

REDISCOVERY OF AN ANCIENT HERBARIUM FOR TURKISH BOTANICAL HISTORY: BOLU GIRLS VILLAGE INSTITUTE HERBARIUM

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ABSTRACT. Bolu Girls' Village Institute Herbarium (Bolu Kız Köy Enstitüsü Herbaryumu) was founded in 1953 by Muhittin Fehmi Özgen. It is one of the earliest herbaria of the Turkish Republic. The herbarium was part of the natural history collections of the school which also included insects, minerals, and fossils. The herbarium initially contained around 2500 specimens within 72 cardboard boxes. Additionally, specimens from this herbarium were sent to İstanbul University Department of Biology Herbarium (ISTF) and around 600 specimens to the herbarium of Royal Botanic Garden Edinburgh (E). In 2006, we received 567 plant specimens in five boxes. The plants were mainly collected from Bolu and neighboring provinces between 1953 and 1958. The herbarium collection contains one bryophyte specimen and three seedless vascular plants. The remaining taxa belong to gymnosperms and angiosperms. The herbarium labels were prepared both in Latin and Turkish. Majority of the specimens have identification up to family and genus level and a small number of them up to species level. This herbarium remained largely unknown to Turkish botanists. Therefore, we think it is valuable to provide detailed information about the history and the content of the herbarium. The information given here not only will contribute to our knowledge about the natural history collections of Turkey but also to the education history of the Turkish Republic.

1. INTRODUCTION

1.1. Historical development of herbaria during the Ottoman Empire

Herbaria are systematically arranged collections of dried plant specimens which allow scientists to study plants simultaneously regardless of their

Keywords. Botanical history, Kızılcıllu, Savaştepe, Turkey, Village Institutes
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growth time and locality. Historical herbaria are especially important as they provide us information about the distribution of plants in time and space. They can be useful for tracing the origin of cultivated plants and tracking the spread of invasive species. The earliest herbaria of the world were founded in Italy during the first half of the 16th century. Botanist Luca Ghini working at the University of Pisa is known to be the inventor of the herbarium. Later, the practice of storing pressed and dried plants in herbaria spread rapidly to the rest of Europe [1]. However, the earliest herbaria in the Ottoman Empire began to be built around mid-19th century. The oldest herbaria of the Ottoman Empire were founded mainly by American and French Colleges and in few other Turkish schools mainly by foreign teachers. According to Baytop [2], the first official herbarium of the Ottoman Empire was “Mekteb-i Tibbiye” or “Herbier de l'École Impériale de Médecine de Galata-séraï” (Imperial School of Medicine of Galata-Serai). The herbarium was founded by the German pharmacist Friedrich Wilhelm Noë in 1845. It was a short-lived herbarium since all the collections, associated materials, and equipment along with other natural history collections were lost during the great fire of Beyoğlu in 1848 [3]. While in Turkey, F. W. Noë made several botanical excursions and sent specimens to European herbaria [3]. Later in 1870, Dr. Abdullah Bey whose original name was Carl Eduard Hammerschmidt (1799-1874) was assigned to restore the natural history collections of the school. In 1871, the school's herbarium collection included 2725 specimens. However, these herbarium specimens could not reach today [2]. One of the other earliest herbaria of the Ottoman Empire was established in 1869 within the Robert College as part of the Natural History Museum. The herbarium collections were mainly provided by Georges Vincent Aznavour and George E. Post. There were 13000 plant specimens in the herbarium [4]. According to Demiriz [5] thousands of specimens collected by G. V. Aznavour were transported to Geneva Herbarium by B. V. D. Post and his wife. The remaining specimens were transferred to Saint-Joseph School in İstanbul [6]. Another school with herbarium collections was Central Turkey College Aintab which was founded in 1875 and closed in 1924. It had a natural history museum named as Mary A. Dickinson Museum. In 1905, teachers and their pupils at Saint Joseph High School in İstanbul began to collect plants from İstanbul-Kadıköy and its environs until the mid-1970s. The collection which remains today includes 2253 herbarium specimens belonging to 1006 species, 436 genera and 87 families [7]. Another school with herbarium collections was Museum of Anatolia College, Merzifon (1913–1938) which contained botanical collections by Manissadjian. In 1914, the herbarium had 7000

botanical collections. In 1938, the museum collections were transferred to Tarsus American College and part of the herbarium collections were sent to herbarium of Ankara University. Later, the collections at the Tarsus American College were sent to Robert College in İstanbul [8]. Other than the above-mentioned herbaria, several other schools had some plant collections. Akyıldırım [9] found natural history collections in 47 schools of İstanbul. However, only 16 of them were well preserved. In terms of botanical collections, a few of them contain complete herbarium specimens as most of them had either only leaf or seed collections.

1.2. The First Herbaria of the Turkish Republic

After the foundation of Turkish Republic and with the higher education revolution new herbaria were founded in Ankara and İstanbul in 1933. German botanist Prof. Dr. Kurt Krause was assigned as the director of the botanical department of the Ankara Higher Agricultural Institute (Ankara Yüksek Ziraat Enstitüsü) between 1933 and 1939. This department was firstly attached to the Ministry of Agriculture. In 1933, Prof. Dr. Krause founded the herbarium of Ankara Yüksek Ziraat Enstitüsü, also called as “Herbarium Turcicum” (ANK). In addition to the foundation of the herbarium, Prof. Dr. Krause travelled around Turkey and collected plant specimens. In 1948, the institute and the herbarium were joined to the Science Faculty of Ankara University. Körüklü [10] stated that there are currently specimens in this herbarium collected by Turkish botanists Kadri Ahmet and Hikmet Birand dated from 1927. The herbarium also contains older specimens received from European herbaria as a gift and specimens from the first herbarium of the Ottoman Empire, Imperial School of Medicine of Galata-Serai which were collected by the director Dr. F.W. Noë in 1844 [10]. In the meantime, İstanbul University Science Faculty Herbarium (ISTF) was founded by Prof. Dr. Alfred Heilbronn in 1933. Later, two additional herbaria were opened under the University of İstanbul belonging to Pharmacy Faculty (ISTE) in 1945 and Forestry Faculty (ISTO) in 1950. At present, these four herbaria are still active and are among the herbaria with the largest collections in Turkey.

Later, Central Anatolia Forestry Research Institute Herbarium (ANKO) was opened in 1959. Then, Ege University herbarium (EGE) was founded in 1962, followed by Ankara University, Faculty of Pharmacy herbarium (AEF) in 1967, Hacettepe University, Faculty of Pharmacy herbarium (HUEF) in 1969 and Atatürk University, Faculty of Science herbarium

(ATA) in 1969. During the 1970s with the foundation of new universities several new herbaria were opened under biology, pharmacy, or forestry departments.

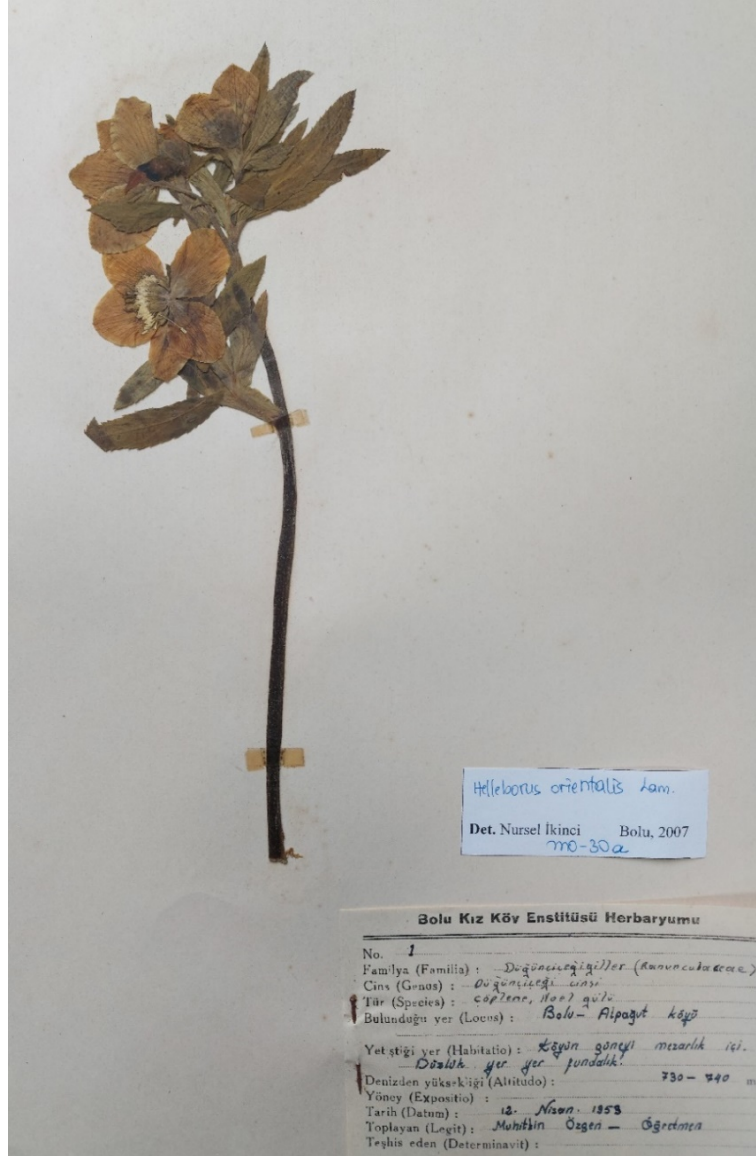


FIGURE 1. One of the specimens from Bolu Girls' Village Institute Herbarium collected in 1953.

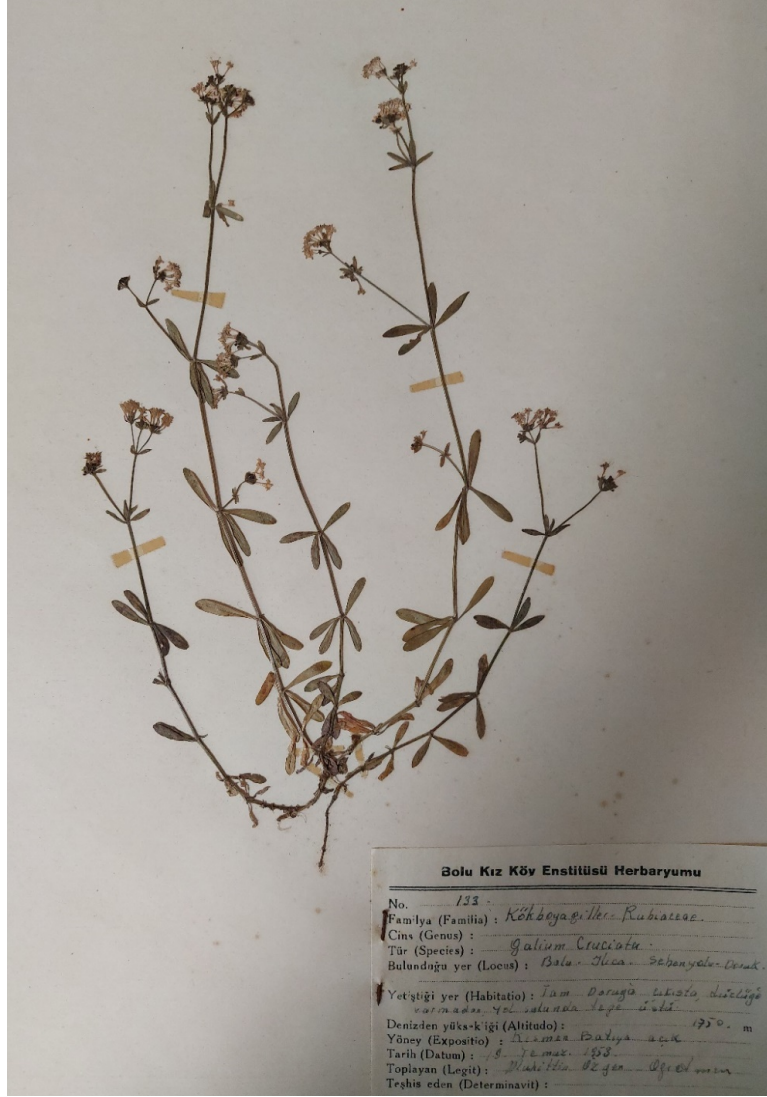


FIGURE 2. One of the specimens with identification up to species level.

1.3. Rediscovery of Bolu Girls' Village Institute Herbarium

In 2006, we received 567 herbarium specimens within five boxes (Figure 1-3). The specimens were collected between 1953 and 1958. These were carefully prepared herbarium specimens with accurate labels written in both

Latin and Turkish. Majority of the specimens were collected by Muhittin Özgen (teacher and the founder of the herbarium) but there were also many specimens collected by the pupils. Later in 2013, Mehmet Tunçkol (a retired teacher in Bolu who also brought us the five herbarium boxes) found an additional set of around 50 herbarium specimens belonging to the same herbarium collections. These later specimens were collected from Abant in 1953 [11]. According to Demiriz [5], specimens from Bolu Girls' Village Institute Herbarium were also sent to İstanbul University Science Faculty Herbarium (ISTF). Some of his specimens were cited in the Flora of Turkey [12]. Additionally, during that time, around 600 specimens were sent to the herbarium of Royal Botanic Garden Edinburgh (E).



FIGURE 3. Five boxes we received in 2006 containing the herbarium specimens.

Bolu Girls' Village Institute did not only own herbarium collections but also zoological, geological, and fossil collections (Figure 4). Together with the pupils, they also built a weather station in the schoolyard to record some of the environmental data. Part of the zoological collection also saved but not in good condition and stored at the Abant İzzet Baysal University Entomology Museum (AIBUEM) (Figure 5 and 6). Aim of this paper is to

provide details about the history of the Bolu Girls' Village Institute collections and its founder Muhittin Fehmi Özgen and to give the list the of specimens stored at AIBU herbarium with all the details attached to them including identifications performed by us.



FIGURE 4. An example from the mineral collection of the school (left). Muhittin Özgen continued to use the labels prepared for Bolu Girls' Village Institute when he moved to different schools by crossing out "Bolu Kız Köy Enstitüsü" and replacing it with "Özel İstanbul Koleji" (right).

2. MATERIALS AND METHODS

We identified and prepared a list of the 567 received specimens. Identification of the herbarium specimens were done using "Flora of Turkey and the East Aegean Islands [12-13] and recent publications related with the region [14-22]. All the herbarium specimens are kept in the Herbarium of Bolu Abant İzzet Baysal University (AIBU). Taxa in the floristic list are given in alphabetical order of families (Appendix). In this list, only plant identifications were added by us. All the other data provided were obtained from the original herbarium labels. There are several duplicates for almost

every specimen. Therefore, we have given the label details of one specimen and added the total number of duplicates.



FIGURE 5. Part of the insect collection of Bolu Girls' Village Institute which are stored at the Abant Izzet Baysal University Entomology Museum (AIBUEM).



FIGURE 6. Second part of the insect collection.

3. RESULTS AND DISCUSSION

3.1. History of Bolu Girls' Village Institute Herbarium

Bolu Girls' Village Institute Herbarium was founded in 1953. The herbarium initially contained 2500 herbarium specimens in 72 cardboard boxes [5; 23]. Other than these specimens, the founder of the herbarium Muhittin Özgen and his pupils had also collected specimens which were sent to İstanbul University Department of Biology Herbarium (ISTF). An additional set of 600 specimens were sent to the herbarium of Royal Botanic Garden Edinburgh (E). In 2006, we received five cardboard boxes containing 567 herbarium specimens. This was what was left of the original 72 herbarium boxes.

Regarding the history of the school, before the Bolu Girls' Village Institute, the school served as Bolu Forestry School (Bolu Orman Mektebi) for 15 years between 1937 and 1952 [24]. The school converted to Bolu Girls' Village Institute in the fall 1952 and the forestry school was moved to Düzce

together with all the staff (teachers and civil servants) and the furniture [24]. The first pupils of the Bolu Girls' Village Institute came from İzmir Kızılcıllu Village Institute. İzmir Kızılcıllu Village Institute was opened in 1937 with the name of "village teachers' training school". The school used the American College buildings and its campus purchased from the Americans by the Turkish State. The institute was closed in 1952 because its buildings and the campus wanted to be used as NATO headquarters. In fall 1952, 400 pupils of the school and 25 teachers were transferred to Bolu Girls' Teacher School and the remaining 400 pupils were sent to Beşikdüzü Girls' Village Institute [25].

The institute in Bolu has continued to this day but under different names and formats. Firstly, the name of the school was changed as "Bolu Girls' Teacher College" (Bolu Kız Öğretmen Okulu) in 1954 because all the "Village Institutes" were closed throughout Turkey. Later, Bolu Girls' Teachers College was closed in 1980. Then, in 1982, when all the materials of the school were distributed to other schools in the vicinity, Mehmet Tunçkol (teacher and school principal at that time in Bolu) saved the above-mentioned herbarium specimens in 20 boxes [11]. Then, Tunçkol put all the herbarium specimens into five boxes and kept them until 2006. In this time, our university also received two boxes of insect collections (Figures 5 and 6). These specimens are stored at the Abant İzzet Baysal University Entomology Museum (AIBUEM). In 2007, during his visit to our university Muhittin Özgen brought us several geological collections but as no one is studying in this field in our faculty we did not keep them. The rest of the zoological and geological collections are probably either destroyed or thrown away. Therefore, we can conclude that the school had different type of natural history collections in addition to herbarium specimens ranging from zoological and geological collections to fossils. The pupils were involved in every step of specimen preparation. All the materials required for different type of collections were produced at the schools' ateliers and carpentry. They also built a weather station in the schoolyard to record some of the environmental data.

3.2. The founder of the herbarium Muhittin Fehmi Özgen

The founder of the Bolu Girls' Village Institute Herbarium, Muhittin Fehmi Özgen was born in Malatya, Hekimhan, in 1921 (Figure 7 and 8). He attended primary school in Hekimhan and secondary school in Elazığ. Then he entered Balıkesir Necatibey Teachers College in 1937 and graduated in

1940 as a teacher. His first teaching place was Tunceli, Hozat where he worked one and a half year. Then, he completed his compulsory military service between 1942 and 1944 in İzmir and İstanbul. In October 1944, he entered the Natural Sciences Department of Ankara Gazi Education Institute (Ankara Gazi Terbiye Enstitüsü Tabii Bilimler Şubesi). There he studied botany, zoology, and geology. He graduated from the Biology Department of this institute in 1946 and was assigned as a teacher at Balıkesir, Savaştepe Village Institute (Savaştepe Köy Enstitüsü) and worked there until the end of 1952. He already started to collect plants and make herbarium specimens during his six years of stay in Balıkesir, Savaştepe and involved students in every step of natural history collection from preparing materials to field work and specimen preparation [23]. He was especially happy when students returned from their summer holidays with geological and other collections. According to Demiriz [5], there was about 500 herbarium specimens in this collection prepared carefully comparable to university herbarium collection standards. Muhittin Özgen moved to Bolu at the beginning of 1953 and continued working as a teacher at Bolu Girl's Village Institute (Bolu Kız Köy Enstitüsü) until the end of 1963. Then, he moved to İstanbul to continue his teaching career until his retirement in 1977. He passed away in İstanbul in 2017. His wife Süeda Özgen (?-2007) was a physical education teacher. They had two children: Mine and Savaş.

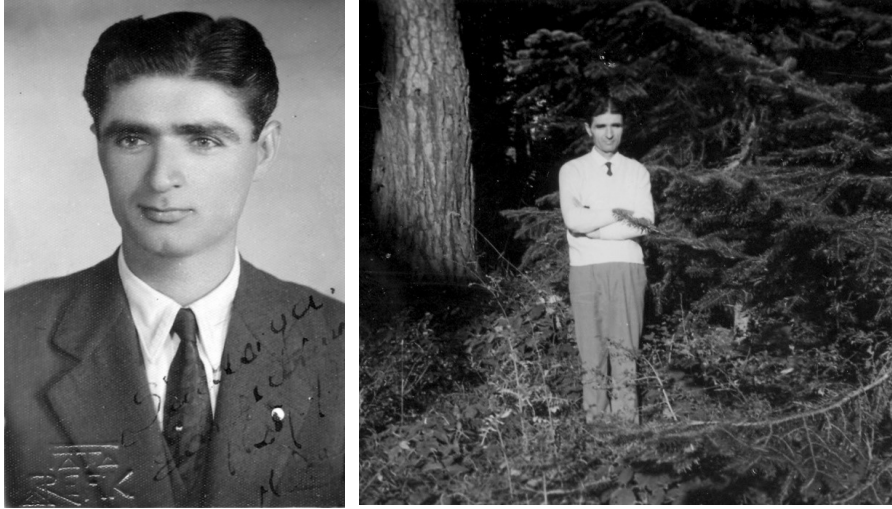


FIGURE 7. Muhittin Fehmi Özgen when he was a teacher in Balıkesir, Savaştepe Village Institute in 1947 (left) and during an excursion to Lake Abant in 1964 (right).



FIGURE 8. Muhittin Fehmi Özgen with his family in front of the lodging of Bolu Girls' Teacher College in 1961.

3.3. Content of the botanical collections

In Appendix, we provide the list of the 567 specimens (stored at AIBU herbarium) with their original label information. The original labels were written both in Turkish and Latin. In Figure 9 and 10 we provide examples of different labels. It can be seen from the labels that many students were involved in plant collection and herbarium label writing. The specimens were collected between 1953 and 1958. Nearly all the specimens have

family identifications given in Turkish and Latin (Figure 9). On the other hand, some specimens had genus names written on their labels and there are also several specimens with complete identification up to the species level. The specimens are in good condition regarding any infections. The only problem is with the poor quality of the strapping tape used which caused many loose specimens. Therefore, specimens need to be remounted.

The collection of 567 herbarium specimens represents 163 taxa as most of them have several duplicates. There is only one bryophyte specimen and three seedless vascular plants. The remaining 159 taxa belong to the flowering plants (Figures 11-17). Demiriz [5] indicated that part of the collection was identified by İstanbul University, Department of Biology staff. Muhittin Özgen informed us that he was searching for botany books in İstanbul bookstores to help him in plant identification (pers. comm.).

Considering the geographical distribution of the plants, we see that most of the specimens were collected from Bolu and neighbouring provinces. However, there are some specimens from different parts of Turkey. An example is a cotton specimen (*Gossypium herbaceum* L.) from Adana province collected by a pupil during the summer holiday.

The collection is composed of mainly wild plants but also includes ornamental plants like *Dahlia* sp., *Philadelphus coronarius* L. and several other cultivated plants, like *Prunus avium* (L.) Moench, *Pyrus elaeagnifolia* Pallas subsp. *elaeagnifolia*.

In terms of species richness of the collection, Caryophyllaceae has the highest number of species with 14 different species followed by Asteraceae (13 taxa) and Rosaceae (10 taxa). Boraginaceae (9 taxa), Fabaceae (8 taxa) and Campanulaceae (8 taxa) are the other families with high number of species. *Campanula* (6 species), *Geranium* (4 species) and *Dianthus* (4 species) are the genera with the highest number of species.

Bolu Kız Köy Enstitüsü Herbariyumu	
No.	74
Familiya (Familia):	Bileşikgiller (Compositae)
Cins (Genus):	Sahinota (Hioschianus)
Tür (Species):	Sahinota (Hioschianus)
Bulunduğu yer (Locus):	Bolu-Okul bahçesi ön kısmı
Yetiştigi yer (Habitatio):	Okul önü, saksıda sürülmemiş toprakta
Denizden yüks-kliği (Altitudo):	700 m
Yöney (Expositio):	
Tarih (Datum):	15 Temmuz 1953
Toplayan (Legit):	Muhittin Özgen-Öğretmen
Teşhis eden (Determinavit):	

Bolu Kız Köy Enstitüsü Herbariyumu	
No.	39
Familiya (Familia):	Bileşikgiller (Compositae)
Cins (Genus):	(Carduus crispus)
Tür (Species):	(Carduus crispus)
Bulunduğu yer (Locus):	Bolu-İlçesi-Şehar yolu, Otomobil durağı önünde çeşme
Yetiştigi yer (Habitatio):	Bu çeşmeden 200 m ileride
Denizden yüks-kliği (Altitudo):	1500 m
Yöney (Expositio):	Kuzeye dönük meşit üzerinde
Tarih (Datum):	19 Temmuz 1953
Toplayan (Legit):	Muhittin Özgen-Öğretmen
Teşhis eden (Determinavit):	

Bolu Kız Köy Enstitüsü Herbariyumu	
No.	66
Familiya (Familia):	Yapraklıgiller (Dipsacaceae)
Cins (Genus):	Myzota (Scabiosa)
Tür (Species):	Myzota (Scabiosa)
Bulunduğu yer (Locus):	Bolu-İlçe arka satta
Yetiştigi yer (Habitatio):	Banyoların hemen arkasındaki dalık kısmı üst-kısmı bahçeyi tarla kenarları
Denizden yüks-kliği (Altitudo):	800 m
Yöney (Expositio):	Yukarıya dönük
Tarih (Datum):	26 Haziran 1953
Toplayan (Legit):	Muhittin Özgen-Öğretmen
Teşhis eden (Determinavit):	

Bolu Kız Köy Enstitüsü Herbariyumu	
No.	73
Familiya (Familia):	Karanfilgiller (Caryophyllaceae)
Cins (Genus):	Karanfilgiller cinsi
Tür (Species):	Vakkacıya (Vaccaria)
Bulunduğu yer (Locus):	Bolu-İlçe, banyolar, arka satta tepesi üstü
Yetiştigi yer (Habitatio):	Etilmiş tarla içi
Denizden yüks-kliği (Altitudo):	850 m
Yöney (Expositio):	Kuzeye açık
Tarih (Datum):	26 Haziran 1953
Toplayan (Legit):	Muhittin Özgen-Öğretmen
Teşhis eden (Determinavit):	

Bolu Kız Köy Enstitüsü Herbariyumu	
No.	
Familiya (Familia):	Aquifoliaceae
Cins (Genus):	Moyra kumru
Tür (Species):	Çobanpüşküllü - Aq Ilex Aquifolium
Bulunduğu yer (Locus):	Karabük - Büyük Lüz yaylası, orman
Yetiştigi yer (Habitatio):	Orman içi - (Funda)
Denizden yüks-kliği (Altitudo):	1550
Yöney (Expositio):	112
Tarih (Datum):	15 Temmuz 1954
Toplayan (Legit):	Muhittin Özgen
Teşhis eden (Determinavit):	

Bolu Kız Köy Enstitüsü Herbariyumu	
No.	
Familiya (Familia):	Kölbeygiller (Rubiaceae)
Cins (Genus):	Bellunatu
Tür (Species):	Asperula odorata
Bulunduğu yer (Locus):	Karabük büyük ormanı, yunuk büyük dike orman sahni
Yetiştigi yer (Habitatio):	Sık orman içi
Denizden yüks-kliği (Altitudo):	1500 metre
Yöney (Expositio):	
Tarih (Datum):	17/12/1954
Toplayan (Legit):	Muhittin Özgen
Teşhis eden (Determinavit):	

FIGURE 9. Label examples-I.

Bolu Kız Köy Enstitüsü Herbariyumu	
No. 68	
Familiya (Familia) :	İslenikçiller (Compositae)
Cins (Genus) :	
Tür (Species) :	Peçamber çiçeği
Bulunduğu yer (Locus) :	Bolu-İlca banyolar, arka sirtlar
Yetiştigi yer (Habitatio) :	Bu sirtın tam tepesinde tarla kenarları
Denizden yüks-kliğı (Altitudo) :	850 m
Yöney (Expositio) :	tepe üstü-kuzeye açık
Tarih (Datum) :	26 Haziran 1953
Toplayan (Legit) :	Muhittin Özgen-Öğretmen
Teşhis eden (Determinavit) :	

Bolu Kız Köy Enstitüsü Herbariyumu	
No. 124	
Familiya (Familia) :	Kökboğaçiller-Rubiaceae
Cins (Genus) :	
Tür (Species) :	Yoğurt otu- Galium verum
Bulunduğu yer (Locus) :	Bolu-İlca arka dağı sırtında çiçek saçı
Yetiştigi yer (Habitatio) :	Fundalaktan sonra başlıya ekili tarla kenarı-cabillik içi
Denizden yüks-kliğı (Altitudo) :	850
Yöney (Expositio) :	Kuzeye açık
Tarih (Datum) :	26 Haziran 1953
Toplayan (Legit) :	Muhittin Özgen-Öğretmen
Teşhis eden (Determinavit) :	

Bolu Kız Köy Enstitüsü Herbariyumu	
No. 6	
Familiya (Familia) :	97buğruçukçiller (Equisetaceae)
Cins (Genus) :	
Tür (Species) :	97buğruçu
Bulunduğu yer (Locus) :	Bolu
Yetiştigi yer (Habitatio) :	Kız Öğretmen okulu, okul bahçesi
Denizden yüks-kliğı (Altitudo) :	700
Yöney (Expositio) :	
Tarih (Datum) :	26 Mayıs 1953
Toplayan (Legit) :	Melâhâk Özal-Öğretmen
Teşhis eden (Determinavit) :	

Bolu Kız Köy Enstitüsü Herbariyumu	
No. 33	
Familiya (Familia) :	Bulmacıçukçiller (Ranunculidae)
Cins (Genus) :	
Tür (Species) :	Başkuluğu (Anemone pulsatilla)
Bulunduğu yer (Locus) :	Bolu Okul bahçesi güney 300 m uzakta
Yetiştigi yer (Habitatio) :	çamaşa köyü yolu üzerindeki marahtık içi
Denizden yüks-kliğı (Altitudo) :	700
Yöney (Expositio) :	
Tarih (Datum) :	23 Mayıs 1953
Toplayan (Legit) :	Melâhâk Özal-Öğretmen
Teşhis eden (Determinavit) :	

Bolu Kız Köy Enstitüsü Herbariyumu	
No. 116	
Familiya (Familia) :	Karanfilçukçiller-Caryophyllaceae
Cins (Genus) :	
Tür (Species) :	Karanfil - Anemone pulsatilla
Bulunduğu yer (Locus) :	Bolu Okul bahçesi
Yetiştigi yer (Habitatio) :	
Denizden yüks-kliğı (Altitudo) :	700
Yöney (Expositio) :	
Tarih (Datum) :	25 Haziran 1953
Toplayan (Legit) :	Muhittin Özgen-Öğretmen
Teşhis eden (Determinavit) :	

Bolu Kız Köy Enstitüsü Herbariyumu	
No. 120	
Familiya (Familia) :	Karanfilçukçiller (Caryophyllaceae)
Cins (Genus) :	
Tür (Species) :	Yabancı karanfil-dianthus caryophyllus
Bulunduğu yer (Locus) :	Bolu-İlca arka fundaliksirtı
Yetiştigi yer (Habitatio) :	Sirtın açık çimlilik meyli üzö
Denizden yüks-kliğı (Altitudo) :	850 m
Yöney (Expositio) :	Batı-kuzeye açık
Tarih (Datum) :	26 Haziran 1953
Toplayan (Legit) :	Muhittin Özgen-Öğretmen
Teşhis eden (Determinavit) :	

Bolu Kız Köy Enstitüsü Herbariyumu	
No. 22	
Familiya (Familia) :	Öküzbaşıçukçiller Globulariaceae
Cins (Genus) :	
Tür (Species) :	Globularia vulgaris
Bulunduğu yer (Locus) :	Bolu-İlca arka dağı köyü
Yetiştigi yer (Habitatio) :	Köyün sulundan geçen deremin üzerindeki büyük ormanlık ort,orman açıklığında
Denizden yüks-kliğı (Altitudo) :	300
Yöney (Expositio) :	simsilerin doğu güney yamaçında
Tarih (Datum) :	12 Nisan 1953
Toplayan (Legit) :	Muhittin Özgen-Öğretmen
Teşhis eden (Determinavit) :	

FIGURE 10. Label examples-II.

4. CONCLUSIONS

Although mentioned earlier in the publication of Demiriz [5], Bolu Girls' Village Institute Herbarium remained largely unknown to most Turkish botanists. It is important to notice that such a carefully prepared herbarium existed in a country school of Turkey much before the Flora of Turkey was started to be published [12-13]. The herbarium collections of the school also contributed to the Flora of Turkey. Therefore, it is important to document the history and the content of this herbarium which will not only improve our knowledge about natural history collections in Turkey but also the education history of the Turkish Republic.

The Village Institutes were opened in 1940 to supply the urgent teacher demand of the young Turkish Republic. The pupils to be educated in these schools were selected from villages and rural areas. After graduation they were going to be employed again in villages. There were 40 Girls' Institutes in Turkey in 1947 [26]. Pupils were accepted to Girls' Institutes after finishing five years of elementary school education and they study five years in the institutes. Secondary school graduates (finishing 5+3 years of education) were also accepted, and they could graduate after two years of education at the institutes [26]. The Village Institutes were closed in 1954 due to ideological reasons. They were converted to teacher-training schools. In this paper, we provide solid information about the quality of education and types of methods involved in the Village Institutes.

Acknowledgement. The author thanks Mehmet Tunçkol (Bolu) who stored the herbarium specimens between 1982 and 2006 and made them available to us and Prof. Dr. Okan Külköylüoğlu who reached Muhittin Özgen and invited him to our university so that we could learn the details of the natural history collections of the school from the first hand. Finally, I would like to thank Prof. Dr. Mustafa Ünal for the information about the insect collection.

Declaration of Competing Interests. The authors declare no conflict of interest.

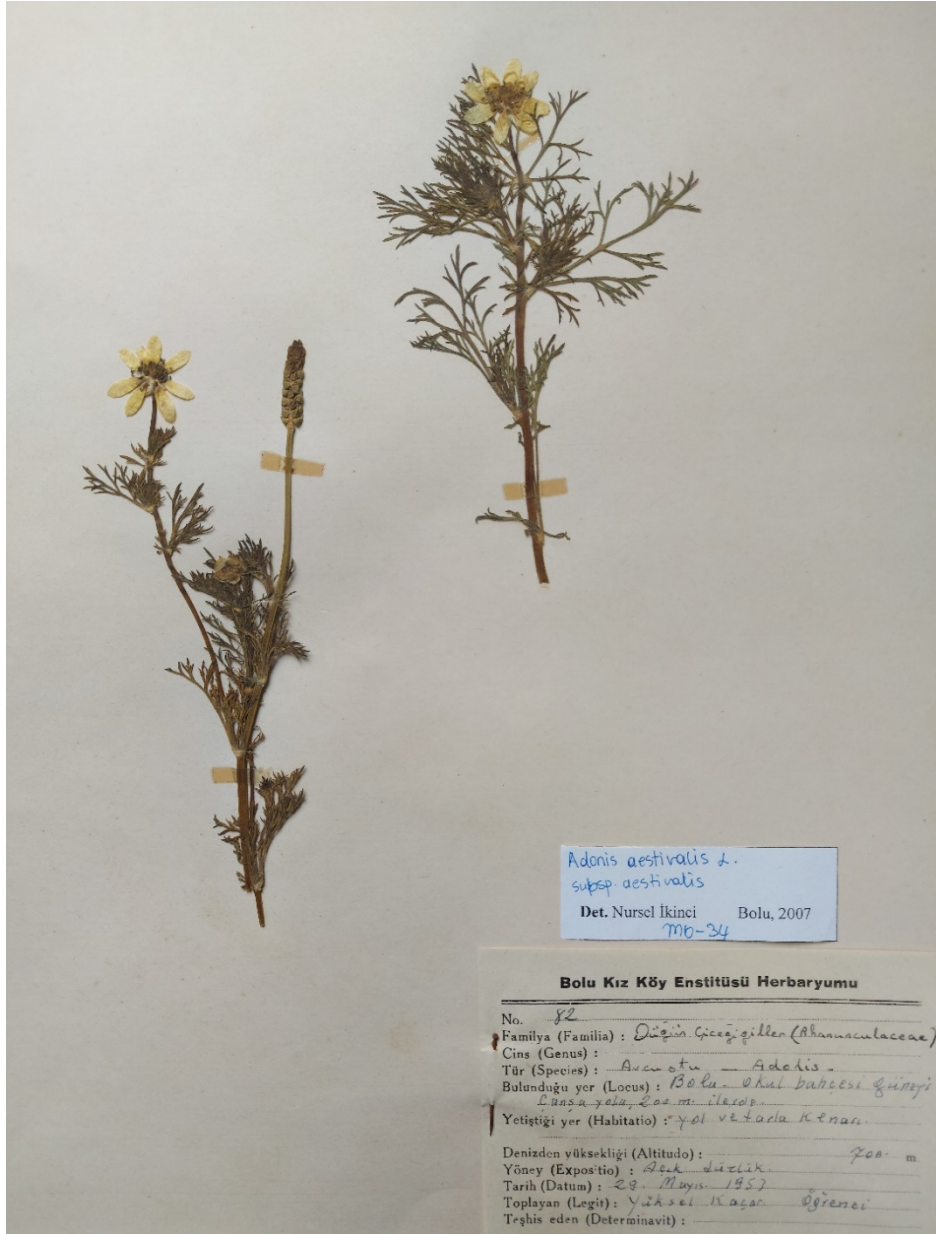


FIGURE 11. A specimen from Bolu Girls' Village Institute Herbarium.

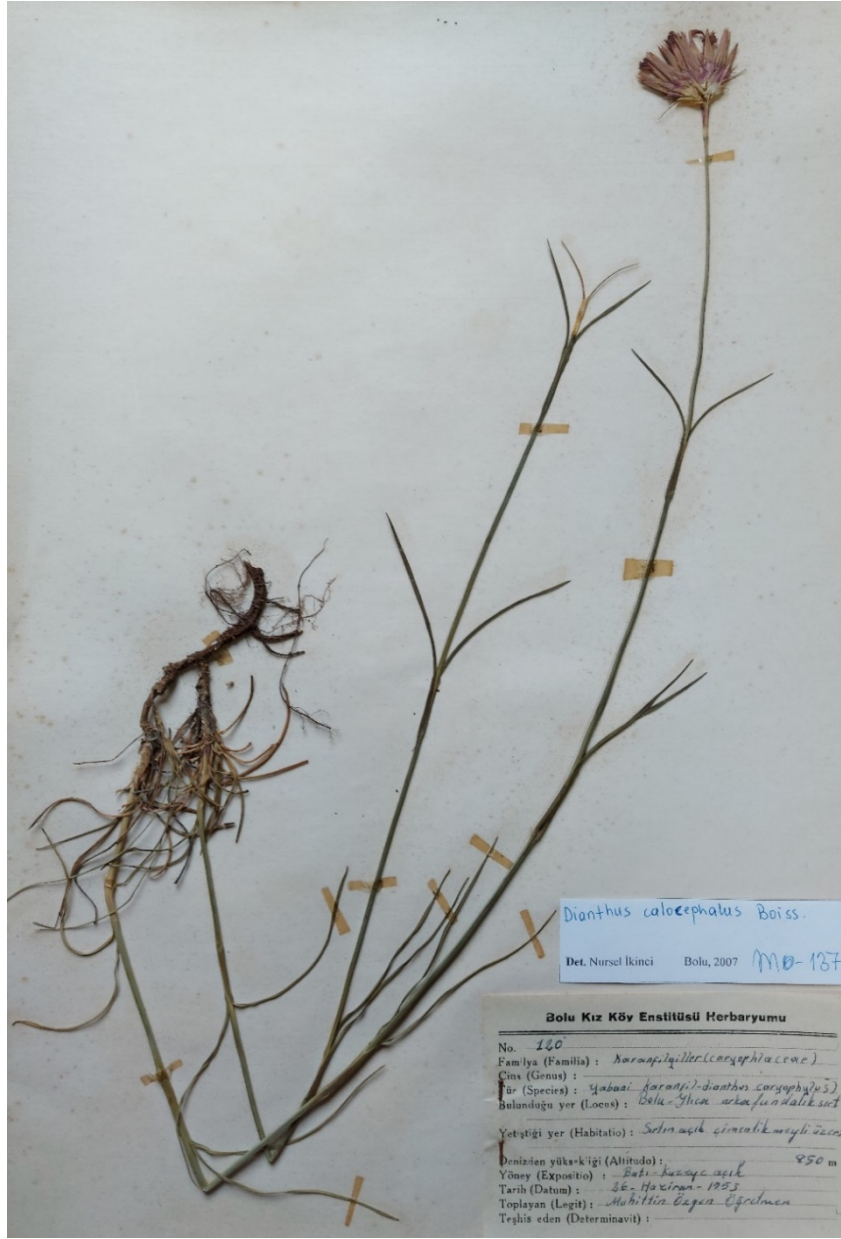


FIGURE 12. A specimen from Bolu Girls' Village Institute Herbarium.

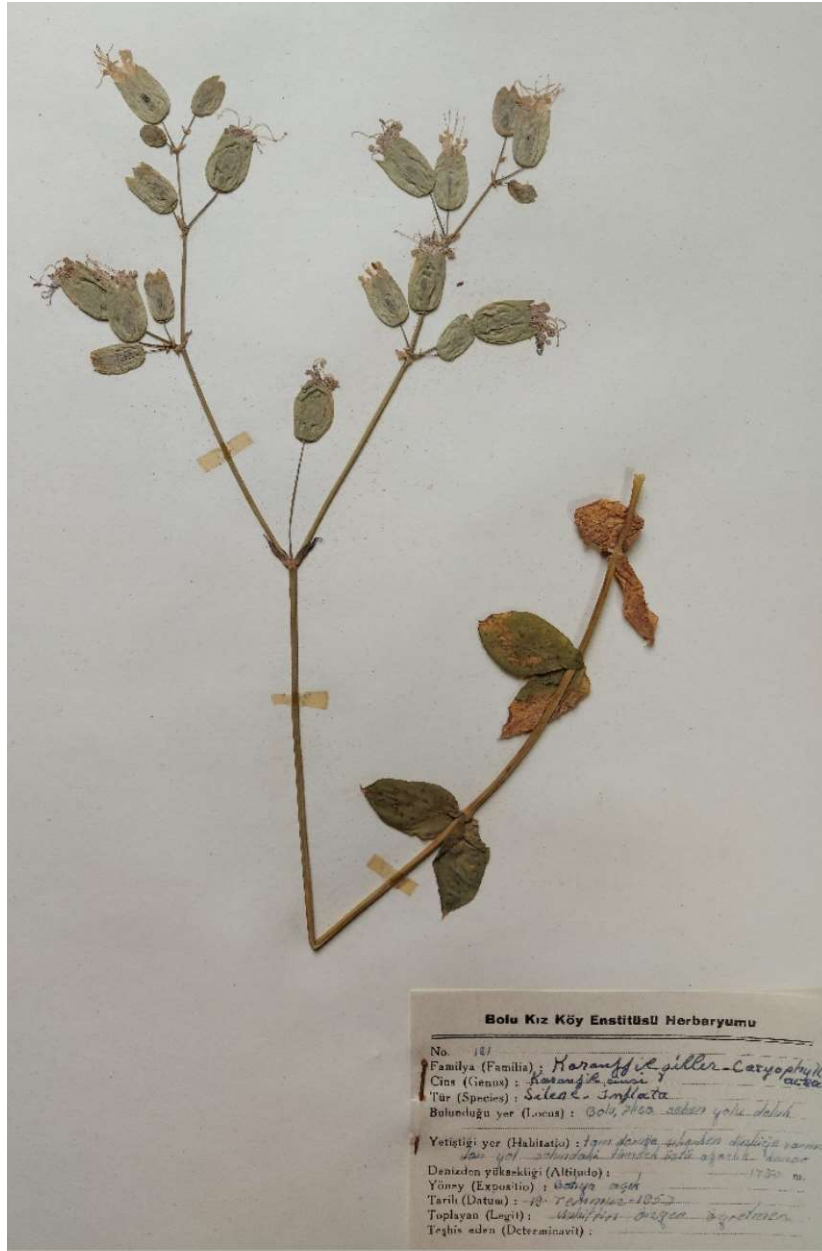


FIGURE 13. A specimen from Bolu Girls' Village Institute Herbarium.



FIGURE 14. A specimen from Bolu Girls' Village Institute Herbarium.

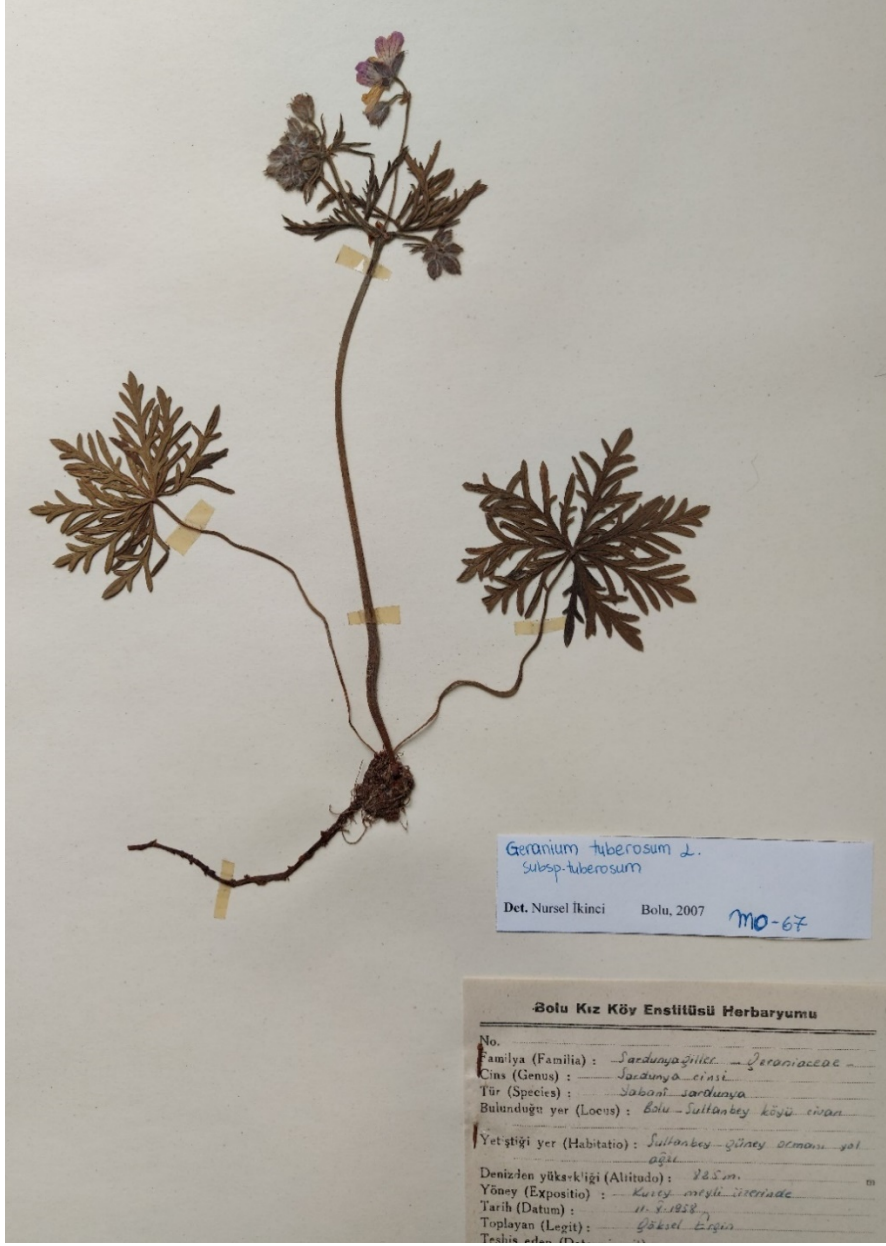


FIGURE 15. A specimen from Bolu Girls' Village Institute Herbarium.



FIGURE 16. A specimen from Bolu Girls' Village Institute Herbarium.

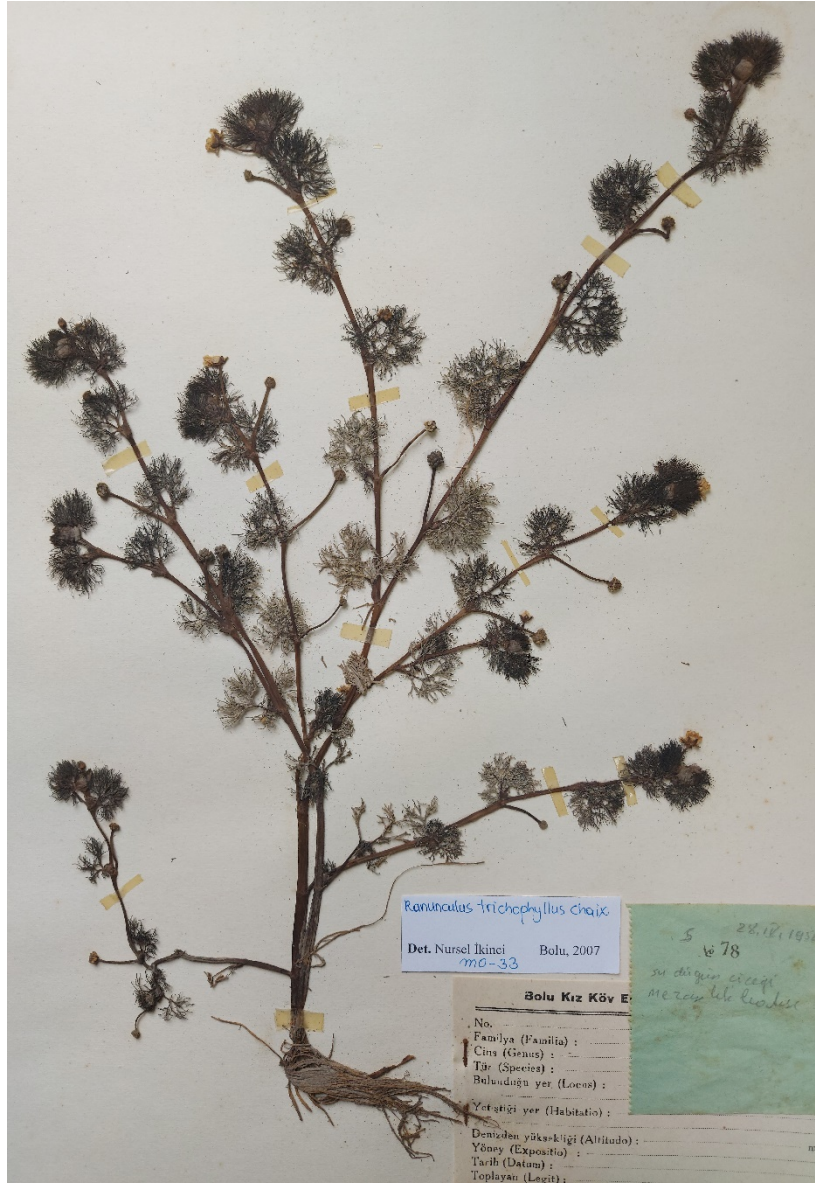


FIGURE 17. An example of an aquatic species, *Ranunculus trichophyllus* Chaix ex Vill., Turkish name written as “su düğün çiçeği”.

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APPENDIX. List of taxa belonging to Bolu Girls' Village Institute Herbarium which are stored at AIBU. First seedless plants and then seed plants are given according to alphabetical order of the families. The numbers are given by us to identity each specimen together with its duplicates (the first coloumn). The province name is only given when it is different than Bolu.

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
144	Bryophyta	İlica-Seben yolu, doruktan 500 m kadar beride oluklu çeşme, yolun sol kenarında meyli üzerinde, toprak sulu, altı çamur, silsilenin kuzey meyli, 1500 m, M. Özgen	19.07.1953	Yosun
	Equisetaceae			
145	<i>Equisetum telmateia</i> Ehrh.	Kız Öğretmen Okulu, okul bahçesi, 740 m, Melahat Özal	26.05.1953	Atkuyruğugiller atkuyruğu
	Dennstaedtiaceae			
142	<i>Pteridium aquilinum</i> (L.) Kuhn	Abant, kuzey, Y. Özyavuz	14.06.1956	

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
	Dryopteridaceae			
143	<i>Dryopteris filix-mas</i> (L.) Schott	Karabük		Eğrelti otu
	Aceraceae			
21	<i>Acer negundo</i> L.	Kız Öğretmen Okulu bahçesi	02.07.1955	
	Apiaceae			
151	<i>Smyrnium perfoliatum</i> L.	Okul bahçesi güneyi 50 m uzakta Çamşa yolu kenarı, bu yol kenarında-düzlük, 740 m, Nazire Ovalı	29.05.1958	
152	<i>Torilis leptophylla</i> (L.) Rchb.f.	Sultanbey Köyü civarı, kuzey meylli, güney ormanları eteği, 750 m, Gülşen Öztürk	11.05.1958	
153		Okul bahçesi, sürülmemiş tarla içi, 700 m, M. Özgen	16.06.1953	
	Aquifoliaceae			
12	<i>Ilex aquifolium</i> L.	Karabük, Büyükdüz Yaylası ormanı, orman içi (funda), 1550 m, M. Özgen	15.06.1954	Çoban püskülü
	Aristolochiaceae			
13	<i>Aristolochia pontica</i> Lam.	Kız Öğretmen Okulu bahçesi, 740 m, Binnaz Akbudak	26.05.1953	Lohusaotugiller Lohusa otu
	Asteraceae			
154	<i>Dahlia</i> sp.			
117	<i>Bellis perennis</i> L.	Sultanbey Köyü civarı, kuzey meylli üzerinde, Güney ormanları eteği, 750 m, Gül Yıldırım	11.05.1958	Bileşikgiller papatya
116	<i>Cichorium intybus</i> L.	Okul bahçesi, ön kısmı, Okul önü, solda sürülmemiş tarla içi, 700 m, M. Özgen	15.07.1953	Bileşikgiller şahin otu
124	<i>Carduus nutans</i> L. subsp. <i>nutans</i>	Çakmaklar Köyü yolunda, kuzeyde, 700 m, Ayhan Başaran	08.06.1955	
121a	<i>Centaurea depressa</i> M.Bieb.	Karacasu Ilıca sırtı güneydoğu sırtı kuzey meylli, güney, 780 m, Ayhan Başaran & Aysel Akarsu	04.06.1955	
121b	<i>Centaurea depressa</i> M.Bieb.	Ilıca, Banyolar, arka sırtlar, bu sırtın tam tepesinde, tarla kenarı, tepe üstü-kuzeye açık, 850 m, M. Özgen	26.06.1953	
121c	<i>Centaurea depressa</i> M.Bieb.	Okul bahçesi güneyi Çamşa yolu 50 m uzakta, yol ve tarla kenarı, tamamen açıklık, 700 m, Ayşe Kiraz	29.05.1953	

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
123	<i>Lapsana communis</i> L. subsp. <i>intermedia</i> (M.Bieb.) Hayek	İlica Seben yolu doruk, tam doruğa çıkarken düzlüğe varmadan yol solundaki tepe, sırt üstü, batıya açık, 1750 m, M. Özgen	19.07.1953	
119	<i>Achillea millefolium</i> L. subsp. <i>pannonica</i> (Scheele) Hayek	Okul bahçesi güneyi Çanşa yolu 200 m uzakta, Tarla ve yol kenarı, tamamen düzlük, 700 m, Ayla Arat	29.05.1953	
122	<i>Carduus acanthoides</i> L. subsp. <i>canthoides</i>	Okul bahçesi aşağıda çam fidanlığı kenar, 2 m'ye kadar yükselmiş çam fidanlarının içinde, 700 m, M. Özgen	18.06.1953	Onofordom
120	<i>Cirsium hypoleucum</i> DC.	İlica-Seben yolu, otomobil durağı oluklu çeşme, bu çeşmeden 200 m ileride yolun sol meyli üzerinde, kuzeye dönük meyil üzerinde, 1500 m, M. Özgen	19.07.1953	
125	<i>Tanacetum</i> sp.	Karabük, Kuzey ormanı, Uzun Göveç Yaylası bölge binası civarı, Orman içi açıklığı güneye dönük meyil üzeri, 1500 m, M. Özgen	16.06.1954	
127	<i>Anthemis cotula</i> L.	Okul bahçesi, spor salonu inşaat yerinde, sık ve zengin bitki topluluğu içinde, açık düzlük, 700 m, M. Özgen	12.06.1953	
115	<i>Doronicum orientale</i> Hoffm.	Okul bahçesi, Okulun doğusu çam fidanlığı, 700 m, M. Özgen	25.05.1953	
126	<i>Pilosella hoppeana</i> (H.Schult.) C.H. & F.W.Schultz subsp. <i>isaurica</i> Hub.-Mor.	Çakmaklar Köyü arka sırtı çamlığında, kuzeyde, 800 m, Naime Vardar	08.06.1955	
	Boraginaceae			
107b	<i>Lithospermum purpureoeruleum</i> L.	Sultanbey Köyü civarı, Sultanbey güney ormanları eteği, kuzey meyli, 750 m, Pakize Soğancı	11.05.1958	Hodangiller
108	<i>Myosotis alpestris</i> F.W.Schmidt subsp. <i>alpestris</i>	İlica-Seben yolu, doruk, doruğa tam çıkışta yol solundaki tepelik üstü, batıya açık, 1750 m, M. Özgen	19.07.1953	
109	<i>Myosotis lithospermifolia</i> (Willd.) Hornem.			
111	<i>Cynoglossum creticum</i> Miller	Okul bahçesi, binanın batısında çit kenarı, Düzlük, 700 m, M. Özgen	16.05.1953	
110	<i>Cynoglossum</i>	Kuzey, Muazzez Uluöz		

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
	<i>officinale</i> L.			
113	<i>Onosma mutabile</i> Boiss.	Yıldız Özyavuz		
114	<i>Trachystemon orientalis</i> (L.) G.Don			
112	Boraginaceae	Çanşa Köyü, Tarla kenarı, sulak yerde, düzlük, 700 m, Saniye Korkusuz	28.04.1958	
107a	<i>Lithospermum purpurocaeruleum</i> L.	Sultanbey, güney etek ormanları	02.07.1955	
	Brassicaceae			
155	<i>Cardamine impatiens</i> L. var. <i>impatiens</i>	Karabük		
156	<i>Nasurtium officinale</i> R.Br.	Gönül Mumcu		
	Campanulaceae			
55	<i>Campanula persicifolia</i> L.	İlica-Seben yolu, Gölcük oluklu çeşme arası, bu iki nokta arasında devam eden şosenin doğu sırtları-orman etekleri, kuzeye kısmen açık, 1500 m, M. Özgen	19.07.1953	Çançiçeğigiller çan çiçeği
56	<i>Campanula olympica</i> Boiss.	İlica Banyolar seben yolu doruk, tam doruk düzlüğünde çok bodur funda içinde, 1850 m		
59	<i>Campanula rapunculus</i> L. var. <i>rapunculus</i>	İlica-Seben yolu, Gölcük oluklu çeşme arkası, bu iki nokta arasında devam eden şosenin doğu sırtları-orman etekleri, kuzeye kısmen açık, 1500 m, M. Özgen	19.07.1953	Çançiçeğigiller
54	<i>Campanula latifolia</i> L.	İlica-Seben yolu, Gölcük üstü oluklu çeşme kenarı funda içi, otomobil durağının dahada yukarıdaki oluklu çeşmenin hemen yanında, batı kuzeye açık, 1500 m, M. Özgen	19.07.1953	Çançiçeğigiller
57	<i>Campanula glomerata</i> L. subsp. <i>hispida</i> (Witasek) Hayek	İlica Banyolar arka fundalık sırt daha doğuda. Yarenler düzlüğü, düzlük, sulak, 900 m, M. Özgen	26.06.1953	
58	<i>Campanula pterocaula</i> Hausskn.	Karabük, Kuzey ormanına giden yol, değirmen üstü şase kenarı, fundalık, 400 m, M. Özgen	18.06.1954	
52	<i>Legousia falcata</i> (Ten.) Fritsch	Okul bahçesi güneyi, Çanşa yolu 50 m ilerde, yol kenarı, 700 m, Mürüvvet Özer	29.05.1953	

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
53	<i>Legousia pentagonia</i> (L.) Thell.	Okul bahçesi, düzlük, 700 m, M. Özgen	11.06.1953	
	Caprifoliaceae			
9	<i>Sambucus nigra</i> L.	Seben yolu, Gölcük üstü, oluklu çeşmeden biraz beride, yol kenarı, kuzey batıya açık, 1450 m,	19.07.1953	Mürüver
10	<i>Sambucus ebulus</i> L.	Ilıca-Seben yolu, Gölcük daha yukarıda oluklu çeşme altı, çeşme akıntısının sağ açık ve kırıç sırtları üzerinde fundamsı, batıya tamamen açık, 1500 m, M. Özgen	19.07.1953	Mürüver
76	<i>Viburnum lantana</i> L.	Sultanköy civarı, Güney orman etekleri, kuzey meyli, 725 m, Sevim Savaş	11.05.1958	Gülgiller
	Caryophyllaceae			
132	<i>Agrostemma githago</i> L.	Okul bahçesi, 700 m, M. Özgen	25.06.1953	Karanfilgiller karamuk
134	<i>Cerastium tomentosum</i> L.	Kız Öğretmen Okulu bahçesi, 740 m, Nalezar Tofur	26.05.1953	
158	<i>Stellaria media</i> (L.) Vill. subsp. <i>postii</i> Holmboe	Okul bahçesi güneyi, Çanşa yolu 300 m mesafede mezarlık içi, düzlük, 740 m, Ülkü Sönmez	29.05.1953	
158b	<i>Stellaria media</i> (L.) Vill. subsp. <i>postii</i> Holmboe			
161	<i>Minuartia anatolica</i> (Boiss.) Woron. var. <i>anatolica</i>	Okul bahçesi 50 m güney Çanşa Köyü yolu, yol ve tarla kenarı ağaçsız açık, 700 m, Nurten Temel	27.05.1953	
160b	<i>Stellaria media</i> (L.) Vill. subsp. <i>media</i>	Şehir içi, Mudumu Caddesi Tekel Binaları önü, 700 m, M. Özgen	25.05.1953	
160	<i>Stellaria media</i> (L.) Vill. subsp. <i>media</i>	Okul bahçesi 50 m güney Çanşa Köyü yolu, yol ve tarla kenarı, 700 m, Ayşe Kiraz & Mürvet Özer	29.05.1953	
160c	<i>Stellaria media</i> (L.) Vill. subsp. <i>media</i>	Okul bahçesi güneyinden geçen Çanşa yolu 100 m uzakta, tarla ve yol kenarı düzlük, 700 m, Ayla Arat	29.04.1953	
159	<i>Moenchia mantica</i> (L.) Bartl. Subsp. <i>mantica</i>	Ilıca-Seben yolu, doruk, güney sırtlar, doruktan 2 km güneyde orman açıklığı çimenlik bir meyili yaylalık, doğu-güneye açık, 1650 m, M. Özgen	26.07.1953	

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
157a	<i>Minuartia hirsuta</i> (M.Bieb.) Hand.-Mazz. subsp. <i>falcata</i> (Gris.) Mattf.	Abant, gölün hemen kuzey doğu sırtın gerisi, sırtın kuzey meğilinde ağaçsız hafif çimenlikler arası, 1350 m, M. Özgen	07.06.1953	Karanfilgiller
157b	<i>Minuartia hirsuta</i> (M.Bieb.) Hand.-Mazz. subsp. <i>falcata</i> (Gris.) Mattf.	Bolu-Seben yolu, yolun tam tepe noktasına vardığı yer, doruk, doruğa çıkışta karşılaşılan ilk çimenlik alan üzerinde, açık düzlük, etraf muhafazalı, 1850 m, M. Özgen	19.07.1953	Karanfilgiller
136	<i>Dianthus barbatus</i> L.	Okul bahçesi, Dikiş atölyesi bahçesi, 700 m, M. Özgen	16.06.1953	
137	<i>Dianthus calocephalus</i> Boiss.	İlica arka fundalık sırt, sırtın açık çimenlik meyli üzeri, Batı-kuzey açık, 850 m, M. Özgen	26.06.1953	Karanfilgiller yabani karanfil
137b	<i>Dianthus calocephalus</i> Boiss.	Karacasu, İlica sırtı, Güneydoğu sırtı, kuzey meyli, güney, 800 m, Aysel Akarsu	04.06.1955	
138	<i>Dianthus ancyrensis</i> Hausskn. & Bormm.	Kızık yaylası, Aladağ orman işletmesi civarı, orman açıklığı, yayla, yaylalık, 1350 m, Emine Coşkun	23.06.1955	
139	<i>Dianthus corymbosus</i> Sibth. & Sm.	Karabük, Büyükdüz Ormanı, Yol kenarı, 1600 m, M. Özgen	16.06.1954	
133	<i>Vaccaria pyramidata</i> Medik.	İlica banyolar, arka sırt, tepe üstü, ekilmiş tarla içi, kuzeye açık, 850 m, M. Özgen	26.05.1953	
140	<i>Silene compacta</i> Fischer	İlica-Seben yolu otomobil ihmal yeri, Oluklu çeşme ile Gölcük arasında yol kenarı orman eteği, kuzeye açık (kısmen), 1500 m, M. Özgen	19.07.1953	
141a	<i>Silene vulgaris</i> Huds. v. <i>vulgaris</i>	İlica-Seben yolu, doruk, tam doruğa çıkarken düzlüğe varmadan yol solundaki tümsek üstü ağaçlık kenarı, batıya açık, 1750 m, M. Özgen	19.07.1953	Nâhul Çiçeği
141b	<i>Silene vulgaris</i> Huds. var. <i>vulgaris</i>	Okul bahçesi, Okul altı çam fidanlığı kenarında, 700 m, M. Özgen	18.06.1953	
	Chenopodiaceae			
4	<i>Chenopodium foliosum</i> (Moench) Aschers.	Kız Öğretmen Okulu bahçesi		
	Cistaceae			
6	<i>Helianthemum nummularium</i> (L.) Mill. subsp. <i>nummularium</i>	Karacasu İlica sırtı güneydoğu sırtı kuzey meyli, güney, 780 m, Mükerrerem Atay	04.06.1955	

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
7	<i>Cistus laurifolius</i> L.	Karabük Kuzey ormanına giden yol değirmen üstü şose kenarı, kuzey doğuya dönük tarafa, 400 m, M. Özgen		
	Convolvulaceae			
24	<i>Calystegia silvatica</i> (Kit.) Griseb.			
	Corylaceae			
51	<i>Corylus avellana</i> L. var. <i>avellana</i>	Akçakoca, Akçakoca deniz sahili, 25 m, M. Özgen	12.07.1954	
	Cupressaceae			
16	<i>Juniperus oxycedrus</i> L. subsp. <i>oxycedrus</i>	İlica-Seben yolu, doruk 1000 m uzaktaki arka sırt, bu kısımda bulunan orman arasındaki açık kısım, yayla, doğuya açık, 1500 m, M. Özgen	26.07.1953	Selvigiller bodur ardıç
	Dipsacaceae			
19	<i>Dipsacus laciniatus</i> L.	İlica-Seben yolu, otomobil ikmal yeri daha yukarı oluklu çeşme, bu çeşmenin üstü yol kenarında yolun doğu meyili üzerinde açık alan, Kuzey batıya açık, 1500 m, M. Özgen	19.07.1953	
149	<i>Scabiosa columbaria</i> L. subsp. <i>columbaria</i> var. <i>columbaria</i>	İlica arka sırtlar, Banyoların hemen arkasındaki fundalık kısmın üst kısmı kaplayan tarla kenarlıkları, 800 m, M. Özgen	26.06.1953	Tarakotugiller uyuzotu
	Ericaceae			
60	<i>Rhododendron ponticum</i> L. subsp. <i>ponticum</i>			
61	<i>Arbutus unedo</i> L.			
	Euphorbiaceae			
28	<i>Euphorbia amygdaloides</i> L. var. <i>amygdaloides</i>	Karabük, Uzun Göveç Yaylası, Yanıklık orman deneme sahası, kuzeye dönük meyil üzerinde, kuzeye dönük meyil, 1500 m	13.06.1954	
27	<i>Euphorbia helioscopia</i> L.	Kız Öğretmen Okulu bahçesi güneyi, 300 m ileride soldaki mezarlık içi, sık çimenli sulakça açık bir düzlük, 700 m, Ruşen özer	29.05.1953	Sütlüyengiller sütlüyen
	Fabaceae			
81	<i>Dorycnium graecum</i> (L.) Ser.	İlica seben yolu doruktan 200 m geride orman kenarı, yolun kenarında bitki ile funda arasındaki koyda, batı kuzeye açık, 1700 m, M. Özgen	19.07.1953	

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
80	<i>Chamaecytisus supinus</i> (L.) Link	Ilıca seven yolu doruktan 200 m geride orman kenarı, tarif edilen mahalde yolun sol kanarında çok kısa funda, batı kuzeye açık, 1750 m, M. Özgen	19.07.1953	
85	<i>Genista lydia</i> Boiss. var. <i>lydia</i>	Kızık Yaylası-Aladağ Orman İşletmesi civarı, Orman içi yayla, yaylalık, 1350 m, Emine Coşkun	23.06.1955	
85b	<i>Genista lydia</i> Boiss. var. <i>lydia</i>	Sultanbey köy civarı, Güney orman etekleri, kuzey meyli üzeri, 825 m, Gülhan Efe	11.05.1958	
82	<i>Lathyrus nissolia</i> L.			
83	<i>Lathyrus laxiflorus</i> (Desf.) O.Kuntze subsp. <i>laxiflorus</i>			
84a	<i>Lathyrus digitatus</i> (M.Bieb.)	Sultanbey Köyü civarı, Sultanbey güney orman eteği, kuzey meyli, 750 m, Benar Uçkun ve Perihan Ersoy	11.05.1958	Baklagiller
84b	<i>Lathyrus digitatus</i> (M.Bieb.)	Yüksel Canan		
87	<i>Trifolium campestre</i> Schreb.	Çayırköy civarı, tarla kenarı, dere kenarı, düzlük, 700 m, Pakize Soğancı	28.04.1958	
88	<i>Medicago sativa</i> L. subsp. <i>sativa</i>	Okul bahçesi, açık düzlük, 700 m, M. Özgen	16.06.1953	
	Fagaceae			
17	<i>Fagus orientalis</i> Lipsky	Karabük, Büyükdüz ormanı, Orman, 1600 m, M. Özgen	09.06.1954	Kayingiller kayın
18	<i>Castanea sativa</i> Miller			
	Geraniaceae			
68	<i>Geranium robertianum</i> L.	Ilıca Seben yolu dorutan yol boyunca 2 km kadar ilerde, güneyde yolun solundaki çimenlik açık alanda orman açıklığında, 1650 m, M. Özgen	26.07.1953	
67	<i>Geranium tuberosum</i> L. subsp. <i>tuberosum</i>	Sultanbey köy civarı, güney orman etekleri, kuzey meyli, 750 m, Ayşe Özkaya	11.05.1958	Sardunyalıklar yabancı sardunya
66	<i>Erodium cicutarium</i> (L.) L'Hérit. subsp. <i>cicutarium</i>	Ilıca Seben yolu doruk 3 km güney yol solu, orman içerisi çimenlik açık düzlük yayla, güneye açık, 1650 m, M. Özgen	26.07.1953	Sardunyalıklar
69	<i>Geranium sylvaticum</i> L.	Ilıca Seben yolu, doruk, tam doruğa çıktığında karşılaşılan düzlükte funda içi, kısmen doğuya açık, 1750 m, M. Özgen	19.07.1953	Sardunyalıklar

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
65b	<i>Geranium pyrenaicum</i> Burm.	Okul bahçesi, okulun doğusunda duvar dibi, 700 m, M. Özgen	18.06.1953	Sardunyangiller
65a	<i>Geranium pyrenaicum</i> Burm.	Kız Öğretmen Okulu bahçesi, 740 m, Nazende Kaçmaz	26.05.1953	Sardunyangiller turnagagası
Globulariaceae				
26a	<i>Globularia trichosantha</i> Fisch. & Mey.	Pirahmetler Köyü, köyün solunda geçen derenin doğusundaki büyük ormanlık sırt, orman açıklığında, silsilenin doğu, güney yamacında, 900 m, M. Özgen	12.04.1953	
26b	<i>Globularia trichosantha</i> Fisch. & Mey.			
Iridaceae				
41	<i>Gladiolus italicus</i> Miller	Karacasu-Ilıca güneydoğu sırtı tepesinde, güney, 800 m, Meliha Baskın	04.06.1955	
39	<i>Iris sintenisii</i> Janka	Karacasu-Ilıca güneydoğu sırtı kuzeyi meyili, güney, 750 m, Ayhan başaran	04.06.1955	
Juncaceae				
47	<i>Luzula campestris</i> (L.) DC.	Karabük, Büyükdüz, orman içi, 1600 m, M. Özgen	17.06.1954	
49	<i>Luzula forsteri</i> (Sm.) DC.	Karabük, Kuzey ormanı Büyükdüz mevki, Bölge Binası, Orman içi açıklığı, kuzey-doğu meyili, 1500 m, M. Özgen	15.06.1954	
48b	<i>Luzula sylvatica</i> (Hudson) Gaudin			
48	<i>Luzula sylvatica</i> (Hudson) Gaudin	Abant, Gölün akıntı köprüsü karşı çıplak sırtlar (hemen geride orman başlıyor), bu tepenin doğu meyili üzerinde, 1350 m, M. Özgen	31.05.1953	
Lamiaceae				
93b	<i>Ajuga reptans</i> L.	Sultanbey Köyü civarı, Güney orman etekleri, kuzey meyili üzerinde, 825 m, Yüksel Duman	11.05.1958	
93a	<i>Ajuga reptans</i> L.	Kızık Yaylası-Aladağ Orman İşletmesi civarı, Orman kenarı-yayla, yaylalık, 1350 m, Adile Özbay	23.06.1955	
92	<i>Ajuga orientalis</i> L.			
95	<i>Lamium purpureum</i> L. var. <i>purpureum</i>			
94	<i>Salvia tomentosa</i> Mill.	Okul bahçesi, Okul önü, sol kısım düzlük, 700 m, M. Özgen	18.06.1953	

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
90	<i>Sideritis montana</i> L. subsp. <i>montana</i>	İlıca, banyolar arka sırtlar, bu sırtın üst kısmında fundalığın arkasındaki çimenlik meğil üzerinde, 850 m, M. Özgen	26.06.1953	
89c	<i>Thymus longicaulis</i> C. Presl subsp. <i>longicaulis</i> var. <i>subisophyllus</i> (Borbás) Jalas	Çakmaklar Köyü çamlığı doğu sırtı, kuzeyde, 800 m, Naime Vardar	08.06.1955	
89	<i>Thymus longicaulis</i> C. Presl subsp. <i>longicaulis</i> var. <i>subisophyllus</i> (Borbás) Jalas	Okul bahçesi güneyi, Çansa yolu kenarı, okuldan 200 m uzakta, yol ve tarla kenarı düzlük, 740 m, Nazire Ovalı	29.05.1953	
89b	<i>Thymus longicaulis</i> C. Presl subsp. <i>longicaulis</i> var. <i>subisophyllus</i> (Borbás) Jalas	İlıca-Seben yolu doruk., tam doruğa çıktığında başlıyan çimenlik-düzlük içinde, yolun sağı, 1750 m, M. Özgen	19.07.1953	
91	<i>Calamintha grandiflora</i> (L.) Moench	İlıca-Seben yolu doruktan 300 m beride, ormanlık içi Seben yolu kenarı, 1700 m, M. Özgen	19.07.1953	
	Lauraceae			
96	<i>Laurus nobilis</i> L.			
	Hyacinthaceae			
44a	<i>Muscari armeniacum</i> Leichtlin	Karabük düz ormanı, orman içi, 1600 m, M. Özgen	13.06.1954	
44b	<i>Muscari armeniacum</i> Leichtlin	Sultanbey Köyü civarı, Kireç ocağı kuzeyi, çeşme kenarı, kuzey meyli, 725 m, Gülşen Öztürk	11.05.1958	Zambakgiller zambak, sümbül
44c	<i>Muscari armeniacum</i> Leichtlin			
	Liliaceae			
40	<i>Fritillaria pontica</i> Wahlenb.	Sultanbey Köyü civarı, Güney orman etekleri, kuzey meyil üzerinde, 825 m, Saadet Ocabaş	11.05.1958	Zambakgiller
	Amaryllidaceae			
43	<i>Allium paniculatum</i> L. subsp. <i>paniculatum</i>	İlıca Banyolar, arka doğu fundalık sırtı, sırt üstü tarla kenarı, kuzeye açık, 850 m, M. Özgen	26.06.1953	
	Convallariaceae			
42	<i>Polygonatum orientale</i> Desf.	Karabük kuzey ormanı, Büyükdüz yanıklık orman sahası, vadi tabanı ormanlık içi sulak, vadi güneye mail, 1500	17.06.1954	Mühürü süleyman

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
		m, M. Özgen		
	Linaceae			
148b	<i>Linum hirsutum</i> L. subsp. <i>anatolicum</i> (Boiss.) Hayek var. <i>anatolicum</i>	Karacasu-Ilıca güneydoğu sırtı, güney, 780 m, Naime Vardar	04.06.1955	
148c	<i>Linum hirsutum</i> L. subsp. <i>anatolicum</i> (Boiss.) Hayek var. <i>anatolicum</i>	Çakmaklar Köyü çamlığı arka sırtı, kuzey, 800 m, Meliha Baskın ve Naime Vardar	08.06.1955	
148a	<i>Linum hirsutum</i> L. subsp. <i>anatolicum</i> (Boiss.) Hayek var. <i>anatolicum</i>			
146	<i>Linum tenuifolium</i> L.	Çakmaklar Köyü arka sırtı, kuzey, 800 m, Ayhan Başaran	08.06.1955	
147	<i>Linum flavum</i> L. subsp. <i>scabrinerve</i> (P.H.Davis) P.H.Davis	Çakmaklar Köyü arka sırtı çamlığında, kuzeyde, 800 m, Meliha Baskın	08.06.1955	
147b	<i>Linum flavum</i> L. subsp. <i>scabrinerve</i> (P.H.Davis) P.H.Davis	Kızık Yaylası-Aladağ Orman İşletmesi civarı, Orman açıklığı-yayla, yaylalık, 1350 m, Adile Özbay	23.06.1955	
	Lythraceae			
25	<i>Lythrum salicaria</i> L.			
	Malvaceae			
1	<i>Gossypium herbaceum</i> L.	Adana, Çukurova, Yurdanur Özkan	25.08.1957	Ebegümeçigiller pamuk
63	<i>Althaea hirsuta</i> L.	Okul bahçesi, 700 m, M. Özgen	16.06.1953	Çanççeğigiller
64	<i>Lavatera punctata</i> All.			
62	<i>Alcea pallida</i> Waldst. & Kit	Kız Öğretmen Okulu bahçesi	02.07.1955	
	Orchidaceae			
46	<i>Orchis</i> sp.	S. Gökmen		
45	<i>Anacamptis pyramidalis</i> (L.) L.C.M. Richard	Ilıca, banyolar arka sırtları, fundalık sırtın tam tepesindeki tarla kenarı, çakıl içerisi, Kuzeye meyilli, 850 m, M. Özgen	26.06.1953	
	Papavenaceae			
37	<i>Fumaria officinalis</i> L.	Okul bahçesi, açık düzlükçe, 700 m, M. Özgen	16.06.1953	
38c	<i>Papaver rhoeas</i> L.	Ilıca, binaların arkası, Buğday ekili tarla içinde fundalık sırtı eteğinde, kuzeye açık, 700 m,	26.06.1953	Gelincikgiller

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
		M. Özgen		
38b	<i>Papaver rhoeas</i> L.	Sultanbey köy civarı, Güney orman etekleri, kuzey meyli üzeri, 725 m, Necla Sönmez	11.05.1958	Gelincikgiller
38	<i>Papaver rhoeas</i> L.	Okul bahçesi, Tarla kenarı ağaçlar arası, 700 m, M. Özgen	18.06.1953	Gelincikgiller
	Poaceae			
50	<i>Poa bulbosa</i> L.	Karabük kuzey ormanı, Büyükdüz mevki bölge binası kuzeydoğu meyili orman içi, orman içi açıklığı, 1500 m, M. Özgen	15.06.1954	
	Polygalaceae			
	<i>Polygala anatolica</i> Boiss. & Heldr.			
	Polygonaceae			
5	<i>Rumex acetosella</i> L.	Karabük, Kuzey ormanı, Büyükdüz Orman bakım evi ön meyili üzerinde, orman açıklığı meyil üzeri, 1500 m, M. Özgen	15.06.1954	Kuzu kulağı
	Primulaceae			
130	<i>Anagallis foemina</i> Miller	Kız Öğretmen Okulu, okulun ön kısmındaki açıklıkta, 700 m, M. Özgen	16.06.1953	Çuhaçiçeğiğiller fare kulağı
131	<i>Anagallis arvensis</i> L. var. <i>arvensis</i>	Okul bahçesi güneyi 300 m mezarlık içi, Çanşa Köyü yolu üzerinde soldaki mezarlık içi, 700 m, Fatma Özkan	29.05.1953	Çuhaçiçeğiğiller fare kulağı
128	<i>Cyclamen coum</i> Mill. subsp. <i>coum</i>	Abant, otel arkası 50 m geride, orman içi, ormanlık, ağaçlar arası, 1350 m, Türkan Gültekin	31.05.1953	Çuhaçiçeğiğiller Siklemen, Buhurumeryem
135	<i>Androsace maxima</i> L.	Okul bahçesi güneyi, Çanşa yolu, 200 m uzakta yol kenarı, bu yol kenarında düzlük, 740 m, Suna Sertçetin	29.05.1953	
14	<i>Lysimachia verticillaris</i> Sprengel			
M0-22	<i>Lysimachia atropurpurea</i> L.	Karacasu İlca sırtı, Kuzey meyli güneydoğu sırtı, güneyde, 800 m, Meliha Baskın	04.06.1955	
129	<i>Primula vulgaris</i> Huds. subsp. <i>vulgaris</i>			
	Ranunculaceae			
34	<i>Adonis aestivalis</i> L. subsp. <i>aestivalis</i>	Okul bahçesi güneyi, Çanşa yolu, 200 m ilerde, yol ve tarla kenarı, Açık düzlük, 700 m,	29.05.1953	Düğünçiçeğiğiller Avcuotu

No	Taxon	Locality, habitat, altitude, collector (as on the original label)	Date	Turkish name (as on the original label)
		Yüksel Kaçar		
30b	<i>Helleborus orientalis</i> Lam.			
30a	<i>Helleborus orientalis</i> Lam.	Alpağut Köyü, Köyün güneyi mezarlık içi, düzlük, yer yer fundalık, 730-750 m, M. Özgen	12.04.1953	Düğünçiçeği giller Çöpleme, Noel gülü
33	<i>Ranunculus trichophyllus</i> Chaix	Mezarlık	28.04.1958	Su düğün çiçeği
35	<i>Ranunculus brutius</i> Ten.			
36	<i>Ranunculus oxyspermus</i> Willd.			
31	<i>Consolida regalis</i> S.F.Gray subsp. <i>paniculata</i> (Host) Soó var. <i>paniculata</i>	Karacasu İlca sırtı kuzey meyli güneydoğu sırtı, güney, 800 m, Naime Vardar	04.06.1955	
32a	<i>Consolida orientalis</i> (Gay) Schröd.	Çakmaklar Köyü yolunda, kuzeyde, 700 m, Nezahat Kaymak	08.06.1955	
32b	<i>Consolida orientalis</i> (Gay) Schröd.	Okul bahçesi, düzlük, 700 m, M. Özgen	25.06.1953	Düğünçiçeği Şakayık
	Resedaceae			
23	<i>Reseda lutea</i> L. var. <i>lutea</i>	Okul bahçesi, İşlenmiş toprakta, düzlük, 700 m, M. Özgen	25.06.1953	
	Rosaceae			
72	<i>Filipendula vulgaris</i> Moench	Karabük kuzey ormanı, Baklabostanı bölge binası ön alanı, Ormanlık su yolu kenarısulak, doğu kuzeye meyil, 850 m, M. Özgen	18.06.1954	
75	<i>Potentilla crantzii</i> (Crantz) G.Beck var. <i>crantzii</i>	Karacasu İlca sırtı güney doğu sırtı kuzey meyli, güney, 800 m, Meliha Baskın	04.06.1955	
70	<i>Fragaria vesca</i> L.	İlca seben yolu oto duracı ile doruk arasındaki oluklu çeşmeden 300 m ileride şasesinin kenarı, orman içi (funda), kuzeye dönük, 1500 m, M. Özgen	19.17.1953	Yabani çilek
71a	<i>Potentilla micrantha</i> Ramond	Pirahmetler Köyü, Köyün doğu kuzeyinde derin vadi., Bu derenin doğu kuzeyi meyili üzerinde, taşlık, fundalık, sarp bir meyil, dereye yakın., derin bir vadi içi, 850 m, M. Özgen	12.04.1953	Gülgiller yabani çilek

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71b	<i>Potentilla micrantha</i> Ramond	Kızık Yaylası-Aladağ Orman İşletmesi civarı, Orman içi-yayla, yaylalık, 1350 m, M. Özgen	23.06.1955	
73	<i>Potentilla reptans</i> L.	Okul bahçesi, Cümle kapısı önü, çimenlik, 700 m, M. Özgen	11.06.1953	Düğünçeğigiller Beş parmakotu
74	<i>Potentilla umbrosa</i> Stev.	Ilıca, banyolar arka sırt, doğu sırtlar, bu fundalık sırtın üstündeki tarlaların kenarı, kuzeye dönük, 850 m, M. Özgen	26.06.1953	Düğünçeğigiller Beş parmakotu
78	<i>Prunus avium</i> (L.) Moench	Çayırköy civarı, köy içi, düzlük, 700 m, Pakize Soğanlı	11.05.1958	Gülğiller
79	<i>Prunus mahaleb</i> (L.) Miller var. <i>mahaleb</i>	Çayırköy civarı, köy içi, düzlük, 700 m, Pakize Soğanlı	11.05.1958	
77	<i>Pyrus elaeagnifolia</i> Pallas subsp. <i>elaegnifolia</i>	Çaşa Köyü, köy tarla kenarı, düzlük, 700 m, Saniye Korkusuz	28.04.1958	Gülğiller
162	<i>Spiraea crenata</i> L.	Okul bahçesi, binanın arkasındaki düzlük. Ağaçcık halinde, 700 m, M. Özgen	25.06.1953	
Rubiaceae				
104	<i>Asperula involucrata</i> Wahlenb.	Karabük, Büyükdüz ormanı, orman açıklığı, 1600 m, M. Özgen	15.06.1954	Kökboyagiller yoğurtotu
106	<i>Asperula taurina</i> L. subsp. <i>taurina</i>	Ilıca-Seben yolu, doruk, tam doruğa çıkışta, düzlüğe varmadan yol solunda tepe üstü, kısmen batıya açık, 1750 m, M. Özgen	19.07.1953	Kökboyagiller
105	<i>Galium verum</i> L. subsp. <i>verum</i>	Ilıca arka doğu sırtlar tepede, fundalıktan sonra başlayan ekili tarla alanları çakıllık içi, kuzeye açık, 850 m, M. Özgen	26.06.1953	Kökboyagiller yoğurtotu
103	<i>Galium odoratum</i> (L.) Scop.	Karabük, Kuzey ormanı, yanıklık ve düz orman sahası, sık orman içi, 1500 m, M. Özgen	17.06.1954	Kökboyagiller belumotu
Hydrangeaceae				
86	<i>Philadelphus coronarius</i> L.	Okul bahçesi batı kısmında, 15 m ² 'lik bir alanda 1,5-2 m boyunda ağaçcık halinde, 700 m, M. Özgen	25.06.1953	
Scrophulariaceae				
99	<i>Veronica jacquinii</i> Baumg.	Karacasu, Ilıca sırtı, Güneydoğu sırtı, kuzey meyli, güney, 750 m, Meliha Baskın	04.05.1955	
101	<i>Veronica chamaedrys</i> L.			

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102	<i>Veronica persica</i> Poiret	Okul bahçesi, Ağaçlık önü, 740 m, M. Özgen	26.05.1953	Fare kulağı
100	<i>Veronica anagallis-aquatica</i> L.	Okul bahçesi müsamere salonu arkası, açıklık ve düzlük, 700 m, M. Özgen	25.06.1953	
97	<i>Verbascum mucronatum</i> Lam.			
98	<i>Melampyrum arvense</i> L. var. <i>arvense</i>	Ilıca-Banyolar, arka sırt, bu sırtın tam tepesinde bulunan tarlaların üstü, yol ve arık kenarı, kuzeye açık, 800 m, M. Özgen	26.06.1953	
	Tamaricaceae			
11	<i>Tamarix parviflora</i> DC	Kız Öğretmen Okulu bahçesi, 740 m, Güner Akçaylı	26.05.1953	İlgıngiller ılgın
	Taxaceae			
15	<i>Taxus baccata</i> L.	Karabük, Yanıklık Ormanı, orman, 1650 m, M. Özgen	09.06.1954	Porsukgiller porsuk
	Thymelaeaceae			
20	<i>Daphne pontica</i> L.			
	Tiliaceae			
8	<i>Tilia argentea</i> Desf.	Okul bahçesi, 700 m, M. Özgen	17.07.1953	İhlamurgiller ihlamur
	Valerianaceae			
150	<i>Valerianella coronata</i> (L.) DC.	Okul bahçesi güneyi Çanşa yolu 200 m uzakta, bu yol kenarı üzerinde, 700 m, Ayşe Kiraz	29.05.1953	
118	<i>Valeriana alliariifolia</i> Adams	Ilıca-Seben yolu, tam doruğa çıkışta, düzlüğe varmadan yol solu tümsek üzeri, 1750 m, M. Özgen	19.07.1953	Çuhaçiçeğigiller
	Violaceae			
2	<i>Viola alba</i> Besser	Abant, G. Mumcu	14.06.1956	
3	<i>Viola tricolor</i> L.	Karabük, Kuzey Ormanı, Uzun Göveç Yaylası, Bölge binası civarı, orman içi açıklık, güneye dönük meyil üzeri, 1500-1800 m, M. Özgen	16.06.1954	