Supplementary

Methods S1. A detailed description of boundary line calculation.

First, we computed GC and PG for every tree ring. Then we divided all PG values into 0.5 mm intervals, with the exception of the first centimetre segment that was classified into 0.25 mm intervals [7]. The average of the top 10 (for the first interval the top 5) GC values in each category of PG were plotted against and fitted with several functions using the package TRADER [111] in R software (R Development Core Team, 2019). The best fit was estimated on the basis of the coefficient of determination (R^2). The resulting boundary line for *P. abies* was expressed by the term GC=93.894-13.581*PG+2783.883*exp(-2.246*PG), for *F. sylvatica* in the form GC=123.960-34.890*PG+802.090*exp(-1.510*PG), and for *A. alba* by the term GC=61.709-14.315*PG+884.913*exp(-1.667*PG). For the computation we used a total of 229.622 increments for *P. abies*, 65.556 for *F. sylvatica* and 11.892 for *A. alba*. Finally, local 10-year GC maxima were scaled to BL values for the appropriate year. The resulting percentage of BL was used as a measure of the growth response magnitude, and considered as a release from suppression if exceeding 25% [58].

Methods S2. A detailed description of spatial autocorrelation calculation.

Omnidirectional experimental variograms were performed as a measure of data variability. Then, the theoretical models that better fit the experimental variograms were calculated. The theoretical models tested were spherical, circular, exponential, Gaussian, stable and Matern [112,113]. Using an Akaike information criterion (AIC) estimator, we selected the theoretical model that best fit our dendrochronological or tree census data regarding disturbances. We calculated variogram characteristics such as range, sill and nugget, using the range as a measure of the maximum autocorrelation distance. We limited the computation at a distance of 250 m, considered the minimal edge length within the core zone of the reserve. As we used binary data to express the occurrence of a disturbance in the observed period, indicator variograms were applied to spatial data [114]. Altogether 20 observation points were chosen for variograms with a lag size of 12.5 metres. Variograms were performed in MATLAB ver. R2016a and results were validated in the R package gstat (R Development Core Team, 2019).

Figure S1. Indicator variograms of severe disturbances in the 1870-1899 period, assorted by soil hydromorphism and release intensity.

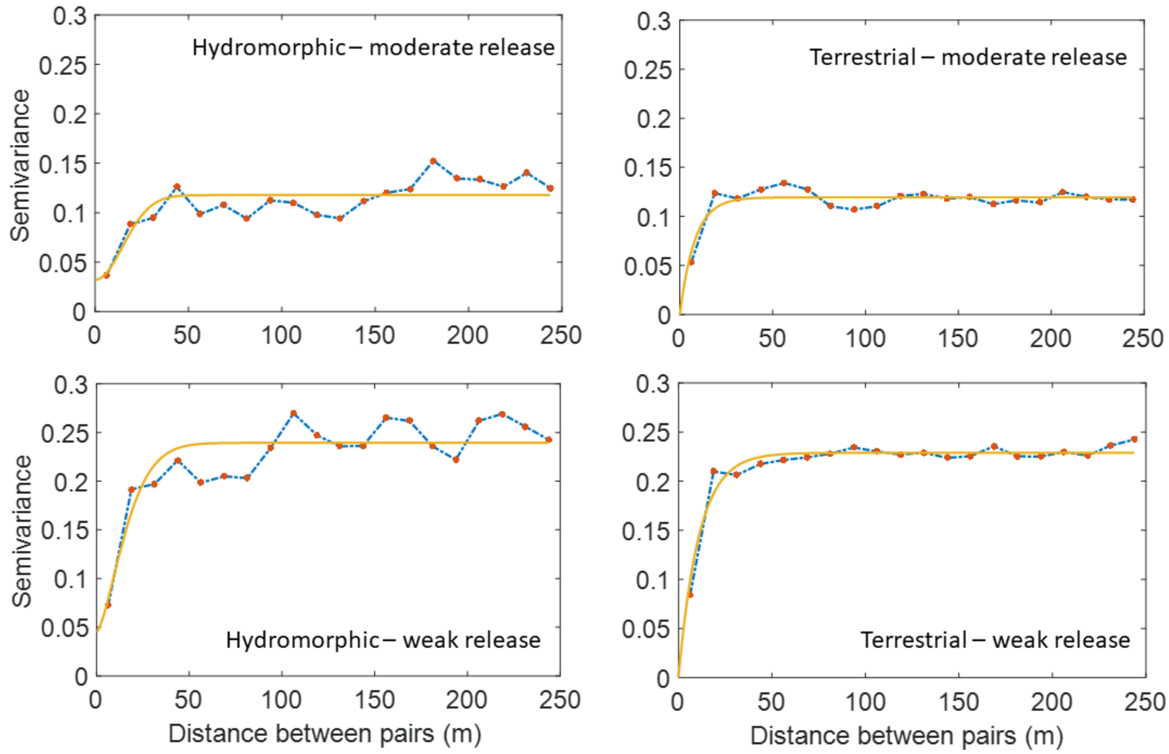

Figure S2. Mosaic diagrams of trees regenerating in gaps or under the canopy, sorted by: (A) species pairs and (B) general for all species. Axes represent dendrochronological datasets, cells of the chart show frequencies (white) and proportions (black) of a contingency table; the area is proportional to the cell frequencies.

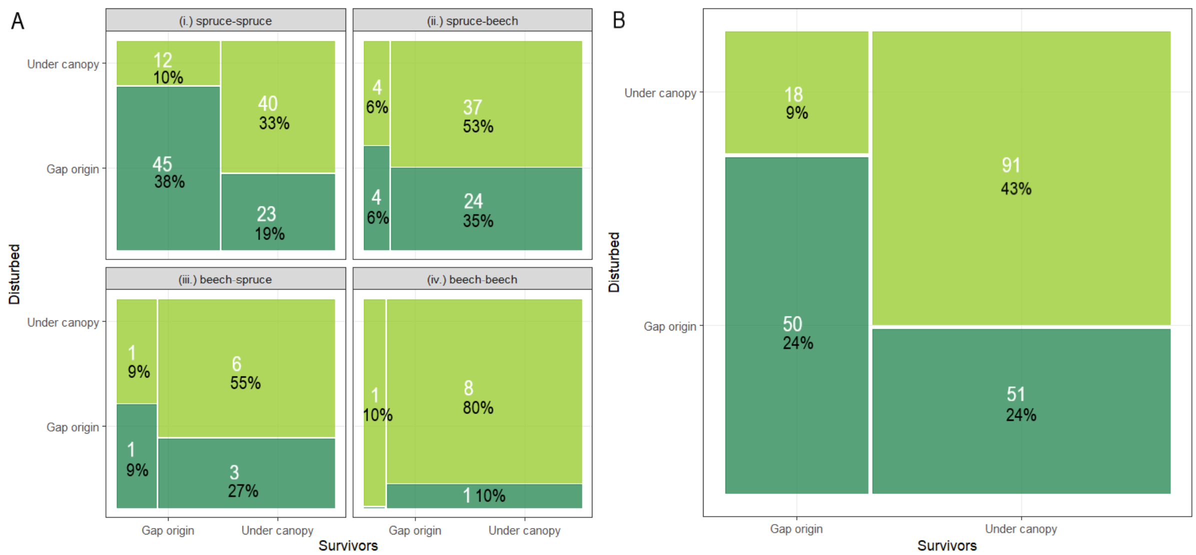

Figure S3. Histograms of: (A) diameter at breast height of disturbed and survivor trees, (B) diameter at breast height of the whole Boubin site, and (C) age at breast height of disturbed and survivor trees. Solid lines define 25th and 75th percentiles, with the dashed and dotted lines showing the mean and median, respectively.