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UTILISATION OF QUANTITATIVE ASSESSMENT OF ALL-SOCIETAL FOREST FUNCTIONS IN LANDSCAPE AND LAND-USE PLANNING

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Abstract

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Considering that forests are the important segment of the natural and human environment, their use in landscape should be highly controlled. Practical solving of this topic asked for the use of the geographic information system (GIS) for its wide possibilities of data processing and presentation. The study deal with the possible utilisation of the quantified forest function values in the process of landscape and land-use planning. The analyses representing the results of this study were created with respect to the presence of existing relations among the forest functions and landscape elements. The analyses were also created with respect to the presentation of practical situations in the decision-making process of landscape and land-use planning. The values of the real potentials serve as the source of objective information of the forest stand function abilities. The values of the real potentials graphically processed in 2-D or 3-D allow the representation of spatial and functional relations among forest stands and other landscape elements. The presented results show that the calculated values of the forest functions in cooperation with GIS software seem to be the effective instrument in the decision-making process of landscape and land-use planning.

forest function, landscape planning, land-use planning, GIS

Considering that forests are the important segment of the natural and human environment, their use in landscape should be highly controlled. There are many map documents prepared within the preliminary phase of the planning process, but the objectively determinated forest function abilities are missing. Forests are involved only marginally in the planning process this time. It is obvious, that the forest functions are not very considered in the planning process, because the exact ability of forests to fulfil these functions is not known for the planner. The interest in the forest impacts and their management with the aim to provide benefits for surrounding landscape call for the objective and exact quantification of these forest function abilities and the integration of thus thematic oriented documents into the process of the spatial landscape organization. There is the need to create the thematic fundament, or the analytical land-use fundament in conception of land-use planning, covering the topic of the all-societal forest functions for the planning process. Practical solving of this topic is conditioned by the use of the geographic information system (GIS) for its wide possibilities of data processing and presentation.

The topic of the study is motivated by the effort to widely involve forests in the process of landscape and land-use planning. The aim of the study is to contribute to the discussed topic of the all-societal forest functions as a form of the forest stands impact on the complex landscape space and to demonstrate the possible utilisation of the quantitative assessment of the all-societal forest functions in landscape and land-use planning on practical examples.

The comprehensive conception of landscape planning represent the consistent coordination of all segments of spatial planning in landscape, it means land-use planning, ecological networks designing, forest management planning, the land consolidation, the landscape conservation management and

water management planning. Landscape planning is overall name for different planning forms and levels (SKLENIČKA, 2003). Landscape planning has noticeably multidisciplinary character and key factors have to be the potential, the landscape capacity, the ecological stability and limits of the landscape exploitation (LIPSKÝ, 1998).

The need of the objective quantification of the all-societal forest functions has entered the interest of forest public mainly thanks to the introduction of the functional integrated forest management. There are two main conceptional approaches to the objectivization and assessment of the forest functions at the present time. The first conception is the assessment of the economic of the all-societal forest functions, when the forest function is assessed on a basis of the forest stands ability to fulfil demands of the human society. Contrary to this conception, there is the ecosystem approach of VYSKOT (1996–2003). His work was presented within the state project of Ministry of the Environment. The title is *Quantification and Quantitative Assessment of All-societal Forest Functions in Czech Republic as a Basis for their Valuation*. The author presents the complex change in understanding of the all-societal forest functions in his work. The basis is eco-systematical understanding of forests and the equality of the all functions that are provided by forest ecosystems. He suggests his own classification of the all-societal forest functions, which is based on natural effects of forest ecosystems. The author also submits the method of the objective assessment of the forest functions within the functional management groups. He defines the real potentials and the real effects of the all-societal forest functions and the total real all-societal potential of forests.

METHODS

The methodology of this study consist of following steps: the choice of the area of interest, the collection of fundamental data, the determination of the all-societal forest function values (VYSKOT et al., 1996–2003), data processing, the GIS project creation, analysis creating (analyses, prognosis, 3D visualizations) and the stand part categorization according to the real potentials of the all-societal forest functions.

The area of interest was chosen with respect to the presence of various landscape elements and the concentration of various interests of society in way of land-use. The convenient locality was found north-west of Brno. Following synergic landscape elements were identified in the area of interest: the watercourse, rivers, water sources, conserved areas, nature reserves, ecological networks, recreational areas and residential areas.

Necessary fundamental data were collected with the help of relevant institutions. Fundamental data were at disposal in digital format, which is the precondition of consequent data processing in GIS. The Tab. I gives the overview of collected data and its formats.

I: *Overview of collected data*

Layer	Format
Regional land-use plan	JPEG
Municipal land-use plan	DGN
Natural and technical limits	SHP
Regional plans of forest development	SHP
Outline map of stand parts	SHP
Orthofotomap	SID
State map derived 1:5000	CIT
Forest management plan data	XLS

The study employs the methodology introduced in *Quantification and Quantitative Assessment of All-societal Forest Functions in Czech Republic as a Basis for their Valuation* (VYSKOT et al., 1996–2003) with respect to the need of the objective and exact determination of the all-societal forest function values. The methodology is based on the ecosystem conception, which accepts the philosophy of the equivalent importance of the all forest functions without unilateral preferences of the human society. The forest functions considered this way are called "the all-societal forest functions". The assessed functions are: the bioproduction function, the ecological-stabilization function, the hydric-water management function, the edaphic-soil conservation function, the social-recreational function and the sanitary-hygienic function.

The real potentials of the forest functions are the values of produced functions under optimum ecosystem conditions.

The real effects of the forest functions are the values of produced functions under actual ecosystem conditions. The functional reduction criterions of the forest stand state are defined in relation to the real potential. The functional reduction criterions are the age, the stand density and the state of health. The final value of the real effect is expressed in percentage in relation to the potential abilities.

DATA PROCESSING

The values of the real potentials were determinated according to the mentioned methodology (VYSKOT et al., 1996–2003) with the help of macro created in MS Excel application. The manual intervention into the automated process of the value determination was necessary in few cases of non-standardized stand types, multi-storey stand parts and clear-cut areas. The processed data file has 1262 rows (forest stands), 26 rows of clear-cut areas and 6 rows of multi-storey stand parts. The value determination of the real potentials of non-standardized stand types was done by the substitution by standardized stand types within the framework of functional target management groups and looking for the values of the real potentials of given stand types. The substi-

tution of non-standardized stand types was done on a basis of the ecological relationship or toleration of wood part representation in schemes of stand types. The values of the real potentials in case of clear-cut areas were determinated according to the stand type, which is most often occurring within the given forest type group in the area of interest. The values of the real effects in case of multi-storey stand parts were determinated according to the function reduction criterions (age, stand density, state of health) calculated by weighted average, where the weight is the area representation of single stand part storeys.

The result of the determination of the real potential and effect values is creating of partial databases in MS Excel application. Partial databases of the real potentials and the real effects were subsequently linked to the database of selected forest management plan data with the help of MS Access application. Part of data processing were also the stand part categorization according to the real potentials of the forest functions and the real effect trend prognosis, which were done with the help of MS Excel application and integrated into the created database. The rules description of these operations follows. The processed database was linked to the outline map database with the help of MS Access application. That allowed the graphical presentation of the real potential and effect values, analysis creating, the graphical presentation of the stand part categorization according to the real potentials of the all-societal forest functions, the graphical presentation of the real effect trend prognosis and the 3-D visualization.

GIS PROJECT CREATION

Fundamental and newly created data were sorted within the framework of the GIS project. All operations within the framework of the GIS project were done with help of ArcGIS 9.0 software, that mean data preparing, the graphical presentation of the real potential and the real effect values, analysis creating, the graphical presentation of stand part categorization according to the real potentials of all-societal forest functions, the graphical presentation of the real effect trend prognosis and the 3-D visualizations. Because of the proper data projection, the transformation of data into the S-JTSK coordinate system was done.

ANALYSIS CREATING

The analyses were created with respect to existing relations among the individual forest functions and landscape elements. The value "three" was chosen as the limit value of the real potential, because according to the chosen methodology the value "three" is the average value, and therefore the value "three" is thought as minimally demanded for the fulfilment of the given forest function. The aim of the created analyses is to present the methodology utilisation in practical situations of the decision-making process of landscape and land-use planning.

STAND PART CATEGORIZATION ACCORDING TO REAL POTENTIALS OF ALL-SOCIETAL FOREST FUNCTIONS

The stand part categorization was done in two levels. The first level includes the substitution of the real potential values of single forest functions (categorization on the level of the real potentials) by "a" or "b" category according to the rule introduced in the Tab. II. The value "three" was chosen as the limit value of the real potential, because according to the chosen methodology the value "three" is the average value, and therefore the value "three" is thought as minimally demanded for the fulfilment of the given forest function.

II: *Categorization on level of real potentials*

Category	a	b
Value of the RP_{fl}	≥ 3	< 3

The second level of the categorization includes determination of the "A", "B", "C" category for every stand part (categorization on the level of stand parts) on a basis of quantity of "a" or "b" categories representing the value level of the real potentials. The "A", "B" or "C" category is assigned for every stand part according to the Tab. III. Processing of the stand part categorization according to the real potentials of the forest functions was automated with the help of macro created in MS Excel application.

III: *Categorization on level of stand parts*

Category (on level of stand parts)	Category (on level of real potentials)					
A	a	a	a	a	a	a
	a	a	a	a	a	b
B	a	a	a	a	b	b
	a	a	a	b	b	b
C	a	a	b	b	b	b
	a	b	b	b	b	b
	b	b	b	b	b	b

REAL EFFECT TREND PROGNOSIS

The real effect trend prognosis in the time n + 10 years, n + 20 years and n + 40 years was done on selected stand parts (about 400) in the area of interest.

3-D VISUALIZATION

3-D visualizations were created with the help of ArcScene extension, which is a part of ArcGIS 9.0 software. Input data necessary for creating of the digital terrain model were contour lines, provided as a part of regional plans of forest development data.

RESULTS OF ANALYSIS CREATING

The presented examples of the created analyses, the stand part categorization according to the real potentials of the all-societal forest functions, the real effect trend prognosis and the 3-D visualizations represent the results of this study. The presented results serve as examples of the utilisation of the used methodology in practical situations of the planning process.

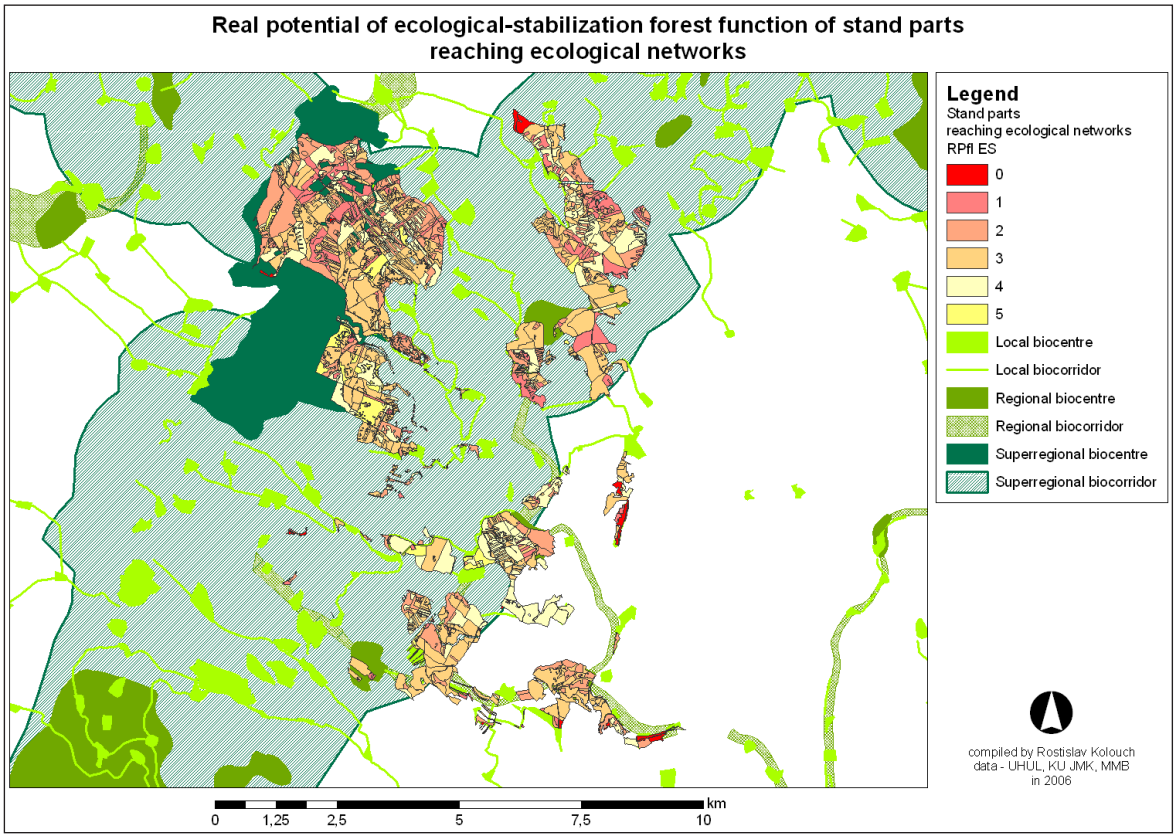
The analysis (Fig. 1) gives the overview of the real potential values of the ecological-stabilization forest function of stand parts reaching the ecological networks in combination with information about spatial relations in the area of interest.

In view of landscape and land-use planning, the real potential values of the ecological-stabilization forest function of stand parts reaching the ecological networks are mostly average up to above-average, but with frequent presence of low up to the extreme low values. This fact should be solved with an increased attention during the planning process. In view of the forest management, the species composition of selected stand parts reaching the ecological networks should be gradually modified towards the stand types with higher real potential values of ecological-stabilization forest function.

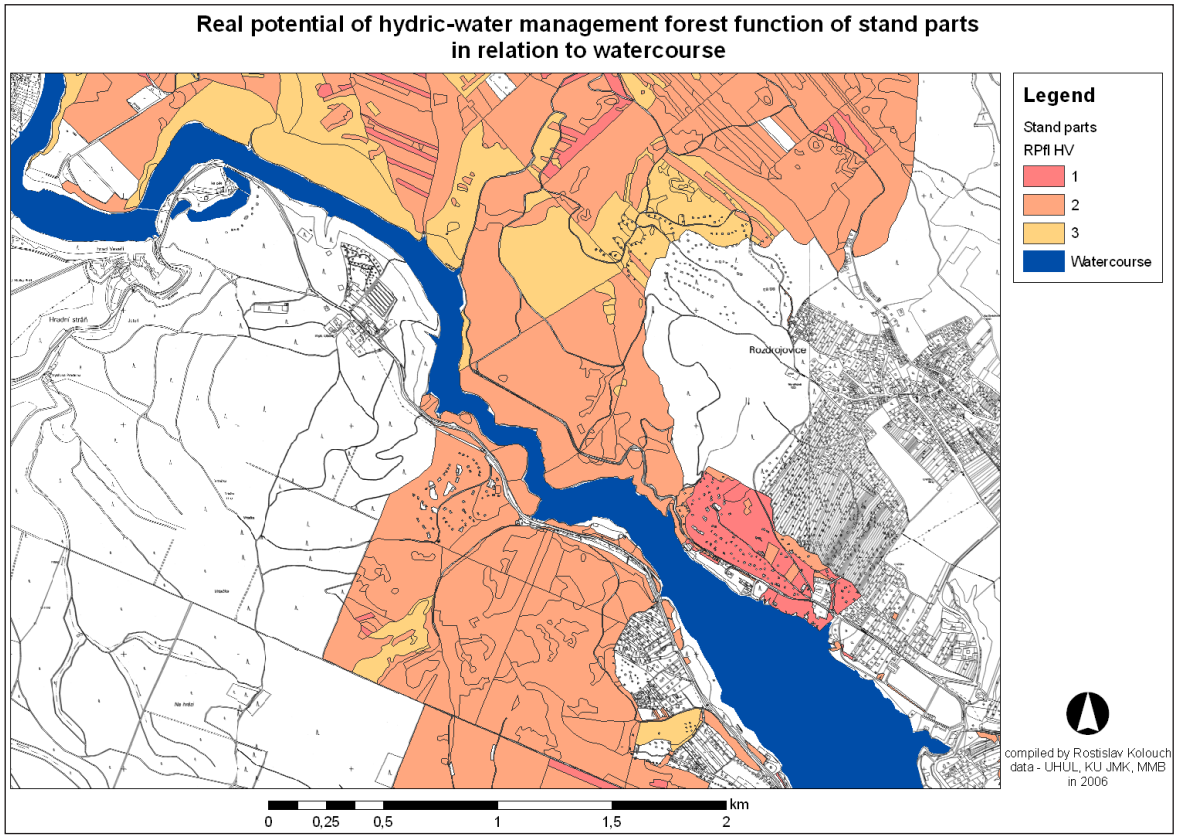
The analysis (Fig. 2) gives the overview of the real potential values of the hydric-water management forest function of stand parts in relation to the watercourse in combination with information about spatial relations in the area of interest.

In view of landscape and land-use planning, the real potential values of hydric-water management forest function of stand parts in relation to the watercourse are mostly below-average. This fact should be solved with an increased attention during the planning process. In view of the forest management, the species composition of stand parts should be gradually modified towards the stand types with higher real potential values of the hydric-water management forest function.

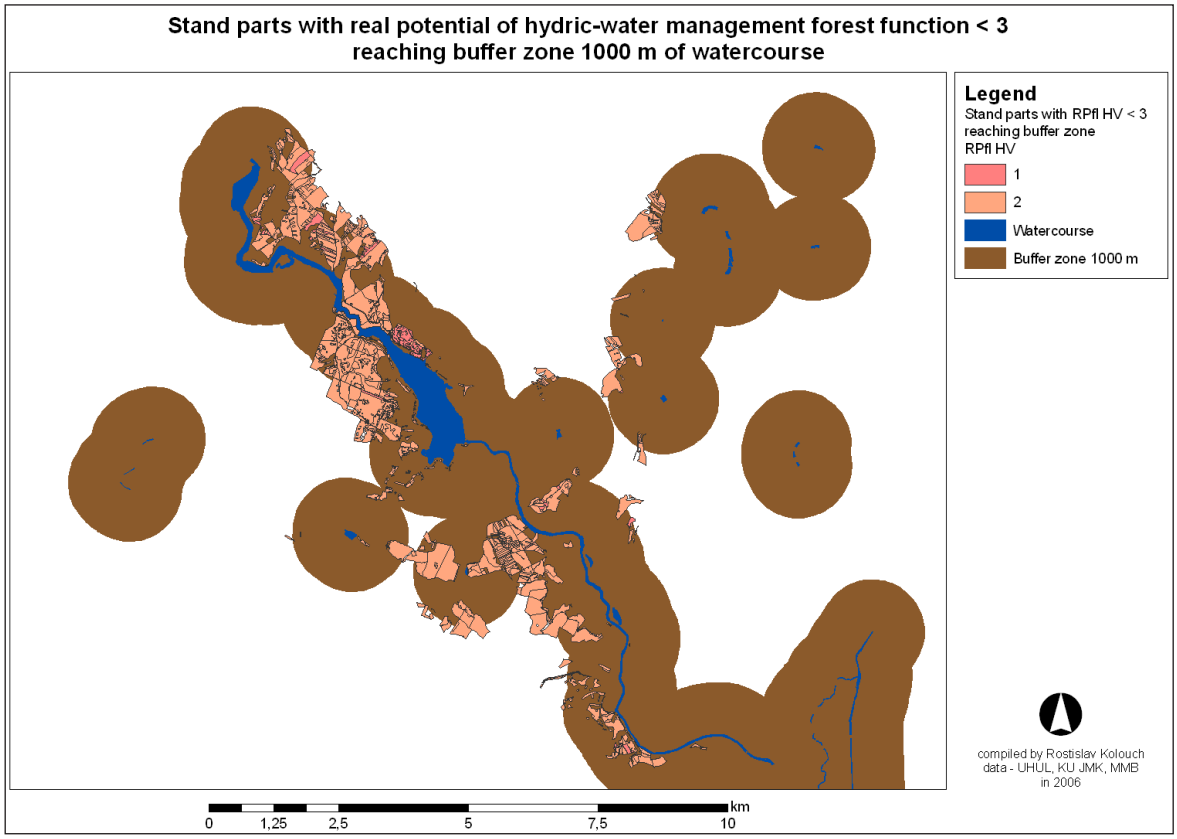
The analysis (Fig. 3) gives the overview of the real potential values of the hydric-water management forest function < 3 of stand parts reaching the buffer 1000 m of the watercourse in combination with information about spatial relations in the area of interest.



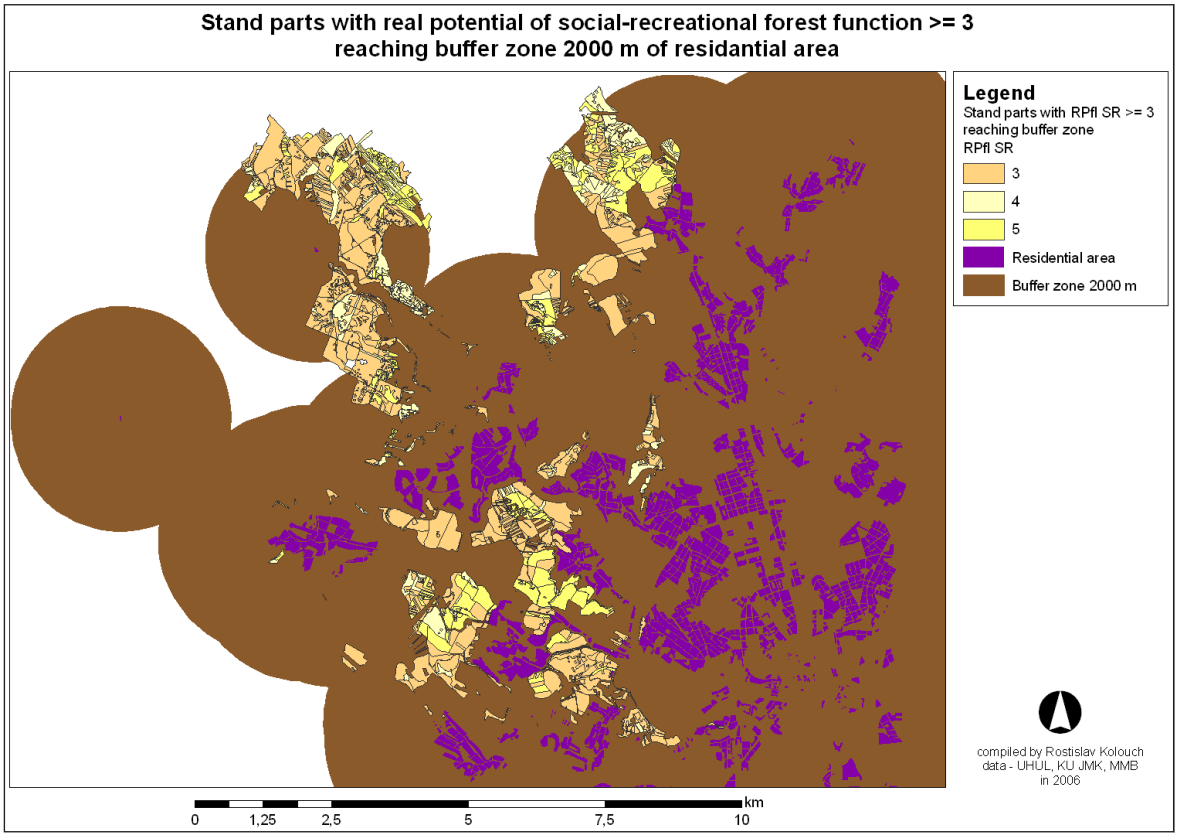
1: *Example of created analysis*



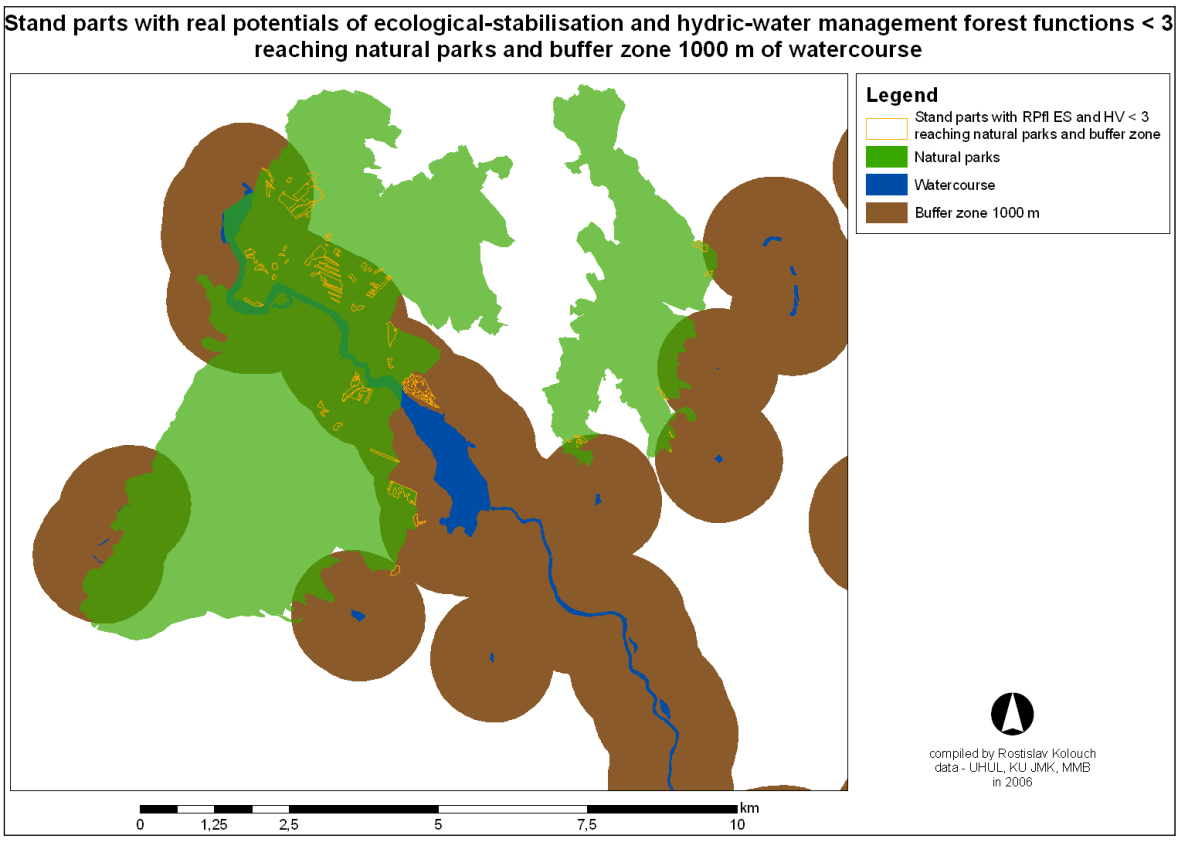
2: *Example of created analysis*



3: *Example of created analysis*



4: *Example of created analysis*



5: *Example of created analysis*

The analysis identifies stand parts reaching the buffer 1000 m of watercourse without the demanded value of the real potential of the hydric-water management forest function. The species composition of identified stand parts should be gradually modified towards the stand types with higher real potential values of the hydric-water management forest function.

The analysis (Fig. 4) gives the overview of the real potential values of the social-recreational forest function ≥ 3 of stand parts reaching the buffer 2000 m of residential areas in combination with information about spatial relations in the area of interest.

The analysis identifies stand parts reaching the buffer 2000 m of residential areas with the demanded value of the real potential of the social-recreational forest function.

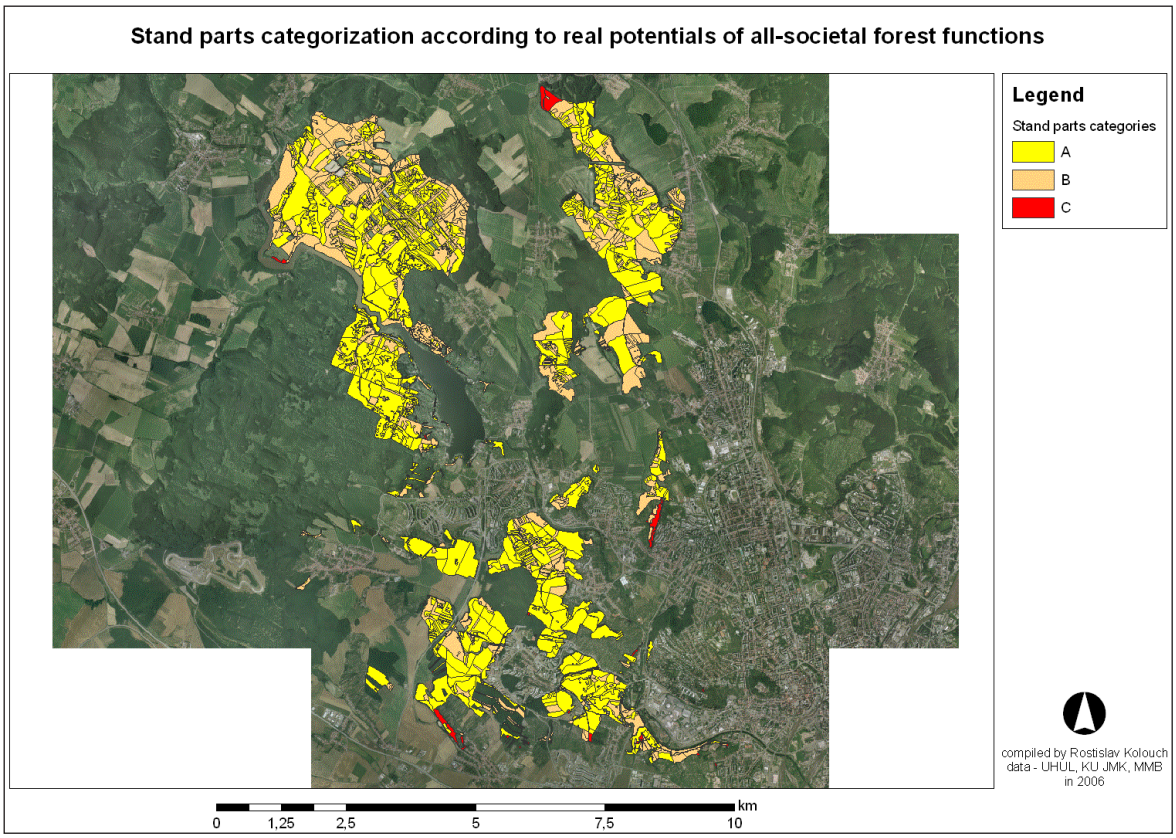
The analysis (Fig. 5) identifies stand parts with the value of the real potential of the ecological-stabilization and hydric-water management forest function < 3 (without demanded value) reaching the natural park and simultaneously the buffer 1000 m of watercourse. The species composition of identified stand parts should be gradually modified towards the stand types with higher real potential values of the ecological-stabilization and hydric-water management forest function. This is the example of the analysis in case of the functions concurrence.

RESULTS OF STAND PART CATEGORIZATION ACCORDING TO REAL POTENTIALS OF ALL-SOCIETAL FOREST FUNCTIONS

The "A", "B", "C" categories of stand parts offer complex information about the level of the potential functional fulfilment of the all-societal forest functions on level of stand parts. The "A", "B", "C" categories categorize stand parts according to the value level frequency of the demanded minimal fulfilment of the single all-societal forest functions. For the need of landscape and land-use planning the stand part categorization identifies areas of an necessary increased attention during the planning process with respect to the demanded level of the potential fulfilment of the all all-societal forest functions.

The analysis (Fig. 6) gives the overview of stand part categories according to the real potentials of the all-societal forest functions in combination with information about spatial relations in the area of interest.

In view of landscape and land-use planning, the "A" and "B" stand part categories are represented by the same part with the occasional presence of the "C" category. It is possible to identify the areas with the dominance of "A" stand part categories and with the dominance "B" stand part categories. The areas with the dominance of the "B" stand part category and the presence of the "C" stand part category should be solved with an increased attention



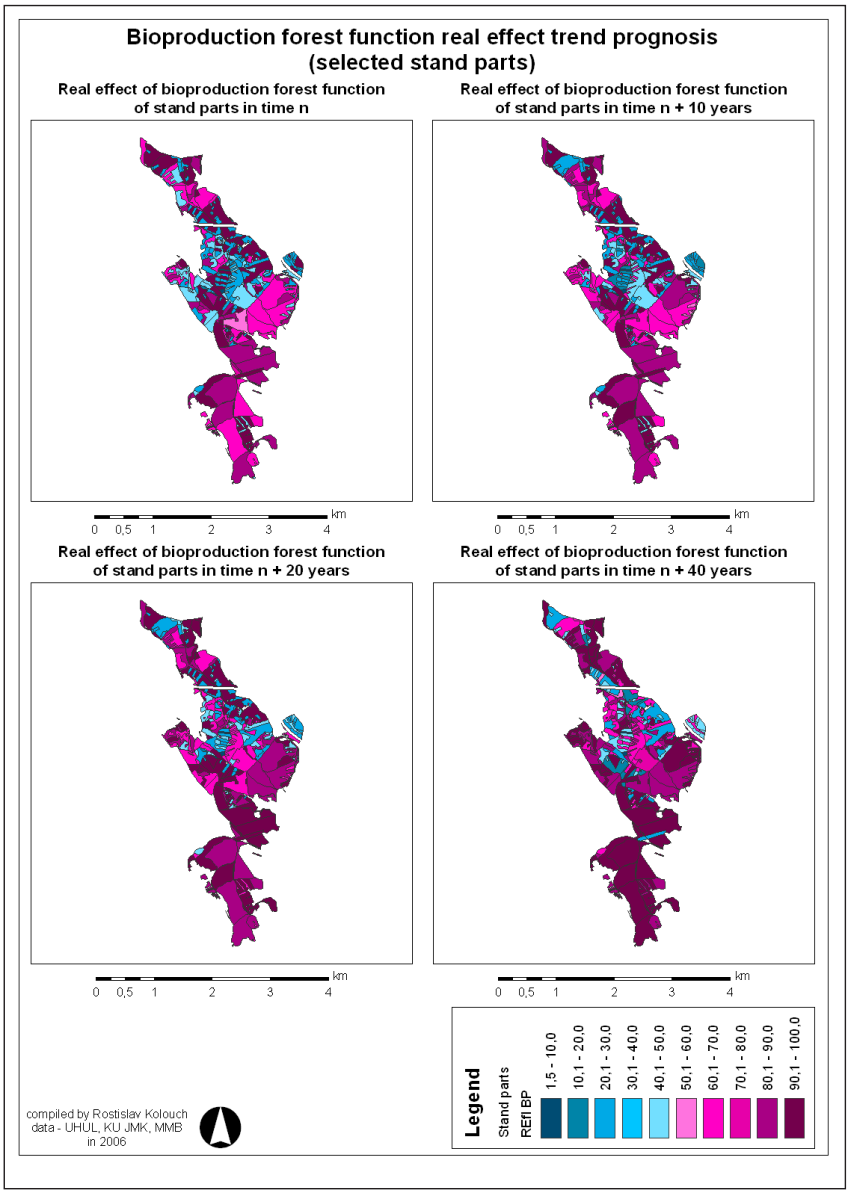
6: *Example of created analysis*

during the planning process with respect to the demanded level of the fulfilment of the all all-societal forest functions. In view of the forest management, the species composition of selected stand parts should be gradually modified towards the stand types with higher real potential values of that forest functions with the insufficient potential fulfilment.

RESULTS OF REAL EFFECT TREND PROGNOSIS

Prognoses are as the analyses also the part of landscape and land-use planning. In view of the solved topic of the forest functions in landscape, it is possible to prognosticate the change of the function values with the help of the used methodology both in optimal (the real potential) and actual (the real effect) ecosystem conditions. With respect to that the real potentials of the forest functions are determinated by relation of the species composition and site conditions (site conditions can be thought as unchanging), it is possible to prognosticate the change of the real potential values by changing the species composition. With respect to that the real effects of the forest functions are determinated by the age, the stand density and the state of health, it is possible to prognosticate the change of the real effect values within the time by changing these factors.

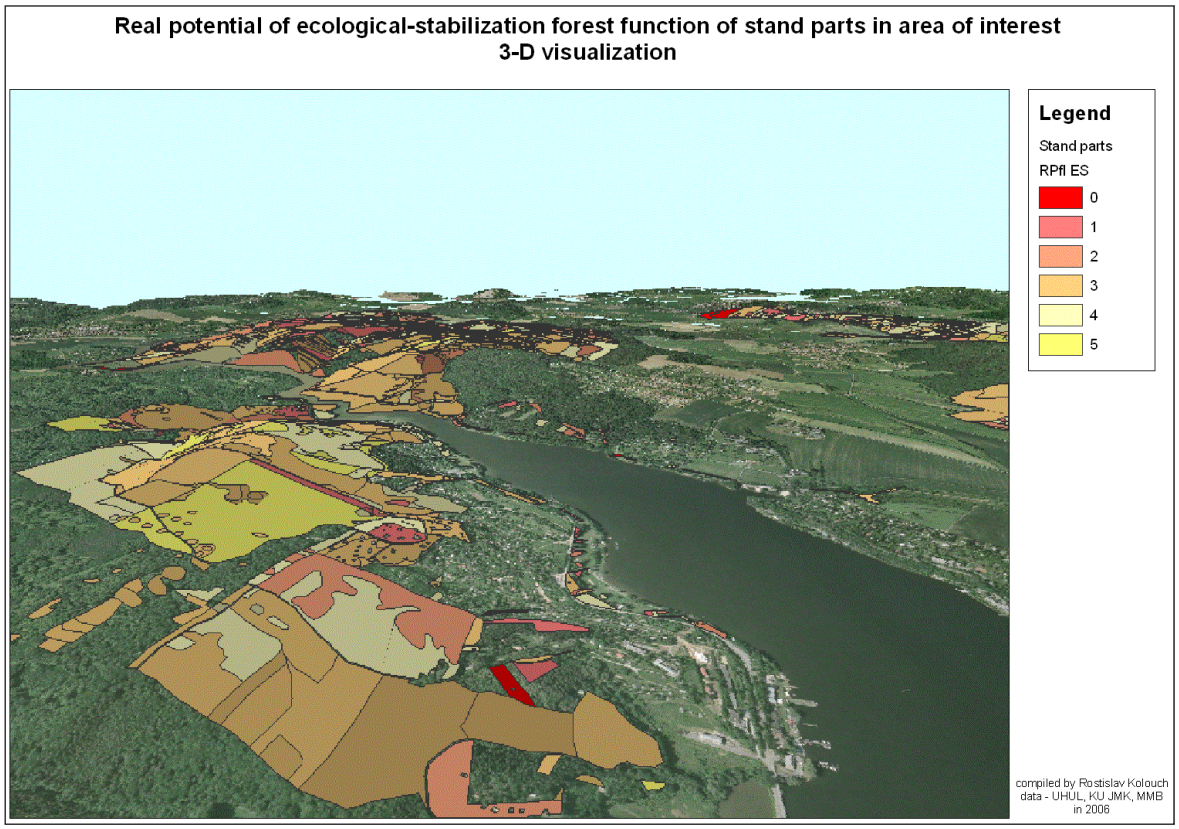
The real effect trend prognosis of forest function was chosen for demonstration of possibility of prognosis creation with the help of used methodology (Fig. 7).



7: *Example of created analysis*

RESULTS OF 3-D VISUALIZATION

The trend of the landscape and land-use planning process is the utilisation of GIS software and the transition from the 2-D data representation to the complex 3-D data representation. The 3-D visualization or the three-dimensional representation (Fig. 8) is an important way of the data representation, because information about the terrain, shape of the area and spatial relations is important for majority of land-use decisions.



8: *Example of created analysis*

DISCUSSION

The values of the real potentials of the all-societal forest functions are basic information utilizable within the framework of landscape and land-use planning. Information about the real effects of forest stands can be suitable additional information.

With respect to that the real potentials of the all-societal forest functions are determinated on a basis of relation of the species composition and site conditions, represented by the forest type group, the real potentials serve as a source of objective information about the potential functional abilities of forest stands involved in the planning process.

With respect to that the real potential values of the forest functions are determinated in the first place by relation of the species composition and site conditions, it is possible to partially influence the real potentials values by modification of the species composition. With respect to that the real effect values of forest functions are determinated in the first place by the age, stand density and state of health, it is possible to partially influence the real effects values by the forest management. The real potential and the real effect values of the forest functions in combination with the presented analyses give the informational fundament for the suggestion of forest management decisions with respect to the modification of the forest stand functional efficiency.

The values of the real potentials of the all-societal forest functions graphically processed in 2-D or 3-D allow the representation of spatial and functional relations among forest stands and other landscape elements. The stand part categorization according to the real potentials of the all-societal forest functions is the superstructural level of the assessment of the forest functions. The categories of stand parts offer complex information about the level of the potential functional fulfilment of the all-societal forest functions on the level of stand parts. The categories categorize stand parts according to the value level frequency of the demanded minimal potential fulfilment of the single all-societal forest functions. For the need of landscape and land-use planning the stand part categorization identifies areas of

an necessary increased attention during the planning process with respect to the demanded level of the fulfilment of the all all-societal forest functions.

The used methodology was shown as completely suitable for solving of the given topic. Thanks to the mainly automated process of the real potentials and the real effects values determination, it is possible to suggest the methodology for the determination of the forest stands functional abilities of large areas.

In view of landscape and land-use planning in relation to the forest functions in landscape, the mentioned outputs represent the till now missing important informational fundament or the analytical land-use fundament in conception of land-use planning. Contribution of the used objective methodology of the quantitative assessment of the all-societal forest functions is the possible utilisation by bodies of land-use planning on all levels. The presented results show that the calculated values of the real potentials and the real effects of the all-societal forest functions including the stand part categorization in cooperation with GIS software seem to be the effective instrument in the decision-making process of landscape and land-use planning.

The presented results demonstrate the social applicability of the used methodology by the elaboration of landscape and land-use planning documents. Fundaments and documents of landscape and land-use planning are overall understood as land-use analytical fundaments including ecological networks, land-use plans, regional plans of forest development, forest management plans, plans of common facilities, management plans of conserved areas and water management plans.

Practical applications of the methodology utilisation of the quantitative assessment of the all-societal forest functions in landscape and land-use planning are following:

- the integration of the real potentials of the all-societal forest functions in a form of land-use analytical fundaments into the decision-making process of landscape and land-planning,
- the integration of the real potentials of the all-societal forest functions into the suggestion and realization of forest component elements of ecological networks and its following management,
- the integration of the real potentials of the all-societal forest functions into the processing of regional plans of forest development and forest management plans, it means the support of the forest management according to the principles of the functional integrated forest management (encouragement of one function does not disturb fulfilment of other functions) and the forests categorization on a basis of results of the quantitative assessment,
- on a basis of information about the location and values of the real potentials of forest stands encourage the specific forest function or group of functions, where it is desired,
- on a basis of information about the location and values of the real potentials of forest stands maximize the potential functional forest stands abilities by the modification of the species composition in relation to ecosystem conditions, where it is desired,
- the integration of the real potentials of the all-societal forest functions into the suggestion and realization of plans of common facilities within the framework of complex parcel consolidations,
- the integration of the real potentials of the all-societal forest functions into the suggestion and realization of management plans of conserved areas and the management optimalization of these areas,
- the integration of the real potentials of the all-societal forest functions into the suggestion and realization of water management plans.

CONCLUSION

The carried out tasks related to solving of the given topic represent in the first place the analysis of all fundamental data, the adjustment of its structure and format and the manually-automatic data processing for the purpose of linking of the real potential and the real effect values of the all-societal forest functions to outline map of stand parts. The synthesis part of the work represents the joint projection of fundamental and newly created data in GIS software, analysis creating and its evaluation. The results of the study are presented mainly in the map outputs.

The content and orientation of the study enlarge set of knowledge about complex forest impacts in landscape. Results of the study correspond to already published knowledge about forest impacts in landscape and newly emphasize the importance of spatial information in combination with functional values of all-societal forest functions.

SOUHRN

Využití kvantifikace celospolečenských funkcí lesů v krajinném a územním plánování

Vzhledem k tomu, že lesy jsou významnou složkou přírodního a životního prostředí, mělo by být jejich využívání pečlivě řízeno a koordinováno. V průběhu přípravné fáze plánovacího procesu se zpracovává velké množství mapových podkladů, mezi kterými chybí objektivně stanovené funkční schopnosti lesů. Praktické řešení tohoto tématu je podmíněno využitím geografických informačních systémů (GIS), jejichž aplikace zásadním způsobem rozšířila možnosti zpracování a prezentace dat.

Téma práce je motivováno snahou o širší zapojení lesů do postupů krajinného a územního plánování. Smyslem předkládané práce je přispět k diskutované problematice celospolečenských funkcí lesů jako formě působení lesů v komplexním krajinném prostoru a na praktických příkladech demonstrovat možnosti využití objektivního hodnocení celospolečenských funkcí lesů v krajinném a územním plánování.
Metodika práce se sestává z následujících kroků: volba zájmového území, shromáždění podkladových dat, stanovení hodnot celospolečenských funkcí lesů (VYSKOT et al., 1996–2003), databázové zpracování, vytvoření GIS projektu, tvorba analýz (analýzy, prognóza, 3D vizualizace) a kategorizace jednotek rozdělení lesa dle reálného potenciálu celospolečenských funkcí lesů. Pro potřebu objektivního a exaktního stanovení hodnot reálných potenciálů a reálných efektů celospolečenských funkcí lesů byla ke zpracování řešeného tématu zvolena metodika Vyskot, I. et al. vypracovaná v rámci státního projektu MŽP ČR „Kvantifikace a kvantitativní hodnocení celospolečenských funkcí lesů ČR jako podklad pro jejich oceňování" (1996–2003). Kvantifikovanými funkcemi lesů se rozumí funkce: bioprodukční, ekologicko-stabilizační, hydricko-vodohospodářská, edafická-půdoochranná, sociálně-rekreační a zdravotně-hygienická.
Analýzy reprezentující výsledky této práce byly vytvářeny s ohledem na existující vazby mezi funkcemi lesů a prvky krajiny. Analýzy byly vytvářeny také s ohledem na prezentaci praktických situací v rozhodovacím procesu krajinného a územního plánování. Výsledky práce jsou prezentovány především v podobě mapových výstupů.
Základním údajem využitelným v rámci krajinného a územního plánování jsou hodnoty reálných potenciálů celospolečenských funkcí lesů. Informace o reálných efektech může být vhodným doplňujícím podkladem.
Vzhledem k tomu, že reálný potenciál celospolečenských funkcí lesů je determinován na základě vazby mezi druhovou skladbou a stanovištěm, jehož podmínky jsou vyjádřeny souborem lesních typů, slouží reálný potenciál jako zdroj objektivní informace o potenciálních funkčních schopnostech lesních porostů dotčených plánovacím procesem.
S ohledem na to, že hodnota reálného potenciálu funkce lesa je determinována především vazbou druhové skladby porostu na podmínky stanoviště, lze jeho hodnoty do jisté míry ovlivnit úpravou druhové skladby. Vzhledem k tomu, že hodnota reálného efektu funkce lesa je determinována především věkem, zkameněním a zdravotním stavem porostu, lze jeho hodnoty do jisté míry ovlivnit vhodnými pěstebními zásahy. Hodnoty reálných potenciálů a efektů funkcí lesů v kombinaci s prezentovanými analýzami poskytují informační podklad pro návrh lesnických managementových opatření s ohledem na úpravu funkční účinnosti lesních porostů.
V grafické podobě zpracované, ať už plošné či prostorové, hodnoty reálných potenciálů a efektů celospolečenských funkcí lesů umožňují reprezentaci prostorových a funkčních vztahů lesních porostů vůči ostatním prvkům krajiny. Nadstavbovou úrovní hodnocení celospolečenských funkcí je kategorizace jednotek rozdělení lesa vycházející z hodnot reálných potenciálů celospolečenských funkcí lesů. Kategorie jednotek rozdělení lesa poskytují komplexní informaci o úrovni potenciálního funkčního plnění celospolečenských funkcí lesů na úrovni těchto jednotek a kategorizují jednotky rozdělení lesa dle četnosti hodnotové úrovně požadovaného minimálního potenciálního plnění jednotlivých celospolečenských funkcí. Pro potřeby krajinného a územního plánování kategorizace jednotek rozdělení lesa identifikuje oblasti nutného zvýšení pozornosti v průběhu plánovacího procesu s ohledem na požadovanou úroveň plnění všech celospolečenských funkcí.
Tyto výstupy představují z pohledu krajinného a územního plánování ve vztahu k funkcím lesů v krajině dosud chybějící významný informační podklad, neboli územně analytický podklad v pojetí územního plánování. Přínosem této objektivní metody hodnocení celospolečenských funkcí lesů je možnost širokého využití orgány zabývající se plánovací činností v krajině na všech stupních. Předkládané výsledky dokládají, že stanovené hodnoty reálných potenciálů a efektů celospolečenských funkcí lesů včetně kategorizace jednotek rozdělení lesa dle reálných potenciálů funkcí lesů ve spojení s GIS softwarem mohou být efektivním nástrojem v rozhodovacím procesu krajinného a územního plánování. Předkládané výsledky práce dokládají společenskou využitelnost použité metodiky při vypracovávání podkladů a dokumentů krajinného a územního plánování.
Použitá metodika se pro řešení daného tématu ukázala jako zcela vyhovující. Díky možnosti využití převážně automatizovaného procesu přiřazování hodnot reálných potenciálů a efektů lze metodiku doporučit pro stanovení funkčních účinků lesních porostů velkých území.
Praktické aplikace využití metodiky hodnocení celospolečenských funkcí lesů v krajinném a územním plánovaní jsou následující:
- začlenění reálných potenciálů celospolečenských funkcí lesů jako zdroje informací do rozhodovacího procesu územního plánování ve formě územně analytického podkladu,
- návrh a realizace skladebných prvků lesních částí územních systémů ekologické stability a následná péče o ně,

- začlenění reálných potenciálů celospolečenských funkcí lesů do zpracování oblastních plánů rozvoje lesů a lesních hospodářských plánů, tím je myšlena podpora hospodaření podle zásad funkčně integrovaného lesního hospodářství (podpora jedné funkce nenarušuje plnění funkcí ostatních) a kategorizaci lesů na základě výsledků hodnocení,
- na základě informace o poloze a hodnotách reálných potenciálů lesních porostů podpora určité funkce, případně kombinace funkcí lesů, v lokalitách, kde je to žádoucí,
- na základě informace o poloze a hodnotách reálných potenciálů lesních porostů maximalizace potenciálních funkčních schopností úpravou druhové skladby ve vazbě na dané stanovištní podmínky v lokalitách, kde je to žádoucí,
- začlenění reálných potenciálů celospolečenských funkcí lesů do návrhu a realizace plánů společných zařízení v rámci komplexních pozemkových úprav,
- začlenění reálných potenciálů celospolečenských funkcí lesů do návrhu a realizace plánů péče o zvláště chráněná území a optimalizace managementu těchto území,
- začlenění reálných potenciálů celospolečenských funkcí lesů do procesu plánování v oblasti vod.

funkce lesa, krajinné plánování, územní plánování, GIS

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