Soil Heterogeneity Changes During Forest Succession: Test of a Model Using Univariate and Geostatistics

by

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(ABSTRACT)

We sampled forest stands in upland forests of the Southeastern US along a chronosequence of a replicated successional forest sere (1, 6, 10, 25, and 80 years) to elucidate the temporal changes in soil spatial heterogeneity. Samples were collected from loblolly pine plantations representing reorganization through aggradation phases of succession, and from one set of oak-hickory stands to signify the steady-state phase of the model. These trends are characterized and compared to a conceptual model of pattern dynamics. Variability in soil properties (NO_3, NH_4, pH, Total N, Total C) and forest floor litter at scales relevant to individual plants was quantified using univariate and geostatistical procedures. Global variation (using both coefficient of variation and standard deviation), patch size and proportion of spatially structured variation were examined for individual variables at each successional stage. These patterns were also averaged to produce a generalized model of spatial heterogeneity change during succession. Individual variables often showed differing patterns. However, when patterns from individual variables were averaged, overall patterns emerged. Early in succession global variability was largest and patch sizes were smallest. As succession progressed, trends in the data showed that global variability decreased and patch sizes

increased to the middle stage of succession. Both of these trends fit our conceptual model of pattern dynamics. However, the slopes in these trends were not significant at alpha=0.05.

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I) *Introduction*

Fine-scale soil nutrient heterogeneity may have important impacts on patterns of tree regeneration and succession in forests, because species differ in their ability to exploit heterogeneity (Einsmann et al. 1999). This heterogeneity, in turn, affects the competitive abilities of different species (Fransen et al. 2001, Rydgren et al. 2001, Bliss et al. 2002). Therefore, knowledge how soil nutrient patterns change during succession may help elucidate what processes are influential in plant competition and ecological succession.

It is well established that mean soil resource availability changes during succession (Vitousek et al. 1989). In general, soil resource pools increase throughout secondary succession, but net resource availability may decline (Vitousek et al. 1989) as plant uptake increases even if mineralization increases. Soil resource spatial heterogeneity presumably also changes during ecosystem succession (Armesto et al. 1991). The changes might reflect interactions between plants and soil nutrient patterns. Studies of heterogeneity patterns may therefore reveal processes important in determining vegetation patterns.

Few studies have examined temporal change in soil spatial heterogeneity. However, existing studies have shown that autocorrelation range can be correlated with average plant size (Kelly and Canham 1992), that as soils age (over centuries) their properties become more homogenous (Saldaña et al. 1998), and that in a stream ecosystem, patch size and overall variability of nitrogen increase during succession (Dent and Grimm 1999). In a terrestrial succession, Gross et al. (1995) found that (1) a greater proportion of the total variation for all variables associated with nitrogen availability

(NH_4, N-mineralization, nitrification, soil moisture) was spatially dependent; and (2) the autocorrelation range was greater in a mid-successional field, than in either an early successional field or a second-growth forest. Studies have also shown that individual trees exert effects on soil pH (Zinke 1962, Crozier and Boerner 1986), and that different tree species can have differing impacts on soil pH, N, C and litter mass (Finzi et al. 1998a, Finzi et al. 1998b). These results indicate that soil spatial heterogeneity patterns may change if the size of the trees change during succession.

Forest soils are heterogeneous at several scales. On broad scales, soils differ enough to be classified into different taxonomic orders. Soils also vary at fine scales that can be perceived by individual plants (Jackson and Caldwell 1993). In this study we examined how soil resource heterogeneity changed during succession at scales from that relevant to individual plants (tenths of meters) to that relevant to a forest community (tens of meters). We quantify soil resource spatial heterogeneity as a combination of: (1) global variability using conventional univariate statistics (mean, standard deviation – SD, and coefficient of variation – CV); (2) patch size as measured by the spatial range of autocorrelation; and (3) the proportion of variation that is spatially dependent. Soil with high heterogeneity is defined as having high global variability, small patch sizes, and high proportion of spatially structured variation.

To examine the changes in soil spatial heterogeneity during forest succession, we created a graphical model to depict the expected changes in heterogeneity and superimposed it on Bormann's (1977) model of biomass accumulation during forest secondary succession (Figure 1). Qualitative trends are represented showing both changes in global variation, patch size and SH% (the proportion of spatially dependent

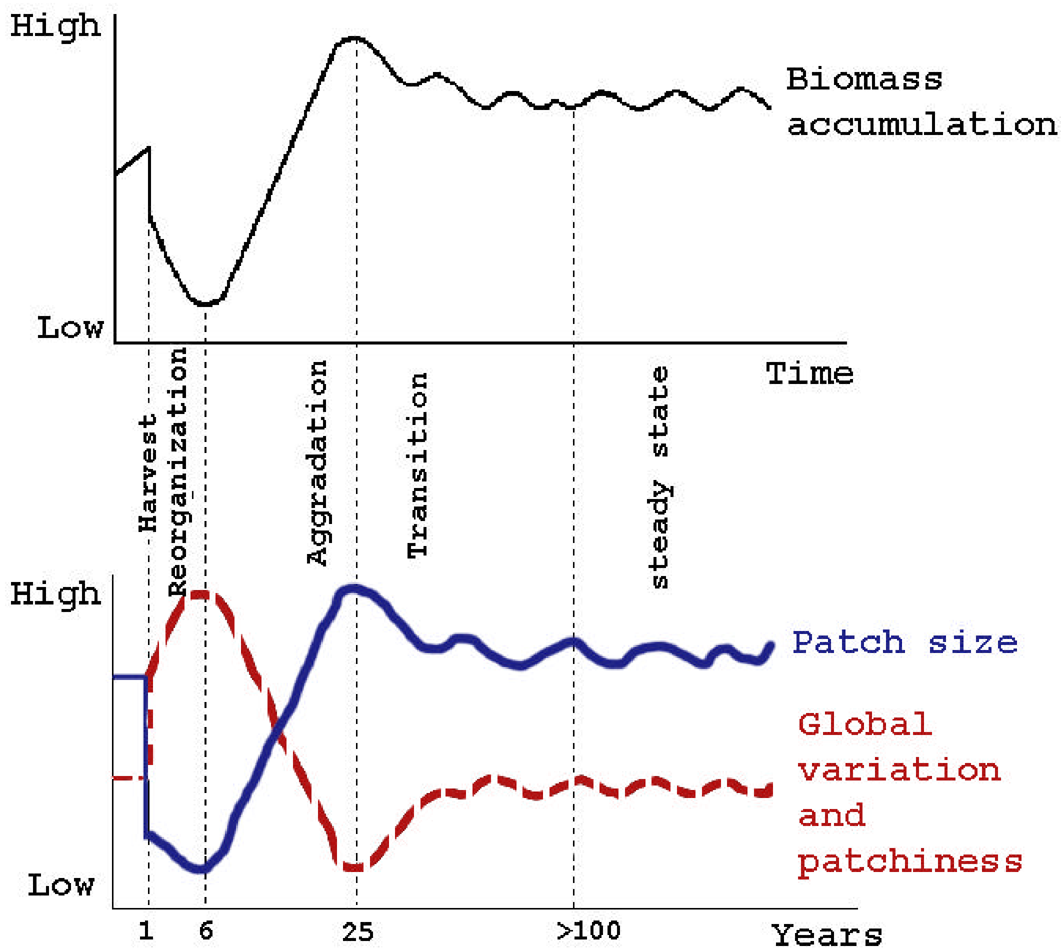

Figure 1. A dynamic model of spatial heterogeneity (patchiness, patch size, and global variation) during secondary succession in Southeastern USA forest communities (below), superimposed on Bormann's (1977) model of biomass accumulation (above).

variance) . Global variability and SH% are expected to be greatest shortly after disturbance and to decrease as vegetation recovers and exploits localized nutrient pools. Then during transition, as patches begin to form in the canopy, the global variation and SH% are expected to increase again to an intermediate level. Changes in patch size are expected to follow a 'mirror image' of changes in global variation and SH%, being smallest shortly after disturbance.

The objectives of this study are: (1) to test the model that hypothesizes a predictable dynamic pattern in the spatial heterogeneity of soil properties during secondary forest succession; and (2) to compare spatial heterogeneity in managed pine stands and naturally vegetated hardwood forests. The predictions tested are: (1) global variability will decrease as stand age increases after a major disturbance; (2) SH% will decrease as stand age increases after a major disturbance; (3) patch size will increase as stand age increases after a major disturbance; (4) spatial patterns of soil resources will differ in pine stands compared to hardwood stands.

II) Methods

1) Study Site

We selected our study site within the Savannah River Site (SRS) near Aiken, South Carolina, USA, an approximately 800 km^2 mile complex operated by the Westinghouse Savannah River Company for the U.S. Department of Energy. The mean July maximum, January minimum, and mean annual temperatures are 27°, 9° and 24° C, respectively. The mean annual precipitation is 113 cm, distributed roughly evenly throughout the year (South Carolina State Climatology Office, SC Dept. of Natural Resources, Columbia, SC 1998). Mixed hardwood and pine forest, composed predominantly of oaks and pines, is the climax vegetation type in most uplands of this region (Delcourt and Delcourt 2000). Prior to the establishment of SRS in 1950, most of the land was a mixture of forests, row crops, pasture and hayfields. After establishment of SRS in the late 1940's much of the agricultural land was planted with pine and has been managed for multiple uses, primarily for timber. This site is ideal for examining successional changes in soil nutrients because: (1) extensive areas of the same soil-type can be found with plantations of similar species and ages; and (2) exact stand ages and detailed histories are clear.

2) Stand Selection

We used a space-for-time (SFT) substitution approach (Pickett 1989) to simulate forest succession. A chronosequence of pine (*Pinus taeda*) plantations (1-year-old, 6-year-old, 10-year-old, 25-year-old) plus one set of hardwood stands (approximately 85 years old) was chosen to represent critical stages of the proposed temporal model of heterogeneity. Ages were chosen to represent the important stages of the succession model. The hardwood stands (averaged 20 m^2 ha^{-1} basal area) were dominated by oaks (*Quercus* spp.; averaged 13 m^2 ha^{-1} basal area) and hickories (*Carya* spp.; 4 m^2 ha^{-1} basal area). Each of the 5 successional stages was replicated three times. All of the pine stands were planted with loblolly pine (*Pinus taeda* L.) except for two 1-year-old stands that were planted in longleaf pine (*Pinus palustris* Mill.) that are unlikely to exert different influences on spatial patterns of soil properties due to species difference. The soils of all stands are Dothan series (a fine-loamy, kaolinitic, thermic Plinthic Kandiudult). The

Dothan series consists of very deep, well-drained, moderately slowly permeable soils that formed in thick beds of unconsolidated, medium to fine textured sediments of the Southeastern Coastal Plain of the USA (Rogers 1990). To minimize effects of fire on soil patterns, stands burned in the past three years were excluded.

Approximately 35 stands were first selected using forest stand maps of SRS provided by the USDA Forest Service station at SRS. The stands were then visited for verification of species, stand age, burn history, and for evaluation of microtopographic variability. Those with the least topographic variability were chosen for measurement. Trees were cored in each stand (except the 1-year-old stands) to confirm stand age.

3) Soil, Forest Floor and Vegetation Measurements

Variables chosen for measurement were limited to chemical and physical properties that: (1) directly affect and are affected by plant growth; and (2) have shown spatial heterogeneity in related studies (Lister et al. 2000, Guo et al. 2002). The six variables selected (Table 1) included forest floor litter mass plus five measures of mineral soil: C%, N%, pH, available NO_3, and available NH_4. Soil moisture was not measured because of the prohibitively large number of measurements required ($\geq$65 points at each of 15 plots . 975 at each of at least three sampling periods) to accurately capture the mean.

Samples were collected to assess soil heterogeneity at scales relevant to individual plants (tenths of meters) and across forest stands (tens of meters). Soil and forest floor samples were collected at each stand using four 20-meter transects arranged in a cross pattern (Figure 2). In pine stands, transects were aligned at 45 degree angles to tree

Table 1. Spatially sampled forest floor and soil variables. (n=61 – 127 per plot). All variables except litter were collected from top 15cm of soil.

Soil total C (%)
Soil total N (%)
Soil pH
Soil available NO_3^- (mg N/Kg soil)
Soil available NH_4^+(mg N/Kg soil)
Forest floor litter - dry mass (g/m^2)

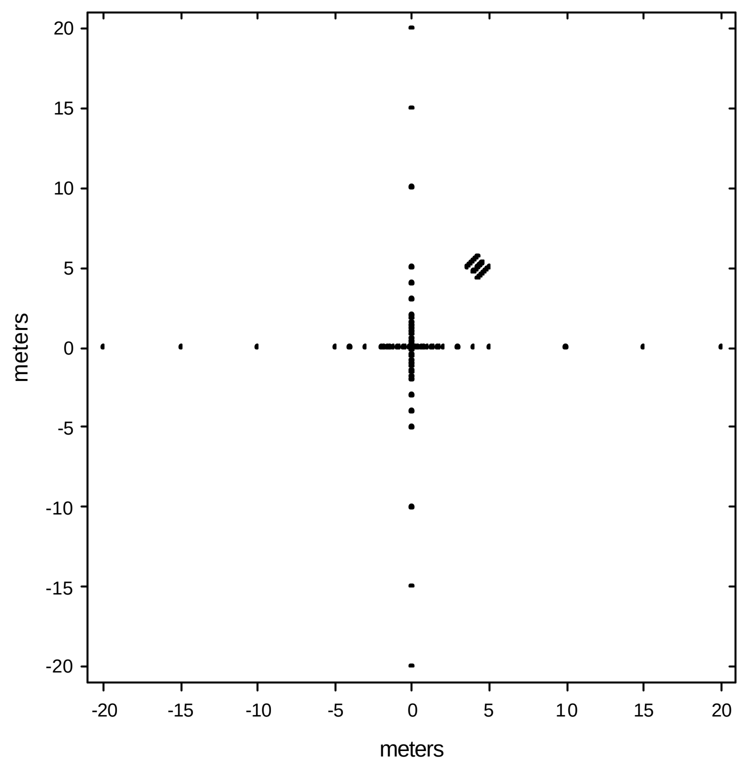

Figure 2. Sampling pattern for soil and litter collection. Smallest lag distance is 5 cm, largest is 40 m. The small cluster of three parallel lines occur within a randomly located in a 1-m2 subplot where small-scale observations were collected. Number of samples collected in coarse-scale and fine-scale plots were 65 and 63, respectively.

planting rows. Transects in hardwood plots were aligned with the cardinal directions. The center of the transect cross was randomly located within a 2500 m^2 area judged to be the least topographic relief within the stand. Along each arm of the cross, samples were collected at the origin, at points every 20 cm from the origin to 2 m, and then at 3, 4, 5, 10, 15, and 20 m from the origin for a total of 16 points on each arm (65 points per plot) (Figure 2). This sampling pattern was selected to provide adequate numbers of pairs at a range of distance lag classes to perform semivariogram analyses (Figure 3) at several scales. Soil bulk density and soil texture were measured outside the transects using composite samples from nine randomly located points. Soil texture was assessed using the hydrometer method (Gee and Bauder 1986).

To determine the spatial variability at scales finer than the minimum sampling distance of the main transects, additional samples were collected in one subplot including three parallel transects, each 1 m long and spaced 0.5 meters apart with samples collected every 5 cm (Figure 2). No substantial differences were noticed in the semivariogram models with the added fine-scale samples, and thus, the fine-scale sample data were dropped from all further analysis.

The soil and forest floor were sampled in May 2000. Forest floor samples were collected using a 9 cm diameter steel pipe with sharpened edges, and dried to constant weight at 65° C to determine mass. Mineral soil samples at each location were collected from 0 – 15 cm (A horizon) with a 2 cm diameter push tube. Soil samples were air dried within 24 hours, then passed through a 2 mm sieve. The pH was determined in a 10:1 slurry of deionized H_2O (Mclean 1982). Soil samples of known oven-dried weight were extracted using 2N KCl. The extracts were analyzed for available NO_3 and NH_4 with a

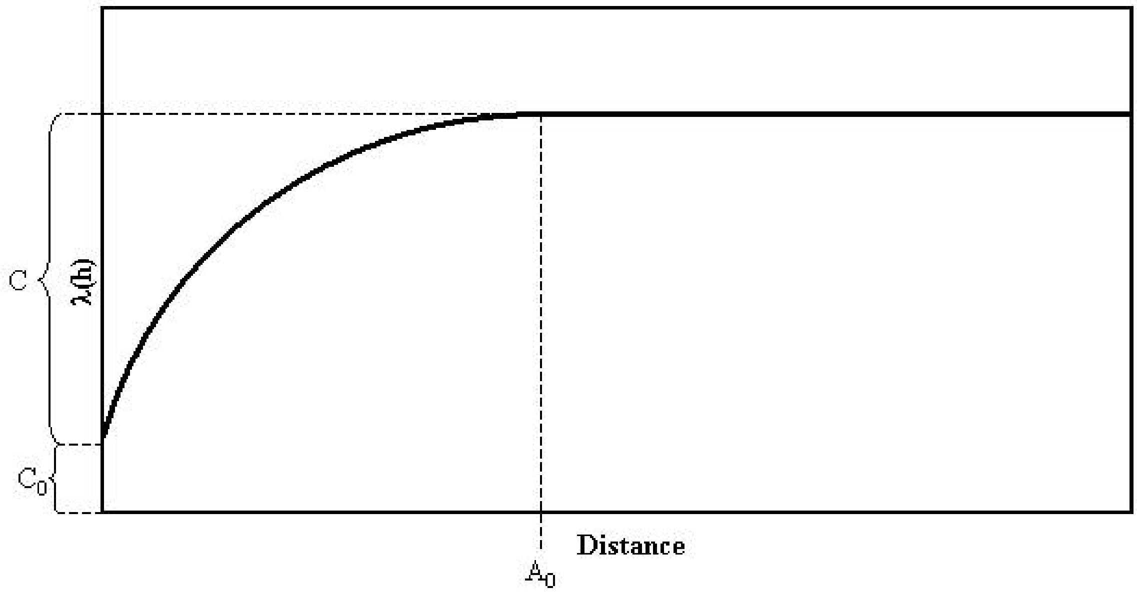

Figure 3. The semivariogram is a graphical representation of half the average variance of differences between point pairs at various distance classes. This is a spherical model that shows smaller average variance at closer separation distance classes. C_0 is the 'nugget effect', C is the portion of spatially structured variance (the "partial sill"), A_0 is the autocorrelation 'range', $C + C_0$ is the 'sill' and theoretically is equal to the variance of an observation.

Bran+Luebbe Traacs 2000 continuous-flow analyzer (Bran+Luebbe GmbH, Norderstedt, Germany). Soil total N and C were measured using 1 g soil samples run through a Vario MAX CNS macro elemental analyzer (Elementar Analysensysteme GmbH, Hanau, Germany).

Percent cover for each species was measured at each stand for tall (≥1 cm diameter at breast height – dbh) and ground (<1 cm dbh) plants (Figure 4). Dbh and species were recorded for all tall plants in one randomly chosen 20 x 20 m subplot bounded by 2 neighboring transects. Percent cover by species for all ground plants was recorded within 1 m wide strips centered on the main transect lines for a total sampling area of 79 m^2 per stand.

4) Analyses

Conventional statistics were used to describe mean and global variation (SD and CV) of all soil and forest floor properties. Semivariograms (Figure 3) were then constructed for each spatial data set to obtain: (1) autocorrelation range (Isaaks and Strivastava 1989, Rossi et al. 1992); and (2) the proportion of spatially dependent variance (commonly called SH%, or $C/(C + C_0)$ x 100%). Semivariogram range has been used as a general index of average patch size (Dent and Grimm 1999), and SH% is used to indicate the proportion of structural variability in the spatial data set (Li and Reynolds 1994, Gross et al. 1995). SH% is the inverse of the 'relative nugget effect' (Isaaks and Strivastava 1989, Gross et al. 1995). As this index increases (from 0 to 1), an increasing proportion of the sample variance is indicated to be spatially dependent over the distance examined.

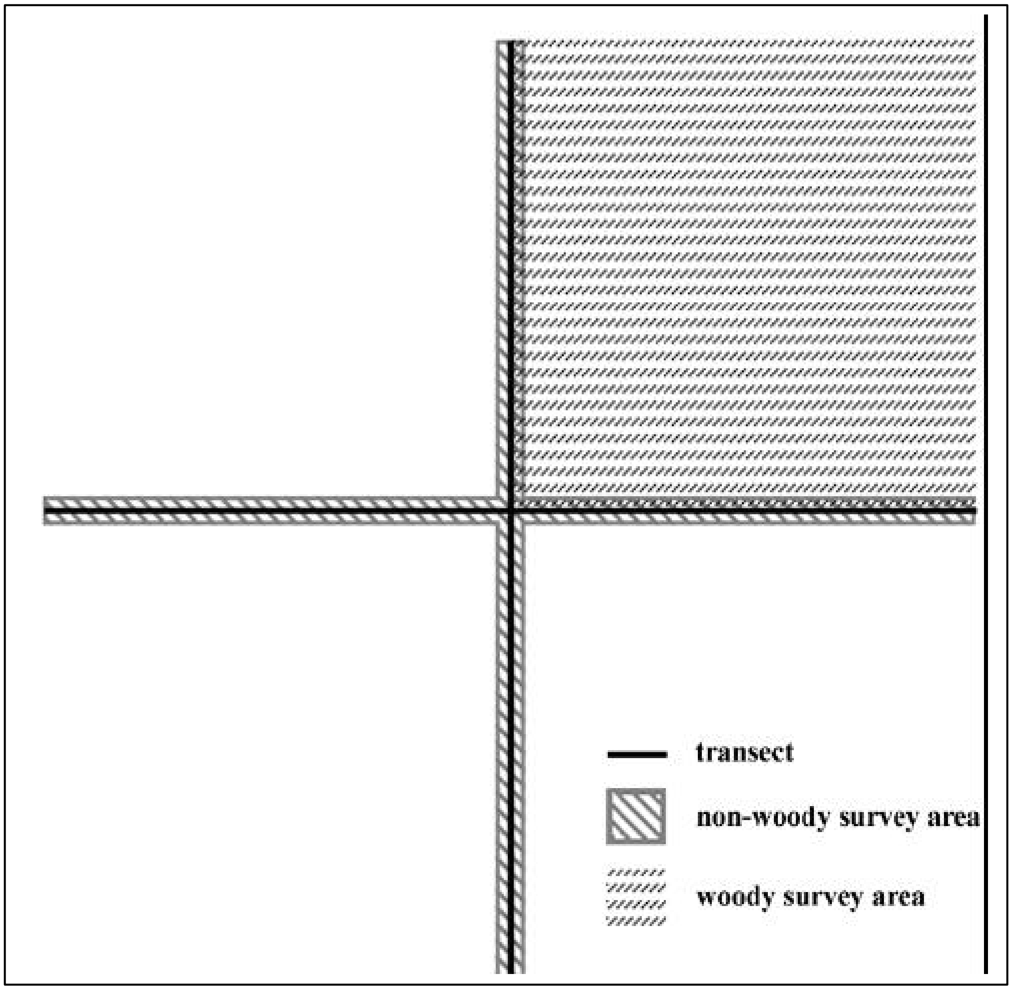

Figure 4. Spatial arrangement of vegetation sampling plots. Tall vegetation survey area is 400 m^2. Ground vegetation survey area is 19x4x1 m^2 + 1 m^2.

To test the model, we created a quantitative representation that accounts for changes in all variables. This *observed* model was created by averaging patterns of replicated stands. It was produced by normalizing the parameters (from 0 to 1) indicating spatial patterns (SD, CV, range, and SH%) for each variable (15 values) based on the highest value, and then averaging across all variables and all stands at each seral stage. The observed model was then plotted against the proposed model (Figure 1) for a visual test of similarity. Next, ANOVA and regression were performed on the observed model to test for age effects and trends in global variation, patch size, and SH%. ANOVA and regression were also performed on these parameters of individual soil variables to test how well our graphical model of heterogeneity dynamics (Figure 1) predicts changes for single variables.

SAS Release 8 (SAS Institute Inc., Cary, NC) was used to perform all statistical analyses. Semivariogram analyses were performed using *PROC VARIOGRAM.* Prior to semivariogram analysis, outliers beyond 3 times the inter-quartile range were removed from the data set. For each variable on each plot, coarse-scale (lag distance=2m) and fine-scale (lag distance=0.2m) semivariograms were created (total of 210 semivariograms). Spherical models were fit to semivariograms with non-linear regression using *PROC NLIN*. Spherical models only were used because soil properties often are best described with them and to maintain consistency for later analysis of range and SH%. A Pseudo-R^2 (hereafter referred to as R^2) for the non-linear model is defined as 1 - SSE/CSS, where SSE is the error sum or squares of the fitted model and CSS is the total sum of squares corrected for the mean. For each variable per plot,

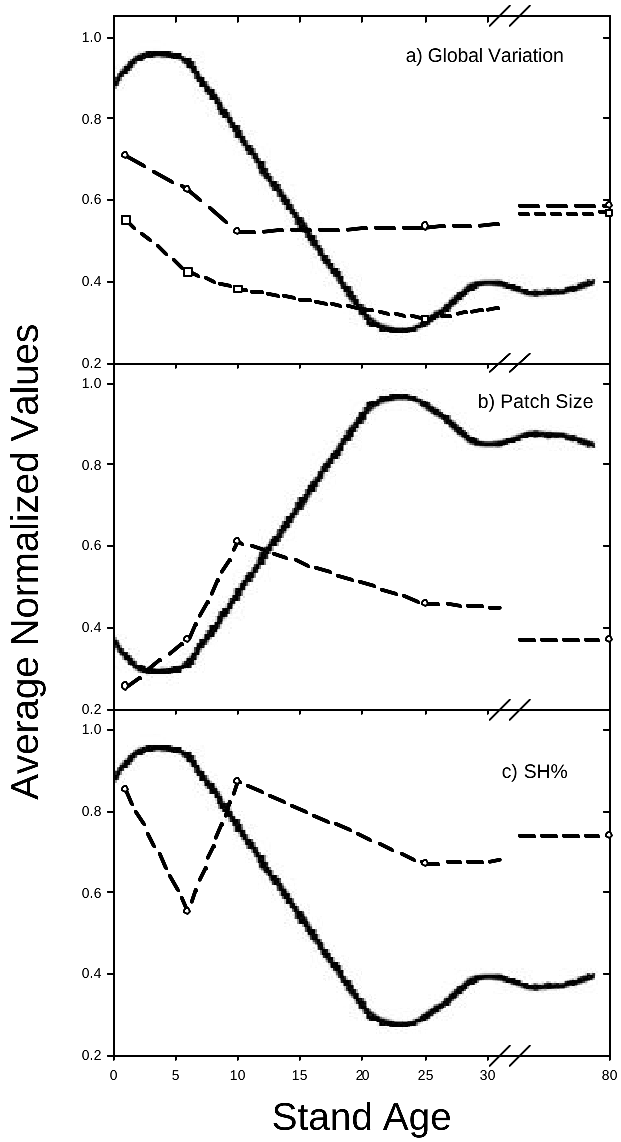

Figure 5. Generalized model of spatial heterogeneity change during forest secondary succession. Expected models (—) are superimposed on observed models (– O –) of global variation (above), patch size (middle) and SH% (below). Observed models are based on average normalized values of standard deviation (a, – □ –), coefficients of variation (a, – O –), range (b, – O –) and SH% (c, – O –) and are based on the averages of all measured variables (C%, N%, NH_4, NO_3, pH and litter mass). Variables with no autocorrelation are omitted from range and SH% analysis. Each variable was first normalized by dividing values by the largest value across all 5 stand ages. only the semivariogram with the higher R^2 greater than or equal to 0.1 was used in subsequent analysis.

ANOVA (*PROC GLM*) was used to test the effects of stand age (pine stands only) on means, SDs, CVs, autocorrelation ranges, and SH% for the four ages of pine stands. The fifth stage of the chronosequence (year 85) did not share the same stand histories, and thus we excluded them from the test. T-tests (*PROC TTEST*) were used to compare the variables between the hardwood and the 25 year old pine stands. Younger pine stands were not used in this test to minimize the effects of time since disturbance and effects of tree size. Nevertheless, this test confounds effects of vegetation type with effects of different types of past disturbance.

We used linear regression (*PROC REG*) to test for temporal trends of means, global variability, patch size and SH% for pine stands of 4 age classes. A 'lack of fit' test was performed on all data before regression was performed to determine the type of model to use. Linear models were appropriate for all data except: (1) CV of NH_4; (2) SH% of C%; and (3) range of NO_3. A second order model did not fit CV of NH_4 nor SH% of C%, and there were only three observations for the range of NO_3; therefore, no regressions were permitted for these variables. Regression was then performed on means of five statistics of the measured variables (mean, CV, SD, semivariogram range and SH% of all measured variables) during succession. Only plots in which a spherical semivariogram model fit with a R^2 greater than 0.1 were retained for analysis of range and SH%; therefore, the number of replicates for range and SH% are often reduced. Regressions for autocorrelation range and SH% were weighted based on the number of replicates.

III) Results:

1) Temporal trend models (average of measured variables):

Average normalized SDs decreased as expected during the first 25 years after disturbance (R^2=0.902, P=0.0501; Figure 5; Table 2). CV decreased during the first 10 years (R^2=0.985, P=0.078, Table 2) reaching a minimum 10 years after disturbance. Autocorrelation range, the index for patch size, had its smallest range estimate at year 1 as expected and increased during the first 10 years after disturbance (R^2=0.929, P=0.172) then decreased slightly. SH% showed no clear pattern during succession (Figure 5).

2) Vegetation-type effects on soil properties and vegetation patterns

Four out of nine soil properties (C%, N%, IN (total available N=NO_3+NH_4), and bulk density) had significantly different means between the hardwood and the 25 year-old pine stands (p= 0.032, 0.018, 0.025, 0.015 respectively; Table 3). Among them, soil bulk density was less in the hardwood stands, while the other three variables were greater in the hardwood stands. Though not significant, mean forest floor litter mass, NH_4 and pH were greater in the hardwood stands. No significant differences between vegetation types were found for SD, CV, range or SH% for any variable.

Vegetation composition differed greatly between the pine plantations and the hardwood stands (Table 4). *Pinus taeda* and *Myrica* sp. were the dominant tall vegetation species in all pine stands, while four oak species (*Quercus hemispherica*, *Q. stellata*, *Q. alba*, *Q. falcata*), 2 hickory species (*Carya tomentosa*, *C. glabra)* and sweet gum (*Liquidambar styraciflua*) dominated hardwood stands.

Table 2. Regression of observed model created from the average values of all measured variables (C%, N%, NH^4, NO^3, pH) in pine stands. df=3. Parameters included were from spherical models with R^2>0.10.

Properties	Index	years	p-value	R^2	Slope
Global variation	CV	1-10	0.0783	0.9850	-
Global variation	CV	1-25	0.2397	0.5781	-
Global variation	SD	1-10	0.0929	0.9789	-
Global variation	SD	1-25	0.0501	0.9022	-
Patch Size	Range	1-10	0.1716	0.9291	+
Patch Size	Range	1-25	0.5114	0.2387	+
% of Structural hetero.	SH%	1-10	0.9927	0.0001	-
% of Structural hetero.	SH%	1-25	0. 7223	0. 0771	-

Table 3. P-values of t-tests comparing 25-year-old pine stands to 85-year-old hardwood stands. Because the average tree size was similar, this comparison tests the influence of vegetation type on soil properties, but this is confounded by other factors such as management history, and previous vegetation cover. Some range and SH% tests are absent where spherical models could not be fit to the data. Bold type denotes significance at .=0.05 level.

Properties	means	SD	CV	Range	SH%
Mineral Soil					
%C	**0.0317**	0.1074	0.9792	0.4796	0.4144
%N	**0.0176**	0.1745	0.8534	0.9877	0.0575
NH_4	0.0926	0.2615	0.8659		
NO_3	0.3999	0.0659	0.5260	0.3221	0.6667
IN	**0.0246**	0.2054	0.8514	0.9839	0.5087
pH	0.3625	0.2739	0.3306		
Bulk Density	**0.0153**				
NO_3/ NH_4	0.2680				
Forest Floor					
Litter mass	0.6458	0.3706	0.3454		

Table 4. Vegetation composition.

Table 4a. Basal area of common tree species greater than 1 cm diameter at 1.3 meters (diameter at breast height; dbh). Units are m^2 / hectare.

Species	Stand Age			
	6	10	25	85
Pinus spp.	16.10	19.63	25.57	
Myrica cerifera L.	0.20	0.10	0.07	
Quercus nigra L.	0.10	0.22	0.19	0.33
Liquidambar styraciflua L.	0.36	0.21	0.35	1.63
Quercus stellata Wang	<0.01	<0.01		3.13
Quercus falcata Michaux	0.02			1.18
Carya tomentosa (Poiret) Nuttall	<0.01			2.54
Nyssa sylvatica Marshall		<0.01	0.02	0.62
Quercus alba L.		0.01		1.36
Cornus florida L.				0.68
Carya glabra (Miller) Sweet.				1.63
Quercus hemispherica Bartram				6.67
Others (13 spp.)	0.07	0.08	0.13	0.26
Total (25 species)	16	20	26	20

Table 4b. Percent importance of common species less than 1 cm diameter at 1.3 meters (diameter at breast height; dbh). Percent importance based on percent cover.

Species	Stand Age				
	1	6	10	25	85
Hypericum gentianoides (L.) BSP.	0.14				
Dichanthelium sp.	0.43	0.05	<0.01	0.001	
Vitis sp.	0.24	0.03	0.01	0.02	0.20
Rubus sp.		0.13			
Rhus copallina L.		0.40	0.04		
Gelsemium sempervirens (L.) Aiton f.		0.12	0.25	0.15	
Quercus nigra L.		0.03	0.15	<0.01	<0.01
Liquidambar styraciflua L.		0.01	0.22	0.31	0.02
Prunus serotina Ehrhart		0.04	0.05	0.15	<0.01
Myrica cerifera L.		0.08		0.25	0.04
Nyssa sylvatica Marshall			0.05		0.05
Vaccinium sp.			0.009	0.06	0.06
Carya tomentosa (Poiret) Nuttall		0.02			0.17
others	0.19	0.09	0.21	0.06	0.46
Percent cover	12%	38%	37%	11%	31%

During succession, the dominance of vegetation in the ground layer shifted from *Hypericum* spp. and *Dichanthelium* spp. to *Vaccinium* spp. and many species of hardwood seedlings. Percent cover of ground vegetation was 12%, 38%, 37%, 11%, and 31% in stands of age 1, 6, 10, 25, and 85 years, respectively (Table 4b).

3) Global Variability in Pine Stands

Large variability existed during succession for all variables measured except pH (Table 5). SDs were greatest one year after disturbance for four out of seven variables (NO_3, IN, pH, and litter) and were smallest at year 25 for five out of seven variables (C%, N%, NH_4, IN and litter; Table 5). SDs tended to decrease with time since disturbance for every variable in the pine stands (years 1-25) except NO_3, though differences were not significant in ANOVA or regression (Table 6 and Table 7).

CVs ranged from 0.25 – 1.22 for all variables except pH. CV of pH ranged from 0.035 to 0.061. Like SD, CV of measured variables also tended to decrease with time since disturbance (Table 5). CV, like SD, was greatest one year after disturbance for five out of seven variables (NO_3, NH_4, IN, pH, and litter mass). However, the only significant difference detected by ANOVA was for CV of NH_4 ($p=0.030$; Table 6), which was smallest at year 10. No trends were significant in regression (Table 7).

4) Patch size and SH% in Successional Stands

Some variables showed spatial autocorrelation more often than others (Table 8). C% and N% were autocorrelated most often with 10 out of 15 stands exhibiting an R^2

Table 5. Soil and forest floor properties during a successional chronosequence. Ages 1-25 are pine plantations, age 85 are natural hardwood stands. Values shown are calculated from 3 replicates (df: 1,3) with each replicate a mean of 61-127 subsamples. Bulk density was the only exception with 9 subsamples per plot. Letters denote ANOVA results significant at α=0.05, df (3,11). Mean separation with Duncan's MRT α=0.05. Arrows indicate significant regression, and (*) indicates significant t-test. Hardwood stands were not included in ANOVA due to dissimilar vegetation composition and site histories.

Property	Stand Age		Mean		Standard Deviation	Coefficient of Variation x100	
Mineral Soil							
C%	1		0.48		0.15	32.2	
	6		0.55		0.17	30.8	
	10		0.57		0.19	33.4	
	25	*	0.45		0.13	27.5	
	85	*	1.05		0.29	27.3	
N%	1		0.019		0.006	29.9	
	6		0.023		0.007	32.6	
	10		0.024		0.007	28.0	
	25	*	0.018		0.005	26.8	
	85	*	0.040		0.011	25.3	
NH_4	1		1.43		1.15	79.4	a
(mg-N/ Kg soil)	6		1.33		1.05	76.8	a
	10		1.54		0.74	46.7	b
	25		1.07		0.64	57.6	a
	85		2.45		1.45	54.9	
NO_3	1		3.71		1.54	41.7	
(mg-N/ Kg soil)	6		2.74		0.61	23.0	
	10		2.57		0.96	39.7	
	25		1.57		0.75	52.3	
	85		2.02		1.27	66.9	
Total	1		5.14	a	2.28	43.9	
Inorganic N	6		4.07	ab	1.26	31.8	
(NH_4 + NO_3)	10		4.10	ab	1.33	32.2	
	25	*	2.64	b	1.14	42.9	
	85	*	4.47		2.07	45.4	

Table 5 (continued).

Property	Stand Age	Mean	Standard Deviation		Coefficient of Variation x100
Mineral Soil					
pH	1	4.92	0.30		6.1
	6	4.90	0.22		4.4
	10	4.88	0.17		3.5
	25	4.76	0.19		3.9
	85	4.99	0.25		5.1
Bulk Density	1	1.54			
(g/cm^3)	6	1.59			
	10	1.44			
	25	* 1.45			
	85	* 1.27			
NO_3/NH_4	1	3.15			
	6	2.78			
	10	2.41			
	25	1.68			
	85	1.09			
Forest Floor					
Litter Mass	1	2.62	3.07	a	121.9
(Kg/m^2)	6	2.40	2.14	ab	110.1
	10	2.13	1.23	ab	51.6
	25	2.41	0.82	b	35.8
	85	3.07	1.39		45.9

Table 6. ANOVA of SD and CV of all pine stands df(3,11). Bold type denotes significance at 0.05 significance level.

	SD	CV
Properties	p-value	p-value
Mineral Soil		
%C	0.6896	0.8720
%N	0.5779	0.8611
NH_4	0.3778	**0.0299**
NO_3	0.1104	0.3489
IN	0.2100	0.5840
pH	0.1460	0.1437
Forest Floor		
Litter mass	0.0980	0.0522

Table 7. Regression of SD and CV on stand age of all pine stands (years 1, 6, 10, 25) for soil properties measured, df (1,3).

	SD			CV		
Properties	p-value	R^2	slope	p-value	R^2	slope
Mineral Soil						
%C	0.3876	0.3750	-	0.2033	0.6347	-
%N	0.4514	0.3004	-	0.2825	0.5148	-
NH_4	0.1089	0.7940	-	0.4075	0.3510	-
NO_3	0.4552	0.2967	-	0.3652	0.4030	+
IN	0.2997	0.4904	-	0.7748	0.0507	+
pH	0.3115	0.4740	-	0.3445	0.4297	-
Forest Floor						
Litter mass	0.1162	0.7811	-	0.1206	0.7733	-

Table 8. Count of the number of spherical models per variable with R^2 values greater than 0.10.

Properties	freq	R^2>0.10 mean R^2	all 15 models mean R^2
Mineral Soil			
%C	10	0.5383	0.2875
%N	10	0.5161	0.1921
NH_4	8	0.3517	0.1941
NO_3	6	0.6413	0.2656
IN	8	0.5371	0.2970
pH	9	0.4616	0.3712
Forest Floor			
Litter mass	7	0.4115	0.3462
All Variables			
	58	0.4920	0.2791

greater than 0.1. Litter mass and NO_3 only exhibited spatial autocorrelation seven and six times respectively. Pine stands showed autocorrelation more often than hardwood stands (Table 9). On average less than two of seven exhibited autocorrelation in hardwood stands compared with four to five variables out of seven in pine stands. The R^2 values of the semivariogram models were generally low (Figure 6). About half of the 105 (58 out of 105) models converged and had R^2 greater than 0.10. Of the 84 models that converged, the mean R^2 was 0.279 with a median of 0.190. The mean R^2 values of the 58 models with $R^2 > 0.10$ was 0.492 and the mean of the SH% was 75%. These 58 models were used for evaluation of patch size and SH%.

The smallest semivariogram ranges were found one year after disturbance for all variables except C% and litter (Table 10) though trends were not significant in regression analysis (Table 11). Range tended to increase during succession for NO_3 and N% (Table 10); the ranges for NO_3 at years 10 and 25 are significantly greater than at year 1 (Table 12), while ranges of N% were not significantly different over time. Regression of both range and SH% individually for each variable on time showed only SH% of litter had a significant negative trend (p=0.012; Table 11).

5) Differences of Means among Pine Stands

Mean IN concentration (NH_4 + NO_3) varied significantly over time (p=0.045, Table 13), and in general decreased (Table 5). Regression analysis revealed four properties out of seven had significant negative trends during succession (Table 14). NO_3, IN, pH, and NO_3/NH_4 all decreased with stand age from year 1 to year 25 (R^2=0.92, p=0.041; R^2=0.94, p=0.030; R^2=0.99, p=0.006; and R^2=0.98, p=0.010, respectively).

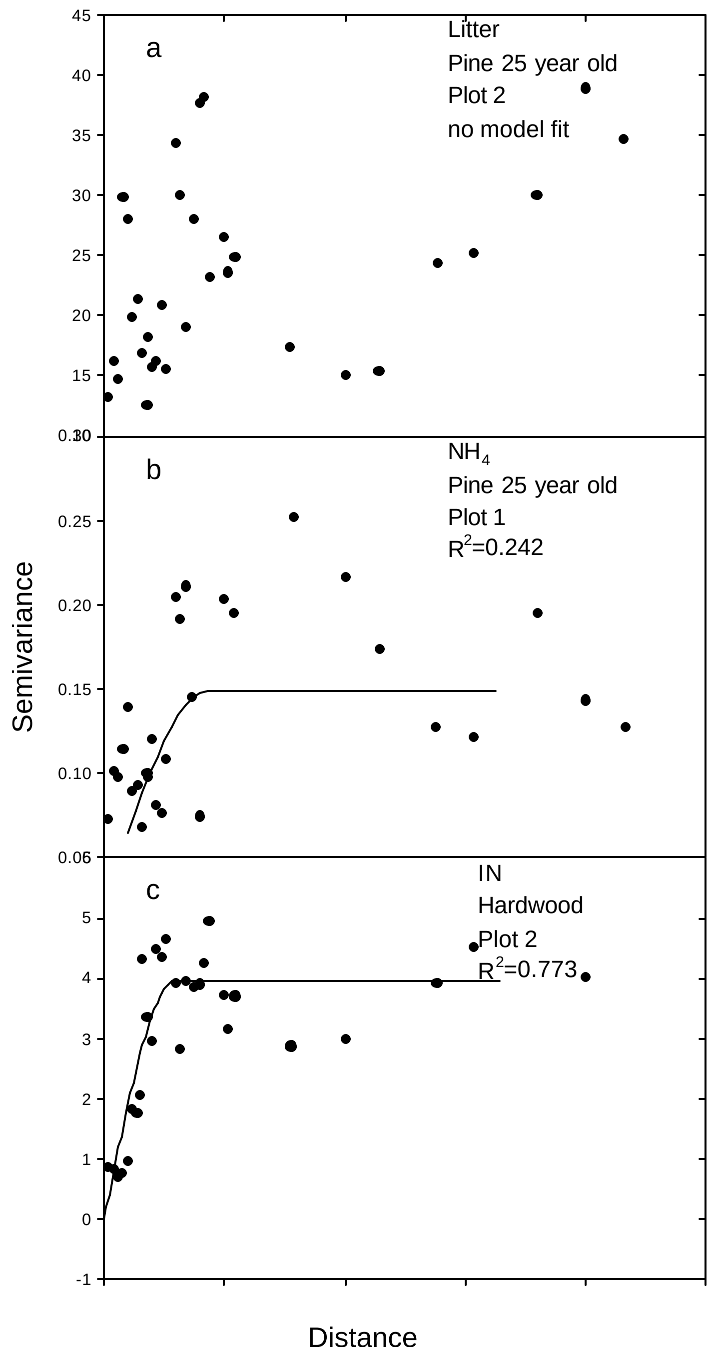

Figure 6. Semivariograms (empirical – dots, and models – lines). Some semivariograms had no model converge (a), some fit moderately well (b), and some fit well (c). Only models with an R^2 greater than 0.10 were retained for analysis.

Table 9. Number of spherical models with R^2 values greater than 0.10 per age class for all 15 stands. Maximum number per year is 21.

Stand Age	Frequency Out of 21	mean R^2
1	12	0.3889
6	12	0.4734
10	15	0.5721
25	14	0.4646
85	5	0.6115

Table 10. Geostatistic parameters of soil and forest floor during a successional chronosequence. Ages 1-25 are pine plantations, age 85 are natural hardwood stands. Only models with R^2 greater than 0.1 were used, and the number out of 3 replicates is listed in the *frequency* column. Mean separation with Duncan's MRT α=0.05. Arrows represent significant linear regression at α=0.05. Mean R^2 is the average of the R^2 values of the spherical semivariogram models.

Property	Age	Frequency	Autocorr. Range		SH%		Avg R^2
Mineral Soil							
C%	1	2	2.63		1.00		0.39
	6	1	1.81		0.04		0.25
	10	3	10.79		0.84		0.65
	25	2	1.77		0.77		0.58
	85	2	7.34		0.62		0.61
N%	1	1	2.11		1.00		0.41
	6	3	7.09		0.48		0.52
	10	3	12.80		0.93		0.68
	25	2	8.31		0.78		0.41
	85	1	8.05		1.00		0.32
NH_4	1	2	1.00		0.30		0.23
	6	2	9.90		0.44		0.52
	10	1	2.82		1.00		0.31
	25	3	9.47		0.66		0.33
	85	0					
NO_3	1	1	1.77	b	1.00		0.59
	6	0	-		-		-
	10	2	3.35	a	1.00		0.58
	25	2	3.70	a	0.76		0.68
	85	1	3.22		1.00		0.74
IN	1	2	1.22		0.68		0.31
	6	1	1.01		0.53		0.31
	10	2	4.22		0.98		0.62
	25	2	2.98		0.85		0.67
	85	1	2.96		1.00		0.77
pH	1	2	1.74		0.93		0.54
	6	2	3.22		0.57		0.53
	10	3	4.51		0.75		0.46
	25	2	2.92		0.65		0.33
	85	0	-		-		-
Forest Floor							
Litter Mass	1	2	2.74		1.00	a	0.36
	6	3	1.40		0.86	a	0.49
	10	1	2.09		0.80	a	0.54
	25	1	1.41		0.11	b	0.16
	85	0	-		-		-

Table 11. Regression against time of range and SH% statistics of all pine stands. Parameters included were taken from spherical models with R^2>0.10. Regression was weighted based on the number of replicates that the spherical model fit. Bold type denotes significance at 0.05 significance level.

	Range			SH%		
Properties	p-value	R^2	slope	p-value	R^2	slope
Mineral Soil						
%C	0.8501	0.0225	-	0.9430	0.0032	-
%N	0.7223	0.0771	+	0.8718	0.0164	+
NH_4	0.3642	0.4042	+	0.4260	0.3295	+
NO_3	0.3662	0.7041	+	0.2271	0.8780	-
IN	0.4976	0.2524	+	0.5256	0.2250	+
pH	0.7782	0.0492	+	0.5020	0.2480	-
Forest Floor						
Litter mass	0.4637	0.2786	-	**0.0121**	0.9760	-

Table 12. ANOVA of semivariogram range (range) and spatial dependence (SH%) of all pine stands. Parameters included were from spherical models with R^2>0.10. Bold type denotes significance at 0.05 significance level.

	Range	SH%
Properties	p-value	p-value
Mineral Soil		
%C	0.4377	0.0894
%N	0.6634	0.3179
NH_4	0.7990	0.3601
NO_3	**0.0208**	0.6250
IN	0.6336	0.5815
pH	0.7176	0.2522
Forest Floor		
Litter mass	0.2851	**0.0215**

Table 13. ANOVA of mean soil resource values in all pine stands df(3,11). Hardwood stands were not included due to dissimilar vegetation composition and site histories. Bold type denotes significance at 0.05 significance level.

Properties	p value
Mineral Soil	
Arcsin %C	0.7210
Arcsin %N	0.5228
log NH_4	0.7526
log NO_3	0.0680
log (NH_4+NO_3)	**0.0454**
pH	0.5738
Bulk Density	0.0712
Forest Floor	
litter mass	0.9735

Table 14. Regression against time of mean soil resource values for all pine stands (years 1,6,10,25; df 1,3). All slopes were negative for variables shown. Bold type denotes significance at 0.05 significance level.

Properties	p-value	R^2
Mineral Soil		
%C	0.6036	0.1572
%N	0.7142	0.0817
NH_4	0.2197	0.0406
NO_3	**0.0406**	0.9205
IN	**0.0304**	0.9402
pH	**0.0058**	0.9885
Bulk Density	0.3832	0.3804
NO_3/NH_4	**0.0096**	0.9808
Forest Floor		
Litter mass	0.7027	0.0884

Though not significantly different in ANOVA or regression, C% and N% tended to increase in the mineral soil for the first 10 years after disturbance (Table 5), and then decreased to their lowest levels at age 25. Soil bulk density tended to decrease over time in pine stands (Table 5), though it was not significantly related to stand age in regression.

IV) Discussion

1) Test of Model - Global variation

Though individual variables often show different patterns, the averaged pattern of global variability followed our hypothesized temporal pattern. Both SD and CV were greatest in the first sampling after disturbance (year 1; Figure 5a). SD decreased continuously to the lowest point at year 25, while CV decreased to a low at year 10, then increased slightly to year 25 due to mean and SD changing at different rates. Gross et al. (1995) found a different pattern. They found CVs of nitrogen availability were lowest in a recently abandoned soybean field, highest in a mid-successional field, and intermediate in a second-growth forest. The field had been cropped for ~ 50 years prior to the study. The annual plowing associated with cropping might have homogenized the spatial variability (Robertson et al. 1993). We studied different successional series with different land use and disturbance histories; it is not surprising we observed a different spatial pattern dynamic.

CV (and autocorrelation range) reached their lowest level at year 10. This was before the predicted minimum at year 25. The faster than expected low point on CV may reflect an accelerated succession that is typical of pine plantations. At planting time management activities were used to reduce unwanted non-pine vegetation to favor rapid pine growth. More importantly, the pines reached crown closure rapidly because they were all of the same age and were planted at uniform spacing. Our simulated succession was less complex both structurally and functionally than a naturally revegetated forest.

2) Test of model - Patch size and SH%

We hypothesized that semivariogram ranges would be smallest shortly after succession, greatest at year 25, and then decrease slightly. As we expected, semivariogram ranges were smaller early and late in succession and larger during intermediate stages (Figure 5b) indicating the changing trend of average patch size of the soil resources. Gross et al. (1995) also observed this pattern. In our study, most individual variables show smaller patch sizes earlier in succession and larger patch sizes later on, but this pattern does not hold for C% and litter. These two variables are presumably linked, as decaying litter is a major source of C in mineral soil. The patterns observed for C% and litter in this study might not reflect natural ecological patterns. Shortly after disturbance, litter is affected most strongly by harvesting and site-preparation activities. After harvest, the residual slash is raked into windrows and burned to prepare the site for the next planting. Therefore, the spatial patterns of the litter are more a consequence of human activity than ecological processes. This may cause spatial patterns to become more linear (windrow effects) rather than circular (tree effects). These spatial patterns may be elucidated using directional semivariograms, however due to the small number of pairs in our semivariograms use of directional semivariograms was not possible. At later stages, when windrows are decayed, litter accumulation, decay patterns, and microsite factors affecting soil micobiota (such as pits and mounds) may be the main source of pattern in litter and C%.

The change in spatial patterns of other variables is also affected by the development of vegetation and is likely a result of complex interactions between soil, vegetation, soil microorganisms, and soil moisture. The arrangement and size of vegetation may drive these patterns via their influence on microbial immobilization, plant uptake, and precipitation stemflow (Crozier and Boerner 1986).

SH% did not exhibit any pattern. Gross et al. (1995) found that the proportion of structured variance was highest in the mid-successional field. Though others have used SH% [$C/(C_o+C)$] (Gross et al. 1995), it is not clearly understood how this index is related directly to soil spatial patterns. The reason for the lack of observed change in spatial pattern may also be due to the relatively small number of observations in each plot (63-127). Larger numbers of observations may be required to obtain accurate estimates of autocorrelation.

3) Effects of vegetation-type on patterns of soil resources

No differences in soil spatial pattern between vegetation types were observed. However, fewer variables in the hardwood stands exhibited autocorrelation than in the pine stands at the scales we examined (Table 9). Other studies have suggested that spatial heterogeneity of soil variables may differ among vegetation types (Kelly and Canham 1992, Schlesinger et al. 1996). However, these studies observed differences caused by changes in plant functional types (e.g. shrub versus grasses) rather than between different species within one functional type.

The most striking difference between hardwood and pine stands was the greater mean soil resource levels in the hardwood stands. The highest C% and N% occur in the hardwood stage. All other stages have approximately 50% of these levels. The differences between the hardwood stands and the 25 year-old pine stands may be due to vegetation type, management activities associated with pine timber production, or previous land-use histories. The differences in C% and N% may largely be a result of mechanical disturbance to the soil and mixing of soil organic matter from 1-15 cm into lower soil horizons (Compton 1998 mentions this also). Furthermore, when windrows are burned, much of the C and N is volatilized. The hardwood stands may not have been in agricultural production, or were further removed in time from cultivation than were the pine stands. Agricultural practices reduce soil C (Lal et al. 1997). Therefore the burning and cropping may have reduced C and N in pine stands. Available IN is greater in the hardwood stands probably because the growth rate is lower than in the pine stands. Greater soil resources under hardwoods have also been attributed to an increase in soil resources due to the presence of hardwoods (from associations with N-fixing microbes, and higher quality litter for example) rather than a decrease caused by pines (Wood et al. 1992).

4) Mean soil resource levels

Soil resource levels generally decreased over time during succession in the pine stands. The trend of decreasing nitrogen availability has been observed by others (Vitousek et al. 1989). Increased nitrogen mineralization is caused by disturbance, including forest harvesting (Matson and Vitousek 1981), and the impact of disturbance likely decreases over time. Changes in N availability are likely caused by changes in microbial immobilization (Vitousek 1985, Stark and Hart 1997), nitrification and mineralization due to changes in moisture and soil temperature, and plant uptake. Before planting, much of the surface organic matter in the pine stands was removed. Vitousek (1985) also found that removal of surface organic material during intensive site preparation led to greatly increased nitrate pool sizes. It is likely that changes in nutrient concentrations caused by soil disturbance could affect nutrient patterns available to plants. Decreasing pH has been accounted for by tree growth, through uptake of an excess of cations over anions (Nilsson et al. 1982, Van Breemen et al. 1983).

Factors affecting nutrient patterns may change over time. For example, immediately after disturbance, whether microbial immobilization of N or plant uptake is more important may depend on the intensity of disturbance (Vitousek 1985). As succession proceeded the relative effect of plant uptake is expected to become more pronounced (Vitousek 1985).

Mineral soil C% and N% appear to increase from year 1 to year 10, and then to decrease by year 25. This pattern is probably caused by the decomposition of forest litter. As litter decays it adds labile C and N to the mineral soil (Cronan et al. 1992). The greatest litter mass for pine stands is found at year 1 stands (Table 5). As the litter begins to decay, levels of C and N in the mineral soil increase. At year 10 litter mass reaches its lowest level while soil C and N reach their highest. Because much of the C and N input from the decaying litter is labile, when litter decay rates decrease C and N concentrations in the mineral soil have a short lag, and then decrease.

VI) Conclusion

The results suggest that some changes in soil spatial patterns may occur during succession that parallel changes in vegetation cover, species composition and average plant size. Early in succession global variability was largest, patch sizes were smallest and plant sizes were smallest. As succession progressed, global variability decreased, patch sizes increased, and size of individual plants increased through the aggradation stage of succession, while the proportion of variation that is spatially dependent did not change. If the soil nutrient heterogeneity was perceived by vegetation, vegetation with more precise resource foraging strategies (e.g. *Liquidambar styraciflua*) would have a relative advantage over imprecise foragers (e.g. *Pinus* spp.) early in succession when resources are more variable and more patchy.

Our choice of managed pine plantations for the chronosequence may have resulted in less variability, and more rapid changes in spatial heterogeneity during succession than would occur in forests that regenerate naturally. In fact if the chronosequence we observed did develop more rapidly than expected the trends would match more closely those predicted (Figure 5). Also, Our chronosequence employed a series of pine plantations with an intended lack of tree species diversity. However, soil spatial heterogeneity may be directly related to tree species diversity. For example, Finzi et al [, 1998 #281]. found significantly different levels of forest floor litter mass, soil C and soil N under different tree species in the same forests. Therefore, if tree species diversity changes during succession, then presumably the variability of soil properties in the forest will change also.

These results suggest that there are predictable changes in spatial patterns during succession. However, because our study only included three replicates, our tests had low power. To understand these trends more clearly, studies with more replication may be needed. However, the changes in spatial pattern that we did observe were weak and may not be functionally important to the vegetation. The mechanisms and links between the spatial heterogeneity and the vegetation was beyond the scope of this study, but should be addressed in future studies.

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Appendix 1. Semivariogram parameters averaged by variable*year. Frequency given is the number of replicates (out of 3) that a spherical model fit with $R^2 > 0.10$. Parameters included are from largescale or smallscale semivariograms – whichever had the larger R^2.

Variable	Year	Frequency	Range	SH%	R2
IN	1	2	1.22	0.68	0.31
IN	6	1	1.01	0.53	0.31
IN	10	2	4.22	0.98	0.62
IN	25	2	2.98	0.85	0.67
IN	99	1	2.96	1.00	0.77
litter	1	2	2.74	1.00	0.36
litter	6	3	1.40	0.86	0.49
litter	10	1	2.09	0.80	0.54
litter	25	1	1.41	0.11	0.16
nh4	1	2	1.00	0.30	0.23
nh4	6	2	9.90	0.44	0.52
nh4	10	1	2.82	1.00	0.31
nh4	25	3	9.47	0.66	0.33
no3	1	1	1.77	1.00	0.59
no3	10	2	3.35	1.00	0.58
no3	25	2	3.70	0.76	0.68
no3	99	1	3.22	1.00	0.74
pH	1	2	1.74	0.93	0.54
pH	6	2	3.22	0.57	0.53
pH	10	3	4.51	0.75	0.46
pH	25	2	2.92	0.65	0.33
C%	1	2	2.63	1.00	0.39
C%	6	1	1.81	0.04	0.25
C%	10	3	10.79	0.84	0.65
C%	25	2	1.77	0.77	0.58
C%	99	2	7.34	0.62	0.61
N%	1	1	2.11	1.00	0.41
N%	6	3	7.09	0.48	0.52
N%	10	3	12.80	0.93	0.68
N%	25	2	8.31	0.78	0.41
N%	99	1	8.05	1.00	0.32

Appendix 2. Semivariogram parameters for all variable*plots. Smallscale (ss) and largescale (ls) parameters are listed separately.

VARNAME	yr	replicate	ssrsq	ssnugget	sspsill	ssrange	sssh	lsrsq	lsnugget	lspsill	lsrange	lssh
IN	1	1	0.51	0.00	7.63	2.16	1.00	0.00	3.11	0.25	0.87	0.07
IN	1	2	0.00	1.74	1.06	0.13	0.38	0.00	1.27	0.25	0.28	0.16
IN	1	3	0.12	0.29	0.17	0.27	0.37	0.00	0.39	0.25	0.66	0.39
IN	6	1	0.02	0.17	0.22	0.21	0.57	0.00	0.18	0.25	0.53	0.58
IN	6	2	0.00	0.54	0.31	0.12	0.37	0.00	0.61	0.25	0.78	0.29
IN	6	3	0.31	0.09	0.11	1.01	0.53	0.00	0.01	0.25	1.54	0.98
IN	10	1	0.00	0.22	0.35	0.07	0.62	0.00	0.36	0.25	0.70	0.41
IN	10	2	0.53	0.00	5.88	6.03	1.00	-0.35	1.89	0.25	21.64	0.12
IN	10	3	0.72	0.07	1.44	2.41	0.95	0.00	0.53	0.25	0.53	0.32
IN	25	1	0.00	0.12	0.10	0.04	0.46	0.00	0.10	0.25	1.31	0.71
IN	25	2	0.65	0.09	1.35	3.57	0.94	0.11	0.91	0.26	6.03	0.22
IN	25	3	0.70	0.09	0.29	2.40	0.77	0.20	0.11	0.25	2.65	0.70
IN	99	1	0.00	0.99	0.05	0.07	0.05	0.00	0.70	0.25	0.87	0.26
IN	99	2	0.77	0.00	3.95	2.96	1.00	0.00	1.61	0.25	0.51	0.13
IN	99	3	0.00	1.72	0.17	0.13	0.09	0.00	2.98	0.25	1.61	0.08
litter	1	1	0.30	0.00	99.39	3.37	1.00	0.00	0.00	191.99	0.86	1.00
litter	1	2	0.00	92.77	7.09	0.04	0.07	0.00	108.60	0.25	0.14	0.00
litter	1	3	0.42	0.00	1029.09	2.10	1.00	0.00	322.77	0.25	0.08	0.00
litter	6	1	0.39	26.48	81.06	0.69	0.75	0.00	62.62	0.25	0.84	0.00
litter	6	2	0.69	29.63	128.61	1.55	0.81	0.00	127.75	0.25	0.06	0.00
litter	6	3	0.38	0.00	5.05	1.97	1.00	-0.14	3.50	0.01	5.43	0.00
litter	10	1	0.54	1.24	4.91	2.09	0.80	0.00	4.25	0.25	0.90	0.06
litter	10	2	0.00	50.28	0.23	0.12	0.00	0.00	49.07	0.25	0.29	0.01
litter	10	3	0.00	3.46	0.20	0.06	0.05	0.00	5.08	0.25	0.32	0.05
litter	25	1	0.16	21.32	2.51	1.41	0.11	0.00	20.17	0.25	0.68	0.01
litter	25	2	0.00	11.09	0.27	0.04	0.02	0.00	12.20	0.25	0.51	0.02
litter	25	3	0.00	5.64	0.26	0.06	0.04	0.00	5.33	0.25	0.24	0.04
litter	99	1	0.00	18.34	1.87	0.04	0.09	0.00	18.05	0.25	0.29	0.01
litter	99	2	0.00	104.99	0.79	0.02	0.01	0.00	94.23	0.25	0.68	0.00
litter	99	3	0.00	4.45	0.22	0.02	0.05	-2.99	2.74	0.39	10.05	0.12
nh4	1	1	0.28	0.12	0.17	1.60	0.59	0.00	0.08	0.25	0.07	0.77
nh4	1	2	0.00	0.02	0.21	0.23	0.93	0.00	0.00	0.18	0.37	1.00
nh4	1	3	0.19	0.08	0.00	0.41	0.02	0.08	0.00	0.22	3.38	1.00
nh4	6	1	0.16	0.05	0.14	0.41	0.72	0.59	0.27	0.15	18.00	0.35
nh4	6	2	0.00	0.04	0.00	0.01	0.03	0.03	0.00	0.10	3.33	1.00
nh4	6	3	0.45	0.05	0.06	1.81	0.53	0.08	0.03	0.13	3.88	0.80
nh4	10	1	0.00	0.03	0.00	0.08	0.07	0.04	0.00	0.09	3.16	1.00
nh4	10	2	0.31	0.00	1.56	2.82	1.00	0.16	1.50	0.32	24.50	0.18
nh4	10	3	0.00	0.01	0.05	0.01	0.78	0.02	0.00	0.09	2.30	1.00
nh4	25	1	0.00	0.02	0.07	0.12	0.77	0.24	0.02	0.13	4.37	0.85
nh4	25	2	0.18	0.04	0.05	1.01	0.56	0.19	0.13	0.06	21.63	0.32
nh4	25	3	0.57	0.02	0.09	2.40	0.82	0.07	0.00	0.10	2.31	1.00
nh4	99	1	0.01	0.11	0.03	0.60	0.19	0.00	0.00	0.21	0.15	1.00

nh4	99	2	0.00	0.06	0.13	0.01	0.68	0.00	0.02	0.25	0.94	0.93
nh4	99	3	0.00	0.80	0.13	0.16	0.14	0.00	0.89	0.25	0.06	0.22
no3	1	1	0.59	0.00	3.03	1.77	1.00	0.00	1.20	0.25	0.20	0.17
no3	1	2	0.06	0.27	2.23	0.45	0.89	0.00	0.84	0.25	0.05	0.23
no3	1	3	0.00	0.19	0.18	0.13	0.48	0.00	0.19	0.25	0.29	0.57
no3	6	1	0.02	0.07	0.03	0.21	0.32	0.04	0.00	0.22	2.64	1.00
no3	6	2	0.00	0.05	0.76	0.18	0.93	0.00	0.30	0.25	0.51	0.46
no3	6	3	0.00	0.05	0.01	0.12	0.12	0.00	0.00	0.10	1.47	1.00
no3	10	1	0.00	0.20	0.09	0.07	0.32	0.00	0.15	0.25	0.89	0.62
no3	10	2	0.47	0.00	1.36	3.28	1.00	0.08	0.36	0.97	7.69	0.73
no3	10	3	0.69	0.00	1.36	3.41	1.00	0.15	0.40	0.25	2.47	0.39
no3	25	1	0.04	0.04	0.13	0.25	0.75	0.00	0.00	0.15	0.47	1.00
no3	25	2	0.70	0.00	1.06	3.54	1.00	0.08	0.08	1.05	6.03	0.93
no3	25	3	0.43	0.02	0.17	2.32	0.91	0.65	0.09	0.09	3.85	0.52
no3	99	1	0.00	0.65	0.03	0.17	0.05	0.00	0.64	0.25	0.42	0.28
no3	99	2	0.74	0.00	2.89	3.22	1.00	0.70	0.00	2.42	4.29	1.00
no3	99	3	0.00	0.41	0.46	0.21	0.53	0.00	0.66	0.25	0.48	0.27
pH	1	1	0.79	0.00	0.13	2.57	1.00	0.39	0.01	0.24	14.14	0.98
pH	1	2	0.10	0.02	0.02	0.48	0.46	0.03	0.00	0.07	3.36	1.00
pH	1	3	0.29	0.01	0.04	0.92	0.86	0.02	0.00	0.07	2.89	1.00
pH	6	1	0.07	0.02	0.02	0.29	0.51	0.01	0.00	0.05	2.32	1.00
pH	6	2	0.51	0.03	0.05	1.41	0.65	0.00	0.00	0.08	1.69	1.00
pH	6	3	0.54	0.01	0.01	5.03	0.50	0.21	0.00	0.04	7.16	1.00
pH	10	1	0.44	0.01	0.03	1.24	0.85	0.01	0.00	0.06	3.04	1.00
pH	10	2	0.73	0.01	0.02	4.03	0.64	0.19	0.00	0.06	5.93	1.00
pH	10	3	0.00	0.00	0.00	0.12	0.30	0.20	0.00	0.01	8.27	0.77
pH	25	1	0.09	0.01	0.03	0.40	0.83	0.00	0.00	0.03	1.38	1.00
pH	25	2	0.18	0.00	0.03	0.81	0.86	0.00	0.00	0.04	2.10	1.00
pH	25	3	0.47	0.01	0.00	5.03	0.44	0.11	0.00	0.02	6.27	1.00
pH	99	1	0.04	0.01	0.04	0.41	0.82	0.05	0.00	0.05	3.12	1.00
pH	99	2	-0.42	0.02	0.00	1.60	0.05	0.00	0.00	0.02	0.44	0.99
pH	99	3	0.00	0.00	0.08	0.23	1.00	0.00	0.00	0.09	2.68	1.00
C%	1	1	0.64	0.00	0.03	2.65	1.00	0.04	0.00	0.03	3.11	1.00
C%	1	2	0.00	0.00	0.00	0.07	0.38	0.14	0.00	0.01	2.61	1.00
C%	1	3	0.00	0.00	0.00	0.14	0.75	0.02	0.00	0.01	3.08	1.00
C%	6	1	0.25	0.01	0.00	1.81	0.04	0.10	0.00	0.02	3.77	1.00
C%	6	2	0.01	0.01	0.00	0.41	0.10	0.04	0.00	0.01	3.54	1.00
C%	6	3	0.00	0.01	0.00	0.03	0.20	0.07	0.00	0.03	3.27	1.00
C%	10	1	0.69	0.01	0.01	2.40	0.53	0.27	0.00	0.03	4.67	0.94
C%	10	2	0.00	0.01	0.00	0.11	0.39	0.63	0.00	0.11	13.66	1.00
C%	10	3	0.12	0.00	0.00	0.46	1.00	0.63	0.00	0.02	16.32	1.00
C%	25	1	0.58	0.00	0.00	1.60	0.62	0.09	0.00	0.01	3.05	1.00
C%	25	2	0.00	0.00	0.00	0.08	0.55	0.00	0.00	0.00	0.10	1.00
C%	25	3	0.59	0.00	0.01	1.94	0.92	0.02	0.00	0.01	3.20	1.00
C%	99	1	0.00	0.01	0.01	0.06	0.54	0.05	0.00	0.03	3.74	0.92
C%	99	2	0.07	0.01	0.03	0.54	0.78	0.88	0.03	0.06	13.81	0.63

C%	99	3	0.34	0.04	0.06	0.88	0.60	0.03	0.00	0.14	2.60	1.00
N%	1	1	0.41	0.00	0.00	2.11	1.00	0.02	0.00	0.00	3.18	1.00
N%	1	2	0.00	0.00	0.00	0.11	0.52	0.00	0.00	0.00	0.84	1.00
N%	1	3	0.00	0.00	0.00	0.10	0.28	0.00	0.00	0.00	2.05	1.00
N%	6	1	0.67	0.00	0.00	3.02	0.19	0.47	0.00	0.00	4.17	1.00
N%	6	2	0.00	0.00	0.00	0.11	0.88	0.46	0.00	0.00	10.05	0.25
N%	6	3	0.00	0.00	0.00	0.03	0.43	0.43	0.00	0.00	8.19	1.00
N%	10	1	0.70	0.00	0.00	3.56	0.85	0.11	0.00	0.00	3.94	0.95
N%	10	2	0.00	0.00	0.00	0.04	0.29	0.53	0.00	0.00	13.45	1.00
N%	10	3	0.29	0.00	0.00	1.81	0.05	0.82	0.00	0.00	21.38	0.95
N%	25	1	0.31	0.00	0.00	0.68	0.77	0.00	0.00	0.00	1.32	1.00
N%	25	2	0.00	0.00	0.00	0.13	0.06	0.00	0.00	0.00	0.98	1.00
N%	25	3	0.47	0.00	0.00	1.69	0.69	0.52	0.00	0.00	15.94	0.79
N%	99	1	0.00	0.00	0.00	0.14	0.29	0.03	0.00	0.00	2.99	1.00
N%	99	2	0.06	0.00	0.00	1.41	0.15	0.32	0.00	0.00	8.05	1.00
N%	99	3	0.00	0.00	0.00	0.01	0.46	0.00	0.00	0.00	1.54	1.00

Appenxix 3. Ground vegetation data. Includes all vegetation < 1cm DBH. Depth, length, width and canopybot units are cm. The dimensions of the photosynthetically active canopy were measured. Canopybot is the distance from ground to the bottom of the canopy.

Year	rep	Transect	point	spp	depth	length	width	canopybot
6	1	1	131	pita	45	10	20	
6	1	1	131	gese	50	5	5	
6	1	1	131	gese	10	50	30	
6	1	1	131	disp	45	10	15	
6	1	1	131	cani	0	0	0	
6	1	1	131	rusp	25	5	5	
6	1	1	131	rusp	0	0	0	
6	1	1	131	gese	10	15	5	
6	1	1	131	rhco	40	50	40	180
6	1	1	131	myce	70	50	60	160
6	1	1	132	gese	15	5	5	
6	1	1	132	gese	5	30	20	
6	1	1	132	rusp	5	20	5	
6	1	1	132	rusp	0	0	0	
6	1	1	132	rusp	20	10	5	
6	1	1	132	cani	0	0	0	
6	1	1	132	gese	5	30	20	
6	1	1	132	pita	110	30	20	70
6	1	1	133	rusp	30	20	20	
6	1	1	133	gese	0	0	0	
6	1	1	133	rusp	0	0	0	
6	1	1	134	rusp	20	5	5	
6	1	1	134	aster	0	0	0	
6	1	1	134	rusp	25	10	5	
6	1	1	134	rusp	25	10	5	
6	1	1	134	rusp	40	5	5	
6	1	1	134	rusp	20	10	5	
6	1	1	135	rusp	0	0	0	
6	1	1	135	rusp	5	10	5	
6	1	1	135	cani	20	5	5	
6	1	1	135	disp	0	0	0	
6	1	1	135	aster	0	0	0	
6	1	1	141	list	30	20	15	190
6	1	1	141	rusp	0	0	0	
6	1	1	141	gese	80	20	15	
6	1	1	141	rusp	5	40	10	
6	1	1	141	rusp	50	5	5	
6	1	1	141	rusp	25	10	5	
6	1	1	141	rusp	20	5	5	
6	1	1	141	rusp	0	0	0	
6	1	1	142	rusp	5	20	10	

6	1	1	142	rusp	0	0	0	
6	1	1	142	rusp	80	5	5	
6	1	1	142	aster	0	0	0	
6	1	1	142	gese	130	10	10	
6	1	1	142	disp	15	5	5	
6	1	1	142	rusp	5	15	10	
6	1	1	142	list	30	40	30	200
6	1	1	143	list	165	35	25	
6	1	1	143	gese	180	10	15	
6	1	1	143	rusp	10	10	30	
6	1	1	143	rusp	35	10	5	
6	1	1	143	rusp	30	5	5	
6	1	1	143	rusp	25	5	5	
6	1	1	143	rusp	30	5	5	
6	1	1	143	disp	30	5	5	
6	1	1	143	gese	70	10	10	
6	1	1	144	gese	40	5	5	
6	1	1	144	gese	45	5	5	
6	1	1	144	gese	20	5	5	
6	1	1	144	gese	0	0	0	
6	1	1	144	gese	0	0	0	
6	1	1	144	gese	40	10	5	
6	1	1	144	gese	50	5	5	
6	1	1	144	gese	30	10	5	
6	1	1	144	gese	140	15	10	
6	1	1	144	disp	20	5	5	
6	1	1	144	disp	0	0	0	
6	1	1	144	list	160	50	40	
6	1	1	144	aster	0	0	0	
6	1	1	144	aster	0	0	0	
6	1	1	144	aster	0	0	0	
6	1	1	144	aster	0	0	0	
6	1	1	144	aster	0	0	0	
6	1	1	144	aster	0	0	0	
6	1	1	144	rusp	30	10	10	
6	1	1	145	rhco	50	50	35	180
6	1	1	145	rusp	0	0	0	
6	1	1	145	rusp	25	20	15	
6	1	1	145	rusp	0	0	0	
6	1	1	145	rusp	0	0	0	
6	1	1	145	rusp	0	0	0	
6	1	1	145	rusp	0	0	0	
6	1	1	145	rusp	0	0	0	
6	1	1	145	rusp	0	0	0	
6	1	1	145	rusp	0	0	0	
6	1	1	145	rusp	0	0	0	

6	1	1	145	rusp	0	0	0	
6	1	1	145	rusp	0	0	0	
6	1	1	145	disp	0	0	0	
6	1	1	145	disp	40	10	5	
6	1	1	145	gese	35	5	5	
6	1	1	145	myce	30	15	10	
6	1	1	145	aster	0	0	0	
6	1	1	145	desp	0	0	0	
6	1	1	145	desp	0	0	0	
6	1	1	145	disp	20	5	5	
6	1	1	151	rhco	35	60	50	200
6	1	1	151	rusp	20	5	5	
6	1	1	151	rusp	5	50	5	
6	1	1	151	rusp	60	15	120	
6	1	1	151	rusp	5	35	10	
6	1	1	151	rusp	5	80	5	
6	1	1	151	rusp	100	5	10	
6	1	1	151	rusp	25	10	5	
6	1	1	151	rusp	5	30	5	
6	1	1	151	eusp	50	5	5	
6	1	1	151	disp	50	20	20	
6	1	1	152	rusp	20	10	5	
6	1	1	152	rusp	30	5	5	
6	1	1	152	rusp	5	50	60	10
6	1	1	152	rusp	40	5	10	
6	1	1	152	rusp	20	5	5	
6	1	1	152	rusp	20	5	10	
6	1	1	152	rusp	25	10	15	
6	1	1	152	rusp	10	30	15	
6	1	1	152	rusp	5	20	10	
6	1	1	152	rusp	40	5	5	
6	1	1	152	divi	15	20	10	140
6	1	1	152	rhco	35	110	30	170
6	1	1	152	disp	15	5	5	
6	1	1	153	rusp	50	10	5	
6	1	1	153	rusp	40	10	10	
6	1	1	153	rusp	30	5	10	
6	1	1	153	rusp	0	0	0	
6	1	1	153	rusp	5	55	5	
6	1	1	153	rusp	5	70	10	
6	1	1	153	rusp	20	10	5	
6	1	1	153	divi	20	30	20	40
6	1	1	153	desp	15	5	5	
6	1	1	153	divi	25	80	50	140
6	1	1	154	eusp	50	5	5	
6	1	1	154	rusp	5	25	10	

6	1	1	154	rusp	45	5	15	
6	1	1	154	rusp	25	5	5	
6	1	1	154	rusp	30	12	5	
6	1	1	154	rusp	0	0	0	
6	1	1	154	rusp	45	10	5	
6	1	1	154	aster	0	0	0	
6	1	1	154	disp	0	0	0	
6	1	1	155	aster	0	0	0	
6	1	1	155	sosp	25	5	5	
6	1	1	155	rusp	5	25	5	
6	1	1	155	rusp	10	5	5	
6	1	1	155	rusp	25	10	5	
6	1	1	155	rusp	0	0	0	
6	1	1	155	rusp	50	10	10	
6	1	1	155	disp	30	15	20	
6	1	1	155	rhco	30	35	20	50
6	1	1	161	rusp	10	60	10	
6	1	1	161	rusp	15	45	10	
6	1	1	161	rusp	10	15	120	
6	1	1	161	rusp	10	10	80	
6	1	1	161	rusp	100	10	15	
6	1	1	161	gese	130	5	10	
6	1	1	161	aster	0	0	0	
6	1	1	161	sosp	80	5	5	
6	1	1	162	rusp	65	10	10	
6	1	1	162	gese	5	50	5	
6	1	1	162	rusp	10	10	5	
6	1	1	162	rusp	40	10	15	
6	1	1	162	rusp	35	15	15	
6	1	1	162	rusp	10	60	15	
6	1	1	162	rusp	10	40	10	
6	1	1	162	desp	0	0	0	
6	1	1	163	rusp	135	15	10	
6	1	1	163	desp	30	5	5	
6	1	1	163	lusp	60	5	5	
6	1	1	163	aster	0	0	0	
6	1	1	163	gese	90	5	10	
6	1	1	163	sosp	50	5	5	
6	1	1	163	rusp	5	45	10	
6	1	1	163	rusp	5	75	5	
6	1	1	164	rusp	70	10	10	
6	1	1	164	rusp	50	15	10	
6	1	1	164	rusp	5	10	25	
6	1	1	164	rusp	60	5	10	
6	1	1	164	rusp	10	15	40	
6	1	1	164	rusp	20	10	5	

6	1	1	164	desp	0	0	0	
6	1	1	165	rusp	60	10	15	
6	1	1	165	rusp	90	5	5	
6	1	1	165	rusp	45	5	5	
6	1	1	165	rusp	20	10	10	
6	1	1	165	rusp	25	10	5	
6	1	1	165	rusp	60	5	5	
6	1	4	131	myce	30	5	5	
6	1	4	131	rusp	5	5	40	
6	1	4	131	myce	500	100	60	
6	1	4	131	rhco	100	50	80	140
6	1	4	132	myce	600	100	100	
6	1	4	132	desp	30	10	5	
6	1	4	133	gese	5	10	10	
6	1	4	133	myce	600	100	100	
6	1	4	134	myce	60	30	30	
6	1	4	134	rhco	20	20	10	
6	1	4	134	myce	130	90	60	70
6	1	4	134	quni	200	60	20	100
6	1	4	135	rusp	0	0	0	
6	1	4	141	gese	60	5	5	
6	1	4	141	gese	30	30	5	
6	1	4	141	gese	10	5	10	
6	1	4	141	disp	20	5	30	
6	1	4	141	rhco	10	5	10	
6	1	4	141	rusp	30	5	10	
6	1	4	141	rusp	35	10	30	
6	1	4	141	rusp	20	5	20	
6	1	4	142	rhco	40	40	50	200
6	1	4	142	desp	50	20	15	
6	1	4	142	rusp	30	10	5	
6	1	4	142	rusp	25	10	5	
6	1	4	142	rusp	50	10	5	
6	1	4	142	disp	10	5	5	
6	1	4	142	rusp	25	10	15	
6	1	4	142	gese	20	5	5	
6	1	4	143	rusp	150	30	20	
6	1	4	143	sosp	50	5	15	
6	1	4	143	rusp	40	5	5	30
6	1	4	143	rusp	20	15	15	
6	1	4	143	rusp	15	15	10	
6	1	4	143	disp	0	0	0	
6	1	4	143	disp	20	40	20	
6	1	4	143	disp	30	5	5	
6	1	4	143	disp	40	5	5	
6	1	4	143	rusp	40	5	10	

6	1	4	143	rhco	10	20	30	150
6	1	4	143	rhco	30	50	40	200
6	1	4	144	disp	0	0	0	
6	1	4	144	disp	40	50	30	
6	1	4	144	disp	20	40	30	
6	1	4	144	rusp	5	5	30	
6	1	4	144	gese	5	5	30	
6	1	4	145	rusp	5	5	30	
6	1	4	145	sosp	40	5	5	
6	1	4	145	cani	10	5	5	
6	1	4	145	gese	5	5	50	
6	1	4	145	rhco	0	0	0	
6	1	4	151	eusp	90	30	20	90
6	1	4	151	disp	20	5	10	
6	1	4	151	disp	45	20	5	
6	1	4	151	aster	10	5	10	
6	1	4	151	gese	15	5	10	
6	1	4	151	gese	10	5	5	
6	1	4	151	gese	15	5	20	
6	1	4	151	gese	20	5	10	
6	1	4	151	gese	15	5	5	
6	1	4	151	rusp	20	5	20	
6	1	4	151	rusp	5	5	15	
6	1	4	151	rusp	30	10	5	
6	1	4	151	rusp	10	5	5	
6	1	4	151	scab	15	5	5	
6	1	4	151	disp	30	10	5	
6	1	4	151	disp	0	0	0	
6	1	4	151	gese	40	10	5	
6	1	4	151	rusp	10	5	5	
6	1	4	151	sosp	30	5	5	
6	1	4	151	aster	0	0	0	
6	1	4	152	anvi	10	30	10	
6	1	4	152	rusp	20	5	5	
6	1	4	152	rusp	45	10	5	
6	1	4	152	rusp	15	5	5	
6	1	4	152	rhco	100	10	10	80
6	1	4	152	gese	20	10	10	
6	1	4	152	gese	0	0	0	
6	1	4	152	eusp	90	40	5	
6	1	4	152	eusp	70	40	25	
6	1	4	152	rusp	20	5	5	
6	1	4	152	disp	20	10	10	
6	1	4	153	sosp	30	5	5	
6	1	4	153	rusp	20	5	10	
6	1	4	153	rusp	30	5	5	

6	1	4	153	gese	10	25	10	
6	1	4	153	gese	20	5	5	
6	1	4	153	eusp	60	10	5	
6	1	4	153	gese	0	0	0	
6	1	4	153	aster	5	10	20	
6	1	4	153	anvi	10	5	20	
6	1	4	153	honey	10	10	20	
6	1	4	153	rusp	25	25	10	
6	1	4	153	smsp	50	5	10	
6	1	4	154	sosp	30	5	5	
6	1	4	154	gese	5	20	10	
6	1	4	154	gese	0	0	0	
6	1	4	154	sissle	5	25	10	
6	1	4	154	aster	20	20	30	
6	1	4	154	aster	20	10	20	
6	1	4	154	aster	20	30	30	
6	1	4	154	aster	20	20	25	
6	1	4	154	gese	15	5	10	
6	1	4	154	gese	15	5	5	
6	1	4	154	aster	0	0	0	
6	1	4	155	anvi	30	50	40	
6	1	4	155	anvi	30	50	30	
6	1	4	155	anvi	15	10	5	
6	1	4	155	anvi	10	30	5	
6	1	4	155	anvi	50	5	5	
6	1	4	155	gese	15	20	15	
6	1	4	155	gese	10	5	10	
6	1	4	155	gese	10	5	15	
6	1	4	155	gese	20	5	15	
6	1	4	155	gese	0	0	0	
6	1	4	155	anvi	20	30	20	
6	1	4	155	aster	5	15	10	
6	1	4	155	sissle	5	15	10	
6	1	4	155	aster	0	0	0	
6	1	4	161	prse	90	50	50	
6	1	4	161	rusp	10	5	5	
6	1	4	161	rusp	10	10	30	
6	1	4	161	prse	10	10	20	
6	1	4	161	prse	25	10	20	
6	1	4	161	aster	10	15	20	
6	1	4	161	disp	20	10	20	
6	1	4	161	rusp	15	10	5	
6	1	4	161	gese	0	0	0	
6	1	4	162	rusp	10	40	20	35
6	1	4	162	rusp	35	10	25	20
6	1	4	162	rusp	5	10	20	

6	1	4	162	disp	5	10	30	
6	1	4	162	disp	40	20	20	
6	1	4	162	prse	40	40	20	40
6	1	4	162	disp	20	40	20	
6	1	4	162	gese	40	20	20	100
6	1	4	163	eusp	40	5	10	
6	1	4	163	eusp	5	10	10	
6	1	4	163	disp	50	10	5	
6	1	4	163	disp	60	5	10	
6	1	4	163	disp	40	20	5	
6	1	4	163	rusp	50	5	5	
6	1	4	163	rusp	10	10	20	
6	1	4	163	rusp	20	10	20	
6	1	4	163	cani	40	10	5	
6	1	4	163	rusp	15	5	5	
6	1	4	164	sosp	50	10	5	
6	1	4	164	sosp	70	5	5	
6	1	4	164	disp	70	10	50	
6	1	4	164	disp	20	30	50	
6	1	4	164	rusp	10	20	5	
6	1	4	164	rusp	30	5	5	
6	1	4	164	gese	15	10	10	
6	1	4	164	sosp	30	5	5	
6	1	4	164	sosp	70	20	10	
6	1	4	164	rusp	10	20	10	
6	1	4	164	rusp	10	10	10	
6	1	4	164	aster	15	20	30	
6	1	4	164	aster	15	10	15	
6	1	4	165	sosp	45	10	10	30
6	1	4	165	disp	10	80	30	
6	1	4	165	disp	15	10	10	
6	1	4	165	aster	0	0	0	
6	1	4	165	disp	10	60	30	
6	1	4	165	disp	10	20	30	
6	1	4	165	rusp	10	20	5	
6	1	4	165	rusp	30	5	5	
6	1	4	165	sosp	10	60	5	
6	1	4	165	rhco	50	50	10	100
6	1	4	165	sosp	50	10	10	
6	1	4	165	sosp	50	5	5	
6	1	4	165	gese	0	0	0	
6	2	2	131	rusp	30	20	20	20
6	2	2	131	rusp	110	10	10	
6	2	2	131	rusp	40	10	5	
6	2	2	131	desp	120	10	5	
6	2	2	132	rusp	50	5	10	40

6	2	2	132	desp	30	5	10	
6	2	2	132	desp	30	5	10	10
6	2	2	132	rusp	90	10	15	
6	2	2	132	rusp	90	10	5	
6	2	2	132	rusp	30	10	10	60
6	2	2	132	sosp	5	20	10	
6	2	2	133	cani	15	5	10	
6	2	2	133	sosp	45	5	5	
6	2	2	133	rusp	40	50	10	
6	2	2	133	rusp	20	10	5	
6	2	2	133	rusp	10	10	20	80
6	2	2	134	anvi	20	40	30	
6	2	2	135	rusp	20	5	10	
6	2	2	135	eusp	45	5	5	
6	2	2	141	rusp	5	5	20	
6	2	2	141	rusp	30	20	100	110
6	2	2	141	rusp	30	40	50	40
6	2	2	142	desp	80	5	5	
6	2	2	142	rusp	90	5	10	
6	2	2	142	rusp	150	10	40	
6	2	2	142	rusp	40	20	60	90
6	2	2	142	rusp	5	10	30	
6	2	2	142	rusp	10	10	60	140
6	2	2	142	rusp	5	5	10	
6	2	2	142	rusp	40	20	100	90
6	2	2	143	rhco	40	50	60	140
6	2	2	143	rhco	50	80	50	180
6	2	2	143	rusp	20	50	20	70
6	2	2	143	rusp	30	10	20	40
6	2	2	144	rhco	10	20	30	80
6	2	2	144	rhco	50	80	50	180
6	2	2	144	rusp	20	50	20	70
6	2	2	144	rusp	30	10	20	40
6	2	2	145	rusp	30	10	10	20
6	2	2	145	rusp	10	10	20	60
6	2	2	145	rusp	60	10	20	
6	2	2	145	rusp	100	15	10	
6	2	2	151	rusp	10	40	30	20
6	2	2	151	rusp	10	30	10	
6	2	2	151	rusp	50	10	5	
6	2	2	151	rhco	30	20	30	
6	2	2	152	rusp	10	40	10	40
6	2	2	152	rusp	20	60	15	20
6	2	2	152	trur	5	5	20	
6	2	2	152	rusp	30	5	5	
6	2	2	152	rusp	10	10	5	40

6	2	2	152	rhco	10	10	20	
6	2	2	153	rusp	30	5	5	
6	2	2	153	rusp	40	10	5	
6	2	2	153	rusp	20	5	10	40
6	2	2	153	rusp	50	10	5	
6	2	2	153	trur	40	10	5	
6	2	2	153	desp	5	10	5	
6	2	2	153	rusp	60	10	5	
6	2	2	153	rusp	35	15	10	
6	2	2	154	rusp	20	60	20	50
6	2	2	154	desp	70	10	5	
6	2	2	154	rusp	110	10	5	40
6	2	2	154	rusp	40	5	5	
6	2	2	154	quni	110	70	50	50
6	2	2	154	prse	30	20	30	110
6	2	2	154	quni	30	30	40	60
6	2	2	155	rusp	30	50	40	35
6	2	2	155	rusp	30	50	40	
6	2	2	155	trur	5	5	20	
6	2	2	155	trur	30	5	10	
6	2	2	155	desp	20	20	5	
6	2	2	155	rusp	40	40	40	30
6	2	2	161	rhco	90	100	80	140
6	2	2	161	rusp	5	5	5	
6	2	2	161	trur	0	0	0	
6	2	2	162	rhco	30	30	30	
6	2	2	162	rhco	80	50	40	120
6	2	2	162	cani	0	0	0	
6	2	2	163	rhco	40	30	30	
6	2	2	164	trur	5	5	10	
6	2	2	164	desp	10	5	5	
6	2	2	164	gasp	10	5	5	
6	2	2	164	rusp	5	5	20	
6	2	2	165	trur	10	5	5	
6	2	2	165	trur	5	30	5	
6	2	2	165	trur	30	50	40	
6	2	2	165	desp	5	5	10	
6	2	2	165	divi	5	5	10	20
6	2	4	131	yellow	30	5	5	
6	2	4	131	hyge	20	5	5	
6	2	4	131	anvi	15	10	20	
6	2	4	131	eusp	20	5	5	
6	2	4	131	yellow	15	5	5	
6	2	4	131	anvi	25	40	35	
6	2	4	131	rusp	10	25	15	100
6	2	4	131	disp	60	5	5	

6	2	4	132	yellow	40	5	5	
6	2	4	132	yellow	30	5	5	
6	2	4	132	yellow	20	5	5	
6	2	4	132	yellow	40	5	5	
6	2	4	132	hyge	25	5	5	
6	2	4	132	disp	25	10	5	
6	2	4	132	disp	50	5	10	
6	2	4	132	rusp	30	10	5	
6	2	4	132	hyge	30	5	5	
6	2	4	132	hyge	25	5	5	
6	2	4	133	anvi	15	40	25	
6	2	4	133	rusp	35	10	10	
6	2	4	133	quni	25	40	80	
6	2	4	133	yellow	25	5	5	
6	2	4	133	yellow	10	5	5	
6	2	4	133	anvi	15	5	5	
6	2	4	134	quni	10	40	45	35
6	2	4	134	rusp	10	15	70	40
6	2	4	134	desp	20	10	10	
6	2	4	134	disp	15	5	5	
6	2	4	134	rusp	10	50	10	
6	2	4	135	rhco	25	5	5	
6	2	4	135	cato	10	35	30	20
6	2	4	135	disp	5	5	5	
6	2	4	135	desp	10	10	5	
6	2	4	135	rusp	10	5	5	
6	2	4	141	disp	55	25	30	
6	2	4	141	desp	65	10	10	
6	2	4	141	rusp	5	90	10	
6	2	4	141	rusp	15	10	5	
6	2	4	141	anvi	90	5	5	
6	2	4	141	aster	0	0	0	
6	2	4	141	rusp	15	80	10	50
6	2	4	142	rusp	120	10	10	
6	2	4	142	anvi	10	10	15	
6	2	4	142	disp	45	5	10	
6	2	4	142	rhco	20	20	15	40
6	2	4	142	eusp	55	5	5	
6	2	4	142	disp	40	20	5	
6	2	4	142	disp	60	25	30	
6	2	4	142	rusp	30	10	10	
6	2	4	142	rusp	100	10	10	
6	2	4	142	disp	35	30	25	
6	2	4	143	cani	25	5	5	
6	2	4	143	disp	20	5	5	
6	2	4	143	desp	5	10	5	

6	2	4	143	anvi	20	35	30	
6	2	4	143	yellow	60	5	5	
6	2	4	143	rusp	105	10	10	
6	2	4	143	gese	5	25	20	
6	2	4	143	eusp	60	5	5	
6	2	4	144	quni	35	50	60	115
6	2	4	144	rusp	90	10	15	30
6	2	4	144	sosp	35	10	10	
6	2	4	144	eusp	60	5	5	
6	2	4	144	pita	30	10	5	40
6	2	4	144	rusp	30	70	25	85
6	2	4	144	disp	15	20	10	
6	2	4	145	yellow	0	0	0	
6	2	4	145	disp	0	0	0	
6	2	4	145	pham	20	5	5	
6	2	4	145	quni	15	25	30	65
6	2	4	145	desp	40	5	5	
6	2	4	145	eusp	115	10	5	
6	2	4	145	disp	0	0	0	
6	2	4	151	rhco	100	100	70	160
6	2	4	151	rhco	35	50	30	90
6	2	4	151	rusp	5	80	15	
6	2	4	151	rusp	5	70	5	
6	2	4	151	cani	30	5	5	
6	2	4	151	desp	60	5	5	
6	2	4	151	desp	130	5	5	
6	2	4	151	rusp	5	75	5	
6	2	4	152	rhco	120	100	70	150
6	2	4	152	anvi	35	30	30	
6	2	4	152	eusp	140	5	5	
6	2	4	152	desp	60	5	5	
6	2	4	152	smsp	55	5	5	
6	2	4	153	desp	50	5	5	
6	2	4	153	desp	20	5	5	
6	2	4	153	rhco	40	40	30	70
6	2	4	153	rusp	70	5	5	
6	2	4	153	anvi	40	10	20	
6	2	4	154	rusp	40	5	10	
6	2	4	154	rusp	60	5	5	
6	2	4	154	rusp	40	5	10	
6	2	4	154	anvi	30	20	25	
6	2	4	154	rhco	20	30	25	100
6	2	4	155	rhco	20	20	30	30
6	2	4	155	anvi	30	30	25	
6	2	4	155	rhco	30	25	20	
6	2	4	155	rusp	25	10	5	

6	2	4	155	rhco	30	25	10	120
6	2	4	161	rhco	40	30	30	80
6	2	4	161	rhco	70	20	20	
6	2	4	161	aster	0	0	0	
6	2	4	161	quni	10	15	10	
6	2	4	161	rusp	5	70	5	
6	2	4	161	rusp	30	5	5	
6	2	4	161	rusp	75	10	5	
6	2	4	161	trur	40	5	5	
6	2	4	161	trur	35	5	5	
6	2	4	161	rhco	40	50	30	170
6	2	4	162	rhco	50	60	40	
6	2	4	162	rhco	70	20	20	
6	2	4	162	rusp	75	10	5	
6	2	4	162	rhco	80	100	30	140
6	2	4	163	rhco	80	100	80	40
6	2	4	163	rusp	80	15	10	
6	2	4	163	eusp	75	5	5	
6	2	4	163	cani	0	0	0	
6	2	4	164	rhco	50	40	30	90
6	2	4	164	rhco	30	40	20	40
6	2	4	164	rusp	100	5	5	
6	2	4	164	sosp	60	5	5	
6	2	4	164	desp	40	5	5	
6	2	4	164	rusp	65	5	5	
6	2	4	164	rhco	100	50	60	30
6	2	4	165	rhco	80	120	40	70
6	2	4	165	rhco	35	40	30	100
6	2	4	165	rhco	50	60	30	50
6	2	4	165	cani	50	5	5	
6	2	4	165	rusp	5	120	5	
6	2	4	165	disp	10	10	10	
6	2	4	165	sosp	50	10	5	
6	2	4	165	rusp	60	15	10	
6	2	4	165	aster	0	0	0	
6	3	1	131	gese	30	70	40	
6	3	1	131	gese	20	50	30	
6	3	1	131	gese	20	40	30	
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6	3	1	131	disp	0	0	0	
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6	3	1	141	gese	40	100	20	
6	3	1	141	gese	10	5	20	
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6	3	1	141	rhco	50	80	60	200
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6	3	1	142	gese	300	30	30	
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6	3	1	142	desp	40	10	5	
6	3	1	142	rhco	40	40	30	140
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6	3	1	143	rhco	50	40	40	60
6	3	1	144	rhco	40	60	40	140
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6	3	1	145	gese	15	15	10	
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6	3	1	151	sosp	60	10	5	

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6	3	1	151	cato	50	80	65	
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6	3	1	152	rhco	110	100	80	120
6	3	1	152	sosp	20	5	5	
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6	3	1	153	myce	30	5	5	
6	3	1	153	disp	30	10	5	
6	3	1	153	sosp	60	5	5	
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6	3	1	153	rare	35	305	5	
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6	3	1	154	rhco	100	100	100	180
6	3	1	154	rhco	20	40	50	130
6	3	1	154	sosp	0	0	0	
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6	3	1	155	rhco	100	100	100	160
6	3	1	155	rhco	30	30	40	130
6	3	1	155	sosp	30	10	5	
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6	3	1	164	rhco	10	5	5	
6	3	1	164	myce	50	5	5	
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6	3	1	165	prse	50	80	110	
6	3	1	165	aster	5	5	5	
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6	3	4	131	rhco	60	10	60	
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6	3	4	132	rhco	40	50	60	100
6	3	4	132	desp	50	10	5	
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6	3	4	141	eusp	30	5	5	
6	3	4	141	disp	20	5	5	
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6	3	4	142	quhe	300	100	80	40
6	3	4	142	rhco	30	20	40	60
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6	3	4	143	rhco	60	50	70	90
6	3	4	143	rhco	20	30	40	100
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6	3	4	144	rhco	30	20	20	100
6	3	4	144	rhco	20	20	20	20
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6	3	4	144	eusp	55	5	5	
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6	3	4	144	rhco	30	40	30	30
6	3	4	145	rhco	30	50	40	25
6	3	4	145	rhco	40	30	70	40
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6	3	4	151	gese	10	5	10	
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6	3	4	152	smsp	20	5	5	
6	3	4	152	rhco	15	20	5	
6	3	4	152	disp	5	20	30	
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6	3	4	153	desp	5	5	20	
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6	3	4	155	rhco	30	40	30	110
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25	1		131	gi	0	0	0	
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25	1		133	gi	0	0	0	
25	1		133	trur	10	5	5	
25	1		134	smsp	30	10	5	
25	1		134	gese	5	40	5	
25	1		134	gese	50	5	5	
25	1		135	gi	0	0	0	
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25	1		142					
25	1		143	disp	30	5	5	
25	1		143	cani	15	5	5	
25	1		144	gi	0	0	0	
25	1		144	pita	20	5	5	
25	1		145	gese	15	5	5	
25	1		145	gese	25	5	5	
25	1		145	gi	0	0	0	
25	1		151	pita	15	5	5	
25	1		151	smsp	0	0	0	

25	1		152	pita	20	5	5	
25	1		152	gi	30	10	10	
25	1		152	desp	20	5	5	
25	1		153	desp	30	5	5	
25	1		153	cani	0	0	0	
25	1		153	quhe	0	0	0	
25	1		153	aster	0	0	0	
25	1		154	pita	25	10	10	
25	1		154	quhe	25	10	15	
25	1		155					
25	1		161	desp	50	5	5	
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25	1		161	quni	10	5	5	
25	1		161	gi	0	0	0	
25	1		162	pita	25	10	10	
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25	1		163	pita	40	10	10	
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25	1		163	pita	20	5	5	
25	1		163	quhe	30	40	15	
25	1		163	smsp	15	5	5	
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25	3	2	135	gese	15	5	5	
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25	3	2	135	vasp	15	40	40	45
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25	3	2	144	desp	5	5	15	

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25	3	2	145	vasp	30	30	30	30
25	3	2	145	gese	10	5	5	
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25	3	2	153	g1	0	0	0	
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25	3	2	154	g1	0	0	0
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25	3	2	161	g2	0	0	0
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25	3	2	161	sedge	0	0	0
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25	3	2	162	g2	30	10	10
25	3	2	162	desp	0	0	0
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25	3	2	163	desp	0	0	0
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80	2	4	134	quhe	35	10	20	
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80	2	4	141	almd	15	10	5	
80	2	4	142	compound	40	40	70	80
80	2	4	142	losp	20	5	5	
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80	2	4	143	viro	15	20	15	120
80	2	4	144	compound	20	30	20	
80	2	4	144	almd	10	15	10	20
80	2	4	144	quhe	20	10	10	
80	2	4	144	quhe	20	5	5	
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80	2	4	144	losp	35	5	5	
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80	2	4	151	compound	25	30	25	
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80	2	4	152	compound	15	40	20	
80	2	4	152	compound	20	70	40	100
80	2	4	152	tora	15	10	10	
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80	2	4	153	losp	15	5	5	
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80	2	4	154	compound	15	25	10	20
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80	2	4	154	toro	15	15	10	
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80	2	4	154	almd	20	20	15	
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80	2	4	161	visp	60	30	25	
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80	2	4	165	quhe	20	5	5	
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80	3	4	131	cato	20	20	10	
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80	3	4	132	desp	5	15	10	
80	3	4	133	gi	0	0	0	
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80	3	4	133	viro	30	5	5	
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80	3	4	134	cato	15	15	10	
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80	3	4	134	gi	0	0	0	
80	3	4	135	gi	0	0	0	
80	3	4	135	cato	30	40	30	
80	3	4	135	desp	25	5	10	
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80	3	4	142	desp	15	5	5	
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80	3	4	143	gi	0	0	0	

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80	3	4	143	nysy	130	100	90	140
80	3	4	144	cato	15	15	10	
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80	3	4	144	gi	0	0	0	
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80	3	4	145	cato	40	60	30	
80	3	4	145	gi	0	0	0	
80	3	4	151	gi	0	0	0	
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80	3	4	151	rusp	25	5	5	
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80	3	4	152	desp	40	5	5	
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80	3	4	153	gi	0	0	0	
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80	3	4	154	gi	0	0	0	
80	3	4	154	desp	10	5	5	
80	3	4	154	desp	10	5	5	
80	3	4	155	gi	0	0	0	
80	3	4	155	desp	40	5	5	
80	3	4	155	desp	25	5	5	
80	3	4	155	desp	20	5	5	
80	3	4	155	desp	10	5	5	
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80	3	4	161	viro	30	30	30	
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80	3	4	162	gi	0	0	0	
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80	3	4	164	desp	30	5	5	

80	3	4	164	rusp	20	5	5
80	3	4	164	rusp	20	5	5
80	3	4	164	cato	40	20	70
80	3	4	164	hbi	40	10	10
80	3	4	164	tora	15	5	5
80	3	4	165	viro	50	40	30
80	3	4	165	gi	0	0	0
80	3	4	165	rusp	25	5	5
80	3	4	165	smsp	25	5	5
80	3	4	165	smsp	30	10	10

Appendix 3. Tall vegetation (greater than 1cm DBH).

year	replicate	quadrant	species	diameter (cm)
6	1	2	acru	1
6	1	2	list	4.5
6	1	2	list	1.5
6	1	2	list	2.5
6	1	2	list	5
6	1	2	list	5
6	1	2	list	1.5
6	1	2	list	2
6	1	2	list	1
6	1	2	list	3
6	1	2	list	1.5
6	1	2	list	1.5
6	1	2	list	1
6	1	2	list	7
6	1	2	list	5
6	1	2	list	4
6	1	2	list	2.5
6	1	2	list	5.5
6	1	2	list	10
6	1	2	list	3.5
6	1	2	list	5.5
6	1	2	list	8
6	1	2	list	4
6	1	2	list	4
6	1	2	list	3
6	1	2	list	4
6	1	2	list	2
6	1	2	list	2.5
6	1	2	list	2
6	1	2	list	1.5
6	1	2	list	6
6	1	2	list	1.5
6	1	2	list	4
6	1	2	list	2
6	1	2	list	7.5
6	1	2	list	4
6	1	2	list	6.5
6	1	2	list	2.5
6	1	2	list	3
6	1	2	list	4.5
6	1	2	myce	1
6	1	2	myce	1
6	1	2	myce	1.5
6	1	2	myce	1.5

6	1	2	myce	2.5
6	1	2	myce	3
6	1	2	myce	1
6	1	2	myce	4.5
6	1	2	pine	16.8
6	1	2	pine	9.1
6	1	2	pine	11.2
6	1	2	pine	10
6	1	2	pine	1
6	1	2	pine	12
6	1	2	pine	8.1
6	1	2	pine	9
6	1	2	pine	16.7
6	1	2	pine	14.7
6	1	2	pine	15.2
6	1	2	pine	11
6	1	2	pine	7
6	1	2	pine	4
6	1	2	pine	14
6	1	2	pine	16.1
6	1	2	pine	13.5
6	1	2	pine	15
6	1	2	pine	4
6	1	2	pine	13
6	1	2	pine	12
6	1	2	pine	3
6	1	2	pine	4
6	1	2	pine	11
6	1	2	pine	11.4
6	1	2	pine	8
6	1	2	pine	14.4
6	1	2	pine	13.5
6	1	2	pine	15.5
6	1	2	pine	18.6
6	1	2	pine	9.5
6	1	2	pine	3
6	1	2	pine	16
6	1	2	pine	15
6	1	2	pine	6
6	1	2	pine	17
6	1	2	pine	12.5
6	1	2	pine	16
6	1	2	pine	6.2
6	1	2	pine	6
6	1	2	pine	5
6	1	2	pine	4.5

6	1	2	pine	16.7
6	1	2	pine	15
6	1	2	pine	15.2
6	1	2	pine	8.7
6	1	2	pine	15
6	1	2	pine	16
6	1	2	pine	15.6
6	1	2	pine	16.2
6	1	2	pine	13.8
6	1	2	pine	8.5
6	1	2	pine	10.5
6	1	2	pine	11.9
6	1	2	pine	8
6	1	2	pine	16.5
6	1	2	pine	12
6	1	2	pine	9
6	1	2	pine	7
6	1	2	pine	16.5
6	1	2	pine	12.5
6	1	2	pine	14.2
6	1	2	pine	15.5
6	1	2	pine	14.5
6	1	2	pine	12.7
6	1	2	quni	4.5
6	1	2	quni	4
6	1	2	staghorn	1.5
6	1	2	staghorn	1
6	1	2	staghorn	1
6	1	2	staghorn	1.5
6	1	2	staghorn	1
6	1	2	staghorn	1
6	1	2	staghorn	1.5
6	2	2	myce	4
6	2	2	myce	4
6	2	2	myce	3.5
6	2	2	myce	1.5
6	2	2	myce	2
6	2	2	myce	1.5
6	2	2	myce	4
6	2	2	myce	3
6	2	2	pine	10
6	2	2	pine	13
6	2	2	pine	11.5
6	2	2	pine	9
6	2	2	pine	16
6	2	2	pine	5

6	2	2	pine	6
6	2	2	pine	12.6
6	2	2	pine	12.7
6	2	2	pine	17
6	2	2	pine	12.8
6	2	2	pine	16.8
6	2	2	pine	4
6	2	2	pine	8
6	2	2	pine	6.5
6	2	2	pine	12.2
6	2	2	pine	6.5
6	2	2	pine	20.5
6	2	2	pine	16.2
6	2	2	pine	11.3
6	2	2	pine	12.6
6	2	2	pine	13.2
6	2	2	pine	9.5
6	2	2	pine	14.2
6	2	2	pine	13.1
6	2	2	pine	13.6
6	2	2	pine	14.1
6	2	2	pine	7.9
6	2	2	pine	10
6	2	2	pine	15.8
6	2	2	pine	2.5
6	2	2	pine	13.2
6	2	2	pine	8.1
6	2	2	pine	10.5
6	2	2	pine	4.5
6	2	2	pine	3.2
6	2	2	pine	7.4
6	2	2	pine	6.5
6	2	2	pine	17.2
6	2	2	pine	5.5
6	2	2	pine	17.5
6	2	2	pine	12.5
6	2	2	pine	6.8
6	2	2	pine	17
6	2	2	pine	11.2
6	2	2	pine	13.3
6	2	2	pine	5
6	2	2	pine	12.7
6	2	2	pine	13.8
6	2	2	pine	5.2
6	2	2	pine	16.5
6	2	2	pine	7

6	2	2	pine	17.2
6	2	2	pine	11.8
6	2	2	pine	17.4
6	2	2	pine	11.5
6	2	2	pine	12.2
6	2	2	pine	19.2
6	2	2	pine	16.1
6	2	2	pine	11.4
6	2	2	pine	19.7
6	2	2	pine	13.9
6	2	2	pine	6
6	2	2	pine	6.8
6	2	2	pine	12
6	2	2	qufa	5
6	2	2	quni	3.5
6	2	2	quni	4.5
6	2	2	quni	2.5
6	2	2	quni	3
6	2	2	quni	2
6	2	2	quni	3
6	2	2	quni	3
6	2	2	quni	3.5
6	2	2	quni	2
6	2	2	quni	2.5
6	2	2	quni	2.5
6	2	2	qust	2.5
6	2	2	sumac	1
6	2	2	sumac	3
6	2	2	sumac	2
6	2	2	sumac	3
6	2	2	sumac	3
6	2	2	sumac	1.5
6	3	1	cato	1.5
6	3	1	divi	2
6	3	1	list	2
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6	3	1	myce	3
6	3	1	myce	2.5
6	3	1	myce	2

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6	3	1	myce	2
6	3	1	myce	1.5
6	3	1	myce	1.5
6	3	1	myce	2
6	3	1	myce	5
6	3	1	myce	4
6	3	1	myce	4
6	3	1	myce	2
6	3	1	myce	2.5
6	3	1	myce	3.5
6	3	1	myce	2
6	3	1	myce	1
6	3	1	myce	3.5
6	3	1	myce	2.5
6	3	1	myce	3
6	3	1	myce	2.1
6	3	1	myce	1.5
6	3	1	pine	10.6
6	3	1	pine	7.2
6	3	1	pine	1.5
6	3	1	pine	12.8
6	3	1	pine	15.7
6	3	1	pine	14.5
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6	3	1	pine	11.7
6	3	1	pine	17.9
6	3	1	pine	11.1
6	3	1	pine	13.2
6	3	1	pine	13.3
6	3	1	pine	14.2
6	3	1	pine	12
6	3	1	pine	13.2
6	3	1	pine	14.5
6	3	1	pine	13.6
6	3	1	pine	14.6
6	3	1	pine	8.8
6	3	1	pine	10.8
6	3	1	pine	15
6	3	1	pine	9.9
6	3	1	pine	17.1
6	3	1	pine	17.7
6	3	1	pine	2.4
6	3	1	pine	15.9

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6	3	1	pine	17.1
6	3	1	pine	14.8
6	3	1	pine	10.6
6	3	1	pine	10.6
6	3	1	pine	3.8
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6	3	1	pine	6.8
6	3	1	pine	15.6
6	3	1	pine	13.5
6	3	1	pine	10.8
6	3	1	pine	15
6	3	1	pine	4.5
6	3	1	pine	2.5
6	3	1	pine	2
6	3	1	pine	12.5
6	3	1	pine	15.2
6	3	1	pine	18.5
6	3	1	pine	21
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6	3	1	pine	8
6	3	1	pine	5.5
6	3	1	pine	7.5
6	3	1	pine	2
6	3	1	pine	13.2
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6	3	1	pine	10.5
6	3	1	pine	14.1
6	3	1	pine	12.4
6	3	1	pine	10.2
6	3	1	pine	13
6	3	1	pine	12.1
6	3	1	pine	3.5
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6	3	1	quni	4.5
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6	3	1	saas	1.5
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6	3	1	sumac	1.5

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6	3	1	sumac	1.5
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6	3	1	sumac	1
6	3	1	sumac	1
6	3	1	sumac	1
6	3	1	sumac	2
6	3	1	sumac	1
6	3	1	sumac	1
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6	3	1	sumac	1.4
6	3	1	sumac	2.4
6	3	1	sumac	1.5
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10	1	1	crasp	1
10	1	1	crasp	1.5
10	1	1	crasp	2
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10	1	1	holy	3
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10	1	1	list	5.6
10	1	1	list	2.5
10	1	1	list	2.5
10	1	1	list	4.5
10	1	1	list	3.5
10	1	1	pine	8.7
10	1	1	pine	14.6
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10	1	1	pine	14
10	1	1	pine	14.5
10	1	1	pine	14.3
10	1	1	pine	17.4
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10	1	1	pine	16.1
10	1	1	pine	15.2

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10	1	1	pine	14.1
10	1	1	pine	17
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10	1	1	pine	17.4
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10	1	1	pine	16.5
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10	1	1	pine	14.1
10	1	1	pine	15
10	1	1	pine	11.7
10	1	1	pine	14.5
10	1	1	pine	14
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10	1	1	pine	14.1
10	1	1	pine	6
10	1	1	pine	16
10	1	1	pine	14.2
10	1	1	pine	14
10	1	1	pine	13.9

10	1	1	pine	9.5
10	1	1	pine	10.9
10	1	1	qual	2
10	1	1	qual	4.5
10	1	1	quni	1.5
10	1	1	quni	3.2
10	1	1	quni	2.5
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10	1	1	quni	5
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10	1	1	quni	3
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10	1	1	quni	2
10	1	1	quni	2.5
10	1	1	quni	2
10	1	1	quni	4
10	1	1	quni	3
10	1	1	quni	2.5
10	1	1	quni	2
10	2	9	acrv	1
10	2	9	crasp	1.5
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10	2	9	list	1.5
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10	2	9	list	2
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10	2	9	list	3.5
10	2	9	list	5.6

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10	2	9	list	1
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10	2	9	myce	1
10	2	9	myce	1
10	2	9	myce	3
10	2	9	myce	2.5
10	2	9	myce	2.5
10	2	9	myce	2
10	2	9	myce	2.5
10	2	9	myce	1
10	2	9	myce	1
10	2	9	myce	2
10	2	9	myce	2
10	2	9	myce	2.5
10	2	9	myce	2
10	2	9	myce	1.5
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10	2	9	myce	3
10	2	9	myce	1
10	2	9	myce	2
10	2	9	myce	2.5
10	2	9	myce	3
10	2	9	myce	4

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10	2	9	myce	2
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10	2	9	myce	1
10	2	9	myce	2.5
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10	2	9	pine	6
10	2	9	pine	15.2
10	2	9	pine	12.3
10	2	9	pine	18.8
10	2	9	pine	2.5
10	2	9	pine	12.2
10	2	9	pine	19.5
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10	2	9	pine	11.2
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10	2	9	pine	13.4
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10	2	9	pine	3
10	2	9	pine	15.9
10	2	9	pine	18.2
10	2	9	pine	10.2
10	2	9	pine	15
10	2	9	pine	17.1

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10	2	9	pine	10.2
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10	2	9	pine	17.2
10	2	9	pine	15.2
10	2	9	pine	12
10	2	9	pine	14.8
10	2	9	pine	14.3
10	2	9	pine	15.7
10	2	9	pine	16.8
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10	2	9	pine	14.7
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10	2	9	quni	1
10	2	9	quni	1.5
10	2	9	quni	3
10	2	9	quni	1.5
10	2	9	quni	6.2
10	2	9	quni	3
10	2	9	quni	1
10	2	9	quni	2
10	2	9	quni	4
10	2	9	quni	2.5
10	2	9	quni	3
10	2	9	quni	1.5
10	2	9	quni	1
10	2	9	quni	2
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10	2	9	quni	5
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10	2	9	quni	1
10	2	9	quni	2
10	2	9	quni	1.5
10	2	9	quni	2.5

10	2	9	quni	2
10	2	9	quni	3
10	2	9	quni	1
10	2	9	qust	1
10	2	9	sumac	1
10	3	4	crasp	2.5
10	3	4	crasp	1
10	3	4	crasp	3.5
10	3	4	crasp	2
10	3	4	crasp	1
10	3	4	crasp	2
10	3	4	crasp	3
10	3	4	crasp	2
10	3	4	crasp	2.5
10	3	4	crasp	3
10	3	4	crasp	3
10	3	4	crasp	2
10	3	4	divi	3
10	3	4	myce	4.5
10	3	4	myce	1.5
10	3	4	myce	3
10	3	4	myce	2
10	3	4	myce	2
10	3	4	myce	2
10	3	4	pine	12.2
10	3	4	pine	13.8
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10	3	4	pine	5.7
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10	3	4	pine	14.2
10	3	4	pine	15
10	3	4	pine	13.2
10	3	4	pine	6.3
10	3	4	pine	10.8
10	3	4	pine	16.8
10	3	4	pine	14.7
10	3	4	pine	6
10	3	4	pine	3.5
10	3	4	pine	19.1
10	3	4	pine	8.5
10	3	4	pine	4
10	3	4	pine	10.2
10	3	4	pine	12.2
10	3	4	pine	14.2

10	3	4	pine	15.8
10	3	4	pine	16.2
10	3	4	pine	18.2
10	3	4	pine	14.4
10	3	4	pine	11.7
10	3	4	pine	10.4
10	3	4	pine	9.5
10	3	4	pine	2.5
10	3	4	pine	10.8
10	3	4	pine	15.7
10	3	4	pine	12.6
10	3	4	pine	13.2
10	3	4	pine	13.6
10	3	4	pine	18.5
10	3	4	pine	12.2
10	3	4	pine	15.5
10	3	4	pine	16.7
10	3	4	pine	11.2
10	3	4	pine	13.4
10	3	4	pine	14.1
10	3	4	pine	8.5
10	3	4	pine	6
10	3	4	pine	9.5
10	3	4	pine	16
10	3	4	pine	15.6
10	3	4	pine	16.8
10	3	4	pine	14
10	3	4	pine	18.6
10	3	4	pine	12.8
10	3	4	pine	16.9
10	3	4	pine	18.2
10	3	4	pine	17
10	3	4	pine	15
10	3	4	pine	20.2
10	3	4	pine	19.2
10	3	4	pine	15.2
10	3	4	pine	12
10	3	4	pine	18
10	3	4	pine	7.4
10	3	4	pine	17.5
10	3	4	prse	2
10	3	4	quini	1.2
10	3	4	quini	1.5
10	3	4	quini	1
10	3	4	quini	2
10	3	4	quini	2

10	3	4	quini	2
10	3	4	quini	1.5
10	3	4	quini	2.5
10	3	4	quini	2.5
10	3	4	quini	2
10	3	4	quini	1.5
10	3	4	quini	2
10	3	4	quini	1.5
10	3	4	quini	1
10	3	4	quini	2.5
10	3	4	quini	2.5
10	3	4	quini	2.5
10	3	4	quini	1
10	3	4	sumac	1
25	1	1	divi	2.7
25	1	1	list	2
25	1	1	list	2
25	1	1	list	7
25	1	1	list	9.2
25	1	1	list	8.2
25	1	1	list	5.9
25	1	1	list	8.5
25	1	1	list	6
25	1	1	myce	1
25	1	1	pine	22.2
25	1	1	pine	18.8
25	1	1	pine	23.6
25	1	1	pine	16
25	1	1	pine	19.5
25	1	1	pine	26.5
25	1	1	pine	23.7
25	1	1	pine	24.3
25	1	1	pine	19.2
25	1	1	pine	23.9
25	1	1	pine	21.6
25	1	1	pine	21.4
25	1	1	pine	26
25	1	1	pine	25.3
25	1	1	pine	22.9
25	1	1	pine	16.5
25	1	1	pine	21.5
25	1	1	pine	20
25	1	1	pine	25.5
25	1	1	pine	20.4
25	1	1	pine	17.3
25	1	1	pine	5.2

25	1	1	pine	16.5
25	1	1	pine	28.2
25	1	1	pine	21.1
25	1	1	pine	25.5
25	1	1	pine	23.5
25	1	1	pine	11.1
25	1	1	prse	6
25	2	3	pine	15.5
25	2	3	pine	22.3
25	2	3	pine	15.2
25	2	3	pine	23.5
25	2	3	pine	17.5
25	2	3	pine	19.2
25	2	3	pine	21.7
25	2	3	pine	21.7
25	2	3	pine	22.8
25	2	3	pine	22.6
25	2	3	pine	23.2
25	2	3	pine	20.2
25	2	3	pine	11.2
25	2	3	pine	22.5
25	2	3	pine	21.5
25	2	3	pine	24.5
25	2	3	pine	20.6
25	2	3	pine	24.8
25	2	3	pine	24.5
25	2	3	pine	20.4
25	2	3	pine	15
25	2	3	pine	22
25	2	3	pine	20
25	2	3	pine	22.5
25	2	3	pine	6.5
25	2	3	pine	22.4
25	2	3	pine	13.6
25	2	3	pine	23.6
25	2	3	pine	15
25	2	3	pine	19.7
25	2	3	pine	21
25	2	3	pine	18.2
25	2	3	pine	8.4
25	2	3	pine	16.2
25	2	3	pine	20.5
25	2	3	pine	15.4
25	2	3	pine	17.1
25	2	3	pine	23.6
25	2	3	pine	17

25	2	3	pine	25.7
25	2	3	pine	16.2
25	2	3	pine	20.7
25	2	3	pine	23
25	2	3	pine	23.8
25	2	3	pine	18
25	2	3	pine	18
25	2	3	pine	16.3
25	2	3	prse	6
25	2	3	prse	5
25	2	3	prse	2.5
25	2	3	quini	3
25	2	3	quini	2
25	2	3	quini	7
25	2	3	quini	3
25	2	3	quini	6.5
25	2	3	quini	2.5
25	2	3	quini	8
25	2	3	quini	6
25	2	3	quini	4
25	2	3	quini	3.5
25	2	3	quini	6
25	2	3	quini	7.5
25	3	2	list	12.6
25	3	2	list	13.5
25	3	2	list	4
25	3	2	list	3
25	3	2	list	1
25	3	2	myce	1
25	3	2	myce	1
25	3	2	myce	1.5
25	3	2	myce	1
25	3	2	myce	2
25	3	2	myce	1.5
25	3	2	myce	2
25	3	2	myce	1
25	3	2	myce	7.5
25	3	2	myce	6
25	3	2	myce	6
25	3	2	myce	5
25	3	2	nysy	4
25	3	2	nysy	3
25	3	2	pine	25.5
25	3	2	pine	15.2
25	3	2	pine	20.5
25	3	2	pine	26.2

25	3	2	pine	17.4
25	3	2	pine	17.9
25	3	2	pine	2.9
25	3	2	pine	26.1
25	3	2	pine	24.9
25	3	2	pine	21
25	3	2	pine	13
25	3	2	pine	29.1
25	3	2	pine	3.5
25	3	2	pine	6
25	3	2	pine	21.9
25	3	2	pine	13.3
25	3	2	pine	18.8
25	3	2	pine	20.3
25	3	2	pine	26
25	3	2	pine	15.2
25	3	2	pine	20.8
25	3	2	pine	21.6
25	3	2	pine	25.2
25	3	2	pine	17
25	3	2	pine	16.6
25	3	2	pine	18.7
25	3	2	prse	1
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25	3	2	prse	5.5
25	3	2	prse	5.1
99	1	3	cato	15.5
99	1	3	cato	6.8
99	1	3	cato	16.5
99	1	3	cato	11.2
99	1	3	cato	3.5
99	1	3	cato	7.5
99	1	3	cato	39.5
99	1	3	cato	41.6
99	1	3	cato	12
99	1	3	cato	5
99	1	3	cato	4.4
99	1	3	cofl	6.5
99	1	3	cofl	3.5
99	1	3	cofl	9.2
99	1	3	cofl	6.5
99	1	3	cofl	4.5
99	1	3	cofl	6
99	1	3	cofl	7
99	1	3	cofl	48.6
99	1	3	cofl	5.5

99	1	3	cofl	4.5
99	1	3	cofl	2
99	1	3	cofl	4
99	1	3	cofl	5
99	1	3	cofl	3.5
99	1	3	cofl	7.2
99	1	3	cofl	5.7
99	1	3	ilop	1
99	1	3	ilop	1.5
99	1	3	nysy	5.5
99	1	3	nysy	4
99	1	3	nysy	5
99	1	3	nysy	4.5
99	1	3	nysy	5
99	1	3	nysy	2
99	1	3	nysy	5
99	1	3	nysy	1
99	1	3	nysy	4
99	1	3	nysy	6.4
99	1	3	nysy	10.4
99	1	3	nysy	9.5
99	1	3	nysy	5
99	1	3	nysy	5
99	1	3	nysy	6.5
99	1	3	nysy	2.5
99	1	3	nysy	1.5
99	1	3	nysy	2
99	1	3	nysy	2
99	1	3	nysy	3.5
99	1	3	nysy	2
99	1	3	qual	48.6
99	1	3	qual	12.8
99	1	3	qual	12.8
99	1	3	qual	10.8
99	1	3	qual	16.8
99	1	3	qufa	68.5
99	1	3	qu-nigral	5
99	1	3	qu-qust	25.8
99	1	3	qu-qust	35.8
99	1	3	qu-qust	10.1
99	1	3	vasp	2
99	1	3	vasp	2.5
99	1	3	vasp	2.5
99	1	3	vasp	1
99	1	3	vasp	2.5
99	1	3	vasp	2.5

99	1	3	vasp	1
99	1	3	vasp	1
99	1	3	vasp	2
99	1	3	vasp	1.5
99	1	3	vasp	2.5
99	1	3	vasp	1.5
99	1	3	vasp	2.5
99	1	3	vasp	3.2
99	1	3	vasp	2.5
99	1	3	vasp	2.5
99	1	3	vasp	1.5
99	1	3	vasp	1.5
99	1	3	vasp	1
99	1	3	vasp	1.5
99	1	3	vasp	2
99	1	3	vasp	2
99	2	3	cato	22
99	2	3	list	31.8
99	2	3	list	30
99	2	3	list	5.2
99	2	3	list	16.5
99	2	3	list	28.2
99	2	3	qufa	21.7
99	2	3	quhe	38.4
99	2	3	quhe	41.5
99	2	3	quhe	13.7
99	2	3	quhe	15.6
99	2	3	quhe	43.5
99	2	3	quhe	15.7
99	2	3	quhe	16.4
99	2	3	quhe	43.9
99	2	3	quhe	33.1
99	2	3	quhe	10.9
99	2	3	quhe	21.2
99	2	3	quhe	3.5
99	2	3	quhe	56.8
99	2	3	quhe	11.9
99	2	3	quhe	3
99	2	3	quhe	2
99	2	3	quhe	41
99	2	3	quhe	16
99	2	3	quhe	21.2
99	2	3	quhe	2.5
99	2	3	quni	26.7
99	2	3	subalt	2
99	2	3	subalt	2

99	2	3	subalt	3
99	2	3	subalt	1.3
99	3	4	cagl	22.5
99	3	4	cagl	8
99	3	4	cagl	9.5
99	3	4	cagl	18.2
99	3	4	cagl	27
99	3	4	cagl	13.5
99	3	4	cagl	6
99	3	4	cagl	9.9
99	3	4	cagl	28
99	3	4	cagl	15.2
99	3	4	cato	22.5
99	3	4	cato	5.5
99	3	4	cato	26.4
99	3	4	cato	8.5
99	3	4	cato	5.5
99	3	4	cato	10.2
99	3	4	ilop	1
99	3	4	nysy	22.8
99	3	4	nysy	10.5
99	3	4	nysy	5.5
99	3	4	nysy	7.5
99	3	4	nysy	4
99	3	4	nysy	2
99	3	4	nysy	3.5
99	3	4	nysy	17.8
99	3	4	piel	26
99	3	4	piel	1
99	3	4	piel	3
99	3	4	qufa	4
99	3	4	qufa	5.4
99	3	4	qufa	6.5
99	3	4	qufa	1
99	3	4	qufa	7.5
99	3	4	qufa	5.5
99	3	4	qufa	5
99	3	4	qufa	6
99	3	4	qufa	1.5
99	3	4	qufa	2.5
99	3	4	qufa	2
99	3	4	qufa	6
99	3	4	qufa	7.2
99	3	4	qufa	1.5
99	3	4	qufa	4.5
99	3	4	qufa	7.8

99	3	4	qufa	7
99	3	4	qufa	5.8
99	3	4	qufa	17.4
99	3	4	qust	34.2
99	3	4	qust	37.2
99	3	4	qust	9.6
99	3	4	qust	10.4
99	3	4	qust	4
99	3	4	qust	17.2
99	3	4	qust	34.4

Appendix 4. Soil and litter data. NH_4, NO_3 and IN data are mg N / Kg soil. X and Y data are coordinates within plots.

yr	rep	transect	point	nh4	no3	IN	N%	C%	litter	pH	x	y
1	1	0	0	1.910	4.166	6.076	0.017	0.332	0	5.4	0	0
1	1	1	1	1.198	4.082	5.280	0.021	0.413	0	5.08	0	0.2
1	1	1	2	1.953	4.614	6.567	0.019	0.312	0	5.1	0	0.4
1	1	1	3	1.372	4.932	6.304	0.017	0.307	0	5.13	0	0.6
1	1	1	4	0.803	4.604	5.407	0.018	0.344	0	5.43	0	0.8
1	1	1	5	1.417	8.502	9.919	0.021	0.416	0	5.13	0	1
1	1	1	6	0.847	4.588	5.434	0.021	0.384	11.27	5.18	0	1.2
1	1	1	7	2.130	6.478	8.608	0.021	0.456	18.24	4.77	0	1.4
1	1	1	8	2.773	6.479	9.252	0.026	0.576	7.03	4.95	0	1.6
1	1	1	9	4.406	9.254	13.660	0.031	0.708	13.2	4.72	0	1.8
1	1	1	10				0.030	0.724	18.73	4.47	0	2
1	1	1	11	2.092	5.882	7.974	0.025	0.493	7.22	5.24	0	3
1	1	1	12	1.185	4.393	5.578	0.017	0.304	0	5.19	0	4
1	1	1	13	1.884	3.136	5.020	0.020	0.447	0	5.26	0	5
1	1	1	14	1.039	4.709	5.748	0.015	0.372	20	4.12	0	10
1	1	1	15	1.166	4.768	5.935	0.024	0.636	2.69	4.87	0	15
1	1	1	16	2.770	10.481	13.252	0.037	1.034	35.14	4.25	0	20
1	1	2	1	1.570	4.561	6.131	0.021	0.592	0	5.26	0.2	0
1	1	2	2	1.001	3.882	4.884	0.023	0.413	0	5.25	0.4	0
1	1	2	3	1.390	4.382	5.772	0.019	0.343	0	5.3	0.6	0
1	1	2	4	1.911	4.672	6.584	0.017	0.336	0	5.12	0.8	0
1	1	2	5	0.634	3.449	4.084	0.015	0.299	0	5.28	1	0
1	1	2	6	1.211	3.087	4.298	0.015	0.266	0	4.8	1.2	0
1	1	2	7	1.095	5.008	6.103	0.018	0.334	4.98	4.92	1.4	0
1	1	2	8	1.178	3.770	4.948	0.019	0.319	6.65	5.47	1.6	0
1	1	2	9	1.121	5.210	6.331	0.018	0.454	7.71	4.67	1.8	0
1	1	2	10	1.166	4.289	5.456	0.022	0.449	13.57	4.97	2	0
1	1	2	11	1.020	7.974	8.994	0.013	0.357	15.42	4.99	3	0
1	1	2	12	2.359	8.717	11.076	0.025	0.560	0	4.72	4	0
1	1	2	13	1.321	5.829	7.150	0.025	0.635	4.34	4.87	5	0
1	1	2	14	1.099	4.668	5.767	0.025	0.633	15.38	4.5	10	0
1	1	2	15	2.165	6.660	8.825	0.017	0.447	27.86	4.27	15	0
1	1	2	16	1.391	5.029	6.421	0.019	0.481	14.7	4.42	20	0
1	1	3	1	0.882	4.041	4.922	0.016	0.368	0	5.13	0	-0.2
1	1	3	2	0.947	3.757	4.705	0.015	0.322	0	5.24	0	-0.4
1	1	3	3	1.400	3.319	4.719	0.013	0.426	0	5.35	0	-0.6
1	1	3	4	1.055	3.972	5.028	0.015	0.339	0	5.19	0	-0.8
1	1	3	5	2.095	8.822	10.917	0.022	0.462	0	4.79	0	-1
1	1	3	6	6.199	10.231	16.430	0.041	0.979	0	4.51	0	-1.2
1	1	3	7	1.528	6.730	8.257	0.029	0.607	7.76	4.96	0	-1.4
1	1	3	8	0.796	5.057	5.853	0.020	0.425	3.44	5.09	0	-1.6
1	1	3	9	1.606	4.709	6.316	0.024	0.585	2.91	5.3	0	-1.8
1	1	3	10	0.850	4.854	5.704	0.019	0.447	2.1	5.2	0	-2

1	1	3	11	1.534	4.638	6.172	0.021	0.479	39.11	4.53	0	-3
1	1	3	12	1.082	3.961	5.043	0.018	0.454	0	4.71	0	-4
1	1	3	13	0.761	3.078	3.839	0.014	0.360	0	4.62	0	-5
1	1	3	14	0.822	5.388	6.210	0.019	0.445	8.6	4.99	0	-10
1	1	3	15	6.891	6.206	13.097	0.026	0.760	37.5	6.41	0	-15
1	1	3	16	2.534	3.860	6.394	0.041	1.287	25.8	4.83	0	-20
1	1	4	1	1.159	3.484	4.644	0.019	0.343	0	5.16	-0.2	0
1	1	4	2	1.014	4.257	5.271	0.018	0.353	0	5.04	-0.4	0
1	1	4	3	0.632	3.683	4.315	0.013	0.336	0	5.04	-0.6	0
1	1	4	4	0.907	3.447	4.354	0.019	0.411	0	5.23	-0.8	0
1	1	4	5	1.110	4.647	5.757	0.015	0.367	0	4.92	-1	0
1	1	4	6	0.817	5.455	6.271	0.016	0.336	0	4.98	-1.2	0
1	1	4	7	1.134	5.409	6.543	0.023	0.497	9.88	4.33	-1.4	0
1	1	4	8	7.789	7.360	15.149	0.029	0.643	11.09	4.3	-1.6	0
1	1	4	9	1.806	10.035	11.842	0.029	0.635	15.83	4.4	-1.8	0
1	1	4	10	3.189	12.672	15.861	0.025	0.516	38.27	4.44	-2	0
1	1	4	11	5.586	5.481	11.067	0.043	1.145	47.66	4.67	-3	0
1	1	4	12	0.822	3.792	4.614	0.021	0.424	0	4.39	-4	0
1	1	4	13	1.191	6.704	7.895	0.025	0.718	44.88	4.6	-5	0
1	1	4	14	0.737	3.164	3.901	0.015	0.440	51.96	4.5	-10	0
1	1	4	15	0.724	4.075	4.799	0.014	0.344	0	4.72	-15	0
1	1	4	16	0.509	4.201	4.710	0.016	0.430	0	4.9	-20	0
1	2	0	0	1.437	2.717	4.154					0	0
1	2	1	1	1.227	2.171	3.398	0.021	0.622	10.84	4.83	0	0.2
1	2	1	2	1.006	2.348	3.353	0.017	0.520	10.5	4.56	0	0.4
1	2	1	3	1.551	3.260	4.811	0.017	0.419	10.12	4.62	0	0.6
1	2	1	4	1.015	2.224	3.239	0.018	0.561	7.25	4.74	0	0.8
1	2	1	5				0.031	1.105	5.77	4.65	0	1
1	2	1	6	0.751	0.714	1.465	0.015	0.384	6.12	4.74	0	1.2
1	2	1	7	0.904	0.664	1.569	0.019	0.535	2.17	4.81	0	1.4
1	2	1	8	1.054	2.261	3.315	0.031	0.653	10.25	4.84	0	1.6
1	2	1	9	0.935	3.482	4.417	0.017	0.489	38.23	4.81	0	1.8
1	2	1	10	0.487	0.500	0.987	0.012	0.372	0.96	5.41	0	2
1	2	1	11	0.911	2.891	3.802	0.008	0.176	49.76	4.82	0	3
1	2	1	12	0.399	1.550	1.949	0.013	0.423	1.03	5.01	0	4
1	2	1	13	0.645	1.144	1.789	0.017	0.403	13.41	5.37	0	5
1	2	1	14	0.522	1.835	2.357	0.013	0.306	26.75	5.15	0	10
1	2	1	15	0.703	1.105	1.808	0.016	0.530	6.21	4.78	0	15
1	2	1	16	0.915	1.585	2.500	0.018	0.441	28.6	4.77	0	20
1	2	2	1	6.207	4.547	10.754	0.034	0.545	16.26	5	0.2	0
1	2	2	2	1.080	1.397	2.477	0.010	0.237	60.42	4.98	0.4	0
1	2	2	3	1.045	2.253	3.297	0.019	0.606	17.11	5.21	0.6	0
1	2	2	4	0.879	1.394	2.273	0.013	0.428	47.31	5.04	0.8	0
1	2	2	5	2.064	8.382	10.446	0.018	0.507	17.83	4.55	1	0
1	2	2	6	2.708	7.698	10.406	0.017	0.411	1.77	4.41	1.2	0
1	2	2	7	2.083	6.294	8.377	0.033	0.561	1.15	4.75	1.4	0

1	2	2	8	0.682	1.161	1.843	0.014	0.426	4.48	4.82	1.6	0
1	2	2	9	0.499	0.846	1.344	0.012	0.336	8.31	4.9	1.8	0
1	2	2	10	0.479	1.423	1.902	0.013	0.364	9.81	4.82	2	0
1	2	2	11	1.564	2.802	4.365	0.023	0.570	3.02	4.9	3	0
1	2	2	12	0.713	1.922	2.634	0.020	0.664	20.08	4.61	4	0
1	2	2	13	1.301	7.282	8.583	0.018	0.651	26.1	4.47	5	0
1	2	2	14	1.196	3.937	5.134	0.016	0.547	12.84	4.59	10	0
1	2	2	15	0.970	0.858	1.828	0.022	0.670	0	4.71	15	0
1	2	2	16	1.566	2.100	3.666	0.022	0.657	50.38	4.58	20	0
1	2	3	1	2.180	2.102	4.282	0.021	0.568	18.49	5.28	0	-0.2
1	2	3	2	0.750	2.573	3.323	0.016	0.310	34.67	4.87	0	-0.4
1	2	3	3	0.598	1.122	1.720	0.014	0.436	1.2	5.14	0	-0.6
1	2	3	4	0.623	2.118	2.741	0.029	0.257	5.15	5.02	0	-0.8
1	2	3	5	1.134	3.186	4.320	0.018	0.506	0	4.78	0	-1
1	2	3	6	1.132	1.382	2.514	0.016	0.383	0.15	4.72	0	-1.2
1	2	3	7	0.918	1.018	1.936	0.014	0.325	0.21	4.78	0	-1.4
1	2	3	8	0.870	2.313	3.183	0.017	0.419	1.05	4.83	0	-1.6
1	2	3	9	1.532	4.431	5.963	0.019	0.486	0.31	4.78	0	-1.8
1	2	3	10	2.409	1.758	4.166	0.016	0.349	7.46	5.69	0	-2
1	2	3	11	0.677	0.947	1.623	0.020	0.583	12.44	4.87	0	-3
1	2	3	12				0.019	0.420	13.87	4.44	0	-4
1	2	3	13	0.844	3.219	4.062	0.015	0.390	10.86	5.22	0	-5
1	2	3	14	1.864	0.865	2.729	0.019	0.577	44.48	4.53	0	-10
1	2	3	15	0.707	0.593	1.300	0.021	0.501	0	5.35	0	-15
1	2	3	16	0.650	2.640	3.290	0.018	0.382	28.22	4.81	0	-20
1	2	4	1	1.050	1.727	2.776	0.014	0.341	25.82	4.76	-0.2	0
1	2	4	2	0.947	3.609	4.555	0.014	0.354	16.87	4.92	-0.4	0
1	2	4	3	1.318	3.120	4.438	0.016	0.520	49.15	4.41	-0.6	0
1	2	4	4	1.546	5.244	6.791	0.024	0.419	32.35	4.61	-0.8	0
1	2	4	5	0.911	1.261	2.173	0.024	0.422	41.22	4.82	-1	0
1	2	4	6	1.059	3.232	4.292	0.015	0.448	26.58	5	-1.2	0
1	2	4	7	0.857	1.730	2.586	0.016	0.385	10.83	4.78	-1.4	0
1	2	4	8	0.947	1.486	2.433	0.014	0.463	27.95	4.73	-1.6	0
1	2	4	9	1.094	3.585	4.679	0.017	0.384	0	4.84	-1.8	0
1	2	4	10	1.393	3.168	4.562	0.020	0.533	11.76	4.63	-2	0
1	2	4	11	0.736	1.613	2.349	0.015	0.425	20.42	4.75	-3	0
1	2	4	12	0.790	2.054	2.845	0.017	0.448	18.96	5.17	-4	0
1	2	4	13	0.756	0.933	1.689	0.013	0.404	8.56	4.82	-5	0
1	2	4	14	0.641	2.143	2.785	0.016	0.499	2.93	5.2	-10	0
1	2	4	15	1.048	1.275	2.323	0.013	0.421	3.47	4.8	-15	0
1	2	4	16	0.852	3.498	4.351	0.017	0.429	0.85	4.75	-20	0
1	2	9	1	1.044	2.653	3.696					100	100
1	2	9	2	0.780	2.780	3.560					100	100
1	2	9	3	0.802	3.317	4.119					100	100
1	2	9	4	0.746	3.780	4.525					100	100
1	2	9	5	0.915	4.655	5.570					100	100

1	2	9	6	1.083	5.325	6.408	100	100
1	2	9	7	0.686	4.025	4.711	100	100
1	2	9	8	1.173	3.709	4.882	100	100
1	2	9	9	0.572	2.159	2.731	100	100
1	2	9	10	2.285	3.049	5.334	100	100
1	2	9	11	1.373	3.799	5.173	101	100
1	2	9	12	0.901	3.268	4.168	101	100
1	2	9	13	1.803	4.412	6.216	101	100
1	2	9	14	1.640	3.358	4.998	101	100
1	2	9	15	1.507	3.340	4.847	101	100
1	2	9	16	2.264	4.983	7.246	101	100
1	2	9	17	7.982	7.540	15.522	101	100
1	2	9	18	1.462	5.720	7.182	101	100
1	2	9	19	1.390	4.560	5.949	101	100
1	2	9	20	4.173	5.459	9.631	101	100
1	2	9	21	1.575	3.062	4.637	101	100
1	2	9	22	1.058	1.303	2.360	100	100
1	2	9	23	1.609	1.565	3.175	100	100
1	2	9	24	0.789	0.881	1.670	100	100
1	2	9	25	1.385	1.540	2.924	100	100
1	2	9	26	1.315	3.389	4.703	100	100
1	2	9	27	1.797	4.425	6.222	100	100
1	2	9	28	1.044	2.595	3.639	100	100
1	2	9	29	0.941	2.664	3.605	100	100
1	2	9	30	1.163	3.310	4.473	100	100
1	2	9	31	1.103	3.932	5.035	100	100
1	2	9	32	1.241	2.831	4.072	101	100
1	2	9	33	1.099	2.619	3.718	101	100
1	2	9	34	1.039	2.658	3.697	101	100
1	2	9	35	1.546	3.012	4.558	101	100
1	2	9	36	1.740	3.920	5.659	101	100
1	2	9	37	3.374	5.798	9.173	101	100
1	2	9	38	4.577	4.511	9.088	101	100
1	2	9	39	3.996	6.502	10.497	101	100
1	2	9	40	2.167	4.158	6.326	101	100
1	2	9	41	3.489	7.989	11.478	101	100
1	2	9	42	1.807	5.028	6.834	101	100
1	2	9	43	1.920	2.454	4.374	100	99
1	2	9	44	1.639	2.939	4.578	100	99
1	2	9	45	1.329	2.356	3.685	100	99
1	2	9	46	0.855	2.114	2.969	100	99
1	2	9	47	1.213	1.589	2.803	100	99
1	2	9	48	0.903	1.054	1.957	100	99
1	2	9	49	7.089	1.950	9.040	100	99
1	2	9	50	1.096	1.600	2.697	100	99
1	2	9	51	1.166	1.844	3.010	100	99

1	2	9	52	0.565	2.148	2.712					100	99
1	2	9	53	1.417	3.295	4.712					101	99
1	2	9	54	1.807	2.918	4.725					101	99
1	2	9	55	0.318	1.998	2.315					101	99
1	2	9	56	1.193	3.289	4.482					101	99
1	2	9	57	3.013	5.462	8.475					101	99
1	2	9	58	2.081	3.668	5.749					101	99
1	2	9	59	1.159	4.004	5.164					101	99
1	2	9	60	3.004	5.093	8.097					101	99
1	2	9	61	4.443	7.590	12.033					101	99
1	2	9	62	1.002	7.695	8.697					101	99
1	2	9	63	1.176	8.021	9.198					101	99
1	3	0	0	0.511	2.346	2.857					0	0
1	3	1	1	0.448	2.372	2.820	0.015	0.417	6.15	5.16	0	0.2
1	3	1	2	0.808	1.983	2.791	0.020	0.585	2.9	5.19	0	0.4
1	3	1	3	0.669	1.607	2.275	0.015	0.463	17.56	5.2	0	0.6
1	3	1	4	0.542	2.469	3.011	0.016	0.434	19.67	5.12	0	0.8
1	3	1	5	0.953	3.656	4.610	0.021	0.510	68.92	4.84	0	1
1	3	1	6				0.017	0.406	95.03	4.83	0	1.2
1	3	1	7	0.683	2.455	3.138	0.019	0.525	71.54	4.88	0	1.4
1	3	1	8	0.563	1.745	2.309	0.015	0.546	102.87	5.15	0	1.6
1	3	1	9	0.821	3.695	4.516	0.015	0.454	66.29	4.75	0	1.8
1	3	1	10	0.737	2.365	3.102	0.019	0.513	50.43	4.55	0	2
1	3	1	11	0.497	1.672	2.168	0.015	0.390	47.19	5.37	0	3
1	3	1	12	0.641	2.109	2.750	0.015	0.402	19.85	4.91	0	4
1	3	1	13	1.141	1.898	3.038	0.012	0.281	5.21	5.18	0	5
1	3	1	14	0.496	1.468	1.964	0.012	0.324	37.54	4.86	0	10
1	3	1	15	1.125	1.997	3.122	0.013	0.355	8.63	4.68	0	15
1	3	1	16	2.128	2.591	4.719	0.028	0.666	0	4.79	0	20
1	3	2	1	0.442	2.071	2.512	0.012	0.368	0	5.05	0.2	0
1	3	2	2	0.614	2.124	2.738	0.016	0.428	0	5.3	0.4	0
1	3	2	3	0.732	2.840	3.572	0.014	0.397	0	5.09	0.6	0
1	3	2	4	0.865	1.833	2.698	0.014	0.386	0	5.36	0.8	0
1	3	2	5	0.787	2.426	3.213	0.011	0.445	0	5.21	1	0
1	3	2	6	1.075	2.074	3.149	0.016	0.437	0	5.07	1.2	0
1	3	2	7	1.102	3.594	4.696	0.013	0.392	0	4.91	1.4	0
1	3	2	8	0.649	3.161	3.810	0.015	0.457	19.64	4.9	1.6	0
1	3	2	9	0.641	2.613	3.254	0.014	0.398	47.39	4.94	1.8	0
1	3	2	10	1.176	2.292	3.468	0.019	0.530	28.95	4.94	2	0
1	3	2	11	0.979	3.237	4.217	0.020	0.565	9.87	4.93	3	0
1	3	2	12	1.250	3.588	4.838	0.015	0.430	13.78	5.01	4	0
1	3	2	13	0.891	3.592	4.483	0.016	0.382	10.8	4.63	5	0
1	3	2	14	0.815	2.716	3.531	0.016	0.489	11.61	5.88	10	0
1	3	2	15	0.804	4.039	4.843	0.015	0.390	0.71	4.98	15	0
1	3	2	16	1.026	2.345	3.370	0.021	0.657	11.71	5.1	20	0
1	3	3	1	0.592	2.828	3.420	0.013	0.350	3.32	5.34	0	-0.2

1	3	3	2	2.162	1.267	3.430	0.017	0.418	37.65	5.83	0	-0.4
1	3	3	3	2.214	2.952	5.165	0.022	0.592	6.09	4.83	0	-0.6
1	3	3	4	0.977	2.997	3.973	0.014	0.394	0	5.07	0	-0.8
1	3	3	5	1.340	2.038	3.378	0.014	0.444	3.72	5	0	-1
1	3	3	6	0.909	2.741	3.650	0.022	0.631	7.67	4.72	0	-1.2
1	3	3	7	0.675	3.809	4.484	0.015	0.444	7.52	4.83	0	-1.4
1	3	3	8	2.724	1.565	4.288	0.015	0.462	19.42	4.84	0	-1.6
1	3	3	9	1.104	3.932	5.035	0.020	0.589	23.33	4.68	0	-1.8
1	3	3	10	0.709	2.593	3.302	0.016	0.422	29.75	4.75	0	-2
1	3	3	11	0.853	2.646	3.499	0.021	0.522	88.13	4.76	0	-3
1	3	3	12	1.925	1.612	3.537	0.016	0.428	7.87	4.8	0	-4
1	3	3	13	0.945	4.349	5.293	0.016	0.479	20.25	4.65	0	-5
1	3	3	14	2.581	3.218	5.799	0.016	0.431	15.15	5.02	0	-10
1	3	3	15	1.188	3.208	4.396	0.018	0.494	0	4.65	0	-15
1	3	3	16	5.810	3.550	9.360	0.046	1.180	0	4.71	0	-20
1	3	4	1	0.549	2.568	3.117	0.015	0.379	0.33	5.04	-0.2	0
1	3	4	2	0.617	2.664	3.281	0.015	0.424	0	5.37	-0.4	0
1	3	4	3	1.517	2.922	4.439	0.020	0.568	13.28	5.02	-0.6	0
1	3	4	4	0.667	2.741	3.408	0.013	0.384	34.66	5.02	-0.8	0
1	3	4	5	0.986	3.096	4.083	0.016	0.452	28.53	4.98	-1	0
1	3	4	6	1.590	4.520	6.109	0.020	0.594	70.4	4.82	-1.2	0
1	3	4	7	0.815	2.930	3.745	0.023	0.613	69.51	4.82	-1.4	0
1	3	4	8	1.082	2.330	3.412	0.021	0.642	76.51	5.05	-1.6	0
1	3	4	9	1.453	2.088	3.541	0.020	0.497	118.46	5.29	-1.8	0
1	3	4	10	2.317	2.672	4.988	0.025	0.581	63.3	5.14	-2	0
1	3	4	11				0.016	0.421	17.93	5.19	-3	0
1	3	4	12	1.116	3.918	5.034	0.013	0.352	0.87	5.12	-4	0
1	3	4	13	0.687	2.969	3.656	0.014	0.352	7.58	5.51	-5	0
1	3	4	14	0.632	1.741	2.373	0.019	0.410	6.02	4.87	-10	0
1	3	4	15	1.160	3.231	4.391	0.015	0.454	67.8	4.97	-15	0
1	3	4	16	0.959	2.579	3.539	0.015	0.396	12.53	5.065	-20	0
6	1	0	0	1.016	2.580	3.596					0	0
6	1	1	1	0.888	1.906	2.794	0.026	0.548	11.3	5.15	0	0.2
6	1	1	2	0.494	1.388	1.882	0.020	0.418	13.83	5.33	0	0.4
6	1	1	3	1.593	1.746	3.340	0.030	0.693	6.49	4.61	0	0.6
6	1	1	4	2.101	2.003	4.104	0.026	0.498	8.43	5.17	0	0.8
6	1	1	5	1.195	2.083	3.278	0.023	0.588	4.42	5.07	0	1
6	1	1	6	1.107	2.177	3.284	0.025	0.567	8.85	4.81	0	1.2
6	1	1	7	1.069	1.895	2.964	0.019	0.413	8.91	4.83	0	1.4
6	1	1	8	0.965	2.008	2.973	0.027	0.562	15.62	4.87	0	1.6
6	1	1	9	1.011	1.918	2.929	0.029	0.401	18.34	5.39	0	1.8
6	1	1	10	1.604	1.829	3.434	0.034	0.800	34.22	4.81	0	2
6	1	1	11	1.347	1.360	2.708	0.038	0.782	52.26	4.86	0	3
6	1	1	12	1.787	1.866	3.652	0.021	0.381	6.02	4.93	0	4
6	1	1	13	1.548	1.980	3.528	0.025	0.476	14.54	5.06	0	5
6	1	1	14	12.019	2.068	14.087	0.029	0.394	8.16	5.42	0	10

6	1	1	15	0.850	2.098	2.948	0.021	0.410	9.6	4.82	0	15
6	1	1	16	1.193	1.991	3.184	0.031	0.883	27.23	4.97	0	20
6	1	2	1	1.560	1.800	3.360	0.023	0.488	32.12	4.96	0.2	0
6	1	2	2	2.510	2.873	5.384	0.027	0.657	11.01	4.59	0.4	0
6	1	2	3	1.089	1.498	2.587	0.021	0.478	11.96	5.2	0.6	0
6	1	2	4	1.309	2.591	3.900	0.025	0.505	45.03	5.09	0.8	0
6	1	2	5	1.488	2.443	3.931	0.025	0.554	57.94	5.05	1	0
6	1	2	6	1.242	1.515	2.757	0.021	0.410	39.55	5.23	1.2	0
6	1	2	7	1.242	1.861	3.103	0.031	0.690	21.05	5.01	1.4	0
6	1	2	8	1.168	2.424	3.592	0.022	0.492	12.9	5.11	1.6	0
6	1	2	9				0.025	0.492	29.67	5.12	1.8	0
6	1	2	10	0.850	1.296	2.145	0.026	0.525	19.86	5.16	2	0
6	1	2	11	0.884	3.788	4.672	0.023	0.576	27.72	4.63	3	0
6	1	2	12	1.395	1.488	2.883	0.030	0.658	38.31	4.73	4	0
6	1	2	13	1.187	1.561	2.748	0.028	0.602	40.8	4.67	5	0
6	1	2	14	0.804	1.927	2.731	0.017	0.382	10.58	5.04	10	0
6	1	2	15	0.659	1.569	2.228	0.020	0.419	13.23	5.38	15	0
6	1	2	16	4.135	2.769	6.904	0.027	0.583	10.35	4.76	20	0
6	1	3	1	0.931	2.179	3.110	0.024	0.521	32.79	4.69	0	-0.2
6	1	3	2	1.787	1.937	3.724	0.031	0.785	11.25	4.77	0	-0.4
6	1	3	3	0.836	1.409	2.246	0.023	0.517	21.28	4.85	0	-0.6
6	1	3	4	1.014	1.738	2.752	0.022	0.503	25.28	4.93	0	-0.8
6	1	3	5	0.849	1.845	2.694	0.018	0.429	35.37	4.8	0	-1
6	1	3	6	1.214	1.870	3.083	0.018	0.354	12.81	5.05	0	-1.2
6	1	3	7	0.955	1.620	2.575	0.024	0.531	14.99	4.9	0	-1.4
6	1	3	8	0.855	1.604	2.459	0.023	0.500	24.93	5.17	0	-1.6
6	1	3	9	1.225	1.368	2.593	0.021	0.448	27.13	5.12	0	-1.8
6	1	3	10	1.138	2.123	3.261	0.025	0.499	21.61	4.84	0	-2
6	1	3	11	0.667	1.647	2.313	0.035	0.751	18.24	4.61	0	-3
6	1	3	12	1.392	2.347	3.739	0.027	0.639	18.65	5.06	0	-4
6	1	3	13	0.697	2.069	2.766	0.028	0.646	30.65	4.93	0	-5
6	1	3	14	1.306	0.936	2.243	0.024	0.536	42.2	5.04	0	-10
6	1	3	15	2.282	2.601	4.883	0.023	0.503	8.7	4.81	0	-15
6	1	3	16	2.069	1.997	4.066	0.016	0.429	12.46	4.69	0	-20
6	1	4	1	2.206	2.433	4.638	0.024	0.501	30.93	4.59	-0.2	0
6	1	4	2	1.776	1.792	3.568	0.027	0.606	17.58	4.59	-0.4	0
6	1	4	3	1.960	1.780	3.739	0.022	0.465	17.58	4.85	-0.6	0
6	1	4	4	1.514	1.942	3.455	0.020	0.386	14.17	5.01	-0.8	0
6	1	4	5	1.868	1.718	3.586	0.025	0.524	12.68	4.81	-1	0
6	1	4	6	1.730	0.607	2.336	0.027	0.489	11.34	4.92	-1.2	0
6	1	4	7	1.883	1.119	3.002	0.027	0.600	13.96	4.87	-1.4	0
6	1	4	8	1.953	2.098	4.051	0.021	0.463	11.72	4.82	-1.6	0
6	1	4	9	1.055	1.246	2.301	0.018	0.346	11.08	4.97	-1.8	0
6	1	4	10	2.017	2.063	4.080	0.023	0.508	5.37	5.07	-2	0
6	1	4	11	3.247	2.312	5.560	0.030	0.555	20.47	4.57	-3	0
6	1	4	12	1.896	1.558	3.454	0.045	0.904	9.66	4.76	-4	0

6	1	4	13				0.038	0.673	9.42	4.51	-5	0
6	1	4	14	2.474	1.420	3.894	0.032	0.551	23.94	4.9	-10	0
6	1	4	15	2.359	1.082	3.441	0.037	0.575	14.92	5	-15	0
6	1	4	16	2.355	1.560	3.915	0.031	0.517	12.03	4.98	-20	0
6	2	0	0	2.889	3.788	6.677					0	0
6	2	1	1	0.674	2.227	2.901	0.016	0.410	23.93	4.66	0	0.2
6	2	1	2	2.320	1.614	3.934	0.036	1.249	77.16	4.2	0	0.4
6	2	1	3	1.048	3.948	4.996	0.018	0.423	21.27	4.77	0	0.6
6	2	1	4	1.384	1.699	3.083	0.027	0.844	30.54	4.53	0	0.8
6	2	1	5	1.111	0.485	1.597	0.010	0.273	20.68	5.17	0	1
6	2	1	6	1.064	2.273	3.336	0.015	0.432	21.89	4.67	0	1.2
6	2	1	7	1.027	3.810	4.837	0.014	0.377	45.67	4.97	0	1.4
6	2	1	8	0.871	1.635	2.506	0.019	0.554	46.03	4.86	0	1.6
6	2	1	9	1.518	3.869	5.387	0.017	0.432	20.98	4.69	0	1.8
6	2	1	10	0.949	3.947	4.896	0.017	0.437	25.19	5.25	0	2
6	2	1	11	0.909	2.487	3.397	0.042	0.346	11.19	5.51	0	3
6	2	1	12	4.334	2.772	7.106	0.015	0.395	25.68	5.27	0	4
6	2	1	13	0.841	1.781	2.622	0.018	0.495	28.99	5.26	0	5
6	2	1	14	0.763	1.103	1.866	0.014	0.434	21.91	5.34	0	10
6	2	1	15	0.911	3.072	3.983	0.011	0.312	11.14	5.5	0	15
6	2	1	16	0.709	3.177	3.886	0.013	0.375	31.24	5.06	0	20
6	2	2	1	1.063	2.311	3.375	0.023	0.625	12.37	4.8	0.2	0
6	2	2	2	1.045	2.548	3.593	0.016	0.397	11.85	5.04	0.4	0
6	2	2	3	1.255	3.864	5.119	0.023	0.446	12.3	5.17	0.6	0
6	2	2	4	0.948	3.242	4.190	0.021	0.390	29.22	4.83	0.8	0
6	2	2	5	0.914	3.411	4.325	0.022	0.415	32.13	5.19	1	0
6	2	2	6	1.303	3.222	4.525	0.015	0.402	33.25	5.14	1.2	0
6	2	2	7	0.782	3.867	4.649	0.017	0.434	26.53	5.35	1.4	0
6	2	2	8	0.775	4.632	5.407	0.015	0.350	23.08	5.44	1.6	0
6	2	2	9	0.886	3.575	4.461	0.018	0.360	18.76	5.53	1.8	0
6	2	2	10	3.013	4.332	7.345	0.018	0.406	32.12	5.62	2	0
6	2	2	11	0.978	0.591	1.568	0.014	0.338	26.09	5.36	3	0
6	2	2	12	1.867	1.978	3.845	0.030	0.345	21.8	5.21	4	0
6	2	2	13	1.018	3.344	4.362	0.018	0.430	80.51	5.24	5	0
6	2	2	14	0.977	1.853	2.829	0.030	0.495	60	5.34	10	0
6	2	2	15	1.932	3.909	5.842	0.025	0.630	39.36	5.35	15	0
6	2	2	16	6.967	3.176	10.143	0.039	1.068	9.34	5.24	20	0
6	2	3	1	1.451	3.471	4.922	0.018	0.464	18.35	4.61	0	-0.2
6	2	3	2	1.208	2.207	3.415	0.022	0.641	8.75	4.57	0	-0.4
6	2	3	3	0.882	1.614	2.496	0.027	0.712	8.31	4.65	0	-0.6
6	2	3	4	0.828	3.699	4.527	0.014	0.424	9.11	5.08	0	-0.8
6	2	3	5	0.822	3.794	4.617	0.014	0.366	9.06	5.05	0	-1
6	2	3	6	0.837	3.626	4.462	0.016	0.496	6.18	4.97	0	-1.2
6	2	3	7	0.653	3.594	4.247	0.012	0.344	3.29	4.8	0	-1.4
6	2	3	8	0.909	4.192	5.101	0.014	0.419	2.87	5.13	0	-1.6
6	2	3	9	0.979	1.747	2.726	0.023	0.589	2.59	5	0	-1.8

6	2	3	10	0.981	3.322	4.303	0.020	0.411	3.76	5.17	0	-2
6	2	3	11	0.660	3.548	4.208	0.012	0.455	2.77	4.9	0	-3
6	2	3	12	1.094	3.725	4.818	0.021	0.661	2.56	5.35	0	-4
6	2	3	13	1.129	2.476	3.605	0.013	0.340	9.1	5.04	0	-5
6	2	3	14	1.203	4.049	5.252	0.018	0.527	23.91	5.36	0	-10
6	2	3	15	1.097	4.072	5.169	0.019	0.668	51.8	4.98	0	-15
6	2	3	16	1.642	3.922	5.564	0.019	0.533	18.66	5.13	0	-20
6	2	4	1	1.009	3.525	4.534	0.025	0.403	47.97	4.86	-0.2	0
6	2	4	2	1.728	3.297	5.025	0.019	0.409	18.34	5.05	-0.4	0
6	2	4	3	1.030	2.141	3.172	0.015	0.465	10.88	4.68	-0.6	0
6	2	4	4	1.312	2.327	3.640	0.018	0.554	8.63	4.95	-0.8	0
6	2	4	5	3.823	3.158	6.980	0.016	0.471	6.93	4.93	-1	0
6	2	4	6	0.959	3.817	4.776	0.023	0.664	6.01	4.84	-1.2	0
6	2	4	7	1.699	3.649	5.348	0.019	0.616	8.39	4.87	-1.4	0
6	2	4	8	1.026	1.386	2.412	0.015	0.492	3.06	5.12	-1.6	0
6	2	4	9	1.062	3.194	4.256	0.015	0.434	3.28	4.98	-1.8	0
6	2	4	10	0.961	3.370	4.331	0.018	0.510	3.54	5.08	-2	0
6	2	4	11	0.586	3.417	4.003	0.014	0.321	1.15	5.13	-3	0
6	2	4	12	1.488	3.538	5.026	0.013	0.277	1.37	5.21	-4	0
6	2	4	13	0.936	3.203	4.138	0.012	0.242	6.59	5.25	-5	0
6	2	4	14	0.860	3.930	4.791	0.017	0.349	8.91	5.65	-10	0
6	2	4	15	1.276	3.196	4.471	0.022	0.620	13.43	4.99	-15	0
6	2	4	16	1.375	3.308	4.683	0.020	0.443	12.63	4.905	-20	0
6	3	0	0	0.611	3.734	4.344					0	0
6	3	1	1	1.343	3.036	4.379	0.029	0.453	1.55	4.79	0	0.2
6	3	1	2	0.690	3.172	3.862	0.019	0.593	1.43	4.47	0	0.4
6	3	1	3	1.024	3.431	4.455	0.028	0.753	3.03	4.7	0	0.6
6	3	1	4				0.022	0.773	1.62	4.71	0	0.8
6	3	1	5	1.399	3.652	5.051	0.032	0.775	2.01	4.6	0	1
6	3	1	6	2.200	2.946	5.146	0.025	0.706	2.09	4.58	0	1.2
6	3	1	7	1.191	3.231	4.422	0.025	0.649	2.27	4.59	0	1.4
6	3	1	8	1.163	3.607	4.770	0.019	0.543	3.16	4.66	0	1.6
6	3	1	9	0.890	3.651	4.542	0.018	0.570	1.77	4.58	0	1.8
6	3	1	10	0.511	2.989	3.501	0.012	0.462	2.52	4.74	0	2
6	3	1	11	0.723	3.519	4.241	0.013	0.402	2.52	4.81	0	3
6	3	1	12	1.347	3.459	4.806	0.027	0.806	1.67	4.58	0	4
6	3	1	13	5.287	3.224	8.510	0.019	0.523	6.72	5.24	0	5
6	3	1	14	1.091	3.427	4.518	0.026	0.872	12.39	4.78	0	10
6	3	1	15	0.793	3.486	4.279	0.036	0.972	6.47	5.05	0	15
6	3	1	16	0.715	3.191	3.905	0.022	0.578	4.74	4.52	0	20
6	3	2	1	1.129	3.537	4.666	0.025	0.725	1.7	4.77	0.2	0
6	3	2	2	0.803	3.648	4.451	0.018	0.578	0.77	4.83	0.4	0
6	3	2	3	0.723	3.539	4.262	0.021	0.644	1.66	4.6	0.6	0
6	3	2	4	0.893	3.553	4.446	0.016	0.505	1.88	4.67	0.8	0
6	3	2	5	1.001	3.421	4.423	0.028	0.787	1.6	4.67	1	0
6	3	2	6	1.285	2.669	3.954	0.040	0.910	5	4.56	1.2	0

6	3	2	7				0.032	0.884	4.09	4.55	1.4	0
6	3	2	8	0.752	3.529	4.281	0.015	0.384	16.1	4.61	1.6	0
6	3	2	9	0.561	2.756	3.317	0.022	0.501	9.95	4.64	1.8	0
6	3	2	10	0.780	3.821	4.600	0.016	0.365	8.74	4.65	2	0
6	3	2	11	1.200	3.172	4.372	0.021	0.717	1.94	4.42	3	0
6	3	2	12	0.465	3.107	3.573	0.028	0.329	4.04	4.68	4	0
6	3	2	13	1.208	3.258	4.466	0.023	0.776	71.67	4.7	5	0
6	3	2	14	1.998	3.197	5.194	0.019	0.672	15.61	4.8	10	0
6	3	2	15	0.806	3.604	4.410	0.021	0.654	10.14	5.06	15	0
6	3	2	16	1.368	2.938	4.306	0.053	0.928	61.55	5	20	0
6	3	3	1	0.858	3.127	3.985	0.045	0.919	1.09	4.72	0	-0.2
6	3	3	2	1.039	3.274	4.313	0.030	0.546	4.51	4.8	0	-0.4
6	3	3	3	0.672	2.811	3.482	0.018	0.611	4.2	4.78	0	-0.6
6	3	3	4	0.897	4.868	5.765	0.059	0.679	4.45	4.71	0	-0.8
6	3	3	5	0.848	3.720	4.569	0.017	0.449	7.15	4.65	0	-1
6	3	3	6	0.672	3.068	3.740	0.019	0.629	6.41	4.7	0	-1.2
6	3	3	7	0.475	3.266	3.741	0.024	0.700	4.35	4.57	0	-1.4
6	3	3	8	0.303	2.593	2.896	0.013	0.424	6.26	4.7	0	-1.6
6	3	3	9	0.788	3.136	3.924	0.016	0.417	4.56	4.55	0	-1.8
6	3	3	10	0.498	3.342	3.840	0.030	1.186	3.85	4.63	0	-2
6	3	3	11	1.605	2.660	4.265	0.025	0.628	1.98	4.77	0	-3
6	3	3	12	1.756	3.313	5.070	0.022	0.588	17.94	4.39	0	-4
6	3	3	13	1.073	2.802	3.875	0.042	0.508	19.79	4.65	0	-5
6	3	3	14	1.188	3.362	4.549	0.017	0.494	1.3	4.85	0	-10
6	3	3	15	0.281	3.216	3.496	0.011	0.262	2.27	5.06	0	-15
6	3	3	16	1.066	2.854	3.920	0.019	0.619	3.47	4.68	0	-20
6	3	4	1	0.757	3.623	4.380	0.024	0.547	1.31	4.64	-0.2	0
6	3	4	2	0.613	3.307	3.919	0.014	0.497	0.43	4.69	-0.4	0
6	3	4	3	0.680	3.329	4.009	0.015	0.483	1.1	4.77	-0.6	0
6	3	4	4	1.324	3.264	4.589	0.015	0.472	1.95	4.73	-0.8	0
6	3	4	5	0.706	3.689	4.395	0.023	0.651	2.04	4.89	-1	0
6	3	4	6	0.728	3.431	4.160	0.015	0.495	3	4.87	-1.2	0
6	3	4	7	0.863	3.142	4.005	0.018	0.567	2.96	4.95	-1.4	0
6	3	4	8	0.996	2.917	3.913	0.022	0.649	2.54	4.76	-1.6	0
6	3	4	9	1.113	3.658	4.771	0.022	0.601	1.53	4.81	-1.8	0
6	3	4	10	1.221	3.337	4.558	0.020	0.564	2.25	4.76	-2	0
6	3	4	11	0.730	2.870	3.600	0.015	0.478	1.12	4.75	-3	0
6	3	4	12	0.417	3.139	3.556	0.022	0.610	1.28	4.92	-4	0
6	3	4	13	0.666	2.900	3.566	0.011	0.302	1.87	4.94	-5	0
6	3	4	14	1.749	3.179	4.928	0.052	1.596	18.67	4.59	-10	0
6	3	4	15	0.636	3.784	4.420	0.016	0.482	1.87	4.77	-15	0
6	3	4	16	1.034	3.776	4.810	0.017	0.511	4.57	4.895	-20	0
10	1	0	0	1.085	4.129	5.213					0	0
10	1	1	1	0.710	3.546	4.256	0.017	0.385	3.07	5	0	0.2
10	1	1	2	0.842	3.406	4.248	0.020	0.459	3.1	4.92	0	0.4
10	1	1	3	0.722	3.223	3.945	0.017	0.480	4.36	4.77	0	0.6

10	1	1	4	1.078	3.927	5.005	0.021	0.585	6.3	4.9	0	0.8
10	1	1	5	0.770	2.906	3.676	0.018	0.400	3.48	5.13	0	1
10	1	1	6	0.247	2.092	2.339	0.013	0.290	4.9	4.94	0	1.2
10	1	1	7	0.921	2.777	3.699	0.018	0.425	4.22	4.91	0	1.4
10	1	1	8	1.156	3.554	4.711	0.019	0.471	6.61	4.9	0	1.6
10	1	1	9	0.588	2.176	2.764	0.019	0.601	5.83	4.84	0	1.8
10	1	1	10	1.052	3.394	4.446	0.028	1.100	6.21	4.76	0	2
10	1	1	11	1.116	3.399	4.515	0.033	1.011	3.09	4.36	0	3
10	1	1	12	1.153	3.719	4.873	0.034	0.993	3.44	4.51	0	4
10	1	1	13	0.852	3.663	4.515	0.021	0.449	6.22	4.79	0	5
10	1	1	14	0.922	3.876	4.798	0.023	0.646	7.59	4.31	0	10
10	1	1	15	0.954	2.272	3.226	0.025	0.582	7.5	4.77	0	15
10	1	1	16	0.808	3.632	4.440	0.015	0.428	5.87	5	0	20
10	1	2	1	1.391	3.178	4.569	0.022	0.545	6.6	5.02	0.2	0
10	1	2	2	0.940	3.779	4.719	0.019	0.511	4.25	5.02	0.4	0
10	1	2	3	1.347	4.413	5.760	0.029	0.766	4.3	4.72	0.6	0
10	1	2	4	1.602	0.790	2.391	0.038	0.975	3.37	4.47	0.8	0
10	1	2	5	0.728	3.056	3.784	0.025	0.620	3	4.59	1	0
10	1	2	6	1.174	3.394	4.568	0.023	0.573	5.82	4.91	1.2	0
10	1	2	7	0.806	3.810	4.616	0.021	0.533	9.01	4.63	1.4	0
10	1	2	8	1.644	3.154	4.797	0.020	0.535	11.83	4.42	1.6	0
10	1	2	9	0.808	2.456	3.264	0.026	0.550	6.14	4.71	1.8	0
10	1	2	10	0.823	3.807	4.630	0.020	0.452	8.88	4.76	2	0
10	1	2	11	0.991	4.398	5.389	0.019	0.466	5.46	4.94	3	0
10	1	2	12	0.966	2.226	3.192	0.016	0.360	7.79	4.86	4	0
10	1	2	13	0.917	3.339	4.256	0.024	0.648	7.57	4.6	5	0
10	1	2	14	1.875	3.566	5.441	0.073	1.848	6.14	4.59	10	0
10	1	2	15	1.251	3.591	4.842	0.028	0.663	15.31	4.51	15	0
10	1	2	16	0.766	1.660	2.426	0.031	0.979	4.04	4.64	20	0
10	1	3	1	0.865	3.619	4.483	0.020	0.425	3.53	5.04	0	-0.2
10	1	3	2	0.857	2.413	3.270	0.024	0.541	3.7	4.74	0	-0.4
10	1	3	3	0.811	3.698	4.509	0.023	0.522	14.2	4.87	0	-0.6
10	1	3	4	0.878	3.635	4.514	0.023	0.579	3.52	4.59	0	-0.8
10	1	3	5	0.700	2.964	3.664	0.025	0.570	0.67	4.61	0	-1
10	1	3	6	0.842	3.816	4.658	0.025	0.628	7.53	4.72	0	-1.2
10	1	3	7	1.411	4.195	5.606	0.027	0.655	1.07	4.31	0	-1.4
10	1	3	8	0.678	3.388	4.066	0.024	0.645	0.51	4.54	0	-1.6
10	1	3	9	0.899	3.614	4.513	0.024	0.605	3.46	4.79	0	-1.8
10	1	3	10	0.770	3.752	4.522	0.025	0.520	1.63	4.73	0	-2
10	1	3	11	0.773	2.808	3.581	0.020	0.415	3.29	4.9	0	-3
10	1	3	12	0.846	4.261	5.108	0.021	0.500	4.22	4.68	0	-4
10	1	3	13	1.050	2.539	3.589	0.026	0.738	4.03	4.46	0	-5
10	1	3	14				0.053	1.714	2.99	4.16	0	-10
10	1	3	15	0.930	2.831	3.761	0.026	0.713	2.11	4.65	0	-15
10	1	3	16	0.490	2.039	2.529	0.015	0.413	2.18	4.88	0	-20
10	1	4	1	1.340	3.798	5.137	0.023	0.564	2.44	4.97	-0.2	0

10	1	4	2	0.789	2.134	2.924	0.020	0.469	2.97	4.88	-0.4	0
10	1	4	3	0.659	3.390	4.049	0.018	0.469	2.89	5.04	-0.6	0
10	1	4	4	1.004	3.010	4.014	0.022	0.502	3.42	5.03	-0.8	0
10	1	4	5	0.981	4.459	5.440	0.017	0.434	3.24	5.11	-1	0
10	1	4	6	0.863	4.370	5.233	0.020	0.428	1.24	5.06	-1.2	0
10	1	4	7	0.613	2.375	2.987	0.016	0.383	3.25	4.89	-1.4	0
10	1	4	8	0.828	3.972	4.800	0.017	0.467	4.79	4.75	-1.6	0
10	1	4	9	0.894	3.366	4.259	0.022	0.550	2.71	4.84	-1.8	0
10	1	4	10	0.643	3.581	4.224	0.019	0.525	4.7	4.85	-2	0
10	1	4	11	3.461	3.876	7.338	0.030	0.761	6.27	4.63	-3	0
10	1	4	12	1.076	3.277	4.353	0.013	0.373	8.5	4.91	-4	0
10	1	4	13	0.471	1.787	2.258	0.014	0.380	8.53	4.89	-5	0
10	1	4	14	0.923	4.104	5.028	0.022	0.526	7.41	5	-10	0
10	1	4	15	2.743	3.044	5.787	0.025	0.795	7.06	4.98	-15	0
10	1	4	16	1.601	3.310	4.911	0.030	0.743	10.03	4.885	-20	0
10	2	0	0	2.631	1.762	4.394					0	0
10	2	1	1	2.242	5.142	7.384	0.025	0.671	129.18	5.14	0	0.2
10	2	1	2	2.486	1.949	4.436	0.038	0.730	18.42	5.21	0	0.4
10	2	1	3	3.887	2.206	6.094	0.033	0.753	37.18	5.27	0	0.6
10	2	1	4	6.663	1.082	7.745	0.044	0.942	19.6	5	0	0.8
10	2	1	5	2.592	4.285	6.877	0.031	0.799	14.41	5.3	0	1
10	2	1	6	3.282	2.912	6.193	0.030	0.740	21.97	5.35	0	1.2
10	2	1	7	2.946	1.858	4.804	0.047	1.023	16.29	5.26	0	1.4
10	2	1	8	2.769	1.271	4.040	0.051	1.100	20.85	5.34	0	1.6
10	2	1	9	4.776	3.899	8.675	0.041	0.948	46.42	5.26	0	1.8
10	2	1	10	6.837	1.327	8.163	0.041	0.859	9.71	5.36	0	2
10	2	1	11	3.135	2.916	6.051	0.043	1.148	14.68	5.33	0	3
10	2	1	12	1.228	1.676	2.905	0.029	0.810	16.59	5.41	0	4
10	2	1	13	3.277	3.177	6.455	0.038	1.050	21.68	5.56	0	5
10	2	1	14	1.039	4.312	5.351	0.050	1.326	16.91	4.75	0	10
10	2	1	15	4.379	1.134	5.513	0.063	1.515	22.3	5.35	0	15
10	2	1	16	6.035	1.666	7.701	0.042	0.998	10.68	5.01	0	20
10	2	2	1	3.519	3.973	7.492	0.034	0.809	47.95	5.2	0.2	0
10	2	2	2	1.627	3.826	5.453	0.028	0.694	35.42	5.22	0.4	0
10	2	2	3	1.794	1.288	3.082	0.034	0.942	22.49	5	0.6	0
10	2	2	4	1.755	3.736	5.491	0.027	0.657	18.2	5.08	0.8	0
10	2	2	5	2.849	2.060	4.908	0.040	0.928	26.61	4.98	1	0
10	2	2	6	6.254	4.132	10.386	0.037	0.883	9.07	4.87	1.2	0
10	2	2	7	3.217	3.156	6.373	0.037	0.812	8.27	5.03	1.4	0
10	2	2	8				0.036	0.915	16.56	4.87	1.6	0
10	2	2	9	5.621	4.660	10.281	0.028	0.825	29.49	5.3	1.8	0
10	2	2	10	2.752	3.111	5.863	0.034	0.785	18.58	5.02	2	0
10	2	2	11	4.448	3.001	7.449	0.045	0.948	23.55	5.12	3	0
10	2	2	12	2.426	1.674	4.101	0.027	0.631	22.87	4.89	4	0
10	2	2	13	4.480	3.483	7.963	0.035	0.670	24.91	4.9	5	0
10	2	2	14	1.721	1.755	3.475	0.019	0.451	36.29	5.14	10	0

10	2	2	15	1.123	1.421	2.544	0.029	0.506	32	5.05	15	0
10	2	2	16	3.672	2.853	6.524	0.030	0.463	14.65	5.4	20	0
10	2	3	1	5.254	1.609	6.863	0.045	1.056	10.11	5.2	0	-0.2
10	2	3	2	2.145	4.204	6.349	0.038	0.905	27.88	5.22	0	-0.4
10	2	3	3	4.355	2.168	6.523	0.037	0.887	27.62	5.03	0	-0.6
10	2	3	4	1.869	3.430	5.299	0.030	0.747	12.14	5.19	0	-0.8
10	2	3	5	1.449	1.322	2.771	0.026	0.606	16.4	5.36	0	-1
10	2	3	6	2.785	3.400	6.185	0.029	0.722	22.99	5.21	0	-1.2
10	2	3	7	3.200	2.217	5.417	0.027	0.748	28.06	4.96	0	-1.4
10	2	3	8	1.510	3.293	4.804	0.027	0.649	21.35	5.2	0	-1.6
10	2	3	9	1.872	3.591	5.463	0.031	0.702	37.5	4.99	0	-1.8
10	2	3	10	1.556	2.215	3.770	0.034	0.796	31.16	5.06	0	-2
10	2	3	11	2.015	1.841	3.857	0.035	0.800	13.68	4.87	0	-3
10	2	3	12	3.145	3.284	6.429	0.032	0.755	17.46	4.95	0	-4
10	2	3	13	2.892	2.918	5.810	0.034	0.814	13.96	5.12	0	-5
10	2	3	14	4.651	3.002	7.652	0.034	0.587	31.75	5.3	0	-10
10	2	3	15	1.858	3.594	5.452	0.017	0.428	24.92	4.96	0	-15
10	2	3	16	3.911	4.382	8.293	0.022	0.472	37.8	4.65	0	-20
10	2	4	1	4.291	4.493	8.784	0.042	0.995	23.6	5.04	-0.2	0
10	2	4	2	2.138	2.961	5.099	0.027	0.678	22.67	5.21	-0.4	0
10	2	4	3	2.461	3.254	5.715	0.037	0.838	27.03	5.24	-0.6	0
10	2	4	4	4.220	4.895	9.115	0.044	0.955	28.1	5.41	-0.8	0
10	2	4	5	4.549	4.747	9.295	0.040	0.978	23.51	5.4	-1	0
10	2	4	6	2.125	1.863	3.987	0.029	0.836	27.34	5.27	-1.2	0
10	2	4	7				0.035	0.781	0	5.15	-1.4	0
10	2	4	8	1.751	2.390	4.141	0.037	0.861	31.05	5.27	-1.6	0
10	2	4	9	2.102	2.620	4.722	0.030	0.750	25.04	5.25	-1.8	0
10	2	4	10	1.504	1.800	3.304	0.033	0.988	29.94	5.16	-2	0
10	2	4	11	4.039	1.472	5.511	0.041	1.095	61.33	5	-3	0
10	2	4	12	2.355	1.850	4.205	0.038	0.962	73.82	4.8	-4	0
10	2	4	13	1.836	1.797	3.632	0.030	0.685	15.34	5.23	-5	0
10	2	4	14	4.683	3.284	7.967	0.054	1.268	35.14	4.83	-10	0
10	2	4	15	2.949	1.490	4.439	0.031	0.781	22.51	5.44	-15	0
10	2	4	16	5.650	3.293	8.944	0.044	0.996	28.105	5.32	-20	0
10	2	9	1	1.384	1.419	2.804					4.29	4.3
10	2	9	2	2.262	1.944	4.206					4.33	4.3
10	2	9	3	2.233	1.521	3.754					4.36	4.4
10	2	9	4	1.729	1.194	2.923					4.4	4.4
10	2	9	5	3.081	2.066	5.147					4.43	4.4
10	2	9	6	1.829	1.523	3.352					4.47	4.5
10	2	9	7	1.963	1.568	3.531					4.5	4.5
10	2	9	8	6.858	1.572	8.429					4.54	4.5
10	2	9	9	1.985	1.590	3.575					4.57	4.6
10	2	9	10	1.710	1.864	3.574					4.61	4.6
10	2	9	11	1.424	1.522	2.946					4.65	4.6
10	2	9	12	1.485	1.819	3.305					4.68	4.7

10	2	9	13	1.425	1.636	3.062	4.72	4.7
10	2	9	14	1.455	1.750	3.205	4.75	4.8
10	2	9	15	2.100	1.177	3.278	4.79	4.8
10	2	9	16	2.128	1.781	3.909	4.82	4.8
10	2	9	17	1.564	1.584	3.148	4.86	4.9
10	2	9	18	1.860	1.590	3.450	4.89	4.9
10	2	9	19	1.630	1.718	3.348	4.93	4.9
10	2	9	20	2.043	1.680	3.723	4.96	5
10	2	9	21	1.663	1.440	3.103	5	5
10	2	9	22	2.086	1.237	3.323	100	100
10	2	9	23	1.563	1.385	2.948	3.97	4.7
10	2	9	24	2.100	1.574	3.673	4.01	4.7
10	2	9	25	2.527	1.656	4.182	4.04	4.8
10	2	9	26	1.872	1.532	3.404	4.08	4.8
10	2	9	27	1.856	1.839	3.695	4.12	4.8
10	2	9	28	1.858	1.415	3.273	4.15	4.9
10	2	9	29	2.291	1.830	4.121	4.19	4.9
10	2	9	30	1.572	1.427	2.999	4.22	4.9
10	2	9	31	1.749	1.289	3.038	100	100
10	2	9	32	1.969	1.485	3.454	4.29	5
10	2	9	33	1.457	1.141	2.598	4.33	5
10	2	9	34	1.464	1.613	3.077	4.36	5.1
10	2	9	35	1.831	1.593	3.424	4.4	5.1
10	2	9	36	1.686	1.635	3.321	4.43	5.1
10	2	9	37	1.528	1.296	2.824	4.47	5.2
10	2	9	38	1.819	1.750	3.569	4.5	5.2
10	2	9	39	1.424	1.811	3.235	4.54	5.2
10	2	9	40	2.113	1.345	3.458	101	100
10	2	9	41	1.483	1.683	3.165	4.61	5.3
10	2	9	42	1.940	1.624	3.563	4.65	5.4
10	2	9	43	1.739	1.589	3.328	3.59	5
10	2	9	44	1.255	1.468	2.723	3.62	5
10	2	9	45	1.644	1.473	3.117	3.66	5.1
10	2	9	46	1.390	1.573	2.964	3.69	5.1
10	2	9	47	1.688	1.396	3.084	3.73	5.1
10	2	9	48	1.534	1.706	3.240	3.76	5.2
10	2	9	49	1.459	1.380	2.839	3.8	5.2
10	2	9	50	2.573	1.605	4.178	100	99
10	2	9	51	3.341	1.648	4.989	3.87	5.3
10	2	9	52	2.535	1.774	4.309	3.9	5.3
10	2	9	53	1.870	1.707	3.577	3.94	5.4
10	2	9	54	1.516	1.425	2.941	3.97	5.4
10	2	9	55	1.778	1.782	3.560	101	99
10	2	9	56	1.517	1.625	3.143	4.04	5.5
10	2	9	57	2.088	1.450	3.538	4.08	5.5
10	2	9	58	1.933	1.607	3.540	4.12	5.5

10	2	9	59	2.030	1.904	3.934					4.15	5.6
10	2	9	60	1.973	1.579	3.552					4.19	5.6
10	2	9	62	1.963	1.338	3.301					101	99
10	2	9	63	2.051	1.422	3.474					4.29	5.7
10	3	0	0	1.121	0.765	1.886					0	0
10	3	1	1	1.055	3.173	4.228	0.017	0.523	9.78	4.68	0	0.2
10	3	1	2	0.801	4.529	5.330	0.015	0.452	9.66	4.6	0	0.4
10	3	1	3	0.648	3.848	4.496	0.012	0.222	9.3	4.69	0	0.6
10	3	1	4	1.196	3.549	4.745	0.013	0.296	7.78	4.68	0	0.8
10	3	1	5	0.581	3.462	4.043	0.016	0.197	11.42	4.8	0	1
10	3	1	6	0.991	4.281	5.272	0.012	0.211	9.21	4.59	0	1.2
10	3	1	7				0.014	0.269	9.03	4.72	0	1.4
10	3	1	8	0.754	0.795	1.549	0.014	0.257	6.67	4.62	0	1.6
10	3	1	9	0.747	0.619	1.367	0.012	0.265	11.59	4.76	0	1.8
10	3	1	10	0.640	2.990	3.631	0.012	0.270	5.91	4.52	0	2
10	3	1	11	0.700	4.117	4.817	0.014	0.236	8.13	4.69	0	3
10	3	1	12	0.909	3.368	4.277	0.017	0.304	9.63	4.64	0	4
10	3	1	13	0.942	2.642	3.584	0.015	0.309	13.24	4.7	0	5
10	3	1	14	1.021	2.738	3.759	0.019	0.354	15.48	4.57	0	10
10	3	1	15	1.286	5.008	6.294	0.019	0.401	10.34	4.96	0	15
10	3	1	16	0.862	3.126	3.988	0.017	0.339	8.15	4.73	0	20
10	3	2	1	0.556	4.532	5.087	0.010	0.175	7.01	4.66	0.2	0
10	3	2	2	0.816	0.792	1.608	0.011	0.212	6.28	4.65	0.4	0
10	3	2	3	0.670	2.596	3.265	0.010	0.171	11.24	4.62	0.6	0
10	3	2	4	0.546	4.074	4.620	0.011	0.247	8.65	4.61	0.8	0
10	3	2	5	0.482	3.836	4.318	0.009	0.235	10.12	4.72	1	0
10	3	2	6	1.209	4.221	5.429	0.013	0.238	10.76	4.85	1.2	0
10	3	2	7	0.820	3.447	4.267	0.013	0.202	11.53	4.72	1.4	0
10	3	2	8	0.677	3.627	4.304	0.010	0.194	10.73	4.64	1.6	0
10	3	2	9	0.995	3.062	4.057	0.012	0.235	9.74	4.63	1.8	0
10	3	2	10	0.757	3.527	4.284	0.011	0.214	7.76	4.7	2	0
10	3	2	11	0.678	2.825	3.504	0.017	0.326	8.22	4.64	3	0
10	3	2	12	1.095	0.616	1.710	0.018	0.341	9.88	4.75	4	0
10	3	2	13	0.621	3.092	3.713	0.016	0.322	8.47	4.73	5	0
10	3	2	14	0.842	2.854	3.696	0.020	0.467	11.05	4.72	10	0
10	3	2	15	1.107	0.783	1.891	0.023	0.474	2.83	4.56	15	0
10	3	2	16	1.794	2.835	4.629	0.026	0.445	13.82	4.62	20	0
10	3	3	1	0.681	3.764	4.445	0.013	0.283	6.04	4.65	0	-0.2
10	3	3	2	0.694	0.606	1.300	0.014	0.197	14.17	4.74	0	-0.4
10	3	3	3	0.634	3.382	4.016	0.010	0.208	9.51	4.73	0	-0.6
10	3	3	4	0.888	3.258	4.146	0.013	0.249	12.37	4.65	0	-0.8
10	3	3	5	0.361	0.574	0.936	0.012	0.247	10	4.75	0	-1
10	3	3	6	0.942	3.942	4.884	0.016	0.359	7.54	4.44	0	-1.2
10	3	3	7	0.630	2.723	3.354	0.017	0.286	9.95	4.74	0	-1.4
10	3	3	8	1.315	3.742	5.057	0.012	0.166	12.33	4.79	0	-1.6
10	3	3	9	0.933	2.956	3.889	0.013	0.217	14.51	4.73	0	-1.8

10	3	3	10	0.781	3.417	4.199	0.013	0.197	9.88	4.8	0	-2
10	3	3	11	0.858	0.604	1.462	0.022	0.425	14.57	4.73	0	-3
10	3	3	12	0.907	2.944	3.851	0.016	0.232	13.44	4.86	0	-4
10	3	3	13	1.178	4.172	5.351	0.012	0.193	7.36	4.98	0	-5
10	3	3	14	0.988	3.455	4.442	0.015	0.337	8.78	4.98	0	-10
10	3	3	15	1.210	3.391	4.601	0.016	0.443	16.72	4.62	0	-15
10	3	3	16	0.745	0.681	1.426	0.016	0.291	7.88	4.8	0	-20
10	3	4	1	0.685	0.451	1.136	0.012	0.251	6.99	4.78	-0.2	0
10	3	4	2	0.722	3.312	4.034	0.013	0.324	8.14	4.46	-0.4	0
10	3	4	3	0.695	3.014	3.709	0.015	0.281	11.67	4.68	-0.6	0
10	3	4	4	0.546	2.961	3.507	0.013	0.306	11.55	4.71	-0.8	0
10	3	4	5	0.395	0.748	1.143	0.012	0.258	10.77	4.78	-1	0
10	3	4	6	0.576	2.698	3.274	0.010	0.233	7.13	4.49	-1.2	0
10	3	4	7	1.014	3.543	4.557	0.014	0.250	12.7	4.92	-1.4	0
10	3	4	8	0.719	4.544	5.262	0.013	0.215	11.89	4.81	-1.6	0
10	3	4	9	1.219	4.694	5.913	0.012	0.193	3.64	4.8	-1.8	0
10	3	4	10	0.585	2.578	3.163	0.016	0.184	6.71	4.72	-2	0
10	3	4	11	0.630	3.163	3.793	0.014	0.219	4.58	4.57	-3	0
10	3	4	12				0.014	0.220	5.83	4.72	-4	0
10	3	4	13	1.063	3.562	4.625	0.013	0.202	12.61	4.83	-5	0
10	3	4	14	0.358	3.069	3.427	0.011	0.164	5.88	4.85	-10	0
10	3	4	15	1.124	3.280	4.404	0.015	0.329	7.62	4.87	-15	0
10	3	4	16	0.721	2.559	3.280	0.015	0.378	10.47	4.695	-20	0
10	3	9	1	1.411	1.938	3.349					100	100
10	3	9	2	1.178	0.877	2.055					100	100
10	3	9	3	1.249	1.934	3.183					100	100
10	3	9	4	1.085	1.617	2.702					100	100
10	3	9	5	0.718	1.405	2.123					100	100
10	3	9	6	0.994	1.859	2.853					100	100
10	3	9	7	0.664	1.098	1.762					100	100
10	3	9	8	1.061	1.836	2.897					100	100
10	3	9	9	1.828	2.148	3.977					100	100
10	3	9	10	1.165	0.954	2.119					100	100
10	3	9	11	0.969	1.237	2.206					101	100
10	3	9	12	1.462	2.258	3.719					101	100
10	3	9	13	1.207	1.440	2.647					101	100
10	3	9	14	1.490	1.511	3.000					101	100
10	3	9	15	1.433	1.892	3.325					101	100
10	3	9	16	0.783	1.488	2.272					101	100
10	3	9	17	1.255	1.854	3.109					101	100
10	3	9	18	1.066	1.523	2.588					101	100
10	3	9	19	0.811	0.975	1.786					101	100
10	3	9	20	1.129	0.845	1.974					101	100
10	3	9	21	0.988	1.344	2.333					101	100
10	3	9	22	0.974	1.918	2.892					100	100
10	3	9	23	1.578	1.545	3.123					100	100

10	3	9	24	1.178	1.186	2.364					100	100
10	3	9	25	1.489	1.391	2.880					100	100
10	3	9	26	1.403	1.575	2.979					100	100
10	3	9	27	1.682	1.119	2.801					100	100
10	3	9	28	1.578	1.409	2.987					100	100
10	3	9	29	1.827	1.390	3.217					100	100
10	3	9	30	1.749	1.793	3.542					100	100
10	3	9	31	1.661	1.928	3.590					100	100
10	3	9	32	0.893	1.402	2.295					101	100
10	3	9	33	0.956	1.788	2.744					101	100
10	3	9	34	0.260	1.201	1.461					101	100
10	3	9	35	1.482	1.620	3.101					101	100
10	3	9	36	1.094	1.667	2.761					101	100
10	3	9	37	1.147	1.417	2.564					101	100
10	3	9	38	1.667	2.062	3.729					101	100
10	3	9	39	1.412	2.202	3.613					101	100
10	3	9	40	0.876	1.368	2.244					101	100
10	3	9	41	0.940	1.090	2.030					101	100
10	3	9	42	1.305	1.764	3.069					101	100
10	3	9	43	1.650	1.030	2.681					100	99
10	3	9	44	1.301	1.909	3.210					100	99
10	3	9	45	3.595	1.911	5.506					100	99
10	3	9	46	0.906	2.103	3.009					100	99
10	3	9	47	1.031	1.385	2.416					100	99
10	3	9	48	1.132	1.844	2.975					100	99
10	3	9	49	1.332	1.370	2.702					100	99
10	3	9	50	1.323	1.090	2.413					100	99
10	3	9	51	0.904	1.158	2.062					100	99
10	3	9	52	0.687	2.254	2.941					100	99
10	3	9	53	1.143	1.721	2.865					101	99
10	3	9	54	1.369	1.814	3.184					101	99
10	3	9	55	1.403	1.601	3.004					101	99
10	3	9	56	1.510	1.400	2.909					101	99
10	3	9	57	1.274	1.440	2.714					101	99
10	3	9	58	1.299	1.089	2.388					101	99
10	3	9	59	1.735	1.478	3.213					101	99
10	3	9	60	1.774	2.053	3.827					101	99
10	3	9	61	1.787	1.963	3.750					101	99
10	3	9	62	0.869	1.225	2.094					101	99
10	3	9	63	0.152	1.622	1.775					101	99
25	1	0	0	1.961	5.278	7.240					0	0
25	1	1	1	0.770	0.316	1.085	0.017	0.427	6.65	5.13	0	0.2
25	1	1	2	1.596	2.182	3.778	0.018	0.458	13.2	4.87	0	0.4
25	1	1	3	0.897	1.295	2.192	0.016	0.442	9.96	4.77	0	0.6
25	1	1	4	0.688	1.345	2.033	0.018	0.470	15.64	4.9	0	0.8
25	1	1	5	1.355	0.560	1.915	0.014	0.455	6.36	5.15	0	1

25	1	1	6	1.015	1.791	2.806	0.021	0.439	8.13	5.03	0	1.2
25	1	1	7	0.914	1.519	2.432	0.021	0.565	7.23	4.84	0	1.4
25	1	1	8	0.912	0.551	1.462	0.022	0.493	8.73	4.7	0	1.6
25	1	1	9	0.681	0.598	1.279	0.017	0.446	7.42	4.88	0	1.8
25	1	1	10	0.882	0.535	1.417	0.018	0.418	7.07	4.92	0	2
25	1	1	11	1.464	0.468	1.931	0.015	0.391	4.38	4.89	0	3
25	1	1	12	1.350	0.511	1.861	0.015	0.304	7.53	4.76	0	4
25	1	1	13	0.593	1.603	2.196	0.013	0.340	6.01	4.77	0	5
25	1	1	14	0.638	0.561	1.199	0.015	0.296	14.72	4.69	0	10
25	1	1	15				0.019	0.372	8.96	4.8	0	15
25	1	1	16	1.185	0.599	1.784	0.019	0.353	5.79	4.87	0	20
25	1	2	1	0.770	1.618	2.388	0.016	0.428	16.81	4.85	0.2	0
25	1	2	2	1.065	0.689	1.754	0.017	0.505	7.37	4.67	0.4	0
25	1	2	3	1.255	0.536	1.791	0.022	0.536	12.01	4.91	0.6	0
25	1	2	4	1.223	0.558	1.781	0.019	0.552	12.85	4.6	0.8	0
25	1	2	5	0.994	0.604	1.598	0.018	0.436	9.74	4.76	1	0
25	1	2	6	1.151	0.560	1.711	0.018	0.477	8.02	4.95	1.2	0
25	1	2	7	0.982	0.605	1.587	0.014	0.408	10.4	4.96	1.4	0
25	1	2	8	0.986	0.583	1.569	0.016	0.348	4.05	5.05	1.6	0
25	1	2	9	0.748	0.585	1.333	0.015	0.358	6.31	4.86	1.8	0
25	1	2	10	0.968	0.608	1.576	0.014	0.385	8.96	4.93	2	0
25	1	2	11	1.405	0.729	2.135	0.021	0.511	6.41	4.87	3	0
25	1	2	12	0.958	1.905	2.863	0.014	0.349	20.08	5.01	4	0
25	1	2	13	5.654	1.496	7.150	0.021	0.504	6.38	5.12	5	0
25	1	2	14	2.245	0.559	2.805	0.025	0.435	9.61	5.01	10	0
25	1	2	15	0.861	0.437	1.298	0.022	0.305	18.98	4.87	15	0
25	1	2	16	1.869	1.988	3.857	0.033	0.657	14.04	4.87	20	0
25	1	3	1	0.829	0.454	1.283	0.018	0.570	8.96	4.71	0	-0.2
25	1	3	2	0.814	1.108	1.921	0.016	0.402	6.5	4.82	0	-0.4
25	1	3	3	0.785	1.644	2.428	0.011	0.312	14.65	4.84	0	-0.6
25	1	3	4	0.949	0.491	1.439	0.018	0.509	13.31	4.5	0	-0.8
25	1	3	5				0.036	1.438	36.06	3.87	0	-1
25	1	3	6	1.725	0.623	2.348	0.033	1.233	21.93	3.88	0	-1.2
25	1	3	7	1.289	0.254	1.543	0.023	0.550	24.45	4.35	0	-1.4
25	1	3	8	0.866	0.281	1.147	0.017	0.382	21.12	4.28	0	-1.6
25	1	3	9	0.734	0.545	1.279	0.013	0.381	11.32	4.83	0	-1.8
25	1	3	10	0.695	1.851	2.546	0.012	0.350	19.43	4.77	0	-2
25	1	3	11	1.896	1.351	3.247	0.019	0.394	17.32	5.1	0	-3
25	1	3	12	0.986	1.180	2.166	0.013	0.321	13.71	5.11	0	-4
25	1	3	13	1.599	0.719	2.318	0.019	0.492	12.43	4.95	0	-5
25	1	3	14	0.756	0.464	1.219	0.014	0.410	12.72	4.83	0	-10
25	1	3	15	0.732	0.603	1.334	0.021	0.502	17.57	4.82	0	-15
25	1	3	16	0.833	0.547	1.379	0.017	0.469	23.11	5.1	0	-20
25	1	4	1	0.987	1.091	2.077	0.019	0.402	13.52	5.04	-0.2	0
25	1	4	2	1.047	0.803	1.851	0.016	0.427	11.54	4.89	-0.4	0
25	1	4	3	1.193	0.679	1.871	0.017	0.430	7.51	4.84	-0.6	0

25	1	4	4	0.947	1.182	2.129	0.014	0.413	19.21	4.84	-0.8	0
25	1	4	5	0.462	1.182	1.644	0.015	0.408	14.41	5.01	-1	0
25	1	4	6	3.321	0.353	3.673	0.017	0.479	20.45	5.27	-1.2	0
25	1	4	7	0.787	0.655	1.443	0.015	0.394	32.15	4.79	-1.4	0
25	1	4	8	1.038	2.309	3.347	0.035	1.016	38.78	4.77	-1.6	0
25	1	4	9	2.039	0.531	2.570	0.025	0.591	27.12	4.54	-1.8	0
25	1	4	10	1.398	0.461	1.859	0.026	0.717	19.27	4.35	-2	0
25	1	4	11	1.207	0.514	1.722	0.016	0.395	12.45	4.83	-3	0
25	1	4	12				0.017	0.452	11.76	4.99	-4	0
25	1	4	13				0.022	0.604	9.54	4.71	-5	0
25	1	4	14	0.868	0.610	1.478	0.020	0.488	14.69	4.94	-10	0
25	1	4	15	0.566	0.474	1.040	0.014	0.380	14.63	4.93	-15	0
25	1	4	16	0.719	0.468	1.187	0.015	0.395	10.465	4.77	-20	0
25	2	0	0	1.073	3.896	4.969					0	0
25	2	1	1	1.130	5.512	6.642	0.016	0.459	16.79	4.82	0	0.2
25	2	1	2	2.308	3.893	6.201	0.017	0.392	32.29	5.05	0	0.4
25	2	1	3	0.973	1.415	2.388	0.017	0.436	24.24	4.71	0	0.6
25	2	1	4	1.187	2.188	3.375	0.020	0.611	19.97	4.72	0	0.8
25	2	1	5	1.214	2.154	3.368	0.020	0.583	26.91	4.85	0	1
25	2	1	6	0.691	2.910	3.601	0.018	0.500	24.1	4.58	0	1.2
25	2	1	7	0.823	3.176	3.999	0.016	0.382	16.18	4.62	0	1.4
25	2	1	8	1.117	2.019	3.135	0.017	0.460	22.91	4.56	0	1.6
25	2	1	9	1.377	1.701	3.077	0.019	0.402	17.71	5.01	0	1.8
25	2	1	10	0.571	2.396	2.967	0.017	0.457	16.33	4.67	0	2
25	2	1	11	1.517	2.235	3.752	0.018	0.480	27.13	4.75	0	3
25	2	1	12	0.769	3.636	4.404	0.012	0.405	17.16	4.66	0	4
25	2	1	13	1.342	2.491	3.833	0.019	0.489	19.93	4.75	0	5
25	2	1	14	0.887	3.220	4.107	0.014	0.341	20.99	4.76	0	10
25	2	1	15	0.881	3.356	4.237	0.017	0.459	21.11	4.65	0	15
25	2	1	16	1.445	3.282	4.726	0.020	0.413	36.12	4.76	0	20
25	2	2	1	0.895	1.606	2.501	0.017	0.376	19.63	5	0.2	0
25	2	2	2	2.010	2.131	4.140	0.017	0.412	16.71	4.83	0.4	0
25	2	2	3	0.833	1.839	2.672	0.016	0.433	18.7	4.69	0.6	0
25	2	2	4	1.070	3.663	4.733	0.023	0.498	23.9	4.71	0.8	0
25	2	2	5	0.839	1.294	2.134	0.015	0.384	25.26	4.63	1	0
25	2	2	6	1.491	3.899	5.390	0.019	0.489	26.31	4.41	1.2	0
25	2	2	7	1.190	1.036	2.226	0.019	0.497	21.35	4.42	1.4	0
25	2	2	8	0.958	4.102	5.060	0.026	0.523	21.33	4.5	1.6	0
25	2	2	9	1.417	1.856	3.273	0.020	0.544	19.57	4.72	1.8	0
25	2	2	10	0.721	1.926	2.647	0.012	0.381	29.71	4.82	2	0
25	2	2	11	0.888	3.060	3.949	0.019	0.413	16.35	4.5	3	0
25	2	2	12	1.068	1.585	2.653	0.018	0.483	17.35	4.97	4	0
25	2	2	13	0.863	3.057	3.920	0.019	0.442	12.71	4.5	5	0
25	2	2	14	2.678	3.398	6.077					10	0
25	2	2	15	1.437	5.063	6.500	0.019	0.428	12.87	4.9	15	0
25	2	2	16	1.205	1.871	3.076	0.020	0.530	22.94	4.62	20	0

25	2	3	1	1.325	2.889	4.214	0.019	0.519	18.23	5.01	0	-0.2
25	2	3	2	0.874	3.544	4.418	0.013	0.251	17.75	4.91	0	-0.4
25	2	3	3	1.895	3.101	4.995	0.019	0.960	24.47	4.73	0	-0.6
25	2	3	4	1.082	2.217	3.299	0.015	0.394	23.73	4.83	0	-0.8
25	2	3	5	1.141	2.247	3.388	0.019	0.453	22.8	4.63	0	-1
25	2	3	6	0.764	1.379	2.143	0.019	0.358	22.23	4.72	0	-1.2
25	2	3	7	1.150	1.876	3.026	0.019	0.474	19.78	4.43	0	-1.4
25	2	3	8	0.994	1.662	2.656	0.017	0.396	31.7	4.49	0	-1.6
25	2	3	9	1.086	3.792	4.878	0.014	0.356	19.06	4.71	0	-1.8
25	2	3	10	0.629	4.216	4.846	0.015	0.355	19.43	4.62	0	-2
25	2	3	11	0.954	1.215	2.169	0.015	0.378	22.15	4.74	0	-3
25	2	3	12	0.826	1.404	2.230	0.018	0.476	31.56	4.53	0	-4
25	2	3	13	0.949	3.545	4.494	0.018	0.443	16.82	4.75	0	-5
25	2	3	14	1.215	1.170	2.385	0.016	0.417	14.51	4.93	0	-10
25	2	3	15	2.268	1.950	4.218	0.020	0.438	25.71	5.01	0	-15
25	2	3	16	1.378	1.578	2.956	0.019	0.401	15.65	5.01	0	-20
25	2	4	1	1.169	1.717	2.886	0.022	0.486	21.15	4.88	-0.2	0
25	2	4	2	2.026	2.500	4.526	0.020	0.556	19.66	4.76	-0.4	0
25	2	4	3	1.067	3.189	4.256	0.019	0.425	16.9	4.74	-0.6	0
25	2	4	4	1.832	3.069	4.901	0.023	0.529	11.17	4.87	-0.8	0
25	2	4	5	1.710	3.786	5.496	0.020	0.495	22.86	4.86	-1	0
25	2	4	6				0.027	0.497	15.4	4.86	-1.2	0
25	2	4	7	1.120	3.526	4.646	0.018	0.430	22.51	4.52	-1.4	0
25	2	4	8	1.352	2.579	3.932	0.020	0.460	21.72	5.14	-1.6	0
25	2	4	9	2.030	4.208	6.238	0.020	0.450	21.33	5.09	-1.8	0
25	2	4	10	0.885	3.429	4.314	0.020	0.534	19.96	4.91	-2	0
25	2	4	11	0.811	3.003	3.814	0.019	0.507	13.33	4.84	-3	0
25	2	4	12	1.853	4.322	6.175	0.020	0.576	15.41	4.98	-4	0
25	2	4	13	0.970	3.392	4.362	0.023	0.590	18.46	4.79	-5	0
25	2	4	14	1.285	1.681	2.966	0.018	0.431	19.16	4.92	-10	0
25	2	4	15	2.418	4.413	6.831	0.021	0.507	18.56	4.37	-15	0
25	2	4	16	9.205	7.562	16.767	0.020	0.474	17.08	4.815	-20	0
25	2	9	1	0.858	1.783	2.641					100	100
25	2	9	2	0.873	1.982	2.855					100	100
25	2	9	3	0.981	1.380	2.361					5.09	5.1
25	2	9	4	2.697	1.683	4.380					100	100
25	2	9	5	0.713	1.640	2.353					5.16	5.2
25	2	9	6	0.710	1.392	2.103					5.2	5.2
25	2	9	7	0.913	1.379	2.291					100	100
25	2	9	8	0.962	1.134	2.096					100	100
25	2	9	9	0.732	1.546	2.278					5.3	5.3
25	2	9	10	0.731	1.702	2.433					5.34	5.3
25	2	9	11	1.145	1.257	2.403					101	100
25	2	9	12	0.754	1.342	2.096					101	100
25	2	9	13	0.885	1.391	2.276					5.44	5.4
25	2	9	14	0.675	1.725	2.399					5.48	5.5

25	2	9	15	0.936	1.657	2.593	5.52	5.5
25	2	9	16	0.735	1.456	2.191	5.55	5.6
25	2	9	17	0.986	1.665	2.651	101	100
25	2	9	18	0.810	1.458	2.268	5.62	5.6
25	2	9	19	0.795	1.179	1.974	101	100
25	2	9	20	0.762	1.489	2.251	5.69	5.7
25	2	9	21	0.860	1.545	2.405	101	100
25	2	9	22	0.978	1.641	2.619	5.37	5.4
25	2	9	23	0.758	1.646	2.404	100	100
25	2	9	24	0.624	1.196	1.820	5.44	5.4
25	2	9	25	0.659	1.780	2.438	100	100
25	2	9	26	1.028	1.451	2.479	100	100
25	2	9	27	0.933	1.394	2.327	5.55	5.6
25	2	9	28	1.184	1.399	2.583	100	100
25	2	9	29	0.765	1.588	2.353	5.62	5.6
25	2	9	30	0.795	1.551	2.346	5.66	5.7
25	2	9	31	0.821	1.606	2.426	5.69	5.7
25	2	9	32	0.786	1.587	2.373	5.73	5.7
25	2	9	33	1.268	1.169	2.437	101	100
25	2	9	34	0.927	1.298	2.225	101	100
25	2	9	35	0.876	1.511	2.387	101	100
25	2	9	36	0.723	1.507	2.230	5.87	5.9
25	2	9	37	0.590	2.155	2.745	5.9	5.9
25	2	9	38	1.257	1.635	2.891	101	100
25	2	9	39	0.771	1.369	2.140	5.98	6
25	2	9	40	0.875	1.634	2.509	6.01	6
25	2	9	41	1.406	1.430	2.836	6.05	6
25	2	9	42	1.058	1.481	2.539	101	100
25	2	9	43	0.567	1.292	1.858	5.73	5.7
25	2	9	44	0.651	1.372	2.023	100	99
25	2	9	45	0.850	1.581	2.431	100	99
25	2	9	46	1.135	1.296	2.431	5.83	5.8
25	2	9	47	0.790	2.032	2.823	100	99
25	2	9	48	1.924	1.509	3.432	100	99
25	2	9	49	0.955	1.601	2.556	5.94	5.9
25	2	9	50	2.251	1.667	3.918	5.98	6
25	2	9	51	1.850	1.579	3.429	6.01	6
25	2	9	52	1.061	1.452	2.513	100	99
25	2	9	53	1.007	1.538	2.546	6.08	6.1
25	2	9	54	0.832	1.674	2.506	6.12	6.1
25	2	9	55	0.876	1.459	2.335	6.15	6.2
25	2	9	56	0.873	1.541	2.414	6.19	6.2
25	2	9	57	0.811	1.309	2.120	6.22	6.2
25	2	9	58	1.289	1.527	2.816	6.26	6.3
25	2	9	59	0.891	1.746	2.637	101	99
25	2	9	60	0.820	1.441	2.262	6.33	6.3

25	2	9	61	0.942	1.363	2.305					6.36	6.4
25	2	9	62	2.961	1.532	4.493					101	99
25	2	9	63	1.024	1.620	2.644					101	99
25	3	0	0								0	
25	3	1	1	0.406	1.322	1.728	0.012	0.334	7.69	4.78	0	0.2
25	3	1	2	0.514	1.136	1.650	0.011	0.359	9.63	4.68	0	0.4
25	3	1	3	0.763	1.328	2.090	0.012	0.297	11.45	4.7	0	0.6
25	3	1	4	0.843	2.981	3.824	0.012	0.354	10.66	4.8	0	0.8
25	3	1	5	0.689	1.525	2.214	0.013	0.338	9.68	4.73	0	1
25	3	1	6	1.210	1.915	3.124	0.038	0.336	12.39	4.67	0	1.2
25	3	1	7	0.559	1.476	2.034	0.015	0.345	12.19	4.64	0	1.4
25	3	1	8	0.576	1.505	2.081	0.023	0.380	8.72	4.77	0	1.6
25	3	1	9	0.692	1.689	2.381	0.012	0.400	10.33	4.61	0	1.8
25	3	1	10	0.456	1.596	2.052	0.014	0.384	15.75	4.67	0	2
25	3	1	11	0.435	1.281	1.716	0.018	0.443	12.24	4.66	0	3
25	3	1	12	0.989	2.034	3.023	0.017	0.527	10.61	4.85	0	4
25	3	1	13	0.806	0.621	1.427	0.018	0.420	13.01	5.17	0	5
25	3	1	14	0.985	0.828	1.812	0.018	0.381	9.74	5.05	0	10
25	3	1	15	0.847	1.309	2.155	0.016	0.464	9.55	4.73	0	15
25	3	1	16	1.080	1.830	2.910	0.016	0.432	9.33	4.73	0	20
25	3	2	1	1.148	2.144	3.292	0.014	0.323	12.24	4.68	0.2	0
25	3	2	2	0.668	1.428	2.096	0.018	0.415	17.53	4.48	0.4	0
25	3	2	3	0.845	1.180	2.025	0.015	0.351	14.82	4.68	0.6	0
25	3	2	4	0.913	1.829	2.742	0.018	0.543	14.33	4.67	0.8	0
25	3	2	5	0.886	1.640	2.526	0.017	0.462	19.83	4.6	1	0
25	3	2	6	0.792	2.486	3.278	0.022	0.660	11.41	4.55	1.2	0
25	3	2	7	0.922	2.559	3.480	0.014	0.388	10.13	4.62	1.4	0
25	3	2	8	0.768	1.189	1.957	0.016	0.415	18.82	4.67	1.6	0
25	3	2	9	1.324	1.320	2.644	0.019	0.468	11.77	4.66	1.8	0
25	3	2	10	1.620	2.224	3.844	0.024	0.552	9.05	4.58	2	0
25	3	2	11	0.781	2.049	2.830	0.023	0.372	8.21	4.7	3	0
25	3	2	12	1.885	1.468	3.353	0.013	0.297	13.33	4.8	4	0
25	3	2	13	0.981	1.309	2.291	0.014	0.332	5.18	4.84	5	0
25	3	2	14	1.417	2.122	3.539	0.033	0.495	9.21	4.65	10	0
25	3	2	15	0.923	2.508	3.431	0.011	0.411	12.06	4.67	15	0
25	3	2	16	0.886	2.050	2.936	0.015	0.362	4.23	4.76	20	0
25	3	3	1	0.327	1.726	2.053	0.052	0.302	15.03	4.62	0	-0.2
25	3	3	2	1.153	2.220	3.373	0.017	0.389	13.79	4.55	0	-0.4
25	3	3	3	0.742	1.886	2.628	0.016	0.354	16.08	4.66	0	-0.6
25	3	3	4	0.785	1.968	2.753	0.014	0.388	14.23	4.65	0	-0.8
25	3	3	5	0.995	2.047	3.042	0.018	0.328	18.03	4.74	0	-1
25	3	3	6	1.474	1.920	3.394	0.014	0.351	10.04	4.65	0	-1.2
25	3	3	7	1.088	1.485	2.573	0.015	0.356	11.39	4.62	0	-1.4
25	3	3	8	1.842	1.761	3.603	0.020	0.520	17.08	4.57	0	-1.6
25	3	3	9	1.111	2.475	3.586	0.018	0.450	14.01	4.59	0	-1.8
25	3	3	10	0.614	1.256	1.871	0.016	0.427	11.53	4.53	0	-2

25	3	3	11	1.048	1.708	2.756	0.014	0.444	10.68	4.64	0	-3
25	3	3	12	0.437	1.253	1.690	0.016	0.427	9.72	4.77	0	-4
25	3	3	13	0.763	1.944	2.707	0.013	0.334	12.2	4.81	0	-5
25	3	3	14	0.733	1.513	2.246	0.018	0.406	16.51	4.55	0	-10
25	3	3	15	1.705	1.376	3.081	0.030	0.715	14.79	4.56	0	-15
25	3	3	16	1.414	2.192	3.606	0.025	0.641	15.71	4.59	0	-20
25	3	4	1	0.991	1.142	2.133	0.016	0.405	10.6	4.75	-0.2	0
25	3	4	2	0.975	2.243	3.218	0.017	0.422	13.39	4.77	-0.4	0
25	3	4	3	0.963	1.729	2.692	0.016	0.382	7.28	4.67	-0.6	0
25	3	4	4	1.003	1.635	2.637	0.015	0.374	10.37	4.8	-0.8	0
25	3	4	5	1.051	1.249	2.300	0.019	0.399	9.39	4.64	-1	0
25	3	4	6	1.609	1.614	3.223	0.019	0.407	9.12	4.85	-1.2	0
25	3	4	7	1.190	2.065	3.255	0.020	0.535	6.1	4.74	-1.4	0
25	3	4	8	1.096	1.577	2.673	0.019	0.491	11.93	4.91	-1.6	0
25	3	4	9	0.905	0.946	1.852	0.021	0.469	9.97	4.75	-1.8	0
25	3	4	10	0.724	1.566	2.290	0.029	0.697	10.77	4.6	-2	0
25	3	4	11	0.977	1.328	2.305	0.020	0.506	14.99	4.54	-3	0
25	3	4	12	1.183	1.735	2.918	0.018	0.493	23.44	4.54	-4	0
25	3	4	13	1.217	2.503	3.720	0.025	0.490	15.63	4.83	-5	0
25	3	4	14	0.893	1.894	2.786	0.016	0.417	12.24	5.01	-10	0
25	3	4	15	0.809	2.198	3.008	0.012	0.320	9.51	4.82	-15	0
25	3	4	16	0.734	0.749	1.482	0.009	0.286	9.92	4.74	-20	0
25	3	9	1	0.936	1.485	2.422					100	100
25	3	9	2	0.867	1.458	2.325					100	100
25	3	9	3	0.615	1.427	2.042					100	100
25	3	9	4	0.848	1.904	2.752					100	100
25	3	9	5	0.758	1.248	2.007					100	100
25	3	9	6	0.493	1.395	1.889					100	100
25	3	9	7	0.787	1.930	2.717					100	100
25	3	9	8	0.844	1.329	2.172					100	100
25	3	9	9	0.846	1.446	2.292					100	100
25	3	9	10	0.553	1.680	2.233					100	100
25	3	9	11	0.521	0.690	1.211					101	100
25	3	9	12	0.475	1.786	2.261					101	100
25	3	9	13	1.267	1.176	2.444					101	100
25	3	9	14	0.724	1.716	2.440					101	100
25	3	9	15	0.362	0.704	1.067					101	100
25	3	9	17	0.892	1.637	2.528					101	100
25	3	9	18	0.940	1.623	2.563					101	100
25	3	9	19	0.721	1.244	1.965					101	100
25	3	9	20	1.698	1.496	3.194					101	100
25	3	9	21	0.755	1.340	2.095					101	100
25	3	9	22	0.718	1.763	2.481					100	100
25	3	9	23	1.067	1.826	2.892					100	100
25	3	9	24	0.592	1.219	1.810					100	100
25	3	9	25	0.670	1.314	1.984					100	100

25	3	9	26	1.006	1.589	2.595					100	100
25	3	9	27	0.655	1.477	2.132					100	100
25	3	9	28	0.678	1.523	2.201					100	100
25	3	9	29	0.681	1.626	2.307					100	100
25	3	9	30	0.307	1.246	1.553					100	100
25	3	9	31	0.869	1.736	2.606					100	100
25	3	9	32	0.600	1.670	2.271					101	100
25	3	9	33	0.586	1.321	1.907					101	100
25	3	9	34	0.813	1.706	2.518					101	100
25	3	9	35	0.737	1.609	2.346					101	100
25	3	9	36	0.686	1.532	2.218					101	100
25	3	9	37	0.866	1.922	2.789					101	100
25	3	9	38	0.834	1.534	2.368					101	100
25	3	9	39	0.690	1.624	2.315					101	100
25	3	9	40	0.456	1.177	1.633					101	100
25	3	9	41	1.124	1.663	2.787					101	100
25	3	9	42	0.870	1.530	2.400					101	100
25	3	9	43	0.732	1.572	2.304					100	99
25	3	9	44	0.694	1.618	2.312					100	99
25	3	9	45	0.481	1.406	1.887					100	99
25	3	9	46	0.778	1.474	2.252					100	99
25	3	9	47	0.566	0.946	1.511					100	99
25	3	9	48	0.580	1.212	1.792					100	99
25	3	9	49	0.685	1.381	2.066					100	99
25	3	9	50	0.922	1.352	2.274					100	99
25	3	9	51	0.402	1.322	1.724					100	99
25	3	9	52	0.713	1.234	1.947					100	99
25	3	9	53	0.950	1.637	2.587					101	99
25	3	9	54	0.996	1.760	2.756					101	99
25	3	9	55	0.499	1.534	2.033					101	99
25	3	9	56	0.865	1.823	2.688					101	99
25	3	9	57	0.390	0.925	1.314					101	99
25	3	9	59	0.846	1.943	2.789					101	99
25	3	9	60	0.678	1.646	2.324					101	99
25	3	9	61	0.695	1.314	2.010					101	99
25	3	9	62	0.452	1.234	1.686					101	99
25	3	9	63	0.813	1.668	2.481					101	99
99	1	0	0	2.173	3.260	5.433					0	0
99	1	1	1	1.713	3.670	5.383	0.038	0.832	17.37	5.59	0	0.2
99	1	1	2	1.391	3.155	4.546	0.025	0.579	13.53	5.83	0	0.4
99	1	1	3	1.020	3.578	4.598	0.025	0.577	11.17	5.35	0	0.6
99	1	1	4	1.377	1.578	2.955	0.025	0.669	12.06	5.1	0	0.8
99	1	1	5	1.836	3.956	5.792	0.035	0.740	24.09	5.5	0	1
99	1	1	6	1.328	1.568	2.896	0.046	0.994	16.8	5.26	0	1.2
99	1	1	7	1.975	4.212	6.187	0.029	0.584	6.58	5.27	0	1.4
99	1	1	8	1.921	3.829	5.750	0.030	0.625	19.61	5.63	0	1.6

99	1	1	9	1.496	4.101	5.598	0.023	0.542	24.28	5.29	0	1.8
99	1	1	10	3.346	3.675	7.021	0.043	0.914	48.98	5.38	0	2
99	1	1	11	1.646	3.171	4.816	0.028	0.522	7.87	5.78	0	3
99	1	1	12	2.206	0.420	2.626	0.030	0.666	7.35	5.87	0	4
99	1	1	13	1.289	1.738	3.027	0.027	0.582	10.14	5.79	0	5
99	1	1	14	1.659	1.561	3.219	0.035	0.948	11.88	5.32	0	10
99	1	1	15	1.631	2.893	4.524	0.030	0.639	12.41	5.47	0	15
99	1	1	16	3.303	2.080	5.382	0.034	0.834	7.78	5.33	0	20
99	1	2	1	1.234	1.619	2.853	0.035	0.727	14.4	5.48	0.2	0
99	1	2	2	0.910	1.640	2.550	0.028	0.617	23.41	5.49	0.4	0
99	1	2	3	1.727	3.716	5.443	0.035	0.759	14.92	5.5	0.6	0
99	1	2	4	1.845	1.963	3.807	0.030	0.865	24.04	5.2	0.8	0
99	1	2	5	1.191	1.829	3.021	0.023	0.605	19.77	5.17	1	0
99	1	2	6	1.863	0.550	2.413	0.030	0.734	19.58	5.91	1.2	0
99	1	2	7	1.390	2.821	4.211	0.031	0.592	22.28	5.39	1.4	0
99	1	2	8	1.815	4.181	5.996	0.029	0.601	15.03	5.21	1.6	0
99	1	2	9	1.739	0.324	2.063	0.025	0.483	17.19	5.28	1.8	0
99	1	2	10	1.515	3.962	5.477	0.029	0.603	32.04	5.07	2	0
99	1	2	11	1.298	2.152	3.450	0.025	0.712	18.63	5.4	3	0
99	1	2	12	2.033	1.511	3.544	0.028	0.682	22.64	5.32	4	0
99	1	2	13	1.716	2.191	3.907	0.029	0.742	24.01	5.27	5	0
99	1	2	14	1.499	3.424	4.923	0.044	0.965	19.48	5.79	10	0
99	1	2	15	2.087	3.328	5.415	0.037	0.727	13.74	5.17	15	0
99	1	2	16	1.484	1.547	3.031	0.034	0.719	9.97	5.03	20	0
99	1	3	1	1.074	3.335	4.410	0.019	0.372	10.81	5.05	0	-0.2
99	1	3	2	1.039	2.810	3.849	0.020	0.396	14.59	5.3	0	-0.4
99	1	3	3	1.525	3.056	4.581	0.033	0.616	10.22	5.55	0	-0.6
99	1	3	4	1.043	1.354	2.397	0.020	0.394	17.34	5.61	0	-0.8
99	1	3	5	1.289	3.914	5.203	0.024	0.523	7.73	5.28	0	-1
99	1	3	6	1.608	3.854	5.461	0.032	0.671	17.69	5.79	0	-1.2
99	1	3	7	1.375	3.754	5.129	0.027	0.579	7.87	5.71	0	-1.4
99	1	3	8	1.316	2.487	3.803	0.030	0.696	20.18	5.49	0	-1.6
99	1	3	9	1.050	3.802	4.852	0.024	0.669	12.55	5.24	0	-1.8
99	1	3	10	0.741	1.690	2.431	0.030	0.675	21.63	5.34	0	-2
99	1	3	11	1.294	3.538	4.832	0.031	0.819	18.16	5.25	0	-3
99	1	3	12	1.800	1.842	3.642	0.039	0.922	17.16	5.33	0	-4
99	1	3	13	1.615	0.342	1.957	0.044	1.500	15.27	4.69	0	-5
99	1	3	14	2.217	2.434	4.651	0.045	1.069	15.97	5.3	0	-10
99	1	3	15	1.544	3.234	4.779	0.040	0.825	12.13	5.36	0	-15
99	1	3	16	3.700	0.406	4.106	0.039	0.848	10.66	5.43	0	-20
99	1	4	1	4.600	3.097	7.697	0.038	0.734	13.96	5.31	-0.2	0
99	1	4	2	1.446	1.770	3.216	0.027	0.587	9.98	5.18	-0.4	0
99	1	4	3	3.066	2.443	5.509	0.025	0.597	11.68	5.16	-0.6	0
99	1	4	4	1.923	1.545	3.468	0.030	0.656	11.32	5.27	-0.8	0
99	1	4	5	1.830	3.018	4.848	0.031	0.678	15.17	5.26	-1	0
99	1	4	6	1.419	1.837	3.256	0.029	0.516	6.14	5.22	-1.2	0

99	1	4	7	2.300	4.385	6.684	0.046	0.960	8.76	5.61	-1.4	0
99	1	4	8	2.156	3.786	5.942	0.030	0.778	3.67	5.48	-1.6	0
99	1	4	9	2.461	2.856	5.317	0.050	1.025	6.39	5.33	-1.8	0
99	1	4	10	2.105	1.955	4.060	0.039	0.689	5.72	5.27	-2	0
99	1	4	11	1.795	1.767	3.562	0.030	0.576	14.45	5.71	-3	0
99	1	4	12	1.741	4.297	6.038	0.028	0.591	7.29	5.32	-4	0
99	1	4	13	1.054	1.559	2.613	0.022	0.495	8.1	5.16	-5	0
99	1	4	14	1.626	3.294	4.920	0.027	0.551	9.51	5.47	-10	0
99	1	4	15	1.432	1.554	2.986	0.034	0.624	7.7	5.56	-15	0
99	1	4	16	2.180	0.391	2.571	0.033	0.803	9.96	5.095	-20	0
99	2	0	0	1.738	0.997	2.735					0	0
99	2	1	1	1.516	0.646	2.162	0.045	1.215	18.59	4.66	0	0.2
99	2	1	2	1.598	3.181	4.779	0.045	1.570	18.51	4.82	0	0.4
99	2	1	3	2.286	3.714	5.999	0.039	1.389	26.12	4.52	0	0.6
99	2	1	4	1.729	4.262	5.991	0.031	0.945	61.32	4.67	0	0.8
99	2	1	5	0.946	3.167	4.112	0.041	1.357	17.39	4.85	0	1
99	2	1	6	1.352	3.841	5.193	0.041	1.474	78.27	4.53	0	1.2
99	2	1	7	1.401	0.495	1.896	0.038	1.317	33.06	4.66	0	1.4
99	2	1	8	1.637	3.870	5.506	0.039	1.338	56.61	4.49	0	1.6
99	2	1	9	2.129	1.224	3.353	0.054	1.400	43.08	4.44	0	1.8
99	2	1	10	3.295	3.929	7.223	0.050	1.291	67.24	4.55	0	2
99	2	1	11	1.287	4.388	5.675	0.040	1.337	30.64	4.58	0	3
99	2	1	12	1.453	3.348	4.801	0.031	0.661	39.68	4.56	0	4
99	2	1	13	1.751	4.770	6.521	0.036	1.052	33.29	4.56	0	5
99	2	1	14	1.159	3.896	5.055	0.027	0.609	28.56	4.49	0	10
99	2	1	15	1.398	0.534	1.932	0.026	0.665	28.06	4.54	0	15
99	2	1	16	1.827	3.630	5.457	0.023	0.682	28.4	4.37	0	20
99	2	2	1	1.467	0.637	2.104	0.034	0.741	39.2	4.59	0.2	0
99	2	2	2	1.464	3.919	5.383	0.040	0.949	96.22	4.46	0.4	0
99	2	2	3	7.792	5.468	13.260	0.041	1.370	20.15	5.58	0.6	0
99	2	2	4	1.445	3.249	4.694	0.038	1.175	16.38	4.49	0.8	0
99	2	2	5	1.589	0.782	2.371	0.041	1.142	21.2	4.59	1	0
99	2	2	6	1.803	3.712	5.515	0.035	1.013	30.92	4.77	1.2	0
99	2	2	7	3.257	7.909	11.165	0.041	1.426	34.52	4.72	1.4	0
99	2	2	8	1.661	0.964	2.625	0.040	1.348	37.25	4.59	1.6	0
99	2	2	9	2.069	3.393	5.462	0.040	1.237	44	4.35	1.8	0
99	2	2	10				0.042	1.329	20.45	4.47	2	0
99	2	2	11	1.824	4.132	5.956	0.032	0.922	23.24	4.67	3	0
99	2	2	12	1.993	3.827	5.820	0.037	1.094	22.37	4.7	4	0
99	2	2	13	2.667	2.925	5.592	0.061	1.588	39.22	4.58	5	0
99	2	2	14				0.045	1.128	26.85	4.46	10	0
99	2	2	15				0.043	1.057	22.27	4.59	15	0
99	2	2	16	1.221	0.346	1.567	0.038	0.794	18.42	4.9	20	0
99	2	3	1	1.285	2.695	3.980	0.037	1.232	44.26	4.57	0	-0.2
99	2	3	2	2.169	0.681	2.850	0.037	1.025	43.6	4.34	0	-0.4
99	2	3	3	1.730	4.053	5.783	0.035	1.072	44.13	4.61	0	-0.6

99	2	3	4	1.843	1.167	3.010	0.020	0.381	45.15	4.63	0	-0.8
99	2	3	5	2.033	0.802	2.835	0.033	1.217	38.2	4.73	0	-1
99	2	3	6	1.941	4.734	6.675	0.043	1.203	43.63	4.55	0	-1.2
99	2	3	7	1.216	0.730	1.946	0.042	1.189	48.44	4.54	0	-1.4
99	2	3	8	2.416	0.787	3.203	0.038	1.088	37.94	4.63	0	-1.6
99	2	3	9	2.178	1.173	3.351	0.044	1.255	33.14	4.6	0	-1.8
99	2	3	10	1.915	0.324	2.239	0.046	1.263	36.32	4.29	0	-2
99	2	3	11	2.734	0.513	3.248	0.040	1.079	51.31	4.56	0	-3
99	2	3	12	7.743	0.161	7.904	0.060	1.521	47.41	5.12	0	-4
99	2	3	13	2.128	3.141	5.269	0.044	1.013	53.15	4.29	0	-5
99	2	3	14	1.499	1.097	2.595	0.033	0.962	21.31	4.6	0	-10
99	2	3	15	1.590	0.859	2.450	0.042	1.061	13.66	4.56	0	-15
99	2	3	16	1.243	0.707	1.951	0.039	0.834	13.91	4.66	0	-20
99	2	4	1	1.236	1.441	2.677	0.036	1.244	32.61	4.57	-0.2	0
99	2	4	2	1.166	1.129	2.295	0.036	1.132	37.71	4.76	-0.4	0
99	2	4	3	1.910	4.710	6.620	0.038	1.195	26.09	4.45	-0.6	0
99	2	4	4	1.496	1.935	3.431	0.044	1.368	31.57	4.68	-0.8	0
99	2	4	5	1.668	3.694	5.361	0.039	1.277	20	4.63	-1	0
99	2	4	6	2.030	3.986	6.016	0.041	1.197	24.27	4.94	-1.2	0
99	2	4	7	1.708	1.129	2.837	0.056	1.308	52.28	4.79	-1.4	0
99	2	4	8	1.683	4.526	6.209	0.034	1.140	47.79	4.58	-1.6	0
99	2	4	9	1.607	0.703	2.310	0.037	1.234	27.18	4.96	-1.8	0
99	2	4	10	1.348	4.487	5.834	0.032	1.126	19.84	4.96	-2	0
99	2	4	11	1.189	0.676	1.865	0.041	1.381	36.66	4.74	-3	0
99	2	4	12	1.300	3.420	4.720	0.037	1.026	40.02	4.54	-4	0
99	2	4	13	1.148	0.522	1.671	0.033	0.859	42.67	4.61	-5	0
99	2	4	14	1.225	0.660	1.885	0.035	0.981	30.89	4.71	-10	0
99	2	4	15	2.993	3.838	6.831	0.016	0.382	18.42	4.74	-15	0
99	2	4	16				0.039	1.149	38.855	4.765	-20	0
99	2	9	1	1.606	1.617	3.223					100	100
99	2	9	2	1.688	1.577	3.264					100	100
99	2	9	3	1.361	1.186	2.548					100	100
99	2	9	4	1.049	1.606	2.655					100	100
99	2	9	5	1.303	1.654	2.957					100	100
99	2	9	6	1.435	1.349	2.784					100	100
99	2	9	7	1.480	1.333	2.813					100	100
99	2	9	8	1.017	1.648	2.664					100	100
99	2	9	9	1.104	1.472	2.576					100	100
99	2	9	10	1.511	1.680	3.191					100	100
99	2	9	11	1.628	2.023	3.651					101	100
99	2	9	12	2.009	1.735	3.744					101	100
99	2	9	13	1.472	1.831	3.303					101	100
99	2	9	14	1.140	1.438	2.578					101	100
99	2	9	15	1.431	1.539	2.970					101	100
99	2	9	16	2.208	1.876	4.085					101	100
99	2	9	17	1.414	1.415	2.828					101	100

99	2	9	18	2.619	1.531	4.150					101	100
99	2	9	19	1.237	1.318	2.555					101	100
99	2	9	20	1.135	1.731	2.867					101	100
99	2	9	22	1.474	1.430	2.905					100	100
99	2	9	23	1.417	1.489	2.906					100	100
99	2	9	24	1.603	1.647	3.250					100	100
99	2	9	25	1.325	1.163	2.489					100	100
99	2	9	26	1.973	1.842	3.816					100	100
99	2	9	27	2.167	1.532	3.699					100	100
99	2	9	28	2.437	1.318	3.755					100	100
99	2	9	29	1.557	1.261	2.818					100	100
99	2	9	30	1.545	1.365	2.910					100	100
99	2	9	31	4.254	1.581	5.834					100	100
99	2	9	32	2.567	1.353	3.920					101	100
99	2	9	33	1.540	1.830	3.370					101	100
99	2	9	34	2.218	1.548	3.765					101	100
99	2	9	35	1.853	1.635	3.489					101	100
99	2	9	36	1.298	1.284	2.581					101	100
99	2	9	37	2.064	1.207	3.271					101	100
99	2	9	38	1.266	1.701	2.967					101	100
99	2	9	39	1.399	1.253	2.652					101	100
99	2	9	40	1.393	1.396	2.789					101	100
99	2	9	41	0.927	1.161	2.088					101	100
99	2	9	42	1.047	1.725	2.772					101	100
99	2	9	43	1.624	1.208	2.831					100	99
99	2	9	44	2.893	1.565	4.458					100	99
99	2	9	45	1.493	1.536	3.029					100	99
99	2	9	46	1.862	1.541	3.404					100	99
99	2	9	47	1.790	1.778	3.568					100	99
99	2	9	48	2.122	1.463	3.585					100	99
99	2	9	49	2.886	1.977	4.862					100	99
99	2	9	50	2.544	1.720	4.264					100	99
99	2	9	51	1.222	1.402	2.624					100	99
99	2	9	52	1.366	1.355	2.721					100	99
99	2	9	53	1.803	1.497	3.300					101	99
99	2	9	54	2.762	1.333	4.096					101	99
99	2	9	55	2.595	1.871	4.466					101	99
99	2	9	56	3.309	1.719	5.028					101	99
99	2	9	58	2.943	1.878	4.821					101	99
99	2	9	59	3.026	1.531	4.557					101	99
99	2	9	60	1.813	1.695	3.508					101	99
99	2	9	61	2.013	1.417	3.431					101	99
99	2	9	62	6.916	1.761	8.677					101	99
99	2	9	63	2.046	1.463	3.509					101	99
99	3	0	0	4.368	0.694	5.062					0	0
99	3	1	1	3.756	0.022	3.778	0.067	1.731	10.62	5.1	0	0.2

99	3	1	2	6.634	0.483	7.117	0.043	1.107	10.47	4.93	0	0.4
99	3	1	3	4.616	1.011	5.627	0.051	1.244	4.12	5.81	0	0.6
99	3	1	4	1.372	0.773	2.145	0.033	0.977	7.57	4.83	0	0.8
99	3	1	5	1.824	2.944	4.768	0.028	0.788	5.98	5	0	1
99	3	1	6	1.945	2.336	4.280	0.025	0.706	5.99	5.31	0	1.2
99	3	1	7	1.605	0.596	2.201	0.030	1.008	11.82	4.48	0	1.4
99	3	1	8	3.716	3.284	7.000	0.038	1.321	10.61	4.96	0	1.6
99	3	1	9	4.081	3.602	7.683	0.058	1.438	8.73	5.02	0	1.8
99	3	1	10	1.655	3.545	5.199	0.038	0.817	7.97	4.82	0	2
99	3	1	11	4.751	0.027	4.777	0.047	1.971	3.7	4.71	0	3
99	3	1	12	1.686	2.457	4.143	0.036	1.309	5.1	5.04	0	4
99	3	1	13	1.299	0.394	1.693	0.030	1.011	9.46	4.61	0	5
99	3	1	14	2.405	0.409	2.813	0.039	0.810	19.06	4.74	0	10
99	3	1	15	2.574	3.250	5.824	0.045	1.291	12.67	4.66	0	15
99	3	1	16	1.984	0.813	2.797	0.036	0.963	7.43	4.7	0	20
99	3	2	1	3.378	3.828	7.206	0.050	1.426	11.33	4.98	0.2	0
99	3	2	2	3.276	0.768	4.044	0.063	2.078	5.33	4.3	0.4	0
99	3	2	3	3.365	0.927	4.291	0.068	1.629	9.88	4.71	0.6	0
99	3	2	4	3.995	0.829	4.824	0.049	1.480	9.37	4.66	0.8	0
99	3	2	5	2.602	0.158	2.760	0.069	1.268	9.01	4.64	1	0
99	3	2	6	1.925	0.502	2.427	0.035	1.038	7.82	4.78	1.2	0
99	3	2	7	2.218	0.549	2.767	0.034	0.914	5.56	4.77	1.4	0
99	3	2	8	2.021	0.824	2.844	0.037	0.955	4.45	5.04	1.6	0
99	3	2	9	3.006	0.901	3.907	0.042	0.979	5.86	4.88	1.8	0
99	3	2	10	3.254	2.678	5.932	0.039	0.903	6.84	4.84	2	0
99	3	2	11	1.344	0.596	1.940	0.033	0.815	10.47	5.07	3	0
99	3	2	12	5.530	4.749	10.279	0.049	1.112	6.92	5.25	4	0
99	3	2	13	4.910	0.062	4.972	0.032	0.651	7.65	5.14	5	0
99	3	2	14	12.076	0.076	12.152	0.065	1.434	13.06	6.08	10	0
99	3	2	15	5.588	3.608	9.196	0.074	1.459	12.88	5.02	15	0
99	3	2	16	4.778	0.765	5.543	0.080	2.121	11.74	4.83	20	0
99	3	3	1	2.785	2.985	5.771	0.039	1.482	7.07	4.47	0	-0.2
99	3	3	2	4.062	3.378	7.441	0.045	1.277	6.04	4.49	0	-0.4
99	3	3	3				0.131	3.051	6.29	5	0	-0.6
99	3	3	4	2.662	0.060	2.722	0.057	1.563	6.1	4.61	0	-0.8
99	3	3	5	4.346	0.565	4.911	0.050	1.304	2.69	4.83	0	-1
99	3	3	6	2.173	0.035	2.208	0.062	1.499	5.98	4.97	0	-1.2
99	3	3	7	2.918	0.899	3.817	0.060	1.340	6.19	5.16	0	-1.4
99	3	3	8	19.010	2.791	21.801	0.057	1.540	6.96	5.31	0	-1.6
99	3	3	9	3.320	0.320	3.640	0.068	1.904	6.58	4.68	0	-1.8
99	3	3	10	6.446	0.662	7.108	0.062	1.385	6.05	4.93	0	-2
99	3	3	11				0.044	1.218	4.26	4.83	0	-3
99	3	3	12				0.059	2.398	15.49	4.8	0	-4
99	3	3	13	3.775	2.777	6.552	0.067	1.756	8.24	4.87	0	-5
99	3	3	14	2.817	2.674	5.491	0.050	1.776	8.44	5.31	0	-10
99	3	3	15	5.892	3.894	9.786	0.066	1.730	14.85	5.18	0	-15

99	3	3	16	3.943	3.102	7.045	0.041	1.167	18.44	5.07	0	-20
99	3	4	1	2.920	2.523	5.443	0.076	1.267	8.37	4.73	-0.2	0
99	3	4	2	3.602	0.051	3.653	0.055	1.002	16.79	5.08	-0.4	0
99	3	4	3				0.057	1.317	12.37	6.08	-0.6	0
99	3	4	4	3.533	1.037	4.570	0.083	1.875	21.56	5.24	-0.8	0
99	3	4	5	2.446	0.569	3.015	0.048	1.174	8.11	5.02	-1	0
99	3	4	6	5.634	2.639	8.273	0.050	1.223	6.16	4.66	-1.2	0
99	3	4	7	3.021	0.714	3.736	0.066	1.693	6.62	4.77	-1.4	0
99	3	4	8	2.070	0.255	2.325	0.053	1.052	9.74	4.65	-1.6	0
99	3	4	9	4.328	0.677	5.005	0.045	1.101	4.21	5.01	-1.8	0
99	3	4	10	1.680	0.360	2.040	0.033	0.870	5.47	4.84	-2	0
99	3	4	11	2.227	0.619	2.846	0.042	1.043	8.52	5.13	-3	0
99	3	4	12	4.138	0.355	4.493	0.058	1.306	6.72	4.82	-4	0
99	3	4	13	2.580	3.098	5.678	0.041	1.131	3.74	4.79	-5	0
99	3	4	14	2.160	3.275	5.435	0.040	1.072	7.9	5.18	-10	0
99	3	4	15	3.212	0.690	3.902	0.039	0.906	13.17	4.84	-15	0
99	3	4	16	3.731	0.784	4.515	0.049	1.232	12.11	5.105	-20	0

Appendix 5. Species codes used in vegetation sampling.

spp.code	common name	species scientific name
acru	red maple	Acer rubrum L.
AGROST		Agrostis sp.
amar	pepper vine	Ampelopsis arborea (L.) Koehne
ansp		Andropogon sp.
arsp		Aristide sp.
assp	milkweed	Asclepias sp.
baha	groundsel-tree/silverling/sea-myrtle	Baccharis halimifolia L
caam	beauty-berry/French mulberry	Calicarpa americana L.
cani	wild sensitive plant	Cassia nicititans L.
cela	hackberry	Celtis laevigata Willd.
ceoc	hackberry	Celtis occidentalis
circ	enchanter's nightshade	Circaea sp. ?
clma	butterfly pea	Clitoria mariana L. ?
COCA		Conyza canadensis
cofl	dogwood	Cornus florida L.
CRSP	hawthorn	Crataegus sp.
crsp	rattlebox	Crotalaria specatabilis Roth.
cysp	sedge species	Cyperaceae sp.
desp	beggar lice/beggar' ticks	Desmodium sp.
DESPA		Lespedeza sp.
diodea		Diodia sp. ?
disp		Dichanthelium sp.
divi	persimmon	Diospyros virginiana L.
ear	lamb's ear	lamb's ear?
ELSP		Elephantopus sp.
erca	horseweed	Erigeron canadensis L.
erhi	fireweed	Erechtities hieracifolia (L.) Raf.
eusp	thoroughwort/dog fennel	Eupatorium sp.
fern	southern lady fern	Athyrium hypericoides Michaux) A.A.Eaton
ferntree	silktree	Albizia julibrissin (Willdenow) Durrazini.
FROSP		Froehlichia sp ?
gasp	bedstraw	Galium sp.
gese	yellow jessamine	Gelsemium sempervirens (L.) Aiton f.
gnob	rabbit tobacco/everlasting/cudweed	Gnapthalium obtusifolium L
GRPI		Polpremum procumbens
hano	Ptilimnium nodosum (Rose) Mathias	Harperella nodosa Rose.?
higr	hawkweed	Hieracium gronovii L. ?
hyge	pineweed	Hypericum gentianoides (L.) BSP.
hyhy	st.andrew's cross	Hypericum hypericoides (L.) Grantz.
ilop	holly	Ilex opaca Aiton.
lasp		Lamiaceae sp.
levi	cut grass	Leersia virginica Willd
lich		Lilaeopsis chinensis (L.) Kuntze ?
lifl		Lobelia sp.
lin?		Lindernia sp.
lisi	privet	Ligustrum sinense Lous. ?

list	sweetgum	Liquidambar styraciflua L.
loja	honeysuckle	Lonicera japonica Thunberg
mint	henbit	Lamium sp.
myce	wax myrtle	Myrica cerifera L.
nysy	blackgum	Nyssa sylvatica Marshall
ophr	prickly pear/cactus	Opuntia sp.
orange		Polypremum sp.
osam	wild olive	Osmanthus americaca (L.) Gray?
pain	maypops/passion-flower	Passiflora incarnata L.
paqu	Virginia creeper	Parthenocissu quinquefolia (L.) Planchon
parsley	parsley	Petroselinum crispum (Miller) Mansfeld.
pasa		Pastinaca sativa L.,? (should not be there)
pasp		Panicum sp.
pebo	red bay	Persea borbonia (L.) Sprengel.
pepper		Lepidium sp.?
pham	pokeweed	Phytolacca americana L.
piel	slash pine	Pinus elliottii Engelm.
pita	loblolly pine	Pinus taeda L.
ploc	sycamore	Platanus occidentalis L.
pone		Polygonum aviculare=P. neglectum
popr		Polypremium procumbens L.
prse	black cherry	Prunus serotina Ehrhart
prur	hog plum	Prunus umbellata Ell.
qufa	southern red oak	Quercus falcata Michaux
quhe	Laura oak	Quercus hemispherica Bartram
quin	Upland willow oak, Blue-jack oak	Quercus incana Bartram,
quni	water oak	Quercus nigra L.
qusp		Quercus sp.
qust	post oak	Quercus stellata Wang
rhch	beak rush	Rhynchospora chapmanii M.A.Curtis?
rhco	dwarf/winged sumac	Rhus copallina L.
rhra	poison ivy=Toxicodendron radicans	Rhus radicans L.
rumsp	sheep-sorrel/sour-grass/swamp dock	Rumex sp. ?
rusp	raspberry	Rubus sp.
saal	sassafras	Sassafras albidum (Nuttall) Nees.
smsp	greenbrier	Smilax sp.
soam		Solanum americanum/Sorbus americana?
sosp	goldenrod	Solidago sp.
sporo	dropseed	Sporobolus sp.?
sunflower	sunflower	Helianthus sp.
tall	false asphodel	Tofieldia racemosa (Walter) BSP.?
thistle	thistle	Circium sp.
trur		Tragia urens L.
ulal	winged elm	Ulmus alata Michaux.
uloc		Ulmus sp.?
UNKD		paspalum sp.
vasp	blueberry	Vaccinium sp.
vino/grop		Vibernum nudem
viro	grape/muscadine	Vitis rotundifolia Michaux.

visp	Vitis sp.

VITA

Steven J. Selin was born in Western New York State in 1972. In 1997 he received an A.A.S. in Natural Resources Conservation from Fingerlakes Community College in Canandaigua, NY. In 1999 he received a B.S. in Environmental and Forest Biology from The State University of New York College of Environmental Science and Forestry.