

ORIGINAL PAPER

THE HERBARIUM FILES OF GYULA ERAZMUS NYÁRÁDY WHICH GOT ABROAD

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Abstract: The herbarium of Gyula Erazmus Nyárády has been assessed to contain around 90.000 sheets. During the past thirty years, the legacy of the famed botanist still found in public institutions and private collection across Romania and Hungary has been studied and processed by Kálmán Váczy, Sándor Bartha and especially Katalin Bartók. However, nothing is known about the sheets that had ended up outside Hungary or Romania. This study proposes to fill this gap to some extent: firstly, it draws attention to sheets from Nyárády's herbarium found in the inventory of the world's biggest botanical gardens, museums and universities of natural science; secondly, it goes into details about the circumstances of collecting the prepared taxa, and the conclusions that can be drawn from this; it presents the reasons why some sheets got abroad; and it adds more data to reconstruct Nyárády's social network. It also indicates that the heritage, now known to consist of around 90.000 sheets, can be completed with the sheets found abroad.

Keywords: herbarium, Gyula Erazmus Nyárády, public institutions, inventory, international and local collections, history of botany.

1. Introduction

Two bigger monographies of the life and work of botanist Gyula Erazmus Nyárády have been written in the past decades (Váczy and Bartha, 1988; Bartók, 2016), but since there are no information about the sheets which got abroad, this study tries to fill this gap in some way. This work draws attention to those sheets, which in the present are in the inventory of the world's biggest botanical gardens, museums and universities of natural science. The study details the circumstances of collecting the prepared taxa, presents the reason why some sheets got abroad, provides data about the scientific social network of Nyárády, and points out that the heritage known to contain

90.000 sheets (Bartók, 2016a; Nagy, 2018) can be completed with the sheets which got abroad.

The professional career of Nyárády was accompanied by his passion for botanizing. He started to collect herbaria in a more serious way when he was only a career entrant, and starting with 1922, when he became the curator of the Museum of Cluj, he could prepare herbaria in a more systematic way, since his passion became his duty and work assignment, he could devote more time.

Since 1921, the Botanical Garden of Cluj published the volumes of *Flora Romaniaae Exsiccata* (a thematical collection published in many copies, containing duplicates, which

were to be sent out to various institutes), that is the herbal collection of Romania, each volume of it containing 100 herbarium sheets, and was made in 70 copies. With these they could manage to make advantageous transactions with 70 botanical institutes and botanical gardens functioning across the continent (Váczy, 2016). Gyula Erazmus Nyárády participated in this work from the beginnings, and starting with the third volume, he carried the main responsibility of the collection, compilation and sending-out of the volumes, which resulted in his sheets getting abroad.

The reason why his sheets got abroad could be the fact that Nyárády had relationships with Romanian scientists, but with many European botanists, and later, with the assignment of the Academy, he completed foreign missions as well, and he was the member of several foreign botanical associations. Unfortunately, his scientific correspondence, with the help of which his foreign social network could be easily reconstructed, mainly because of the war events in 1944, after his death, all letters perished (in 1983 his widow wiped out their house, and moved to their daughter abroad). Only a small notebook remained, which contains the abstract of his correspondences between 1904 and 1950.

2. Materials and Methods

Following the methods of Katalin Bartók (Bartók, 2016a), who revealed the materials from Romania and Hungary, this study searches the answer to the question: Which foreign collections contain taxa prepared and identified by Gyula Erazmus Nyárády?

Since there are approximately 3000 herbariums in the World (Nagy et al., 2017), the study did not have the opportunity to ask information from all public collections. The results only indicate, that the Romanian and

Hungarian Nyárády collection estimated to have 90.000 sheets can and should be completed with the sheets which got abroad.

3. Results and discussions

3.1 Herbarium sheets in Austrian public collections

The herbarium of the Naturhistorisches Museum Wien according to our present knowledge manages the biggest Nyárády collection which got abroad. The number of the sheets found here exceeds one hundred (104), three quarters (76 sheets) of which stem from Gyula Erazmus Nyárády' individual collecting, and one quarter (28 sheets) from collective collectings (collected together with Alexandru Borza (1887–1971), Emil Pop (1897–1974), Eustach Woloszczak (1835–1918) and others). The sheets were made during 1905 and 1930, period which includes the time when Nyárády was in Kežmarok and Târgu Mureș, and the first part of the decades spent in Cluj. Most of the plants come from Slovakia, but the collection contains many sheets from Hungary and Romania, furthermore 3 sheets from Bulgarian and 1 from Polish territory. The taxa represent 6 families of plant: Poaceae, Brassicaceae (7 species of *Alyssum*), Asteraceae (with species of *Hieracium* and *Centaurea*), Potamogetonaceae, Lamiaceae and Salicaceae. The last one contains about 69 species of *Salix*, which during his time in Kežmarok was collected by Nyárády and botanist Eustach Woloszczak, who at that time was already in his seventies. All the *Salix* preparatums of Nyárády were revisioned by the scientist of Ukrainian origin, but who was researching in Vienna, and who in 1917 named a species after Nyárády (*Salix nyárádyi* Woloszcz.), fact that confirms that the young career entrant gained the respect of the times' most acclaimed botanists' at a very young age.

Also in Vienna there are additional 11 herbarium sheets related to Nyárády, kept in the herbarium of Universität Wien (Faculty Center Botany). The sheets were made between 1913 and 1926, 7 of them stem from individual, 4 of them from collective collectings with Emil Pop and were collected from Romania (7), Bulgaria (3) and Hungary (1). The taxa represent 3 families of plant: Brassicaceae (with 9 species of *Alyssum*), Saxifragaceae and Salicaceae (with 1–1 species).

The collection of Karl-Franzens-Universität Graz (Herbarium) also has 2 herbarium sheets with the name of Gyula Erazmus Nyárády. One of them has its origins in 1907 and was collected in Slovakia, and the other one was collected in 1918 in Romania, both being individual collectings (a *Ligularia* and a *Ranunculus* species).

3.2 The Carnegie Museum of Natural History's herbarium in Pittsburgh (USA)

The Carnegie Museum of Natural History's herbarium in Pittsburgh, Pennsylvania according to present knowledge, owns the biggest Nyárády collection of those sheets which got outside of Europe. The 89 herbarium sheets found here provide a hand-picked 'abstract' of the time period when Nyárády was in Cluj. It contains different taxa (81 species) classable in about 25 families of plant (Poaceae, Asteraceae, Caryophyllaceae, Fabaceae, Brassicaceae, Ericaceae, Amaryllidaceae, Ranunculaceae, Apiaceae, Orobanchaceae, Cyperaceae, Cystopteridaceae, Amaranthaceae, Fagaceae, Ceratophyllaceae, Papaveraceae, Cistaceae, Boraginaceae, Asparagaceae, Linaceae, Plantaginaceae, Lamiaceae, Apiaceae, Primulaceae, Rosaceae), which stem from individual collectings made in Romania between 1923 and 1947. Also in this collection there is a herbarium sheet of

Nyárády Antal (1920–1982), one of Nyárády's son.

In the inventory of Harvard University (Cambridge, Massachusetts) Herbaria and Libraries Collection there are 4 additional 'Nyárády' sheets. At this time it is still unknown if these sheets were collected by Gyula Erazmus Nyárády, or his son, Antal.

3.3 Nyárády sheets in the collections of Commonwealth of Australia

At present, there is little knowledge about the American relations of Gyula Erazmus Nyárády, and even fewer information about his Australian relationships. The research of this in the present can be done almost solely based on the herbarium sheets. Nyárády's sheets can be found in public botanical collections of three states of the Commonwealth of Australia (Victoria, New South Wales and Tasmania).

The collection of the Royal Botanic Gardens Melbourne (National Herbarium) manages 23 sheets from 1911 and 1947, 16 stem from individual and 7 from collective collectings (with Emil Pop, Eugen Victor Ghişa (1909–1984), Alexandru Borza, George Bujorean (1893–1971), Traian Ştefureac (1908–1986)). The plants collected from Bulgaria (16), Romania (6) and Republic of Moldova (1) belong to 10 families including *Berberis*, *Celtis*, *Ceratodon*, *Ficus* and other species.

The Royal Botanic Garden Sydney's herbarium (National Herbarium of New South Wales) owns 17 herbarium sheets originating from Nyárády's fieldwork in 1911 carried out in Romania (16) and Hungary (1). More than half of the taxa are *Centaurea*.

The collection of the Tasmanian Museum and Art Gallery (Tasmanian Herbarium) in Hobart can be proud of 1 'Nyárády' sheet. According to the data written on the label, the sheet is a *Genista* species collected in 1925 in Romania, which presumably did not get to the

institution directly from Nyárády, but thanks to the inter-institutional exchanges in Australia.

3.4 Nyárády's legacy in the United Kingdom

The Royal Botanic Gardens Kew's herbarium in London owns 25 Nyárády sheets. Most of them were collected between 1920 and 1931 in Romania – 20 individual and 5 collective (with George Bujorean, Emil Pop and Alexandru Borza) collectings. The taxa represent 7 families: from the Asteraceae family 3 *Centaurea*, from the Brassicaceae family 6 *Alyssum* and from the Poaceae family 5 *Poa* species are to be found in the collection; the remaining taxa are from the Cupressaceae, Pinaceae, Rosaceae and Violaceae families.

Also in London, the inventory of collection of the Natural History Museum (Herbarium) contains 40 additional 'Nyárády' sheets, however there is no further information about this at present.

In Edinburgh, Scotland, the Royal Botanic Garden Edinburgh's herbarium owns the herbarium sheets of *Alyssum* species (11) which were collected and first identified by Nyárády. Further 6 sheets contain 1–1 exemplar of plant genus *Alnus*, *Corylus*, *Cardamine*, *Campanula*, *Saxifraga* and *Tournefortia*, which were collected between 1923 and 1926 in Hungary and Romania. The collection, a total of 17 sheets, is the result of individual (14 sheets) and collective (3 sheets collected with George Bujorean, Alexandru Borza) collectings.

3.5 The Herbarium of Botanic Garden Meise (Belgium)

The Nyárády collection of the Herbarium of Botanic Garden Meise with its 18 sheets (16 taxa) is the most valuable fraction of the sheets which got abroad, as (with the exception of 2 sheets), it is a considerable fungi-preparatum collection. Until now Nyárády was not known

to be a mycologist and plant pathologist in the scientific field. The heritage from the Kingdom of Belgium is the witness of the fact that the scientist while working in Cluj, before he was elected academic (between 1923 and 1947), was quite interested in those fungi genera, which are very important from the perspective of plant pathology (*Puccinia*, *Erysiphe*, *Anthracoidea*, *Golovinomyces*, *Podosphaera* etc.), and conducted researches in this field in territories of Romania and Republic of Moldova.

3.6 Nyárády sheets kept in Czech and Ukrainian universities

Nyárády and his institution had relationships with many Central and Eastern European universities. The proof of this can be found in the herbarium of two Czech and two Ukrainian universities.

The collection of the Masaryk University (Herbarium – Department of Botany and Zoology), in the city of Brno has 11 Nyárády sheets collected between 1912 and 1939 from Hungarian and Romanian territories. A total of 6 sheets stem from individual and 5 from collective (Alexandru Buia (1911–1964), Alexandru Borza and Péterfi Ștefan (1906–1978)) collectings: species of *Bifora*, *Caucalis*, *Chaerophyllum*, *Prangos* (2), *Hieracium* (3), *Leucanthemum*, *Riccia* and *Stipa*.

The Charles University in Prague's herbarium (Department of Botany) enriches the Czech Nyárády collection by 2 additional taxa: a *Taraxacum* species collected and identified together with George Bujorean in 1923, and a *Doronicum* species collected and identified together with Alexandru Borza in 1933.

The inventory of the Ukrainian Yu. Fedecovich Chernivtsi State University's herbarium (Botany Department) in the city of Chernivtsi contains 8 sheets under the name of Gyula Erazmus Nyárády. Some stem from individual collecting carried out in territories of

Romania (7) and Bulgaria (1) between 1926 and 1930: 5 species of *Alyssum* and 3 species of *Hieracium*.

The herbarium of the likewise Ukrainian Ivan Franko National University of Lviv owns 4 sheets, which were created between 1923 and 1925 (individual collectings from Romania, from families of plants Asteraceae and Poaceae).

3.7 Smaller collections (Republic of Armenia, Federal Republic of Germany)

During this research many collections were found, which, for now, own just a few sheets which can be related to Erasmus Nyárády. Some of these points out that Nyárády had scientific relationships even in the countries of Asia. For example in the herbarium of the Institute of Botany of the National Academy of Sciences of Armenia in Yerevan, the capital city of Armenia, there is only one *Picris* (Asteraceae) from Nyárády's individual collecting from 1925 in Romania.

Likewise, the German public collections have only a few Nyárády sheets in their property. The Botanischer Garten und Botanisches Museum Berlin's herbarium (Herbarium Berolinense) has only 6 sheets (from the period 1924 and 1932, from Romanian and Bulgarian territories, individual collectings), even though we know that Nyárády was in a constant relationship with the workers of the botanical garden and museum of Berlin (Friedrich Markgraf (1897–1987), Friedrich Ludwig Emil Diels (1874–1945), Robert Knud Friedrich Pilger (1876–1953)), being a good German speaker, and in 1932 he even published an article in the institutional magazine *Notzblatt des Königl* about the ambiguous *Alyssum* species (Nyárády, 1932). In this same institution 3 herbarium sheets can be found with the name of Nyárády Antal.

The herbarium of Friedrich-Schiller-Universität Jena (Herbarium Haussknecht) in

Central Germany owns 3 sheets, which are related to the name of Nyárády. The three sheets are individual and collective (with Emil Pop) collectings made between 1926 and 1928 in Romania.

Lastly, it is worth to mention the Leibniz Institute of Plant Genetics and Crop Plant Research's herbarium in Gatersleben, where next to the two *Allium* species herbarium sheets of Erasmus Gyula Nyárády which are from an individual collecting from 1949 in Romania, there is a significant *Allium* collection made of 15 sheets by Antal Nyárády.

3.8 General aspects about the foreign herbarium collections

The 18 foreign herbarium collections presented in this study altogether own around five hundred Nyárády sheets (218 taxon) in 9 countries all over the Globe (**Fig. 1**). The research should be continued, since there is known that Nyárády had relationships in cities like Belgrade, Athens, Leningrad, Sofia, Geneva, Basel, Zürich, Turin, Cagliari, Bremen, Weimar, Zagreb, Amsterdam, Krakow, Uppsala and other relations (Váczy, 2016a) (**Fig. 1**).

Concerning the appearance of the sheets, it is important to mention that the sheets of Nyárády were of regular size, made of board, and on each sheet there was only one species. A label was glued on the right bottom of the sheet, containing the scientific name of the plant, the place it was collected, its exposure, a short ecological characterization, and the time of the collecting, the name of the collector and the name of the identifier.

The vast majority of the sheets which got abroad are sterling exemplars, since the scientist placed every important part of the plant with the help of which it can be identified and the taxon was sent with its scientific name and the place and time of collecting (year, month, day).

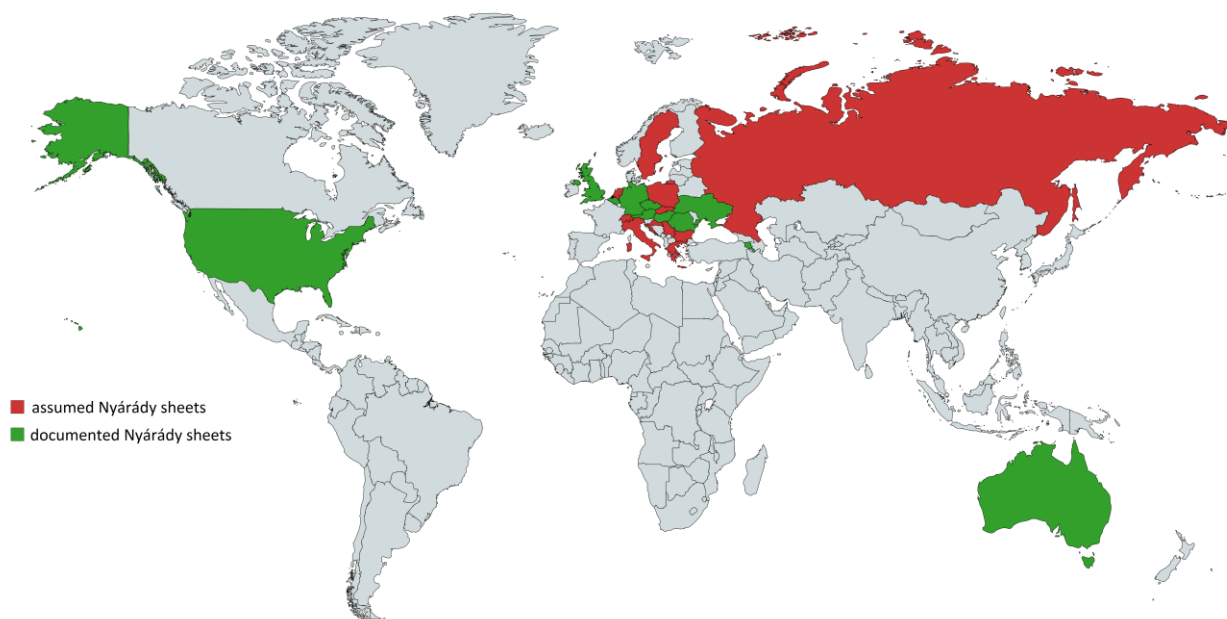


Fig. 1. Countries in the public collections of which, according to the present knowledge there are Nyárády sheets and countries where presumably additional sheets could be found (original, 2018)

Some sheets contain latter revision labels which reflect the changes of the taxonomy and nomenclature in the last half century, since at large Nyárády identified correctly the plants he collected. Thanks to the attachment of this accurate collecting data, other information (botanical descriptions, ethnobotanical knowledge, etc.), his herbarium sheets are of great significance not only in phytogeography, taxonomy and nomenclature research but also in other fields of science such as ethnobotanics, ethnogeobotanics, ethnopharmacobotanics and cultural history. They provide essential information regarding the folk names and uses of certain plants, data (dates, locations) of researchers' activities, life stories, research pathways, inter-institutional relations and the reconstruction of the formation of public collections.

Questioning the relevance of this herbarium research and exploration should be of no use, knowing that in the last decade the results of the Google Academic search engine for the „herbarium” word reached 60.000 (Takács et al., 2017), furthermore, the natural

science collections, the herbarium was the central topic of the 12th Advances in research on the flora and vegetation of the Carpatopannonian region international conference (debates, presentations etc.) (Molnár, 2018).

Conclusions

The herbarium sheets of Nyárády which got abroad have great importance in the history of science. The public collections in Europe, America, Asia and Australia are just a ‘resume’, the ‘essence’ of the diversified botanical work and the inland herbarium – containing 90.000 sheets – of the natural scientist. Nyárády was attentive that those species he considered important (in many cases these were discovered and identified by him) to be sent in form of herbarium to botanical gardens, museums of natural science and the herbariums of universities.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or

financial relationships that could be construed as a potential conflict of interest.

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