

**Figure S1.** Spatial distribution of *q*-values (i.e., probabilities to belong to the 3 clusters inferred) in VB1.



**Figure S2.** Spatial distribution of *q*-values (i.e., probabilities to belong to the 4 clusters inferred) in VB2.



**Figure S3.** Spatial distribution of *q*-values (i.e., probabilities to belong to the 6 clusters inferred) in VB3.



Randomized correlation coefficients between trees' age and membership to Geneland clusters **Figure S4.** Distributions of randomized correlation coefficients between tree's age and *q*-values for each

genetic cluster inferred by Bayesian clustering within the three study plots.

**Table S1.** Pair-wise *F*<sub>ST</sub> values between genetic clusters inferred by Bayesian clustering in VB1.

|           | Cluster 1 | Cluster 2 | Cluster 3 |
|-----------|-----------|-----------|-----------|
| Cluster 1 | -         | -         | -         |
| Cluster 2 | 0.2043    | -         | -         |
| Cluster 3 | 0.0952    | 0.1916    | -         |

**Table S2.** Pair-wise *F*<sub>ST</sub> values between genetic clusters inferred by Bayesian clustering in VB2.

|           | Cluster 1 | Cluster 2 | Cluster 3 | Cluster 4 |
|-----------|-----------|-----------|-----------|-----------|
| Cluster 1 | -         | -         | -         | -         |
| Cluster 2 | 0.0845    | -         | -         | -         |
| Cluster 3 | 0.0278    | 0.0907    | -         | -         |
| Cluster 4 | 0.0790    | 0.1510    | 0.0683    | -         |

**Table S3.** Pair-wise *F*<sub>ST</sub> values between genetic clusters inferred by Bayesian clustering in VB3.

| Cluster 1 | Cluster 2  | Cluster 3  | Cluster 4   | Cluster 5   | Cluster 6   |
|-----------|--|--|---|---|---|
| -         | -  | -  | -   | -   | -   |
| 0.2922    | -  | -  | -   | -   | -   |
| 0.1581    | 0.1923   | -  | -   | -   | -   |
| 0.1047    | 0.2390   | 0.1196   | -   | -   | -   |
| 0.1214    | 0.1403   | 0.0424   | 0.1053  | -   | -   |
| 0.1673    | 0.1535   | 0.0810   | 0.1059  | 0.0299  | -0  |
|           | Cluster 1<br>-<br>0.2922<br>0.1581<br>0.1047<br>0.1214<br>0.1673 | Cluster 1 Cluster 2   - -   0.2922 -   0.1581 0.1923   0.1047 0.2390   0.1214 0.1403   0.1673 0.1535 | Cluster 1     Cluster 2     Cluster 3       -     -     -       0.2922     -     -       0.1581     0.1923     -       0.1047     0.2390     0.1196       0.1214     0.1403     0.0424       0.1673     0.1535     0.0810 | Cluster 1     Cluster 2     Cluster 3     Cluster 4       -     -     -     -       0.2922     -     -     -       0.1581     0.1923     -     -       0.1047     0.2390     0.1196     -       0.1214     0.1403     0.0424     0.1053       0.1673     0.1535     0.0810     0.1059 | Cluster 1     Cluster 2     Cluster 3     Cluster 4     Cluster 5       - |