

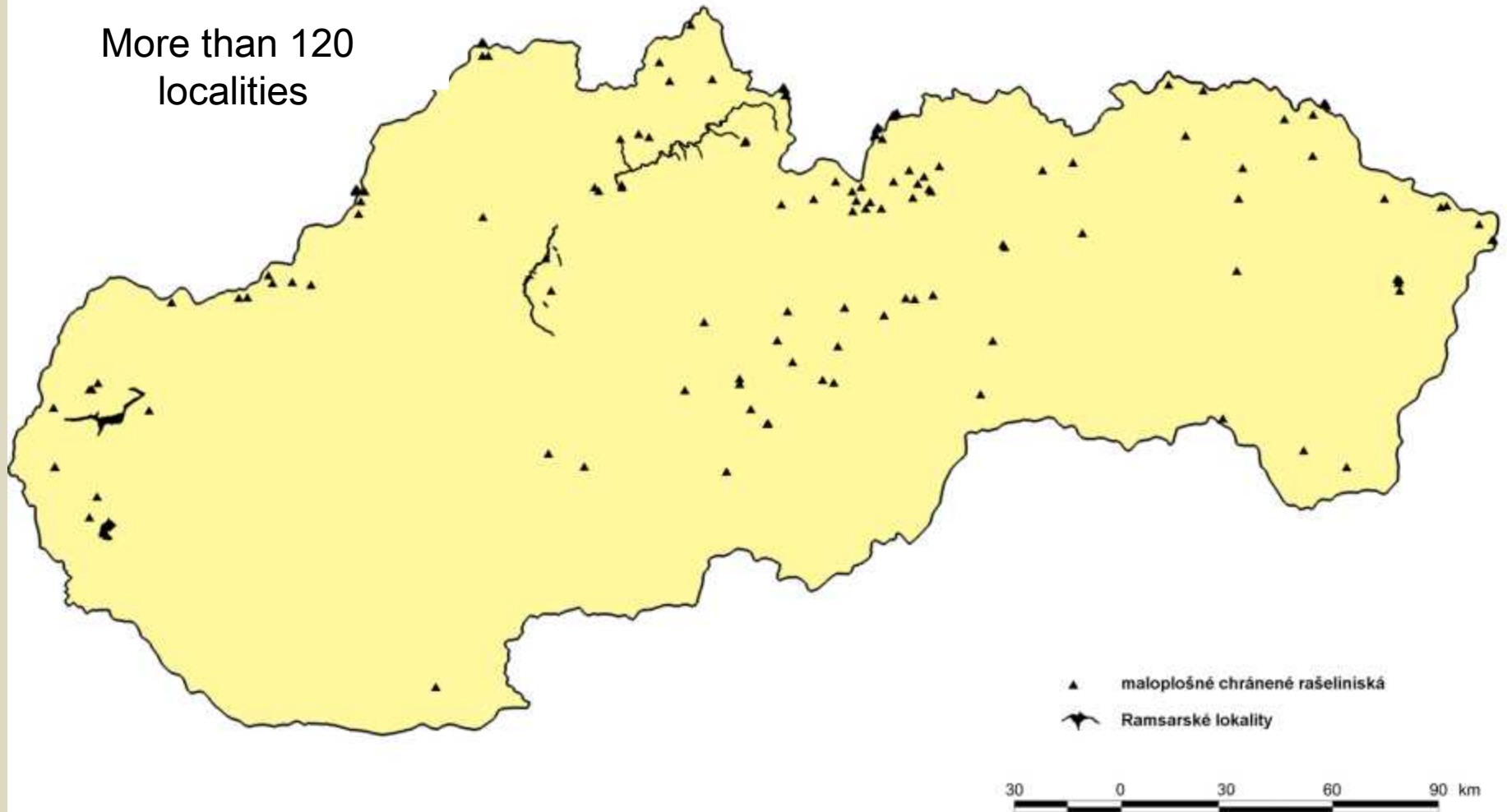
Peatland Inventory in Slovakia

Rastislav Lasák, DAPHNE – Institute of applied ecology
Conservation of Wetlands in the Carpathians
16–19 November 2009 Tatranská Štrba



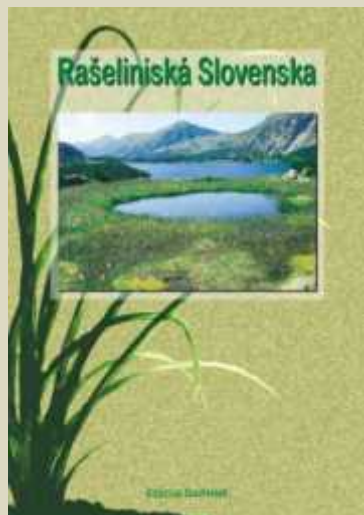
Localities of peatlands before 2000

More than 120
localities

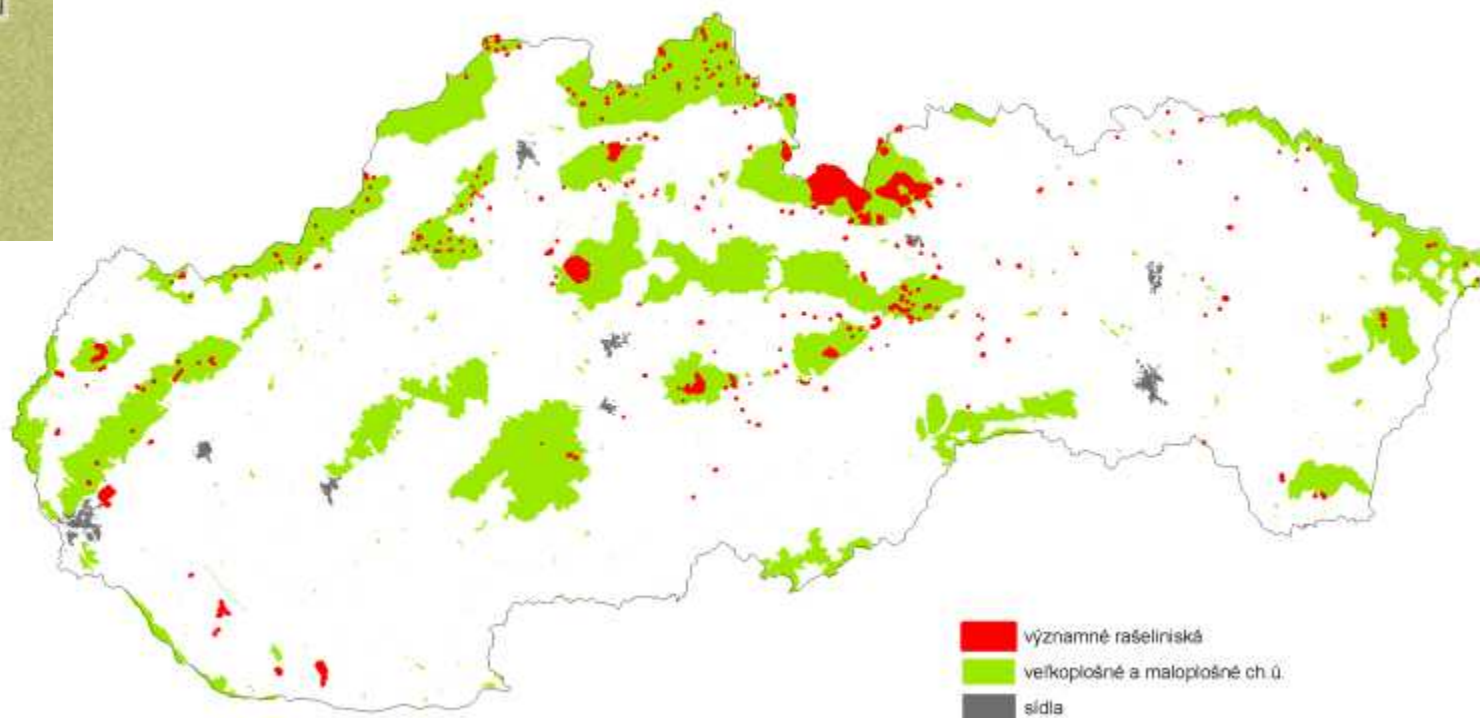


Localities of peatlands in 2000

“Desktop inventory”

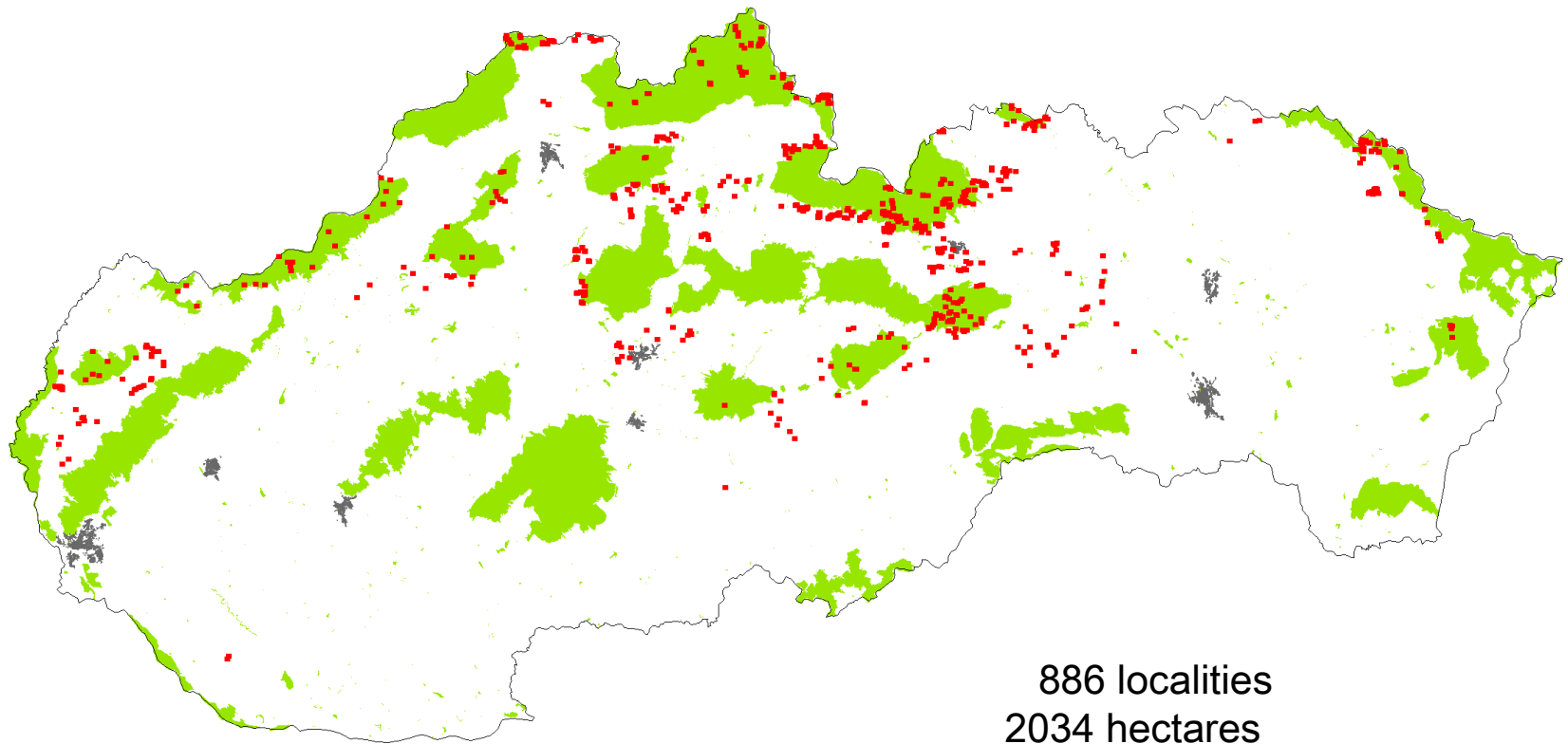




320 localities of important peatlands from
publication Peatlands of Slovakia (Stanova V. (ed.)
2000)



Localities of peatlands in 2001-2003

“Real field inventory”



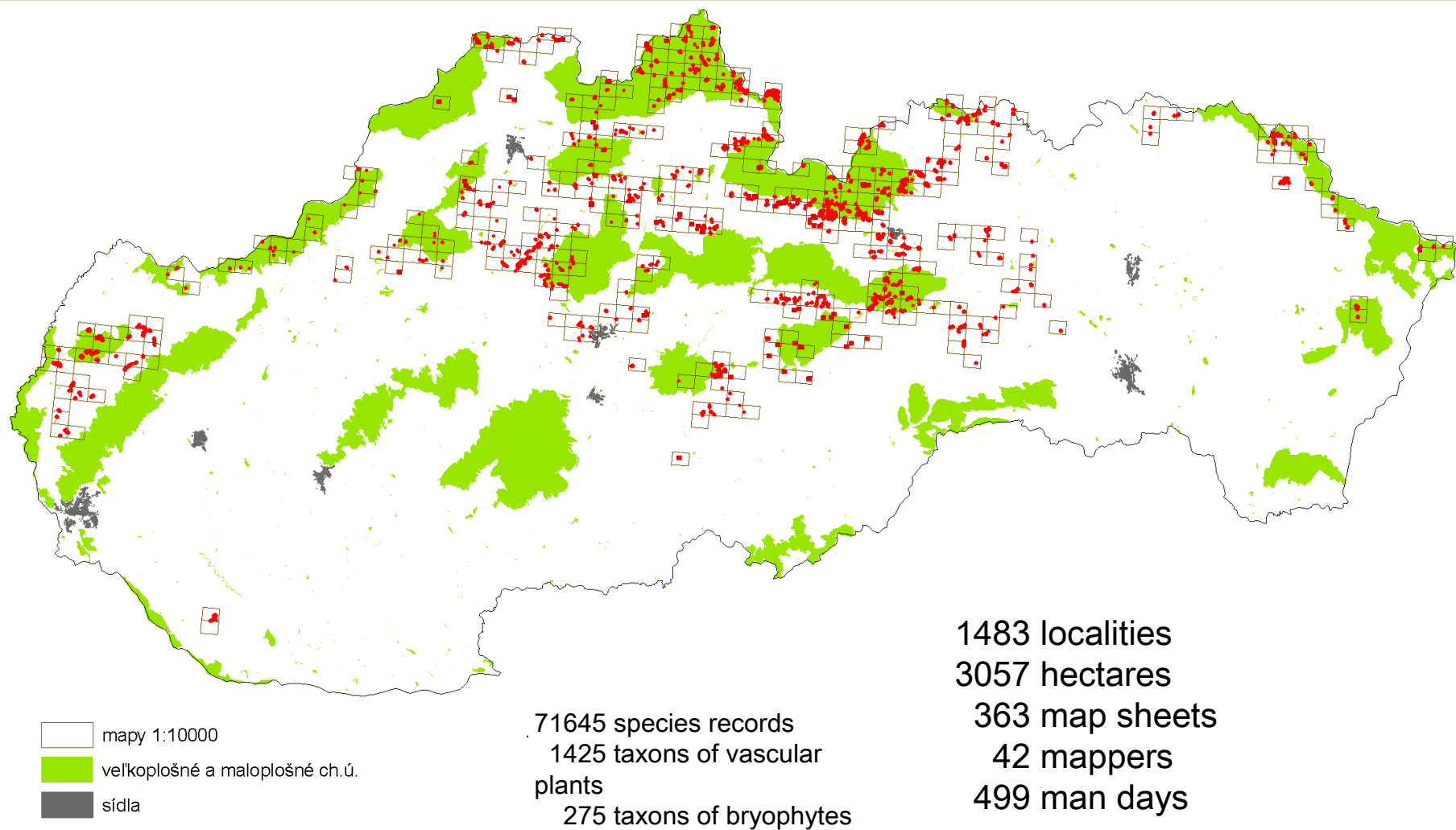
 veľkoplošné a maloplošné ch.ú.
 sídla

46512 species records
1310 taxons of vascular
plants
249 taxons of bryophytes

886 localities
2034 hectares
240 map sheets
32 mappers
310 man days

Localities of peatlands in 2005-2009

“Real field inventory”



Peatland Inventory in Slovakia (2001-2009)

- Methodology of peatland inventory
 - Pre-selection of peatland sites on the base of geobotanical map and CORINE Land Cover
 - Preparation of field maps in the scale 1:10000 with pre-selected sites
 - Printing of field forms sheets
- Manual for peatland mappers
- Tools for measuring of pH, conductivity and water temperature
- Training for mappers
- Data flow logistic
- **Base of Information System of Peatlands**
 - Electronic version of field form – “client” databases
 - Electronic version of form for bryophytes
 - Server or data store application of ISP
 - Application for data evaluation and presentation

Peatlands Inventory – Data

Field

Flow Database

Mapping

- Site drawing into field map
- Measure pH, temp., cond.
- Write into field form:
 - biotopes of the site
 - species composition
 - water regime
 - site management
 - measured values
 - threats of site

Digitizing of
drown polygons

Filling "client"
databases

&
GIS



Database
of
bryophyt



Server of
Information
System
of
Peatlands



Bryophytes sent to expert

Bryophytes
determination

Filling bryo-
database

Data Keeper

- experts db preparation
- data flow managing
- data consistency checking
- server managing
- preparation data for evaluation



Data
presentation
Data evaluation
Practical usage
of data

Drawing into map

Measuring



Measuring pH, ...

Bryophytes collecting



Meno mapovateľa: <input style="width: 150px;" type="text"/>		Kód mapovateľa: <input style="width: 100px;" type="text"/>		Dátum: <input style="width: 100px;" type="text"/>	
Kód plochy: <input style="width: 150px;" type="text"/>		Kód mapy: <input style="width: 100px;" type="text"/>			
Názov MJ: <input style="width: 250px;" type="text"/>					

Komplex mapovacích jednotiek					
Typ mapovacej jednotky	%	Typ mapovacej jednotky	%	Typ mapovacej jednotky	%

Types of biotopes

Nemapované plochy					
D: <input type="checkbox"/> E: <input type="checkbox"/> P: <input type="checkbox"/> I: <input type="checkbox"/> L: <input type="checkbox"/> R: <input type="checkbox"/> S: <input type="checkbox"/> T: <input type="checkbox"/> V: <input type="checkbox"/> Z: <input type="checkbox"/> iné: <input style="width: 100px;" type="text"/> % <input style="width: 50px;" type="text"/>					

Dreviny zastúpené na mapovanej ploche			
Vysadené <input type="checkbox"/>	Z náletu <input type="checkbox"/>	Celková pokryvnosť drevín v % <input style="width: 100px;" type="text"/>	
Solitér: <input type="checkbox"/>	Línia: <input type="checkbox"/>	Zhluk: <input type="checkbox"/>	Falanga: <input type="checkbox"/>

Management

Manažment aplikovaný na ploche	
Odstránenie porastu: <input type="checkbox"/>	Naprava vodného režimu: <input type="checkbox"/> Kosenie (frekvencia) <input style="width: 100px;" type="text"/>

Vodný režim	
Odtokový (prameň): <input type="checkbox"/>	Prietočný: <input type="checkbox"/>
Stagnujúci: <input type="checkbox"/>	Záplavový: <input type="checkbox"/>
Neznámy vodný režim: <input type="checkbox"/>	
Vodný zdroj	
Dažďová voda: <input type="checkbox"/>	Podzemná voda: <input type="checkbox"/>
Neznámy vodný zdroj: <input type="checkbox"/>	

Odhad plochy
zakreslenej ako bod
(v metroch
štvorcových):

Measured values

Namerané hodnoty pH, vodivosti a teploty vody			
	pH	Vodivosť	Teplota
meranie číslo 1:	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>
meranie číslo 2:	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>
meranie číslo 3:	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>
meranie číslo 4:	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>
meranie číslo 5:	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>

Water regime

Ohrozenie popisovanej plochy			
Pokles hladiny podzemnej vody: <input type="checkbox"/>	Ťažba rašeliny: <input type="checkbox"/>	Ťažba dreva: <input type="checkbox"/>	Invázia druhov z okolitých plôch: <input type="checkbox"/>
Odvodňovanie (kanály, drenáže) v rámci mapovanej plochy: <input type="checkbox"/>		Prehánanie hospodárskych zvierat: <input type="checkbox"/>	
Odvodňovanie (kanály, drenáže) v okolí mapovanej plochy: <input type="checkbox"/>		Iné ohrozenie: <input style="width: 150px;" type="text"/>	

Pokryvnosti jednotlivých poschodí				
Celková pokryvnosť v % <input style="width: 50px;" type="text"/>	Pokryvnosť E0 <input style="width: 50px;" type="text"/>	z toho rašeliníkov v % <input style="width: 50px;" type="text"/>	E1 <input style="width: 50px;" type="text"/>	E2 <input style="width: 50px;" type="text"/>
			E3 <input style="width: 50px;" type="text"/>	v% <input style="width: 50px;" type="text"/>

Poznámka:

Species List

Záznam druhov					
Názov druhu	Zas	Zn	Názov druhu	Zas	Zn

Experts
data
client
database
GIS layers
bryophytes

INFO

Meno mapovateľa: Marek Gonda Kód mapovateľa: Dátum: 16.7.2007

Kód plochy: 1 Kód mapy: 26-33-09

Názov MJ: Caricion davallianae

Komplex mapovacích jednotiek		
Map Unit		%
Calthion a Molinion		45
Caricion davallianae		55
*		0

Nemapované plochy

D: ☐ E: ☐ P: ☐ I: ☐ L: ☐ R: ☐ S: ☐ T: ☐ V: ☐ Z: ☐ iné: %

Dreviny zastúpené na mapovanej ploche

Vysadené ☐ Z náletu ☒ Celková pokrývnosť drevín v %

Solitér: ☒ Lína: ☐ Zhluk: ☒ Falanga: ☒

Manažment aplikovaný na ploche

Odstraňovanie náletu: ☐ Náprava vodného režimu: ☐ Kosenie (frekvencia): 1krát/Xrokov

Vodný režim		Odhad plochy zakreslenej ako bod (v metroch štvorcových): <input type="text"/>	Namerané hodnoty pH, vodivosti a teploty vody		
Odtokový (prameň): <input checked="" type="checkbox"/>	Prietočný: <input type="checkbox"/>		pH	Vodivosť	Teplota
Stagnujúci: <input type="checkbox"/>	Záplavový: <input type="checkbox"/>		meranie číslo 1: <input type="text"/>	<input type="text"/>	<input type="text"/>
Neznámy vodný režim: <input type="checkbox"/>			meranie číslo 2: <input type="text"/>		
Vodný zdroj			meranie číslo 3: <input type="text"/>		
Dažďová voda: <input type="checkbox"/>	Podzemná voda: <input checked="" type="checkbox"/>		meranie číslo 4: <input type="text"/>		
Neznámy vodný zdroj: <input type="checkbox"/>			meranie číslo 5: <input type="text"/>		

Ohrozenie popisovanej plochy

Pokles hladiny podzemnej vody: ☐ Ťažba rašeliny: ☐ Ťažba dreva: ☐ Invázia druhov z okolitých plôch: ☐

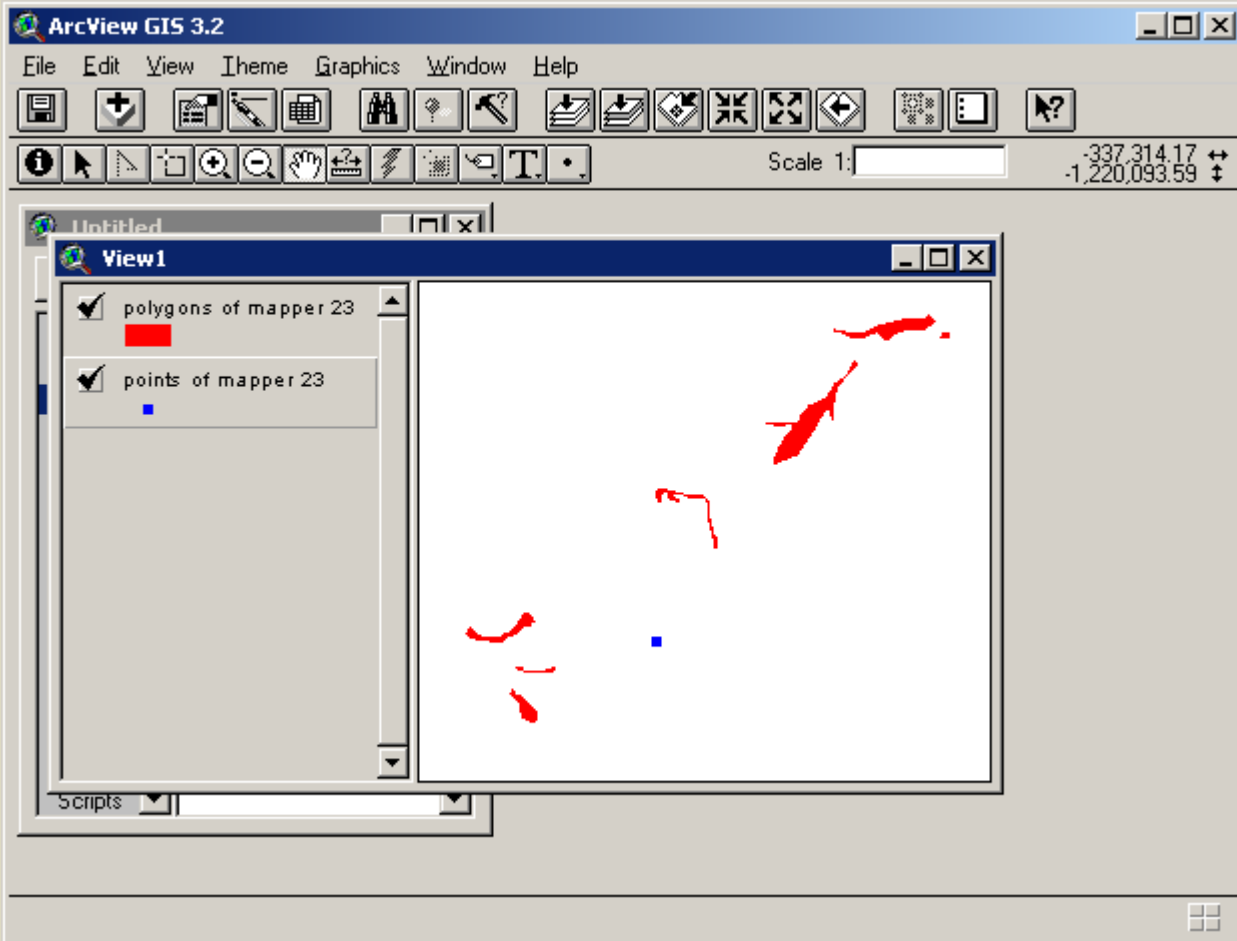
Odvodňovanie (kanály, drenáže) v rámci mapovanej plochy: ☐ Prehánanie hospodárskych zvierat: ☐

Odvodňovanie (kanály, drenáže) v okolí mapovanej plochy: ☐ Iné ohrozenie:

Pokrývnosť jednotlivých poschodí

Celková pokrývnosť v % 95 Pokrývnosť E0 30 z toho rašeliníkov v % 0 E1 85 E2 20 E3 20 v%

Poznámka:



INFO

Meno: Kód mapovateľa:

Kód plochy:

Kód mapy:

Mapovacia jednotka:

Názov druhu:

Record: of 119

ISR

INFORMATION SYSTEM OF PEATLANDS OF SLOVAKIA
Last update: 13. 11. 2009 10:07:44

Number of polygon+point localities:.....	1483=1386+97
Total area of all localities (in hectares):.....	3057.53
Number of vascular plant species+bryofytes:.....	1700=1425+275
Number of vascular plant species+bryofytes records:	71645=63737+7908
Number of mapsheets:	363
Number of mappers:	42
Number of mandays:	499

Database queries:

Select taxon:

Show FORMs

Show GIS

Select habitat:

>

0

Show FORMs

Show GIS

Relationships

INFO

istb_autoid
 istb_rok
 istb_mesiac
 istb_date
MapId_SiteId
 MapperName
 MapperID
 Date
 SiteID
 MapID
 MUName
 Area
 B
 E
 F
 I
 M
 R
 S
 T
 W
 WB
 NonMapElse
 NonMapped_p
 PW
 WW
 W_p
 Soliter
 Linia
 Cluster
 Falanga
 wwwCut

1

SPECIES

istb_id
MapId_SiteId
TaxonName
 istb_taxon_id
 istb_etaz
 Abund
 Sign

∞

pHaConductivity

MapId_SiteId
pH
Conductivity
 Temp
 id

∞

KOMPLEX

MapId_SiteId
ShortMU
 MU_p

∞

tblINFO_Bryo

fIdCode
 fIdMapperName
 fIdMapperID
 fIdSiteID
 fIdMapID
 fIdTaxonName-info
 fIdSign
 zdroj_db



3 selected localities for 'Carex capillaris'

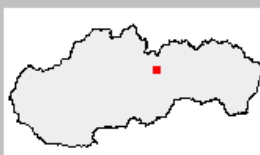
Mapper Name: Daniel Dítě Mapper code: 20 Date: 28. 7. 2009

Site ID: 3 Map ID: teplicka MapID_SiteID: teplicka_3

Estimation of the area, when it is drawn in the map sheet like a point (in sq. meters)

Habitats of the locality

Map Unit	%
▶ Caricion davallianae	35
Calthion a Molinion	30
Sphagno warnstorffiani-Tomenthypnion	35



Not mapped parts of the locality

D: ☐ E: ☐ P: ☐ I: ☐ L: ☒ R: ☐ S: ☐ T: ☐ V: ☐ Z: ☐ iné: % 10

Woods characteristics occurred on the locality

Planted ☐ Succession: ☒ Soliter: ☒ Line: ☐ Cluster: ☒ Falanga: ☐ Abundance in %: 15

Management of the locality

Succession elimination: ☐ Water regime restoration: ☐ Moving (frequency):

Water regime

Outlet (spring): ☒ Flow: ☐
Stagnant: ☐ Flood: ☐
Unknown regime: ☐

Source of water

Water from rain: ☐ Underground water: ☒
Unknown source: ☐

Measured values of pH, conductivity and water temp.

pH Vodivost' Teplota
probe number 1:
probe number 2:
probe number 3:
probe number 4:
probe number 5:

Locality threats

Undersurface water level decrease: ☐ Peat mining: ☐ Tree cutting: ☐ Occurrence of Invasive species:
Draining of the area by channels or drainage pipes into the polygon: ☐ Occurrence of grazing:
Draining of the area by channels or drainage pipes out of the polygon: ☐ Other threat:

Etage's Abundance

Total abundance % 95 Abundance E0 90 mosses from E0 % 35 E1 85 E2 15

Species List

Taxon Name	Etage	Abund	MU
▶ Acetosa pratensis	1	1	CAD
Agrostis canina	1	2	CAD
Alchemilla vulgaris	1	2	CAD
Alnus incana	1	1	CAD
Angelica sylvestris	1	2	CAD
Anthoxanthum odoratum	1	2	CAD
Bistorta major	1	1	CAD
Briza media	1	2	CAD
Calamagrostis varia	1	1	CAD
Calluna vulgaris	1	1	CAD
Carex capillaris	1	1	CAD
Carex davalliana	1	2	CAD
Carex echinata	1	2	CAD
Carex flava	1	2	CAD
Carex nigra	1	2	CAD
Carex panicea	1	2	CAD
Carex paniculata	1	2	CAD
Carex rostrata	1	2	CAD
Cirsium palustre	1	1	CAD
Cirsium rivulare	1	2	CAD
Crepis paludosa	1	2	CAD
Cruciata glabra	1	1	CAD
Dactylorhiza majalis	1	2	CAD
Epilobium palustre	1	1	CAD
Equisetum palustre	1	2	CAD
Eriophorum angustifolium	1	1	CAD
Eriophorum latifolium	1	1	CAD

Record: 1 of 62

Note: X coord: -346140.091 Y coord: -1209555.2883

3 selected localities for 'Carex capillaris'

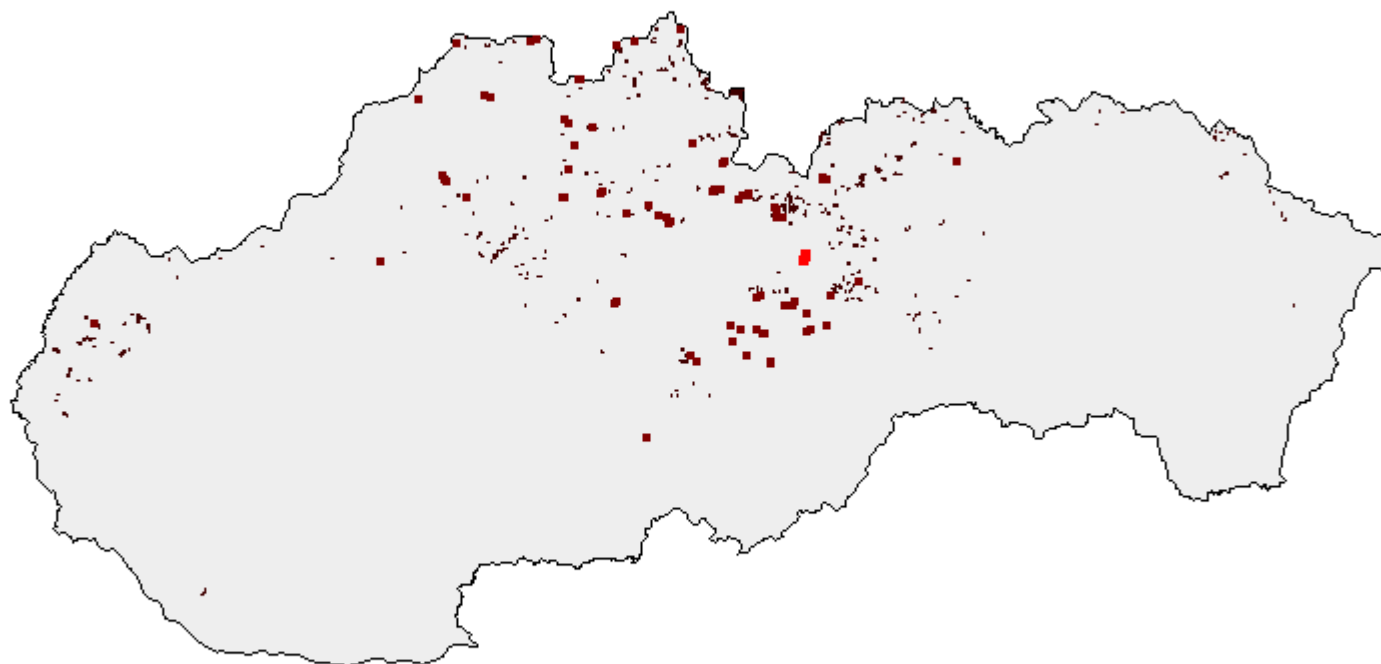
- ☒ **Peatland Sites**
- ☐ Settlements
- ☐ NATURA2000 - SCI
- ☐ NATURA2000 - SPA
- ☐ Protected Areas
- ☐ Orographic units
- ☒ State border

ZOOM - Full

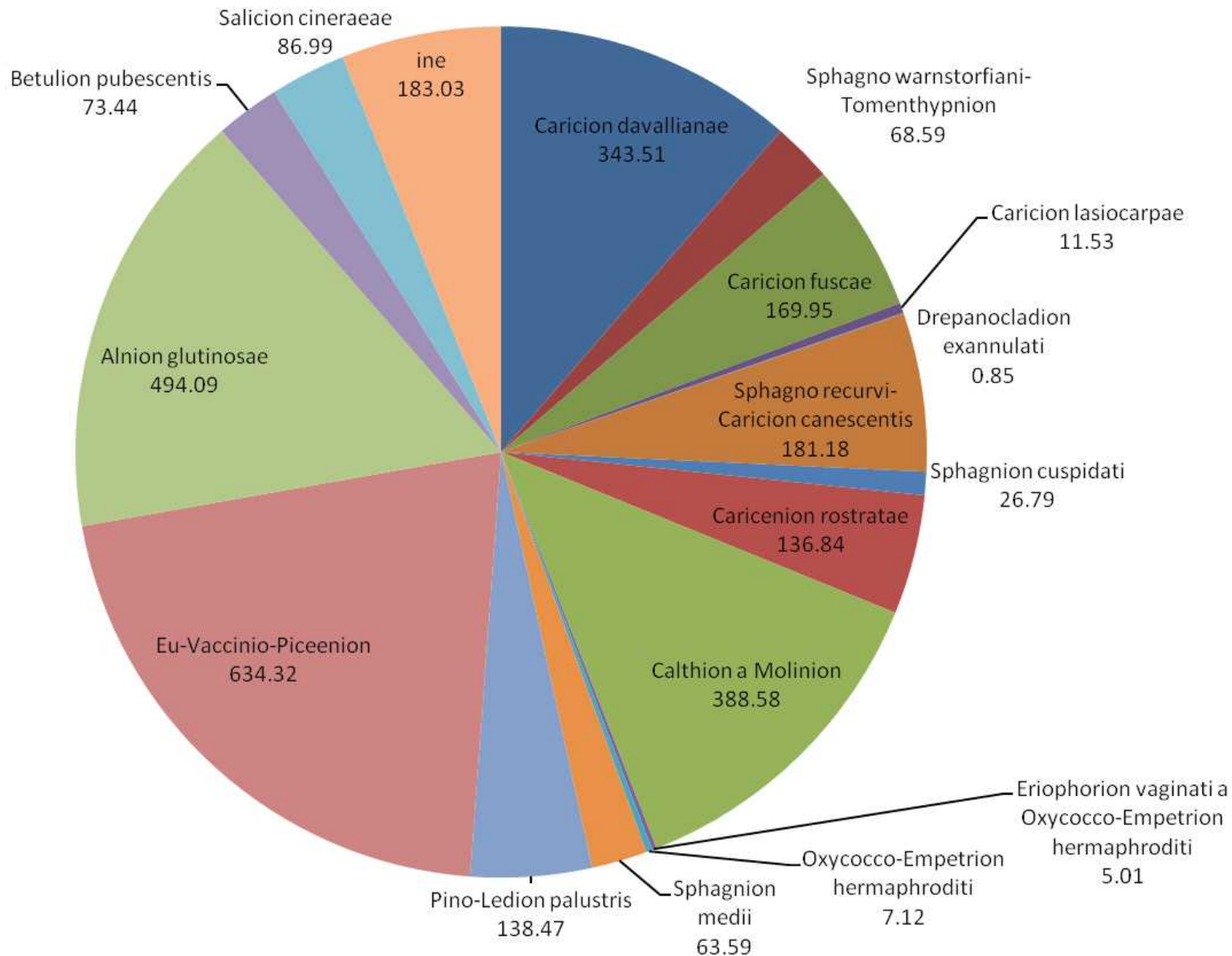
ZoomIn

Select

Pan

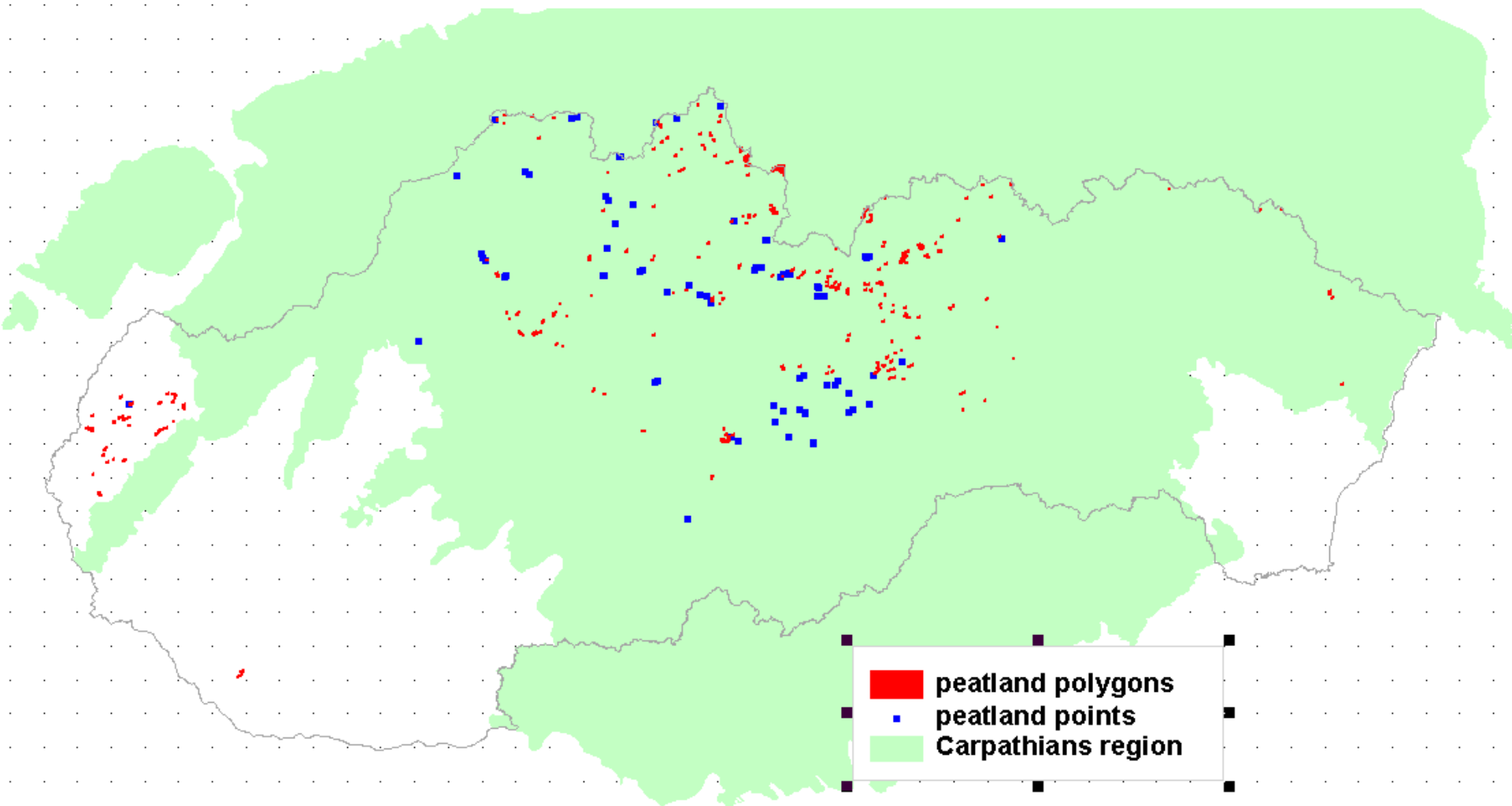


Data presentation



Data presentation

85% of area of all peatland sites are within the Carpathian region



Data evaluation

- Clearing of data for „exotic taxons“
- Analyzing data with methods of multivariable analyzes, followed by clustering methods
- Identification of „indication species“ of peatland types
- Creation of expert system on identification of peatland type and their ecological status
- Analyzing of management data

Practical usage of ISP

- Main source of data of distribution of peatland vascular plant species and bryophytes
- Main source of data for identification of “peatland” sites of NATURA 2000 network
- One of the three major source of data for identification of sites valuable for agro-envi schemes
- All data are part of Information System of Taxons and Biotopes of State Nature Conservancy - used for practical nature protection



Thank you for
your attention