FOREST NATURALNESS ASSESSMENT

in the CZECH REPUBLIC

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Where and why the Czech old-growth forests survived in the cultural landscape

Central Europe = cultural landscape affected by man since neolithic age

WHY the naturalness assessment of the forests

- absence of actual knowledges about the old-growth forests on the large scale
- tool for the forestry and environmental policy
    - National Forestry Programme
    - Strategy of nature conservation in the CZ
- tool for the restoration management planning in the protected forest areas
- tool for the NATURA 2000 sites management
- to establish the Old-growth forests databank

Key conditions for the naturalness assessment system

- to be realizable on the whole forest area of the Czech Republic
- to be on-line updateable in the future
- to be developed on the scientific base (natural forest dynamics)
- to be independent on subjective approach of evaluators
- to be useful (simply) for the nature conservationists, foresters, officers
- **to be cheap**

Development of the assessment system

Examples of compromises:

- one set of parameters for all habitat types (lowland f., mixed mountain f.)
- minimal grain for assessment – 1 ha
- dynamic system = old-growth forest elements comeback:
  - living trees 100 years
  - deadwood 50 years
- only dominant tree species which affect the disturbance dynamics
- minimal area of old-growth forest in one locality – 10 ha, later 5 ha
- etc.

- !!! herb layer, soil condition, stand structure etc. assessment is out of practical possibilities – we have assessed only the tree layer

Development of the assessment system

3+2 degrees of naturalness (compromise for practicioners):

- original
- natural
- near-natural

→ Old-growth Forests Databank

- cultural
- artificial

→ out of Databank

original – never managed forests left to spontaneous development

natural – historically by man affected forest, actually left to spontaneous development

near-natural – actually by man affected forests, restoration management is acceptable temporarily, old-growth elements partially

Development of the assessment system

30 parameters in 4 groups were used:

A - direct historical and current impact of man (17 parameters)

B - historical and current deadwood management (4 parameters)

C - indirect historical and current impact of man (3 parameters)

D - tree species composition changes (6 parameters)

Assessment system

Forest naturalness assessment						
Locality:						
Partial plot:						
Partial plot area:						
Parameters		Degree fo naturalness				
		A	B	C	D	E
		original	natural	near-natural	cultural	artificial
A - Direct impact on stand development by forest management						
A1	Any felling in the history or only the selective felling more than 100 years ago	YES				
A2	Selective felling in the last 100 years		YES			
A3	Main felling (clear cut) more than 100 years ago and secondary succession without management		YES			
A4	Intentional regeneration measures in the past on less then 1/4 area		YES			
A5	Intentional regeneration measures in the past on more then 1/4 area			YES		
A6	Main felling (clear cut) and introduction of regeneration elements at present				YES	
A7	Incidental felling of live (active) trees at present without the clearing formation			YES		
A8	Incidental felling of live (active) trees at present with the clearing formation				YES	
A9	Plantation or sowing as a management measure on less than 1/4 area in the past		YES			
A10	Plantation or sowing as a management measure on more than 1/4 area in the past			YES		
A11	Plantation or sowing as a management measure at the present time				YES	
A12	Intentional tending measures in the past on less then 1/4 area		YES			
A13	Intentional tending measures in the past on more then 1/4 area			YES		
A14	Intentional tending measures at present				YES	
A15	Restoration management measures in the past		YES			
A16	Restoration management measures at present			YES		
A17	Special measures eliminate secondary human impact (invasive species felling)	YES				
B - Deadwood						

Assessment system

A17	Special measures eliminate secondary human impact (invasive species felling)	YES				
B - Deadwood						
B1	Any haulage of deadwood or haulage of deadwood more than 50 years ago	YES				
B2	Haulage of deadwood in the last 50 years		YES			
B3	Partial processing of deadwood at present			YES		
B4	Fully processing of deadwood at present				YES	
C - Indirect human impact on stand development						
C1	Historical cattle grazing whose impact on the development of stand structure and texture is negligible today and only a theoretical influencing of tree species can be recorded	YES				
C2	Long-term wildlife overpopulation in the last 50 years affecting the development of stand structure (markedly reduced number of trees in several subsequent diameter classes); the natural regeneration of all main autochtonous tree species is currently running (tree species, which have more than 20% in the potential natural tree species composition).		YES			
C3	Long-term wildlife overpopulation in the last 50 years affecting the development of stand structure (markedly reduced number of trees in several subsequent diameter classes); the natural regeneration of some main autochtonous tree species is currently blocked (tree species, which have more than 20% in the potential natural tre species composition).			YES		
D - Current tree species composition as compared with the potential natural tree species composition						
D1	Attendance of all main autochtonous tree species with the presence of reproductive trees		YES			
D2	Attendance of site-allochtonous tree species interspersed up to 10%			YES		
D3	Attendance of site-allochtonous tree species interspersed from 10% to 50%				YES	
D4	Attendance of site-allochtonous tree species interspersed more than 50%					YES
D5	Transitional presence of invasive neophytes (robinia, tree-of-heaven, white pine, red oak etc.) up to 5 %	YES				
D6	Genetically allochtonous tree stands (genetically allochtonous populations)				YES	

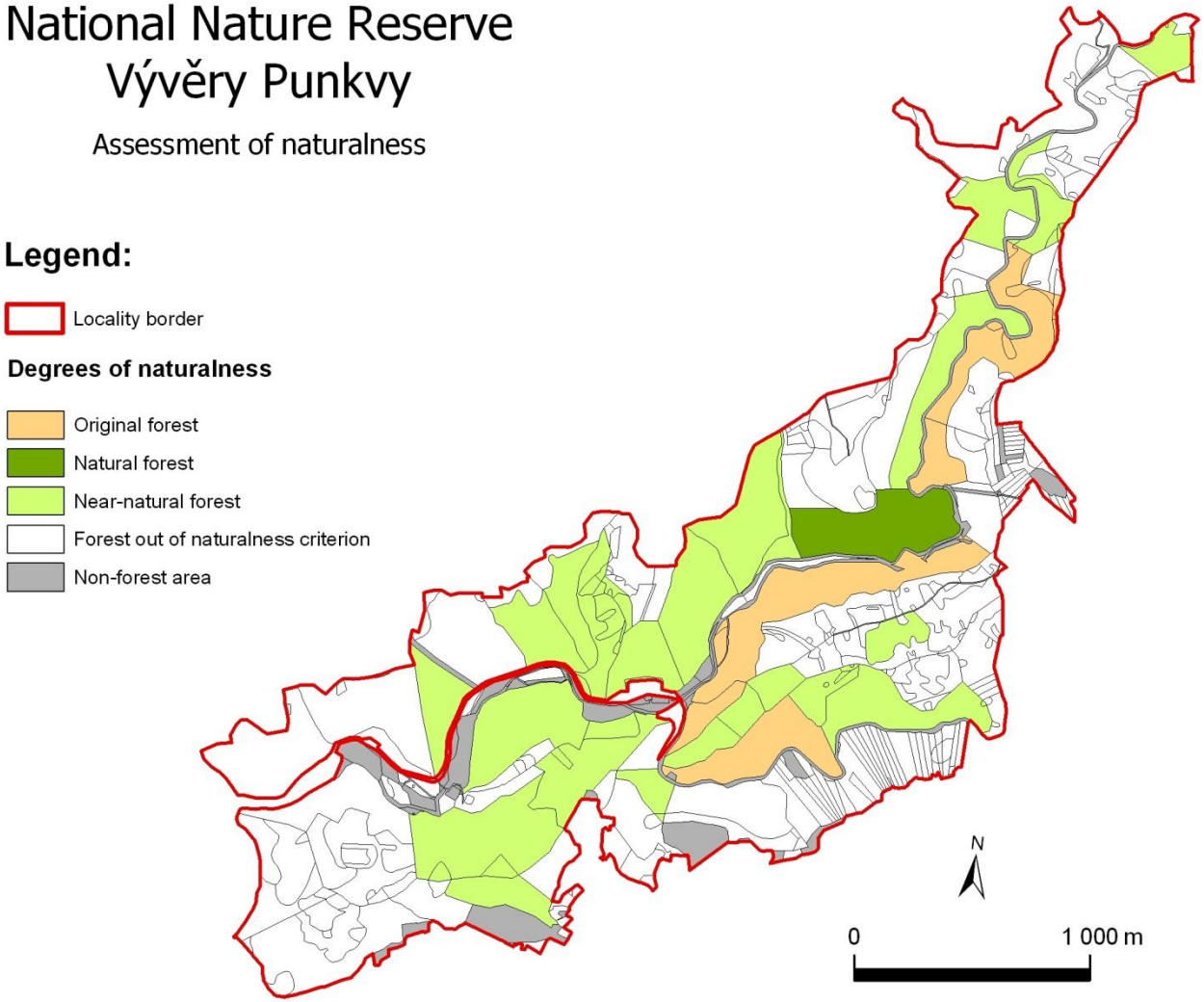
Assessment system

original Never managed forests *left to spontaneous development*
natural Historically by man affected forests, actually *left to spontaneous development*,
near natural Actually by man affected forests; restoration management is acceptable, old-growth forests elements are limited

Degree of naturalness	original	natural	near-natural	cultural	artificial
Final assessment:					
Is the (partial) plot left to spontaneous development? (Yes/No)					
When yes, since when?					
The name of evaluator:					
Date of assessment:					
Note:					

dynamic system = when the parameters are fullfilled, the forest stand can be reclassified into the higher degree of naturalness

Results – using in the management planning



- restoration management planning
- priorities determination

Registered Natural Forests - the Czech Republic on aggregate [ha]

	Original	Natural	Near-nat.	Total
NPs	2157.35	4509.97	8036.23	14703.55
PLAs (ssSPAs only)	309.46	2050.04	5877.98	8237.48
PLAs (unprotected only)		86.02	852.66	938.68
PLAs (MFs)		16.76	59.87	76.63
PLAs (total)	309.46	2152.82	6790.51	9252.79
Free landscape (ssSPAs only)		515.85	3865.92	4381.77
Free landscape (unprotected only)		26.46	519.38	545.84
Free landscape (total)		542.31	4385.30	4927.61
MFs (ssSPAs only)		20.82	221.95	242.77
MFs (unprotected only)		299.27	140.56	439.83
MFs (total)		320.09	362.51	682.60
Total	**2466.81**	**7525.19**	**19574.55**	**29566.55**

(as at 1/1/2012)

NPs - National Parks

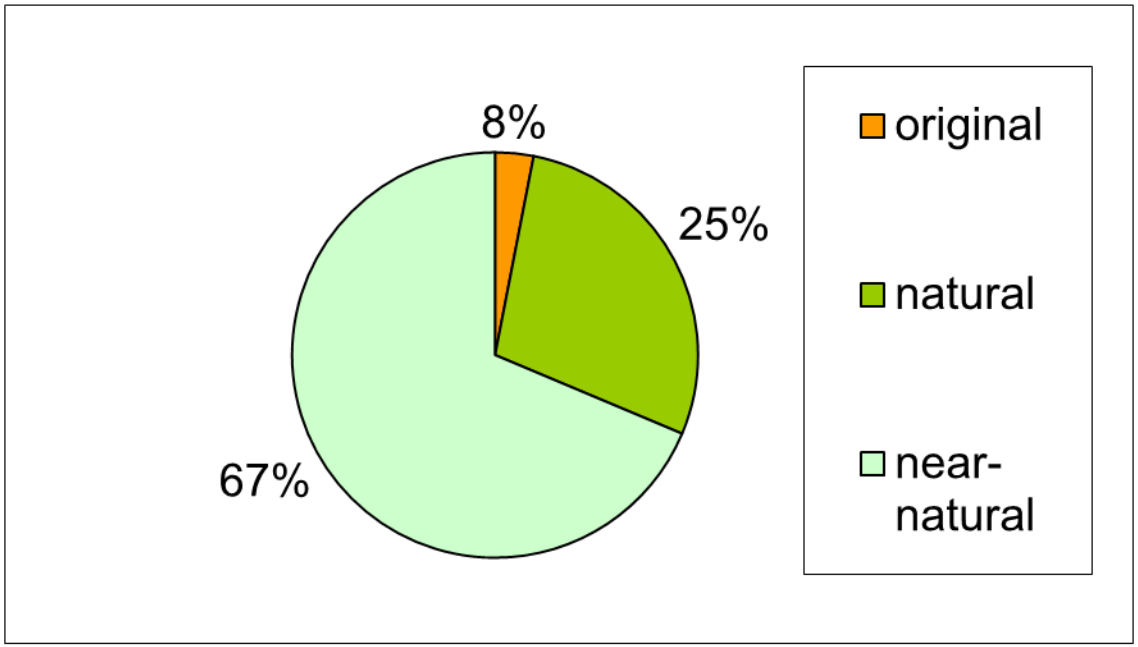
PLAs - Protected Landscape Areas

MFs - forest in ownership of Military Forests and Farms, state enterprise

"Free landscape" - areas out of NPs, PLAs and MFs

Results – general information

- old-growth forests in the Czech Republic – **1,2%** of total forest area (2.600 mil. ha)
- **490** localities in the range **10-1200** ha per locality
- 50% of localities is located in national parks
- 30% of localities is located in protected landscape areas
- 530 ha (1,8%) non protected

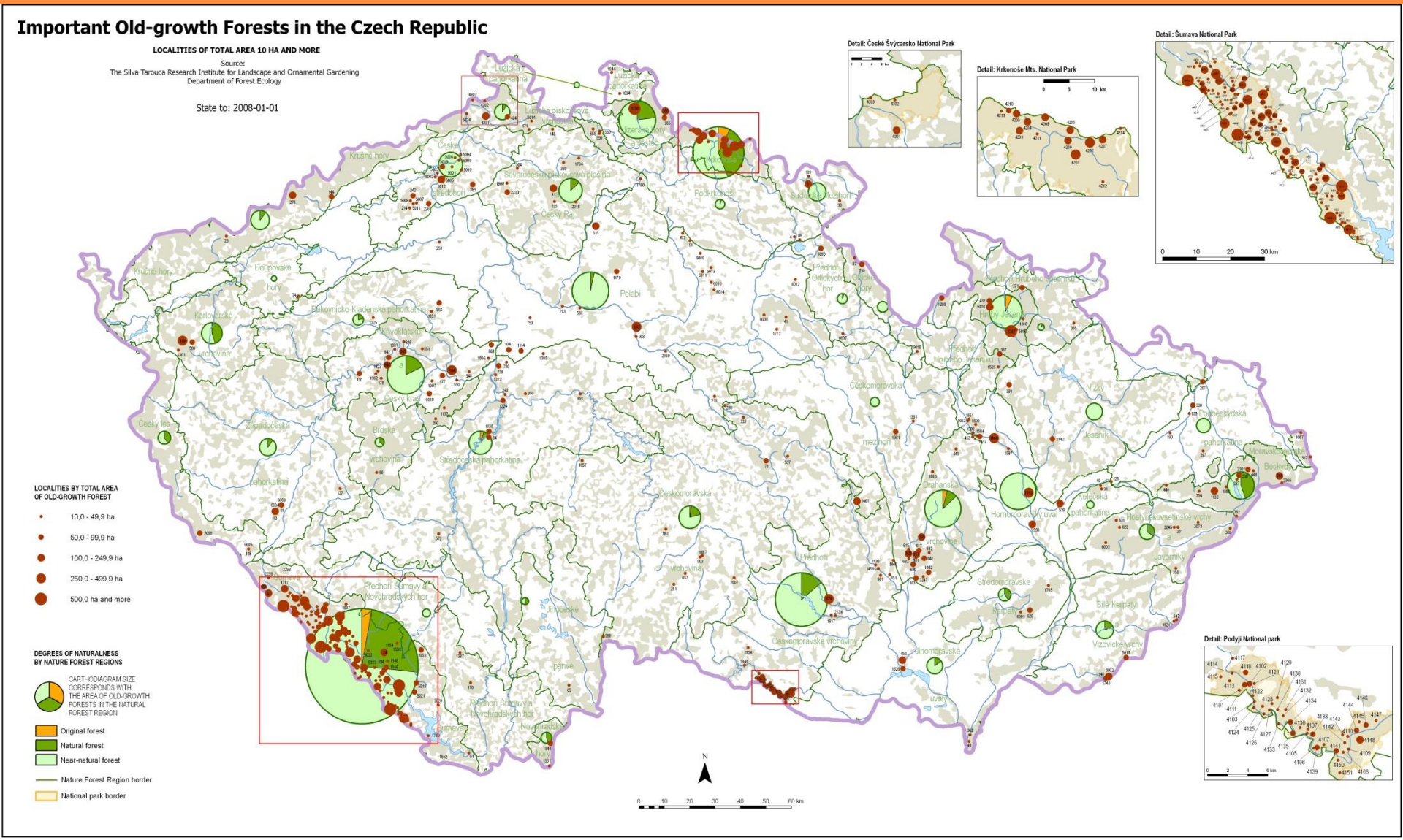


2 500 ha

7 500 ha

19 600 ha

Results – localization of old-growth forests



Old-growth forests databank - www.naturalforests.cz