DENDROMETRY

2.6.1 Map of density development of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of density development of living trees between years 1996 and 2010 was derived from the tree density maps from particular years. These were calculated from vector stem position maps using a circular focal density filter in ArcGIS 9.3 Spatial Analyst software. The map displays for every square meter of Boubín natural forest a real density difference of living trees in circular neighborhood area of about 700 m^2. The density differences are calculated in pieces per 1 hectare (pcs/ha).

key words: natural forest, density difference

2.6.2 Map of basal area development of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of local basal area development of living trees between years 1996 and 2010 was derived from the particular basal area maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter in ArcGIS 9.3 Spatial Analyst software. The map displays for every square meter of the study area a real local basal area difference of living trees in a circular neighborhood of about 700 m^2. The basal area difference is calculated in square meters per 1 hectare (m^2/ha).

key words: natural forest, basal area development

2.6.3 Map of volume development of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of local volume development of living trees between years 1996 and 2010 was calculated by subtraction of the particular local volume maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter in ArcGIS 9.3 Spatial Analyst software. The map displays for every square meter of the study area a real local volume difference of living trees in a circular neighborhood of about 700 m^2. The volume difference is calculated in cubic meters per 1 hectare (m^3/ha).

key words: natural forest, tree volume development

2.6.4 Map of deadwood volume development in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of deadwood volume development between years 1996 and 2010 was calculated by subtraction of the particular deadwood volume maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real deadwood volume difference in a circular neighborhood of about 700 m². The volume difference is calculated in cubic meters per 1 hectare (m³/ha).

key words: natural forest, deadwood, tree volume development

2.6.5 Map of volume development of living and dead trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of total volume development (i.e. volume development of all living and dead trees) between years 1996 and 2010 was calculated by subtraction of the particular total volume maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter in ArcGIS 9.3 Spatial Analyst software. The map displays for every square meter of the study area a real volume difference of living and dead trees in a circular neighborhood of about 700 m². The volume difference is calculated in cubic meters per 1 hectare (m³/ha).

key words: natural forest, tree volume development

2.6.6 Map of development of local proportion of deadwood from total volume in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of local proportion of deadwood from the total volume between years 1996 and 2010 was calculated by subtraction of the particular deadwood proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter in ArcGIS 9.3 Spatial Analyst software. The map displays for every square meter of the study area a real deadwood volume proportion difference in a circular neighborhood of about 700 m². The deadwood volume proportion difference is calculated in percents (%).

key words: natural forest, tree volume development, deadwood

2.6.7 Map of development of European beech proportion by the number of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of European beech proportion by the number of living trees between years 1996 and 2010 was calculated by subtraction of the particular beech proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter and Map Algebra in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real

European beech proportion difference (calculated by the number of living trees – in percents) in a circular neighborhood of about 700 m^2.

key words: natural forest, development, European beech

2.6.8 Map of development of European beech proportion by the basal area of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of European beech proportion by the basal area of living trees between years 1996 and 2010 was calculated by subtraction of the particular beech proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter and Map Algebra in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real European beech proportion difference (calculated by the basal area of living trees – in percents) in a circular neighborhood of about 700 m^2.

key words: natural forest, basal area, development, European beech

2.6.9 Map of development of European beech proportion by the volume of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of European beech proportion by the volume of living trees between years 1996 and 2010 was calculated by subtraction of the particular beech proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter and Map Algebra in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real European beech proportion difference (calculated by the volume of living trees – in percents) in a circular neighborhood of about 700 m^2.

key words: natural forest, tree volume, development, European beech

2.6.10 Map of development of Norway spruce proportion by the number of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of Norway spruce proportion by the number of living trees between years 1996 and 2010 was calculated by subtraction of the particular Norway spruce proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter and Map Algebra in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real Norway spruce proportion difference (calculated by the number of living trees – in percents) in a circular neighborhood of about 700 m^2.

key words: natural forest, development, Norway spruce

2.6.11 Map of development of Norway spruce proportion by the basal area of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of Norway spruce proportion by the basal area of living trees between years 1996 and 2010 was calculated by subtraction of the particular Norway spruce proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter and Map Algebra in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real Norway spruce proportion difference (calculated by the basal area of living trees – in percents) in a circular neighborhood of about 700 m^2.

key words: natural forest, basal area, Norway spruce

2.6.12 Map of development of Norway spruce proportion by the volume of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of Norway spruce proportion by the volume of living trees between years 1996 and 2010 was calculated by subtraction of the particular Norway spruce proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter and Map Algebra in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real Norway spruce proportion difference (calculated by the volume of living trees – in percents) in a circular neighborhood of about 700 m^2.

key words: natural forest, tree volume, Norway spruce

2.6.13 Map of development of silver fir proportion by the number of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of silver fir proportion by the number of living trees between years 1996 and 2010 was calculated by subtraction of the particular silver fir proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter and Map Algebra in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real silver fir proportion difference (calculated by the number of living trees – in percents) in a circular neighborhood of about 700 m^2.

key words: natural forest, development, silver fir

2.6.14 Map of development of silver fir proportion by the basal area of living trees in the Boubín natural forest between years 1996–2010
Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of silver fir proportion by the basal area of living trees between years 1996 and 2010 was calculated by subtraction of the particular silver fir proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter and Map Algebra in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real silver fir proportion difference (calculated by the basal area of living trees – in percents) in a circular neighborhood of about 700 m^2.

key words: natural forest, basal area, development, silver fir

2.6.15 Map of development of silver fir proportion by the volume of living trees in the Boubín natural forest between years 1996–2010

Král K., Adam D., Hort L., Janík D., Šamonil P., Unar P., Vrška T.

The map of development of silver fir proportion by the volume of living trees between years 1996 and 2010 was calculated by subtraction of the particular silver fir proportion maps from both years. These were calculated from digital stem position maps of the Boubín forest using a circular focal filter and Map Algebra in ArcGIS 9.3 Spatial Analyst software. The difference map displays for every square meter of the study area a real silver fir proportion difference (calculated by the volume of living trees – in percents) in a circular neighborhood of about 700 m^2.

key words: natural forest, tree volume, development, silver fir

NATURAL REGENERATION

3.3 Map of natural regeneration in the Boubín natural forest in 1996
Hort L., Vrška T., Adam D., Janík D., Král K., Šamonil P., Unar P.

Advance growth of trees that form at least thin clusters and had not yet reached the minimum size for individual measurement ($d_{1.3} \geq 10$ cm) were mapped as groups of regeneration in the form of traverses. In the field, the representation of individual tree species was established by ocular estimation according to tree counts in all continuous groups with a minimum density of 10 seedlings per square metre and height span within the group was recorded as an interval. The mapping was made into the tree map 1 : 1000. In 1996 natural regeneration covered 30% of site area. European beech dominated in all (6) height classes, while areas in two upper classes (height of 2m and more) prevailed. Regeneration of Norway spruce and European mountain ash became appreciable and it was included within lower height classes (height from 0.5 to 2m).

key words: natural forest, natural regeneration

3.4 Map of natural regeneration on inventory plots in the Boubín natural forest in 2010
Hort L., Adam D., Janík D., Král K., Šamonil P., Unar P., Vrška T.

In the Boubín natural forest tree species natural regeneration (DBH < 10cm) was investigated in the area of 46.1ha; using a reference quadrate network (side of 44.25m). At 239 network points was at circular plot covering an area of 30m2 (radius 3.09m) recorded all regeneration heigher than 1.3m. The regeneration of Picea, Fagus and Sorbus is represented in the map by cartodiagrams at three diameter classes: DBH till 3cm, DBH 3 – 7cm and DBH 7 – 10cm. Relatively often occured plots with zero natural regeneration (12.5%), at 56% plots grew 10 or more individuals, at 85% grep 3 or more. Overall Fagus massively prevailed in species composition (98.5%), Picea represented only 1.4%.

key words: natural forest, natural regeneration, inventory plot

3.5 Map of natural regeneration in the Boubín natural forest in 2011
Komárková E., Přívětivý T., Hort L., Adam D., Vrška T., Janík D., Král K., Šamonil P., Unar P.

In 2011 a fourth complete mapping of natural regeneration in Boubín natural forest was carried out. The map shows height diferentiation and representation areas of measured groups of tree regeneration. Mapping was conducted on the basis of the tree position map. Natural regeneration covered 49% of site area in 2011. European beech remained the dominating species of regeneration, mostly within upper classes (height of 4m and more) prevailed. Advanced growths of Norway spruce and European mountain ash were registered as polygons (2% of total area) for the first time. These two species were recorded also within beech-spruce mixtures. Spruce and mountain ash were fixed to creeks – in high northern part and in low (lake) part in southeast. Sporadic occurrence of silver fir and sycamore maple was mapped as single point.

key words: natural forest, natural regeneration

3.6 Map of development of natural regeneration in the Boubín natural forest in the period from 1972 to 2011
Komárková E., Hort L., Adam D., Vrška T., Janík D., Král K., Šamonil P., Unar P.

The map displays the development of the natural regeneration between years 1972–2011. It is a synthesis of the maps of natural regeneration from the years 1972, 1988, 1996 and 2011. Overlay of maps allows identification of main trends of development (growth, stagnation and dieback) by species structure. During 1972–2011 period 56.3% total area was covered by natural regeneration. Succesfully grown up beech (the growth) occupied 52.0% total area.

key words: natural forest, natural regeneration, development

3.7 Map of natural regeneration on inventory plots in the Boubín natural forest in 2012
Hort L., Adam D., Janík D., Král K., Šamonil P., Unar P., Vrška T.

In the Boubín natural forest tree species natural regeneration (DBH < 10cm) was investigated in the area of 46.1ha; using a reference quadrate network (side of 44.25m). At 239 network points was at circular plot covering an area of 30m2 (radius 3.09m) recorded all regeneration heigher than 1.3m. The regeneration of Picea, Fagus and Sorbus is represented in the map by cartodiagrams at three diameter classes: DBH till 3cm, DBH 3 – 7cm and DBH 7 – 10cm. Relatively often occured plots with zero natural regeneration (12.5%), at 56% plots grew 10 or more individuals, at 85% grep 3 or more. Overall Fagus massively prevailed in species composition (98.5%), Picea represented only 1.4%. Other species (esp. Sorbus) reduced, they even left diameter extent of DBH 7 – 10 cm.

key words: natural forest, natural regeneration, inventory plot