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The Black Locust Communities in the Northern Part of "Pohronská pahorkatina" Hills

Blažena Benčaťová[1] & Tibor Benčať[2]

[1]Katedra fytológie LF TU vo Zvolene, T.G. Masaryka 24, 960 53 Zvolen, Slovak Republic, e-mail: bbencat@vsld.tuzvo.sk
[2]Katedra plánovania a tvorby krajiny, FEE TU vo Zvolene, Kolpašská 9/B, 969 01 Banská Štiavnica, Slovak Republic, e-mail: bencat@fee.tuzvo.sk

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Abstract: The Black Locust (*Robinia pseudoacacia* L.) phytocenoses in Slovakia belong to the substitute communities on autochthonous native Oak-Hornbeam and Oak forests. In our article we continue in results of Jurko (1963), Jurko & Kontriš (1982), Ščepka (1982, 1985). We given phytocenological characteristics of Black Locust forest stands in the northern part of "Pohronská pahorkatina" Hills. In this area we preliminary determed following communities: *Chelidonio-Robinietum* Jurko 1963, *Urtico dioicae-Robinietum* Ščepka 1982 prov., *Balloto nigrae-Robinietum* Jurko 1963, *Bromo sterilis-Robinietum* Jurko 1963 prov., *Galio aparines-Robinietum* Ščepka 1982 prov., communitie with *Hedera helix*.

Keywords: *Robinietea*, secondary communities, syntaxonomy, distribution.

Introduction

From actual forest area in Slovakia Black Locust represents 32.971 ha (1.73%), of whole forest area. The recommendation area for Black Locust cultivation represented area of the phytogeographycal zone Pannonicum. Individually its growth on border of forest stands or in urban conditions northern from this zone up to the 755 m a.s.l. Benčať (1989, 1995).

Black Locust communities in some parts of Slovakia becomes permanent part of vegetation and namely in lowlands and hills Jurko (1963), Jurko & Kontriš (1982), Ščepka (1982, 1985) they substitute native communities.

Material and methods

Brief characteristic of territory

Between rivers Hron and Žitava spreads "Pohronská pahorkatina" Hills. This territory we can situate in triangle between regional small towns Tlmače, Vráble and Zlaté Moravce. It is created by young Cenozoic geological formations presented by neogen loams, sounds and brashsounds with brown soils.

The typical fold climate is from soft dry up to the soft worm. Average annual sum of precipitations is 600–800 mm. The native forest communities in this are was Oak-Hornbeam Carphatians forests (*Carici pilosae-Carpinenion betuli*), Oak forests (*Quercetum petraeae-cerris*), Oak-Hornbeam Pannocicum forests (*Querco robori-Carpinenion betuli*) and floodplain forests (*Ulmenion*).

The study of Black Locust forest communities was obtained in august 2004 and was analyzed by the Zürich-Monpellier School method with 7 degree scale abundance and dominance. Nomenclature of plants is according to MARHOLD & HINDÁK (1988), nomenclature of syntaxons according to MUCINA & MAGLOCKÝ (1985).

Results and discussion

In study territory we can floristical and ecological difference some communities with Black Locust. In this article we don't resolve questions of syntaxonomical position of Black Locust forest stands, but we can give the more original phytocenological relevés from this territory. For their detailed study and next synthesis, we will do more relevés and its analysis from others Slovakia territories.

In the northern part of "Pohronská pahorkatina" hills we advanced 5 associations, which are part of following cenotaxonomical units:

Classis *ROBINIETEA* JURKO ex HADAČ & SOFRON 1980
Ordo *Chelidonio-Robinietalia* JURKO ex HADAČ & SOFRON 1980
Alliance *Chelidonio-Robinion* HADAČ & SOFRON 1980
Association *Chelidonio-Robinietum* JURKO 1963
Association *Urtico dioicae-Robinietum* ŠČEPKA 1982 prov.
Alliance *Balloto nigrae-Robinion* HADAČ & SOFRON 1980
Association *Balloto nigrae-Robinietum* JURKO 1963
Association *Bromo sterilis-Robinietum* JURKO 1963 prov.
Association *Galio aparines-Robinietum* ŠČEPKA 1982 prov.
Community with *Hedera helix*

Chelidonio-Robinietum JURKO 1963

Association Chelidonio-Robinietum JURKO 1963 is known from many regions of Slovakia. ŠČEPKA (1982) suppose it for most typical community of Black Locust on East Lowland territory, where it occurs mainly on downs. JURKO & KONTRIŠ (1982) describet it from Malé Carpathians. On our territory is registered

only in one phytocenological reléve in which in tree layer dominated Black Locust with height about 30 m and in shrubs layer Sambucus nigra. The herb layer is presented mainly with nitrophil species like Chelidonium majus, Urtica dioica and Galium aparine.

Malé Kozmálovce, right side of road from Mochovce, medium depression, height of Black Locust 30 m, altitude 185 m a.s.l., exp. NE, relevé area 20 x 20 m, 14.8.2004.

E_3–50%, E_2–70%, E_1–90%

E_3 – *Robinia pseudaccacia* 5; E_2 – *Robinia pseudaccacia* +, *Sambucus nigra* 4, *Euonymus europaeus* +, *Acer campestre* +; E_1 – *Chelidonium majus* 3, *Urtica dioica* 2, *Galium aparine* 1, *Euonymus europaeus* 2, *Geum urbanum* +, *Crataegus monogyna* +, *Arctium lappa* r, *Viola odorata* 1, *Rubus fruticosus* +, *Anthriscus sylvestris* +, *Brachypodium sylvaticum* +, *Impatiens parviflora* +, *Acer campestre* +, *Lapsana communis* r, *Melica uniflora* +.

***Urtico dioicae-Robinietum* ŠČEPKA 1982 prov.**

This community described ŠČEPKA (1982) from Black Locust forests so called "veldt type", where missing the shrub layer and species like *Urtica dioica* and *Poa pratensis* dominated. In our community the shrub layer is rich on Oak-Hornbeam and wormer Oak forests. In herb layer except *Urtica dioica* and *Poa pratensis, Rubus caesius* has the high abundnance too.

Veľké Vozokany, near road from Zlaté Moravce, around plough-up fields and Oak forest (*Quercus cerris*, *Q. petraea*, *Q. robur*), medium depression on basis of slow slope, altitude 190 m a.s.l., exp. SW, slope 20°, relevé area 20 x 20 m, 14.8.2004.

E_3–60%, E_2–40%, E_1–90%

E_3 – *Robinia pseudaccacia* 5; E_2 – *Robinia pseudaccacia* 4, *Sambucus nigra* 1, *Euonymus europaeus* +, *Crataegus monogyna* +, *Ribes uva-crispa* +, *Ligustrum vulgare* +; E_1 – *Urtica dioica* 4, *Rubus caesius* 3, *Sambucus nigra* +, *Quercus cerris* +, *Q. petraea* +, *Moehringia trinervia* +, *Robinia pseudaccacia* +, *Poa pratensis* 3, *Geum urbanum* +, *Euonymus europaeus* 1, *Viola hirta* +, *Geranium robertianum* +, *Ligustrum vulgare* +, *Crataegus monogyna* +, *Heracleum sphondylium* +, *Elytrigia repens* 2.

***Balloto nigrae-Robinietum* JURKO 1963**

Black Locust forests from the association *Balloto nigrae-Robinietum* with its phytocenological (terminal plane) as well as floristicall conditions similar that described by ŠČEPKA (1982) from Tarbucka locality. The differences we can see only in total abundance in tree and shrub layers. The differencies in Black Locust abundance is probably in different date of reléve. Abundance and number of species in shrub layer is much rich and equally are present in them woody species. *Euonymus europaeus*, *Sambucus nigra*, *Ligustrum vulgare*, *Crataegus laevigata*, *Acer campestre*, *Ulmus minor*. In herb layer the highest abundation are *Ballota nigra*, *Stellaria holostea*, *Anthriscus sylvestris*, *Bromus sterilis, Arum alpinum*, *Fragaria vesca*. Like example is phytocenological relevé:

Slepčany, beyond village above vineyards, plate, around cereal fields, altitude 205 m a.s.l., exp. W, slope 0°, relevé area 20 x 20 m, 15.8.2004.

E_3–30%, E_2–80%, E_1–80%

E_3 – *Robinia pseudaccacia* 5; E_2 – *Robinia pseudaccacia* 1, *Sambucus nigra* 2, *Euonymus europaeus* 1, *Crataegus monogyna* +, *Ligustrum vulgare* 1, *Crataegus laevigata* 1, *Acer campestre* 1, *Prunus spinosa* +, *Rosa canina* +, *Prunus padus* +, *Ulmus minor* 1, *Swida sanquinea* +; E_1 – *Ballota nigra* 3, *Bromus sterilis* 1, *Geum urbanum* 2, *Stellaria holostea* 2, *Anthriscus sylvestris* 2, *Poa pratensis* 1, *Arum alpinum* 1, *Fragaria vesca* 1, *Carex muricata* 1, *Galium aparine* +, *Euonymus europaeus* 1, *Ligustrum vulgare* 1, *Sambucus nigra* +, *Viola hirta* +, *Geranium robertianum* +, *Rosa canina* +, *Arctium lappa* +, *Cucubalus baccifer* +, *Swida sanquinea* +, *Ulmus minor* +, *Brachypodium sylvaticum* +.

***Bromo sterilis-Robinietum* JURKO 1963 prov.**

Phytocenoses of these association according preliminary results will be more frequent in this territory. They are on steep slopes along roads on loam as well as sandy soils. These communities are typical with its low deformed growth of Black Locust in tree and shrub layer. The other species presented in the shrub layer are: *Euonymus europaeus*, *Sambucus nigra* and *Acer campestre.* In the herb layer with higher abundance is *Bromus sterilis*, with lower *Urtica dioica*, *Ballota nigra*, *Viola hirta*, *Galium aparine* and *Geum urbanum*. Floristic structure of these community documents the following phytocenological relevé: Malé Kozmálovce, left side of road from Mochovce, relatively steep slope, Black Locust tree low deformed growth, altitude 200 m a.s.l., exp. SW, slope 30°, relevé area 20 x 20 m, 14.8.2004.

E_3–35%, E_2–40%, E_1–100%

E_3 – *Robinia pseudaccacia* 5; E_2 – *Robinia pseudaccacia* 3, *Euonymus europaeus* 3, *Sambucus nigra* +, *Acer campestre* +; E_1 – *Urtica dioica* 2, *Ballota nigra* 2, *Bromus sterilis* 4, *Galium aparine* 1, *Geum urbanum* 1, *Euonymus europaeus* +, *Viola hirta* 2, *Geranium robertianum* +, *Arctium lappa* +, *Carex muricata* +, *Fallopia convolvulus* +, *Alopecurus pratensis* +.

***Galio aparines-Robinietum* ŠČEPKA 1982 prov.**

The Black Locust forest stands with *Galium aparine* dominance, described ŠČEPKA (1982) like temporary association from the mezophile stands. On our territory, the similar communities we found around the village Slepčany. These forest stands have rich species in shrub layer, with dominance woody species like *Robinia pseudaccacia*, *Sambucus nigra* and *Crataegus monogyna*, *Euonymus europaeus*, *Prunus spinosa*, *Ligustrum vulgare*. The herb layer is presented with high dominance of species significant nitrogen rich soils like *Galium aparine*, *Arum alpinum*, *Anthriscus sylvestris* and *Urtica dioica*. Like example of these communities we presented the phytocenological relevé: Slepčany, beyond village, between vineyards concave – convexe slope, altitude

180 m a.s.l., exp. W, slope 15°, relevé area 20 x 20 m, Black Locust height 20 m, age about 20–40 years, 15.8.2004.

E_3–50%, E_2–50%, E_1–90%.

E_3 – *Robinia pseudaccacia* 5; E_2 – *Robinia pseudaccacia* 3, *Sambucus nigra* 3, *Euonymus europaeus* +, *Crataegus monogyna* 1, *Ribes uva-crispa* +, *Ligustrum vulgare* +, *Prunus spinosa* +, *Fraxinus excelsior* +, *Ribes* sp. +; E_1 – *Galium aparine* 3, *Viola hirta* 2, *Arum alpinum* 2, *Anthriscus sylvestris* 1, *Alopecurus pratensis* 1, *Chelidonium majus* +, *Urtica dioica* +, *Bromus sterilis* +, *Sambucus nigra* +, *Quercus cerris* +, *Geum urbanum* 1, *Geranium robertianum* +, *Ligustrum vulgare* +, *Viola odorata* +, *Lysimachia nummularia* +, *Fraxinus excelsior* +, *Prunus spinosa* +.

On the locality Vieska nad Žitavou, on native communities with *Quercus cerris* we selected phytocenoses with massive abundance of *Hedera helix* in herb layer. However the presentation of woody species is the same like in relevés above mentioned, some differences are only in presentation *Prunus padus* in shrub layer. The structure of these community documented relevé: Vieska nad Žitavou, behind church, medium slope 2°, exp. NW, relevé area 20 x 20 m, Black Locust height 30 m, age about 40–60 years, 15.8.2004.

E_3 – 40%, E_2 – 30%, E_1 – 100%

E_3 – *Robinia pseudaccacia* 5, *Quercus cerris* +; E_2 – *Robinia pseudaccacia* 2, *Sambucus nigra* 3, *Crataegus monogyna* +, *Ligustrum vulgare* 1, *Quercus cerris* 1, *Prunus padus* +, *Hedera helix* +, *Lonicera xylosteum* r; E_1 – *Hedera helix* 5, *Chelidonium majus* +, *Quercus cerris* +, *Poa pratensis* 1, *Euonymus europaeus* +, *Geranium robertianum* 1, *Ligustrum vulgare* +, *Viola odorata* 2, *Rubus fruticosus* 1, *Anthriscus sylvestris* +, *Carex muricata* +, *Fallopia convolvulus* +, *Arum alpinum* +, *Cucubalus baccifer* +, *Alliaria petiolata* +.

Summary

In the study area between rivers Hron and Žitava spreads "Pohronská pahorkatina" Hills we confirm basic Black Locust communities described from Slovakia. There are: *Chelidonio-Robinietum* JURKO 1963, *Urtico dioicae-Robinietum* ŠČEPKA 1982 prov., *Balloto nigrae-Robinietum* JURKO 1963, *Bromo sterilis-Robinietum* JURKO 1963 prov., *Galio aparines-Robinietum* ŠČEPKA 1982 prov. Near Arboretum Mlyňany, in the locality Vieska nad Žitavou, we selected phytocenoses with massive abundance of *Hedera helix* in herb layer. Its following research will be the aim of our research.

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