

POSSIBILITY OF APPLICATION OF INTERNATIONAL PHYTOCENOLOGICAL NOMENCLATURE IN SERBIA

LJ. RAKONJAC¹, ZAGORKA TOMIC², R. NEVENIC¹, A. LUCIC¹, TATJANA ĆIRKOVIĆ-MITROVIĆ¹, V. POPOVIĆ¹ and LJILJANA BRAŠANAC-BOSANAC¹

¹*Institute of Forestry, University of Belgrade, 11000 Belgrade, Serbia*

²*Faculty of Forestry, University of Belgrade, 11000 Belgrade, Serbia*

Abstract- This is a short review of the final official version of the International Code of Phytocenological Nomenclature. Some essential problems in the phytocenological nomenclature of the forest vegetation in Serbia are presented and discussed. The conclusions emphasize the necessity to adapt the names of all the defined syntaxa to the code rules and regulations.

Key words: Code of Phytocenological Nomenclature, forest vegetation of Serbia, names of syntaxa.

INTRODUCTION

Classification is a necessary and very important domain of a branch of plant science, phytocenology. This implies that the separation and naming of the basic units (associations) and other lower and higher syntaxa, is the responsibility and complex task of each phytocenologist. In Serbia, generations of scientists have studied and named syntaxonomic categories in accordance with the basic rules of the floristic-ecological mid-European-Mediterranean (Braun-Blanquet) school. More recently, the numbers of syntaxon units has multiplied as a result of phytocenological research.

The International Association for Vegetation Science has undertaken certain measures in order to unify the rules in syntaxonomy, with the obligation of respecting the same, scientifically verified nomenclature. As a result, the first Code of Phytocenologi-

cal Nomenclature was adopted at the Eleventh International Botanical Congress in Seattle in 1969, and published in 1976 in the Hague. The first Codex was complemented and made stricter in 1980 in Sydney. The third, most complete and detailed supplement, was published in 2000 (Weber et al., 2000). The last version of the Codex, which replaces all the previous, is the official version and imposes the obligation of harmonizing the current nomenclature with the international rules, which are in force in all parts of Europe.

EXCERPTS FROM THE CODEX

The third official version of the Code of Phytocenological Nomenclature was prepared by the Nomenclature Commission of the International Association for Vegetation Science (IAVS) and International Federation of Phytosociology (FIP). This final English edition is the official version of the Codex.

With the aim of general acceptance of the new names of syntaxa (including the nomina nova), new combinations, or neotypification of the names, authors are required to send copies of their publications to J.P. Therillal who is responsible for registration of the publications and typification of the names. The index of other data will be published every year. For nomina ambigua, inversa, mutata and conservanda, suggestions should be sent to the suitable Nomenclature Commission or to the Secretary, Professor Doctor Georg Grabherr.

The main aim of the Code is the introduction of a stable nomenclature and enabling the easy and accurate use of syntaxonomic names, not only among phytocenologists, but also by applied ecologists in forestry, agriculture and the preservation of nature.

The Code contains the definitions, principles, articles, recommendations and guides for the regular derivation of syntaxa names, based on the names of the plant species.

The Principles are the base, and Articles and Recommendations contain the detailed regulations and rules and they should provide a unity and unambiguity of future nomenclature. In addition, the rules should make order in the earlier nomenclature. This implies a revision of previous syntaxa names, if they are not harmonized by the rules of the Codex.

Names that are formed in opposition to the rules cannot be retained, except if they are adopted as nomina conservanda.

IMPORTANT PROBLEMS OF PHYTOCENOLOGICAL NOMENCLATURE IN SERBIA

The number of syntaxa

There is a great number of syntaxa in previous phytocenological literature, including an abundance of synonyms and homonyms which cause confusion even among phytocenologists. For instance, in Serbia more than 300 associations of woody and bushy

species have been reported, classified into 50 alliances and suballiances (Tomić, 2004). This is mainly because of the great number of synonyms. Namely, authors in Serbia did not pay enough attention to the work of their predecessors about similar (or same) phytocenoses, and they authorized the results of their research by providing new names to associations. Along with synonyms, the reason for the great number of the associations is the frequent requalification of subassociations to the rank of association, which additionally increases the number of the basic syntaxa.

Edificators, characteristic species and differential species as the name-giving species of the associations and subassociations

The concept of edicator (dominant tree species) is not mentioned in the international Code, which is mainly based on purely floristic principles. This presents great obstacles that cannot be overcome easily in the application of phytocenological nomenclature in forestry practice, which is still based on the percentage of the main species in a tree layer.

In addition, further complications arise from the fact that the name-giving syntaxa must be botanically correctly defined species and intraspecific taxa. For instance, the majority of phytocenologists acknowledge the main species of the alliance Fagion moesiaca Blečić et Lakušić (1970), Moesian beech (*Fagus moesiaca* /Domin, Maly/Czeczott) as a specific, new species in the eastern Balkans. Nevertheless, there are opposing views in Serbia that advocate the return to the taxon *Fagus sylvatica* L. (Josifović and Janković, 1970).

The situation of Sessile oak aggregates (*Quercus petraea* /Matt/ Liebl. agg), where three species are not clearly defined by associations, *Quercus petraea* (Matt) Liebl., *Quercus dalechampii* Ten and *Quercus polycarpa* Schur, is even more complicated.

In regard to subspecies, it would be favorable if the phytocenoses, for the sake of the establishment of the correct nomenclature, are defined and by-range

classified into at least three subspecies of the Austrian pine (*Pinus nigra* Arn): subsp. *austriaca* Asch. et Gr.; subsp. *pal-lasiana* (Lamb) Holmb.; subsp. *gočensis*, since in ecological conditions and floristic composition, as well as in characteristic alliances, the phytocenoses of the subspecies clearly differ.

As a rule, the names of the associations consist of two characteristic species, one of which (secondary) is most frequently bushy or herbaceous, and the other (main) is woody, with the suffix *-etum*. The names of two tree species (For instance, Rud, 1949) are not explicitly excluded by it. However, it unambiguously leads to the non-acknowledgement of associations with three and more species in the name (e.g., *Piceo-Fago-Ahietetum* Col. 1965, *Piceo subalpinae-Vaccinio-Juniperetum* Mis. et Pop. 1954, *Heilethoro-Ostryo-Quercetum* Tom. 1980., *Hordelymo-Querco-Carpinetum* Jov. 1979). The particular problems in Serbia are the relict polydominant communities, with a great number of woody species in the name, and frequently with the suffix *-mixtum*, the renaming of which will be very hard: *Syringog-Aceri intermedii-Coryletum colurnae* Jov. (55) 1979, *Acereto-Frazineto-Carpinetum-Fagetum mixium* Mis. et Din. 1967, *Fraxino-Aceri intermedii-Coryletum colurnae* Mis. et Din. 1972, *Omorikae-Piceeto-Abieto-Fageto-Pinetum mixtum* Col. 1965, etc.

By the rules of the Code, the name of the syntaxon has to be derived from the taxa that are typical for a certain syntaxon. The concept "characteristic species (subspecies)" is very problematic to applied forest phytocenology which has been intensively developed in Serbia, since it is based on the purely floristic analysis of phytocoenosis, whereas the foresters (phytocenologists) have preferred the ecological approach.

Geographical and ecological attributes in syntaxonomic names

For many years the numerous ecological principles that make up defined syntaxa very suitable for usage, not only in the science but in practice as well, have been consistently incorporated in the phytocenolog-

ical classification in our country.

- a) Further difficulties will be caused by the explicit
 - a) prohibition of the use of geographical attributes in syntaxonomic names (provided they are not derived from the names of taxa), since they do not contain any floristic information. The same is true for the other ecological attributes. Therefore, the renaming of all syntaxa (alliances, associations and subassociations), which in their names have references to altitudes, e.g. *submontanum* (*Fagenion moesiaca submontanum* Jov. 1976, *Fagetum moesiaca submontanum* (Rud. 49) Jov. 1976, *Fagetum submontanum mixtum* Miš. 1972), *montanum* (*Fagetum moesiaca montanum* Jov. 1953, *Fagenion moesiaca montanum* Jov. 1976, *Quercetum montanum* Cer. et Jov. 1953), *altimontanum* (*Fagetum altimontanum moesiacum* Jov. 1985, *subalpinum* (*Piceetum excelsae serbicuni subalpinum* Mis. et Pop. 1980, *Fagenion moesiaca subalpinum* Jov. 1976);
 - b) geological parent material, such as *serpentinicum* (*Quercetum dalechampii serpentinicum* Cvj. 1999, *Abieti-Fagctum serpentinicum* Beus. 1986), *calcicolum* (*Fagetum moesiaca montanum* Jov. 1953 subass. *calcicolum*), *silicicolum* (*Carpinetum orientalis silicicolum* Jov. 1970);
 - c) degree of humidity: *Fraxino angustifoliae-Quercetum roboris* Jov. et Tom. 1979 subass. *hygrophyllum*, *Fraxino angustifoliae-Quercetum roboris* subass. *subinundatum*, *Quercetum pubescentis-virgiliana subass. xerophyllum*, etc.;
 - d) geographical-regional belonging: *Quercetum-frainetto-cerris scardicum* Krasn. 1968; *Piceetum excelsae serbicum* Miš. et Pop. 1980, including all the references *moesiacum* (*Querco-Carpinetum moesiacum* Rud. 1949, *Paliurion moesiacum* Jov. 1985, if they do not originate from the name of the main species (*Fagenion moesiaca* Bleč. et Lakš, 1970).

According to the rules of the Code, only the syntaxon with names that were formed in accordance to

the regulations and with purely floristic properties will be internationally recognized and authorized, whereas all the others will be variants (geographical, ecological, etc). The variants are not treated by the rules of the Code and serve for local usage, such as in the forest typology, etc.

The only permitted attributes that are not based on the name of the plant taxon are complex names that contain a prefix which expresses some morphological or ecological characteristics (e.g. *Magnocaricion elatae* Koch. 1926, *Xerobromion Br.-Bl. et Moor* 1938), compounds with *Eu-* for the additional syntaxonomic categories (e.g., *Eu-Vaccino-Piceenion Oberd.* 1957). In subassociations, if the attribute is not derived from the scientific name of the species (or intraspecies taxon), it can be presented by the adjective *-inops* or *typicum* (For instance, *Quercetum frainetto-cerris* Rud. 1949 sub-ass. *typicum*).

DISCUSSION AND CONCLUSIONS

Since the principles and articles of the Codex are obligatory (whether regressively to January 1, 1910, or January 1st, 1976, or since January 1 1987 or January 1, 2002 and onwards, in the way which is specifically determined), it is clear that the phytocologists in all the European countries will make the revision of the old nomenclature and pay attention to the rules of the Code during the renaming and authorization of new syntaxa. All the names are only the "labels" and are therefore not entirely adequate, i.e. they cannot express the total essence of the syntaxa. However, some inconsistencies in the use of the names of some phytocenoses should be removed and the necessary order and uniformity in nomenclature should be introduced.

In this regard, in some of the neighboring countries the activities have been performed; in Austria an extensive and well-argued syntaxonomic revision of the south part of the Mid European beech forests was conducted (Wilner, 2002); in Croatia the phytocological nomenclature was modernized and incorporated in a textbook of forestry phytocenology (Raus

and Vukelic, 1998); for Bosnia and Herzegovina, the summary of the Code was published and problems concerning the revision for the areas of Croatia, Bosnia and Herzegovina, Serbia has been tackled by Vojnikovic (2003).

Since the rules of the Code are based on purely floristic principles, they are very rigid, i.e. it is hard to adapt them to the domesticated ecological trend of forestry phytocenology that has been used in Serbia for decades. Nevertheless, it is necessary, for the international verification of our syntaxa, to start the revision of the old classification units, and for the authorization of the new ones, to acquaint all phytocologists with the rules of the Code.

This implies a detailed acquaintance with the Codex, the monitoring of activities aimed at revising syntaxonomic nomenclature in the region, and the beginning of the harmonization of the numerous, previously defined syntaxa in the forest vegetation of Serbia with the international Code. Unless steps in this regard are taken, the many results of forest phytocenology, which have been intensively developed in the last 60 years, will remain unknown and unrecognized in European science.

REFERENCES

- Jovanović, B.* (1953). *Bulletin of the Faculty of Forestry* Belgrade, Number 87, pp. 197-210. Biblid: 0353-4537, (2003), 87, pp. 197-210.
- Josifović, M. (Ed.)* (1970). *Flora R. Serbia* 1-8. Serbian Academy of Science and Arts, Belgrade. pp. 70-74.
- Krstić, M.* (1989): The study of the ecological-productive characteristics of Sessile oak forests and the selection of the most suitable way of the renewal in the Northeast Serbia. Doctoral Thesis, Manuscript, Faculty of Forestry of the University of Belgrade.
- Tomić, Z.* (2003): The contribution to the knowledge on the association *Quercetum montanum* Cer. el
- Tomić, Z.* (2004): *Forestry Phytocenology*, Textbook for the students of the Faculty of Forestry. Faculty of Forestry Belgrade.
- Vojniković, S.* (2003): History and current phytocological nomenclature and classification. *Forestry Magazine* Number 3-4 CXXVII (2003), pp. 153-159, Zagreb.

Vukelić, J. and D. Rauš (1998): Forestry phytocoenology and forestry associations in Croatia. University in Zagreb, Zagreb.

Wilner, W. (2002): Syntaxonomische Revision der sudmiltleuropäischen Buchcnwalder. *Phytocoenologia* 32(3), str. 337-453, September 12, 2002, Berlin-Slultgurl.

Weber, H.E. and J. Moraveć (2000): International Code of Phytosociological Nomenclature. 3rd edition. *Journal of Vegetation Science* 11, 739-768, 2000. Ž IAVS; Opulus Press Uppsala. Printed in Sweden.

International Botanical Code. 2. Phytocenology nomenclature Codex. (1987) Translated from the French by John Sugar. University Copies Liber, ed., pp. 89-125, Zagreb.

