## Supplementary materials



Figure S1. Species-specific diameter distribution over the observed period (specified years) in the multispecies uneven-aged forest located in the Unieszów Forestry Range.


Figure S2. Variation of Shannon species diversity index (SSP) on measurement plots in 1993, 2006 and 2017 inventories (from top to the bottom) in the multispecies uneven-aged forest located in the Unieszów Forestry Range.




Figure S3. Variation of Gini size inequality index (GI) on measurement plots in 1993, 2006 and 2017 inventories (from top to the bottom) in the multispecies uneven-aged forest located in the Unieszów Forestry Range.


Figure S4. Mean spatial positioning (CE), spatial mingling (SM) and spatial differentiation of tree diameter (TD) - tree species pooled - at the neighborhood spatial scale over the investigated period.

a).



Figure S5. Mean values of CE, SM and TD indices and standard errors of the means calculated for tree species in 1993 (a), 2006 (b) and 2017 (c).


Figure S6. Growth dominance curves for conifers present in the multispecies uneven-aged forest in two analyzed periods.


Figure S7. Growth dominance curves for broadleaved tree species present in the multispecies unevenaged forest in two analyzed periods.

Table S1. Spatially inexplicit and spatially explicit indices describing the structural aspects of the forest.

| Index | Formulation | Explanations |
| :---: | :---: | :---: |
| Spatial Indices |  |  |
| Spatial positioning CE | $C E=\frac{r_{A}}{r_{E}}=\frac{\frac{1}{N} \sum_{i=1}^{N} r_{i}}{0.5 \cdot\left(\frac{A}{N}\right)^{1 / 2}+0.0514 \cdot \frac{P}{N}+0.041 \cdot \frac{P}{N^{3 / 2}}}$ | $\mathrm{r}_{\mathrm{A}}$ - observed mean distances between trees A - area ( $\mathrm{m}^{2}$ ) N -total number of trees P -circumference of the plot |
| Spatial diameter differentiation $\mathrm{TD}_{\mathrm{ij}}$ | $T D_{i j}=1-\frac{1}{n} \sum_{j=1}^{n}\left(\frac{\min (s i, s j)}{\max (s i, s j)}\right)$ | $\begin{gathered} \mathrm{Si}-\text { size of } i \text {-th tree } \\ \mathrm{S}_{j}-\text { size of } j \text {-th tree } \\ \mathrm{n}-\text { number of neighbors }(\mathrm{n}=3) \end{gathered}$ |
| Spatial mingling index SM | $S M=\frac{1}{k} \sum_{i=1}^{k} v_{i j}$ | $k$-numbers of nearest neighbors $v_{i j}=1$ if reference tree and neighbor are different species, otherwise $v_{i j}=0$ |
| Shannon species diversity index SSP | Non-spatial indices $S S P=-\sum_{i=1}^{s} p_{i} \cdot \ln \cdot p_{i}$ | $\mathrm{p}_{\mathrm{i}}$-share of species i <br> ln-natural logarithm |


| $\begin{aligned} & \text { Gini index } \\ & \text { GI } \end{aligned}$ | $G I=1-\sum_{i=1}^{k}\left(b a_{i-1} b a_{i}\right) \cdot\left(n_{i}+n_{i-1}\right)$ | k -number of diameter classes ba (bai-1)-cumulative fraction of basal area of trees with $\mathrm{dbh} \leq \mathrm{ith}$ ( $\mathrm{i}-1$ ) diameter class (for $\mathrm{i}=1$, ba $=$ $0)$ <br> $n_{i}\left(n_{i}-1\right)$-cumulative fraction of number of trees area of trees with dbh $\leq$ ith ( $\mathrm{i}-1$ ) diameter class (for $\mathrm{I}=1, \mathrm{n}=0$ ) |
| :---: | :---: | :---: |

Table S2. Species-specific GI index ( $\pm$ standard deviation) describing the inequality in trees diameter over the 24 -year period.

| Species | $\mathbf{1 9 9 3}$ |  | $\mathbf{2 0 0 6}$ |  | $\mathbf{2 0 1 7}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | GI ( $\mathbf{\pm s d} \mathbf{)}$ | cv (\%) | GI ( $\mathbf{\pm d d} \mathbf{)}$ | cv (\%) | GI ( $\mathbf{\pm s d} \mathbf{)}$ | cv (\%) |
| Abies alba | $0.22(0.09)$ | 40 | $0.21(0.08)$ | 40 | $0.19(0.08)$ | 43 |
| Pinus sylvestris | $0.06(0.03)$ | 63 | $0.05(0.04)$ | 79 | $0.05(0.04)$ | 75 |
| Picea abies | $0.13(0.12)$ | 95 | $0.08(0.11)$ | 129 | $0.11(0.12)$ | 111 |
| Larix decidua | $0.12(0.13)$ | 106 | $0.12(0.15)$ | 126 | $0.11(0.13)$ | 116 |
| Betula pendula | $0.11(0.11)$ | 101 | $0.07(0.10)$ | 141 | $0.05(0.08)$ | 167 |
| Quercus robur | $0.07(0.12)$ | 174 | $0.08(0.14)$ | 183 | $0.08(0.14)$ | 169 |
| Fagus sylvatica | $0.14(0.15)$ | 73 | $0.15(0.13)$ | 82 | $0.14(0.12)$ | 83 |
| Carpinus betulus | $0.03(0.03)$ | 165 | $0.07(0.08)$ | 123 | $0.11(0.09)$ | 83 |

