ETH Zürich

Department of Biology

Master in Ecology and Evolution

Impact of wild ungulate grazing on Orthoptera abundance and diversity in subalpine grasslands

Master Thesis

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Zürich, January 2011

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1. Abstract

Grasslands are ubiquitous ecosystems that cover almost 41% of the Earth's terrestrial landscape. These ecosystems support large communities of vertebrate and invertebrate herbivores. An important role within grassland ecosystems falls to the Orthoptera as they can consume large amounts of biomass. The occurrence of Orthoptera within grassland systems is strongly affected by habitat diversity and vegetation structure, which in turn can be shaped by large herbivores. Indeed, several studies focused on the impact of livestock on Orthoptera, but little is known about how wild ungulates affect the abundance and diversity of Orthoptera in grassland ecosystems.

In the Swiss National Park (SNP) red deer (*Cervus elaphus* L.) and chamois (*Rupicapra rupicapra* L.) strongly influence the vegetation structure of subalpine grasslands and create a distinct vegetation pattern: short-grass (SG) is found on former cattle pastures where large herbivores graze intensively today, tall-grass (TG) in areas that were traditionally used as hay meadows that are subject to less large herbivore grazing. Consequently, our main goal was to determine how vegetation type (SG or TG), as well as how vegetation structure and habitat diversity, affected Orthoptera abundance and species diversity. Vegetation structure and habitat diversity was measured on 36 transects located on 6 grasslands within the park. In each grassland half of the transects were located in SG, half in TG vegetation. On the same transects Orthoptera were counted in open quadrates and were caught by sweep-netting. Caught Orthoptera individuals were identified to species level.

In total we found nine Orthoptera species, and caught 0.5 individuals per square meter on average. Our results showed that Orthoptera abundance and diversity were not influenced by vegetation type, i.e., no difference was found between Orthoptera numbers in SG and in TG vegetation. We can think of several reasons for this phenomenon: first, we might observe a natural grassland ecosystem in which one player has adapted to the presence of the others; secondly, Swiss mountain Orthoptera species might react differently to grazing than those in other grassland ecosystems; thirdly, dung removal might have erased a potential effect. Orthoptera abundance was influenced by vegetation structure similar to other studies. The observed increased abundance in higher vegetation probably was due to a favourable microclimate and shelter from predators. Also Orthoptera species diversity increased with higher vegetation. Orthoptera abundance increased with higher proportion of grasses but decreased with habitat diversity, which was inversely linked to grass proportion. Similar to Orthoptera abundance, also species richness decreased with habitat diversity. Orthoptera species composition at the different locations differed considerably and could be explained by vegetation structure, habitat diversity, altitude and distance and is roughly the same as some eighty years ago.

2. Introduction

Grasslands are defined as habitats dominated by grasses (Gibson, 2009). Beside grasses and forbs dwarf shrubs, dicotyledons, lichens or mosses may also occur (Coupland, 1979). These ecosystems cover approximately 40.5% of the Earth's terrestrial landscape (White *et al.*, 2000), and support large populations of vertebrate and invertebrate herbivores. Orthoptera - containing the two suborders Ensifera (crickets and bush crickets) and Caelifera (grasshoppers) - are important components of grassland ecosystems as they consume approximately 0.3 – 8.0 % of net primary production (Köhler *et al.*, 1987 and references within). They are wasteful feeders as they clip the grasses in the middle and then feed on the lower part only (Ingrisch & Köhler, 1998). *Chorthippus parallelus* is, for example, known to consume 2% of net primary production and waste a further 8% (Ingrisch & Köhler, 1998). In high altitude ecosystems, Orthoptera herbivory is found to have an even greater impact than in the lowlands – with Orthoptera removing 19 – 30 % of the aboveground phanerogam biomass (Blumer & Diemer, 1996). Orthoptera species are not only important as herbivores for the grassland ecosystem but also as a prey source. Predators are invertebrates (insects, spiders, etc.) and birds (Dempster, 1963).

Arthropod species diversity is strongly influenced by habitat heterogeneity with habitat heterogeneity being the most important predictor of arthropod species richness (Báldi, 2008). A diverse habitat consists of many microhabitats, which can fulfil the needs of different species and different life stages. Orthoptera species will find a variety of food sources, shelter, oviparity and sun basking sites and appropriate humidity in a diverse habitat (Curry, 1994; Ingrisch & Köhler, 1998). Consequently, grasshoppers are more abundant in certain habitats than in others. In addition to habitat diversity, vegetation structure also has a large influence on grasshopper distribution (Clark, 1948; Gardiner *et al.*, 2002). For example, Gardiner *et al.* (2002), who investigated the relationship between sward height and the density of three grasshopper species (*Chorthippus albomarginatus*, *Chorthippus brunneus* and *Chorthippus parallelus*), found highest grasshopper abundance at an intermediate sward height.

Habitat diversity and variability is created by large mammalian herbivores in many grassland ecosystems (Adler *et al.*, 2001; Frank, 2006). Consequently, these animals directly (through forage competition) or indirectly (by altering habitat heterogeneity and vegetation structure) influence the abundance and diversity of Orthoptera inhabiting the same ecosystem (Suominen & Danell, 2006). However, most studies that investigated the impact of large herbivores on the Orthoptera communities considered livestock (e.g. Holmes *et al.*, 1979; Jepson-Innes & Bock, 1989; Welch *et al.*, 1991; O'Neill *et al.*, 2003), and little is known about the interactions between non-domestic large mammals and Orthoptera. We are aware of only two studies conducted in natural grasslands. Grasshopper densities were reported to increase with bison grazing (Joern, 2004). In contrast, decreasing Orthoptera densities were reported under increasing grazing pressure by wild African ungulates (Samways & Kreuzinger, 2001). Given the importance Orthoptera play in grassland ecosystems, this lack of research is surprising. Consequently,

the aim of our study was to gain a better understanding on how large herbivores influence the abundance and diversity of Orthoptera in natural grassland ecosystems. We assessed the impact of wild ungulates on Orthoptera abundance and species diversity in the Swiss National Park (SNP).

Red deer and chamois create distinct vegetation patterns in the subalpine grassland ecosystems of the park: Short-grass (SG) is found where they graze intensively, while tall-grass (TG) is found in areas subject to less large herbivore grazing (Schütz *et al.*, 2003, 2006). Thus, we assessed Orthoptera abundance and diversity in these two vegetation types. We also measured vegetation structure and habitat diversity within these vegetation types and assessed whether these parameters have an effect on Orthoptera abundance and species diversity.

3. Methods

3.1 Study area

The study was carried out in the Swiss National Park, which is located in south-eastern Switzerland. Between 1960 and 2009 the park's weather station at Buffalora (1980 m a.s.l.) recorded mean annual precipitation of 871 ± 156 mm and mean annual temperature of 0.6 ± 0.6 °C. The park covers an area of 170 km^2, of which three square kilometres are subalpine grasslands. The elevations within the park range from 1350 to 3170 m a.s.l. (Risch *et al.*, 2008).

Our study sites were associated with a bigger study focusing on the impact of various herbivores on grassland ecosystem patterns and processes on subalpine grasslands. They were located on Alp Stabelchod (sites 1-4), Stabelchod Dadaint (5 & 6), Margunet (7 & 8), Val dal Botsch (9 & 10), Alp Grimmels (11-14) and Alp Mingèr (15-18; Figure 1), and their elevations ranged from 1975 m a.s.l. to 2300 m a.s.l.. Sites with uneven numbers were established on heavily grazed SG vegetation, those with even numbers on TG vegetation. SG vegetation was dominated by red fescue (*Festuca rubra* L.), perennial quaking grass (*Briza media* L.), and milfoil (*Achillea millefolium* L.), while TG vegetation was dominated by evergreen sedge (*Carex sempervirens* Vill.), mat-grass (*Nardus stricta* L.), and Bellard's Kobresia (*Elyna myosuroides* (Vill.) Fritsch) (Risch *et al.*, 2008). At each study site we established two 4m wide x 25m long transects to assess the Orthoptera abundance and diversity.

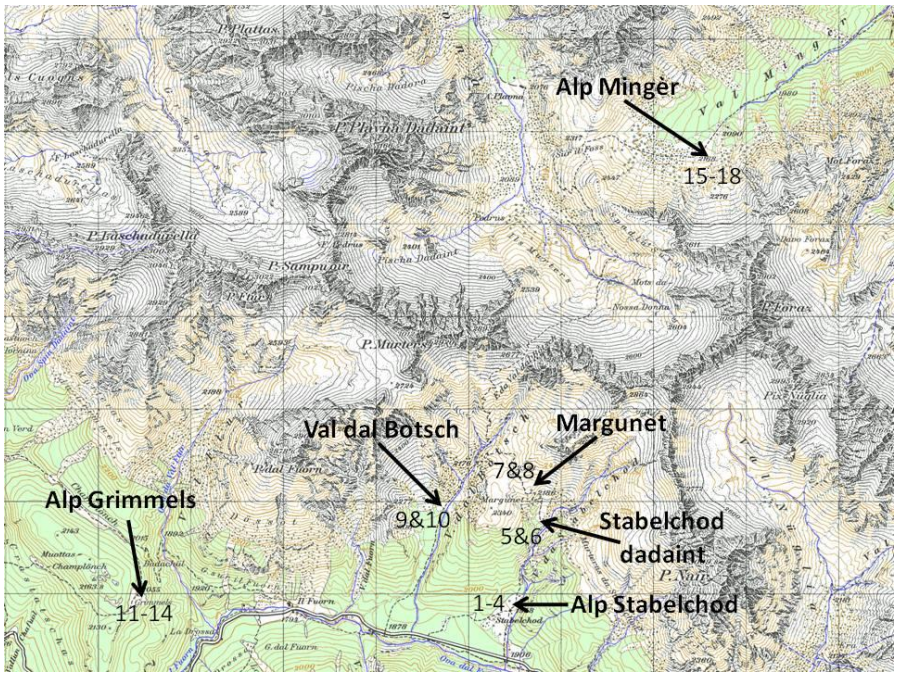

Figure 1: Overview of the six sites in the Swiss National Park. Map: Swiss Map 50. Numbers refer to sites.

3.2 Orthoptera abundance and diversity

Orthoptera abundance and species composition was assessed by counting, catching and by recording Orthoptera stridulation sounds. Counting and catching took place in different weeks to assure that one method did not influence the other.

The method used for counting Orthoptera was adapted from Gardiner *et al.* (2002). Orthoptera were counted in five fixed open quadrate plots ($0.25m^2$) located at 5, 10, 15, 20 and 25 m of each transect. The counts were conducted every two weeks from mid-June to the end of August 2010. The fixed plots were approached simultaneously by two people and the number of jumping Orthoptera individuals emerging from within the plots counted. In addition, we searched for hidden individuals by sweeping through the vegetation by hand. All the counts were extrapolated to the number of individuals counted per m^2.

Orthoptera were also caught four times over the course of six weeks between the beginning of August and mid-September 2010. During one week all transects were sampled. For this purpose, we divided the transects into 25 one meter segments, six of which were available per catching session (Figure 2). Five out of six segments per transect were sampled with sweep nets (30cm diameter; Forestry suppliers Inc. Jackson, MS, USA) on dry days between 09:20 and 17:00. For this purpose, two persons positioned themselves at opposite ends of a segment and then started sweeping while walking towards the centre simultaneously. One person swiped the net slightly faster than the other one in order to catch rapid and slow dispersal species (Foster & Reuter, 1996). All adult Orthoptera were identified to the species level following Baur *et al.* (2006), larvae were counted but not identified and all individuals were released in the same segment as they were caught. All the catches were extrapolated to the number of individuals caught per m^2.

For Orthoptera abundance analysis larvae were included. In addition to catching Orthoptera, we also determined the presence of Orthoptera by recording stridulation sounds. These records served as a control to check the species list obtained from the catches. Records were taken with an ultrasonic detector (Magenta Bat4, Magenta Electronics Ltd, Burton-on-Trent, GB) and a voice recorder (Maxfield MAX G-Flash Metal, Maxfield GmbH, Düsseldorf, Germany) between mid-August and mid-September between 10:35 and 15:25 on sunny, dry days with temperatures between 9°C and 20°C and with light wind only. One record was taken over about 15 minutes and 100m distance. When recording Orthoptera sounds, individuals of a large area can be heard. Thus, we collected one record for all transects that were within 100m reach. For each group of transects up to six records were taken. Records were analyzed with the help of the program Audacity 1.2.6. and Roesti & Keist (2009).

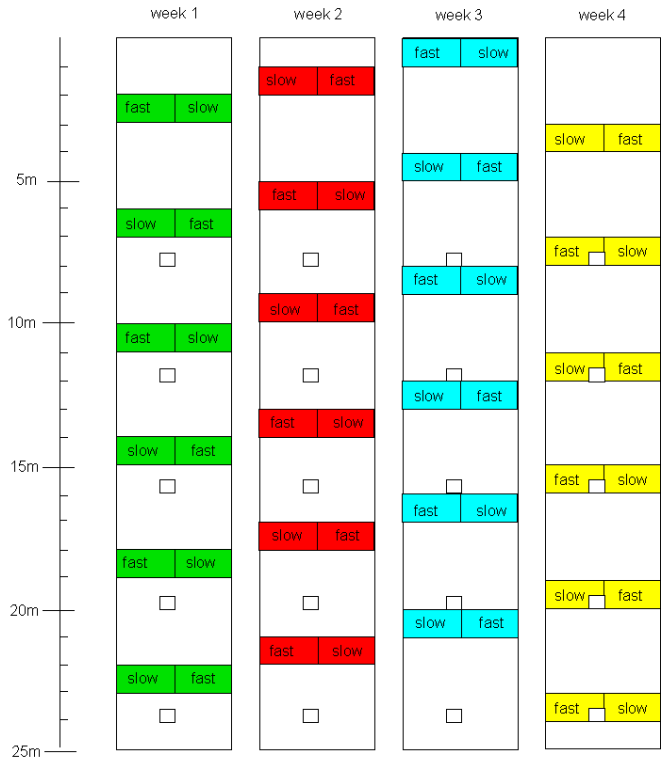

Figure 2: In each of the four weeks different parts of the transect were used for Orthoptera catching. Small white quadrates indicate where Orthoptera counting took place. Counting was finished before the third catching week.

Using Orthoptera catches m^{-2} we were able to calculate Orthoptera abundance and species diversity. The latter term was expressed as species richness ($S_{Orthoptera}$) and as Shannon Index ($H'_{Orthoptera}$). Species richness (S) equals the total number of species per square meter. Shannon Index (H') accounts for species richness and evenness and is calculated based on the relative abundance p of species i (Magurran, 1988; Equation 1). A high Shannon Index stands for high species richness and evenness:

(Equation 1) $$H' = -\sum_i (pi * ln(pi)) \qquad pi = \frac{ni}{N}$$

where *pi* refers to the relative abundance of species *i*.

3.3 Ecosystem parameters influencing Orthoptera abundance and diversity

We assessed the effect of vegetation type, vegetation height and habitat diversity on Orthoptera abundance and diversity. Vegetation type was given by the experimental design. Vegetation structure was measured for each 25m transect. For this purpose we divided the four meter width of a transect into three equal parts and placed a 25m long measuring tape in the centre of each part. We then recorded the vegetation height next to the tape at 0.5m intervals (=3 x 50 records per transect). Habitat diversity was expressed as diversity in vegetation cover, which we assessed at 0.5 m intervals along the tape. Thereby we distinguished between grasses, herbs, mosses & lichens, rocks, bare soil, woody plants, ant hills or wood. These values were then used to calculate habitat diversity ($H'_{Habitat}$) using the Shannon index (Equation 1; *pi* = proportion of vegetation cover *i*).

According to Heidorn & Joern (1987), grasshoppers prefer grasses with high nitrogen content. We therefore used plant nitrogen data from 2009 that was collected on plots in immediate proximity of the transects as a part of the larger exclosure project. Plant nitrogen concentration was analyzed by dry combustion on a TruSpec SN analyzer at 950°C (Leco Corp., St. Joseph, MI, USA) from plant material harvested in September 2009 that was dried at 65°C, and ground through a 0.5 millimetre sieve.

3.4 Distribution of Orthoptera species in the Swiss National Park

Since we were catching Orthoptera on grasslands located in different parts of the SNP, we tested which grasslands had most similar Orthoptera species compositions and which factors influenced them. Orthoptera catches of two neighbouring transects which belonged to the same site were summed.

3.5 Statistical analyses

Transects from site 16 were excluded from the $S_{Orthoptera}$ and $H'_{Orthoptera}$ calculations as no Orthoptera had been caught at any time of sampling. For calculating $H'_{Orthoptera}$, Orthoptera catches of five replicates of each transect were summed in order to minimize zero values. All data was tested for normality and Orthoptera catches m^{-2} were square root transformed SQRT(Orthoptera catches m^{-2} + 0.5) according to Sokal & Rohlf (1995). To assess how vegetation height and habitat diversity affected Orthoptera abundance and diversity we used linear regression analyses. Thereby, Orthoptera catches m^{-2}, $S_{Orthoptera}$ and $H'_{Orthoptera}$ were the dependent variables and vegetation height and $H'_{Habitat}$ were the independent variables, respectively. The effect of vegetation type on Orthoptera abundance and diversity was tested with one-way-ANOVA. Further linear regression analyses were conducted to assess how the different vegetation cover types affected Orthoptera abundance and diversity, and how nitrogen concentration affected Orthoptera abundance. Vegetation cover variables and plant nitrogen concentration were the independent variables and Orthoptera catches m^{-2}, $S_{Orthoptera}$ and $H'_{Orthoptera}$ the dependent variables, respectively. All these statistical analyses were conducted with "IBM SPSS Statistics 19" (SPSS Inc, Chicago, USA).

A principal coordinates analysis (Wildi, 2010) was performed to assess Orthoptera species composition in different areas of the SNP. Orthoptera catches were square root transformed and species vectors were normalized. We measured similarity in Orthoptera species composition between locations with the following equation (Wildi & Orlòci, 1996):

(Equation 2)
$$S_{x,y} = \frac{\sum x_i y_i}{\sum x_i^2 + \sum y_i^2 - \sum x_i y_i} \; (i = 1, \ldots, n)$$

X_i and y_i represent how many times species i occurred in locations x and y, and n is the number of Orthoptera species.

4. Results

4.1 Orthoptera abundance and diversity

During our sampling sessions we counted 715 and caught 1388 Orthoptera individuals, 882 of which were adults. We found nine different species in total: Roesel's bush-cricket *Metrioptera roeselii* (Hgb), which belongs to the taxonomic suborder of Ensifera, and *Bohemanella frigida* (Boh.), *Chorthippus biguttulus* (L.), *Chorthippus parallelus* (Zett.), *Gomphocerippus rufus* (L.), *Gomphocerus sibiricus* (L.), *Omocestus viridulus* (L.), *Podisma pedestris* (L.) and *Tetrix bipunctata* (L.), which all belong to the taxonomic suborder Caelifera (grasshoppers). Species determination check with stridulation sounds gave good results, as in most cases the species lists for Orthoptera catches and Orthoptera stridulation sound records corresponded perfectly (Appendix A).

The maximum number of individuals counted on a transect was 18.4 per square meter (average 2.6 m^{-2}), whilst the maximum number of individuals caught per square meter was 2.4 (average 0.5 m^{-2}). Orthoptera catches and Orthoptera counts per square meter were highly correlated (R^2=0.694, df=34, F=77.002, $p < 0.001$; Figure 3). Thus, we used Orthoptera catches per square meter as an estimate of Orthoptera abundance. $S_{Orthoptera}$ varied between 0.00 and 0.50 per transect and $H'_{Orthoptera}$ between 0.00 and 1.28.

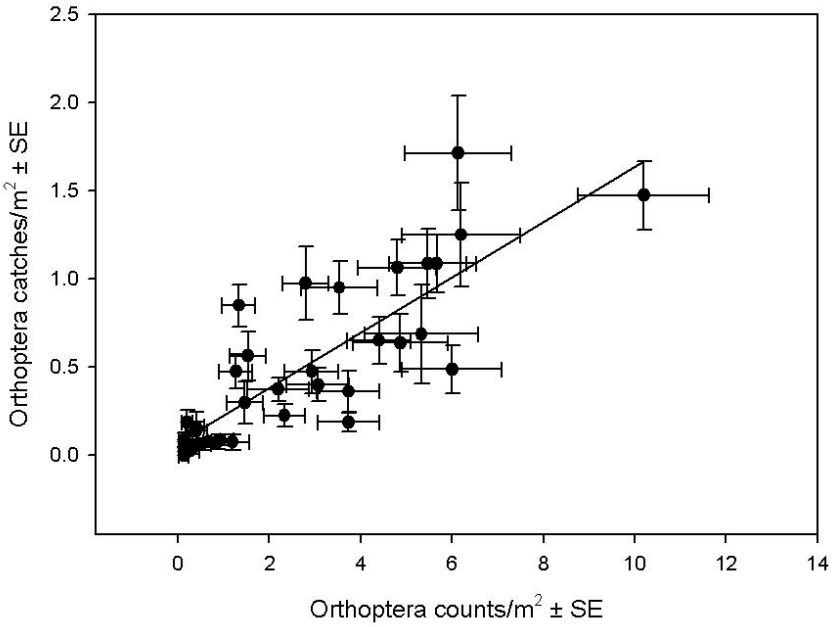

Figure 3: Orthoptera catches m^{-2} were linearly correlated with Orthoptera counts m^{-2}.

4.2 Ecosystem parameters influencing Orthoptera abundance and diversity

When comparing Orthoptera catches m^{-2} for SG and TG vegetation no significant difference was detected (df=34, F=2.548, p = 0.120), thus, differences in grazing patterns of red deer and chamois did not influence Orthoptera catches. The grazing pattern also had no significant influence on Orthoptera species diversity ($S_{Orthoptera}$: df=32, F=3.83, p=0.059; $H'_{Orthoptera}$: df=32, F=1.778, p=0.192).

In contrast, both Orthoptera abundance (R^2=0.357, df=34, F=18.897, p < 0.001; Figure 4) and Orthoptera species diversity ($S_{Orthoptera}$: R^2=0.48, df=32, F=29.575, p < 0.001; $H'_{Orthoptera}$: R^2=0.227, df=32, F=9.380, p=0.004) were correlated with vegetation height (ranging from 3.39 cm to 16.09 cm per transect), all values increasing with increasing vegetation height.

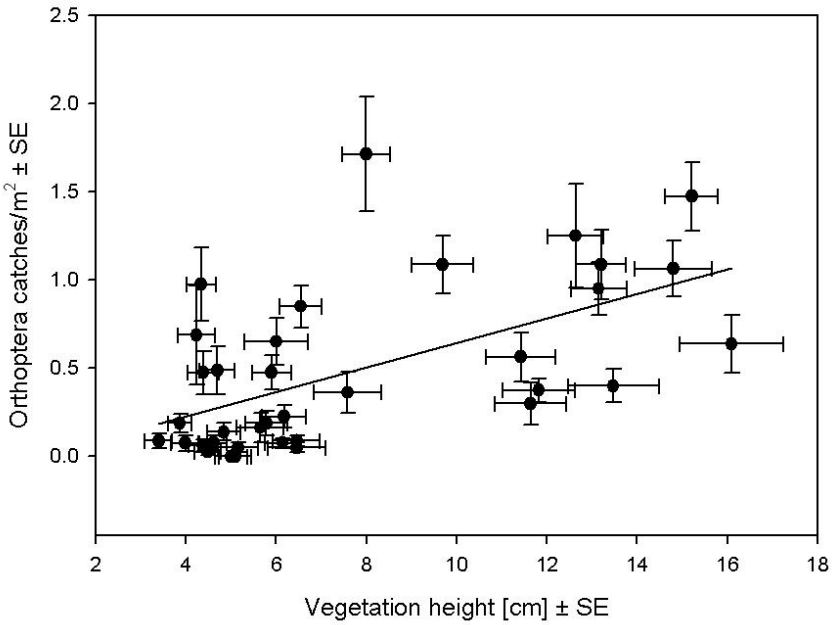

Figure 4: Orthoptera catches m^{-2} were linearly correlated with vegetation height.

Orthoptera abundance (Orthoptera catches m^{-2}; R^2=0.305, df=34, F=14.927, p < 0.001; Figure 5) was negatively linearly related to habitat diversity ($H'_{Habitat}$). $H'_{Habitat}$ was negatively linearly correlated with $S_{Orthoptera}$ (R^2=0.159, df=32, F=6.042, p=0.020), but no correlation was found with $H'_{Orthoptera}$ (R^2=0.009, df=32, F=0.304, p=0.585).

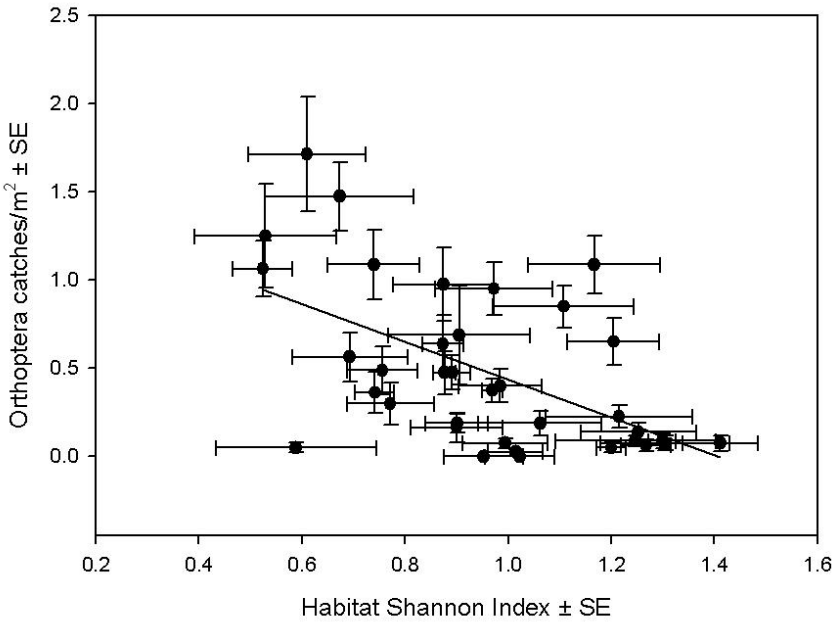

Figure 5: Orthoptera catches m^{-2} were negatively linearly correlated with $H'_{Habitat}$.

The vegetation cover variables measured that correlated with Orthoptera abundance (Orthoptera catches m^{-2}) were the proportion of grasses and the proportion of herbs. The proportion of grass was positively correlated with Orthoptera catches m^{-2} (R^2=0.222, df=34, F=9.703, p = 0.004), while herbs were negatively correlated with Orthoptera catches m^{-2} (R^2=0.116, df=34, F=4.443, p=0.042). $H'_{Habitat}$ was lower when the proportion of grasses was higher. No relationship between any of the parameters measured was found for $S_{Orthoptera}$ and $H'_{Orthoptera}$.

The nitrogen concentration of SG vegetation was significantly higher than the one of TG vegetation (df=34, F=13.667, p=0.001). In SG, plant nitrogen concentration was correlated with Orthoptera abundance (R^2=0.538, df=16, F=18.624, p=0.001), whereas no correlation was found for the TG vegetation (R^2=0.007, df=16, F=0.109, p=0.746). Plant nitrogen had no influence on Orthoptera diversity ($S_{Orthoptera}$: R^2=0.025, df=32, F=0.837, p=0.367; $H'_{Orthoptera}$: R^2=0.018, df=32, F=0.577, p=0.453).

4.3 Distribution of Orthoptera species in the Swiss National Park

Orthoptera species composition differed considerably within the SNP (Figure 7). Multivariate analyses showed that three distinct aggregation groups could be observed (Figure 6). In the lower right corner, sites 1-6 are located, which represent all transects located on Alp Stabelchod and Stabelchod Dadaint. Species *Chorthippus parallelus* and *Metrioptera roeselii* gave distinction to the communities in these areas characterized by low $H'_{Habitat}$. In the upper left corner, sites 11-13 are aggregated, all of those were located on Alp Grimmels with *Chorthippus biguttulus* as a characteristic species. They were separated from other locations in distance (X-Coordinate). In the bottom left corner, sites 7-10 and 15, 17 and 18 were located. Those sites were located on Margunet, Val dal Botsch and on Alp Mingèr. *Gompocerus sibiricus* occurred in these places and they were characterized by low vegetation height and high

altitude. Site 14, also located on Alp Grimmels, was the only site not clearly belonging to one of the three groups.

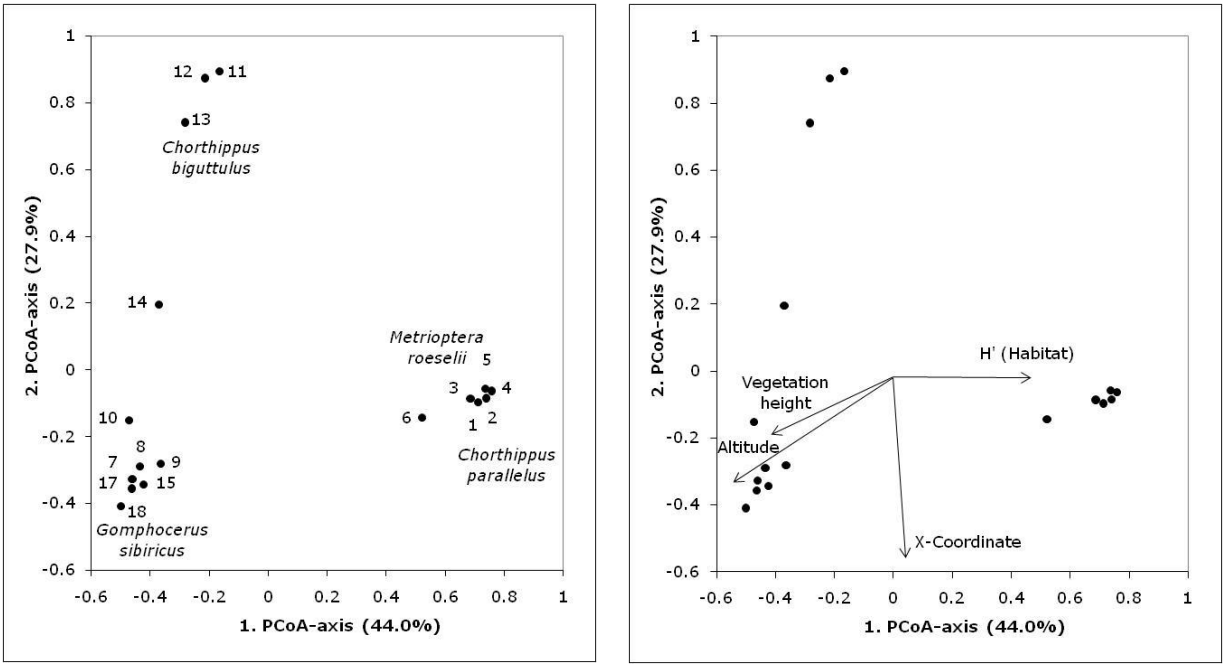

Figure 6: Sites are aggregated according to Orthoptera species composition. Numbers stand for the site number.

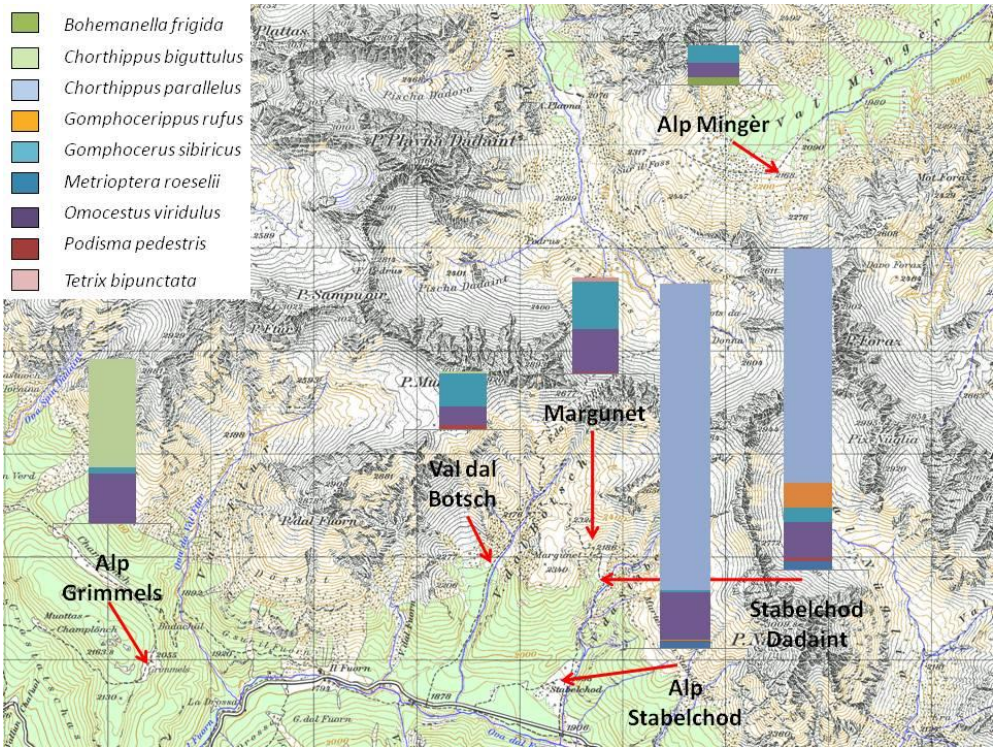

Figure 7: The species composition of all six locations visualized as column graphs. Size of column bars corresponds to the relative number of caught Orthoptera per location. Background map: Swiss Map 50.

5. Discussion

5.1 Orthoptera abundance and diversity

The average Orthoptera abundance (0.5 catches per square meter) found in the SNP is similar to that found in other studies (Jepson-Innes & Bock, 1989; Welch *et al.*, 1991; Gardiner *et al.*, 2002; O'Neill *et al.*, 2003), ranging from 0.0 to 3.4 individuals per square meter. O'Neill *et al.* (2003) for example, had an average abundance of 0.1 grasshoppers per square meter and sweep net sample. Unfortunately, we were not able to compare Orthoptera species richness to other studies as they did not relate their species numbers to absolute areas (e.g. Samways & Kreuzinger, 2001), or did not focus on species richness at all (e.g. O'Neill, 2003). As the SNP is located at high altitude, Orthoptera species richness is expected to be relatively low (Wettstein & Schmid, 1999).

5.2 Ecosystem parameters influencing Orthoptera abundance and diversity

Our results suggest that wild ungulates do not directly influence the Orthoptera communities in the SNP since Orthoptera abundance and species diversity did not differ between the two vegetation types. The two studies we found in the literature that assessed how wild ungulate grazing affects Orthoptera abundance found contrasting results to our study. Joern (2004) reported higher Orthoptera numbers under bison grazed conditions in the Konza tall-grass prairie in Kansas (USA). He explained his findings with increased food quality and altered habitat structure in grazed vegetation. In contrast, Samways & Kreuzinger (2001) found lower abundance of Orthoptera with increasing grazing pressure within grasslands of a game park in South Africa. Their explanation for the decreased invertebrate density under wild ungulate grazing was a change in habitat structure. Higher (Holmes *et al.*, 1979) or lower (Jepson-Innes & Bock, 1989; Welch *et al.*, 1991; O'Neill *et al.*, 2003) overall Orthoptera abundances were also found with livestock grazing. Also these authors explained their findings by altered food quality and microhabitat with grazing. Interestingly, O'Neill *et al.* (2003) used an experimental livestock density of 10.8 ind./km^2 - which is comparable to the density of red deer in SNP (personal communication SNP) – but found lower Orthoptera abundance when the large herbivores were present. We can think of several reasons that could explain this difference in results:

1) Our study was conducted in a natural grassland ecosystem, in which Orthoptera, red deer and chamois have coexisted in situ for dozens of years and therefore are adapted to the presence of the others. In contrast, livestock-grazing was simulated over a certain period in the study of O'Neill *et al.* (2003).

2) It was reported that different species react differently to grazing (Holmes *et al.*, 1979; Jepson-Innes & Bock, 1989; O'Neill *et al.*, 2003). The Orthoptera species occurring in the SNP are completely distinct to the ones in studies conducted in Africa (Samways & Kreuzinger, 2001) or North America (Holmes *et al.*,

1979; Jepson-Innes & Bock, 1989; Welch *et al.*, 1991; O'Neill *et al.*, 2003) with no pest species present in the Swiss mountains.

3) Ungulate dung, which otherwise could have attracted Orthoptera, had been removed from the transects (dung counts for herbivore exclosure project). This might have influenced Orthoptera distribution, as grasshoppers (*Chorthippus parallelus*) have frequently been observed on dung heaps (personal observation; Figure 8).

Figure 8: *Chorthippus parallelus* individuals sitting on dung heaps. (Alp Stabelchod, 30.08.2010)

As reported in other studies (Clark, 1948; Morris, 2000; Gardiner *et al.*, 2002), vegetation structure had a large influence on grasshopper distribution in the SNP as we caught significantly more Orthoptera individuals in taller vegetation. One reason for these findings might be related to more favourable microclimatic conditions (humidity, temperature) found in taller vegetation. Tall vegetation is not so readily warmed by the sun nor cooled by free circulating air (Clark, 1948), so the microclimate in tall vegetation is more stable than that of shorter vegetation. This, in turn, would indicate the patches with taller vegetation are actively selected by the insects (Ingrisch & Köhler, 1998). A second reason might be that Orthoptera profit from the cover from predators in the tall grass (Grayson & Hassall, 1985). We found that vegetation structure also significantly influenced Orthoptera species diversity ($S_{Orthoptera}$ and $H'_{Orthoptera}$), which increased with higher vegetation. Also, Morris (2000) found an increased overall arthropod species richness with higher vegetation which he explained by the increased food availability.

Orthoptera abundance was negatively correlated with habitat diversity. This might be surprising on first sight but with a closer look at habitat diversity it becomes clearer. Proportion of grasses was negatively correlated with habitat diversity and Orthoptera abundance was positively related to the proportion of grasses. Thus, in the SNP more Orthoptera are found in a non-diverse habitat as such a habitat

containing a lot of grass. Since all the species found – except for *Tetrix bipunctata* – are feeding on grasses (Baur *et al.*, 2006), the higher number of individuals in areas with higher grass cover is logical. Along with Orthoptera abundance, also Orthoptera species richness was higher in a non-diverse habitat. This finding contrasts a prediction of Báldi (2008), who suggested that arthropod species richness is higher in a diverse habitat.

5.3 Distribution of Orthoptera species in the Swiss National Park

We found that altitude, vegetation height, habitat diversity, and location gave distinction to the Orthoptera communities in the SNP. *Gomphocerus sibiricus*, *Metrioptera roeselii* & *Chorthippus parallelus*, and *Chorthippus biguttulus* were the characteristic species of the different groups respectively. Those species occurred in habitats as expected from literature (Baur *et al.*, 2006). *Gomphocerus sibiricus* is common in high altitude communities and is described as a typical mountain species, while *Metrioptera roeselii*, occurring in high vegetation and low habitat diversity, is dependent on tall, dense vegetation. *Chorthippus parallelus* lives in a variety of habitats and *Chorthippus biguttulus* prefers warm and dry habitats with relatively low vegetation. There is evidence that community composition was somewhat different in the SNP in the 1920's and 1930's, when Hofmänner (1951) conducted studies on some of the grasslands we worked on. This author found neither *Chorthippus parallelus* nor *Metrioptera roeselii* on Alp Stabelchod, even though the vegetation has been described as tall grass. This might be a sampling artefact or caused by changes in vegetation composition due to an increasing ungulate density during the past eighty years. In contrast, the dominating Orthoptera species in our study on Alp Grimmels (*Chorthippus biguttulus*, *Omocestus viridulus*, *Gomphocerus sibiricus*), Margunet (*Omocestus viridulus*, *Gomphocerus sibiricus*) and on Val dal Botsch (*Omocestus viridulus*, *Gomphocerus sibiricus*, *Podisma pedestris*) were already found during the assessment in the early history of the park (Hofmänner, 1951).

6. Acknowledgements

My thank goes to my supervisor Anita Risch; to Martin Schütz, Alan Haynes, Luise Rothe and Niculin Geer for assistance in the field and in data analysis; to Janine Friedhoff, Rene Seifert and Melanie Hodel for assistance in the field and also for your encouragement and amusement; to the Swiss National Park for giving me the permission to work in the SNP and providing accommodation.

7. References

Adler, P.B., Raff, D.A. & Lauenroth, W.K. (2001) The effect of grazing on the spatial heterogeneity of vegetation. *Oecologia* **128**, 465-479.

Audacity (2006) Audacity 1.2.6. Free digital-audio editor.

Báldi, A. (2008) Habitat heterogeneity overrides the species-area relationship. *Journal of Biogeography* **35**, 675-681.

Baur, B., Baur, H., Roesti, C. & Roesti, D. (2006) *Die Heuschrecken der Schweiz*. Haupt Verlag Bern.

Blumer, P. & Diemer, M. (1996) The Occurrence and Consequences of Grasshopper Herbivory in an Alpine Grassland, Swiss Central Alps. *Arctic and Alpine Research* **28**, 435-440.

Clark, E.J. (1948) Studies in the ecology of British grasshoppers. *Transactions of the Royal Entomological Society of London* **99**, 173-222.

Curry, J.P. (1994) *Grassland invertebrates. Ecology, influence on soil fertility and effects on plant growth*. Chapman & Hall, London, UK.

Coupland, R.T. (1979) *Grassland ecosystems of the world: analysis of grasslands and their uses*. Cambridge University Press, Cambridge,U.K.

Dempster, J.P. (1963) The population dynamics of grasshoppers and locusts. *Biological Reviews* **38**, 490-529.

Foster, R.N. & Reuter, K.C. (1996) Evaluation of rangeland controls: a general protocol for efficacy of insecticide applied from the air. *Grasshopper Integrated Pest Management Handbook. Technical Bulletin 1809* (ed. by G.L. Cunningham and M.W. Sampson), pp. 112.1-112.7. USDA-APHIS, Washington, DC, USA.

Frank, D.A. (2006) Large herbivores in heterogeneous grassland ecosystems. *Large Herbivore Ecology, Ecosystem Dynamics and Conservation* (ed. by K. Danell, R. Bergström, P. Duncan and J. Pastor), pp. 326-347. Cambridge University Press, Cambridge, U.K.

Gardiner, T., Pye, M., Field, R. & Hill, J. (2002) The influence of sward height and vegetation composition in determining the habitat preferences of three Chorthippus species (Orthoptera: Acrididae) in Chelmsford, Essex, UK. *Journal of Orthoptera Research* **11**, 207-213.

Gibson, D.J. (2009) *Grasses and grassland ecology*. Oxford University Press, New York.

Grayson, F.W.L. & Hassall, M. (1985) Effects of rabbit grazing on population variables of Chorthippus brunneus (Orthoptera). *Oikos* **44**, 27-34.

Heidorn, T.J. & Joern A. (1987) Feeding preference and spatial distribution of grasshoppers (Acrididae) in response to nitrogen fertilization of Calamovilfa longifolia. *Functional Ecology* **1**, 369-375.

Hofmänner, B. (1951) *Die Geradflügler (Dermaptera und Orthoptera) des Schweizerischen Nationalparkes und der angrenzenden Gebiete*. Band 3. Verlag Lüdin AG, Liestal.

Holmes, N.D., Smith, D.S. & Johnston, A. (1979) Effect of Grazing by Cattle on the Abundance of Grasshoppers on Fescue Grassland. *Journal of Range Management* **32**, 310-311.

Ingrisch, S. & Köhler G. (1998) *Die Heuschrecken Mitteleuropas*. Westarp Wissenschaften-Verlagsgesellschaft GmbH, Magdeburg.

Jepson-Innes, K. & Bock, C.E. (1989) Response of grasshoppers (Orthoptera: Acrididae) to livestock grazing in southeastern Arizona: differences between seasons and subfamilies. *Oecologia* **78**, 430-431.

Joern, A. (2004) Variation in Grasshopper (Acrididae) Densities in Response to Fire Frequency and Bison Grazing in Tallgrass Prairie. *Environmental Entomology* **33**, 1617-1625.

Köhler, G., Brodhun, H.-P. & Schäller, G. (1987) Ecological energetic of central European grasshoppers (Orthoptera: Acrididae). *Oecologia* (Berlin) **74**, 112-121.

Magurran, A.E. (1988) *Ecological diversity and its measurement*. Cambridge University Press, Cambridge, U.K.

Morris, M.G. (2000) The effects of structure and its dynamics on the ecology and conservation of arthropods in British grasslands. *Biological Conservation* **95**, 129-142.

O'Neill, K.M., Olson, B.E., Rolston, M.G., Wallander, R., Larson, D.P. & Seibert, C.E. (2003) Effects of livestock grazing on rangeland grasshopper (Orthoptera: Acrididae) abundance. *Agriculture, Ecosystems and Environment* **97**, 511-64.

Risch, A.C., Jurgensen, M.F., Page-Dumroese, D.S., Wildi, O. & Schütz, M. (2008) Long-term development of above- and below-ground carbon stocks following land-use change in subalpine ecosystems of the Swiss National Park. *Canadian Journal of Forest Research* **38**, 1590-1602.

Roesti, C. & Keist, B. (2009) *Die Stimmen der Heuschrecken*. Haupt Verlag Bern.

Samways, M.J. & Kreuzinger, K. (2001) Vegetation, ungulate and grasshopper interactions inside vs. outside an African savanna game park. *Biodiversity and Conservation* **10**, 1963-1981.

Schütz, M., Risch, A.C., Leuzinger, E., Krüsi, B.O. & Achermann, G. (2003) Impact of herbivory by red deer (Cervus elaphus L.) on patterns and processes in subalpine grasslands in the Swiss National Park. *Forest Ecology and Management* **181**, 177-188.

Schütz, M., Risch, A.C., Achermann, G., Thiel-Egenter, C., Page-Dumroese, D.S., Jurgensen, M.F. & Edwards, P.J. (2006) Phosphorus Translocation by Red Deer on a Subalpine Grassland in the Central European Alps. *Ecosystems* **9**, 624-633.

Sokal, R.R. & Rohlf, F.J. (1995) *Biometry. The principles and practice of statistics in biological research*. Third edition. W. H. Freeman and Company, New York.

SPSS, 2010. SPSS version 19. SPSS Inc, Chicago.

Suominen, O. & Danell, K. (2006) Effects of large herbivores on other fauna. *Large Herbivore Ecology, Ecosystem Dynamics and Conservation* (ed. by K. Danell, R. Bergström, P. Duncan and J. Pastor), pp. 383-412. Cambridge University Press, Cambridge, U.K.

Swiss Map 50, 2000. Bundesamt für Landestopographie, Wabern.

Welch, J.L., Redak, R. & Kondratieff, B.C. (1991) Effect of Cattle Grazing on the Density and Species of Grasshoppers (Orthoptera: Acrididae) of the Central Plains Experimental Range, Colorado: a Reassessment after Two Decades. *Journal of the Kansas Entomological Society* **64**, 337-343.

Wettstein, W. & Schmid, B. (1999) Conservation of arthropod diversity in montane wetlands: effect of altitude, habitat quality and habitat fragmentation on butterflies and grasshoppers. *Journal of Applied Ecology* **36**, 363-373.

White, R., Murray, S. & Rohweder, M. (2000) *Pilot analysis of global ecosystems: grassland ecosystems technical report*. World Resources Institute, Washington, DC, USA.

Wildi, O. & Orlòci, L. (1996) *Numerical exploration of community patterns. A guide to the use of MULVA 5*. 2nd Edition. SPB Academic Publishing, Amsterdam.

Wildi, O. (2010) *Data Analysis in Vegetation Ecology*. John Wiley & Sons Ltd, West Sussex, U.K.

Appendix A – Orthoptera species determination check

Table A1: Comparison of Orthoptera stridulation sound records and absolute number of adult Orthoptera catches.

	Catches	Sound	Catches	Sound	Catches	Sound	Catches	Sound
	Site 1 + 3		Site 2 + 4		Site 5 + 6		Site 7 + 8	
Chorthippus biguttulus	0	absent	0	absent	0	absent	0	absent
Chorthippus parallelus	114	present	225	present	130	present	0	absent
Gomphocerippus rufus	0	absent	0	absent	14	absent	0	absent
Gomphocerus sibiricus	1	present	1	absent	8	present	23	present
Metrioptera roeselii	1	present	6	present	5	present	0	absent
Omocestus viridulus	20	present	32	present	20	present	21	present

	Catches	Sound	Catches	Sound	Catches	Sound	Catches	Sound
	Site 9 + 10		Site 11 + 12		Site 13 + 14		Site 15,16,17,18	
Chorthippus biguttulus	1	absent	87	present	41	present	0	absent
Chorthippus parallelus	0	absent	0	absent	0	absent	0	absent
Gomphocerippus rufus	0	absent	0	absent	0	absent	0	absent
Gomphocerus sibiricus	14	present	0	present	7	present	15	present
Metrioptera roeselii	0	absent	0	absent	0	absent	0	absent
Omocestus viridulus	8	present	10	present	49	present	12	present

Orthoptera voice records were compared with Orthoptera catches. *Gomphocerippus rufus* grasshoppers had been caught at Stabelchod Dadaint (sites 5&6) but no sound could be recorded. According to Roesti & Keist (2009) the stridulation sound of *Gomphocerippus rufus* is low and is performed in irregular intervals. Probably that's the reason why it could not be recorded. According to Baur *et al.* (2006) *Chorthippus biguttulus* belongs to a group of grasshoppers which can only be distinguished by the stridulation sound of male grasshoppers. In the records only the sound of *Chorthippus biguttulus* could be heard. Therefore we can assume that it is the only one grasshopper species representing this group at the sampling sites. Species *Bohemanella frigida*, *Podisma pedestris* and *Tetrix bipunctata* don't produce any stridulation sound (Baur *et al.*, 2006).

Appendix B – Data used for analysis

Table B1: Orthoptera counts 2010. Counts in open quadrates in 0.25m^2.

Orthoptera counts 2010

Authors: Lena Spalinger, Alan Haynes, Janine Friedhoff, Rene Seifert, Melanie Hodel, Mirjam von Rütte, Heidi Vögler, Luise Rothe

Measurement	Site	Fence	Transect	Date	Time	Air Temperature (°C)	Weather
1	Stabelchod	1	1	16.06.2010	1015	13	light rain, light wind,some sun
1	Stabelchod	1	2	16.06.2010	1015	13	light rain, light wind,some sun
1	Stabelchod	2	1	16.06.2010	810	9	rain
1	Stabelchod	2	2	16.06.2010	810	9	rain
1	Stabelchod	3	3	16.06.2010	1000	13	light rain, light wind
1	Stabelchod	3	4	16.06.2010	1000	13	light rain, light wind
1	Stabelchod	4	3	16.06.2010	830	9	light rain
1	Stabelchod	4	4	16.06.2010	830	9	light rain
1	Dadaint	5	3	17.06.2010	1300		light rain
1	Dadaint	5	4	17.06.2010	1300		light rain
1	Dadaint	6	1	17.06.2010	1215		cloudy
1	Dadaint	6	2	17.06.2010	1215		cloudy
1	Margunet	7	3	17.06.2010	915	11	cloudy, sun through clouds
1	Margunet	7	4	17.06.2010	915	11	light clouds
1	Margunet	8	1	17.06.2010	1020	10	cloudy
1	Margunet	8	2	17.06.2010	1020	10	cloudy
1	Val dal Botsch	9	3	16.06.2010	1330	15	cloudy
1	Val dal Botsch	9	4	16.06.2010	1330	15	cloudy
1	Val dal Botsch	10	1	16.06.2010	1330	15	cloudy
1	Val dal Botsch	10	2	16.06.2010	1330	15	cloudy
1	Grimmels	11	3	14.06.2010	1430	21	Cloudy, 10% blue, no wind
1	Grimmels	11	4	14.06.2010	1430	21	Cloudy, 10% blue, no wind
1	Grimmels	12	1	14.06.2010	1535	16	70% blue sky, light wind
1	Grimmels	12	2	14.06.2010	1535	16	70% blue sky, light wind
1	Grimmels	13	1	14.06.2010	1350	17	cloudy, no wind
1	Grimmels	13	2	14.06.2010	1350	17	cloudy, no wind
1	Grimmels	14	3	14.06.2010	1220	17	cloudy,10% blue, light wind,few raindrops
1	Grimmels	14	4	14.06.2010	1220	17	cloudy,10% blue, light wind,few raindrops
1	Minger	15	1	15.06.2010	1100	9	light rain, no wind
1	Minger	15	2	15.06.2010	1100	9	light rain, no wind
1	Minger	16	3	15.06.2010	1100	9	light rain, no wind
1	Minger	16	4	15.06.2010	1100	9	light rain, no wind
1	Minger	17	3	15.06.2010	1225	9	light rain, no wind
1	Minger	17	4	15.06.2010	1225	9	light rain, no wind
1	Minger	18	1	15.06.2010	1225	9	light rain, no wind
1	Minger	18	2	15.06.2010	1225	9	light rain, no wind
2	Stabelchod	1	1	28.06.2010	1540	22	sunny, occasional gusts
2	Stabelchod	1	2	28.06.2010	1540	22	sunny, occasional gusts
2	Stabelchod	2	1	28.06.2010	1300	19	sunny, light wind
2	Stabelchod	2	2	28.06.2010	1300	19	sunny, light wind
2	Stabelchod	3	3	28.06.2010	1540	22	sunny, occasional gusts
2	Stabelchod	3	4	28.06.2010	1540	22	sunny, occasional gusts
2	Stabelchod	4	3	28.06.2010	1300	19	sunny, light wind
2	Stabelchod	4	4	28.06.2010	1300	19	sunny, light wind
2	Dadaint	5	3	01.07.2010	1445	20	sunny 50% cloud, light wind
2	Dadaint	5	4	01.07.2010	1445	20	sunny 50% cloud, light wind
2	Dadaint	6	1	01.07.2010	1410	20	sunny 50% cloud, light wind
2	Dadaint	6	2	01.07.2010	1410	20	sunny 50% cloud, light wind
2	Margunet	7	3	01.07.2010	1140	19	sunny 50% cloud, light wind
2	Margunet	7	4	01.07.2010	1140	19	sunny 50% cloud, light wind
2	Margunet	8	1	01.07.2010	1030	17	sunny 50% cloud, light wind
2	Margunet	8	2	01.07.2010	1030	17	sunny 50% cloud, light wind
2	Val dal Botsch	9	3	30.06.2010	1545	18	cloudy, windy
2	Val dal Botsch	9	4	30.06.2010	1545	18	cloudy, windy
2	Val dal Botsch	10	1	30.06.2010	1545	18	cloudy, windy
2	Val dal Botsch	10	2	30.06.2010	1545	18	cloudy, windy
2	Grimmels	11	3	30.06.2010	945	18	10% cloud
2	Grimmels	11	4	30.06.2010	945	18	10% cloud
2	Grimmels	12	1	30.06.2010	945	18	10% cloud
2	Grimmels	12	2	30.06.2010	945	18	10% cloud
2	Grimmels	13	1	30.06.2010	1130	21	40% cloud, sunny
2	Grimmels	13	2	30.06.2010	1130	21	40% cloud, sunny
2	Grimmels	14	3	30.06.2010	1130	21	40% cloud, sunny
2	Grimmels	14	4	30.06.2010	1130	21	40% cloud, sunny
2	Minger	15	1	29.06.2010	1330	19	40% clouds, wind
2	Minger	15	2	29.06.2010	1330	19	40% clouds, wind
2	Minger	16	3	29.06.2010	1330	19	40% clouds, wind
2	Minger	16	4	29.06.2010	1330	19	40% clouds, wind
2	Minger	17	3	29.06.2010	1400	19	40% clouds, wind
2	Minger	17	4	29.06.2010	1400	19	40% clouds, wind
2	Minger	18	1	29.06.2010	1400	19	40% clouds, wind
2	Minger	18	2	29.06.2010	1400	19	40% clouds, wind

Table B1 continued: Orthoptera counts 2010

3	Stabelchod	1	1	12.07.2010	1610	23	50% cloud light wind
3	Stabelchod	1	2	12.07.2010	1610	23	50% cloud light wind
3	Stabelchod	2	1	12.07.2010	1140	22	30% cloud sunny
3	Stabelchod	2	2	12.07.2010	1140	22	30% cloud sunny
3	Stabelchod	3	3	12.07.2010	1610	23	50% cloud light wind
3	Stabelchod	3	4	12.07.2010	1610	23	50% cloud light wind
3	Stabelchod	4	3	12.07.2010	1150	22	30% cloud sunny
3	Stabelchod	4	4	12.07.2010	1150	22	30% cloud sunny
3	Dadaint	5	3	15.07.2010	955	20	30 % clouds, no wind
3	Dadaint	5	4	15.07.2010	955	20	31 % clouds, no wind
3	Dadaint	6	1	15.07.2010	1135	19	50% clouds, no wind
3	Dadaint	6	2	15.07.2010	1135	19	50% clouds, no wind
3	Margunet	7	3	15.07.2010	1550	25	50% clouds, light wind
3	Margunet	7	4	15.07.2010	1550	25	50% clouds, light wind
3	Margunet	8	1	15.07.2010	1355	25	30% clouds, light wind
3	Margunet	8	2	15.07.2010	1355	25	30% clouds, light wind
3	Val dal Botsch	9	3	16.07.2010	930	21	10% cloud, light breeze
3	Val dal Botsch	9	4	16.07.2010	930	21	10% cloud, light breeze
3	Val dal Botsch	10	1	16.07.2010	1050	21	10% cloud, light breeze
3	Val dal Botsch	10	2	16.07.2010	1050	21	10% cloud, light breeze
3	Grimmels	11	3	13.07.2010	1630	22	80% clouds, no wind
3	Grimmels	11	4	13.07.2010	1630	22	80% clouds, no wind
3	Grimmels	12	1	13.07.2010	1630	22	80% clouds, no wind
3	Grimmels	12	2	13.07.2010	1630	22	80% clouds, no wind
3	Grimmels	13	1	13.07.2010	1330	22	50% clouds, no wind
3	Grimmels	13	2	13.07.2010	1330	22	50% clouds, no wind
3	Grimmels	14	3	13.07.2010	1330	22	50% clouds, no wind
3	Grimmels	14	4	13.07.2010	1330	22	50% clouds, no wind
3	Minger	15	1	14.07.2010	1600	21	80% cloud, light wind
3	Minger	15	2	14.07.2010	1600	21	80% cloud, light wind
3	Minger	16	3	14.07.2010	1600	21	80% cloud, light wind
3	Minger	16	4	14.07.2010	1600	21	80% cloud, light wind
3	Minger	17	3	14.07.2010	1600	21	80% cloud, light wind
3	Minger	17	4	14.07.2010	1600	21	80% cloud, light wind
3	Minger	18	1	14.07.2010	1600	21	80% cloud, light wind
3	Minger	18	2	14.07.2010	1600	21	80% cloud, light wind
4	Stabelchod	1	1	28.07.2010	1055	17	55%clouds, light wind
4	Stabelchod	1	2	28.07.2010	1055	17	55%clouds, light wind
4	Stabelchod	2	1	28.07.2010	1010	15	sunny, 15% clouds
4	Stabelchod	2	2	28.07.2010	1010	15	sunny, 15% clouds
4	Stabelchod	3	3	28.07.2010	1055	17	60%clouds, light wind
4	Stabelchod	3	4	28.07.2010	1055	17	60%clouds, light wind
4	Stabelchod	4	3	28.07.2010	1020	15	sunny, 15% clouds
4	Stabelchod	4	4	28.07.2010	1020	15	sunny, 15% clouds
4	Dadaint	5	3	26.07.2010	1155	14	95% clouds, light wind
4	Dadaint	5	4	26.07.2010	1155	14	95% clouds, light wind
4	Dadaint	6	1	26.07.2010	1155	9	95% clouds, light wind
4	Dadaint	6	2	26.07.2010	1155	9	95% clouds, light wind
4	Margunet	7	3	26.07.2010	1525	9	95% clouds, windy
4	Margunet	7	4	26.07.2010	1525	9	95% clouds, windy
4	Margunet	8	1	26.07.2010	1525	9	95% clouds, windy
4	Margunet	8	2	26.07.2010	1525	9	95% clouds, windy
4	Val dal Botsch	9	3	28.07.2010	1630	15	bit rain, 90% clouds, bit wind
4	Val dal Botsch	9	4	28.07.2010	1630	15	bit rain, 90% clouds, bit wind
4	Val dal Botsch	10	1	28.07.2010	1525	16	bit rain, 100% clouds, light wind
4	Val dal Botsch	10	2	28.07.2010	1525	16	bit rain, 100% clouds, light wind
4	Grimmels	11	3	29.07.2010	1255	9	rain, 100% clouds
4	Grimmels	11	4	29.07.2010	1255	9	rain, 100% clouds
4	Grimmels	12	1	29.07.2010	1240	9	rain, 100% clouds, light wind
4	Grimmels	12	2	29.07.2010	1240	9	rain, 100% clouds, light wind
4	Grimmels	13	1	29.07.2010	1045	9	rain, 100% clouds, light wind
4	Grimmels	13	2	29.07.2010	1045	9	rain, 100% clouds, light wind
4	Grimmels	14	3	29.07.2010	1045	9	rain, 100% clouds, light wind
4	Grimmels	14	4	29.07.2010	1045	9	rain, 100% clouds, light wind
4	Minger	15	1	27.07.2010	1125	10	95% clouds, light wind
4	Minger	15	2	27.07.2010	1125	10	95% clouds, light wind
4	Minger	16	3	27.07.2010	1310	10	90% clouds, light wind
4	Minger	16	4	27.07.2010	1310	10	90% clouds, light wind
4	Minger	17	3	27.07.2010	1410	10	70% clouds, light wind
4	Minger	17	4	27.07.2010	1410	10	70% clouds, light wind
4	Minger	18	1	27.07.2010	1010	9	95% clouds, light wind
4	Minger	18	2	27.07.2010	1010	9	95% clouds, light wind
5	Stabelchod	1	1	09.08.2010	1845	18	sunny, 10% clouds, light windy
5	Stabelchod	1	2	09.08.2010	1845	18	sunny, 10% clouds, light windy
5	Stabelchod	2	1	09.08.2010	1845	18	sunny, 10% clouds, light windy
5	Stabelchod	2	2	09.08.2010	1845	18	sunny, 10% clouds, light windy
5	Stabelchod	3	3	11.08.2010	1420	16	85% clouds, no wind
5	Stabelchod	3	4	11.08.2010	1420	16	85% clouds, no wind

Table B1 continued: Orthoptera counts 2010

5	Stabelchod	4	3	11.08.2010	1505	16	99% clouds, light wind
5	Stabelchod	4	4	11.08.2010	1505	16	99% clouds, light wind
5	Dadaint	5	3	11.08.2010	1205	17	99% clouds, light wind, bit rain
5	Dadaint	5	4	11.08.2010	1205	17	99% clouds, light wind, bit rain
5	Dadaint	6	1	11.08.2010	1205	17	95% clouds, light wind
5	Dadaint	6	2	11.08.2010	1205	17	95% clouds, light wind
5	Margunet	7	3	11.08.2010	1100	16	90% clouds, no wind
5	Margunet	7	4	11.08.2010	1100	16	90% clouds, no wind
5	Margunet	8	1	11.08.2010	1010	16	80% clouds, no wind
5	Margunet	8	2	11.08.2010	1010	16	80% clouds, no wind
5	Val dal Botsch	9	3	12.08.2010	1115	12	100% clouds, light wind, bit rain
5	Val dal Botsch	9	4	12.08.2010	1115	12	100% clouds, light wind, bit rain
5	Val dal Botsch	10	1	12.08.2010	1145	12	100% clouds, light wind
5	Val dal Botsch	10	2	12.08.2010	1145	12	100% clouds, light wind
5	Grimmels	11	3	09.08.2010	1500	22	0% clouds, sunny, light wind
5	Grimmels	11	4	09.08.2010	1500	22	0% clouds, sunny, light wind
5	Grimmels	12	1	09.08.2010	1500	22	0% clouds, sunny, light wind
5	Grimmels	12	2	09.08.2010	1500	22	0% clouds, sunny, light wind
5	Grimmels	13	1	09.08.2010	1300	16	0% clouds, light wind
5	Grimmels	13	2	09.08.2010	1300	16	0% clouds, light wind
5	Grimmels	14	3	09.08.2010	1315	16	0% clouds, light wind
5	Grimmels	14	4	09.08.2010	1315	16	0% clouds, light wind
5	Minger	15	1	10.08.2010	1325	16	65% clouds, light wind
5	Minger	15	2	10.08.2010	1325	16	65% clouds, light wind
5	Minger	16	3	10.08.2010	1325	16	70% clouds, light wind
5	Minger	16	4	10.08.2010	1325	16	70% clouds, light wind
5	Minger	17	3	10.08.2010	1125	16	45% clouds, light wind
5	Minger	17	4	10.08.2010	1125	16	45% clouds, light wind
5	Minger	18	1	10.08.2010	1110	16	60% clouds, light wind
5	Minger	18	2	10.08.2010	1110	16	60% clouds, light wind
6	Stabelchod	1	1	25.08.2010	1115	18.5	5% clouds, light wind, sunny
6	Stabelchod	1	2	25.08.2010	1115	18.5	5% clouds, light wind, sunny
6	Stabelchod	2	1	25.08.2010	1430	20.4	10% clouds, light wind, sunny
6	Stabelchod	2	2	25.08.2010	1430	20.4	10% clouds, light wind, sunny
6	Stabelchod	3	3	25.08.2010	1155	18.5	5% clouds, light wind, sunny
6	Stabelchod	3	4	25.08.2010	1155	18.5	5% clouds, light wind, sunny
6	Stabelchod	4	3	25.08.2010	1410	20.4	5% clouds, light wind, sunny
6	Stabelchod	4	4	25.08.2010	1410	20.4	5% clouds, light wind, sunny
6	Dadaint	5	3	23.08.2010	1550	21	100% clouds
6	Dadaint	5	4	23.08.2010	1550	21	100% clouds
6	Dadaint	6	1	23.08.2010	1550	21	40% clouds, windy
6	Dadaint	6	2	23.08.2010	1550	21	40% clouds, windy
6	Margunet	7	3	23.08.2010	1300	21	40% clouds, windy
6	Margunet	7	4	23.08.2010	1300	21	40% clouds, windy
6	Margunet	8	1	23.08.2010	1300	21	40% clouds, windy
6	Margunet	8	2	23.08.2010	1300	21	40% clouds, windy
6	Val dal Botsch	9	3	24.08.2010	1640	18	90% clouds, windy
6	Val dal Botsch	9	4	24.08.2010	1640	18	90% clouds, windy
6	Val dal Botsch	10	1	24.08.2010	1705	18	80% clouds, windy
6	Val dal Botsch	10	2	24.08.2010	1705	18	80% clouds, windy
6	Grimmels	11	3	26.08.2010	1055	24	0% clouds, light wind
6	Grimmels	11	4	26.08.2010	1055	24	0% clouds, light wind
6	Grimmels	12	1	26.08.2010	1130	24	0% clouds, light wind
6	Grimmels	12	2	26.08.2010	1130	24	0% clouds, light wind
6	Grimmels	13	1	26.08.2010	1400	24	5% clouds, light wind
6	Grimmels	13	2	26.08.2010	1400	24	5% clouds, light wind
6	Grimmels	14	3	26.08.2010	1345	24	5% clouds, light wind
6	Grimmels	14	4	26.08.2010	1345	24	5% clouds, light wind
6	Minger	15	1	27.08.2010	1145	16	100% clouds, light wind
6	Minger	15	2	27.08.2010	1145	16	100% clouds, light wind
6	Minger	16	3	27.08.2010	1245	9	100% clouds, light wind, rain
6	Minger	16	4	27.08.2010	1245	9	100% clouds, light wind, rain
6	Minger	17	3	27.08.2010	1300	9	100% clouds, light wind, rain
6	Minger	17	4	27.08.2010	1300	9	100% clouds, light wind, rain
6	Minger	18	1	27.08.2010	1055	16	90% clouds, light wind
6	Minger	18	2	27.08.2010	1055	16	90% clouds, light wind

Table B1 continued: Orthoptera counts 2010

Quadrate area: 0.25 m^2

Method 1 = Each of the two researchers counts all Orthoptera in the quadrate. Average per quadrate gives the total number of Orthoptera per quadrate.

Method 2 = Each researcher counts all Orthoptera in half of the quadrate. Sum per quadrate gives the total number of Orthoptera per quadrate.

Measurement	Fence	Transect	Number of Orthopter (1)					Number of Orthoptera (2)					
			Quadrate 1	Quadrate 2	Quadrate 3	Quadrate 4	Quadrate 5	Quadrate 1	Quadrate 2	Quadrate 3	Quadrate 4	Quadrate 5	
1	1	1	2	0	0	0	1	2	1	0	0	1	Method 1
1	1	2	1	1	2	1	0	1	1	2	1	0	
1	2	1	1	1	0	1	0	2	1	0	1	0	
1	2	2	1	1	0	0	0	1	1	0	0	0	
1	3	3	0	0	0	0	1	0	0	0	0	1	
1	3	4	0	0	0	0	0	0	0	0	0	0	
1	4	3	0	0	0	0	1	0	0	0	0	1	
1	4	4	1	0	0	0	0	1	0	0	0	0	
1	5	3	0	0	0	0	0	0	0	0	0	0	
1	5	4	1	0	0	0	0	1	0	0	0	0	
1	6	1	0	0	2	0	0	0	0	2	0	0	
1	6	2	2	1	0	2	0	2	1	0	2	0	
1	7	3	0	0	0	0	0	0	0	0	0	0	
1	7	4	0	0	0	0	0	0	0	0	0	1	
1	8	1	0	0	0	0	0	0	0	0	0	0	
1	8	2	0	0	0	0	0	0	0	0	0	0	
1	9	3	0	0	1	1	0	0	0	1	1	0	
1	9	4	0	0	0	0	0	0	0	0	0	0	
1	10	1	0	0	0	1	0	0	0	0	1	0	
1	10	2	0	0	0	0	0	0	0	0	0	0	
1	11	3	0	0	0	0	0	0	0	0	0	0	
1	11	4	0	0	0	0	0	0	0	0	0	0	
1	12	1	0	0	0	0	0	0	0	0	0	0	
1	12	2	5	7	1	0	0	5	5	1	0	0	
1	13	1	0	0	3	2	0	0	0	2	3	0	
1	13	2	1	2	0	0	1	1	2	0	0	1	
1	14	3	1	1	2	0	1	1	1	2	0	1	
1	14	4	0	0	1	1	2	0	0	1	1	2	
1	15	1	0	0	0	0	0	0	0	0	0	0	
1	15	2	0	0	0	0	0	0	0	0	0	0	
1	16	3	0	0	0	0	0	0	0	0	0	0	
1	16	4	0	0	0	0	0	0	0	0	0	0	
1	17	3	0	0	0	0	0	0	0	0	0	0	
1	17	4	0	0	0	0	0	0	0	0	0	0	
1	18	1	0	0	0	0	0	0	0	0	0	0	
1	18	2	0	0	0	0	0	0	0	0	0	0	
2	1	1	0	0	0	1	2	0	0	0	0	2	
2	1	2	0	1	4	3	3	0	1	1	4	3	
2	2	1	1	1	0	0	0	1	1	0	0	0	
2	2	2	0	1	0	1	1	0	1	1	2	1	
2	3	3	1	0	3	0	0	0	0	1	0	0	
2	3	4	0	1	0	0	0	0	0	0	0	0	
2	4	3	0	0	2	2	1	0	2	0	1	1	
2	4	4	4	1	1	1	1	2	1	1	1	2	
2	5	3	1	1	1	0	0	1	1	1	0	0	
2	5	4	0	0	1	1	0	0	0	0	1	0	
2	6	1	0	1	0	2	1	0	1	0	2	1	
2	6	2	2	5	1	3	0	2	6	1	3	0	
2	7	3	0	0	2	0	0	0	0	2	0	0	
2	7	4	1	0	0	0	0	1	0	0	0	0	
2	8	1	2	1	0	0	2	1	1	0	0	1	
2	8	2	1	0	1	0	1	0	0	1	0	1	
2	9	3	1	0	0	0	0	1	0	0	0	0	
2	9	4	2	0	0	0	0	1	0	0	0	0	
2	10	1	0	0	0	0	0	0	0	0	0	0	
2	10	2	0	0	0	0	1	0	0	0	0	1	
2	11	3	0	1	0	0	0	0	1	0	0	0	
2	11	4	1	1	1	0	2	1	1	1	0	2	
2	12	1	1	0	2	0	0	1	0	2	0	0	
2	12	2	0	4	2	0	0	0	4	2	0	0	
2	13	1	0	0	0	1	0	0	0	0	1	0	
2	13	2	0	1	0	0	0	0	1	0	0	0	
2	14	3	0	1	0	0	0	0	1	1	0	0	
2	14	4	0	0	0	0	0	0	0	0	0	0	
2	15	1	0	0	0	0	0	0	0	0	0	0	
2	15	2	0	0	0	0	0	0	0	0	0	0	
2	16	3	0	0	0	0	0	0	0	0	0	0	
2	16	4	0	0	0	0	0	0	0	0	0	0	
2	17	3	0	0	0	0	0	0	0	0	0	0	
2	17	4	0	0	0	0	0	0	0	0	0	0	
2	18	1	0	0	1	0	0	0	0	1	0	0	
2	18	2	0	0	0	0	0	0	0	0	0	0	
3	1	1	1	3	1	0	0	0	6	3	0	1	Method 2
3	1	2	0	0	1	1	1	0	0	0	0	0	
3	2	1	5	4	0	1	0	2	4	0	1	0	
3	2	2	1	1	0	1	1	2	2	1	3	0	
3	3	3	0	0	0	0	0	0	0	1	0	0	
3	3	4	0	0	0	0	0	0	0	0	1	0	
3	4	3	1	1	1	0	0	0	1	1	1	0	
3	4	4	2	3	3	1	1	2	3	4	1	3	
3	5	3	1	1	0	5	1	1	1	0	0	2	

Table B1 continued: Orthoptera counts 2010

3	5	4	0	0	0	0	1	1	0	0	0	0		
3	6	1	0	0	0	0	0	0	1	0	0	1		
3	6	2	2	0	1	1	1	0	1	3	1	0		
3	7	3	1	0	0	0	0	0	0	0	0	0		
3	7	4	0	0	0	0	0	0	0	0	0	0		
3	8	1	0	1	0	0	0	0	0	0	0	0		
3	8	2	1	0	0	1	0	1	1	1	0	1		
3	9	3	0	0	0	0	0	2	1	2	0	0		
3	9	4	0	0	1	0	0	0	0	1	0	0		
3	10	1	0	0	0	0	0	0	0	1	0	1		
3	10	2	0	0	0	0	0	0	0	0	0	0		
3	11	3	1	0	2	1	0	1	2	0	0	1		
3	11	4	1	0	0	1	0	0	1	3	3	0		
3	12	1	0	2	1	1	0	0	0	1	0	0		
3	12	2	3	0	1	1	0	0	1	1	2	0		
3	13	1	1	1	0	4	1	0	2	1	0	0		
3	13	2	0	1	0	2	1	0	0	0	1	4		
3	14	3	2	1	0	3	0	1	1	2	2	0		
3	14	4	2	2	0	0	0	1	0	1	0	1		
3	15	1	1	1	0	0	0	0	0	0	0	0		
3	15	2	0	0	0	0	0	0	0	0	2	0		
3	16	3	0	0	0	0	0	0	1	0	0	0		
3	16	4	0	0	0	0	0	0	0	0	0	1		
3	17	3	0	0	0	0	1	0	0	1	0	0		
3	17	4	1	0	0	0	0	0	1	0	1	0		
3	18	1	1	0	0	0	0	0	0	0	0	0		
3	18	2	0	0	0	0	0	0	0	0	0	1		
4	1	1	0	1	0	0	1	0	1	0	0	0		
4	1	2	0	2	0	1	0	0	0	0	0	0		
4	2	1	0	0	0	0	0	0	0	0	0	1		
4	2	2	2	3	0	1	0	0	2	1	1	0		
4	3	3	0	0	0	0	0	0	0	0	2	0		
4	3	4	2	0	0	1	1	0	0	0	0	0		
4	4	3	1	0	0	0	0	0	0	0	0	0		
4	4	4	2	1	0	2	1	2	1	0	1	0		
4	5	3	1	1	0	0	0	0	0	0	1	3		
4	5	4	1	0	0	0	2	0	1	0	0	1		
4	6	1	0	0	0	0	0	0	0	0	0	1		
4	6	2	0	0	2	2	1	0	0	0	1	1		
4	7	3	0	0	0	0	0	0	0	0	0	0		
4	7	4	0	0	0	0	0	0	0	0	0	0		
4	8	1	0	0	0	0	1	0	0	0	0	0		
4	8	2	1	0	0	2	0	1	2	1	0	0		
4	9	3	0	0	0	0	0	0	0	0	0	0		
4	9	4	1	0	1	1	0	0	0	0	0	0		
4	10	1	0	0	0	0	0	0	0	0	0	0		
4	10	2	0	0	0	0	0	0	0	0	0	0		
4	11	3	1	0	2	1	0	0	0	0	0	2		
4	11	4	0	1	1	0	2	0	0	0	0	0		
4	12	1	1	1	1	0	0	0	1	0	0	0		
4	12	2	2	0	0	0	0	0	0	0	0	0		
4	13	1	1	1	1	0	1	0	0	1	1	0		
4	13	2	1	0	0	1	0	0	1	1	0	1		
4	14	3	0	0	0	0	0	0	0	0	2	0		
4	14	4	0	0	0	1	0	0	0	0	0	0		
4	15	1	0	0	0	1	0	0	1	0	0	0		
4	15	2	0	0	0	0	0	0	0	0	0	0		
4	16	3	0	0	0	0	0	0	0	0	0	0		
4	16	4	0	0	0	0	0	0	0	0	0	0		
4	17	3	0	0	0	0	0	0	0	0	0	0		
4	17	4	0	3	0	0	0	0	0	1	1	1		
4	18	1	0	0	0	0	0	0	1	0	0	0		
4	18	2	0	0	0	0	0	0	0	0	0	0		
5	1	1	0	3	0	0	0	0	2	0	0	1		
5	1	2	1	1	1	0	0	0	1	6	0	1		
5	2	1	2	1	0	1	0	1	2	0	1	1		
5	2	2	0	1	0	1	0	0	1	0	0	0		
5	3	3	0	0	1	0	0	0	1	0	0	0		
5	3	4	3	0	0	1	0	2	0	0	0	0		
5	4	3	2	0	0	0	0	0	1	1	0	0		
5	4	4	1	1	1	3	1	2	1	3	2	3		
5	5	3	1	1	0	0	0	0	0	0	1	0		
5	5	4	0	1	0	0	0	0	0	0	0	0		
5	6	1	0	0	0	0	0	0	0	0	0	0		
5	6	2	0	0	1	1	1	1	1	1	0	0		
5	7	3	0	0	0	0	0	0	0	0	0	0		
5	7	4	0	0	0	0	0	0	0	0	0	0		
5	8	1	0	0	1	0	0	0	0	0	0	0		
5	8	2	0	0	1	0	0	0	0	0	0	0		
5	9	3	0	0	0	0	0	0	0	0	0	0		
5	9	4	0	0	0	0	0	0	0	0	0	0		
5	10	1	0	0	0	0	0	0	0	0	0	0		
5	10	2	0	0	0	0	0	0	0	0	0	0		
5	11	3	0	0	0	0	0	0	3	2	0	0		
5	11	4	1	1	0	0	0	0	2	1	1	1		
5	12	1	0	1	1	0	1	0	0	1	1	0		
5	12	2	0	2	3	0	0	2	1	3	0	0		
5	13	1	0	1	0	1	1	0	1	2	1	0		

Table B1 continued: Orthoptera counts 2010

5	13	2	0	0	0	2	0	0	1	0	0	1
5	14	3	1	3	0	4	0	0	1	0	3	0
5	14	4	1	0	1	0	0	2	0	0	0	0
5	15	1	0	0	0	0	0	0	0	0	1	0
5	15	2	0	0	0	0	0	0	0	0	0	0
5	16	3	0	0	0	0	0	0	0	0	0	0
5	16	4	0	0	0	0	0	0	0	0	0	0
5	17	3	0	0	0	0	0	0	0	0	0	0
5	17	4	0	1	0	0	0	1	0	0	0	0
5	18	1	0	0	0	0	0	0	0	0	0	0
5	18	2	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	2	0	0	2	3	1	0	0
6	1	2	1	0	3	2	1	2	0	3	1	0
6	2	1	0	3	1	2	1	2	2	0	2	1
6	2	2	0	1	0	2	1	1	1	2	1	1
6	3	3	0	0	0	0	0	1	0	0	0	0
6	3	4	2	0	0	0	0	1	2	0	0	0
6	4	3	0	0	0	2	0	1	2	0	5	0
6	4	4	2	0	1	2	3	3	1	0	1	4
6	5	3	1	1	1	4	1	2	2	0	0	0
6	5	4	0	0	0	0	0	0	0	0	1	0
6	6	1	1	0	0	0	0	0	0	0	0	0
6	6	2	0	1	0	0	1	0	0	0	0	1
6	7	3	0	0	0	0	0	0	0	0	0	0
6	7	4	0	0	0	0	0	0	0	0	0	0
6	8	1	0	0	0	0	0	0	0	0	0	0
6	8	2	0	0	0	0	0	0	1	0	0	0
6	9	3	0	0	1	0	0	0	0	0	0	0
6	9	4	0	0	0	0	0	0	0	0	0	0
6	10	1	0	0	0	0	0	0	0	0	0	0
6	10	2	0	0	0	0	0	0	0	0	0	0
6	11	3	0	1	0	0	0	0	1	0	0	0
6	11	4	0	0	0	1	0	2	0	0	0	0
6	12	1	2	0	0	0	1	0	0	1	0	0
6	12	2	1	0	0	0	1	0	1	3	0	0
6	13	1	0	1	0	0	0	0	0	0	1	2
6	13	2	0	0	1	1	0	1	0	0	1	1
6	14	3	1	0	1	0	0	1	0	0	1	0
6	14	4	3	0	1	0	1	1	0	0	0	1
6	15	1	0	0	0	0	0	0	0	0	0	0
6	15	2	0	0	0	0	0	0	0	0	0	0
6	16	3	0	0	0	0	0	0	0	0	0	0
6	16	4	0	0	0	0	0	0	0	0	0	0
6	17	3	0	0	0	0	0	0	0	0	0	0
6	17	4	0	0	0	0	0	0	0	0	0	0
6	18	1	0	0	0	1	0	0	0	0	0	0
6	18	2	0	0	0	0	0	0	0	0	0	0

Table B2: Orthoptera catches 2010. Sweep net catches on 4m^2 segments. Species determination of adults.

Orthoptera catches 2010

Authors: Lena Spalinger, Janine Friedhoff, Maria-Luise Rothe, Niculin Geer

Week	Fence	Transect	Date	Time	Air Temperature °C	Weather	Notes
1	1	1	06.08.2010	1200	12	100% clouds, light wind/cloudy	
1	1	2	02.08.2010	1615	17	50% clouds, light wind/sunny	
1	2	1	03.08.2010	1700	16	90% clouds, light wind/cloudy	
1	2	2	03.08.2010	1640	16	95% clouds, light wind/cloudy	
1	3	3	02.08.2010	1535	17	55% clouds, no wind/sunny	
1	3	4	02.08.2010	1515	17	80% clouds, no wind/cloudy with light sun	
1	4	3	03.08.2010	1530	18	80% clouds, windy/sunny	
1	4	4	03.08.2010	1600	18	75% clouds, light wind/light sun	
1	5	3	02.08.2010	1350	14	100% clouds, light wind/ light rain, wet grass	
1	5	4	02.08.2010	1415	14	100% clouds, no wind/light rain, wet grass	
1	6	1	02.08.2010	1125	14	100% clouds, no wind/some rain drops	
1	6	2	02.08.2010	1200	14	95% clouds, no wind/cloudy	
1	7	3	02.08.2010	910	14	95% clouds/cloudy, light rain	
1	7	4	02.08.2010	930	14	80% clouds/light rain, later no more rain and light sun	
1	8	1	02.08.2010	1030	14	95% clouds, no wind/cloudy, grass slightly wet	
1	8	2	02.08.2010	1000	14	80% clouds, no wind/sunny	
1	9	3	06.08.2010	1020	12	95% clouds, light rain /cloudy, grass wet	
1	9	4	06.08.2010	1040	12	95% clouds, light rain, light wind/light sun, wet grass	
1	10	1	06.08.2010	930	12	90% clouds, no wind/sunny, wet grass	
1	10	2	06.08.2010	1010	12	95% clouds, light wind/cloudy, wet grass	
1	11	3	03.08.2010	1320	18	55% clouds, light wind/sunny	
1	11	4	03.08.2010	1340	18	60% clouds, light wind/sunny	
1	12	1	03.08.2010	1140	15	40% clouds, light wind/sunny	
1	12	2	03.08.2010	1210	18	45% clouds, light wind/light sun	
1	13	1	03.08.2010	1115	13	80% clouds, light wind/cloudy	
1	13	2	03.08.2010	1100	13	70% clouds, light wind/light sun	
1	14	3	03.08.2010	940	10	50% clouds, no wind/light sun	
1	14	4	03.08.2010	1030	13	50% clouds, light wind/light sun	
1	15	1	04.08.2010	1110	9	5% clouds, light wind/sunny	
1	15	2	04.08.2010	1130	10	5% clouds, windy/sunny	
1	16	3	04.08.2010	1100	9	5% clouds, light wind/sunny	
1	16	4	04.08.2010	1040	9	5% clouds, light wind/sunny	
1	17	3	04.08.2010	1230	13	15% clouds, windy/sunny	
1	17	4	04.08.2010	1200	13	15% clouds, windy/sunny	
1	18	1	04.08.2010	1150	12	10% clouds, light wind/sunny	
1	18	2	04.08.2010	1140	11	10% clouds, windy/sunny	
2	1	1	19.08.2010	1325	20	5% clouds, light wind/sunny	
2	1	2	19.08.2010	1315	20	5% clouds, light wind/sunny	
2	2	1	19.08.2010	925	13	5 % clouds, no wind/sunny, grass slightly wet	
2	2	2	19.08.2010	1010	14	5% clouds, no wind/sunny	
2	3	3	19.08.2010	1300	20	5% clouds, light wind/sunny	
2	3	4	19.08.2010	1245	20	15% clouds, light wind/sunny	
2	4	3	19.08.2010	1130	15	15% clouds, light wind/sunny	
2	4	4	19.08.2010	1115	15	15% clouds, light wind/sunny	
2	5	3	17.08.2010	1010	14	99% clouds, light wind/cloudy, grass slightly wet	
2	5	4	17.08.2010	1040	14	50% clouds, no wind/sunny, grass slightly wet	
2	6	1	17.08.2010	1140	14	70% clouds, windy/cloudy	
2	6	2	17.08.2010	1110	14	30% clouds, light wind/sunny	
2	7	3	17.08.2010	1250	15	100% clouds, light wind/cloudy	
2	7	4	17.08.2010	1310	15	90% clouds, no wind/sunny	
2	8	1	17.08.2010	1345	15	99% clouds, no wind/cloudy	
2	8	2	17.08.2010	1330	15	90% clouds, no wind/cloudy	
2	9	3	17.08.2010	1545	15	100% clouds, light wind/cloudy	
2	9	4	17.08.2010	1535	15	100% clouds, some rain drops, light wind/cloudy	
2	10	1	17.08.2010	1500	17	100% clouds, light wind/cloudy	
2	10	2	17.08.2010	1520	17	100% clouds, no wind/cloudy	
2	11	3	20.08.2010	1005	18	60% clouds, no wind/cloudy, wet grass	
2	11	4	20.08.2010	1020	18	60% clouds, no wind/sunny, wet grass	
2	12	1	20.08.2010	950	18	85% clouds, no wind/cloudy, wet grass	
2	12	2	20.08.2010	920	18	90% clouds, no wind/cloudy, wet grass	
2	13	1	20.08.2010	1145	20	20% clouds, no wind/sunny	
2	13	2	20.08.2010	1130	17	35% clouds, no wind/sunny	
2	14	3	20.08.2010	1205	20	20% clouds, no wind/sunny	
2	14	4	20.08.2010	1220	20	20% clouds, light wind/sunny	
2	15	1	18.08.2010	930	11	90% clouds, no wind/cloudy	
2	15	2	18.08.2010	1000	11	85% clouds, no wind/cloudy	
2	16	3	18.08.2010	920	11	90% clouds, no wind/cloudy	
2	16	4	18.08.2010	950	11	95% clouds, no wind/cloudy	
2	17	3	18.08.2010	1105	16	85% clouds, light wind/cloudy	
2	17	4	18.08.2010	1120	17	80% clouds, light wind/cloudy	
2	18	1	18.08.2010	1135	17	90% clouds, light wind/cloudy	
2	18	2	18.08.2010	1045	15	70% clouds, no wind/cloudy	
3	1	1	30.08.2010	1325	11	35% clouds, very windy/sunny	
3	1	2	30.08.2010	1340	11	50% clouds, very windy/wechselhaft	
3	2	1	30.08.2010	1235	6	40% clouds, very windy/sunny	

Table B2 continued: Orthoptera catches 2010

3	2	2	30.08.2010	1215	6	10% clouds, very windy/sunny	
3	3	3	30.08.2010	1355	11	50% clouds, very windy/sunny	
3	3	4	30.08.2010	1410	11	70% clouds, very very windy/wechselhaft	
3	4	3	30.08.2010	1110	6	5% clouds, very windy/sunny	
3	4	4	30.08.2010	1135	6	5% clouds, very windy/sunny	
3	5	3	01.09.2010	1440	9	0% clouds, light wind/sunny	
3	5	4	01.09.2010	1505	9	0% clouds, light wind/sunny	some shade
3	6	1	01.09.2010	1320	9	0% clouds, windy/sunny	
3	6	2	01.09.2010	1345	9	0% clouds, windy/sunny	
3	7	3	01.09.2010	1120	7	0% clouds, light wind/sunny	some snow
3	7	4	01.09.2010	1100	7	0% clouds, light wind/sunny	some snow
3	8	1	01.09.2010	1150	7	0% clouds, windy/sunny	some snow
3	8	2	01.09.2010	1135	7	0% clouds, light wind/sunny	some snow
3	9	3	01.09.2010	930	0	0% clouds, no wind/sunny	
3	9	4	01.09.2010	920	0	0% clouds, no wind/sunny	
3	10	1	01.09.2010	950	0	0% clouds, no wind/sunny	hoarfrost
3	10	2	01.09.2010	940	0	0% clouds, no wind/sunny	hoarfrost
3	11	3	03.09.2010	1320	19	60% clouds, light wind/sunny	
3	11	4	03.09.2010	1335	19	75% clouds, light wind/sunny	
3	12	1	03.09.2010	1225	19	5% clouds, windy/sunny	
3	12	2	03.09.2010	1245	19	80% clouds, light wind/sunny	
3	13	1	03.09.2010	1110	13	20% clouds, light wind/sunny	
3	13	2	03.09.2010	1140	13	60% clouds, windy/cloudy	
3	14	3	03.09.2010	1100	13	20% clouds, no wind/sunny	
3	14	4	03.09.2010	1050	13	20% clouds, no wind/sunny	
3	15	1	02.09.2010	1235	13	0% clouds, light wind/sunny, dunsty	
3	15	2	02.09.2010	1255	13	0% clouds, light wind/sunny, dunsty	
3	16	3	02.09.2010	1225	13	0% clouds, light wind/sunny, dunsty	
3	16	4	02.09.2010	1245	13	0% clouds, light wind/sunny, dunsty	
3	17	3	02.09.2010	1345	13	0% clouds, no wind/sunny, dunsty	
3	17	4	02.09.2010	1330	13	0% clouds, light wind/sunny, dunsty	
3	18	1	02.09.2010	1320	13	0% clouds, light wind/sunny, dunsty	
3	18	2	02.09.2010	1310	13	0% clouds, light wind/sunny, dunsty	
4	1	1	06.09.2010	1100	14	15% clouds, windy/sunny	
4	1	2	06.09.2010	1120	14	35% clouds, windy/sunny	
4	2	1	06.09.2010	1400	14	99% clouds, windy/cloudy	
4	2	2	06.09.2010	1425	14	99% clouds, windy/cloudy	
4	3	3	06.09.2010	1145	14	35% clouds, windy/sunny	
4	3	4	06.09.2010	1130	14	35% clouds, windy/sunny	
4	4	3	06.09.2010	1445	14	99% clouds, light wind/cloudy	
4	4	4	06.09.2010	1515	14	99% clouds, light wind/cloudy, some rain drops	
4	5	3	08.09.2010	935	9	100% clouds, light rain/no wind	
4	5	4	08.09.2010	1000	9	100% clouds/cloudy, wet grass	
4	6	1	08.09.2010	1040	9	100% clouds, no wind/cloudy, wet grass	
4	6	2	08.09.2010	1015	9	100% clouds, no wind/cloudy with light rain, wet grass	
4	7	3	07.09.2010	1325	11	100% clouds, light rain, light wind	
4	7	4	07.09.2010	1340	11	100% clouds, light rain, light wind	
4	8	1	07.09.2010	1425	11	100% clouds, light rain, no wind	
4	8	2	07.09.2010	1415	11	100% clouds, light rain, no wind	
4	9	3	07.09.2010	1135	10	100% clouds, light rain, wet grass	
4	9	4	07.09.2010	1140	10	100% clouds, light rain, wet grass	
4	10	1	07.09.2010	1120	10	100% clouds/cloudy, wet grass	
4	10	2	07.09.2010	1130	10	100% clouds/cloudy, wet grass	
4	11	3	09.09.2010	1255	14	55% clouds, light wind/cloudy	
4	11	4	09.09.2010	1245	14	45% clouds, light wind/sunny	
4	12	1	09.09.2010	1330	14	45% clouds, windy/sunny	
4	12	2	09.09.2010	1310	14	50% clouds, light wind/sunny	
4	13	1	09.09.2010	920	9	30% clouds, no wind/sunny	
4	13	2	09.09.2010	935	9	30% clouds, no wind/sunny	
4	14	3	09.09.2010	955	9	50% clouds, no wind/sunny	
4	14	4	09.09.2010	1010	9	40% clouds, windy/sunny	
4	15	1	10.09.2010	1015	7	100% clouds, windy/cloudy	
4	15	2	10.09.2010	1000	7	100% clouds, light wind/cloudy	
4	16	3	10.09.2010	1025	7	100% clouds, windy/cloudy	
4	16	4	10.09.2010	1035	7	100% clouds, windy/cloudy	
4	17	3	10.09.2010	1100	7	100% clouds, light wind/cloudy	
4	17	4	10.09.2010	1050	7	100% clouds, light wind/cloudy	
4	18	1	10.09.2010	1045	7	100% clouds, light wind/cloudy	
4	18	2	10.09.2010	1040	7	100% clouds, light wind/cloudy	

Table B2 continued: Orthoptera catches 2010

Each replicate was carried out on a $4m^2$ section.

Week	Fence	Transect	Replicate	Larvae	*Metrioptera roeselii*	*Podisma pedestris*	*Bohemanella frigida*	*Omocestus viridulus*	*Gomphocerus sibiricus*	*Gomphocerippus rufus*	*Chorthippus parallelus*	*Tetrix bipunctata*	*C. biguttulus-group*	*Metrioptera roeselii*	*Podisma pedestris*	*Bohemanella frigida*	*Omocestus viridulus*	*Gomphocerus sibiricus*	*Gomphocerippus rufus*	*Chorthippus parallelus*	*Tetrix bipunctata*	*C. biguttulus-group*
					Females									Males								
1	1	1	1	0																		
1	1	1	2	3							5							1		14		
1	1	1	3	0							1											
1	1	1	4	1				2														
1	1	1	5	1																		
1	1	2	1	0				1														
1	1	2	2	0																2		
1	1	2	3	4				1												5		
1	1	2	4	0							1									1		
1	1	2	5	0																		
1	2	1	1	1																1		
1	2	1	2	5							1									1		
1	2	1	3	1																2		
1	2	1	4	2							2									1		
1	2	1	5	2				1												1		
1	2	2	1	1																		
1	2	2	2	14													1					
1	2	2	3	3																		
1	2	2	4	1																		
1	2	2	5	4													1					
1	3	3	1	1							1									3		
1	3	3	2	3							1									1		
1	3	3	3	2																		
1	3	3	4	0																		
1	3	3	5	0				1												1		
1	3	4	1	0																		
1	3	4	2	2																		
1	3	4	3	1																1		
1	3	4	4	1																		
1	3	4	5	1																1		
1	4	3	1	1				2														
1	4	3	2	3							1						1					
1	4	3	3	3													1			2		
1	4	3	4	1													1					
1	4	3	5	0																		
1	4	4	1	13																1		
1	4	4	2	1																		
1	4	4	3	7													1					
1	4	4	4	10							1									2		
1	4	4	5	4																1		
1	5	3	1	1																		
1	5	3	2	1				1														
1	5	3	3	4				1														
1	5	3	4	0																		
1	5	3	5	4																		
1	5	4	1	3																		
1	5	4	2	7													1			1		
1	5	4	3	4																		
1	5	4	4	0																		
1	5	4	5	1																		
1	6	1	1	4																		
1	6	1	2	3																		
1	6	1	3	4				2														
1	6	1	4	2																		
1	6	1	5	5																1		
1	6	2	1	5																		
1	6	2	2	3		1			1													
1	6	2	3	4				2	1		1											
1	6	2	4	7				1														
1	6	2	5	2																		
1	7	3	1	0																		
1	7	3	2	0																		
1	7	3	3	0					2													

Table B2 continued: Orthoptera catches 2010

1	7	3	4	1																		
1	7	3	5	0																		
1	7	4	1	0																		
1	7	4	2	0																		
1	7	4	3	0																		
1	7	4	4	0																		
1	7	4	5	0																		
1	8	1	1	0				1														
1	8	1	2	0				1														
1	8	1	3	0																		
1	8	1	4	0																		
1	8	1	5	1																		
1	8	2	1	0																		
1	8	2	2	0																		
1	8	2	3	0					1													
1	8	2	4	1												1	1					
1	8	2	5	0												1						
1	9	3	1	0					1								1					
1	9	3	2	1		1			1													
1	9	3	3	0																		
1	9	3	4	0																		
1	9	3	5	0																		
1	9	4	1	0																		
1	9	4	2	0																		
1	9	4	3	0													1					
1	9	4	4	0					1													
1	9	4	5	0																		
1	10	1	1	0																		
1	10	1	2	0		1		1														
1	10	1	3	0												1						
1	10	1	4	0				1	3							1	1					
1	10	1	5	0																		
1	10	2	1	0																		
1	10	2	2	0																		
1	10	2	3	0																		
1	10	2	4	0																		
1	10	2	5	0				1														
1	11	3	1	9																		
1	11	3	2	2																		
1	11	3	3	2																		
1	11	3	4	1																		
1	11	3	5	1																		
1	11	4	1	2																		
1	11	4	2	1																		
1	11	4	3	2																		
1	11	4	4	0																		
1	11	4	5	1																		
1	12	1	1	11																		
1	12	1	2	9																		
1	12	1	3	7																		
1	12	1	4	8																		
1	12	1	5	6																		
1	12	2	1	19																		1
1	12	2	2	14																		
1	12	2	3	5				1														
1	12	2	4	8																		
1	12	2	5	0																		
1	13	1	1	2												1						
1	13	1	2	9																		
1	13	1	3	0				1								1						
1	13	1	4	3																		
1	13	1	5	0																		
1	13	2	1	3																		
1	13	2	2	1																		
1	13	2	3	0																		
1	13	2	4	2																		
1	13	2	5	6				1														
1	14	3	1	0				1								2						
1	14	3	2	4				1								1						
1	14	3	3	1				1	1							3						
1	14	3	4	2				7	1							1	1					
1	14	3	5	1																		
1	14	4	1	0				1								1						
1	14	4	2	0				1	1							1						

Table B2 continued: Orthoptera catches 2010

1	14	4	3	0					1														
1	14	4	4	3				1									1						
1	14	4	5	0																			
1	15	1	1	0																			
1	15	1	2	0																			
1	15	1	3	0			1																
1	15	1	4	1																			
1	15	1	5	0					1														
1	15	2	1	0																			
1	15	2	2	0																			
1	15	2	3	0																			
1	15	2	4	1																			
1	15	2	5	0																			
1	16	3	1	0																			
1	16	3	2	0																			
1	16	3	3	0																			
1	16	3	4	0																			
1	16	3	5	0																			
1	16	4	1	0																			
1	16	4	2	0																			
1	16	4	3	0																			
1	16	4	4	0																			
1	16	4	5	0																			
1	17	3	1	0															1				
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1	17	3	4	0																			
1	17	3	5	0																			
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1	17	4	3	0			1																
1	17	4	4	4					1								1	2					
1	17	4	5	2				1	1														
1	18	1	1	1																			
1	18	1	2	0					1														
1	18	1	3	0																			
1	18	1	4	0																			
1	18	1	5	1														1					
1	18	2	1	0																			
1	18	2	2	0																			
1	18	2	3	0														1					
1	18	2	4	0			1																
1	18	2	5	0																			
2	1	1	1	0																	1		
2	1	1	2	0							3										3		
2	1	1	3	0							1						1				1		
2	1	1	4	0																	1		
2	1	1	5	0							1										1		
2	1	2	1	0																			
2	1	2	2	0																			
2	1	2	3	0																			
2	1	2	4	0							1										1		
2	1	2	5	0				1			1										2		
2	2	1	1	3							7						3				8		
2	2	1	2	1					1		7			1							1		
2	2	1	3	1																			
2	2	1	4	0				1			1										1		
2	2	1	5	3							2			1							3		
2	2	2	1	1							1												
2	2	2	2	2				1			1						1				4		
2	2	2	3	4							2										1		
2	2	2	4	0													1				2		
2	2	2	5	3				1			1			1							2		
2	3	3	1	0							1						1				3		
2	3	3	2	0				1															
2	3	3	3	0																	1		
2	3	3	4	0				1									1						
2	3	3	5	0			1																
2	3	4	1	0							1						1				1		
2	3	4	2	0							2												
2	3	4	3	0													1						
2	3	4	4	3																	1		
2	3	4	5	0							1						1				1		
2	4	3	1	1				1													2		

Table B2 continued: Orthoptera catches 2010

2	4	3	2	2				3			2												
2	4	3	3	2							5						1			2			
2	4	3	4	1																2			
2	4	3	5	0													1			1			
2	4	4	1	1																2			
2	4	4	2	2							1									3			
2	4	4	3	1				2												1			
2	4	4	4	3				1			2									2			
2	4	4	5	2							4						1			2			
2	5	3	1	0							1												
2	5	3	2	2							1												
2	5	3	3	5													1			2			
2	5	3	4	0							1									2			
2	5	3	5	7							2									1			
2	5	4	1	0																			
2	5	4	2	6							1												
2	5	4	3	3							2									1			
2	5	4	4	2																1			
2	5	4	5	0																1			
2	6	1	1	0				1			3									1			
2	6	1	2	0							2									1			
2	6	1	3	0							2							1		2			
2	6	1	4	2													1						
2	6	1	5	1																1			
2	6	2	1	2					1									1		2			
2	6	2	2	0													1			1			
2	6	2	3	4						1	2						1			1			
2	6	2	4	3							3						1	2					
2	6	2	5	2																			
2	7	3	1	0																			
2	7	3	2	0																			
2	7	3	3	0				1	1									1					
2	7	3	4	0																			
2	7	3	5	0																			
2	7	4	1	0					2								1	1					
2	7	4	2	0																			
2	7	4	3	0												1							
2	7	4	4	0																			
2	7	4	5	0					3								1						
2	8	1	1	0													2						
2	8	1	2	0																			
2	8	1	3	0					1														
2	8	1	4	0																			
2	8	1	5	0																			
2	8	2	1	1													2						
2	8	2	2	0				1															
2	8	2	3	0					1														
2	8	2	4	0					2								1						
2	8	2	5	0				1										1					
2	9	3	1	0					1														
2	9	3	2	0																			
2	9	3	3	0																			
2	9	3	4	0																			
2	9	3	5	0																			
2	9	4	1	0																			
2	9	4	2	2					1														
2	9	4	3	0																			
2	9	4	4	0																			
2	9	4	5	1																			
2	10	1	1	0																			
2	10	1	2	0																			
2	10	1	3	0				1															
2	10	1	4	0					2								1						
2	10	1	5	0																			
2	10	2	1	0																			1
2	10	2	2	0																			
2	10	2	3	0																			
2	10	2	4	0																			
2	10	2	5	0				1										1					
2	11	3	1	2																			
2	11	3	2	1																			
2	11	3	3	5																			
2	11	3	4	1																			
2	11	3	5	0																			

Table B2 continued: Orthoptera catches 2010

2	11	4	1	0																	
2	11	4	2	1																	
2	11	4	3	0								1									
2	11	4	4	2																	1
2	11	4	5	0																	
2	12	1	1	5				1													1
2	12	1	2	3																	1
2	12	1	3	1				1													1
2	12	1	4	0																	
2	12	1	5	2																	
2	12	2	1	9												3					1
2	12	2	2	4				2								1					
2	12	2	3	4												1					
2	12	2	4	4								1									1
2	12	2	5	7								1									1
2	13	1	1	0																	
2	13	1	2	3				2													
2	13	1	3	1													1				2
2	13	1	4	0																	1
2	13	1	5	0																	
2	13	2	1	0																	
2	13	2	2	1																	
2	13	2	3	1																	
2	13	2	4	0								1									
2	13	2	5	2												2					
2	14	3	1	0				1													
2	14	3	2	0												2					
2	14	3	3	1								1									3
2	14	3	4	1												1					1
2	14	3	5	1					1							1					
2	14	4	1	0				2													
2	14	4	2	1												1					
2	14	4	3	3				1								1					
2	14	4	4	0				2				1									
2	14	4	5	3																	1
2	15	1	1	0																	
2	15	1	2	0			1														
2	15	1	3	0																	
2	15	1	4	0												1					
2	15	1	5	0													1				
2	15	2	1	0																	
2	15	2	2	0																	
2	15	2	3	1																	
2	15	2	4	0																	
2	15	2	5	0																	
2	16	3	1	0																	
2	16	3	2	0																	
2	16	3	3	0																	
2	16	3	4	0																	
2	16	3	5	0																	
2	16	4	1	0																	
2	16	4	2	0																	
2	16	4	3	0																	
2	16	4	4	0																	
2	16	4	5	0																	
2	17	3	1	0																	
2	17	3	2	0																	
2	17	3	3	0																	
2	17	3	4	0																	
2	17	3	5	0																	
2	17	4	1	0																	
2	17	4	2	0																	
2	17	4	3	0												1	1				
2	17	4	4	0												1					
2	17	4	5	0																	
2	18	1	1	0																	
2	18	1	2	0																	
2	18	1	3	0																	
2	18	1	4	0																	
2	18	1	5	0												1					
2	18	2	1	0																	
2	18	2	2	1																	
2	18	2	3	0																	
2	18	2	4	0																	

Table B2 continued: Orthoptera catches 2010

2	18	2	5	0					2									1					
3	1	1	1	0							4												
3	1	1	2	0													1			1			
3	1	1	3	0				1			1									1			
3	1	1	4	0							1												
3	1	1	5	0																			
3	1	2	1	0							1												
3	1	2	2	0				1			1												
3	1	2	3	0																			
3	1	2	4	0							3									2			
3	1	2	5	0							2									2			
3	2	1	1	1							2												
3	2	1	2	0							1									1			
3	2	1	3	0							1												
3	2	1	4	0							1									1			
3	2	1	5	0							1												
3	2	2	1	0																			
3	2	2	2	0				1			1									2			
3	2	2	3	0																2			
3	2	2	4	0				1			2												
3	2	2	5	0							1									1			
3	3	3	1	0													1						
3	3	3	2	0							3												
3	3	3	3	0																			
3	3	3	4	0							1												
3	3	3	5	0																			
3	3	4	1	0																			
3	3	4	2	0							1												
3	3	4	3	0							1				1		1						
3	3	4	4	0							1									1			
3	3	4	5	0																			
3	4	3	1	0				1			1												
3	4	3	2	0				1			1												
3	4	3	3	1																1			
3	4	3	4	0							1									2			
3	4	3	5	0																			
3	4	4	1	1	1						4									1			
3	4	4	2	0							1						1			3			
3	4	4	3	0							1												
3	4	4	4	0							3									2			
3	4	4	5	0							1			1						1			
3	5	3	1	0							1									3			
3	5	3	2	0							2									2			
3	5	3	3	0							1									1			
3	5	3	4	0	1						1									1			
3	5	3	5	0							6									2			
3	5	4	1	1													1						
3	5	4	2	0							1												
3	5	4	3	0							1												
3	5	4	4	0				1			1			1									
3	5	4	5	0																			
3	6	1	1	0							1												
3	6	1	2	0					1		2									2			
3	6	1	3	1							4									4			
3	6	1	4	0							2									1			
3	6	1	5	0							1									1			
3	6	2	1	0														1		4			
3	6	2	2	0														1					
3	6	2	3	1																			
3	6	2	4	0				1		1	4									1			
3	6	2	5	0		1					1							2		1			
3	7	3	1	0																			
3	7	3	2	0																			
3	7	3	3	0																			
3	7	3	4	0					1														
3	7	3	5	0																			
3	7	4	1	0				1															
3	7	4	2	0																	1		
3	7	4	3	0																			
3	7	4	4	0								1					1						
3	7	4	5	0														1					
3	8	1	1	0				1															
3	8	1	2	0																			
3	8	1	3	0																			

Table B2 continued: Orthoptera catches 2010

3	8	1	4	0																	
3	8	1	5	0																	
3	8	2	1	0																	
3	8	2	2	0																	
3	8	2	3	0																	
3	8	2	4	0																	
3	8	2	5	0																	
3	9	3	1	0																	
3	9	3	2	0																	
3	9	3	3	0																	
3	9	3	4	0																	
3	9	3	5	0																	
3	9	4	1	0																	
3	9	4	2	0																	
3	9	4	3	0																	
3	9	4	4	0																	
3	9	4	5	0																	
3	10	1	1	0																	
3	10	1	2	0																	
3	10	1	3	0																	
3	10	1	4	0																	
3	10	1	5	0																	
3	10	2	1	0																	
3	10	2	2	0																	
3	10	2	3	0																	
3	10	2	4	0																	
3	10	2	5	0																	
3	11	3	1	1																	1
3	11	3	2	0																	1
3	11	3	3	1									1								2
3	11	3	4	0																	
3	11	3	5	0																	
3	11	4	1	0																	
3	11	4	2	0																	
3	11	4	3	1																	
3	11	4	4	0																	
3	11	4	5	0																	
3	12	1	1	1									4								3
3	12	1	2	2									4								2
3	12	1	3	0																	
3	12	1	4	0																	
3	12	1	5	1																	1
3	12	2	1	0																	4
3	12	2	2	0									13								6
3	12	2	3	0									1								1
3	12	2	4	0									1								
3	12	2	5	2									2								2
3	13	1	1	0																	
3	13	1	2	2									1								2
3	13	1	3	0									2								2
3	13	1	4	1				1					2								2
3	13	1	5	0									3								
3	13	2	1	0																	
3	13	2	2	0																	
3	13	2	3	0																	
3	13	2	4	0																	
3	13	2	5	0				1													1
3	14	3	1	0				1					1								
3	14	3	2	0																	
3	14	3	3	1																	
3	14	3	4	0												1					
3	14	3	5	0																	
3	14	4	1	0																	
3	14	4	2	0																	
3	14	4	3	0																	
3	14	4	4	0																	
3	14	4	5	2																	
3	15	1	1	0																	
3	15	1	2	0																	
3	15	1	3	0																	
3	15	1	4	0																	
3	15	1	5	0																	
3	15	2	1	0																	
3	15	2	2	0																	

Table B2 continued: Orthoptera catches 2010

3	15	2	3	0																		
3	15	2	4	0																		
3	15	2	5	0																		
3	16	3	1	0																		
3	16	3	2	0																		
3	16	3	3	0																		
3	16	3	4	0																		
3	16	3	5	0																		
3	16	4	1	0																		
3	16	4	2	0																		
3	16	4	3	0																		
3	16	4	4	0																		
3	16	4	5	0																		
3	17	3	1	0																		
3	17	3	2	0																		
3	17	3	3	0																		
3	17	3	4	0																		
3	17	3	5	0																		
3	17	4	1	0																		
3	17	4	2	0																		
3	17	4	3	0																		
3	17	4	4	0				1									1					
3	17	4	5	0																		
3	18	1	1	0																		
3	18	1	2	0																		
3	18	1	3	0																		
3	18	1	4	0																		
3	18	1	5	0																		
3	18	2	1	0				1														
3	18	2	2	0																		
3	18	2	3	0																		
3	18	2	4	0																		
3	18	2	5	0																		
4	1	1	1	0																		
4	1	1	2	0							1											
4	1	1	3	0																3		
4	1	1	4	0																		
4	1	1	5	0																		
4	1	2	1	0																		
4	1	2	2	0		1														1		
4	1	2	3	0																		
4	1	2	4	0							2											
4	1	2	5	0																2		
4	2	1	1	1	1						6									6		
4	2	1	2	0							4									3		
4	2	1	3	0							1									1		
4	2	1	4	0																		
4	2	1	5	0							2											
4	2	2	1	0							5									2		
4	2	2	2	0							3											
4	2	2	3	0							1									1		
4	2	2	4	0							2									4		
4	2	2	5	1																3		
4	3	3	1	0							1									2		
4	3	3	2	0							2			1						1		
4	3	3	3	0							1									1		
4	3	3	4	0																		
4	3	3	5	0																		
4	3	4	1	0																		
4	3	4	2	0													1					
4	3	4	3	0							1									1		
4	3	4	4	0																1		
4	3	4	5	0																		
4	4	3	1	0							2									2		
4	4	3	2	1							2									6		
4	4	3	3	0							2									3		
4	4	3	4	0							3									2		
4	4	3	5	0							2											
4	4	4	1	0							1									8		
4	4	4	2	0							4									1		
4	4	4	3	0							2									2		
4	4	4	4	0							1									2		
4	4	4	5	1							1									3		
4	5	3	1	0							3									2		

Table B2 continued: Orthoptera catches 2010

4	5	3	2	0				1			3									1		
4	5	3	3	0							3											
4	5	3	4	0							2									2		
4	5	3	5	0	2			2			5			1								
4	5	4	1	0							1									1		
4	5	4	2	0							1											
4	5	4	3	0																		
4	5	4	4	0																		
4	5	4	5	0																1		
4	6	1	1	0							1											
4	6	1	2	0							2											
4	6	1	3	0															1	1		
4	6	1	4	0							3									1		
4	6	1	5	0																		
4	6	2	1	0																		
4	6	2	2	0							1								2	3		
4	6	2	3	0															1	1		
4	6	2	4	0						2									1			
4	6	2	5	0															1			
4	7	3	1	0														2				
4	7	3	2	0														1				
4	7	3	3	0																		
4	7	3	4	0																		
4	7	3	5	0				1														
4	7	4	1	0																		
4	7	4	2	0				1														
4	7	4	3	0																		
4	7	4	4	0																		
4	7	4	5	0																		
4	8	1	1	0																		
4	8	1	2	0																		
4	8	1	3	0																		
4	8	1	4	0																		
4	8	1	5	0																		
4	8	2	1	0																		
4	8	2	2	0																		
4	8	2	3	0														1				
4	8	2	4	0					1									1				
4	8	2	5	0																		
4	9	3	1	0																		
4	9	3	2	0																		
4	9	3	3	0																		
4	9	3	4	0																		
4	9	3	5	0																		
4	9	4	1	0																		
4	9	4	2	0																		
4	9	4	3	0																		
4	9	4	4	0																		
4	9	4	5	0																		
4	10	1	1	0																		
4	10	1	2	0																		
4	10	1	3	0																		
4	10	1	4	0																		
4	10	1	5	0																		
4	10	2	1	0																		
4	10	2	2	0																		
4	10	2	3	0																		
4	10	2	4	0																		
4	10	2	5	0																		
4	11	3	1	0									1									2
4	11	3	2	0																		1
4	11	3	3	0																		3
4	11	3	4	0																		
4	11	3	5	0																		
4	11	4	1	0									1									1
4	11	4	2	0																		
4	11	4	3	0																		
4	11	4	4	0																		
4	11	4	5	0									1									
4	12	1	1	1																		
4	12	1	2	0																		
4	12	1	3	0																		
4	12	1	4	0																		
4	12	1	5	0									1									1

Table B2 continued: Orthoptera catches 2010

4	12	2	1	1									2								6
4	12	2	2	0																	3
4	12	2	3	1																	2
4	12	2	4	0																	2
4	12	2	5	0																	
4	13	1	1	0																	
4	13	1	2	0																	2
4	13	1	3	0									1								1
4	13	1	4	1																	
4	13	1	5	0									1								1
4	13	2	1	0																	
4	13	2	2	1																	
4	13	2	3	0																	
4	13	2	4	0																	
4	13	2	5	1									4								1
4	14	3	1	0									1								1
4	14	3	2	1				1													
4	14	3	3	0									1								
4	14	3	4	0																	
4	14	3	5	0																	
4	14	4	1	1																	
4	14	4	2	0																	
4	14	4	3	0				1					1								
4	14	4	4	0																	
4	14	4	5	0																	
4	15	1	1	0																	
4	15	1	2	0																	
4	15	1	3	0																	
4	15	1	4	0																	
4	15	1	5	0																	
4	15	2	1	0																	
4	15	2	2	0																	
4	15	2	3	0																	
4	15	2	4	0																	
4	15	2	5	0																	
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4	16	3	4	0																	
4	16	3	5	0																	
4	16	4	1	0																	
4	16	4	2	0																	
4	16	4	3	0																	
4	16	4	4	0																	
4	16	4	5	0																	
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4	17	3	3	0																	
4	17	3	4	0																	
4	17	3	5	0																	
4	17	4	1	0																	
4	17	4	2	0												1					
4	17	4	3	0																	
4	17	4	4	0																	
4	17	4	5	0																	
4	18	1	1	0																	
4	18	1	2	0																	
4	18	1	3	0																	
4	18	1	4	0																	
4	18	1	5	0																	
4	18	2	1	0																	
4	18	2	2	0																	
4	18	2	3	0																	
4	18	2	4	0																	
4	18	2	5	0																	

Table B3: Orthoptera sound records. With ultrasonic detector.

Orthoptera sound records

Author: Lena Spalinger

Location	Fence	Date	Time start	Time end	Temperature °C	Weather	File name	Distance
Stabelchod	1+3	19.08.2010	1200	1215	16	15% clouds, light wind/sunny	V008.wav	100m
Stabelchod	2+4	19.08.2010	1035	1110	14	7% clouds, no wind/sunny	V007.wav	100m
Stabelchod	1+3	19.08.2010	1340	1400	20	5% clouds, light wind/sunny	V009.wav	100m
Stabelchod	2+4	19.08.2010	1400	1415	20	5% clouds, light wind/sunny	V010.wav	100m
Stabelchod dadaint	5	01.09.2010	1525	1540	10	0% clouds, windy/sunny	V017.wav	50m
Stabelchod dadaint	6	01.09.2010	1420	1435	9	0% clouds, windy/sunny	V016.wav	50m
Margunet	7+8	01.09.2010	1235	1255	11	0% clouds, light wind/sunny	V015.wav	50m
Grimmels	11+12	20.08.2010	1055	1110	17	40% clouds, no wind/sunny	V011.wav	100m
Grimmels	13+14	20.08.2010	1115	1130	17	40% clouds, no wind/sunny	V012.wav	100m
Grimmels	11+12	20.08.2010	1350	1400	20	65% clouds, light wind/cloudy	V014.wav	100m
Grimmels	13+14	20.08.2010	1315	1340	20	40% clouds, light wind/sunny	V013.wav	100m
Grimmels	11+12	03.09.2010	1350	1405	19	80% clouds, light wind/light sun	V019.wav	100m
Grimmels	13+14	03.09.2010	1430	1450	19	90% clouds, light wind/cloudy	V020.wav	100m
Minger	all	18.08.2010	1300	1320	17	90% clouds, light wind/cloudy	V002.wav	100m
Minger	all	02.09.2010	1400	1420	12	0% clouds, light wind/dunsty, sunny	V018.wav	100m
Val dal Botsch	9+10	15.09.2010	1245	1300	20	35% clouds, light wind/sunny	V021.wav	100m

Table B3 continued: Orthoptera sound records

Recorded Orthoptera species																
File name	**V008.wav**	**V007.wav**	**V009.wav**	**V010.wav**	**V017.wav**	**V016.wav**	**V015.wav**	**V011.wav**	**V012.wav**	**V014.wav**	**V013.wav**	**V019.wav**	**V020.wav**	**V002.wav**	**V018.wav**	**V021.wav**
Location	**Stabelchod**	**Stabelchod**	**Stabelchod**	**Stabelchod**	**Stabelchod d**	**Stabelchod d**	**Margunet**	**Grimmels**	**Grimmels**	**Grimmels**	**Grimmels**	**Grimmels**	**Grimmels**	**Minger**	**Minger**	**Val dal Botsch**
Fence	**1+3**	**2+4**	**1+3**	**2+4**	**5**	**6**	**7+8**	**11+12**	**13+14**	**11+12**	**13+14**	**11+12**	**13+14**	**all**	**all**	**9+10**
Date	**19.08.2010**	**19.08.2010**	**19.08.2010**	**19.08.2010**	**01.09.2010**	**01.09.2010**	**01.09.2010**	**20.08.2010**	**20.08.2010**	**20.08.2010**	**20.08.2010**	**03.09.2010**	**03.09.2010**	**18.08.2010**	**02.09.2010**	**15.09.2010**
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	G.sibiricus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	G.sibiricus	G.sibiricus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	G.sibiricus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	G.sibiricus	G.sibiricus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	G.sibiricus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	G.sibiricus	G.sibiricus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	G.sibiricus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	O.viridulus	G.sibiricus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	G.sibiricus	O.viridulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	O.viridulus	G.sibiricus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	G.sibiricus		C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	O.viridulus	G.sibiricus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	G.sibiricus		C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	C.biguttulus	O.viridulus	O.viridulus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	C.parallelus	G.sibiricus		G.sibiricus	G.sibiricus	C.biguttulus	C.biguttulus	C.biguttulus	O.viridulus	O.viridulus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	M.roeselii	C.parallelus	G.sibiricus		O.viridulus	G.sibiricus	G.sibiricus	C.biguttulus	C.biguttulus		O.viridulus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	M.roeselii	C.parallelus	G.sibiricus		O.viridulus	G.sibiricus	G.sibiricus	C.biguttulus	C.biguttulus		O.viridulus	G.sibiricus
	C.parallelus	C.parallelus	C.parallelus	C.parallelus	M.roeselii	C.parallelus	O. viridulus		O.viridulus	O.viridulus	G.sibiricus	C.biguttulus	G.sibiricus		O.viridulus	O.viridulus
	C.parallelus	C.parallelus	G.sibiricus	C.parallelus	M.roeselii	C.parallelus	O.viridulus		O.viridulus		G.sibiricus	C.biguttulus	G.sibiricus		O.viridulus	O.viridulus
	C.parallelus	C.parallelus	G.sibiricus	C.parallelus	M.roeselii	C.parallelus	O.viridulus		O.viridulus		G.sibiricus	C.biguttulus	O.viridulus		O.viridulus	O.viridulus
	G.sibiricus	C.parallelus	G.sibiricus	C.parallelus	O.viridulus	C.parallelus	O.viridulus		O.viridulus		G.sibiricus	C.biguttulus	O.viridulus		O.viridulus	O.viridulus
	G.sibiricus	C.parallelus	G.sibiricus	M.roeselii		G.sibiricus	O.viridulus		O.viridulus		G.sibiricus	C.biguttulus	O.viridulus		O.viridulus	
	G.sibiricus	C.parallelus	M.roeselii	M.roeselii		G.sibiricus	O.viridulus				G.sibiricus	C.biguttulus	O.viridulus			
	M.roeselii	C.parallelus	O.viridulus	O.viridulus		G.sibiricus	O.viridulus				O.viridulus	C.biguttulus	O.viridulus			
	O.viridulus	C.parallelus	O.viridulus	O.viridulus		G.sibiricus	O.viridulus				O.viridulus	C.biguttulus	O.viridulus			
	O.viridulus	C.parallelus	O.viridulus	O.viridulus		G.sibiricus	O.viridulus				O.viridulus	C.biguttulus	O.virudulus			
	O.viridulus	M.roeselii	O.viridulus	O.viridulus		G.sibiricus					O.viridulus	C.biguttulus				
	O.viridulus	M.roeselii	O.viridulus	O.viridulus		G.sibiricus					O.viridulus	C.biguttulus				
	O.viridulus	O.viridulus		O.viridulus		G.sibiricus					O.viridulus	C.biguttulus				
		O.viridulus		O.viridulus		G.sibiricus					O.viridulus					
		O.viridulus		O.viridulus		G.sibiricus					O.viridulus					
		O.viridulus				G.sibiricus					O.viridulus					
		O.viridulus				G.sibiricus					O.viridulus					
		O.viridulus														
		O.viridulus														
		O.viridulus														

Table B4: Vegetation height transects. Vegetation height right below the mark.

Vegetation height transects

Authors: Lena Spalinger, Janine Friedhoff, Rene Seifert

				Gras lenght (cm)																																																
Fence	**Transect**	**Date**	**Replicate**	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**6**	**6.5**	**7**	**7.5**	**8**	**8.5**	**9**	**9.5**	**10**	**10.5**	**11**	**11.5**	**12**	**12.5**	**13**	**13.5**	**14**	**14.5**	**15**	**15.5**	**16**	**16.5**	**17**	**17.5**	**18**	**18.5**	**19**	**19.5**	**20**	**20.5**	**21**	**21.5**	**22**	**22.5**	**23**	**23.5**	**24**	**24.5**	**25**
1	1	22.07.2010	1	2	5	2	3	5	16	3	0	3	3	0	2	0	2	3	0	2	5	29	39	12	17	9	3	7	6	6	5	3	2	5	3	7	4	2	2	4	4	2	2	3	3	2	4	4	2	1	3	1	2
1	1	22.07.2010	2	8	4	3	5	3	3	2	3	4	4	3	2	3	0	1	7	1	1	17	10	6	16	23	10	7	5	4	3	3	5	3	1	2	3	2	6	5	3	2	3	3	3	3	2	1	0	0	3	1	2
1	1	22.07.2010	3	2	3	2	2	2	2	2	3	1	2	2	4	2	4	20	1	2	3	4	11	10	9	3	16	2	3	5	0	0	3	5	5	4	2	2	2	1	4	5	1	2	2	4	1	3	2	2	2	4	1
1	2	22.07.2010	1	3	8	3	4	5	3	5	1	4	1	2	2	3	2	5	3	3	2	2	2	2	2	1	3	2	2	2	3	2	2	3	4	3	4	5	7	8	5	7	3	7	7	6	5	5	4	3	5	5	5
1	2	22.07.2010	2	1	9	6	6	12	9	6	7	5	3	4	7	10	6	4	4	3	2	2	2	1	0	2	5	5	1	2	2	7	14	2	6	8	25	3	8	5	10	25	9	10	5	17	13	10	17	2	0	9	0
1	2	22.07.2010	3	1	1	1	1	2	1	0	1	1	5	1	0	1	1	2	1	3	4	2	2	3	4	2	2	5	5	2	7	3	8	3	13	3	1	9	7	2	1	7	1	1	2	2	7	3	36	4	9	3	3
2	1	22.07.2010	1	0	2	16	17	16	13	14	13	32	2	8	1	10	0	12	8	5	7	2	11	7	17	9	12	6	14	11	9	6	2	2	2	8	15	6	20	15	13	6	4	17	18	18	7	7	9	4	14	14	7
2	1	22.07.2010	2	20	26	15	20	11	14	21	16	19	19	31	32	1	2	3	22	16	21	13	14	35	10	3	15	16	16	35	9	9	9	8	16	15	4	13	19	7	12	12	18	17	18	19	8	20	25	18	20	12	15
2	1	22.07.2010	3	0	3	4	5	12	12	5	14	12	8	15	9	18	14	13	11	18	21	32	26	5	10	10	21	12	26	14	19	11	17	9	20	0	6	10	9	10	9	4	8	4	14	14	11	17	17	21	30	2	7
2	2	22.07.2010	1	16	18	3	11	4	12	14	2	5	19	13	13	24	19	23	15	14	1	23	11	19	13	12	16	13	8	7	15	10	9	14	15	21	29	15	6	13	13	12	25	22	20	24	17	19	13	13	14	13	14
2	2	22.07.2010	2	3	2	2	3	20	28	19	10	18	8	6	7	14	18	15	17	7	5	22	33	23	0	14	4	9	9	14	6	4	12	7	14	18	21	22	20	9	8	15	18	16	11	12	20	14	4	23	3	7	8
2	2	22.07.2010	3	2	2	4	14	14	13	40	73	55	35	19	26	20	22	3	24	10	14	15	11	11	11	13	15	15	8	2	12	11	21	15	30	12	14	14	24	8	0	7	11	11	10	13	15	8	12	11	18	13	14
3	3	22.07.2010	1	4	11	9	8	9	10	14	18	2	1	8	3	5	14	18	20	4	9	7	3	12	1	2	4	3	10	8	4	6	3	7	11	3	3	7	6	5	4	0	2	3	3	2	2	1	2	1	1	6	7
3	3	22.07.2010	2	7	17	18	4	4	12	6	5	5	5	5	5	4	9	8	3	5	4	2	3	3	3	3	3	5	6	4	1	2	3	4	4	1	4	5	2	4	1	3	2	3	2	1	1	3	3	8	3	2	11
3	3	22.07.2010	3	7	11	27	12	28	8	18	6	8	3	1	2	9	5	9	3	6	3	14	1	5	0	8	4	20	4	7	16	2	8	8	2	5	5	1	4	4	3	2	2	6	3	2	5	28	6	1	4	1	1
3	4	22.07.2010	1	4	3	4	6	25	8	26	8	2	25	45	26	24	19	25	8	26	8	6	2	6	4	5	1	4	2	2	6	80	60	14	2	18	23	21	10	14	7	12	15	20	15	27	43	2	4	17	48	22	3
3	4	22.07.2010	2	13	4	2	33	3	9	2	6	18	7	5	29	15	21	23	3	8	5	32	5	17	2	3	1	5	3	8	14	8	6	10	10	9	17	19	33	25	23	22	14	3	2	9	13	6	24	10	12	15	15
3	4	22.07.2010	3	2	1	3	2	7	2	2	3	9	16	9	9	4	7	6	26	28	10	15	1	4	5	5	2	2	0	1	7	15	12	7	14	14	10	7	40	6	4	14	28	23	17	21	15	25	26	0	0	18	19
4	3	22.07.2010	1	10	14	14	14	32	9	6	10	1	0	10	9	16	19	15	15	12	14	23	17	16	20	14	11	24	18	17	9	13	25	27	18	22	19	15	15	11	24	3	5	14	16	10	12	12	10	1	1	1	12
4	3	22.07.2010	2	15	16	18	10	25	15	10	0	0	2	4	15	17	16	12	17	12	14	16	10	7	7	2	12	23	14	17	12	8	13	18	18	69	87	27	18	6	12	0	12	13	14	4	8	11	0	0	9	1	3
4	3	22.07.2010	3	18	29	14	21	5	12	18	37	2	0	14	4	19	20	15	15	7	14	16	12	15	15	12	26	16	21	14	16	13	40	14	23	23	26	26	14	0	21	17	6	13	14	12	12	7	4	4	3	13	6
4	4	22.07.2010	1	11	20	15	3	26	19	14	20	14	22	18	16	17	16	16	17	15	18	21	20	13	44	18	24	27	18	21	4	15	8	25	20	18	24	19	31	21	18	16	20	23	25	21	9	34	18	16	17	0	3
4	4	22.07.2010	2	18	12	0	15	14	7	12	22	17	22	19	20	15	7	11	10	9	5	1	6	6	13	13	11	11	23	9	11	10	14	14	22	12	18	20	23	3	7	13	15	15	20	0	9	19	3	14	22	21	16
4	4	22.07.2010	3	22	67	60	36	52	26	19	22	21	14	15	14	5	11	14	18	16	14	23	19	12	8	1	5	2	12	4	12	14	8	3	9	9	25	5	6	9	20	13	15	15	18	19	137	101	26	21	21	5	28
5	3	22.07.2010	1	3	4	10	5	4	3	7	5	3	9	3	4	15	16	2	18	15	3	8	5	23	28	4	5	8	20	8	5	3	4	3	17	4	28	7	25	24	25	27	28	20	5	17	18	13	19	17	18	23	17
5	3	22.07.2010	2	36	22	9	2	12	12	30	16	24	2	1	1	16	2	6	13	30	26	2	20	5	9	7	5	1	1	11	3	4	4	13	10	21	18	25	25	27	27	18	16	10	6	25	38	28	9	25	15	15	13
5	3	22.07.2010	3	9	4	10	10	15	14	10	13	3	2	6	7	10	8	28	5	17	8	19	4	16	3	18	20	18	25	19	14	21	19	26	26	34	19	24	21	16	27	49	4	25	21	19	15	27	21	50	15	56	29
5	4	22.07.2010	1	2	2	3	15	10	12	23	20	27	21	23	5	5	22	3	16	5	12	3	1	2	2	5	8	7	10	2	18	19	3	2	20	3	4	1	2	2	23	3	3	4	3	7	2	1	3	12	3	3	3
5	4	22.07.2010	2	28	25	17	4	5	35	6	3	15	7	21	18	19	6	35	25	26	27	1	6	7	14	5	22	14	6	7	25	25	6	3	5	3	7	16	3	13	38	29	7	4	6	29	10	27	10	20	21	36	26
5	4	22.07.2010	3	19	8	21	3	4	16	23	28	21	17	25	31	10	22	9	8	14	18	3	12	4	1	5	3	1	18	21	17	6	7	4	21	0	4	3	7	3	14	3	2	3	2	14	6	17	15	3	8	2	5
6	1	22.07.2010	1	15	13	15	5	4	5	3	3	5	3	3	5	3	3	2	3	2	4	3	2	3	1	4	2	1	0	4	3	5	5	0	5	4	6	8	5	4	0	3	2	2	6	6	4	2	0	0	1	3	10
6	1	22.07.2010	2	12	4	4	14	6	9	2	19	3	10	15	4	5	7	6	8	2	7	25	10	8	11	8	7	6	13	10	5	9	6	7	3	0	1	3	37	5	7	10	11	18	12	8	11	9	21	9	9	9	11
6	1	22.07.2010	3	0	1	0	8	7	12	3	8	4	3	4	3	5	6	0	6	5	13	3	7	2	7	4	17	28	0	0	9	6	10	6	3	2	3	10	16	4	14	6	6	7	2	4	20	5	8	10	0	2	17
6	2	22.07.2010	1	24	5	7	18	20	2	36	13	16	16	7	51	14	9	4	4	13	3	7	8	23	37	25	21	17	7	14	25	17	12	18	8	11	0	4	1	0	9	13	15	9	9	4	4	7	7	0	4	11	10
6	2	22.07.2010	2	5	16	7	3	3	3	4	23	10	15	5	3	21	19	0	4	3	0	1	4	3	6	6	4	10	15	23	21	20	5	21	3	10	5	7	7	5	22	3	16	2	0	7	5	9	2	4	2	5	10
6	2	22.07.2010	3	7	6	3	5	9	11	6	4	1	49	6	15	44	10	22	5	10	17	1	4	5	2	2	9	0	4	0	2	9	12	5	0	18	21	22	14	4	6	4	15	0	7	2	3	25	8	21	3	21	18
7	3	20.07.2010	1	8	4	4	9	16	12	21	16	14	1	1	1	4	3	0	2	10	3	0	2	2	3	7	10	4	4	4	5	7	0	0	8	3	1	1	1	1	8	4	2	2	1	8	8	1	0	2	16	7	0
7	3	20.07.2010	2	11	6	6	5	4	6	2	11	1	5	6	2	10	7	5	2	3	12	8	2	2	7	6	2	0	6	3	0	0	3	2	3	3	5	7	6	2	2	3	0	0	0	0	3	0	2	0	4	4	0
7	3	20.07.2010	3	3	3	3	5	4	5	3	0	8	1	3	4	7	1	18	17	11	7	1	0	0	10	9	15	15	12	9	6	12	9	6	4	3	9	5	6	4	3	0	5	6	0	1	5	0	0	3	2	4	3
7	4	20.07.2010	1	19	25	17	20	12	26	22	8	19	15	21	12	12	4	2	1	12	9	6	14	1	1	8	10	9	12	0	4	0	7	0	2	0	0	1	2	5	5	1	7	5	14	24	16	10	1	4	2	9	2
7	4	20.07.2010	2	2	13	4	10	5	4	10	0	5	5	4	0	3	3	3	4	0	7	6	7	4	3	5	3	5	2	2	2	2	2	0	0	0	0	0	0	4	7	4	6	15	15	4	3	12	2	0	2	2	2
7	4	20.07.2010	3	2	5	5	6	1	7	1	8	7	8	3	2	1	0	1	6	2	4	3	4	2	5	12	5	2	4	8	5	1	3	2	0	0	0	0	2	1	3	3	7	4	11	18	11	13	5	2	3	10	9
8	1	20.07.2010	1	2	18	1	1	1	1	1	3	2	7	1	2	1	4	2	6	5	2	7	5	2	2	2	4	3	2	8	3	2	2	7	10	4	2	10	0	5	10	12	16	15	10	26	13	2	2	10	12	5	2
8	1	20.07.2010	2	4	6	5	5	13	5	3	2	3	1	5	0	0	2	3	3	1	3	2	5	8	4	7	4	1	0	8	0	7	3	4	7	2	1	2	4	0	9	0	12	3	3	4	8	8	11	9	12	18	14
8	1	20.07.2010	3	2	6	5	4	17	3	2	0	25	18	5	5	7	13	15	11	7	2	6	3	2	5	7	3	3	4	10	0	36	14	9	11	18	8	18	38	1	11	4	10	1	15	7	7	10	13	4	3	6	3
8	2	20.07.2010	1	10	12	9	7	2	2	3	2	5	1	2	4	4	5	3	4	4	5	5	3	5	2	8	3	12	17	12	2	5	3	3	5	5	6	6	3	13	15	2	2	2	17	13	3	3	3	8	3	3	4
8	2	20.07.2010	2	15	15	12	1	2	5	3	1	10	0	7	4	4	0	4	3	0	0	10	3	9	8	5	0	2	4	2	4	0	3	10	1	1	0	14	4	2	14	5	7	2	2	12	8	11	14	11	11	4	14
8	2	20.07.2010	3	2	4	7	13	7	2	7	12	9	28	27	42	4	2	3	7	9	8	5	5	0	2	1	0	2	3	4	2	3	0	15	16	9	7	10	5	3	0	5	12	5	7	9	1	5	0	2	2	10	5
9	3	20.07.2010	1	7	8	5	2	6	10	10	0	12	9	2	0	5	8	8	8	7	5	5	7	5	2	5	6	6	0	0	6	0	0	4	1	0	0	0	34	7	5	8	5	5	7	10	6	4	5	4	2	1	1
9	3	20.07.2010	2	0	3	0	5	7	4	5	4	2	7	4	3	5	6	5	3	3	2	3	4	3	5	4	0	3	3	4	4	2	2	3	4	2	0	0	5	6	2	2	3	4	3	4	3	3	3	0	0	2	3
9	3	20.07.2010	3	2	3	8	5	10	2	0	3	2	0	15	0	3	5	2	4	7	7	7	5	4	2	9	1	2	7	4	0	1	5	6	1	1	4	0	0	2	4	2	3	2	3	5	3	1	3	6	0	4	3
9	4	20.07.2010	1	14	4	0	1	9	6	8	4	3	4	7	3	2	4	10	2	6	6	10	4	9	13	7	5	3	8	2	3	3	2	14	0	12	12	2	10	5	7	2	8	4	5	2	9	7	6	2	3	7	2
9	4	20.07.2010	2	6	0	9	3	0	4	5	5	2	2	2	1	8	3	4	5	3	1	0	4	4	5	3	4	5	4	5	2	6	3	6	0	0	4	9	5	20	5	23	5	0	5	4	4	4	4	4	3	2	5
9	4	20.07.2010	3	2	10	17	3	2	6	2	2	5	1	7	5	5	1	4	5	5	6	3	5	3	2	4	2	3	2	3	5	2	1	1	0	2	2	0	4	0	0	3	8	9	10	3	5	3	5	0	4	2	7
10	1	20.07.2010	1	2	2	2	3	2	2	2	2	3	3	3	4	6	3	3	4	3	3	4	5	3	4	3	5	1	1	2	1	20	3	4	3	2	2	3	2	3	2	2	3	2	4	3	5	3	2	9	2	12	10
10	1	20.07.2010	2	1	1	1	0	2	1	1	2	4	1	3	17	8	5	2	9	9	2	9	6	9	19	8	30	14	18	24	19	17	36	2	3	0	3	6	6	2	4	5	7	6	7	8	16	8	0	33	0	12	9
10	1	20.07.2010	3	1	0	2	2	3	6	3	2	6	0	2	6	2	7	5	11	4	13	3	5	4	2	3	18	2	1	4	10	3	8	4	33	3	3	3	3	4	9	3	13	5	1	4	4	6	5	3	4	2	0
10	2	20.07.2010	1	5	5	4	15	4	7	3	4	3	3	2	7	3	6	2	6	0	0	2	6	2	3	3	4	3	4	3	8	4	8	8	4	8	3	3	4	12	2	8	13	7	3	2	5	3	3	4	3	4	4
10	2	20.07.2010	2	7	7	14	29	5	5	4	2	7	9	4	22	1	5	2	2	5	2	2	3	5	3	15	30	2	4	2	2	4	3	3	0	3	2	4	2	3	4	1	5	3	2	4	5	3	2	4	3	3	5
10	2	20.07.2010	3	25	14	32	17	19	5	3	4	3	3	1	3	2	2	2	4	2	3	3	4	3	7	7	7	5	18	6	3	1	2	2	1	8	6	2	4	3	5	1	1	3	4	5	6	1	5	1	5	1	1
11	3	19.07.2010	1	4	3	3	6	1	3	3	3	4	7	2	2	1	3	2	2	7	4	4	0	5	6	2	4	7	11	10	6	5	2	2	2	5	4	5	4	6	6	4	1	1	2	2	2	3	1	2	2	5	7
11	3	19.07.2010	2	5	5	4	6	4	5	8	5	3	2	3	2	2	4	0	6	6	6	4	4	9	3	2	6	17	6	2	18	0	6	5	0	2	1	3	1	3	2	1	3	6	4	2	2	2	1	2	4	5	10
11	3	19.07.2010	3	3	5	7	3	37	5	10	4	3	3	4	2	20	5	3	2	2	4	4	7	20	4	2	2	3	7	6	3	4	1	8	2	7	1	3	12	1	2	7	2	1	1	3	2	4	2	4	4	2	5
11	4	19.07.2010	1	2	2	2	2	2	2	1	2	1	1	1	2	2	4	3	2	6	11	4	7	2	2	5	3	10	3	2	3	4	5	5	4	5	5	2	3	5	5	7	3	2	2	2	5	7	14	7	4	2	4

Table B4 continued: Vegetation height transects

11	4	19.07.2010	2	2	3	3	6	7	6	26	5	1	2	1	1	2	0	9	2	3	3	0	2	2	3	5	2	3	4	2	5	3	4	3	1	2	4	4	5	3	1	2	1	3	5	5	3	2	1	1	2	2	2
11	4	19.07.2010	3	2	3	2	2	12	9	3	2	1	2	1	1	4	5	5	3	9	4	3	2	5	0	3	6	2	4	3	5	4	3	3	4	3	2	10	3	8	5	6	6	6	6	9	6	4	6	2	8	9	4
12	1	19.07.2010	1	7	2	4	5	3	3	2	4	3	6	3	4	5	5	14	4	4	1	4	4	7	4	3	4	1	3	4	4	6	14	2	2	3	5	7	4	2	7	5	1	5	3	4	5	4	3	3	5	3	3
12	1	19.07.2010	2	6	6	5	4	4	3	8	4	5	7	23	11	5	35	2	15	5	1	6	2	14	1	1	2	1	12	1	3	0	1	2	4	7	4	4	6	6	5	1	7	4	3	4	3	4	3	2	7	5	3
12	1	19.07.2010	3	3	3	2	1	4	3	6	6	5	3	5	3	4	8	3	1	0	5	2	1	2	1	2	5	3	1	3	2	1	3	4	1	2	1	4	3	4	4	5	0	1	5	2	1	4	7	4	3	8	7
12	2	19.07.2010	1	25	5	4	5	24	0	23	13	9	8	3	4	1	5	21	8	3	6	4	3	4	9	6	7	8	9	6	8	7	24	8	5	9	14	2	12	5	4	3	8	6	17	4	4	2	2	12	5	33	30
12	2	19.07.2010	2	8	13	3	9	2	12	4	12	6	3	1	7	7	7	3	12	9	8	4	6	3	8	8	10	1	7	8	8	6	6	10	3	12	2	12	2	4	2	17	6	4	18	26	3	8	14	32	3	6	10
12	2	19.07.2010	3	2	16	7	15	7	5	4	6	4	25	4	11	10	3	7	6	2	8	5	3	8	7	18	5	2	2	7	1	5	14	7	8	7	2	12	12	5	27	tree	tree	tree	tree	32	4	3	4	5	3	18	2
13	1	23.07.2010	1	1	5	40	2	1	2	6	22	7	12	30	35	45	12	1	16	1	6	2	27	4	13	13	7	4	24	16	2	1	1	5	1	1	2	3	7	4	2	1	0	1	4	1	0	0	3	4	1	1	0
13	1	23.07.2010	2	1	1	2	2	3	12	4	1	1	7	1	4	11	9	1	17	6	4	9	6	4	7	0	11	4	6	3	2	35	4	3	5	2	2	3	2	2	1	4	2	1	2	1	2	2	4	2	2	2	0
13	1	23.07.2010	3	3	1	9	5	1	0	1	9	12	6	2	5	5	1	5	0	6	43	22	21	9	10	11	2	26	7	8	59	4	2	23	2	3	9	1	7	6	0	1	5	1	1	1	3	1	1	5	1	1	5
13	2	23.07.2010	1	2	1	11	5	6	10	1	8	33	10	5	1	1	7	7	1	15	2	1	3	8	5	1	9	5	4	3	1	4	18	8	4	1	9	17	15	6	4	5	2	1	12	3	49	2	5	4	3	4	24
13	2	23.07.2010	2	2	3	9	1	21	4	22	18	3	7	22	2	3	9	0	1	1	1	3	9	5	2	9	9	3	1	20	5	1	3	4	22	7	1	32	3	4	34	6	16	24	35	6	10	27	35	26	5	10	4
13	2	23.07.2010	3	3	2	1	1	6	5	1	3	3	1	3	1	1	0	1	1	1	1	3	6	19	8	22	1	1	23	1	13	5	8	1	1	4	3	3	3	18	3	5	4	5	1	10	7	7	9	5	5	48	3
14	3	23.07.2010	1	5	6	6	7	27	29	15	1	27	20	8	22	9	28	9	7	3	2	0	4	14	10	7	20	4	25	32	4	7	100	100	150	120	135	32	22	22	14	37	49	28	18	1	1	1	1	20	0	20	11
14	3	23.07.2010	2	9	18	6	8	30	27	33	34	29	7	6	15	30	29	11	16	16	15	22	0	1	20	14	22	25	18	11	1	0	1	32	44	17	32	46	48	35	13	10	7	80	61	20	3	2	2	6	1	4	1
14	3	23.07.2010	3	42	25	18	29	13	1	14	22	33	27	5	18	15	2	1	8	0	4	7	44	27	50	25	1	25	2	4	2	45	22	27	4	0	14	44	22	25	30	71	1	40	17	25	14	8	0	0	1	1	1
14	4	23.07.2010	1	25	14	15	9	21	22	35	28	12	14	46	42	1	28	13	1	25	1	33	39	19	1	24	9	17	23	33	16	38	27	17	25	40	25	4	18	20	7	3	6	11	2	1	1	1	37	1	4	1	4
14	4	23.07.2010	2	32	21	33	1	13	22	13	17	42	26	20	33	22	27	45	26	41	29	23	8	32	20	21	8	38	7	24	20	19	17	2	1	1	1	13	25	7	7	6	10	17	0	9	5	1	1	3	4	4	1
14	4	23.07.2010	3	16	7	1	9	5	1	7	6	32	1	9	1	4	0	0	9	1	0	18	9	10	10	18	31	20	2	1	6	4	9	24	15	1	3	13	2	1	6	1	3	2	1	1	1	3	2	2	3	23	3
15	1	21.07.2010	1	6	1	2	3	7	6	6	7	17	12	4	7	5	2	13	3	7	11	7	2	10	8	14	13	15	6	6	8	9	8	6	10	4	9	9	9	9	3	8	6	5	23	2	2	5	6	6	7	7	11
15	1	21.07.2010	2	3	2	4	3	5	0	5	6	3	4	6	5	4	2	3	3	5	3	3	4	11	3	6	6	8	1	4	5	5	3	4	7	4	0	5	3	5	3	5	12	4	10	2	3	3	5	4	3	6	5
15	1	21.07.2010	3	2	9	3	3	2	23	0	6	1	8	8	10	3	8	3	20	8	24	8	9	3	7	4	12	5	2	7	24	6	6	8	5	6	1	3	2	2	20	1	9	2	2	2	8	4	2	4	9	6	1
15	2	21.07.2010	1	9	4	7	7	7	7	7	2	4	11	2	6	1	6	1	2	6	4	5	7	18	2	4	14	3	4	31	9	7	7	6	8	4	6	4	4	7	6	6	3	5	7	4	6	5	0	1	0	1	4
15	2	21.07.2010	2	7	3	11	3	2	4	3	2	1	4	2	4	3	3	3	3	2	4	3	3	4	10	6	4	3	7	6	4	3	3	3	2	1	2	3	3	3	3	3	5	2	2	6	3	4	5	3	5	2	3
15	2	21.07.2010	3	14	7	7	7	4	6	6	1	4	1	4	1	6	2	8	5	3	8	2	3	6	1	5	7	7	5	1	0	1	1	2	3	4	4	9	3	7	4	6	0	2	3	4	4	0	2	3	3	2	1
16	3	21.07.2010	1	2	2	9	1	9	1	7	9	5	7	2	36	6	3	13	9	4	5	2	6	0	2	2	1	8	1	1	4	6	11	1	2	16	5	5	1	17	6	12	8	6	1	8	4	2	6	6	6	6	4
16	3	21.07.2010	2	12	0	4	3	3	1	5	7	8	4	4	3	2	2	5	5	4	3	6	4	3	1	3	4	1	2	4	4	3	4	4	2	3	4	4	2	5	8	7	5	2	2	3	3	4	1	2	3	5	4
16	3	21.07.2010	3	3	8	3	3	1	6	5	10	3	18	3	35	46	13	3	6	2	8	5	0	4	6	4	2	2	4	1	7	4	4	7	11	6	17	12	7	9	17	5	5	3	6	5	14	10	5	2	0	1	0
16	4	21.07.2010	1	2	10	3	6	7	5	13	6	8	7	8	6	3	4	15	15	9	0	7	13	4	13	4	7	5	3	4	7	4	3	25	8	8	4	4	5	2	4	3	5	4	7	6	1	6	5	11	6	5	3
16	4	21.07.2010	2	3	3	4	2	4	5	5	2	2	0	2	1	0	3	4	5	6	0	3	2	3	15	5	5	2	1	2	3	3	0	3	2	3	3	6	2	2	3	2	2	0	3	3	3	3	5	7	7	5	4
16	4	21.07.2010	3	17	22	13	14	3	3	4	5	6	3	20	3	10	1	2	2	3	2	6	3	3	3	2	2	10	1	8	9	12	4	14	2	2	1	7	3	2	1	1	0	1	3	1	3	8	1	3	4	6	4
17	3	21.07.2010	1	4	7	7	55	14	6	3	3	0	2	3	2	1	2	3	2	3	2	3	4	2	2	5	5	4	3	3	4	3	2	2	2	3	2	0	3	3	3	2	3	8	3	3	3	2	4	3	2	2	5
17	3	21.07.2010	2	4	5	6	3	18	15	8	9	12	9	8	26	12	8	6	1	5	7	4	24	4	8	1	7	6	4	2	6	2	0	3	2	2	4	4	2	4	7	3	4	2	6	7	5	3	2	1	1	1	2
17	3	21.07.2010	3	31	24	9	34	15	13	12	5	34	6	5	5	36	13	30	15	6	7	11	8	11	6	12	8	9	5	5	5	5	3	8	5	3	4	5	3	4	3	4	3	8	2	3	3	2	3	3	3	0	0
17	4	21.07.2010	1	19	24	9	4	5	7	5	15	17	3	12	26	27	13	4	6	3	12	4	7	8	25	26	5	14	31	3	13	35	13	6	33	8	8	16	18	16	8	1	3	7	7	2	2	2	7	5	4	1	0
17	4	21.07.2010	2	2	6	12	23	14	36	3	9	18	16	19	42	17	12	31	0	24	26	5	7	4	7	20	21	4	3	17	15	3	18	10	15	17	9	2	2	2	2	1	0	12	5	3	4	2	2	1	1	4	3
17	4	21.07.2010	3	18	23	34	8	3	13	20	18	22	9	17	27	25	24	19	33	30	19	12	24	18	26	20	16	4	14	17	10	18	34	17	15	4	9	2	6	3	13	4	7	2	1	1	1	0	5	1	0	1	0
18	1	21.07.2010	1	18	3	4	5	10	2	5	3	2	26	2	4	3	3	0	8	6	3	5	2	9	1	9	8	1	3	7	3	7	5	3	4	3	2	4	1	3	1	1	8	21	4	3	5	2	1	3	3	2	5
18	1	21.07.2010	2	6	3	5	4	4	3	2	1	3	1	2	4	2	3	3	8	1	1	3	4	5	4	4	5	0	4	1	1	1	3	0	15	5	4	1	2	11	5	1	8	1	6	4	24	5	1	1	2	1	2
18	1	21.07.2010	3	5	8	8	4	4	2	5	2	4	2	4	8	4	7	5	5	3	4	1	6	5	1	2	0	0	4	1	7	1	8	9	1	3	5	8	6	9	7	4	4	3	1	4	8	5	8	6	8	6	5
18	2	21.07.2010	1	4	1	3	2	1	2	2	4	3	4	7	6	6	4	1	3	0	0	4	3	2	2	2	5	2	8	1	7	7	3	1	2	5	5	10	13	5	1	2	3	5	3	2	4	3	0	4	4	3	3
18	2	21.07.2010	2	25	15	15	10	2	2	2	3	2	4	2	3	3	4	3	3	0	2	1	2	1	1	1	2	1	2	1	2	2	1	1	2	1	8	0	0	3	3	3	3	4	0	6	0	12	2	2	1	0	0
18	2	21.07.2010	3	7	14	8	15	4	4	1	4	2	2	2	14	3	2	2	1	2	0	2	2	3	5	13	2	2	2	1	1	1	2	1	4	1	3	0	7	0	1	0	4	2	2	3	4	2	3	1	3	0	0

Table B5: Vegetation cover transects. Dominant cover over 0.5m between two marks. Same dates as Vegetation height transects.

Vegetation cover transects

Authors: Lena Spalinger, Janine Friedhoff, Rene Seifert

			Soil cover(g=grass h=herbs e=earth r=rock f=flechten&moose z=holz a=antshill w=woody plant)																																															
Fence	Transect	Replicate	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19	19.5	20	20.5	21	21.5	22	22.5	23	23.5	24	24.5	25
1	1	1	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	f	f	g	g	g	g	f	h	h	h	h	h	h	h	h	g	g	h	h	g	h	f	h	h	h	h	h	h	h	h	h	h	h	h	h
1	1	2	h	h	f	f	h	g	g	e	h	h	g	h	h	h	f	f	h	g	g	g	g	g	g	h	g	f	h	g	h	h	f	g	h	h	h	h	h	g	h	h	h	g	g	g	g	e	f	h	f	h
1	1	3	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	f	f	h	g	g	h	z	h	h	e	f	f	f	h	g	h	h	f	f	h	h	h	h	h	g	h	h	h	h	h	h	g	h
1	2	1	h	h	h	h	h	h	f	f	h	f	h	h	h	h	h	f	h	f	g	h	f	f	f	h	h	h	f	f	f	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h
1	2	2	h	h	g	g	g	g	h	h	g	f	f	h	h	h	h	h	g	h	f	f	h	f	f	h	h	h	h	h	h	h	g	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	f	f
1	2	3	f	f	f	f	f	h	h	g	h	f	h	f	f	f	f	f	h	h	f	h	h	h	h	h	h	h	h	h	h	h	g	h	h	h	h	h	h	f	f	f	f	g	h	h	h	h	h	h	h	h
2	1	1	e	g	g	g	g	g	g	g	g	g	g	h	g	e	g	h	h	g	g	e	g	g	g	g	g	g	g	g	g	e	f	g	g	g	g	g	g	g	g	h	g	g	g	g	g	g	h	h	g	g
2	1	2	g	g	g	g	g	g	g	g	g	g	g	g	h	e	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	e	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
2	1	3	h	e	g	g	g	g	h	g	g	g	g	g	g	g	h	h	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g	h	g	g	h	g	h	g	g	g	h	g	g	g	g	g	g	g	h	g
2	2	1	g	g	h	h	h	h	g	f	h	g	g	g	g	g	h	g	g	h	h	h	g	h	g	g	h	g	g	g	h	g	g	g	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	h
2	2	2	h	h	h	h	g	g	g	g	g	g	g	h	g	g	g	g	g	h	h	g	g	g	e	h	h	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g
2	2	3	h	h	h	h	e	h	z	z	z	z	g	g	g	g	g	e	h	g	g	g	g	g	g	g	h	g	e	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g
3	3	1	g	h	h	h	g	g	g	g	h	g	g	g	g	g	g	g	g	h	h	h	e	g	h	h	h	h	g	g	g	h	h	h	h	h	h	h	h	f	f	f	h	h	h	h	h	g	h	h	h	h
3	3	2	g	g	h	g	h	h	h	h	g	h	h	h	h	g	h	h	h	h	e	f	h	h	h	h	h	h	g	h	h	g	g	g	g	h	h	e	f	h	f	h	h	h	h	h	h	h	h	g	g	h
3	3	3	g	g	g	g	g	g	h	g	h	h	h	h	g	g	g	h	g	h	g	h	g	f	h	h	h	g	h	g	h	g	g	h	h	h	h	h	g	g	h	h	h	h	h	h	h	g	h	h	h	f
3	4	1	h	h	h	h	h	g	g	h	h	g	g	g	g	g	g	g	g	g	h	h	h	h	h	f	f	h	h	h	z	h	h	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	z	g	g	h
3	4	2	h	h	h	g	h	h	h	h	g	g	g	g	g	g	g	h	h	g	g	h	h	h	f	h	h	h	h	h	h	g	g	g	g	g	g	g	g	g	g	g	h	g	e	h	g	g	h	z	h	g
3	4	3	h	h	h	h	h	h	h	h	h	h	h	g	h	h	h	h	h	g	h	g	h	g	h	f	f	f	f	f	h	h	h	h	h	g	h	h	h	g	g	g	g	g	g	g	g	g	g	a	g	g
4	3	1	g	g	g	g	g	h	e	e	e	h	h	g	g	g	h	g	g	g	g	g	g	g	e	g	g	g	g	g	g	g	g	g	g	g	g	e	g	g	g	e	g	h	g	g	h	h	f	f	f	r
4	3	2	h	g	h	g	g	g	h	e	f	g	g	g	g	g	g	g	g	g	g	h	h	h	g	g	g	h	g	g	e	g	g	g	z	z	g	g	e	g	a	g	g	h	h	g	g	e	g	g	h	h
4	3	3	g	g	g	g	h	g	g	g	h	h	e	g	g	g	g	g	h	g	h	g	g	g	g	g	g	e	g	g	g	g	g	g	g	g	g	g	g	h	g	g	h	g	h	e	g	g	g	f	g	g
4	4	1	h	g	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	e	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g	g	g	z	g
4	4	2	g	g	g	g	g	e	g	g	g	g	g	g	g	e	g	g	h	g	h	e	g	g	g	e	g	g	g	g	g	g	g	g	g	g	g	h	g	g	h	g	g	g	g	e	g	h	h	g	g	g
4	4	3	g	w	w	w	w	g	g	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	h	h	h	g	g	g	g	g	g	g	g	g	g	e	e	g	g	g	g	g	g	w	w	w	g	g	h	g
5	3	1	g	g	g	g	h	h	h	g	g	h	g	g	g	g	h	g	g	g	g	g	g	g	g	g	h	g	g	g	h	h	g	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
5	3	2	g	g	h	g	g	g	g	g	g	g	f	f	g	g	h	g	g	g	g	g	g	g	g	g	f	f	f	g	g	g	h	e	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
5	3	3	h	g	h	h	g	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	h	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	e	g	g	g	g	g	g	g	g	g	g
5	4	1	h	h	h	h	g	g	g	g	g	g	g	h	g	g	g	g	g	g	h	h	e	h	h	g	g	h	h	g	g	h	g	g	h	h	h	h	g	h	h	h	h	h	h	g	h	g	g	h	g	g
5	4	2	g	g	g	g	g	g	g	g	g	h	g	g	h	g	g	g	g	g	h	g	g	g	g	h	g	g	g	g	g	g	h	h	g	g	g	g	g	g	h	g	h	g	g	g	g	h	g	g	g	g
5	4	3	g	g	g	h	h	g	g	g	g	g	g	g	h	g	g	g	g	g	h	h	h	g	h	h	g	g	g	g	g	h	h	g	f	h	h	h	h	g	f	h	h	h	g	h	g	h	h	g	h	h
6	1	1	g	g	g	g	h	g	h	g	g	h	e	g	r	h	f	f	f	f	e	e	f	f	f	f	f	f	f	f	f	f	g	h	g	g	g	g	h	f	h	h	f	g	e	f	f	g	e	e	g	g
6	1	2	g	h	g	e	g	g	g	g	f	f	g	f	g	g	f	f	g	f	f	f	f	g	g	f	g	g	f	g	f	g	g	g	g	g	g	g	h	g	g	g	g	g	g	g	g	f	f	h	g	g
6	1	3	h	f	g	g	g	g	f	f	f	g	g	f	h	g	f	f	f	f	f	f	f	f	f	g	g	r	g	h	g	g	g	g	g	g	h	g	g	g	g	f	h	g	h	g	g	h	g	g	h	g
6	2	1	g	g	g	g	g	g	h	g	g	g	g	h	g	g	h	h	g	h	h	g	g	g	g	g	g	g	g	g	g	g	g	h	g	g	f	h	g	f	g	g	g	f	f	h	h	f	e	h	g	g
6	2	2	g	g	h	e	f	g	h	f	h	g	h	h	g	g	r	r	e	z	h	g	g	e	g	g	g	g	g	g	g	h	g	h	h	g	g	g	e	g	g	h	g	e	g	e	h	h	f	h	h	g
6	2	3	g	g	f	g	g	h	h	f	f	w	h	f	w	f	g	w	g	h	g	f	f	g	g	g	h	g	g	e	g	g	g	h	g	g	g	h	g	h	g	g	g	z	g	h	g	g	h	g	g	g
7	3	1	e	h	g	g	g	g	g	g	g	g	h	e	h	e	e	g	h	h	h	h	h	h	h	g	g	w	w	g	g	e	e	g	f	r	e	e	e	g	w	e	w	e	e	h	h	g	h	g	g	f
7	3	2	g	g	g	g	g	g	h	g	e	g	g	g	g	g	g	g	h	g	g	h	h	h	g	e	g	g	g	g	e	g	h	h	h	g	g	g	g	e	w	w	g	g	e	e	e	e	e	h	e	h
7	3	3	g	g	w	g	g	w	g	e	e	g	e	g	e	h	h	g	g	g	e	e	e	g	g	g	g	g	g	g	g	g	w	w	h	g	g	g	g	g	g	h	g	e	e	e	e	h	w	h	w	e
7	4	1	g	g	g	g	g	g	g	g	g	g	h	g	g	h	g	g	g	g	g	g	h	h	g	g	h	g	g	h	e	g	g	g	e	e	h	g	g	h	e	g	h	g	g	g	g	h	h	h	h	g
7	4	2	h	g	h	g	g	h	h	g	e	g	g	g	h	h	h	g	h	e	g	g	g	g	g	h	h	e	h	e	h	e	e	g	e	e	e	e	h	h	g	g	g	g	g	h	h	g	e	r	f	h
7	4	3	g	h	g	g	h	g	f	g	g	g	g	h	h	e	e	e	h	h	h	h	g	g	g	g	h	e	e	e	e	h	e	e	e	e	e	e	h	g	g	g	h	g	g	g	g	g	h	g	g	g
8	1	1	h	h	h	h	h	e	f	g	h	g	h	h	g	g	h	h	h	g	g	h	w	h	g	g	h	h	f	g	g	g	g	w	w	g	g	f	f	g	g	g	g	g	g	g	e	g	g	g	h	g
8	1	2	h	g	g	g	g	h	g	e	h	h	h	w	r	h	h	h	h	h	e	g	w	w	w	w	f	g	g	g	w	e	e	r	h	h	e	e	h	g	g	g	e	e	f	h	g	g	h	g	g	g
8	1	3	g	g	g	g	h	h	h	h	h	h	g	g	g	g	g	g	g	g	h	h	h	f	h	g	h	h	h	g	g	g	h	g	g	h	g	g	h	e	g	h	h	g	h	h	g	e	g	h	e	e
8	2	1	g	g	g	g	g	h	h	h	h	h	h	h	f	h	h	w	w	g	g	h	h	f	h	g	g	g	g	h	h	h	h	h	h	h	g	g	g	g	h	h	h	g	g	g	h	h	h	g	h	h
8	2	2	g	g	g	e	h	h	g	h	h	r	g	h	r	f	f	w	w	r	g	h	g	g	e	f	e	g	g	h	h	h	g	h	h	h	e	g	g	h	g	g	g	h	g	g	g	g	e	e	h	g
8	2	3	g	w	h	g	h	g	g	g	g	g	g	g	g	h	h	h	h	g	g	g	f	f	f	f	f	g	g	h	h	e	g	g	g	e	g	e	h	e	h	g	g	h	g	g	g	h	h	e	g	h
9	3	1	g	h	g	g	g	g	h	r	f	g	g	f	g	h	h	g	h	g	g	g	h	g	g	g	h	f	h	e	r	r	f	e	r	r	r	h	g	h	g	g	g	g	g	g	g	g	g	g	h	h
9	3	2	g	f	e	h	e	g	h	g	f	f	h	h	h	g	g	h	g	h	h	g	g	g	g	r	h	h	f	f	f	h	e	f	e	r	r	g	h	h	e	f	f	f	g	g	e	g	e	f	f	f
9	3	3	h	f	g	h	g	g	g	g	g	f	g	r	r	g	h	g	g	h	h	h	g	f	g	f	f	g	g	g	f	g	g	f	f	f	r	r	g	e	e	h	h	h	h	h	g	e	f	r	f	e
9	4	1	g	g	g	f	f	h	h	f	h	h	h	f	f	f	f	f	f	h	h	g	g	g	g	g	g	g	g	h	g	f	g	r	r	g	h	g	f	g	f	h	g	f	g	f	f	g	g	g	g	g
9	4	2	g	a	a	g	e	f	h	g	g	h	f	f	h	h	h	f	h	f	e	e	h	g	g	h	h	g	e	g	f	h	f	r	f	f	h	g	g	g	g	h	h	w	g	f	f	g	f	f	f	g
9	4	3	h	g	g	f	f	f	f	f	f	f	g	g	f	f	g	g	f	g	g	f	g	f	f	g	h	f	g	g	g	f	h	g	f	f	r	f	r	r	h	g	g	g	g	g	g	g	r	f	h	h
10	1	1	g	h	h	h	h	g	g	g	h	h	g	h	g	h	g	g	g	h	g	g	g	g	g	h	g	h	g	h	g	h	h	h	f	h	h	h	h	h	h	h	g	g	g	f	h	h	h	h	g	g
10	1	2	e	e	g	e	g	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g	e	h	h	h	g	g	g	g	g	h	g	g	g	f	g	g	f	g
10	1	3	f	f	f	f	h	f	g	g	h	r	h	g	f	g	g	g	g	g	h	h	h	g	h	f	f	f	f	h	h	h	h	g	h	g	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	f
10	2	1	g	h	g	g	g	g	h	h	g	g	f	g	g	f	g	f	h	f	h	e	h	f	g	g	h	h	h	h	g	w	f	h	h	g	g	g	g	f	f	h	g	h	g	f	h	h	g	f	g	g
10	2	2	g	g	g	g	g	g	g	h	g	g	w	g	h	g	g	g	g	g	g	h	g	g	g	g	g	f	e	h	h	e	h	g	g	g	g	h	h	h	h	g	g	e	g	h	h	g	e	e	r	e
10	2	3	g	g	h	g	g	e	h	g	g	g	e	g	h	f	f	h	g	g	f	e	f	g	g	h	h	g	g	h	f	f	h	h	f	g	g	h	g	h	h	f	h	h	h	g	f	g	f	f	f	f
11	3	1	g	g	g	g	g	h	g	g	h	h	g	g	g	f	f	h	h	g	g	h	f	g	g	g	g	g	g	g	h	g	g	h	g	h	g	g	g	h	h	h	h	h	h	h	h	h	h	h	h	h
11	3	2	g	g	g	g	g	g	g	h	h	h	g	g	g	g	f	g	g	g	g	g	h	g	g	g	g	g	g	g	z	g	g	h	g	h	g	g	h	h	h	h	h	h	h	h	h	h	h	h	h	g
11	3	3	g	h	g	g	z	z	z	g	h	h	h	g	g	g	g	g	g	g	h	g	g	g	g	g	h	g	g	z	h	g	g	g	h	h	h	g	h	h	g	h	h	h	h	h	h	h	h	g	h	g

Table B5 continued: Vegetation cover transects

11	4	1	g	g	h	h	g	g	g	g	g	g	r	r	h	h	h	g	g	g	g	h	h	g	g	g	g	g	g	g	g	h	h	h	g	g	g	h	g	g	f	f	f	g	g	f	g	h	h	h	h	h
11	4	2	g	h	h	g	g	g	g	g	g	g	f	h	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	f	g	g	g	g	h	h	h	g	g	g	g	h	g	h	g	h	h	h	h	h	f	h	h
11	4	3	g	g	g	g	g	g	e	e	h	g	h	e	h	h	g	g	g	g	g	f	g	h	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g	g	g	h	h	h	h	g	h
12	1	1	g	g	h	g	g	h	g	f	f	g	g	h	h	e	f	g	g	h	e	g	g	h	g	g	h	h	g	g	g	g	h	g	g	g	g	g	g	g	h	h	g	g	g	g	h	g	g	h	g	g
12	1	2	g	h	g	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	g	g	h	g	g	g	h	h	h	h	h	h	g	h	g	g	f	g	g	g	g	h	g	h	g	g	g	g	g	g	g	g	g
12	1	3	h	h	h	g	h	f	h	g	h	g	g	g	g	h	g	g	e	g	g	h	g	h	g	g	h	h	h	h	g	g	h	r	h	h	g	g	g	g	g	e	e	g	g	g	g	g	g	g	g	g	g
12	2	1	g	g	g	g	f	g	g	g	g	h	g	g	h	h	g	g	h	g	g	g	g	g	g	h	h	h	g	g	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	h	g	g	g	g	g	g	g
12	2	2	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	h	g	g	g	g	g	g	g	g	h	h	h	h	g	g	g	g	h	g	g	g	h	h
12	2	3	g	h	g	g	g	g	g	g	g	h	h	g	g	g	g	g	g	g	g	h	r	g	g	g	g	g	g	g	h	g	g	g	g	g	g	g	g	h	w	w	w	w	g	g	h	h	h	g	g	g
13	1	1	h	g	g	g	h	h	g	g	g	h	h	w	w	g	g	g	h	h	g	g	g	g	h	g	g	g	g	g	h	h	h	h	h	f	f	h	f	f	f	h	f	f	h	e	e	e	f	h	f	f
13	1	2	h	h	g	g	h	g	g	g	h	g	g	g	h	g	h	g	g	g	g	g	h	g	f	g	f	f	g	g	h	h	h	g	e	h	h	h	f	h	h	f	f	f	h	f	f	f	f	f	f	e
13	1	3	g	h	h	h	h	h	f	g	g	g	g	g	h	h	g	g	h	h	g	g	g	g	h	g	g	g	g	g	g	h	h	g	g	f	f	h	g	f	f	g	h	h	e	g	g	g	h	h	h	f
13	2	1	g	h	g	h	h	g	h	g	w	w	g	g	h	g	g	h	g	h	h	h	h	h	h	h	h	h	h	h	g	g	g	g	g	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	h	g
13	2	2	h	h	g	g	g	g	h	h	g	g	g	h	g	g	g	g	g	h	h	h	h	h	g	f	h	h	h	h	g	h	h	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
13	2	3	h	h	h	g	g	g	h	h	h	g	h	h	h	g	h	g	g	h	h	g	g	g	g	h	h	h	h	h	h	g	h	h	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
14	3	1	g	g	g	g	g	g	g	f	f	g	g	g	g	g	g	g	f	e	g	f	g	g	g	g	g	g	g	g	g	w	w	w	w	w	w	g	g	g	g	g	g	f	f	f	f	f	g	f	g
14	3	2	g	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	f	g	g	g	g	g	g	h	h	g	g	g	g	g	h	g	g	g	g	w	w	w	w	h	h	g	f	f	f
14	3	3	g	g	g	g	g	g	h	g	g	g	g	h	g	f	h	g	f	g	g	e	e	g	g	g	g	g	g	g	g	h	g	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	f	f	f	f	h
14	4	1	g	g	g	g	g	g	g	g	g	w	e	g	h	g	g	h	g	g	g	g	g	h	g	g	h	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	f	f	g	f	f	f	f	f	f	f
14	4	2	g	g	g	g	g	g	g	g	g	w	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g	g	g	g	g	f	f	f	g	g	f	g	f	g	f	f	f	f	g	f	h	f	f	h	f
14	4	3	g	g	g	g	h	h	h	g	g	f	g	g	g	g	g	g	g	g	g	e	e	g	h	h	g	g	g	g	g	f	h	h	g	g	g	f	f	g	g	f	f	f	h	h	h	h	h	h	h	h	f	g	h
15	1	1	h	h	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g	g	g	g	g	e	g	g	g	e	g	e	g	g	g	g	g	g	f	g	f	g	g	g	g	e	e	g	g	g	g	h	h
15	1	2	h	h	h	g	e	e	h	g	h	g	g	h	h	h	h	g	h	h	h	g	g	g	g	e	g	h	h	g	g	r	h	e	g	f	g	e	g	h	g	h	h	h	g	g	g	h	h	g	g
15	1	3	h	g	g	g	h	g	g	g	g	e	g	g	e	e	e	g	g	g	g	e	g	g	h	g	h	e	e	h	h	h	h	g	e	g	h	g	h	g	h	g	h	e	h	g	h	g	h	h	h	h
15	2	1	h	g	g	h	e	h	h	h	h	h	h	h	h	h	h	h	g	g	h	h	g	g	h	g	g	g	h	h	g	h	h	g	w	g	g	g	g	g	g	h	g	g	h	g	g	g	h	h	e	g
15	2	2	g	g	g	g	h	h	f	h	h	g	h	h	h	g	e	g	g	h	h	h	h	h	g	h	h	g	g	g	g	h	g	h	h	h	h	f	g	f	g	g	g	e	g	g	h	e	h	e	h	g
15	2	3	g	g	g	g	g	g	g	g	g	h	g	h	h	h	g	h	h	h	h	h	g	g	g	h	h	g	g	g	f	f	f	f	g	h	g	h	g	f	g	h	h	h	h	g	h	e	h	h	g	h
16	3	1	h	h	h	h	h	g	g	g	g	g	g	g	g	g	g	g	h	g	f	g	g	g	h	h	g	h	g	g	g	g	h	h	e	g	g	g	h	g	g	g	g	e	g	e	g	g	g	h	g	e
16	3	2	g	h	h	h	h	h	g	g	g	g	h	h	h	h	g	g	g	e	g	g	h	e	h	g	f	g	g	h	g	h	h	f	g	g	f	f	g	g	g	g	e	f	h	g	f	h	h	h	g	g
16	3	3	g	g	h	g	g	g	h	g	h	h	g	w	w	w	h	g	g	g	f	g	g	g	g	h	g	h	h	g	g	g	g	g	g	g	g	g	g	g	g	g	e	w	h	g	g	g	g	g	f	h
16	4	1	g	h	g	g	g	h	e	g	g	g	g	g	h	g	g	g	e	z	g	g	f	f	g	g	g	h	h	e	h	e	g	g	g	g	g	e	h	g	e	h	g	h	g	g	g	g	g	g	g	g
16	4	2	f	g	g	g	g	g	h	h	h	g	h	h	h	h	g	h	g	g	g	h	w	h	g	g	h	h	h	h	e	f	h	h	h	g	g	h	h	g	h	h	g	h	h	g	g	g	g	g	g	g
16	4	3	g	g	g	g	g	g	g	g	g	g	g	h	g	h	g	h	g	g	h	h	h	h	h	h	e	h	h	g	g	g	g	g	g	h	g	h	g	h	h	e	h	g	h	g	g	g	g	h	g	g
17	3	1	g	g	g	h	g	g	g	g	g	g	g	f	h	h	h	g	f	g	g	h	h	g	g	g	h	g	g	g	g	g	h	h	h	h	g	g	g	g	h	h	h	r	h	g	g	g	h	g	h	h
17	3	2	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	h	g	g	g	g	g	g	h	g	g	g	e	g	g	g	g	g	g	g	g	h	h	h	g	g	h
17	3	3	g	g	g	g	g	g	g	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	g	g	g	g	h	g	g	g	g	h	r
17	4	1	g	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	h	h	g	g	g	g	g	g	g	g	g	g	h	h	f	g	g	e	e	f	g	g	f	h
17	4	2	g	f	g	g	g	g	g	g	g	g	g	g	g	g	g	e	g	g	g	g	h	g	g	g	g	g	g	g	g	g	g	g	g	g	h	f	f	h	h	h	h	g	h	g	h	f	f	f	h	h
17	4	3	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	e	g	g	h	g	f	f	h	h	g	g	f	f	f
18	1	1	g	g	h	g	h	h	g	g	h	h	h	h	h	f	f	f	f	f	f	f	f	f	f	g	f	f	e	f	h	g	g	g	f	h	h	f	h	h	h	h	g	h	h	h	h	e	h	e	h	f
18	1	2	e	g	h	e	e	h	f	h	g	h	h	h	g	h	f	g	g	f	f	f	g	g	g	g	g	f	h	h	h	f	f	w	f	f	f	f	h	g	h	g	g	f	g	h	g	f	f	h	e	h
18	1	3	h	g	g	g	g	h	h	h	g	g	e	h	g	g	g	g	e	g	f	g	h	h	h	f	e	h	f	h	h	h	g	g	h	e	g	g	h	h	h	h	e	f	f	f	g	g	g	h	h	h
18	2	1	g	h	h	h	h	h	g	g	g	g	g	h	g	h	h	e	e	e	h	f	g	h	h	h	f	f	h	f	g	f	f	g	f	f	g	g	g	h	h	h	e	h	g	f	f	e	g	e	f	e
18	2	2	g	g	g	h	h	f	h	g	g	g	g	g	g	g	h	h	h	f	h	f	g	h	h	h	h	f	h	g	f	f	h	h	f	e	f	f	h	h	f	h	e	h	h	g	g	h	f	f	w	e
18	2	3	g	g	g	g	g	e	h	h	h	g	h	g	g	h	h	h	h	h	h	h	h	h	h	h	g	f	f	h	h	f	h	f	h	g	f	f	w	h	h	f	e	f	h	h	h	h	e	h	f	f	f

Appendix C – Additional data not used for analysis

Table C1: Loose stones on transects. 1 = loose stones present on 0.5m between two marks.

Loose stones on transects

Authors: Lena Spalinger, Janine Friedhoff, Rene Seifert

1 = loose stones

			Stones laying around?																																																	
Fence	Transect	Replicate	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19	19.5	20	20.5	21	21.5	22	22.5	23	23.5	24	24.5	25
1	1	1															1	1					1	1				1																								
1	1	2					1													1	1																															
1	1	3																													1	1	1	1	1	1	1															
1	2	1							1	1	1	1			1	1	1		1		1	1	1	1	1	1	1	1	1	1	1	1														1						
1	2	2											1	1						1	1	1	1	1	1	1		1	1																										1	1	1
1	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1		1	1	1		1			1		1		1		1	1	1	1	1	1	1	1							1	1	
2	1	1																													1																					
2	1	2																																																		
2	1	3																																																		
2	2	1																																																		
2	2	2																																																		
2	2	3																																					1														
3	3	1																																					1	1	1									1	
3	3	2																																				1	1	1				1							
3	3	3		1																1		1		1	1	1						1	1															1	1	1	
3	4	1																					1	1	1	1	1	1		1															1							
3	4	2																					1	1	1	1	1																1	1								
3	4	3																			1	1	1			1	1	1	1	1		1	1	1		1	1	1	1														
4	3	1								1																1																		1								
4	3	2								1																																			1							
4	3	3				1	1	1																																1												
4	4	1																																																		
4	4	2																		1																																
4	4	3																																																		
5	3	1																																											1						1	1
5	3	2																																																		
5	3	3																		1		1	1	1																			1	1	1	1				1				
5	4	1																						1							1	1					1					1		1								
5	4	2																																																		
5	4	3																																																		
6	1	1																			1	1	1					1			1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1		
6	1	2																				1	1									1	1	1	1	1	1					1		1				1	1	1		
6	1	3																		1	1	1	1	1			1		1	1	1	1	1		1	1	1			1	1				1		1	1				
6	2	1																																	1	1										1	1				1
6	2	2							1	1			1	1																									1														
6	2	3	1		1				1	1	1		1		1	1			1	1	1		1						1		1								1	1											
7	3	1							1	1																																	1						1			
7	3	2																																1			1		1	1			1	1	1	1	1	1	1	1	1	1
7	3	3																															1													1	1	1	1		1	1	1
7	4	1																											1		1	1	1	1	1	1															1				
7	4	2												1	1	1	1		1	1		1			1			1	1	1	1	1	1	1	1	1	1																
7	4	3																	1			1								1	1			1	1	1	1	1																
8	1	1												1				1	1						1	1			1			1										1		1	1										
8	1	2	1	1	1			1	1	1				1		1					1	1	1	1						1		1	1			1		1	1	1	1											
8	1	3				1	1	1			1	1		1	1		1		1	1		1	1			1	1	1		1										1		1	1								1		
8	2	1																1	1																																
8	2	2																	1		1						1																									
8	2	3																					1	1	1	1	1	1																								
9	3	1									1					1					1			1		1	1	1		1			1	1				1	1				1	1				1	1	1	1	1
9	3	2		1	1																							1	1		1		1	1	1	1			1			1	1	1	1			1	1	1	1	1	1
9	3	3		1		1		1	1	1	1	1	1							1	1	1			1	1	1		1	1	1	1	1	1	1			1			1			1		1			1	1		1	1
9	4	1				1	1	1					1	1		1												1				1	1												1	1					
9	4	2		1			1	1					1	1	1	1		1	1	1								1		1		1		1	1				1	1	1	1	1	1		1		1		1	
9	4	3	1					1																									1	1		1		1									1				
10	1	1			1	1	1	1	1	1	1	1	1	1	1																			1																			

Table C1 continued: Loose stones on transects

10	1	2	1	1	1	1	1		1	1	1	1	1																							1	1											1	1	1	1	1	1	
10	1	3	1	1	1	1				1			1	1																												1	1												1
10	2	1																	1	1	1	1																				1	1					1		1		1		
10	2	2																			1	1										1	1	1	1	1	1	1	1		1	1	1						1	1		1
10	2	3											1	1	1					1	1	1	1								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1		
11	3	1																																																		
11	3	2																																																		
11	3	3																																																		
11	4	1																		1	1	1	1	1	1		1									1	1	1														
11	4	2				1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1																								
11	4	3								1	1	1	1	1	1	1	1	1	1	1								1														1											
12	1	1																																																		
12	1	2																																																		
12	1	3																																							1	1										
12	2	1																																																		
12	2	2																																																		
12	2	3																																																		
13	1	1															1															1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	2																								1	1								1		1	1	1			1	1	1	1	1	1					1
13	1	3																													1			1	1	1	1	1	1	1	1			1	1				1	1		
13	2	1																																						1		1										
13	2	2												1															1																							
13	2	3																																																		1
14	3	1																	1	1	1	1	1			1																										
14	3	2																					1	1				1																								
14	3	3																																																		
14	4	1																																																		
14	4	2																																																		
14	4	3																																	1		1							1		1						
15	1	1																																						1	1							1	1	1
15	1	2						1																1															1	1	1	1					1		1	1	
15	1	3																																																		
15	2	1																																															1	1	
15	2	2									1		1		1	1	1	1	1				1		1							1	1	1												1	1			1		
15	2	3											1	1	1	1				1		1			1		1			1	1	1	1						1								1					
16	3	1											1										1	1									1											1					1	1	1	1
16	3	2				1		1					1										1					1															1	1		1		1	1	1	1	1
16	3	3						1	1	1	1	1	1						1			1	1				1		1				1													1						
16	4	1															1	1							1							1												1	1	1	1	1				
16	4	2												1	1	1	1	1	1	1	1	1		1			1			1	1	1	1	1		1	1	1	1		1	1	1	1	1	1	1					
16	4	3							1	1																	1		1			1										1		1								
17	3	1							1	1	1	1	1	1		1		1	1	1	1			1							1		1	1		1	1	1		1			1					1			1	
17	3	2																							1	1	1				1	1	1	1		1		1		1				1		1		1			1	
17	3	3																		1			1					1	1			1	1	1	1	1	1				1	1			1	1		1	1	1	1	
17	4	1																			1																						1		1	1	1	1	1		
17	4	2																																											1	1	1	1	1	1	1
17	4	3																																							1			1	1	1	1	1	1			
18	1	1												1	1			1	1	1																																
18	1	2													1			1	1	1	1				1																							1				
18	1	3																																									1	1	1							
18	2	1											1	1	1																		1	1	1	1									1	1					
18	2	2										1	1	1	1	1													1						1	1	1	1	1			1				1							
18	2	3																	1				1	1	1		1	1	1				1		1	1																

Table C2: Vegetation cover quadrates. Percent cover in 0.25m^2 quadrate.

Vegetation cover quadrates

Authors: Lena Spalinger, Janine Friedhoff, Rene Seifert

Fence	Transect	Meter	Date	Slope °	Exposition °	Gras %	Herbs %	Bare earth & Mulch %	Rock %	Lichens & Mosses %	Woody plant %	Loose stones (yes or no)
1	1	5	22.07.2010	10	120	16	15	3	0	66	0	n
1	1	10	22.07.2010	10	120	40	27	19	0	14	0	n
1	1	15	22.07.2010	10	120	20	26	7	0	47	0	n
1	1	20	22.07.2010	10	120	23	67	9	0	1	0	n
1	1	25	22.07.2010	10	120	15	32	4	0	49	0	n
1	2	5	22.07.2010	8	220	13	9	0	7	71	0	n
1	2	10	22.07.2010	8	220	23	49	19	2	7	0	n
1	2	15	22.07.2010	8	220	29	57	7	4	3	0	n
1	2	20	22.07.2010	8	220	25	66	9	0	0	0	n
1	2	25	22.07.2010	8	220	13	87	0	0	0	0	n
2	1	5	22.07.2010	12	260	65	30	5	0	0	0	n
2	1	10	22.07.2010	12	260	68	20	12	0	0	0	n
2	1	15	22.07.2010	12	260	32	37	13	0	18	0	n
2	1	20	22.07.2010	12	260	49	47	1	0	3	0	n
2	1	25	22.07.2010	12	260	60	27	5	0	8	0	n
2	2	5	22.07.2010	3	240	59	32	9	0	0	0	n
2	2	10	22.07.2010	3	240	32	9	59	0	0	0	n
2	2	15	22.07.2010	3	240	54	22	24	0	0	0	n
2	2	20	22.07.2010	3	240	58	26	16	0	0	0	n
2	2	25	22.07.2010	3	240	53	14	30	1	2	0	n
3	3	5	22.07.2010	13	260	27	56	12	1	4	0	n
3	3	10	22.07.2010	13	260	14	71	13	0	2	0	n
3	3	15	22.07.2010	13	260	20	52	24	2	2	0	n
3	3	20	22.07.2010	13	260	29	43	26	1	1	0	n
3	3	25	22.07.2010	13	260	29	55	14	1	1	0	n
3	4	5	22.07.2010	6	200	26	67	7	0	0	0	n
3	4	10	22.07.2010	6	200	9	37	12	8	34	0	y
3	4	15	22.07.2010	6	200	39	23	32	2	4	0	n
3	4	20	22.07.2010	6	200	69	14	17	0	0	0	n
3	4	25	22.07.2010	6	200	58	19	19	0	4	0	n
4	3	5	22.07.2010	10	210	55	21	24	0	0	0	n
4	3	10	22.07.2010	10	210	59	29	12	0	0	0	n
4	3	15	22.07.2010	10	210	29	21	50	0	0	0	n
4	3	20	22.07.2010	10	210	40	28	32	0	0	0	n
4	3	25	22.07.2010	10	210	24	22	46	0	8	0	n
4	4	5	22.07.2010	12	260	64	17	19	0	0	0	n
4	4	10	22.07.2010	12	260	71	17	12	0	0	0	n
4	4	15	22.07.2010	12	260	57	17	26	0	0	0	n
4	4	20	22.07.2010	12	260	62	23	15	0	0	0	n
4	4	25	22.07.2010	12	260	63	18	19	0	0	0	n
5	3	5	22.07.2010	8	160	72	16	12	0	0	0	n
5	3	10	22.07.2010	8	160	68	21	11	0	0	0	n
5	3	15	22.07.2010	8	160	24	44	25	0	7	0	n
5	3	20	22.07.2010	8	160	93	7	0	0	0	0	n
5	3	25	22.07.2010	8	160	64	27	9	0	0	0	n
5	4	5	22.07.2010	12	200	60	27	13	0	0	0	n
5	4	10	22.07.2010	12	200	51	42	7	0	0	0	n
5	4	15	22.07.2010	12	200	24	59	16	0	1	0	n
5	4	20	22.07.2010	12	200	23	61	13	2	1	0	n
5	4	25	22.07.2010	12	200	51	23	13	0	13	0	n
6	1	5	22.07.2010	12	130	22	26	12	0	40	0	y
6	1	10	22.07.2010	12	130	18	21	10	0	48	0	3
6	1	15	22.07.2010	12	130	49	18	17	0	16	0	y
6	1	20	22.07.2010	12	130	32	32	12	0	13	0	11
6	1	25	22.07.2010	12	130	60	21	9	0	6	0	4
6	2	5	22.07.2010	17	120	28	35	2	0	35	0	y
6	2	10	22.07.2010	17	120	28	31	38	0	3	0	n
6	2	15	22.07.2010	17	120	69	20	11	0	0	0	n
6	2	20	22.07.2010	17	120	57	38	5	0	0	0	n
6	2	25	22.07.2010	17	120	69	23	7	0	1	0	n
7	3	5	20.07.2010	12	130	30	61	8	0	1	0	n
7	3	10	20.07.2010	12	130	35	22	41	0	2	0	n
7	3	15	20.07.2010	12	130	31	32	35	0	0	2	n
7	3	20	20.07.2010	12	130	7	25	25	0	3	40	y
7	3	25	20.07.2010	12	130	15	23	34	1	8	19	y
7	4	5	20.07.2010	22	130	19	16	41	0	7	17	y
7	4	10	20.07.2010	22	130	33	25	27	0	7	8	y
7	4	15	20.07.2010	22	130	13	9	59	5	0	14	y
7	4	20	20.07.2010	22	130	31	47	7	0	0	15	n
7	4	25	20.07.2010	22	130	26	15	16	2	13	28	y
8	1	5	20.07.2010	20	150	35	47	17	0	1	0	y
8	1	10	20.07.2010	20	150	19	11	10	0	5	52	3
8	1	15	20.07.2010	20	150	68	21	3	0	0	0	8
8	1	20	20.07.2010	20	150	24	29	44	0	3	0	y
8	1	25	20.07.2010	20	150	62	24	14	0	0	0	n
8	2	5	20.07.2010	1	130	59	23	7	4	6	1	n
8	2	10	20.07.2010	1	130	41	41	5	9	4	0	n
8	2	15	20.07.2010	1	130	39	35	25	0	1	0	n

Table C2 continued: Vegetation cover quadrates

8	2	20	20.07.2010	1	130	56	42	1	0	1	0	n
8	2	25	20.07.2010	1	130	54	40	5	0	1	0	n
9	3	5	20.07.2010	15	180	31	20	6	10	33	0	n
9	3	10	20.07.2010	15	180	19	27	10	7	37	0	y
9	3	15	20.07.2010	15	180	31	11	15	4	17	2	20
9	3	20	20.07.2010	15	180	29	9	32	6	24	0	y
9	3	25	20.07.2010	15	180	30	13	10	7	37	3	y
9	4	5	20.07.2010	22	180	45	50	4	0	1	0	y
9	4	10	20.07.2010	22	180	35	33	10	0	22	0	y
9	4	15	20.07.2010	22	180	29	15	16	3	12	25	n
9	4	20	20.07.2010	22	180	26	42	8	6	18	0	n
9	4	25	20.07.2010	22	180	49	19	15	0	17	0	y
10	1	5	20.07.2010	15	90	19	66	7	1	7	0	n
10	1	10	20.07.2010	15	90	56	27	10	0	7	0	n
10	1	15	20.07.2010	15	90	39	34	9	0	0	0	18
10	1	20	20.07.2010	15	90	18	56	4	0	0	22	n
10	1	25	20.07.2010	15	90	31	34	6	0	29	0	n
10	2	5	20.07.2010	18	140	24	54	12	0	10	0	y
10	2	10	20.07.2010	18	140	39	56	4	0	1	0	n
10	2	15	20.07.2010	18	140	18	67	10	1	4	0	n
10	2	20	20.07.2010	18	140	14	42	15	2	27	0	n
10	2	25	20.07.2010	18	140	14	8	27	3	33	0	15
11	3	5	19.07.2010	15	120	60	35	3	1	1	0	n
11	3	10	19.07.2010	15	120	66	30	2	0	2	0	n
11	3	15	19.07.2010	15	120	48	48	2	0	0	2	n
11	3	20	19.07.2010	15	120	31	63	6	0	0	0	n
11	3	25	19.07.2010	15	120	25	55	19	0	1	0	n
11	4	5	19.07.2010	28	110	25	18	4	0	12	0	41
11	4	10	19.07.2010	28	110	44	34	10	0	6	0	6
11	4	15	19.07.2010	28	110	48	39	7	0	6	0	n
11	4	20	19.07.2010	28	110	36	40	8	0	16	0	n
11	4	25	19.07.2010	28	110	26	34	10	0	30	0	y
12	1	5	19.07.2010	22	120	82	15	2	0	1	0	n
12	1	10	19.07.2010	22	120	35	59	5	0	1	0	n
12	1	15	19.07.2010	22	120	49	49	2	0	0	0	n
12	1	20	19.07.2010	22	120	70	20	7	0	3	0	y
12	1	25	19.07.2010	22	120	72.5	25	2	0	0.5	0	y
12	2	5	19.07.2010	25	100	65	30	5	0	0	0	y
12	2	10	19.07.2010	25	100	61	30	2	0	7	0	n
12	2	15	19.07.2010	25	100	58	25	6	1	10	0	n
12	2	20	19.07.2010	25	100	50	40	10	0	0	0	n
12	2	25	19.07.2010	25	100	30	56	6	1	1	6	n
13	1	5	23.07.2010	25	70	53	20	14	0	13	0	n
13	1	10	23.07.2010	25	70	64	17	13	0	6	0	n
13	1	15	23.07.2010	25	70	33	22	7	0	38	0	n
13	1	20	23.07.2010	25	70	35	31	15	0	19	0	y
13	1	25	23.07.2010	25	70	20	37	10	0	33	0	n
13	2	5	23.07.2010	30	30	52	34	11	0	3	0	n
13	2	10	23.07.2010	30	30	27	21	1	0	51	0	n
13	2	15	23.07.2010	30	30	52	40	7	0	1	0	n
13	2	20	23.07.2010	30	30	61	34	4	0	1	0	n
13	2	25	23.07.2010	30	30	68	25	6	0	1	0	n
14	3	5	23.07.2010	25	50	65	18	10	0	7	0	n
14	3	10	23.07.2010	25	50	66	23	9	0	2	0	n
14	3	15	23.07.2010	25	50	64	23	13	0	0	0	n
14	3	20	23.07.2010	25	50	46	49	5	0	0	0	n
14	3	25	23.07.2010	25	50	23	30	3	1	43	0	n
14	4	5	23.07.2010	20	110	80	12	8	0	0	0	n
14	4	10	23.07.2010	20	110	62	38	0	0	0	0	n
14	4	15	23.07.2010	20	110	50	29	8	0	13	0	n
14	4	20	23.07.2010	20	110	54	26	3	1	16	0	n
14	4	25	23.07.2010	20	110	22	46	8	0	23	1	n
15	1	5	21.07.2010	20	350	24	61	13	0	2	0	n
15	1	10	21.07.2010	20	350	52	38	9	0	1	0	n
15	1	15	21.07.2010	20	350	48	17	12	0	1	0	22
15	1	20	21.07.2010	20	350	49	34	15	0	2	0	y
15	1	25	21.07.2010	20	350	28	38	8	1	25	0	n
15	2	5	21.07.2010	15	340	53	38	8	0	1	0	y
15	2	10	21.07.2010	15	340	43	55	2	0	0	0	n
15	2	15	21.07.2010	15	340	63	31	6	0	0	0	y
15	2	20	21.07.2010	15	340	36	31	22	0	11	0	n
15	2	25	21.07.2010	15	340	28	32	23	3	14	0	y
16	3	5	21.07.2010	17	320	46	43	4	1	6	0	n
16	3	10	21.07.2010	17	320	42	38	15	0	5	0	n
16	3	15	21.07.2010	17	320	29	40	18	0	13	0	n
16	3	20	21.07.2010	17	320	71	20	5	0	4	0	n
16	3	25	21.07.2010	17	320	27	53	11	1	8	0	y
16	4	5	21.07.2010	20	330	41	47	2	0	6	0	4
16	4	10	21.07.2010	20	330	33	48	18	0	1	0	y
16	4	15	21.07.2010	20	330	43	38	10	4	5	0	y
16	4	20	21.07.2010	20	330	27	54	18	0	1	0	n
16	4	25	21.07.2010	20	330	45	38	16	0	1	0	n
17	3	5	21.07.2010	13	360	34	30	22	0	14	0	n

Table C2 continued: Vegetation cover quadrates

17	3	10	21.07.2010	13	360	59	32	9	0	0	0	n
17	3	15	21.07.2010	13	360	40	37	21	1	1	0	y
17	3	20	21.07.2010	13	360	56	34	6	1	3	0	n
17	3	25	21.07.2010	13	360	67	21	11	1	0	0	n
17	4	5	21.07.2010	14	360	67	27	5	0	1	0	n
17	4	10	21.07.2010	14	360	60	25	15	0	0	0	n
17	4	15	21.07.2010	14	360	86	14	0	0	0	0	n
17	4	20	21.07.2010	14	360	17	25	45	0	13	0	y
17	4	25	21.07.2010	14	360	44	16	36	0	4	0	y
18	1	5	21.07.2010	10	10	46	22	4	0	28	0	n
18	1	10	21.07.2010	10	10	34	38	4	0	24	0	y
18	1	15	21.07.2010	10	10	19	36	0	0	45	0	n
18	1	20	21.07.2010	10	10	29	30	8	0	33	0	n
18	1	25	21.07.2010	10	10	40	35	18	0	7	0	n
18	2	5	21.07.2010	10	40	23	58	15	0	4	0	n
18	2	10	21.07.2010	10	40	22	22	4	0	46	0	6
18	2	15	21.07.2010	10	40	18	26	5	0	49	0	2
18	2	20	21.07.2010	10	40	23	28	30	0	19	0	n
18	2	25	21.07.2010	10	40	37	10	1	1	51	0	n

Table C3: Vegetation height quadrates. Height below corner points of 0.01m^2 quadrate disc placed randomly in 0.25m^2 quadrate.

Vegetation height quadrates

Authors: Lena Spalinger, Janine Friedhoff, Rene Seifert

			Gras lenght 1				Gras lenght 2				Gras lenght 3				Gras lenght 4				Gras lenght 5			
Fence	Transect	Meter	value 1	value 2	value 3	value 4	value 1	value 2	value 3	value 4	value 1	value 2	value 3	value 4	value 1	value 2	value 3	value 4	value 1	value 2	value 3	value 4
1	1	5	2	1	3	2	9	4	2	2	2	2	1	5	1	2	2	0	1	0	2	2
1	1	10	15	16	0	7	25	19	15	4	14	9	7	16	13	22	20	20	15	19	13	4
1	1	15	3	0	2	9	5	0	4	3	5	28	0	5	3	12	5	7	0	3	18	2
1	1	20	4	5	3	7	21	3	4	7	4	2	5	2	10	2	7	3	2	2	2	5
1	1	25	3	0	2	2	2	3	1	2	4	4	3	4	1	2	1	2	2	1	3	4
1	2	5	4	3	4	3	8	1	7	7	7	4	0	1	1	1	1	0	4	1	6	3
1	2	10	5	3	11	6	1	5	1	2	5	7	9	6	2	2	6	4	2	3	4	2
1	2	15	8	6	1	1	5	1	1	22	27	20	17	14	1	1	2	3	1	1	1	22
1	2	20	1	1	2	8	25	1	50	29	1	5	9	8	6	1	3	7	1	2	7	1
1	2	25	3	3	2	1	1	5	8	8	3	7	5	10	1	5	5	5	1	1	5	5
2	1	5	10	12	0	9	9	17	7	4	13	9	13	22	12	14	17	16	9	15	7	14
2	1	10	9	13	12	24	11	9	14	12	13	15	18	9	12	9	14	16	14	9	6	17
2	1	15	0	2	2	4	2	4	6	0	10	2	4	2	12	10	17	14	10	13	5	8
2	1	20	5	4	2	3	17	3	5	12	14	0	9	5	17	12	16	4	15	14	3	0
2	1	25	10	13	14	12	7	8	8	7	5	5	2	8	5	4	5	13	15	15	9	7
2	2	5	15	12	17	10	10	9	15	3	13	14	19	25	4	0	14	11	8	13	18	9
2	2	10	0	2	0	11	12	9	3	7	10	4	7	12	12	0	11	0	1	8	11	0
2	2	15	9	11	7	10	7	7	5	3	8	3	6	0	27	9	15	3	10	5	9	6
2	2	20	29	17	12	16	13	14	17	20	19	14	12	18	15	23	7	17	14	16	19	15
2	2	25	4	9	10	12	2	3	7	17	17	12	11	6	12	11	16	6	5	7	11	4
3	3	5	6	1	3	7	6	18	3	14	6	4	3	2	2	4	2	6	6	0	6	1
3	3	10	3	1	1	1	4	4	9	4	10	3	2	5	8	8	20	19	13	5	4	3
3	3	15	4	1	7	5	6	7	20	4	17	2	22	23	1	10	8	2	1	5	7	1
3	3	20	4	4	1	3	3	2	7	1	6	4	1	4	3	8	2	38	1	7	2	2
3	3	25	2	6	5	4	2	5	3	4	2	13	4	3	6	3	8	12	6	6	8	7
3	4	5	6	7	30	11	10	5	3	19	11	10	15	10	38	17	18	7	20	1	5	21
3	4	10	0	1	1	2	3	1	12	5	1	4	5	0	0	2	2	1	3	0	5	4
3	4	15	3	5	7	4	4	4	0	5	5	0	4	10	9	12	5	6	3	4	10	2
3	4	20	22	22	26	48	21	17	15	11	25	22	23	19	25	48	25	28	9	21	40	12
3	4	25	9	4	7	8	9	25	18	8	15	3	8	10	14	3	3	6	7	3	5	7
4	3	5	20	16	16	15	12	9	11	20	12	15	14	19	17	19	15	14	18	16	22	19
4	3	10	22	19	24	11	18	18	17	21	18	13	20	21	14	19	18	16	20	19	18	22
4	3	15	8	8	7	7	12	15	4	8	10	15	17	15	19	9	15	6	13	7	13	11
4	3	20	10	2	17	10	8	9	7	9	11	13	6	11	7	17	17	12	15	11	4	13
4	3	25	2	8	3	5	2	2	4	1	2	2	0	2	3	5	2	2	7	7	0	6
4	4	5	15	14	16	15	14	16	5	16	11	6	8	4	13	20	14	6	10	22	12	6
4	4	10	16	17	11	10	49	15	12	3	14	12	13	14	13	8	14	15	21	14	11	16
4	4	15	9	13	18	14	27	11	19	12	13	15	11	15	13	39	4	14	0	12	15	0
4	4	20	26	14	17	18	17	16	18	15	20	23	20	24	13	22	22	19	20	22	13	23
4	4	25	15	22	18	15	18	14	17	23	21	23	19	17	18	19	18	19	17	18	17	17
5	3	5	7	5	10	8	9	19	15	5	21	22	8	17	27	22	19	25	27	63	22	17
5	3	10	7	7	26	1	27	14	15	19	21	23	30	34	51	12	31	35	2	8	7	2
5	3	15	4	4	5	1	12	6	1	8	1	29	32	3	2	7	21	5	3	8	3	2
5	3	20	36	33	39	24	36	79	49	13	23	8	50	54	24	15	18	30	35	31	23	25
5	3	25	13	40	14	6	19	14	7	18	32	38	26	23	14	8	13	9	22	16	11	12
5	4	5	12	7	8	5	12	16	8	5	24	20	24	18	12	4	7	14	12	13	17	20
5	4	10	5	6	57	12	8	8	12	6	6	6	10	59	6	2	5	4	27	11	17	21
5	4	15	4	5	5	5	8	6	4	3	2	3	3	5	5	6	1	3	26	3	2	7
5	4	20	5	3	6	6	5	4	8	7	5	4	16	5	4	4	3	6	5	5	4	5
5	4	25	30	4	9	7	5	13	9	1	3	5	5	3	13	10	16	10	3	11	2	12
6	1	5	4	3	1	0	4	0	1	2	6	12	1	1	4	6	0	1	0	0	5	3
6	1	10	1	2	3	0	0	1	7	6	5	1	0	2	5	0	6	5	2	7	1	18
6	1	15	4	15	9	4	12	6	3	5	8	6	0	5	7	4	4	10	7	0	4	7
6	1	20	3	8	6	2	4	5	13	6	3	2	1	9	2	2	10	5	12	12	2	4
6	1	25	0	10	8	8	5	17	13	12	15	26	12	5	15	9	14	9	25	15	11	18
6	2	5	2	4	11	6	4	3	2	1	0	5	2	6	7	9	5	3	3	11	3	7
6	2	10	0	0	5	2	1	0	2	2	19	13	11	8	10	6	13	14	2	0	2	10
6	2	15	16	17	18	5	17	13	18	15	14	11	14	13	3	10	12	15	13	12	14	12
6	2	20	6	10	3	11	7	18	14	12	8	13	19	21	32	19	23	24	3	6	14	17
6	2	25	13	17	15	11	12	18	16	26	18	15	13	23	13	4	2	13	7	15	18	8
7	3	5	2	2	8	4	7	7	8	3	11	6	0	3	17	1	5	6	9	4	2	8
7	3	10	6	8	9	2	0	2	2	7	6	3	4	4	4	0	1	6	1	2	8	3
7	3	15	1	7	1	0	5	5	0	2	2	2	11	1	4	7	2	3	0	14	8	8
7	3	20	3	2	8	1	2	0	11	4	3	1	2	2	4	2	1	0	0	1	1	5
7	3	25	12	3	1	1	2	0	5	10	4	8	3	0	1	11	0	7	2	1	0	0
7	4	5	1	2	0	4	5	2	7	3	4	6	9	3	0	4	7	3	2	1	1	3
7	4	10	2	2	5	13	0	8	4	6	7	0	3	2	13	11	1	10	6	0	0	8
7	4	15	0	0	0	3	0	0	2	0	0	0	2	4	0	4	6	1	6	3	2	1
7	4	20	2	4	4	13	7	8	9	9	4	2	3	1	3	10	6	3	16	11	4	12
7	4	25	16	13	7	1	8	10	5	0	9	5	2	9	4	2	1	8	1	2	6	0
8	1	5	3	0	1	4	4	3	17	7	1	2	4	8	1	5	3	3	8	3	5	5
8	1	10	10	7	8	5	5	4	4	7	4	7	1	2	7	4	7	3	2	1	7	4
8	1	15	15	10	24	34	7	10	8	34	40	14	23	30	4	8	3	20	12	15	37	29
8	1	20	4	3	3	1	5	6	3	3	1	2	2	3	8	5	3	6	4	3	3	4
8	1	25	11	10	12	7	14	12	13	9	15	6	11	10	13	15	10	11	2	8	11	9
8	2	5	4	3	10	3	3	5	10	5	5	12	7	3	6	5	7	3	3	7	4	3
8	2	10	7	4	3	6	5	7	3	4	4	6	8	8	4	7	3	5	5	3	3	7
8	2	15	8	5	2	10	7	5	9	10	9	3	2	5	10	2	5	1	13	4	9	5
8	2	20	5	8	13	16	12	13	11	9	5	9	10	13	7	12	13	11	11	9	13	7
8	2	25	5	11	9	9	2	1	2	5	6	2	4	1	2	5	3	7	7	8	2	5
9	3	5	1	3	2	6	0	0	2	0	6	5	0	2	5	6	8	2	0	0	10	6
9	3	10	1	0	3	3	3	2	1	0	4	2	5	2	5	2	2	2	6	1	4	4
9	3	15	5	3	5	3	0	0	2	0	3	2	1	4	2	3	4	3	7	4	4	0
9	3	20	8	0	5	0	3	0	3	4	2	1	5	1	0	3	0	2	3	0	2	0

Table C3 continued: Vegetation height quadrates

9	3	25	3	3	2	0	3	4	3	0	0	3	2	3	2	2	4	2	1	0	0	6
9	4	5	3	8	6	2	6	6	5	3	6	6	7	5	5	3	3	3	7	8	2	3
9	4	10	3	3	3	1	3	2	2	3	1	3	1	1	3	2	5	3	2	0	2	2
9	4	15	3	3	5	3	5	5	6	2	3	4	2	5	4	0	1	0	2	4	3	2
9	4	20	3	2	4	4	6	4	0	3	4	2	5	0	6	6	5	2	5	4	0	1
9	4	25	4	2	9	2	2	0	8	0	2	4	3	2	1	2	3	3	3	0	6	4
10	1	5	5	3	2	3	3	4	4	3	2	4	3	2	4	5	4	2	1	4	2	5
10	1	10	4	2	3	2	2	3	3	4	4	3	2	1	2	3	2	3	2	3	3	2
10	1	15	3	3	4	1	3	4	2	3	3	4	3	3	1	2	4	5	5	5	3	1
10	1	20	3	3	4	2	3	3	2	0	0	4	0	0	2	3	0	3	3	4	4	3
10	1	25	3	2	2	3	4	1	2	2	2	2	0	0	1	1	3	1	0	2	2	1
10	2	5	0	2	1	3	2	2	1	3	2	3	4	14	6	3	4	4	2	1	2	2
10	2	10	4	6	3	6	6	4	3	3	6	7	6	5	2	9	2	3	2	5	3	3
10	2	15	13	0	3	5	5	8	4	2	4	12	4	13	6	11	2	5	3	2	5	1
10	2	20	15	1	11	4	4	5	0	2	0	1	2	4	3	4	3	4	2	1	2	2
10	2	25	0	5	0	0	0	2	0	0	0	0	0	0	5	3	0	4	1	3	3	0
11	3	5	7	3	5	3	10	6	9	4	3	6	1	4	6	5	5	2	4	9	6	6
11	3	10	6	8	6	3	13	4	7	3	4	2	6	3	6	3	7	4	5	3	4	6
11	3	15	4	2	1	1	2	5	3	1	4	4	3	2	8	3	1	2	7	2	7	1
11	3	20	1	2	8	4	3	1	4	6	3	1	7	4	8	5	5	6	2	5	2	5
11	3	25	4	6	4	1	1	2	1	6	3	3	1	4	8	3	1	4	4	1	3	2
11	4	5	6	3	4	2	4	3	0	3	2	4	6	0	3	5	1	1	8	6	5	3
11	4	10	3	3	5	4	7	5	1	4	5	5	4	4	4	6	5	2	4	1	4	1
11	4	15	4	3	2	2	2	1	2	3	2	2	4	4	1	3	2	4	1	4	5	3
11	4	20	2	3	1	2	1	2	3	3	3	3	1	8	4	4	1	5	1	1	0	0
11	4	25	2	1	1	6	4	1	2	2	1	1	3	1	1	3	5	3	3	2	1	2
12	1	5	1	1.5	2.5	3	1	2	17	8	27	8	4	8	3	6	16	10	9	16	3	2
12	1	10	4	5	3	6	2	3	5	1	4	12	5	2	4	6	3	12	1	3	4	4
12	1	15	6	4	4	1	3	3	5	7	7	3	1	1	6	1	1	2	5	4	1	4
12	1	20	6	4	5	2	4	4	5	3	3	4	1	4	4	4	1	1	1	4	4	1
12	1	25	3	5	1	1	12	21	1	2	9	5	5	2	3	1	2	1	10	6	1	4
12	2	5	9	12	9	19	15	13	9	2	6	6	6	2	11	3	5	6	7	9	11	11
12	2	10	8	4	5	5	12	8	9	5	6	6	3	1	4	5	2	4	6	9	7	3
12	2	15	12	23	5	7	13	16	19	29	1	2	6	6	21	13	1	13	2	1	13	13
12	2	20	17	15	5	5	14	22	15	19	4	6	5	8	20	10	4	12	1	14	9	18
12	2	25	7	2	5	5	4	2	4	4	1	0	10	1	4	2	1	2	1	1	1	3
13	1	5	2	0	3	1	1	3	2	1	2	6	3	3	2	2	5	3	4	2	2	0
13	1	10	2	3	3	4	6	15	10	7	8	2	13	3	2	2	1	0	0	2	4	5
13	1	15	3	3	4	1	4	2	2	1	2	1	4	1	1	2	2	2	3	2	1	4
13	1	20	2	0	2	2	3	3	2	2	4	2	0	1	2	6	4	2	1	3	2	1
13	1	25	2	2	3	2	5	5	1	4	4	2	2	0	2	5	2	2	0	4	0	0
13	2	5	4	2	1	3	2	3	2	2	7	2	2	4	4	3	2	2	3	2	1	4
13	2	10	1	1	1	3	2	4	2	2	3	2	3	5	3	2	2	3	1	1	4	2
13	2	15	2	1	2	2	6	3	9	28	5	3	5	12	3	2	1	4	6	3	2	1
13	2	20	8	4	5	5	7	5	4	6	5	3	5	9	3	4	6	5	4	4	6	7
13	2	25	6	10	5	3	2	5	4	3	2	8	4	4	10	6	10	12	6	4	7	11
14	3	5	9	10	10	11	7	11	9	10	5	13	13	3	9	9	19	2	8	9	11	6
14	3	10	15	9	10	12	32	9	12	13	24	10	7	4	10	10	2	8	14	10	15	10
14	3	15	18	19	18	14	17	11	16	16	18	6	16	30	8	7	15	8	16	14	15	9
14	3	20	9	4	8	16	7	16	9	5	22	8	15	16	7	16	18	9	3	3	9	5
14	3	25	1	3	2	1	1	0	2	1	3	5	9	4	5	0	1	5	1	2	4	2
14	4	5	5	11	12	9	15	30	18	22	6	9	14	16	13	13	15	24	15	8	11	13
14	4	10	19	14	18	16	17	14	16	15	14	17	19	12	7	7	16	14	14	18	12	13
14	4	15	6	3	2	1	3	1	2	1	7	3	2	1	8	12	10	12	4	2	1	3
14	4	20	1	4	5	2	2	7	3	2	6	7	1	2	2	1	2	1	2	8	2	3
14	4	25	1	2	3	3	2	1	0	3	3	2	2	4	1	2	5	2	1	3	1	1
15	1	5	6	4	6	3	2	5	2	9	3	8	10	2	1	0	5	8	9	7	2	6
15	1	10	4	4	5	8	4	5	6	1	3	3	4	5	3	4	3	4	4	4	3	5
15	1	15	2	9	11	8	8	8	7	9	6	5	4	10	8	7	6	7	6	0	6	8
15	1	20	8	3	3	8	6	3	8	4	6	6	6	6	4	2	5	7	3	7	4	5
15	1	25	3	5	3	4	1	2	2	3	2	3	4	5	7	2	3	1	4	3	6	2
15	2	5	5	5	3	2	6	3	2	5	3	10	3	5	4	1	2	4	3	4	3	6
15	2	10	6	9	7	5	5	7	8	7	5	3	5	3	5	3	6	2	6	5	6	7
15	2	15	5	3	5	6	4	3	2	3	5	3	3	5	4	4	3	4	4	3	3	3
15	2	20	4	2	5	5	4	1	2	4	2	4	5	5	5	6	2	1	0	4	5	5
15	2	25	1	3	7	1	1	2	1	4	6	2	1	0	3	2	2	2	1	1	1	3
16	3	5	2	7	6	5	4	9	8	5	3	7	4	3	7	5	1	4	23	6	2	5
16	3	10	4	3	7	10	4	1	1	6	3	5	6	1	3	6	5	2	2	7	5	4
16	3	15	4	4	2	4	4	4	4	3	2	0	5	7	0	3	10	11	6	0	6	1
16	3	20	8	12	9	8	9	9	9	7	11	11	8	10	10	6	4	7	9	8	9	6
16	3	25	7	6	4	8	22	8	4	5	5	4	15	1	4	1	3	1	7	3	6	9
16	4	5	6	10	10	5	8	7	3	2	10	9	3	8	8	3	1	4	6	4	5	3
16	4	10	3	3	3	5	3	4	2	2	3	2	4	3	3	5	4	3	4	9	1	5
16	4	15	6	4	3	3	4	4	4	7	6	4	4	8	3	5	2	2	3	6	2	6
16	4	20	2	1	4	5	5	6	1	4	5	4	11	5	7	4	4	4	1	1	2	3
16	4	25	3	6	5	4	4	8	5	4	6	3	1	3	5	2	3	4	7	2	7	2
17	3	5	2	2	8	0	3	1	9	1	5	1	5	8	10	6	5	8	3	1	1	3
17	3	10	11	5	5	4	6	3	18	21	5	14	18	4	3	4	22	7	7	8	5	3
17	3	15	2	2	2	2	6	5	5	4	3	5	2	12	2	1	1	3	1	3	13	10
17	3	20	7	5	8	6	8	7	3	6	10	5	4	4	5	5	4	5	6	5	4	14
17	3	25	7	5	4	8	3	4	5	4	8	6	5	7	2	5	1	5	7	2	6	8
17	4	5	11	6	23	21	10	14	16	9	6	10	14	22	15	27	42	42	2	6	13	8
17	4	10	25	35	30	9	14	10	5	9	13	21	6	4	6	9	12	7	17	5	27	20
17	4	15	17	23	22	14	11	12	7	6	13	22	19	9	14	38	13	12	39	20	42	42
17	4	20	3	1	1	0	0	0	0	5	5	1	11	7	0	4	10	9	4	3	1	6
17	4	25	5	8	10	9	8	7	3	4	6	7	5	9	10	9	6	7	11	9	6	7
18	1	5	3	2	5	5	1	2	4	5	4	4	6	5	4	6	6	0	3	3	0	2
18	1	10	3	4	2	3	1	3	4	2	2	3	1	2	2	3	2	3	3	1	0	1
18	1	15	1	2	1	0	0	2	1	0	3	2	2	2	2	1	2	2	1	0	1	2
18	1	20	2	1	0	2	2	0	1	3	3	2	1	1	0	2	1	1	1	2	3	1
18	1	25	3	4	2	0	3	0	4	0	0	1	4	2	1	2	2	2	1	2	4	3
18	2	5	1	2	1	1	2	1	1	0	1	1	1	2	2	1	1	0	1	2	2	1
18	2	10	0	1	2	1	2	1	1	1	1	0	2	2	0	2	0	2	1	0	1	1
18	2	15	1	1	2	1	1	2	2	1	0	1	2	2	1	3	1	2	1	1	1	0
18	2	20	0	1	1	0	0	0	1	3	1	1	0	0	1	5	2	1	1	2	0	2
18	2	25	3	4	2	3	0	3	1	1	3	1	2	2	1	2	1	0	2	3	0	2