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Structure, growth and increment of the stands in the course of stand transformation in the Klokočná Forest Range

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ABSTRACT: This paper deals with transformation of pure even-aged forest stands to uneven-aged irregular stands on an example of the Klokočná Forest Range. The fully operational management system according to principles of shelterwood or selection systems has been executed here since 1993. An investigation of this transformation process started in 1999 and it is focused on the places with more distinct structural differences. On the basis of research analysis, it is possible to consider about the permanent uneven-aged forest stands in future here. But for successful achievement of this goal it is necessary to continue this transformation step by step for a long time. The transformation is still at the beginning and its result depends on the effort and the forest management goal and the priority of the particular forest functions.

Keywords: uneven-aged forest stands; forest stand transformation; stand structure; silviculture; selection principles

A clear cutting system has been used as the main forest management system in the major part of forests in the Czech Republic in the last two centuries. It was connected with the formation of even-aged forest stands of simple structure and poor biodiversity. This general forest management approach has brought about some positive effects – higher growth rate, financial benefit for more valuable timber, sustainability of management on the basis of the age and the area. On the other hand, the negative impacts – a decrease of ecological and static stability of forest ecosystems, an increase of snow, wind and biotic damage and in consequence a high portion of salvage cutting, a negative impact of cultivation of conifer monocultures on the environmental conditions – have been criticised for a long time (Remeš 2006).

Mainly for these reasons there have been efforts to change the clear cutting forest management toward alternative silviculture systems in the Czech forest management history. The target management system varied; it was mainly selection system (Konias 1950; Polanský 1961; Kratochvíl 1970) and shelterwood systems (Čížek, Stone 1963; Poleno 1967).

Also in recent years, in connection with the increasing importance of "other non-wood-producing roles of the forest" alternative systems of forest management have become more and more popular. The transformation of even-aged pure coniferous monocultures into mixed uneven-aged forest stands is an important topic of forest management in many countries (Reininger 1992; Korpeľ, Saniga 1993; Poleno 1999, 2000; Schütz 2001; O'Hara 2001; Souček 2002; Tesař et al. 2004). The target species composition and the final stand structure of forest stands after the conversion are influenced by site and forest conditions, former use of land, requirements of social community and priority of the particular forest functions (Remeš 2006).

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This paper describes the transformation process of an even-aged forest stand to an irregular forest stand on an example of the Klokočná Forest Range.

SITE DESCRIPTION

Localisation

The area of interest is managed by Forests of the Czech Republic, State Enterprise. This territory is a part of the Konopiště Forest Enterprise, Říčany Forest District. The area of this forest range is 591 hectares. These forests are classed to the category of special-purpose forests due to the health-recreational role of forests in the suburban area of the Prague metropolis.

Natural conditions

Geological and soil conditions

The interest area belongs to the southern part of the Bohemian Massif, which is called intrusive Central Bohemian Massif – Central Bohemian pluton. It is built of intrusive rocks – biotite-porphyric granodiorite, so called Říčany granite.

Mesotrophic or oligotrophic Cambisols and their pseudogley forms were formed on the acid granite parent rock. Soil types are loamy to clay, the soils have a low or intermediate nutrient supply, with the acidic reaction. These soils are characterised by calcium and magnesium deficiency and sodium and potassium sufficiency.

Climatic conditions

According to climatic characteristics the locality is a moderately warm climatic region (B), moderately warm, moderately humid upland climatic district, with bland winter (B3). The average temperature of the area is 7.5°C, the vegetation period lasts about 150 days, total annual precipitation amount is about 600 mm. The precipitation during the vegetation period accounts for 65% of total year precipitation. Lang rain factor is about 75 and it corresponds to semi-humid climatic characteristics.

The elevation ranges from 420 m to 510 m above sea level. Prevailing winds are from the north-west or west direction.

Typology classification

The forest range (from the forest typology aspect) is mainly constituted by forest type group 4P – acid oak-fir forest (Q*uerceto-abietum*) and 4Q – poor oak-fir forest. These groups of forest types (pseudogley ecological series, with edaphic acid (P) and poor (Q) category) are conditioned by the typical water regime of alternately moist pseudogley sites.

The groups of forest types 4P and 4Q take up about 70.5% of the Klokočná Forest Range. 29.5% is taken up by groups 2K (3.5%) and 3K (26%). The Klokočná Forest Range lies in the 3rd forest vegetation zone (oak-beech zone) and in the 4th forest vegetation zone (beech zone).

Tree species composition

According to the literature sources, forests in the interest area were composed mainly of silver fir – before the time of distinct human forest activity.

At present, Norway spruce (*Picea abies* L.) is a dominant species – 51%, followed by Scots pine (*Pinus silvestris* L.) – 28.7%, European larch (*Larix decidua* Mill.) – 9.6%, European birch (*Betula verrucosa* Ehrh.) – 4.7%. Silver fir (*Abies alba* Mill.) covers only 0.8% of forest land and pedunculate oak (*Quercus robur* L.) – 1.7%.

Forest management

The conversion of clear cutting management system to shelterwood system, with the application of selection principles, is the most important attribute of forest management in the Klokočná Forest Range. An operational management system according to principles of shelterwood or selection system has been executed here since 1993.

This conversion is supported by sequence of events which are conditioned by specific site and climatic conditions. The forest stands in the Klokočná Forest Range are distinctly affected by snow damage. Late wet snow breaks namely pine stands of middle age and so it prevents stands to grow up to the end of rotation period. On these pseudogley soils spruce stands are very susceptible to wind break due to their shallow root system. Water-logging and heavy weed infestation after clear cutting are other important factors that have a negative influence on the artificial regeneration of forest stands.

Because of these factors, there was repeatedly a reduction of stand density of spruce and pine stands here. These forest stands were not reconstructed (unsuccessful artificial regeneration) and spontaneous natural regeneration (namely spruce regeneration) appeared at many places. Interesting forest structures, with larger height and diameter differences, were created systematically at these sites. Less complex stand structure, two-storeyed stands, which correspond to the shelterwood system, is on the major part of the forest range.

The forest managers try to make the best account of this situation for the conversion of clear cutting management system. Silvicultural measures in a part of the stands are differentiated according to the particular conditions and momentary state. Natural regeneration is relatively easily achievable, and for this reason artificial regeneration is focused on a complementation of missing tree species. This is a question of the original species which were eliminated by the application of clear cutting management system in the past.

METHODOLOGY

Experimental plots are situated in the southeastern part of the Klokočná Forest Range, in the part of the stand 635 B 13/4a/1 and 635 F 13/5a/1b. There are eight plots; six circular plots and two rectangular plots. The size of each rectangular plot is 50 × 100 m (the area is half a hectare). The circular plots have a radius of 20 m, the area of each circular plot being 1,256.6 m^2. The total area sampled is 17,539.8 m^2. The regeneration potential was studied in detail on two transects (10 × 100 m). Research was focused on the investigation of a stand structure (dbh, height, spatial arrangement, regeneration, volume stock, current annual volume increment and time development of these parameters). Measurements were repeated after a five-year period. The general aim is to evaluate a possibility of achieving permanent uneven-aged stands with selection structure.

RESULT

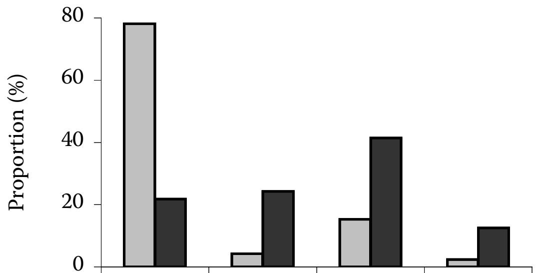
Species composition

The species composition in monitored stands (Figs. 1–4) shows the clear dominance of pine, its proportion in the stand volume amounts to 70% in both stands in both years. In the years 1999–2004 its portion was reduced by 5% in both cases. On the contrary, the proportion of spruce increased by 3%, and the participation of oak also slightly increased. The differences were caused by the cutting of pine realised in the period between the surveys. The species composition of the defined participation of the tree number shows the clear dominance of spruce whose portion has increased mainly thanks to the ingrowth to the border of registration. In stand 635F, the presence of fir and beech was found, however, in stand 635 B these species were missing.

Number of trees

According to the main species (Table 1) the number of trees in stand 635 B slightly increased between the surveys. The changes were mostly related to spruce as the number of its trees increased the most and it was by the ingrowth up to the border of registration. In stand 635 B a decrease of the total number of trees was noted. The reason was the cutting, mainly of pine, and the decrease of its number influenced the general trend.

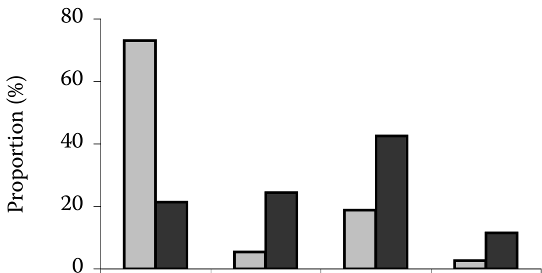
The dbh distribution of the number of trees in diameter classes (Figs. 5 and 6) was compared with the model curve of selection forest according to Meyer. From the curves characterising the main types of selection forest, Meyer's curve of type B was chosen (Korf 1955), which corresponds best to the stands under transformation to selection forest in the monitored stands. If we judge the whole range of tree diameters, there is apparently a decreasing tendency of the tree number with a significant decrease in diameter classes 26 and 30, and it applies to both stands. Afterwards the percent occurrence increased again, due to the upper pine storey, with the culmination in diameter classes



	Pine	Oak	Spruce	Other broadleaves
volume	78.08	4.26	15.29	2.37
number	21.77	24.27	41.47	12.51

Species

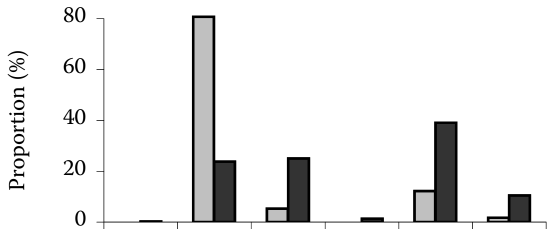
Fig. 1. The proportion of species according to the number and growing stock on 635 B (1999)



	Pine	Oak	Spruce	Other broadleaves
volume	73.11	5.46	18.78	2.65
number	21.37	24.45	42.59	11.57

Species

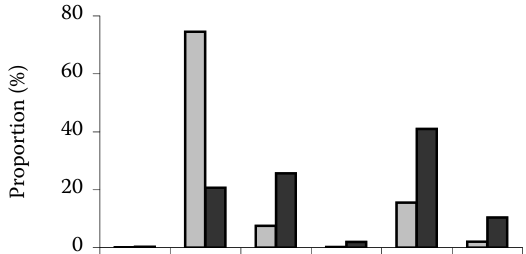
Fig. 2. The proportion of species according to the number and growing stock on 635 B (2004)



	Beech	Pine	Oak	Fir	Spruce	Other*
volume	0.05	80.72	5.28	0.06	12.21	1.67
number	0.25	23.85	24.97	1.39	39.09	10.47

Species

Fig. 3. The proportion of species according to the number and growing stock on 635 F (1999) (* other broadleaves)



	Beech	Pine	Oak	Fir	Spruce	Other*
volume	0.10	74.55	7.51	0.18	15.55	2.11
number	0.27	20.73	25.64	2.00	41.02	10.36

Species

Fig. 4. The proportion of species according to the number and growing stock on 635 F (2004) (* other broadleaves)

Table 1. Tree numbers (1999 and 2004) (trees/ha)

Stand	Pine	Spruce	Oak	Fir	Beech	Other broadleaves	Total
1999							
635 B	169	321	188	0	0	97	774
635 F	215	353	225	13	2	95	903
2004							
635 B	166	331	190	0	0	90	778
635 F	178	352	220	17	2	89	858

38 and 42. Again, in both stands almost identically in both years of the survey. A comparison of the real state (diameter 18–58) with the model curve shows the deficit of trees from diameter classes 22 to 30. Diameter class 34 almost identifies the model in all cases. In other classes (34–50), the surplus of trees was shown. It applies to both stand groups in the years 1999 and 2004. In 2004 in stand 635 F there was a decrease of the percent occurrence of trees in the diameter classes (38–46) which was caused by the cutting in 1999.

Growing stock

The value of the growing stock was different in the first year of survey in both monitored stand groups (Table 2). However, within the second measuring in 2004 the total volume stock of both stand groups was brought nearer. This change was mainly caused by the volume increment of spruce (635 B) and the cutting of pine (635 F). Even in these species the partial volume changed in the most significant way, related to pine it decreased, related to spruce it increased.

Pine has always had the highest volume stock out of the particular species, followed by spruce and oak. The difference between pine and oak in both stands also meant the difference in the total volume stocks in 1999. The volume stock of oak and pine was significantly higher in stand 635 F than in stand 635 B. The stocks of spruce were almost comparable in both stands.

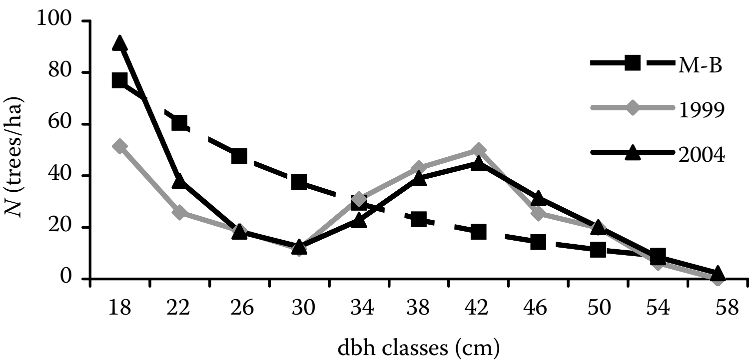


Fig. 5. Tree numbers according to diameter on 635 B in dbh classes, comparison with the Meyer curve of type B (M-B)

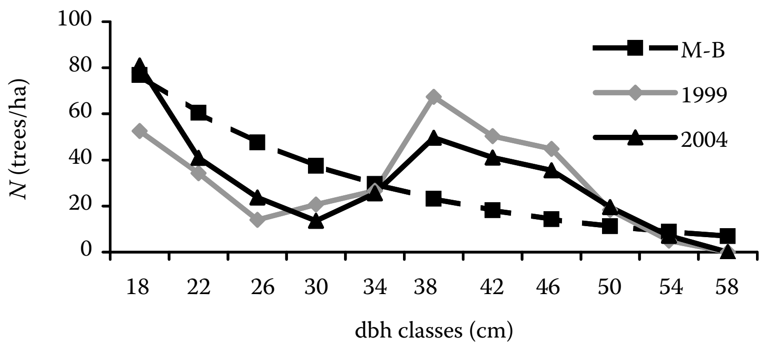


Fig. 6. Tree numbers according to diameter on 635 F in dbh classes, comparison with the Meyer curve of type B (M-B)

The volume distribution according to the diameters (Figs. 7 and 8) was skew right-sided with two peaks, the first in class 18 (slightly below 20 m^3/ha) and the second significant one in diameter classes 38–46 (635 F). In stand 635 B the stock had the clear peak in diameter class 42. In both stands, the maxima varied around 80 m^3/ha. The decrease of the curve was observed in diameter classes 26 and 30. In classes 34–58 mainly pine is substituted, spruce sporadically which is distributed almost in the whole diameter spectrum. Spruce is dominant in diameter classes 10–22. Oak and other species also belong to these diameters. The significant stock carrier was pine, which occurred just in the diameter classes from 34 higher. In stand 635 F the pine cutting caused an evident decrease of the volume stock in diameter classes 34–46.

Volume increment

The current annual volume increment (Table 3) exceeded 8 m^3/ha in both stands. In stand 635 B it reached the value of 8.84 m^3/ha/year, when spruce (3.66 m^3/ha) and pine (3.52 m^3/ha) had the highest partial increment, oak reached the value of 1.20 m^3/ha. In the group 635 F the current annual volume increment was slightly lower – 8.23 m^3/ha and pine reached the highest value 3.54 m^3/ha, spruce was at the second place with the value 2.51 m^3/ha. The more significant rate of increment was found in oak – 1.20 m^3/ha (635 B) and 1.69 m^3/ha (635 F). In stand 635 B the stand volume increment was relatively equally generated by spruce and pine. In stand 635 F pine was the main carrier of increment, spruce did not contribute to the whole value so significantly as in 635 B.

Table 2. Standing volume (1999 and 2004) (m^3/ha)

Stand	Pine	Spruce	Oak	Fir	Beech	Other broadleaves	Total
1999							
635 B	251.88	49.33	13.76	0.00	0.00	7.63	322.60
635 F	317.70	48.06	20.79	0.23	0.21	6.58	393.36
2004							
635 B	267.22	68.66	19.95	0.00	0.00	9.68	365.51
635 F	282.37	58.90	28.44	0.67	0.39	7.62	378.38

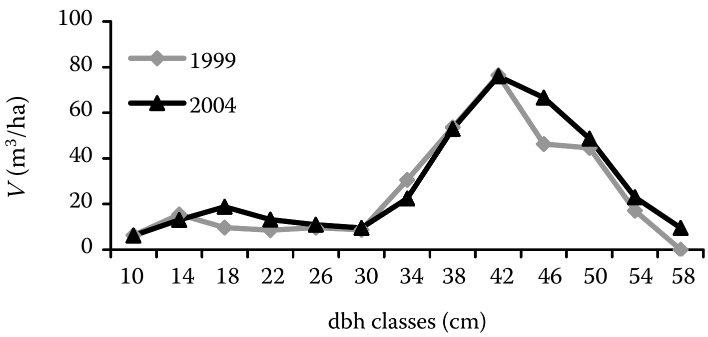


Fig. 7. Standing volume on 635 B in dbh classes

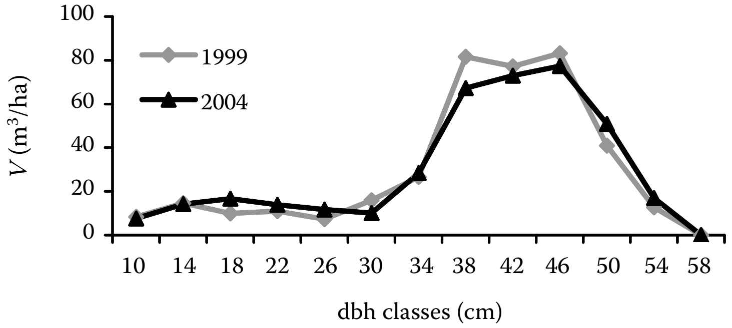


Fig. 8. Standing volume on 635 F in dbh classes

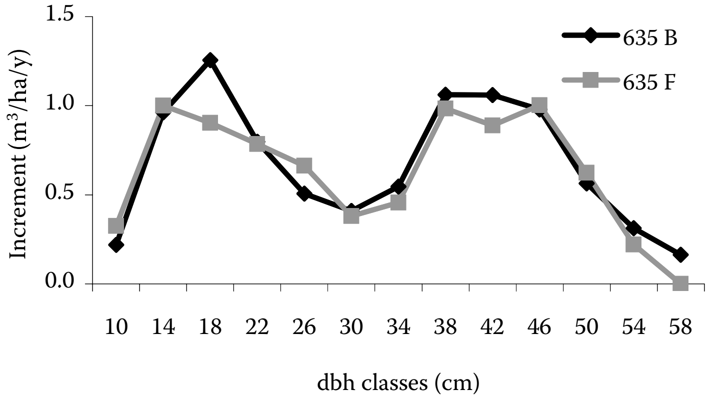


Fig. 9. Current annual volume increment in dbh classes

In comparison with the total mean annual volume increment of mature stand (pine, homogeneous, even-aged, 110 years – 6.6 m^3/ha – Halaj, Řehák 1979) the current annual volume increment was higher in both monitored stands. In comparison with the even-aged mature spruce stand (8.3 m^3/ha/year) the current annual volume increment was also higher (8.84 m^3/ha) and in stand 635 F it slightly lagged behind (8.23 m^3/ha). This shows that the stand groups are not productively losing at the current stage.

Advance regeneration

The detailed view on the height structure of advance regeneration and its distribution according to tree species and height classes is documented in Table 4. Norway spruce is the highest species on both transects. Only this species is presented in all height classes. It seems to be good from the aspect of future development. Oak also has a relatively good height distribution, but the future development of this light demanding species is not so clear.

The tree numbers in the particular height classes document a relatively favourable status. The natural regeneration is "in the dynamics", the number of trees seems to be reasonable for the maintenance of the uneven-aged stand structure. One must say that obviously it is not possible to count on all tree species in future.

DISCUSSION

The problems of stand transformation into selection forest in the Czech Republic and in Slovakia solved in the last century and at the beginning of this century provided data on the stands in transformation and the stands with the selection structure which were published mainly by Zakopal (1958, 1959, 1960). In the area of the School Forest Enterprise Masarykův les in Křtiny they were investigated by Truhlář (1977, 1995) and Ždímal (1991). Souček (2002) evaluated the long-term realisation of transformation into selection forest in Opuky at Opočensko location. The long-term conversion of stands in Hetlín at Kutnohorsko was studied by

Table 3. Current annual volume increment in dbh classes (m^3/ha/y)

Stand	Pine	Spruce	Oak	Fir	Beech	Other broadleaves	Total
635 B	3.52	3.66	1.20	–	–	0.45	8.84
635 F	3.54	2.51	1.69	0.06	0.04	0.40	8.23

Table 4. Detailed survey of density and distribution of advance regeneration, result of the transect investigation

Height classes	Beech	Pine	Birch	Oak	Red oak	Rowan	Maple	Aspen	Spruce	Total
Transect 1 – 635 B (number of trees per hectare)										
–50	40	0	0	280	60	440	10	40	530	1,400
51–100	10	0	10	0	0	20	0	0	600	640
101–250	0	0	10	10	0	10	0	0	360	390
251+	0	0	30	60	10	0	0	0	190	290
Upper layer (dbh > 10 cm)	0	150	30	110	10	20	0	0	210	530
Total	50	150	80	460	80	490	10	40	1,890	3,250
Transect 2 – 635 F										
–50	40	10	10	320	40	220	0	0	360	1,000
51–100	0	0	0	10	0	10	0	0	500	520
101–250	0	0	0	0	0	0	0	0	420	420
251+	0	0	20	70	0	20	0	0	760	870
Upper layer (dbh > 10 cm)	0	220	0	150	0	0	0	0	180	550
Total	40	230	30	550	40	250	0	0	2,220	3,360

Tesař et al. (2004). In Slovakia, the stands with the selection structure were described by e.g. Zakopal (1959, 1960), Hladík (1992), Saniga (1997), Saniga and Szanyi (1998).

The species composition of the monitored stand groups of Klokočná Forest Range differs from the ideal species composition of the selection forest even from the site suitable species composition. The present species composition of the monitored stands 635 B, F is distant from the natural reconstruction species composition in which fir and oak dominate (40%) complemented by beech and aspen (10%, Plíva 2000). However, the target species composition for these locations recommends about a 60% proportion of spruce and identically 20% of fir and oak, the resource for the conversion of stand is more optimistic. The significant absence is a minimal proportion of silver fir – the species suitable to these sites (pseudogley soils), which was recorded only in one of the stand groups.

The dbh distribution in the diameter classes in comparison with the model curve of type B according to Meyer shows an evident deficit of the tree number in diameter classes 20–32 and a surplus between 36 and 50. According to Schütz (1989), in the stands in transformation it is necessary to just identify the missing proportions of trees in the relevant diameter classes in comparison with the balanced curve characterising the selection forest. The surplus is caused by the presence of the upper storey created by pine and it can be added to the absence of trees in the middle tree layer. Higher tree numbers and their unbalanced distribution according to the diameter classes illustrate the basic stage of transformation to the selection forest and the structure which better corresponds to the shelterwood system (two-storeyed stand).

The number of trees in the stand groups described in this paper at Klokočná was higher on average than the published values. It is clear that the stand has been developing from the even-aged one with the majority of pine and the other species were put in or they appeared later in a natural way.

It explains the number of trees which approaches the upper border of intervals mentioned for selection forests. Related to the selection forest in Slovakia e.g. Saniga and Szanyi (1998) reported the range from 270 to 725 trees per ha. A similar range was also mentioned by Réh (1978) in the summary that analysed the knowledge of several authors from the former Czechoslovakia – 348–985 trees per ha.

The volume stock of the monitored stands was included in the range mentioned for selection forests: according to Saniga and Szanyi (1998) the volume stock of stand is in the interval from 240 to 520 m^3 per ha. Réh (1978), who summarised the knowledge from the Czechoslovakian selection forest, reported the range from 355 to 595 m^3 per ha. In some locations, the stock of the selection forest with the balanced structure was at a lower level. The current higher volume stock of stands is caused by the surplus of pines in the thicker diameter classes. In the selection forests which are composed of light demanding species (3^{rd} –5^{th} forest vegetation zones) the optimal stock should not exceed 350 m^3 per ha (Korpeľ et al. 1991).

The current annual volume increment found in the selection stands and in the stands in the course of transformation reaches significantly different values. The Czechoslovakian selection forest described in a summary by Réh (1978) showed the current volume annual increment in the range of 9.33–13.22 m^3 per ha. The latest data covering the wide spectrum of stands and the site conditions of Slovakia, mentioned the interval from 3 to 12 m^3/ha/year (Saniga, Szanyi 1998).

In the conditions of the Czech Republic Truhlář (1995) found out that in the School Forest Enterprise Masaryk's Forest in Křtiny, Pokojná peak location, the range of current annual volume increment was from 7.79 to 13.23 m^3 per ha. According to Hladík (1992) within four-year, five-year periods from 1968 to 1988 the increment was between 9.68 and 13.24 and in the whole twenty-year period it reached the value of 11.3 m^3/ha/year. In comparison with the published data, the volume increments are rather undersized in Klokočná Forest Range.

CONCLUSION

The conversion of the clear cutting management system to the shelterwood system with the application of selection principles is the most important attribute of forest management in the Klokočná Forest Range. The operational management system according to principles of shelterwood or selection systems has been executed here since 1993.

An investigation of this transformation process started in 1999 and it is focused on the places with more distinct structural differentiation. The present stand structure is a result of natural disturbances and silvicultural treatments.

The monitored stand groups are at the beginning of conversion. It is proved by the values of tree numbers, their distribution into the diameter classes and volume stock of evaluated stands. The local conditions are not ideal for the selection forest and the current composition differs from the natural and target species composition. In the stand groups, natural spruce restoration appears. However, it is not on a large area which is favourable for the future differentiation of stands. The places with the missing regeneration can be used with the help of parent stand shelter to regeneration in an artificial way and silver fir suitable for the selection forest.

In comparison with the table values of stand the monitored stand groups are not losing in wood production. The continuity of transformation into the selective forest needs a relatively long time and it can bring about some economic risks – mainly a decrease of wood value due to the relatively high age of spruce and pine trees from the upper layer which had to be left in the stand for supporting the stand structure differentiation. On the other hand, it is realistic to expect an economic profit in future due to minimisation of costs of stand tending as well as stand regeneration.

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Struktura, růst a přírůst porostů ve fázi přestavby na lesnickém úseku Klokočná

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ABSTRAKT: Příspěvek hodnotí přestavbu stejnověkých jehličnatých porostů na porosty různověké na příkladu lesnického úseku Klokočná (Lesní závod Konopiště, Lesy ČR, s. p.). Plně provozní systém hospodaření podle zásad podrostního nebo výběrného hospodářského způsobu je zde aplikován od roku 1993. Výzkumné aktivity zde probíhají od roku 1999 a jsou zaměřené na ty části lesnického úseku, které jsou z hlediska přestavby nejpokročilejší. Na základě provedených analýz, hodnotících strukturu, zásobu a přírůst porostů a jejich vývoj, je možné uvažovat v budoucnosti o trvale nestejnověkých porostech. Je však nutné pokračovat v nastoupené cestě přestavby porostů po relativně dlouhou dobu. Transformace je totiž stále jen na začátku a výsledek tohoto procesu je závislý na úsilí a cílech lesních hospodářů a také na prioritách jednotlivých funkcí lesních porostů.

Klíčová slova: nestejnověké lesní porosty; přestavba lesních porostů; porostní struktura; pěstování lesa; výběrné principy

Holosečné hospodaření bylo v posledních dvou stoletích používáno jako hlavní hospodářský způsob ve velké části lesů v České republice. To bylo spojeno s vytvářením stejnověkých porostů s jednoduchou strukturou a nízkou biodiverzitou. Vedle pozitivních ekonomických efektů tohoto hospodaření se postupně začaly projevovat i negativní důsledky (snížená ekologická stabilita lesních ekosystémů, vysoký podíl nahodilých těžeb), které se následně staly hlavními důvody pro motivaci snah směřujících ke změně způsobu hospodaření. Ty lze opakovaně zaznamenat v celém průběhu minulého století i v současnosti.

Hlavním cílem alternativních pěstebních postupů v lesním hospodaření se v České republice stalo podrostní hospodaření a v mnohem omezenější míře i výběrný les. Jedním z příkladů těchto snah je i hospodaření v lesních porostech lesnického úseku Klokočná (polesí Říčany, lesní závod Konopiště, Lesy ČR, s. p.), kde spolupůsobením přírodních podmínek a záměrného lesnického hospodaření vznikají strukturně diverzifikované porosty, které se v současnosti pomístně nacházejí již v pokročilejší fázi přestavby. Do těchto míst je také koncentrován výzkum, který je zaměřen na vyhodnocení struktury, zásob a přírůstů porostů a jejich vývoje.

V dané lokalitě je situována řada výzkumných ploch s různou úrovní výzkumných aktivit. Výsledky předložené v příspěvku jsou založené na vyhodnocení opakovaného měření strukturních a růstových parametrů lesních porostů po pětileté periodě na šesti kruhových a jedné hektarové čtvercové výzkumné ploše v odděleních 635 B a 635 F. Stanovištní a růstové podmínky v této oblasti nejsou zvlášť příznivé pro složitější porostní struktury – je zde relativně málo srážek (okolo 600 mm ročně) a malé zastoupení jedle bělokoré, která byla hlavní dřevinou přirozených lesů na zdejších převážně oglejených, minerálně chudých půdách (kyselé a chudé dubové jedliny) a je také hlavní dřevinou výběrných lesů. Výrazné zastoupení zde má borovice lesní (je však zastoupena pouze v horní etáži a v nejvyšších tloušťkových třídách), smrk ztepilý (jediná dřevina, která je zastoupena v celém tloušťkovém spektru porostů a je do budoucna vzhledem k toleranci k zástinu zřejmě nejperspektivnější) a dub letní, který je zastoupen ve střední etáži porostu.

Tloušťková struktura sledovaných porostů ve srovnání se vzorovou křivkou tloušťkové struktury výběrných lesů podle Meyera vykazuje deficit stromů v tloušťkových třídách 20–32 a naopak přebytek ve třídách 36 a 50. To je typické pro původně stejnověké porosty ve fázi přestavby. S tím je spojen i větší počet stromů, než je obvykle doloženo z výběrných lesů. Běžný roční objemový přírůst hodnocených porostů je poměrně vysoký (na místní stanovištní podmínky) a pohybuje se vysoko nad úrovní tabulkových hodnot udávaných pro stejnověké borové porosty; je srovnatelný s hodnotami pro porosty smrkové (ve věku odpovídajícímu stáří horní etáže těchto porostů). Nedochází tedy ke ztrátám na objemové produkci porostů.

Pokud bude cílem dosáhnout trvale co nejvyšší strukturní rozrůzněnosti porostů, bude nezbytné v procesu přestavby pokračovat ještě po relativně dlouhou dobu. Po omezené období je možné očekávat určitá ekonomická rizika spojená se ztrátou hodnoty dříví, způsobenou relativně vysokým věkem jednotlivých stromů smrku a borovice pěstovaných od mládí ve volném postavení. Ty bude nutné z důvodu udržení odpovídající porostní struktury v porostech ponechat. Na druhou stranu lze v budoucnu očekávat výrazné snížení nákladů na výchovu i obnovu strukturně bohatých porostů a výhody ekologické.

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