

Habitat-related knowledge: comparison of traditional Hungarian Csángó and scientific knowledge

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Abstract In this paper, we present the characteristics of habitat-related traditional knowledge and the results of its comparison to scientific knowledge in an Eastern Carpathian Csángó (tsangow) community. All local traditional names of plants and habitat types were recorded, and 25 people were interviewed about the habitat preferences of these species. Great similarity was found between the Csángó and the scientific terminology used to describe habitat preferences, and less similarity regarding habitat names. Some habitat names often turned up in everyday conversations, while others seemed to survive only in geographical names. Csángós rarely use habitat names for orientating themselves in the landscape. They apply geographical and property names instead. Data also indicate that most of the habitat-related knowledge of the Csángós is non-verbal.

Keywords: Eastern-Carpathians, traditional ecological knowledge (TEK), ethnoecological classifications, landscape perception

Short title: Comparison of traditional and scientific habitat-related knowledge

1. Introduction

Similarities and differences between local, traditional knowledge and western science; e.g. the discrepancy between scientific and traditional ecological knowledge (TEK) are often discussed (PÉNTEK, SZABÓ 1985, COLORADO 1988, AGRAWAL 1995, HUNTINGDON 2000, RAB 2001, AIKENHEAD, OGAWA 2007). Experience has demonstrated that traditional knowledge tends to be site-specific, long-term, experience-based, holistic and often sacred. Such traditional knowledge is essential for sustainable, adaptive management of our landscapes (FOLKE et al. 1998, BERKES et al. 2000, BERKES, FOLKE 2002, BECKER, GHIMIRE 2003, TENGÖ, BELFRAGE 2004, VOGL et al. 2004, VERLINDEN, DAYOT 2005, DREW, HENNE 2006, RIST, DAHDUH-GUEBAS 2006, MUNKHDALAI et al. 2007, MOLNÁR et al. 2008).

Studies on traditional ecological knowledge have focused on soils (reviewed by BARRERA-BASSOLS, ZINCK 2003), plant and animal species names (e.g. BERLIN 1992, MEDIN, ATRAN 1999), the traditional use of wild plant resources (e.g. ALCORN 1984, DEUR, TURNER 2005), and the holistic relation of nature and humans (e.g. NETTING 1981, NELSON 1983, SUZUKI, KNUDSTON 1992, BERKES 1999). Recently, traditional and scientific habitat classifications have also been compared in details (FLECK, FARDER 2000, SHEPARD et al. 2001, TORRE-CUADROS, ROSS 2003, VERLINDEN, DAYOT 2005, DELANG 2006, HERNANDEZ-STEFANONI et al. 2006, NAIDOO, HILL 2006, HALME, BODMER 2007).

We wanted to conduct the study in our mother tongue, and own culture. Ethnogeobotanical studies among Hungarians, such as collecting traditional plant and habitat names and focusing on the role these play in geographical names, as well as tracing the historical changes of habitat names began relatively early (mostly among communities living in Romania as a minority since the Trianon Treaty in 1920) (e.g. SZABÓ, PÉNTEK 1976, PÉNTEK, SZABÓ 1985, GUB 1996, RAB, 2001). However, traditional knowledge on habitat preferences has not been recorded in Hungarian.

To understand the traditional empirical knowledge of Hungarians on habitat classification, and analyze its relations to scientific knowledge, we carried out a study in an area with the possibly most traditional farming system. We selected a Hungarian Csángó (tsangow) community as a focal group living in Gyimes in the isolated valleys of the Eastern Carpathians, Romania. We addressed three basic questions: (1) what are the terms and criteria Csángó people use to describe habitat preferences (site condition preferences) of wild plant species?; (2) what kind of vegetation or habitat types do they name and distinguish in their landscape?; and (3) what are their criteria for naming and distinguishing these habitat types? The results of our study are presented in this paper.

2. Material and methods

2.1. Study area

Hungarians settled the densely forested Gyimes area (Transylvania, Eastern-Carpathians, Romania) only in the 18th century (at that time the area still belonged to Hungary). By now, the population has reached 15.000 and constitutes a separate ethnographic group called 'gyimesi Csángó' (TANKÓ 2001). People live in three settlements that are located in valleys, and are surrounded by 1500-1800 m high mountains covered with spruce woodlands. The cleared areas are species rich pastures and meadows. Agriculture is dominated by animal husbandry (market products: calf, cheese, milk, and potatoes). No wheat and only a limited amount of fruit are produced. The most important vegetables are potato and corn. Collected wild plant resources are wood, hay, mushrooms, berries and medicinal herbs (all plants are regarded medicinal even if the person does not know any usage). Land is privately owned.

Having been isolated from the main Hungarian population of the west, Csángó people preserved a culture rich in archaic elements (TANKÓ 2001) (e.g. ca. 70 % of the transport is by wooden carts, ca. 80% of the food is self-

produced, only ca. 30 % of the households have a bathroom, but 99 % have a television, and only ca. 2 % of the clothing is self-made; Csángó people spend about 210 days annually outdoor in the woodlands and on the meadows and pastures). Since Csángó people still depend chiefly on the biomass production of the landscape, their knowledge on plants, animals and the landscape is astonishingly wide (KÓCZIÁN et al. 1975, 1976, RAB et al. 1998, ILYÉS 2000, 2007, PÁLFALVI 2001).

The zonal woodland type of the area is *Hieracio rotundati-Piceetum* Pawl. et Br.-Bl. 39. At lower elevations and on southern slopes *Symphyto cordati-Fagetum* Vida 59 and *Pulmonario rubrae-Fagetum* (Soó 64) Täuber 87 occur, whereas near mountain tops *Campanulo abietinae-Juniperetum* Simon 66 predominates. On the clear-cut areas, *Rubetum idaei* Pfeiff. 36 em. Oberd. 73 and *Sambucetum racemosae* (Noirf. 49) Oberd. 73 develop. The secondary meadows mainly belong to *Festuco rubrae-Agrostietum capillaris* Horv. 51 and *Anthoxantho-Agrostietum capillaris* Sillinger 33, and on more nutrient poor soils to *Violo declinatae-Nardetum* Simon 66. Along creeks *Telekio speciosae-Alnetum incanae* Coldea (86) 90, *Salici purpureae-Myricarietum* Moor. 58, and *Telekio-Petasitetum hybridi* (Morariu 67) Resm. et Rațiu 74 occur, whereas around flushes *Carici flavae-Eriophoretum latifolii* Soó 44, *Glycerietum plicatae* (Kulcz. 28) Oberd. 54 is typical. Overgrazed areas are dominated by *Senecioni-Rumicetum alpinii* Horv. 49. em. Coldea (86) 90 and *Veratretum albi* Pușcaru et al. 56 (see also PÁLFALVI 2001, KOVÁCS 2001, NECHITA 2003).

2.2. Data collection

We started our preliminary surveys among Csángó people in Gyimesközéplek, Lunca de Jos in 1999. We joined in their everyday occupations (around the house, mowing the meadows, wood cutting in the spruce woodlands, pasturing up in the mountains). From 2002 onwards, we prepared detailed indoor and outdoor interviews followed by open-ended and semi-directed interviews. After 2007, data collection was even more structured by using questionnaires.

We have recorded the names of all the wild plant species used by the Csángó people. Based on our floristic and phytosociological data (90 relevés), around 420 wild plant species occur in the landscape. Csángó people denominate about 245 of them with approximately 147 names (some species have the same name). About 90% of the names have the same meaning for all members of the community. On average, one person knows about 80% of the names (MOLNÁR, BABAI unpubl.).

To obtain data on the Csángós' knowledge on habitat preference, we asked 25 persons the following question: "In what sort of places/Under what site conditions does species ... occur?" All plant species were included in the questionnaire. Under "habitat preference", we meant the biotic and abiotic needs of plant species, e.g. soil quality, wetness, stone content, and light demand; whereas under "habitat type" we meant the vegetation types of the landscape and other similar biotopes, like gardens, road verges, creeks. Additionally, we have collected further names used for habitat and vegetation types during our excursions with the interviewees and by indoor interviews. The geographical name register of ILYÉS (1998) also was checked for further traditional habitat names. Frequency of use of habitat names was estimated based on our own experience, although we also have asked two Csángó people about how often they use these names.

2.3. Data analysis

All the phrases used by the Csángós when describing habitat preferences were compiled and sorted into 12 groups. These groups were set up following the criteria used by CASAGRANDE 2004, VERLINDEN, DAYOT (2005), DELANG (2006), HERNANDEZ-STEFANONI et al. (2006), and HALME, BODMER (2007) and our own field experience. The established groups were as follows:

- Phrases based on vegetation formation containing the words 'grassland', 'woodland', 'bush' or 'tree';
- Phrases based on a vegetation type name: where the habitat of a species was identified by mentioning the vegetation type it usually occurs;
- Phrases based on species groups such as contain the name of a plant species group (e.g. broad-leaved woodlands, moss covered areas);
- Phrases based on species names;
- Phrases based on site condition: where phrases refer to different soil conditions, exposure, etc.;
- Phrases based on the vegetation structure (e.g. gap, dense, fringe);
- Phrases based on the landscape type (e.g. out in the mountains, at higher elevation or referring to a large woodland or grassland area);
- Phrases based on geographical names;
- Phrases based on successional stage (e.g. abandoned or clear-cut areas where the main feature of vegetation is its fast change);
- Phrases based on land-use (e.g. meadow, pasture, fertilized, trampled, or places not used at all);
- Phrases based on the naturalness of the habitat referring to a natural or degraded state;
- Other phrases: any other phrase.

Phrases consisting of more than one word were assigned to more. Since the meaning of a word often is not straightforward, some subjectivity in the assignment was inevitable.

Scientific phrases (used by practising scientists) were collected from ten Hungarian botanists. They provided habitat preference data for 80-80 species of the landscapes they work in (Great Hungarian Plain and Hungarian mountains). The reason for excluding botanists working in the Carpathians was that the terminology they use is strongly influenced by local ethnobotanical and ethnoecological knowledge (as ours is influenced, too). The phrases of the ten botanists and ten randomly chosen Csángó interweaves were compared quantitatively (percentage of phrases according to the groups).

All the habitat type names were assigned to one or two relevant groups (see above). One more group was added to the list: General phrases (XY-community, XY-vegetation). Scientific "habitat type" names were obtained from different sources for the following reasons: (1) the phytosociological system (BORHIDI, SÁNTA 1999) is hierarchical (we used all the four hierarchy levels), (2) there are other elaborated systems of habitat classification for Hungary (the so-called Á-NÉR system), which cover all natural and man-made habitats (FEKETE et al. 1997, BÖLÖNI et al. 2003, 2007), (3) a list of vegetation types that seems to be independent of the traditional terminology is available for another Carpathian area (Kelemen-havasok, HÖHN 1998) close to the area studied. We analyzed only the Hungarian scientific names, as they do not have as strict nomenclatural rules as Latin nomenclature does. Again, habitat names consisting of more than one word were assigned to more groups (e.g. open rock grasslands: 'open' is a structure, 'rock' refers to site (soil) conditions, and 'grassland' is a formation type).

3. Results

3.1 Phrases used by Csángós to describe habitat preferences

Habitat preference of wild plant species was mostly described by referring to (1) site conditions (richness in nutrients, amount of stone and water in the soil, slope exposure; e.g. 'only on very nutrient rich sites'), (2) formation type (e.g. 'in woodlands', 'among grasses'), (3) land-use (e.g. 'in trampled gardens'), (4) succession generated by former land-use (e.g. 'on the place of former animal pens', 'on trampled ground, but only if not trampled any more'), (5) landscape type (e.g. 'high up in the mountains') (Table 1). Habitat preferences of other species were rarely used as a reference (e.g. 'like *Nardus*'). Similarly, geographical names, structure of the vegetation ('in woodlands with gaps'), vegetation type (only spruce woodlands were mentioned) or species group (mosses) were scarcely applied. In case of generalist species, the expressions 'everywhere', 'anywhere' were often used, sometimes with restrictive clauses ('occurs everywhere, but only outside of woodlands'). Csángó people never referred to the naturalness of a habitat. In some cases, the description was surprisingly accurate (e.g. *Eriophorum* 'grows higher in the mountains, in small depressions on slopes with spring-like water, where the soil is wet and 'mobile'). The quantitative data showed that 46 % of the phrases referred to site conditions and 28 % to land-use, while the proportion of phrases referring to formation, landscape type or succession was low (Fig. 1).

Table 1. Phrases used by the 25 Csángó people interviewed to describe habitat preferences of wild plant species

Type of phrases	All collected phrases (excluding only close synonyms)
Formation	in bushy places, in woodlands, in grasslands, among grasses, among trees
Vegetation type	in 'spruce woodlands'
Species group	in densely moss covered areas, in broad-leaved woodlands
Species name	together with beech, among <i>Urtica</i> , in the same places as <i>Salix</i> , where <i>Juniperus</i> grows, on spruce trees, where there is no <i>Nardus</i> , in more shady places than <i>Sambucus</i>
Site conditions	in loamy places, in shadow, in dark places, in the place with "hard" soil (dry, fixed), on formerly flooded, dried-out places, on nutrient-poor/rich places, around dung, on rock piles, on rocks, on rocky soils, on soils with gravel, on river banks (with gravel), on eroded, barren slopes along creeks, in marshy places, in wet places, where water floods wide places, in muddy places, in flushes, in the head of flushes, in small depressions on slopes with spring-like water, along the small creeks under flushes, along creeks (that never freeze), on sunny slopes, along water courses, on northern slopes
Vegetation structure	in woodlands with gaps, in open woodlands with grasses, in dense woodlands, in woodlands without grasses to graze, in fringes of beech woodlands, in woodland fringes facing clear cuts, under trees or bushes, near trunks, close to the roots of <i>Salix</i> trees
Landscape type	on mountain slopes, on high mountains, in places out in the mountains, at lower elevation (i.e. in the valleys), from foothills up to "halfway" up (i.e. not on the top of the mountains), in "big" woodlands, on "big" hay meadows, in areas with small humps
Geography	on the top of "Bárányhegy"
Succession	on <i>Fragaria</i> -type/ <i>Rubus idaeus</i> -type clear-cut areas, on abandoned fields, on field margins, on abandoned gardens, on the former place of houses, on the former place of animal pens, where twigs were left after felling, in burned places
Land-use	in settlements, near houses, on arable fields, on fertilized places, in meadows where the aftermath is grazed, among aftermath, on hay meadows, on well-managed meadows, along fences, on pastures, around animal watering places, in planted <i>Pinus sylvestris</i> woodlands, on grassy slopes between field strips, in places not trampled, in trampled places, in the trampled, grassy gardens, on trampled ground but only if not trampled any more, in cemeteries, along roads and ditches, in places with rubbish, in places, not used by humans, in neglected places where it is difficult to walk through, in disturbed places, planted only, where people allow it to grow
Habitat naturalness	-
Other	on ant nests, everywhere, anywhere, doesn't grow in the wild

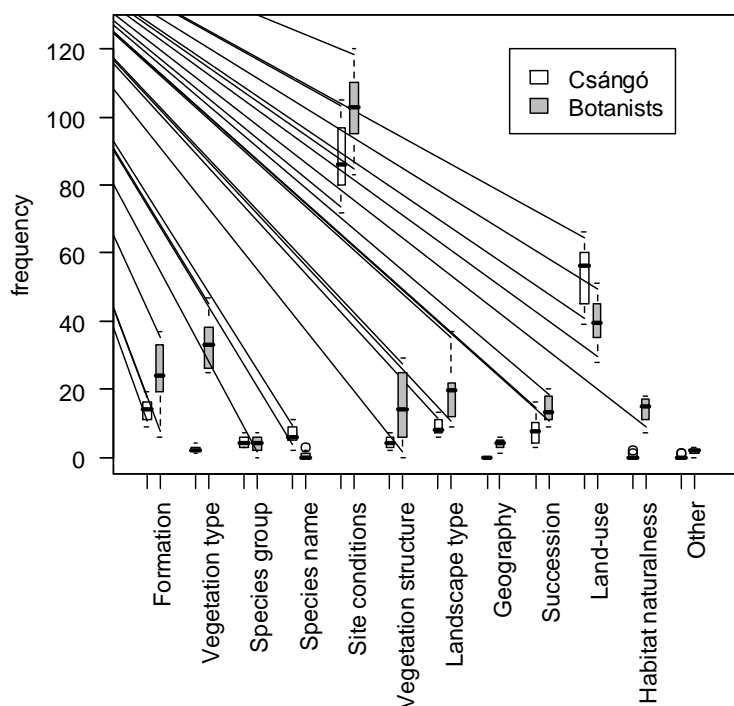


Figure 1. Quantitative comparison of phrases used by botanists and Csángó people to describe habitat preferences of wild plant species

3.2 Phrases used by botanists to describe habitat preferences

Besides phrases referring to land-use, site conditions and formation, botanists often applied vegetation types to describe habitat preferences (e.g. ‘in loess steppe grasslands’) (Table 2). They also often used geographical phrases (e.g. ‘a Submediterranean species’, ‘in the Lake Baláta’) or successional data (e.g. ‘in grasslands established on former woodland sites’). They also preferred detailed and accurate (thus longer) phrases (e.g. ‘in open dry oak woodlands’). In the quantitative analyses (Fig. 1), 37 % of the phrases referred to site conditions, 15 % to land-use, 12 % to vegetation type, while other phrases were more rarely used (landscape type, vegetation structure, succession, and naturalness).

Table 2. Examples of phrases used by the ten botanists to describe habitat preferences of wild plant species

Type of phrases	Examples of phrases
Formation	in grasslands, in shrub, in woodlands
Vegetation type	in ‘dolomite rock grasslands’, in ‘loess steppe grasslands’, in marshes, in ‘rock scrub’, in ‘open dry oak woodlands’, in ‘ravine woodlands’, in ‘mountain grasslands’
Species group	in oak woodlands, in softwood forests
Species name	occurs together with beech, as <i>Hottonia</i>
Site conditions	on dry, warm slopes, on alkali mud, on dolomite, in rock crevices, on northern rocky slopes, in nitrogen-rich damp forests, close to water in shadow, in flushes, in slowly moving, warm waters
Vegetation structure	on woodland openings, in woodland fringes, in shortgrass steppes, in flooded meadows with old trees (wooded-meadow)
Landscape type	in the lowlands, in the <i>Quercus cerris-petraea</i> zone, in damp valleys, in oxbow lakes
Geography	in Southern-Transdanubia, a Submediterranean species, an Illyrian species, only in Lake Baláta, above 800 meters a.s.l.
Succession	in woodland originated grasslands, on bushy sand dunes, on pioneer surfaces, on clear cuts, on abandoned fields, on the former place of sheep pens
Land-use	in overgrazed pastures, in planted <i>Robinia</i> forests, in traditionally used arable fields, in rice fields, around farms, in settlements, in trampled gardens, on places heavily disturbed by wild game, on road verges, along ditches, planted, where it is "allowed" to grow
Habitat naturalness	in secondary alkali grasslands, in degraded dry grasslands
Other	it is a woodland generalist species, in nearly all open habitat, everywhere, impossible to tell, it has no characteristic habitat, everywhere outside woodlands, a randomly occurring species, "as it happens"

3.3 Names of habitat types used by the Csángós

A surprisingly high number (98) of habitat type names was collected (see Appendix). The main criterion of naming a habitat type was the abundance of certain plant species. These could be trees (*Picea*, *Fagus*), wild fruits

(*Rubus idaeus*, *Fragaria*, *Vaccinium*), medicinal plants (*Gentiana lutea*), wetland species (*Carex*), pasture weeds (*Juniperus*, *Nardus*, *Rumex*), plants of pastures providing water (dew) during summer (*Alchemilla*), or sometimes the dominants of meadows ('imola' = tall grasses). Phrases often referred to land-use ('pasture', 'meadow', 'road verge'), formation (e.g. 'woodland'), site conditions (e.g. 'stone', 'flush'), vegetation structure (e.g. 'dense woodland'), and species groups ('mosses', 'broad-leaved'). Expressions based on landscape type or vegetation type were rarely used. We found no habitat-type names containing geographical phrases and general phrases (like 'community'). Csángó people never referred to the naturalness of the habitats. Successional stages were only distinguished in spruce woodlands: the stage in the first years (after clear cut) is called 'vész', the dense young stand of spruce is called 'bezseny' and sometimes later 'cseplesz', the young forest is called 'karós erdő', and the old is named 'kinőtt erdő'. On pastures, the first successional stage of spruce woodlands is called 'apróbojtos'.

In everyday conversations, 9% of the Csángó habitat names was used very often, 22% often, 34 % less often, and 22 % only rarely. Of the names, 11% survived only as a geographical name.

In case of meadows, 'habitat type like' names often referred not to the habitat itself, but the quality of the hay (hay with *Helleborus*, *Trifolium*, *Alchemilla*, *Carlina acaulis*, *Salvia*, *Tragopogon*, *Rhinanthus*, *Hypericum*, *Laser*, *Cirsium/Carduus*, tall or broad-leaved grasses). These names were only included in the habitat type list, if Csángós used them also as a habitat name.

Other, usually broader habitat-type names actually referred to habitat mosaics (e.g. 'out in the mountains', 'top of a mountain', 'valley', 'at the head/base of a valley', 'on the slopes of the mountains'); and thus they were omitted from the habitat type list.

3.4 Scientific habitat names

In case of phytosociological names (BORHIDI, SÁNTA 1999, Fig. 2), frequency of species-based phrases increased from vegetation classes to plant associations in the hierarchy of phytosociological categories (1, 5, 16, 35%), while no similar tendency was observed in other types of the phrases (especially if the data were standardized by ignoring species-based names). However, the proportion of formation-based names slightly decreased, and that of names referring to vegetation structure increased in a similar way. In case of Á-NÉR habitat type names (FEKETE et al. 1997, BÖLÖNI et al. 2003, 2007) – compared to the phytosociological names – expressions based on vegetation structure (e.g. 'open', 'tussock'), landscape-type (e.g. 'mountain', 'lowland'), successional stage (e.g. 'pioneer', 'increasing tree cover'), land-use (e.g. 'meadow', 'planted'), and naturalness (e.g. 'natural', 'characterless') were applied more, and geographical names and general phrases less frequently. Species-based names were quite rare. In the habitat classification system of the Kelemen-havasok area (HÖHN 1998) – compared to phytosociological names – the proportion of species-based names was similarly high, but the proportion of names based on vegetation-type and species group, and names related to geography was low. Additionally, phrases referring to structure and landscape type were rather frequent in this classification scheme compared to Á-NÉR habitat names. Examples of phrases used in Hungarian scientific habitat type names are listed in Table 3.

Table 3. A short selected list of phrases used in habitat type names in scientific habitat classifications (for more expressions see the referred publications)

Phrase types	Examples of phrases
General	-community, -vegetation
Formation	woodland, grassland, shrub, tall-herb, steppe
Vegetation type	"sessile oak-woodland", " <i>Robinia</i> -woodland", "alkali steppe", "raised bog"
Species group	hardwood, <i>Sphagnum</i> , large sedge, endemic, bushy <i>Salix</i>
Species name	beech (woodland), <i>Puccinellia</i> (sward)
Site conditions	fen, alkali, rock, floodplain, flush, loess cliff
Vegetation structure	tussock, open, closed, mixed, treeless, fringe, mosaic
Landscape type	at foothills, mountain, lowland
Geography	sub-mediterranean, continental
Succession	pioneer, transitional, increasing tree cover
Land-use	meadow, pasture, orchard, planted, extensively used
Habitat naturalness	natural, characterless, weedy

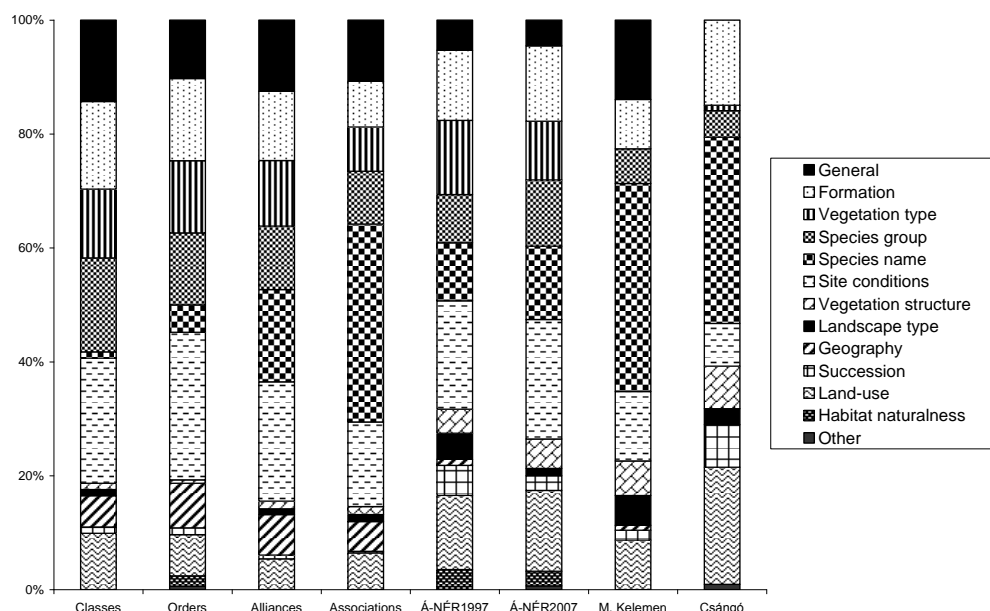


Figure 2. Proportion of phrases according to groups in scientific and Csángó habitat classifications (in %)

4. Discussion

4.1. Phrases used to describe habitat and site condition preferences of wild plant species

Great similarity between traditional and scientific knowledge we found in our study often has been documented (e.g. COLORADO 1988, AGRAWAL 1995, HUNTINGDON 2000). In both, scientific and Csángó traditional knowledge most expressions refer to site conditions (wetness, nutrient availability, stone content), and land-use. Botanists, however, frequently use complex expressions, names based on vegetation type and structure, geographical expressions, categories of the phytosociological system (e.g. species living in beech woodlands are called *Fagetalia* species), and refer to the state of naturalness. Naturally, Csángó people do not use such phrases. Also, they rarely apply expressions based on vegetation type (like ‘in spruce woodland’).

For Csángó people many wild plant species have great economic importance, since the quality of the hay depends mostly on the species composition of the grasslands, and the vitality of the dominant species. In contrast, NELSON (1983) found only some important species in the Koyukon nation living in the coniferous forests of Canada.

Generalist and specialist species are distinguished, but the grouping of the species is unconscious (there are no special names for the groups). They do not set up groups for species of natural and man-made habitats, either. Though the Csángós’ knowledge on the habitat preferences of wild plants is astonishingly accurate (less than 15% of the answers were botanically ‘incorrect’, BABAI, MOLNÁR unpubl., cf. ALCORN 1984), most of this knowledge is non-verbal. Csángó people seldom use these phrases in their everyday life. We often felt during our work that this knowledge was put into words for the first time to answer our questions (‘Wait! I am thinking how to say it precisely.’).

A significant part of scientific botanical knowledge (though definitely not all) relies upon visible patterns (principally the occurrence and cover data of species). Not only botanists gather knowledge in this way. Csángó people who spend most of their lives in nature behave similarly (cf. MOLNÁR et al. 2008).

4.2. Names of habitat types

Habitat classification of the Csángó people is based on many different criteria, even though only one or two of them are used for one habitat type (contrary to VERLINDEN and DAYOT (2005)). The Csángó system does not focus on species composition. It refers to site conditions (wetland and stony habitats) in case of edaphic habitat types, and dominant species or land-use (beech woodland, meadow) in case of habitat types with deeper soils. Successional stages are distinguished only in spruce woodlands. Species after which habitats are denoted are generally dominant species and are of economic importance (cf. PÉNTEK, SZABÓ 1985, RAB 2001). Unexpectedly, dominant species of meadows and pastures are often indirectly used to designate habitat types. They are mainly used to describe the quality of the hay or grass. We have found no habitat type name containing two species names as usual in the phytosociological nomenclature (see BORHIDI, SÁNTA 1999).

According to our observations, knowledge of the habitat type names is homogenous across the Csángó community, in contrast to the observations of BOSTER (1985). Habitat type names in the nearby Gyergyó-basin (RAB 2001) have also much in common with the Csángó names. The habitat (and soil) names of other regions in Transylvania (100-300 km from the Csángó territory), however, differ considerably (GUB 1996, 2003, PÉNTEK,

SZABÓ 1985). Transylvanian habitat names, as emphasized by PÉNTEK, SZABÓ (1985) seem to originate locally or regionally, and hence are likely to be independent of scientific names.

Criteria mentioned in other studies (Peru: species, floods, physiognomy, soil (HALME, BODMER 2007), Namibia: soil, vegetation, landscape type (VERLINDEN, DAYOT 2005), Thailand: growth conditions, vegetation, soil, slope (DELANG 2006), Mexico: tree height, moisture, soil, species (CASAGRANDE 2004), Mexico: successional stages (HERNANDEZ-STEFANONI et al. 2006)) were all found among the Csángós.

Proportion of criteria used by Csángó people to denominate habitat types is most similar to that of the botanical habitat list of the nearby Kelemen-havasok area. Csángós, however, use more phrases related to landscape dynamics (land-use and succession). Compared to the two Á-NÉR habitat lists, Csángós apply species-based expressions more, and vegetation type-based names less frequently, while general phrases and those referring to naturalness are missing in Gyimes. The Csángó classification most resembles the plant association level of the four phytosociological hierarchy levels. However, this resemblance is discernible only in cases where habitat types are named after species names, species groups and site conditions. Otherwise, the differences are striking.

The Csángó habitat classification is roughly as detailed as scientific habitat classifications. RAB (2001) and PÉNTEK, SZABÓ (1985) found similar agreement in other regions in Transylvania. In Peru, however, HALME, BODMER (2007) have found that the ethnecological classification is more detailed, while JOHNSON (2000) found the opposite in Canada. Comparing traditional and scientific classifications is not an easy task, since it highly depends on the intensity of botanical research in the region, and the depth (and accuracy) of the reconstruction of traditional classification. As emphasized above, the traditional knowledge on habitat preference and habitat type cannot be regarded as lacking, though it is partly non-verbal.

Compared to the scientific classification, the Csángó system is only less detailed in the case of fen communities (*Eriophorum*, *Glyceria plicata*, *Carex* spp. dominated communities) and rocky vegetation. For the Csángós, fen communities are rather similar in terms of their economic use, while the rocky vegetation is rarely used and visited, since they occur high in the mountains. Phenotypic and ecological salience (sensu HUNN 1999) seem to be the most important factors in the denomination process. Similarly to our experiences, PÉNTEK and SZABÓ (1985) also found fewer grassland habitat type names than expected (Kalotaszeg, Transylvania). We argue that in case of grasslands, it is not the dominant species of the habitat itself, but the quality of hay that is used to describe an area (e.g. in Orogyik mountain the hay contains too much *Carlina acaulis*, i.e. the hay is too spiny).

Some of the habitat names are quite often used in everyday conversations with the relevant meaning of the habitats themselves (like 'spruce woodland', 'pasture', '*Nardus* grassland'). Others are much less often used (e.g. 'wild place', 'dense woodland'), while the rest either seems to refer to mere localities (e.g. 'Danciás', a locality of an important medicinal herb, *Gentiana lutea*), or are only relict designations survived as geographical names ('Tiszás', a place where *Taxus baccata* once grew). In many cases, it is not the habitat type names, but the site conditions (e.g. 'nutrient rich place', 'stony place') that are used to describe an area.

4.3. Landscape perception of Csángó people

Csángó people seldom use names of habitat types for orientation in the landscape (the most often used terms are 'woodland', 'pasture', 'potato field', and 'river bank'). They mostly use geographical names or the name of the owner of a property ('Maria's pasture in Jávárdi valley'). Csángós often orientate themselves in the landscape using expressions such as closer or farther from the stream ('in' and 'out'), and up and down in the valleys ('up' and 'down') similarly to the Gitksan people living in similar mountainous landscape with coniferous woodlands in NW Canada (JOHNSON 2000). When they mention a habitat name, they do not use the phrases in a general meaning, but – as JOHNSON (2000) pointed out – they speak about a concrete location such as a parcel or an area in the landscape and about their current or possible use.

To understand some aspects of the landscape perception of the Csángós, we raised e.g. the question of 'what species occur in habitat A?'. People very often listed no or only a few species, though if we asked what places species A prefers, they answered: 'habitat X'. We presume that they do not have compiled species lists in their mind as botanists do. They know many occurrences of useful plants by their locality and not by habitat types. In contrast to botanists, they do not have an imaginary vegetation map in their mind either. They were born and grown up within a relatively small area (ca. 100 km²), and know the history, the owners and the economic quality of nearly all the parcels, but not their species composition or the naturalness, which is out of importance to them. The value of the landscape is not compared to that of other landscapes, but to the former state of their own landscape (e.g. 'woodland cover decreases', '*Nardus* is fluctuating', '*Telekia speciosa* is spreading'). The landscape is their home and the most important natural resource for them. It is the property of the Csángó people.

Though Csángós live a deeply Christian (Catholic) life, and regard everything as given by God and therefore must not be wasted, we did not find such a sacred connection to the landscape (BABAI, MOLNÁR unpubl.) as that found among the Koyukon, Cree and Gitksan people (NELSON 1983, BERKES 1999, JOHNSON 2000). Taboos regulating vegetation use (cf. COLDING, FOLKE 2001) were not identified, either. The collections of the Csángó beliefs and legends (ca. 2000 stories, MAGYAR 2003, ANTAL 2004) do not contain such stories, either. One explanation could be the very strict ownership system. In Csángó territories, nearly all square meters of land are

privately owned by the members of the same family often ‘since time immemorial’, so the consequences of over- or improper use are well known (MOLNÁR, BABAI unpubl.). Only water of rivers and springs, gravel, mushrooms, berries, medicinal herbs, and resin belong to the common property of the community. Though the landscape is similar to other mountainous boreal landscapes with easily observable watersheds, we found no sign of landscape management at the scale of ecosystems or watersheds (sensu BERKES et al. 1998).

We hope that our studies will contribute to the adaptive management of this beautiful landscape, and Csángó people will find their way of living under the new constraints of the European Union. SZABÓ and PÉNTEK (1976) emphasized that the ethnobotanical knowledge is degrading much faster than natural vegetation itself. It is also our task to protect and maintain this knowledge for the future.

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Appendix. Habitat type names used by Csángó people

First the local Csángó terms used for a habitat, followed by frequency of use: **** very often used, *** often used, ** regularly used, * rarely used, GN: used only as a geographical name; than criteria: F: Formation, VT: Vegetation type-based, S: Species-based, SG: Species-group-based, SC: Site condition-based, STR: Vegetation structure-based, LT: Landscape type-based, SUC: Succession-based, LU: Land-use-based, O: Other; Word-to-word translation of the habitat name (? means: word-to-word translation into English is impossible) / Approximate English equivalent of the habitat name

Woodlands and related habitat types

- Erdő**** F Woodland/ Woodland
- Fenyőerdő, fenyveserdő**** F, VT Spruce woodland /Spruce woodland
- Bükkös, bükkfás, bikkfás, bükkerdő, bükkfaerdő*** S, F Beech woodland /Beech woodland
- Leveles erdő* SG, F Woodland with leaves /Broad-leaved woodland (beech, poplar etc.)
- Vad hely* LU* Wild place /Where vegetation is not controlled by humans (e.g. woodland interiors in narrow valleys)
- Aszálás** LU Desiccated /An area where spruce tress were ring-barked
- Irtás** LU Clearing /Cleared area, often turned into a grassland
- Perzselés* LU Singeing /A singed area, usually *Nardus* or *Juniperus* is singed
- Égés, égetés** LU Burning /A burnt area, usually woodland
- Erdőszél** STR Forest fringe /Forest fringe
- Vágtér*** LU Clear cut area /Clear cut area
- Csutakos, csutak** O With stumps /A cleared area with stumps
- Vész, veszes** LU Dangerous /Clear cut area (usually with twigs all over)
- Mánás, málnás, mánavész, málnavész*** S, SUC Having *Rubus idaeus* /An area with *Rubus idaeus* on clear cuts
- Epervész, eper-vágtér* S, SUC Having *Fragaria* /An area with *Fragaria* on clear cuts
- Rakottás* S Having *Salix caprea* /An area with *Salix caprea*
- Apróbojtos** SUC, STR Young tassels /Young spruce woodland (height less than 1 m)
- Bezseny, bezsenyes erdő*** SUC, STR ? /Dense, young spruce woodland
- Cseplesz** SUC, STR Something small? /Less dense, a bit older (?) spruce woodland than 'bezseny'
- Bokros** F Bushy place /An area covered with bushes, often only by one species
- Bozót** F Thicket, scrub /Bushy area, but more diverse, often also small trees (similar to 'bezseny')
- Bojtos*** STR Tassels /Very sparse spruce stand
- Fiatl erdő*** SUC, F Young woodland /Young spruce woodland (cca. 10 year old)
- Karós erdő** SUC, F Staked woodland /Woodland with stake sized trees (7-21 cm in diameter)
- Szelhás erdő, szelha erdő, szálás erdő** SUC, F ? /Woodland with straight trees (good for houses)
- Kinőtt erdő** SUC, F Adult woodland /Old woodland (above 70-100 years)
- Nagy erdő** STR, F Large woodland /Old and large woodland
- Gyéres erdő** STR, F Sparse woodland /Thinly-grown or partly cleared woodland
- Tömör erdő** STR, F Dense woodland /Dense woodland
- Lúcsos, lúcsfás** S Having *Pinus sylvestris* /An area with *Pinus sylvestris*
- Tiszás (GN) S Having *Taxus* /An area with *Taxus*
- Nyírfás, nyírfaerdő, nyires* S, F Having *Betula* /An area with *Betula*
- Nyárfás* S Having *Populus* /An area with *Populus*
- Cserfás, cserés* S, F Having *Alnus* /An area with *Alnus*
- Jáhoros (GN) S Having *Acer* /An area with *Acer*
- Kőrösös (GN) S Having *Fraxinus* /An area with *Fraxinus*
- Füzes, ficfás* S Having *Salix* /An area with *Salix* trees

Borsikás** S Having *Juniperus* /An area with *Juniperus*
 Magyarós* S Having *Corylus* /An area with *Corylus*
 Kórusos, kórusfás* S Having *Sorbus aucuparia* /An area having *Sorbus aucuparia*
 Csigolyás** S Having *Salix* /An area with bushy *Salix* species
 Fügés (GN) S Having *Ribes* /An area with *Ribes*
 Kokojzás** S Having *Vaccinium* /An area with *Vaccinium*
 Menisorás* S Having *Vaccinium vitis-idaea* /An area with *Vaccinium vitis-idaea*
 Fehérkokojzás, takonykokojzás* S Having *Vaccinium uliginosum* /An area with *Vaccinium uliginosum*
 Bojzás (GN) S Having *Sambucus* /An area with *Sambucus*
 Gyüngyemény(es) (GN) S Having *Spiraea* /An area with *Spiraea*
 Hecsellis* S Having *Rosa* /An area with *Rosa*

Grasslands and related habitat types

Mező*** F ? /Grassland in open, relatively flat landscape
 Puszta*** F Bare /Mountain top without woodlands (mostly pastures), often not inhabited, large opening in a woodland
 Lik** STR Hole /A smaller opening in a woodland
 Pázsit, pázsint, pást, pástos hely*** F Lawn /Area covered with grasses, often on a layer of gravel
 Kaszáló**** LU Hay meadow /Hay meadow
 Bennvaló kaszáló*** LT, LU Inner meadow /Meadow close to settlement, regularly fertilized
 Künnvaló kaszáló*** LT, LU Outer meadow /Meadow far from settlements
 Hegyi kaszáló*** LT, LU Meadow in the mountains /Meadow in the mountains
 Erdőközeli, erdőközötti kaszáló** LT, LU Meadows close/among woodlands /Meadows close/among woodlands
 Imolás kaszáló* SG, LU Hay meadow with tall grasses /Fertilized hay meadow with the dominance of *Trisetum* and other tall grasses
 Vadlóherés (kaszáló)** SG, LU Hay meadow with wild *Trifolium* /Hay meadow with wild *Trifolium* at higher elevation
 Bartacines*** S Having *Onobrychis* /An area with oversown *Onobrychis*
 Zableveles** S Having oat-leaved species /An area with grasses like *Brachypodium*, *Dactylis*, *Festuca pratensis*
 Kecskékapro, kapros** S Having *Laser* /An area with *Laser*
 Nyáraló**** LU To spend the summer /Pasture used in summer
 Őszlő**** LU To spend the autumn /Meadow where the aftermath is grazed in the autumn (partly fertilized)
 Reglő, legelő**** LU Pasture /Pasture
 Csipkés, szamárcsipkés** S Having *Carduus/Cirsium* /An area (often a pasture) with *Carduus/Cirsium*
 Szőrcsés, szőrfüves*** S Having *Nardus* /*Nardus* grassland
 Zsanikás** S Having *Alchemilla* /An area with *Alchemilla*
 Ördög bordás** S Having *Pteridium* /An area with *Pteridium*
 Ászpás* S Having *Veratrum* /An area with *Veratrum*
 Esztenás hely* LU Place with a mountain farm /A nutrient rich area around the mountain farms (often with *Rumex*), on the place of sheep pens
 Lósódis* S Having *Rumex* /An area with *Rumex*
 Bundzsákos*** SG ? /Surface covered with mosses
 Mohos, muhos (GN) SG Having *Sphagnum* /Area covered with *Sphagnum*
 Szalamás (GN) S Having *Allium ursinum* /An area with *Allium ursinum*
 Hagymás (GN) S Having *Allium* /An area with *Allium*
 Dancias (GN) S Having *Gentiana lutea* /An area with *Gentiana lutea*
 Csúf hely*** LU Ugly place /Area not mown or grazed, stony or with twigs, or steep, difficult to walk through
 Mocskos hely** LU Dirty place /Area full of rubbish (communal and/or twigs)

Wetlands and other abiotic habitat types

Kő, szikla*** SC Rock, cliff /Rock, cliff
 Nagy víz, porond vize** SC Big water, water of the river banks /Larger creek
 Patak**** SC Creek /Smaller creek
 Patak mente** SC Along creeks /Along creeks
 Porond**** SC River banks /Young and old river banks with gravel (older ones covered with nutrient-poor grasslands)
 Leszakadás, süllyedés, szakadék** SC Fallen down /A loamy slope eroded by a stream
 Podbállapis* S Having *Tussilago* /An area with *Tussilago*
 Forrás*** SC Spring /Spring
 Taplaca** SC Warm spring water /Spring and its creek, that never freezes
 Sátés, sásos** SG Having *Carex* /Fens around flushes
 Selymék, selymés hely, selyke hely*** SC A sinking area /Fens around flushes
 Surlós, békalábas* S Having *Equisetum* /A wet area with *Equisetum*
 Keptelános* S Having *Petasites* /An area with *Petasites*
 Nádas (GN) S Having *Phragmites* /Reedbed, a marshy area with *Phragmites*

Other habitat types

Épületek mellett, udvar*** LU Close to houses, in gardens /Close to houses, in gardens
 Szántó föld, pityókaföld**** LU Arable field, potato field /Arable field, potato field

Kert mellett*** LU Along a fence /Along a fence
Utak mellett** LU On road verges /On road verges
Csihányos* S Having *Urtica* /An area with *Urtica*