species is often thought to represent adaptation to local climate or habitat specific factors (Schütz, W. & Milberg, P. 1997).

The genus *Carex*, a keystone grassland species, is a group that seems to have received little attention in studies on this topic or similar so far. In the area investigated several species of *Carex* are widely occurring and therefore allowed the choice of a species pair, a lowland generalist and an alpine specialist, with contrasting distributions, but otherwise similar ecological and biological characteristics. Two other such species pairs of *Veronica* and *Viola* have already been studied within the SeedClim project, a bigger and more extensive project this study is also part of. They could be proven to allocate resources to different life functions and show changes in growth as a reaction to climate variables. Within the specialisations similar reaction in allocation could be found as well (Bargmann, T. 2009).

This study, investigating growth, allocation and germination reactions of *Carex* will be used in combination with other SeedClim studies at the plant population and community levels to address questions of climate, and climate change effects, and how they scale across individual, population and community levels of organisation.

2. Materials and Methods

2.1 Description of the species

Depending on occurrence and abundance at the localities considered (see below) as well as their specific characteristics as one lowland/generalist and one alpine/specialist species, a species pair within the Genus *Carex* were selected for study (see also “SeedClim :: UiB”). The two species are *C. capillaris* as the alpine specialist and *C. pallescens* as the lowland generalist.

2.1.1 *Carex capillaris*

The hairlike sedge is a tussock forming, evergreen hemicryptophyte that grows on infertile soil in non-shaded conditions. It is native to Africa, North America, Asia and Europe with a northern European latitudinal limit of > 65°N and a southern European latitudinal limit < 45°N degrees. In Britain it grows at a minimum altitude of 243m and up to 1025m. The typical maximum height is 40cm and it usually flowers in July (Fitter, A.H. & Peat, H.J. 1994). According to “Gyldendals store nordiske flora” (Mossberg, B., Stenberg, L., & Ericsson, S. 1995) it typically is 5-25 cm in height, grows on moist hay meadows, leaves are light in colour and 1-2 mm broad, and it has 2-4 inflorescences with 5-10 flowers which are hanging on hair-fine stalks. It is defined as boreo-arctic montane (Fitter, A.H. & Peat, H.J. 1994) or arctic-alpine (http://www.floraweb.de/).

Figure 2.1.1: *Carex capillaris*, illustration taken from (Mossberg, B. et al. 1995)

2.1.2 *Carex pallescens*

The pale sedge is also a tussock forming, evergreen hemicryptophyte that grows on infertile soils. It is native to Europe, Africa and Asia (Fitter, A.H. & Peat, H. J. 1994) and also occurs in Siberia and America (http://www.floraweb.de/). It grows to a northern European latitudinal limit of > 65°N and a southern European latitudinal limit of either < 45°N or none/unknown, in Britain at a maximum altitude of 792 m a.s.l. and a minimum of 0 (Fitter, A.H. & Peat, H.J. 1994). While Fitter, A.H. & Peat, H.J. (1994) list a typical height between 20 and 60 cm and flowering from May to June, Mossberg, B. et al. (1995) in the "Northern Flora" name a height of 15-50 cm and flowering from June to July, so there seems to be a difference in depending on range position. Mossberg, B. et al. (1995) describe further that the pale sedge usually grows on humid soil, on meadows, close to brooks, on the fringe of forests and on waysides, that its leaves are 2-4 mm and hairy and that it has 2-3 female inflorescences. It is defined as boreo-temperate (Fitter, A.H. & Peat, H.J. 1994).

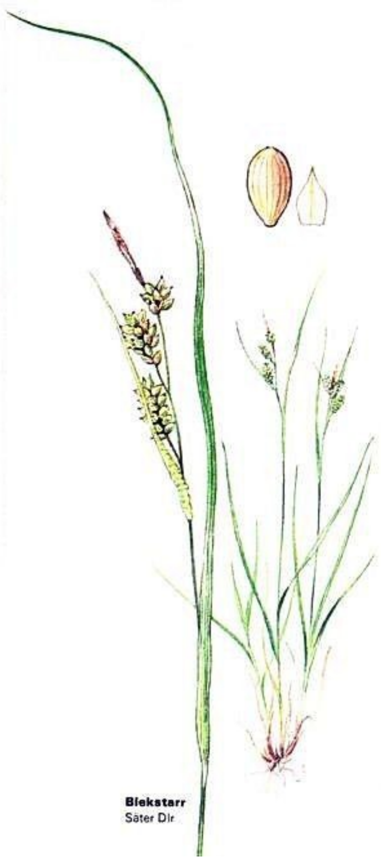

Figure 2.1.2: *Carex pallescens,* illustration taken from (Mossberg, B. et al. 1995)

Klimeš, L. et al. (1997) define both species as a "Festuca ovina" type regarding their clonal growth, which is described as graminoids forming turfs and having long-lived below-ground stems that originate above-ground and are later pulled into the soil because of the roots contracting. They have rhizomes as storage organs and spread usually rather slowly (only few cm/year).

2.2 Study sites and climate grid

The sites used for the study are the sites selected for SeedClim ("SeedClim :: UiB"), a project of the Ecological and Environmental Change Research Group in Bergen (EECRG), being situated in the areas south and east of the Sognefjord in western Norway (see fig. 2.2.2 and 2.2.3). In summer 2008 twelve sites were selected for their characteristics as low productive grasslands, ecologically comparable because of similarities in geology, land use and species diversity. They represent a climate grid using the climatic characteristics of western Norway. A strong gradient of precipitation from the oceanic coast towards the continental inlands (range > 3000 - < 600 mm; www.met.no), as well as a considerable temperature gradient due to strong altitudinal gradients in this geographical area (altitudinal gradients of > 1500 m are available; lapse rate of ca. 0.5°C/100m), makes it possible to establish a grid of sites with very different climatic conditions in a comparably small geographic area. Three temperature classes and four precipitation regimes were selected, based on summer temperatures (temperature tetraterm – the average temperature over the four warmest months of the year) and annual precipitation. The three temperature classes are 'lowland' with a tetraterm of approximately 10.5°C, 'intermediate' with approximately 9°C and 'alpine' with approximately 6°C, having four classes of mean annual precipitation of approximately 700mm, 1300mm, 2000mm and 2800mm (see fig. 2.2.1 and table 2.3.2). Monthly interpolated climate data of the years 1961-1990 for locations close to the study sites was provided by the Norwegian Meteorological Institute (www.met.no).

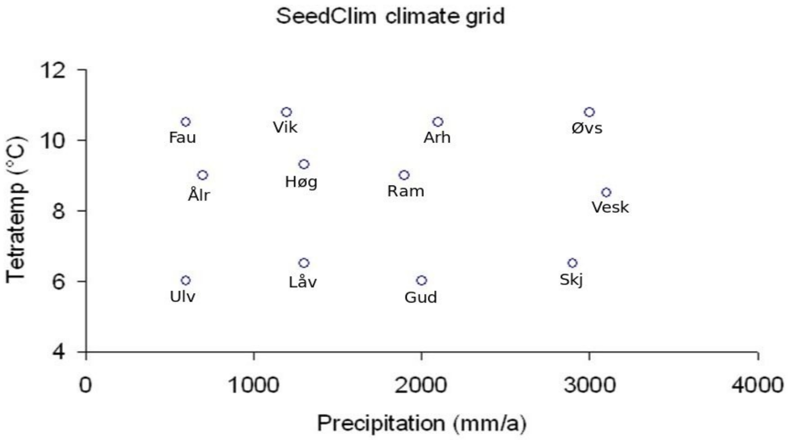

Figure 2.2.1: SeedClim climate grid, with abbreviations of the locality names. Fau=Fauske, Ålr=Ålrust, Ulv=Ulvehaugen, Vik=Vikesland, Høg=Høgsete, Låv=Låvisdalen, Arh=Arhelleren, Ram=Rambera, Gud=Gudmedalen, Øvs=Øvstedal, Vesk=Veskre, Skj=Skjldingahaugen (SeedClim, edited)

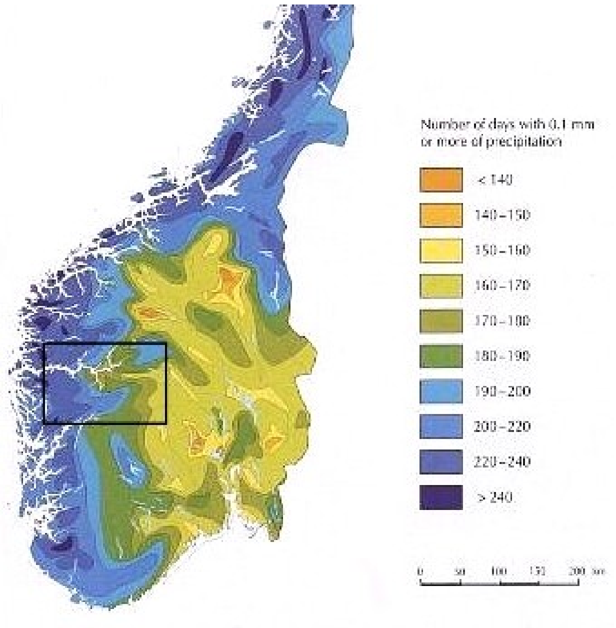

Figure 2.2.2: Map of southern Norway with colours indicating precipitation days, modified from (Moen, A. et al. 1999) provided by the Norwegian Mapping Authorities, showing the placement of the study sites in Norway.

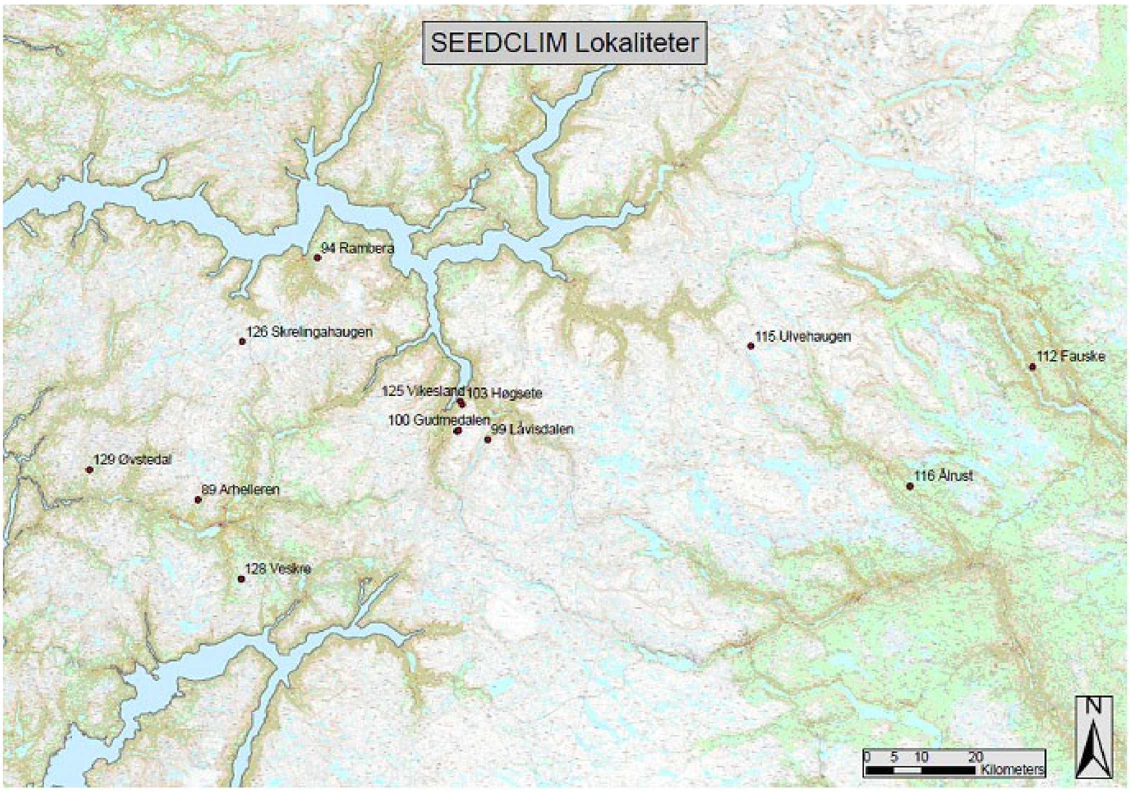

Figure 2.2.3: SeedClim localities situated south of the Sognefjord in south west Norway (SeedClim).

2.3 Field collection and measurements

The plants were collected between 30th July and 20th August 2009 at the localities described above, but only where they were occurring in large enough numbers, (see Table 2.3.1 and Table 2.3.2).

Table 2.3.1: SeedClim localities with elevation classification and amounts of mean annual precipitation.

Temp. \ Precip.	*very low*	*low*	*intermediate*	*high*
alpine	(115) Ulvehaugen[1]	(99) Låvisdalen[2]	(54/100) Gudmedalen[2]	(126) Skjeldingahaugen[2]
intermediate	(116) Ålrust[1]	(103) Høgsete[3]	(94) Rambera[2,3]	(127/128) Veskre[2,3]
lowland	(112) Fauske[1]	(125) Vikesland[1]	(89) Arhelleren[3]	(129) Øvstedal[3]

redrawn from: "Summary of the first SEEDCLIM field season – 2008"

[1] at these localities no plants were collected, because they either could not be found or only a very small number could be detected and those only growing under special conditions (like where a little brook was flowing, or the cows defecate etc.)

[2] at these localities *Carex capillaris* was found and collected

[3] at these localities *Carex pallescens* was found and collected

At some of the localities the species were present, but we decided against collecting individuals, because it was obvious that the plants grew only on certain sites under certain microclimatic conditions and not over the general area of the locality. Too few plants or too closely related ones would render them useless for statistical analysis and not be representative for the population, respectively.

Table 2.3.2: Localities where the two species were collected with climate data used (provided by the Norwegian Meteorological Institute, 2009). Temperature tetraterm is the average temperature at the four warmest months of the year.

site name	***site-abbr.***	***temp. class***	***temp. tetra term (°C)***	***precipitation (mm)***	***prec. class***	***altitude (m.a.s.)***
Låvisdalen	Lav	Alpine	6.45	1320.5	Low	1097
Gudmedalen	Gud	Alpine	5.87	1924.6	Intermediate	1213
Skjeldingahaugen	Skj	Alpine	6.58	2724.85	High	1133
Høgsete	Hog	Intermediate	9.17	1356.21	Low	700
Rambera	Ram	Intermediate	8.77	1848.17	Intermediate	779
Veskre	Vesk	Intermediate	8.67	3028.69	High	780
Arhelleren	Arh	Lowland	10.60	2043.64	Intermediate	439
Øvstedal	Ovs	Lowland	10.78	2923.19	High	476

In order to have a large enough number of individuals for measurements and analysis at least 30 flowering individuals were collected per site. Turfs with groups of plants were dug out with enough soil to not damage the roots. As a method to keep the sampling random, since there was usually no continuous cover, the first plant/group of plants that was found were selected. At least three such turfs were collected at each locality to have a minimum of three genetic individuals. They were taken with some distance apart, but preferably in proximity to the 'blocks' which are a subunit in the set-up of a different part of the SeedClim project.

The seeds of the sampled plants were mainly harvested at the sites (when they were not mature enough, they were left attached to the plants until matured) and marked for identification with the individual they were taken from. The turfs were taken from the field locations to the lab and the target species biomass was subsequently separated from the soil. The process of clearing the roots of soil and separating them from root mass of other plants with lowest possible damage was quite labour-intensive and took from the end of August until the beginning of December 2009. To keep the plants in a proper condition until finally pressed, they were stored in a cooling room at a temperature of 4°C in the meantime. The individuals were pressed with a regular plant press.

2.4 Characters measured

For the individuals collected the number of inflorescences as well as the number of seeds, per inflorescence and per mother shoot, were recorded. Seeds were weighed and then stratified at a temperature of 4°C from November 5th 2009 until used further.

Twenty seeds from *C. pallescens* were used in a germination experiment, if that many were available (see below). Unfortunately *C. capillaris* could not be used for this experiment, since the number of seeds is significantly lower in that species. (Up to ten seeds from each mother from both species had been used for a common garden experiment that, for several reasons, could not further be used in this thesis.)

The pressed individuals were photographed and they were subsequently measured as follows:

Height until first flower, total height of the flower stem, the number of leaves as well as the number of dead leaves, the length of the longest leaf together with the width (in *C. pallescens* only) and the length of the longest root. The biomass of all roots together, the stem, all leaves, dead leafs and “other biomass” (a category for several different parts containing sheets, dead material, and undefined root mass) was determined. Generally roots were weighed together for each genet, since it was sometimes difficult to allocate roots to individual shoots. To do so, the roots were removed from the rest and if a bigger “root mass” was holding them all together it was assigned to the “other biomass” measurement.

To measure leaves, they were cut off where the sheet part ends (which is easily visible through a little mark on the leaf) and as far as possible the same was done with the dead leaves. Dead leaves where it was not possible to determine any part above the former sheet part were classified into the “other biomass” section. If one genet contained many similar-sized parts, these were measured together instead of separately.

When measuring the plants difficulties arose concerning the question whether the single parts of a genet could be defined as separate ramets or not. By starting an experiment in the greenhouse (which is not considered any further) it was possible to observe that several shoots (sometimes quite a high number) were produced by one single seed. As a consequence, but also because the measuring of all the separate parts turned out not to be feasible, the data was mainly analysed at the genet level. A genetic individual was defined as all the shoots that were somehow connected, mainly underground, and could not be separated (without ripping plant tissues).

All together 105 genetic individuals of *C. pallescens* were pressed and measured, thereof 41 from Veskre, 30 from Rambera, 10 from Høgsete, 14 from Arhelleren and 10 from Øvstedal.

Of *Carex capillaris* 305 genetic individuals were pressed and measured, thereof 52 from Gudmedalen, 86 from Skjellingahaugen, 63 from Låvisdalen, 39 from Rambera and 65 from Veskre.

Very different genet sizes, which were undetectable when the plants were still in the soil, explains the highly variable number of genets collected per site.

2.5 Germination experiment

From each mother of *C. pallescens* 20 randomly chosen seeds, or less if twenty were not available, were spread on Petri dishes with agar nutrient medium, sealed with parafilm and put into an incubator to test germination. The seeds were germinated at days with periods of 18 h light and 6 h darkness and fluctuating temperatures of 25°C and 15°C respectively. The Petri dishes were controlled, if possible, every week in the beginning, every two weeks later on, and the newly germinated individuals were recorded and then removed. After each scoring the Petri dishes were randomly rearranged in the incubator and additional water was supplied as needed. The experiment was started May 26th 2010 and was running for 152 days. Seeds used had been stratified in darkness for (at least) 202 days at 4°C in a refrigerator thereof two weeks on agar.

2635 seeds from 165 mother shoots that were originating from 48 genetic individuals of *Carex pallescens* were used. Thereof from Veskre: 581 seeds, 39 mother shoots, 16 genets, from Arhelleren: 508 seeds, 30 mother shoots, 6 genets, from Rambera: 476 seeds, 32 mother shoots, 14 genets, from Øvstedal: 370 seeds, 25 mother shoots, 4 genets and from Høgsete: 700 seeds, 39 mother shoots, 8 genets (see table 3.2.1).

2.6 Statistical analysis

All statistical analysis was done using R version 2.9.2 (2009-08-24) (R Development Core Team 2009). Two different data sets were created from the plant measurements, one for all mother shoots with flower stems, seeds and inflorescences, the other on genet level including vegetative and generative measurements. A third data set contains the data from the germination experiment.

Firstly the data was analysed exploratory creating box plots of the different variables against the climate and localities. Regression analysis was used to link variables to climate factors and ANOVA and Tukey-test to detect differences between sites or different levels of temperature and precipitation.

To avoid pseudoreplication mixed effect models were used, since it is clustered data and a model ignoring random effects would assume a too big sample size. For most of the analysis a linear mixed-effects model (lme; Pinheiro, J. et al. 2009) fit by restricted maximum likelihood (REML) was used, and only for count data a generalized linear mixed-effects model (glmm; Venables, W.N. & Ripley, B.D. 2002) fit by penalized quasi-likelihood (PQL) was used. Quasi poisson was used to allow for overdispersion.

The glmm is a more complicated model and was therefore not used for all the analyses, but when both are applicable the two models give very similar output.

Specified as random factors were site and 'block' (the turfs the individuals were taken from) for the data set on genet level and site, 'block' and genet for the one containing all mother shoots.

ANOVA and Tukey-test were used to test if there was a significant difference concerning one of the alpine sites compared to the other, as well as when looking at the soil characteristics from the different sites collected in summer 2010 in other parts of the SeedClim project. But also lme with 'block' as random effect – in that case 'block' refers to a subunit in the set-up of a different part of the SeedClim project – was used to further test the soil characteristics.

To analyse the data from the germination experiment a generalized linear mixed-effects model (glmm) fit by penalized quasi-likelihood was used with a binomial distribution of the response – as in germinated or not germinated, taking into account that only up to a certain number, the amount sown, could actually germinate. 'Block', genet and mother shoot were specified as random factors. Germination was tested against time ('days since sowing') depending on temperature, precipitation and/or seed weight.

3. Results

3.1 Plant traits and allocation

The two species reacted very differently to the climatic variables and the results will therefore be listed separately. All p-values shown are from the single predictor models (with either precipitation or temperature) as most of the analysis with both as predictors (temp+prec) shows no significant pattern and there were no significant interactions between the two climate variables.

3.1.1 *Carex pallescens*

In *Carex pallescens* growth was significantly positively related to temperature, but not to precipitation (see figure 3.1.1). The total number of seeds produced decreased with increasing precipitation (p-value=0.0371, fig.3.1.1g). There are several growth traits showing a significantly positive relationship with temperature. The biomass of the flower stems increased (p-value = 0.0223, fig.3.1.1b) as well as the total height of the flower stems (p-value = 0.0020, fig.3.1.1a) , the leaves grew longer (p-value = 0.0232, measured as length of the longest leaf; fig.3.1.1c), but therefore also the 'leaf area' (measured as 'length of the longest leaf' * 'leaf width') increases (p-value = 0.0259, fig.3.1.1e). The relationship of leaf length to the number of leaves ('length of the longest leaf'/'total number of leaves') also has a positive correlation with temperature (LLL/NL p-value = 0.0031, fig.3.1.1f). With rising temperature also the root length increased (measured as length of the longest root) (p-value = 0.0320, fig.3.1.1d). Even though above- and below ground parts seem to increase with increasing temperature neither the biomass of those plant parts, nor the total biomass (fig.3.1.1h), could be shown to increase. There were no changes in any allocation patterns with climate.

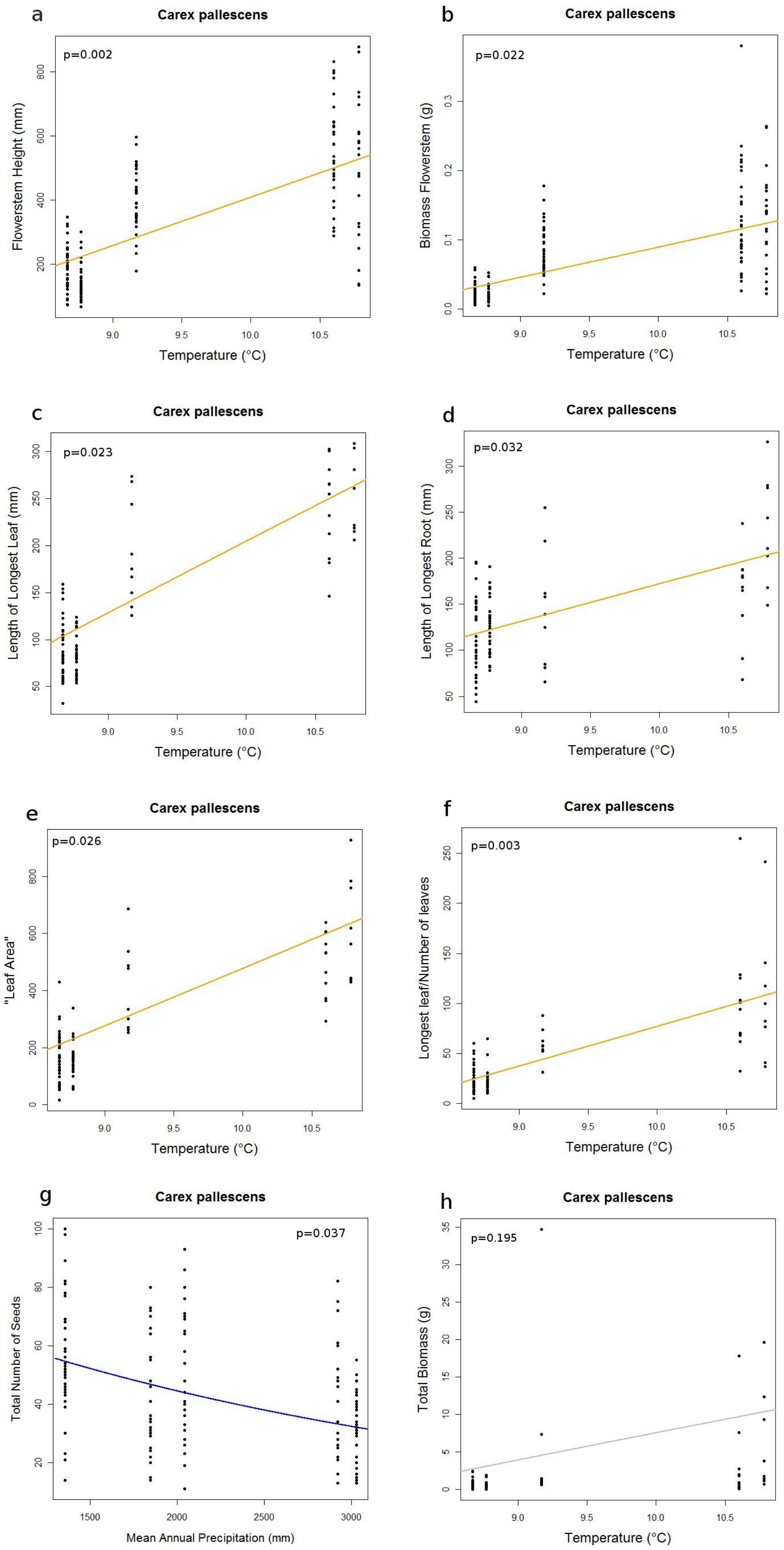

Figure 3.1.1:

Significant relationships of growth patterns and climate variables in *Carex pallescens* of (with p-values)

a.) total flower stem height

b.) flower stem biomass

c.) leaf length

d.) root length

e.) 'leaf area'

f.) relationship of longest leaf and number of leaves

g.)total seed number

h.) total biomass (non-significant).

3.1.2 *Carex capillaris*

For the alpine species the only significant relationships found were negative relationships with precipitation (see fig. 3.1.2) Leaf size (measured as length of the longest leaf) decreases with increasing precipitation (p-value = 0.0429) as well as the number of inflorescence per flower stem (Tinf/iFS p-value = 0.0443), though that seems to be merely a change in arrangement since the number of seeds does not change significantly. Also the number of inflorescences could not be shown to be significantly related to precipitation when using the dataset on all flower stems for the analysis, so I question the importance of this pattern.

No significant relationship of growth patterns and temperature could be shown. Concerning allocation neither for temperature nor precipitation a pattern could be found.

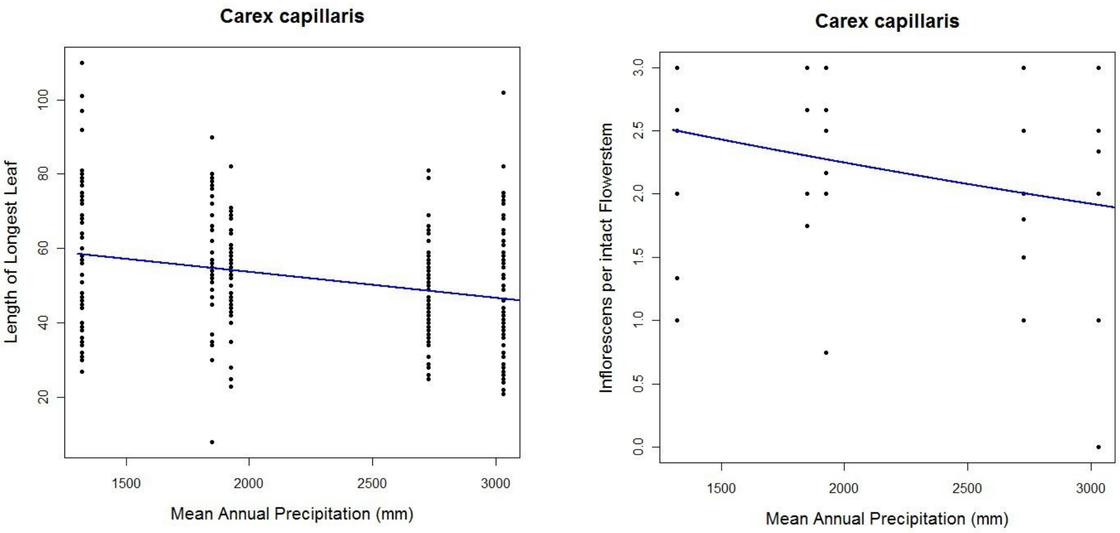

Figure 3.1.2: Significant relationships of growth patterns of *Carex capillaris* with precipitation.

The exploratory plots of the regression analysis (only examples shown) suggested that Gudmedalen, the coldest alpine site, often deviated from the other sites and obscured apparent relationships with temperature. Taken this into consideration an ANOVA and a Tukey-Test were used to determine that it indeed is different from the other alpine sites (see fig. 3.1.3).

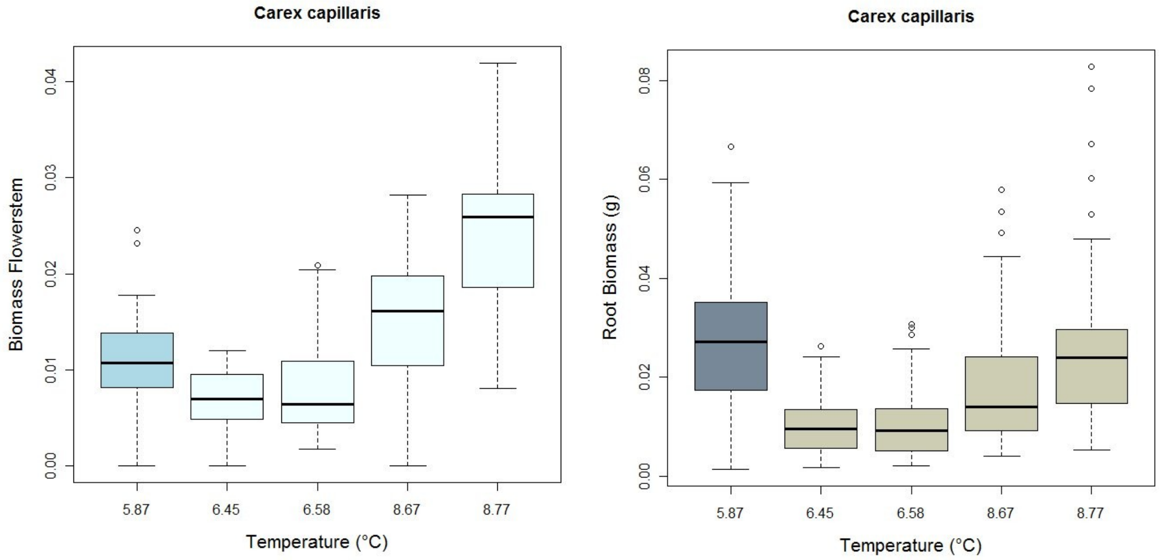

Figure 3.1.3: Examples of two diagnostic plots showing Gudmedalen (indicated by different colour) deviating from other alpine sites.

Other factors than climate could explain the differences of Gudmedalen towards the other alpine sites, therefore soil data – collected in other context for SeedClim during the summer 2010 – was briefly looked at. Using ANOVA and Tukey-tests it could be shown that Gudmedalen is significantly different from the other alpine sites in certain soil characteristics measured (LOI, water content; see fig. 3.1.4).

The soil characters were also included in the regression analysis as covariate (at least in some), but no new patterns could be found by doing so.

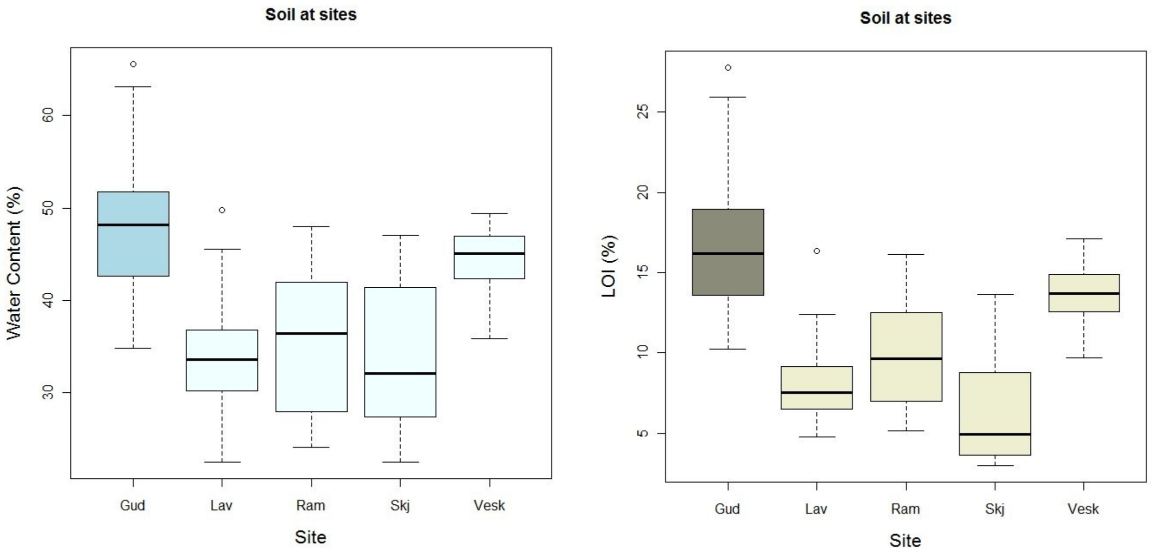

Figure 3.1.4: Soil characteristics of the five sites were *Carex capillaris* was collected, showing that Gudmedalen (indicated by different colour) is different than the other two alpine sites, but also one of the intermediate sites (Rambera). Gud = Gudmedalen, Lav = Låvisdalen, Ram = Rambera, Skj = Skjellingahaugen, Vesk = Veskre.

3.2 Germination experiment

The percentage of seeds germinated in this experiment was generally rather low, since after about 150 days the highest germination percentage is around 50%, but mainly lower (see table 3.2.1). Germination also seems to start slowly taking a long time until the onset of germination. A significant negative correlation of germination over time with temperature as well as with precipitation could be shown (p-values < 0.001), but not for their interaction (p = 0.95).

Higher temperature has a negative impact on the slope, but the onset of germination is earlier and faster and therefore the predicted germination percentage higher. Higher precipitation has a generally negative effect on germination (fig. 3.2.1).

Table 3.2.1: Seeds and germination numbers of *C. pallescens* listed as: Total number of seeds, number of seeds sown in the germination experiment, number of seeds that germinated or did not germinate and the percentage of germination, average seed weight per seed in milligram with corresponding standard deviation (SD) .

site	**TNS**	**incubator**	**germ.**	**not germ.**	**germ. %**	**av/s (mg)**	***SD***
Høgsete	2123	680	119	489	28.1	0.90	0.21
Rambera	1316	476	117	359	24.6	0.58	0.23
Veskre	1276	581	115	466	19.8	0.73	0.22
Arhelleren	1510	508	266	242	52.4	0.96	0.25
Øvstedal	1115	370	72	298	19.5	0.60	0.32

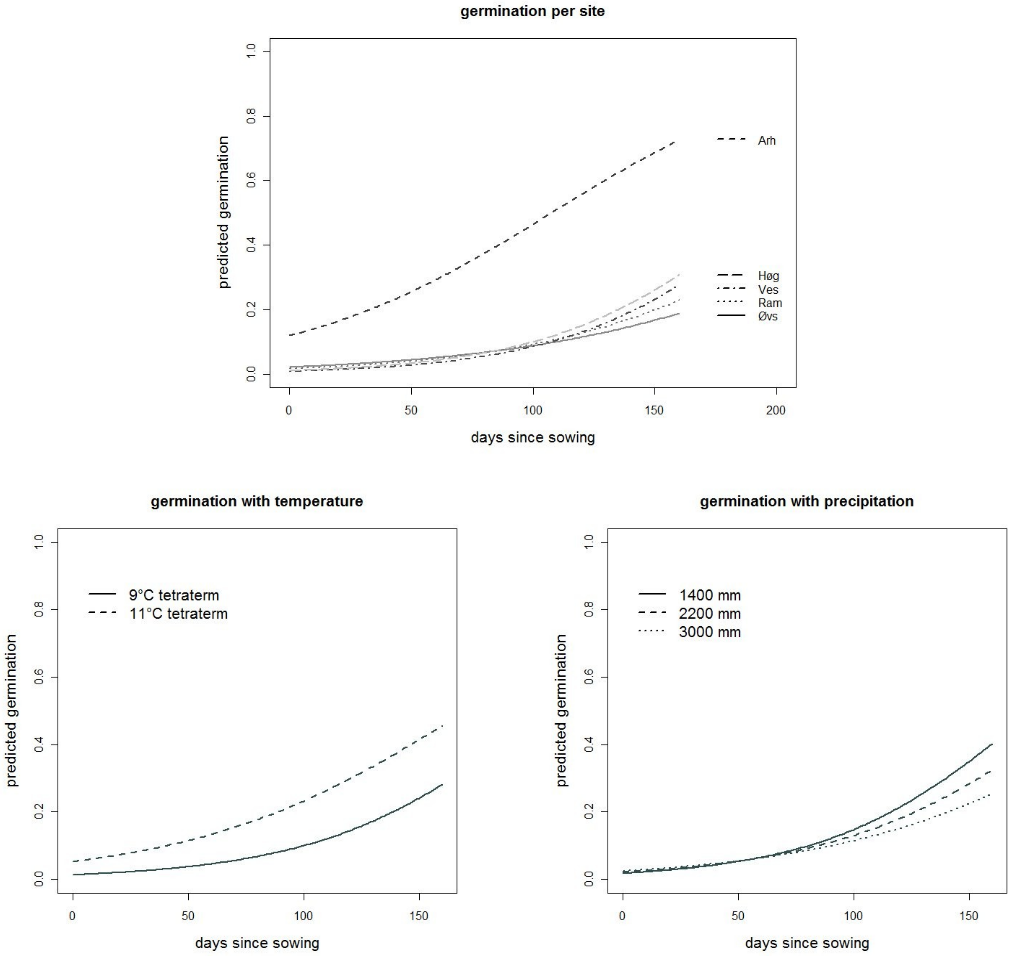

Figure 3.2.1: Estimated germination in *Carex pallescens* using data from an incubator experiment lasting for about 150 days at 16/8h of light/darkness and temperatures of 25/15°C in reaction to temperature or precipitation at the collection sites and the different sites collected respectively.

When seed mass is included in the model it shows a significantly positive relationship with germination. Heavier seeds germinate earlier (p-value = 0.0332) and to a higher percentage (p = 0.0442) (fig. 3.2.2). Germination over time with precipitation interacting with seed weight has a significant negative relationship (p = 0.0098).

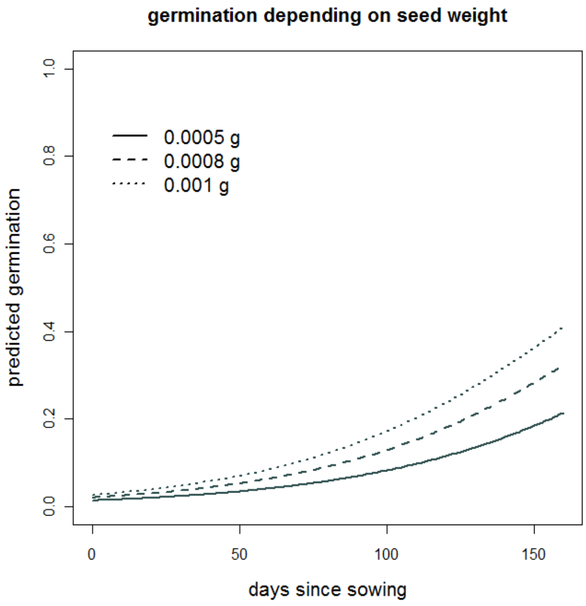

Figure 3.2.2: Estimated germination in *Carex pallescens* using data from an incubator experiment lasting for about 150 days at 16/8h of light/darkness and temperatures of 25/15°C depending on seed mass.

4. Discussion

4.1 Changes in plant traits with climate

Generally there seems to be a pattern of traits being negatively correlated with precipitation and positively correlated with temperature which matches our expectations.

The two species do not react similarly to climate variables, most notably because the generalist, *C. pallescens*, strongly responds to temperature, whereas the alpine specialist, *C. capillaris*, does not seem to respond to temperature at all. In common for both is the lack of demonstrable allocation patterns. All together a limited number of growth traits were found to be significantly correlated with the climatic variables and no clear pattern could be discovered concerning allocation.

4.1.1. *Carex pallescens*

Carex pallescens showed a positive relationship with temperature in several growth traits like leaf size, root length, flower stem height and related ones like flower stem biomass. The only significant relationship with precipitation was a decrease in the number of seeds.

A positive growth response to higher temperature seems to be a common reaction of all kinds of plants (see e.g. Arft, A.M. et al. 1999; Körner, C. 2003; Stenström, A. & Jonsdottir, I.S. 1997). Increased root growth could also be a sign of increased competition for below-ground resources (Berendse, F. & Möller, F. 2009), which would logically be a side effect of increased vegetative growth.

Stress could be a possible explanation for the decrease in the number of seeds in response to increasing precipitation, as no allocation became evident. Very high precipitation amounts could lead to temporal flooding of the ground, which apparently also happens at the wettest site (Spindelböck personal observation). Flooding can lead to temporal oxygen deficiency in the soil which can stop root growth and cause fine roots to die off. Such irregularities can already occur during a few hours of flooding (Larcher, W. 2001).

The seed number might also be influenced by how many seeds have been lost before and during harvesting them in the field. The number lost is not necessarily the same for all sites, as I expect the seeds to vary in their degree of maturity between lowland and intermediate sites. There is no way of knowing how many seeds got lost beforehand, and there was certainly a difference in colour between the seeds from different sites which might indicate a difference in maturity. However, one would rather expect to find a pattern with temperature if the seed maturity was the reason for differences found, which was not the case here.

4.1.2. *Carex capillaris*

Carex capillaris showed basically no reaction to temperature whereas two traits, decreased leaf size and number of inflorescences, could be shown to have a significant negative relationship with precipitation. That the number of inflorescences per flower stem decreased might not have much meaning for the performance of the plant, since the number of seeds did not seem to be influenced by it. It has to be mentioned as well that this pattern was only found using the data on genet level, which does not contain measurements for all the flower stems, but merely the maximum inflorescence number per flower stem for the whole genet.

Higher precipitation was expected to have a negative influence on plants, and decreased growth might be a reaction to limited nutrient and oxygen availability in the soil (Gilgen, A.K. & Buchmann, N. 2009).

Growth reactions in *C. capillaris* at one of the alpine sites (Gudmedalen) were found to be significantly different from the others (see fig. 3.1.3). Plants seem to grow bigger there and have greater biomass compared to the other alpine sites.

Trying to find an explanation, soil characteristics from the sites were analysed and Gudmedalen was shown to differ from the other alpine sites in soil characteristics. The content of water as well as organic matter in the soil was higher; including these findings into the analysis as a covariate did not lead to any significant explanations.

Soil organic matter is positively correlated with the nitrogen concentration of the soil (Körner, C. 2003). Soil nutrients are important limiting factors for plant growth (Li, Y., Luo, T., & Lu, Q. 2008, Arft, A.M. et al. 1999) and experimental nutrient application can lead to enhanced growth (Jonsdottir, I.S. 1991). A higher concentration of nutrients in the soil could explain why individuals would grow bigger at the site in question. Still (Li, Y. et al. 2008) found plant height to be better explained by climate than by soil variables. In this study however the attempt to find correlations between growth patterns and soil variables by analysing them the same way as the climate variables did not lead to any clarification, as no significant relationship could be found.

4.2 Changes in allocation strategies with climate

Changes in allocation were generally lacking, or at least not possible to detect in this study. Even though both plant species seem to respond to climatic variables concerning their growth, no shift from one section to the other, like from above to below ground, or from reproductive traits to vegetative, could be proven.
Similarly, in a study on temperate grassland communities Gilgen, A.K. & Buchmann, N. (2009) did not find a significant response in below ground productivity in reaction to draught, whereas above ground the reactions were varying between different sites and years. Neither could they prove any reaction on the single species level.

Together with soil nutrients (mentioned above) competition might play a complex role, above as well as below ground, and may help to explain the lack of an evident reaction to climate variables. With increased below ground competition allocation to roots tends to increase, but in the presence of a higher amount of nitrogen in the soil this process seems to be stopped (Berendse, F. & Möller, F. 2009). In a field study (Cahill Jr., J.F. 2003) could not find that competition did increase allocation to roots and argued that above and below ground competition interact to affect plant growth.

Complex interactions between plants in the same community might have a strong influence on biomass allocation and growth that is of course not possible to grasp by just looking at single species. These interactions might obscure patterns caused by climatic conditions.

4.2.1. *Carex pallescens*

Allocation could not be shown in the analysis, but as for example total biomass did not increase significantly with temperature in *C. pallescens* even though several growth traits, above and below ground, increased resources certainly got allocated somehow.
In a study with precipitation gradients in the US Zhou, X., Talley, M., & Luo, Y. (2009) similarly found little variation in total biomass, even though shoot biomass increased with precipitation. They interpreted it as due to a proportionally higher root biomass that did not vary much with precipitation and an increase in turnover of roots with increasing precipitation. Precipitation might also play some role with temperature relationships in this study, as the warmest site is also the wettest and only the two wetter lowland sites are represented in the grid, while the drier ones are missing.

For this species another factor to be considered is grazing in the study area, since there are several different animals present (sheep, goats, cows) and at some of the sites there surely has been some grazing, at least on *C. pallescens*. It is hard, if not impossible, to quantify the degree of grazing that occurs and estimating the effects might be just as hard, as they can be very different.

Herbivory can be considered a very complex environmental factor for plants as it has many direct, as well as indirect effects and reactions to it are very different in different species (Tolvanen, A. & Henry, G.H.R. 2000; Jonsdottir, I.S. 1991). Li, Y. et al. (2008) found high correlation of growth with climate and soil in ungrazed grasslands, but insignificant correlations with both in grazed grasslands. That shows that, even if the plants respond to climatic variables in terms of growth, grazing might obscure and further influence those patterns.

Grazing can stimulate root growth (Cahill Jr., J.F. 2003), and grazed plants can be able to maintain an above ground production level similar to or even higher than ungrazed plants (Tolvanen, A. & Henry, G.H.R. 2000). Population structure and therefore competition might be changed (Jonsdottir, I.S. 1991), but also age structure might be altered (Tolvanen, A. & Henry, G.H.R. 2000). As influences are that complex it makes interpretation hard, but it is also not possible to say, if or how much the animals actually graze on the species investigated.

4.2.2. *Carex capillaris*

For *C. capillaris* the most surprising result, apart from a general lack of reaction to temperature, is that there seems to be no pattern of allocation to root system, rather the opposite.
Alpine plants are especially expected to allocate more to their roots, as a reaction to cold, to maintain higher temperatures below ground (Fan, J.W. et al. 2009), particularly to the fine roots (Körner, C. 2003). However, *C. capillaris* did neither show a pattern of root length nor root biomass with climatic variables in this study. The fine roots might be among the parts that get lost when separating roots from soil and therefore this pattern could be not measurable. But plants are also expected to allocate resources to their roots when water is limited (Li, Y. et al. 2008), so excess supply of water might keep the plant from putting too many resources into below ground parts. Also root biomass density might decrease significantly with increasing altitude (Luo, T. et al. 2005), so competition below ground, which is also supposed to cause plants to allocate to roots (Cahill Jr., J.F. 2003) might not play as much of a role.

As vegetative growth decreases with increasing precipitation, but investments in reproductive traits do not – at least not significantly – the reaction of *C. capillaris* might be positive towards reproduction. That is of course only speculative, as no such relationship could be proven.

4.2.3. Comparison of the species

That the two species react differently might be because of their characteristics, but making generalisations based on a study with only one species for each type should be done cautiously, as differences in responses could also be due to species specific variations.

However, comparing my results to a similar study done with the same climate grid with species pairs of *Veronica* and *Viola* (Bargmann, T. 2009) the alpine/lowland contrast can be considered further. In that study patterns of climate with growth and allocation could be found for all species, but all responded differently and with different traits to the climate variables in growth (biomass was not measured), whereas they showed some consistency for alpine and lowland species in allocation patterns. The growth reactions of *Carex* are not quite the same as those of *Veronica* and

Viola. Increasing temperature leads to increase in leaf length in a generalist in each study (*C. pallescens; Veronica officinalis*), but also *Viola biflora* (alpine) produces longer but thinner leaves. Increasing precipitation leads to decreased size in *C. capillaris* (leaves) and *Viola palustris* (shoot height) – one alpine, one generalist. So all in all there seems to be no consistency in growth reaction within the groups of alpines or generalists.

4.3 Changes in germination strategies with climate in *Carex pallescens*

Seeds from one of the lowland sites, Arhelleren, germinated noticeably better than those from all the other localities, and had a germination percentage of about 50% which was almost twice as high as for most of the others. For seeds from the wetter lowland site germination was lowest with only about 19%. Generally germination percentages were rather low and germination onset was late.

The delay in germination onset is not surprising, as it is typical for almost all *Carex* species (Schütz, W. 2000). The Seed Information Database (http://data.kew.org/sid/) lists germination of around 80% for this species under similar conditions, and the pre-sowing treatment as well as the germination conditions provided can be considered near optimal for *Carex* (Schütz, W. 2000). A variety of influences can be important for differences in dormancy levels and therefore germination in a species. Even slight influences during the production of the seeds can play a role on how fast and well they germinate (Larcher, W. 2001), and the environment of the mother plants can cause large variation in the level of dormancy, even within the same region or population (Schütz, W. & Milberg, P. 1997). Therefore a germination rate that is considerably lower than the one listed in the database is not that surprising.

In this experiment germination and precipitation are definitely negatively correlated (see fig. 3.2.1). With temperature the relationship is a little different as the correlation along time is also a negative one, but there is more germination in seeds from higher temperatures. That means the seeds start to germinate faster and therefore do not germinate as much anymore after some time. Previous studies have found that seeds that were grown at higher temperatures (preconditioned – the mother plant experienced higher temperatures) also have higher germination (Baskin, C.C. & Baskin, J.M. 1998; Schmuths, H. et al. 2006). With precipitation the reaction can be a decrease or increase of dormancy depending on the species and type of dormancy (Baskin, C.C. & Baskin, J.M. 1998).

The negative influence of high precipitation seems to be very strong as seeds from the warmest site, which is also the wettest, germinated worst in the incubator.

Many species produce seeds that are different in shape, colour or size, due to variations in the environment but there are no clear patterns in different species as to when the seeds grow bigger or smaller, neither with precipitation nor temperature (Baskin, C.C. & Baskin, J.M. 1998). In this study differences in seed weight and colour were also evident with plants from Arhelleren, the locality with the highest germination number, clearly having the biggest seeds. Higher seed weight had an overall positive influence on germination in this experiment. Precipitation however has a very strong negative influence on germination, and analysing germination with precipitation and seed weight still showed a negative relationship. But seeds originating from a wetter area were already lighter, so the effect is even more negative.

4.4 Implications under climate change

That the two species react very differently to climate variables might also make them react to climate change in different ways. As climate in the study region is predicted to become warmer and wetter, my findings may indicate very negative future perspectives for *C. capillaris* which responds negatively to increased precipitation and is unaffected by temperature. In contrast, *C. pallescens* shows a positive growth response to temperature. Positive growth responses, also from other plants, might increase competitive effects experienced by *C. capillaris* for several resources and make it therefore harder to persist for a plant that does not itself react with increased growth. Reduced growth could have a negative impact on their ability to compete with other species and cold adapted species, like alpines, seem to be rather poor competitors to begin with (Callaghan, T.V., Carlsson, B.Å., & Svensson, B.M. 1996). Species from alpine grasslands are generally able to grow in the subalpine, but they are naturally limited by forests or taller plants (Vittoz, P. et al. 2009). Under climatic change alpine species might therefore be threatened to be "overgrown" by plants moving upwards from lower altitudes (Walther, G.-R. et al. 2002). Lowland species, and generally species with wider ecological ranges, have already been shown to increase their abundance due to climate warming in central Norwegian mountains, possibly because of competition advantage (Klanderud, K. & Birks, H.J.B. 2003).

On the other hand, increasing vegetative growth can have a negative correlation with reproductive effort (Arft, A.M. et al. 1999; Suter, M. 2009), but plant size can also be positively correlated with reproductive biomass (Niu, K. et al. 2009). Since *C. pallescens* shows a negative response in seed number to increasing precipitation, under the climate change expected it might be forced to reproduce more vegetatively.

Klanderud, K. & Birks, H.J.B. (2003) found lowland species to be more successful in expanding their ranges in the eastern, climatically more continental, areas of central Norwegian mountains than in the western, more oceanic, ones. They hypothesized that therefore in the future, partly due to increased precipitation, weakly competitive high-altitude species might have more refuges in the more oceanic areas in the west. The results from this study, with the lowland generalist being more sensitive to high amounts of rain concerning its reproductive traits the possibility of those species being less successful in more oceanic climate is quite high. Together with lower seed production, the effect of higher precipitation on germination is overall negative. In the context of climate change, where higher precipitation is predicted for the region investigated, that might mean an overall negative effect on sexual reproduction. Of course germination conditions in the field are very different from those in an incubator and seeds might therefore show other germination patterns, but the results from this study suggest that seeds from the wetter sites have inferior germination requirements. Natural conditions may be more difficult for germination and therefore depress germination success even more, as too much water in the soil is also likely to reduce germination percentages (Baskin, C.C. & Baskin, J.M. 1998). Even though seedlings might have a greater tolerance to environmental conditions than what germination requires, changes in seed and seedling success can contribute to change in the composition of the plant community (Fay, P.A. & Schultz, M.J. 2009).

Most studies on climate change in the northern parts of the world (boreal, arctic-alpine areas) have been focusing on studying the effects of warming (e.g. Stenström, A. & Jonsdottir, I.S. 1997; Arft, A.M. et al. 1999; Klanderud, K. & Birks, H.J.B. 2003). Studies on the effects of precipitation are often in arid areas (e.g. Fan, J.W. et al. 2009) or where draught might cause problems in the future (e.g. Gilgen, A.K. & Buchmann, N. 2009).

This study suggests however that increasing precipitation might also have strong effects in climatically wet areas, like western Norway, and negative responses of lowland species to precipitation may in some cases partly counteract the positive effect of higher temperatures for them.

4.5 Uncertainties and further research

At some sites the species were found, but not collected, because there were only very few individuals all occurring close to each other. To keep the collection random the aim was to get at least thirty individuals that grew rather widespread for them to be representative for the population at that site. So rather than risking to have too few individuals that were not representative, no plants were collected. It would of course be desirable to have plants to measure from all the sites in the grid as it makes comparison to climate more reliable, due to a more balanced distribution. There are two localities per precipitation class for the wetter classes, but only a single one for the drier, for example.

The results from this study alone cannot be used to conclude firmly about differences between alpine specialist and generalist species as only two species were studied instead of several that are similar specialists/generalists. This is basically for reasons of feasibility: few species of *Carex* were sufficiently abundant at (almost) all the localities, and the amount of work would have gone beyond the scope of a masters thesis. Several species pairs would make it easier to draw more general conclusions, since with only two species the differences in reaction could also be species specific. Nonetheless, this study contributes to an understanding of possible reactions to climate and may inspire further research in that field.

Harvesting the roots of the target species was particularly difficult as the roots of all the species present are strongly entangled and surely a certain amount – of length and biomass – got lost in the process. These difficulties are common in other studies as well and some were not possible to excavate root systems at all (e.g. Tolvanen, A. & Henry, G.H.R. 2000, Jonsdottir, I.S. 1991, (Niu, K. et al. 2009), Berendse, F. & Möller, F. 2009) and Luo, T. et al. (2005) predict a average maximum rooting depth for grasses of 2-2.5 m, but it might be less at higher latitudes. Also, concentrating on only the larger roots as suggested by Cahill Jr., J.F. (2003) was not possible, since no such thing could be found for both species investigated. Assuming the amount will be approximately the same for all the plants involved the results can still be meaningful.

Additional investigations could also be made using the data collected. Analysis with climate data collected at the localities in the summer 2009 (the time the plants were collected) could be carried out to possibly find more patterns in the plants growth as reaction to climate. Being able to compare the analyses of the long term climate data with the actual climate of the year could also give an idea how fast plants can react to differences in climate from one year to the next.

Finally the common garden experiment that was started with seeds from the plants collected could be finished and used for further comparison. More insight could be given on reasons for differences being of plastic or genetic origin and on how fast a plant could therefore react to changes in climate. The number of plants that germinated in the experiment is very low though and would therefore make it difficult to compare the measurements with those from the plants collected in the field. A better understanding of how much root mass is lost when separating roots from the soil would also make interpretation of the results easier.

5. Conclusion

The two species of *Carex* both responded to climatic variables, albeit very differently. *C. pallescens* reacted positively to an increase in temperature with several growth traits above and below ground as well as in germination, and negatively to precipitation in seed production and germination. *C. capillaris* showed a negative growth response to increasing precipitation concerning its leaves, but did not show any relationship to temperature. Trying to answer the questions posed it is possible to say that (1) both species did show differences in growth with climatic conditions, and (2) they did react very differently in their growth pattern. (3) Strategies though are hard to assume, as no allocation patterns could be found. Overall precipitation influenced germination and seed production negatively in *C. pallescens* which indicates a negative reproduction response. *C. capillaris* reduced growth, but did not seem to show a significant reaction in reproductive traits, which might mean that a vegetative decrease has little influence on the reproduction. Further investigations would be desirable, but were not feasible within the scope of this work. Considering the effects of climate change the negative growth response of *C. capillaris* might cause a competitive disadvantage and alpine species in general may be displaced by lowland species because of their competition success. *C. pallescens* however may be less successful in wetter areas as negative effects of high precipitation on reproductive traits and germination could diminish the positive effects of a temperature increase for this species.

6. References

Arft, A.M., Walker, M.D., Gurevitch, J., Alatalo, J.M., Bret-Harte, M.S., Dale, M., Diemer, M., Gugerli, F., Henry, G.H.R., Jones, M.H., Hollister, R.D., Jonsdottir, I.S., Laine, K., Levesque, E., Marion, G. M., Molau, U., Molgaard, P., Nordenhall, U., Raszhivin, V., Robinson, C. H., Starr, G., Stenstrom, A., Stenstrom, M., Totland, O., Turner, P. L., Walker, L. J., Webber, P. J., Welker, J. M. & Wookey, P. A. (1999) Responses of Tundra Plants to Experimental Warming: Meta-Analysis of the International Tundra Experiment. *Ecological Monographs*, **69**, 491-511.

Bargmann, T. (2009) How are plants responding to a changing climate? - A case study of growth and allocation in *Veronica alpina*, *Viola biflora*, *Veronica officinalis* and *Viola palustris* in western Norway. (unpublished Master's thesis)

Baskin, C.C. & Baskin, J.M. (1998) *Seeds - Ecology, Biogeography, and Evolution of Dormancy and Germination*. Academic Press, San Diego, California.

Berendse, F. & Möller, F. (2009) Effects of competition on root–shoot allocation in *Plantago lanceolata* L.: adaptive plasticity or ontogenetic drift? *Nature Conservation and Plant Ecology Group*, **201**, 567–573.

Cahill Jr., J.F. (2003) Lack of relationship between below-ground competition and allocation to roots in 10 grassland species. *Journal of Ecology*, **91**, 532-540.

Callaghan, T.V., Carlsson, B.Å. & Svensson, B.M. (1996) Some apparently paradoxical aspects of the life cycles, demography and population dynamics of plants from the subarctic Abisko area. *Ecological Bulletins*, **45**, 133-143.

Fan, J.W., Wang, K., Harris, W., Zhong, H.P., Hu, Z.M., Han, B., Zhang, W.Y. & Wang, J.B. (2009) Allocation of vegetation biomass across a climate-related gradient in the grasslands of Inner Mongolia. *Journal of Arid Environments*, **73**, 521–528.

Fay, P.A. & Schultz, M.J. (2009) Germination, survival, and growth of grass and forb seedlings: Effects of soil moisture variability. *Acta Oecologica*, 679–684.

Fitter, A.H. & Peat, H. J. (1994) The Ecological Flora Database, http://www.ecoflora.co.uk/

FloraWeb: Daten und Informationen zu Wildpflanzen und zur Vegetation Deutschlands, http://www.floraweb.de/

Gilgen, A.K. & Buchmann, N. (2009) Response of temperate grasslands at different altitudes to simulated summer drought differed but scaled with annual precipitation. *Biogeosciences*, **6**, 2525–2539.

Hanssen-Bauer, I., Førland, E.J., Haugen, J.E. & Tveito, O.E. (2003) Temperature and precipitation scenarios for Norway: comparison of results from dynamical and empirical downscaling. *Climate Research*, **25**, 15-27.

Heide, O.M. (2004) Environmental control of flowering and sex expression in *Carex flava*. *Physiologia Plantarum*, **121**, 691-698.

IPCC AR4. (2007) *IPCC Fourth Assessment Report: Climate Change, Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Core Writing Team, Pachauri, R.K. and Reisinger, A. (Eds.)*. IPCC, Geneva, Switzerland.

Jonsdottir, I.S. (1991) Effects of Grazing on Tiller Size and Population Dynamics in a Clonal Sedge (*Carex bigelowii*). *OIKOS*, **62**, 177-188.

Klanderud, K. & Birks, H.J.B. (2003) Recent increases in species richness and shifts in altitudinal distributions of Norwegian mountain plants. *The Holocene*, **13**, 1–6.

Klimeš, L., Klimešová, J., Hendriks, R. & van Groenendael, J. (1997) Clonal plant architectures: a comparative analysis of form and function. *The ecology and evolution of clonal plants* p. 453. Backhuys Publishers, Leiden, the Netherlands.

Körner, C. (2003) *Alpine Plant Life*. Springer-Verlag, Berlin, Heidelberg, New York.

Larcher, W. (2001) *Physiological Plant Ecology - Ecophysiology and Stress Physiology of Functional Groups*. Springer-Verlag, Berlin, Heidelberg, New York.

Li, Y., Luo, T. & Lu, Q. (2008) Plant height as a simple predictor of the root to shoot ratio: Evidence from alpine grasslands on the Tibetan Plateau. *Journal of Vegetation Science*, **19**, 245-252.

Luo, T., Brown, S., Pan, Y., Shi, P., Ouyang, H., Yu, Z. & Zhu, H. (2005) Root biomass along subtropical to alpine gradients: global implication from Tibetan transect studies. *Forest Ecology and Management*, 349–363.

Meteorologisk institutt (Norwegian Meteorological Institute), http://met.no/

Milberg, P., Andersson, L. & Noronha, A. (1996) Seed Germination After Short-Duration Light Exposure: Implications for the Photo-Control of Weeds. *Journal of Applied Ecology*, **33**, 1469-1478.

Moen, A., Lillethun, A. & Odland, A. (1999) *National atlas of Norway : Vegetation*. Norwegian Mapping Authority, Hønefoss.

Mossberg, B., Stenberg, L. & Ericsson, S. (1995) *Gyldendals store nordiske flora*. Gyldendal Norsk

Forlag A/S, Oslo.

Niu, K., Choler, P., Zhao, B. & Du, G. (2009) The allometry of reproductive biomass in response to land use in Tibetan alpine grasslands. *Functional Ecology*, **23**, 274-283.

Pinheiro, J., Bates, D., DebRoy, S., Sarkar, D. & the R Core team. (2009) nlme: Linear and Nonlinear Mixed Effects Models.

R Development Core Team. (2009) R: A language and environment for statistical computing. R Foundation for Statistical Computing,Vienna, Austria. ISBN 3-900051-07-0, URL http://www.R-project.org.

Roots, E.F. (1989) Climate Change: High-Latitude Regions. *Climatic Change*, **15**, 223-253.

Schmuths, H., Bachmann, K., Weber, W.E., Horres, R. & Hoffmann, M.H. (2006) Effects of Preconditioning and Temperature During Germination of 73 Natural Accessions of *Arabidopsis thaliana*. *Annals of Botany*, 623–634.

Schütz, W. (2000) Ecology of seed dormancy and germination in sedges (*Carex*). *Perspectives in Plant Ecology, Evolution and Systematics*, **3**, 67-89.

Schütz, W. & Milberg, P. (1997) Seed Dormancy in *Carex canescens*: Regional Differences and Ecological Consequences. *Oikos*, **78**, 420-428.

SeedClim :: UiB. SeedClim :: UiB, http://www.uib.no/rg/EECRG/projects/seedclim

Seed Information Database: Search Results (*Carex pallescens*), http://data.kew.org/sid/SidServlet?Source=epic&ID=4660&Num=3j9

Stenström, A. & Jonsdottir, I.S. (1997) Responses of the clonal sedge, *Carex bigelowii*, to two seasons of simulated climate change. *Global Change Biology*, **3**, 89-96.

Suter, M. (2009) Reproductive allocation of *Carex flava* reacts differently to competition and resources in a designed plant mixture of five species. *Plant Ecology*, 481–489.

Tolvanen, A. & Henry, G.H.R. (2000) Population Structure of Three Dominant Sedges under Muskox Herbivory in the High Arctic. *Arctic, Antarctic and Alpine Research*, **32**, 449-455.

Ursino, N. (2009) Above and below ground biomass patterns in arid lands. *Ecological Modelling*, **220**, 1411-1418.

Venables, W.N. & Ripley, B.D. (2002) *Modern Applied Statistics with S*. Springer, New York.

Vittoz, P., Randin, C., Dutoit, A., Bonnet, F. & Hegg, O. (2009) Low impact of climate change on subalpine grasslands in the Swiss Northern Alps. *Global Change Biology*, **15**, 209–220.

Walther, G.-R., Post, E., Convey, P., Menzel, A., Parmesan, C., Beebee, T.J.C., Fromentin, J.-M., Hoegh-Guldberg, O. & Bairlein, F. (2002) Ecological responses to recent climate change. *Nature*, **416**, 389-395.

Zhou, X., Talley, M. & Luo, Y. (2009) Biomass, Litter, and Soil Respiration Along a Precipitation Gradient in Southern Great Plains, USA. *Ecosystems*, 1369–1380.

7. Appendices

Measurements by species and site (1) for all flower stems (2) on genet level

Explanation of abbreviations:

for dataset “flower stems”(fs):

site	site
Block	turf collected
IND	genet
Shoot	mothershoot
HTF	height til flower
TH	total height
INF	no. inflorescenses
NS (1)	no. seeds (inf)
TNS	total no. seeds
BioS	biomass flowerstem
sw	seed weight

for dataset on genet level (gen):

site	site
Block	turf collected
IND	genet
Type	vegetative/generative
PtsT	total number parts
PtsA	living parts
PtsD	dead parts
TH	total flower stem height
TFS	total no. flower stems
brFs	no. broken flower stems
iFS	no. intact flower stems
NL	number of leaves
LLL	length of the longest leaf
LW	leaf width
LLR	length of the longest root
Tinf	total no. inflorescenses
TNS	total no. seeds
BioR	biomass roots
BioS	biomass stems
BioL	biomass leaves
BioSS	other biomass
NDL	no. dead leaves
BioDL	biomass dead leaves
NL/Pt	no. leaves per part
LLL/NL	leaf length/leaf number
LA	leaf area
abo	aboveground biomass
bel	belowground biomass

Appendix 1: Measurements by species and site for all flower stems

Carex capillaris, fs, Veskre

site	Block	IND	Shoot	HTF	TH	INF	NS (1)	NS (2)	NS (3)	NS(4)	TNS	BioS	sw
Vesk	V	V-A2	V-A2(1)	165	185	2	5	7	0	0	12	0.0161	0.0005
Vesk	V	V-A3	V-A3(1)	185	192	2	4	6	0	0	10	0.0216	0.0006
Vesk	V	V-A3	V-A3(2)	138	161	3	3	6	7	0	16	0.0174	0.0005
Vesk	V	V-A5	V-A5(1)	114	132	2	1	3	0	0	4	0.0089	NA
Vesk	V	V-B1	V-B1(1)	138	244	3	0	4	2	0	6	0.0250	NA
Vesk	V	V-B6	V-B6(1)	132	163	2	5	4	0	0	9	0.0142	NA
Vesk	V	V-B6	V-B6(2)	147	167	2	4	6	0	0	10	0.0108	NA
Vesk	V	V-B8	V-B8(1)	137	163	2	2	2	0	0	4	0.0105	NA
Vesk	V	V-B8	V-B8(2)	161	190	2	3	5	0	0	8	0.0172	NA
Vesk	V	V-B8	V-B8(3)	136	165	2	4	4	0	0	8	0.0099	NA
Vesk	V	V-B8	V-B8(4)	161	213	4	1	0	6	7	14	0.0234	0.0007
Vesk	V	V-B8	V-B8(5)	127	161	2	4	4	0	0	8	0.0137	NA
Vesk	V	V-B8	V-B8(6)	172	205	2	5	5	0	0	10	0.0198	NA
Vesk	V	V-C1	V-C1(1)	135	164	NA	NA	NA	NA	NA	NA	0.0140	NA
Vesk	V	V-C2	V-C2(c)	29	NA	NA	NA	NA	NA	NA	NA	0.0024	NA
Vesk	V	V-C2	V-C2(d)	27	NA	NA	NA	NA	NA	NA	NA	0.0020	NA
Vesk	V	V-C4	V-C4(a1)	NA	56	1	5	0	0	0	5	0.0014	NA
Vesk	V	V-D1	V-D1(1)	42	55	1	1	0	0	0	1	0.0012	NA
Vesk	V	V-D1	V-D1(2)	160	227	3	6	5	4	0	15	0.0318	0.0007
Vesk	V	V-D3	V-D3(1)	90	185	3	7	10	4	0	21	0.0199	0.0007
Vesk	V	V-E1	V-E1(1a)	70	89	2	4	4	0	0	8	0.0034	NA
Vesk	V	V-E1	V-E1(1b)	129	196	3	2	5	5	0	12	0.0310	NA
Vesk	V	V-E1	V-E1(2)	124	181	2	10	9	0	0	19	0.0243	0.0008
Vesk	V	V-E2	V-E2(1)	121	149	3	1	3	8	0	12	0.0185	0.0009
Vesk	V	V-E3	V-E3(1)	176	245	2	7	8	0	0	15	0.0244	0.0006
Vesk	V	V-E4	V-E4(1)	187	243	2	6	8	0	0	14	0.0226	0.0006
Vesk	V	V-E5	V-E5(1)	179	230	2	7	6	0	0	13	0.0222	0.0006
Vesk	V	V-E7	V-E7(1)	245	300	2	5	7	0	0	12	0.0282	0.0007
Vesk	V	V-E12	V-E12(1)	86	104	NA	NA	NA	NA	NA	NA	0.0066	NA
Vesk	V	V-F1	V-F1	109	149	2	6	1	0	0	7	0.0120	NA
Vesk	V	V-F8	V-F8(a)	64	78	2	0	0	0	0	0	0.0030	NA
Vesk	V	V-F12	V-F12(1)	110	132	2	8	6	0	0	14	0.0114	0.0006
Vesk	V	V-F12	V-F12(2)	107	123	2	6	9	0	0	15	0.0125	0.0006
Vesk	V	V-F13	V-F13(1)	110	134	2	7	7	0	0	14	0.0130	0.0007
Vesk	V	V-G1	V-G1(1)	99	125	1	5	0	0	0	5	0.0116	NA
Vesk	V	V-G1	V-G1(2)	138	194	3	7	9	6	0	22	0.0241	0.0007

Carex capillaris, fs, Låvisdalen

site	Block	IND	Shoot	HTF	TH	INF	NS (1)	NS (2)	NS (3)	NS(4)	TNS	BioS	sw
Lav	L	L-A1	L-A1	63	77	3	1	5	5	0	11	0.0070	NA
Lav	L	L-A2	L-A2	61	81	2	4	4	0	0	8	0.0060	NA
Lav	L	L-B1	L-B1(1)	82	103	3	3	7	9	0	19	0.0104	0.0005
Lav	L	L-B1	L-B1(2)	87	105	3	1	8	10	0	19	0.0108	0.0005
Lav	L	L-B2	L-B2	98	125	2	8	7	0	0	15	0.0111	0.0005
Lav	L	L-B5	L-B5(1)	87	108	2	8	7	0	0	15	0.0092	0.0006
Lav	L	L-B5	L-B5(2)	87	116	1	8	0	0	0	8	0.0094	NA
Lav	L	L-B5	L-B5(3)	98	120	1	8	0	0	0	8	0.0097	NA
Lav	L	L-C16	L-C16	31	NA	NA	NA	NA	NA	NA	NA	0.0017	NA
Lav	L	L-C17	L-C17	63	NA	NA	NA	NA	NA	NA	NA	0.0052	NA
Lav	L	L-C24	L-C24	44	53	2	3	5	0	0	8	0.0024	NA
Lav	L	L-D8	L-D8(1)	95	113	3	1	1	7	0	9	0.0095	NA
Lav	L	L-D9	L-D9	100	NA	NA	NA	NA	NA	NA	NA	0.0121	NA
Lav	L	L-D9	L-D9(1)	71	95	3	1	6	6	0	13	0.0085	0.0003
Lav	L	L-D9	L-D9(2)	111	130	2	5	6	0	0	11	0.0138	0.0004
Lav	L	L-D9	L-D9(3)	87	106	3	3	3	4	0	10	0.0104	0.0004
Lav	L	L-E1	L-E1	45	NA	NA	NA	NA	NA	NA	NA	0.0033	NA
Lav	L	L-E1	L-E1(1)	102	123	2	7	8	0	0	15	0.0107	0.0004
Lav	L	L-E4	L-E4	78	131	3	6	10	10	0	26	0.0117	0.0003
Lav	L	L-E5	L-E5	70	92	3	3	5	7	0	15	0.0078	0.0002
Lav	L	L-E6	L-E6	38	NA	NA	NA	NA	NA	NA	NA	0.0027	NA
Lav	L	L-E6	L-E6(1)	94	135	3	7	8	7	0	22	0.0123	0.0004
Lav	L	L-E8	L-E8	82	99	2	7	6	0	0	13	0.0075	0.0004
Lav	L	L-E9	L-E9	84	125	3	5	8	10	0	23	0.0110	0.0004
Lav	L	L-E10	L-E10	106	119	2	5	6	0	0	11	0.0089	0.0004
Lav	L	L-E11	L-E11	94	127	3	5	7	7	0	19	0.0119	0.0004
Lav	L	L-E12	L-E12(1)	89	163	4	1	7	8	8	24	0.0143	0.0003
Lav	L	L-E12	L-E12(2)	90	134	3	5	8	9	0	22	0.0124	0.0003
Lav	L	L-E12	L-E12(3)	94	119	2	8	9	0	0	17	0.0092	0.0004
Lav	L	L-F1	L-F1(1)	51	74	3	3	5	4	0	12	0.0055	NA
Lav	L	L-F1	L-F1(2)	67	104	3	6	7	0	0	13	0.0069	0.0004
Lav	L	L-F3	L-F3	101	NA	NA	NA	NA	NA	NA	NA	0.0083	NA
Lav	L	L-F3	L-F3(1)	43	99	2	6	6	0	0	12	0.0049	NA
Lav	L	L-F4	L-F4	68	91	2	1	6	0	0	7	0.0057	NA
Lav	L	L-F5	L-F5	73	NA	NA	NA	NA	NA	NA	NA	0.0046	NA
Lav	L	L-F5	L-F5(1)	82	135	2	4	3	0	0	7	0.0083	NA
Lav	L	L-F5	L-F5(2)	10	28	3	2	4	3	0	9	0.0018	NA
Lav	L	L-F7	L-F7	47	NA	NA	NA	NA	NA	NA	NA	0.0038	NA
Lav	L	L-F7	L-F7(1)	56	91	2	4	6	0	0	10	0.0060	NA
Lav	L	L-F7	L-F7(2)	84	114	NA	0	0	0	0	0	0.0049	NA
Lav	L	L-F8	L-F8	76	NA	NA	NA	NA	NA	NA	NA	0.0034	NA
Lav	L	L-F8	L-F8(1)	60	89	1	5	0	0	0	5	0.0046	NA
Lav	L	L-F11	L-F11	59	NA	NA	NA	NA	NA	NA	NA	0.0033	NA
Lav	L	L-F13	L-F13	59	NA	NA	NA	NA	NA	NA	NA	0.0027	NA
Lav	L	NA	L-F	52	76	2	6	8	0	0	14	0.0047	0.0003
Lav	L	L-G2	L-G2	57	105	3	1	7	5	0	13	0.0090	0.0004
Lav	L	L-G3	L-G3	78	109	2	4	5	0	0	9	0.0073	NA

Carex capillaris, fs, Rambera

site	Block	IND	Shoot	HTF	TH	INF	NS (1)	NS (2)	NS (3)	NS(4)	TNS	BioS	sw
Ram	R1	R-A1	R-A1(1)	176	231	3	6	9	7	0	22	0.0260	0.0004
Ram	R1	R-A1	R-A1(2)	202	257	3	4	7	6	0	17	0.0296	0.0005
Ram	R2	R-B1	R-B1	131	143	2	5	4	0	0	9	0.0081	NA
Ram	R2	R-B3	R-B3	148	191	2	5	9	0	0	14	0.0190	0.0005
Ram	R3	R-C1	R-C1	208	230	2	6	9	0	0	15	0.0259	0.0005
Ram	R3	R-C3	R-C3	240	260	3	1	6	8	0	15	0.0324	0.0006
Ram	R3	R-C4	R-C4	92	NA	NA	NA	NA	NA	NA	NA	0.0190	NA
Ram	R3	R-C5	R-C5	217	239	3	5	10	10	0	25	0.0314	0.0004
Ram	R3	R-C6	R-C6	133	172	2	1	2	0	0	3	0.0266	NA
Ram	R3	R-C8	R-C8	145	NA	NA	NA	NA	NA	NA	NA	0.0257	NA
Ram	R3	R-C8	R-C8(1)	273	295	3	1	10	6	0	17	0.0582	0.0006
Ram	R3	R-C9	R-C9(1)	145	191	3	8	9	7	0	24	0.0233	0.0005
Ram	R3	R-C9	R-C9(2)	154	199	3	3	5	3	0	11	0.0235	0.0040
Ram	R4	R-D1	R-D1(1)	200	247	3	6	3	7	0	16	0.0264	0.0005
Ram	R4	R-D1	R-D1(2)	199	277	3	1	5	1	0	7	0.0315	NA
Ram	R4	R-D1	R-D1(3)	153	266	3	5	7	0	0	12	0.0380	0.0006
Ram	R4	R-D1	R-D1(4)	145	255	3	2	4	2	0	8	0.0299	NA
Ram	R4	R-D1	R-D1(5)	171	207	3	4	5	6	0	15	0.0167	0.0006
Ram	R4	R-D1	R-D1(6)	218	279	2	5	7	0	0	12	0.0279	NA
Ram	R4	R-D1	R-D1(7)	232	277	2	7	7	0	0	14	0.0269	0.0004
Ram	R4	R-D1	R-D1(8)	181	254	3	5	7	7	0	19	0.0286	0.0005
Ram	R4	R-D1	R-D2	144	194	2	7	7	0	0	14	0.0176	NA
Ram	R5	R-E	R-E1	164	193	2	4	3	0	0	7	0.0350	NA
Ram	R5	R-E	R-E1(1)	45	NA	NA	NA	NA	NA	NA	NA	0.0036	NA
Ram	R5	R-E	R-E1(2)	77	NA	NA	NA	NA	NA	NA	NA	0.0072	NA
Ram	R5	R-E	R-E3	188	210	2	7	7	0	0	14	0.0242	0.0005
Ram	R5	R-E	R-E5	58	NA	NA	NA	NA	NA	NA	NA	0.0056	NA
Ram	R5	R-E	R-E5(1)	169	227	2	6	6	0	0	12	0.0265	0.0005
Ram	R5	R-E	R-E6	104	NA	NA	NA	NA	NA	NA	NA	0.0075	NA
Ram	R5	R-E	R-E6(1)	159	184	1	6	0	0	0	6	0.0179	NA
Ram	R5	R-F	R-F4	171	192	2	8	8	0	0	16	0.0197	0.0003
Ram	R5	R-F	R-F5(1)	134	155	2	2	6	0	0	8	0.0154	NA
Ram	R5	R-F	R-F5(2)	156	179	2	7	7	0	0	14	0.0172	0.0006
Ram	R6	R-G16	R-G16(1)	176	194	3	6	4	2	0	12	0.0242	0.0040
Ram	R6	R-G16	R-G16(2)	154	169	2	6	6	0	0	12	0.0147	0.0006
Ram	R6	R-G16	R-G16(3)	212	235	3	3	4	6	0	13	0.0344	0.0006
Ram	R6	R-G16	R-G16(4)	88	NA	NA	NA	NA	NA	NA	NA	0.0141	NA
Ram	R6	R-G16	R-G16(5)	35	NA	NA	NA	NA	NA	NA	NA	0.0033	NA
Ram	R6	R-G17	R-G17(1)	189	215	3	8	7	6	0	21	0.0391	0.0006
Ram	R6	R-G17	R-G17(2)	167	269	3	9	8	7	0	24	0.0543	0.0007
Ram	R6	R-G17	R-G17(3)	139	NA	NA	NA	NA	NA	NA	NA	0.0101	NA
Ram	R6	R-G17	R-G17(4)	117	NA	NA	NA	NA	NA	NA	NA	0.0114	NA

Carex capillaris, fs, Skjellingahaugen

site	Block	IND	Shoot	HTF	TH	INF	NS (1)	NS (2)	NS (3)	NS(4)	TNS	BioS	sw
Skj	S1	S-A1	S-A1(1)	82	98	2	1	7	0	0	8	0.0045	NA
Skj	S1	S-A1	S-A1(2)	77	89	2	4	4	0	0	8	0.0047	NA
Skj	S1	S-A1	S-A1(3)	102	114	2	6	8	0	0	14	0.0072	0.0004
Skj	S1	S-A1	S-A1(a)	10	NA	NA	NA	NA	NA	NA	NA	NA	NA
Skj	S2	S-B1	S-B1(1)	139	155	2	6	8	0	0	14	0.0116	0.0004
Skj	S2	S-B3	S-B3(1)	106	120	2	9	9	0	0	18	0.0112	0.0005
Skj	S2	S-B3	S-B3(b)	63	NA	NA	NA	NA	NA	NA	NA	0.0063	NA
Skj	S2	S-C2	S-C2(1)	93	113	2	6	6	0	0	12	0.0059	0.0004
Skj	S2	S-C2	S-C2(2)	94	115	1	7	0	0	0	7	0.0052	NA
Skj	S2	S-D1	S-D1(1)	109	130	2	7	7	0	0	14	0.0089	NA
Skj	S2	S-D1	S-D1(a2)	42	NA	NA	NA	NA	NA	NA	NA	0.0031	NA
Skj	S2	S-D2	S-D2(b)	111	NA	NA	NA	NA	NA	NA	NA	0.0071	NA
Skj	S2	S-D2	S-D3(b)	34	NA	NA	NA	NA	NA	NA	NA	0.0020	NA
Skj	S2	S-E1	S-E1(1)	95	110	2	6	8	0	0	14	0.0074	0.0003
Skj	S2	S-E1	S-E1(b)	32	NA	NA	NA	NA	NA	NA	NA	0.0021	NA
Skj	S2	S-E5	S-E5(1)	89	105	2	5	7	0	0	12	0.0067	0.0002
Skj	S2	S-E5	S-E5(2)	72	95	NA	0	0	0	0	0	0.0034	NA
Skj	S2	S-F	S-F7(b)	36	NA	NA	NA	NA	NA	NA	NA	0.0019	NA
Skj	S2	S-G2	S-G2	36	NA	NA	NA	NA	NA	NA	NA	0.0023	NA
Skj	S2	S-G5	S-G5	23	NA	NA	NA	NA	NA	NA	NA	0.0018	NA
Skj	S2	S-G8	S-G8(1)	98	116	2	6	8	0	0	14	0.0092	0.0002
Skj	S2	S-G8	S-G8(a)	80	NA	NA	NA	NA	NA	NA	NA	0.0053	NA
Skj	S2	S-G10	S-G10	31	NA	NA	NA	NA	NA	NA	NA	0.0021	NA
Skj	S2	S-G11	S-G11	88	120	3	3	7	3	0	13	0.0064	0.0001
Skj	S2	S-G12	S-G12	61	NA	NA	NA	NA	NA	NA	NA	0.0062	NA
Skj	S2	S-G13	S-G13	84	117	2	8	7	0	0	15	0.0064	0.0004
Skj	S2	S-G14	S-G14	69	NA	NA	NA	NA	NA	NA	NA	0.0043	NA
Skj	S2	S-M	S-M	63	NA	NA	NA	NA	NA	NA	NA	0.0045	NA
Skj	S3	S-O1	S-O1(1)	129	145	2	7	8	0	0	15	0.0116	0.0005
Skj	S3	S-O1	S-O1(2)	103	123	2	4	5	0	0	9	0.0080	NA
Skj	S3	S-O1	S-O1(3)	116	134	2	7	6	0	0	13	0.0103	0.0005
Skj	S3	S-O1	S-O1(4)	126	151	2	5	7	0	0	12	0.0093	0.0006
Skj	S3	S-O1	S-O1(5)	78	87	1	2	0	0	0	2	0.0026	NA
Skj	S3	S-O1	S-O1(a)	86	124	NA	0	0	0	0	0	0.0114	NA
Skj	S3	S-O1	S-O1(b)	41	NA	NA	NA	NA	NA	NA	NA	0.0032	0.0004
Skj	S3	S-O2	S-O2(1)	106	117	2	3	3	0	0	6	0.0056	NA
Skj	S3	S-O5	S-O5	121	146	2	7	7	0	0	14	0.0095	0.0005
Skj	S3	S-O6	S-O6(1)	120	157	3	3	9	9	0	21	0.0109	0.0005
Skj	S3	S-O11	S-O11(1)	98	118	2	5	7	0	0	12	0.0090	0.0003
Skj	S3	NA	S-Aa	NA	54	3	7	9	7	0	23	0.0032	0.0005
Skj	S4	S-P5	S-P5(1)	162	176	2	9	10	0	0	19	0.0204	0.0006
Skj	S4	S-P8	S-P8(1)	122	167	2	9	9	0	0	18	0.0154	0.0005
Skj	S4	S-P8	S-P8(2)	129	158	3	1	5	5	0	11	0.0095	0.0005
Skj	S4	S-P11	S-P11(1)	121	NA	NA	NA	NA	NA	NA	NA	0.0136	NA
Skj	S4	NA	S-B	169	190	2	4	8	0	0	12	0.0132	0.0006
Skj	S4	NA	S-C	91	111	2	8	7	0	0	15	0.0095	0.0006
Skj	S4	S-P13	S-P13(1)	132	159	2	9	8	0	0	17	0.0209	0.0007
Skj	S4	S-P17	S-P17(1)	95	136	3	5	9	7	0	21	0.0163	0.0006
Skj	S4	S-P17	S-P17(2)	55	92	1	9	0	0	0	9	0.0086	NA
Skj	S4	S-P18	S-P18(1)	145	161	2	9	9	0	0	18	0.0128	0.0004
Skj	S4	S-P18	S-P19	133	155	2	5	4	0	0	9	0.0092	NA

Carex capillaris, fs, Gudmedalen

site	Block	IND	Shoot	HTF	TH	INF	NS (1)	NS (2)	NS (3)	NS(4)	TNS	BioS	sw
Gud	G1	G-A3	G-A3	152	188	2	8	8	0	0	16	0.0135	NA
Gud	G1	G-A4	G-A4	94	NA	NA	NA	NA	NA	NA	NA	0.0085	NA
Gud	G1	G-A7	G-A7	78	NA	NA	NA	NA	NA	NA	NA	0.0034	NA
Gud	G1	G-A8	G-A8	128	NA	NA	NA	NA	NA	NA	NA	0.0082	NA
Gud	G1	G-B1	G-B1	83	NA	NA	NA	NA	NA	NA	NA	0.0056	NA
Gud	G1	G-B4	G-B4	95	NA	NA	NA	NA	NA	NA	NA	0.0058	NA
Gud	G1	G-B4	G-B4(1)	195	214	2	7	5	0	0	12	0.0208	0.0005
Gud	G1	G-B5	G-B5	54	NA	NA	NA	NA	NA	NA	NA	0.0047	NA
Gud	G1	G-B5	G-B5(1)	131	153	2	3	5	0	0	8	0.0105	NA
Gud	G1	G-B9	G-B9	81	NA	NA	NA	NA	NA	NA	NA	0.0085	NA
Gud	G1	G-B10	G-B10	105	146	2	6	7	0	0	13	0.0126	0.0009
Gud	G1	G-B13	G-B13	119	NA	NA	NA	NA	NA	NA	NA	0.0089	NA
Gud	G1	NA	G-[Bb]	131	224	3	4	5	4	0	13	0.0285	0.0006
Gud	G1	NA	G-[Cc]	103	168	3	5	5	5	0	15	0.0195	0.0008
Gud	G1	NA	G-[Dd]	121	142	2	6	4	0	0	10	0.0088	NA
Gud	G1	NA	G-[Y]	177	228	2	7	7	0	0	14	0.0236	0.0009
Gud	G1	NA	G-[X]	175	209	2	6	6	0	0	12	0.0173	0.0008
Gud	G2	G-C1	G-C1(1)	104	131	3	1	7	4	0	12	0.0112	0.0007
Gud	G2	G-C1	G-C1(2)	129	146	2	5	5	0	0	10	0.0115	NA
Gud	G2	G-C4	G-C4(1)	153	170	2	6	8	0	0	14	0.0168	0.0007
Gud	G2	G-C4	G-C4(2)	146	162	2	7	5	0	0	12	0.0150	0.0006
Gud	G2	G-C4	G-C4(3)	98	114	3	8	8	4	0	20	0.0096	0.0006
Gud	G2	G-C4	G-C4(4)	136	159	2	8	7	0	0	15	0.0139	0.0005
Gud	G2	G-C4	G-C4(5)	143	165	2	8	7	0	0	15	0.0148	0.0005
Gud	G2	G-C4	G-C4(6)	130	143	2	6	5	0	0	11	0.0102	0.0003
Gud	G2	G-C4	G-C4(7)	84	NA	NA	NA	NA	NA	NA	NA	0.0068	NA
Gud	G2	G-C4	G-C4(8)	61	NA	NA	NA	NA	NA	NA	NA	0.0039	NA
Gud	G2	G-C4	G-C4(9)	49	NA	NA	NA	NA	NA	NA	NA	0.0040	NA
Gud	G3	G-D1	G-D1	131	220	3	7	10	6	0	23	0.0243	0.0005
Gud	G3	G-D4	G-D4	140	199	3	4	5	5	0	14	0.0157	0.0007
Gud	G3	G-D5	G-D5	137	157	1	9	0	0	0	9	0.0134	NA
Gud	G3	G-D9	G-D9	74	NA	NA	NA	NA	NA	NA	NA	0.0034	NA
Gud	G3	G-D13	G-D13(1)	101	127	3	4	6	6	0	16	0.0071	0.0006
Gud	G3	G-D13	G-D13(2)	104	157	3	1	8	9	0	18	0.0101	0.0007
Gud	G3	G-D13	G-D13(3)	123	181	3	3	8	11	0	22	0.0134	0.0006
Gud	G3	G-D14	G-D14(1)	136	183	3	6	10	9	0	25	0.0242	0.0007
Gud	G3	G-D14	G-D14(2)	143	175	2	1	2	0	0	3	0.0127	NA
Gud	G3	G-D14	G-D14(3)	97	NA	NA	NA	NA	NA	NA	NA	0.0089	NA
Gud	G3	G-D15	G-D15	156	180	3	5	7	5	0	17	0.0178	0.0006
Gud	G3	G-D16	G-D16(1)	130	145	3	1	7	7	0	15	0.0107	0.0007
Gud	G3	G-D16	G-D16(2)	105	124	2	3	7	0	0	10	0.0106	NA
Gud	G3	G-D16	G-D16(3)	78	NA	NA	NA	NA	NA	NA	NA	0.0068	NA
Gud	G3	G-D19	G-D19(1)	143	168	2	7	7	0	0	14	0.0230	0.0007
Gud	G3	G-D19	G-D19(2)	119	145	3	0	0	0	0	0	0.0134	NA
Gud	G3	G-D19	G-D19(3)	113	137	3	2	3	4	0	9	0.0115	NA
Gud	G3	G-D21	G-D21	198	227	2	0	2	0	0	2	0.0232	NA
Gud	G3	G-D23	G-D23(1)	158	236	3	7	6	8	0	21	0.0278	0.0008
Gud	G3	G-D23	G-D23(2)	137	NA	NA	NA	NA	NA	NA	NA	0.0213	NA
Gud	G3	G-D24	G-D24(1)	194	255	3	4	6	8	0	18	0.0221	0.0008
Gud	G3	G-D24	G-D24(2)	171	197	NA	0	0	0	0	0	0.0124	NA
Gud	G3	G-D24	G-D24(3)	121	164	NA	0	0	0	0	0	0.0084	NA
Gud	G3	G-D24	G-D24(4)	133	192	NA	0	0	0	0	0	0.0126	NA
Gud	G3	G-D26	G-D26	107	149	3	5	6	4	0	15	0.0154	0.0005
Gud	G3	G-D27	G-D27	106	NA	NA	NA	NA	NA	NA	NA	0.0107	NA

Carex pallescens, fs, Veskre 1

site	Block	IND	Shoot	HTF	TH	INF	NS (1)	NS (2)	NS (3)	TNS	BioS	sw
Vesk	V1	V-A1	V-A1(1)	198	232	2	4	10	0	14	0.0357	0.0013
Vesk	V1	V-A1	V-A1(2)	NA	85	1	1	0	0	1	0.0046	NA
Vesk	V1	V-A1	V-A1(3)	99	NA	NA	NA	NA	NA	NA	0.0088	NA
Vesk	V1	V-B1	V-B1(1)	233	249	1	22	0	0	22	0.0360	0.0011
Vesk	V1	V-B3	V-B3(1)	166	185	2	15	18	0	33	0.0252	0.0010
Vesk	V1	V-B3	V-B3(2)	270	297	2	17	22	0	39	0.0404	0.0010
Vesk	V1	V-B3	V-B3(3)	151	191	3	1	20	19	40	0.0299	0.0010
Vesk	V2	V-C1	V-C1(c)	135	NA	NA	NA	NA	NA	NA	0.0148	NA
Vesk	V2	V-C4	V-C4(1)	178	210	2	18	27	0	45	0.0234	0.0007
Vesk	V2	V-C4	V-C4(2)	70	91	2	11	18	0	29	0.0080	0.0006
Vesk	V2	V-C5	V-C5(1)	37	55	2	2	4	0	6	0.0024	NA
Vesk	V2	V-C5	V-C5(c)	37	NA	NA	NA	NA	NA	NA	0.0024	NA
Vesk	V2	V-C6	V-C6(1)	220	248	2	15	14	0	29	0.0309	0.0008
Vesk	V2	V-C6	V-C6(2)	274	318	3	8	13	19	40	0.0565	0.0008
Vesk	V2	V-C6	V-C6(a)	167	NA	NA	NA	NA	NA	NA	0.0282	NA
Vesk	V2	V-C7	V-C7(1)	239	267	2	23	25	0	48	0.0355	0.0009
Vesk	V2	V-C7	V-C7(1a)	215	NA	NA	NA	NA	NA	NA	0.0427	NA
Vesk	V2	V-C7	V-C7(1c)	186	NA	NA	NA	NA	NA	NA	0.0277	NA
Vesk	V2	V-C7	V-C7(2)	165	206	3	8	15	20	43	0.0273	0.0007
Vesk	V2	V-C7	V-C7(3)	55	74	2	4	12	0	16	0.0057	0.0005
Vesk	V2	V-C7	V-C7(4)	151	186	3	7	17	17	41	0.0205	0.0005
Vesk	V2	V-C7	V-C7(5)	116	135	2	7	4	0	11	0.0108	NA
Vesk	V2	V-C7	V-C7(6)	125	153	2	14	30	0	44	0.0179	0.0004
Vesk	V2	V-C7	V-C7(7)	202	230	2	21	29	0	50	0.0264	0.0006
Vesk	V2	V-C7	V-C7(8)	197	222	2	23	32	0	55	0.0360	0.0007
Vesk	V2	V-C7	V-C7(9)	78	106	2	14	24	0	38	0.0123	0.0005
Vesk	V2	V-C7	V-C7(10)	40	55	2	4	6	0	10	0.0049	NA
Vesk	V2	V-C8	V-C8(1)	144	163	1	8	0	0	8	0.0210	NA
Vesk	V2	V-C8	V-C8(2)	243	272	2	1	0	0	1	0.0408	NA
Vesk	V2	V-C8	V-C8(c)	101	NA	NA	NA	NA	NA	NA	0.0098	NA
Vesk	V3	V-D1	V-D1(1)	117	135	2	18	20	0	38	0.0200	0.0007
Vesk	V3	V-D2	V-D2(1)	142	156	1	18	0	0	18	0.0172	0.0008
Vesk	V3	V-D2	V-D2(2)	163	184	2	12	18	0	30	0.0236	0.0005
Vesk	V3	V-D2	V-D2(3)	188	210	2	15	17	0	32	0.0304	0.0008
Vesk	V3	V-D3	V-D3(b)	40	NA	NA	NA	NA	NA	NA	0.0032	NA

Carex pallescens, fs, Veskre 2

site	**Block**	**IND**	**Shoot**	**HTF**	**TH**	**INF**	**NS (1)**	**NS (2)**	**NS (3)**	**TNS**	**BioS**	**sw**
Vesk	V4	V-E1	V-E1(1)	53	72	2	6	10	0	16	0.0056	0.0007
Vesk	V4	V-E1	V-E1(2)	71	88	2	6	9	0	15	0.0070	0.0009
Vesk	V4	V-E1	V-E1(3)	69	82	2	3	4	0	7	0.0045	NA
Vesk	V4	V-E1	V-E1(c)	36	NA	NA	NA	NA	NA	NA	0.0022	NA
Vesk	V4	V-E1	V-E1(e)	43	NA	NA	NA	NA	NA	NA	0.0021	NA
Vesk	V4	V-E1	V-E1(f)	29	NA	NA	NA	NA	NA	NA	0.0012	NA
Vesk	V4	V-E2	V-E2(c)	39	NA	NA	NA	NA	NA	NA	0.0028	NA
Vesk	V4	V-F1	V-F1(1)	108	139	2	15	17	0	32	0.0156	0.0003
Vesk	V4	V-F1	V-F1(1a)	49	NA	NA	NA	NA	NA	NA	0.0047	NA
Vesk	V4	V-F1	V-F1(1b)	50	NA	NA	NA	NA	NA	NA	0.0048	NA
Vesk	V4	V-F1	V-F1(2)	180	197	2	5	17	0	22	0.0204	0.0007
Vesk	V4	V-F1	V-F1(3)	101	122	3	4	7	15	26	0.0178	0.0002
Vesk	V4	V-F1	V-F1(4b)	52	NA	NA	NA	NA	NA	NA	0.0041	NA
Vesk	V4	V-F1	V-F2(1)	224	247	2	21	27	0	48	0.0353	0.0006
Vesk	V4	V-F1	V-F2(2)	168	194	2	16	15	0	31	0.0250	0.0005
Vesk	V4	V-F1	V-F2(d)	89	NA	NA	NA	NA	NA	NA	0.0092	NA
Vesk	V5	V-G1	V-G1(2)	195	208	2	13	21	0	34	0.0261	0.0009
Vesk	V5	V-G1	V-G1(3)	52	93	2	4	16	0	20	0.0121	0.0004
Vesk	V5	V-G1	V-G1(c)	75	NA	NA	NA	NA	NA	NA	0.0132	NA
Vesk	V5	V-H1	V-H1(1)	147	169	2	14	15	0	29	0.0206	0.0009
Vesk	V5	V-H1	V-H1(2)	159	184	2	12	14	0	26	0.0176	0.0008
Vesk	V5	V-I1	V-I1(1)	309	347	2	0	14	0	14	0.0602	0.0004
Vesk	V5	V-I1	V-I1(1a)	138	170	NA	NA	NA	NA	NA	0.0150	NA
Vesk	V5	V-I1	V-I1(1b)	95	NA	NA	NA	NA	NA	NA	0.0172	NA
Vesk	V5	V-J1	V-J1(1)	113	132	1	22	0	0	22	0.0144	0.0009
Vesk	V5	V-J1	V-J1(1a)	52	NA	NA	NA	NA	NA	NA	0.0059	NA
Vesk	V5	V-J1	V-J1(2)	130	141	1	13	0	0	13	0.0107	0.0008
Vesk	V5	V-K1	V-K1(1)	300	326	2	17	21	0	38	0.0461	0.0008
Vesk	V5	V-K1	V-K1(1a)	110	NA	NA	NA	NA	NA	NA	0.0174	NA
Vesk	V5	V-K1	V-K1(2)	224	251	2	17	19	0	36	0.0393	0.0007
Vesk	V5	V-K1	V-K1(3)	161	184	2	18	22	0	40	0.0267	0.0007
Vesk	V5	V-K2	V-K2(1)	205	226	2	9	17	0	26	0.0290	0.0008

Carex pallescens, fs, Rambera

site	**Block**	**IND**	**Shoot**	**HTF**	**TH**	**INF**	**NS (1)**	**NS (2)**	**NS (3)**	**TNS**	**BioS**	**sw**
Ram	R1	R-A	R-A1	113	162	3	22	29	21	72	0.0294	0.0008
Ram	R1	R-A	R-A2	98	157	3	21	16	27	64	0.0300	0.0006
Ram	R1	R-A	R-A2(a)	162	NA	NA	NA	NA	NA	NA	0.0284	NA
Ram	R1	R-A	R-A3	181	208	2	34	36	0	70	0.0334	0.0010
Ram	R1	R-A	R-A4	113	145	2	34	32	0	66	0.0207	0.0007
Ram	R1	R-A	R-A5	96	123	2	0	15	0	15	0.0105	0.0002
Ram	R1	R-A	R-A6	131	160	2	27	28	0	55	0.0221	0.0008
Ram	R1	R-A	R-A7	91	118	3	4	16	10	30	0.0137	0.0007
Ram	R1	R-A	R-A(a)	31	NA	NA	NA	NA	NA	NA	0.0022	NA
Ram	R1	R-A	R-A(c)	86	NA	NA	NA	NA	NA	NA	0.0090	NA
Ram	R1	R-A	R-A(d)	91	NA	NA	NA	NA	NA	NA	0.0082	NA
Ram	R2	R-B1	R-B1(1)	151	175	2	19	13	0	32	0.0237	0.0006
Ram	R2	R-B1	R-B1(2)	108	129	1	20	0	0	20	0.0115	0.0001
Ram	R2	R-B1	R-B1(3)	96	113	2	14	17	0	31	0.0134	0.0006
Ram	R2	R-B1	R-B1(4)	36	56	NA	0	0	0	0	0.0045	NA
Ram	R2	R-B1	R-B1(5)	50	72	2	1	10	0	11	0.0068	NA
Ram	R2	R-B2	R-B2(1)	242	269	3	18	18	20	56	0.0466	0.0008
Ram	R2	R-B2	R-B2(2)	270	301	2	25	21	0	46	0.0477	0.0009
Ram	R3	R-C1	R-C1(1)	64	72	1	5	0	0	5	0.0041	NA
Ram	R3	R-C3	R-C3	74	95	2	17	18	0	35	0.0126	0.0005
Ram	R3	R-C7	R-C7(1)	91	106	3	1	13	15	29	0.0155	0.0006
Ram	R3	R-C9	R-C9	39	NA	NA	NA	NA	NA	NA	0.0030	NA
Ram	R3	R-C9	R-C9(1)	54	67	2	4	10	0	14	0.0049	0.0002
Ram	R3	R-C10	R-C10(1)	114	135	3	10	16	22	48	0.0177	0.0007
Ram	R3	R-C10	R-C10(2)	113	140	3	10	9	17	36	0.0224	0.0003
Ram	R3	R-C11	R-C11(1)	106	127	2	12	10	0	22	0.0186	0.0006
Ram	R3	R-C11	R-C11(2)	89	108	2	16	15	0	31	0.0157	0.0005
Ram	R3	R-C12	R-C12(1)	96	112	2	14	12	0	26	0.0129	NA
Ram	R3	R-C12	R-C12(2)	125	149	3	2	12	16	30	0.0246	0.0009
Ram	R3	R-C13	R-C13(1)	79	99	2	12	13	0	25	0.0122	0.0006
Ram	R3	R-C13	R-C13(2)	115	138	2	22	19	0	41	0.0243	0.0004
Ram	R3	R-C13	R-C13(3)	69	84	2	10	14	0	24	0.0098	0.0005
Ram	R3	R-C14	R-C14(1)	67	82	2	9	11	0	20	0.0105	0.0003
Ram	R3	R-C14	R-C14(2)	67	86	3	11	12	11	34	0.0111	0.0004
Ram	R3	R-C15	R-C15	107	132	3	6	9	16	31	0.0129	0.0004
Ram	R3	R-C18	R-C18	34	NA	NA	NA	NA	NA	NA	0.0044	NA
Ram	R3	R-C18	R-C18(1)	71	89	2	15	16	0	31	0.0109	0.0004
Ram	R4	R-D1	R-D1(1)	129	185	3	22	28	23	73	0.0361	0.0008
Ram	R4	R-D1	R-D1(2)	180	221	3	24	25	24	73	0.0330	0.0008
Ram	R4	R-D1	R-D1(3)	151	197	NA	0	0	0	0	0.0273	NA
Ram	R4	R-D2	R-D2(1)	217	252	3	22	28	30	80	0.0526	0.0008
Ram	R4	R-D2	R-D2(2)	162	205	2	17	13	0	30	0.0215	0.0007

Carex pallescens, fs, Høgsete 1

site	**Block**	**IND**	**Shoot**	**HTF**	**TH**	**INF**	**NS (1)**	**NS (2)**	**NS (3)**	**TNS**	**BioS**	**sw**
Hog	H1	H-A1	H-A1	67	NA	NA	NA	NA	NA	NA	0.0127	NA
Hog	H1	H-A2	H-A2(1)	300	349	3	27	28	26	81	0.0714	0.0007
Hog	H1	H-A3	H-A3(1)	70	93	NA	0	0	0	0	0.0081	NA
Hog	H1	H-A3	H-A3(2)	248	267	NA	0	0	0	0	0.0234	NA
Hog	H1	H-A3	H-A3(3)	106	NA	NA	NA	NA	NA	NA	0.0074	NA
Hog	H1	H-A3	H-A3(4)	210	NA	NA	NA	NA	NA	NA	0.0229	NA
Hog	H1	H-A4	H-A4(1)	373	422	2	49	51	0	100	0.1334	0.0010
Hog	H2	H-B1	H-B1(1)	398	429	2	25	25	0	50	0.0966	0.0010
Hog	H2	H-B1	H-B1(2)	231	293	3	30	28	24	82	0.0555	0.0006
Hog	H2	H-B1	H-B1(3)	295	331	1	14	0	0	14	0.0594	0.0010
Hog	H2	H-B2	H-B2(1)	217	256	2	26	26	0	52	0.0483	0.0009
Hog	H2	H-B2	H-B3(1)	227	257	3	11	19	16	46	0.0353	0.0008
Hog	H2	H-B2	H-B3(2)	319	356	2	11	28	0	39	0.0645	0.0008
Hog	H2	H-B4	H-B4(A1)	275	317	2	16	25	0	41	0.0519	0.0007
Hog	H2	H-B4	H-B4(A2)	219	244	0	0	0	0	0	0.0273	NA
Hog	H2	H-B4	H-B4(A3)	205	NA	NA	NA	NA	NA	NA	0.0404	NA
Hog	H2	H-B4	H-B4(A4)	165	194	0	0	0	0	0	0.0278	NA
Hog	H2	H-B5	H-B5(1)	299	349	2	10	11	0	21	0.0693	0.0004
Hog	H2	H-B5	H-B5(2)	90	NA	NA	NA	NA	NA	NA	0.0135	NA
Hog	H2	H-B5	H-B5(3)	148	NA	NA	NA	NA	NA	NA	0.0296	NA
Hog	H3	H-C	H-C1(a)	138	NA	NA	NA	NA	NA	NA	0.0240	NA
Hog	H3	H-C	H-C1(b)	100	NA	NA	NA	NA	NA	NA	0.0179	NA
Hog	H3	H-C	H-C4	159	NA	NA	NA	NA	NA	NA	0.0304	NA
Hog	H3	H-C	H-C5(1)	543	596	3	22	24	32	78	0.1579	0.0010
Hog	H3	H-C	H-C6(1)	522	574	2	31	38	0	69	0.1270	0.0011
Hog	H3	H-C	H-C6(2)	302	NA	NA	NA	NA	NA	NA	0.0498	NA
Hog	H3	H-C	H-C7(1)	367	427	2	32	19	0	51	0.0859	0.0009
Hog	H3	H-C	H-C7(2)	466	506	2	5	25	0	30	0.1056	0.0010
Hog	H3	H-C	H-C7(3)	120	179	2	9	14	0	23	0.0222	0.0004
Hog	H3	H-C	H-C9(1)	73	120	2	19	15	0	34	0.0186	NA
Hog	H3	H-C	H-C11(1)	228	303	2	7	21	0	28	0.0542	NA
Hog	H3	H-C	H-C11(2)	416	463	2	15	34	0	49	0.1047	0.0010
Hog	H3	H-C	H-C12(1)	359	392	2	17	26	0	43	0.0684	0.0010
Hog	H3	H-C	H-C13(1)	395	434	2	15	29	0	44	0.0715	0.0008
Hog	H3	H-C	H-C13(2)	462	497	2	25	22	0	47	0.1161	0.0011
Hog	H3	H-C	H-C13(3)	291	NA	NA	NA	NA	NA	NA	0.0545	NA
Hog	H3	H-C	H-C13(4)	246	NA	NA	NA	NA	NA	NA	0.0448	NA
Hog	H3	H-C	H-C14(1)	406	434	2	17	28	0	45	0.0798	0.0009
Hog	H3	H-C	H-C14(2)	325	NA	NA	NA	NA	NA	NA	0.0726	NA

Carex pallescens, fs, Høgsete 2

site	Block	IND	Shoot	HTF	TH	INF	NS (1)	NS (2)	NS (3)	TNS	BioS	sw
Hog	H3	H-C	H-C15	276	NA	NA	NA	NA	NA	NA	0.0601	NA
Hog	H3	H-C	H-C16(1)	318	NA	NA	NA	NA	NA	NA	0.0442	NA
Hog	H3	H-C	H-C16(2)	126	NA	NA	NA	NA	NA	NA	0.0262	NA
Hog	H3	H-C	H-C16(3)	137	NA	NA	NA	NA	NA	NA	0.0279	NA
Hog	H3	H-C	H-C17(1)	460	511	2	35	31	0	66	0.1185	0.0011
Hog	H3	H-C	H-C17(2)	323	NA	NA	NA	NA	NA	NA	0.0658	NA
Hog	H3	H-C	H-C17(3)	171	NA	NA	NA	NA	NA	NA	0.0437	NA
Hog	H3	H-C	H-C18(1)	481	521	2	23	36	0	59	0.1383	0.0012
Hog	H3	H-C	H-C18(2)	203	265	2	10	31	0	41	0.0513	NA
Hog	H3	H-C	H-C18(3)	158	NA	NA	NA	NA	NA	NA	0.0454	NA
Hog	H3	H-C	H-C18(4)	248	NA	NA	NA	NA	NA	NA	0.0615	NA
Hog	H3	H-C	H-C18(5)	234	NA	NA	NA	NA	NA	NA	0.0577	NA
Hog	H3	H-C	H-C18(6)	120	NA	NA	NA	NA	NA	NA	0.0305	NA
Hog	H3	H-C	H-C18(7)	253	NA	NA	NA	NA	NA	NA	0.0624	NA
Hog	H3	H-C	H-C18(8)	104	NA	NA	NA	NA	NA	NA	0.0194	NA
Hog	H3	H-C	H-C20	331	391	2	31	31	0	62	0.0845	0.0010
Hog	H3	H-C	H-C21	309	357	2	25	31	0	56	0.0582	0.0006
Hog	H3	NA	H-[Kk]	516	560	2	30	37	0	67	0.1394	0.0010
Hog	H3	NA	H-[Cc]	401	447	3	23	17	25	65	0.0879	0.0007
Hog	H3	NA	H-[Ff]	302	344	3	14	27	23	64	0.0571	0.0008
Hog	H4	H-D	H-D1(1)	346	378	2	30	38	0	68	0.0953	0.0012
Hog	H4	H-D	H-D1(2)	457	483	2	22	36	0	58	0.1080	0.0012
Hog	H4	H-D	H-D1(3)	413	441	3	26	29	43	98	0.1145	0.0010
Hog	H4	H-D	H-D2(1)	323	343	3	5	4	14	23	0.0758	0.0006
Hog	H4	H-D	H-D2(2)	325	352	3	2	17	34	53	0.0626	0.0008
Hog	H4	H-D	H-D2(3)	305	334	3	16	32	29	77	0.0615	0.0007
Hog	H4	H-D	H-D2(4)	286	334	3	21	34	34	89	0.0848	0.0009
Hog	H4	H-D	H-D2(5)	359	390	2	25	31	0	56	0.0839	0.0010
Hog	H4	H-D	H-D3(1)	202	234	2	31	23	0	54	0.1783	0.0011

Carex pallescens, fs, Arhelleren

site	Block	IND	Shoot	HTF	TH	INF	NS (1)	NS (2)	NS (3)	TNS	BioS	sw
Arh	A1	A-A1	A-A1(1)	461	495	2	27	27	0	54	0.0984	0.0011
Arh	A1	A-A1	A-A1(2)	571	596	2	2	7	0	9	0.1045	NA
Arh	A1	A-A2	A-A2(1)	598	629	1	23	0	0	23	0.1201	0.0011
Arh	A1	A-A2	A-A2(2)	443	481	2	21	17	0	38	0.0825	0.0010
Arh	A1	A-A3	A-A3	242	NA	NA	NA	NA	NA	NA	0.0506	NA
Arh	A1	A-A3	A-A3(1)	690	731	2	30	28	0	58	0.2057	0.0010
Arh	A1	A-A3	A-A3(2)	565	605	2	37	34	0	71	0.1768	0.0012
Arh	A2	A-B1	A-B1	242	NA	NA	NA	NA	NA	NA	0.0332	NA
Arh	A2	A-B1	A-B1(1)	368	397	1	23	0	0	23	0.0743	0.0013
Arh	A2	A-B1	A-B1(2)	365	396	2	3	8	0	11	0.0884	0.0013
Arh	A2	A-B2	A-B2	128	NA	NA	NA	NA	NA	NA	0.0176	NA
Arh	A2	A-B2	A-B2(1)	265	288	1	11	0	0	11	0.0263	0.0003
Arh	A2	A-B2	A-B2(2)	277	313	2	15	18	0	33	0.0459	0.0008
Arh	A2	A-B2	A-B2(3)	309	342	2	21	15	0	36	0.0510	0.0007
Arh	A2	A-B2	A-B3	152	NA	NA	NA	NA	NA	NA	0.0251	NA
Arh	A2	A-B4	A-B4(b1)	729	780	2	41	45	0	86	0.2355	0.0012
Arh	A2	A-B4	A-B4(b2)	486	575	3	11	29	36	76	0.1629	0.0010
Arh	A2	A-B4	A-B4(b3)	755	803	2	3	4	0	7	0.2190	NA
Arh	A2	A-B4	A-B4(b4)	749	797	3	39	13	41	93	0.2159	0.0011
Arh	A2	A-B4	A-B4(c)	84	NA	NA	NA	NA	NA	NA	0.0108	NA
Arh	A2	A-B4	A-B4(c1)	498	537	2	19	22	0	41	0.3811	0.0010
Arh	A2	A-B4	A-B4(d1)	267	302	2	17	14	0	31	0.0407	0.0006
Arh	A2	A-B4	A-B4(d2)	375	439	3	9	29	26	64	0.1004	0.0009
Arh	A2	A-B4	A-B4(d3)	250	314	2	13	15	0	28	0.0494	0.0005
Arh	A2	A-B4	A-B4(d4)	429	475	3	21	25	23	69	0.0912	0.0007
Arh	A2	A-B4	A-B4(d5)	179	NA	NA	NA	NA	NA	NA	0.0262	NA
Arh	A2	A-B4	A-B4(d6)	111	NA	NA	NA	NA	NA	NA	0.0108	NA
Arh	A2	A-B4	A-B4(d7)	164	NA	NA	NA	NA	NA	NA	0.0247	NA
Arh	A2	NA	A-N	522	577	2	2	6	0	8	0.2147	NA
Arh	A2	A-C8	A-C8	328	NA	NA	NA	NA	NA	NA	0.1362	NA
Arh	A3	A-D	A-D1(1)	426	464	2	22	18	0	40	0.0679	0.0009
Arh	A3	A-D	A-D1(2)	479	516	2	34	31	0	65	0.0883	0.0012
Arh	A3	A-D	A-D2(1)	602	645	3	6	6	21	33	0.1551	0.0005
Arh	A3	A-D	A-D2(2)	331	366	2	4	0	0	4	0.0390	NA
Arh	A3	A-D	A-D2(3)	592	632	2	32	32	0	64	0.1218	0.0010
Arh	A3	A-D	A-D2(4)	447	483	2	14	22	0	36	0.0939	0.0011
Arh	A3	A-D	A-D2(5)	594	642	3	5	4	10	19	0.1521	0.0008
Arh	A3	A-D	A-D2(6)	534	574	3	4	7	15	26	0.1283	0.0006
Arh	A3	A-D	A-D2(a)	125	NA	NA	NA	NA	NA	NA	0.0201	NA
Arh	A3	A-D	A-D2(b)	159	NA	NA	NA	NA	NA	NA	0.0293	NA
Arh	A3	A-D	A-D2(c)	159	NA	NA	NA	NA	NA	NA	0.0245	NA
Arh	A3	A-D	A-D3	589	613	2	18	22	0	40	0.1076	0.0011
Arh	A3	A-D	A-D4(1)	348	377	2	16	28	0	44	0.0689	0.0009
Arh	A3	A-D	A-D4(2)	495	529	NA	0	0	0	0	0.0882	NA
Arh	A3	A-D	A-D4(3)	773	804	2	24	24	0	48	0.2122	0.0012
Arh	A3	A-D	A-D4(4)	633	691	3	28	22	30	80	0.2004	0.0011
Arh	A3	A-D	A-D4(5)	794	832	2	36	34	0	70	0.2225	0.0013
Arh	A3	A-D	A-D5	572	606	NA	0	0	0	0	0.1409	NA
Arh	A3	A-D	A-D10	388	422	NA	0	0	0	0	0.0548	NA
Arh	A3	A-D	A-D11	434	522	3	23	28	20	71	0.1338	0.0010

Carex pallescens, fs, Øvstedal

site	Block	IND	Shoot	HTF	TH	INF	NS (1)	NS (2)	NS (3)	TNS	BioS	sw
Ovs	O1	O-A1	O-A1	100	NA	NA	NA	NA	NA	NA	0.0220	NA
Ovs	O1	O-A1	O-A1(1)	442	483	2	7	15	0	22	0.1761	0.0002
Ovs	O1	O-A2	O-A2	356	414	3	1	12	13	26	0.0948	0.0006
Ovs	O1	O-A4	O-A4(1)	129	181	2	6	10	0	16	0.0227	0.0001
Ovs	O1	O-A4	O-A4(2)	212	250	3	7	20	19	46	0.0510	0.0006
Ovs	O1	O-A4	O-A4(3)	95	138	3	7	8	10	25	0.0290	0.0001
Ovs	O1	O-A4	O-A4(4)	415	NA	3	2	12	15	29	0.0960	0.0006
Ovs	O1	O-A4	O-A4(5)	560	613	2	9	12	0	21	0.1394	0.0007
Ovs	O1	O-A4	O-A4(6)	413	475	3	9	20	17	46	0.1122	0.0008
Ovs	O1	NA	O-W	71	118	NA	0	0	0	0	0.0237	NA
Ovs	O2	O-B1	O-B1(a)	654	698	2	20	21	0	41	0.1491	0.0009
Ovs	O2	O-B1	O-B1(b)	367	NA	NA	NA	NA	NA	NA	0.0838	NA
Ovs	O2	O-B1	O-B1(b1)	565	608	NA	0	0	0	0	0.1317	0.0008
Ovs	O2	O-B1	O-B1(c1)	505	542	2	13	15	0	28	0.0778	0.0003
Ovs	O2	O-B1	O-B1(c2)	523	561	3	29	20	3	52	0.0966	0.0005
Ovs	O2	O-B1	O-B1(e1)	309	327	2	8	18	0	26	0.0399	0.0002
Ovs	O2	O-B1	O-B1(e2)	423	447	2	1	7	0	8	0.0604	NA
Ovs	O2	O-B1	O-B1(e3)	286	317	2	7	6	0	13	0.0399	0.0002
Ovs	O3	O-C	O-C1(b1)	434	476	2	8	22	0	30	0.1159	0.0011
Ovs	O3	O-C	O-C1(b2)	544	NA	2	4	17	0	21	0.1734	0.0003
Ovs	O3	O-C	O-N	83	135	3	20	6	34	60	0.0293	0.0005
Ovs	O4	O-D	O-D1(b1)	536	583	2	14	20	0	34	0.1710	0.0003
Ovs	O4	O-D	O-D1(b2)	822	879	3	22	26	34	82	0.2645	0.0006
Ovs	O4	O-D	O-D1(b3)	548	NA	NA	NA	NA	NA	NA	0.1271	NA
Ovs	O4	O-D	O-D1(c1)	525	579	3	22	27	26	75	0.1420	0.0004
Ovs	O4	O-D	O-D1(c2)	655	697	2	38	34	0	72	0.2077	0.0010
Ovs	O4	O-D	O-D1(c3)	539	585	2	22	26	0	48	0.1492	0.0009
Ovs	O4	O-D	O-D1(d1)	764	802	2	0	3	0	3	0.2031	NA
Ovs	O4	O-D	O-D1(d2)	827	863	2	20	26	0	46	0.2626	0.0009
Ovs	O4	O-D	O-D1(d3)	166	NA	NA	NA	NA	NA	NA	0.0372	NA
Ovs	O4	O-D	O-D1(d4)	246	NA	NA	NA	NA	NA	NA	0.0548	NA
Ovs	O4	O-D	O-D1(e)	220	NA	NA	NA	NA	NA	NA	0.0516	NA
Ovs	O4	O-D	O-D1(e1)	676	723	2	14	32	0	46	0.1579	0.0006
Ovs	O4	O-D	O-D1(e2)	694	736	2	5	16	0	21	0.1791	0.0007
Ovs	O4	O-D	O-D1(e3)	576	607	1	28	0	0	28	0.1377	0.0009
Ovs	O4	O-D	O-D1(f)	215	NA	NA	NA	NA	NA	NA	0.0408	NA
Ovs	O4	O-D	O-D1(f1)	575	610	2	28	33	0	61	0.1396	0.0010
Ovs	O4	O-D	O-G	266	293	2	24	25	0	49	0.0582	0.0009

Appendix 2: Measurements by species and site on genet level

Carex capillaris, gen, Veskre 1

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Vesk	V	V-A1	veg	1	1	0	0	0	0	0	7	39	87	0	0	0.0079	0.0000	0.0115	0.0072	6	0.0016	7	5.57	0.0131	0.0151
Vesk	V	V-A2	flow	4	4	0	185	1	0	1	23	75	120	2	12	0.0435	0.0161	0.0545	0.0349	4	0.0013	5.75	13.04	0.0719	0.0784
Vesk	V	V-A3	flow	3	3	0	192	2	0	2	10	75	116	5	26	0.0428	0.0390	0.0272	0.0339	1	0.0020	3.33	22.5	0.0682	0.0767
Vesk	V	V-A4	veg	1	1	0	0	0	0	0	7	72	92	0	0	0.0137	0.0000	0.0215	0.0123	0	0.0000	7	10.29	0.0215	0.0260
Vesk	V	V-A5	flow	4	2	2	132	1	0	1	17	52	125	2	4	0.0448	0.0089	0.0288	0.0377	11	0.0065	8.5	6.12	0.0442	0.0825
Vesk	V	V-B1	flow	4	4	0	244	1	0	1	22	69	125	3	6	0.0849	0.0250	0.0415	0.0790	6	0.0050	5.5	12.55	0.0715	0.1639
Vesk	V	V-B2	veg	3	3	0	0	0	0	0	20	57	125	0	0	0.0713	0.0000	0.0355	0.0510	18	0.0100	6.67	8.55	0.0455	0.1223
Vesk	V	V-B3	veg	1	1	0	0	0	0	0	10	52	75	0	0	0.0418	0.0000	0.0172	0.0423	15	0.0070	10	5.2	0.0242	0.0841
Vesk	V	V-B4	veg	1	1	0	0	0	0	0	3	41	39	0	0	0.0041	0.0000	0.0021	0.0040	4	0.0008	3	13.67	0.0029	0.0081
Vesk	V	V-B5	veg	1	1	0	0	0	0	0	4	32	44	0	0	0.0055	0.0000	0.0026	0.0032	5	0.0011	4	8	0.0037	0.0087
Vesk	V	V-B6	flow	5	5	0	167	2	0	2	30	53	129	4	19	0.0779	0.0250	0.0448	0.0614	40	0.0190	6	8.83	0.0888	0.1393
Vesk	V	V-B8	flow	7	6	1	213	6	0	6	25	42	144	14	52	0.0850	0.0945	0.0321	0.0845	51	0.0274	4.17	10.08	0.1540	0.1695
Vesk	V	V-C1	flow	2	2	0	164	1	0	1	11	57	100	0	0	0.0844	0.0140	0.0213	0.0590	18	0.0107	5.5	10.36	0.0460	0.1434
Vesk	V	V-C2	veg	5	5	0	0	2	2	0	20	65	81	0	0	0.0307	0.0044	0.0341	0.0397	18	0.0079	4	16.25	0.0464	0.0704
Vesk	V	V-C3	veg	1	1	0	0	0	0	0	8	55	106	0	0	0.0306	0.0000	0.0150	0.0267	11	0.0060	8	6.88	0.0210	0.0573
Vesk	V	V-C4	flow	4	3	1	56	1	0	1	24	52	106	1	5	0.0549	0.0014	0.0431	0.0456	11	0.0065	8	6.5	0.0510	0.1005
Vesk	V	V-C5	veg	2	2	0	0	0	0	0	21	74	147	0	0	0.0692	0.0000	0.0540	0.0509	16	0.0105	10.5	7.05	0.0645	0.1201
Vesk	V	V-C6	veg	1	1	0	0	0	0	0	4	28	57	0	0	0.0053	0.0000	0.0019	0.0027	5	0.0011	4	7	0.0030	0.0080
Vesk	V	V-D1	flow	3	2	1	227	2	0	2	11	40	104	4	16	0.0568	0.0330	0.0235	0.0814	9	0.0077	5.5	7.27	0.0642	0.1382
Vesk	V	V-D10	veg	3	2	1	0	0	0	0	6	64	124	0	0	0.1068	0.0000	0.0179	0.0751	7	0.0070	3	21.33	0.0249	0.1819
Vesk	V	V-D11	veg	1	1	0	0	0	0	0	4	29	122	0	0	0.0115	0.0000	0.0092	0.0195	3	0.0036	4	7.25	0.0128	0.0310
Vesk	V	V-D12	veg	3	2	1	0	0	0	0	9	73	127	0	0	0.1159	0.0000	0.0208	0.0928	10	0.0136	4.5	16.22	0.0344	0.2087
Vesk	V	V-D2	veg	3	3	0	0	0	0	0	18	46	84	0	0	0.0312	0.0000	0.0321	0.0654	2	0.0024	6	7.67	0.0345	0.0966
Vesk	V	V-D3	flow	2	2	0	185	1	0	1	7	39	112	3	21	0.0377	0.0199	0.0112	0.0369	10	0.0078	3.5	11.14	0.0389	0.0746
Vesk	V	V-D4	veg	3	2	1	0	0	0	0	10	36	89	0	0	0.0187	0.0000	0.0185	0.0422	5	0.0034	5	7.2	0.0219	0.0609
Vesk	V	V-D5	veg	2	1	1	0	0	0	0	4	28	89	0	0	0.0067	0.0000	0.0074	0.0249	4	0.0040	4	7	0.0114	0.0316
Vesk	V	V-D6	veg	1	1	0	0	0	0	0	7	31	92	0	0	0.0135	0.0000	0.0070	0.0182	0	0.0000	7	4.43	0.0070	0.0317
Vesk	V	V-E1	flow	11	9	2	196	3	0	3	11	50	126	7	39	0.0586	0.0587	0.0205	0.1038	21	0.0224	1.22	40.91	0.1016	0.1624
Vesk	V	V-E10	veg	1	1	0	0	0	0	0	6	74	75	0	0	0.0305	0.0000	0.0167	0.0000	7	0.0088	6	12.33	0.0255	0.0305
Vesk	V	V-E11	veg	1	1	0	0	0	0	0	6	65	111	0	0	0.0435	0.0000	0.0164	0.0000	9	0.0069	6	10.83	0.0233	0.0435
Vesk	V	V-E12	flow	4	4	0	104	1	0	1	13	38	89	0	0	0.0444	0.0066	0.0186	0.0940	8	0.0076	3.25	11.69	0.0328	0.1384
Vesk	V	V-E13	veg	1	1	0	0	0	0	0	5	56	100	0	0	0.0218	0.0000	0.0084	0.0363	2	0.0014	5	11.2	0.0098	0.0581
Vesk	V	V-E14	veg	1	1	0	0	0	0	0	4	43	67	0	0	0.0137	0.0000	0.0034	0.0268	0	0.0000	4	10.75	0.0034	0.0405

Carex capillaris, gen, Veskre 2

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Vesk	V	V-E15	veg	1	1	0	0	0	0	0	5	64	93	0	0	0.0300	0.0000	0.0100	0.0300	4	0.0000	5	12.8	0.0100	0.0600
Vesk	V	V-E16	veg	1	1	0	0	0	0	0	4	49	51	0	0	0.0100	0.0000	0.0000	0.0100	0	0.0000	4	12.25	0.0000	0.0200
Vesk	V	V-E17	veg	1	1	0	0	0	0	0	4	44	63	0	0	0.0100	0.0000	0.0000	0.0200	0	0.0000	4	11	0.0000	0.0200
Vesk	V	V-E2	flow	2	2	0	149	1	0	1	8	43	145	3	12	0.0500	0.0200	0.0200	0.0600	5	0.0000	4	10.75	0.0400	0.1100
Vesk	V	V-E3	flow	2	2	0	245	1	0	1	8	61	71	2	15	0.0300	0.0200	0.0200	0.0500	7	0.0100	4	15.25	0.0500	0.0700
Vesk	V	V-E4	flow	2	2	0	243	1	0	1	9	68	86	2	14	0.0400	0.0200	0.0300	0.0400	14	0.0100	4.5	15.11	0.0600	0.0800
Vesk	V	V-E5	flow	4	3	1	230	1	0	1	13	82	110	2	13	0.1000	0.0200	0.0300	0.1400	9	0.0100	4.33	18.92	0.0600	0.2400
Vesk	V	V-E7	flow	2	2	0	300	1	0	1	7	62	117	2	12	0.0800	0.0300	0.0100	0.1000	2	0.0000	3.5	17.71	0.0400	0.1800
Vesk	V	V-E8	veg	1	1	0	0	0	0	0	5	102	81	0	0	0.0200	0.0000	0.0200	0.0400	3	0.0000	5	20.4	0.0200	0.0500
Vesk	V	V-E9	veg	4	3	1	0	0	0	0	16	59	99	0	0	0.0600	0.0000	0.0300	0.1100	3	0.0000	5.33	11.06	0.0300	0.1700
Vesk	V	V-F1	flow	7	7	0	149	2	0	2	27	58	92	2	7	0.0700	0.0100	0.0300	0.1200	0	0.0000	3.86	15.04	0.0400	0.1900
Vesk	V	V-F10	veg	1	1	0	0	0	0	0	5	55	63	0	0	0.0100	0.0000	0.0000	0.0100	8	0.0100	5	11	0.0100	0.0200
Vesk	V	V-F11	veg	1	0	1	0	0	0	0	0	0	103	0	0	0.0200	0.0000	0.0000	0.0400	0	0.0000	0	NA	0.0000	0.0600
Vesk	V	V-F12	flow	5	4	1	132	2	0	2	5	37	131	4	29	0.0500	0.0200	0.0000	0.1500	21	0.0200	1.25	29.6	0.0500	0.2100
Vesk	V	V-F13	flow	9	6	3	134	1	0	1	40	49	132	2	14	0.0800	0.0100	0.0400	0.3100	21	0.0100	6.67	7.35	0.0700	0.3900
Vesk	V	V-F14	veg	1	1	0	0	0	0	0	5	32	84	0	0	0.0100	0.0000	0.0100	0.0100	10	0.0000	5	6.4	0.0100	0.0200
Vesk	V	V-F15	veg	1	1	0	0	0	0	0	6	26	43	0	0	0.0100	0.0000	0.0000	0.0200	3	0.0000	6	4.33	0.0100	0.0400
Vesk	V	V-F16	veg	3	1	2	0	0	0	0	2	22	71	0	0	0.0100	0.0000	0.0000	0.0300	10	0.0100	2	11	0.0100	0.0400
Vesk	V	V-F17	veg	2	1	1	0	0	0	0	12	43	84	0	0	0.0400	0.0000	0.0100	0.1500	5	0.0000	12	3.58	0.0200	0.2000
Vesk	V	V-F18	veg	1	1	0	0	0	0	0	3	25	40	0	0	0.0100	0.0000	0.0000	0.0300	4	0.0000	3	8.33	0.0000	0.0300
Vesk	V	V-F19	veg	1	1	0	0	0	0	0	8	27	80	0	0	0.0100	0.0000	0.0000	0.0100	3	0.0000	8	3.38	0.0000	0.0200
Vesk	V	V-F2	veg	3	2	1	0	0	0	0	18	50	84	0	0	0.0300	0.0000	0.0200	0.0400	8	0.0000	9	5.56	0.0200	0.0700
Vesk	V	V-F20	veg	1	0	1	0	0	0	0	0	0	93	0	0	0.0100	0.0000	0.0000	0.0200	0	0.0000	0	NA	0.0000	0.0300
Vesk	V	V-F21	veg	1	0	1	0	0	0	0	0	0	68	0	0	0.0100	0.0000	0.0000	0.0200	0	0.0000	0	NA	0.0000	0.0300
Vesk	V	V-F3	veg	1	1	0	0	0	0	0	4	22	76	0	0	0.0000	0.0000	0.0000	0.0000	7	0.0000	4	5.5	0.0000	0.0100
Vesk	V	V-F4	veg	1	1	0	0	0	0	0	5	24	81	0	0	0.0100	0.0000	0.0000	0.0100	10	0.0000	5	4.8	0.0100	0.0300
Vesk	V	V-F5	veg	1	1	0	0	0	0	0	3	22	61	0	0	0.0000	0.0000	0.0000	0.0100	10	0.0000	3	7.33	0.0000	0.0100
Vesk	V	V-F6	veg	3	2	1	0	0	0	0	5	21	89	0	0	0.1000	0.0000	0.0000	0.1900	11	0.0000	2.5	8.4	0.0000	0.2900
Vesk	V	V-F7	veg	1	1	0	0	0	0	0	4	31	100	0	0	0.0300	0.0000	0.0000	0.0400	10	0.0000	4	7.75	0.0100	0.0600
Vesk	V	V-F8	flow	3	2	1	78	1	0	1	7	27	123	0	0	0.0400	0.0000	0.0100	0.1200	16	0.0100	3.5	7.71	0.0200	0.1700
Vesk	V	V-F9	veg	1	1	0	0	0	0	0	5	34	74	0	0	0.0000	0.0000	0.0000	0.0100	0	0.0000	5	6.8	0.0000	0.0100
Vesk	V	V-G1	flow	6	4	2	194	2	0	2	19	44	92	4	27	0.0900	0.0400	0.0200	0.1200	10	0.0100	4.75	9.26	0.0700	0.2100

Carex capillaris, gen, Låvisdalen 1

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Lav	L	L-A1	flow	5	5	0	77	1	0	1	10	48	125	3	11	0.0304	0.0070	0.0102	0.0188	11	0.0070	2	24	0.0242	0.0492
Lav	L	L-A2	flow	4	3	1	81	1	0	1	10	51	90	2	8	0.0127	0.0060	0.0114	0.0128	8	0.0039	3.33	15.3	0.0213	0.0255
Lav	L	L-A3	veg	1	1	0	0	0	0	0	4	45	65	0	0	0.0043	0.0000	0.0025	0.0028	3	0.0010	4	11.25	0.0035	0.0071
Lav	L	L-B1	flow	4	3	1	105	2	0	2	11	57	89	6	38	0.0159	0.0212	0.0199	0.0298	21	0.0161	3.67	15.55	0.0572	0.0457
Lav	L	L-B2	flow	4	4	0	125	1	0	1	13	73	95	2	15	0.0313	0.0111	0.0186	0.0400	25	0.0122	3.25	22.46	0.0419	0.0713
Lav	L	L-B3	veg	3	3	0	0	0	0	0	13	79	89	0	0	0.0298	0.0000	0.0343	0.0327	16	0.0085	4.33	18.23	0.0428	0.0625
Lav	L	L-B4	veg	2	2	0	0	0	0	0	6	56	80	0	0	0.0133	0.0000	0.0062	0.0193	8	0.0074	3	18.67	0.0136	0.0326
Lav	L	L-B5	flow	5	3	2	120	3	0	3	14	58	102	4	31	0.0523	0.0283	0.0219	0.0640	39	0.0240	4.67	12.43	0.0742	0.1163
Lav	L	L-C1	veg	1	1	0	0	0	0	0	6	39	53	0	0	0.0115	0.0000	0.0037	0.0210	10	0.0058	6	6.5	0.0095	0.0325
Lav	L	L-C10	veg	1	1	0	0	0	0	0	6	46	70	0	0	0.0121	0.0000	0.0072	0.0211	11	0.0043	6	7.67	0.0115	0.0332
Lav	L	L-C11	veg	1	1	0	0	0	0	0	4	40	60	0	0	0.0044	0.0000	0.0024	0.0096	10	0.0020	4	10	0.0044	0.0140
Lav	L	L-C12	veg	1	1	0	0	0	0	0	5	32	83	0	0	0.0068	0.0000	0.0029	0.0117	11	0.0029	5	6.4	0.0058	0.0185
Lav	L	L-C13	veg	1	1	0	0	0	0	0	4	69	63	0	0	0.0125	0.0000	0.0109	0.0253	14	0.0074	4	17.25	0.0183	0.0378
Lav	L	L-C14	veg	1	1	0	0	0	0	0	7	58	59	0	0	0.0047	0.0000	0.0121	0.0053	8	0.0022	7	8.29	0.0143	0.0100
Lav	L	L-C15	veg	1	1	0	0	0	0	0	4	36	55	0	0	0.0064	0.0000	0.0031	0.0111	11	0.0028	4	9	0.0059	0.0175
Lav	L	L-C16	flow	2	2	0	0	1	1	0	7	77	95	0	0	0.0144	0.0017	0.0064	0.0243	14	0.0058	3.5	22	0.0139	0.0387
Lav	L	L-C17	flow	4	4	0	0	1	1	0	8	40	69	0	0	0.0290	0.0052	0.0077	0.0550	30	0.0140	2	20	0.0269	0.0840
Lav	L	L-C19	veg	4	2	2	0	0	0	0	8	45	76	0	0	0.0126	0.0000	0.0060	0.0202	26	0.0080	4	11.25	0.0140	0.0328
Lav	L	L-C2	veg	1	1	0	0	0	0	0	4	32	68	0	0	0.0040	0.0000	0.0031	0.0055	10	0.0018	4	8	0.0049	0.0095
Lav	L	L-C22	veg	1	1	0	0	0	0	0	5	45	88	0	0	0.0121	0.0000	0.0079	0.0135	16	0.0047	5	9	0.0126	0.0256
Lav	L	L-C23	veg	1	1	0	0	0	0	0	4	34	35	0	0	0.0030	0.0000	0.0021	0.0057	12	0.0020	4	8.5	0.0041	0.0087
Lav	L	L-C24	flow	4	4	0	53	1	0	1	19	51	70	2	8	0.0362	0.0024	0.0236	0.0666	21	0.0069	4.75	10.74	0.0329	0.1028
Lav	L	L-C3	veg	1	1	0	0	0	0	0	4	35	56	0	0	0.0052	0.0000	0.0021	0.0088	11	0.0022	4	8.75	0.0043	0.0140
Lav	L	L-C4	veg	1	1	0	0	0	0	0	6	47	64	0	0	0.0172	0.0000	0.0079	0.0260	13	0.0069	6	7.83	0.0148	0.0432
Lav	L	L-C5	veg	1	1	0	0	0	0	0	4	27	57	0	0	0.0036	0.0000	0.0015	0.0095	10	0.0043	4	6.75	0.0058	0.0131
Lav	L	L-C6	veg	1	1	0	0	0	0	0	4	44	58	0	0	0.0077	0.0000	0.0052	0.0138	9	0.0032	4	11	0.0084	0.0215
Lav	L	L-C7	veg	1	1	0	0	0	0	0	4	39	45	0	0	0.0025	0.0000	0.0022	0.0048	7	0.0014	4	9.75	0.0036	0.0073
Lav	L	L-C8	veg	1	1	0	0	0	0	0	5	38	92	0	0	0.0101	0.0000	0.0026	0.0110	16	0.0078	5	7.6	0.0104	0.0211
Lav	L	L-C9	veg	1	1	0	0	0	0	0	3	31	44	0	0	0.0033	0.0000	0.0016	0.0049	7	0.0015	3	10.33	0.0031	0.0082

Carex capillaris, gen, Låvisdalen 2

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Lav	L	L-D1	veg	1	0	1	0	0	0	0	0	0	87	0	0	0.0178	0.0000	0.0000	0.0204	0	0.0000	0	NA	0.0000	0.0382
Lav	L	L-D4	veg	2	2	0	0	0	0	0	5	72	77	0	0	0.0086	0.0000	0.0092	0.0151	9	0.0066	2.5	28.8	0.0158	0.0237
Lav	L	L-D8	flow	3	3	0	113	1	0	1	16	101	70	3	9	0.0329	0.0095	0.0396	0.0709	13	0.0192	5.33	18.94	0.0683	0.1038
Lav	L	L-D9	flow	9	8	1	130	4	1	3	38	110	151	8	34	0.1019	0.0448	0.1139	0.1696	24	0.0343	4.75	23.16	0.1930	0.2715
Lav	L	L-E1	flow	5	3	2	123	2	1	1	8	92	103	2	15	0.0440	0.0140	0.0172	0.0661	13	0.0128	2.67	34.5	0.0440	0.1101
Lav	L	L-E10	flow	1	1	0	119	1	0	1	7	53	53	2	11	0.0058	0.0089	0.0099	0.0094	5	0.0031	7	7.57	0.0219	0.0152
Lav	L	L-E11	flow	3	3	0	127	1	0	1	10	67	91	3	19	0.0262	0.0119	0.0161	0.0376	10	0.0077	3.33	20.1	0.0357	0.0638
Lav	L	L-E12	flow	7	5	2	163	3	0	3	24	79	109	9	63	0.0650	0.0359	0.0372	0.0968	22	0.0203	4.8	16.46	0.0934	0.1618
Lav	L	L-E2	veg	1	1	0	0	0	0	0	6	67	79	0	0	0.0076	0.0000	0.0123	0.0121	8	0.0049	6	11.17	0.0172	0.0197
Lav	L	L-E3	veg	1	1	0	0	0	0	0	6	63	65	0	0	0.0133	0.0000	0.0111	0.0226	7	0.0047	6	10.5	0.0158	0.0359
Lav	L	L-E4	flow	4	4	0	131	1	0	1	11	80	105	3	26	0.0417	0.0117	0.0204	0.0575	15	0.0104	2.75	29.09	0.0425	0.0992
Lav	L	L-E5	flow	2	2	0	92	1	0	1	10	77	92	3	15	0.0102	0.0078	0.0179	0.0202	9	0.0065	5	15.4	0.0322	0.0304
Lav	L	L-E6	flow	2	1	1	135	2	1	1	7	78	65	3	22	0.0084	0.0150	0.0131	0.0200	6	0.0067	7	11.14	0.0348	0.0284
Lav	L	L-E7	veg	1	1	0	0	0	0	0	5	97	58	0	0	0.0031	0.0000	0.0154	0.0085	5	0.0025	5	19.4	0.0179	0.0116
Lav	L	L-E8	flow	1	1	0	99	1	0	1	6	30	87	2	13	0.0091	0.0000	0.0059	0.0135	5	0.0038	6	5	0.0097	0.0226
Lav	L	L-E9	flow	2	2	0	125	1	0	1	10	81	101	3	23	0.0398	0.0110	0.0213	0.0602	8	0.0058	5	16.2	0.0381	0.1000
Lav	L	L-F1	flow	6	3	3	104	2	0	2	15	67	173	6	25	0.0479	0.0124	0.0222	0.0830	18	0.0167	5	13.4	0.0513	0.1309
Lav	L	L-F11	flow	2	1	1	0	1	1	0	5	74	82	0	0	0.0184	0.0033	0.0119	0.0306	14	0.0118	5	14.8	0.0270	0.0490
Lav	L	L-F13	flow	2	1	1	0	1	1	0	4	60	115	0	0	0.0222	0.0027	0.0062	0.0387	13	0.0088	4	15	0.0177	0.0609
Lav	L	L-F2	veg	2	1	1	0	0	0	0	5	75	86	0	0	0.0160	0.0000	0.0121	0.0270	15	0.0121	5	15	0.0242	0.0430
Lav	L	L-F3	flow	8	4	4	99	2	1	1	21	74	103	2	12	0.0531	0.0132	0.0329	0.0644	22	0.0317	5.25	14.1	0.0778	0.1175
Lav	L	L-F4	flow	3	2	1	91	1	0	1	7	73	85	2	7	0.0220	0.0057	0.0135	0.0428	9	0.0108	3.5	20.86	0.0300	0.0648
Lav	L	L-F5	flow	5	2	3	135	3	1	2	5	27	84	5	16	0.0526	0.0147	0.0045	0.0759	29	0.0225	2.5	10.8	0.0417	0.1285
Lav	L	L-F6	veg	7	7	0	0	0	0	0	13	75	119	0	0	0.0976	0.0000	0.0216	0.1704	34	0.0255	1.86	40.38	0.0471	0.2680
Lav	L	L-F7	flow	5	3	2	114	3	1	2	12	60	117	2	10	0.0386	0.0147	0.0194	0.0575	24	0.0134	4	15	0.0475	0.0961
Lav	L	L-F8	flow	5	3	2	89	2	1	1	13	58	114	1	5	0.0434	0.0080	0.0141	0.0563	28	0.0309	4.33	13.38	0.0530	0.0997
Lav	L	L-F9	veg	1	1	0	0	0	0	0	5	64	99	0	0	0.0181	0.0000	0.0117	0.0237	10	0.0078	5	12.8	0.0195	0.0418
Lav	L	L-G1	veg	2	1	1	0	0	0	0	4	78	104	0	0	0.0208	0.0000	0.0124	0.0341	13	0.0122	4	19.5	0.0246	0.0549
Lav	L	L-G2	flow	2	2	0	105	1	0	1	10	77	131	3	13	0.0275	0.0090	0.0209	0.0365	13	0.0137	5	15.4	0.0436	0.0640
Lav	L	L-G3	flow	2	2	0	109	1	0	1	7	60	89	2	9	0.0255	0.0073	0.0091	0.0359	9	0.0089	3.5	17.14	0.0253	0.0614
Lav	L	L-G4	veg	2	1	1	0	0	0	0	2	35	85	0	0	0.0241	0.0000	0.0012	0.0227	11	0.0087	2	17.5	0.0099	0.0468
Lav	L	L-G5	veg	2	2	0	0	0	0	0	5	68	60	0	0	0.0033	0.0000	0.0058	0.0043	8	0.0038	2.5	27.2	0.0096	0.0076

Carex capillaris, gen, Rambera 1

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Ram	R1	R-A1	flow	6	4	2	257	2	0	2	15	78	98	6	39	0.1087	0.0556	0.0500	0.1448	31	0.0535	3.75	20.8	0.1591	0.2535
Ram	R1	R-A2	veg	1	1	0	0	0	0	0	2	59	151	0	0	0.0529	0.0000	0.0088	0.0629	3	0.0061	2	29.5	0.0149	0.1158
Ram	R1	R-A3	veg	1	1	0	0	0	0	0	2	30	81	0	0	0.0096	0.0000	0.0038	0.0109	8	0.0076	2	15	0.0114	0.0205
Ram	R1	R-A4	veg	1	1	0	0	0	0	0	3	54	73	0	0	0.0302	0.0000	0.0114	0.0482	7	0.0105	3	18	0.0219	0.0784
Ram	R1	R-A5	veg	1	1	0	0	0	0	0	3	35	58	0	0	0.0219	0.0000	0.0046	0.0170	3	0.0010	3	11.67	0.0056	0.0389
Ram	R1	R-A6	veg	1	1	0	0	0	0	0	3	53	109	0	0	0.0784	0.0000	0.0171	0.0541	9	0.0110	3	17.67	0.0281	0.1325
Ram	R2	R-B1	flow	1	1	0	143	1	0	1	5	35	94	2	9	0.0143	0.0081	0.0044	0.0371	8	0.0048	5	7	0.0173	0.0514
Ram	R2	R-B2	veg	2	2	0	0	0	0	0	9	57	107	0	0	0.0439	0.0000	0.0190	0.0656	10	0.0106	4.5	12.67	0.0296	0.1095
Ram	R2	R-B3	flow	2	2	0	191	1	0	1	7	45	109	2	14	0.0279	0.0190	0.0099	0.0801	10	0.0124	3.5	12.86	0.0413	0.1080
Ram	R2	R-B4	veg	1	1	0	0	0	0	0	2	51	78	0	0	0.0150	0.0000	0.0053	0.0198	0	0.0000	2	25.5	0.0053	0.0348
Ram	R3	R-C1	flow	3	3	0	230	1	0	1	14	77	105	2	15	0.0565	0.0259	0.0280	0.0958	17	0.0182	4.67	16.5	0.0721	0.1523
Ram	R3	R-C2	veg	3	1	2	0	0	0	0	6	76	103	0	0	0.0829	0.0000	0.0216	0.1207	20	0.0191	6	12.67	0.0407	0.2036
Ram	R3	R-C3	flow	2	2	0	260	1	0	1	12	52	99	3	15	0.0506	0.0324	0.0185	0.0816	15	0.0191	6	8.67	0.0700	0.1322
Ram	R3	R-C4	flow	6	6	0	0	1	1	0	22	80	127	0	0	0.1193	0.0190	0.0636	0.1931	30	0.0293	3.67	21.82	0.1119	0.3124
Ram	R3	R-C5	flow	2	2	0	239	1	0	1	8	78	114	3	25	0.0492	0.0314	0.0189	0.1186	7	0.0106	4	19.5	0.0609	0.1678
Ram	R3	R-C6	flow	3	3	0	172	1	1	0	11	62	99	2	3	0.0410	0.0266	0.0216	0.0992	21	0.0214	3.67	16.91	0.0696	0.1402
Ram	R3	R-C7	veg	3	2	1	0	0	0	0	11	59	119	0	0	0.0264	0.0000	0.0216	0.0794	18	0.0187	5.5	10.73	0.0403	0.1058
Ram	R3	R-C8	flow	3	2	1	295	2	1	1	17	72	104	3	17	0.0312	0.0839	0.0375	0.1325	21	0.0257	8.5	8.47	0.1471	0.1637
Ram	R3	R-C9	flow	4	2	2	199	2	0	2	9	45	126	6	35	0.0641	0.0468	0.0126	0.0736	23	0.0149	4.5	10	0.0743	0.1377

Carex capillaris, gen, Rambera 2

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Ram	R4	R-D1	flow	26	26	0	279	9	0	9	94	90	128	24	117	0.3198	0.2435	0.2181	0.5255	75	0.0502	3.62	24.89	0.5118	0.8453
Ram	R5	R-E	flow	26	16	10	227	8	4	4	87	66	132	7	39	0.4495	0.1275	0.1404	0.4408	91	0.0588	5.44	12.14	0.3267	0.8903
Ram	R5	R-F	flow	18	14	4	192	3	0	3	92	51	101	6	38	0.3492	0.0523	0.1014	0.4278	60	0.0272	6.57	7.76	0.1809	0.7770
Ram	R6	R-G1	veg	1	1	0	0	0	0	0	3	37	47	0	0	0.0052	0.0000	0.0021	0.0032	3	0.0011	3	12.33	0.0032	0.0084
Ram	R6	R-G10	veg	1	0	1	0	0	0	0	0	0	76	0	0	0.0183	0.0000	0.0000	0.0206	6	0.0082	0	NA	0.0082	0.0389
Ram	R6	R-G11	veg	1	1	0	0	0	0	0	3	47	65	0	0	0.0150	0.0000	0.0055	0.0185	4	0.0026	3	15.67	0.0081	0.0335
Ram	R6	R-G12	veg	1	0	1	0	0	0	0	0	0	61	0	0	0.0095	0.0000	0.0000	0.0092	5	0.0048	0	NA	0.0048	0.0187
Ram	R6	R-G13	veg	1	1	0	0	0	0	0	5	49	96	0	0	0.0204	0.0000	0.0085	0.0208	0	0.0000	5	9.8	0.0085	0.0412
Ram	R6	R-G14	veg	1	1	0	0	0	0	0	3	55	103	0	0	0.0268	0.0000	0.0097	0.0283	0	0.0000	3	18.33	0.0097	0.0551
Ram	R6	R-G15	veg	2	1	1	0	0	0	0	2	8	48	0	0	0.0067	0.0000	0.0006	0.0160	5	0.0082	2	4	0.0088	0.0227
Ram	R6	R-G16	flow	9	4	5	235	5	2	3	16	57	119	8	37	0.0924	0.0907	0.0267	0.1470	37	0.0395	4	14.25	0.1569	0.2394
Ram	R6	R-G17	flow	10	4	6	269	4	2	2	30	56	124	6	45	0.1142	0.1149	0.0621	0.1369	42	0.0301	7.5	7.47	0.2071	0.2511
Ram	R6	R-G2	veg	1	0	1	0	0	0	0	0	0	72	0	0	0.0231	0.0000	0.0000	0.0235	8	0.0098	0	NA	0.0098	0.0466
Ram	R6	R-G3	veg	1	1	0	0	0	0	0	2	79	105	0	0	0.0671	0.0000	0.0097	0.0344	3	0.0049	2	39.5	0.0146	0.1015
Ram	R6	R-G4	veg	1	1	0	0	0	0	0	2	65	69	0	0	0.0339	0.0000	0.0063	0.0360	5	0.0086	2	32.5	0.0149	0.0699
Ram	R6	R-G5	veg	1	1	0	0	0	0	0	4	69	89	0	0	0.0480	0.0000	0.0194	0.0396	4	0.0102	4	17.25	0.0296	0.0876
Ram	R6	R-G6	veg	1	1	0	0	0	0	0	4	51	119	0	0	0.0602	0.0000	0.0116	0.0321	0	0.0000	4	12.75	0.0116	0.0923
Ram	R6	R-G7	veg	1	1	0	0	0	0	0	2	37	106	0	0	0.0290	0.0000	0.0035	0.0169	2	0.0009	2	18.5	0.0044	0.0459
Ram	R6	R-G8	veg	1	1	0	0	0	0	0	3	34	86	0	0	0.0119	0.0000	0.0028	0.0282	5	0.0103	3	11.33	0.0131	0.0401
Ram	R6	R-G9	veg	1	1	0	0	0	0	0	3	74	132	0	0	0.0259	0.0000	0.0139	0.0265	0	0.0000	3	24.67	0.0139	0.0524

Carex capillaris, gen, Skjellingahaugen 1

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Skj	S1	S-A1	flow	12	11	1	114	4	1	3	28	39	77	6	30	0.0608	0.0164	0.0195	0.0873	20	0.0090	2.55	15.32	0.0449	0.1481
Skj	S1	S-A2	veg	1	1	0	0	0	0	0	7	26	74	0	0	0.0053	0.0000	0.0057	0.0075	9	0.0027	7	3.71	0.0084	0.0128
Skj	S1	S-A3	veg	1	1	0	0	0	0	0	7	37	96	0	0	0.0103	0.0000	0.0063	0.0071	5	0.0071	7	5.29	0.0134	0.0174
Skj	S1	S-A4	veg	1	1	0	0	0	0	0	4	36	101	0	0	0.0124	0.0000	0.0039	0.0076	8	0.0050	4	9	0.0089	0.0200
Skj	S2	S-B1	flow	3	3	0	155	1	0	1	6	39	147	2	14	0.0236	0.0116	0.0065	0.0250	3	0.0013	2	19.5	0.0194	0.0486
Skj	S2	S-B3	flow	4	3	1	120	2	1	1	15	56	160	2	18	0.0231	0.0175	0.0212	0.0415	10	0.0080	5	11.2	0.0467	0.0646
Skj	S2	S-C1	veg	1	1	0	0	0	0	0	4	29	65	0	0	0.0045	0.0000	0.0026	0.0045	4	0.0010	4	7.25	0.0036	0.0090
Skj	S2	S-C2	flow	2	2	0	115	2	0	2	13	44	119	3	19	0.0222	0.0111	0.0125	0.0239	13	0.0095	6.5	6.77	0.0331	0.0461
Skj	S2	S-D1	flow	4	3	1	130	2	1	1	12	52	82	2	14	0.0323	0.0120	0.0171	0.0463	17	0.0109	4	13	0.0400	0.0786
Skj	S2	S-D2	flow	2	1	1	0	1	1	0	8	49	86	0	0	0.0258	0.0071	0.0099	0.0317	9	0.0059	8	6.13	0.0229	0.0575
Skj	S2	S-D3	flow	2	1	1	0	1	1	0	6	52	82	0	0	0.0215	0.0020	0.0107	0.0209	12	0.0082	6	8.67	0.0209	0.0424
Skj	S2	S-E1	flow	3	2	1	110	2	1	1	10	46	89	2	14	0.0134	0.0095	0.0122	0.0165	4	0.0022	5	9.2	0.0239	0.0299
Skj	S2	S-E2	veg	1	1	0	0	0	0	0	2	29	44	0	0	0.0042	0.0000	0.0013	0.0087	1	0.0008	2	14.5	0.0021	0.0129
Skj	S2	S-E3	veg	1	1	0	0	0	0	0	2	25	47	0	0	0.0082	0.0000	0.0014	0.0074	6	0.0020	2	12.5	0.0034	0.0156
Skj	S2	S-E5	flow	3	2	1	105	2	0	2	7	39	59	2	12	0.0077	0.0101	0.0068	0.0074	7	0.0039	3.5	11.14	0.0208	0.0151
Skj	S2	S-E6	veg	1	1	0	0	0	0	0	4	34	38	0	0	0.0026	0.0000	0.0026	0.0036	6	0.0019	4	8.5	0.0045	0.0062
Skj	S2	S-E7	veg	2	2	0	0	0	0	0	11	28	68	0	0	0.0113	0.0000	0.0076	0.0077	6	0.0018	5.5	5.09	0.0094	0.0190
Skj	S2	S-F	flow	10	9	1	0	1	1	0	36	54	128	0	0	0.1117	0.0019	0.0483	0.1532	33	0.0181	4	13.5	0.0683	0.2649
Skj	S2	S-G1	veg	1	0	1	0	0	0	0	0	25	105	0	0	0.0086	0.0000	0.0000	0.0127	8	0.0028	0	NA	0.0028	0.0213
Skj	S2	S-G10	flow	1	1	0	0	1	1	0	5	53	48	0	0	0.0110	0.0021	0.0062	0.0161	5	0.0025	5	10.6	0.0108	0.0271
Skj	S2	S-G11	flow	1	1	0	120	1	0	1	5	34	86	3	13	0.0033	0.0064	0.0029	0.0046	5	0.0012	5	6.8	0.0105	0.0079
Skj	S2	S-G12	flow	3	2	1	0	1	1	0	11	55	90	0	0	0.0426	0.0062	0.0196	0.0521	11	0.0080	5.5	10	0.0338	0.0947
Skj	S2	S-G13	flow	3	2	1	117	1	0	1	8	40	86	2	15	0.0281	0.0064	0.0096	0.0351	12	0.0078	4	10	0.0238	0.0632
Skj	S2	S-G14	flow	1	1	0	0	1	1	0	5	53	142	0	0	0.0285	0.0043	0.0103	0.0244	7	0.0044	5	10.6	0.0190	0.0529

Carex capillaris, gen, Skjellingahaugen 2

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Skj	S2	S-G15	veg	1	1	0	0	0	0	0	5	51	98	0	0	0.0203	0.0000	0.0093	0.0256	7	0.0051	5	10.2	0.0144	0.0459
Skj	S2	S-G2	flow	1	1	0	0	1	1	0	6	34	118	0	0	0.0199	0.0023	0.0057	0.0201	6	0.0040	6	5.67	0.0120	0.0400
Skj	S2	S-G3	veg	1	1	0	0	0	0	0	6	45	88	0	0	0.0225	0.0000	0.0077	0.0242	6	0.0041	6	7.5	0.0118	0.0467
Skj	S2	S-G5	flow	1	1	0	0	1	1	0	5	46	113	0	0	0.0178	0.0018	0.0057	0.0269	7	0.0040	5	9.2	0.0115	0.0447
Skj	S2	S-G6	veg	2	1	1	0	0	0	0	7	58	95	0	0	0.0219	0.0000	0.0140	0.0316	12	0.0050	7	8.29	0.0190	0.0535
Skj	S2	S-G7	veg	1	1	0	0	0	0	0	5	57	106	0	0	0.0217	0.0000	0.0093	0.0283	6	0.0045	5	11.4	0.0138	0.0500
Skj	S2	S-G8	flow	5	4	1	116	2	1	1	24	56	145	2	14	0.0890	0.0145	0.0290	0.1103	23	0.0139	6	9.33	0.0574	0.1993
Skj	S2	S-G9	veg	1	1	0	0	0	0	0	5	46	NA	0	0	0.0000	0.0000	0.0072	0.0195	5	0.0035	5	9.2	0.0107	0.0195
Skj	S2	S-H	veg	1	1	0	0	0	0	0	6	40	65	0	0	0.0137	0.0000	0.0084	0.0114	5	0.0037	6	6.67	0.0121	0.0251
Skj	S2	S-I	veg	1	1	0	0	0	0	0	2	31	40	0	0	0.0044	0.0000	0.0018	0.0050	5	0.0010	2	15.5	0.0028	0.0094
Skj	S2	S-J	veg	2	2	0	0	0	0	0	9	36	79	0	0	0.0165	0.0000	0.0102	0.0139	6	0.0034	4.5	8	0.0136	0.0304
Skj	S2	S-K	veg	1	1	0	0	0	0	0	5	43	95	0	0	0.0081	0.0000	0.0062	0.0093	8	0.0037	5	8.6	0.0099	0.0174
Skj	S2	S-L	veg	2	2	0	0	0	0	0	7	57	86	0	0	0.0242	0.0000	0.0122	0.0254	13	0.0096	3.5	16.29	0.0218	0.0496
Skj	S2	S-M	flow	1	1	0	0	1	1	0	7	41	124	0	0	0.0151	0.0045	0.0104	0.0122	6	0.0040	7	5.86	0.0189	0.0273
Skj	S2	S-N	veg	1	1	0	0	0	0	0	5	47	57	0	0	0.0116	0.0000	0.0067	0.0089	7	0.0031	5	9.4	0.0098	0.0205
Skj	S3	S-O1	flow	16	15	1	151	7	2	5	102	81	132	9	51	0.2685	0.0564	0.1461	0.6730	41	0.0428	6.8	11.91	0.2453	0.9415
Skj	S3	S-O11	flow	5	2	3	118	1	0	1	9	50	104	2	12	0.0138	0.0090	0.0090	0.0603	12	0.0054	4.5	11.11	0.0234	0.0741
Skj	S3	S-O12	veg	1	1	0	0	0	0	0	6	42	44	0	0	0.0023	0.0000	0.0063	0.0066	0	0.0000	6	7	0.0063	0.0089
Skj	S3	S-O13	veg	1	1	0	0	0	0	0	3	42	129	0	0	0.0084	0.0000	0.0055	0.0185	2	0.0032	3	14	0.0087	0.0269
Skj	S3	S-O14	veg	1	1	0	0	0	0	0	7	57	65	0	0	0.0135	0.0000	0.0137	0.0235	7	0.0060	7	8.14	0.0197	0.0370
Skj	S3	S-O15	veg	1	1	0	0	0	0	0	3	37	55	0	0	0.0045	0.0000	0.0030	0.0114	0	0.0000	3	12.33	0.0030	0.0159
Skj	S3	S-O16	veg	1	1	0	0	0	0	0	3	50	93	0	0	0.0072	0.0000	0.0042	0.0185	3	0.0021	3	16.67	0.0063	0.0257
Skj	S3	S-O17	veg	1	1	0	0	0	0	0	5	38	54	0	0	0.0023	0.0000	0.0026	0.0028	0	0.0000	5	7.6	0.0026	0.0051
Skj	S3	S-O18	veg	2	2	0	0	0	0	0	12	52	57	0	0	0.0182	0.0000	0.0196	0.0675	9	0.0058	6	8.67	0.0254	0.0857
Skj	S3	S-O19	veg	1	1	0	0	0	0	0	5	62	86	0	0	0.0121	0.0000	0.0135	0.0131	1	0.0011	5	12.4	0.0146	0.0252
Skj	S3	S-O2	flow	2	2	0	117	1	0	1	23	79	129	2	6	0.0615	0.0056	0.0290	0.1550	4	0.0061	11.5	6.87	0.0407	0.2165

Carex capillaris, gen, Skjellingahaugen 3

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Skj	S3	S-O20	veg	1	1	0	0	0	0	0	5	45	47	0	0	0.0042	0.0000	0.0051	0.0118	5	0.0012	5	9	0.0063	0.0160
Skj	S3	S-O21	veg	1	1	0	0	0	0	0	6	29	42	0	0	0.0029	0.0000	0.0036	0.0037	0	0.0000	6	4.83	0.0036	0.0066
Skj	S3	S-O22	veg	1	1	0	0	0	0	0	7	41	59	0	0	0.0050	0.0000	0.0079	0.0126	0	0.0000	7	5.86	0.0079	0.0176
Skj	S3	S-O23	veg	1	1	0	0	0	0	0	5	43	94	0	0	0.0145	0.0000	0.0068	0.0175	2	0.0013	5	8.6	0.0081	0.0320
Skj	S3	S-O24	veg	1	1	0	0	0	0	0	4	53	24	0	0	0.0044	0.0000	0.0128	0.0335	0	0.0000	4	13.25	0.0128	0.0379
Skj	S3	S-O25	veg	1	1	0	0	0	0	0	4	34	87	0	0	0.0135	0.0000	0.0071	0.0240	0	0.0000	4	8.5	0.0071	0.0375
Skj	S3	S-O26	veg	1	1	0	0	0	0	0	3	69	96	0	0	0.0103	0.0000	0.0098	0.0187	3	0.0045	3	23	0.0143	0.0290
Skj	S3	S-O28	veg	1	1	0	0	0	0	0	3	64	98	0	0	0.0299	0.0000	0.0164	0.0262	1	0.0008	3	21.33	0.0172	0.0561
Skj	S3	S-O29	veg	1	1	0	0	0	0	0	2	51	24	0	0	0.0026	0.0000	0.0050	0.0191	2	0.0034	2	25.5	0.0084	0.0217
Skj	S3	S-O3	veg	1	1	0	0	0	0	0	3	52	69	0	0	0.0040	0.0000	0.0031	0.0051	0	0.0000	3	17.33	0.0031	0.0091
Skj	S3	S-O30	veg	1	1	0	0	0	0	0	7	57	63	0	0	0.0088	0.0000	0.0204	0.0170	0	0.0000	7	8.14	0.0204	0.0258
Skj	S3	S-O31	veg	1	1	0	0	0	0	0	2	69	114	0	0	0.0100	0.0000	0.0086	0.0214	2	0.0034	2	34.5	0.0120	0.0314
Skj	S3	S-O32	veg	1	1	0	0	0	0	0	5	59	76	0	0	0.0192	0.0000	0.0094	0.0250	0	0.0000	5	11.8	0.0094	0.0442
Skj	S3	S-O33	veg	1	1	0	0	0	0	0	3	42	126	0	0	0.0104	0.0000	0.0039	0.0238	0	0.0000	3	14	0.0039	0.0342
Skj	S3	S-O34	veg	1	1	0	0	0	0	0	4	56	93	0	0	0.0074	0.0000	0.0161	0.0150	2	0.0044	4	14	0.0205	0.0224
Skj	S3	S-O35	veg	1	1	0	0	0	0	0	5	38	NA	0	0	0.0000	0.0000	0.0052	0.0052	0	0.0000	5	7.6	0.0052	0.0052
Skj	S3	S-O4	veg	1	1	0	0	0	0	0	7	53	36	0	0	0.0021	0.0000	0.0051	0.0056	0	0.0000	7	7.57	0.0051	0.0077
Skj	S3	S-O5	flow	3	3	0	146	1	0	1	15	65	128	2	14	0.0289	0.0095	0.0259	0.0830	6	0.0087	5	13	0.0441	0.1119
Skj	S3	S-O6	flow	2	1	1	157	1	0	1	3	35	97	3	21	0.0135	0.0109	0.0026	0.0352	9	0.0040	3	11.67	0.0175	0.0487
Skj	S3	S-O7	veg	1	1	0	0	0	0	0	4	37	59	0	0	0.0049	0.0000	0.0038	0.0079	0	0.0000	4	9.25	0.0038	0.0128
Skj	S4	S-P1	veg	6	5	1	0	0	0	0	24	51	90	0	0	0.0401	0.0000	0.0241	0.0708	0	0.0000	4.8	10.63	0.0241	0.1109
Skj	S4	S-P11	flow	3	3	0	0	1	1	0	8	55	37	0	0	0.0081	0.0136	0.0121	0.0553	0	0.0000	2.67	20.63	0.0257	0.0634
Skj	S4	S-P12	veg	1	1	0	0	0	0	0	4	34	39	0	0	0.0034	0.0000	0.0035	0.0056	6	0.0016	4	8.5	0.0051	0.0090
Skj	S4	S-P13	flow	5	3	2	159	1	0	1	11	58	104	2	17	0.0354	0.0209	0.0186	0.0881	2	0.0011	3.67	15.82	0.0406	0.1235
Skj	S4	S-P14	veg	1	1	0	0	0	0	0	6	58	97	0	0	0.0063	0.0000	0.0083	0.0129	0	0.0000	6	9.67	0.0083	0.0192
Skj	S4	S-P15	veg	2	2	0	0	0	0	0	8	58	77	0	0	0.0176	0.0000	0.0144	0.0214	9	0.0024	4	14.5	0.0168	0.0390
Skj	S4	S-P16	veg	1	1	0	0	0	0	0	9	66	76	0	0	0.0140	0.0000	0.0179	0.0280	5	0.0022	9	7.33	0.0201	0.0420
Skj	S4	S-P17	flow	5	5	0	136	2	0	2	18	58	111	4	30	0.0462	0.0249	0.0296	0.0967	12	0.0096	3.6	16.11	0.0641	0.1429
Skj	S4	S-P18	flow	8	7	1	161	2	0	2	50	53	100	4	27	0.0556	0.0220	0.0463	0.1105	28	0.0123	7.14	7.42	0.0806	0.1661
Skj	S4	S-P24	veg	1	1	0	0	0	0	0	3	36	88	0	0	0.0095	0.0000	0.0022	0.0108	3	0.0023	3	12	0.0045	0.0203
Skj	S4	S-P5	flow	4	4	0	176	1	0	1	16	49	122	2	19	0.0331	0.0204	0.0227	0.0584	14	0.0042	4	12.25	0.0473	0.0915
Skj	S4	S-P8	flow	6	6	0	167	2	0	2	33	66	57	5	29	0.0296	0.0249	0.0431	0.0727	16	0.0080	5.5	12	0.0760	0.1023

Carex capillaris, gen, Gudmedalen 1

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Gud	G1	G-A1	flow	4	2	2	0	1	1	0	13	69	104	0	0	0.1074	0.0120	0.0280	0.0132	19	0.0208	6.5	10.62	0.0608	0.1206
Gud	G1	G-A2	flow	2	1	1	0	1	1	0	6	60	109	0	0	0.0533	0.0049	0.0129	0.0664	7	0.0056	6	10	0.0234	0.1197
Gud	G1	G-A3	flow	1	1	0	188	1	0	1	7	44	84	2	16	0.0525	0.0135	0.0096	0.0720	14	0.0102	7	6.29	0.0333	0.1245
Gud	G1	G-A4	flow	4	3	1	0	1	1	0	15	55	103	0	0	0.0899	0.0085	0.0215	0.1202	26	0.0204	5	11	0.0504	0.2101
Gud	G1	G-A5	veg	1	1	0	0	0	0	0	6	55	79	0	0	0.0209	0.0000	0.0085	0.0195	9	0.0066	6	9.17	0.0151	0.0404
Gud	G1	G-A6	veg	2	1	1	0	0	0	0	5	42	91	0	0	0.0202	0.0000	0.0053	0.0270	11	0.0053	5	8.4	0.0106	0.0472
Gud	G1	G-A7	flow	1	1	0	0	1	1	0	6	54	122	0	0	0.0366	0.0034	0.0093	0.0282	11	0.0087	6	9	0.0214	0.0648
Gud	G1	G-A8	flow	2	1	1	0	1	1	0	5	50	86	0	0	0.0358	0.0082	0.0058	0.0611	5	0.0060	5	10	0.0200	0.0969
Gud	G1	G-B1	flow	3	2	1	0	1	1	0	8	59	150	0	0	0.0761	0.0056	0.0181	0.0754	15	0.0175	4	14.75	0.0412	0.1515
Gud	G1	G-B10	flow	2	1	1	146	1	0	1	8	53	148	2	13	0.0667	0.0126	0.0137	0.0721	8	0.0097	8	6.63	0.0360	0.1388
Gud	G1	G-B11	veg	1	1	0	0	0	0	0	7	54	93	0	0	0.0317	0.0000	0.0134	0.0366	11	0.0062	7	7.71	0.0196	0.0683
Gud	G1	G-B12	veg	1	1	0	0	0	0	0	7	68	121	0	0	0.0334	0.0000	0.0148	0.0299	10	0.0104	7	9.71	0.0252	0.0633
Gud	G1	G-B13	flow	4	3	1	0	1	1	0	14	57	151	0	0	0.0732	0.0089	0.0238	0.0952	14	0.0255	4.67	12.21	0.0582	0.1684
Gud	G1	G-B14	veg	1	1	0	0	0	0	0	3	65	76	0	0	0.0205	0.0000	0.0075	0.0275	3	0.0042	3	21.67	0.0117	0.0480
Gud	G1	G-B2	veg	1	1	0	0	0	0	0	5	35	62	0	0	0.0061	0.0000	0.0033	0.0095	7	0.0025	5	7	0.0058	0.0156
Gud	G1	G-B3	veg	1	1	0	0	0	0	0	4	35	142	0	0	0.0249	0.0000	0.0045	0.0284	8	0.0050	4	8.75	0.0095	0.0533
Gud	G1	G-B4	flow	3	2	1	214	2	1	1	9	55	108	2	12	0.0557	0.0266	0.0155	0.0633	16	0.0116	4.5	12.22	0.0537	0.1190
Gud	G1	G-B5	flow	2	2	0	153	2	1	1	12	35	112	2	8	0.0686	0.0152	0.0128	0.0648	15	0.0097	6	5.83	0.0377	0.1334
Gud	G1	G-B7	veg	2	1	1	0	0	0	0	6	47	88	0	0	0.0163	0.0000	0.0079	0.0203	8	0.0069	6	7.83	0.0148	0.0366
Gud	G1	G-B8	veg	1	1	0	0	0	0	0	3	69	102	0	0	0.0174	0.0000	0.0073	0.0299	7	0.0085	3	23	0.0158	0.0473
Gud	G1	G-B9	flow	4	2	2	0	1	1	0	12	58	124	0	0	0.0721	0.0085	0.0228	0.0834	17	0.0114	6	9.67	0.0427	0.1555
Gud	G2	G-C1	flow	7	3	4	146	2	0	2	18	45	89	5	22	0.0536	0.0227	0.0198	0.0638	43	0.0222	6	7.5	0.0647	0.1174
Gud	G2	G-C4	flow	25	17	8	170	12	6	6	85	56	115	13	87	0.4015	0.0950	0.1194	0.3517	177	0.0932	5	11.2	0.3076	0.7532

Carex capillaris, gen, Gudmedalen 2

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	abo	bel
Gud	G3	G-D1	veg	1	1	0	220	0	0	0	5	54	99	3	23	0.0320	0.0243	0.0088	0.0476	9	0.0118	5	10.8	0.0449	0.0796
Gud	G3	G-D10	veg	2	2	0	0	0	0	0	12	59	125	0	0	0.0727	0.0000	0.0246	0.0571	16	0.0101	6	9.83	0.0347	0.1298
Gud	G3	G-D11	veg	1	1	0	0	0	0	0	9	56	109	0	0	0.0407	0.0000	0.0137	0.0416	10	0.0072	9	6.22	0.0209	0.0823
Gud	G3	G-D12	veg	1	1	0	0	0	0	0	3	71	90	0	0	0.0392	0.0000	0.0088	0.0771	9	0.0028	3	23.67	0.0116	0.1163
Gud	G3	G-D13	flow	5	5	0	181	3	0	3	30	48	103	9	56	0.1243	0.0306	0.0278	0.1732	29	0.0220	6	8	0.0804	0.2975
Gud	G3	G-D14	flow	8	5	3	183	3	1	2	28	82	158	5	28	0.2409	0.0458	0.0547	0.3368	19	0.0112	5.6	14.64	0.1117	0.5777
Gud	G3	G-D15	flow	1	1	0	180	1	0	1	2	43	81	3	17	0.0244	0.0178	0.0031	0.0550	17	0.0076	2	21.5	0.0285	0.0794
Gud	G3	G-D16	flow	3	3	0	145	3	1	2	10	47	71	5	25	0.0361	0.0281	0.0098	0.0651	17	0.0102	3.33	14.1	0.0481	0.1012
Gud	G3	G-D17	veg	1	1	0	0	0	0	0	5	46	56	0	0	0.0138	0.0000	0.0051	0.0214	4	0.0018	5	9.2	0.0069	0.0352
Gud	G3	G-D18	veg	1	1	0	0	0	0	0	3	61	84	0	0	0.0070	0.0000	0.0086	0.0457	5	0.0024	3	20.33	0.0110	0.0527
Gud	G3	G-D19	flow	7	6	1	168	3	0	3	30	52	186	8	23	0.1732	0.0479	0.0389	0.2642	41	0.0227	5	10.4	0.1095	0.4374
Gud	G3	G-D2	veg	1	1	0	0	0	0	0	4	42	45	0	0	0.0054	0.0000	0.0034	0.0122	5	0.0016	4	10.5	0.0050	0.0176
Gud	G3	G-D20	veg	1	1	0	0	0	0	0	3	25	34	0	0	0.0046	0.0000	0.0013	0.0167	5	0.0011	3	8.33	0.0024	0.0213
Gud	G3	G-D21	flow	2	1	1	227	1	0	1	9	50	79	2	2	0.0593	0.0232	0.0098	0.0901	9	0.0070	9	5.56	0.0400	0.1494
Gud	G3	G-D22	veg	1	1	0	0	0	0	0	4	43	45	0	0	0.0096	0.0000	0.0054	0.0146	5	0.0013	4	10.75	0.0067	0.0242
Gud	G3	G-D23	flow	4	4	0	236	2	1	1	15	58	79	3	21	0.1086	0.0491	0.0242	0.1495	22	0.0172	3.75	15.47	0.0905	0.2581
Gud	G3	G-D24	flow	12	6	6	255	4	0	4	31	68	115	3	18	0.1869	0.0555	0.0572	0.4076	66	0.0502	5.17	13.16	0.1629	0.5945
Gud	G3	G-D25	veg	1	1	0	0	0	0	0	6	61	84	0	0	0.0298	0.0000	0.0103	0.0345	5	0.0023	6	10.17	0.0126	0.0643
Gud	G3	G-D26	flow	2	2	0	149	1	0	1	11	48	82	3	15	0.0659	0.0154	0.0095	0.0117	10	0.0040	5.5	8.73	0.0289	0.0776
Gud	G3	G-D27	flow	2	1	1	0	1	1	0	4	70	83	0	0	0.0267	0.0107	0.0129	0.0333	8	0.0051	4	17.5	0.0287	0.0600
Gud	G3	G-D28	veg	1	1	0	0	0	0	0	4	64	84	0	0	0.0346	0.0000	0.0050	0.0388	6	0.0029	4	16	0.0079	0.0734
Gud	G3	G-D3	veg	1	1	0	0	0	0	0	4	28	47	0	0	0.0050	0.0000	0.0015	0.0081	7	0.0011	4	7	0.0026	0.0131
Gud	G3	G-D4	veg	3	2	1	199	0	0	0	7	55	107	3	14	0.0344	0.0157	0.0107	0.0449	15	0.0075	3.5	15.71	0.0339	0.0793
Gud	G3	G-D5	veg	4	3	1	157	0	0	0	13	47	109	1	9	0.0479	0.0134	0.0160	0.0587	17	0.0130	4.33	10.85	0.0424	0.1066
Gud	G3	G-D6	veg	1	1	0	0	0	0	0	5	40	69	0	0	0.0167	0.0000	0.0067	0.0161	3	0.0016	5	8	0.0083	0.0328
Gud	G3	G-D7	veg	1	1	0	0	0	0	0	2	23	44	0	0	0.0013	0.0000	0.0007	0.0037	0	0.0000	2	11.5	0.0007	0.0050
Gud	G3	G-D8	veg	2	2	0	0	0	0	0	14	47	96	0	0	0.0610	0.0000	0.0161	0.0478	13	0.0073	7	6.71	0.0234	0.1088
Gud	G3	G-D9	flow	3	3	0	0	1	1	0	11	57	71	0	0	0.0646	0.0000	0.0255	0.0638	11	0.0065	3.67	15.55	0.0320	0.1284

Carex pallescens, gen, Veskre 1

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LW	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	LA	abo	bel
Vesk	V1	V-A1	flow	7	5	2	232	3	1	2	31	159	1.5	196	3	15	0.2121	0.0982	0.1683	0.4760	0	0.0000	6.2	25.65	238.5	0.2665	0.6881
Vesk	V1	V-A2	veg	26	21	5	0	0	0	0	264	123	2	195	0	0	0.3067	0.0000	1.1248	0.8532	30	0.1477	12.57	9.78	246	1.2725	1.1599
Vesk	V1	V-B1	flow	4	2	2	249	1	0	1	7	109	1.5	133	1	22	0.0782	0.0360	0.0620	0.5112	8	0.0535	3.5	31.14	163.5	0.1515	0.5894
Vesk	V1	V-B10	veg	1	1	0	0	0	0	0	4	80	1.5	59	0	0	0.0147	0.0000	0.0108	0.0165	4	0.0073	4	20	120	0.0181	0.0312
Vesk	V1	V-B11	veg	1	1	0	0	0	0	0	1	60	1	73	0	0	0.0247	0.0000	0.0052	0.0213	2	0.0028	1	60	60	0.0080	0.0460
Vesk	V1	V-B12	veg	1	1	0	0	0	0	0	4	77	2	66	0	0	0.0219	0.0000	0.0093	0.0413	2	0.0026	4	19.25	154	0.0119	0.0632
Vesk	V1	V-B13	veg	1	1	0	0	0	0	0	5	56	1	87	0	0	0.0122	0.0000	0.0117	0.0297	5	0.0037	5	11.2	56	0.0154	0.0419
Vesk	V1	V-B2	veg	1	1	0	0	0	0	0	3	60	1.2	178	0	0	0.0625	0.0000	0.0170	0.0407	5	0.0067	3	20	72	0.0237	0.1032
Vesk	V1	V-B3	flow	7	3	4	297	3	0	3	24	150	2	134	7	112	0.0625	0.0955	0.0962	0.6338	9	0.0302	8	18.75	300	0.2219	0.6963
Vesk	V1	V-B4	veg	1	1	0	0	0	0	0	5	66	1	86	0	0	0.0229	0.0000	0.0115	0.0476	7	0.0058	5	13.2	66	0.0173	0.0705
Vesk	V1	V-B5	veg	1	1	0	0	0	0	0	5	79	1	144	0	0	0.0293	0.0000	0.0108	0.0152	1	0.0009	5	15.8	79	0.0117	0.0445
Vesk	V1	V-B6	veg	1	1	0	0	0	0	0	1	32	0.5	44	0	0	0.0077	0.0000	0.0014	0.0104	3	0.0008	1	32	16	0.0022	0.0181
Vesk	V1	V-B7	veg	1	1	0	0	0	0	0	2	68	1	105	0	0	0.0241	0.0000	0.0105	0.0210	3	0.0033	2	34	68	0.0138	0.0451
Vesk	V1	V-B8	veg	1	1	0	0	0	0	0	3	53	1	106	0	0	0.0054	0.0000	0.0035	0.0037	4	0.0017	3	17.67	53	0.0052	0.0091
Vesk	V1	V-B9	veg	1	1	0	0	0	0	0	1	53	1	70	0	0	0.0078	0.0000	0.0033	0.0089	0	0.0000	1	53	53	0.0033	0.0167
Vesk	V2	V-C1	flow	3	2	1	NA	1	1	0	15	109	2	131	NA	0	0.1094	0.0000	0.2038	0.2724	11	0.2532	7.5	14.53	218	0.4570	0.3818
Vesk	V2	V-C10	veg	3	3	0	0	0	0	0	10	75	3	94	0	0	0.0765	0.0000	0.0574	0.0731	1	0.0049	3.33	22.5	225	0.0623	0.1496
Vesk	V2	V-C2	veg	1	1	0	0	0	0	0	3	61	2	144	0	0	0.0355	0.0000	0.0195	0.0795	5	0.0058	3	20.33	122	0.0253	0.1150
Vesk	V2	V-C3	veg	1	1	0	0	0	0	0	6	84	2	91	0	0	0.0603	0.0000	0.0341	0.0494	2	0.0078	6	14	168	0.0419	0.1097
Vesk	V2	V-C4	flow	3	3	0	210	2	0	2	8	110	2	151	4	74	0.0347	0.0314	0.0640	0.1920	7	0.0098	2.67	41.25	220	0.1052	0.2267
Vesk	V2	V-C5	flow	6	4	2	55	2	1	1	12	102	1.5	133	2	6	0.0766	0.0048	0.0399	0.1365	7	0.0066	3	34	153	0.0513	0.2131
Vesk	V2	V-C6	flow	5	4	1	318	3	1	2	7	105	2	154	5	69	0.0840	0.1156	0.0531	0.2256	8	0.0205	1.75	60	210	0.1892	0.3096
Vesk	V2	V-C7	flow	33	21	12	267	12	2	10	66	128	2	158	22	356	0.5918	0.2677	0.2174	1.3470	27	0.0466	3.14	40.73	256	0.5317	1.9388
Vesk	V2	V-C8	flow	6	5	1	272	3	1	2	10	100	2	137	3	9	0.1608	0.0716	0.0368	0.4261	5	0.0150	2	50	200	0.1234	0.5869
Vesk	V2	V-C9	veg	1	1	0	0	0	0	0	3	104	2	65	0	0	0.0515	0.0000	0.0331	0.0725	1	0.0725	3	34.67	208	0.1056	0.1240

Carex pallescens, gen, Veskre 2

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LW	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	LA	abo	bel
Vesk	V3	V-D1	flow	9	2	7	135	1	0	1	8	77	2	82	2	38	0.0637	0.0200	0.0322	0.2165	4	0.0069	4	19.25	154	0.0591	0.2802
Vesk	V3	V-D2	flow	8	4	4	210	3	0	3	17	82	2	110	5	80	0.1008	0.0712	0.0669	0.3045	3	0.0059	4.25	19.29	164	0.1440	0.4053
Vesk	V3	V-D3	flow	6	2	4	NA	1	1	0	14	72	1.5	106	NA	0	0.0514	0.0032	0.0292	0.1127	3	0.0021	7	10.29	108	0.0345	0.1641
Vesk	V4	V-E1	flow	12	4	8	88	6	3	3	51	66	2	106	6	38	0.1621	0.0204	0.0687	0.2835	10	0.0070	12.75	5.18	132	0.0961	0.4456
Vesk	V4	V-E2	flow	5	3	2	NA	1	1	0	15	35	1	76	NA	0	0.0570	0.0028	0.0191	0.1053	3	0.0022	5	7	35	0.0241	0.1623
Vesk	V4	V-E3	veg	2	2	0	0	0	0	0	9	55	2	91	0	0	0.0000	0.0000	0.0216	0.0390	8	0.0147	4.5	12.22	110	0.0363	0.0390
Vesk	V4	V-F1	flow	33	18	15	247	9	4	5	72	154	2	147	11	159	0.6394	0.1369	0.3330	1.2012	18	0.0486	4	38.5	308	0.5185	1.8406
Vesk	V5	V-G1	flow	30	18	12	208	3	1	2	55	87	2	115	4	54	0.4037	0.0514	0.1599	0.9657	62	0.1211	3.06	28.47	174	0.3324	1.3694
Vesk	V5	V-H1	flow	5	4	1	184	2	0	2	11	95	1.5	98	4	55	0.0288	0.0382	0.0387	0.1078	7	0.0152	2.75	34.55	142.5	0.0921	0.1366
Vesk	V5	V-H3	veg	1	1	0	0	0	0	0	6	76	2	94	0	0	0.0057	0.0000	0.0159	0.0128	2	0.0023	6	12.67	152	0.0182	0.0185
Vesk	V5	V-H4	veg	1	1	0	0	0	0	0	3	65	1.5	82	0	0	0.0274	0.0000	0.0114	0.0251	0	0.0000	3	21.67	97.5	0.0114	0.0525
Vesk	V5	V-I1	flow	17	4	13	347	3	1	2	26	143	3	153	2	14	0.2484	0.0924	0.1473	0.6816	14	0.0508	6.5	22	429	0.2905	0.9300
Vesk	V5	V-J1	flow	4	3	1	141	3	1	2	18	100	2	100	2	35	0.1210	0.0310	0.0547	0.2949	4	0.0065	6	16.67	200	0.0922	0.4159
Vesk	V5	V-K1	flow	12	10	2	326	4	1	3	26	116	2	145	6	114	0.3019	0.1295	0.1113	0.5616	7	0.0137	2.6	44.62	232	0.2545	0.8635
Vesk	V5	V-K2	flow	2	2	0	226	1	0	1	8	83	1.5	52	2	26	0.0181	0.0290	0.0407	0.0919	2	0.0034	4	20.75	124.5	0.0731	0.1100
Vesk	V5	V-K5	veg	3	3	0	0	0	0	0	10	58	1	100	0	0	0.0184	0.0000	0.0123	0.0442	6	0.0053	3.33	17.4	58	0.0176	0.0626

Carex pallescens, gen, Øvstedal

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LW	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	LA	abo	bel
Ovs	O1	O-A	veg	4	0	4	0	0	0	0	0	0	0	225	0	0	0.5109	0.0000	0.0000	1.7405	0	0.0000	0	NA	0	0.0000	2.2514
Ovs	O1	O-A1	flow	7	5	2	483	2	1	1	14	215	2	279	2	22	0.3158	0.1981	0.1761	1.0229	8	0.0283	2.8	76.79	430	0.4025	1.3387
Ovs	O1	O-A2	flow	3	3	0	414	1	0	1	8	219	2	244	3	26	0.1428	0.0948	0.1394	0.3443	4	0.0114	2.67	82.13	438	0.2456	0.4871
Ovs	O1	O-A3	veg	3	2	1	0	0	0	0	10	206	3	203	0	0	0.2989	0.0000	0.2014	0.6591	6	0.0150	5	41.2	618	0.2164	0.9580
Ovs	O1	O-A4	flow	25	25	0	613	6	1	5	23	222	2	327	16	183	0.6439	0.4503	0.2692	2.4132	18	0.0501	0.92	241.3	444	0.7696	3.0571
Ovs	O1	O-A5	veg	2	1	1	0	0	0	0	7	261	3	149	0	0	0.3434	0.0000	0.1995	0.9579	1	0.0048	7	37.29	783	0.2043	1.3013
Ovs	O1	O-A6	veg	6	3	3	0	0	0	0	0	0	0	231	0	0	0.2214	0.0000	0.0000	0.6917	0	0.0000	0	NA	0	0.0000	0.9131
Ovs	O2	O-B1	flow	42	26	16	698	8	1	7	52	281	2	277	13	168	2.1823	0.6792	0.8873	5.4099	42	0.1674	2	140.5	562	1.7339	7.5922
Ovs	O3	O-C	flow	27	24	3	476	3	1	2	62	304	2.5	168	7	111	1.9014	0.3186	1.2476	8.7653	33	0.1715	2.58	117.68	760	1.7377	10.6667
Ovs	O4	O-D	flow	83	31	46	879	17	5	12	96	309	3	211	25	565	3.6178	2.3841	2.0859	11.0286	89	0.4901	3.1	99.78	927	4.9601	14.6464

Carex pallescens, gen, Rambera

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LW	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	LA	abo	bel
Ram	R1	R-A	flow	19	13	6	208	11	5	6	55	119	2	158	17	372	0.5410	0.2076	0.2466	0.9243	10	0.0299	4.23	28.13	238	0.4841	1.4653
Ram	R2	R-B1	flow	6	6	0	175	5	0	5	26	81	2	174	8	104	0.2105	0.0599	0.1001	0.3773	2	0.0039	4.33	18.69	162	0.1639	0.5878
Ram	R2	R-B10	veg	1	1	0	0	0	0	0	5	64	1	98	0	0	0.0159	0.0000	0.0205	0.0396	0	0.0000	5	12.8	64	0.0205	0.0555
Ram	R2	R-B11	veg	2	2	0	0	0	0	0	9	61	1	191	0	0	0.0311	0.0000	0.0298	0.0495	10	0.0083	4.5	13.56	61	0.0381	0.0806
Ram	R2	R-B12	veg	1	1	0	0	0	0	0	7	83	2	82	0	0	0.0578	0.0000	0.0433	0.0747	0	0.0000	7	11.86	166	0.0433	0.1325
Ram	R2	R-B13	veg	1	1	0	0	0	0	0	4	56	1	96	0	0	0.0095	0.0000	0.0088	0.0182	0	0.0000	4	14	56	0.0088	0.0277
Ram	R2	R-B2	flow	7	4	3	301	2	0	2	25	124	2	132	5	102	0.2578	0.0943	0.0898	0.5064	0	0.0000	6.25	19.84	248	0.1841	0.7642
Ram	R2	R-B4	veg	1	1	0	0	0	0	0	3	68	2	101	0	0	0.0566	0.0000	0.0139	0.0472	5	0.0176	3	22.67	136	0.0315	0.1038
Ram	R2	R-B7	veg	1	1	0	0	0	0	0	5	67	1.5	136	0	0	0.0271	0.0000	0.0196	0.0272	5	0.0151	5	13.4	100.5	0.0347	0.0543
Ram	R2	R-B8	veg	2	2	0	0	0	0	0	9	85	1.5	123	0	0	0.0930	0.0000	0.0433	0.0806	14	0.0461	4.5	18.89	127.5	0.0894	0.1736
Ram	R2	R-B9	veg	1	1	0	0	0	0	0	5	63	2	107	0	0	0.0331	0.0000	0.0197	0.0351	4	0.0193	5	12.6	126	0.0390	0.0682
Ram	R3	R-C1	flow	5	5	0	72	1	0	1	12	118	1.5	129	1	5	0.0704	0.0041	0.0439	0.1553	0	0.0000	2.4	49.17	177	0.0480	0.2257
Ram	R3	R-C10	flow	5	3	2	140	2	0	2	16	93	2	138	6	84	0.2375	0.0401	0.0724	0.3665	6	0.0148	5.33	17.44	186	0.1273	0.6040
Ram	R3	R-C11	flow	6	5	1	127	2	0	2	20	90	2	119	4	53	0.1595	0.0343	0.0919	0.2555	10	0.0267	4	22.5	180	0.1529	0.4150
Ram	R3	R-C12	flow	4	3	1	149	2	0	2	12	84	2	142	5	56	0.1602	0.0375	0.0600	0.3893	8	0.0213	4	21	168	0.1188	0.5495
Ram	R3	R-C13	flow	5	5	0	138	3	0	3	22	79	2	134	6	90	0.2292	0.0463	0.1084	0.4271	17	0.0548	4.4	17.95	158	0.2095	0.6563
Ram	R3	R-C14	flow	4	4	0	86	2	0	2	11	84	2	126	5	54	0.1602	0.0216	0.0481	0.2908	11	0.0302	2.75	30.55	168	0.0999	0.4510
Ram	R3	R-C15	flow	2	2	0	132	1	0	1	9	94	1.5	124	3	31	0.1176	0.0129	0.0383	0.1505	7	0.0159	4.5	20.89	141	0.0671	0.2681
Ram	R3	R-C16	veg	6	6	0	0	0	0	0	25	67	1.5	93	0	0	0.1294	0.0000	0.0609	0.1727	13	0.0178	4.17	16.08	100.5	0.0787	0.3021
Ram	R3	R-C17	veg	1	1	0	0	0	0	0	4	54	1	83	0	0	0.0239	0.0000	0.0110	0.0489	2	0.0032	4	13.5	54	0.0142	0.0728
Ram	R3	R-C18	flow	3	2	1	89	2	1	1	6	79	2	134	2	31	0.0728	0.0153	0.0180	0.1150	6	0.0160	3	26.33	158	0.0493	0.1878
Ram	R3	R-C3	flow	1	1	0	95	1	0	1	6	64	2	115	2	35	0.0226	0.0126	0.0227	0.0745	0	0.0000	6	10.67	128	0.0353	0.0971
Ram	R3	R-C4	veg	3	3	0	0	0	0	0	13	76	2	126	0	0	0.0783	0.0000	0.0465	0.1422	0	0.0000	4.33	17.54	152	0.0465	0.2205
Ram	R3	R-C5	veg	2	1	1	0	0	0	0	4	89	2	142	0	0	0.0775	0.0000	0.0196	0.1968	4	0.0220	4	22.25	178	0.0416	0.2743
Ram	R3	R-C6	veg	4	4	0	0	0	0	0	10	58	2	169	0	0	0.1023	0.0000	0.0395	0.1914	8	0.0306	2.5	23.2	116	0.0701	0.2937
Ram	R3	R-C7	flow	1	1	0	106	1	0	1	5	86	2	110	3	29	0.0415	0.0155	0.0231	0.1182	7	0.0135	5	17.2	172	0.0521	0.1597
Ram	R3	R-C8	veg	1	1	0	0	0	0	0	5	59	2	78	0	0	0.0403	0.0000	0.0221	0.0865	5	0.0130	5	11.8	118	0.0351	0.1268
Ram	R3	R-C9	flow	5	5	0	67	2	1	1	8	104	1.5	167	2	14	0.1512	0.0079	0.0329	0.2754	13	0.0178	1.6	65	156	0.0586	0.4266
Ram	R4	R-D1	flow	15	12	3	221	3	0	3	52	113	3	162	6	146	0.3553	0.0964	0.2226	0.9240	17	0.0717	4.33	26.08	339	0.3907	1.2793
Ram	R4	R-D2	flow	8	4	4	252	2	0	2	19	114	2	134	5	110	0.1721	0.0741	0.0889	0.4586	10	0.0338	4.75	24	228	0.1968	0.6307

Carex pallescens, gen, Høgsete

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LW	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	LA	abo	bel
Hog	H1	H-A1	flow	4	1	3	NA	1	1	0	4	244	2	127	NA	0	0.1133	0.0127	0.0617	0.3410	10	0.0262	4	61	488	0.1006	0.4543
Hog	H1	H-A2	flow	8	3	5	349	1	0	1	14	244	2	125	3	81	0.1102	0.0714	0.1592	0.5231	13	0.0367	4.67	52.29	488	0.2673	0.6333
Hog	H1	H-A3	flow	11	1	10	267	4	2	2	5	268	2	139	0	0	0.2124	0.0618	0.0977	0.6911	16	0.0364	5	53.6	536	0.1959	0.9035
Hog	H1	H-A4	flow	6	1	5	422	1	0	1	4	126	2	85	2	100	0.0568	0.1334	0.0532	0.3501	12	0.0422	4	31.5	252	0.2288	0.4069
Hog	H2	H-B1	flow	15	4	11	429	3	0	3	13	175	1.5	66	6	146	0.1409	0.2115	0.1351	0.6539	23	0.0812	3.25	53.85	262.5	0.4278	0.7948
Hog	H2	H-B2	flow	10	5	5	356	3	0	3	13	150	2	158	7	137	0.3625	0.1481	0.1463	0.6936	19	0.1092	2.6	57.69	300	0.4036	1.0561
Hog	H2	H-B4	flow	7	3	4	317	4	1	3	7	135	2	81	2	41	0.3032	0.1474	0.0536	0.8527	14	0.0354	2.33	57.86	270	0.2364	1.1559
Hog	H2	H-B5	flow	10	3	7	349	3	2	1	8	167	2	219	2	21	0.1996	0.1124	0.0903	0.5261	10	0.0227	2.67	62.63	334	0.2254	0.7257
Hog	H3	H-C	flow	141	87	54	596	36	19	17	270	274	2.5	255	35	825	5.5162	4.4343	4.7117	18.7881	207	1.2948	3.1	88.29	685	10.4408	24.3043
Hog	H4	H-D	flow	24	17	0	483	9	0	9	44	191	2.5	162	23	576	1.3206	0.8647	0.5864	4.4390	43	0.1619	2.59	73.8	477.5	1.6130	5.7596

Carex pallescens, gen, Arhelleren

site	Block	IND	Type	PtsT	PtsA	PtsD	TH	TFS	brFs	iFS	NL	LLL	LW	LLR	Tinf	TNS	BioR	BioS	BioL	BioSS	NDL	BioDL	NL/Pt	LLL/NL	LA	abo	bel
Arh	A1	A-A1	flow	9	3	6	596	2	0	2	8	182	2	187	4	63	0.4172	0.2029	0.0828	1.0940	7	0.0266	2.67	68.25	364	0.3123	1.5112
Arh	A1	A-A2	flow	4	0	4	629	2	0	2	9	190	2	172	3	61	0.0630	0.2026	0.0889	0.3155	7	0.0299	0	NA	380	0.3214	0.3785
Arh	A1	A-A3	flow	11	5	6	731	3	1	2	16	301	2	165	4	129	0.4825	0.4331	0.2641	1.4960	16	0.0932	3.2	94.06	602	0.7904	1.9785
Arh	A2	A-B1	flow	7	2	5	397	3	1	2	9	146	2	238	3	34	0.1263	0.1959	0.0559	0.3268	10	0.0294	4.5	32.44	292	0.2812	0.4531
Arh	A2	A-B2	flow	18	8	10	342	5	2	3	17	266	2	188	5	80	0.3667	0.1659	0.2729	1.1119	23	0.0897	2.13	125.18	532	0.5285	1.4786
Arh	A2	A-B4	flow	54	15	39	803	13	4	9	46	213	2	181	22	495	1.3738	1.5686	0.6681	3.6611	96	0.3694	3.07	69.46	426	2.6061	5.0349
Arh	A2	A-C	veg	0	0	0	0	0	0	0	0	0	0	220	0	0	0.2429	0.0000	0.0000	0.3783	0	0.0000	0	NA	0	0.0000	0.6212
Arh	A2	A-C11	veg	1	1	0	0	0	0	0	3	303	2	169	0	0	0.0298	0.0000	0.1040	0.1232	3	0.0243	3	101	606	0.1283	0.1530
Arh	A2	A-C3	veg	7	5	2	0	0	0	0	9	232	2	179	0	0	0.2791	0.0000	0.1349	0.4764	6	0.0236	1.8	128.89	464	0.1585	0.7555
Arh	A2	A-C4	veg	3	3	0	0	0	0	0	3	265	2	138	0	0	0.1261	0.0000	0.0730	0.2165	3	0.0093	1	265	530	0.0823	0.3426
Arh	A2	A-C5	veg	1	1	0	0	0	0	0	3	186	2	68	0	0	0.0164	0.0000	0.0567	0.0340	2	0.0035	3	62	372	0.0602	0.0504
Arh	A2	A-C6	veg	1	1	0	0	0	0	0	4	281	2	91	0	0	0.0194	0.0000	0.1155	0.1455	2	0.0086	4	70.25	562	0.1241	0.1649
Arh	A2	A-C8	flow	6	1	5	NA	1	1	0	4	199	2	208	NA	0	0.1678	0.1362	0.0645	0.3443	0	0.0000	4	49.75	398	0.2007	0.5121
Arh	A3	A-D	flow	89	57	32	832	20	3	17	141	255	2.5	238	33	640	3.5888	2.1496	1.6788	10.1268	73	0.2635	2.47	103.09	637.5	4.0919	13.7156