

Provisional list of Hungarian archaeophytes

ANDRÁS TERPÓ¹, MARIA ZAJĄC² & ADAM ZAJĄC²

¹ Institute for Agricult. Advising and Research Organization, University of Agricultural Sciences, Páter K., Gödöllő, H-2103 Hungary

² Department of Plant Taxonomy and Phytogeography, Institute of Botany, Jagiellonian University, Kopernika 27, 31-501 Kraków, Poland, fax: +48 12 4230949; e-mail: zajacm@ib.uj.edu.pl; zajac@ib.uj.edu.pl

TERPÓ A., ZAJĄC M. & ZAJĄC A. (1999): Provisional list of Hungarian archaeophytes. – *Thaiszia - J. Bot.* 9: 41-47. – ISSN 1210-0420.

ABSTRACT: Archaeophytes, the older group of anthropophytes has around 200 representatives amongst the flora of Hungary. This paper presents their provisional list. Some internal divisions and necessity to verify the suggested taxa as archaeophytes is discussed.

KEYWORDS: archaeophytes, Hungary.

Introduction

In any specified flora, selecting the taxa which are established archaeophytes will provide a basis for the evaluation of the degree of its transformation. Further distinctions within the group result in the separation of the older migration group from the younger one. Even though various terms are used in contemporary European literature on the subject, the main criteria for their designation are not contested. The first group, which taxa have been usually called archaeophytes, following suggestion of THELUNG (1915, 1918-1919), while the other, younger group, called neophytes (MEUSEL 1943) or kenophytes (KORNAŚ & MEDWECKA-KORNAŚ 1986). Despite the very simple premise of distinction, this division is, nevertheless, of high practical value. Archaeophytes are those of anthropophytes which arrived in a given area before the end of the 15th century (the time of discovering the New World by Columbus), while kenophytes are those which arrived later. Obviously, new taxa were coming from other destinations (e.g. overland from Asia) but distinguishing a large group of anthropophytes of American origin is a good solution.

Archaeophytes, the group which will be discussed below, have to be indicated with reference to a specific territory. Certainly, this cannot be done, for instance, for the entire northern hemisphere. At this stage of our knowledge about the group and considering that the body of literature on synanthropes is usually limited, it is convenient to list them for individual countries. The ideal system of reference would certainly be the biogeographical regions. Several countries have their archaeophytes already compiled in lists (e. g. Poland - ZAJĄC 1979, 1983, 1987a, b, 1988; Slovakia - HALADA 1997) or distinguished in their floras (e. g. Germany - ROTHMALER 1994). Other countries lack such data.

It seemed interesting to compile a provisional list of archaeophytes for Hungary, a country with a very interesting and diversified flora.

Criteria for Selection

The first and most important criterion is finding that a given species is foreign to a given area. One of the premises thereof is the lack of natural sites of the species. Such a species will occur only in synanthropic communities or - rarely - in degraded or highly transformed natural or seminatural communities. To come across this can sometimes be difficult, although feasible when the flora of a country is known well. Hungary has many studies which allow verification of the species (SOÓ 1964-1980, SIMOM 1992, HORVÁTH & al. 1996). This method is used when distinguishing anthropophytes from native taxa. As many species have only a few natural sites and many synanthropic ones. These taxa should be distinguished, because they are worthy of detailed study, most of all regarding their syntaxonomic status.

The second criterion supporting the classification of an anthropophyte as archaeophyte, i. e. age criterion, is more difficult. There are, principally, two sources of relevant knowledge. Archaeobotanical studies represent one of them, while old East European literature from the Middle Ages is the other. These sources were utilised in compiling the list of archaeophytes for Poland (ZAJĄC 1979, PIEKIEŁKO & ZAJĄC 1976). Hungary has relatively few archeobotanical sources (e. g. HARTYÁNYI & NOVÁKI 1975; WILLERDING 1983; Gyulai 1993, 1994, 1996a, 1996b; GYULAI & DÁLNOKI 1997, TERPÓ & BÁLINT 1999). These pertain to only a small number of species. It is, however, still possible to think of indirect inference. We know the homelands of many archaeophytes occurring in Eastern Europe and in most cases these will be the Mediterranean and Irano-Turanian Subkingdoms. Since Neolithic agriculture developed in Hungary earlier than in the areas north of the Alps and the Carpathians, we think that the species coming from the aforementioned areas are archaeophytes also in the Hungarian territory. Nevertheless, many of the taxa, particularly those which do not occur within Poland or Germany will be provisionally listed as archaeophytes. Only when they are discovered in archaeological sites can they be firmly indicated as archaeophytes.

List of Archaeophytes

The aim of this publication is stated as providing a platform for discussion. The provisional list includes some 200 taxa which, in our opinion, might be archaeophytes. This should be taken as an initial point for further discussion and its details determined more precisely, in the course of further research. There will always be some species that are fairly difficult to classify. In Poland archaeophytes are divided into three principal groups: *archaeophyta adventiva*, *archaeophyta anthropogena* and *archaeophyta resistantia* (MIREK 1981, ZAJĄC 1979 and others). *Archaeophyta adventiva* are the species which were transferred from other areas assisted by humans. *Archaeophyta anthropogena* are the taxa which originated due to the various activities of humans - mainly selection. *Archaeophyta resistantia* include "homeless species" presently lacking any natural sites but having survived since the earlier climatic periods of the Holocene period, again due to human influence.

The logical classification is fairly simple regarding the first two groups. The third - *archaeophyta resistantia* still requires some additional criteria to be applied. There are synanthropic species in Middle Europe which distribution does not reach outside it, for which it is difficult to identify any natural communities that they might have originated from. These taxa are usually categorised in the *archaeophyta resistantia* group.

The archaeophytes presented in the provisional list for Hungary can also be classified into the groups mentioned. The most numerous among them are, obviously, the *archaeophyta adventiva*, which can be assumed to represent approximately 85% of all those recorded. *Archaeophyta anthropogena* represents a somewhat smaller group. This group may include, above all, weeds of cereal and root-crops which were selected by humans from their natural populations, e. g. *Aethusa cynapium* L. subsp. *agrestis* (WALLR.) DOSTÁL, *Rhinanthus alectorolophus* (SCOP.) POLLICH subsp. *buccalis* (WALLR.) SCHINZ & THELL. or *Pisum sativum* L. subsp. *arvense* (L.) ASCH. & GRAEB. and many others. At this point it is difficult to highlight the species classified as *archaeophyta resistantia*. One cannot use for this purpose the data obtained for Poland (ZAJĄC 1979) but should review meticulously the list of archaeophytes for Hungary through analysis of their distribution and status there, and possibly even suggest the species to be included.

Signs used in the list:

In bold face – archaeophytes with archaeobotanical documentation

? - archaeophytic status of taxon uncertain

Abutilon theophrasti MEDIC.

Aethusa cynapium L. subsp. *agrestis*
(WALLR.) DOSTÁL

Aethusa cynapium L. subsp. *cynapium*

Adonis aestivalis L.

A. flammea JACQ.

Aegilops cylindrica HOST

Agrostemma githago L.

Ajuga chamaepitys (L.) SCHREB.

Allium atroviolaceum BOISS.

? *A. sativum* L. subsp. *ophioscorodon*
(LINK) DÖLL

Alopecurus myosuroides HUDS.

? ***Amaranthus graecizans*** L.

A. lividus L.
Anagallis arvensis L.
A. foemina MILL.
Anthemis arvensis L.
A. cotula L.
Anthriscus caucalis M. BIEB.
A. cerefolium (L.) HOFM. subsp.
 trichosperma (SCHULT. & SCHULT.)
 ARCANG.
Apera spica-venti (L.) P. BEAUV.
A. interrupta (L.) P. BEAUV.
Aphanes arvensis L.
A. microcarpa (BOISS. & REUT.) ROTHM.
Arctium lappa L.
? *A. minus* (HILL.) BERNH.
Aristolochia clematidis L.
Armoracia rusticana P. GAERTN., B.
 MEY. & SCHREB.
Artemisia absinthium L.
? *A. scoparia* WALDST. & KIT.
Asperugo procumbens L.
Asperula arvensis L.
Atriplex nitens SCHKUHR
A. patula L.
A. rosea L.
A. tatarica L.
Avena fatua L.
A. strigosa SCHREB.
Ballota nigra L.
Bifora radians M. BIEB.
Bromus arvensis L. subsp. ***arvensis***
B. secalinus L.
B. sterilis L.
B. tectorum L.
Bupleurum rotundifolium L.
Calepina irregularis (ASSO) THELL.
Camelina alyssum (MILL.) THELL.
C. sativa (L.) CRANTZ
Cannabis sativa L.
Capsella bursa-pastoris (L.) MEDIK.
? *Carduus acanthoides* L.
? *C. nutans* L.
Carthamus tinctorius L.
Caucalis latifolia L.
C. platycarpus L.
Centaurea cyanus L.
? *C. solstitialis* L.
? *Cerastium glomeratum* THUILL.
? *Chaiturus marrubiastrum* (L.) RCHB.
Chenopodium bonus-henricus L.

Ch. ficifolium SM.
Ch. hybridum L.
Ch. murale L.
Ch. urbicum L.
Ch. vulvaria L.
Cichorium intybus L.
Conium maculatum L.
Conringia orientalis (L.) DUMORT.
Consolida regalis GRAY
? *Convolvulus arvensis* L.
Coronopus squamatus (FORSSK.) ASCH.
? *Crepis pulchra* L.
Cuscuta epilinum WEIHE EX BOENN.
? *Cynodon dactylon* (L.) PERS.
Descurainia sophia (L.) WEBB EX PRANTL
Digitaria ciliaris (RETZ.) KOELER
D. ischaemum (SCHREB.) H. L. MÜHL.
D. sanguinalis (L.) SCOP.
? *Diplotaxis muralis* (L.) DC.
? *D. tenuifolia* (L.) DC.
Echinochloa crus-galli (L.) P. BEAUV.
Erodium cicutarium (L.) L'HÉR.
Eruca vesicaria (L.) CAV. subsp. *sativa*
 (MILL.) THELL.
? *Erucastrum gallicum* (WILLD.) O. E.
 SCHULZ
Erysimum cheiranthoides L.
Erysimum repandum L.
Euphorbia exigua L.
E. falcata L.
E. helioscopia L.
E. pepus L.
E. platyphyllos L.
E. taurinensis ALL.
Fallopia convolvulus (L.) Á. LÖVE
Fumaria officinalis L.
F. schleicheri SOY.-WILL.
F. vaillantii LOISEL.
Gagea arvensis (PERS.) DUMORT.
Galeopsis angustifolia (EHRH.) HOFFM.
G. ladanum L.
? *Galium aparine* L.
G. spurium L.
G. tricornutum DANDY
Geranium dissectum L.
G. molle L.
G. pusillum BURM. f.
Glaucium corniculatum (L.) RUDOLPH.
Heliotropium europaeum L.
? *Herniaria hirsuta* L.

Hibiscus trionum L.
Hordeum murinum L.
Hyoscyamus niger L.
Inula helenium L.
Kickxia elatine (L.) DUMORT.
K. spuria (L.) DUMORT.
Lactuca serriola L.
Lamium album L.
L. amplexicaule L.
Lappula squarrosa (RETZ.) DUMORT.
? *Lathyrus hirsutus* L.
Lathyrus sativus L.
Leonurus cardiaca L.
Lepidium campestre (L.) R. BR.
L. ruderale L.
Linaria arvensis (L.) DESF.
Lithospermum arvense L.
Lolium remotum SCHRANK
L. temulentum L.
Lycium barbarum L.
Lycopsis arvensis L.
Malva neglecta WALLR.
M. pusilla SM.
M. sylvestris L.
Marrubium × *paniculatum* DESR.
M. vulgare L.
Matricaria maritima L. subsp. *inodora*
(L.) DOSTÁL
? *M. tenuifolia* (KIT.) SIMK.
Melandrium noctiflorum (L.) FR.
? *Melilotus albus* MEDIK.
? ***M. officinalis*** (L.) PALL.
Mercurialis annua L.
Misopates orontium (L.) RAF.
Myagrum perfoliatum L.
Myosotis arvensis (L.) HILL
Nepeta cataria L.
Neslia paniculata (L.) DESF.
Nigella arvensis L.
Odontites verna (BELLARDI) DUMORT.
Onobrychis viciifolia SCOP.
Onopordum acanthium L.
Ornithogalum × *degenianum* POLGÁR
O. refractum KIT.
Papaver argemone L.
P. dubium L.
P. hybridum L.
P. rhoeas L.
Phleum paniculatum HUDS.
Pisum sativum L. subsp. *arvense* (L.)
ASCH. & GRAEB.
Polycnemum majus A. BRAUN
? *Portulaca oleracea* L. subsp. *oleracea*
Prunus cerasifera EHRH.
Ranunculus arvensis L.
Raphanus raphanistrum L.
? *Reseda lutea* L.
R. luteola L.
Rhinanthus alectorolophus (SCOP.)
POLLICH subsp. *buccalis* (WALLR.)
SCHINZ & THELL.
Rubia tinctorum L.
Rumex kernerii BORBÁS
R. patientia L.
Saponaria officinalis L.
Scandix pecten-veneris L.
Scleranthus annuus L.
Sclerochloa dura (L.) P. BEAUV.
Senecio vulgaris L.
Setaria italica (L.) P. BEAUV.
S. pumila (POIR.) ROEM. & SCHULT.
S. verticillata (L.) P. BEAUV.
S. viridis (L.) P. BEAUV.
Sherardia arvensis L.
Silene dichotoma EHRH.
S. gallica L.
Sinapis arvensis L.
? *Sisymbrium loeselii* L.
S. officinale (L.) SCOP.
? *S. orientale* L.
Smyrniium perfoliatum L.
Solanum luteum MILL.
S. nigrum L. em. MILL.
Sonchus asper (L.) HILL
S. oleraceus L.
Spergula arvensis L.
Stachys annua (L.) L.
? *Taeniantherum caput-medusae* (L.)
NEVSKI
Thesium dollineri MURB.
Thlaspi arvense L.
Thymelaea passerina (L.) COSS. &
GERM.
Torilis arvensis (HUDS.) LINK.
Urtica urens L.
Vaccaria hispanica (MILL.) RAUSCHERT
? *Valerianella dentata* (L.) POLLICH
V. locusta LATERR.

V. rimosa BASTARD
Verbena officinalis L.
Veronica agrestis L.
V. arvensis L.
V. opaca FR.
V. polita FR.
V. triphyllos L.
Vicia angustifolia* L. var. *segetalis
 (THUILL.) SERR.
V. biennis L.

V. hirsuta (L.) S. F. GRAY
V. pannonica CRANTZ
***V. tetrasperma* (L.) SCHREB.**
V. villosa ROTH
***Viola arvensis* MURRAY**
 ? *V. odorata* L.
 ? *Vulpia bromoides* (L.) S. F. GRAY
 ? *V. myuros* (L.) C. C. GMEL.
***Xanthium strumarium* L.**

References

- GYULAI F. (1993): Environment and Agriculture in Bronze Age Hungary. – Archaeolingua. A Publication Series of the Archaeological Institute of the Hungarian Academy of Sciences. – Budapest, 59 p.
- GYULAI F. (1994): A Kárpát-medence haszonnövényei a 9-10. században. – In GYÖRFFY Gy. (ed.): Honfoglalás és régészet, p. 247-258 – Budapest.
- GYULAI F. (1996a): Balatonmagyaród-Hídvégpuszta késő bronzkori település növény-leletei és élelmiszermaradványai. – Zalai Múzeumok 6: 169-195.
- GYULAI F. (1996b): Umwelt und Pflanzenbau in Transdanubien während der Urnefelder-, Hallstatt- und Latènekultur. – In: JEREM E. & LIPPERT A. (eds.): Akten des Internationalen Symposiums, Sopron, 10-14. Mai 1994. Budapest. – Archeolingua, p. 127-136. – Budapest.
- GYULAI F. & DÁLNOKI V. (1997): Aquincum (Budapest) 1985-1986 évi ásatásának növényleletei. (ined.)
- HALADA L. (1997): Archeophytes in the flora of Slovakia - a preliminary list. – Bull. Slov. Bot. Spoločn., Bratislava, 19: 129-36 [in Slovakian with English summary].
- HARTYÁNYI P. B. & NOVÁKI G. (1975): Növényi Mag - és termésleletek Magyarországon az újkőkortól a XVIII. Századig. II. – Magyar Mezőgazdasági Múzeum Közleményei. Mitteilungen des ungarischen landwirtschaftlichen Museums. 1973-1974: 23-73. (in Hungarian with English summary).
- HORVÁTH F., DOBOLYI Z. K., MORSCHHAUSER T., LÖKÖS L., KARAS L. & SZERDAHELYI T. (1996): Flóra adatbázis 1. 2. Taxonlista és attribútum állomány. – MTA Ökológiai és Botanikai Kutatóintézete, Vácrátót, 267pp.
- KORNAŚ J. & MEDWECKA-KORNAŚ A. (1986): Plant geography. – PWN, Warszawa, 528pp. [in Polish].
- MEUSEL H. (1943): Vergleichende Arealkunde. Zweiter Band: Listen und Kartenteil. – Gebrüder Borntraeger Verlag, Berlin-Zehlendorf, XII+92pp.
- MIREK Z. (1981): Problemy klasyfikacji roślin synantropijnych. – Wiad. Bot. 25(1): 45-54.
- PIEKIEŁKO A. & ZAJĄC A. (1976): Archeofity w polskim piśmiennictwie średniowiecznym. – Zesz. Nauk UJ, Prace Bot. 5: 149-151.
- ROTHMALER W. (1994): Exkursionsflora von Deutschland. 4. Gefäßpflanzen: Kritischer Band. – Gustav Fischer Verlag, Jena, Stuttgart, 811pp.
- SIMON T. (1992): A magyarországi edényes flóra hartározója. Harasztok - virágos növények. – Tankönyvkiadó, Budapest, 892pp.
- SOÓ R. (1964-1980): Synopsis systematico-geobotanica florum vegetationisque Hungariae I-VI. – Akadémiai Kiadó, Budapest, 1: 589 pp., 2: 655., 3: 506 pp., 4: 614 pp., 5: 724., 6: 556 pp. [in Hungarian].
- TERPÓ A. & BÁLINT K. (1999): Flora and Vegetation of 2000 years old Budapest (Hungary). – [ined.]

- THELLUNG A. (1915): Pflanzenwanderungen unter dem Einfluss des Menschen. – Englers Bot. Jahrb. Leipzig, 53(3/5) Beibl. 116.
- THELLUNG A. (1918-1919): Zur Terminologie der Adventiv- und Ruderalflora. – Allg. Bot. Zeitschr. Karlsruhe 24: 36-43.
- WILLERDING U. (1986): Zur Geschichte der Unkräuter Mitteleuropas. – Karl Wachholtz Verlag, Neumünster, 382pp.
- ZAJĄC A. (1979): The origin of the archeophytes occurring in Poland. – Rozprawy Habilitacyjne UJ Nr.29: 1-219. [in Polish].
- ZAJĄC A. (1983): Studies on the origin of archaeophytes in Poland. Part I. Methodical consideration. – Zesz. Nauk. UJ., Prace Bot. 11: 87-107.
- ZAJĄC A. (1987a): Studies on the origin of archaeophytes in Poland. Part II. Taxa of Mediterranean and Atlantic-Mediterranean origin. – Zesz. Nauk. UJ., Prace Bot. 14:7-50.
- ZAJĄC A. (1987b): Studies on the origin of archaeophytes in Poland. Part III. Taxa of Irano-Turanian, Euro-Siberian-Irano-Turanian and Mediterranean-Irano-Turanian origin. – Zesz. Nauk. UJ., Prace Bot. 15: 93-129.
- ZAJĄC A. (1988): Studies on the origin of archaeophytes in Poland. Part IV. Taxa of Pontic-Pannonian, Mediterraneo-South Asiatic, South Asiatic and Middle European origin, Archaeophyta anthropogena, Archaeophyta resistentia, Archaeophytes of unknown origin. – Zesz. Nauk. UJ., Prace Bot. 11: 87-107.

Received: 30 March 1999

Revised: 30 June 1999

Accepted: 8 July 1999