APPENDIX

Appendix

Field Sampling Techniques and Matrix Construction Notes for Each Species

ASTRAGALUS TYGHENSIS

A total of 15 permanent monitoring plots at five sites were sampled to obtain demographic data from five populations of *Astragalus tyghensis*. Monitored populations were at sites 4, 10, 13, 25, and 41 (Kaye and Brady 1991). Plot locations were selected by visually partitioning each population into homogeneous areas, then randomly placing plot locations. All permanent plots were 5 x 5 m square, marked in each corner with a 1 m piece of iron rebar protruding at least 30 cm from the soil. The upper left corner-rebar of each plot (facing up-slope) was labeled with an aluminum tag noting plot number. To sample, each side of the plot was marked temporarily at 1 m intervals with nails, and string was tossed back and forth over the plot (looped each time around a nail) to create a grid of 1 x 1 m subplots within the 5 x 5 m macroplot. The location of each *Astragalus tyghensis* individual in every subplot was mapped and numbered on map sheets. A dot and a corresponding plant number were placed on the map sheets to mark the position of each plant. In some cases, it was difficult to determine whether tufts of plants were clusters of individuals or merely a single plant that had branched below the soil surface, or a combination of these. In these cases, the loose soil was gently excavated and probed with fingers to check for root connections. On a separate data sheet, we noted diameter (cm), length of longest stem (cm), number of inflorescences, and evidence of grazing (yes or no) of each mapped and numbered plant.

To assess seed production, we sampled between 25 and 80 plants at each monitoring site. Plants were sampled at random for number of inflorescences and fruits adjacent to and outside of the permanent macroplots. In addition, whole infructescences were collected at random and inspected for seed set per fruit and insect seed predation. At sites 4 and 41, the number of fruits per plant was measured for all plants in the plots, instead of subsampling outside the plots, because of the relatively low number of flowering plants at those sites. The samples were collected each season when fruits were mature. For each site, we performed linear regressions to determine the number of fruits expected from a plant given the number of inflorescences (for these tests, $P < 0.05$) (except at sites 4 and 41 in 1992-98, and 4, 10, 25, and 41 in 1999 where fruit production was measured directly). These data were multiplied by the average number of seeds per fruit at each site to give an estimate of the number of seeds produced by each monitored plant. The following formulae were used to calculate the number of seeds produced per plant given the number of inflorescences or fruits [(#inflorescences×regression coefficient for fruits/inflorescences)×average number of seeds per fruit].

For the purposes of the model, the individuals in a population were assigned to categories (stages) based on age (for seedlings only) and size. The number of seedlings produced per plant in each category was determined, and the probability of individual stasis in the same stage or transition to another was be calculated. The transition probabilities were the proportion of individuals in each stage that made the transition to another stage (e.g.,

become smaller or larger) from one year to the next. We recognized five stages for this species based primarily on stem length: seedling, longest stem <10 cm, 10-20 cm, 20-30 cm, and >30 cm. These stages were defined subjectively after displaying the size data graphically in several different ways. In a few cases, data for a particular stage were lacking for a given year due to absence of that category from the population samples. When this occurred, the column for that stage was replaced by the mean transition elements from all other years (Table A.1).

CIMICIFUGA ELATA

We used data from three *C. elata* populations to derive transition matrices: EUGRASS, EUNORR and WIL032 (Kaye and Kirkland 1994). At each population, we measured all the following characteristics of each plant: number of leaves, number of reproductive stems, and number of racemes. In addition, we mapped and tagged individuals within 40-m on either side of a reference transect. Plants were mapped according to a coordinate system in which the first (x) coordinate is the distance along the reference transect to a plant, and the second (y) is the lateral (perpendicular) distance from the transect to the plant. Because plants usually were found on both sides of the transect center-line, plants to the right of the transect (facing in the direction of the transect) were given positive y-axis ordinates, and those to the left were assigned negative y-axis ordinates. Distances were measured to the nearest decimeter to the base of the plant where it rooted into the soil. Plants were permanently tagged by inserting a stiff wire (12 gauge) into the soil 15-cm away from the plant perpendicular to the transect

center-line. The wire was looped at the top and a machine-numbered aluminum tag was fixed in the loop. In this way, each individual was tagged with a permanent and unique number and set of coordinates. Data from tagged plants were used to classify each individual into five stages, including seedling, vegetative with 1 or 2 leaves, vegetative with 3 or more leaves, reproductive (having at least one flower stalk), or dormant (for plants that skipped one or more years then reappeared). As in matrices for *A. tyghensis*, when too little data were available to calculate transitions for a particular stage, the matrix column for that stage was replaced by the mean. This occurred for the EUGRASS population in which the large vegetative stage was replaced by means in year 2, for EUNORR where seedlings, recuitment, and dormany were replaced by means only in year 4, and WIL032 where seedling and large vegetative transitions were replaced by means in year 1 (Table A.1).

HAPLOPAPPUS RADIATUS

Ten plots were established at five sites within the Oregon portion of the range of *Haplopappus radiatus* (Kaye and Meinke 1992). Plots were assigned to a fenced or unfenced treatment by a toss of a coin. All plots, whether inside or outside of an exclosure, were 10 x 10 m square and followed the same basic form. It was necessary to incorporate walk-ways into the plot set-up in order to reach the individual subplots for close inspection. Therefore, each plot was composed of five 1-m wide belt transects alternating with 1-m wide walk-ways. The belt transects were marked permanently with rebar posts anchored at each end. Each transect was broken into 10 contiguous 1 x 1 m

subplots in which plants were mapped and measured. Thus, there were five transects of ten subplots each, for a total of fifty subplots per plot (plot 1-out was an exception, with only 25 subplots). To locate the plots for sampling, a meter tape was run from the left post to the right post (left and right as if facing up-hill), and each 1-m segment of meter tape formed the lower edge of each subplot. A 1 x 1 m frame was then placed on the ground (with one edge along the meter tape) to delineate the subplot.

In 1991 the plots were sampled twice, on April 15-18 and July 19-23; 1992 sampling occurred on May 7-10 and July 20-24; 1993 sampling occurred on May 11-12 and July 13-14; 1994 sampling occurred on May 17-19 and August 2-4; 1995 sampling was conducted on May 22-26 and August 7-11; 1996 sampling occurred August 12-16; 1997 sampling was on May 28-29 and August 5-7; 1998 sampling was done on May 19-20 and July 28-30, and sampling in 1999 was conducted on May 18-19 and July 26-29. The early spring samples were conducted primarily to maintain the plots and locate seedlings. All plants were measured and remapped during the summer sample. In every subplot, all *Haplopappus radiatus* individuals were mapped onto special map forms and numbered consecutively on the map. Data on plant height (cm), length of longest leaf (cm), number of leaves, number of healthy and aborted flower heads (capitula), number of grazed stems, and percentage herbivory by grasshoppers, were recorded onto a second data sheet. In 1991, the density of *Haplopappus radiatus* was so high at the Lime sites (1 & 2) that we reduced the area of the subplots where non-reproductive plants are mapped and measured to the lower left-hand quarter of the subplots. All reproductive individuals

in the entire subplot were mapped and measured in the Lime plots (1 & 2). In addition, only even numbered subplots were sampled at Upper Lime plot 1-out. All portions of all subplots were sampled at the Lookout Mountain Road sites (plots 3, 4 & 5). In 1996, protocol was changed at the Lime sites so that mapping and measuring included all plants in all plots. Each individual was assinged to ne of four stages based primarily on number of leaves and reproductive status: seedling, juvenile(#four leaves), vegetative (>4 leaves and non-reproductive), and reproductive (producing at least one flowering capitulum). These stages were defined subjectively after displaying the size data graphically. Occasionally, no seedlings survived at all in a given population and year, and in others, all seedlings survived. Also, in some plots, no reproductive plants were observed in some years, so no data were available to estimate transition probabilities of this stage class. As above, where data were lacking, we used the average of transition probabilities from the years when these data were available (Table A.1).

LOMATIUM BRADSHAWII

We used information from three populations that were part of a prairie burning experiment (Kaye et al. 2001) to collect demographic data on *Lomatium bradshawii*. All three, Fisher Butte, Rose Prairie, and Long Tom, were within the southwest part of the species' range, in an area west and north of Eugene, Oregon. Three burning treatments were conducted at two of the locations, making a total of seven independent demographic data sets for this species. Permanent monitoring plots were sampled annually. To establish these plots, mature *Lomatium bradshawii* plants (reproductive or large

vegetative) were randomly chosen from throughout the population areas and tagged in 1988. These individuals were numbered, and a subset, ten at Fisher Butte, six at Rose Prairie, and ten at Long Tom, were randomly selected from each treatment area to serve as center points for permanent circular plots (2-m radius). All *L. bradshawii* individuals were mapped in each circular plot in May or June of each year (prior to burning) from 1988 through 1993. Leaf number, seed production, and umbel number were recorded annually for all tagged plants, including those at the center of each circular plot and outside the plots, and seed production per reproductive plant category was used to estimate per capita seedling recruitment for each reproductive stage. We used a biological classification that combined plant size and reproductive state to classify each *Lomatium bradshawii* individual into one of five stages: seedling, vegetative plant with one or two leaves, vegetative plant with three or more leaves, and reproductive plant with one, or two or more umbels. Reproductive plants were segregated by umbel number because one-umbel plants rarely produce seed, while two-umbel plants produce seeds on the second umbel, and plants with three or more umbels may produce many seeds (T.N. Kaye, unpublished data). We combined vegetative plants with one or two leaves into a single stage because field observations indicated that plants with one leaf often produced a second leaf later in the year, and therefore leaf number of small plants may be a function of sampling date and/or variation in seasonal phenology, not plant vigor. Seedlings were defined as first year plants, often with cotyledons. All vegetative plants with one leaf were considered seedlings in 1988 (Table A.1).

LOMATIUM COOKII

Long-term monitoring plots were established at two populations in near Cave Junction, Oregon (Kaye 2000). At each population (Middle and South), 20 plots were randomly placed. These plots were 0.5 x 0.5-m, and all individual *Lomatium cookii* plants were mapped to their approximate location, given unique numbers**,** and assigned to the categories defined below. To sample, a 0.5 x 0.5-m frame was placed over the plot and all plant positions were mapped to scale on a map form. Plant categories were seedling, vegetative with 1 or 2 leaves, vegetative with 3 or more leaves, reproductive with 1 umbel, reproductive with 2 umbels, and reproductive with 3 or more umbels. As above, where data were lacking, we used the average of transition probabilities from the years when these data were available (Table A.1).

Table A.1. Annual transition matrices. The transition matrices reported below are in a condensed format. Each column represents a transition matrix for a single year of observation. The entries in a column of the table are the entries in each column of the matrix, stacked one above the other, beginning with seedling transitions at the top. To reconstruct a square matrix, each column must be reshaped so that the first five entries (or four for *Haplopappus radiatus* and six for *Lomatium cookii*) form the first (left hand) column of the matrix, the next five (or four or six, as above) the next column, and so on. See the details for each species above for stage definitions.

Astragalus tyghensis, site 4

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.407	0.220	0.479	0.120	0.632	0.556	0.681	0.345	0.514
0.019	0.017	0.010	0.160	0.035	0.037	0.000	0.034	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.515	0.254	0.444	0.151	0.261	0.423	0.350	0.455	0.216
0.182	0.222	0.083	0.093	0.130	0.231	0.300	0.127	0.255
0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000
0.176	0.228	0.062	0.247	0.046	0.529	0.316	0.054	0.207
0.163	0.121	0.195	0.133	0.280	0.033	0.184	0.241	0.125
0.372	0.576	0.463	0.367	0.560	0.733	0.368	0.552	0.344
0.256	0.152	0.000	0.300	0.000	0.133	0.237	0.000	0.188
0.047	0.000	0.000	0.000	0.000	0.000	0.026	0.000	0.000
2.176	2.815	0.619	3.081	0.790	2.710	1.543	1.737	1.934
0.000	0.037	0.160	0.000	0.154	0.000	0.000	0.083	0.000
0.188	0.185	0.240	0.071	0.615	0.333	0.375	0.500	0.000
0.812	0.630	0.520	0.214	0.231	0.444	0.250	0.083	1.000
0.000	0.111	0.000	0.643	0.000	0.222	0.250	0.000	0.000
3.332	3.116	2.321	6.468	1.556	0.736	2.314	3.648	2.936
0.000	0.000	0.333	0.000	0.000	1.000	0.000	0.250	0.198
0.200	0.250	0.000	0.000	0.100	0.000	0.000	0.500	0.131
0.400	0.750	0.333	1.000	0.600	0.000	0.500	0.000	0.448
0.400	0.000	0.333	0.000	0.100	0.000	0.500	0.000	0.167

Table A.1, Continued.

Astragalus tyghensis, site 10

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.278	0.062	0.319	0.217	0.530	0.512	0.363	0.202	0.113
0.111	0.021	0.017	0.029	0.034	0.047	0.022	0.024	0.005
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.021	0.000	0.000	0.005	0.000	0.010	0.000	0.008	0.005
0.286	0.217	0.478	0.161	0.300	0.459	0.455	0.326	0.233
0.171	0.130	0.217	0.274	0.300	0.235	0.247	0.157	0.407
0.171	0.043	0.000	0.048	0.000	0.000	0.026	0.000	0.058
0.000	0.000	0.000	0.016	0.000	0.000	0.000	0.000	0.012
0.557	0.191	0.208	0.564	0.054	0.441	0.311	1.018	0.418
0.020	0.033	0.170	0.029	0.235	0.156	0.055	0.247	0.014
0.320	0.533	0.638	0.186	0.500	0.531	0.616	0.438	0.507
0.560	0.200	0.128	0.414	0.176	0.188	0.192	0.067	0.333
0.060	0.033	0.000	0.257	0.029	0.016	0.014	0.014	0.029
2.677	1.018	0.992	2.691	0.325	2.154	1.780	3.593	1.904
0.000	0.065	0.023	0.000	0.051	0.051	0.000	0.207	0.000
0.125	0.339	0.568	0.040	0.615	0.308	0.621	0.448	0.083
0.550	0.387	0.364	0.240	0.308	0.410	0.379	0.138	0.500
0.275	0.097	0.023	0.640	0.000	0.103	0.000	0.000	0.417
4.857	2.358	1.216	3.179	0.749	4.376	1.384	3.75	2.588
0.083	0.000	0.000	0.000	0.026	0.000	0.000	0.000	0.014
0.000	0.150	0.583	0.000	0.211	0.600	0.429	0.500	0.309
0.330	0.500	0.250	0.000	0.553	0.000	0.286	0.500	0.302
0.500	0.250	0.167	1.000	0.105	0.400	0.143	0.000	0.321

Table A.1, Continued.

Astragalus tyghensis, site 13

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.373	0.147	0.288	0.358	0.281	0.297	0.384	0.377	0.192
0.026	0.058	0.006	0.039	0.045	0.059	0.088	0.038	0.026
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.094	0.004	0.000	0.105	0.005	0.004	0.005	0.002	0.002
0.417	0.188	0.438	0.271	0.362	0.215	0.335	0.437	0.256
0.188	0.188	0.062	0.161	0.179	0.192	0.335	0.121	0.171
0.076	0.031	0.000	0.060	0.015	0.024	0.023	0.004	0.014
0.014	0.000	0.000	0.021	0.000	0.006	0.000	0.000	0.000
1.435	0.424	0.066	6.667	0.235	0.296	0.090	0.065	0.109
0.074	0.061	0.538	0.116	0.175	0.105	0.058	0.249	0.124
0.278	0.318	0.290	0.231	0.320	0.363	0.562	0.472	0.355
0.417	0.364	0.000	0.273	0.117	0.121	0.190	0.036	0.204
0.157	0.121	0.000	0.240	0.039	0.048	0.036	0.000	0.000
5.550	4.182	0.729	2.836	1.247	3.512	1.929	0.879	1.232
0.062	0.014	0.379	0.096	0.067	0.040	0.016	0.157	0.028
0.062	0.162	0.515	0.205	0.167	0.100	0.222	0.486	0.139
0.438	0.378	0.000	0.361	0.350	0.540	0.460	0.229	0.361
0.375	0.432	0.000	0.242	0.233	0.140	0.270	0.029	0.278
14.566	11.301	1.835	6.819	2.998	5.478	5.093	2.691	2.541
0.000	0.000	0.221	0.041	0.000	0.026	0.000	0.068	0.000
0.143	0.050	0.691	0.174	0.075	0.026	0.057	0.386	0.111
0.143	0.250	0.000	0.216	0.350	0.237	0.314	0.250	0.333
0.643	0.700	0.000	0.495	0.500	0.500	0.629	0.159	0.556

Table A.1, Continued.

Astragalus tyghensis, site 25

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.381	0.176	0.338	0.238	0.402	0.240	0.375	0.423	0.136
0.044	0.072	0.032	0.270	0.073	0.020	0.087	0.064	0.034
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
0.133	0.115	0.549	0.126	0.748	0.310	0.391	0.370	0.274
0.382	0.230	0.127	0.347	0.087	0.267	0.141	0.050	0.178
0.325	0.000	0.000	0.085	0.065	0.017	0.016	0.000	0.041
0.049	0.000	0.000	0.045	0.000	0.009	0.000	0.000	0.000
0.932	0.261	0.045	0.162	0.002	0.029	0.019	0.074	0.191
0.000	0.016	0.204	0.017	0.111	0.085	0.199	0.318	0.054
0.086	0.590	0.611	0.046	0.606	0.529	0.581	0.307	0.380
0.617	0.279	0.080	0.197	0.071	0.196	0.059	0.006	0.293
0.259	0.016	0.018	0.665	0.020	0.078	0.000	0.000	0.065
6.864	1.691	0.290	2.207	0.052	0.342	0.297	0.704	1.556
0.000	0.019	0.069	0.000	0.121	0.022	0.161	0.235	0.000
0.061	0.292	0.678	0.026	0.517	0.169	0.495	0.333	0.000
0.303	0.453	0.195	0.053	0.207	0.483	0.237	0.059	0.400
0.636	0.179	0.000	0.868	0.069	0.270	0.011	0.000	0.600
6.040	3.403	0.727	5.577	0.264	0.716	0.655	1.394	2.483
0.000	0.000	0.022	0.000	0.012	0.000	0.027	0.143	0.026
0.000	0.111	0.467	0.000	0.231	0.095	0.493	0.571	0.246
0.200	0.407	0.267	0.000	0.376	0.254	0.260	0.000	0.221
0.800	0.463	0.222	1.000	0.318	0.540	0.082	0.000	0.428

Table A.1, Continued.

Astragalus tyghensis, site 41

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.588	0.406	0.461	0.167	0.370	0.292	0.333	0.312	0.000
0.059	0.203	0.026	0.083	0.167	0.250	0.083	0.031	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.049	0.003	0.000	0.005	0.000	0.000	0.000	0.007
0.686	0.082	0.625	0.114	0.368	0.281	0.389	0.321	0.050
0.229	0.344	0.031	0.190	0.053	0.375	0.278	0.036	0.300
0.014	0.344	0.000	0.219	0.105	0.062	0.056	0.000	0.125
0.000	0.131	0.000	0.171	0.000	0.000	0.000	0.000	0.000
0.000	2.386	0.083	0.000	0.037	0.028	0.008	0.005	0.023
0.231	0.037	0.561	0.000	0.000	0.031	0.171	0.147	0.048
0.769	0.222	0.195	0.111	0.556	0.375	0.341	0.500	0.262
0.000	0.407	0.000	0.111	0.222	0.250	0.220	0.000	0.405
0.000	0.333	0.000	0.556	0.148	0.031	0.000	0.000	0.048
1.885	1.885	0.326	1.885	0.151	0.219	0.176	0.035	0.151
0.097	0.097	0.424	0.097	0.000	0.000	0.059	0.176	0.000
0.199	0.199	0.303	0.199	0.250	0.207	0.235	0.412	0.000
0.293	0.293	0.000	0.293	0.536	0.517	0.412	0.029	0.500
0.320	0.320	0.000	0.320	0.214	0.241	0.147	0.000	0.500
0.683	0.683	0.542	0.683	0.566	0.821	0.917	0.181	0.712
0.125	0.125	0.500	0.125	0.000	0.000	0.000	0.300	0.160
0.138	0.138	0.330	0.138	0.000	0.114	0.107	0.400	0.190
0.192	0.192	0.000	0.192	0.182	0.229	0.357	0.050	0.164
0.466	0.466	0.000	0.466	0.758	0.571	0.536	0.000	0.373

Table A.1, Continued.

Cimicifuga elata, EUNORR

0.000	0.000	0.000	0.000
0.279	0.250	0.600	0.400
0.000	0.000	0.000	0.000
0.000	0.000	0.200	0.000
0.302	0.250	0.200	0.200
0.000	0.000	0.000	0.000
0.520	0.539	0.480	0.424
0.000	0.000	0.000	0.000
0.000	0.039	0.000	0.030
0.280	0.231	0.280	0.182
0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.063
0.000	0.000	1.000	0.500
0.750	1.000	0.000	0.438
4.000	5.000	5.000	2.500
0.000	0.000	0.000	0.000
0.000	1.000	0.000	0.500
1.000	0.000	0.000	0.000
0.000	0.000	1.000	0.000
0.000	0.000	0.000	0.000
1.000	0.435	0.810	0.769
0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000
0.000	0.565	0.191	0.231

Table A.1, Continued.

Cimicifuga elata, EUGRASS

0.000	0.000	0.000	0.000
0.615	1.000	0.875	0.667
0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000
0.154	0.000	0.000	0.000
0.000	0.000	0.000	0.000
0.529	0.621	0.677	0.738
0.000	0.000	0.029	0.000
0.000	0.138	0.029	0.048
0.382	0.138	0.088	0.071
0.000	0.000	0.000	0.000
0.500	0.833	1.000	1.000
0.000	0.000	0.000	0.000
0.500	0.167	0.000	0.000
0.000	0.000	0.000	0.000
5.000	8.000	0.600	4.000
0.000	0.000	0.600	0.000
0.000	0.000	0.000	0.000
0.000	1.000	0.200	1.000
1.000	0.000	0.200	0.000
0.000	0.000	0.000	0.000
1.000	0.688	0.750	1.000
0.000	0.063	0.000	0.000
0.000	0.000	0.125	0.000
0.000	0.250	0.125	0.000

Table A.1, Continued.

Cimicifuga elata, WIL032

0.000	0.000	0.000	0.000	0.000
0.588	0.600	0.833	0.250	0.667
0.050	0.200	0.000	0.000	0.000
0.063	0.000	0.000	0.250	0.000
0.042	0.000	0.167	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.561	0.579	0.588	0.476	0.611
0.078	0.000	0.118	0.238	0.000
0.145	0.368	0.118	0.048	0.056
0.043	0.053	0.059	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.256	0.333	0.667	0.000	0.111
0.111	0.333	0.000	0.000	0.222
0.289	0.000	0.333	0.500	0.111
0.150	0.333	0.000	0.250	0.000
0.251	0.273	0.129	0.231	0.423
0.075	0.000	0.065	0.154	0.077
0.075	0.000	0.065	0.154	0.077
0.721	0.909	0.710	0.615	0.769
0.067	0.046	0.129	0.039	0.000
0.000	0.000	0.000	0.000	0.000
0.393	0.286	0.500	0.286	0.500
0.098	0.143	0.000	0.000	0.250
0.339	0.429	0.250	0.429	0.250
0.170	0.143	0.250	0.286	0.000

Table A.1, Continued.

Haplopappus radiatus, 1-in

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.222	0.125	0.075	0.020	0.138	0.229	0.370	0.172	0.047
0.000	0.000	0.075	0.002	0.034	0.000	0.000	0.035	0.007
0.000	0.104	0.050	0.011	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.609	0.340	0.381	0.244	0.500	0.545	0.689	0.532	0.686
0.185	0.107	0.127	0.232	0.152	0.287	0.126	0.177	0.144
0.000	0.369	0.079	0.244	0.130	0.069	0.126	0.044	0.052
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.247	0.095	0.233	0.040	0.210	0.109	0.103	0.150	0.151
0.584	0.121	0.233	0.475	0.400	0.709	0.451	0.591	0.454
0.045	0.724	0.100	0.337	0.250	0.136	0.422	0.181	0.319
2.342	7.765	11.270	2.074	0.719	1.174	0.387	3.570	0.000
0.195	0.000	0.170	0.000	0.172	0.148	0.040	0.064	0.070
0.537	0.000	0.390	0.315	0.266	0.426	0.133	0.419	0.298
0.159	0.882	0.189	0.630	0.484	0.391	0.813	0.454	0.570

Haplopappus radiatus, 1-out

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.353	0.667	0.013	0.105	0.577	0.167	0.105	0.041
0.000	0.059	0.000	0.095	0.000	0.000	0.008	0.035	0.016
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.585	0.405	0.316	0.158	0.500	0.512	0.612	0.483	0.390
0.098	0.054	0.184	0.246	0.286	0.279	0.149	0.172	0.169
0.024	0.378	0.079	0.316	0.143	0.116	0.134	0.081	0.104
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.063	0.087	0.111	0.019	0.164	0.214	0.240	0.154	0.215
0.688	0.065	0.333	0.321	0.345	0.543	0.347	0.673	0.456
0.063	0.783	0.222	0.566	0.164	0.157	0.360	0.096	0.229
1.514	0.800	9.723	2.345	0.506	2.400	1.357	4.033	0.000
0.243	0.100	0.215	0.000	0.152	0.182	0.071	0.167	0.088
0.514	0.000	0.477	0.207	0.342	0.364	0.333	0.400	0.441
0.189	0.900	0.215	0.621	0.367	0.436	0.548	0.350	0.294

Table A.1, Continued.

Haplopappus radiatus, 2-in

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.256	0.039	0.000	0.133	0.125	0.273	0.055	0.039
0.000	0.000	0.000	0.000	0.200	0.000	0.000	0.039	0.000
0.000	0.047	0.007	0.016	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.330	0.270	0.283	0.018	0.167	0.307	0.267	0.333	0.130
0.049	0.067	0.067	0.158	0.333	0.154	0.200	0.000	0.087
0.035	0.281	0.100	0.298	0.000	0.077	0.133	0.222	0.130
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.263	0.093	0.231	0.091	0.077	0.114	0.026	0.156	0.033
0.158	0.047	0.154	0.136	0.154	0.364	0.385	0.375	0.167
0.211	0.628	0.077	0.409	0.115	0.341	0.461	0.281	0.633
1.745	5.920	2.250	0.536	0.295	0.183	4.379	0.785	0.000
0.106	0.060	0.143	0.000	0.053	0.067	0.017	0.015	0.070
0.298	0.040	0.107	0.134	0.295	0.217	0.207	0.246	0.123
0.394	0.860	0.643	0.619	0.537	0.617	0.724	0.692	0.719

Haplopappus radiatus, 2-out

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.368	0.385	0.000	0.750	0.000	0.286	0.053	0.226
0.000	0.132	0.000	0.000	0.125	0.000	0.286	0.007	0.007
0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.443	0.167	0.195	0.158	0.154	0.316	0.154	0.200	0.200
0.043	0.139	0.024	0.193	0.154	0.105	0.308	0.000	0.000
0.000	0.292	0.073	0.140	0.154	0.053	0.231	0.200	0.200
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.333	0.091	0.200	0.067	0.138	0.095	0.000	0.077	0.077
0.083	0.227	0.200	0.467	0.241	0.286	0.615	0.539	0.539
0.000	0.409	0.160	0.267	0.172	0.381	0.231	0.039	0.039
1.707	36.000	0.735	0.552	0.097	0.368	13.591	1.667	1.667
0.387	0.000	0.449	0.035	0.097	0.158	0.045	0.133	0.133
0.200	0.000	0.143	0.207	0.258	0.263	0.454	0.800	0.800
0.013	1.000	0.265	0.414	0.323	0.421	0.409	0.067	0.067

Table A.1, Continued.

Haplopappus radiatus, 3-in

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.111	0.000	0.444	0.000	0.305	0.187	0.154	0.130	0.163
0.022	0.000	0.111	0.000	0.017	0.031	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.430	0.188	0.581	0.344	0.450	0.482	0.471	0.500	0.486
0.056	0.200	0.065	0.203	0.275	0.071	0.157	0.075	0.114
0.028	0.400	0.129	0.219	0.025	0.054	0.098	0.000	0.029
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.230	0.068	0.353	0.029	0.143	0.175	0.105	0.207	0.059
0.333	0.182	0.294	0.529	0.738	0.550	0.263	0.379	0.265
0.035	0.591	0.353	0.265	0.071	0.162	0.526	0.069	0.500
0.235	1.800	0.963	1.035	0.517	2.294	0.958	0.745	0.000
0.177	0.000	0.256	0.193	0.133	0.059	0.042	0.098	0.000
0.353	0.100	0.232	0.175	0.617	0.412	0.208	0.392	0.000
0.177	0.800	0.488	0.632	0.200	0.412	0.625	0.255	0.933

Haplopappus radiatus, 3-out

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.364	0.000	0.095	1.000	0.026	0.040	0.093	0.033
0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.008
0.000	0.182	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.385	0.148	0.652	0.267	0.478	0.542	0.333	0.600	0.250
0.096	0.284	0.217	0.333	0.348	0.292	0.292	0.267	0.375
0.010	0.444	0.000	0.222	0.087	0.083	0.250	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.271	0.015	0.263	0.039	0.050	0.094	0.048	0.064	0.034
0.448	0.194	0.447	0.416	0.767	0.469	0.524	0.830	0.534
0.063	0.746	0.237	0.429	0.133	0.417	0.397	0.043	0.375
0.478	0.250	0.198	0.022	0.520	0.833	1.271	1.627	0.000
0.130	0.000	0.132	0.067	0.107	0.033	0.051	0.053	0.000
0.478	0.000	0.491	0.178	0.600	0.333	0.119	0.573	0.280
0.304	0.938	0.293	0.689	0.293	0.567	0.746	0.307	0.680

Table A.1, Continued.

Haplopappus radiatus, 4-in

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.333	0.000	0.000	0.083	0.038	0.200	0.333	0.071
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.071
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.506	0.414	0.600	0.436	0.682	0.458	0.591	0.500	0.650
0.006	0.115	0.089	0.103	0.045	0.208	0.091	0.273	0.050
0.000	0.069	0.156	0.205	0.045	0.042	0.091	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.400	0.000	0.308	0.444	0.083	0.241	0.107	0.300	0.500
0.400	0.143	0.231	0.222	0.667	0.586	0.250	0.300	0.065
0.100	0.429	0.385	0.222	0.250	0.069	0.536	0.300	0.375
2.400	0.333	1.917	0.667	1.130	1.250	2.250	0.722	0.000
0.200	0.000	0.417	0.000	0.217	0.125	0.500	0.167	0.222
0.400	0.333	0.083	0.278	0.609	0.750	0.250	0.389	0.556
0.400	0.333	0.417	0.556	0.130	0.125	0.250	0.333	0.111

Haplopappus radiatus, 4-out

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.455	0.600	0.000	0.125	0.200	0.217	0.235	0.048
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.575	0.391	0.796	0.455	0.707	0.500	0.513	0.588	0.548
0.035	0.065	0.020	0.152	0.098	0.148	0.282	0.177	0.065
0.009	0.217	0.082	0.091	0.049	0.074	0.000	0.000	0.032
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.385	0.077	0.500	0.300	0.364	0.444	0.600	0.250	0.263
0.385	0.154	0.100	0.400	0.364	0.278	0.133	0.550	0.263
0.000	0.462	0.400	0.200	0.091	0.167	0.200	0.000	0.053
1.571	2.500	0.393	1.067	0.833	5.750	2.125	4.000	0.000
0.429	0.000	0.429	0.200	0.500	0.250	0.000	0.200	0.000
0.286	0.500	0.250	0.400	0.417	0.250	0.750	0.400	0.500
0.000	0.500	0.250	0.200	0.000	0.250	0.250	0.400	0.500

Table A.1, Continued.

Haplopappus radiatus, 5-in

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.306	0.000	0.306	0.000	1.000	0.000	0.188	0.286	0.667
0.009	0.000	0.009	0.000	0.000	0.000	0.062	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.440	0.556	0.857	0.619	0.500	0.182	0.250	0.800	0.846
0.020	0.000	0.000	0.143	0.357	0.182	0.250	0.200	0.000
0.000	0.111	0.095	0.095	0.143	0.000	0.000	0.000	0.077
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.222	0.000	0.076	0.000	0.200	0.000	0.000	0.333	0.000
0.000	0.000	0.342	0.000	0.400	0.571	0.375	0.333	0.714
0.000	0.333	0.392	1.000	0.400	0.000	0.500	0.222	0.286
0.250	0.000	0.500	0.250	0.200	2.286	7.000	0.750	0.000
0.000	0.000	0.500	0.000	0.400	0.143	0.000	0.000	0.000
0.500	0.000	0.250	0.500	0.000	0.286	1.000	0.750	0.250
0.250	0.000	0.250	0.500	0.600	0.143	0.000	0.250	0.500

Haplopappus radiatus, 5-out

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.400	1.000	0.395	0.000	0.395	0.538	0.333	0.097
0.000	0.000	0.000	0.008	0.000	0.008	0.000	0.048	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.500	0.474	0.786	0.400	0.500	0.333	0.250	0.417	0.727
0.000	0.105	0.000	0.267	0.200	0.000	0.500	0.042	0.045
0.000	0.158	0.071	0.133	0.100	0.167	0.250	0.042	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.333	0.000	0.500	0.156	0.000	0.200	0.000	0.000	0.250
0.333	0.000	0.000	0.239	0.167	0.000	0.500	1.000	0.375
0.000	0.000	0.500	0.288	0.667	0.600	0.250	0.000	0.188
5.000	1.903	0.000	1.000	0.000	5.571	3.000	3.750	0.000
0.000	0.048	0.333	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.393	0.000	0.500	0.500	0.571	0.429	0.750	0.000
0.000	0.512	0.667	0.500	0.500	0.429	0.571	0.250	0.667

Table A.1, Continued.

Lomatium bradshawii, Rose Prairie 0

0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.203	0.133	0.000	0.000	0.091	0.500	0.155
0.017	0.200	0.000	0.250	0.000	0.000	0.078
0.017	0.000	0.000	0.000	0.091	0.000	0.018
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.867	0.133	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.600	0.000	0.222
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.100	0.111	0.000	0.429	0.000	0.182	0.000
0.600	0.444	0.700	0.143	0.222	0.818	0.304
0.200	0.333	0.100	0.286	0.556	0.000	0.304
0.000	0.000	0.000	0.000	0.222	0.000	0.000
0.091	1.572	0.032	0.416	0.128	0.162	0.000
0.000	0.000	0.000	0.000	0.000	0.071	0.000
0.400	0.125	0.250	0.250	0.125	0.500	0.000
0.600	0.563	0.250	0.375	0.625	0.286	0.750
0.000	0.250	0.167	0.250	0.250	0.071	0.000
1.780	4.123	1.118	0.957	3.941	1.639	0.000
0.000	0.000	0.000	0.000	0.000	0.167	0.000
0.200	0.000	0.000	0.000	0.000	0.333	0.000
0.600	0.500	0.667	0.750	0.333	0.333	0.000
0.200	0.500	0.333	0.250	0.667	0.000	0.000

Table A.1, Continued.

Lomatium bradshawii, Rose Prairie 1

0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.333	0.500	0.301	0.286	0.379	0.632	0.444
0.000	0.125	0.012	0.036	0.116	0.055	0.000
0.000	0.000	0.012	0.018	0.021	0.000	0.000
0.000	0.000	0.000	0.000	0.011	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.500	0.500	0.250	0.472	0.429	0.567	0.279
0.333	0.400	0.000	0.167	0.214	0.105	0.114
0.000	0.000	0.000	0.056	0.054	0.000	0.000
0.000	0.000	0.000	0.028	0.054	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.118	0.000	0.188	0.154	0.182	0.136	0.074
0.529	0.281	0.188	0.000	0.182	0.636	0.324
0.294	0.250	0.125	0.385	0.409	0.023	0.029
0.059	0.406	0.000	0.231	0.227	0.000	0.044
0.010	0.100	0.014	0.066	0.094	0.006	0.000
0.000	0.063	0.188	0.143	0.071	0.148	0.000
0.200	0.063	0.250	0.071	0.143	0.482	0.077
0.600	0.313	0.250	0.214	0.357	0.222	0.154
0.200	0.563	0.063	0.500	0.357	0.000	0.077
1.995	2.653	0.363	0.785	0.957	0.496	0.000
0.000	0.000	0.067	0.091	0.000	0.031	0.000
0.364	0.133	0.167	0.000	0.083	0.500	0.000
0.091	0.067	0.267	0.091	0.250	0.313	0.333
0.546	0.800	0.333	0.818	0.583	0.063	0.000

Table A.1, Continued.

Lomatium bradshawii, Rose Prairie 2

0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.313	0.542	0.141	0.447	0.244	0.469	0.000
0.125	0.125	0.000	0.000	0.089	0.021	0.000
0.000	0.083	0.000	0.000	0.022	0.000	0.000
0.063	0.000	0.000	0.000	0.022	0.010	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.833	0.154	0.154	0.448	0.320	0.217
0.500	0.000	0.000	0.231	0.172	0.120	0.022
0.500	0.000	0.077	0.154	0.035	0.040	0.000
0.000	0.167	0.000	0.000	0.035	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.091	0.000	0.000	0.000	0.136	0.200	0.175
0.636	0.421	0.273	0.286	0.273	0.600	0.175
0.182	0.105	0.182	0.286	0.364	0.000	0.048
0.091	0.211	0.000	0.143	0.182	0.050	0.032
0.061	0.060	0.000	0.175	0.032	0.014	0.000
0.000	0.000	0.000	0.000	0.100	0.044	0.000
0.333	0.333	0.500	0.231	0.000	0.391	0.286
0.333	0.000	0.250	0.308	0.500	0.391	0.000
0.333	0.667	0.000	0.308	0.400	0.000	0.143
2.529	1.293	0.283	0.914	0.767	0.576	0.000
0.000	0.000	0.071	0.000	0.000	0.125	0.250
0.200	0.071	0.071	0.000	0.071	0.438	0.000
0.000	0.143	0.571	0.000	0.571	0.188	0.250
0.800	0.714	0.214	0.667	0.357	0.125	0.000

Table A.1, Continued.

Lomatium bradshawii, Fisher Butte 0

0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.214	0.531	0.219	0.071	0.214	0.500	0.250
0.071	0.219	0.000	0.179	0.071	0.289	0.000
0.000	0.031	0.016	0.000	0.036	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.111	0.375	0.264	0.350	0.120	0.417	0.297
0.222	0.250	0.113	0.225	0.480	0.583	0.243
0.037	0.125	0.057	0.050	0.000	0.000	0.000
0.000	0.125	0.000	0.000	0.080	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.029	0.083	0.137	0.036	0.012	0.023	0.158
0.400	0.556	0.480	0.679	0.494	0.864	0.586
0.229	0.250	0.137	0.089	0.193	0.023	0.040
0.029	0.111	0.027	0.071	0.084	0.011	0.000
0.168	0.536	0.096	0.226	0.145	1.576	0.154
0.000	0.000	0.081	0.107	0.000	0.000	0.095
0.158	0.143	0.324	0.393	0.136	0.804	0.524
0.526	0.429	0.297	0.321	0.546	0.196	0.191
0.105	0.429	0.189	0.071	0.182	0.000	0.095
1.332	4.212	0.492	3.104	10.946	8.013	0.383
0.000	0.000	0.080	0.000	0.000	0.000	0.056
0.235	0.000	0.160	0.250	0.077	0.526	0.278
0.471	0.250	0.320	0.188	0.231	0.263	0.222
0.235	0.750	0.320	0.438	0.539	0.158	0.389

Table A.1, Continued.

Lomatium bradshawii, Fisher Butte 1

0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.737	0.296	0.471	0.357	0.100	0.539	0.000
0.105	0.370	0.059	0.143	0.600	0.192	0.000
0.000	0.037	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.029	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.410	0.647	0.571	0.539	0.200	0.467	0.341
0.333	0.147	0.179	0.256	0.525	0.533	0.159
0.051	0.118	0.000	0.077	0.050	0.000	0.023
0.000	0.029	0.000	0.000	0.025	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.179	0.106	0.225	0.129	0.023	0.054	0.100
0.643	0.277	0.275	0.323	0.442	0.794	0.536
0.071	0.255	0.125	0.323	0.256	0.054	0.064
0.107	0.277	0.100	0.097	0.116	0.033	0.073
0.057	0.697	0.183	0.982	1.088	0.178	0.183
0.125	0.091	0.042	0.136	0.000	0.000	0.042
0.375	0.000	0.417	0.273	0.103	0.677	0.167
0.250	0.364	0.333	0.273	0.172	0.226	0.333
0.125	0.546	0.083	0.182	0.724	0.000	0.375
0.873	5.770	1.435	7.190	9.199	3.589	1.542
0.000	0.000	0.111	0.000	0.000	0.000	0.000
0.158	0.000	0.083	0.111	0.111	0.522	0.194
0.211	0.000	0.333	0.111	0.222	0.217	0.161
0.632	0.941	0.361	0.500	0.611	0.217	0.290

Table A.1, Continued.

Lomatium bradshawii, Fisher Butte 2

0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.444	0.360	0.520	0.500	0.111	0.136	0.000
0.074	0.220	0.040	0.100	0.333	0.455	0.000
0.037	0.000	0.040	0.000	0.000	0.000	0.000
0.000	0.020	0.000	0.000	0.037	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.360	0.148	0.217	0.212	0.133	0.091	0.115
0.360	0.444	0.087	0.546	0.267	0.636	0.481
0.040	0.037	0.174	0.091	0.000	0.000	0.019
0.000	0.074	0.044	0.030	0.200	0.000	0.019
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.091	0.074	0.234	0.000	0.060	0.015	0.044
0.546	0.426	0.297	0.852	0.434	0.687	0.483
0.182	0.185	0.188	0.074	0.253	0.060	0.044
0.091	0.204	0.047	0.037	0.060	0.000	0.105
0.037	0.178	0.112	1.115	0.654	0.029	0.000
0.143	0.000	0.083	0.030	0.000	0.028	0.000
0.000	0.063	0.167	0.394	0.000	0.694	0.063
0.429	0.500	0.417	0.333	0.333	0.167	0.250
0.429	0.375	0.083	0.242	0.583	0.000	0.313
4.755	5.210	1.825	10.132	6.819	3.486	0.000
0.050	0.000	0.000	0.000	0.000	0.023	0.000
0.100	0.000	0.051	0.120	0.000	0.318	0.250
0.100	0.000	0.359	0.200	0.179	0.364	0.083
0.750	0.909	0.462	0.600	0.714	0.136	0.250

Table A.1, Continued.

Lomatium bradshawii, Long Tom

0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.231	0.474	0.232	0.486	0.082
0.250	0.143	0.128	0.158	0.048	0.029	0.197
0.000	0.000	0.103	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.214	0.294	0.100	0.375	0.395	0.314	0.286
0.071	0.294	0.500	0.375	0.116	0.198	0.071
0.071	0.235	0.300	0.000	0.023	0.012	0.000
0.000	0.118	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.163	0.039	0.056	0.054	0.257	0.130	0.051
0.286	0.269	0.278	0.378	0.270	0.348	0.254
0.163	0.269	0.306	0.135	0.122	0.116	0.119
0.122	0.231	0.222	0.000	0.054	0.000	0.085
0.009	0.194	0.254	0.088	0.257	0.144	0.452
0.033	0.000	0.000	0.073	0.091	0.167	0.065
0.200	0.071	0.026	0.342	0.091	0.000	0.097
0.433	0.464	0.342	0.293	0.273	0.417	0.097
0.233	0.464	0.553	0.146	0.205	0.042	0.161
0.256	2.019	1.633	1.677	1.146	2.557	2.442
0.063	0.000	0.000	0.046	0.177	0.000	0.111
0.250	0.056	0.051	0.292	0.118	0.143	0.111
0.375	0.167	0.180	0.369	0.118	0.333	0.111
0.313	0.722	0.744	0.169	0.471	0.333	0.111

Table A.1, Continued.

Lomatium cookii, Middle

0.000	0.000	0.000	0.000	0.000
0.312	0.540	0.644	0.650	0.866
0.250	0.238	0.092	0.200	0.036
0.031	0.000	0.000	0.000	0.000
0.000	0.016	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.200	0.217	0.581	0.453	0.581
0.280	0.478	0.326	0.442	0.156
0.040	0.000	0.023	0.000	0.000
0.040	0.000	0.000	0.000	0.000
0.000	0.043	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.066	0.064	0.033	0.066	0.228
0.311	0.532	0.633	0.566	0.551
0.164	0.106	0.167	0.250	0.125
0.098	0.043	0.117	0.092	0.015
0.066	0.021	0.017	0.013	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.03125	0.026
0.062	0.080	0.235	0.063	0.211
0.219	0.280	0.765	0.313	0.553
0.375	0.320	0.000	0.438	0.158
0.125	0.200	0.000	0.063	0.026
1.000	2.900	0.244	0.301	0.196
0.000	0.000	0.000	0.000	0.095
0.000	0.000	0.067	0.029	0.143
0.294	0.083	0.200	0.171	0.310
0.235	0.250	0.500	0.514	0.357
0.235	0.375	0.167	0.229	0.024
2.900	8.400	0.722	0.888	0.577
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.043
0.000	0.000	0.071	0.059	0.174
0.000	0.154	0.464	0.176	0.435
0.990	0.769	0.393	0.706	0.304

Table A.1, Continued.

Lomatium cookii, South

0.000	0.000	0.000	0.000	0.000
0.382	0.750	0.426	0.294	0.603
0.182	0.125	0.115	0.157	0.032
0.000	0.000	0.000	0.000	0.016
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.160	0.185	0.405	0.464	0.321
0.400	0.481	0.230	0.232	0.262
0.000	0.000	0.014	0.043	0.024
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.038	0.025	0.200	0.288	0.057
0.212	0.550	0.540	0.356	0.434
0.192	0.175	0.040	0.034	0.132
0.135	0.100	0.040	0.034	0.000
0.000	0.000	0.020	0.034	0.000
0.000	0.00	0.000	0.000	0.000
0.000	0.000	0.000	0.167	0.111
0.000	0.154	0.154	0.167	0.333
0.222	0.231	0.000	0.000	0.111
0.333	0.308	0.385	0.500	0.000
0.000	0.154	0.000	0.000	0.000
1.40	1.90	0.252	0.344	0.445
0.000	0.000	0.000	0.000	0.333
0.000	0.000	0.231	0.167	0.000
0.000	0.231	0.077	0.167	0.111
0.250	0.231	0.231	0.250	0.111
0.125	0.462	0.154	0.167	0.111
8.80	12.00	1.567	2.139	2.765
0.000	0.000	0.000	0.143	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.083	0.143	0.400
0.000	0.000	0.167	0.000	0.000
0.990	0.990	0.333	0.143	0.200