

SUPPLEMENTAL TABLES

Supplemental Table 1. Parameters used in the MAXENT models for both the projected distributions of *M. oregonensis* under current and past conditions (i.e., at the LGM), as well as how the parameters effect the ENMs (for additional details see Phillips et al. 2006, Phillips & Dudik 2008). Also listed is the circumscribed geographic area for which the distribution was projected. The predicted distribution was generated for an area that extended beyond the sampled sky-island populations; this area was selected based on the collection localities and the range of the species, the presence of mountain chains, and the southern extent of the glaciers during the last glacial maximum.

| Parameter | s | Parameter values |
|--|---|--------------------------------|
| Regularization multiplier | Regulates model over-fitting | 0.5 |
| Maximum number of iterations | Maximizes model convergence | 1000 |
| Feature types (linear, quadratic, product, threshold, hinge) | Control the model response to the environmental variables | Auto |
| Replicate Run type | Assessment method of predictive power | Cross-validation |
| Percentage of test data | Proportion of data set aside for model validation | 10 |
| Area for projection of distribution | Boundaries of the area used in prediction from which background points are selected | 42° - 50° N 118° - 106.5° W |

Supplemental Table 2. Climatic variables used to generate the predicted distribution of *M. oregonensis* using the program MAXENT (Phillips et al. 2006). Codes are given in accordance to the WorldClim Database (Hijmans et al. 2005).

| Code | Variable |
|-------|-------------------------------------|
| bio1 | Annual Mean Temperature |
| bio4 | Temperature Seasonality |
| bio8 | Mean Temperature of Wettest Quarter |
| bio9 | Mean Temperature of Driest Quarter |
| bio10 | Mean Temperature of Warmest Quarter |
| bio11 | Mean Temperature of Coldest Quarter |
| bio12 | Annual Precipitation |
| bio13 | Precipitation of Wettest Month |
| bio14 | Precipitation of Driest Month |
| bio15 | Precipitation Seasonality |
| bio16 | Precipitation of Wettest Quarter |
| bio17 | Precipitation of Driest Quarter |
| bio18 | Precipitation of Warmest Quarter |
| bio19 | Precipitation of Coldest Quarter |

Supplemental Table 3. Fixed parameter settings used in the demographic and genetic models generated with the program SPLATCHE (Currat et al. 2004). See Table 1 for details of other key parameter values that were varied (i.e., k , m , and r).

| Parameter | Value |
|---|---|
| Resize prior to expansion | No |
| Migration rate between source populations prior to expansion | 0 |
| Demographic model | Stochastic migration model with absolute numbers of emigrants |
| Density overflow | No |
| Number of linked sites (i.e., number of base-pairs for a locus) | 1,000 |
| Total mutation rate | 0.001 |
| Fraction of substitutions being transitions for DNA | 0.33 |
| Heterogeneity in mutation rates along the sequence | 0.8 |
| Number of categories for DNA mutation variation | 0 |
| τ , the number of generations prior to expansion | 1000 or 10000 |

Supplementary movies. These visualizations show how demographic parameters impact the pattern of movement across the geographic landscape, and in particular, that the effect of heterogeneity is lessened with large carrying capacities, k , and migration, m . For example, the expansion patterns depicted here, which approximate an expanding wave front, contrast with those with smaller values of k and m (see Fig. 3). Green colors in the maps signify cells with low numbers of emigrants, whereas cells contributing high numbers of emigrants are shown in red.