Methodical basis for Map of Potential Natural Vegetation of Poland

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Abstract:

The guiding principles, the method of field record and method of preparation of the map and the legend are discussed. The experience concerning the draft sheet just published and its expected importance to the science and practice are considered. Differentiation of the vegetation of Poland is presented by the surface method in a final scale 1 : M, with a later possible mutation to 1 : 500 000.

INTRODUCTION

Specific problems concerning the methods in cartography of the vegetation of Poland have arisen only recently in this country. Nevertheless, the Polish achievements in this field are quite important (ca. 150 maps without counting mutations, reprints etc.), the more so if we consider that the science of phytosociology is but half a century old. The maps, however, mostly represent only small fragments of the territory of Poland. To date only two cartographic attempts have been undertaken involving the vegetation of the whole country; these are the map „Krainy roślinne” (Vegetation regions) in a 1 : 8 M scale by Motyka (1952) and „Krajobrazy roślinne” (Vegetation landscapes) in a 1 : 5 M scale by Medwecka-Kornaś (1966).

Both these maps, although interesting, constitute a certain kind of geobotanical synthesis which arose in the laboratory and not on the basis of field records. The lack of a map reviewing the vegetation of the whole country, which would be based on field records, and would combine new approaches and methods with a faithful picture of the spatial differentiation of the vegetation is badly felt.

Such maps in medium or small scale have already been prepared in neighbouring countries. In the first place should be quoted here the 8-sheet Geobotanical Map of the U.S.S.R. in a 1 : 4 M scale with a two-volume commentary by Lavrienko and Sotchava (1956). Ten years ago a geobotanical map of Roumania was published in a 1 : 500 000 scale (Doniță N., Leandru V., Puscaru-Soroceanu, 1960).

Excellent results have been achieved in this field in the maps of various provinces of Yugoslavia. From among extraeuropean works noteworthy is the map „Potential Natural Vegetation of the Conterminous United States” (Küchler, 1964).

In the German Democratic Republic a 1:M map was first prepared (1958), and then a more extensive work in a 1:500 000 scale. Both versions of the East Germany map concern the natural vegetation (Scamoni, ed. 1958, 1964). Its units, mostly communities or groups of natural associations serve as symbols of series of plant communities occurring on the same primeval site, beginning with natural and going on to anthropogenic communities, and those forming what is known as the dynamic circle of communities (Schwickerath, 1954).

The vegetation map of the German Federal Republic is based on different principles as a many-sheet elaboration in a 1:200 000 scale. The first sheet together with the extensive explanatory text appeared in 1966. It presents the potential natural vegetation of today, that is the vegetation which would grow on the given territory if human interference suddenly ceased (Tüxen, 1956). It is, therefore, an attempt of evaluation of the natural potential inherent in the habitat and environment, taking into account the irreversible changes which have occurred in them owing to various activities of man. In spite of the different guiding lines the cartographic message of both German maps seems to be similar, in spite of differences due to the scale (Trautmann, 1965, 1966).

The map of the Czechoslovak vegetation in a 1:200 000 scale (Moravec, 1961a and b, Moravcová-Husová, 1961; Neuhausl, 1963, 1964) is a trial of reconstruction of the primeval vegetation. Recently a large volume has appeared discussing the problems, methods and guiding principles of this map (Mikyška et coll., 1968).

The main aim of the initiators and authors of these extensively planned cartographic works was to obtain a homogeneous picture of the vegetation of their country. Beside its purely cognitive purposes, the initiative was guided by quite concretely formulated wishes of diverse „readers” as for instance town and country planning (G. Federal Republic, Roumania, Czechoslovakia) and forestry circles (Yugoslavia, G. Federal Republic). The aim in view was also to prepare so-called national atlases (G. Democr. Republic) or to prepare a cartographic index of the vegetation as had been done earlier for other elements of the geographical environment (Czechoslovakia, cf. Stepán, 1969; Mikyška et coll. 1968).

We cannot for lack of space discuss here the reasons why Poland has so far no map reviewing the vegetation, but it might be useful to consider what type of map would at this moment be most necessary and what possibilities of preparing it exist.

The present staff and financial possibilities of Polish phytosociology are restricted, and the limited active interest of the future readers of the

map does not create — at least for the present — any chances of preparing a review map of the vegetation of the whole country in a medium scale, e.g. 1 : 300 000, analogous to the existing geological and soil maps. It would, on the other hand, be feasible to prepare in a relatively short time a map of the vegetation of Poland based on original field records in a 1 : M scale with later mutation to a 1 : 500 000 scale.

The necessity of basing the work on the already existing phytosociocartographic elaborations of the neighbouring countries, and the limits set by the scale obliged us to give up the idea of preparing a map of the real vegetation. Presentation of the real vegetation on maps in a medium scale is difficult, and frequently quite unfeasible since the degree of differentiation of what is called anthropogenic vegetation covering 60—70 percent of the surface of our country is 10 to 15 times higher than that of the natural vegetation (Fig. 1 *). Any trial of generalisation and uniform approach to both these types of vegetation would give in medium and small scale nothing but a modified map of ground utilisation.

From among the three possibilities of preparing a map of the natural vegetation, without taking into account what is called regions or landscapes, we chose the map of the potential natural vegetation. Although the execution of such a map causes a number of difficulties in practice, it gives, however, a uniform picture of the vegetation of a larger territory, it visualises the geographical variability of the vegetation, and makes possible in most cases an unequivocal definition of the irreversible changes caused by man in the plant cover. This choice was prompted, among other things, by numerous observations showing the readiness with which, in our climatic zone, the natural potential of the habitats comes into play, manifested by the growth of forest on any site which even for a short time was exempt from human dealings. The future readers of the map, particularly practitioners in this field, will also be more interested in the evaluation of the potential possibilities of the habitat than in the reconstruction of the bygone status.

It is professor W. Matuszkiewicz who was the initiator of the Map of the Potential Natural Vegetation of Poland, and the principles of this undertaking were formulated in the Department of Applied Phytosociology of the Warsaw University (Warsaw—Białowieża) with the participation of several persons from other related centres. It is also there that some first tentative sheets have been prepared (page 216).

So far all editorial and cartographic work has been done under the present author's guidance in the cartographic laboratory at Białowieża which used to form a part of the Department of Applied Phytosociology of the Warsaw University headed by professor W. Matuszkiewicz, and is included at present in the Group of Vegetation Cartography and Landscape Shaping of the Institute of Botany of the Warsaw University

* All maps, Tables and Legend on the end of this paper.

(headed by doc. dr J. B. Faliński). Prof. W. Matuszkiewicz (Warsaw), doc. dr J. B. Faliński (Białowieża) and doc. dr T. Wojterski (Poznań) are entrusted with the scientific and organisational guidance of the realisation of this map.

According to the latest decisions, the Map of the Potential Natural Vegetation of Poland is to be included into the scientific program of the Polish Academy of Sciences, and work on the map will be performed by the Group for Vegetation Cartography and Landscape Shaping mentioned above, in collaboration with other scientific institutions under the same general scientific and organisational guidance as to date.

GUIDING PRINCIPLES OF MAP OF THE POTENTIAL NATURAL VEGETATION OF POLAND

in 1 : M and 1 : 500 000 scales

1. Contents of the map and their presentation: the up-to-date, natural vegetation in the sense of Tüxen (1956) taking into account Schwickerath's concept of dynamic circles of plant communities (1954), presented by the surface method.

2. Scale 1 : M with later mutation to 1 : 500 000.

3. The potential natural vegetation is the common denominator of the entire vegetation, therefore what is known as anthropogenic vegetation will not find direct expression on the map.

4. For geographic-climatic (zonal) reasons, the potential natural vegetation in most parts of this country is equivalent with the forest vegetation.

5. The map should contain also information on the distribution in Poland of extrazonal nonforest communities, even if they occupy a small area, but are a natural and durable component of the Polish plant cover and are important in the geobotanical aspect of the country. Considering the guiding principles in the preparation of the map as a surface map, in this case a deviation is permissible for point mapping of the above mentioned data.

6. The basic unit in the legend is a plant association, or exceptionally, in the case of small-area communities of those difficult to identify in the field, a group or alliance of associations.

7. A possibly full demonstration of the geographical differentiation of the vegetation is postulated, particularly of the zonal vegetation through regional associations, geographical varieties and the montane belt.

8. For conceptual and methodic reasons, the direct demonstration of the dynamic, genetic and historical differentiation of the plant communities will have to be omitted, with the exception of cases where it is included in the units of the legend.

LEGEND TO MAP OF POTENTIAL NATURAL VEGETATION
OF POLAND

The Legend (Fig. 2) includes 29 plant associations, two collective units (e.g. *Cephalanthero-Fagion*, *Alno-Padion*, xerothermic grasslands), 12 geographical varieties, six montane belts, two trophic series. Thus, the differentiation of *Quercus-Carpineta* on the territory of Poland will be shown through four regional associations including two geographical varieties, each in two trophic series.

The particular groups of plant communities are denoted by corresponding groups of symbols.

METHOD OF FIELD RECORDS FOR MAP AND METHOD
OF PREPARATION OF MAP OF POTENTIAL NATURAL VEGETATION

The cartography of the potential vegetation that is of any phenomenon which has no actual existence in nature, but is possible, must be based on indirect methods.

In the case of the potential natural vegetation this is possible since it was found that each natural community is substituted in the anthropogenic landscape by a strictly defined secondary community, called equivalent community (*Ersatzgesellschaft* — Tüxen, 1932, equivalent of forest association — Paczowski, 1935). It is true that, owing to the diverse and diversifying activity of man, the number of these equivalent communities is enormous (Table 1, Fig. 1), but it is a proved fact that on the site of a natural community of a certain type, under certain conditions of management, only definite equivalent communities will arise. In this way the potential vegetation becomes as if the common denominator under which the actually existing anthropogenic vegetation and the relict fragments of the natural vegetation may be inscribed.

Of particular importance for the cartography of the potential vegetation are the indicator equivalent communities (Faliński, 1966), that is those which exhibit a particular affinity to the „parent” natural communities, and can in view of this play the role of indicators (Table 2). The natural community with its equivalent communities form what is known as the dynamic circle of communities (Schwickerath, 1954). Its symbol on the map is a natural community, in our climatic zone in most cases a forest community.

Mapping of the potential vegetation may be done either directly or indirectly. The indirect method consists in the preparation of a map of the real vegetation first, and then its transposal — with the use of a special key — to a map of the potential vegetation (Fig. 1). This method, however, is very time-consuming and can only be applied for large-scale maps. In the preparation of medium and small-scale maps, the direct method is used consisting in substituting directly on the map the complicated real relations observed in the field by the above mentioned common denominator.

In mapping of the potential vegetation also such indicators are utilised as tree groups, tree-bordered avenues, manor parks, cemeteries, the structure of cultivated fields and the earlier known relations between the vegetation and other elements of the geographical environment such as ground relief, substrate, water conditions etc., and sporadically even the shape and age of human settlements.

Of course it is assumed that the earlier established relations between the natural and the anthropogenic vegetation on the one side, and the vegetation and other elements of the geographical environment, on the other, are valid only for the given region, and on a new area they should be verified and repeatedly checked.

The preparation proper of the Potential Map of the Natural Vegetation of Poland in a 1:M scale with later mutation to 1:500 000 will be preceded by a period of preliminary work in which draft sheets in a 1:300 000 and 1:200 000 scale will be prepared. The particular sheets include areas uniform as regards their physico-geographical character, generally mesoregions or larger parts of macroregions in the sense of J. Kondracki (1965), and they represent the vegetation of segments with a surface area of 1100—7420 sq.km (cf. next chapter). The purpose of preparation of these draft sheets is the checking of the guiding principles of the legend for the map, perfectioning of the methodical foundations and accumulation of experience which may be useful in the realisation of the whole venture.

The work on the draft sheets will be done in two steps:

I) preparatory work for phytosociocartographical records and making of the records in the field.

II) technical elaboration of the map.

Mapping of the vegetation is a geographical mapping, this means that it is based on already existing cartographic material (generally topographic maps in various scales, in our case 1:100 000), on which in the course of field work the results are mapped according to a special key and the earlier established legend (Fig. 2).

1. Before starting the mapping in the field of each sheet, the theme was registered in the section of Geodesic and Cartographic Work of the Head Office of Land-Surveying and Cartography.

2. After establishing the range covered by the draft sheet, and eventually in concert with other persons working on the map, the itinerary for field mapping is planned, that is the length and course of the necessary travels across the studied area, so as to cover it with a more or less uniform network of transecting lines. Optimal proved for the preparation of draft sheets a density of this network of joint length of 800—1000 current km per 1000 sq.km of mapped surface.

3. Mapping proper is done while travelling with a car along the marked transecting lines with frequent stops for identification of large-area

anthropogenic communities and assigning them immediately to the corresponding circles of natural communities. Other elements of the environment and landscape (e.g. avenues, ruderal flora in villages, trees and shrubs on cemeteries, in parks, forest plantations) can frequently be classified while slowly advancing in the car. The investigation results in the sense of identification of certain segments of the area as regards the units of potential vegetation, are point — or surface-mapped by the Legend symbols (number and letter or coloured marks in dependence on the choice of the author of the sheet). The present author additionally keeps a field diary in which difficult and doubtful cases are noted, those requiring a greater number of observations, and also the results of assignment which may raise doubts later, and observations concerning the conditions in which some communities occur, floristic observations — in a word all that cannot be included in the outline map. All this may be very useful in the final elaboration of the map after getting a general idea of the mapped territory. With an efficient locomotion and a good road network half of which only is paved, one working group (driver and phytosociologist) can examine during 10 hours of travelling along transecting lines a joint length of 150—220 km.

4. On the same day in the evening the results of investigation recorded on the outline map should be partly interpolated, the unclear points revealed and the itinerary for the next day planned.

Technical elaboration of the draft sheet consists in:

1. preparation of an original drawing of the map, generally on the basis of the field mapping;

2. generalisation of the map and field mapping, transposal of the contours of the distinguished surface areas and points, checking of the closure of contours and making of photostat copy in the reduction proposed for reproduction (1 : 300 000, or 1 : 200 000);

3. drawing up in detail of draft sheet including technical and subject elaboration and establishment of deviations permissible for the given sheet from the generally established pattern volume of the sheet, of the legend for the sheet, of the inset and other supplementary materials for the map; decision as to the technique of reproduction;

4. preparation of fair copy, proof reading, making of ozalid or photoreflex copies, reproduction (so far only in black and white offset technique).

EXPERIENCE AND CONCLUSIONS CONCERNING PREPARATION OF DRAFT SHEETS OF MAP OF POTENTIAL NATURAL VEGETATION OF POLAND

Polish phytosociology lacks experience and tradition in the sphere of medium and small-scale cartography, and recent studies have revealed a sharply transitional character of the geobotanical picture of the plant

Draft sheets of Map of Potential Vegetation of Poland covering the territory of Poland: a — sheets published; b — sheets in preparation.

cover of Poland. It was, therefore, decided to precede the work on the review Map of the Potential Natural Vegetation of Poland in a 1:M scale by the preparation and publication of several draft sheets in a 1:200 000 or 1:300 000 scale. (Fig. 3—5).

To date in the editorial series „Materiały Zakładu Fitosocjologii Stosowanej U.W. Warszawa—Białowieża” („Materials of the Department of Applied Phytosociology of the Warsaw University, Warszawa—Białowieża”) the following sheets have appeared, partly with an explanatory text, comprising approximately uniform physico-geographical regions: The Górowo Eminence and Orneta Lowland (1:200 000, ca. 1100 sq.km, Faliński, 1966b), the Warsaw Basin (1:300 000, ca. 3800 sq.km, Matuszkiewicz W., 1966b) and the Silesian Lowland — middle part (1:300 000 ca. 5820 sq.km, Matuszkiewicz W., 1967), the Bielsk Plateau (1:300 000, ca. 7308 sq.km, Faliński 1968) and a segment

of this region known as the Drohiczyn Plateau (1 : 200 000, ca. 1776 sq.km, Faliński 1968)*. A sheet of the Masurian Lakeland — central part (1 : 300 000, ca. 6015 sq.km, Faliński, cf. also map in the present paper) and a sheet of the Kurpie Plain (1 : 300 000, ca. 5369 sq.km, Faliński) are in press. Field records have been made for the sheet of the Białystok Plateau and Lubawa Hummock. The Poznań centre is preparing two sheets from West Pomerania and two from Greater Poland.

In view of the expenses, the draft sheets are printed in the offset black and white technique.

If we disregard certain limitations due to the use of unicoloured print, the conclusions from the prepared draft sheets may be listed as follows:

1. The 1 : 300 000 scale allows to list practically in full all the large surfaces of natural forest communities, and to represent their area by the surface method. It is also possible to show the geographical differentiation of the more important forest communities deciding of the character of the vegetation.

2. Extrazonal communities should be represented by points, only exceptionally by surfaces.

3. Communities reaching in Poland the limit of their range, e.g. sub-boreal spruce forests, since they are limited to particular sites and small areas should be marked by points close to the limit of their range, and partly as surfaces (sheets Bielsk Plateau, Masurian Lakeland). The same rule should be applied to thermophilous oak forests, particularly in the northern part of the country. Consistent application of the surface mapping method in this case would once for all rule out the possibility of presenting synchorologic phenomena.

4. Azonal communities, particularly those of larger river valleys had to be mostly represented as a belt complex, e.g. *Salicetum albo-fragilis*

*) In the meantime several maps of the potential natural vegetation of Poland covering small fragments of this country have been elaborated, for instance the Ojców National Park (Medwecka-Kornaś A.; Kornaś J., 1963), the Botanical Park in Białowieża (Faliński, 1965), The Białowieża Polana (glade) (Faliński, 1966 a), the environs of the villages Radziejewice, Siejkowo, and Iznawa and the Kal peninsula in the Masurian Lakeland (4 sheets, Faliński manuscript), the environs of Kartuzy and of the Ostrzyce Lake in the Kaszuby Lakeland (Matuszkiewicz W., 1966 a, 1968 a), the environs of the Wdzydze Lake in the Tuchola Forest (Matuszkiewicz W., Matuszkiewicz A., 1968b) and several others not yet published.

All these maps, even jointly, are of no major importance for the rapid preparation of the Map of the Potential Natural Vegetation of Poland since they concern only very small areas. They are, however, a highly valuable supplementary material for establishing the correlation between anthropogenic and other elements of the geographical environment. Moreover, some of these maps have found interesting practical application, e.g. in the planning of the grounds of recreation centres (Matuszkiewicz W., 1968, Solińska-Górnicka, 1968).

with *Alno-Padion* or *Alno-Padion* with hygrophilous *Querco-Carpinetum*. In some cases the range of these units on the map was widened.

5. On 1 : 200 000 scale maps it was still possible to present the ecological differentiation of commoner associations (division into subassociations: sheets Górowo Eminence, Drohiczyn Plateau). This, however, is only possible for small segments of the area, where geographical differentiation is not involved or consciously disregarded.

6. The necessity of generalisation was already postulated in the legend to the map in the case when floristically and ecologically similar units are concerned. Here the hierarchic system of plant associations allows the use of such notions as a group or alliance of associations. Their inherent meaning can be unequivocally defined. Another problem is the cartographic presentation of certain coupled systems or complexes, the members of which in the system of plant communities frequently occupy distant places, e.g. the *Salici-Franguletum* and *Vaccinio (uliginosi)-Pinetum* complex. Such complexes, if they are of repetitive character and can be sharply delimited in the field from homogeneous units, must receive in the map separate symbols. These symbols should be related to those representing homogeneous units forming the given complex, but coloured-stripe patterns should be avoided. It is necessary, however, to limit the presentation of complexes solely to the cases when the principle of distinction on the basis of the dominating community cannot be applied.

7. The size of what is called the basic field has so far not been unequivocally established. Its mechanical establishment may obscure certain specific traits of the spatial differentiation of the vegetation. At the stage of draft sheets this value will be somewhat arbitrary, and in the synthetic approach on the scale of a review map of Poland, the surface area of the field will perhaps have to differ according to the given region.

8. The draft sheets are supposed to cover exemplary, possibly diverse as regards landscape, regions of Poland. Generalisation of the materials from sheets with a 1 : 300 000 scale to a scale of 1 : 500 000 or 1 : M will probably oblige us to omit certain details e.g. the trophic series in the group *Querco-Carpineta*, to disregard some small-surface units and to include them partly into the complex units. It is expected that at a 1 : 500 000 scale it will still be possible to deal in terms of plant associations or groups of associations. It may not be possible on the 1 : M map to respect all the above mentioned postulates, and for some type of vegetation it may be necessary to use what is called vegetation landscapes.

The review Map of the Potential Natural Vegetation of Poland in a 1 : M scale together with the eventual variant in a 1 : 500 000 scale is to be published in colours.

A few words should finally be said as to the hopes attached by the initiators to the Map of the Potential Natural Vegetation of Poland.

1. It is hoped that the map will give for the first time a uniform picture of the vegetation of Poland, drawn according to sufficient clearly defined criteria elaborated on the basis of practically almost ended systematic-phytosociological studies (cf. Matuszkiewicz W., 1965 and literature quoted therein).

2. Having for the first time the opportunity of considering the vegetation of this country against that of Central Europe, we will be able to search for the connections between the differentiation of the plant communities in Poland and in the neighbouring countries. It will be possible to study closer and define more precisely the fundamental problems of the geobotanical transitional character of the territory of Poland.

3. Material will be available for considerations involving the history of the vegetation and climate, and for investigations on the spatial differentiation of the vegetation and other elements of the geographical environment.

4. There will be a basis for a regional division of the country according to uniform phytosociological (synchorological) criteria.

5. The map will fill a gap in the material necessary for the knowledge of the distribution of various elements of the geographical environment in Poland.

6. It is hoped that the review Map of the Potential Natural Vegetation of Poland will find practical application as it has in the case of our neighbours in site planning, forestry, meadow science and in planning of recreation centres.

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LITERATURA

- Donita N., Leandru V., Puscaru-Soroceanu, 1960, *Harta Geobotanica R.P.R.* 1: 500.000, 4 arkusze. — Akad. Republ. Romine.
- Faliński J. B. 1965. *Essai d'interpretation phytosociologique et cartographique de la végétation des parcs (par l'exemple du Parc Botanique de Białowieża)*. — *Mater. Zakł. Fitosoc. Stos. UW Warszawa—Białowieża* 6: 75—90 + mapa.
- Faliński J. B., 1966a, *Antropogeniczna roślinność Puszczy Białowieskiej jako wynik synantropizacji naturalnego kompleksu leśnego*. — *Dissert. Univers. Varsoviensis* 13: 1—256 + mapa.
- Faliński J. B., 1966b, *Dzisiejsza potencjalna roślinność naturalna Wzniesień Górskich i Niziny Orneckiej*. — *Mater. Zakł. Fitosoc. Stos. UW Warszawa—Białowieża*, 11: 1—15 + mapa.
- Faliński J. B., 1968, *Potencjalna roślinność naturalna Wysoczyzny Bielskiej*. — *Mater. Zakł. Fitosoc. Stos. UW Warszawa—Białowieża*, 25.

- Faliński J. B., mscr., Potencjalna roślinność naturalna Pojezierza Mazurskiego — część środkowa.
- Faliński J. B., mscr., Potencjalna roślinność naturalna Równiny Kurpiowskiej.
- Faliński J. B., Hryniewicz-Sudnik J., Fabiszewski J., 1963, Śródpolne zarośla z rzędu *Prunetalia* (czyżnie) Równiny Kutnowskiej jako wskaźnik dzisiejszej potencjalnej roślinności naturalnej. — *Acta Soc. Bot. Pol.* 32.4: 693—714.
- Kondracki J., 1965, *Geografia fizyczna Polski*. — PWN, Warszawa, 575 pp.
- Küchler A. W., 1964, Potential Natural Vegetation of the conterminous United States. — *American Geographical Society, Spec. Publ.* 36: 1—38, 1—116 + mapa, New York.
- Lavrienko J. M., Sočava W. B., 1956, Rastitielnyj pokrow SSSR. Pojasnitielnyj tiekst k Gieobotaniceskoj karte SSSR m. 1:4 000 000. Moskwa—Leninograd.
- Matuśzkiewicz A., 1963 a, La cartographie phytosociologique en Pologne. Son état actuel et l'utilisation pratique. — Bericht ü.d. Intern. Symp. f. Vegetationskartierung v. 23—26.3.1959 in Stolzenau/Weser. Red. J. Tüxen, pp. 347—352. Verlag J. Cramer, Weinheim.
- Matuśzkiewicz A., 1963 b, Bibliografia polskich map fitosocjologicznych. — *Mater. Zakł. Fitosoc. Stos. UW Warszawa — Białowieża*, 3: 1—15.
- Matuśzkiewicz W., 1965, Aktualny stan prac nad fitosocjologiczną typologią lasów Polski. Zagadnienia systematyki fitosocjologiczno-leśnej w Polsce. *Mater. konf. nauk. Warszawa 27.IV.1965. Mat. Zakł. Fitosoc. Stos. UW Warszawa—Białowieża*, 9: 5—37.
- Matuśzkiewicz W., 1966 a, Potencjalna roślinność naturalna wybranych obiektów leśnych w nadleśnictwie Kartuzy. — *Mater. Zakł. Fitosoc. Stos. UW Warszawa — Białowieża*: 10: 1—10 + tab. + mapa.
- Matuśzkiewicz W., 1966 b, Potencjalna roślinność naturalna Kotliny Warszawskiej. — *Mater. Zakł. Fitosoc. Stos. UW Warszawa — Białowieża*, 15: 1—12 + mapa.
- Matuśzkiewicz W., 1967, Potencjalna roślinność naturalna Niziny Śląskiej (część środkowa). — *Mater. Zakł. Fitosoc. Stos. UW Warszawa — Białowieża*, 17: 1—14 + mapa.
- Matuśzkiewicz W., 1968, Fitosocjologiczne podstawy zagospodarowania rejonu Jezior Ostrzyckich dla potrzeb turystyki i rekreacji. — *Biuletyn Inst. Urbanist. i Architekt.* 27: 1—24.
- Matuśzkiewicz W., Matuśzkiewicz A., 1968, Potencjalna roślinność naturalna okolic jeziora Wdzydze. — *Mater. Zakł. Fitosoc. Stos. UW Warszawa — Białowieża*, 23.
- Medwecka-Kornaś A., 1966, Naturalne krajobrazy roślinne. 1:5 000 000 — Polska. Atlas geograficzny. PPWK, Warszawa.
- Medwecka-Kornaś A., Kornaś J., Plant Communities of the Ojców National Park (Southern Poland) and their Successions. — *Bull. d. l'Acad. Polon. d. Sc.* 11.7: 353—355.
- Mikyška R. et coll., 1968, Geobotanická mapa ČSSR. 1. České země. — *Vegetace ČSSR A2*: 1—204 + fot.
- Moravec J., 1961 a, Postup při geobotanickém mapování. — *Biol. práce* 7.12: 21—23. Bratislava.
- Moravec J., 1961 b, Jednotky geobotanického mapování. — *Biol. práce* 7.12: 57—63. Bratislava.
- Moravcová-Husová M., 1961, Výsledky a zkušenosti geobotanického mapování v Čechách. — *Biol. práce* 7.12: 75—78. Bratislava.

- Motyka J., 1952, Krainy roślinne 1 : 8 000 000. — W: Janiszewski M., Geograficzny atlas Polski, PZWS, Warszawa.
- Neuhäusl R., 1963, Vegetationskarte von Böhmen und Mähren. — Ber. geobot. Inst. ETH, Stgtg Rübel, Zürich, 34: 107—121.
- Neuhäusl R., 1964, Rekonstrukční vegetační mapování. — Biológia 19.6: 475—482. Bratislava.
- Paczoski J., 1935, Piętrowość lasu. — Bibl. Botan. Pol. Tow. Botan. 3: 1—72. Poznań.
- Scamoni A. (red.), 1958, Karte der natürlichen Vegetation, 1 : 1 000 000. — Klima-Atlas d. DDR. Akademie-Verlag, Berlin.
- Scamoni A. (red.), 1964, Karte der natürlichen Vegetation, 1 : 500 000. — Akademie-Verlag, Berlin.
- Schwickerath M., 1954, Die Landschaft und ihre Wandlung, auf geobotanischer und geographischer Grundlage entwickelt und erläutert im Bereich des Messtischblattes Stolberg, Aachen.
- Solińska-Górnicka B., 1968, Fitosocjologiczne podstawy zagospodarowania rekreacyjnego, na przykładzie wybranych terenów nad Zalewem Żegrzyńskim. — Biuletyn Inst. Urbanist. i Architekt. 27.
- Stepán J., 1969, Biologicko-krajinné prvky v integrovaném informacním systému o uzemi. — CSAV, Studia geographica 6, Problemy současné biografie: 87—93. Brno.
- Tüxen R., 1932, Wald und Bodenentwicklung in Nordwestdeutschland. — Ber. Wandervers. d. Nordwestdeutshl. Forstvereins. 37. Hannover.
- Tüxen R., 1956, Die heutige potentielle natürliche Vegetation als Gegenstand der Vegetationskartierung. — Angew. Pflanzensoz. 13: 5—42.
- Trautmann W., 1965, Die Vegetationskarte Minden 1 : 200 000, das erste Musterblatt der geplanten Vegetationskarte der Bundesrepublik Deutschland. — Natur u. Landschaft, 40.3: 48—52 + mapa.
- Trautmann W., 1966, Erläuterung zur Karte der potentiellen natürlichen Vegetation der Bundesrepublik Deutschland 1 : 200 000 Blatt 85 Minden. — Schriftenreihe f. Vegetationskunde, 1: 137 + mapa.

Podstawy metodyczne Mapy Potencjalnej Roślinności Naturalnej Polski

Streszczenie

Mimo znacznego dorobku ilościowego polskiej kartografii fitosocjologicznej, powstały tylko 2 mapy obejmujące cały kraj. Z uwagi na bardzo małą podziałkę i założenia metodyczne okazują się one nie wystarczające i nie dają wiernego obrazu roślinności Polski.

Zakład Fitosocjologii Stosowanej Uniwersytetu Warszawskiego, Warszawa — Białowieża, przystąpił do prac nad przeglądową mapą Potencjalnej Roślinności Naturalnej Polski w roku 1965. Z założeń mapy wynika, że będzie to mapa powierzchniowa, przedstawiająca dzisiejszą potencjalną roślinność naturalną w sensie R. Tüxena (1956), a podstawową jednostką legendy będzie asocjacja, w wyjątkowych przypadkach grupy asocjacji, związek asocjacji, lub kompleksy. Mapa powinna ukazać możliwie pełne zróżnicowanie geograficzne asocjacji roślinnych, zwłaszcza asocjacji zonalnych. Wstępny okres prac nad mapą obejmuje wykonanie pewnej liczby próbnych arkuszy w podziałce 1 : 300.000 dla różnych regionów fizyczno-geograficznych

(str. 216). Mapa w ostatecznej redakcji w podziałce 1 : M z wariantem 1 : 500.000 powinna przynieść jednolity obraz roślinności Polski na tle roślinności Europy Środkowej. W szczególności pozwoli ona na bliższe zbadanie istoty przejściowego położenia geobotanicznego Polski, a równocześnie wypełni dotkliwą lukę w materiałach do fizjografii kraju.

Na mapę roślinności potencjalnej całej Polski czeka ochrona przyrody, planowanie przestrzenne, a zwłaszcza planowanie terenów rekreacyjnych i turystycznych, leśnictwo oraz liczne dziedziny wiedzy blisko współpracujące z fitosocjologią lub korzystające z jej wyników, jak kompleksowa geografia fizyczna, geografia regionalna, klimatologia, gleboznawstwo itd.

VEGETATION OF THE POLANA BIAŁOWIESKA IN THE BIAŁOWIEŻA PRIMEVAL FOREST

Janusz B. Faliński

Roślinność Polany Białowieskiej w Puszczy Białowieskiej

Fig. 1. Differentiation on phytosociological map according to the varying contents, and principle of transposing the map of the real vegetation to the map of potential vegetation — Polana Białowieska, Białowieża Primeval Forest.

(according to J. B. Faliński, 1966, greatly simplified and changed)

Legend to maps „Primary vegetation” and „Potential natural vegetation”:
1 — *Carici elongatae-Alnetum*, 2 — *Circaeae-Alnetum*, 3 — *Tilio-Carpinetum stachyretorum*, 4 — *Tilio-Carpinetum typicum*, 5 — *Tilio-Carpinetum calamagrostietorum*, 6 — *Potentillo albae-Quercetum*, 7 — *Sphagnetum medio-rubelli*, 7a — *Vaccinio uliginosi-Pinetum*. Legend to map „Real anthropogenic vegetation”: 1–6: field weed communities *Consolidido-Brometum* in crop rotation with *Spergulo-Echinochloetum* or *Digitarietum ischaemi*; 1 and 4 — moisture degree with *Mentha arvensis* ssp. *austriaca*, 2 and 5 moisture degree typical, form with *Polygonum hydropiper*, 3 and 6 — typical moisture degree, typical form; 7 — garden weed community *Galinsogo-Setarietum*, 8 — complex of ruderal communities near fences, on

farmyards and rubble heaps *Urtico-Malvetum*, *Daturo-Malvetum*, *Tanaceto-Artemisietum*, *Leonuro-Arctietum*, *Ballotetum nigrae*, *Lolio-Plantaginetum*, 9 — specialised ruderal communities of railway tracks: *Panicli-Eragrostietum*, *Corisperm-Brometum*, *Echio-Melilotetum*, 10 — communities of trodden and grazed roadsides *Lolio-Plantaginetum*, *Lolio-Potentillietum anserinae*, *Juncetum macri*, *Blismo-Juncetum compressi*, *Rumici-Alopecuretum*, 11 — pioneer communities on slopes of gravel pits and shallow clay pits, 12 — *Sparganio-Sagittarietum potamogetonosum*, 13 — high rush communities: *Scirpo-Phragmitetum*, *Glycerietum maximeae*, *Caricetum vesicariae*, *C. paniculatae*, *C. vulpinae*, *C. gracilis*, *C. ripario-acutiformis*, *C. elatae*, *C. appropinquatae* etc., 14 — damp meadow communities: *Cirsietum rivularis*, *Sciepetum silvaticum*, 15 — damp meadow and pasture communities: *Epilobio-Juncetum*, *Juncetum-Cynosuretum*, 16 — rye-grass meadow communities: *Arrhenatheretum elatioris*, 17 — pasture community: *Lolio-Cynosuretum*, 18 — transitional peat: *Caricetum diandrae*, 19 — basophilous transitional peat: *Caricetum davallianae*, 20 — *Carici-Agrostietum*, 21 — *Sphagnetum medio-rubelli*, partly in complex with *Vaccinio uliginosi-Pinetum*, 22 — *Polygato-Nardetum*, 23 — fragment of various forest communities at different stages of degeneration or regeneration.

10	Acidophilous oak forests and mixed pine-oak forests
101	Subatlantic acidophilous oak forests (<i>Querco-Betuletum</i>)
102	Acidophilous oak-beech forests (<i>Fago-Quercetum</i>)
103	Central-european acidophilous oak forests (<i>Quercetum medioeu-ropaeum</i> , <i>Calamagrostio-Quercetum</i>)
104	Continental pine-oak mixed forests (<i>Pino-Quercetum?</i>)
2	Pine forests and bog birch forests (<i>Dicrano-Pinion</i>)
21	Suboceanic pine forests (<i>Leucobryo-Pinetum</i>)
211	Lowland variety
212	Submontane variety
22	Continental pine forests (<i>Peucedano-Pinetum</i>)
221	„Sarmatian” variety
222	Subboreal variety
23	Coastal pine forests (<i>Empetro nigri-Pinetum</i>)
24	Suboceanic bog birch forests (<i>Betuletum pubescentis</i>)
25	Continental bog pine forests (<i>Vaccinio uliginosi-Pinetum</i>)
11	Dwarf pine scrubs
111	Sudeten dwarf pine shrubs (<i>Pinetum mughi sudeticum</i>)
112	Carpathian dwarf pine shrubs (<i>Pinetum mughi carpathicum</i>)
12	Alpine grasslands and herb vegetation
13	High peat
14	Natural xerothermic grasslands
15	Halophilous communities

Fig. 2

Legend to Map of Potential Natural Vegetation of Poland
Prepared by: W. Matuszkiewicz, J. B. Faliński, N. Olszewska

01	Bog alder forests (<i>Carici elongatae-Alnetum</i>)
	011 subatlantic variety
	012 central-european variety
	013 subboreal variety
	3 Floodplain forests (<i>Salicetum albo-fragilis</i>)
	4 Floodplain forests (<i>Alno-Padion</i> p.p. max.)
	5 Floodplain forests (<i>Fraxino-Ulmetum</i>)
6	Deciduous, mainly oak-hornbeam forests (<i>Carpinion</i>)
	61 Subatlantic oak-hornbeam forests (<i>Stellario-Carpinetum</i>)
62	Central-european oak-hornbeam forests (<i>Galio-Carpinetum</i>)
	621a Greater Poland-Silesian variety, poor series
	621b Greater Poland-Silesian variety, rich series
63	Subcontinental oak-hornbeam forests (<i>Tilio-Carpinetum</i>)
	631a Smaller Poland variety, poor series
	631b Smaller Poland variety, poor series
	632a Masovian variety (Central Poland variety), poor series
	632b Masovian variety (Central Poland variety), rich series
	633a Masurian variety (subboreal variety), poor series
	633b Masurian variety (subboreal variety), rich series
	64 Submontane maple-linden forests (<i>Aceri-Tilietum</i>)

- 9 Spruce and fir forests (*Vaccinio-Piceion* p.p. max.)
- 91 Boreal lowland fir forests (*Quercus-Piceetum*, *Sphagno girgensohnii-Piceetum*)
- 92 Sudeten montane spruce forests („*Piceetum tatricum*” coll.)
- 93 Carpathian montane spruce forests („*Piceetum tatricum*” coll.)
- 94 Montane fir-spruce forests (*Abieti-Piceetum* prov.)
- 95 Upland fir forests (*Abietetum polonicum*?)
- 7 Beech forests, fir forests and sycamore forests (*Fagion*)
- 71 Pomeranian rich beech forests (*Melico-Fagetum*)
- 72 Sudeten rich beech forests (*Dentario enneaphyllidis-Fagetum*)
- 72A montane form
- 72B submontane form
- 73 Carpathian rich beech forests (*Dentario enneaphyllidis-Fagetum*)
- 731A West-carpathian variety, montane form
- 731B West-carpathian variety, submontane form
- 732A East-carpathian variety, montane form
- 732B East-carpathian variety, submontane form
- 74 Calciphilous beech forests (*Caphalanthero-Fagion*)
- 75 Pomeranian acidophilous beech forests (*Trientali-Fagetum*)
- 76 Montane acidophilous beech forests (*Luzulo-Fagetum*)
- 77 Sycamore forests (*Acerion*)
- 78 Eutrophic fir forests (*Galio-Abietion*)
- 8 Thermophilous oak forests (*Quercetalia pubescentis*)
- 81 Thermophilous oak forests (*Potentillo albae-Quercetum*)
- 82 Warm hazel brushwood (*Peucedano-Coryletum*)

POTENTIAL NATURAL VEGETATION OF THE BIELSK PLATEAU

Janusz B. Faliński

POTENCJALNA ROŚLINNOŚĆ NATURALNA WYSOCZYNY BIELSKIEJ

- Olsy (*Carici elongatae-Alnetum*), częściowo w kompleksie z borem bagiennym (*Vaccinio uliginosi-Pinetum*)
 Nadrzeczne łęgi wierzbowe (*Salicetum albo-fragilis*) w kompleksie z łęgami jesionowo-wiązowymi (*Fraxino-Ulmetum*)
 Przysłoneczne łęgi olszowe i olszowo-jesionowe ze związku *Alno-Padion Circae-Alnetum* i inne
 Subkontynentalne grady (*Tilio-Carpinetum*), seria bogata, a - odmiana mazurska (subborealna), b - odmiana mazowiecka
 Świetlista dąbrowa (*Potentillo albae-Quercetum*) - a i ciepłe zarośla leszczynowe (*Peucedano cervariae-Coryletum*) - b

- Borealne świerczyny nizinne (*Quercus-Piceetum*, *Sphagno-Piceetum*)
 Kontynentalny bór mieszany (*Pino-Quercetum*) a - odmiana subborealna, b - odmiana sarmacka
 Kontynentalny bór sosnowy (*Peucedano-Pinetum*) a - odmiana subborealna, b - odmiana sarmacka
 Kontynentalny sosnowy bór bagienny (*Vaccinio uliginosi-Pinetum*)
 Torfowisko wysokie (*Sphagnum medio-rubellum*)
 Naturalne murawy kserotermiczne ("stepowe")

KLIMAT

Białowieża 1951-1960

Szepietowo 1951-1960

wg J. L. Olszewskiego, msr

GEOLOGIA

wg E. Ruhlgo i M. Sokółowskiej 1956

- Torfy
 Mady, łąki, piaski, miejscami ze żwirami akumulacji rzecznej
 Piaski, miejscami ze żwirami akumulacji rzecznej
 Piaski i żwiru akumulacji wodno-lodowej
 Gliny zwalowe, miejscami piaski z glazami akumulacji denno-lodowej
 Piaski ze żwirami, żwiru i skupienia glazów akumulacji czołowo-lodowej wszystkich stadiów
 Gliny zwalowe, miejscami piaski z glazami w strefie akumulacji czołowo-lodowej stadium 1 kujawskiego i północno-mazowieckiego, 2 mazowiecko-podlaskiego

KRAJOBRAZY NATURALNE

wg J. Kondrackiego 1965

- tarasy zalewowe
 równiny denudacyjne
 wzgórza ostańcowe

Zakład Fitosocjologii Stosowanej UW
Warszawa - BiałowieżaOpracowanie kartograficzne
Neli Olszewska

1968

POTENTIAL NATURAL VEGETATION OF THE WARSAW BASIN

Władysław Matuszkiewicz

POTENCJALNA ROŚLINNOŚĆ NATURALNA KOTLINY WARSZAWSKIEJ

GEOLOGIA

KRAJOBRAZY NATURALNE

Holocen	Mady i piaski akumulacji rzecznej
Piaski wydmowe
Złodow bałtyckie (Würm)	Piaski i żwirzy stozków napływowych
Piaski akumulacji rzecznej
Złodow środkowo-polskie (Riss)-stadium Warty	Iły zastoiskowe
Gliny zwałowe i piaski moreny dennej
Piaski żwirowe, żwirzy i głazy moreny czołowej
Pliocen	Iły pstry

	Peryglacjalne równiny denudacyjne
	Taraszy wydmowe
	Taraszy zalewowe

Zakład Fitosocjologii Stosowanej UW
Warszawa - BiałołękaOpracowanie kartograficzne:
Neli Olszewska

Circles of plant groups in the region of the Białowieża
Primeval Forest
/according to J.E. Faliński, 1966a/

Legend -

- - main equivalent communities
- ① - other equivalent community
- ⊖ - exceptional sporadic equivalent community
- - communities equivalent for certain units

Indicator equivalent plant communities in the Białowieża Primeval Forest Region
according to J.B. Faliński, 1966a

Natural communities	A n t h r o p o g e n i c c o m m u n i t i e s				
	of grasslands	segetal	ruderal and related	of felling	of brushwood and forest edge
Salici-Franguletum, Carici elongatae-Al- netum	Phragmitetea	△		regeneration phases	Salici-Franguletum
Salicetum albo-fragilis	Phalaridetum arundinaceae	△	Polygono-Bidentetum, Chenopodietum glauco- rubri, comm. of, z Pu- licaria vulgaris	regeneration phases	Salicetum triandro-viminalis, Convolvulus sepium-Asperul- aparino-Ass.
Carcae-Alnetum Carici remotae-Fraxi- netum, Fraxino-Ulmetum	Molinieta	△	Polygono-Bidentetum, Leersio-Bidentetum	regeneration phases	Comm. of Cornus sanguinea, comm. of Symphytum officinale- Eupatorium cannabinum
Tilio-Carpinetum	Arrhenatheretum medieuropeum, Lolio-Cynosuretum Polygalacto-Nardetum	Consolido-Brometum, Spergulo-Lolietum, Spergulo-Echinochloe- tum	Leonuro-Arctietum tomentosi, Tanaceto- -Artemisietum arctietosum	Epilobio-Senecione- tum silvatici, Epilobio-Salicetum capreae	Alliario-Chaerophylletum, Trifolio-Agrimoniae
Potentillo albae -Quercetum	Arrhenatheretum medieuropeum var. z Salvia pratensis, Festuco-Thymetum	Consolido-Brometum, Digitarietum ischaemi	Potentillo-Absin- thietum, Datura- -Malvetum, Tanacetum- -Artemisietum chrysanthemetosum	as above	initial phases - Prunetalia
Pino-Quercetum	△	▲	▲	as above	▲
Peucedano-Pinetum	Spergulo-Corynephorretum	Papaveretum argemone	▲	as above	▲
Vaccinio uliginosi- Pinetum	△	△	△	regeneration phases	Salici-Franguletum, Caricetum inflatae
Querco-Piceetum, Sphagno-Piceetum	△	△	△	regeneration phases	△

△ - no equivalent communities

▲ - no indicator equivalent communities

POTENCJALNA ROŚLINNOŚĆ NATURALNA POJEZIERZA MAZURSKIEGO

Janusz B. Faliński

(część środkowa)

1:200,000

Fig. 5

POTENTIAL NATURAL VEGETATION OF THE MASURIAN LAKELAND
(CENTRAL PART)

PODZIAŁ FIZYCZNO-GEOGRAFICZNY (kompleksowy)

wg J. Kondrackiego i J. Ostrowskiego (1968)

- 831.1 MAKROREGION: NIZINA STAROPRUSKA
- 831.13. Mesoregion: Rowina Sopotnia
- 832.1 MAKROREGION: POJEZIERZE MAZURSKIE
- 832.13. Mesoregion: Pojezierze Mrągowskie
- 832.15. Mesoregion: Kraina Wielkich Jezior
- 832.14. Mesoregion: Kraina Węgorzy
- 832.15. Mesoregion: Garb Szalski
- 832.16. Mesoregion: Pojezierze Elckie
- 832.17. Mesoregion: Rowina Mazurska
- 832.21 MAKROREGION: POJEZIERZE LITEWSKIE
- 832.21. Mesoregion: Puszcza Romincka
- 833.1 MAKROREGION: NIZINA PÓŁNOCNO-PODLASKA
- 833.11. Mesoregion: Wysoczyzna Kolneńska

PODZIAŁ GEOBOTANICZNY (florystyczno-fitosocjologiczny)

wg B. Pałkowskiego (1963)

- IV. KRAINA: POJEZIERZE MAZURSKIE
- IV.A. Okręg Olsztyński
- IV.A.1. Podokręg Sopotnia
- IV.A.2. Podokręg Pojezierze
- IV.B. Okręg Górzno-Suwałki
- IV.B.1. Podokręg Żubów

- granice I rzędu
- granice II rzędu
- granice III rzędu
- granice IV rzędu

PODZIAŁ GEOBOTANICZNY (fitosocjologiczny)

Opracował: J.B. Faliński (1970)

- I. KRAINA: NIZINA STAROPRUSKA
- I.1. Okręg Sopotnia
- I.2. Okręg Perlecki
- II. KRAINA: POJEZIERZE MAZURSKIE
- II.1. Okręg Mrągowski
- II.2. Okręg Wielkich Jezior
- II.3. Okręg Olsztyński
- II.4. Okręg Elckie
- II.5. Okręg Węgorza Szalskie
- II.6. Okręg Elckie
- II.7. Okręg Puszcza Piska
- III. KRAINA: POJEZIERZE LITEWSKIE
- III.1. Okręg Puszcza Romincka
- IV. KRAINA: PÓŁNOCNODOLSKA
- IV.1. Okręg Kolneński

1:500,000

- Olsy (*Carici elongatae-Alnetum*) w odmianie subborealnej
- Nadrzeczne łęgi wierzbowo-topolowe (*Salicetum albo-fragilis*), także nad brzegami wielkich jezior mazurskich
- Łęgi olszowe i olszowo-jesionowe (*Circeo-Alnetum*)
- „Podgórski” łęg jesionowy (*Carici remotae-Fraxinetum*) na kresowym wschodnim stanowisku
- Olszyna borealna (*Alnetum incanaze boreale*) na stanowiskach wypowych
- Nadrzeczne i przysturkowe łęgi wiązowe z grupy *Fraxino-Ulmetum* (głównie *Fraxino-Ulmetum*)
- Grądy subkontynentalne (*Tilio-Carpinetum*) odmiana mazurska, seria bogata
- odmiana mazurska, seria uboga, w tym wszystkie oligotroficzne zbiorowiska grądowe typu *Tilio-Carpinetum uliginosum*
- Grądy ciepłolubne (*Tilio-Carpinetum prunilatum* lub zbliżone do tego podzespół); zawierające na niektórych stanowiskach świetlistą dąbrowę
- Świetlista dąbrowa (*Potentilla albae-Quercetum*)
- Kontynentalny bor mieszany (*Pino-Quercetum*), odmiana subborealna
- Borealne świerczyny nizinowe (*Quercus-Piceetum*, *Sphagno-Piceetum*)
- Kontynentalny bor sosnowy (*Peucedano-Pinetum*), odmiana subborealna
- Kontynentalny sosnowy bor bagienny (*Vaccinio uliginosi-Pinetum*)

ZESPÓŁ KARTOGRAFII ROŚLINNOŚCI
I KSZTAŁTOWANIA KRAJOBRAZU
INSTYTUTU BOTANIKI UNIWERSYTETU WARSZAWSKIEGO
Białowieża

Redaktor mapy: Janusz B. Faliński