1.3 Introduction and summary for English-speaking readers

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The project **'Plant communities of Mecklenburg-Vorpommern and their vulnerability'** provides a state-of-the-art overview of the vegetation types in this federal state of NE Germany (also known in English as Mecklenburg-West Pomerania). In addition, an assessment of these plant communities for nature conservation purposes is given. A team of more than a dozen scientists has been working on this project, some of them since 1993.

The results are published in a two-volume edition: The first volume (BERG & al. 2001b) includes the synoptic tables of all ranks of syntaxa from associations upwards. The second volume on hand contains introductory chapters on the project, on the research area and on the methodology, and detailed accounts of each syntaxon. A CD-ROM with unabridged versions of all the tables and additional information will be published in 2004 and will be available at cost price from the LUNG (see imprint for the address).

This short introduction aims to make much of the information included in the two volumes accessible to non-German-speaking readers. For any further questions, please do not hesitate to contact the editors or the authors of the individual chapters.

1.3.1 Syntaxonomy

1.3.1.1 Our approach to classification

At the beginning of the project, two fundamental demands were formulated which we aimed to meet with our classification:

- It should be carried out in a uniform manner according to logical and transparent principles.
- The vegetation units defined in this way should be applicable for nature conservation practitioners and should also be compatible, as far as possible, with overviews of plant communities from neighbouring regions.

Since the Braun-Blanquet approach (phytosociology) is the leading method for classifying vegetation in Germany and large parts of Europe, it was clear that this should be followed. Many more or less diverging methods have been included within this approach, as can be seen for example in the textbook by DIERSCHKE (1994), but so far no complete and consistent concept has been developed.

We ourselves have thus had to develop a concept that puts the Braun-Blanquet approach in unambiguous concrete terms and definitions. Our concept is largely based on the suggestions of BERGMEIER & al. (1990), combined with the idea of the central syntaxon of DIERSCHKE (e. g. 1994: 324). It was published for the first time in DENGLER & BERG (2002) and, in a more developed version and with more theoretical background, in DENGLER (2003). 12 axiomatic definitions form the centre of our concept, which is described in chapter I.3.1.2 of the text-volume or as an English version in DENGLER (2003: 252). Only the most important points are briefly mentioned here:

- All homogeneous vegetation stands have been taken into account in our classification (**completeness**). So-called 'atypical' or 'fragmentary' types have not been 'eliminated' by table work, as has frequently been suggested or done by other authors.
- The classification is carried out within three **structural types of vegetation** that have been distinguished *a priori*: vegetation dominated by phanerophytes, herbaceous vegetation (including dwarf shrubs), and one-layered cryptogam vegetation (which is not dealt with here due to a lack of data).
- Clear, testable criteria are used for character and differential species: The constancy of a **differential species** has to be at least twice as high as in the other syntaxa of the same rank within the next superior syntaxon. A **character species** has to fulfil this criterion compared with all other syntaxa of equal rank within the same structural type. Species that meet the character species criterion for several hierarchically intercalated syntaxa are called **transgressive character species**. Such cases occur frequently.
- **Joint differential species of 2 or 3 classes** are those taxa that are not character species of any rank within the structural type in question but which fulfil the differential criterion of these classes against all other classes of this type.
- Within each syntaxon of superior rank, one '**central syntaxon**' can be described that is characterised by diagnostic species of the hierarchical level(s) above, but has no or insufficient (i. e. less than one per relevé) character species of its own. As a result, there is no longer any need to erect informal ('unranked') communities.
- **Constancy** is calculated on the basis of relevés for associations and as a mean of the association values for superior syntaxa.
- As they are an important part of the vegetation, **bryophytes, lichens and macroalgae** have been considered in all vegetation units.

1.3.1.2 Implementation and results

The classification was based on one of the world's largest phytosociological data-bases (cf. EWALD 2001), containing more than 50,000 relevés. This includes nearly all the published relevés from the territory of Mecklenburg-Vorpommern as well as many from unpublished theses and reports. Vegetation types lacking character species are also represented to a large extent. 42,207 relevés were used for the final tablework, omitting only those from outside Mecklenburg-Vorpommern, those published more than once, those considered incomplete or erroneous or without determinations of the relevant species.

The relevés were stored with the programme TURBO(VEG) (cf. HENNEKENS 1995). The classification was carried out manually, but with computer assistance. For example, we used TWINSPAN and other cluster algorithms to generate possible classifications. These were

tested as to whether and how well they complied with the principles of classification mentioned above and – if they did not – were further modified. The starting point of the classification was a preliminary 'syntax code', i. e. the class under which the relevé was originally published. During the classificatory process, relevés have frequently been shifted around between different classes, but a final check was made that each relevé had only been used once. Similarly, synoptic tables of all the equally ranked syntaxa within the two structural types have been generated repeatedly to test which taxa fulfil the character species criterion – and only those which do so have been used.

In our results we present a syntaxonomic system with 26 classes of herbaceous and 8 classes of woody vegetation, subdived in 12 subclasses, 70 orders, 6 suborders, 125 alliances and 284 associations. Only a very few vegetation types such as bramble shrubs and communities of marine macroalgae could not be represented by tables due to the absence of data. Our classification deviates in many ways from existing systems. On the one hand, we were able to support the merging of several existing classes into one. One example is the case with the perennial ruderal communities from anhydromorphic sites (Artemisietea vulgaris), in which we combine the former classes Artemisietea vulgaris s. str., Galio-Urticetea p. p., Agropyretea intermedio-repentis and Epilobietea angustifolii p. p. On the other hand, the restriction of the classification to structural types and the central syntaxon concept enabled a stronger subdivision of certain vegetation types to be made which better reflects the ecological conditions, such as is the case with the moor woodlands.

1.3.1.3 Phytosociological nomenclature

We have paid particular attention to the careful application of the 'International Code of Phytosociological Nomenclature' (ICPN, WEBER & al. 2000). In DENGLER & al. (2003) we have given a more detailed outline of what we have done and how we have interpreted some ambiguous regulations of the ICPN.

Our aim was to find the correct names according to the Code for all syntaxa used. We therefore checked each of them in two major stages:

- We collected the accepted names and syntaxonomic synonyms from the major phytosociological overviews in Central Europe which completely or partly correspond to our individual units.
- Beginning with the oldest name, we checked their legitimacy and validity as well as their type location.

This procedure enabled us to determine the oldest valid and legitimate name known to us, which is most probably the correct name. These names are used as accepted names in the headings of the syntaxon chapters. We have seen the protologues of the accepted names for all our 531 syntaxa, have included the references to their author citations in the bibliography, and have ensured that they are valid and legitimate. Furthermore, some 3,500 synonyms are listed, most of them with a nomenclatural assessment.

Our investigation revealed that no names are currently available for several of the recognised syntaxa, sometimes because of a novel classification by us but sometimes because a commonly used name for a certain syntaxon proved to be invalid or to be a pseudonym. All the necessary new descriptions and typifications of syntaxa will be published in DENGLER & al. (2003, 2004) as well as in some shorter papers (DENGLER & KREBS 2003, LINKE 2003, ISERMANN & DENGLER in prep.). Furthermore, proposals to the Nomenclature Commission for all *nomina proposita* included in the text are in preparation.

1.3.2 Nature conservation assessment

Within the project, we assessed all the associations and some of their recognised subdivisions according to their vulnerability and to their nature conservation value, so that the book could be used as a Red Data Book of plant communities.

1.3.2.1 Vulnerability

The vulnerability category (*Gefährdung*; see chapter I.3.7 of the text-volume and ABDANK & al. [2002]) is based on three criteria of assessment (Tab. 10):

1. The **current distribution** (*Bestandssituation*, Tab. 13) is derived from the area covered by (*Bestandsgröße*, Tab. 11), and the spatial distribution of (*Bestandsverteilung*, Tab. 12), a plant community within Mecklenburg-Vorpommern in the last 10 years. The value zero for the current distribution means that the association was absent during this period, whereas a value of 5 indicates that it is very widespread and frequent in Mecklenburg-Vorpommern.
2. The **quantitative development** (*quantitative Entwicklung*, Tab. 14) since 1960, when an enormous change in land-use took place in Mecklenburg-Vorpommern, especially in agriculture, is estimated on a scale from very high decrease (1), through more or less unchanged (4), to expanding (5).
3. The foreseeable **threat from human activities** (*Bedrohung*, Tab. 15) within the next 10 years is assessed from very high (1), through none (4), to support (5).

The total category of **vulnerability** is derived by use of a matrix (Tab. 16) that combines these three criteria. It ranges from 0 (vanished), through 1 (critical) and 2 (endangered), to 3 (threatened), but we also use R (very rare but not actually threatened). Unthreatened plant communities are divided into V (near threatened), * (not threatened) and *< (not threatened and expanding). Where our data are deficient (cf. Tab. 17), we use the categories G (vulnerability assumed, but degree uncertain), * and D (uncertain whether threatened or not).

1.3.2.2 Nature conservation value

Even more than is the case with Red Data Books for individual taxa (cf. SCHNITTLER & GÜNTHER 1999), vulnerability alone is not an adequate indicator for setting up conservation priorities for plant communities. We therefore developed the concept of the nature conservation value (*Naturschutzfachliche Wertstufe*, see chapter I.3.8 and BERG & al. [2001]) as an additional measure. It is based on three criteria of assessment:

1. The **content of threat** (*Gefährdungsinhalt*) represents the average number of threatened taxa occurring within a stand (relevé) of a given plant community. This assessment is based on the regional Red Data Books of Mecklenburg-Vorpommern for vascular plants, bryophytes, lichens and

Charophyceae. The percentage of the constancy of each species is multiplied by a weighting-factor (see Tab. 18), and these products are added together for all the species occurring in a certain community. The resulting sums for all 284 associations are divided into 5 quintiles to derive the category of the content of threat (see Tab. 19).

2. The **degree of naturalness/human impact** (*Natürlichkeitsgrad/Kultureinfluss*) extends from nearly natural (1) to artificial communities (5).

3. The **responsibility** (*Verantwortlichkeit*) of Mecklenburg-Vorpommern for the preservation of a plant community is given in a five-stage scale from highest (1) to lowest (5). This assessment is based on the proportion of the area covered by a community in Mecklenburg-Vorpommern to its overall area. Where knowledge is inadequate, the responsibility category has been estimated by referring to the number of species in the diagnostic species combination with restricted geographical ranges.

The combination of these three criteria results in a total category of **nature conservation value** by use of a matrix (Tab. 22). It ranges from 'highest, worthy of priority conservation measures' (1), to 'lowest, only slightly worthy of conservation measures' (5).

1.3.2.3 Plant communities requiring priority conservation measures

Priorities for practical conservation measures (**need for action**; *Handlungsbedarf*) are derived from a combination of the categories of vulnerability and nature conservation value (Tab. 24). They are classified into 4 categories, from '!!!' (very high need for action) through '!!' and '!' to '–' (no need for action).

1.3.2.4 Results and evaluation of the nature conservation assessment

The summarised results of our nature conservation assessment and statistical evaluations of these are given in part III.

Tab. 26 and Fig. 4 show the proportions of associations and their sub-types belonging to different categories of vulnerability. In Tab. 28 the most endangered associations within the category 'critical' are listed. In the following Figures 5–7, the associations are analysed according to the three criteria of assessment from which their vulnerability is derived.

The distribution of the nature conservation values within all associations is shown in Tab. 29 and Fig. 8. The communities with the highest conservation value are listed in Tab. 30. The highest level of threat can be found in some mesotrophic mire communities (classes 12 and 29; cf. Tab. 31). As Fig. 9 shows most associations can grow under semi-natural conditions. Since most of the associations occurring in Mecklenburg-Vorpommern are also very widely distributed outside, this federal state has particular responsibilty for only a few of them (Fig. 10).

In general, the category of vulnerability and the nature conservation value are correlated with each other (Fig. 11), but there are interesting exceptions to this which are discussed in the text. The combination of both criteria produces the need for action, the distribution of which within the associations is illustrated in Tab. 33 and Fig. 12. Associations with a very high need for action (!!!) inhabit oligo- to mesotrophic wetlands for the most part. These ecosystems should therefore be the central focus for nature conservation measures in Mecklenburg-Vorpommern.

The most important factor threatening plant communities in Mecklenburg-Vorpommern is the intensive agricultural land-use (cf. Fig. 13). There are only a few associations with a very high need for action that are not already legally protected (Tab. 36). Plant communities can also be used as indicators for legal valuation, e. g. as the habitat types of Appendix 2 of the Habitats Directive of the EU (cf. Tab. 37).

1.3.3 Presentation of the data

1.3.3.1 General aspects of both volumes

All syntaxa are numbered sequentially to identify them in the headings and columns of the table-volume as well as in the chapters of the special part in the text-volume. The numbers are preceded by one or two rank-indicating capital letters, e. g. K08 for the eighth class. In the case of associations, we use only four-part numbers (e. g. 21.2.1.1). Supplementary ranks are numbered by adding a lower-case letter to the number of the syntaxon of the principal rank in question, e. g. UK26b is the second subclass of the 26th class. The ranks are indicated by the following letters:

A	=	association
K	=	class
O	=	order
UK	=	subclass
UO	=	suborder
V	=	alliance

The sociological value is indicated by one of the following letters:

C	=	character taxon (e. g. AC = character taxon of an association)
D	=	differential taxon

The plant nomenclature follows WIßKIRCHEN & HAEUPLER (1998) for vascular plants, KOPERSKI & al. (2000) for bryophytes, SCHOLZ (2000) for lichens, SCHMIDT & al. (1996) for Charophyceae, SCHORIES & al. (1996) for marine macroalgae, and MOLLENHAUER & CHRISTENSEN (1996) for Vaucheriaceae. For some critical groups of bryophytes, we have had to introduce additional species aggregates in the sense of FRAHM & FREY (1992).

1.3.3.2 The table-volume

In the table-volume, each class is generally represented by one table that includes all syntaxa from the class (K) to the association (A). With very large classes, this may be divided into one table for the superior syntaxa and one (or more) for the associations. Each table starts with the following **headings**:

- ***Syntaxon:*** number of the syntaxon and, in the line below, its rank (the latter preceded by 'Z' if it is the central syntaxon)
- ***Assoziationen:*** number of associations belonging to it
- ***Aufnahmen:*** number of relevés
- ***Aufnahmen mit Kryptogamenbearbeitung:*** number of relevés in which non-vascular plants have been taken into account in the field

- ***mittlere Flächengröße [m²]:*** median of the used plot sizes in square metres
- ***mittlere Artenzahl:*** mean number of plant species (corrected for relevés in which non-vascular plants have not been treated)

For information, in the case of superior syntaxa both plot sizes and species densities are given as medians or means respectively of the calculated values of the associations belonging to them.

The **body of the tables** includes the species with their percentage constancy. '0' means that the constancy is below 0.5 %; a dot means that the species is absent from these relevés. The constancy of bryophytes, lichens and macroalgae is calculated only for the relevés in which non-vascular plants were considered. 'Constancy values' of syntaxa above the rank of association represent the mean of the constancies in the associations belonging to them. Columns of associations are printed wholly in italics if they are represented by less than 10 relevés or only the non-vascular plants if these are considered from less than 10 relevés. Syntaxa of superior rank are in italics if they consist only of one 'italicised' association, or of two associations with at least one 'italicised' association, or of three to four associations with at least two 'italicised' associations. Syntaxa of higher rank are also printed in italics if only one or a few of their associations exist in Mecklenburg-Vorpommern which are non-representative for the individual syntaxon as a whole (see list at the top of page 12 in the table-volume: Thero-Salicornietea etc.).

Taxa in the tables may be given both in an aggregated and in a differentiated manner by use of the following signs:

<name of taxon> (ges.)	=	sum of occurrences in different strata for phanerophytes, or sum of differentiated and undifferentiated data for polytypical taxa
<name of taxon>*	=	aggregate, species group
<name of taxon> B	=	tree layer
<name of taxon> S	=	shrub layer
<name of taxon> K	=	herb layer (only for phanerophytes)
- <name of taxon>	=	micro-species belonging to the above aggregate
-- <name of taxon>	=	subspecies of the above species
--- <name of taxon>	=	variety of the above species
# <name of taxon>	=	constancy values in this line belong for the most part to the segregate in the line above

The species in the **class-tables** are arranged by their sociological value (*Kennwert*) which can be seen on the left of the species names, e. g. 'VC26.6.2' for character species of alliance 26.6.2. Species with the same sociological value are arranged with decreasing constancy in the individual syntaxa. At the end of each class-table, other species (*Sonstige*) are listed, i. e. species without sociological value within this class. Species with more than 10 % constancy are given first of all, arranged with decreasing constancy. Then species with less than 10 % but more than 1 % constancy are listed alphabetically.

In the table columns the **sociological values** are marked by use of the following signatures, which are further explained in Tab. 1):

XY	character species
XY	differential species of a class or highest level of a transgressive character species
XY	differential species of a syntaxon below the class
XY	character species of a subordinate syntaxon (only used in the all-class-table)
XY	constancy value may be not be representative for this syntaxon
#	constancy value of the polytypic taxon in the line above, for the most part probably belonging to this segregate

Tab. 1: An excerpt from a class-table, to illustrate the use of graphical signatures for sociological values

Syntaxon		24	24.1	24.1.1	24.1.2	24.1.1.1	24.1.2.1	24.1.2.2
		K	O	V	ZV	ZA	ZA	A
KC24	X Calammophila baltica	62	62	59	63	59	71	55
	Ammophila arenaria	36	36	20	44	20	52	36
KD m. 15	Leymus arenarius	59	59	64	57	64	59	55
	Eryngium maritimum	4	4	1	6	1	7	4
VC24.1.1	Elymus farctus boreoatl.	44	44	100	16	100	24	8
VD24.1.1	Cakile maritima baltica	18	18	36	9	36	13	4
	Salsola kali kali	11	11	23	5	23	10	1
VD24.1.2	Hieracium umbellatum	20	20	1	29	1	24	34
	Jasione montana	7	7	.	11	.	9	12
AC24.1.2.2	Festuca rubra arenaria	40	40	3	59	3	41	77
	# Festuca rubra* [1]	12	12	4	16	4	9	23

Explanation:

character species of class

character spec. of class, differential spec. of alliance 24.1.2

joint differential species of class 15 and 24

character species of class, alliance 24.1.1 and differential species of association 24.1.2.1

differential species of alliance 24.1.1 (belonging to a different class)

differential species of alliance 24.1.2

transgressive character species, i. e. both AC24.1.2.2 and KC24

The **origin of the relevés** of each association is mentioned at the end of each class-table. First of all, their geographical origin is classified in the following order: (i) the total number of relevés from Mecklenburg-Vorpommern (MV); (ii) in a few cases, the number of additional relevés from Brandenburg (BR), Berlin (B), Lower Saxony (NS), Schleswig-Holstein (SH) and Poland (Polen); (iii) a division of the relevés from Mecklenburg-Vorpommern into administrative districts (abbreviations for these are given at the foot of p. 13 in the table-volume). In addition, the sources for the relevés are cited in alphabetical order, and this literature is included in bibliography of the text-volume.

The **all-class-table** (*Gesamtklassentabelle*, table-volume p. 272) mentions all the species that occur in the relevés that are being dealt with. They are arranged in alphabetical order under (i) trees and shrubs (*Phanerophyten*, p. 272), (ii) other vascular plants (*Sonstige Gefäßpflanzen*, p. 276), (iii) bryophytes (*Moose*, p. 325), (iv) lichens (*Flechten*, p. 335), and (v) 'algae' (*'Algen'*, p. 339). The constancy values for all 34 classes are given in the columns. The sociological value within the herb-vegetation (*Offenlandvegetation*) is listed on the left margin, and that of vegetation dominated by phanerophytes (*Gehölzvegetation*) on the right. Only the character species of all ranks and the differential species of the classes are mentioned. In the case of transgressive character species, the highest and the lowest characterised ranks are given. The following additional symbols are used:

n. b.	=	not estimated (mainly due to rarity)
×	=	indifferent, i. e. with major occurrences in more than 3 classes of a structural type
-	=	not represented in the relevés of a structural type

1.3.3.3 The text-volume: general structure

The text-volume consists of 4 parts, each indicated by a footer. Part I deals with general aspects (cf. I.1.3.3.4). It is followed by the special part (part II), with the descriptions of the plant communities (cf. I.1.3.3.5). In part III we present an overview and an evaluation of the vulnerability, nature conservation value and legal status of all treated plant communities (cf. I.1.3.2.3). Finally, part IV includes a glossary (IV.1), the list of references for both volumes (IV.2), indices of the syntaxa (IV.3) and taxa (IV.4), the addresses of the authors (IV.5) and the abbreviations (IV.6). Two inserts contain a list of the numbers and the correct names of all syntaxa as well as corrigenda to the table-volume.

1.3.3.4 The text-volume: contents of the general part

In Chapter I.1.1 we give a short **outline of the project**, i. e. its aims, preliminary work, methodological guidelines, sources of data, establishment and utilisation of the database, allocation of responsibilities among the editors, communication within the project. The **structure of the text-volume** is explained in chapter I.1.2.

The physical characteristics of the **natural geographical units** (I.2.1, Fig. 1) of Mecklenburg-Vorpommern were created mainly during the Weichsel glaciation, when a young-moraine landscape with many different landscape types was formed. Only in the southwest of the region are there some areas with an old-moraine landscape. The **phytogeographical position** of Mecklenburg-Vorpommern is dealt with in chapter I.2.2. It belongs to the floristic region of Middle Europe (MEUSEL & JÄGER 1992). The boundary between the Subatlantic and the Central European floristic provinces (MEUSEL & JÄGER 1992) runs from SW to NE through its territory. 89 % of the c. 900 indigenous vascular plant taxa have a Holarctic distribution (Fig. 2). There are only few neoendemic species (see Box A, *Kasten A*). Species from Mecklenburg-Vorpommern with a restricted European range (see Box B, *Kasten B*) are important for the concept of nature conservation value (cf. I.1.3.2.2).

Our approach to **vegetation classification** (cf. I.1.3.1.1) is explained in detail in chapter I.3.1. Chapter I.3.2 deals with the **nomenclature of plant communities** (cf. I.1.3.1.3) and the form of presentation in the category *Sonstige Namen* of the syntaxon chapters (cf. I.1.3.3.5). How the associations of our book are related to the so-called **'vegetation forms'** of the Greifswald school of vegetation science is explained in chapter I.3.3. The principles followed in the **naming of taxa** are briefly mentioned in chapter I.3.2. The concept of the category **'selected fungi and animals'** in the special part is outlined in chapter I.3.5, where the contributing specialists are listed in Tab. 6. The concept, drawing up and interpretation of the four different types of **distribution maps** in the special part are the subject of chapter I.3.6. Our concept and assessment of **vulnerability** (cf. I.1.3.2.1) are treated in chapter I.3.7. In chapter I.3.8 our approach to the **nature conservation value** (cf. I.1.3.2.2) is explained. Finally, in chapter I.3.9 we explain how **priorities for practical conservation measures** can be derived from the combination of the categories of vulnerabilty and the nature conservation values.

1.3.3.5 The text-volume: syntaxon accounts in the special part

The chapters dealing with each syntaxon consist of different sub-chapters, whose structure is explained in the following. Some of these categories occur only at the association level, others only at the class level. Certain information may be provided at a higher syntaxonomic level if it applies to all inferior syntaxa:

- ***Sonstige Namen*** (other names): [first, without additional markings]: Basionyms, original name forms in the case of the addition of epithets by us, valid names or name forms at the time of publication when a *nomen propositum* is used in the heading – Syn.: The most important nomenclatural and syntaxonomic synonyms as well as other names of the same rank, e. g. pseudonyms and phantom names, are listed here in chronological order – incl.: Syntaxa that belong to one of the following categories are listed, arranged by decreasing rank and alphabetically within the same rank: (i) syntaxa of a superior rank, if they are completely included in the given syntaxon; (ii) syntaxa of a lower rank than the given syntaxon if they are often placed elsewhere within the syntaxonomic system; (iii) syntaxa without clear indication of rank (ICPN Art. 3d; e. g. communities) or with a rank that does not comply with the Rules (ICPN Art. 3d; e. g. association groups); (iv) as an exception, vegetation units which are not syntaxa in the sense of the ICPN – excl.: Syntaxa of subordinate rank that are excluded from the

given syntaxon in our classification, but which are not excluded in some relevant literature, may be listed under this sub-category – non: Homonyms and other syntaxa of the same rank, which are often equated with the syntaxon in question but not in our system. In principle, each name is followed by a nomenclatural assessment in square brackets referring to the relevant ICPN regulation (these are explained in detail in DENGLER & al. 2003). The protologues of most of the names have been checked by us and their references included in the bibliography, indicated by an asterisk (*) following the year of the author citation.

- ***Syntaxonomie*** (syntaxonomy): Here our classification is compared with other approaches in the literature, especially when we present a new syntaxon or a new delimitation of an existing syntaxon.
- ***Ausgewählte Pilze und Tiere*** (selected fungi and animals, only for classes): This sub-chapter presents non-plant species that are closely linked with certain vegetation types. The focus is on fungi and animal taxa that are rare, endangered or have restricted geographical ranges.
- ***Diagnostische Artenkombination*** (diagnostic species combination, only for associations): This form of presentation is intended to show the appearance of a typical stand of this association. Firstly we present the mean species number per median plot size for the relevés used. Then the species are listed, arranged by the strata of trees (B), shrubs (S), herbs (K) and bryophytes and lichens (M). We note all species that occur in at least one-third of the relevés plus the character species of the individual associations (set in bold letters). The species are arranged according to decreasing constancy, and character species with less than 34 % constancy are separated by a dash at the end of the list.
- ***Charakteristik*** (characteristics): Physiognomical, ecological and other general characteristics of the plant communities are presented here.
- ***Untergliederung*** (subdivision, only for associations): The subdivision of an association into informal subtypes (*Ausbildungen*) may be given here, either verbally or with the use of a small syntaxonomic tableau (see below). In the latter case, both vulnerability and nature conservation value (see below) are assessed both at the level of associations and separately for these subtypes.
- ***Synchorologie und naturräumliche Bindung*** (synchorology and relationship to natural geographical units, only for associations): The entire distribution of the community as well as that within Mecklenburg-Vorpommern are discussed here.
- ***Naturschutzrechtliche Einordnung*** (legal valuation, only for associations): The status of the association according to the Habitats Directive of the EU (*FFH*), the nature conservation law of Mecklenburg-Vorpommern (*LNatG M-V § 20*) and the instructions for the identification of biotopes in Mecklenburg-Vorpommern (*MVBio*).
- ***Gefährdung*** (vulnerability, only for associations): As explained in chapter I.1.3.2.1, the valuations for the three single criteria and the total category of vulnerability are given in a small tableau, often accompanied by verbal explanations.
- ***Naturschutzfachliche Wertstufe*** (nature conservation value, only for associations): As explained in chapter I.1.3.2.2, the valuations for the three single criteria and the total category of nature conservation value are given in a small tableau, often accompanied by verbal explanations.
- ***Erhaltungsmöglichkeiten*** (conservation strategies): Possible conditions and measures for the conservation and/or support of the association

In addition to these sections, three other elements are used to illustrate the individual syntaxa: Syntaxonomic tableaus, distribution maps and photographs:

Syntaxonomic tableaus illustrate the hierarchical arrangement of the syntaxa, with their character and differential species listed alphabetically. In addition to the information already included in the table-volume, transgressive character species are mentioned for all ranks and not only for the highest and lowest; some additional differential species are listed; and species that most probably comply with the character species criterion only within the territory of Mecklenburg-Vorpommern are indicated with 'terr.'.

Four different types of grid **maps** are used to illustrate the distribution of syntaxa in Mecklenburg-Vorpommern: Maps of single characteristic species, maps of sites where the community was found, and synoptic maps that combine this information with the representation of a potential synareal derived by the superimposition of distribution data of the diagnostic species. The following symbols are used in these maps

Tab. 2: Symbols used in the distribution maps.

Maps of single species	
○, ⊕, ◐, ●	species record: before 1900 or with reliable information on extinction, from 1900 to 1959, from 1960 to 1979, since 1980
Maps of the sites where a syntaxon was found	
★	relevé sites (coloured in synoptic maps)
Synoptic maps of associations	
▪, ■, ■	record of more than 1/4 to 1/2, 1/2 to 3/4, more than 3/4 of the association character species
Synoptic maps of superior syntaxa	
◆, ◆, ◆	record of more than 1/4 to 1/2, 1/2 to 3/4, more than 3/4 of the character species of this and all subordinate syntaxa