

A review of the doublet collection of Otto Blau's herbarium (SARA)

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Review article

UDK: 582.2/.3 (497.6+497.16)

This paper presents the preliminary results of the review of materials from the doublet collection of Otto Blau's herbarium, which is part of the Herbarium of the National Museum of Bosnia and Herzegovina (SARA). Analysis of the total number of specimens (2503) provided data on the sites (in Bosnia and Herzegovina and Montenegro) where the specimens of various plant groups were collected (*Phycophyta*– 1, *Mycophyta*– 5, *Lichenophyta*– 6, *Bryophyta*– 14, *Pteridophyta* – 27 and *Spermatophyta*– 2450). The collection contains 127 families, 579 genera and 1501 species of *Pteridophyta* and *Spermatophyta*. The supreme value of the collection lies in its 6 registered type specimens.

Key words: Blau's herbarium, SARA, National Museum, Sarajevo, Bosnia and Herzegovina, type species, sites, list.

INTRODUCTION

The oldest specimens deposited in the SARA herbarium belong to the collection of Dr. Otto Blau (Fig. 1), who was based in Bosnia and Herzegovina from 1861 to 1872, first as Prussian and later as German consul. A diplomat and esteemed orientalist, he collected a quantity of geographical and botanical material during numerous trips in Bosnia and Herzegovina, for the purpose of studying its people and nature. The results of his research were published in 24 papers, where he wrote about the people, political relations, trade, cultural relations, archaeology, phytogeography, numismatics, geography, mining, economy and other distinctive features of Bosnia and Herzegovina. The travelogue consisting of a summary of Blau's observations, published in Berlin in 1877 under the title "Reisen in Bosnien und Herzegovina: Topographische und pflanzengeographische Aufzeichnungen" ("Travels in Bosnia and Herzegovina: topographic and plant geographical notes"), is the most important contribution to the further knowledge of the geographic and biogeographic characteristics of Bosnia and Herzegovina, and is considered to be one of the earliest published works on the phytogeography of Bosnia and Herzegovina, preceded only by the works of Ami Boué (1840) and Otto Sendtner (1847).

Otto Blau collected multiple specimens of each plant species, and formed two identical sets. The plant material was determined by Paul Friedrich Ascherson, a long-time curator of the Berlin-Dahlem Botanical Museum. The first set, which was sent to the Botanical Museum, was accompanied by complete information for each species (sites, collection dates, scientific names). The second set remained in the consulate in Sarajevo and had numbered specimens with scientific names, but without any habitat information. Before leaving Sarajevo, Dr. Blau decided to write a "herbarium catalogue", where he entered all the data from the original labels along with a species number. The catalogue and the second set were sent to the University of Strasbourg and then to the Royal Botanic Museum in Berlin, where the first set was already located.

During that period, Karlo Malý was volunteering as a botanist in the National Museum of Bosnia and Herzegovina. He recognised the value of Otto Blau's herbarium collection, and proposed an exchange of materials with the Botanic Museum in Berlin which was accepted, and in 1906 one set of Blau's collection with the original catalogue and field reports became the property of the National Museum in Sarajevo, which was duly announced to the public (K. Malý, 1909). The second set was destroyed during World War II, after Berlin was bombed by the Allies.

From the museological point of view, Blau's doublet collection is of special scientific and historical significance. Given the fact that some specimens from Blau's collection were later described as new taxa, including some endemics, this

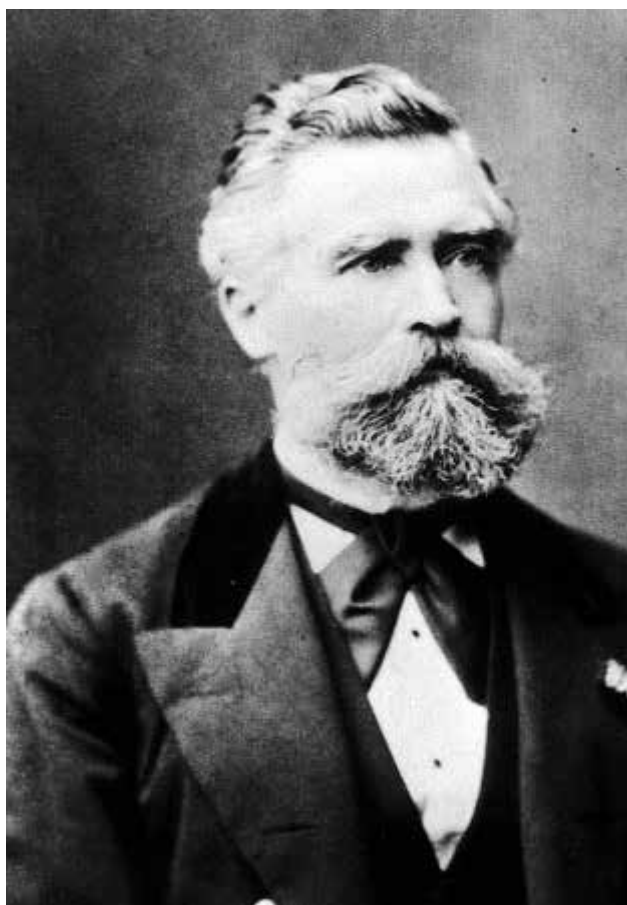


Figure 1. Dr. Otto Blau (1828-1879).

paper should contribute to new knowledge of the highly valuable floristic material and contents of the 152-year-old collection.

MATERIALS AND METHODS

Otto Blau's doublet collection with 2503 specimens is deposited in the Department of Natural Sciences of the National Museum of Bosnia and Herzegovina in Sarajevo, in a separate cabinet in the Herbarium. The plant material was collected during the period 1868-1872, at numerous sites in Bosnia and Herzegovina, and some specimens were collected in Montenegro.

The herbarium is systematized by families and genera, written on 22×26 cm paper folders which contain all collected species of a certain genus enclosed in a separate envelope. Each single sheet contains a non-mounted specimen with information on the territory where it was collected (eg. *Bosnien*) and the catalogue (inventory) number in the upper part, and data on the scientific name of the species and the author in the lower part.

The catalogue contains a detailed topographic description of Sarajevo and its surroundings, as well as other sites visited with a list of characteristic plant species, followed by a table with complete data on each specimen: inventory/

catalogue number; scientific name and author; common name(s) for some species; the name of the collection site with some data on altitude and geological substrate; date, month and year of collection and remarks. The catalogue ends with an alphabetical list of species with inventory numbers and a systematic overview of the taxa.

The nomenclature is given according to the catalogue data. The analysis of the degree of exploration of Blau's doublet collection was based on the floristic works of various authors (Ascherson & Kanitz, 1877; Beck, 1903-1927; Beck & Malý, 1950; Beck, Malý & Ž. Bjelčić, 1967, 1974, 1983). The categorization of type specimens was taken from the study of the Department of Natural Sciences of the National Museum of Bosnia and Herzegovina (1984).

RESULTS AND DISCUSSION

LIST OF SITES FROM BOSNIA AND HERZEGOVINA AND MONTENEGRO

Bosnia: Sarajevo, Stari grad, Bendbaša, Kozja ćuprija, Mošćanica valley, Miljacka gorge, Han Hreša, Jarčedol, Trebević, Borije, Hum, Brus, Hrid, Dobra voda, Ablakovina, Međuse, Miljevići, Mrkovići, Kovačići, Grlice near Vojkovići, Lukavica, Lapišnica valley, Bistrica, Jahorina, Ljubogošće, Mt. Romanija, Romanija plateau, Mokro, Sumbulovac, Glasinac, Gorica, Košava valley, Kobilja Glava, Vogošća, Ozren, Bukovik, Vučija luka, Glog, Drljevac, Han jezero, Han Toplice, Dobrinjka valley, Igman, Hrasnica, Blažuj, Reljevo, Vrelo Bosne, Ilidža, Zujevina, Hadžići, Pazarić, Dubovci, Bjelašnica, Hranisava, Željeznica valley, Ilovica, Krupa valley, Gradac, Treskavica, Foča, Kotorsko near Foča, Zagorje, Vučja, Sušice, Mosorovići, Bergovina near Kalinovik, Bosna valley, Rakovica, Kiseljak, Dusina, Fojnica, Vitez, Han, Vetranica near Vitez, Lepenica, Kreševo, Mt. Inač, Lopata, Vranc, Breza, Visoko, Mt. Lipeta near Vareš, Zenica, Busovača, Travnik, Karaula, Vlašić, Vranica, Mt. Zec, Vrbas valley, Skender Vakuf, Vakuf, Mt. Tisovac, Vrbanja, Banjaluka, Sana valley, Prijedor, Vranduk, Žepče, Usora, Lašva valley, Maglaj, Doboj, Derventa, Ukrina valley, Brod, Jajce, Jezero, Ostro hill near Jajce; **Herzegovina:** Mt. Ivan, Bradina, Paprasko, Konjic, Lisičići, Trešanica valley, Borci, Boračko lake, Bijela, Jablanica, Neretva valley, Grabovica, Crno vrelo, Drežnica, Prenj, Porim, Podporim, Raška Gora, Mostar, Podvelež, Lištica, Mostarsko Blato, Lipnica, Blagaj, Buna, Bunica valley, Nevesinje, Gacko, Višnjevo, Lipnik near Gacko, Ravno, Trebinje; **Montenegro:** Piva gorge, Durmitor, Dubljevići, Borkovići, Nikolin do, Komarske grede and Smriječno near Plužine.

The results of the analysis of the distribution of plant species reveal that the material was collected almost throughout Bosnia and Herzegovina (2405 sheets), while 97 sheets were collected at a few sites in Montenegro.

LIST OF ALGAE, FUNGI, LICHENS AND MOSSES (BOSNIA AND HERZEGOVINA)

Algae

Chara foetida var. *subhispida* A. Braun

Fungi

Geaster limbatus Fr.

Tulostoma conicum

Uromyces scutellata Winter

Agaricus lateritius Schaeff.

Agaricus oreades Bolton

Lichens

Bryopogon jubatum Link.

Cladonia rangiferina (L.) Weber

Peltigera aphthosa (L.) Willd.

Ramalina calycina

Stricta pulmonaria (L.) Birolì

Usnea barbata Fr.

Mosses

Aneura pinguis (L.) Dumort.

Bartramia pomiformis Hedw.

Brachythecium plumosum (Hedw.) Schimp.

Cinclidotus aquaticus (Hedw.) Bruch & Schimp.

Eurhynchium striatum (Hedw.) Schimp.

Fontinalis antipyretica Hedw.

Funaria hygrometrica Hedw.

Hylocomium splendens (Hedw.) Schimp.

Hypnum cupressiforme Hedw.

Hypnum schreberi Willd.

Jungermannia barbata Schreb.

Marchantia polymorpha L.

Mnium cuspidatum Hedw.

Polytrichum formosum Hedw.

REGISTER OF SPERMATOPHYTES AND PTERIDOPHYTES FROM BOSNIA AND HERZEGOVINA THE LIST OF FAMILIES, GENERA AND NUMBER OF PLANT SPECIES (IN BRACKETS) IS GIVEN BELOW:

Fam. Papilionaceae: *Trifolium* L. (18), *Melilotus* Mill. (4), *Trigonella* L. (1), *Dorycnium* Vill. (1), *Lotus* L. (3), *Galega* L. (1), *Colutea* L. (1), *Robinia* L. (1), *Astragalus* L. (2), *Oxytropis* DC. (1), *Hippocrepis* L. (1), *Coronilla* L. (4), *Onobrychis* Mill. (1), *Pisum* L. (2), *Lathyrus* L. (11), *Vicia* L. (15), *Phaseolus* L. (1), *Genista* L. (6), *Cytisus* L. (6), *Ononis* L. (3), *Anthyllis* L. (1), *Medicago* L. (4); **Fam. Rosaceae:** *Amygdalus* L. (1), *Prunus* L. (8), *Crataegus* L. (2), *Amelanchier* Med. (1), *Cotoneaster* Med. (1), *Pirus* L. (6), *Cydonia* Mill. (1), *Spiraea* L. (2), *Ulmaria* Mill. (2), *Aruncus* (1), *Geum* L. (3), *Potentilla* L. (12), *Fragaria* L. (3), *Rubus* L. (5), *Rosa* L. (6), *Agrimonia* L. (1), *Aremonia* Neck. (1), *Alchemilla* L. (2), *Sanguisorba* L. (1), *Dryas* L. (1);

- Fam. Myrtaceae:** *Punica* L. (1);
Fam. Lythraceae: *Lythrum* L. (2);
Fam. Onagraceae: *Epilobium* L. (7), *Circaea* L. (1);
Fam. Haloragaceae: *Ceratophyllum* L. (1), *Calitriche* L. (2), *Myriophyllum* L. (1), *Hippuris* L. (1);
Fam. Lineae: *Linum* L. (9);
Fam. Geraniaceae: *Erodium* L'Her. (1), *Geranium* L. (13);
Fam. Balsamineae: *Impatiens* L. (1);
Fam. Oxalideae: *Oxalis* L. (1);
Fam. Rutaceae: *Ruta* L. (2), *Haplophyllum* Juss. F. (1), *Dictamnus* L. (1);
Fam. Zygophylleae: *Tribulus* L. (1);
Fam. Terebinthaceae: *Rhus* L. (1);
Fam. Euphorbiaceae: *Euphorbia* L. (13), *Mercurialis* L. (2);
Fam. Rhamnaceae: *Paliurus* Mill. (1), *Rhamnus* L. (2), *Frangula* Mill. (2);
Fam. Illicineae: *Ilex* L. (1);
Fam. Celastineae: *Evonymus* L. (2);
Fam. Staphylaceae: *Staphylea* L. (1);
Fam. Ampelideae: *Vitis* L. (3);
Fam. Hippocastaneae: *Aesculus* L. (1);
Fam. Acerineae: *Acer* L. (7);
Fam. Tiliaceae: *Tilia* L. (3);
Fam. Malvaceae: *Lavatera* L. (1), *Althaea* L. (3), *Malva* L. (3), *Hibiscus* L. (1), *Abutilon* Gaertn. (1);
Fam. Cucurbitaceae: *Cucurbita* L. (2), *Citrullus* Forsk. (1), *Cucumis* L. (2), *Bryonia* L. (2), *Sicyos* L. (1);
Fam. Caryophylleae: *Cucubalus* L. (1), *Agrostemma* L. (1), *Coronaria* Guett. (2), *Melandrium* Roehl. (3), *Viscaria* Bernh. (1), *Silene* L. (10), *Vaccaria* Med. (1), *Saponaria* L. (1), *Heliosperma* Rchb. (3), *Gypsophila* L. (1), *Tunica* Scop. (3), *Dianthus* L. (12), *Drypis* L. (1), *Sagina* L. (1), *Alsine* Wahlenb. (4), *Arenaria* L. (1), *Moehringia* L. (2), *Holosteum* L. (1), *Stellaria* L. (4), *Moenchia* Ehrh. (1), *Cerastium* L. (9), *Malachium* Fr. (1), *Spergula* Presl. (1), *Herniaria* L. (2), *Scleranthus* L. (3);
Fam. Portulacaceae: *Portulaca* L. (1);
Fam. Hypericineae: *Hypericum* L. (8), *Parnassia* L. (1);
Fam. Cistaceae: *Helianthemum* Mill. (3);
Fam. Violaceae: *Viola* L. (12);
Fam. Polygalaceae: *Polygala* L. (8);
Fam. Resedaceae: *Reseda* L. (3);
Fam. Cruciferae: *Hesperis* L. (1), *Malcolmia* R. Br. (2), *Arabis* L. (6), *Turritis* L. (1), *Dentaria* L. (3), *Cardamine* L. (7), *Sisymbrium* L. (2), *Alliaria* Scop. (1), *Nasturtium* R. Br. (5), *Barbarea* R. Br. (1), *Erysimum* L. (4), *Syrenia* Andr. (1), *Brassica* L. (4), *Sinapis* L. (1), *Diploaxis* DC. (1), *Cochlearia* L. (1), *Draba* L. (2), *Erophilla* Mill. (1), *Lunaria* L. (1), *Berteroa* DC. (1), *Alyssum* L. (6), *Vogelia* Med. (1), *Thlaspi* L. (5), *Aethionema* R.Br. (1), *Capsella* Med. (1), *Biscutella* L. (1), *Lepidium* L. (2), *Hutchinsia* R.Br. (1), *Raphanus* L. (1);
Fam. Papaveraceae: *Corydalis* Vent. (3), *Fumaria* L. (1), *Papaver* L. (1), *Chelidonium* L. (1);
Fam. Nymphaeaceae: *Nuphar* Sm. (1);
Fam. Berberideae: *Berberis* L. (1), *Epimedium* L. (1);
Fam. Ranunculaceae: *Clematis* L. (4), *Anemone* L. (4), *Pulsatilla* Mill. (2), *Hepatica* Mill. (1), *Thalictrum* L. (4), *Trollius* L. (1), *Ranunculus* L. (14), *Eranthis* Salisb. (1), *Caltha* L. (1), *Helleborus* L. (1), *Isopyrum* L. (1), *Nigella* L. (2), *Aquilegia* L. (1), *Delphinium* L. (1), *Aconitum* L. (1), *Actaea* L. (1);
Fam. Crassulaceae: *Sedum* L. (8), *Sempervivum* L. (1), *Saxifraga* L. (6);
Fam. Ribesiaceae: *Ribes* L. (1), *Chrysosplenium* L. (1);
Fam. Umbelliferae: *Sanicula* L. (1), *Astrantia* L. (1), *Eryngium* L. (3), *Aegopodium* L. (1), *Carum* L. (1), *Pimpinella* L. (1), *Berula* L. (1), *Bifora* Hoffm. (1), *Bupleurum* L. (7), *Coriandrum* L. (1), *Smyrnum* L. (1), *Oenanthe* L. (3), *Meum* Mill. (1), *Seseli* L. (4), *Trinia* Hoffm. (1), *Athamanta* L. (2), *Silauus* Mill. (1), *Cnidium* Cuss. (1), *Libanotis* Hill. (1), *Pleurospermum* Guss. (1), *Chaerophyllum* L. (3), *Myrrhis* Mill. (6), *Scandix* L. (1), *Aethusa* L. (1), *Conium* L. (1), *Angelica* L. (1), *Lophosciadium* DC. (1), *Peucedanum* L. (7), *Pastinaca* L. (1), *Heracleum* L. (2), *Tordylium* L. (1), *Laserpitium* L. (5), *Orlaya* Hoffm. (1), *Daucus* L. (1), *Torilis* Adans. (3), *Pančićia* Vis. (1);
Fam. Araliaceae: *Hedera* L. (1);
Fam. Corneae: *Cornus* L. (2);
Fam. Ericaceae: *Erica* L. (1), *Calluna* Salisb. (1), *Arctostaphylos* Adans. (1), *Vaccinium* L. (1), *Pyrola* L. (2);
Fam. Primulaceae: *Primula* L. (6), *Androsace* L. (1), *Cyclamen* L. (2), *Soldanella* L. (1), *Lysimachia* L. (3), *Anagallis* L. (2);
Fam. Acanthaceae: *Acanthus* L. (1);
Fam. Scrophulariaceae: *Melampyrum* L. (5), *Alectorolophus* Hall. (2), *Euphrasia* L. (4), *Odontites* Hall. (1), *Pedicularis* L. (4), *Antirrhinum* L. (2), *Linaria* Mill. (4), *Veronica* L. (15), *Gratiola* L. (1), *Digitalis* L. (3), *Scrophularia* L. (4), *Verbascum* L. (8);
Fam. Solanaceae: *Datura* L. (1), *Hyoscyamus* L. (1), *Nicotiana* L. (2), *Atropa* L. (1), *Solanum* L. (5), *Physalis* L. (1);
Fam. Orobanchaceae: *Orobanche* L. (6), *Phelypaea* L. (1), *Lathraea* L. (1);
Fam. Gentianeae: *Erythraea* Borkh. (2), *Gentiana* L. (11), *Chlora* Adans. (1);
Fam. Apocynae: *Vinca* L. (1);
Fam. Asclepiadeae: *Vincetoxicum* Moehr. (2);
Fam. Jasmineae: *Syringa* L. (1), *Fraxinus* L. (3), *Ligustrum* L. (1);
Fam. Polemoniaceae: *Polemonium* L. (1);
Fam. Convolvulaceae: *Convolvulus* L. (3), *Cuscuta* L. (3);
Fam. Boraginaceae: *Heliotropium* L. (2), *Cerinthe* L. (1), *Asperugo* L. (1), *Onosma* L. (2), *Echium* (2), *Pulmonaria* L. (2), *Lythospermum* L. (3), *Anchusa* (1), *Myosotis* L. (5), *Symphytum* L. (2), *Cynoglossum* L. (2), *Lappula* Gilib. (1), *Moltkia* Lehm. (1);
Fam. Labiatae: *Mentha* L. (4), *Lycopus* L. (2), *Salvia* L. (7), *Origanum* L. (2), *Thymus* L. (3), *Satureia* L. (6), *Micromeria* Benth. (1), *Calamintha* Adans. (6), *Melissa* L. (1), *Hyssopus* L. (1), *Prunella* L. (3), *Scutellaria* L. (4), *Nepeta* L. (2), *Glechoma* L. (2), *Melittis* L. (1), *Lamium* L. (4), *Chaeturus* Lk. (1), *Leonurus* L. (1), *Galeopsis* L. (5), *Betonica* L. (1), *Stachys* L. (9), *Sideritis* L. (1), *Marrubium* L. (2), *Ballota* L. (1), *Teucrium* L. (4), *Ajuga* L. (4);
Fam. Verbenaceae: *Verbena* L. (1);
Fam. Caprifoliaceae: *Lonicera* L. (4), *Viburnum* L. (2), *Sambucus* L. (3), *Adoxa* L. (1);
Fam. Rubiaceae: *Galium* L. (16), *Asperula* L. (6), *Sherardia* L. (1);
Fam. Valerianeae: *Valerianella* Mill. (4), *Valeriana* L. (3);
Fam. Dipsacaceae: *Dipsacus* L. (2), *Cephalaria* Schrad. (3), *Knautia* L. (3), *Succisa* Hall. (2), *Scabiosa* L. (6);
Fam. Synanthereae: *Eupatorium* L. (1), *Adenostyles* Cass. (1), *Petasites* Gartn. (2), *Homogyne* Cass. (1), *Tussilago* L. (1), *Aster* L. (3), *Erigeron* L. (3), *Stenactis* Cass. (1), *Bellidistram* Cass. (1), *Bellis* L. (1), *Solidago* L. (1), *Bidens* L. (1), *Inula* L. (8), *Pulicaria* Gartn. (2), *Bupthalmum* L. (1), *Telekia* Baumg. (1), *Micropus* L. (1), *Filago* L. (2), *Gnaphalium* L. (5), *Helichrysum* Pers. (1), *Cupularia* Lam. (1), *Artemisia* L. (4), *Carpesium* L. (1), *Chrysanthemum* L. (11), *Anthemis* L. (5), *Achillea* L. (8), *Doronicum* L. (2), *Arnica* L. (1), *Senecio* L. (11), *Xanthium* L. (2), *Calendula* L.

(1), *Echinops* L. (3), *Xeranthemum* L. (2), *Carlina* L. (4), *Crupina* Cass. (1), *Centaurea* L. (15), *Kentrophyllum* Neck. (1), *Chamaepeuce* DC. (1), *Onopordon* L. (1), *Cirsium* Adans. (8), *Jurinea* Cass. (1), *Lappa* Scop. (3), *Serratula* L. (1), *Aposeris* Neck. (1), *Lampsana* Mill. (1), *Cichorium* L. (1), *Scolymus* L. (1), *Hypochaeris* L. (1), *Pterotheca* Cass. (1), *Sonchus* L. (4), *Leontodon* L. (5), *Picris* L. (1), *Scorzonera* L. (2), *Tragopogon* L. (3), *Prenanthes* L. (1), *Lactuca* L. (3), *Mulgedium* Cass. (3), *Chondrilla* L. (2), *Taraxacum* Web. (1), *Hieracium* L. (26), *Crepis* L. (8), *Achyroperhorus* Vaill. (1);

Fam. Campanulaceae: *Specularia* DC. (1), *Campanula* L. (13), *Symphyandra* DC. (1), *Phyteuma* L. (3), *Hedraeanthus* Griseb. (4), *Jasione* L. (1);

Fam. Globulariaceae: *Globularia* L. (1);

Fam. Plumbagineae: *Plumbago* L. (1), *Armeria* Willd. (1);

Fam. Plantagineae: *Plantago* L. (1);

Fam. Amaranthaceae: *Polycnemum* L. (1), *Amaranthus* L. (3);

Fam. Chenopodeae: *Spinacia* L. (1), *Chenopodium* L. (5), *Beta* L. (1);

Fam. Polygonaceae: *Polygonum* L. (10), *Fagopyrum* Mill. (1), *Rumex* L. (11);

Fam. Thymeleae: *Daphne* L. (2);

Fam. Santalaceae: *Thesium* L. (3);

Fam. Loranthaceae: *Viscum* L. (1);

Fam. Aristolochiaceae: *Asarum* L. (1), *Aristolochia* L. (2);

Fam. Urticaceae: *Urtica* L. (2), *Parietaria* L. (3), *Humulus* L. (1), *Cannabis* L. (1), *Celtis* L. (1), *Ulmus* L. (1), *Morus* L. (2);

Fam. Amentaceae: *Quercus* L. (5), *Castanea* Mill. (1), *Juglans* L. (1), *Fagus* L. (1), *Corylus* L. (2), *Carpinus* L. (2), *Ostrya* Scop. (1), *Betula* L. (2), *Alnus* Mill. (3);

Fam. Salicaceae: *Salix* L. (7), *Populus* L. (4);

Fam. Coniferae: *Pinus* L. (3), *Abies* Mill. (1), *Picea* A. Dietr. (1), *Juniperus* L. (1);

Fam. Alismaceae: *Alisma* L. (1);

Fam. Orchidaceae: *Orchis* L. (13), *Gymnadenia* (1), *Aceras* R.Br. (2), *Platanthera* Rich. (3), *Ophrys* L. (3), *Neottia* Ludw. (2), *Epipactis* Zinn (3), *Cephalanthera* Rich. (2), *Nigritella* Rich. (1);

Fam. Iridaceae: *Iris* L. (3), *Gladiolus* L. (1), *Crocus* L. (3);

Fam. Amaryllidaceae: *Galanthus* L. (1), *Narcissus* L. (2);

Fam. Liliaceae: *Colchicum* L. (2), *Veratrum* L. (2), *Tofieldia* Huds. (1), *Erythronium* L. (1), *Gagea* Salisb. (2), *Lilium* L. (2), *Muscari* Mill. (3), *Hyacinthus* L. (1), *Scilla* L. (3), *Ornithogalum* L. (5), *Allium* L. (8), *Tulipa* L. (1), *Anthericum* L. (1);

Fam. Smilacaceae: *Asparagus* L. (2), *Convallaria* L. (1), *Polygonatum* Adans. (2), *Maianthemum* Web. (1), *Ruscus* L. (2), *Paris* L. (1);

Fam. Dioscoreae: *Tamus* L. (1);

Fam. Juncaceae: *Luzula* DC. (5), *Juncus* L. (7);

Fam. Cyperaceae: *Carex* L. (26), *Scripus* L. (3), *Eriophorum* L. (1), *Cyperus* L. (2);

Fam. Gramineae: *Lolium* L. (1), *Hordeum* L. (4), *Triticum* L. (3), *Brachypodium* P.B. (1), *Secale* L. (1), *Festuca* L. (4), *Molinia* Schrk. (1), *Arundo* L. (1), *Glyceria* R.Br. (1), *Catabrosa* P.B. (1), *Poa* L. (9), *Eragrostis* Host (1), *Briza* L. (1), *Sesleria* Scop. (5), *Cynosurus* L. (1), *Dactylis* L. (1), *Koeleria* Pers. (2), *Melica* L. (3), *Bromus* L. (9), *Sieglingia* Bernh. (1), *Avena* L. (3), *Holcus* L. (1), *Anthoxanthum* L. (1), *Agrostis* L. (1), *Milium* L. (1), *Stipa* L. (1), *Lasiagrostis* Lk. (1), *Andropogon* L. (1), *Sorghum* Moench. (2), *Zea* L. (1), *Oryza* L. (1), *Phleum* L. (3), *Alopecurus* L. (2), *Tragus* Haller (1), *Panicum* L. (7);

Fam. Aroideae: *Arum* L. (1), *Lemna* L. (2), *Typha* L. (2), *Sparganium* L. (1);

Fam. Najadeae: *Potamogeton* L. (6);

Fam. Juncagineae: *Triglochin* L. (1);

Fam. Lycopodiaceae: *Lycopodium* L. (2);

Fam. Ophioglossaceae: *Botrychium* Sw. (1);

Fam. Polypodiaceae: *Notholaena* R. Br. (1), *Pteris* L. (1), *Blechnum* L. (1), *Scolopendrium* Adans. (1), *Asplenium* L. (6), *Cystopteris* Bernh. (1), *Aspidium* Sw. (5), *Polypodium* L. (1), *Phegopteris* Fee (1), *Grammitis* Sw. (1);

Fam. Equisetaceae: *Equisetum* L. (4).

REGISTER OF SPERMATOPHYTES AND PTERIDOPHYTES FROM MONTENEGRO

Fam. Papilionaceae: *Trifolium* L. (1), *Onobrychis* Mill. (1);

Fam. Rosaceae: *Dryas* L. (1), *Prunus* L. (1);

Fam. Lineae: *Linum* L. (1);

Fam. Geraniaceae: *Geranium* L. (1);

Fam. Terebinthaceae: *Rhus* L. (1);

Fam. Rhamnaceae: *Rhamnus* L. (2);

Fam. Acerineae: *Acer* L. (2);

Fam. Cucurbitaceae: *Bryonia* L. (1);

Fam. Caryophyllae: *Alsine* Wahlenb. (1), *Cerastium* L. (3), *Dianthus* L. (5), *Melandrium* Roehl. (2);

Fam. Hypericaceae: *Parnassia* L. (1);

Fam. Cruciferae: *Barbarea* R.Br. (1), *Draba* L. (1);

Fam. Ranunculaceae: *Clematis* L. (1), *Thalictrum* L. (1), *Delphinium* L. (1);

Fam. Crassulaceae: *Sempervivum* L. (1);

Fam. Umbelliferae: *Bupleurum* L. (1), *Eryngium* L. (1), *Laserpitium* L. (1), *Peucedanum* L. (2), *Seseli* L. (3), *Tordylium* L. (1);

Fam. Araliaceae: *Cornus* L. (1);

Fam. Ericaceae: *Arctostaphylos* Adans. (1);

Fam. Primulaceae: *Androsace* L. (1);

Fam. Scrophulariaceae: *Melampyrum* L. (1), *Euphrasia* L. (1), *Odontites* Hall. (1), *Pedicularis* L. (1), *Linaria* Mill. (1), *Verbascum* L. (3);

Fam. Gentianeae: *Gentiana* L. (2);

Fam. Jasmineae: *Fraxinus* L. (1);

Fam. Labiatae: *Mentha* L. (1), *Salvia* L. (1), *Satureia* L. (2), *Hyssopus* L. (1), *Stachys* L. (2);

Fam. Rubiaceae: *Asperula* L. (1);

Fam. Dipsacaceae: *Scabiosa* L. (3);

Fam. Synanthereae: *Pulicaria* Gartn. (1), *Inula* L. (1), *Artemisia* L. (1), *Chrysanthemum* L. (2), *Centaurea* L. (2), *Senecio* L. (3), *Tragopogon* L. (2), *Scorzonera* L. (1);

Fam. Campanulaceae: *Campanula* L. (2), *Edraianthus* DC. (1);

Fam. Plumbagineae: *Armeria* Willd. (1);

Fam. Amentaceae: *Quercus* L. (1);

Fam. Salicaceae: *Salix* L. (2), *Populus* L. (1);

Fam. Coniferae: *Pinus* L. (1), *Juniperus* L. (1);

Fam. Liliaceae: *Colchicum* L. (1), *Allium* L. (2);

Fam. Cyperaceae: *Carex* L. (1);

Fam. Gramineae: *Poa* L. (1), *Sesleria* Scop. (1), *Bromus* L. (1), *Phleum* L. (1);

Fam. Aroideae: *Arum* L. (1);

Fam. Polypodiaceae: *Cystopteris* Bernh. (1).

The review of the herbarium structure reveals the numbers of different plant groups for both countries:

- Bosnia and Herzegovina: *Phycophyta* - 1, *Mycophyta* - 5, *Lichenophyta* - 6, *Bryophyta* - 14, *Pteridophyta* - 26, *Spermatophyta* - 2353;
- Montenegro: *Pteridophyta* - 1, *Spermatophyta* - 96.

Table 1 summarizes the data on the number of families, genera and species for the Bosnian-Herzegovinian part of Blau's collection, and reveals the following:

Pteridophyta are represented by 4 families, 13 genera and 26 species,

Spermatophyta are represented by 89 families, 496 genera and 1378 plant species.

Table 1. Numerical representation of systematic categories from *Herbarium Blavianum* collection for Bosnia and Herzegovina

	Family	Genus	Species
Pteridophyta	4	13	26
Spermatophyta	89	496	1378
Total:	93	509	1404

Table 2 gives an overview of systematic categories for the Montenegrin part of Blau's collection. *Pteridophyta* includes 1 family, 1 genus and 1 species, while *Spermatophyta* are categorized in 33 families, 69 genera and 96 species.

Table 2. Numerical representation of systematic categories from *Herbarium Blavianum* collection for Montenegro

	Family	Genus	Species
Pteridophyta	1	1	1
Spermatophyta	33	69	96
Total:	34	70	97

The plant material has never been taxonomically reviewed since the collection was established, so that the original collection data has been used. There is no doubt that the review according to the newer classification planned for the upcoming period will alter the proportion of existing systematic categories.

In addition, some specimens were incompletely determined to the level of genus (43 specimens from Bosnia and Herzegovina and 2 specimens from Montenegro). The dynamics of material collection by year is different (Bosnia and Herzegovina: 1868 – 1150 specimens, 1869 – 865 specimens, 1870 – 4 specimens, 1871 – 481 specimens and 1872 – 3 specimens; Montenegro: 1869 – 97 specimens).

The collection also includes the specimens that were used to describe new taxa – types which were categorized in 1984 according to ICBN rules adopted at the XIX International Botanical Congress in Montreal (1959):

- *Alyssum cinereum* Blau (Syn. *A. moellendorffianum* Asher.) **HOLOTYPE!** (Fig. 2.)
- *Potentilla reptans* L. var. *blavii* Ascher. et Graebn. **HOLOTYPE!** (Fig. 3.)
- *Crepis blavii* (Ascherson) Stadlmann (Syn. *Mulgedium blavii* Ascherson) **HOLOTYPE!** (Fig. 4.)
- *Avenastrum blavii* Beck /Syn. *Avenula blavii* (Asch. et Jka.) W. Sauer et Cmel. **/HOLOTYPE!** (Fig. 5.)
- *Saxifraga blavii* Beck (Syn. *S. adscendens* var. *blavii* Engler) **SYNTYPUS!** (Fig. 6.)
- *Bromus erectus* Huds. (Syn. *B. moellendorffianum* A.G.) **TYPUS!** (Fig. 7.), with the remark indicating that the species of the typus will be defined after the scientific review.



Figure 2. *Alyssum cinereum* Blau (Syn. *A. moellendorffianum* Asherson). Locus classicus: in kalkigem Berglezum in Treschanitz-Tal.



Figure 3. *Potentilla reptans* L. var. *blavii* Ascher. et Graebn. Locus classicus: as a weed in Otto Blau's garden in Sarajevo.



Figure 4. *Crepis blavii* (Ascherson) Stadlmann (Syn. *Mulgedium blavii* Ascherson). Locus classicus: "in fruticetis inter Paljev do et Bakračuš, rar"



Figure 5. *Avenastrum blavii* Beck /Syn. *Avenula blavii* (Asch. et Jka.) W. Sauer et Cmel./ Locus classicus: in saxis calc. montis Trebević pr. Sarajevo. 800 m.



Figure 6. *Saxifraga blavii* Beck. (Syn. *S. adscendens* var. *blavii* Engler). Locus classicus: auf den höheren Kuppen der Romanija 4000".

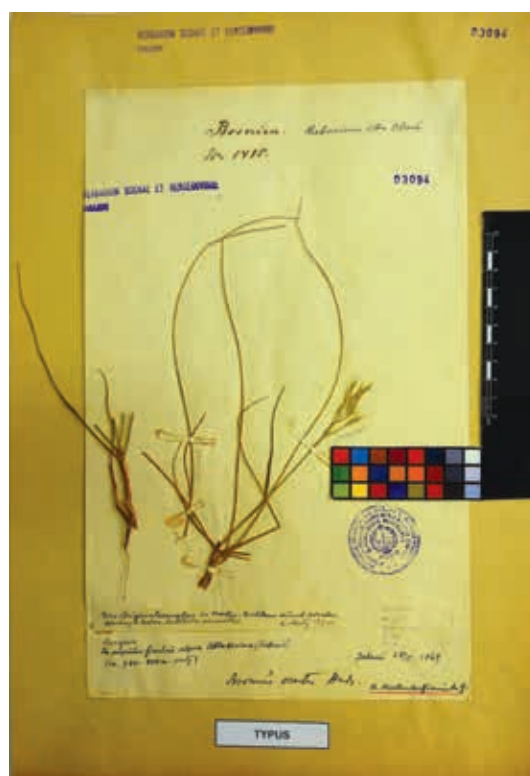


Figure 7. *Bromus erectus* Huds. (Syn. *B. moellendorffianum* A.G.) TYPUS! Locus classicus: in rupinum supra Ablakovina (Trebević), ca 780 – 800 m. Malý.

CONCLUSIONS:

Analysis of the total number of sheets from Otto Blau's doublet collection resulted in new data on its content and revealed that:

- most specimens were collected in the territory of Bosnia and Herzegovina (96.1%), while a minor part of the collection originates from Montenegro (3.9%);
- the collection consists of algae – 0.04%, fungi – 0.20%, lichens – 0.24%, mosses – 0.56%, ferns – 1.08% and spermatophytes – 97.88%;
- the Bosnian-Herzegovinian part of the collection is systematically divided into 93 families, 509 genera and 1404 species, while specimens from Montenegro include 34 families, 70 genera and 97 taxa (those data refer to *Pteridophyta* and *Spermatophyta*);
- a total of 43 specimens from Bosnia and Herzegovina and 2 from Montenegro do not have valid scientific names and were omitted from the analysis;
- most specimens (46%) were collected during the first year when the collection was established;
- six nomenclature types (4 holotypuses, 1 syntypus and 1 typus) were identified and labelled based on the rules of the International Codex of Botanical Nomenclature (ICBN).

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SAŽETAK

U radu su prikazani preliminarni rezultati istraživanja materijala iz kolekcije dubleta Otto Blaua koja čini dio herbarija Zemaljskog muzeja Bosne i Hercegovine (SARA). Analizom ukupnog broja primjeraka (2503) su dati podaci o lokalitetima (BiH, Crna Gora) na kojima su prikupljeni uzorci različitih biljnih grupa (*Phycophyta* – 1, *Mycophyta* – 5, *Lichenophyta* – 6, *Bryophyta* – 14, *Pteridophyta* – 27 i *Spermatophyta* – 2450). Registrirano je 127 porodica, 579 rodova i 1501 vrsta *Pteridophyta* i *Spermatophyta*. Najveću vrijednost predstavljaju registrirani tipski primjerci (6) koji su uloženi u istoimenu zbirku.

Ključne riječi: Blauov herbar, SARA, Zemaljski muzej, Sarajevo, Bosna i Hercegovina, tipske vrste, nalazišta, popis.