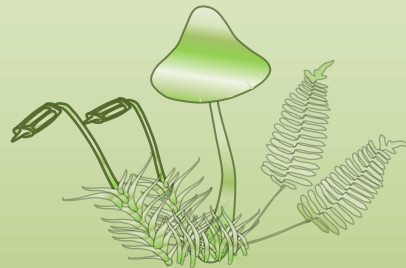


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Inhibitory effects of *Armillaria mellea* (Vahl) P. Kumm. on liver glutathione S-transferase activity

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Armillaria mellea (Vahl) P. Kumm.'nın karaciğer glutatyon S-transferaz aktivitesi üzerine baskılayıcı etkileri

Abstract: *Armillaria mellea* (Vahl) P. Kumm. commonly-known as the honey fungus is an edible mushroom and its antioxidant, antitumor, neuroprotective, and insulin resistance reductive effects have been well-characterized. Glutathione S-transferases (GST) are the group of detoxification enzymes has a function to conjugate glutathione to the variety of electrophile, making them more water-soluble for excretion. Their inhibition or activation could have profound toxicological or clinical implications. This study is conducted to investigate the inhibitory effects of *A. mellea* on GST enzymes. Total GST activities were measured using glutathione and 1 chloro-2,4-dinitrobenzene as substrates spectrophotometrically, and enzyme kinetic studies were conducted to determine V_{max} and K_m values. Additionally, aqueous and methanolic extracts of *A. mellea* were tested to see how they modulate the kinetic parameters. V_{max} for liver GST enzyme was calculated as 443.90 ± 11.52 U/mg, K_m value for GSH, and CDNB were determined as 4.88 ± 0.53 mM and 10.43 ± 1.07 mM, respectively. The decrease in V_{max} and the increase in K_m values with *A. mellea* extracts demonstrated a mixed-type inhibitory mechanism. Methanolic extract inhibits the GSH-dependent GST activity much more than the CDNB-dependent activity, but aqueous extract mainly affects CDNB-dependent GST activity. In conclusion, *A. mellea* could suppress the hepatic GST enzymes that might have toxicological consequences such as reduced cellular detoxification of electrophilic xenobiotics as well as alleviated drug resistance in the treatment of several diseases.

Key words: *Armillaria mellea*, glutathione S-transferase, enzyme inhibition, V_{max} , K_m

Özet: *Armillaria mellea* (Vahl) P. Kumm. yaygın olarak bal mantarı olarak bilinen yenilebilir bir mantardır ve antioksidan, antitümör, nöroprotektif ve insülin direncini azaltıcı etkileri iyi karakterize edilmiştir. Glutatyon S-transferazlar (GST), detoksifikasyon enzimlerinin bir grubudur ve glutatyonu çeşitli elektrofillere konjüge etme fonksiyonuna sahiptir. Bu işlem onları atılım için suda daha fazla çözünür hale getirir. GST enzimlerinin baskılanması veya aktive edilmesinin toksikolojik veya klinik etkileri olabilir. Bu çalışma *A. mellea*'nın GST'ler üzerindeki baskılayıcı etkilerini araştırmak için yapılmıştır. Toplam GST aktiviteleri, spektrofotometrik olarak glutatyon ve 1 kloro-2,4-dinitrobenzen substratları kullanılarak ölçülmüş, V_{max} ve K_m değerlerini belirlemek için enzim kinetiği çalışmaları yapılmıştır. Ek olarak, *A. mellea*'nın sulu ve metanolik özütleri, kinetik parametreleri nasıl modüle ettiklerini değerlendirmek için test edilmiştir. Karaciğer GST enzimi için V_{max} 443.90 ± 11.52 U/mg, GSH ve CDNB için K_m değerleri sırasıyla $4,88 \pm 0,53$ mM ve $10,43 \pm 1,07$ mM olarak belirlenmiştir. *A. mellea* ekstratları ile V_{max} 'daki azalma ve K_m değerlerindeki artış, GST enziminin karışık tipte inhibisyon mekanizmasıyla baskılandığını göstermiştir. Metanolik ekstraktın GSH-bağımlı GST aktivitesini CDNB-bağımlı aktiviteden çok daha fazla inhibe ettiği, fakat su ekstraktlarının esas olarak CDNB-bağımlı GST aktivitesini baskıladığı gösterilmiştir. Sonuç olarak *A. mellea*'nın, karaciğer GST enzimini baskılayarak ksenobiyotiklerin hücresele detoksifikasyonunu azaltabilecek ve çeşitli hastalıkların tedavisinde ilaç direncinin azaltılması gibi toksikolojik sonuçları olabilecek bir mantar türü olabileceği değerlendirilmiştir.

Anahtar Kelimeler: *Armillaria mellea*, glutatyon S-transferaz, enzim baskılama, V_{max} , K_m

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1. Introduction

Fungi are eukaryotic and heterotrophic organisms that are free of chlorophylls and composed of tubular filamentous cells and spores. Commonly known as honey fungus, *Armillaria mellea* (Vahl) P. Kumm. is a plant pathogen and classified as a part of a cryptic complex of morphologically similar species that are closely related to each other. They also have green bioluminescent properties and produce mushrooms around the bases of the infected trees. Honey fungus is also classified as edible, even though some people might be intolerant (Pegler, 2000). As ingested, its metabolites reached the hepatic tissues and metabolized internally.

One of the main detoxification enzymes present in the liver tissues is Glutathione S-transferases (GSTs), which plays a crucial role in the detoxification of endobiotic metabolites

and xenobiotics. They conjugate the reduced glutathione (GSH), an intracellular thiol-containing compounds to the electrophilic substances to make them more hydrophilic and less toxic. When food and/or its metabolites enter an organism, protective mechanisms against oxidative stress and other detrimental effects are activated, which also involve the activity of GST enzymes (Strange et al., 2001). There is increasing evidence that some foods and food additives might affect GSTs either by direct suppression of enzymatic activity or indirectly by declining the levels of the GST substrates. Therefore, this study is conducted to see if edible mushroom; *A. mellea* could interfere with the detoxification of organic xenobiotics or endobiotic metabolites, which would eventually lead to unpredictable toxicological consequences for organisms. Our study provides a detailed *in vitro* study on inhibitory effects of *A. mellea* on rat liver GST enzymes.

2. Materials and Method

2.1. Reagents and chemicals

All the chemicals were analytical grade having more than 99% purity if available. They were obtained from Sigma-Aldrich (Steinheim, Germany) or Merck (USA). Analytical grade methanol, potassium phosphate dibasic trihydrate, sodium carbonate, bovine serum albumin (BSA), ethylene diamine tetraacetic acid (EDTA), sodium chloride, trizma base, 1 chloro-2, 4 dinitrobenzene (CDNB), L-glutathione (reduced), sodium diphosphate, potassium sodium tartrate, Folin and Ciocalteu's phenol reagent, copper sulfate, potassium chloride, hydrochloric acid, disodium monophosphate were the used chemicals in this study.

2.2. Preparation of fungal extracts

Armillaria mellea that was used in this study was collected from the Western Black sea region of Turkey and kept at Karamanoglu Mehmetbey University, Kamil Özdağ Science Faculty, Department of Biology. Dr. Yasin UZUN kindly provided the specimen. Water and methanol extracts were prepared to scrutinize *in vitro* enzyme inhibitory effects over liver GST enzymes. Accordingly, dried entire mushrooms weighing ten grams were pulverized using liquid nitrogen, mortar, and pestle and extracted with the Soxhlet extraction apparatus throughout 24-h with methanol or water as solvents. Then, a rotary evaporator concentrated the extracts which were freeze-dried in a lyophilizer and stored at +4°C until further use.

2.3. Preparation of cytosolic fractions from rat liver tissues

After washing with the ice-cold homogenization medium (50 mM potassium phosphate, 5 mM EDTA, 0.5 mM PMSF, 1.15% KC, pH:7.0), rat liver tissues were minced and homogenized using the bladed homogenizer (Tissue Ruptor™, Qiagen, USA). Following homogenization, the samples were centrifuged at 1.500 g for 15 minutes for the separation of nuclear part and non-degradable cells. Supernatants were transferred to the Eppendorf tubes and kept at -85°C until further use. The total protein contents of the homogenates were measured with the Lowry method (Lowry et al., 1951).

2.4. *In vitro* enzyme assay for liver glutathione S-transferase

For measuring the total GST enzyme activity, 1 chloro-2, 4 dinitrobenzene (CDNB), and reduced glutathione (GSH) were used as substrates. According to our optimized protocol which is developed from a previously published procedure (Habig et al., 1974), 15 µl of 2 mg protein-containing homogenates were mixed with 250 µl of phosphate buffer (50 mM, pH:7.0), 20 µl of GSH (50 mM), and 15 µl of CDNB (50 mM dissolved in 2/3 ethanol) in a UV-transparent 96-well plate and mixed thoroughly. After that, the changes in absorbance was monitored at 340 nm for 2 min with a spectrophotometric microplate reader (MultiScan GO™, Thermo Scientific, USA). Besides, the rate of non-enzymatic CDNB-GSH conjugation was determined with an enzyme-free reaction. Total GST activity was determined as the amount of chromogenic product formed by the homogenate containing one mg of protein for one minute.

2.5. Determination of maximum velocity (V_{max}) and Michaelis-Menten constants (K_m) for liver glutathione S-transferase

Enzyme kinetic studies were conducted to determine V_{max} and K_m values for different substrates of GSTs. Above-mentioned protocol was conducted with varied concentrations of CDNB (1- 2- 5- 10- 20- 25- 30- 40- 50- 60- 70 mM) and GSH (1- 2- 5- 10- 25- 50- 75- 100 mM), each time one substrate concentration was kept constant and the other changed. Velocity versus substrate concentration graphs (Michaelis-Menten curve) and double reciprocal plots (Lineweaver-Burk plot) were developed, and the maximum enzymatic activity for liver GST and K_m values for each substrate were calculated with the enzyme kinetics module of GraphPad Prism 6.0 software.

2.6. Effects of *A. mellea* extracts on liver glutathione S-transferase activity and its kinetic parameters

Substrate dependent enzymatic activity measurements were conducted to determine the mechanism by which *A. mellea* extracts suppress the GST enzyme. K_m and V_{max} values were calculated in the absence and presence of *A. mellea* extracts (0- 0.25- 0.5- 1- 2- 4- 6- 8- 10 mg/ml) in accordance with Michaelis-Menten kinetics. First, the Michaelis-Menten plot that was obtained by changing CDNB concentrations were re-conducted for the *A. mellea* water and methanol extracts, and then V_{max} value for CDNB-dependent GST activity and K_m values for CDNB substrate were estimated. Changes in V_{max} values with different extracts were determined, and the rate of enzymatic suppression was calculated for aqueous and methanolic extracts. Another substrate of the GST enzyme is reduced glutathione (GSH). Similar enzyme kinetics studies again determined the effects of *A. mellea* on GSH-dependent GST activity. In these studies, the CDNB concentration was kept constant, and GSH-dependent total GST activity was determined at different doses of *A. mellea* extracts. K_m and V_{max} values were determined accordingly.

2.7. Statistical analyses

All the assays were carried out at least in triplicate measurements. The results are expressed as mean values and the standard error of the mean (SEM). K_m and V_{max} values were calculated from double reciprocal plots using the enzyme kinetics module of GraphPad 6.0 software.

3. Results

3.1. The kinetic parameters of liver glutathione S-transferases

One of the main substrates of the GST enzyme is the GSH molecule. All GST isozymes conjugate the GSH group from the thiol groups to the compounds to be detoxified, making them more water-soluble. Additionally, CDNB is another commonly used substrate of GST *in vitro* since it resembles the common xenobiotics that are the target of all GST isozymes. Enzymatic GSH conjugation to the CDNB produces a chromogen that can be followed at 340 nm spectrophotometrically.

At the first stage of our study, kinetic parameters of liver GST enzymes were determined. To do this, by keeping the concentration of CDNB constant, GSH-dependent enzymatic activity of GST were analyzed. Michaelis-Menten and Lineweaver-Burk plots for GSH-dependent

GST activity were given in Figures 1A and 1B, respectively. Additionally, CDNB-dependent GST activity was also studied at constant GSH levels, and the changes in GST activity has been monitored. According to the Michaelis-Menten (Figure 1C) and Lineviewer-Burk (Figure 1D) plots, the maximum velocity of GST (V_{max}) was calculated as 443.9 ± 11.52 U/mg, K_m value for GSH and CDNB were determined as 4.88 ± 0.53 mM and 10.43 ± 1.07 mM, respectively.

3.2. Effects of *A. mellea* extracts on CDNB and GSH-dependent GST enzyme activity and its kinetic parameters

The abovementioned studies were also conducted in the presence of different amounts of (0- 0.25- 0.5- 1- 2- 4- 6- 8- 10 mg/ml) aqueous and methanolic extracts of *A. mellea*. In the presence of *A. mellea* extracts, the changes in V_{max} and K_m values for both substrates reveal the enzymatic inhibitory mechanism, such as competitive, non-competitive, uncompetitive, or mixed-type. The effects of *A. mellea* aqueous extracts on kinetic parameters of the GST enzyme have been summarized in Figure 2. Using these graphs and their equations, changes in the V_{max} and K_m values revealed that aqueous extracts inhibited both GSH and CDNB-dependent GST activity. A decrease in V_{max} and an increase in K_m values (Figure 2A-2D) with the

increasing doses of *A. mellea* extracts suggests the mixed-type inhibitory mechanism over the GST enzyme. According to Table 1, aqueous extracts inhibited the GSH-dependent GST activity at 19.71% with maximum doses. However, its effect on CDNB-dependent activity is much more pronounced. Since maximum inhibition takes place two-fold higher. That is, CDNB-dependent activity was inhibited by approximately 40% with 10 mg/ml of aqueous extract.

The changes in the kinetic parameters of GST enzyme with *A. mellea* methanolic extracts are also studied, and the results are summarized in Figure 3. Similar to the water extracts, methanolic extracts also decreased the V_{max} and increased the K_m values for both substrates with rising concentrations. The decrease in V_{max} and increase in K_m values suggests the mixed-type inhibitory mechanism similar to the aqueous extracts. On the contrary to the results of water extracts, the methanolic extract inhibited the GSH-dependent GST activity much more than the CDNB-dependent activity. According to Table 2, methanolic extracts suppressed the GSH-dependent GST activity at 48% with maximum doses, but CDNB-dependent activity decreased only 4% with similar doses. How the GST activity is regulated with different doses of *A. mellea* has been schematized in Figure 4, and the differences between different extracts are visualized.

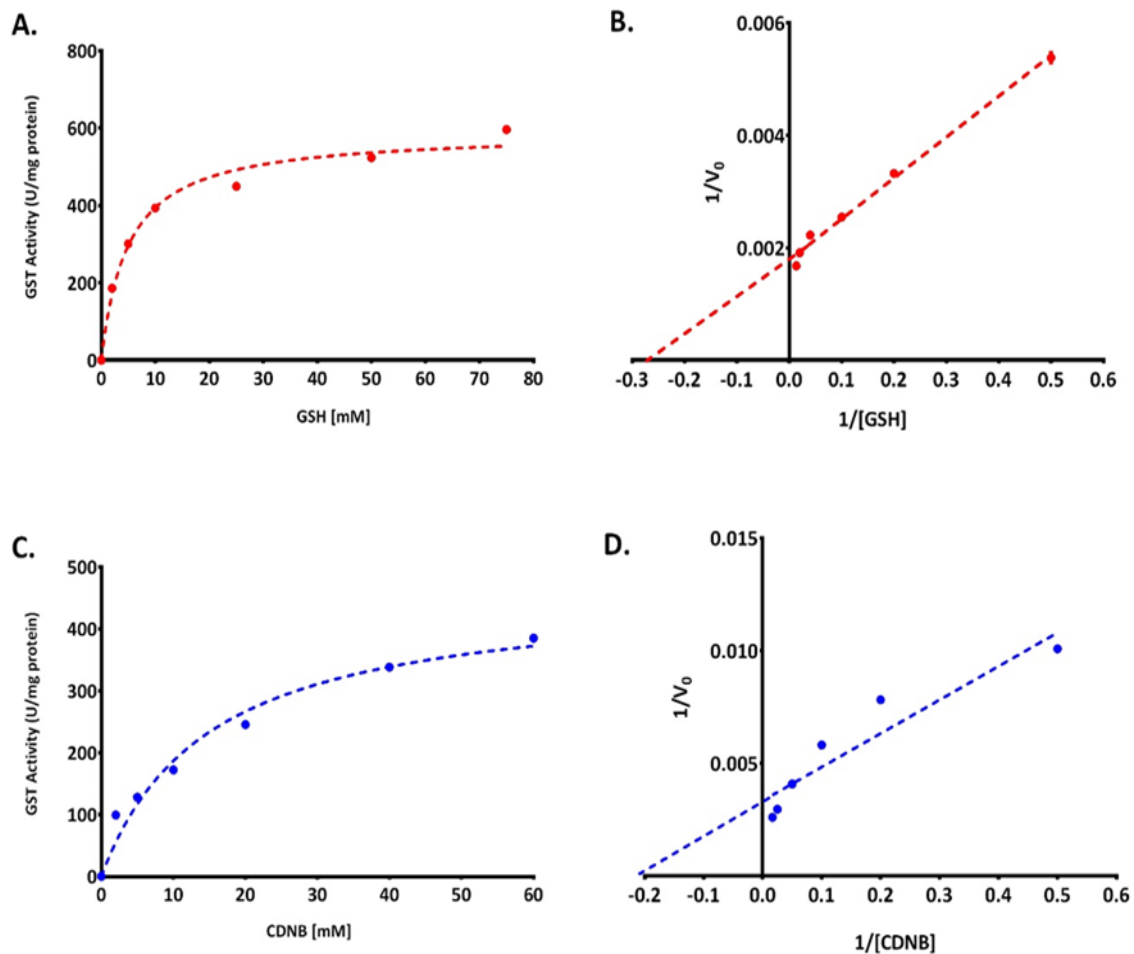


Figure 1. Michaelis-Menten (A) and Lineviewer-Burk plots (B) for GSH-dependent GST activities and Michaelis-Menten (C) and Lineviewer-Burk plots (D) for CDNB-dependent GST activities.

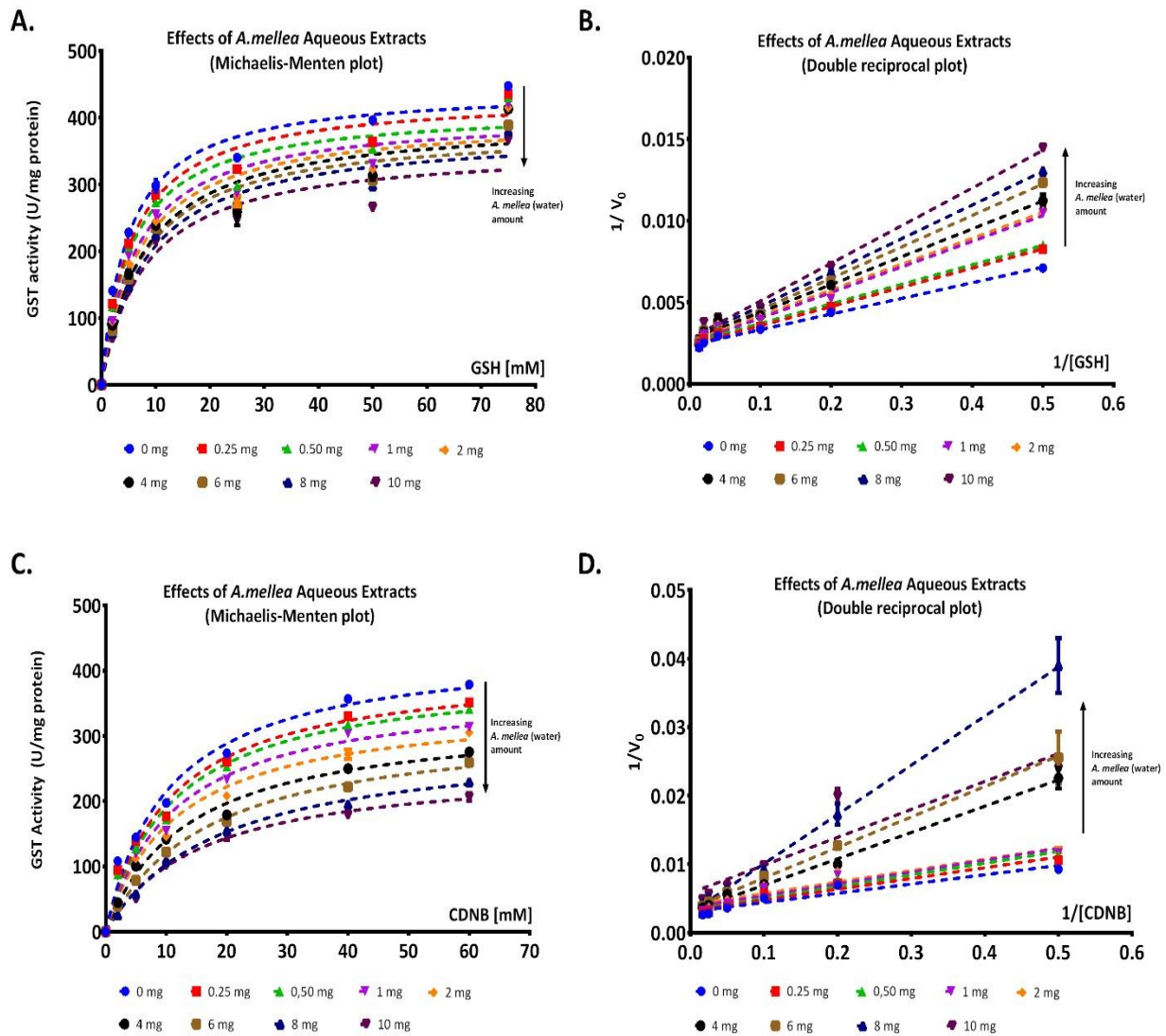


Figure 2. Effects of *A. mellea* water extracts on GSH and CDNB-dependent GST activities. A and C demonstrate the simple substrate vs. velocity curves, and B and D demonstrate the double reciprocal plots of A and C, respectively.

Table 1. Effects of *A. mellea* aqueous extracts on inhibition levels, V_{max} and K_m values of two different substrates. Data is represented as mean ± SEM.

Amount	<i>A. mellea</i> aqueous extracts GSH-dependent GST Activity			<i>A. mellea</i> aqueous extracts CDNB-dependent GST Activity		
	V _{max} (U/mg)	K _m (mM)	% Inhibition	V _{max} (U/mg)	K _m (mM)	% Inhibition
0 mg	443.9 ± 11.5	4.88 ± 0.53	0 ± 0	438.5 ± 14.3	10.43 ± 1.06	0 ± 0
0.25 mg	433.4 ± 14.6	5.54 ± 0.71	2.37 ± 3.29	408.5 ± 12.6	10.54 ± 1.01	6.84 ± 2.88
0.50 mg	413.8 ± 16.8	5.49 ± 0.91	6.78 ± 3.80	400.1 ± 11.0	11.07 ± 0.93	8.76 ± 2.52
1 mg	405.3 ± 18.6	6.41 ± 1.14	8.70 ± 4.20	375.2 ± 13.3	11.40 ± 1.22	14.44 ± 3.04
2 mg	400.0 ± 19.8	6.88 ± 1.29	9.89 ± 4.46	351.2 ± 14.6	11.62 ± 1.45	19.91 ± 3.34
4 mg	398.4 ± 23.5	7.81 ± 1.69	10.25 ± 5.30	331.4 ± 8.7	13.67 ± 1.02	24.42 ± 2.00
6 mg	384.7 ± 17.0	7.54 ± 1.24	13.34 ± 3.84	323.4 ± 6.7	16.91 ± 0.94	26.25 ± 1.55
8 mg	379.9 ± 17.1	8.25 ± 1.35	14.42 ± 3.87	295.5 ± 6.3	18.54 ± 1.02	32.61 ± 1.45
10 mg	356.4 ± 20.4	8.07 ± 1.68	19.71 ± 4.60	257.3 ± 8.5	15.84 ± 1.42	41.32 ± 1.96

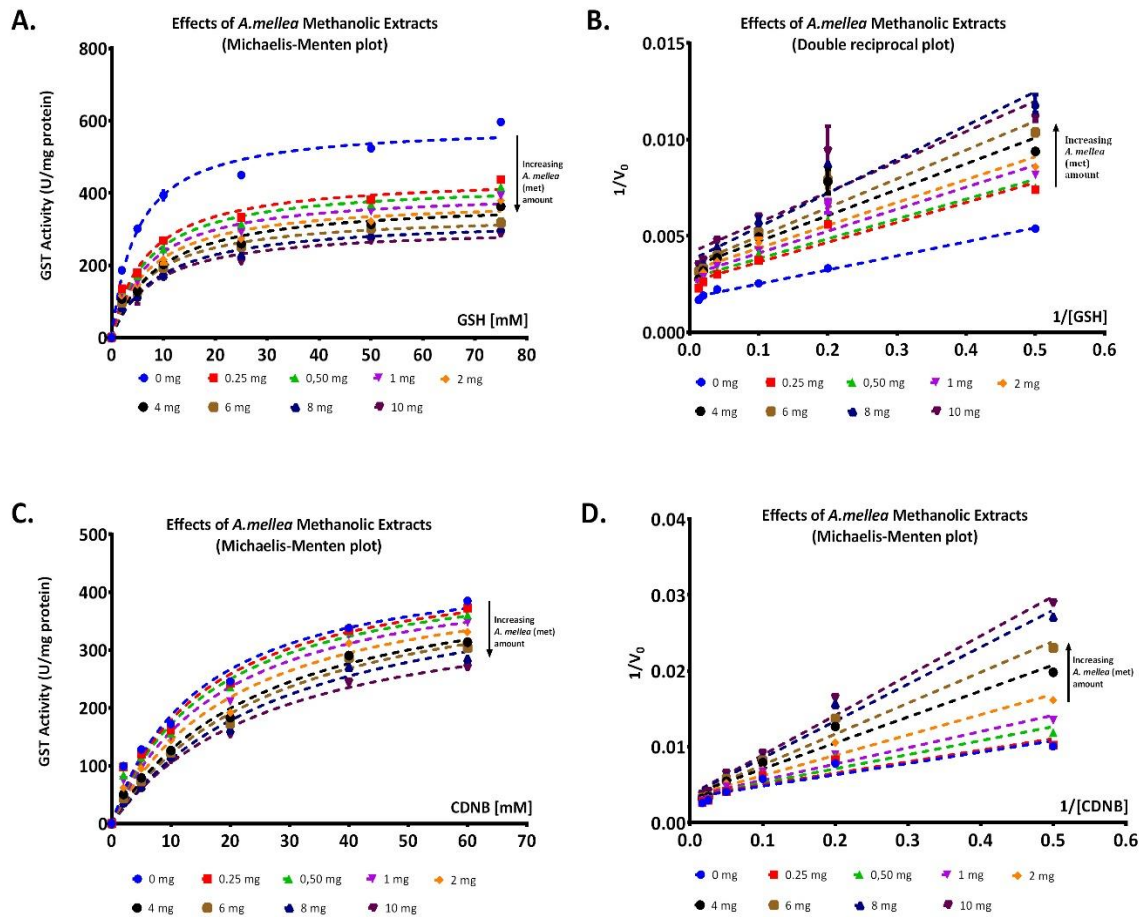


Figure 3. Effects of *A. mellea* methanolic extracts on GSH and CDNB-dependent GST activities. A and C demonstrate the simple substrate vs. velocity curves, and B and D demonstrate the double reciprocal plots of A and C, respectively.

3. Conclusion and Discussion

The world population is getting faced with several health and nutritional problems due to irregular growth patterns. Today, the use of natural resources in the diet becomes a necessity due to the economic difficulties, and the use of macrofungi arises due to their high nutritional properties. Additionally, several types of fungus exhibit

pharmacological activities with few side effects and are used medically. *A. mellea*, an edible and medicinal fungus, has been reported to exhibit antioxidant and antitumor activities (Wu et al., 2012). Besides, some data reported its neuroprotective roles against degenerative disorders such as Alzheimer's diseases (An et al., 2017), and its insulin resistance reductive effects have recently been proposed (Yang et al., 2019).

Table 2. Effects of *A. mellea* methanol extracts on inhibition levels, V_{max} and K_m values of two different substrates. Data is represented as mean \pm SEM.

Amount	<i>A. mellea</i> methanol extracts GSH-dependent GST Activity			<i>A. mellea</i> methanol extracts CDNB-dependent GST Activity		
	V_{max} (U/mg)	K_m (mM)	% Inhibition	V_{max} (U/mg)	K_m (mM)	% Inhibition
0 mg	589.3 \pm 16.1	4.95 \pm 0.56	0 \pm 0	464.3 \pm 27.1	14.86 \pm 2.39	0 \pm 0
0.25 mg	445.9 \pm 13.8	6.64 \pm 0.79	24.33 \pm 2.35	460.6 \pm 27.9	15.67 \pm 2.57	0.80 \pm 6.01
0.50 mg	428.0 \pm 14.4	6.93 \pm 0.88	27.37 \pm 2.45	458.8 \pm 23.8	16.74 \pm 2.30	1.18 \pm 5.13
1 mg	404.6 \pm 14.1	7.13 \pm 0.93	31.34 \pm 2.39	456.2 \pm 27.7	18.67 \pm 2.89	1.74 \pm 5.96
2 mg	384.2 \pm 15.9	7.46 \pm 1.15	34.80 \pm 2.70	454.0 \pm 28.1	21.62 \pm 3.24	2.22 \pm 6.06
4 mg	378.9 \pm 15.7	8.71 \pm 1.29	35.70 \pm 2.68	453.4 \pm 23.2	25.56 \pm 2.97	2.35 \pm 4.99
6 mg	342.2 \pm 9.2	7.54 \pm 0.75	41.93 \pm 1.57	453.9 \pm 26.1	27.72 \pm 3.52	2.24 \pm 5.62
8 mg	328.5 \pm 9.5	8.71 \pm 0.90	44.26 \pm 1.62	447.7 \pm 30.9	30.27 \pm 4.19	3.58 \pm 6.65
10 mg	306.5 \pm 12.1	8.16 \pm 1.16	47.99 \pm 2.05	440.0 \pm 16.2	28.04 \pm 2.50	5.17 \pm 3.49

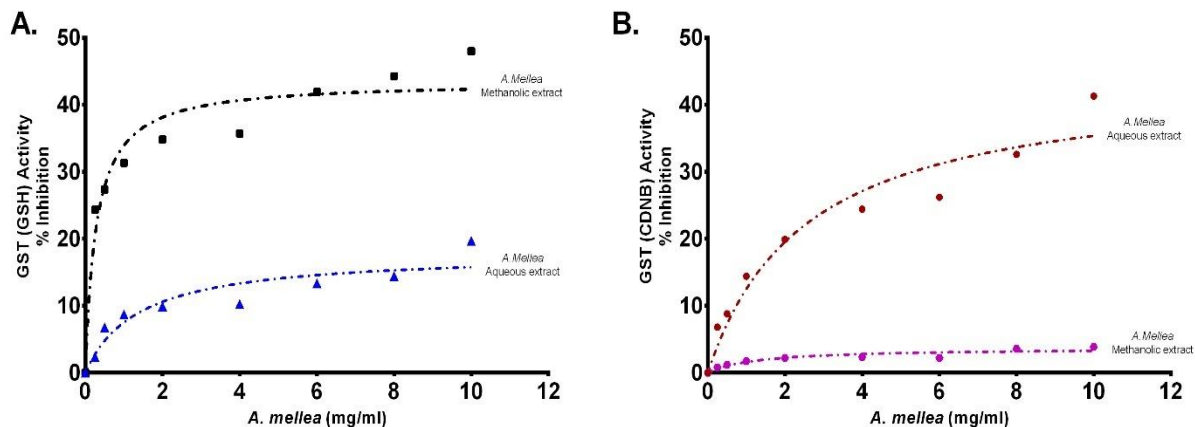


Figure 4. The suppressive effects of *A.mellea* aqueous and methanol extracts on GSH-dependent (A) and CDNB-dependent (B) total GST enzyme activity.

Glutathione S-transferases assure efficient enzymatic conjugation of the main antioxidant molecule, GSH, to the reactive electrophiles making them more water-soluble and excretable. They take part in the detoxification of xenobiotics and endobiotic metabolites, mainly in the liver tissues. However, several compounds can also be converted to highly reactive or toxic products through the GSH conjugation (Appiah-Opong et al., 2009). The crucial roles of GSTs in drug metabolism and cellular physiology might be regulated as a result of active compounds that are present in our diet. Therefore, their inhibition or activation could have profound toxicological or clinical implications. For instance, the induction of GSTs would diminish the carcinogenic properties of some compounds and provides chemoprevention to the organisms. Their inhibition might have toxicological consequences such as reduced cellular detoxification of electrophilic xenobiotics as well as alleviated drug resistance in the treatment of several diseases (Appiah-Opong et al., 2009). Therefore, interferences with the functionality of GSTs caused by the nutrients may have unpredictable toxicological consequences for the organisms. Nevertheless, it is hard to make an overall assessment of the level at which dietary supplementation, over-nutritional dietary supplementation, natural exposure, or poisoning will show effects (Gweshelo et al., 2016). Thus, this study is conducted to investigate the effects of *A. mellea* on liver glutathione S-transferases.

The results of this study confirm the general inhibitory potential of both aqueous and methanolic extracts of *A. mellea* on liver glutathione S-transferase enzyme. They decreased V_{max} values for GST activity at all concentrations while relatively increased K_m values of its substrates, namely GSH and CDNB. This type of suppression is one of the general characteristics of mixed-type inhibition.

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Although similar to the effects of non-competitive inhibitors, mixed-type inhibitors reduce the affinity of the substrate to the enzyme without competing with the substrate. The decrease in V_{max} and the increase in K_m demonstrate *A.mellea* suppresses GST activity with a mixed-type suppression mechanism. From the experimental results, it is essential to note that the inhibitory mechanism of aqueous and methanolic extracts was slightly different from each other in such a way that methanolic extract mainly inhibits the GSH-dependent GST activity much more than the CDNB-dependent activity. However, aqueous extracts mainly affect GSH-dependent GST activities.

The inhibition of GSTs has been studied *in vitro*, and several plant-derived compounds such as hematin, thoningianin, cibacron blue, tannic acid, ellagic acid, ethacrynic acid, ferulic acid, stilbene, caffeic acid, quercetin, and curcumin have been reported to decrease GST activities (Hayeshi et al., 2007; Gweshelo et al., 2016). Therefore, *A.mellea* extracts might have high levels of these compounds, since elevated doses caused increased enzyme suppression. The inhibition of GSTs by *A.mellea* may support the uses of some drugs which are detoxified with the GST enzyme system and would increase the bioavailability of the drugs in the body. However, further studies should focus on separating the bioactive compounds responsible for inhibiting GSTs and identify their structures.

Acknowledgments

Armillaria mellea (Vahl) P. Kumm. samples were kindly provided by Dr. Yasin Uzun, who collected and identified the samples.

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A new record for the Mycota of Turkey

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Türkiye Mikotası için yeni bir kayıt

Abstract: The marasmioid species, *Marasmius collinus* (Scop.) Singer, belonging to the family *Marasmiaceae*, is given as new record for the mycobiota of Turkey from Sarıkamış Allahukeber Mountains National Park (Kars/Erzurum). A brief description of the taxon is given together with its photographs related to macro and micromorphologies.

Key words: *Marasmius collinus*, *Marasmiaceae*, new record, Sarıkamış Allahukeber Mountains National Park, Turkey

Özet: *Marasmiaceae* familyasına ait bir marasmioid tür olan *Marasmius collinus* (Scop.) Singer Sarıkamış Allahuekber Dağları Milli Parkı'ndan (Kars/Erzurum) Türkiye mikobiyotası için yeni kayıt olarak verilmiştir. Taksonun kısa betimlemesi makro ve mikromorfolojisine ait fotoğraflarla birlikte verilmiştir.

Anahtar Kelimeler: *Marasmius collinus*, *Marasmiaceae*, yeni kayıt, Sarıkamış Allahuekber Dağları Milli Parkı, Türkiye

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1. Introduction

The genus *Marasmius* Fr. is morphologically characterized by small convex caps, gills on adnate hymenium, usually thin and bare stipes, hyaline and not amyloid spores, and saprotrophic ecology. The most important distinguishing feature is: *Marasmius* species are tough types which dry-up but later revive when moistened. Several of the species are known to grow in the characteristic «fairy ring» pattern. (Moser, 1983; Knudsen and Vesterholt, 2008; Antonin and Noordeloos, 2010).

Marasmius genus contains about 500 species in the family *Marasmiaceae* (*Agaricales*, *Agaricomycetes*, *Basidiomycota*) and according to presented checklists and the recent studies in Turkey, 12 species have so far been identified belonging to this genus (Kirk et al., 2008; Sesli and Denchev, 2014; Solak et al., 2015; Uzun et al., Akçay et al., 2018; Bozok et al., 2018; Keleş, 2018a; Keleş, 2018b; Sadullahoğlu and Demirel, 2018; Sesli et al., 2018a; Sesli et al., 2018b; Uzun and Kaya, 2018; Altuntaş et al., 2019; Akçay, 2019; Çağlı et al., 2019; Sesli and Bandini, 2019; Acar et al., 2020).

The present study aims to make a contribution to the mycobiota of Turkey.

2. Materials and Method

Specimens were collected from Gürbüzler village of Selim (Kars-Turkey) district at Allahuekber Mountains National Park in 2016. Morphological and ecological characteristics of the samples were recorded during the field study and they were photographed in their natural habitats. Then, they were taken to the laboratory and microscopic investigations were carried out on them. Microscopic investigation of the samples were done by using a Leica DM500 light microscope mounted with a Leica ICC50 HD camera. Reagents such as 5 % KOH and Congo red were used investigation media. Identification was performed with the aid of the relevant literature (Moser, 1983; Breitenbach and Kränzlin, 1991; Antonin and Noordeloos, 2010).

3. Results

Basidiomycota R.T. Moore

Agaricales Underw.

Marasmiaceae Roze ex Kühner

Marasmius Fr.

Marasmius collinus (Scop.) Singer

Macroscopic features: Pileus, 15-40 mm broad, first conical, soon convex-applanate, with involute margin, reddish-brown when young and fresh, then ochraceous or yellow-brown, smooth. Flesh, thin, cream or yellowish at margin, almost white at centre of pileus, smell and taste indistinct. Lamellae, moderately crowded, distant, adnate to almost free, white to cream coloured, with irregularly serrate and concolorous edges. Stipe, 25-60 × 3-6 mm, cylindrical, fistulose, straight, slightly broadened at base, smooth, pale beige, cream-coloured, darker at base (Fig. 1a).

Microscopic features: Spores 7-11 × 4-5.5 µm, hyaline, ellipsoid, oblong or cylindrical, slightly attenuated at apex (Fig. 1b). Spore print whitish. Basidia 30-40 × 7-8 µm, clavate, 4- spored (Fig. 1c). Basidioles 15-40 × 3-9 µm, clavate, cylindrical or fusiform (difficult to distinguish between basidia and basidiols under microscope, because the sterigmata are not very prominent and their sizes are close to each other). Cystidia absent.

Specimen examined: Turkey, Kars, Selim district, Southwest of Gürbüzler village, grassy area, 40° 27.253'N, 42° 34.097'E, 2077 m, 29.05.2016, MEA. 956.

4. Discussions

Marasmius collinus is very similar to *M. oreades* (Bolton) Fr., and is found in comparable habitats. These two species can be distinguished from each other by the differences listed in the Table 1 (Moser, 1983; Breitenbach and Kränzlin, 1991; Antonin and Noordeloos, 2010; Jossierand, 1955).



Figure 1. *Marasmius collinus*: **a**-basidiomata; **b**-basidiospores; **c**-basidia and basidiols (bars= 10 µm).

Table 1. Differences between *Marasmius collinus* and *M. oreades*

	<i>Marasmius collinus</i>	<i>Marasmius oreades</i>
Stipe	hollow at first, soft and easily compressible	stuffed for a long time, tough
Spores	up to 11 µm in length and somewhat narrower	rarely reaches to 10 µm in length
Basidia	30-40 µm in length	up to 50 µm in length

As a result of the study, the number of species belonging to the genus *Marasmius* has increased from 12 to 13 in Turkey (Sesli and Denchev, 2014; Solak et al., 2015).

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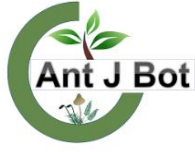
It is very important to continue to the macrofungal studies in order to increase the number of determined macrofungi to the expected levels in our country.

Also, in order to benefit sufficiently from edible and medicinal mushrooms and to avoid poisonous mushrooms, they must first be recognized.

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The explorations on the flora of Tunceli (Turkey)

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Tunceli (Türkiye) florası üzerine araştırmalar

Abstract: The study was carried out until 2018 intermittently, on condition that majority in 2014. The study area is located between Erzincan, Malatya, Elazığ and Bingöl cities in the Eastern Anatolia. Its whole is placed in the Irano-Turanian phytogeographic region and, in B7 and B8 squares according to Davis' Grid System. During the study, 2950 samples were collected and 1559 of them were identified. The identification of these samples resulted 74 families, 386 genera and 922 taxa. The distribution of taxa by phytogeographic regions is as follows; Irano-Turanian elements 397 (43.1 %), Mediterranean elements 20 (2.2 %), Europe-Siberian elements 40 (4.3 %), East Mediterranean elements 14 (1.5 %), Euxine element 13 (1.4 %), Hyrcano-Euxine elements 3 (0.3 %), Sarmatian 1 (0.1 %), the cosmopolite or unknown distribution 434 (47.1 %). The number of endemic taxa is 150 (endemism ratio 16.3 %).

Key words: Biodiversity, Eastern Anatolia, endemic, phytogeographic region, taxon

Özet: Çalışma, çoğunluğu 2014 yılında olması kaydıyla aralıklı olarak 2018 yılına kadar gerçekleştirilmiştir. Çalışma alanı, Doğu Anadolu'daki Erzincan, Malatya, Elazığ ve Bingöl şehirleri arasında yer almaktadır. Çalışma alanının tamamı İnan-Turan fitocoğrafik bölgesinde ve Davis'in Kareleme Sistemi'ne göre B7 ve B8 karelerinde bulunur. Çalışma boyunca toplanan 2950 örneğin 1559 tanesi teşhis edilmiştir. Bu örneklerin teşhis edilmesiyle, 74 familyaya ait 386 cins ve 922 takson bulunmuştur. Taksonların fitocoğrafik bölgelere göre dağılımı şöyledir; 397 (% 43.1)'si İnan-Turan elementi, 20 (% 2.2)'si Akdeniz elementi, 40 (% 4.3)'ü Avrupa-Sibirya elementi, 14 (% 1.5)'ü Doğu Akdeniz elementi, 13 (1.4)'ü Karadeniz elementi, 3 (% 0.3)'ü Hirkanya-Karadeniz elementi, 1 (% 0.1)'i Sarmasya elementi, 434 (% 47.1)'ü kozmopolit veya fitocoğrafik bölgesi bilinmeyen. 150 takson endemiktir (endemizm oranı % 16.3).

Anahtar Kelimeler: Biyoçeşitlilik, Doğu Anadolu, endemik, fitocoğrafik bölge, takson

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1. Introduction

The flora of Turkey has high endemism ratio and rich plant diversity due to its location at the connections of Europe, the Middle East, Central Asia, and Africa, and also the interaction among Mediterranean, Irano-Turanian and Europe-Siberian phytogeographic regions (Davis, 1971; Gür, 2016).

Tunceli is located on Anatolian diagonal in Eastern region of Turkey (Davis, 1971). Geography of Tunceli composes of mountains ranging from 1500 m to 3000 m, deep valleys, plateaus and very small amount of plains. There are a lot of small and large streams flowing between mountains. This area is surrounded by Keban Dam, Pülümür River and the branches of Euphrates River. The geographic texture and sparse human population provide the protection of natural life. Tunceli has the least agriculture area (114.000 ha) in Eastern Anatolia. So, sheep breeding is very important in this area. The grasslands are used for winter fodder and grazing in summer (Öztürk et al., 2015).

In Tunceli, the average annual temperature is 12.8 °C and the precipitation is about 857.9 mm per year. July and August are the driest months, and the average monthly precipitation falls under 4 mm during this period. The greatest amount of precipitation occurs in December, with an average of 130.8 mm. July is the warmest month with an average of 27.2 °C. The lowest average temperatures in the year occur in January, when it is around -1.9 °C. The climate of the region is classified as Csa (dry and hot

summer Mediterranean) by the Köppen-Geiger Climate Classification system (MGM, 2010).

Munzur Valley National Park, which is one of the Turkey's largest national parks, was declared as a national park in 1971, and serves as homel for many plant and animal species.

The study aims to determine the plant diversity of Tunceli province and to contribute to the Flora of Turkey.

2. Materials and Method

During fieldworks of this research, about 2950 plant samples were collected within Tunceli province during the vegetation seasons until 2018 intermittently, on condition that majority in 2014. Moreover, photos were taken in their natural habitats, GPS coordinates were recorded with their localities and habitat information. The collected samples were dried based on herbarium methods. Flora of Turkey and the East Aegean Islands (Davis, 1965-1985; Davis et al., 1988) was used as the initial reference for identification. The plant names and authors were checked from "Bizim Bitkiler (2013)", "Plants of the World Online (POWO, 2019)", "World Flora Online (WFO, 2020)", and "International Plant Names Index (IPNI, 2020)". Prepared samples with respect to herbarium techniques were stored in the AYDN, VANF, KNYA, and NGBB herbaria (Thiers, 2016).

3. Results

Nine hundred and twenty two plant taxa belonging to 386 genera and 74 families according to Stevens (2001) were

determined and listed in alphabetical order in Table 1. Previously presented taxa (Armağan, 2018) were not included in the list.

Davis' Grid System was used in localities (Davis, 1965). The plant names, collector numbers, localities, the phytogeographic regions, and the endemism status etc. of the taxa were also given in the table. (Stevens, 2001).

The abbreviations used in the Table 1 as follow;

The directions (E = East, W = West, N = North, S = South)

m = meter

km = kilometer

nh. = neighbourhood

v. = village

Mt. = mountain

* = endemic

Ir.-Tur. = Irano – Turanian phytogeographical region

Medit. = Mediterranean phytogeographical region

Hyr.-Eux. = Hyrcano–Euxine phytogeographical region

Eux. = Euxine phytogeographical region

Euro.-Sib. = Euro – Siberian phytogeographical region

E.Medit. = East Mediterranean phytogeographical region

Sarmat. = Sarmatian phytogeographical region

Cosmp. = Cosmopolite

Unk. = Unknown

Alt. = Altitude

Obs. = Observation

End. = Endemic

Col.No = Collector number

Rcd. = New record for Tunceli province

Table 1. Plant list of the area.

Scientific name	Col.No	Localite	Alt.	Date	Habit	Note	Region
ACANTHACEAE Juss.							
<i>Acanthus dioscoridis</i> L.	4434	B7 Tunceli: Center, 3.5 km from Aktuluk to Buğulu	1065	06.06.2014	Degraded oaks forest		Unk.
AMARANTHACEAE Juss.							
<i>Amaranthus albus</i> L.	5735	B7 Tunceli: Mazgirt, 2 km from Akdüven to Güleç	1100	05.08.2014	Steppe, ruderal		Unk.
	6127	B7 Tunceli: Mazgirt, S of Dedebağ v.	860	26.08.2014			
	5954	B7 Tunceli: Mazgirt, Eltihatun	1414	09.08.2014			
<i>Amaranthus retroflexus</i> L.	5767	B7 Tunceli: Pülümür, 45 km from Tunceli to Pülümür (Pülümür valley)	1200	06.08.2014	Steppe		Unk.
<i>Beta corolliflora</i> Zosimovic ex Buttler	6173	B7 Tunceli: 10 km from Pülümür - Erzincan mainroad to Süleymanuşağı village	2210	27.08.2014	Steppe	Rcd.	Ir.-Tur.
<i>Beta macrorrhiza</i> Steven	5941	B7 Tunceli: Ovacık, 5 km from Işıkvuran to Ağaçpınar	2133	08.08.2014	Steppe, near streamside	Rcd.	Ir.-Tur.
	4287	B7 Tunceli: Ovacık, Işıkvuran v.	1710	04.06.2014			
	4421	B7 Tunceli: Pülümür, between Kabadal and Sağlamtaş	1540	05.06.2014			
<i>Chenopodium album</i> L.	6126	B7 Tunceli: Mazgirt, S of Dedebağ v.	860	26.08.2014	Steppe		Unk.
<i>Chenopodium botrys</i> L.	4486	B7 Tunceli: Çemişgezek, 2 km from Bulgurtepe to Payamdüzü	1060	06.06.2014	Ruderal, steppe		Unk.
	4696	B7 Tunceli: Hozat, 4.5 km from Uzundal to Yüceldi	1970	17.06.2014			
<i>Chenopodium foliosum</i> Asch.	Obs.	B7 Tunceli: Hozat, 15 km from Ovacık to Hozat (NE of Halitpınar v.)	1800	17.06.2014	Steppe		Unk.
<i>Chenopodium opulifolium</i> Schrad. ex W.D.J.Koch & Ziz	4584	B7 Tunceli: Mazgirt, 1 km E of Geçitveren v.	1270	16.06.2014	Ruderal, steppe	Rcd.	Unk.
	5752	B7 Tunceli: Nazımiye, Pülümür Valley, 38 km from Tunceli to Pülümür	1150	06.08.2014			
<i>Chenopodium sosnowskyi</i> Kapeller	5557	B8 Tunceli: Pülümür, 5 km S of Derindere	2030	22.07.2014	Steppe	Rcd.	Unk.
<i>Chenopodium urbicum</i> L.	6274	B7 Tunceli: Mazgirt, between Beylermezrası and Göktepe (side of Munzur stream)	842	19.09.2014	Dried river bad, steppe	Rcd.	Unk.
	6051	B7 Tunceli: Mazgirt, around of Kale v.	1590	15.08.2014			
<i>Chenopodium vulvaria</i> L.	5894	B7 Tunceli: Pülümür, 42 km from Tunceli to Pülümür (Pülümür Valley), across of Ağlayan Kayalar	1570	07.08.2014	Steppe	Rcd.	Unk.
<i>Noaea mucronata</i> (Forssk.) Asch. & Schweinf.	5349	B7 Tunceli: Nazımiye, E of Ramazanköy v.	1440	20.07.2014	Eroded slopes, steppe		Unk.
	6341	B7 Tunceli: Ovacık, 8 km from Işıkvuran to Ağaçpınar	2150	21.09.2014			
<i>Noaea tournefortii</i> (Jaub. & Spach) Moq.	5000	B7 Tunceli: Ovacık, Ziyaret v., N of Munzur Gözeleri	1400	20.06.2014	Rocky areas, steppe		Unk.
	5570	B8 Tunceli: Pülümür, 2 km N of Elmalı	1400	22.07.2014			
<i>Salsola tragus</i> L.	5114	B7 Tunceli: Pertek, 3 km from Elazığ-Pertek-Çemişgezek crossroads to Çemişgezek (1 km S of Çorovan v.)	870	28.06.2014	Steppe	Rcd.	Unk.
	5963	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	875	13.08.2014			
ANACARDIACEAE R.Br.							

<i>Cotinus coggygria</i> Scop.	4202	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Oak forest, riverside		Unk.
<i>Pistacia palaestina</i> Boiss.	4984	B7 Tunceli: Ovacık, W of Ziyaret v.	1340	20.06.2014	Steppe		E.Medit.
<i>Rhus coriaria</i> L.	6240	B7 Tunceli: Nazımiye, Pülümür Valley, 24 km from Tunceli to Pülümür	1017	05.09.2014	Riverside, oak forest		Unk.
APIACEAE Lindl.							
<i>Actinolema macrolema</i> Boiss.	3725	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Steppe		Ir.-Tur.
<i>Anthriscus nemorosa</i> (M.Bieb.) Spreng.	6528	B7 Tunceli: Nazımiye, 12 km NE of Büyükyurt (Hakis) v., (5 km SE of Aşağımarkosör)	1926	01.06.2015	Riverside		Unk.
<i>Artemisia squamata</i> L.	4087	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Steppe, ruderal, in gardens, field side		Unk.
	4531	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014			
	5120	B7 Tunceli: Pertek, 3 km from Elazığ-Pertek-Çemişgezek crossroads to Çemişgezek (1 km S of Çorovan v.)	870	28.06.2014			
	5262	B7 Tunceli: Pertek, Camikebir nh.	1100	19.07.2014			
<i>Astrodaucus orientalis</i> (L.) Drude	5271	B7 Tunceli: Pertek, 3 km from Pertek to Tunceli	1257	19.07.2014	Steppe	Rcd.	Ir.-Tur.
	5573	B8 Tunceli: Pülümür, between Kuzulca and Elmalı	1360	22.07.2014			
<i>Bunium elegans</i> (Fenzl) Freyn	4741	B7 Tunceli: Ovacık, 11 km from Ovacık to Hozat, 1 km before junction of Bilgeç v.	1820	17.06.2014	Steppe	Rcd.	Unk.
	4988	B7 Tunceli: Ovacık, W of Ziyaret v.	1340	20.06.2014			
	3873	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014			
<i>Bunium microcarpum</i> (Boiss.) Freyn & Bormm. ex Freyn subsp. <i>buorgaei</i> (Boiss.) Hedge & Lamond	4205	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe		Ir.-Tur.
	4065	B7 Tunceli: Ovacık, 51 km from Tunceli to Ovacık (Munzur Valley), 7 km to Ovacık	1210	26.05.2014			
<i>Bunium microcarpum</i> (Boiss.) Freyn & Bormm. ex Freyn subsp. <i>microcarpum</i>	4927	B7 Tunceli: Ovacık, 8 km from Eskigedik to Işıkvuran	2120	19.06.2014	Steppe		E.Medit.
<i>Bupleurum croceum</i> Fenzl	4079	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Bupleurum gerardii</i> All.	5095	B7 Tunceli: Çemişgezek, 2.5 km from Vişneli to Çemişgezek	895	21.06.2014	Steppe	Rcd.	Unk.
	4510	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014			
	5706	B7 Tunceli: Pertek, 2 km from Biçmekaya to Koçpınar	1323	25.07.2014			
	4866	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014			
<i>Chaerophyllum crinitum</i> Boiss.	4597	B7 Tunceli: Mazgirt, 2 km from Akdüven to Güleç	1125	16.06.2014	Steppe		Ir.-Tur.
	4234	B7 Tunceli: Ovacık, 15 km from Ovacık-Tunceli-Işıkvuran crossroads to Işıkvuran	1670	04.06.2014			
	3761	B7 Tunceli: Pertek, 1 km S of Beydamı v.	1270	22.05.2014			
	4804	B8 Tunceli: Pülümür, Kırklar v.	1945	18.06.2014			
<i>Chaerophyllum macrospermum</i> (Willd. ex Sprengel) Fisch. & C.A.Mey. ex Hohen	5768	B7 Tunceli: Pülümür, 16 km from Tunceli to Pülümür (Pülümür Valley)	1240	06.08.2014	Steppe		Unk.
<i>Daucus carota</i> L.	5653	B7 Tunceli: Ovacık, 2 km from Ovacık center to Gözeler v.	1290	24.07.2014	Field side, steppe	Rcd.	Unk.
<i>Daucus guttatus</i> Sibth. & Sm.	5698	B7 Tunceli: Center, between Çimenli and Böğürtlen villages	916	25.07.2014	Field side, steppe	Rcd.	Unk.
<i>Echinophora tenuifolia</i> L. subsp. <i>sibthorpiana</i> (Guss.) Tutin	5699	B7 Tunceli: Center, S of Çimenli village	987	25.07.2014	Field side, steppe	Rcd.	Ir.-Tur.
	6131	B7 Tunceli: Mazgirt, S of Dedebağ v.	860	26.08.2014			
<i>Eryngium campestre</i> L. var. <i>virens</i> Link	5153	B7 Tunceli: Çemişgezek, E of Anıl village (Tahar Valley)	1000	29.06.2014	Steppe		Unk.
	4609	B7 Tunceli: Mazgirt, 11 km from Çukur to Güleç	1230	16.06.2014			
	5292	B7 Tunceli: Center, 14 km from Tunceli to Pülümür (Pülümür Valley)	970	20.07.2014			
	5072	B7 Tunceli: Pertek, 14 km from Pertek to Çemişgezek, 2 km after Singeç bridge, on the right hills	860	21.06.2014			
	5268	B7 Tunceli: Pertek, Camikebir nh.	1100	19.07.2014			
<i>Eryngium thyrsoideum</i> Boiss.	5770	B7 Tunceli: Pülümür, 16 km from Tunceli to Pülümür (Pülümür Valley)	1240	06.08.2014	Steppe	Rcd.	Ir.-Tur.
<i>Falcaria vulgaris</i> Bernh.	5566	B8 Tunceli: Pülümür, between Üçdam and Erzurum-Erzincan mainroad	1380	22.07.2014	Steppe		Unk.
<i>Ferulago setifolia</i> K.Koch	4924	B7 Tunceli: Ovacık, 8 km from Işıkvuran to Eskigedik	2130	19.06.2014	Steppe		Ir.-Tur.

<i>Grammosciadium daucooides</i> DC.	4742	B7 Tunceli: Ovacık, 11 km from Ovacık to Hozat, 1 km before junction of Bilgeç v.	1820	17.06.2014	Steppe		Ir.-Tur.
<i>Grammosciadium platycarpum</i> Boiss. & Hausskn.	4194	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe		Ir.-Tur.
	5028	B7 Tunceli: Ovacık, 10 km from Eğrişinar to Yenikonak	1570	20.06.2014			
<i>Heptaptera anisoptera</i> (DC.) Tutin	4119	B7 Tunceli: Mazgirt, Akpazar, S of Yenice v. (N of Şevki mezarası)	1160	02.06.2014	Steppe	Rcd.	Unk.
	4532	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014			
<i>Heracleum sphondylium</i> L. subsp. <i>cyclocarpum</i> (K.Koch) P.H.Davis	4986	B7 Tunceli: Ovacık, W of Ziyaret v.	1340	20.06.2014	Riverside	Rcd.	Euxine
<i>Heracleum trachyloma</i> Fisch. & C.A.Mey.	6002	B7 Tunceli: Pülümür, NW of Közlüce v.	1560	14.08.2014	Wet places	Rcd.	Unk.
	3957	B7 Tunceli: Center, 5 km from Tunceli to Ovacık (Munzur Valley)	940	25.05.2014			
<i>Johrenia dichotoma</i> DC.	5169	B7 Tunceli: Çemişgezek, Tahar valley (Ali Boğazi)	1024	29.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Laser trilobum</i> (L.) Borkh.	5259	B7 Tunceli: Nazımiye, Pülümür Valley, E slopes of Hılbeşen bridge, across of Ağlayan Kayalar	1345	30.06.2014	Oak forest		Unk.
<i>Lisaea strigosa</i> (Banks & Sol.) Eig.	4086	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşcu	867	02.06.2014	In gardens, ruderal, steppe		Ir.-Tur.
	4546	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	985	16.06.2014			
<i>Malabaila dasyantha</i> (K.Koch) Grossh.	3850	B7 Tunceli: Hozat, 2.5 km from Demirkapı to Dervişçemal	1700	23.05.2014	Steppe	Rcd.	Ir.-Tur.
<i>Malabaila secacul</i> (Mill.) Boiss.	3906	B7 Tunceli: Pertek, 12 km from Pertek to Çemişgezek, around of Singeç bridge	855	24.05.2014	Steppe		Unk.
	4782	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1560	18.06.2014			
<i>Oenanthe sophiae</i> Schischk.	5744	B7 Tunceli: Mazgirt, 3 km from Akdüven to Güleç	1102	05.08.2014	Steppe		Unk.
<i>Ormosciadium aucheri</i> Boiss.	5105	B7 Tunceli: Çemişgezek, 3 km from Arpadere to Büyükörtince	1112	21.06.2014	Steppe	Rcd.	Unk.
	5305	B7 Tunceli: Nazımiye, 3 km from Tunceli-Pülümür-Nazımiye crossroads to Nazımiye	1190	20.07.2014			
<i>Pastinaca sativa</i> L. subsp. <i>urens</i> (Req. ex Gren. & Godr.) Çelak	6113	B7 Tunceli: Pülümür, 50 km from Tunceli to Pülümür (Pülümür Valley), Kırmızıköprü Bridge	1250	16.08.2014	Steppe, in gardens	Rcd.	Unk.
	6069	B8 Tunceli: Pülümür, Hasangazi v.	1730	16.08.2014			
	5537	B8 Tunceli: Pülümür, Şampaşakaraderbent v.	1912	22.07.2014			
<i>Peucedanum ruthenicum</i> M.Bieb.	5764	B7 Tunceli: Pülümür, 45 km from Tunceli to Pülümür (Pülümür valley)	1200	06.08.2014	Steppe	Rcd.	Unk.
<i>Physocaulis nodosus</i> (L.) Tausch	4907	B7 Tunceli: Pülümür, 5 km NW of Ardıçlı (Gersunut) v.	1975	18.06.2014	Steppe	Rcd.	Unk.
	4373	B7 Tunceli: Pülümür, Kocatepe v.	1680	05.06.2014			
	3946	B7 Tunceli: Center, 5 km from Tunceli to Ovacık (Munzur Valley)	970	25.05.2014			
<i>Pimpinella corymbosa</i> Boiss.	5345	B7 Tunceli: Nazımiye, E of Ramazanköy v.	1440	20.07.2014	Steppe		Ir.-Tur.
	5671	B7 Tunceli: Ovacık, 16 km from Ovacık to Tunceli (Munzur Valley)	1180	24.07.2014			
<i>Pimpinella kotschyana</i> Boiss.	5304	B7 Tunceli: Nazımiye, 3 km from Tunceli-Pülümür-Nazımiye crossroads to Nazımiye	1190	20.07.2014	Steppe	Rcd.	Ir.-Tur.
<i>Prangos corymbosa</i> Boiss.	4548	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	985	16.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Prangos ferulacea</i> (L.) Lindl.	4649	B7 Tunceli: Hozat, between Karacaköy and Uzundal, the road of Sarısaltuk Türbesi	1730	17.06.2014	Steppe		Unk.
	4192	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014			
<i>Prangos peucedanifolia</i> Fenzl	4468	B7 Tunceli: Hozat, 3.5 km from Hozat to Pertek, junction of Kardelen v.	1470	06.06.2014	Rocky areas, steppe	Rcd.	Ir.-Tur.
	3975	B7 Tunceli: Center, 1 km from Tunceli-Ovacık-Dedeğaç crossroads to Dedeğaç v. (Munzur Valley)	1060	25.05.2014			
<i>Prangos platychlaena</i> Boiss.	5363	B7 Tunceli: Nazımiye, 2 km E of Sarıyayla v.	1945	20.07.2014	Steppe	*	Ir.-Tur.
<i>Scandix iberica</i> M.Bieb.	4050	B7 Tunceli: Ovacık, 46 km from Tunceli to Ovacık, 12 km before Ovacık (Munzur Valley)	1213	26.05.2014	Steppe		Unk.
<i>Smyrniopsis aucheri</i> Boiss.	4970	B7 Tunceli: Center, N of Sarıtaz v., Kalan Valley	1150	19.06.2014	Steppe		Ir.-Tur.
<i>Smyrniium cordifolium</i> Boiss.	5453	B7 Tunceli: Hozat, S of Kurukaymak	1495	21.07.2014	Steppe		Ir.-Tur.
	3937	B7 Tunceli: Center, 2.5 km from Tunceli to Ovacık (Munzur Valley)	930	25.05.2014			
<i>Stenotaenia macrocarpa</i> Freyn & Sint. ex Freyn	5890	B7 Tunceli: Nazımiye, 11 km NE of Büyükyurt (Hakis) v.	1938	07.08.2014	Steppe slopes, under oak	* Rcd.	Ir.-Tur.
	5546	B8 Tunceli: Pülümür, 1-2 km E of Bağırpaşa,	1916	22.07.2014			

		N of Şampaşakaraderbent			forest, dried river beds		
<i>Torilis arvensis</i> (Huds.) Link	5683	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1075	24.07.2014	Steppe	Rcd.	Unk.
<i>Torilis leptophylla</i> (L.) Rech.f.	4524	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe		Unk.
<i>Trigonoscladium intermedium</i> Freyn & Sint. ex Sint.	4232	B7 Tunceli: Ovacık, 15 km from Ovacık-Tunceli-Işıkvuran crossroads to Işıkvuran	1670	04.06.2014	Steppe	*	Ir.-Tur.
<i>Turgenia latifolia</i> (L.) Hoffm.	3738	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Steppe		Unk.
	4181	B7 Tunceli: Nazımiye, 3 km from Nazımiye to Tunceli	1510	03.06.2014			
<i>Turgeniopsis foeniculacea</i> (Fenzl) Boiss.	4325	B7 Tunceli: Pülümür, between Kaymaztepe and Kovuklu	1545	05.06.2014	Steppe	Rcd.	Unk.
<i>Zosima absinthifolia</i> (Vent.) Link	3929	B7 Tunceli: Center, Alibaba nh.	930	25.05.2014	Steppe		Unk.
APOCYNACEAE Juss.							
<i>Apocynum venetum</i> L. subsp. <i>sarmatiense</i> (Woodson) ined.	5713	B7 Tunceli: Center, N of Çimenli v.	878	25.07.2014	Wet places	Rcd.	Unk.
<i>Cynanchum acutum</i> L.	5703	B7 Tunceli: Pertek, N of Pınarlar v.	1213	25.07.2014	Steppe		Cosmp.
	5755	B7 Tunceli: Pülümür, 45 km from Tunceli to Pülümür (Pülümür valley)	1200	06.08.2014			
<i>Vincetoxicum canescens</i> (Willd.) Decne.	3820	B7 Tunceli: Center, Kocalar-Sütlüce-Tüllük crossroads	1115	23.05.2014	Steppe		Unk.
<i>Vincetoxicum parviflorum</i> Decne.	4948	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Rocky areas, steppe	*	Ir.-Tur.
<i>Vincetoxicum scandens</i> Sommier & Levier	5685	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1075	24.07.2014	Steppe		Unk.
ARISTOLOCHACEAE Juss.							
<i>Aristolochia bottae</i> Jaub. & Spach	3823	B7 Tunceli: Center, between Tüllük and Çıralı, Baldan-Tüllük junction	1490	23.05.2014	Steppe	Rcd.	Ir.-Tur.
ASPARAGACEAE Juss.							
<i>Ornithogalum plurifolium</i> Yild. & Kılıç	6501	B7 Tunceli: Center, 1 km from Sarıtaş to Gözen (İksor), Kalan Valley	1160	30.05.2015	Steppe	*	Ir.-Tur.
ASPLENIACEAE Newman							
<i>Asplenium ceterach</i> L.	4954	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Rock crevices		Unk.
<i>Asplenium haussknechtii</i> God. & Reut.	4456	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Rocky areas in shadow		Unk.
ASTERACEAE Bercht. & J.Presl							
<i>Achillea arabica</i> Kotschy (= <i>Achillea biebersteinii</i> Afanasiev)	3714	B7 Tunceli: Center, between Tunceli and Pertek, junction of Kopuzlar v.	1020	22.05.2014	Steppe		Ir.-Tur.
	3759	B7 Tunceli: Pertek, 1 km S of Beydamı v.	1270	22.05.2014			
	4416	B7 Tunceli: Pülümür, between Dereboyu and Sağlamtaş	1540	05.06.2014			
<i>Achillea coarctata</i> Poir.	4038	B7 Tunceli: Ovacık, 41 km from Tunceli to Ovacık (Munzur Valley)	1175	26.05.2014	Steppe		Unk.
<i>Achillea millefolium</i> L.	6009	B7 Tunceli: Pülümür, between Boğazkaraderbent and Hasangazi	1800	14.08.2014	Steppe		Euro.-Sib.
<i>Achillea nobilis</i> L. subsp. <i>neilreichii</i> (A.Kern.) Velen.	5482	B8 Tunceli: Pülümür, between Derindere and Kırđım	1905	22.07.2014	Steppe		Euro.-Sib.
<i>Achillea pseudoaleppica</i> Hausskn. ex Hub.-Mor.	3979	B7 Tunceli: Center, 1 km from Tunceli-Ovacık-Dedeğaç crossroads to Dedeğaç v. (Munzur Valley)	1060	25.05.2014	degraded oaks forest	* Rcd.	Ir.-Tur.
<i>Achillea schischkinii</i> Sosn.	4445	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Steppe	*	Ir.-Tur.
<i>Anthemis cretica</i> L. subsp. <i>pontica</i> (Willd.) Grierson	4470	B7 Tunceli: Hozat, 3.5 km from Hozat to Pertek, junction of Kardelen v.	1470	06.06.2014	Eroded slopes, steppe		Unk.
	4135	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, junction of Kızılcık v.	1060	02.06.2014			
	3961	B7 Tunceli: Center, 7 km from Tunceli to Ovacık (Munzur Valley)	960	25.05.2014			
<i>Artemisia absinthium</i> L.	5848	B7 Tunceli: Nazımiye, 4 km NE of Büyükyurt (Hakis) v.	1775	07.08.2014	Steppe		Unk.
	5374	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014			
<i>Artemisia marschalliana</i> Spreng.	5567	B8 Tunceli: Pülümür, between Üçdam and Erzurum-Erzincan mainroad	1380	22.07.2014	steppe	Rcd.	Unk.
<i>Carduus lanuginosus</i> Willd.	5826	B7 Tunceli: Ovacık, 1 km NE of Buyer Baba Lake	2820	06.08.2014	Mt. steppe	*	Unk.
<i>Carduus pycnocephalus</i> L. subsp. <i>albidus</i> (M.Bieb.) Kazmi	4081	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Steppe		Unk.

<i>Carlina oligocephala</i> Boiss. & Kotschy	5423	B7 Tunceli: Hozat, between Karaçavuş and Boydaş	1720	21.07.2014	Steppe	Rcd.	Unk.
<i>Centaurea aggregata</i> Fisch. & C.A.Mey. ex DC.	5358	B7 Tunceli: Nazımiye, Sarıyayla v.	1835	20.07.2014	Steppe		Unk.
<i>Centaurea balsamita</i> Lam.	5434	B7 Tunceli: Hozat, W of Boydaş v.	1430	21.07.2014	Steppe, field side, ruderal, degraded oak forest	Rcd.	Ir.-Tur.
	4089	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşcu	867	02.06.2014			
	5718	B7 Tunceli: Mazgirt, 4.5 km from Kızılıçık to Kuşcu	1000	25.07.2014			
<i>Centaurea carduiiformis</i> DC. var. <i>carduiiformis</i>	5212	B7 Tunceli, Çemişgezek, 1 km NE of Alakuş village	1390	29.06.2014	Steppe, field side, ruderal, degraded oak forest	*	Unk.
	5187	B7 Tunceli: Çemişgezek, 5.5 km from Çemişgezek to Alakuş	1296	29.06.2014			
	5433	B7 Tunceli: Hozat, W of Boydaş v.	1430	21.07.2014			
	5641	B7 Tunceli: Ovacık, 30 km from Tunceli to Ovacık (Munzur Valley)	1070	24.07.2014			
	4112	B7 Tunceli: Mazgirt, 7 km from Kızılıçık to Göktepe	935	02.06.2014			
<i>Centaurea carduiiformis</i> DC. var. <i>thriniciifolia</i> (DC.) Wagenitz	4784	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1560	18.06.2014	Steppe	Rcd.	Unk.
<i>Centaurea consanguinea</i> DC.	4490	B7 Tunceli: Çemişgezek, 2 km from Bulgurtepe to Payamdüzü	1060	06.06.2014	Steppe	*	Ir.-Tur.
	5462	B7 Tunceli: Hozat, 1 km E of Uzundal v.	1900	21.07.2014			
	4562	B7 Tunceli: Mazgirt, 1 km from Ortaharman to Sülüntaş	1220	16.06.2014			
	5967	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	875	13.08.2014			
	5283	B7 Tunceli: Pertek, 8 km from Pertek to Tunceli	1300	19.07.2014			
<i>Centaurea derderiifolia</i> Wagenitz	5110	B7 Tunceli: Pertek, 3 km from Elazığ-Pertek-Çemişgezek crossroads to Çemişgezek (1 km S of Çorovan v.)	870	28.06.2014	Steppe	*	Ir.-Tur.
	5289	B7 Tunceli: Pertek, 1 km E of Mercimek v.	1420	19.07.2014			
<i>Centaurea fenzi</i> Reichardt	5432	B7 Tunceli: Hozat, W of Boydaş v.	1430	21.07.2014	degraded oaks forest	*	Ir.-Tur.
<i>Centaurea glastifolia</i> L.	5359	B7 Tunceli: Nazımiye, Sarıyayla v.	1835	20.07.2014	Steppe	Rcd.	Ir.-Tur.
	6011	B8 Tunceli: Pülümür, 4 km from Hasangazi to Balpayam	1832	14.08.2014			
	5503	B8 Tunceli: Pülümür, Kırdım v.	2080	22.07.2014			
<i>Centaurea iberica</i> Trev. ex Sprengel	5296	B7 Tunceli: Center, 14 km from Tunceli to Pülümür (Pülümür Valley)	970	20.07.2014	Ruderal, steppe		Unk.
<i>Centaurea kurdica</i> Reichardt	5133	B7 Tunceli: Pertek, 2 km N of Geçityaka v.	960	28.06.2014	Steppe, field side, ruderal, degraded oak forest	*	Ir.-Tur.
	5213	B7 Tunceli: Pertek, E of Yeniköy v.	1360	29.06.2014			
<i>Centaurea polypodiifolia</i> Boiss. var. <i>polypodiifolia</i>	4519	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe		Unk.
<i>Centaurea polypodiifolia</i> Boiss. var. <i>pseudobehen</i> (Boiss.) Wagenitz	5435	B7 Tunceli: Hozat, W of Boydaş v.	1430	21.07.2014	Steppe		Ir.-Tur.
<i>Centaurea pseudoscabiosa</i> Boiss. & Buhse subsp. <i>araratica</i> (Azn.) Wagenitz	6072	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014	Steppe	Rcd.	Ir.-Tur.
<i>Centaurea pseudoscabiosa</i> Boiss. & Buhse subsp. <i>pseudoscabiosa</i>	5528	B8 Tunceli: Pülümür, Şampaşakaraderbent v.	1820	22.07.2014	Steppe		Unk.
<i>Centaurea pterocaula</i> Trautv.	6207	B7 Tunceli: Hozat, 18 km from Hozat to Ovacık	1967	28.08.2014	Steppe	Rcd.	Ir.-Tur.
	6079	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014			
<i>Centaurea rhizantha</i> C.A.Mey.	5815	B7 Tunceli: Ovacık, 8 km from Sarıgül to Yalmanlar, the walk way of Buyer Baba sanctuary	2680	06.08.2014	Steppe		Ir.-Tur.
	6661	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2516	27.06.2015			
<i>Centaurea rigida</i> Banks & Sol.	5099	B7 Tunceli: Çemişgezek, 2 km from Vişneli to Arpaderen	1080	21.06.2014	Field side, steppe	Rcd.	Ir.-Tur.
	5116	B7 Tunceli: Pertek, 3 km from Elazığ-Pertek-Çemişgezek crossroads to Çemişgezek (1 km S of Çorovan v.)	870	28.06.2014			
<i>Centaurea saligna</i> (K.Koch) Wagenitz	5605	B7 Tunceli: Nazımiye, 6 km E of Ayrılanlı v.	1800	23.07.2014	Steppe	*	Ir.-Tur.
	5665	B7 Tunceli: Ovacık, 12 km from Eğripınar to Yenikonak	1570	24.07.2014			
	5897	B7 Tunceli: Ovacık, Tunceli-Ovacık-	1240	08.08.2014			

		Yakatarla junction					
	5562	B8 Tunceli: Pülümür, 3 km from Bardakçı to Derindere	1740	22.07.2014			
	5498	B8 Tunceli: Pülümür, W of Kırdım v.	2070	22.07.2014			
<i>Centaurea solstitialis</i> L.	5298	B7 Tunceli: Center, 14 km from Tunceli to Pülümür (Pülümür Valley)	970	20.07.2014	Ruderal, steppe		Unk.
<i>Centaurea spectabilis</i> (DC.) Sch.Bip. var. <i>microlopha</i> (Boiss.) Wagenitz	4578	B7 Tunceli: Mazgirt, 1 km S of Geçitveren v.	1345	16.06.2014	Steppe		Ir.-Tur.
	5872	B7 Tunceli: Nazımiye, 6 km NE of Büyükyurt (Hakis) v.	2015	07.08.2014			
	5032	B7 Tunceli: Ovacık, 2 km N of Yenikonak v.	1705	20.06.2014			
	5064	B7 Tunceli: Pertek, 17 km from Pertek to Tunceli	1300	21.06.2014			
	5534	B8 Tunceli: Pülümür, Şampaşakaraderbent v.	1912	22.07.2014			
<i>Centaurea urvillei</i> DC. subsp. <i>hayekiana</i> Wagenitz	5070	B7 Tunceli: Pertek, 4.5 km from Pertek to Tunceli, S of Mercimek v.	1307	21.06.2014	On rock, steppe		Ir.-Tur.
	4010	B7 Tunceli: Center, 15 km from Tunceli to Ovacık (Munzur Valley)	1010	25.05.2014			
<i>Centaurea urvillei</i> DC. subsp. <i>nimrodus</i> (Boiss. & Hausskn.) Wagenitz	5058	B7 Tunceli: Ovacık, between Yarımkaya and Şahverdi	1520	20.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Centaurea virgata</i> Lam.	5299	B7 Tunceli: Center, 14 km from Tunceli to Pülümür (Pülümür Valley)	970	20.07.2014	Steppe, field side, ruderal, degraded oak forest		Ir.-Tur.
<i>Chardinia orientalis</i> (L.) Kuntze	4426	B7 Tunceli: Pülümür, 9 km from Pülümür to Tunceli (Pülümür valley), S of Kangallı v.	1324	05.06.2014	Steppe		Ir.-Tur.
<i>Cichorium intybus</i> L.	Obs.	B7 Tunceli: Mazgirt, 5.5 km from Kale to Doludizgin	1560	15.08.2014	Steppe, degraded oaks forest		Unk.
	Obs.	B7 Tunceli: Center, 3.5 km from Aktuluk to Buğulu	1065	06.06.2014			
<i>Cirsium aristatum</i> DC.	5721	B7 Tunceli: Mazgirt, NE of Akdüven v.	1040	05.08.2014	Steppe	* Rcd.	Ir.-Tur.
	6271	B7 Tunceli: Mazgirt, W of Yenice v.	1140	19.09.2014			
	6272	B7 Tunceli: Mazgirt, W of Yenice v.	1140	19.09.2014			
<i>Cirsium arvense</i> (L.) Scop.	5985	B7 Tunceli: Nazımiye, 10 km NE of Büyükyurt (Hakis) v.	1940	14.08.2014	Wet places		Unk.
	5362	B7 Tunceli: Nazımiye, Sarıyayla v.	1835	20.07.2014			
<i>Cirsium cephalotes</i> Boiss.	5989	B7 Tunceli: Nazımiye, 8 km NE of Büyükyurt (Hakis) v.	2040	14.08.2014	Steppe	Rcd.	Euxine
	5795	B7 Tunceli: Pülümür, between Eğimli and Kocatepe	2341	06.08.2014			
<i>Cirsium haussknechtii</i> Boiss.	6114	B7 Tunceli: Center, 3 km from Çılga v. to Tunceli center	1480	17.08.2014	Steppe		Ir.-Tur.
	5984	B7 Tunceli: Hozat, N of Çıgırlı v.	1660	13.08.2014			
<i>Cirsium leucocephalum</i> (Willd.) Spreng.	6074	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014	Steppe		Ir.-Tur.
<i>Cirsium leuconeurum</i> Boiss. & Hausskn.	6365	B7 Tunceli: Pertek, between Kayabağ and Derebucağı	1655	22.09.2014	Steppe	* Rcd.	Medit.
<i>Cirsium simplex</i> C.A.Mey. subsp. <i>armenum</i> (DC.) Petr.	5832	B7 Tunceli: Ovacık, 800 m NE of Buyer Baba Lake	2890	06.08.2014	Mt. pastures	Rcd.	Unk.
<i>Cirsium simplex</i> C.A.Mey. subsp. <i>simplex</i>	5793	B7 Tunceli: Pülümür, between Eğimli and Kocatepe	2341	06.08.2014	Wet places		Euxine (Mt.)
<i>Cirsium sommieri</i> Petr.	6251	B7 Tunceli: Center, Alacık road	1330	05.09.2014	Oak forest	*	Ir.-Tur.
<i>Cirsium subinermis</i> Fisch. & C.A.Mey.	6016	B8 Tunceli: Pülümür, 2 km from Balpayam to Ağaşenliği	1830	14.08.2014	Wet places		Ir.-Tur.
<i>Cirsium vulgare</i> (Savi) Ten.	6200	B7 Tunceli: Hozat, between Uzundal and Sarsaltuk	1700	28.08.2014	Steppe	Rcd.	Unk.
	6201	B7 Tunceli: Hozat, between Uzundal and Sarsaltuk	1790	28.08.2014			
	5746	B7 Tunceli: Mazgirt, SW of Güleç v.	1105	05.08.2014			
	6191	B7 Tunceli: Center, 6 km from Gökçek to Çıralı	1560	27.08.2014			
<i>Cirsium yıldızianum</i> Arabacı & Dirmenci	6220	B7 Tunceli: Nazımiye, between Güneycik and Beytaş	1665	01.09.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Cnicus benedictus</i> L.	3898	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	865	24.05.2014	Steppe		Unk.
<i>Cota altissima</i> (L.) J.Gay	3793	B7 Tunceli: Center, between Tunceli and Sütlüce, 1.8 km from Sütlüce junction	1030	23.05.2014	Field side, steppe		Unk.
	3878	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014			
<i>Cota austriaca</i> (Jacq.) Sch.Bip.	4071	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Field side, steppe		Unk.
	8099a	B7 Tunceli: Pertek, Kaledibi nh.	895	01.05.2018			

<i>Cota melanoloma</i> (Trautv.) Holub	4340	B7 Tunceli: Pülümür, between Sarıgül and Kocatepe	1900	05.06.2014	Steppe		Ir.-Tur.
<i>Cota tinctoria</i> (L.) J.Gay ex Guss.	3695	B7 Tunceli: Center, Tunceli - Elazığ road, 700 m after Aktuluk v.	930	22.05.2014	Steppe, degraded oak forest		Unk.
	4218	B7 Tunceli: Ovacık, 5 km from Ovacık-Tunceli-Yakatarla to Yakatarla	1620	04.06.2014			
	4321	B7 Tunceli: Pülümür, between Kaymaztepe and Kovuklu	1545	05.06.2014			
	3963	B7 Tunceli: Center, 2.5 km from Tunceli-Ovacık-Dedeoğaç crossroads to Dedeoğaç v. (Munzur Valley)	1100	25.05.2014			
	4099	B7 Tunceli: Mazgirt, 7 km from Kızılcık to Göktepe	935	02.06.2014			
<i>Cota wiedemanniana</i> (Fisch. & C.A.Mey.) Holub	4495	B7 Tunceli: Pertek, between Çemişgezek and Elazığ, 6 km from Bulgurtepe to Payamdüzü	980	06.06.2014	Steppe		Unk.
<i>Cousinia eriocephala</i> Boiss. & Hausskn.	5796	B7 Tunceli: Ovacık, 9 km from Kocatepe to Yalmanlar	2510	06.08.2014	Steppe	*	Ir.-Tur.
<i>Cousinia intertexta</i> Freyn & Sint.	5100	B7 Tunceli: Çemişgezek, 2 km from Vişneli to Arpaderen	1080	21.06.2014	Steppe, field side, ruderal, degraded oak forest	*	Ir.-Tur.
	5460	B7 Tunceli: Hozat, S of Kurukaymak	1405	21.07.2014			
<i>Crepis alpina</i> L.	3737	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Steppe		Unk.
	4067	B7 Tunceli: Ovacık, 32 km from Tunceli to Ovacık (Munzur Valley)	1110	26.05.2014			
	3935	B7 Tunceli: Center, 2.5 km from Tunceli to Ovacık (Munzur Valley)	930	25.05.2014			
	3814	B7 Tunceli: Center, 3 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1070	23.05.2014			
<i>Crepis commutata</i> (Spreng.) Greuter	4496	B7 Tunceli: Pertek, between Çemişgezek and Elazığ, 6 km from Bulgurtepe to Payamdüzü	980	06.06.2014	Steppe	Rcd.	Unk.
<i>Crepis foetida</i> L. subsp. <i>rhoeadifolia</i> (M.Bieb.) Čelak.	3880	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014	Field side, steppe		Unk.
	5471	B8 Tunceli: Pülümür, between Derindere and Bardakçı	1840	22.07.2014			
<i>Crepis sancta</i> (L.) Bornm. subsp. <i>obovata</i> (Boiss. & Noë) Babç.	3932	B7 Tunceli: Center, 2.5 km from Tunceli to Ovacık (Munzur Valley)	930	25.05.2014	Steppe		Unk.
<i>Crupina crupinastrum</i> (Moris) Vis.	4072b	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Field side, steppe		Unk.
	3740	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014			
<i>Crupina vulgaris</i> Cass.	4072a	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Field side, steppe		Unk.
<i>Cyanus depressus</i> (M.Bieb.) Soják	4069	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Field side, steppe		Unk.
<i>Cyanus lanigerus</i> (DC.) Holub	6556	B7 Tunceli: Ovacık, 5 km from Işıkvuran to Ağaçpınar	2140	01.06.2015	Steppe	*	Ir.-Tur.
<i>Cyanus pichleri</i> (Boiss.) Holub	4463	B7 Tunceli: Hozat, 3 km from Dervişcemal to Balkaynar	1675	06.06.2014	Steppe	Rcd.	Unk.
<i>Cyanus triumfetti</i> (All.) Dostál ex Á.Löve & D.Löve	6647	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2204	27.06.2015	Steppe		Unk.
<i>Cymbolaena griffithii</i> (A.Gray) Wagenitz	3891	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek. 2.5 km before Singeç bridge	865	24.05.2014	Steppe		Ir.-Tur.
<i>Cynara aurantica</i> Post	5956	B7 Tunceli: Mazgirt, 2 km from Beylermezrası to Göktepe	870	09.08.2014	Field side, steppe	Rcd.	Ir.-Tur.
	5719	B7 Tunceli: Mazgirt, Kepektaş	860	25.07.2014			
<i>Erigeron acris</i> L. subsp. <i>pycnotrichus</i> (Vierh.) Grierson	5443	B7 Tunceli: Hozat, N of Boydaş v. (Tahar Valley)	1215	21.07.2014	Steppe		Euro.-Sib.
	5373	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014			
<i>Erigeron caucasicus</i> Steven. subsp. <i>venustus</i> (Botsch.) Grierson	5808	B7 Tunceli: Ovacık, 8 km from Sarıgül to Yalmanlar, the walk way of Buyer Baba sanctuary	2680	06.08.2014	Steppe		Unk.
<i>Eupatorium cannabinum</i> L.	6255	B7 Tunceli: Nazımiye, Pülümür Valley, 31 km from Tunceli to Pülümür	1085	05.09.2014	Wet places, steppe		Euro.-Sib.
	5578	B7 Tunceli: Pülümür, 5 km from Erzincan-Erzurum-Tunceli crossroads to Pülümür	1420	22.07.2014			
	5991	B7 Tunceli: Pülümür, 1.5 km from Turnadere to Közlüce	1500	14.08.2014			
<i>Filago arvensis</i> L.	4498	B7 Tunceli: Pertek, between Çemişgezek and Elazığ, 6 km from Bulgurtepe to Payamdüzü	980	06.06.2014	Steppe		Unk.
<i>Garhadiolus hedyppois</i> Jaub. & Spach	4424	B7 Tunceli: Pülümür, 9 km from Pülümür to Tunceli (Pülümür valley), S of Kangallı v.	1324	05.06.2014	Steppe		Ir.-Tur.
<i>Gundelia dersim</i> Vitek, Yüce & Ergin	3704	B7 Tunceli: Center, Tunceli - Elazığ road, 700 m after Aktuluk v.	930	22.05.2014	Steppe	*	Ir.-Tur.

	5086	B7 Tunceli: Çemişgezek, between Çemişgezek and Elazığ, 3 km NW of Sarıbalta v.	1050	21.06.2014			
	3766	B7 Tunceli: Pertek, between Beydamı and Yolkanak	1300	22.05.2014			
	5065	B7 Tunceli: Pertek, 17 km from Pertek to Tunceli	1300	21.06.2014			
<i>Gundelia glabra</i> Mill.	5797	B7 Tunceli: Ovacık, 9 km from Kocatepe to Yalmanlar	2510	06.08.2014	Steppe	*	Ir.-Tur.
<i>Gundelia munzuriensis</i> Vitek, Yüce & Ergin	Obs.	B7 Tunceli: Ovacık, 5 km from Ovacık-Tunceli-Yakatarla to Yakatarla	1620	04.06.2014	Steppe	*	Ir.-Tur.
<i>Gundelia vitekii</i> Armağan	Obs.	B7 Tunceli: Pülümür, Çakırkaya v.	1750	05.06.2014	Steppe	*	Ir.-Tur.
<i>Helianthus tuberosus</i> L.	6286	B7 Tunceli: Pülümür, 4.5 km from Pülümür to Tunceli (Pülümür valley)	1384	20.09.2014	In gardens		Unk.
<i>Helichrysum arenarium</i> (L.) Moench subsp. <i>aucherii</i> (Boiss.) P.H.Davis & Kupicha	5609	B7 Tunceli: Nazımiye, 7 km E of Ayranlı v.	1910	23.07.2014	Steppe	*	Ir.-Tur.
<i>Helichrysum arenarium</i> (L.) Moench subsp. <i>rubicundum</i> (K.Koch) P.H.Davis & Kupicha	6061	B7 Tunceli: Center, 1 km W of Babaocağı v.	1240	15.08.2014	Steppe		Ir.-Tur.
<i>Helichrysum plicatum</i> DC. subsp. <i>plicatum</i>	6101	B7 Tunceli: Pülümür, 6.5 km from Pülümür to Ardiçli (Gersunut) v.	1650	16.08.2014	Steppe		Unk.
<i>Hieracium pannosum</i> Boiss.	5230	B7 Tunceli: Nazımiye, 800 m from Aşağıabat bridge to Büyükyurt (Hakis) v.	1070	30.06.2014	Rocky areas		E.Medit.
<i>Inula acaulis</i> Schott & Kotschy ex Boiss.	5802	B7 Tunceli: Ovacık, 9.5 km from Kocatepe to Yalmanlar (the walk way of Buyer Baba sanctuary)	2600	06.08.2014	Steppe		Unk.
<i>Inula helenium</i> L. subsp. <i>pseudohelenium</i> Grierson	5536	B8 Tunceli: Pülümür, Şampaşakaraderbent v.	1912	22.07.2014	Wet places, degraded oak forest		Ir.-Tur.
<i>Inula macrocephala</i> Boiss. & Kotschy ex Boiss.	6040	B7 Tunceli: Mazgirt, 5.5 km from Kale to Doludizgin	1560	15.08.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Inula oculus-christi</i> L.	5372	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014	Steppe		Euro.-Sib.
<i>Inula thapsoides</i> (M.Bieb. ex Willd.) Spreng.	5422	B7 Tunceli: Hozat, between Karaçavuş and Boydaş	1720	21.07.2014	Steppe	Rcd.	Unk.
<i>Inula viscidula</i> Boiss. & Kotschy	6018	B8 Tunceli: Pülümür, 2 km W of Ağaşenliği	1740	14.08.2014	Steppe	Rcd.	Unk.
<i>Jurinea cataonica</i> Boiss. & Hausskn.	5593	B7 Tunceli: Nazımiye, between Ramazanköy and Ayranlı	1420	23.07.2014	Steppe slopes		Ir.-Tur.
	5895	B7 Tunceli: Pülümür, 42 km from Tunceli to Pülümür (Pülümür Valley), across of Ağılayan Kayalar	1570	07.08.2014			
	6188	B7 Tunceli: Center, 17 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (5 km before Çıralı v.)	1574	27.08.2014			
	6014	B8 Tunceli: Pülümür, 2 km from Balpayam to Ağaşenliği	1830	14.08.2014			
<i>Jurinea pontica</i> Hausskn. & Freyn ex Hausskn.	5177	B7 Tunceli: Çemişgezek, 2.6 km from Çemişgezek to Gedikler	1100	29.06.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Jurinella moschus</i> (Hablitz) Bobrov	4846	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014	Mt. steppe	Rcd.	Ir.-Tur.
	6678	B8 Tunceli: Pülümür, 6 km E of Kırklar v.	2310	09.06.2015			
<i>Klasea cerinthifolia</i> (Sm.) Greuter & Wagenitz	5091	B7 Tunceli: Çemişgezek, center	946	21.06.2014	Steppe		Unk.
	4530	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014			
<i>Klasea serratuloides</i> (DC.) Greuter & Wagenitz	4933	B7 Tunceli: Ovacık, 12 km from Işıkvuran to Eskiğedik	1985	19.06.2014	Steppe		Ir.-Tur.
	4327	B7 Tunceli: Pülümür, 6 km from Kocatepe to Çakırkaya	1510	05.06.2014			
<i>Lactuca hispida</i> L. (= <i>Cephalorrhynchus tuberosus</i> (Steven) Schchian)	4025	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1060	26.05.2014	Degraded oaks forest, steppe		Unk.
	5887	B7 Tunceli: Nazımiye, 8 km NE of Büyükyurt (Hakis) v.	1963	07.08.2014			
	4204	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014			
<i>Lactuca mulgedioides</i> (Vis. & Pančić) Boiss. & Kotschy ex Boiss.	4712	B7 Tunceli: Hozat, between Hozat and Ovacık, 2 km from Yüceldi to Aşlıca	1970	17.06.2014	Steppe		Ir.-Tur.
<i>Lactuca orientalis</i> (Boiss.) Boiss.	6053	B7 Tunceli: Mazgirt, Yukarıoyunca v.	1430	15.08.2014	Steppe		Ir.-Tur.
<i>Lapsana communis</i> L. subsp. <i>intermedia</i> (M.Bieb.) Hayek var. <i>intermedia</i>	3689	B7 Tunceli: Center, Tunceli - Elazığ road, 700 m after Aktuluk v.	930	22.05.2014	Degraded oaks forest, steppe		Unk.
	5834	B7 Tunceli: Ovacık, 800 m NE of Buyer Baba Lake	2910	06.08.2014			

	3967	B7 Tunceli: Center, 2.5 km from Tunceli-Ovacık-Dedeğaç crossroads to Dedeğaç v. (Munzur Valley)	1100	25.05.2014			
	3804	B7 Tunceli: Center, 2 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1050	23.05.2014			
<i>Leontodon asperrimus</i> (Willd.) Endl.	4175	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014	Steppe		Ir.-Tur.
<i>Onopordum acanthium</i> L.	5531	B8 Tunceli: Pülümür, Şampaşakaraderbent v.	1820	22.07.2014	Steppe	Rcd.	Unk.
<i>Onopordum candidum</i> Nábelek	6125	B7 Tunceli: Çemişgezek, 6 km from Çemişgezek to Pertek	1108	17.08.2014	Steppe		Ir.-Tur.
	5717	B7 Tunceli: Mazgirt, 4.5 km from Kızılılık to Kuşcu	1000	25.07.2014			
	6273	B7 Tunceli: Mazgirt, Kızılılık v.	1014	19.09.2014			
<i>Onopordum carduchorum</i> Borm. & Beauverd	5295	B7 Tunceli: Center, 14 km from Tunceli to Pülümür (Pülümür Valley)	970	20.07.2014	Steppe	Rcd.	Ir.-Tur.
	5955	B7 Tunceli: Mazgirt, NE of Aslanyurdu v.	983	09.08.2014			
<i>Onopordum polycephalum</i> Boiss.	5942	B7 Tunceli: Ovacık, 3 km from Ağaçpınar to Işıkvuran	1880	08.08.2014	Steppe	* Rcd.	Ir.-Tur.
	5943	B7 Tunceli: Ovacık, 3 km from Ağaçpınar to Işıkvuran	1880	08.08.2014			
<i>Onopordum tauricum</i> Willd.	5143	B7 Tunceli: Çemişgezek, between Bozağaç and Ulukale villages	1100	28.06.2014	Steppe	Rcd.	Euro.-Sib.
<i>Onopordum turcicum</i> Danin	6082	B8 Tunceli: Pülümür, SE of Kırklar v.	1945	16.08.2014	Steppe		Ir.-Tur.
<i>Picnomon acarna</i> (L.) Cass.	5722	B7 Tunceli: Mazgirt, NE of Akdüven v.	1040	05.08.2014	Steppe		Unk.
<i>Picris hieracioides</i> L.	6048	B7 Tunceli: Mazgirt, 3 km from Kale to Doludizgin	1710	15.08.2014	Steppe	Rcd.	Euro.-Sib.
	6081	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014			
<i>Pilosella echioides</i> (Lum.) F.W.Schultz & Sch.Bip.	6049	B7 Tunceli: Mazgirt, 2 km from Kale to Doludizgin	1750	15.08.2014	Steppe		Unk.
<i>Pilosella verruculata</i> (Link) Soják	5371	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014	Steppe	Rcd.	Unk.
<i>Pilosella x auriculoides</i> (Láng) Arv. -Touv.	5992	B7 Tunceli: Pülümür, 1.5 km from Turnadere to Közlüce	1500	14.08.2014	Steppe, pastures		Unk.
	4058	B7 Tunceli: Ovacık, 48 km from Tunceli to Ovacık, 10 km before Ovacık (Munzur Valley)	1190	26.05.2014			
<i>Psephellus goeksunensis</i> (Aytaç & H.Duman) Greuter & Raab-Straube	5010	B7 Tunceli: Ovacık, 10 km from Eğripınar to Yenikonak	1570	20.06.2014	Steppe	* Rcd.	Unk.
<i>Psephellus pyrrhoblepharus</i> (Boiss.) Wagenitz	6474	B7 Tunceli: Nazımiye, Pülümür Valley, 38 km from Tunceli to Pülümür	1133	29.05.2015	Mt. steppe, rocky areas	*	Ir.-Tur.
	4276	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2120	04.06.2014			
	4338	B7 Tunceli: Pülümür, between Sangül and Kocatepe	1905	05.06.2014			
<i>Ptilostemon afer</i> (Jacq.) Greuter subsp. <i>eburneus</i> Greuter	5317	B7 Tunceli: Nazımiye, 2 km from Nazımiye to Tunceli	1548	20.07.2014	Steppe	*	Ir.-Tur.
<i>Pulicaria dysenterica</i> (L.) Bernh.	6136	B7 Tunceli: Mazgirt, S of Dedeğaç v.	860	26.08.2014	Wet places	Rcd.	Unk.
<i>Pulicaria vulgaris</i> (L.) Gaertn.	6050	B7 Tunceli: Mazgirt, around of Kale v.	1590	15.08.2014	Steppe	Rcd.	Euro.-Sib.
<i>Reichardia dichotoma</i> (Vahl) Freyn	5784	B7 Tunceli: Pülümür, between Kocatepe and Çakırkaya	1710	06.08.2014	Steppe		Ir.-Tur.
<i>Rhagadiolus stellatus</i> (L.) Gaertn.	3728	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Steppe	Rcd.	Medit.
	4174	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014			
<i>Scorzonera incisa</i> DC.	6546	B7 Tunceli: Ovacık, 9 km from Aşağıtorunoba to Çakmaklı	1800	01.06.2015	Steppe		Ir.-Tur.
	6545	B7 Tunceli: Ovacık, 9 km from Aşağıtorunoba to Çakmaklı	1800	01.06.2015			
	4417	B7 Tunceli: Pülümür, between Kabadal and Sağlamtaş	1540	05.06.2014			
<i>Scorzonera latifolia</i> (Fisch. & C.A.Mey.) DC.	5910	B7 Tunceli: Ovacık, SW of Yakatarla v.	1700	08.08.2014	Steppe		Ir.-Tur.
	5472	B8 Tunceli: Pülümür, between Derindere and Bardakçı	1840	22.07.2014			
<i>Scorzonera papposa</i> DC.	4152	B7 Tunceli: Mazgirt, 2 km from Beylermezrası to Aslanyurdu	855	02.06.2014	Steppe		Ir.-Tur.
	3749	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014			
	4103	B7 Tunceli: Mazgirt, 7 km from Kızılılık to Göktepe	935	02.06.2014			
<i>Scorzonera tomentosa</i> L.	5167	B7 Tunceli: Çemişgezek, Tahar valley (Ali Boğazi)	1024	29.06.2014	Steppe	*	Ir.-Tur.
	5908	B7 Tunceli: Ovacık, 9 km from Tunceli-Ovacık-Yakatarla crossroads to Yakatarla	1620	08.08.2014			

<i>Scorzonera veratrifolia</i> Fenzl	6021	B8 Tunceli: Pülümür, S of Ağaşenliği v., between Ağaşenliği and Altınhüseyin	1650	14.08.2014	Steppe		Ir.-Tur.
<i>Senecio cilicius</i> Boiss.	5877	B7 Tunceli: Nazımiye, 6 km NE of Büyükyurt (Hakis) v.	2015	07.08.2014	Steppe	*	Ir.-Tur.
	5377	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014			
<i>Senecio othomae</i> M.Bieb.	5375	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014	Wet places, steppe		Euro.-Sib.
	5772	B7 Tunceli: Pülümür, 16 km from Tunceli to Pülümür (Pülümür Valley)	1240	06.08.2014			
<i>Senecio racemosus</i> (M.Bieb.) DC.	6080	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014	Steppe		Ir.-Tur.
<i>Senecio vernalis</i> Waldst. & Kit.	Obs.	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014	Steppe		Unk.
<i>Siebera pungens</i> (Lam.) J. Gay	4557	B7 Tunceli: Mazgirt, 1 km from Ortaharman to Sülüntaş	1220	16.06.2014	Steppe		Ir.-Tur.
	5726	B7 Tunceli: Mazgirt, N of Akdiiven v.	1150	05.08.2014			
	5705	B7 Tunceli: Pertek, 3 km from Pınarlar to Biçmekaya	1310	25.07.2014			
<i>Tanacetum argenteum</i> (Lam.) Willd. subsp. <i>canum</i> (K.Koch) Grierson	4012	B7 Tunceli: Center, 17 km from Tunceli to Ovacık (Munzur Valley)	1015	25.05.2014	On rocks		Unk.
<i>Tanacetum armenum</i> (DC.) Sch.Bip.	4271	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2100	04.06.2014	Rock crevices		Unk.
	6535	B7 Tunceli: Ovacık, 7 km from Yoncalı to Ağaçpınar	2165	01.06.2015			
<i>Tanacetum balsamita</i> L.	5437	B7 Tunceli: Hozat, between Boydaş and Karaçavuş	1635	21.07.2014	Steppe		Unk.
	5376	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014			
<i>Tanacetum balsamitoides</i> Sch.Bip.	5835	B7 Tunceli: Ovacık, around of Buyer Baba Lake	2940	06.08.2014	Riverside		Unk.
<i>Tanacetum cappadocicum</i> (DC.) Sch.Bip.	4678	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe	*	Ir.-Tur.
<i>Tanacetum cilicium</i> (Boiss.) Grierson	4436	B7 Tunceli: Center, 16 km from Aktuluk to Demirkapı	1395	06.06.2014	Steppe		E.Medit.
<i>Tanacetum mucroniferum</i> Hub.-Mor. & Grierson	5623	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1990	23.07.2014	Rocky areas, steppe	*	Ir.-Tur.
	4316	B7 Tunceli: Ovacık, 1.5 km E of Işıkvuran v.	1960	04.06.2014			
	4237	B7 Tunceli: Ovacık, 18 km from Ovacık-Tunceli-Işıkvuran crossroads to Işıkvuran	1635	04.06.2014			
	4339	B7 Tunceli: Pülümür, between Sargül and Kocatepe	1900	05.06.2014			
<i>Tanacetum nitens</i> (Boiss. & Noë) Grierson	4448	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Rocky areas	* Rcd.	Ir.-Tur.
<i>Tanacetum polycephalum</i> Sch.Bip. subsp. <i>argyrophyllum</i> (K.Koch) Podlech (= <i>Tanacetum argyrophyllum</i> (K.Koch) Tzvelev)	4471	B7 Tunceli: Hozat, 3.5 km from Hozat to Pertek, junction of Kardelen v.	1470	06.06.2014	On rocks	Rcd.	Ir.-Tur.
<i>Tanacetum zahlbruckneri</i> (Náb.) Grierson	4387	B7 Tunceli: Pülümür, 1 km from Çakırkaya and Dereboyu	1800	05.06.2014	Steppe	*	Ir.-Tur.
<i>Taraxacum montanum</i> (C.A.Mey.) DC.	5841	B7 Tunceli: Nazımiye, 2.5 km NE of Büyükyurt (Hakis) v.	1700	07.08.2014	Steppe	Rcd.	Ir.-Tur.
	5753	B7 Tunceli: Nazımiye, Pülümür Valley, 38 km from Tunceli to Pülümür	1150	06.08.2014			
<i>Taraxacum stevenii</i> DC. (= <i>Taraxacum crepidiforme</i> DC.)	5798	B7 Tunceli: Ovacık, 9 km from Kocatepe to Yalmanlar	2510	06.08.2014	Steppe		Ir.-Tur.
<i>Tragopogon bupththalmoides</i> (DC.) Boiss.	6073	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014	Steppe		Ir.-Tur.
<i>Tragopogon porrifolius</i> L. subsp. <i>longirostris</i> (Sch.Bip.) Greuter	4209	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe		Unk.
<i>Tragopogon reticulatus</i> Boiss. & Huet	5799	B7 Tunceli: Ovacık, 9 km from Kocatepe to Yalmanlar	2510	06.08.2014	Steppe		Unk.
<i>Tripleurospermum monticolum</i> (Boiss. & A.Huet) Bornm.	6519	B7 Tunceli: Center, 17 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (8 km before Çıralı v.)	1810	01.06.2015	Steppe	* Rcd.	Unk.
<i>Tussilago farfara</i> L.	Obs.	B7 Tunceli: Center, 14 km from Tunceli to Ovacık (Munzur Valley)	1000	11.04.2015	Steppe		Euro.-Sib.
<i>Turanecio eriospermus</i> (DC.) Hamzaoğlu	5812	B7 Tunceli: Ovacık, 8 km from Sarıgül to Yalmanlar, the walk way of Buyer Baba sanctuary	2680	06.08.2014	Rocky areas, steppe		Ir.-Tur.
	4292	B7 Tunceli: Ovacık, Işıkvuran v.	1710	04.06.2014			
<i>Xanthium spinosum</i> L.	Obs.	B7 Tunceli: Çemişgezek, Bağsuyu v.	980	21.06.2014	Steppe		Unk.

<i>Xanthium strumarium</i> L.	6129	B7 Tunceli: Mazgirt, S of Dedebağ v.	860	26.08.2014	Wet places, steppe		Unk.
<i>Zoegea leptaura</i> L.	4504	B7 Tunceli: Çemişgezek, 5 km from Payamdüzü to Yemişdere	865	06.06.2014	Steppe		Ir.-Tur.
	6134	B7 Tunceli: Mazgirt, S of Dedebağ v.	860	26.08.2014			
BERBERIDACEAE Juss.							
<i>Berberis crataegina</i> DC.	5771	B7 Tunceli: Pülümür, 16 km from Tunceli to Pülümür (Pülümür Valley)	1240	06.08.2014	Steppe		Ir.-Tur.
<i>Bongardia chrysogenum</i> (L.) Spach	6428	B7 Tunceli: Center, 7 km from Tunceli to Pülümür (Pülümür Valley)	934	12.04.2015	Steppe	Rcd.	Ir.-Tur.
<i>Leontice leontopetalum</i> L.	6429	B7 Tunceli: Center, 7 km from Tunceli to Pülümür (Pülümür Valley)	934	12.04.2015	Steppe		Unk.
BETULACEAE Gray							
<i>Alnus glutinosa</i> (L.) Gaertn. subsp. <i>glutinosa</i>	5672	B7 Tunceli: Ovacık, 16 km from Ovacık to Tunceli (Munzur Valley)	1180	24.07.2014	Riverside		Euro.-Sib.
<i>Alnus glutinosa</i> (L.) Gaertn. subsp. <i>antitaurica</i> Yalt.	6065	B7 Tunceli: Center, 4 km from Tunceli center to Babaocağı	930	15.08.2014	Riverside		E.Medit.
<i>Corylus avellana</i> L.	5572	B8 Tunceli: Pülümür, 2 km N of Elmalı	1400	22.07.2014	Riverside		Euro.-Sib.
BORAGINACEAE Juss.							
<i>Alkanna froedimii</i> Rech.f.	4360	B7 Tunceli: Pülümür, 2 km from Sarıgül to Yalmanlar	2200	05.06.2014	Steppe	*	Ir.-Tur.
<i>Alkanna orientalis</i> (L.) Boiss.	5975	B7 Tunceli: Hozat, 3.2 km from Hozat to Pertek	1440	13.08.2014	Steppe		Ir.-Tur.
<i>Anchusa leptophylla</i> Roem. & Schult. subsp. <i>tomentosa</i> (Boiss.) D.F.Chamb.	5272	B7 Tunceli: Pertek, 3 km from Pertek to Tunceli	1257	19.07.2014	Steppe	*	Ir.-Tur.
<i>Asperugo procumbens</i> L.	6445	B7 Tunceli: Center, Alibaba nh.	930	11.04.2015	Steppe	Rcd.	Euro.-Sib.
<i>Brunnera orientalis</i> I.M.Johnst.	6521	B7 Tunceli: Nazımiye, 4 km NE of Büyükyurt (Hakis) v.	1707	01.06.2015	Degraded oak forest, steppe		Euxine
	6472	B7 Tunceli: Nazımiye, Pülümür Valley, 38 km from Tunceli to Pülümür	1127	29.05.2015			
	6539	B7 Tunceli: Ovacık, 7 km from Yoncalı to Ağaçpınar	2015	01.06.2015			
	6400	B7 Tunceli: Center, 12 km from Tunceli to Ovacık (Munzur Valley)	1000	11.04.2015			
<i>Cerintho minor</i> L.	3992	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	1043	25.05.2014	Steppe		Euro.-Sib.
<i>Cynoglossum creticum</i> Mill.	6650	B7 Tunceli: Pülümür, 5 km NW of Ardıçlı (Gersunut) v.	2285	27.06.2015	Steppe		Unk.
	6481	B7 Tunceli: Pülümür, 48 km from Tunceli to Pülümür (Pülümür Valley)	1205	29.05.2015			
	3783	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014			
<i>Cynoglossum vanense</i> Störý	4673	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe	Rcd.	Ir.-Tur.
	4250	Ir.-Tur.	2020	04.06.2014			
	4778	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1560	18.06.2014			
<i>Echium italicum</i> L.	6010	B8 Tunceli: Pülümür, 4 km from Hasangazi to Balpayam	1832	14.08.2014	Steppe		Medit.
<i>Macrotomia densiflora</i> (Ledeb.) McBride	4299	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Ağaçpınar	2123	04.06.2014	Mt. steppe		Ir.-Tur.
	4278	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2150	04.06.2014			
<i>Myosotis sylvatica</i> Hoffm. subsp. <i>rivularis</i> Vestergr.	5953	B7 Tunceli: Ovacık, W of Ziyaret v.	1335	08.08.2014	Riverside		Unk.
<i>Nonea persica</i> Boiss.	4036	B7 Tunceli: Ovacık, 41 km from Tunceli to Ovacık (Munzur Valley)	1175	26.05.2014	Steppe	Rcd.	Ir.-Tur.
<i>Onosma alborosea</i> Fisch. & C.A.Mey. subsp. <i>sanguinolenta</i> (Vatke) Bornm.	4680	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Onosma malatyana</i> Binzet	7516	B7 Tunceli: Mazgirt, 1.5 km from Kızılıcık to Göktepe	965	03.06.2017	Steppe		Ir.-Tur.
<i>Onosma sericea</i> Willd.	Obs.	B7 Tunceli: Center, Tunceli - Elazığ road, 700 m after Aktuluk v.	930	22.05.2014	Steppe		Ir.-Tur.
<i>Paracaryum cristatum</i> (Schreb.) Boiss.	4001	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	995	25.05.2014	Steppe, rocky areas	*	
	4570	B7 Tunceli: Mazgirt, 1 km S of Geçitveren v.	1345	16.06.2014			
	5026	B7 Tunceli: Ovacık, 10 km from Eğripınar to Yenikonak	1570	20.06.2014			

	8100	B7 Tunceli: Pertek, Kaledibi nh.	1240	01.05.2018			
	6645	B7 Tunceli: Pülümür, 5 km from Pülümür to Ardıçlı (Gersunut) v.	1665	27.06.2015			
	4779	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1560	18.06.2014			
	3934	B7 Tunceli: Center, 2.5 km from Tunceli to Ovacık (Munzur Valley)	930	25.05.2014			
<i>Rindera caespitosa</i> (A.DC.) Bunge	4852	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014	Steppe	*	Ir.-Tur.
<i>Rindera lanata</i> (Lam.) Bunge	4451	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Steppe		Unk.
	5011	B7 Tunceli: Ovacık, 10 km from Eğrişınar to Yenikonak	1570	20.06.2014			
<i>Rochelia disperma</i> (L.) K.Koch	4674	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe		Unk.
BRASSICACEAE Burnett							
<i>Aethionema arabicum</i> (L.) Andr. ex DC.	4590	B7 Tunceli: Mazgirt, 4 km from Geçitveren to Akdüven	1110	16.06.2014	Steppe		Unk.
	4575	B7 Tunceli: Mazgirt, 1 km S of Geçitveren v.	1345	16.06.2014			
	3836	B7 Tunceli: Center, 10 km from Aktuluk to Demirkapı	1443	23.05.2014			
	5047	B7 Tunceli: Ovacık, between Yazıören and Gözeler	1400	20.06.2014			
	6490	B7 Tunceli: Pülümür, 1 km from Turnadere to Közlüce	1435	29.05.2015			
	3768	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014			
<i>Aethionema armenum</i> Boiss.	4211	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe		Ir.-Tur.
	5489	B8 Tunceli: Pülümür, between Derindere and Kırdım	2045	22.07.2014			
	4806	B8 Tunceli: Pülümür, Kırklar v.	1945	18.06.2014			
<i>Aethionema carneum</i> (Banks & Sol.) B.Fedtsch.	6691	B7 Tunceli: Center, 1 km from Aktuluk to Buğulu	1015	27.04.2015	Steppe	Rcd.	Ir.-Tur.
	6426	B7 Tunceli: Center, 7 km from Tunceli to Pülümür (Pülümür Valley)	934	12.04.2015			
<i>Aethionema cordatum</i> (Desf.) Boiss.	4249	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2020	04.06.2014	Rocky areas, steppe		Ir.-Tur.
	4896	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2430	18.06.2014			
	3851	B7 Tunceli: Hozat, 3.5 km from Demirkapı to Dervişçemal	1760	23.05.2014			
<i>Aethionema diastrophis</i> Bunge	3991	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	1043	25.05.2014	Steppe	Rcd.	Unk.
	3818	B7 Tunceli: Center, 3 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1070	23.05.2014			
<i>Aethionema grandiflorum</i> Boiss. & Hohen.	4739	B7 Tunceli: Ovacık, 11 km from Ovacık to Hozat, 1 km before junction of Bilgeç v.	1820	17.06.2014	Steppe		Ir.-Tur.
	4737	B7 Tunceli: Ovacık, 12 km from Ovacık to Hozat, 250 m before junction of Bilgeç v.	1850	17.06.2014			
	4225	B7 Tunceli: Ovacık, 8 km from Ovacık-Tunceli-Yakatarla to Yakatarla	1680	04.06.2014			
<i>Aethionema membranaceum</i> (Desv.) DC.	4633	B7 Tunceli: Hozat, between Çıgırlı and Dervişçemal, junction of Buzlupınar	1740	17.06.2014	Steppe		Unk.
	5054	B7 Tunceli: Ovacık, between Gözeler and Yazıören, 1 km S of Mollaaliler v.	1380	20.06.2014			
	4715	B7 Tunceli: Ovacık, 17 km from Ovacık to Hozat, E of Halitpınar v.	1895	17.06.2014			
	4754	B7 Tunceli: Pülümür, 1 km from Pülümür-Tunceli-Turnadere crossroads to Turnadere v.	1455	18.06.2014			
	3821	B7 Tunceli: Center, Kocalar-Sütlüce-Tüllük crossroads	1115	23.05.2014			
	3848	B7 Tunceli: Hozat, 2.5 km from Demirkapı to Dervişçemal	1700	23.05.2014			
<i>Aethionema oppositifolium</i> (Pers.) Hedge	6667	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2516	27.06.2015	Rock crevices	Rcd.	Unk.
<i>Aethionema speciosum</i> Boiss. & A.Huet	4889	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014	Mt. steppe		Ir.-Tur.
	4836	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014			
<i>Alliaria petiolata</i> (M. Bieb.) Cavara & Grande	4729	B7 Tunceli: Hozat, 15 km from Ovacık to Hozat (NE of Halitpınar v.)	1800	17.06.2014	Steppe, shadow areas		Unk.
	4374	B7 Tunceli: Pülümür, Kocatepe v.	1680	05.06.2014			
<i>Alyssum callichroum</i> Boiss. &	4123	B7 Tunceli: Mazgirt, Akpazar, S of Yenice v.	1250	02.06.2014	Steppe		Unk.

Balansa		(N of Şevki mezarı)					
<i>Alyssum condensatum</i> Boiss. & Hausskn. subsp. <i>flexibile</i> (Nyar) T.R.Dudley	5170	B7 Tunceli: Çemişgezek, Tahar valley (Ali Boğazi)	1024	29.06.2014	Steppe		Unk.
	4381	B7 Tunceli: Pülümür, Çakırkaya v.	1750	05.06.2014			
<i>Alyssum contemptum</i> Schott & Kotschy	4230	B7 Tunceli: Ovacık, 5.5 km from Ovacık-Tunceli-Yakatarla to Yakatarla	1670	04.06.2014	Steppe		Ir.-Tur.
<i>Alyssum filiforme</i> Nyár.	4703	B7 Tunceli: Hozat, between Hozat and Ovacık, around of Yüceldi v.	1930	17.06.2014	Steppe	*	Ir.-Tur.
	4646	B7 Tunceli: Hozat, between Karacaköy and Uzundal, the road of Sarısaltuk Türbesi	1730	17.06.2014			
	3838	B7 Tunceli: Center, 12 km from Aktuluk to Demirkapı	1465	23.05.2014			
	3928	B7 Tunceli: Center, Alibaba nh.	930	25.05.2014			
	5326	B7 Tunceli: Nazımiye, 3 km from Nazımiye to Dereova	1600	20.07.2014			
	4182	B7 Tunceli: Nazımiye, 3 km from Nazımiye to Tunceli	1510	03.06.2014			
	4203	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014			
	3921	B7 Tunceli: Pertek, S of Mercimek v.	1305	24.05.2014			
	3787	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014			
	3976	B7 Tunceli: Center, 1 km from Tunceli-Ovacık-Dedeğaç crossroads to Dedeğaç v. (Munzur Valley)	1060	25.05.2014			
5490	B8 Tunceli: Pülümür, W of Kırırım v.	2070	22.07.2014				
<i>Alyssum murale</i> Waldst. & Kit. subsp. <i>murale</i> var. <i>murale</i>	5907	B7 Tunceli: Ovacık, 2.5 km from Tunceli-Ovacık-Yakatarla crossroads to Yakatarla	1400	08.08.2014	Steppe	Rcd.	Unk.
	5044	B7 Tunceli: Ovacık, between Yazıören and Gözeler	1400	20.06.2014			
	5587	B7 Tunceli: Pülümür, between Pülümür and Erzincan, Pülümür Mt.	1900	22.07.2014			
	4219	B7 Tunceli: Ovacık, 5 km from Ovacık-Tunceli-Yakatarla to Yakatarla	1620	04.06.2014			
<i>Alyssum murale</i> Waldst. & Kit. subsp. <i>murale</i> var. <i>alpinum</i> Boiss. ex Nyár.	4807	B8 Tunceli: Pülümür, 2 km E of Kırklar v.	2100	18.06.2014	Steppe	*	Unk.
<i>Alyssum ochroleucum</i> Boiss. & A.Huet	4274	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2120	04.06.2014	Steppe	*	Ir.-Tur.
<i>Alyssum pateri</i> Nyár. subsp. <i>pateri</i>	4869	B8 Tunceli: Pülümür, Şampaşakaraderbent v.	2080	18.06.2014	Pastures	*	Ir.-Tur.
<i>Alyssum pateri</i> Nyár. subsp. <i>prostratum</i> (Nyár.) T.R.Dudley	4553	B7 Tunceli: Mazgirt, 1 km from Ortaharman to Sülüntaş	1220	16.06.2014	Steppe	*	Ir.-Tur.
	5043	B7 Tunceli: Ovacık, between Yazıören and Gözeler	1400	20.06.2014			
<i>Alyssum peltarioides</i> Boiss. subsp. <i>virgatifforme</i> (Nyár.) T.R.Dudley	5937	B7 Tunceli: Ovacık, 5 km from Işıkvuran to Ağaçpınar	2133	08.08.2014	Mt. steppe	*	Unk.
	4911	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Ağaçpınar	2110	19.06.2014			
	5588	B7 Tunceli: Pülümür, between Pülümür and Erzincan, Pülümür Mt.	1900	22.07.2014			
	4840	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014			
<i>Alyssum sibiricum</i> Willd.	3896	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	865	24.05.2014	Steppe		Unk.
<i>Alyssum simplex</i> Rudolph	4477	B7 Tunceli: Hozat, 2 km NE of Akpınar v.	1350	06.06.2014	Steppe		Unk.
	3985	B7 Tunceli: Center, 10 km from Tunceli to Ovacık (Munzur Valley)	960	25.05.2014			
<i>Alyssum strictum</i> Willd.	4412	B7 Tunceli: Pülümür, between Dereboyu and Sağlantaş	1610	05.06.2014	Steppe		Ir.-Tur.
	4347	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014			
<i>Alyssum strigosum</i> Banks & Sol.	6418	B7 Tunceli: Center, Örenözü Nature Park (Pülümür Valley)	920	12.04.2015	Steppe		Unk.
	4020	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1060	26.05.2014			
<i>Alyssum virgatum</i> Nyár.	5938	B7 Tunceli: Ovacık, 5 km from Işıkvuran to Ağaçpınar	2133	08.08.2014	Steppe	* Rcd.	Unk.
	5586	B7 Tunceli: Pülümür, between Pülümür and Erzincan, Pülümür Mt.	1900	22.07.2014			
<i>Alyssum xanthocarpum</i> Boiss.	4019	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1060	26.05.2014	Steppe slopes		Unk.
<i>Anchonium elichrysofolium</i> (DC.) Boiss.	5819	B7 Tunceli: Ovacık, 8 km from Sarıgül to Yalmanlar, the walk way of Buyer Baba	2680	06.08.2014	Mt. steppe		Ir.-Tur.

		sanctuary					
<i>Arabis alpina</i> L.	4675	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Rocky areas, steppe		Unk.
	4262	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2100	04.06.2014			
<i>Aubrieta libanotica</i> Boiss. & Hohen.	4662	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Rock crevices		Unk.
	6487	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1528	29.05.2015			
<i>Aurinia rupestris</i> (Sweet) Cullen & T.R.Dudley subsp. <i>cyclocarpa</i> (Boiss.) Cullen & T.R.Dudley	4280	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2150	04.06.2014	Rocky areas, steppe	*	Unk.
	4884	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014			
<i>Barbarea auriculata</i> Hausskn. ex Bomm.	6532	B7 Tunceli: Ovacık, 1 km W of Ağaçpınar	1934	01.06.2015	Riverside	*	Ir.-Tur.
	6500	B7 Tunceli: Pülümür, 2 km from Hiver to Dağyolu (Pülümür Mt.)	1864	29.05.2015		Rcd.	
<i>Barbarea brachycarpa</i> Boiss.	6526	B7 Tunceli: Nazımiye, 12 km NE of Büyükyurt (Hakis) v., (5 km SE of Aşağımarkosör)	1926	01.06.2015	Riverside	Rcd.	Ir.-Tur.
<i>Capsella rubella</i> Reut.	4582	B7 Tunceli: Mazgirt, 1 km E of Geçitveren v.	1270	16.06.2014	Steppe	Rcd.	Medit.
<i>Cardamine uliginosa</i> M.Bieb.	6413	B7 Tunceli: Center, Örenönu Nature Park (Pülümür Valley)	920	12.04.2015	Wet meadows	*	Unk.
	4861	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014			
<i>Clypeola jonthlaspi</i> L.	4335	B7 Tunceli: Pülümür, 5 km from Kocatepe to Çakırkaya	1520	05.06.2014	On rocks	Rcd.	Unk.
<i>Coluteocarpus vesicaria</i> (L.) Holmboe	4195	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe	*	Ir.-Tur.
	5804	B7 Tunceli: Ovacık, 9.5 km from Kocatepe to Yalmanlar (the walk way of Buyer Baba sanctuary)	2600	06.08.2014			
<i>Conringia clavata</i> Boiss.	6442	B7 Tunceli: Center, Alibaba nh.	930	11.04.2015	Steppe		Unk.
	6697	B7 Tunceli: Center, between Ambar and Karakoç	970	20.04.2015			
	4757	B7 Tunceli: Pülümür, 1 km from Pülümür-Tunceli-Turnadere crossroads to Turnadere v.	1455	18.06.2014			
<i>Conringia orientalis</i> (L.) Dumort	4591	B7 Tunceli: Mazgirt, 4 km from Geçitveren to Akdüven	1110	16.06.2014	Steppe	Rcd.	Unk.
<i>Crambe orientalis</i> L.	Obs.	B7 Tunceli: Mazgirt, 7 km from Kızılcık to Göktepe	935	02.06.2014	Steppe		Unk.
<i>Draba brunifolia</i> Steven	4892	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014	Rocky areas, steppe		Unk.
	4833	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014			
<i>Draba nuda</i> (Bélangier) Al-Shehbaz & M.Koch	6423	B7 Tunceli: Pülümür, 20 km from Pülümür to Tunceli (Pülümür valley)	1215	12.04.2015	Steppe		Unk.
<i>Draba rigida</i> Willd.	6396	B7 Tunceli: Center, 12 km from Tunceli to Ovacık (Munzur Valley)	1000	11.04.2015	On rocks	Rcd.	Unk.
<i>Draba verna</i> L.	6419	B7 Tunceli: Center, Örenönu Nature Park (Pülümür Valley)	920	12.04.2015	Meadows		Unk.
<i>Eruca vesicaria</i> (L.) Cav.	3872	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014	Steppe	Rcd.	Unk.
<i>Erysimum crassipes</i> Fisch. & C.A.Mey.	4716	B7 Tunceli: Ovacık, 17 km from Ovacık to Hozat, E of Halitpınar v.	1895	17.06.2014	Steppe	Rcd.	Unk.
	4428	B7 Tunceli: Pülümür, 9 km from Pülümür to Tunceli (Pülümür valley), S of Kangallı v.	1324	05.06.2014			
<i>Erysimum leucanthemum</i> (Steppehan ex Willd.) B.Fedtsch.	5006	B7 Tunceli: Ovacık, 3.5 km from Eğripınar to Yenikonak	1427	20.06.2014	Steppe		Unk.
	4859	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014			
<i>Erysimum pycnophyllum</i> J.Gay	6495	B7 Tunceli: Pülümür, 7 km from Pülümür to Erzincan (Pülümür Mt.)	1841	29.05.2015	Steppe		Ir.-Tur.
<i>Erysimum uncinatifolium</i> Boiss.	6523	B7 Tunceli: Nazımiye, around of Dereova v., 5 km SE of Aşağımarkosör	1970	01.06.2015	Steppe		Euro.-Sib.
	4838	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014			
<i>Fibigia clypeata</i> (L.) Medik. subsp. <i>clypeata</i> var. <i>eriocarpa</i> (DC.) Post	4023	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1060	26.05.2014	Steppe, degraded oak forest, dried river bad		Unk.
	4049	B7 Tunceli: Ovacık, 46 km from Tunceli to Ovacık, 12 km before Ovacık (Munzur Valley)	1213	26.05.2014			
	4413	B7 Tunceli: Pülümür, between Dereboyu and Sağlamtaş	1610	05.06.2014			

<i>Heldreichia bupleurifolia</i> Boiss. subsp. <i>bupleurifolia</i>	5821	B7 Tunceli: Ovacık, NE of Buyer Baba Lake	2745	06.08.2014	Mt. steppe		Unk.
<i>Hesperis bicuspidata</i> (Willd.) Poir.	4850	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014	Steppe	*	Ir.-Tur.
	4851	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014			
<i>Hesperis breviscapa</i> Boiss.	4914	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Ağaçpınar	2110	19.06.2014	Steppe	*	Ir.-Tur.
	4331	B7 Tunceli: Pülümür, 6 km from Kocatepe to Çakırkaya	1510	05.06.2014			
<i>Hesperis matronalis</i> L.	4711	B7 Tunceli: Hozat, between Hozat and Ovacık, 2 km from Yüceldi to Aşlıca	1970	17.06.2014	Steppe		Unk.
<i>Hesperis pendula</i> DC. subsp. <i>campicarpa</i> (Boiss.) Dvorak	4949	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Rock crevices, steppe	*	E.Medit.
	4997	B7 Tunceli: Ovacık, Ziyaret v., N of Munzur Gözeleri	1400	20.06.2014			
<i>Hesperis persica</i> Boiss.	4241	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2050	04.06.2014	Mt. steppe	Rcd.	Ir.-Tur.
<i>Hesperis thyrsoidea</i> Boiss.	4189	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe		Ir.-Tur.
	4734	B7 Tunceli: Hozat, 14 km from Ovacık to Hozat (NE of Halitpınar v.)	1720	17.06.2014			
	4386	B7 Tunceli: Pülümür, 1 km from Çakırkaya and Dereboyu	1800	05.06.2014			
	4414	B7 Tunceli: Pülümür, between Dereboyu and Sağlantaş	1610	05.06.2014			
<i>Hirschfeldia incana</i> (L.) Lagr.-Foss	4485	B7 Tunceli: Çemişgezek, 2 km from Bulgurtepe to Payamdüzü	1060	06.06.2014	Steppe	Rcd.	Unk.
<i>Hornungia petraea</i> (L.) R.Br.	6438	B7 Tunceli: Nazımiye, 33 km from Tunceli to Pülümür (Pülümür Valley)	1061	11.04.2015	Steppe	Rcd.	Unk.
	6402	B7 Tunceli: Center, 15 km from Tunceli to Ovacık (Munzur Valley)	995	11.04.2015			
<i>Iberis simplex</i> DC.	4131	B7 Tunceli: Mazgirt, Akpazar, S of Yenice v. (S of Şevki mezarı)	1270	02.06.2014	Steppe		Unk.
	4923	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Eskigedik	2170	19.06.2014			
<i>Isatis candolleana</i> Boiss.	4000	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	995	25.05.2014	Steppe	*	Ir.-Tur.
	4191	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014			
	4389	B7 Tunceli: Pülümür, 2-3 km from Çakırkaya and Dereboyu	1830	05.06.2014			
	3801	B7 Tunceli: Center, 2 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1050	23.05.2014			
<i>Isatis cappadocica</i> Desv. subsp. <i>cappadocica</i>	3853	B7 Tunceli: Hozat, 3.5 km from Demirkapı to Dervişçemal	1760	23.05.2014	Steppe		Ir.-Tur.
<i>Isatis cappadocica</i> Desv. subsp. <i>macrocarpa</i> (Jaub. & Spach) P.H.Davis	5025	B7 Tunceli: Ovacık, 10 km from Eğripınar to Yenikonak	1570	20.06.2014	steppe		Ir.-Tur.
<i>Isatis cappadocica</i> Desv. subsp. <i>steviana</i> (Trautv.) P.H.Davis	5876	B7 Tunceli: Nazımiye, 6 km NE of Büyükyurt (Hakis) v.	2015	07.08.2014	Steppe		Unk.
<i>Isatis cochlearis</i> Boiss.	3841	B7 Tunceli: Center, 12 km from Aktuluk to Demirkapı	1430	23.05.2014	Steppe	Rcd.	Ir.-Tur.
<i>Isatis glauca</i> Aucher ex Boiss.	5092	B7 Tunceli: Çemişgezek, center	946	21.06.2014	Steppe	Rcd.	Ir.-Tur.
	5380	B7 Tunceli: Nazımiye, 2.5 km E of Sarıayla v.	2000	20.07.2014			
	5275	B7 Tunceli: Pertek, 8 km from Pertek to Tunceli	1300	19.07.2014			
<i>Isatis spectabilis</i> P.H.Davis	4908	B7 Tunceli: Pülümür, 2.5 km NW of Ardıçlı (Gersunut) v.	1913	18.06.2014	Steppe	*	Ir.-Tur.
<i>Isatis tinctoria</i> L. subsp. <i>tomentella</i> (Boiss.) P.H.Davis	4731	B7 Tunceli: Hozat, 15 km from Ovacık to Hozat (NE of Halitpınar v.)	1800	17.06.2014	Steppe		Unk.
	5650	B7 Tunceli: Ovacık, 36 km from Tunceli to Ovacık (Munzur Valley)	1150	24.07.2014			
<i>Isatis undulata</i> Aucher ex Boiss.	5591	B7 Tunceli: Pülümür, between Pülümür and Erzincan, Pülümür Mt.	1900	22.07.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Matthiola longipetala</i> (Vent.) DC.	3871	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014	Steppe	Rcd.	Unk.
<i>Myagrum perfoliatum</i> L.	4074	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Steppe	Rcd.	Unk.
<i>Pseudosempervivum aucheri</i> (Boiss.) Pobed.	4297	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Ağaçpınar	2123	04.06.2014	Mt. steppe	*	Ir.-Tur.
	4326	B7 Tunceli: Pülümür, 6 km from Kocatepe to Çakırkaya	1510	05.06.2014			
	4848	B8 Tunceli: Pülümür, 500 m N of Balpayam	2400	18.06.2014			

		(3-4 km S of Kırklar v.)					
<i>Ricotia aucheri</i> (Boiss.) B.L.Burt	4916	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Ağaçpınar	2110	19.06.2014	Steppe		Ir.-Tur.
<i>Sinapis arvensis</i> L.	3870	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014	Steppe	Rcd.	Unk.
<i>Sisymbrium altissimum</i> L.	4082	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Ruderal, steppe		Unk.
	6696	B7 Tunceli: Center, Alibaba nh.	920	20.04.2015			
	4980	B7 Tunceli: Center, Gözen (İksor) v.	1490	19.06.2014			
<i>Sisymbrium loeselii</i> L.	5679	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1075	24.07.2014	Ruderal, steppe		Unk.
<i>Strigosella africana</i> (L.) Botsch.	6462	B7 Tunceli: Nazımiye, Pülümür Valley, 25 km from Tunceli to Pülümür	1035	29.05.2015	Ruderal		Unk.
<i>Tchihatchewia isatidea</i> Boiss.	4239	B7 Tunceli: Ovacık, 18 km from Ovacık-Tunceli-Işıkvuran crossroads to Işıkvuran	1635	04.06.2014	Steppe, rocky areas	*	Ir.-Tur.
	3828	B7 Tunceli: Center, 14 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (11 km before Çıralı v.)	1800	23.05.2014			
	3960	B7 Tunceli: Center, 8 km from Tunceli to Ovacık (Munzur valley)	945	25.05.2014			
	3819	B7 Tunceli: Center, 3 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1070	23.05.2014			
<i>Thlaspi arvense</i> L.	4359	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014	Steppe, degraded oak forest	Rcd.	Unk.
	4854	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014			
<i>Thlaspi bornmuelleri</i> (Rech.f.) Hedge	4290	B7 Tunceli: Ovacık, Işıkvuran v.	1710	04.06.2014	Ruderal, steppe	*	Ir.-Tur.
	4385	B7 Tunceli: Pülümür, 1 km from Çakırkaya and Dereboyu	1800	05.06.2014			
	6499	B7 Tunceli: Pülümür, 1.8 km from Hiver to Dağyolu (Pülümür Mt.)	1891	29.05.2015			
<i>Thlaspi huetii</i> Boiss.	6369	B7 Tunceli: Nazımiye, 31 km from Tunceli to Pülümür (Pülümür Valley)	1048	10.02.2015	Steppe	Rcd.	Unk.
<i>Thlaspi kurdicum</i> Hedge	4841	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014	Mt. steppe	Rcd.	Ir.-Tur.
<i>Turritis laxa</i> (Sibth. & Sm.) Hayek	6522	B7 Tunceli: Nazımiye, around of Dereova v., 5 km SE of Aşağımarkosör	1937	01.06.2015	Steppe	Rcd.	Unk.
CAMPANULACEAE Juss.							
<i>Asyneuma amplexicaule</i> (Willd.) Hand.-Mazz.	4686	B7 Tunceli: Hozat, 700 m N of Uzundal v.	1700	17.06.2014	Steppe		Unk.
<i>Asyneuma lobelioides</i> (Willd.) Hand. -Mazz.	4904	B7 Tunceli: Pülümür, 5 km NW of Ardıçlı (Gersunut) v.	1975	18.06.2014	Steppe		Ir.-Tur.
<i>Campanula conferta</i> A.DC.	4641	B7 Tunceli: Hozat, between Karacaköy and Uzundal, the road of Sarısaltuk Türbesi	1730	17.06.2014	Steppe		Unk.
<i>Campanula glomerata</i> L. subsp. <i>hispida</i> (Witasek) Hayek	3843	B7 Tunceli: Center, 12 km from Aktuluk to Demirkapı	1430	23.05.2014	Steppe		Euro.- Sib.
<i>Campanula hedgii</i> P.H.Davis	6112	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2516	16.08.2014	On rocks	*	Unk.
<i>Campanula munzurenensis</i> P.H.Davis	4835	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014	Mt. steppe	*	Unk.
<i>Campanula oligosperma</i> Dambolt	4935	B7 Tunceli: Ovacık, 12 km from Işıkvuran to Eskigedik	1985	19.06.2014	Steppe	*	Ir.-Tur.
<i>Campanula propinqua</i> Fisch. & C.A.Mey	3748	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014	Steppe		Unk.
<i>Campanula quercetorum</i> Hub.- Mor. & C.Simon	4965	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Rock crevices	*	Ir.-Tur.
<i>Campanula reuteriana</i> Boiss. & Balansa	4581	B7 Tunceli: Mazgirt, 1 km E of Geçitveren v.	1270	16.06.2014	Steppe		Unk.
<i>Campanula sclerotricha</i> Boiss.	5918	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2005	08.08.2014	Steppe		Unk.
<i>Campanula stevenii</i> M.Bieb.	4810	B8 Tunceli: Pülümür, 2 km E of Kırklar v.	2100	18.06.2014	Steppe		Ir.-Tur.
<i>Campanula tridentata</i> Schreb.	4872	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014	Rocky areas, steppe	Rcd.	Unk.
<i>Campanula yildirimlii</i> Kit Tan & Sorger	5674	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1075	24.07.2014	Rock crevices	*	Unk.
<i>Legousia falcata</i> (Ten.) Fritsch ex Janch.	6468	B7 Tunceli: Nazımiye, Pülümür Valley, 25 km from Tunceli to Pülümür	1035	29.05.2015	Oak forest	Rcd.	Medit.
<i>Legousia pentagonia</i> (L.) Thell.	4540	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	985	16.06.2014	Steppe		E.Medit.
CANNABACEAE Martinov							
<i>Celtis australis</i> L. subsp. <i>caucasica</i> (Willd.) C.C.Towns.	6233	B7 Tunceli: Center, 10 km from Tunceli to Pülümür (Pülümür Valley)	949	05.09.2014	Steppe	Rcd.	Unk.
	6236	B7 Tunceli: Center, 14 km from Tunceli to Pülümür (Pülümür Valley)	965	05.09.2014			

<i>Celtis tournefortii</i> Lam.	6143	B7 Tunceli: between Tunceli - Kovancılar, 1 km after Kızılcık v.	1110	26.08.2014	Steppe		Unk.
CAPRIFOLIACEAE Juss.							
<i>Centranthus longiflorus</i> Steven	4003	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	995	25.05.2014	Steppe		Ir.-Tur.
	5417	B7 Tunceli: Hozat, 2 km from Dervişcemal to Hozat	1730	21.07.2014			
<i>Cephalaria syriaca</i> (L.) Schrad.	4075	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Ruderal		Unk.
<i>Dipsacus laciniatus</i> L.	5448	B7 Tunceli: Hozat, N of Boydaş v. (Tahar Valley)	1215	21.07.2014	Steppe		Unk.
<i>Lonicera orientalis</i> Lam.	5012	B7 Tunceli: Ovacık, 10 km from Eğrişinar to Yenikonak	1570	20.06.2014	Oak forest, steppe	*	Unk.
	5411	B7 Tunceli: Hozat, 9 km from Demirkapı to Dervişcemal	1765	21.07.2014			
	6180	B7 Tunceli: Center, 15 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (10 km before Çıralı v.)	1844	27.08.2014			
<i>Morina persica</i> L.	5189	B7 Tunceli: Çemişgezek, 5.5 km from Çemişgezek to Alakuş	1296	29.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Ptercephalus plumosus</i> (L.) Coulter	4615	B7 Tunceli: Mazgirt, 8 km from Çukur to Güleç	1365	16.06.2014	Steppe	Rcd.	Unk.
<i>Scabiosa crinita</i> Kotschy & Boiss.	4688	B7 Tunceli: Hozat, 700 m N of Uzundal v.	1700	17.06.2014	Steppe		Ir.-Tur.
<i>Scabiosa micrantha</i> Desf.	4013	B7 Tunceli: Center, 17 km from Tunceli to Ovacık (Munzur Valley)	1015	25.05.2014	Steppe		Unk.
<i>Scabiosa persica</i> Boiss.	4077	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Scabiosa rotata</i> M.Bieb.	5048	B7 Tunceli: Ovacık, between Yazıören and Gözeler	1400	20.06.2014	Steppe		Ir.-Tur.
<i>Valeriana alliariifolia</i> Adams	4938	B7 Tunceli: Ovacık, 4 km from Eskigedik to Işıkvuran	1890	19.06.2014	Riverside		Unk.
	6071	B8 Tunceli: Pülümür, Hasangazi v.	1740	16.08.2014			
<i>Valeriana sisymbriifolia</i> Vahl	4284	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2300	04.06.2014	Rock crevices, steppe		Ir.-Tur.
	6517	B7 Tunceli: Center, 14 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (11 km before Çıralı v.)	1770	01.06.2015			
<i>Valerianella coronata</i> (L.) DC.	3680	B7 Tunceli: Center, Tunceli - Elaziğ road, 700 m after Aktuluk v.	930	22.05.2014	Field side, steppe		Unk.
	6467	B7 Tunceli: Nazımiye, Pülümür Valley, 25 km from Tunceli to Pülümür	1035	29.05.2015			
	3765	B7 Tunceli: Pertek, between Beydamı and Yolkanak	1300	22.05.2014			
	3931	B7 Tunceli: Center, 2.5 km from Tunceli to Ovacık (Munzur Valley)	930	25.05.2014			
<i>Valerianella dactylophylla</i> Boiss. & Hohen.	3729	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Steppe		Ir.-Tur.
	7520	B7 Tunceli: Pertek, 9 km from Pertek to Tunceli	1511	03.06.2017			
<i>Valerianella glomerata</i> Boiss. & Balansa	4576a	B7 Tunceli: Mazgirt, 1 km S of Geçitveren v.	1345	16.06.2014	Steppe	* Rcd.	Ir.-Tur.
	7521	B7 Tunceli: Pertek, 9 km from Pertek to Tunceli	1511	03.06.2017			
<i>Valerianella lasiocarpa</i> Steven ex Betcke	4576b	B7 Tunceli: Mazgirt, 1 km S of Geçitveren v.	1345	16.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Valerianella pumila</i> (L.) DC.	8102	B7 Tunceli: Pertek, Kaledibi nh.	1240	01.05.2018	Steppe	Rcd.	Unk.
	6506	B7 Tunceli: Center, 1 km from Sarıtaş to Gözen (İksor), Kalan Valley	1160	30.05.2015			
<i>Valerianella uncinata</i> (M.Bieb.) Dufur.	6450	B7 Tunceli: Center, 17 km from Tunceli to Ovacık (Munzur Valley)	1007	28.05.2015	Steppe	Rcd.	Ir.-Tur.
<i>Valerianella vesicaria</i> (L.) Moench	3677	B7 Tunceli: Center, Tunceli - Elaziğ road, 700 m after Aktuluk v.	930	22.05.2014	Steppe		Unk.
	3722	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014			
CARYOPHYLLACEAE Juss.							
<i>Acanthophyllum oppositiflorum</i> Aytaç	5966	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	875	13.08.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Acanthophyllum verticillatum</i> C.A.Mey.	6130	B7 Tunceli: Mazgirt, S of Dedebağ v.	860	26.08.2014	Steppe	Rcd.	Ir.-Tur.
	6116	B7 Tunceli: Pertek, 2 km W of Bulgurtepe v.	1060	17.08.2014			
	5281	B7 Tunceli: Pertek, 8 km from Pertek to Tunceli	1300	19.07.2014			
	5693	B7 Tunceli: Center, 10 km from Tunceli to Ovacık (Munzur Valley)	970	24.07.2014			
<i>Agrostemma githago</i> L.	3730	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Field side, steppe	Rcd.	Unk.

<i>Arenaria kotschyana</i> Fenzl	4952	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Rock crevices	*	Unk.
<i>Arenaria serpyllifolia</i> L.	4346	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014	Steppe		Unk.
	4793	B7 Tunceli: Pülümür, SE of Közlüce v.	1620	18.06.2014			
<i>Cerastium chlorifolium</i> Fisch. & C.A.Mey.	4775	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1560	18.06.2014	Steppe	Rcd.	Unk.
<i>Cerastium davuricum</i> Fisch. ex Spreng.	4710	B7 Tunceli: Hozat, between Hozat and Ovacık, 2 km from Yüceldi to Aşlıca	1970	17.06.2014	Wet meadows, oak forest		Euro.-Sib.
	4694	B7 Tunceli: Hozat, 4.5 km from Uzundal to Yüceldi	1970	17.06.2014			
	3707	B7 Tunceli: Center, between Tunceli and Pertek, junction of Kopuzlar v.	1020	22.05.2014			
<i>Cerastium dichotomum</i> L.	6694	B7 Tunceli: Center, 2 km E of Buğulu v.	1173	27.04.2015	Oak forest		Unk.
<i>Cerastium longifolium</i> Willd.	4822	B8 Tunceli: Pülümür, E of Kırklar v.	2260	18.06.2014	Steppe		Ir.-Tur.
<i>Cerastium purpurascens</i> Adams	6674	B8 Tunceli: Pülümür, 6 km E of Kırklar v.	2315	09.06.2015	Steppe		Unk.
<i>Dianthus calocephalus</i> Boiss.	4785	B7 Tunceli: Pülümür, SE of Közlüce v.	1620	18.06.2014	Steppe scree		Unk.
<i>Dianthus floribundus</i> Boiss.	5123	B7 Tunceli: Pertek, 3 km from Elazığ-Pertek-Çemişgezek crossroads to Çemişgezek (1 km S of Çorovan v.)	870	28.06.2014	Steppe		Ir.-Tur.
<i>Dianthus orientalis</i> Adams	4465	B7 Tunceli: Hozat, 3.5 km from Hozat to Pertek, junction of Kardelen v.	1470	06.06.2014	Rocky areas, steppe		Unk.
	4197	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014			
	4956	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014			
	3958	B7 Tunceli: Center, 8 km from Tunceli to Ovacık (Munzur valley)	945	25.05.2014			
<i>Dianthus tabrisianus</i> Bien. ex Boiss.	4628	B7 Tunceli: Hozat, between Çığırılı and Dervişçemal, junction of Buzlupınar	1740	17.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Dianthus zederbaueri</i> Vierh.	5002	B7 Tunceli: Ovacık, 3.5 km from Eğripınar to Yenikonak	1427	20.06.2014	steppe	* Rcd.	Ir.-Tur.
<i>Dianthus zonatus</i> Fenzl var. <i>aristatus</i> (Boiss.) Reeve	4616	B7 Tunceli: Mazgirt, 5 km from Çukur to Güleç	1430	16.06.2014	Rocky areas, steppe	Rcd.	Unk.
	4767	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1575	18.06.2014			
<i>Eremogone acutisepala</i> (Hausskn. ex F.Williams) Ikonn.	5184	B7 Tunceli: Çemişgezek, 5.5 km from Çemişgezek to Alakuş	1296	29.06.2014	Steppe	*	Ir.-Tur.
	4618	B7 Tunceli: Mazgirt, 5 km from Çukur to Güleç	1430	16.06.2014			
	4601	B7 Tunceli: Mazgirt, 4 km from Akdüven to Güleç	1090	16.06.2014			
	5038	B7 Tunceli: Ovacık, 3 km from Gözeler to Yazıören	1483	20.06.2014			
	4213	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014			
<i>Eremogone blepharophylla</i> (Boiss.) Ikonn.	4827	B8 Tunceli: Pülümür, E of Kırklar v.	2300	18.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Eremogone gypsophiloides</i> (L.) Fenzl	4449	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Steppe		Ir.-Tur.
	4450	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014			
	4648	B7 Tunceli: Hozat, between Karacaköy and Uzundal, the road of Sarısaltuk Türbesi	1730	17.06.2014			
	4740	B7 Tunceli: Ovacık, 11 km from Ovacık to Hozat, 1 km before junction of Bilgeç v.	1820	17.06.2014			
	4770	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1575	18.06.2014			
	4808	B8 Tunceli: Pülümür, 2 km E of Kırklar v.	2100	18.06.2014			
<i>Eremogone ledebouriana</i> (Fenzl) Ikonn.	5001	B7 Tunceli: Ovacık, 3.5 km from Eğripınar to Yenikonak	1427	20.06.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Eremogone macrantha</i> (Schischk.) Ikonn.	4282	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2150	04.06.2014	Steppe	Rcd.	Ir.-Tur.
	4349	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014			
	4823	B8 Tunceli: Pülümür, E of Kırklar v.	2260	18.06.2014			
<i>Eremogone pseudacantholimon</i> (Borrm.) Holub	4918	B7 Tunceli: Ovacık, 6 km from Işıkvuran to Eskigedik	2250	19.06.2014	Steppe	*	Ir.-Tur.
<i>Gypsophila aucheri</i> Boiss.	5193	B7 Tunceli: Çemişgezek, between Gülbahçe and Gedikler	1390	29.06.2014	Steppe	*	Ir.-Tur.
	4565	B7 Tunceli: Mazgirt, 4 km from Ortaharman to Darikent	1140	16.06.2014			
	5390	B7 Tunceli: Nazımiye, N of Yayıkçağ v.	1794	20.07.2014			
	5274	B7 Tunceli: Pertek, 7 km from Pertek to	1327	19.07.2014			

		Tunceli						
	5571	B8 Tunceli: Pülümür, 2 km N of Elmalı	1400	22.07.2014				
<i>Gypsophila briquetiana</i> Schischk.	5811	B7 Tunceli: Ovacık, 8 km from Sarıgül to Yalmanlar, the walk way of Buyer Baba sanctuary	2680	06.08.2014	Rock crevices	*	Ir.-Tur.	
	5924	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2290	08.08.2014				
<i>Gypsophila hispida</i> Boiss.	5523	B8 Tunceli: Pülümür, 3.5 km from Bardakçı to Derindere	1746	22.07.2014	Steppe scree, degraded oak forest			Ir.-Tur.
<i>Gypsophila laricina</i> Schreb.	5925	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2290	08.08.2014	Steppe, rocky areas	*	Ir.-Tur.	
	6110	B7 Tunceli: Pülümür, 9 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2115	16.08.2014				
	6094	B8 Tunceli: Pülümür, 5 km E of Kırklar v.	2400	16.08.2014				
<i>Gypsophila munzurenensis</i> Armağan	5645	B7 Tunceli: Ovacık, 30 km from Tunceli to Ovacık (Munzur Valley)	1080	24.07.2014	Steppe			Ir.-Tur.
<i>Gypsophila ruscifolia</i> Boiss.	4508	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe			Ir.-Tur.
<i>Gypsophila venusta</i> Fenzl	4085	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Steppe	Rcd.		Ir.-Tur.
<i>Herniaria hirsuta</i> L.	3888	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	865	24.05.2014	Steppe	Rcd.		Unk.
<i>Holosteum umbellatum</i> L. var. <i>glutinosum</i> (M.Bieb.) Gay	6380	B7 Tunceli: Center, 3 km from Tunceli to Ovacık (Munzur valley)	931	27.03.2015	Steppe	Rcd.		Unk.
<i>Holosteum umbellatum</i> L. var. <i>umbellatum</i>	6432	B7 Tunceli: Center, 7 km from Tunceli to Pülümür (Pülümür Valley)	934	12.04.2015	Steppe	Rcd.		Unk.
<i>Minuartia anatolica</i> (Boiss.) Woronow var. <i>lanuginosa</i> McNeill	4842	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014	Mt. steppe	*		Ir.-Tur.
<i>Minuartia erythrosepala</i> (Boiss.) Hand.-Mazz.	4653	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe			Ir.-Tur.
<i>Minuartia glandulosa</i> (Boiss. & A.Huet) Bornm.	4452	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Rocky areas, steppe	*	Ir.-Tur.	
	4897	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2430	18.06.2014				
<i>Minuartia hirsuta</i> (M.Bieb.) Hand.-Mazz. subsp. <i>falcata</i> (Gris.) Mattf.	4676	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe	Rcd.	Ir.-Tur.	
	4638	B7 Tunceli: Hozat, between Karacaköy and Uzundal, the road of Sarısaltuk Türbesi	1730	17.06.2014				
	4289	B7 Tunceli: Ovacık, Işıkvuran v.	1710	04.06.2014				
<i>Minuartia juniperina</i> (L.) Maire & Petitm.	4654	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Rocky areas, steppe		Unk.	
	4273	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2120	04.06.2014				
	4365	B7 Tunceli: Pülümür, 3 km from Sarıgül to Yalmanlar	2250	05.06.2014				
<i>Minuartia mesogitana</i> (Boiss.) Hand.-Mazz. subsp. <i>kotschyana</i> (Boiss.) McNeill	6461	B7 Tunceli: Nazımiye, Pülümür Valley, 25 km from Tunceli to Pülümür	1035	29.05.2015	Steppe	Rcd.		Unk.
<i>Minuartia meyeri</i> (Boiss.) Bornm.	4363a	B7 Tunceli: Pülümür, 2 km from Sarıgül to Yalmanlar	2200	05.06.2014	Steppe			Ir.-Tur.
<i>Minuartia multinervis</i> (Boiss.) Bornm.	4656	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe	Rcd.		Unk.
<i>Minuartia recurva</i> (All.) Schinz & Thell. subsp. <i>oreina</i> (Mattf.) McNeill	4826	B8 Tunceli: Pülümür, E of Kırklar v.	2300	18.06.2014	Steppe			Unk.
<i>Minuartia rimarum</i> (Boiss. & Balansa) Mattf.	5830	B7 Tunceli: Ovacık, 800 m NE of Buyer Baba Lake	2821	06.08.2014	Rock crevices	*		Ir.-Tur.
<i>Minuartia umbellulifera</i> (Boiss.) McNeill subsp. <i>umbellifera</i> var. <i>kurdica</i> McNeill	4717	B7 Tunceli: Ovacık, 17 km from Ovacık to Hozat, E of Halıtpınar v.	1895	17.06.2014	Steppe	*		Ir.-Tur.
<i>Paronychia euphratica</i> (Chaudhri) Chaudhri	4130	B7 Tunceli: Mazgirt, Akpazar, S of Yenice v. (S of Şevki mezarası)	1270	02.06.2014	Rocky areas, steppe	* Rcd.	Ir.-Tur.	
	5039	B7 Tunceli: Ovacık, 3 km from Gözeler to Yazıören	1483	20.06.2014				
<i>Paronychia kurdica</i> Boiss. subsp. <i>kurdica</i>	5134	B7 Tunceli: Çemişgezek, W of Bozağaç village	1120	28.06.2014	Steppe		Unk.	
	4554	B7 Tunceli: Mazgirt, 1 km from Ortaharman to Sülüntaş	1220	16.06.2014				
	3834	B7 Tunceli: Center, 10 km from Aktuluk to Demirkapı	1443	23.05.2014				
	4173	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014				

	5712	B7 Tunceli: Pertek, between Koçpınar and Çalhözü	1117	25.07.2014			
	3884	B7 Tunceli: Pertek, 6.5 km from Pertek to Çemişgezek	868	24.05.2014			
	3769	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014			
	3817	B7 Tunceli: Center, 3 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1070	23.05.2014			
<i>Paronychia kurdica</i> Boiss. subsp. <i>montis-munzur</i> Chaudhri	4408	B7 Tunceli: Pülümür, between Dereboyu and Sağlamtaş	1610	05.06.2014	Rock crevices	*	Unk.
<i>Petrorhagia alpina</i> (Hablitz) P.W.Ball & Heywood	4714	B7 Tunceli: Ovacık, 17 km from Ovacık to Hozat, E of Halıtpınar v.	1895	17.06.2014	Steppe	Rcd.	Unk.
	4221	B7 Tunceli: Ovacık, 5 km from Ovacık-Tunceli-Yakatarla to Yakatarla	1620	04.06.2014			
<i>Petrorhagia cretica</i> (L.) P.W.Ball & Heywood	4558	B7 Tunceli: Mazgirt, 1 km from Ortaharman to Sülüntaş	1220	16.06.2014	Steppe		Unk.
	4509	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014			
	5129	B7 Tunceli: Pertek, 3 km from Elazığ-Pertek-Çemişgezek crossroads to Çemişgezek (1 km S of Çorovan v.)	870	28.06.2014			
<i>Phryna ortegioides</i> (Fisch. & C.A.Mey.) Pax & K.Hoffm.	5974	B7 Tunceli: Hozat, 4.5 km from Hozat to Pertek	1445	13.08.2014	Steppe	* Rcd.	Ir.-Tur.
	6195	B7 Tunceli: Hozat, between Karacaköy and Uzundal, the road of Sarısaltuk Türbesi	1830	28.08.2014			
<i>Saponaria glutinosa</i> M.Bieb.	3839	B7 Tunceli: Center, 12 km from Aktuluk to Demirkapı	1465	23.05.2014	Degraded oak forest, steppe		Unk.
	4026	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1060	26.05.2014			
<i>Saponaria orientalis</i> L.	5668	B7 Tunceli: Ovacık, 12 km from Eğripınar to Yenikonak	1570	24.07.2014	Steppe scree	Rcd.	Unk.
<i>Saponaria prostrata</i> Willd. subsp. <i>anatolica</i> Hedge	4944	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	1915	19.06.2014	Steppe	*	Ir.-Tur.
	4323	B7 Tunceli: Pülümür, between Kaymaztepe and Kovuklu	1545	05.06.2014			
<i>Saponaria prostrata</i> Willd. subsp. <i>prostrata</i>	4033	B7 Tunceli: Ovacık, 41 km from Tunceli to Ovacık (Munzur Valley)	1175	26.05.2014	Steppe	*	Ir.-Tur.
	3912	B7 Tunceli: Pertek, SW of Mercimek v.	1290	24.05.2014			
<i>Scleranthus annuus</i> L.	4746	B7 Tunceli: Ovacık, 3 km S of Ovacık	1315	17.06.2014	Steppe	Rcd.	Unk.
<i>Scleranthus uncinatus</i> Schur	4569	B7 Tunceli: Mazgirt, 1 km S of Geçitveren v.	1345	16.06.2014	Steppe	Rcd.	Unk.
<i>Silene ampullata</i> Boiss.	3830	B7 Tunceli: Center, 15 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (10 km before Çıralı v.)	1850	23.05.2014	Steppe		Ir.-Tur.
<i>Silene argentea</i> Ledeb.	4177	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014	Steppe		Ir.-Tur.
<i>Silene arguta</i> Fenzl	4454	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Rocky areas, steppe		Ir.-Tur.
	4816	B8 Tunceli: Pülümür, 2.8 km E of Kırklar v.	2120	18.06.2014			
<i>Silene caryophylloides</i> (Poir.) Oth subsp. <i>caryophylloides</i>	4878	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014	Rocky areas, steppe		Ir.-Tur.
<i>Silene caryophylloides</i> (Poir.) Oth subsp. <i>subulata</i> (Boiss.) Coode & Cullen	4663	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	On rocks		Unk.
	4664	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014			
	4253	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2020	04.06.2014			
<i>Silene chlorifolia</i> Sm.	6159	B7 Tunceli: 10 km from Pülümür - Erzincan mainroad to Süleymanuşağı village	2210	27.08.2014	Steppe		Ir.-Tur.
	3926	B7 Tunceli: Center, Alibaba nh.	930	25.05.2014			
	3858	B7 Tunceli: Center, S of Kopuzlar v.	1084	24.05.2014			
	4196	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014			
<i>Silene compacta</i> Fisch. ex Hornem.	4701	B7 Tunceli: Hozat, between Hozat and Ovacık, around of Yüceldi v.	1930	17.06.2014	Steppe		Unk.
	3952	B7 Tunceli: Center, 5 km from Tunceli to Ovacık (Munzur Valley)	940	25.05.2014			
<i>Silene dianthoides</i> Pers.	4277	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2150	04.06.2014	Mt. steppe		Ir.-Tur.
	4839	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014			
<i>Silene italica</i> (L.) Pers.	4298	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Ağaçpınar	2123	04.06.2014	Steppe		Medit.
<i>Silene latifolia</i> Poir. subsp. <i>alba</i> (Miller) Greuter & Burdet	5249	B7 Tunceli: Nazımiye, Pülümür Valley, 43 km from Tunceli to Pülümür	1588	30.06.2014	Degraded oak forest, steppe		Unk.

<i>Silene longipetala</i> Vent.	4466	B7 Tunceli: Hozat, 3.5 km from Hozat to Pertek, junction of Kardelen v.	1470	06.06.2014	Steppe	Rcd.	Unk.
<i>Silene manissadjianii</i> Freyn	4681	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarsaltuk Türbesi	2270	17.06.2014	Steppe	* Rcd.	Ir.-Tur.
	4809	B8 Tunceli: Pülümür, 2 km E of Kırklar v.	2100	18.06.2014			
<i>Silene marschallii</i> C.A.Mey.	4760	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1575	18.06.2014	Rocky areas, steppe		Ir.-Tur.
<i>Silene montbretiana</i> Boiss.	4479	B7 Tunceli: Hozat, between Akpınar and Karabakır	1275	06.06.2014	Steppe		Ir.-Tur.
	4725	B7 Tunceli: Hozat, 15 km from Ovacık to Hozat (NE of Halitpınar v.)	1800	17.06.2014			
<i>Silene odontopetala</i> Fenzl	4661	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarsaltuk Türbesi	2270	17.06.2014	Rock crevices		Unk.
	4665	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarsaltuk Türbesi	2270	17.06.2014			
	3826	B7 Tunceli: Center, 14 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (11 km before Çıralı v.)	1800	23.05.2014			
<i>Silene saxatilis</i> Sims	4724	B7 Tunceli: Hozat, 15 km from Ovacık to Hozat (NE of Halitpınar v.)	1800	17.06.2014	Steppe	Rcd.	Unk.
<i>Silene sclerophylla</i> Chowdhuri	5254	B7 Tunceli: Nazımiye, Pülümür Valley, E slopes of Hilbeşen bridge, across of Ağlayan Kayalar	1560	30.06.2014	Steppe	*	Ir.-Tur.
<i>Silene spergulifolia</i> (Desf.) M.Bieb.	4467	B7 Tunceli: Hozat, 3.5 km from Hozat to Pertek, junction of Kardelen v.	1470	06.06.2014	Rock crevices		Ir.-Tur.
	4178	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014			
	3827	B7 Tunceli: Center, 14 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (11 km before Çıralı v.)	1800	23.05.2014			
<i>Silene stenobotrys</i> Boiss. & Hausskn.	4523	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe		Ir.-Tur.
<i>Silene surculosa</i> Hub.-Mor.	4917	B7 Tunceli: Ovacık, 6 km from Işıkvuran to Eskigedik	2250	19.06.2014	Steppe	*	Ir.-Tur.
	4719	B7 Tunceli: Ovacık, 17 km from Ovacık to Hozat, E of Halitpınar v.	1895	17.06.2014			
	4222	B7 Tunceli: Ovacık, 5 km from Ovacık-Tunceli-Yakatarla to Yakatarla	1620	04.06.2014			
	4900	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2380	18.06.2014			
	4345	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014			
	6496	B7 Tunceli: Pülümür, 7 km from Pülümür to Erzincan (Pülümür Mt.)	1841	29.05.2015			
<i>Silene swertiifolia</i> Boiss.	4138	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, junction of Kızılçık v.	1060	02.06.2014	Steppe		Ir.-Tur.
<i>Silene vulgaris</i> (Moench) Garcke var. <i>commutata</i> (Guss.) Coode & Cullen	4309	B7 Tunceli: Ovacık, 4 km from Aşağıtorunoba to Ağaçpınar	1800	04.06.2014	Steppe		Unk.
<i>Silene vulgaris</i> (Moench) Garcke var. <i>vulgaris</i>	3708	B7 Tunceli: Center, between Tunceli and Pertek, junction of Kopuzlar v.	1020	22.05.2014	Oak forest		Unk.
<i>Stellaria media</i> (L.) Vill.	6435	B7 Tunceli: Center, Alibaba nh.	930	11.04.2015	Steppe	Rcd.	Unk.
<i>Telesium oligospermum</i> Steud. ex Boiss.	6128	B7 Tunceli: Mazgirt, S of Dedebağ v.	860	26.08.2014	Steppe		Ir.-Tur.
	3780	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014			
<i>Vaccaria hispanica</i> (Mill.) Rauschert (= <i>Vaccaria pyramidata</i> subsp. <i>grandiflora</i> (Fisch. ex DC.) Hayek)	Obs.	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014	Steppe		Unk.
<i>Velezia rigida</i> L.	4516	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe		Unk.
CELASTRACEAE R.Br.							
<i>Euonymus latifolius</i> Mill. subsp. <i>caucensis</i> Coode & Cullen	6036	B8 Tunceli: Pülümür, 2 km W of Altınhüseyin	1905	14.08.2014	Oak forest	* Rcd.	Euxine
<i>Euonymus latifolius</i> Mill. subsp. <i>latifolius</i>	6227	B7 Tunceli: Center, 18 km from Tunceli to Ovacık (Munzur Valley)	975	04.09.2014	Oak forest	Rcd.	Euro.-Sib.
	5885	B7 Tunceli: Nazımiye, 8 km NE of Büyükyurt (Hakis) v.	1963	07.08.2014			
	6296	B7 Tunceli: Pülümür, E of Ardıçlı v.	1747	20.09.2014			
<i>Parnassia palustris</i> L.	6023	B8 Tunceli: Pülümür, S of Ağaşenliği v., between Ağaşenliği and Altınhüseyin	1650	14.08.2014	Wet meadows		Unk.
CLEOMACEAE Airy Shaw							
<i>Cleome iberica</i> DC.	3892	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	865	24.05.2014	Ruderal	Rcd.	E.Medit.

CONVOLVULACEAE Juss.							
<i>Cuscuta balansae</i> Boiss.	5323	B7 Tunceli: Nazimiye, 2 km from Nazimiye to Dereova	1700	20.07.2014	On <i>Ziziphora</i> sp.		Unk.
<i>Cuscuta europaea</i> L.	5533	B8 Tunceli: Pülümür, Şampaşakaraderbent v.	1912	22.07.2014	Parasite	Rcd.	Unk.
<i>Cuscuta globularis</i> Bertol.	5624	B7 Tunceli: Nazimiye, 1 km S of Holik v.	1990	23.07.2014	On <i>Tanacetum</i> sp.	Rcd.	Unk.
<i>Cuscuta lupuliformis</i> Krock.	5491	B8 Tunceli: Pülümür, W of Kırđım v.	2070	22.07.2014	Parasite	Rcd.	Euro.-Sib.
CRASSULACEAE J.St.-Hil.							
<i>Prometheum aizoon</i> (Fenzl) 't Hart	5806	B7 Tunceli: Ovacık, 8 km from Sarıgöl to Yalmanlar, the walk way of Buyer Baba sanctuary	2680	06.08.2014	Rocky areas, steppe		Ir.-Tur.
<i>Prometheum sempervivoides</i> (Fischer ex M.Bieb.) H.Ohba	5409	B7 Tunceli: Hozat, 9 km from Demirkapı to Dervişçemal	1765	21.07.2014	Steppe		Unk.
	4216	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014			
<i>Rosularia sempervivum</i> (M.Bieb.) A.Berger subsp. <i>persica</i> (Boiss.) Eggh	4966	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Rock crevices		Ir.-Tur.
<i>Sedum album</i> L.	5928	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2184	08.08.2014	Steppe		Unk.
<i>Umbilicus luteus</i> (Huds.) Webb & Berthel	4972	B7 Tunceli: Center, 1.5 km from Santaş to Gözen (İksor), Kalan Valley	1172	19.06.2014	Wet places in Oak forest		Unk.
CUCURBITACEAE Juss.							
<i>Bryonia aspera</i> Stev. ex Ledeb.	5456	B7 Tunceli: Hozat, S of Kurukaymak	1495	21.07.2014	Riverside		Unk.
CUPRESSACEAE Gray							
<i>Juniperus excelsa</i> M.Bieb.	5429	B7 Tunceli: Hozat, between Karaçavuş and Boydaş	1720	21.07.2014	Steppe		Unk.
	6336	B7 Tunceli: Ovacık, between Ağaçpınar and Çambulak	1890	21.09.2014			
	6335	B7 Tunceli: Ovacık, between Aşağıtorunoba and Ağaçpınar	1860	21.09.2014			
<i>Juniperus foetidissima</i> Willd.	5210	B7 Tunceli, Çemişgezek, between Çemişgezek and Kemaliye, 1 km E of Dedebeyli village	1275	29.06.2014	Mt. Slopes		Unk.
<i>Juniperus oxycedrus</i> L.	6224	B7 Tunceli: Center, between Batman and Atlantı	1082	03.09.2014	Steppe		Unk.
	5469	B7 Tunceli: Center, 1.5 km from Geyiksuyu to Atadoğdu	1225	21.07.2014			
CYPERACEAE Juss.							
<i>Carex divulsa</i> Stokes	5021	B7 Tunceli: Ovacık, 10 km from Eğripınar to Yenikonak	1570	20.06.2014	Wet places	Rcd.	Unk.
	4052	B7 Tunceli: Ovacık, 47 km from Tunceli to Ovacık, 11 km before Ovacık (Munzur Valley)	1200	26.05.2014			
<i>Scirpoides holoschoenus</i> (L.) Soják	4148	B7 Tunceli: Mazgirt, 2 km from Beylermezrası to Aslanyurdu	855	02.06.2014	Wet places		Unk.
	3773	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014			
DATISACEAE Dumort.							
<i>Datisca cannabina</i> L.	5639	B7 Tunceli: Center, 18 km from Tunceli to Ovacık (Munzur Valley)	1023	24.07.2014	Degraded oak forest, steppe		Unk.
	4004	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	995	25.05.2014			
	5946	B7 Tunceli: Center, S of Dilek v.	1093	08.08.2014			
	5692	B7 Tunceli: Center, 21 km from Tunceli to Ovacık (Munzur Valley)	1024	24.07.2014			
ELAEAGNACEAE Juss.							
<i>Elaeagnus angustifolia</i> L.	6265	B7 Tunceli: Mazgirt, 3 km from Akpazar to Yenice	1125	19.09.2014	Steppe		Unk.
EQUISETACEAE Michx. ex DC.							
<i>Equisetum arvense</i> L.	3951	B7 Tunceli: Center, 5 km from Tunceli to Ovacık (Munzur Valley)	940	25.05.2014	Stream side		Unk.
<i>Equisetum giganteum</i> L.	3948	B7 Tunceli: Center, 5 km from Tunceli to Ovacık (Munzur Valley)	940	25.05.2014	Dried river bad		Unk.
EUPHORBIACEAE Juss.							
<i>Chrozophora tinctoria</i> (L.) A.Juss.	5729	B7 Tunceli: Mazgirt, N of Akdüven v.	1130	05.08.2014	Steppe		Unk.

<i>Euphorbia aleppica</i> L.	5088	B7 Tunceli: Çemişgezek, between Çemişgezek and Elaziğ, 3 km NW of Sarıbalta v.	1050	21.06.2014	Steppe	Rcd.	Unk.
	5714	B7 Tunceli: Mazgirt, between Beylermezrası and Aslanıyurdu	860	25.07.2014			
<i>Euphorbia chamaesyce</i> L.	5734	B7 Tunceli: Mazgirt, 2 km from Akdüven to Güleç	1100	05.08.2014	Steppe		Unk.
	4506	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014			
<i>Euphorbia cheiradenia</i> Boiss. & Hohen.	4689	B7 Tunceli: Hozat, 700 m N of Uzundal v.	1700	17.06.2014	Steppe		Ir.-Tur.
	5824	B7 Tunceli: Ovacık, 1 km NE of Buyer Baba Lake	2820	06.08.2014			
	3760	B7 Tunceli: Pertek, 1 km S of Beydamı v.	1270	22.05.2014			
	4902	B7 Tunceli: Pülümür, 8 km NW of Ardıçlı (Gersunut) v.	2325	18.06.2014			
	4342	B7 Tunceli: Pülümür, between Sarıgül and Kocatepe	1900	05.06.2014			
<i>Euphorbia denticulata</i> Lam.	4270	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2100	04.06.2014	Mt. steppe, degraded oak forest		Ir.-Tur.
	4973	B7 Tunceli: Center, 2 km from Sarıtaş to Gözen (İksor), Kalan Valley	1180	19.06.2014			
	3808	B7 Tunceli: Center, 2 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1050	23.05.2014			
<i>Euphorbia esula</i> L. subsp. <i>tommasiniana</i> (Bertol.) Kuzmanov	4164	B7 Tunceli: Nazımiye, 6.5 km from Nazımiye to Tunceli, 400 m after Geriş v. junction	1340	03.06.2014	Steppe		Unk.
<i>Euphorbia falcata</i> L. subsp. <i>falcata</i> var. <i>galilaea</i> (Boiss.) Boiss.	3727	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Steppe		Unk.
	4162	B7 Tunceli: Nazımiye, 6.5 km from Nazımiye to Tunceli, 400 m after Geriş v. junction	1340	03.06.2014			
<i>Euphorbia gaillardotii</i> Boiss. & Balanche	4561	B7 Tunceli: Mazgirt, 1 km from Ortaharman to Sütlüntaş	1220	16.06.2014	Steppe, field side		Ir.-Tur.
	6222	B7 Tunceli: Pertek, betwen Yeniköy and Pınarlar	1378	02.09.2014			
<i>Euphorbia herniarifolia</i> Willd.	4659	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Mt. steppe, rocky areas		Unk.
	5822	B7 Tunceli: Ovacık, NE of Buyer Baba Lake	2745	06.08.2014			
	4887	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014			
<i>Euphorbia iberica</i> Boiss.	4709	B7 Tunceli: Hozat, between Hozat and Ovacık, 2 km from Yüceldi to Aşlıca	1970	17.06.2014	Steppe		Ir.-Tur.
	4682	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014			
<i>Euphorbia macrocarpa</i> Boiss. & Buhse	4247	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2020	04.06.2014	Steppe		Unk.
<i>Euphorbia macroclada</i> Boiss.	5087	B7 Tunceli: Çemişgezek, between Çemişgezek and Elaziğ, 3 km NW of Sarıbalta v.	1050	21.06.2014	Steppe		Ir.-Tur.
	5325	B7 Tunceli: Nazımiye, 3 km from Nazımiye to Dereova	1600	20.07.2014			
	5312	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1447	20.07.2014			
	5898	B7 Tunceli: Ovacık, Tunceli-Ovacık-Yakatarla junction	1240	08.08.2014			
	5270	B7 Tunceli: Pertek, Camikebir nh.	1100	19.07.2014			
	5702	B7 Tunceli: Pertek, 1 km from Sumek to Pınarlar	1177	25.07.2014			
	6029	B8 Tunceli: Pülümür, 1 km E of Altınhüseyin	1736	14.08.2014			
<i>Euphorbia orientalis</i> L.	5976	B7 Tunceli: Hozat, 3.2 km from Hozat to Pertek	1440	13.08.2014	Steppe		Ir.-Tur.
	4022	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1060	26.05.2014			
<i>Euphorbia szovitsii</i> Fisch. & C.A.Mey. var. <i>kharputensis</i> Azn. ex M.S.Khan	4604	B7 Tunceli: Mazgirt, 11 km from Çukur to Güleç	1230	16.06.2014	Steppe		Ir.-Tur.
	5029	B7 Tunceli: Ovacık, 10 km from Eğripınar to Yenikonak	1570	20.06.2014			
	4995	B7 Tunceli: Ovacık, Ziyaret v., N of Munzur Gözeleri	1400	20.06.2014			
	5467	B7 Tunceli: Center, 7 km from Geyiksuyu to Taşıtlı	1343	21.07.2014			
<i>Euphorbia szovitsii</i> Fisch. & C.A.Mey. var. <i>szovitsii</i>	4476	B7 Tunceli: Hozat, 2 km NE of Akpınar v.	1350	06.06.2014	Steppe	Rcd.	Ir.-Tur.
FABACEAE Lindl.							
<i>Astragalus cephalotes</i> Banks et Sol. var. <i>brevicalyx</i> Eig	3756	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014	Steppe	* Rcd.	Unk.

<i>Astragalus christianus</i> L.	6547	B7 Tunceli: Ovacık, 9 km from Aşağıtorunoba to Çakmaklı	1800	01.06.2015	Steppe	Rcd.	Unk.
<i>Astragalus cicer</i> L.	3840	B7 Tunceli: Center, 12 km from Aktuluk to Demirkapı	1430	23.05.2014	Field side, steppe	Rcd.	Unk.
<i>Astragalus cretaceus</i> Boiss.	3846	B7 Tunceli: Hozat, 2.5 km from Demirkapı to Dervişçemal	1700	23.05.2014	Steppe	Rcd.	Ir.-Tur.
<i>Astragalus gummifer</i> Labill.	5068	B7 Tunceli: Pertek, 4.5 km from Pertek to Tunceli, S of Mercimek v.	1307	21.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Astragalus halicacabus</i> Lam.	4229	B7 Tunceli: Ovacık, 5.5 km from Ovacık-Tunceli-Yakatarla to Yakatarla	1670	04.06.2014	Steppe		Ir.-Tur.
<i>Astragalus incertus</i> Ledeb.	4847	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014	Mt. steppe		Ir.-Tur.
<i>Astragalus lamarkii</i> Boiss.	4642	B7 Tunceli: Hozat, between Karacaköy and Uzundal, the road of Sarısaltuk Türbesi	1730	17.06.2014	Steppe	*	Ir.-Tur.
<i>Astragalus lineatus</i> Lam.	4362	B7 Tunceli: Pülümür, 2 km from Sarıgül to Yalmanlar	2200	05.06.2014	Steppe		Unk.
<i>Astragalus macrocephalus</i> Willd. subsp. <i>finitimus</i> (Bunge) D.F.Chamb.	3798	B7 Tunceli: Center, between Tunceli and Sütlüce, 1.8 km from Sütlüce junction	1030	23.05.2014	Steppe		Ir.-Tur.
	3757	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014			
<i>Astragalus ocephalus</i> Boiss. subsp. <i>stachyophorus</i> Hub.-Mor. & D.F.Chamb.	4435	B7 Tunceli: Center, 7 km from Aktuluk to Buğulu	1200	06.06.2014	Steppe	*	Ir.-Tur.
<i>Astragalus pendulus</i> DC.	4068	B7 Tunceli: Ovacık, 32 km from Tunceli to Ovacık (Munzur Valley)	1110	26.05.2014	Steppe		Ir.-Tur.
	3845	B7 Tunceli: Hozat, 2.5 km from Demirkapı to Dervişçemal	1700	23.05.2014			
<i>Astragalus scabrifolius</i> Boiss.	4110	B7 Tunceli: Mazgirt, 7 km from Kızılcık to Göktepe	935	02.06.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Astragalus taochius</i> Woronov	4443	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Steppe	* Rcd.	Euxine
<i>Astragalus tigridis</i> Boiss.	3696	B7 Tunceli: Center, Tunceli - Elazığ road, 700 m after Aktuluk v.	930	22.05.2014	Degraded oak forest, steppe		Unk.
<i>Astragalus viridis</i> Bunge	4700	B7 Tunceli: Hozat, between Hozat and Ovacık, around of Yüceldi v.	1930	17.06.2014	Steppe	Rcd.	Unk.
<i>Cicer pinnatifidum</i> Jaub. & Spach	4787	B7 Tunceli: Pülümür, SE of Közlüce v.	1620	18.06.2014	Steppe		Unk.
<i>Colutea cilicica</i> Boiss. & Balansa	3705	B7 Tunceli: Center, between Tunceli and Pertek, junction of Kopuzlar v.	1020	22.05.2014	Steppe		Unk.
<i>Coronilla scorpioides</i> (L.) W.D.J.Koch	6692	B7 Tunceli: Center, 1 km from Aktuluk to Buğulu	1015	27.04.2015	Steppe		Unk.
<i>Cullen jaubertianum</i> (Fenzl) C.H.Stirt.	4147	B7 Tunceli: Mazgirt, between Elazığ and Tunceli, 1 km E of Beyler mezarası	873	02.06.2014	Steppe		Ir.-Tur.
<i>Ebenus haussknechtii</i> Bornm. ex Hub.-Mor.	3799	B7 Tunceli: Center, 2 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1050	23.05.2014	Steppe	*	Ir.-Tur.
<i>Galega officinalis</i> L.	4699	B7 Tunceli: Hozat, 4.5 km from Uzundal to Yüceldi	1970	17.06.2014	Degraded oak forest, steppe	Rcd.	Euro.-Sib.
	4623	B7 Tunceli: Mazgirt, 5 km from Çukur to Güleç	1430	16.06.2014			
	4383	B7 Tunceli: Pülümür, Çakırkaya v.	1750	05.06.2014			
<i>Glycyrrhiza glabra</i> L.	4084	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Field side, steppe		Unk.
<i>Hammatolobium lotoides</i> Fenzl	5166	B7 Tunceli: Çemişgezek, Tahar valley (Ali Boğazı)	1024	29.06.2014	Rock crevices	Rcd.	E.Medit.
	3745	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014			
<i>Hedysarum erythroleucum</i> Boiss.	4881	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2516	18.06.2014	Mt. steppe scree	* Rcd.	Ir.-Tur.
	6666	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2516	27.06.2015			
<i>Hedysarum varium</i> Willd.	4149	B7 Tunceli: Mazgirt, 2 km from Beylermezarası to Aslanıyurdu	855	02.06.2014	Steppe		Ir.-Tur.
<i>Hippocrepis biflora</i> Spreng.	3866	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014	Steppe	Rcd.	Unk.
<i>Lathyrus chloranthus</i> Boiss.	4761	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1575	18.06.2014	Dried river bad		Ir.-Tur.
	3947	B7 Tunceli: Center, 5 km from Tunceli to Ovacık (Munzur Valley)	940	25.05.2014			
<i>Lathyrus roseus</i> Steven	3844	B7 Tunceli: Center, 13 km from Aktuluk to Demirkapı	1396	23.05.2014	Degraded oak forest, steppe		Hycr.-Euxine
<i>Lathyrus rotundifolius</i> Willd. subsp. <i>miniatus</i> (M.Bieb. ex Steven) P.H.Davis	4045	B7 Tunceli: Ovacık, 44 km from Tunceli to Ovacık, 14 km before Ovacık (Munzur Valley)	1190	26.05.2014	Oak forest		Unk.
<i>Lotus aegaeus</i> (Griseb.) Boiss.	4143	B7 Tunceli: Mazgirt, 1 km from Kızılcık to	970	02.06.2014	Steppe	Rcd.	Unk.

		Göktepe					
<i>Lotus gebelia</i> Vent. var. <i>anthylloides</i> Boiss.	3908	B7 Tunceli: Pertek, 12 km from Pertek to Çemişgezek, around of Singeç bridge	855	24.05.2014	Rocky areas, steppe	*	Ir.-Tur.
<i>Lotus gebelia</i> Vent. var. <i>hirsutissimus</i> (Ledeb.) Dinsm.	4140	B7 Tunceli: Mazgirt, 1 km from Kızılcık to Göktepe	1132	02.06.2014	Steppe		Ir.-Tur.
<i>Medicago fischeriana</i> (Ser.) Trautv.	3875	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014	Steppe		Ir.-Tur.
<i>Medicago minima</i> (L.) Bartal.	4171	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014	Steppe		Unk.
<i>Medicago noeana</i> Boiss.	4104	B7 Tunceli: Mazgirt, 7 km from Kızılcık to Göktepe	935	02.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Medicago radiata</i> L.	3835	B7 Tunceli: Center, 10 km from Aktuluk to Demirkapı	1443	23.05.2014	Steppe		Ir.-Tur.
<i>Melilotus albus</i> Desr.	4095	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Ruderal, in gardens		Unk.
<i>Melilotus officinalis</i> (L.) Desr.	4094	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Ruderal, in gardens		Unk.
<i>Onobrychis argyrea</i> Boiss.	3900	B7 Tunceli: Pertek, 12 km from Pertek to Çemişgezek, around of Singeç bridge	855	24.05.2014	Steppe		Ir.-Tur.
	3879	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014			
	3800	B7 Tunceli: Center, 2 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1050	23.05.2014			
<i>Onobrychis cornuta</i> (L.) Desv.	4266	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2100	04.06.2014	Mt. steppe		Unk.
<i>Onobrychis galegifolia</i> Boiss.	4567	B7 Tunceli: Mazgirt, 4 km from Ortaharman to Darikent	1140	16.06.2014	Steppe		Ir.-Tur.
	4184	B7 Tunceli: Nazımiye, 1 km from Pülümür-Nazımiye-Tunceli crossroads to Nazımiye	1100	03.06.2014			
<i>Onobrychis subacaulis</i> Boiss.	4800	B8 Tunceli: Pülümür, 2 km from Hasangazi to Kırklar	1816	18.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Ononis spinosa</i> L. subsp. <i>leiosperma</i> (Boiss.) Sirj.	5094	B7 Tunceli: Çemişgezek, 2.5 km from Vişneli to Çemişgezek	895	21.06.2014	Wet places, steppe		Unk.
<i>Pisum sativum</i> L. subsp. <i>elatus</i> (M.Bieb.) Aschers. & Graebn. var. <i>elatus</i>	6511	B7 Tunceli: Center, 18 km from Tunceli to Ovacık (Munzur Valley)	990	30.05.2015	Wet places in Oak forest	Rcd.	Medit.
<i>Pisum sativum</i> L. subsp. <i>elatus</i> (M.Bieb.) Aschers. & Graebn. var. <i>pumilio</i> Meikle	3869	B7 Tunceli: Pertek, 5 km from Pertek to Çemişgezek	866	24.05.2014	Degraded oak forest, steppe		Unk.
<i>Sophora jaubertii</i> Spach	4432	B7 Tunceli: Pülümür, 16 km from Pülümür to Tunceli (Pülümür valley)	1240	05.06.2014	Ruderal, steppe	Rcd.	Euxine
	4788	B7 Tunceli: Pülümür, SE of Közlüce v.	1620	18.06.2014			
<i>Trifolium elongatum</i> Willd.	4794	B8 Tunceli: Pülümür, 2 km from Hasangazi to Kırklar	1816	18.06.2014	Steppe	*	Unk.
	4605	B7 Tunceli: Mazgirt, 11 km from Çukur to Güleç	1230	16.06.2014			
<i>Trifolium pilulare</i> Boiss.	4605	B7 Tunceli: Mazgirt, 11 km from Çukur to Güleç	1230	16.06.2014	Steppe		Unk.
<i>Trifolium resupinatum</i> L.	4483	B7 Tunceli: Hozat, Çemişgezek-Elazığ road, S of Akpınar v.	1221	06.06.2014	Riverside	Rcd.	Unk.
<i>Vicia balansae</i> Boiss.	4288	B7 Tunceli: Ovacık, Işıkvuran v.	1710	04.06.2014	Steppe	Rcd.	Euxine
<i>Vicia cracca</i> L. subsp. <i>stenophylla</i> Vel.	4179	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014	Steppe	Rcd.	Unk.
<i>Vicia noeana</i> Boiss & Reut. ex Boiss.	4167	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014	Steppe		Ir.-Tur.
<i>Vicia peregrina</i> L.	4083	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Steppe, field side	Rcd.	Unk.
	4168	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014			
<i>Vicia sativa</i> L. subsp. <i>nigra</i> (L.) Ehrh. var. <i>segetalis</i> (Thuill.) Ser. ex DC.	3744	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Field side, steppe	Rcd.	Unk.
<i>Vicia sepium</i> L.	5066	B7 Tunceli: Çemişgezek, 5 km from Çemişgezek to Pertek	1050	21.06.2014	Steppe	Rcd.	Euro.-Sib.
FAGACEAE Dumort.							
<i>Quercus brantii</i> Lindl.	5455	B7 Tunceli: Hozat, S of Kurukaymak	1495	21.07.2014	Forest		Ir.-Tur.
	6247	B7 Tunceli: Nazımiye, 2 km from Aşağırabat bridge to Büyükyurt (Hakis) v.	1095	05.09.2014			
<i>Quercus infectoria</i> Oliv. subsp. <i>veneris</i> (A.Kern.) Meikle	5747	B7 Tunceli: Mazgirt, SW of Güleç v.	1105	05.08.2014	Forest		Unk.
	5723	B7 Tunceli: Mazgirt, NE of Akdüven v.	1040	05.08.2014			
	6058	B7 Tunceli: Center, 1 km W of Pınar v.	1274	15.08.2014			
	6228	B7 Tunceli: Center, 5 km from Tunceli to Pülümür (Pülümür Valley)	930	05.09.2014			
	6248	B7 Tunceli: Center, 1 km from Tunceli-	1133	05.09.2014			

		Pülümür mainroad to Alacık v.					
	6119	B7 Tunceli: Pertek, 2 km W of Bulgurtepe v.	1060	17.08.2014			
	5710	B7 Tunceli: Pertek, between Koçpınar and Bıçmekaya	1270	25.07.2014			
	5711	B7 Tunceli: Pertek, between Koçpınar and Çalıözü	1130	25.07.2014			
<i>Quercus libani</i> Oliv.	5397	B7 Tunceli, Center, 10 km from Aktuluk to Demirkapı	1450	21.07.2014	Forest		Ir.-Tur.
	5748	B7 Tunceli: Mazgirt, SW of Güleç v.	1105	05.08.2014			
	5731	B7 Tunceli: Mazgirt, N of Akdüven v.	1130	05.08.2014			
	5724	B7 Tunceli: Mazgirt, NE of Akdüven v.	1040	05.08.2014			
	6060	B7 Tunceli: Center, 1 km W of Babaocağı v.	1240	15.08.2014			
	6059	B7 Tunceli: Center, Pınar v.	1270	15.08.2014			
	5465	B7 Tunceli: Center, W of Taşıtlı v.	1490	21.07.2014			
	6249	B7 Tunceli: Center, 1 km from Tunceli-Pülümür mainroad to Alacık v.	1133	05.09.2014			
	6241	B7 Tunceli: Nazımiye, 400 m from Aşağırabat bridge to Büyükyurt (Hakis) v.	1070	05.09.2014			
	5315	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1447	20.07.2014			
	5342	B7 Tunceli: Nazımiye, E of Ramazanköy v.	1440	20.07.2014			
	5905	B7 Tunceli: Ovacık, 2.5 km from Tunceli-Ovacık-Yakatarla crossroads to Yakatarla	1400	08.08.2014			
	5468	B7 Tunceli: Center, 1.5 km from Geyiksuyu to Atadoğdu	1225	21.07.2014			
	6028	B7 Tunceli: Pülümür, E of Altınhüseyin v.	1633	14.08.2014			
	6152	B7 Tunceli: Pülümür, 3 km from Erzincan-Pülümür-Süleymanuşağı to Süleymanyuşağı	1800	27.08.2014			
<i>Quercus macranthera</i> Fisch. & C.A.Mey. subsp. <i>sypirensis</i> (K.Koch) Mentsky	6189	B7 Tunceli: Center, E of Çıralı v.	1450	27.08.2014	Forest	*	Unk.
<i>Quercus petraea</i> (Matt.) Liebl. subsp. <i>iberica</i> (Steven ex M.Bieb.) Krassiln.	5396	B7 Tunceli, Center, 10 km from Aktuluk to Demirkapı	1450	21.07.2014	Forest		Unk.
<i>Quercus petraea</i> (Matt.) Liebl. subsp. <i>pinnatiflora</i> (K. Koch) Menitsky	5461	B7 Tunceli: Hozat, between Beşelma and Uzundal	1787	21.07.2014	Forest	*	Unk.
	5868	B7 Tunceli: Nazımiye, 5 km NE of Büyükyurt (Hakis) v.	1835	07.08.2014			
	5343	B7 Tunceli: Nazımiye, E of Ramazanköy v.	1440	20.07.2014			
	5904	B7 Tunceli: Ovacık, 2.5 km from Tunceli-Ovacık-Yakatarla crossroads to Yakatarla	1400	08.08.2014			
	6252	B7 Tunceli: Center, Alacık road	1330	05.09.2014			
	5527	B8 Tunceli: Pülümür, 3.5 km from Bardakçı to Derindere	1746	22.07.2014			
	5560	B8 Tunceli: Pülümür, between Pülümür and Yedisu, 2.5 km after Derindere v.	1925	22.07.2014			
<i>Quercus pubescens</i> Willd.	5459	B7 Tunceli: Hozat, S of Kurukaymak	1405	21.07.2014	Forest	Rcd.	Unk.
	6150	B7 Tunceli: Pülümür, 2 km from Erzincan-Pülümür-Süleymanuşağı to Süleymanyuşağı	1683	27.08.2014			
<i>Quercus robur</i> L. subsp. <i>pedunculiflora</i> (K.Koch) Menitsky	6192	B7 Tunceli: Center, 3 km from Gökçek to Çıralı	1400	27.08.2014	Forest		Ir.-Tur.
	6212	B7 Tunceli: Ovacık, Mollaaliler v. (Mercan Valley)	1394	28.08.2014			
	5899	B7 Tunceli: Ovacık, Tunceli-Ovacık-Yakatarla junction	1240	08.08.2014			
	6250	B7 Tunceli: Center, Alacık road	1330	05.09.2014			
	6187	B7 Tunceli: Center, 15 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (10 km before Çıralı v.)	1791	27.08.2014			
	6034	B8 Tunceli: Pülümür, 2 km W of Altınhüseyin	1808	14.08.2014			
GENTIANACEAE Juss.							
<i>Centaurium erythraea</i> Rafn. subsp. <i>turcicum</i> (Velen.) Melderis	5445	B7 Tunceli: Hozat, N of Boydaş v. (Tahar Valley)	1215	21.07.2014	Steppe, wet places		Unk.
	5615	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1875	23.07.2014			
	5913	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	1800	08.08.2014			
	5520	B8 Tunceli: Pülümür, 300 m from Bardakçı-Derindere-Kırdım crossroads to Kırdım v.	1750	22.07.2014			
<i>Gentiana gelida</i> M.Bieb.	5789	B7 Tunceli: Pülümür, between Yalmanlar and Kocatepe, NW of Sarıgül v.	2230	06.08.2014	Mt. pastures	Rcd.	Euxine (Mt.)
<i>Gentiana olivieri</i> Griseb.	4158	B7 Tunceli: Nazımiye, 6.5 km from Nazımiye to Tunceli, 400 m after Geriş v. junction	1340	03.06.2014	Damp places		Ir.-Tur.

	4975	B7 Tunceli: Center, 2 km from Sarıtaş to Gözen (İksor), Kalan Valley	1180	19.06.2014			
<i>Gentiana septemfida</i> Pallas	5935	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Eskigedik	2225	08.08.2014	Damp places	Rcd.	Hyrc.-Euxine (Mt.)
GERANIACEAE Juss.							
<i>Erodium ciconium</i> (L.) L'Hér.	6434	B7 Tunceli: Center, Alibaba nh.	930	11.04.2015	Steppe		Unk.
<i>Erodium cicutarium</i> (L.) L'Hér.	4522	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe	Rcd.	Cosmp.
	6366	B7 Tunceli: Center, 9 km from Tunceli to Pülümür (Pülümür Valley)	921	10.02.2015			
<i>Geranium pyrenaicum</i> Burm.f.	4951	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Rocky areas, steppe		Unk.
	4375	B7 Tunceli: Pülümür, Kocatepe v.	1680	05.06.2014			
	4862	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014			
<i>Geranium rotundifolium</i> L.	4963	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Rocky areas, steppe		Unk.
	4286	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	1960	04.06.2014			
	4238	B7 Tunceli: Ovacık, 18 km from Ovacık-Tunceli-Işıkvuran crossroads to Işıkvuran	1635	04.06.2014			
	6700	B7 Tunceli: Center, 3 km from Tunceli to Ovacık (Munzur Valley)	915	16.04.2015			
<i>Geranium tuberosum</i> L.	4660	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe		Ir.-Tur.
	4261	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2100	04.06.2014			
<i>Pelargonium endlicherianum</i> Fenzl	5199	B7 Tunceli: Çemişgezek, 2 km from Dedebeyli to Akçayurt	1100	29.06.2014	Scree		Unk.
	5658	B7 Tunceli: Ovacık, 4 km from Eğripınar to Yenikonak	1455	24.07.2014			
HYDROCHARITACEAE Juss.							
<i>Najas marina</i> L. subsp. <i>intermedia</i> (Wolfg. ex Gorski) Casper	5958	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	875	13.08.2014	In the lake water	Rcd.	Unk.
	5959	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	875	13.08.2014			
JUGLANDACEAE DC. ex Perleb							
<i>Juglans regia</i> L.	6331	B7 Tunceli: Center, 17 km from Tunceli to Ovacık (Munzur Valley)	1014	21.09.2014	Riverside, in gardens		Unk.
JUNCACEAE Juss.							
<i>Juncus alpigenus</i> K.Koch.	4930	B7 Tunceli: Ovacık, 8 km from Eskigedik to Işıkvuran	2120	19.06.2014	Damp places	Rcd.	Unk.
<i>Juncus articulatus</i> L.	5513	B8 Tunceli: Pülümür, between Bardakçı to Derindere	1980	22.07.2014	Damp places		Unk.
JUNCAGINACEAE Juss.							
<i>Triglochin palustris</i> L.	5519	B8 Tunceli: Pülümür, between Bardakçı to Derindere	1980	22.07.2014	Wet meadows	Rcd.	Unk.
LAMIACEAE Martinov							
<i>Ajuga chamaepitys</i> (L.) Schreb. subsp. <i>chia</i> (Schreb.) Arcang.	4478	B7 Tunceli: Hozat, 2 km NE of Akpınar v.	1350	06.06.2014	Steppe		Unk.
	5655	B7 Tunceli: Ovacık, SW of Gözeler v.	1420	24.07.2014			
<i>Ajuga chamaepitys</i> (L.) Schreb. subsp. <i>euphratica</i> P.H.Davis	5164	B7 Tunceli: Çemişgezek, Tahar valley (Ali Boğazi)	1024	29.06.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Ajuga chamaepitys</i> (L.) Schreb. subsp. <i>laevigata</i> (Banks & Sol.) P.H.Davis	4301	B7 Tunceli: Ovacık, 13 km from Işıkvuran to Ağaçpınar	1875	04.06.2014	Steppe		Ir.-Tur.
	5046	B7 Tunceli: Ovacık, between Yazıören and Gözeler	1400	20.06.2014			
	6489	B7 Tunceli: Pülümür, 1 km from Turnadere to Közlüce	1435	29.05.2015			
	6374	B7 Tunceli: Nazımiye, 31 km from Tunceli to Pülümür (Pülümür Valley)	1048	11.03.2015			
<i>Ballota nigra</i> L. subsp. <i>kurdica</i> P.H.Davis	5621	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1990	23.07.2014	Rock crevices	Rcd.	Ir.-Tur.
<i>Clinopodium graveolens</i> (M.Bieb.) Kuntze subsp. <i>graveolens</i> (It is mentioned as <i>Acinos rotundifolius</i> Pers. in flora of Turkey)	4961	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Steppe	Rcd.	Unk.
	4776	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1560	18.06.2014			
<i>Clinopodium vulgare</i> L.	5257	B7 Tunceli: Nazımiye, Pülümür Valley, E slopes of Hılbeşen bridge, across of Ağlayan Kayalar	1560	30.06.2014	Rock crevices	Rcd.	Unk.

<i>Lallemantia iberica</i> (M.Bieb.) Fisch. & C.A.Mey.	3736	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Steppe		Ir.-Tur.
	3861	B7 Tunceli: Center, between Tunceli and Pertek, junction of Tozkoparan v.	1280	24.05.2014			
	4064	B7 Tunceli: Ovacık, 51 km from Tunceli to Ovacık (Munzur Valley), 7 km to Ovacık	1210	26.05.2014			
	4425	B7 Tunceli: Pülümür, 9 km from Pülümür to Tunceli (Pülümür valley), S of Kangallı v.	1324	05.06.2014			
<i>Lallemantia peltata</i> (L.) Fisch. & C.A.Mey.	4960	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Steppe		Ir.-Tur.
	4398	B7 Tunceli: Pülümür, 5 km from Çakırkaya and Dereboyu	1870	05.06.2014			
	4348	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014			
<i>Lamium album</i> L. subsp. <i>crinitum</i> (Montbret & Aucher ex Benth.) Mennema	4671	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe		Euxine
	6537	B7 Tunceli: Ovacık, 7 km from Yoncalı to Ağaçpınar	2015	01.06.2015			
<i>Lamium amplexicaule</i> L.	6431	B7 Tunceli: Center, 7 km from Tunceli to Pülümür (Pülümür Valley)	934	12.04.2015	Steppe		Unk.
	6375	B7 Tunceli: Center, 14 km from Tunceli to Ovacık (Munzur Valley)	1000	11.04.2015			
<i>Lamium garganicum</i> L. subsp. <i>striatum</i> (Sm.) Hayek	4672	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	In shadow of rocks, rocky areas		Unk.
	6477	B7 Tunceli: Nazımiye, Pülümür Valley, 43 km from Tunceli to Pülümür	1208	29.05.2015			
	4248	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2020	04.06.2014			
	6533	B7 Tunceli: Ovacık, 7 km from Yoncalı to Ağaçpınar	2165	01.06.2015			
	4766	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1575	18.06.2014			
	6488	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1528	29.05.2015			
<i>Lamium macrodon</i> Boiss. & Huet	6376	B7 Tunceli: Center, S of Pah bridge, Karakoç-Atlantı junction	939	06.03.2015	Steppe		Ir.-Tur.
<i>Lamium multifidum</i> L.	6480	B7 Tunceli: Pülümür, 45 km from Tunceli to Pülümür (Pülümür Valley)	1194	29.05.2015	Steppe	Rcd.	Ir.-Tur.
<i>Lamium tomentosum</i> Willd.	5817	B7 Tunceli: Ovacık, 8 km from Sarıgül to Yalmanlar, the walk way of Buyer Baba sanctuary	2680	06.08.2014	Rocky areas	Rcd.	Unk.
<i>Lycopus europaeus</i> L.	6137	B7 Tunceli: Mazgirt, S of Dedebağ v.	860	26.08.2014	Riverside	Rcd.	Unk.
<i>Marrubium anisodon</i> K.Koch	4093	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Steppe	Rcd.	Unk.
	3795	B7 Tunceli: Center, between Tunceli and Sütlüce, 1.8 km from Sütlüce junction	1030	23.05.2014			
<i>Marrubium astracanicum</i> Jacq.	4669	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe		Unk.
	4856	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014			
<i>Marrubium parviflorum</i> Fisch. & C.A.Mey. subsp. <i>oligodon</i> (Boiss.) Seybold	5285	B7 Tunceli: Pertek, 8 km from Pertek to Tunceli	1300	19.07.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Melissa officinalis</i> L.	5158	B7 Tunceli: Çemişgezek, between Anıl and Gözlüçayır villages (Tahar Valley)	1000	29.06.2014	Steppe		Euxine
	5676	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1075	24.07.2014			
<i>Mentha longifolia</i> (L.) L. subsp. <i>typhoides</i> (Briq.) Harley	5998	B7 Tunceli: Pülümür, 1.5 km from Turnadere to Közlüce	1500	14.08.2014	Riverside		Unk.
<i>Micromeria cremnophila</i> Boiss. & Heldr. subsp. <i>anatolica</i> P. H. Davis	5165	B7 Tunceli: Çemişgezek, Tahar valley (Ali Boğazı)	1024	29.06.2014	Rock crevices	*	Ir.-Tur.
<i>Micromeria cristata</i> (Hampe) Griseb. subsp. <i>orientalis</i> P.H. Davis	5241	B7 Tunceli: Nazımiye, 800 m from Aşağırabat bridge to Büyükyurt (Hakis) v.	1070	30.06.2014	Rock crevices	*	Ir.-Tur.
	5932	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2184	08.08.2014			
<i>Moluccella laevis</i> L.	4566	B7 Tunceli: Mazgirt, 4 km from Ortaharman to Darikent	1140	16.06.2014	Field side, steppe	Rcd.	Ir.-Tur.
	4070	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014			
	6262	B7 Tunceli: Mazgirt, between Kepektaş and Kuşçu	875	19.09.2014			
<i>Nepeta betonicifolia</i> C.A.Mey.	4811	B8 Tunceli: Pülümür, 2 km E of Kırklar v.	2100	18.06.2014	Steppe		Ir.-Tur.
<i>Nepeta italica</i> L.	4150	B7 Tunceli: Mazgirt, 2 km from Beylermezrası to Aslanyurdu	855	02.06.2014	Steppe		Medit.
	4992	B7 Tunceli: Ovacık, W of Ziyaret v.	1340	20.06.2014			

	3933	B7 Tunceli: Center, 2.5 km from Tunceli to Ovacık (Munzur Valley)	930	25.05.2014			
<i>Nepeta leptantha</i> Boiss. & Hausskn.	5833	B7 Tunceli: Ovacık, 800 m NE of Buyer Baba Lake	2910	06.08.2014	Mt. steppe	*	Ir.-Tur.
<i>Nepeta nuda</i> L. subsp. <i>albiflora</i> (Boiss.) Gams	4748	B7 Tunceli: Ovacık, 3 km S of Ovacık	1315	17.06.2014	Steppe		Unk.
	6088	B8 Tunceli: Pülümür, 2.3 km E of Kırklar v.	2110	16.08.2014			
<i>Nepeta teucriifolia</i> Willd.	5901	B7 Tunceli: Ovacık, Tunceli-Ovacık-Yakatarla junction	1240	08.08.2014	Steppe		Ir.-Tur.
	5581	B7 Tunceli: Pülümür, 2 km N of Dağyolu v.	1566	22.07.2014			
	5381	B8 Tunceli: Nazımiye, 6 km from Sariyayla to Çalığağl	2010	20.07.2014			
	6032	B8 Tunceli: Pülümür, SE of Altınhüseyin	1630	14.08.2014			
	5550	B8 Tunceli: Pülümür, between Pülümür and Yedisu, 9 km after Derindere v.	1780	22.07.2014			
<i>Nepeta trichocalyx</i> Greuter & Burdet	5988	B7 Tunceli: Nazımiye, 10 km NE of Büyükyurt (Hakis) v.	1940	14.08.2014	Steppe	*	Ir.-Tur.
<i>Origanum acutidens</i> (Hand.-Mazz.) Ietsw.	3990	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	1043	25.05.2014	Steppe	*	Ir.-Tur.
	5309	B7 Tunceli: Nazımiye, 3 km from Tunceli-Pülümür-Nazımiye crossroads to Nazımiye	1190	20.07.2014			
	5762	B7 Tunceli: Pülümür, 45 km from Tunceli to Pülümür (Pülümür valley)	1200	06.08.2014			
<i>Origanum vulgare</i> L. subsp. <i>gracile</i> (K.Koch) Ietsw.	5163	B7 Tunceli: Çemişgezek, between Anıl and Gözlüçayır villages (Tahar Valley)	1000	29.06.2014	Dried river bad		Ir.-Tur.
<i>Phlomis armeniaca</i> Willd.	5340	B7 Tunceli: Nazımiye, 3 km from Nazımiye to Dereova	1600	20.07.2014	Steppe		Ir.-Tur.
	5007	B7 Tunceli: Ovacık, 5 km from Eğripınar to Yenikonak	1480	20.06.2014			
<i>Phlomis kurdica</i> Rech.f.	5101	B7 Tunceli: Çemişgezek, 4 km from Vişneli to Arpaderen	1110	21.06.2014	Steppe		Ir.-Tur.
	5142	B7 Tunceli: Çemişgezek, W of Bozağaç village	1120	28.06.2014			
	4088	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014			
	6043	B7 Tunceli: Mazgirt, 5.5 km from Kale to Doludizgin	1560	15.08.2014			
	4512	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014			
	4484	B7 Tunceli: Pertek, 1 km NE of Akdemir v.	1153	06.06.2014			
	4499	B7 Tunceli: Pertek, between Çemişgezek and Elazığ, 10 km from Bulgurtepe to Payamdüzü	1070	06.06.2014			
5059	B7 Tunceli: Pertek, 17 km from Pertek to Tunceli	1300	21.06.2014				
<i>Phlomis oppositiflora</i> Boiss. & Hausskn	5161	B7 Tunceli: Çemişgezek, between Anıl and Gözlüçayır villages (Tahar Valley)	1000	29.06.2014	Steppe	*	Ir.-Tur.
<i>Phlomis pungens</i> Willd. var. <i>hirta</i> Velen.	4120	B7 Tunceli: Mazgirt, Akpazar, S of Yenice v. (N of Şevki mezarası)	1160	02.06.2014	Steppe		Unk.
	5341	B7 Tunceli: Nazımiye, 3 km from Nazımiye to Dereova	1600	20.07.2014			
<i>Phlomis pungens</i> Willd. var. <i>hispida</i> Hub.-Mor.	4595	B7 Tunceli: Mazgirt, 2 km from Akdüven to Güleç	1125	16.06.2014	Steppe	Rcd.	Unk.
<i>Phlomis rigida</i> Labill.	4611	B7 Tunceli: Mazgirt, 11 km from Çukur to Güleç	1230	16.06.2014	Steppe		Ir.-Tur.
	4433	B7 Tunceli: Center, 1.5 km from Aktuluk to Buğulu	1060	05.06.2014			
	5339	B7 Tunceli: Nazımiye, 3 km from Nazımiye to Dereova	1600	20.07.2014			
<i>Phlomis tuberosa</i> L.	4751	B7 Tunceli: Ovacık, 3 km S of Ovacık	1315	17.06.2014	Steppe		Unk.
<i>Prunella vulgaris</i> L.	5509	B8 Tunceli: Pülümür, between Bardakçı to Derindere	1980	22.07.2014	Wet meadows		Euro.-Sib.
<i>Salvia adenocaulon</i> P.H.Davis	5446	B7 Tunceli: Hozat, N of Boydaş v. (Tahar Valley)	1215	21.07.2014	Steppe	* Rcd.	Medit.
<i>Salvia aethiopsis</i> L.	4090	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Steppe	Rcd.	Unk.
	4145	B7 Tunceli: Mazgirt, 6 km from Kızılcık to Göktepe	860	02.06.2014			
<i>Salvia brachyantha</i> (Bordz.) Pobed.	4314	B7 Tunceli: Ovacık, 1.5 km E of Işıkvuran v.	1960	04.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Salvia caespitosa</i> Montbret & Aucher ex Benth.	4876	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014	Mt. steppe	* Rcd.	Ir.-Tur.
	6676	B7 Tunceli: Pülümür, 12 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2536	16.06.2015			
<i>Salvia candidissima</i> Vahl subsp. <i>candidissima</i>	5291	B7 Tunceli: Center, 10 km from Tunceli to Pülümür (Pülümür Valley)	943	20.07.2014	Steppe		Ir.-Tur.
	5104	B7 Tunceli: Çemişgezek, 3 km from Arpaderen to Büyükörünce	1112	21.06.2014			

	5215	B7 Tunceli: Nazımiye, 800 m from Aşağırabat bridge to Büyükyurt (Hakis) v.	1070	30.06.2014			
	5347	B7 Tunceli: Nazımiye, E of Ramazanköy v.	1440	20.07.2014			
<i>Salvia candidissima</i> Vahl subsp. <i>occidentalis</i> Hedge	4151	B7 Tunceli: Mazgirt, 2 km from Beylermezrası to Aslanyurdu	855	02.06.2014	Steppe	Rcd.	Unk.
<i>Salvia cerino-pruinosa</i> Rech.f.	4136	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, junction of Kızılıçık v.	1060	02.06.2014	Steppe	* Rcd.	Ir.-Tur.
	3924	B7 Tunceli: Pertek, 9 km from Pertek to Tunceli	1395	24.05.2014			
<i>Salvia euphratica</i> Montbret & Aucher. var. <i>leiocalycina</i> (Rech.f.) Hedge	7512	B7 Tunceli: Mazgirt, 5.5. km from Kızılıçık to Karayusuf	1270	03.06.2017	Steppe	* Rcd.	Ir.-Tur.
<i>Salvia frigida</i> Boiss.	4259	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2100	04.06.2014	Mt. steppe, degraded oak forest		Ir.-Tur.
	5543	B8 Tunceli: Pülümür, 1-2 km E of Bağırpaşa Mt., 2 km N of Şampaşakaraderbent v.	1886	22.07.2014			
<i>Salvia limbata</i> C.A.Mey.	4937	B7 Tunceli: Ovacık, 4 km from Eskigedik to Işıkvuran	1890	19.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Salvia macrochlamys</i> Boiss. & Kotschy	5694	B7 Tunceli: Center, 8 km from Tunceli to Ovacık (Munzur valley)	955	24.07.2014	Steppe		Ir.-Tur.
<i>Salvia microstegia</i> Boiss. & Balansa	5473	B8 Tunceli: Pülümür, between Derindere and Bardakçı	1840	22.07.2014	Steppe		Ir.-Tur.
<i>Salvia multicaulis</i> Vahl	3691	B7 Tunceli: Center, Tunceli - Elazığ road, 700 m after Aktuluk v.	930	22.05.2014	Degraded oak forest, steppe		Ir.-Tur.
	4302	B7 Tunceli: Ovacık, 13 km from Işıkvuran to Ağaçpınar	1875	04.06.2014			
	4962	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014			
	4252	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2020	04.06.2014			
	4267	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2100	04.06.2014			
	6399	B7 Tunceli: Center, Alibaba nh.	930	11.04.2015			
<i>Salvia palaestina</i> Benth.	4560	B7 Tunceli: Mazgirt, 1 km from Ortaharman to Sülüntaş	1220	16.06.2014	Steppe		Ir.-Tur.
	5109	B7 Tunceli: Pertek, 3 km from Elazığ-Pertek-Çemişgezek crossroads to Çemişgezek (1 km S of Çorovan v.)	870	28.06.2014			
	5073	B7 Tunceli: Pertek, 14 km from Pertek to Çemişgezek, 2 km after Singeç bridge, on the right hills	860	21.06.2014			
<i>Salvia recognita</i> Fisch. C.A.Mey.	4598	B7 Tunceli: Mazgirt, 2 km from Akdüven to Güleç	1125	16.06.2014	Steppe	*	Ir.-Tur.
	5258	B7 Tunceli: Nazımiye, Pülümür Valley, E slopes of Hılbeşen bridge, across of Ağlayan Kayalar	1345	30.06.2014			
	6479	B7 Tunceli: Pülümür, 45 km from Tunceli to Pülümür (Pülümür Valley)	1194	29.05.2015			
<i>Salvia russellii</i> Benth.	4551	B7 Tunceli: Mazgirt, 3.5 km from Ortaharman to Kayacı	1000	16.06.2014	Steppe		Ir.-Tur.
<i>Salvia sclarea</i> L.	4153	B7 Tunceli: Mazgirt, 2 km from Beylermezrası to Aslanyurdu	855	02.06.2014	Steppe scree		Ir.-Tur.
	3930	B7 Tunceli: Center, Alibaba nh.	930	25.05.2014			
	5640	B7 Tunceli: Ovacık, 30 km from Tunceli to Ovacık (Munzur Valley)	1070	24.07.2014			
<i>Salvia staminea</i> Montbret & Aucher ex Benth.	6498	B7 Tunceli: Pülümür, 1.8 km from Hiver to Dağyolu (Pülümür Mt.)	1891	29.05.2015	Steppe		Ir.-Tur.
<i>Salvia syriaca</i> L.	4073	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, around of Kuşçu	867	02.06.2014	Field side, steppe	Rcd.	Ir.-Tur.
	3741	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014			
<i>Salvia tomentosa</i> Mill.	5442	B7 Tunceli: Hozat, between Boydaş and Karaçavuş	1602	21.07.2014	Steppe		Medit.
<i>Salvia trichoclada</i> Benth.	3706	B7 Tunceli: Center, between Tunceli and Pertek, junction of Kopuzlar v.	1020	22.05.2014	Steppe		Ir.-Tur.
<i>Salvia verticillata</i> L. subsp. <i>amasiaca</i> (Frey & Bornm.) Bornm.	6175	B7 Tunceli: 10 km from Pülümür - Erzincan mainroad to Süleymanuşağı village	2210	27.08.2014	Steppe, damp places		Ir.-Tur.
	5450	B7 Tunceli: Hozat, N of Boydaş v. (Tahar Valley)	1215	21.07.2014			
	5219	B7 Tunceli: Nazımiye, 800 m from Aşağırabat bridge to Büyükyurt (Hakis) v.	1070	30.06.2014			
	5057	B7 Tunceli: Ovacık, between Yarımkaya and Şahverdi	1485	20.06.2014			
	5756	B7 Tunceli: Pülümür, 45 km from Tunceli to Pülümür (Pülümür valley)	1200	06.08.2014			
<i>Salvia virgata</i> Jacq.	6174	B7 Tunceli: 10 km from Pülümür - Erzincan	2210	27.08.2014	Steppe		Ir.-Tur.

		mainroad to Süleymanuşağı village					
	5740	B7 Tunceli: Mazgirt, 3 km from Akdüven to Güleç	1102	05.08.2014			
	5356	B7 Tunceli: Nazımiye, Sarıyayla v.	1835	20.07.2014			
	5357	B7 Tunceli: Nazımiye, Sarıyayla v.	1835	20.07.2014			
	6017	B8 Tunceli: Pülümür, 2 km W of Ağaşenliği	1740	14.08.2014			
<i>Satureja hortensis</i> L.	5308	B7 Tunceli: Nazımiye, 3 km from Tunceli-Pülümür-Nazımiye crossroads to Nazımiye	1190	20.07.2014	Ruderal, steppe		Unk.
	6334	B7 Tunceli: Ovacık, 2 km from Tunceli-Ovacık-Aşağıtorunoba crossroads to Aşağıtorunoba	1345	21.09.2014			
	6217	B7 Tunceli: Ovacık, 34 km from Tunceli to Ovacık (Munzur Valley)	1127	28.08.2014			
	5902	B7 Tunceli: Ovacık, Tunceli-Ovacık-Yakatarla junction	1240	08.08.2014			
	6117	B7 Tunceli: Pertek, 2 km W of Bulğurtepe v.	1060	17.08.2014			
	6316	B7 Tunceli: Pülümür, 3.5 km from Pülümür to Çobanyıldızı v.	1395	20.09.2014			
	6033	B8 Tunceli: Pülümür, SE of Altınhüseyin	1630	14.08.2014			
<i>Scutellaria albida</i> L. subsp. <i>condensata</i> (Rech.f.) J.R.Edm.	4622	B7 Tunceli: Mazgirt, 5 km from Çukur to Güleç	1430	16.06.2014	Steppe, ruderal	Rcd.	Ir.-Tur.
<i>Scutellaria albida</i> L. subsp. <i>velenovskiyi</i> (Rech.f.) Greuter & Burdet	4706	B7 Tunceli: Hozat, between Hozat and Ovacık, around of Yüceldi v.	1930	17.06.2014	Steppe	Rcd.	E.Medit.
<i>Scutellaria megalaspis</i> Rech.f.	5240	B7 Tunceli: Nazımiye, 800 m from Aşağıabat bridge to Büyükyurt (Hakis) v.	1070	30.06.2014	Steppe		Ir.-Tur.
<i>Scutellaria orientalis</i> L. subsp. <i>bicolor</i> (Hochst.) J.R.Edm.	5266	B7 Tunceli: Pertek, Camikebir nh.	1100	19.07.2014	Rocky slopes	*	Ir.-Tur.
<i>Scutellaria orientalis</i> L. subsp. <i>haussknechtii</i> (Boiss.) J.R.Edm.	4517	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe, rocky areas	*	Ir.-Tur.
	3927	B7 Tunceli: Center, Alibaba nh.	930	25.05.2014			
	3905	B7 Tunceli: Pertek, 12 km from Pertek to Çemişgezek, around of Singeç bridge	855	24.05.2014			
	3752	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014			
	3753	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014			
<i>Scutellaria orientalis</i> L. subsp. <i>orientalis</i>	5052	B7 Tunceli: Ovacık, between Gözeler and Yazıören, 1 km S of Mollaaliler v.	1380	20.06.2014	Steppe		Ir.-Tur.
<i>Scutellaria orientalis</i> L. subsp. <i>virens</i> (Boiss. & Kotschy) J.R.Edm.	5306	B7 Tunceli: Nazımiye, 3 km from Tunceli-Pülümür-Nazımiye crossroads to Nazımiye	1190	20.07.2014	Steppe		Ir.-Tur.
<i>Scutellaria salviifolia</i> Benth.	3685	B7 Tunceli: Center, Tunceli - Elaziğ road, 700 m after Aktuluk v.	930	22.05.2014	Steppe	Rcd.	Unk.
	4159	B7 Tunceli: Nazımiye, 6.5 km from Nazımiye to Tunceli, 400 m after Geriş v. junction	1340	03.06.2014			
<i>Stachys balansae</i> Boiss. & Kotschy	5878	B7 Tunceli: Nazımiye, 6 km NE of Büyükyurt (Hakis) v.	2050	07.08.2014	Steppe	*	E.Medit.
<i>Stachys burgsdorffoides</i> (Benth.) Boiss.	4967	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Steppe		Ir.-Tur.
	4187	B7 Tunceli: Center, 29 km from Tunceli to Pülümür (Pülümür Valley), 650 m NW of Kutudere bridge	1070	03.06.2014			
<i>Stachys cretica</i> L. subsp. <i>anatolica</i> Rech.f.	5801	B7 Tunceli: Ovacık, 9.5 km from Kocatepe to Yalmanlar (the walk way of Buyer Baba sanctuary)	2600	06.08.2014	Steppe	*	Unk.
<i>Stachys iberica</i> M.Bieb. subsp. <i>stenostachya</i> (Boiss.) Rech.f.	5328	B7 Tunceli: Nazımiye, 3 km from Nazımiye to Dereova	1600	20.07.2014	Steppe		Ir.-Tur.
	4160	B7 Tunceli: Nazımiye, 6.5 km from Nazımiye to Tunceli, 400 m after Geriş v. junction	1340	03.06.2014			
<i>Stachys lavandulifolia</i> Vahl	4034	B7 Tunceli: Ovacık, 41 km from Tunceli to Ovacık (Munzur Valley)	1175	26.05.2014	Steppe		Unk.
	3852	B7 Tunceli: Hozat, 3.5 km from Demirkapı to Dervişçemal	1760	23.05.2014			
<i>Stachys melampyroides</i> Hand.-Mazz.	4544	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	985	16.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Stachys saturejoides</i> Montbret & Aucher ex Benth.	3913	B7 Tunceli: Pertek, Camikebir nh.	1090	24.05.2014	Steppe	Rcd.	Ir.-Tur.
	3890	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	865	24.05.2014			
<i>Stachys setifera</i> C.A.Mey. subsp. <i>lycia</i> (Gand.) R.Bhattacharjee	5663	B7 Tunceli: Ovacık, 10 km from Eğripınar to Yenikonak	1650	24.07.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Stachys spectabilis</i> Choisy ex DC.	5427	B7 Tunceli: Hozat, between Karaçavuş and Boydaş	1720	21.07.2014	Steppe		Ir.-Tur.

	5616	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1875	23.07.2014			
	6078	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014			
	6093	B8 Tunceli: Pülümür, 2.6 km E of Kırklar v.	2120	16.08.2014			
<i>Stachys tundjeliensis</i> Kit Tan & Sorger	5404	B7 Tunceli: Hozat, 1 km from Demirkapı to Dervişcema	1620	21.07.2014	Steppe	*	Ir.-Tur.
	3842	B7 Tunceli: Center, 12 km from Aktuluk to Demirkapı	1430	23.05.2014			
	5619	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1960	23.07.2014			
	5053	B7 Tunceli: Ovacık, between Gözele and Yazıören, 1 km S of Mollaaliler v.	1380	20.06.2014			
	4037	B7 Tunceli: Ovacık, 41 km from Tunceli to Ovacık (Munzur Valley)	1175	26.05.2014			
<i>Teucrium chamaedrys</i> L. subsp. <i>sinuatum</i> (Celak.) Rech.f.	5239	B7 Tunceli: Nazımiye, 800 m from Aşağırabat bridge to Büyükyurt (Hakis) v.	1070	30.06.2014	Rock crevices, steppe		Ir.-Tur.
	5331	B7 Tunceli: Nazımiye, 3 km from Nazımiye to Dereova	1600	20.07.2014			
	5916	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2005	08.08.2014			
<i>Teucrium chamaedrys</i> L. subsp. <i>tauricola</i> Rech.f.	4977	B7 Tunceli: Center, 2 km from Sarıtaş to Gözen (İksor), Kalan Valley	1180	19.06.2014	Steppe	Rcd.	Medit.
<i>Teucrium leucophyllum</i> Montbret & Aucher ex Benth.	5201	B7 Tunceli: Çemişgezek, 2 km from Dedebeyle to Akçayurt	1100	29.06.2014	Scree	*	Ir.-Tur.
<i>Teucrium multicaule</i> Montbret & Aucher ex Benth.	4125	B7 Tunceli: Mazgirt, Akpazar, S of Yenice v. (N of Şevki mezarı)	1250	02.06.2014	Steppe		Ir.-Tur.
	3925	B7 Tunceli: Center, Alibaba nh.	930	25.05.2014			
	4430	B7 Tunceli: Pülümür, 9 km from Pülümür to Tunceli (Pülümür valley), S of Kangallı v.	1324	05.06.2014			
	4431	B7 Tunceli: Pülümür, 9 km from Pülümür to Tunceli (Pülümür valley), S of Kangallı v.	1324	05.06.2014			
	3750	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014			
	6456	B7 Tunceli: Center, 15 km from Tunceli to Pülümür (Pülümür Valley)	1019	29.05.2015			
<i>Teucrium orientale</i> L. var. <i>glabrescens</i> Hausskn. ex Borm.	5027	B7 Tunceli: Ovacık, 10 km from Eğripınar to Yenikonak	1570	20.06.2014	Steppe		Ir.-Tur.
	6104	B7 Tunceli: Pülümür, 7 km from Pülümür to Ardıçlı (Gersunut) v.	1690	16.08.2014			
<i>Teucrium orientale</i> L. var. <i>orientale</i>	4207	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe		Ir.-Tur.
	3774	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014			
<i>Teucrium orientale</i> L. var. <i>puberulens</i> Ekim	6205	B7 Tunceli: Hozat, 16 km from Hozat to Ovacık	1940	28.08.2014	Steppe		Ir.-Tur.
	5018	B7 Tunceli: Ovacık, 10 km from Eğripınar to Yenikonak	1570	20.06.2014			
<i>Teucrium parviflorum</i> Schreber	4520	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe		Ir.-Tur.
	4109	B7 Tunceli: Mazgirt, 7 km from Kızılcık to Göktepe	935	02.06.2014			
<i>Teucrium polium</i> L.	4521	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe		Unk.
<i>Thymus convolutus</i> Klokov	4901	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2380	18.06.2014	Steppe	*	Ir.-Tur.
<i>Thymus fallax</i> Fisch. & C.A.Mey.	5553	B8 Tunceli: Pülümür, 5 km S of Derindere	2030	22.07.2014	Steppe		Ir.-Tur.
<i>Thymus haussknechtii</i> Velen.	5108	B7 Tunceli: Çemişgezek, 3 km from Vişneli to Çemişgezek	880	21.06.2014	Steppe, on rocks	*	Ir.-Tur.
	5159	B7 Tunceli: Çemişgezek, between Anıl and Gözlüçayır villages (Tahar Valley)	1000	29.06.2014			
	3911	B7 Tunceli: Pertek, 12 km from Pertek to Çemişgezek, around of Singeç bridge	855	24.05.2014			
<i>Thymus kotschyanus</i> Boiss. & Hohen.	5229	B7 Tunceli: Nazımiye, 800 m from Aşağırabat bridge to Büyükyurt (Hakis) v.	1070	30.06.2014	Steppe		Ir.-Tur.
	4210	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014			
	4769	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1575	18.06.2014			
<i>Thymus leucotrichus</i> Hal.	6648	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2204	27.06.2015	Steppe		Unk.
	4845	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014			
<i>Thymus sipyleus</i> Boiss.	7513	B7 Tunceli: Mazgirt, 5.5. km from Kızılcık to Karayusuf	1270	03.06.2017	Steppe	Rcd.	Unk.
<i>Ziziphora capitata</i> L.	3684	B7 Tunceli: Center, Tunceli - Elaziğ road, 700 m after Aktuluk v.	930	22.05.2014	Steppe		Unk.
	3686	B7 Tunceli: Center, Tunceli - Elaziğ road, 700 m after Aktuluk v.	930	22.05.2014			

	4573	B7 Tunceli: Mazgirt, 1 km S of Geçitveren v.	1345	16.06.2014			
	3764	B7 Tunceli: Pertek, between Beydamı and Yolkanak	1300	22.05.2014			
<i>Ziziphora clinopodioides</i> Lam.	5181	B7 Tunceli: Çemişgezek, 4 km from Çemişgezek to Gedikler	1190	29.06.2014	Steppe		Ir.-Tur.
	5322	B7 Tunceli: Nazımiye, 2 km from Nazımiye to Dereova	1700	20.07.2014			
	5917	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2005	08.08.2014			
LINACEAE DC. ex Perleb							
<i>Linum catharticum</i> L.	6164	B7 Tunceli: 10 km from Pülümür - Erzincan mainroad to Süleymanuşağı village	2210	27.08.2014	Damp places	Rcd.	Unk.
	5516	B8 Tunceli: Pülümür, between Bardakçı to Derindere	1980	22.07.2014			
<i>Linum meletonis</i> Hand.-Mazz.	4265	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2100	04.06.2014	Mt. steppe	Rcd.	Ir.-Tur.
<i>Linum mucronatum</i> Bertol. subsp. <i>armenum</i> (Bordz.) P.H.Davis	4002	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	995	25.05.2014	Steppe		Ir.-Tur.
	4909	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Ağaçpınar	2110	19.06.2014			
	4936	B7 Tunceli: Ovacık, 12 km from Işıkvuran to Eskigedik	1985	19.06.2014			
	4903	B7 Tunceli: Pülümür, 8 km NW of Ardıçlı (Gersunut) v.	2325	18.06.2014			
	3802	B7 Tunceli: Center, 2 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1050	23.05.2014			
	3815	B7 Tunceli: Center, 3 km from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce	1070	23.05.2014			
<i>Linum mucronatum</i> Bertol. subsp. <i>mucronatum</i>	5178	B7 Tunceli: Çemişgezek, 2.6 km from Çemişgezek to Gedikler	1100	29.06.2014	Steppe		Ir.-Tur.
	4536	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	985	16.06.2014			
	5069	B7 Tunceli: Pertek, 4.5 km from Pertek to Tunceli, S of Mercimek v.	1307	21.06.2014			
	3754	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkanak	1114	22.05.2014			
	4636	B7 Tunceli: Hozat, 4 km from Hozat to Uzundal	1625	17.06.2014			
	4098	B7 Tunceli: Mazgirt, 7 km from Kızılek to Göktepe	935	02.06.2014			
<i>Linum obtusatum</i> (Boiss.) Stapf.	4364	B7 Tunceli: Pülümür, 3 km from Sarıgül to Yalmanlar	2250	05.06.2014	Steppe		Ir.-Tur.
<i>Linum tenuifolium</i> L.	5521	B8 Tunceli: Pülümür, between Bardakçı and Derindere, 300 m from Kırdım junction to Kırdım v.	1750	22.07.2014	Steppe	Rcd.	Unk.
<i>Linum unguiculatum</i> P.H.Davis	4126	B7 Tunceli: Mazgirt, Akpazar, S of Yenice v. (N of Şevki mezarı)	1250	02.06.2014	Steppe	* Rcd.	Ir.-Tur.
LORANTHACEAE Juss.							
<i>Loranthus europaeus</i> Jacq.	5945	B7 Tunceli: Center, S of Dilek v.	1093	08.08.2014	On Oaks	Rcd.	Unk.
MORACEAE Gaudich.							
<i>Ficus carica</i> L. subsp. <i>rupestris</i> (Hausskn.) Browcz	6246	B7 Tunceli: Nazımiye, 400 m from Aşağıabat bridge to Büyükyurt (Hakis) v.	1070	05.09.2014	Stream side, oak forest		Ir.-Tur.
	3909	B7 Tunceli: Pertek, 12 km from Pertek to Çemişgezek, around of Singeç bridge	855	24.05.2014			
<i>Morus alba</i> L.	Obs.	B7 Tunceli: Center, Gözen (İksor) v.	1490	19.06.2014	Field side, degraded oak forest		Unk.
OLEACEAE Hoffmanns. & Link							
<i>Fraxinus angustifolia</i> Vahl subsp. <i>syriaca</i> (Boiss.) Yalt.	5677	B7 Tunceli: Center, 26 km from Tunceli to Ovacık (Munzur Valley)	1075	24.07.2014	Stream side		Ir.-Tur.
ONAGRACEAE Juss.							
<i>Epilobium anatolicum</i> Hausskn.	5425	B7 Tunceli: Hozat, between Karaçavuş and Boydaş	1720	21.07.2014	Riverside, damp places		Unk.
	5952	B7 Tunceli: Ovacık, W of Ziyaret v.	1335	08.08.2014			
	5515	B8 Tunceli: Pülümür, between Bardakçı to Derindere	1980	22.07.2014			
	5995	B7 Tunceli: Pülümür, 1.5 km from Turnadere to Közlüce	1500	14.08.2014			
<i>Epilobium hirsutum</i> L.	5441	B7 Tunceli: Hozat, between Boydaş and Karaçavuş	1602	21.07.2014	Riverside, damp places		Unk.
	6225	B7 Tunceli: Mazgirt, E of Akyünlü v.	1173	03.09.2014			
	6267	B7 Tunceli: Mazgirt, W of Yenice v.	1140	19.09.2014			
	5355	B7 Tunceli: Nazımiye, Sarıyayla v.	1835	20.07.2014			

	5914	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	1800	08.08.2014			
	6075	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014			
<i>Epilobium lanceolatum</i> Sebast. & Mauri	5256	B7 Tunceli: Nazimiye, Pülümür Valley, E slopes of Hılbeşen bridge, across of Ağlayan Kayalar	1560	30.06.2014	Riverside, damp places	Rcd.	Unk.
<i>Epilobium minutiflorum</i> Hausskn.	4480a	B7 Tunceli: Hozat, Çemişgezek-Elazığ road, S of Akpınar v.	1224	06.06.2014	Riverside, damp places		Ir.-Tur.
<i>Epilobium palustre</i> L.	5017	B7 Tunceli: Ovacık, 10 km from Eğripınar to Yenikonak	1570	20.06.2014	Riverside, damp places	Rcd.	Unk.
<i>Epilobium stevenii</i> Boiss.	5564	B8 Tunceli: Pülümür, between Bardakçı and Üçdam	1450	22.07.2014	Steppe	Rcd.	Ir.-Tur.
OROBANCHACEAE Vent.							
<i>Bornmuellerantha aucheri</i> (Boiss.) Rothm.	5414	B7 Tunceli: Hozat, 9 km from Demirkapı to Dervişçemal	1765	21.07.2014	Steppe	Rcd.	Ir.-Tur.
	5859	B7 Tunceli: Nazimiye, 5 km NE of Büyükyurt (Hakis) v.	1835	07.08.2014			
	5327	B7 Tunceli: Nazimiye, 3 km from Nazimiye to Dereova	1600	20.07.2014			
	5923	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2290	08.08.2014			
<i>Bungea trifida</i> (Vahl) C.A.Mey.	4124	B7 Tunceli: Mazgirt, Akpazar, S of Yenice v. (N of Şevki mezarası)	1250	02.06.2014	Steppe		Ir.-Tur.
	4351	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014			
<i>Euphrasia pectinata</i> Ten.	4939	B7 Tunceli: Ovacık, 2 km from Eskigedik to Işıkvuran	1918	19.06.2014	Damp places		Euro.-Sib.
	5788	B7 Tunceli: Pülümür, between Yalmanlar and Kocatepe, NW of Sarıgül v.	2230	06.08.2014			
<i>Melampyrum arvense</i> L.	4379	B7 Tunceli: Pülümür, Kocatepe v.	1680	05.06.2014	Damp places, dried river bad		Euro.-Sib.
<i>Odontites vulgaris</i> Moench	6138	B7 Tunceli: Mazgirt, S of Dedebağ v.	860	26.08.2014	Riverside, damp places	Rcd.	Euro.-Sib.
<i>Orobanche kurdica</i> Boiss. & Hausskn. ex Boiss.	4006	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	995	25.05.2014	Steppe		Ir.-Tur.
<i>Orobanche pubescens</i> d'Urv.	4947	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Steppe	Rcd.	Medit.
<i>Orobanche sintenisii</i> Beck ex Bomm.	3917	B7 Tunceli: Pertek, Camikebir nh.	1090	24.05.2014	Steppe	Rcd.	Ir.-Tur.
<i>Parentucellia latifolia</i> (L.) Caruel	5444	B7 Tunceli: Hozat, N of Boydaş v. (Tahar Valley)	1215	21.07.2014	Steppe	Rcd.	Medit.
<i>Pedicularis comosa</i> L. var. <i>acmodonta</i> (Boiss.) Boiss.	4057	B7 Tunceli: Ovacık, 48 km from Tunceli to Ovacık, 10 km before Ovacık (Munzur Valley)	1190	26.05.2014	Wet meadows		Unk.
	4370	B7 Tunceli: Pülümür, Kocatepe v.	1680	05.06.2014			
	4825	B8 Tunceli: Pülümür, E of Kırklar v.	2300	18.06.2014			
<i>Pedicularis comosa</i> L. var. <i>sibthorpii</i> (Boiss.) Boiss.	6662	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2516	27.06.2015	Rocky areas	Rcd.	Unk.
	4890	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014			
<i>Pedicularis munzurdaghensis</i> Armağan	4874	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014	Limestone rocks crevices	*	Ir.-Tur.
	6663	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2516	27.06.2015			
<i>Phelipanche arenaria</i> (Borkh.) Pomel (syn: <i>O. arenaria</i> Borkh.)	4626	B7 Tunceli: Hozat, between Çığırlı and Dervişçemal, junction of Buzlupınar	1740	17.06.2014	Steppe	Rcd.	Unk.
	4415	B7 Tunceli: Pülümür, between Dereboyu and Sağlamtaş	1540	05.06.2014			
<i>Phelypaea coccinea</i> (M.Bieb.) Poir.	4391	B7 Tunceli: Pülümür, 4 km from Çakırkaya and Dereboyu	1905	05.06.2014	On <i>Salvia</i> sp.	Rcd.	Ir.-Tur.
<i>Rhinanthus angustifolius</i> C.C.Gmel. subsp. <i>grandiflorus</i> (Wallr.) D.A.Webb	4801	B8 Tunceli: Pülümür, 2 km from Hasangazi to Kırklar	1816	18.06.2014	Damp places	Rcd.	Unk.
<i>Rhynchosorys elephas</i> (L.) Griseb.	5951	B7 Tunceli: Ovacık, W of Ziyaret v.	1335	08.08.2014	Damp places	Rcd.	Euro.-Sib.
<i>Rhynchosorys odontophylla</i> R.B.Burb. & I.Richardson	5888	B7 Tunceli: Nazimiye, 8 km NE of Büyükyurt (Hakis) v.	1963	07.08.2014	Oak forest	*	Ir.-Tur.
PAEONIACEAE Raf.							

<i>Paeonia arietina</i> G.Anderson	4457	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Steppe, Oak forest		Unk.
	4293	B7 Tunceli: Ovacık, Işıkvuran v.	1710	04.06.2014			
	4352	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014			
PAPAVERACEAE Juss.							
<i>Fumaria asepala</i> Boiss.	3794	B7 Tunceli: Center, between Tunceli and Sütlüce, 1.8 km from Sütlüce junction	1030	23.05.2014	Field side, steppe		Unk.
<i>Glaucium cappadocicum</i> Boiss.	6168	B7 Tunceli: 10 km from Pülümür - Erzincan mainroad to Süleymanuşağı village	2210	27.08.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Glaucium leiocarpum</i> Boiss.	6703	B7 Tunceli: Çemişgezek, 1.5 km W of Sarıbalta v.	1187	28.06.2015	Steppe		Unk.
	4403	B7 Tunceli: Pülümür, between Dereboyu and Sağlamtaş	1610	05.06.2014			
<i>Hypecoum procumbens</i> L.	4500	B7 Tunceli: Pertek, between Çemişgezek and Elaziğ, 2 km from Payamdüzü to Akçapınar	945	06.06.2014	Field side, steppe	Rcd.	Unk.
<i>Hypecoum pseudograndiflorum</i> Petrovic	3792	B7 Tunceli: Center, between Tunceli and Sütlüce, 1.8 km from Sütlüce junction	1030	23.05.2014	Field side, steppe	Rcd.	Unk.
<i>Papaver armeniacum</i> Lam.	4188	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Papaver bracteatum</i> Lindl.	4228	B7 Tunceli: Ovacık, 8 km from Ovacık-Tunceli-Yakatarla to Yakatarla	1680	04.06.2014	Steppe		Unk.
	4051	B7 Tunceli: Ovacık, 47 km from Tunceli to Ovacık, 11 km before Ovacık (Munzur Valley)	1200	26.05.2014			
<i>Papaver dubium</i> L.	3986	B7 Tunceli: Center, 10 km from Tunceli to Ovacık (Munzur Valley)	960	25.05.2014	Steppe		Unk.
<i>Papaver macrostomum</i> Boiss. & A.Huet	3989	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	1043	25.05.2014	Steppe		Ir.-Tur.
	4753	B7 Tunceli: Pülümür, 1 km from Pülümür-Tunceli-Turnadere crossroads to Turnadere v.	1455	18.06.2014			
<i>Papaver persicum</i> Lindl. subsp. <i>fulvum</i> Kit Tan & Sorger	3962	B7 Tunceli: Center, 7 km from Tunceli to Ovacık (Munzur Valley)	960	25.05.2014	Steppe	* Rcd.	Unk.
<i>Papaver persicum</i> Lindl. subsp. <i>persicum</i>	4137	B7 Tunceli: Mazgirt, between Tunceli and Kovancılar, junction of Kızılçık v.	1060	02.06.2014	Steppe		Unk.
<i>Papaver rhoeas</i> L.	3988	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	1043	25.05.2014	Steppe		Unk.
<i>Roemeria hybrida</i> (L.) DC.	5156	B7 Tunceli: Çemişgezek, between Anıl and Gözlüçayır villages (Tahar Valley)	1000	29.06.2014	Steppe		Unk.
PEDALIACEAE R.Br.							
<i>Sesamum indicum</i> L.	5969	B7 Tunceli: Pertek, 3 km from Geçityaka to Dorutay	1000	13.08.2014	Cultivate		Unk.
PHYLLANTHACEAE Martinov							
<i>Andrachne telephioides</i> L.	5965	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	875	13.08.2014	Steppe		Unk.
PINACEAE Spreng. ex F.Rudolphi							
<i>Pinus sylvestris</i> L. var. <i>hamata</i> Steven	5522	B8 Tunceli: Pülümür, between Bardakçı and Derindere, 300 m from Kırdım junction to Kırdım v.	1750	22.07.2014	Forest		Euro.- Sib.
PLANTAGINACEAE Juss.							
<i>Anarrhinum orientale</i> Benth.	3746	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014	Steppe		Ir.-Tur.
<i>Chaenorhinum huber-morathii</i> P.H.Davis	7459	B7 Tunceli: Pertek, between Pertek and Mercimek v.	1280	26.05.2017	Rocky slopes	*	Ir.-Tur.
	7524	B7 Tunceli: Pertek, 4 km from Pertek to Tunceli	1385	03.06.2017			
<i>Kickxia spuria</i> (L.) Dumort subsp. <i>integrifolia</i> (Brot.) R.Fernandes	6054	B7 Tunceli: Mazgirt, Yukarıoyumca v.	1430	15.08.2014	Steppe		Unk.
	5737	B7 Tunceli: Mazgirt, 3 km from Akdüven to Güleç	1102	05.08.2014			
<i>Linaria chalepensis</i> (L.) Mill.	6491	B7 Tunceli: Pülümür, 1 km from Turnadere to Közlüce	1435	29.05.2015	Steppe	Rcd.	E.Medit.
	6690	B7 Tunceli: Center, 17 km from Tunceli to Ovacık (Munzur valley)	1040	30.04.2015			
	6503	B7 Tunceli: Center, 1 km from Sarıtaş to Gözen (İksor), Kalan Valley	1160	30.05.2015			
<i>Linaria corifolia</i> Desf.	5577	B7 Tunceli: Pülümür, 3 km from Erzincan-Erzurum-Tunceli crossroads to Pülümür	1335	22.07.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Linaria kurdica</i> Boiss. & Hohen. subsp. <i>araratica</i> (Tzvelev) P.H.Davis	6167	B7 Tunceli: 10 km from Pülümür - Erzincan mainroad to Süleymanuşağı village	2210	27.08.2014	Steppe	Rcd.	Ir.-Tur.
	5761	B7 Tunceli: Pülümür, 45 km from Tunceli to Pülümür (Pülümür valley)	1200	06.08.2014			
<i>Linaria kurdica</i> Boiss. & Hohen.	5583	B7 Tunceli: Pülümür, Dağyolu v.	1725	22.07.2014	Steppe	Rcd.	Ir.-Tur.

subsp. <i>aucheri</i> (Boiss.) P.H.Davis								
<i>Linaria kurdica</i> Boiss. & Hohen. subsp. <i>kurdica</i>	5419	B7 Tunceli: Hozat, 700 m N of Hozat-Tunceli-Pertek crossroads	1520	21.07.2014	Steppe		Ir.-Tur.	
	5732	B7 Tunceli: Mazgirt, N of Akdüven v.	1130	05.08.2014				
	5392	B7 Tunceli: Nazımiye, 3 km from Dereova to Yayıkçağıl	1630	20.07.2014				
<i>Plantago major</i> L.	6024	B8 Tunceli: Pülümür, S of Ağaşenliği v., between Ağaşenliği and Altınhüseyin	1650	14.08.2014	Damp places		Unk.	
<i>Veronica anagallis-aquatica</i> L. subsp. <i>lysimachioides</i> (Boiss.) M.A.Fisch. (= <i>Veronica lysimachioides</i> Boiss.)	5617	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1910	23.07.2014	Riverside, damp places		Unk.	
	4931	B7 Tunceli: Ovacık, 8 km from Eskigedik to Işıkvuran	2120	19.06.2014				
	5669	B7 Tunceli: Ovacık, 9.5 km from Ovacık to Tunceli (Munzur Valley)	1193	24.07.2014				
	5950	B7 Tunceli: Ovacık, W of Ziyaret v.	1335	08.08.2014				
	6077	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014				
<i>Veronica anagalloides</i> Guss. subsp. <i>heureka</i> M.A.Fisch.	5618	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1910	23.07.2014	Riverside, damp places	Rcd.	Ir.-Tur.	
	5993	B7 Tunceli: Pülümür, 1.5 km from Turnadere to Közlüce	1500	14.08.2014				
<i>Veronica beccabunga</i> L.	5511	B8 Tunceli: Pülümür, between Bardakçı to Derindere	1980	22.07.2014	Riverside		Unk.	
<i>Veronica bozakmanii</i> M.A.Fisch.	6424	B7 Tunceli: Pülümür, 20 km from Pülümür to Tunceli (Pülümür valley)	1215	12.04.2015	Steppe		Ir.-Tur.	
	4781	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1560	18.06.2014				
<i>Veronica macrostachya</i> Vahl subsp. <i>mardinensis</i> (Bornm.) M.A. Fisch.	4170	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014	Steppe, degraded oak forest	*	Ir.-Tur.	
<i>Veronica orientalis</i> Mill. subsp. <i>nimrodi</i> (Richt. ex Stapf) M.A.Fisch.	4246	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2020	04.06.2014	Steppe	*	Unk.	
	4264	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2100	04.06.2014				
<i>Veronica orientalis</i> Mill. subsp. <i>orientalis</i>	3698	B7 Tunceli: Center, Tunceli - Elaziğ road, 700 m after Aktuluk v.	930	22.05.2014	Steppe, degraded oak forest		Ir.-Tur.	
	3790	B7 Tunceli: Center, between Tunceli and Sütlüce, 1.8 km from Sütlüce junction	1030	23.05.2014				
	3831	B7 Tunceli: Center, 16 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (9 km before Çıralı v.)	1850	23.05.2014				
	3966	B7 Tunceli: Center, 2.5 km from Tunceli-Ovacık-Dedeoğaç crossroads to Dedeoğaç v. (Munzur Valley)	1100	25.05.2014				
	4105	B7 Tunceli: Mazgirt, 7 km from Kızılcık to Göktepe	935	02.06.2014				
<i>Veronica polita</i> Fr.	6430	B7 Tunceli: Center, 7 km from Tunceli to Pülümür (Pülümür Valley)	934	12.04.2015	Steppe	Rcd.	Unk.	
PLATANACEAE T.Lestib.								
<i>Platanus orientalis</i> L.	5082	B7 Tunceli: Çemişgezek, 7 km from Payamdüzü to Bulgurtepe (Doğan Stream Valley)	922	21.06.2014	Riverside		Unk.	
	5138	B7 Tunceli: Çemişgezek, W of Bozağaç village	1120	28.06.2014				
PLUMBAGINACEAE Juss.								
<i>Acantholimon calvertii</i> Boiss.	3899	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	865	24.05.2014	Steppe	*	Ir.-Tur.	
<i>Plumbago europaea</i> L.	6135	B7 Tunceli: Mazgirt, S of Dedeoğaç v.	860	26.08.2014	Steppe		Unk.	
POACEAE Barnhart								
<i>Aegilops cylindrica</i> Host.	4593	B7 Tunceli: Mazgirt, between Akdüven and Koyunuşağı	1125	16.06.2014	Steppe	Rcd.	Ir.-Tur.	
<i>Aegilops neglecta</i> Reg. ex Bertol.	5081	B7 Tunceli: Pertek, between Dorutay and Akdemir	1300	21.06.2014	Steppe		Medit.	
	4405	B7 Tunceli: Pülümür, between Dereboyu and Sağlamtaş	1610	05.06.2014				
<i>Aegilops speltoides</i> Tausch var. <i>ligustica</i> (Savign.) Bornm.	5089	B7 Tunceli: Çemişgezek, between Çemişgezek and Elaziğ, 3 km NW of Sarbalta v.	1050	21.06.2014	Steppe		Unk.	
<i>Aegilops triuncialis</i> L.	4474	B7 Tunceli: Hozat, 2 km NE of Akpınar v.	1350	06.06.2014	Steppe		Unk.	
<i>Aegilops umbellulata</i> Zhuk.	4172	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014	Steppe		Ir.-Tur.	
<i>Alopecurus aucheri</i> Boiss.	4919	B7 Tunceli: Ovacık, 6 km from Işıkvuran to Eskigedik	2250	19.06.2014	Steppe	Rcd.	Ir.-Tur.	

<i>Avena barbata</i> Pott ex Link	4535	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	985	16.06.2014	Steppe	Rcd.	Medit.
	4494	B7 Tunceli: Pertek, between Çemişgezek and Elazığ, 6 km from Bulgurtepe to Payamdüzü	980	06.06.2014			
<i>Briza humilis</i> M.Bieb.	4541	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	985	16.06.2014	Steppe	Rcd.	Unk.
<i>Bromus danthoniae</i> Trin.	5050	B7 Tunceli: Ovacık, between Yazıören and Gözeler	1400	20.06.2014	Steppe		Unk.
	4407	B7 Tunceli: Pülümür, between Dereboyu and Sağlamtaş	1610	05.06.2014			
<i>Bromus intermedius</i> Guss.	4376	B7 Tunceli: Pülümür, Kocatepe v.	1680	05.06.2014	Steppe	Rcd.	Unk.
<i>Bromus japonicus</i> Thunb. subsp. <i>anatolicus</i> (Boiss. & Heldr.) Penzes	4446	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Steppe	Rcd.	Unk.
<i>Bromus scoparius</i> L.	4747	B7 Tunceli: Ovacık, 3 km S of Ovacık	1315	17.06.2014	Steppe	Rcd.	Unk.
<i>Bromus squarrosus</i> L.	4998	B7 Tunceli: Ovacık, Ziyaret v., N of Munzur Gözeleri	1400	20.06.2014	Steppe		Unk.
<i>Bromus tectorum</i> L.	4612	B7 Tunceli: Mazgirt, 8 km from Çukur to Güleç	1365	16.06.2014	Steppe		Unk.
	4528	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014			
	4945	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	1915	19.06.2014			
<i>Chrysopogon gryllus</i> (L.) Trin.	5040	B7 Tunceli: Ovacık, between Yazıören and Gözeler	1400	20.06.2014	Steppe		Unk.
<i>Cynodon dactylon</i> (L.) Pers. var. <i>villosus</i> Regel	4555	B7 Tunceli: Mazgirt, 1 km from Ortaharman to Sülüntaş	1220	16.06.2014	Steppe		Unk.
<i>Dactylis glomerata</i> L. subsp. <i>glomerata</i>	4702	B7 Tunceli: Hozat, between Hozat and Ovacık, around of Yüceldi v.	1930	17.06.2014	Steppe		Euro.-Sib.
<i>Dactylis glomerata</i> L. subsp. <i>hispanica</i> (Roth) Nyman	4353	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014	Steppe		Unk.
	4368	B7 Tunceli: Pülümür, 3 km from Sarıgül to Yalmanlar	2250	05.06.2014			
<i>Deschampsia caespitosa</i> (L.) P.Beauv.	4870	B8 Tunceli: Pülümür, N of Kızılmescit v. (S of Bağırpaşa Mt.)	2080	18.06.2014	Steppe		Unk.
<i>Eremopoa persica</i> (Trin.) Roshev.	4695	B7 Tunceli: Hozat, 4.5 km from Uzundal to Yüceldi	1970	17.06.2014	Steppe		Ir.-Tur.
<i>Festuca chalcophaea</i> V.Krecz. & Bobrov.	4728	B7 Tunceli: Hozat, 15 km from Ovacık to Hozat (NE of Halitpınar v.)	1800	17.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Heterantherium piliferum</i> (Banks & Sol.) Hochst.	4462	B7 Tunceli: Hozat, 3 km from Dervişçemal to Balkaynar	1675	06.06.2014	Steppe		Ir.-Tur.
<i>Hordeum bulbosum</i> L.	5036	B7 Tunceli: Ovacık, 3 km from Cevizlidere to Kozluca, SE of Karataş v.	1625	20.06.2014	Steppe		Unk.
	5008	B7 Tunceli: Ovacık, 5 km from Eğripınar to Yenikonak	1480	20.06.2014			
	4233	B7 Tunceli: Ovacık, 15 km from Ovacık-Tunceli-Işıkvuran crossroads to Işıkvuran	1670	04.06.2014			
	4396	B7 Tunceli: Pülümür, 5 km from Çakırkaya and Dereboyu	1870	05.06.2014			
	4377	B7 Tunceli: Pülümür, Kocatepe v.	1680	05.06.2014			
	3945	B7 Tunceli: Center, 5 km from Tunceli to Ovacık (Munzur Valley)	970	25.05.2014			
<i>Melica ciliata</i> L.	4427	B7 Tunceli: Pülümür, 9 km from Pülümür to Tunceli (Pülümür valley), S of Kangallı v.	1324	05.06.2014	Steppe		Unk.
<i>Melica persica</i> Kunth subsp. <i>inaequiglumis</i> (Boiss.) Bor	4953	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Steppe		Unk.
	4979	B7 Tunceli: Center, Gözen (İksor) v.	1490	19.06.2014			
<i>Phleum pratense</i> L.	4447	B7 Tunceli: Hozat, between Demirkapı and Dervişçemal, 300 m to Buzlupınar junction	1810	06.06.2014	Steppe	Rcd.	Euro.-Sib.
	4928	B7 Tunceli: Ovacık, 8 km from Eskigedik to Işıkvuran	2120	19.06.2014			
<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	6056a	B7 Tunceli: Mazgirt, Yukarıoyunca v.	1430	15.08.2014	Riverside		Unk.
	6076	B8 Tunceli: Pülümür, 3 km from Hasangazi to Kırklar	1890	16.08.2014			
<i>Poa bulbosa</i> L.	4350	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014	Steppe		Unk.
<i>Psathyrostachys fragilis</i> (Boiss.) Nevski subsp. <i>villosa</i> C.Baden	4922	B7 Tunceli: Ovacık, 7 km from Işıkvuran to Eskigedik	2170	19.06.2014	Steppe		Ir.-Tur.
<i>Setaria verticillata</i> (L.) P.Beauv. var. <i>ambigua</i> (Guss.) Parl.	4481	B7 Tunceli: Hozat, Çemişgezek-Elazığ road, S of Akpınar v.	1224	06.06.2014	Steppe	Rcd.	Unk.
<i>Sorghum halepense</i> (L.) Pers.	4503	B7 Tunceli: Çemişgezek, 5 km from Payamdüzü to Yemişdere	865	06.06.2014	Steppe		Unk.
<i>Stipa ehrenbergiana</i> Trin. & Rupr.	4354	B7 Tunceli: Pülümür, 2.5 km from Kocatepe to Sarıgül, near to Sarıgül junction	1970	05.06.2014	Steppe		Ir.-Tur.
<i>Taeniatherum caput-medusae</i> (L.) Nevski subsp. <i>crinitum</i> (Schreb.) Melderis	4464	B7 Tunceli: Hozat, 3 km from Dervişçemal to Balkaynar	1675	06.06.2014	Steppe		Ir.-Tur.
	4469	B7 Tunceli: Hozat, 3.5 km from Hozat to	1470	06.06.2014			

		Pertek, junction of Kardelen v.					
	4614	B7 Tunceli: Mazgirt, 8 km from Çukur to Güleç	1365	16.06.2014			
	4493	B7 Tunceli: Pertek, between Çemişgezek and Elazığ, 6 km from Bulgurtepe to Payamdüzü	980	06.06.2014			
POLYGALACEAE Hoffmanns. & Link							
<i>Polygala anatolica</i> Boiss. & Heldr.	4920	B7 Tunceli: Ovacık, 6 km from Işıkvuran to Eskigedik	2250	19.06.2014	Steppe	Rcd.	Ir.-Tur.
	4388	B7 Tunceli: Pülümür, 1 km from Çakırkaya and Dereboyu	1800	05.06.2014			
<i>Polygala papilionacea</i> Boiss.	4830	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014	Mt. steppe	Rcd.	Ir.-Tur.
<i>Polygala pruinosa</i> Boiss.	3681	B7 Tunceli: Center, Tunceli - Elazığ road, 700 m after Aktuluk v.	930	22.05.2014	Steppe		Unk.
	5162	B7 Tunceli: Çemişgezek, between Anıl and Gözlüçayır villages (Tahar Valley)	1000	29.06.2014			
POLYGONACEAE Juss.							
<i>Oxyria digyna</i> (L.) Hill	5828	B7 Tunceli: Ovacık, 800 m NE of Buyer Baba Lake	2821	06.08.2014	Rocky areas		Unk.
<i>Polygonum arenastrum</i> Boreau	5493	B8 Tunceli: Pülümür, W of Kırırım v.	2070	22.07.2014	Steppe		Unk.
<i>Polygonum aviculare</i> L.	5754	B7 Tunceli: Nazımiye, Pülümür Valley, 38 km from Tunceli to Pülümür	1150	06.08.2014	Steppe	Rcd.	Unk.
<i>Polygonum bistorta</i> L.	4863	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014	Wetlands	Rcd.	Euro.-Sib.
<i>Polygonum cognatum</i> Meissn.	6163	B7 Tunceli: 10 km from Pülümür - Erzincan mainroad to Süleymanuşağı village	2210	27.08.2014	Steppe		Unk.
<i>Polygonum dumetorum</i> L.	5751	B7 Tunceli: Nazımiye, Pülümür Valley, 38 km from Tunceli to Pülümür	1150	06.08.2014	Steppe	Rcd.	Unk.
<i>Polygonum lapathifolium</i> L.	5960	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	875	13.08.2014	Riverside	Rcd.	Unk.
<i>Polygonum setosum</i> Jacq. subsp. <i>luzuloides</i> (Jaub. & Spach) Leblebici	6044	B7 Tunceli: Mazgirt, 5.5 km from Kale to Doludizgin	1560	15.08.2014	Steppe	Rcd.	Ir.-Tur.
<i>Polygonum setosum</i> Jacq. subsp. <i>setosum</i>	5728	B7 Tunceli: Mazgirt, N of Akdüven v.	1130	05.08.2014	Steppe		Ir.-Tur.
	5612	B7 Tunceli: Nazımiye, 7 km E of Ayrılan v.	1910	23.07.2014			
<i>Rheum ribes</i> L.	Obs.	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2120	04.06.2014	Steppe		Ir.-Tur.
<i>Rumex nepalensis</i> Spreng.	5850	B7 Tunceli: Nazımiye, 4 km NE of Büyükyurt (Hakis) v.	1775	07.08.2014	Wetlands		Unk.
<i>Rumex tuberosus</i> L. subsp. <i>horizontalis</i> (K.Koch) Rech.f.	5379	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014	Wetlands		Unk.
POTAMOGETONACEAE Bercht. & J.Presl							
<i>Potamogeton nodosus</i> Poir.	Obs.	B7 Tunceli: Mazgirt, Yukarıoyumca v.	1430	15.08.2014	Wet meadows	Rcd.	Unk.
<i>Potamogeton perfoliatus</i> L.	5957	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	875	13.08.2014	Wetlands	Rcd.	Unk.
PRIMULACEAE Batsch ex Borkh.							
<i>Anagallis foemina</i> Mill.	4539	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	985	16.06.2014	Steppe	Rcd.	Medit.
	3724	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014			
	4156	B7 Tunceli: Nazımiye, 6.5 km from Nazımiye to Tunceli, 400 m after Geriş v. junction	1340	02.06.2014			
	4497	B7 Tunceli: Pertek, between Çemişgezek and Elazığ, 6 km from Bulgurtepe to Payamdüzü	980	06.06.2014			
<i>Androsace maxima</i> L.	6414	B7 Tunceli: Center, Örenönü Nature Park (Pülümür Valley)	920	12.04.2015	Steppe		Unk.
<i>Androsace villosa</i> L.	4875	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014	Rocky slopes	Rcd.	Euro.-Sib.
	4894	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014			
	4837	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014			
<i>Lysimachia verticillaris</i> Spreng.	4736	B7 Tunceli: Ovacık, 13 km from Ovacık to Hozat, 900 m after junction of Bilgeç v.	1807	17.06.2014	Wetlands		Hyrc.-Euxine
	4796	B8 Tunceli: Pülümür, 2 km from Hasangazi to Kırklar	1816	18.06.2014			
<i>Lysimachia vulgaris</i> L.	6161	B7 Tunceli: 10 km from Pülümür - Erzincan mainroad to Süleymanuşağı village	2210	27.08.2014	Wetlands		Unk.
	5496	B8 Tunceli: Pülümür, W of Kırırım v.	2070	22.07.2014			
<i>Primula auriculata</i> Lam.	5510	B8 Tunceli: Pülümür, between Bardakçı to Derindere	1980	22.07.2014	Wet meadows		Ir.-Tur.
RANUNCULACEAE Juss.							

<i>Adonis aestivalis</i> L. subsp. <i>parviflora</i> (Fisch. ex DC.) E.A.Busch	4423	B7 Tunceli: Pülümür, 9 km from Pülümür to Tunceli (Pülümür valley), S of Kangallı v.	1324	05.06.2014	Steppe		Unk.
<i>Adonis cyllenea</i> Boiss., Heldr. & Orph. var. <i>parvadraca</i> Boiss.	Obs.	B7 Tunceli: Pülümür, between Sangül and Kocatepe, Buyer waterfall	2150	30.05.2017	Mt. steppe	* Rcd.	Unk.
<i>Adonis ericalycina</i> Boiss.	3791	B7 Tunceli: Center, between Tunceli and Sütlüce, 1.8 km from Sütlüce junction	1030	23.05.2014	Steppe		Unk.
<i>Anemone coronaria</i> L.	4279	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2150	04.06.2014	Mt. steppe	Rcd.	Medit.
<i>Caltha palustris</i> L.	6092	B8 Tunceli: Pülümür, 2.6 km E of Kırklar v.	2120	16.08.2014	Wet meadows		Unk.
<i>Clematis orientalis</i> L.	6064	B7 Tunceli: Center, 4 km from Tunceli center to Babaocağı	930	15.08.2014	Oak forest	Rcd.	Unk.
	5574	B7 Tunceli: Pülümür, 2 km from Erzincan-Erzurum-Tunceli crossroads to Pülümür	1260	22.07.2014			
	5690	B7 Tunceli: Center, 21 km from Tunceli to Ovacık (Munzur Valley)	1024	24.07.2014			
<i>Consolida glandulosa</i> (Boiss. & Huet) Bornm.	5576	B7 Tunceli: Pülümür, 3 km from Erzincan-Erzurum-Tunceli crossroads to Pülümür	1335	22.07.2014	Steppe	*	Ir.-Tur.
<i>Consolida oliveriana</i> (DC.) Schödinger	5739	B7 Tunceli: Mazgirt, 3 km from Akdüven to Güleç	1102	05.08.2014	Steppe		Ir.-Tur.
<i>Consolida scleroclada</i> (Boiss.) Schrödinger var. <i>rigida</i> (Frey & Sint.) P.H.Davis	5978	B7 Tunceli: Hozat, 2.5 km from Hozat to Dervişcemal v.	1523	13.08.2014	Steppe		Ir.-Tur.
	5301	B7 Tunceli: Center, 14 km from Tunceli to Pülümür (Pülümür Valley)	970	20.07.2014			
<i>Delphinium albiflorum</i> DC.	5642	B7 Tunceli: Ovacık, 30 km from Tunceli to Ovacık (Munzur Valley)	1070	24.07.2014	Steppe		Unk.
<i>Delphinium kurdicum</i> Boiss. & Hohen.	5900	B7 Tunceli: Ovacık, Tunceli-Ovacık-Yakatarla junction	1240	08.08.2014	Steppe		Ir.-Tur.
	5893	B7 Tunceli: Pülümür, 42 km from Tunceli to Pülümür (Pülümür Valley), across of Ağlayan Kayalar	1570	07.08.2014			
	5488	B8 Tunceli: Pülümür, between Derindere and Kırdım	2045	22.07.2014			
<i>Delphinium peregrinum</i> L.	6118	B7 Tunceli: Pertek, 2 km W of Bulgurtepe v.	1060	17.08.2014	Degraded oak forest, steppe		Medit.
	5968	B7 Tunceli: Pertek, 9 km from Pertek to Çemişgezek, 2.5 km before Singeç bridge	875	13.08.2014			
<i>Eranthis hyemalis</i> (L.) Salisb.	4242	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2020	04.06.2014	Wet meadows		Unk.
	6405	B7 Tunceli: Ovacık, 1.5 km E of Ovacık center	1230	10.04.2015			
<i>Nigella arvensis</i> L. var. <i>glauca</i> Boiss.	3902	B7 Tunceli: Pertek, 12 km from Pertek to Çemişgezek, around of Singeç bridge	855	24.05.2014	Steppe		Unk.
<i>Nigella latisecta</i> P.H.Davis	3751	B7 Tunceli: Center, 1 km from Kopuzlar to Yolkonak	1114	22.05.2014	Steppe		Ir.-Tur.
<i>Nigella nigellastrum</i> (L.) Willk.	4525	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe	Rcd.	Unk.
<i>Nigella oxypetala</i> Boiss.	4114	B7 Tunceli: Mazgirt, between Güneşdere and Kızılcık	1090	02.06.2014	Steppe		Ir.-Tur.
<i>Pulsatilla violacea</i> Rupr. subsp. <i>armena</i> (Boiss.) Luferov	6675	B7 Tunceli: Pülümür, 5 km from Sarıgül to Yalmanlar	2721	03.06.2015	Steppe	Rcd.	Unk.
<i>Ranunculus arvensis</i> L.	3723	B7 Tunceli: Center, 1 km S of Aktuluk	930	22.05.2014	Steppe		Unk.
<i>Ranunculus fenzi</i> Boiss.	4744	B7 Tunceli: Ovacık, 10 km from Ovacık to Hozat, in junction of Kuşluca v.	1710	17.06.2014	Steppe	*	Ir.-Tur.
<i>Ranunculus munzurensis</i> S.Erik & Yıld.	6540	B7 Tunceli: Ovacık, 7 km from Yoncalı to Ağaçpınar	2015	01.06.2015	On rocks	*	Ir.-Tur.
<i>Ranunculus repens</i> L.	3716	B7 Tunceli: Center, between Tunceli and Pertek, junction of Kopuzlar v.	1020	22.05.2014	Steppe		Unk.
<i>Thalictrum isopyroides</i> C.A.Mey.	4371	B7 Tunceli: Pülümür, Kocatepe v.	1680	05.06.2014	Rock crevices, steppe		Ir.-Tur.
	6509	B7 Tunceli: Center, 4 km from Sarıtaş to Gözen (İksor), Kalan Valley	1350	30.05.2015			
RHAMNACEAE Juss.							
<i>Paliurus spina-christi</i> P.Mill.	4487	B7 Tunceli: Çemişgezek, 2 km from Bulgurtepe to Payamdüzü	1060	06.06.2014	Steppe, in gardens		Unk.
	3711	B7 Tunceli: Center, between Tunceli and Pertek, junction of Kopuzlar v.	1020	22.05.2014			
ROSACEAE Juss.							
<i>Agrimonia repens</i> L.	5033	B7 Tunceli: Ovacık, 2 km N of Yenikonak v.	1705	20.06.2014	Wet meadows		Unk.
<i>Alchemilla holocycla</i> Rothm.	5366	B7 Tunceli: Nazımiye, 2 km E of Sarıyayla v.	1945	20.07.2014	Wet meadows	*	Ir.-Tur.
<i>Amelanchier ovalis</i> Medik.	4893	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2510	18.06.2014	Rocky slopes		Unk.
<i>Amygdalus communis</i> L.	5286	B7 Tunceli: Pertek, 8 km from Pertek to Tunceli	1300	19.07.2014	Steppe, in gardens		Unk.

<i>Amygdalus trichamygdalus</i> (Hand.-Mazz.) Woronow	3910	B7 Tunceli: Pertek, 12 km from Pertek to Çemişgezek, around of Singeç bridge	855	24.05.2014	Steppe	Rcd.	Ir.-Tur.
<i>Cerasus mahaleb</i> (L.) Mill.	6256	B7 Tunceli: Center, between Tüllük and Dedeğaç, N of Tüllük	1750	05.09.2014	Steppe, dried river bad		Unk.
	5920	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2005	08.08.2014			
<i>Cerasus microcarpa</i> (C.A.Mey.) Boiss.	5997	B7 Tunceli: Pülümür, 1.5 km from Turnadere to Közlüce	1500	14.08.2014	Stream side		Ir.-Tur.
<i>Cotoneaster nummularius</i> Fisch. & C.A.Mey.	5838	B7 Tunceli: Nazımiye, 400 m from Aşağıabat bridge to Büyükyurt (Hakis) v.	1054	07.08.2014	Riverside, forest		Unk.
	6244	B7 Tunceli: Nazımiye, 400 m from Aşağıabat bridge to Büyükyurt (Hakis) v.	1070	05.09.2014			
<i>Crataegus monogyna</i> Jacq.	6254	B7 Tunceli: Nazımiye, Pülümür Valley, 31 km from Tunceli to Pülümür	1085	05.09.2014	Steppe		Unk.
<i>Crataegus orientalis</i> Pall. ex M.Bieb. subsp. <i>orientalis</i>	6123	B7 Tunceli: Çemişgezek, between Gülbahçe and Dedebeyli	1277	17.08.2014	Steppe		Unk.
	5265	B7 Tunceli: Pertek, Camikebir nh.	1100	19.07.2014			
	6012	B8 Tunceli: Pülümür, 4 km from Hasangazi to Balpayam	1832	14.08.2014			
	5548	B8 Tunceli: Pülümür, between Pülümür and Yedisu, 10 km after Derindere v.	1717	22.07.2014			
<i>Crataegus orientalis</i> Pall. ex M.Bieb. subsp. <i>szovitsii</i> (Pojark.) K.I.Chr.	6139	B7 Tunceli: Mazgirt, S of Dedeğaç v.	860	26.08.2014	Riverside, steppe		Ir.-Tur.
	5378	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014			
<i>Filipendula ulmaria</i> (L.) Maxim.	5626	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1990	23.07.2014	Wet meadows		Euro.-Sib.
<i>Geum heterocarpum</i> Boiss.	6541	B7 Tunceli: Ovacık, 7 km from Yoncalı to Ağaçpınar	2015	01.06.2015	Rocky areas	Rcd.	Unk.
<i>Geum rivale</i> L.	4867	B8 Tunceli: Pülümür, 4 km from Kırklar to Kızılmescit	2450	18.06.2014	Damp places		Unk.
<i>Geum urbanum</i> L.	3970	B7 Tunceli: Center, 2.5 km from Tunceli-Ovacık-Dedeğaç crossroads to Dedeğaç v. (Munzur Valley)	1100	25.05.2014	Damp places		Euro.-Sib.
<i>Malus sylvestris</i> (L.) Mill. subsp. <i>orientalis</i> (Uglitzk.) Browicz	6026	B8 Tunceli: Pülümür, S of Ağaşenliği v., between Ağaşenliği and Altınhüseyin	1650	14.08.2014	Steppe		Unk.
	6107	B7 Tunceli: Pülümür, E of Ardıçlı (Gersunut) v.	1767	16.08.2014			
	5518	B8 Tunceli: Pülümür, between Bardakçı to Derindere	1980	22.07.2014			
<i>Potentilla argentea</i> L.	5625	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1990	23.07.2014	Rock crevices		Unk.
<i>Potentilla inclinata</i> Vill.	6160	B7 Tunceli: 10 km from Pülümür - Erzincan mainroad to Süleymanuşağı village	2210	27.08.2014	Steppe	Rcd.	Unk.
<i>Potentilla recta</i> L.	5538	B8 Tunceli: Pülümür, 1-2 km E of Bağırpaşa Mt., 2 km N of Şampaşakaraderbent v.	1886	22.07.2014	Steppe		Unk.
<i>Potentilla reptans</i> L.	5662	B7 Tunceli: Ovacık, 10 km from Eğrişpınar to Yenikonak	1650	24.07.2014	Steppe		Unk.
	6085	B8 Tunceli: Pülümür, SE of Kırklar v.	2015	16.08.2014			
<i>Potentilla speciosa</i> Willd.	5807	B7 Tunceli: Ovacık, 8 km from Sarğıl to Yalmanlar, the walk way of Buyer Baba sanctuary	2680	06.08.2014	Steppe		Unk.
<i>Prunus divaricata</i> Ledeb.	6206	B7 Tunceli: Hozat, 18 km from Hozat to Ovacık	1967	28.08.2014	Oak forest		Unk.
	5879	B7 Tunceli: Nazımiye, 6 km NE of Büyükyurt (Hakis) v.	2050	07.08.2014			
	6035	B8 Tunceli: Pülümür, 2 km W of Altınhüseyin	1905	14.08.2014			
<i>Pyrus elaeagnifolia</i> Pall. subsp. <i>elaagnifolia</i>	6007	B7 Tunceli: Pülümür, between Közlüce and Hacılı	1576	14.08.2014	Steppe		Unk.
<i>Pyrus elaeagnifolia</i> Pall. subsp. <i>kotschyana</i> (Boiss.) Browicz	6025	B8 Tunceli: Pülümür, S of Ağaşenliği v., between Ağaşenliği and Altınhüseyin	1650	14.08.2014	Steppe		Unk.
<i>Rosa canina</i> L.	6063	B7 Tunceli: Center, S of Babaoçağı v.	1117	15.08.2014	Steppe, in gardens		Unk.
	6230	B7 Tunceli: Center, 6 km from Tunceli to Pülümür (Pülümür Valley)	934	05.09.2014			
	5701	B7 Tunceli: Pertek, between Pirinçci and Karagüney	1153	25.07.2014			
	6098	B7 Tunceli: Pülümür, 3 km from Pülümür to Hiver	1917	16.08.2014			
	5499	B8 Tunceli: Pülümür, W of Kırdım v.	2070	22.07.2014			
	6148	B7 Tunceli: Pülümür, 2 km from Erzincan-Pülümür-Süleymanuşağı to Süleymanuşağı	1683	27.08.2014			
<i>Rosa mollis</i> Sm.	5500	B8 Tunceli: Pülümür, SW of Kırdım v.	2070	22.07.2014	Steppe		Unk.
<i>Rosa orientalis</i> A.Dupont ex DC.	5921	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2005	08.08.2014	Steppe		Ir.-Tur.
<i>Rosa pulverulenta</i> M.Bieb.	5794	B7 Tunceli: Pülümür, between Eğimli and	2341	06.08.2014	Steppe		Unk.

		Kocatepe					
<i>Rosa vanheuckermania</i> Crép.	5881	B7 Tunceli: Nazımiye, 6 km NE of Büyükyurt (Hakis) v.	2050	07.08.2014	Steppe		Ir.-Tur.
<i>Rubus caesius</i> L.	Obs.	B7 Tunceli: Çemişgezek, between Gülbahçe and Dedebevli	1277	17.08.2014	Steppe		Unk.
<i>Rubus canescens</i> DC.	5700	B7 Tunceli: Center, S of Çimenli village	987	25.07.2014	Field side, steppe		Euro.-Sib.
<i>Rubus sanctus</i> Shreb.	6235	B7 Tunceli: Center, 14 km from Tunceli to Pülümür (Pülümür Valley)	965	05.09.2014	Riverside		Unk.
<i>Sanguisorba minor</i> L. subsp. <i>lasiocarpa</i> (Boiss. & Hausskn.) Nordborg	4108	B7 Tunceli: Mazgirt, 7 km from Kızılcık to Göktepe	935	02.06.2014	Steppe		Unk.
<i>Sanguisorba minor</i> L. subsp. <i>minor</i>	4206	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe		Unk.
<i>Sorbus umbellata</i> Fritsch	5880	B7 Tunceli: Nazımiye, 6 km NE of Büyükyurt (Hakis) v.	2050	07.08.2014	Steppe, Oak forest		Unk.
	6147	B7 Tunceli: Pülümür, 2 km from Erzincan-Pülümür-Süleymanuşağı to Süleymanuşağı	1683	27.08.2014			
RUBIACEAE Juss.							
<i>Asperula affinis</i> Boiss. & A.Huet	4834	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014	Mt. steppe	Rcd.	Ir.-Tur.
<i>Asperula arvensis</i> L.	3977	B7 Tunceli: Center, 1 km from Tunceli-Ovacık-Dedağaç crossroads to Dedağaç v. (Munzur Valley)	1060	25.05.2014	Steppe	Rcd.	Unk.
<i>Asperula glomerata</i> (M.Bieb.) Griseb. subsp. <i>condensata</i> (Ehrend.) Ehrend. var. <i>condensata</i>	5780	B7 Tunceli: Pülümür, 4.5 km from Akdik to Kovuklu	1600	06.08.2014	Steppe	Rcd.	Unk.
<i>Asperula glomerata</i> (M.Bieb.) Griseb. subsp. <i>condensata</i> (Ehrend.) Ehrend. var. <i>filiformis</i> Bomm.	4899	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2380	18.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Asperula glomerata</i> (M.Bieb.) Griseb. subsp. <i>glomerata</i>	4201	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe		Unk.
<i>Asperula involucrata</i> Wahlenb.	4199	B7 Tunceli: Ovacık, 1.5 km from Ovacık-Tunceli-Yakatarla crossroads to Yakatarla v.	1320	04.06.2014	Steppe		Euxine
	5042	B7 Tunceli: Ovacık, between Yazıören and Gözeler	1400	20.06.2014			
<i>Asperula stricta</i> Boiss. subsp. <i>latibracteata</i> (Boiss.) Ehrend.	5606	B7 Tunceli: Nazımiye, 6 km E of Ayrılan v.	1800	23.07.2014	Steppe	*	Ir.-Tur.
<i>Callipeltis cucullaris</i> (L.) Steven	4411	B7 Tunceli: Pülümür, between Dereboyu and Sağlantaş	1610	05.06.2014	Steppe		Ir.-Tur.
<i>Crucianella exasperata</i> Fisch. & C.A.Mey.	4515	B7 Tunceli: Mazgirt, 1 km W of Kayacı v.	990	16.06.2014	Steppe		Unk.
<i>Crucianella gilanicum</i> Trin. subsp. <i>kotschyi</i> (Ehrend.) Ehrend.	5863	B7 Tunceli: Nazımiye, 5 km NE of Büyükyurt (Hakis) v.	1835	07.08.2014	Steppe		Ir.-Tur.
<i>Cruciata taurica</i> (Pall. ex Willd.) Ehrend.	4406	B7 Tunceli: Pülümür, between Dereboyu and Sağlantaş	1610	05.06.2014	Steppe		Ir.-Tur.
<i>Galium incanum</i> Sm. subsp. <i>elatius</i> (Boiss.) Ehrend.	4655	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Steppe		Ir.-Tur.
<i>Galium megalanthum</i> Boiss.	4764	B7 Tunceli: Pülümür, 2 km from Turnadere to Közlüce	1575	18.06.2014	Rocky slopes		Ir.-Tur.
<i>Galium mite</i> Boiss. & Hohen.	4617	B7 Tunceli: Mazgirt, 5 km from Çukur to Güleç	1430	16.06.2014	Steppe		Ir.-Tur.
	4789	B7 Tunceli: Pülümür, SE of Közlüce v.	1620	18.06.2014			
<i>Galium paschale</i> Forssk.	5884	B7 Tunceli: Nazımiye, 8 km NE of Büyükyurt (Hakis) v.	1963	07.08.2014	Oak forest	Rcd.	E.Medit. (Mt.)
<i>Galium radulifolium</i> Ehrend. & Schön.-Tem.	4727	B7 Tunceli: Hozat, 15 km from Ovacık to Hozat (NE of Halitpınar v.)	1800	17.06.2014	Steppe	*	Unk.
<i>Galium runcinatum</i> Ehrend. & Schön.-Tem.	4957	B7 Tunceli: Ovacık, N of Eskigedik v., Munzur Mt.	2160	19.06.2014	Rocky areas	*	Ir.-Tur.
<i>Galium shinasii</i> Yıldırım	5155	B7 Tunceli: Çemişgezek, E of Anıl village (Tahar Valley)	1000	29.06.2014	Rock crevices	* Rcd.	Ir.-Tur.
	5238	B7 Tunceli: Nazımiye, 800 m from Aşağırabat bridge to Büyükyurt (Hakis) v.	1070	30.06.2014			
<i>Galium verum</i> L. subsp. <i>glabrescens</i> Ehrend.	5556	B8 Tunceli: Pülümür, 5 km S of Derindere	2030	22.07.2014	Steppe	Rcd.	Ir.-Tur.
<i>Galium verum</i> L. subsp. <i>verum</i>	5447	B7 Tunceli: Hozat, N of Boydaş v. (Tahar Valley)	1215	21.07.2014	Steppe, dried river bad		Euro.-Sib.
SALICACEAE Mirb.							
<i>Populus nigra</i> L. subsp. <i>caudina</i> (Ten.) Bugala	6229	B7 Tunceli: Center, 5 km from Tunceli to Pülümür (Pülümür Valley)	930	05.09.2014	Steppe		Unk.

<i>Populus tremula</i> L.	5561	B8 Tunceli: Pülümür, between Pülümür and Yedisu, 2.5 km after Derindere v.	1925	22.07.2014	Riverside		Unk.
<i>Salix acmophylla</i> Boiss.	6234	B7 Tunceli: Center, 14 km from Tunceli to Pülümür (Pülümür Valley)	965	05.09.2014	Damp places	Rcd.	Ir.-Tur.
<i>Salix bornmuelleri</i> Hausskn.	5517	B8 Tunceli: Pülümür, between Bardakçı to Derindere	1980	22.07.2014	Stream side		Ir.-Tur.
<i>Salix pentandroides</i> A.K.Skvortsov	6203	B7 Tunceli: Hozat, 13 km from Hozat to Ovacık	1972	28.08.2014	Wetlands	Rcd.	Euxine
SANTALACEAE R.Br.							
<i>Arceuthobium oxycedri</i> (DC.) M.Bieb.	5206	B7 Tunceli, Çemişgezek, between Çemişgezek and Kemaliye, 1 km E of Dedebeyli village	1275	29.06.2014	On <i>Juniperus</i> sp.	Rcd.	Euro.-Sib.
	6122	B7 Tunceli: Çemişgezek, between Gülbahçe and Dedebeyli	1277	17.08.2014			
	6361	B7 Tunceli: Pertek, E of Dere v.	1378	22.09.2014			
	6181	B7 Tunceli: Center, 15 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (10 km before Çıralı v.)	1844	27.08.2014			
<i>Chrysothesium aureum</i> (Jaub. & Spach) Hendrych	6531	B7 Tunceli: Ovacık, 1 km W of Ağaçpınar v.	1934	01.06.2015	Steppe scree	* Rcd.	Ir.-Tur.
	4832	B8 Tunceli: Pülümür, 500 m N of Balpayam (3-4 km S of Kırklar v.)	2400	18.06.2014			
<i>Thesium arvense</i> Horv.	4035	B7 Tunceli: Ovacık, 41 km from Tunceli to Ovacık (Munzur Valley)	1175	26.05.2014	Degraded oak forest, steppe		Euro.-Sib.
<i>Viscum album</i> L.	6359	B7 Tunceli: Pertek, Dere v.	1268	22.09.2014	On <i>Pyrus</i> sp.		Unk.
SAPINDACEAE Juss.							
<i>Acer monspessulanum</i> L. subsp. <i>cinerascens</i> (Boiss.) Yalt.	6397	B7 Tunceli: Center, 12 km from Tunceli to Ovacık (Munzur Valley)	1000	11.04.2015	Riverside		Ir.-Tur.
<i>Acer monspessulanum</i> L. subsp. <i>ibericum</i> (M. Bieb.) Yalt.	4011	B7 Tunceli: Center, 17 km from Tunceli to Ovacık (Munzur Valley)	1015	25.05.2014	Riverside		Ir.-Tur.
<i>Acer platanoides</i> L.	5883	B7 Tunceli: Nazımiye, 10 km NE of Büyükyurt (Hakis) v.	1921	07.08.2014	Oak forest		Euro.-Sib.
	5869	B7 Tunceli: Nazımiye, 5 km NE of Büyükyurt (Hakis) v.	1835	07.08.2014			
	5559	B8 Tunceli: Pülümür, between Pülümür and Yedisu, 2.5 km after Derindere v.	1925	22.07.2014			
	6149	B7 Tunceli: Pülümür, 2 km from Erzincan-Pülümür-Süleymanuşağı to Süleymanuşağı	1683	27.08.2014			
<i>Acer tataricum</i> L.	5758	B7 Tunceli: Pülümür, 45 km from Tunceli to Pülümür (Pülümür valley)	1200	06.08.2014	Oak forest		Sarmat.
	5568	B8 Tunceli: Pülümür, 2 km N of Elmalı	1400	22.07.2014			
SAXIFRAGACEAE Juss.							
<i>Saxifraga cymbalaria</i> L.	5994	B7 Tunceli: Pülümür, 1.5 km from Turnadere to Közlüce	1500	14.08.2014	Wetlands	Rcd.	Unk.
<i>Saxifraga kotschyi</i> Boiss.	4283	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2150	04.06.2014	Rock crevices	Rcd.	Unk.
<i>Saxifraga sibirica</i> L.	5827	B7 Tunceli: Ovacık, 800 m NE of Buyer Baba Lake	2821	06.08.2014	Rocky areas	Rcd.	Unk.
<i>Saxifraga tridactylites</i> L.	6439	B7 Tunceli: Nazımiye, 33 km from Tunceli to Pülümür (Pülümür Valley)	1061	11.04.2015	Stream side, damp places	Rcd.	Medit. (Mt.)
	6404	B7 Tunceli: Center, 15 km from Tunceli to Ovacık (Munzur Valley)	994	11.04.2015			
SCROPHULARIACEAE Juss.							
<i>Scrophularia catariifolia</i> Boiss. & Heldr.	6659	B7 Tunceli: Pülümür, 11 km NW of Ardıçlı (Gersunut) v. (Munzur Mt.)	2516	27.06.2015	Rocky areas	Rcd.	Ir.-Tur.
<i>Scrophularia crenophila</i> Boiss.	4708	B7 Tunceli: Hozat, between Hozat and Ovacık, 2 km from Yüceldi to Aşlıca	1970	17.06.2014	Steppe	Rcd.	Ir.-Tur.
<i>Scrophularia libanotica</i> Boiss. subsp. <i>libanotica</i> var. <i>pontica</i> R.R.Mill	5979	B7 Tunceli: Hozat, 6 km from Hozat to Dervişçemal	1714	13.08.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Scrophularia libanotica</i> Boiss. subsp. <i>libanotica</i> var. <i>urartuensis</i> R.R.Mill	4679	B7 Tunceli: Hozat, between Karacaköy and Uzundal, around of Sarısaltuk Türbesi	2270	17.06.2014	Rock crevices	*	Ir.-Tur.
<i>Scrophularia luridiflora</i> Fisch. & C.A.Mey.	6202	B7 Tunceli: Hozat, 13 km from Hozat to Ovacık	1972	28.08.2014	Damp soil	*	Ir.-Tur.
<i>Scrophularia rimarum</i> Bornm.	6109	B7 Tunceli: Pülümür, 7 km NW of Ardıçlı (Gersunut) v.	2002	16.08.2014	Steppe		Unk.
<i>Scrophularia umbrosa</i> Dumont	5144	B7 Tunceli: Çemişgezek, between Bozağaç and Ulukale villeges, 1 km E of Ulukale	1080	28.06.2014	Dried river bad		Cosmp.
<i>Scrophularia xanthoglossa</i> Boiss. var. <i>decipiens</i> (Boiss. & Kotschy) Boiss.	4005	B7 Tunceli: Center, between Tunceli and Ovacık (Munzur Valley), road of Dilek v.	995	25.05.2014	Steppe	Rcd.	Ir.-Tur.
	3715	B7 Tunceli: Center, between Tunceli and	1020	22.05.2014			

		Pertek, junction of Kopuzlar v.					
	4176	B7 Tunceli: Nazımiye, 5 km from Nazımiye to Tunceli	1435	03.06.2014			
	6465	B7 Tunceli: Nazımiye, Pülümür Valley, 25 km from Tunceli to Pülümür	1035	29.05.2015			
	3779	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014			
<i>Verbascum krauseanum</i> Murb.	6518	B7 Tunceli: Center, 17 km from Tunceli-Pülümür-Sütlüce crossroads to Çıralı v. (8 km before Çıralı v.)	1810	01.06.2015	Steppe slopes	* Rcd.	Ir.-Tur.
<i>Verbascum lasianthum</i> Boiss. ex Benth.	5725	B7 Tunceli: Mazgirt, N of Akdüven v.	1150	05.08.2014	Steppe	Rcd.	Unk.
	5695	B7 Tunceli: Center, between Kanoğlu and Burmageçit	1009	25.07.2014			
<i>Verbascum oreophilum</i> K.Koch. var. <i>joannis</i> (Bordz.) Hub.-Mor.	5370	B7 Tunceli: Nazımiye, 2.5 km E of Sarıyayla v.	2000	20.07.2014	Steppe		Ir.-Tur.
<i>Verbascum sinuatum</i> L. subsp. <i>sinuatum</i> var. <i>adenosepalum</i> Murb.	5394	B7 Tunceli, Center, 10 km from Aktuluk to Demirkapı	1450	21.07.2014	Steppe		Medit.
<i>Verbascum songaricum</i> Schrenk ex Fisch. subsp. <i>subdecurrens</i> Hub.-Mor.	6086	B8 Tunceli: Pülümür, SE of Kırklar v.	2015	16.08.2014	Steppe	* Rcd.	Ir.-Tur.
<i>Verbascum speciosum</i> Schrad.	5416	B7 Tunceli: Hozat, 2 km from Dervişçemal to Hozat	1730	21.07.2014	Steppe		Unk.
SIMAROUBACEAE DC.							
<i>Ailanthus altissima</i> (Mill.) Swingle	6142	B7 Tunceli: between Tunceli - Kovancılar, 1 km after Kızılılık v.	1110	26.08.2014	Plantation on roadside	Rcd.	Unk.
SOLANACEAE Juss.							
<i>Hyoscyamus niger</i> L.	5629	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1990	23.07.2014	Steppe		Unk.
<i>Hyoscyamus reticulatus</i> L.	Obs.	B7 Tunceli: Center, 500 m from Tunceli-Pülümür-Sütlüce crossroads to Sütlüce v.	940	23.05.2014	Steppe		Ir.-Tur.
<i>Lycopersicon esculentum</i> Mill.	Obs.	B7 Tunceli: Pülümür, 4.5 km from Pülümür to Tunceli (Pülümür valley)	1384	20.09.2014	In gardens		Unk.
<i>Physalis alkekengi</i> L.	6066	B7 Tunceli: Center, 4 km from Tunceli center to Babaocağı	930	15.08.2014	Steppe	Rcd.	Unk.
<i>Solenanthes circinnatus</i> Ledeb.	4063	B7 Tunceli: Ovacık, 48 km from Tunceli to Ovacık, 10 km before Ovacık (Munzur Val.)	1190	26.05.2014	Steppe		Ir.-Tur.
	4815	B8 Tunceli: Pülümür, 2.8 km E of Kırklar v.	2120	18.06.2014			
<i>Solenanthes stamineus</i> (Desf.) Wettst.	4285	B7 Tunceli: Ovacık, 3 km N of Işıkvuran v. Munzur Mt.	2300	04.06.2014	Steppe		Unk.
TAMARICACEAE Link							
<i>Tamarix smyrnensis</i> Bunge	6231	B7 Tunceli: Center, 10 km from Tunceli to Pülümür (Pülümür Valley)	949	05.09.2014	Riverside		Unk.
THYMELAEACEAE Juss.							
<i>Daphne oleoides</i> Schreb.	4336	B7 Tunceli: Pülümür, 5 km from Kocatepe to Çakırkaya	1520	05.06.2014	On rocks		Unk.
<i>Diarthron magakjanii</i> (Sosn.) Kit Tan	6654	B7 Tunceli: Pülümür, 7 km NW of Ardıçlı (Gersunut) v.	2390	27.06.2015	Steppe scree	Rcd.	Ir.-Tur.
<i>Thymelaea passerina</i> (L.) Coss. & Germ.	5741	B7 Tunceli: Mazgirt, 3 km from Akdüven to Güleç	1102	05.08.2014	Eroded slopes		Unk.
	6027	B8 Tunceli: Pülümür, 1 km from Altınhüseyin to Ağaşenliği	1606	14.08.2014			
TYPHACEAE Juss.							
<i>Typha minima</i> Funck	6483	B7 Tunceli: Pülümür, 14 km from Pülümür to Tunceli (Pülümür valley)	1232	29.05.2015	Wetlands		Euro.-Sib.
<i>Typha shuttleworthii</i> W.D.J.Koch & Sond.	5947	B7 Tunceli: Center, 5 km from Tunceli to Ovacık (Munzur Valley)	930	08.08.2014	Wetlands, riverside		Unk.
ULMACEAE Mirb.							
<i>Ulmus canescens</i> Melville	6232	B7 Tunceli: Center, 10 km from Tunceli to Pülümür (Pülümür Valley)	949	05.09.2014	Riverside	Rcd.	E.Medit.
<i>Ulmus glabra</i> Huds.	6237	B7 Tunceli: Center, 16 km from Tunceli to Pülümür (Pülümür Valley)	1011	05.09.2014	Riverside	Rcd.	Euro.-Sib.
	6239	B7 Tunceli: Nazımiye, Pülümür Valley, 24 km from Tunceli to Pülümür	1017	05.09.2014			
URTICACEAE Juss.							
<i>Urtica dioica</i> L.	5627	B7 Tunceli: Nazımiye, 1 km S of Holik v.	1990	23.07.2014	Damp soil, shadow places		Unk.
<i>Parietaria judaica</i> L.	Obs.	B7 Tunceli: Mazgirt, 2 km from Akdüven to Güleç	1125	16.06.2014	Rock crevices		Unk.
VERBENACEAE J.St.-Hil.							

<i>Verbena officinalis</i> L.	4583	B7 Tunceli: Mazgirt, 1 km E of Geçitveren v.	1270	16.06.2014	Damp soil	Unk.	
	5630	B7 Tunceli: Nazımiye, 1 km from Dereova to Ramazanköy	1470	23.07.2014			
	5659	B7 Tunceli: Ovacık, 10 km from Eğrişinar to Yenikonak	1660	24.07.2014			
ZYGOPHYLLACEAE R.Br.							
<i>Tribulus terrestris</i> L.	Obs.	B7 Tunceli: Çemişgezek, around of Yemişdere v.	1000	21.06.2014	Steppe	Unk.	
<i>Zygophyllum fabago</i> L.	6124	B7 Tunceli: Çemişgezek, Hamamatik	963	17.08.2014	Old settlement	Rcd. Ir.-Tur.	

4. Discussions

The identification of these samples resulted 74 families, 386 genera and 922 taxa. The analysis of the phytogeographic regions shows that Irano-Turanian elements 397 (43.1 %), Mediterranean elements 20 (2.2 %), Europe-Siberian elements 40 (4.3 %), East Mediterranean elements 14 (1.5 %), Euxine element 13 (1.4 %), Hyrcano-Euxine elements 3 (0.3 %), Sarmatian 1 (0.1 %), the cosmopolite or unknown distribution 434 (47.1 %) (Figure 1). The number of endemic taxa is 150 (16.3 %).

The families with the most taxa in the research area were Asteraceae (149), Lamiaceae (98), Brassicaceae (82), Caryophyllaceae (82), Fabaceae (56), Apiaceae (49), Rosaceae (35), Poaceae (33), Ranunculaceae (23), and Rubiaceae (20) (Figure 2).

As a result of this study, 294 taxa, 46 of which are endemic, were reported as new recorded for Flora of Tunceli province, after the literature were checked (Davis, 1965-1985; Davis et al., 1988; Yıldırım, 1995; Güner et al. 2000; Tuzlacı and Doğan, 2010; Doğan and Tuzlacı, 2010; 2015; Yüce Babacan et al. 2017). According to Ekim et al. (2000), *Silene surculosa* Hub.-Mor. and *Teucrium leucophyllum* Montbret & Aucher ex Benth. species in the EX category were collected from Tunceli for the first time in this study. Until today, 3 new species have been introduced to the scientific world from Tunceli (*Gypsophila munzurenensis* Armağan, *Pedicularis munzurdaghensis* Armağan, and *Gundelia vitekii* Armağan). Consider to the potential of studied area (Tunceli province), we anticipate the total number of taxa will reach to around 2000 with the results of other studies and identification of unidentified samples.

In order to become a brand city in the world, many cities take the path of branding by featuring their cultural values and natural sources. On the other hand, studies on conservation of plant gene resources and sustainable use are increasing rapidly. The way of protection is to first identify what exists and to recognize it (Eker et al. 2019). In addition to contributing to the identification and conservation of our biological richness with this study, the data obtained will be a resource for the relevant institutions and organizations working on this subject.

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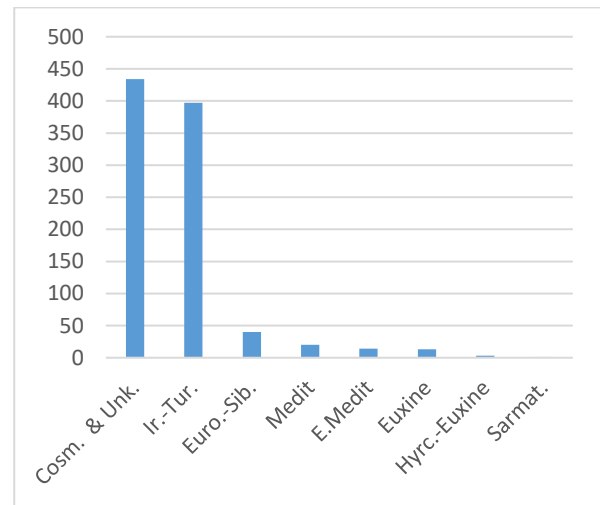


Figure 1. The distribution of taxa depending on phytogeographical regions in this study.

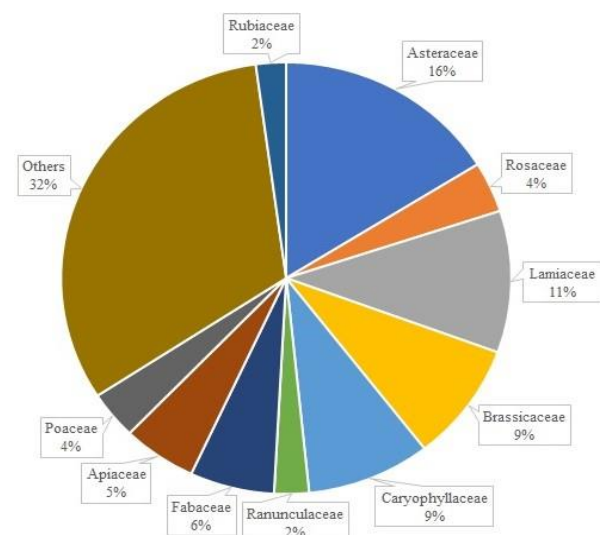


Figure 2. The distribution of families according to number of taxa.

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Macromycetes determined in Muradiye (Van) district

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Muradiye (Van) ilçesinde belirlenen makromantarlar

Abstract: The study was based on macrofungi samples collected from the region within the boundaries of Muradiye district of Van province in 2014 and 2015. As a result of field and laboratory studies 86 macrofungi species belonging to 50 genera, 25 families, seven orders and three classes within the divisions Ascomycota and Basidiomycota were determined. The determined taxa are listed together with their habitats, substrates, collection locality, geographic coordinates and personel voucher numbers. One of them, *Melanophyllum haematospermum* (Bull.: Fr.) Kreisel, is a new record for Turkey as the first member of the genus *Melanophyllum* Velen.

Key words: Biodiversity, new record, macrofungi, mycota, Turkey

Özet: Çalışma 2014 ve 2015 yıllarında Van'ın Muradiye ilçe sınırları içinde kalan bölgeden toplanan makromantar örnekleri üzerinde gerçekleştirilmiştir. Arazi ve laboratuvar çalışmaları sonucunda *Ascomycota* ve *Basidiomycota* bölümleri içinde yer alan üç sınıf, yedi takım, 25 familya ve 50 cinse ait 86 tür belirlenmiştir. Belirlenen taksonlar, habitatları, substratları, toplanma yerleri, coğrafi koordinatları ve toplayıcı numaraları ile birlikte listelenmiştir. Bunlardan bir tanesi, *Melanophyllum haematospermum* (Bull.: Fr.) Kreisel, *Melanophyllum* Velen. cinsinin ilk üyesi niteliğinde, Türkiye için yeni kayıttır.

Anahtar Kelimeler: Biyoçeşitlilik, yeni kayıt, makromantar, mikota, Türkiye

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1. Introduction

Fungi are an important group of organism for nature, and about 1.5 million species of them have been supposed to exist in the world (Hawksworth et al., 1995). Those fungi with fruiting bodies that can be seen by naked eye are known as macrofungi and almost 15.000 of them were determined in Europe (Lukić, 2008).

Starting especially from the first quarter of 20th century, many studies have also been carried out on the macrofungi of Turkey and almost 2.400 taxa have been determined (Sesli and Denchev, 2014; Solak et al., 2015). But the macrofungal biodiversity of Turkey hasn't completely been determined yet.

Muradiye is a district of Van province within Eastern Anatolian region of Turkey and situated between 38°44' - 39°12' north latitudes and 43°34' - 43°53' east longitudes. The district is surrounded by Diyaridin (Ağrı) district to north, central district of Van to the south, Çaldıran and Özalp districts to the east and Erciş district to the west (Figure 1). Bendimahi and Zincirli streams, and Van lake are the main hydrologic components of the region. According to the data obtained from Muradiye Meteorological Station, the region has an annual average temperature of 9.2 °C and a total precipitation of 582 mm. Steppe vegetation is the dominant vegetation type in the region. *Populus* L., *Salix* L., *Quercus* L., *Malus* Mill. and *Juglans* L. are the major tree population affecting the growth of macrofungi in the region.

Though some macrofungal biodiversity studies have been carried out in neighboring districts and provinces (Demirel, 1996; Demirel and Uzun, 1996; Uzun and Demirel, 1996; Demirel et al., 2002, 2003, 2004, 2010, 2015; Kaya, 2000a,b,c,d; Kaya, 2001; Kaya and Demirel, 2000; Akçay

et al., 2010; Demirel and Koçak, 2016; Şelem et al., 2019) there isn't a complete study on the macrofungi of Muradiye district.

The study aims to determine the macrofungi of the district and make a contribution to the mycobiota of Turkey.

2. Materials and Method

Macrofungi samples were collected from the region within the boundaries of Muradiye districts of Van province. They were photographed at their natural habitat and descriptive characteristics of them were noted. Then the samples were transferred to the laboratory and microscopic investigations were performed. The samples were identified with the help of the related references (Phillips, 1981; Moser, 1983; Buczacki, 1989; Bresnky and Besl, 1990; Ellis and Ellis, 1990; Breitenbach and Kränzlin, 1984, 1986, 1991, 1995; 2000; Jordan, 1995; Wasser, 1996, 2000; Peterson et al., 2000; Kränzlin, 2005; Hausknecht, 2009; Amandeep et al., 2015). The samples are kept at the fungarium of Van Yüzüncü Yıl University (VANF).

3. Results

The determined taxa are listed in alphabetical order and the systematics follows Index Fungorum (accessed on 5 December 2019).

Ascomycota Whittaker

Leotiomycetes O.E. Erikss. & Winka

Helotiales Nannf.

Helotiaceae Rehm

1. *Hymenoscyphus calyculus* (Fr.) W. Phillips

Muradiye district centre, on *Salix* sp. stumps, 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 181; Değerbilir

village, on *Populus* sp. stump, 39°03'646"N, 43°44'799"D, 1806 m, 24.10.2014, Çağlı. 187.

Pezizomycetes O.E.Erikss. & Winka

Pezizales J.Schröt.

Helvellaceae Fr.

2. ***Helvella leucopus*** Pers.

Around Muradiye Waterfall, on soil under *Populus* sp., 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 209.

3. ***Paxina queletii*** (Bres.) Stangl

Değerbilir village, on soil under *Populus* sp., 39°03'646"N, 43°44'799"D, 1806 m, 27.05.2015, Çağlı. 293.

Morchellaceae Rchb.

4. ***Morchella elata*** Fr.

Değerbilir village, on soil under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 19.05.2015, Çağlı. 239.

5. ***Verpa bohemica*** (Krombh.) J. Schröt

Muradiye District centre, on soil under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 03.05.2015, Çağlı. 206.

6. ***Verpa conica*** (O.F. Müll.) Sw.

Old Görecek village, on soil *Populus* sp., 39°04'881"N, 43°45'514"E, 1813 m, 19.05.2015, Çağlı. 243.

Pezizaceae Dumort.

7. ***Peziza domiciliana*** Cooke

Küçükköy village, on soil under *Populus* sp. 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 73.

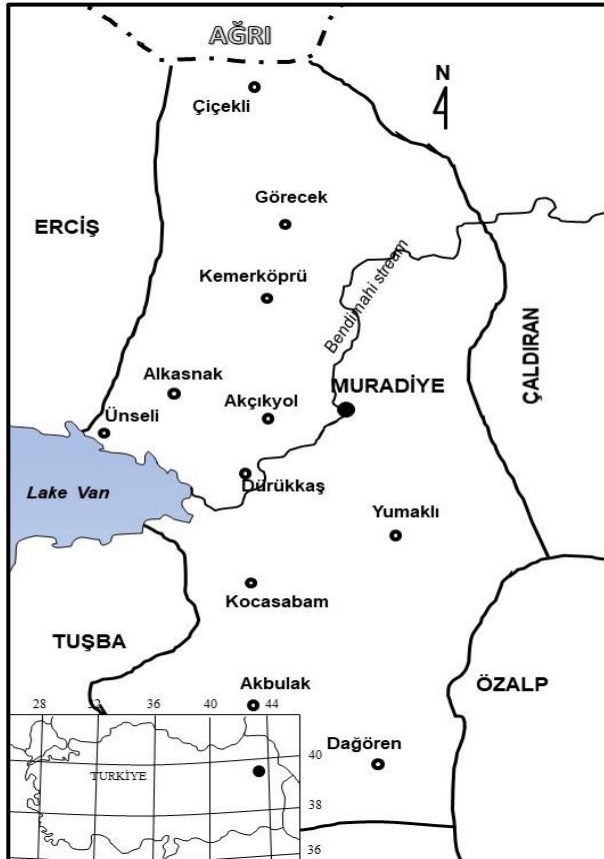


Figure 1. Map of the research area.

8. ***Peziza praetervisa*** Bres

Küçükköy village, on burned place under *Salix* sp., 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 82.

Pyronemataceae Corda

9. ***Geopora arenosa*** (Fuckel) S. Ahmad

Muradiye District centre, on soil under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 78.

10. ***Scutellinia scutellata*** (L.) Lambotte

Muradiye district centre, on *Salix* and *Populus* sp. stumps, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 36; Around Muradiye Waterfall, 39°03'913"N, 43°45'400"E, 1828 m, 26.05.2014, Çağlı. 95.

Basidiomycota R.T.Moore

Agaricomycetes Doweld

Agaricales Underw.

Agaricaceae Chevall.

11. ***Agaricus arvensis*** Schaeff.

Yumaklı village, on soil among grass under *Populus* sp., 38°56'565"N, 43°45'078"E, 1639 m, 19.05.2015, Çağlı. 221.

12. ***Agaricus bernardii*** Quéf.

Küçükköy village, meadow, 38°59'473"N, 43°46'421"E, 1667 m, 24.10.2014, Çağlı. 178.

13. ***Agaricus campestris*** L.

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 129.

14. ***Agaricus pampeanus*** Speng.

Görecek village, meadow, 39°03'520"N, 43°45'517"E, 1865 m, 24.10.2014, Çağlı. 165.

15. ***Bovista plumbea*** Pers.

Kemerköprü village, meadow, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 17.

16. ***Coprinus comatus*** (O.F. Müll.) Pers.

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 19.05.2015, Çağlı. 237.

17. ***Lepiota cristata*** (Bolton) P. Kumm.

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 111.

18. ***Lepiota helveola*** Bres.

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, Çağlı. 116; Gönderme village, 39°05'152"N, 43°49'028"E, 1907 m, 20.10.2014, Çağlı. 118.

19. ***Leucoagaricus leucothites*** (Vittad.) Wasser

Değerbilir village, among grass with needle litter, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 117.

20. ***Lycoperdon pratense*** Pers.

Küçükköy village, meadow, 38°59'473"N, 43°46'421"E, 1667 m, 24.10.2014, Çağlı. 179.

21. ***Lycoperdon utriforme*** Bull.

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 131; Balaklı village,

38°58'507"N, 43 44'083"E, 1695 m, 19.05.2015, Çağlı. 236.

22. *Macrolepiota excoriata* (Schaeff.) Wasser

Görecek village, among grass, 39°03'520"N, 43°45'517"E, 1865 m, 24.10.2014, Çağlı. 166.

23. *Melanophyllum haematospermum* (Bull.: Fr.) Kreisel

Pileus 12-24 mm in diameter, at first hemispherical to obtuse-conic, then campanulate later convex or applanate, with or without a small umbo; margin incurved when young, decurved to level at maturity, with greyish to greyish-brown veil fragments; surface cottony when young, suede-like to granulose, light to dingy-brown, darker at the center. Lamellae free to deeply adnexed, crowded, pinkish-brown, vinaceous-brown. Stipe 20-30 × 3.5-5 mm, cylindrical, straight to somewhat bent, enlarged to bulbous at the base, hollow or with a pith-like core in age, fragile, greyish, covered by reddish-brown to vinaceous-brown remnants of the universal veil (Figure 2a). Basidia 15-19 × 5.5-6.5 µm, clavate to clavate-cylindrical, 4-spored. Spores 4.5-6.5 × 2.5-4 µm, elliptic, oblong-elliptic to reniform, thin walled, smooth to minutely roughened, olive-brown (Figure 2b).

Melanophyllum haematospermum was reported to grow on humus-rich soil under both conifers and deciduous trees as solitary or in groups (Wasser, 2000; Bujakiewicz, 2010).

Değerbilir village, on soil among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 112.

Bolbitiaceae Singer

24. *Conocybe semiglobata* Kühner & Watling

Küçükköy village, among grass, 38° 59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 46; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, Çağlı. 74.

25. *Conocybe siennophylla* (Berk. & Broome) Singer

Muradiye District centre, among leaf litter under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 91; Duruktaş village, 38°57'391"N, 43°40'898"E, 1670 m, 24.10.2014, Çağlı. 169.

26. *Conocybe subovalis* Kühner & Watling

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 16; Ayrancı village, 39°96'929"N, 43°51'673"E, 1937 m, 26.05.2014, Çağlı. 68; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 20.10.2014, Çağlı. 138.

27. *Conocybe tenera* (Schaeff.) Fayod

Küçükköy village, among grass under *Populus* sp., 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 67; Around Muradiye Waterfall, 39° 03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 226.

28. *Conocybe velutipes* (Velen.) Hauskn. & Svrček

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 113 (Çağlı et al., 2019).

29. *Galeropsis desertorum* Velen. & Dvořák

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 144.

Cortinariaceae R. Heim ex Pouzar

30. *Cortinarius vernus* H. Lindstr. & Melot

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 15; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, Çağlı. 214; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, Çağlı. 223, Gönderme village, 39°05'152"N, 43°49'028"E, 1907 m, 19.05.2015, Çağlı. 229.

Cyphellaceae Lotsy

31. *Chondrostereum purpureum* (Pers.) Pouzar

Muradiye District centre, on *Salix* sp. stump, 38° 59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 185.

Entolomataceae Kotl. & Pouzar

32. *Entoloma ameides* (Berk. & Broome) Sacc.

Görecek old village, meadow, 39°04'881"N, 43°45'514"E, 1813 m, 19.05.2015, (Çağlı et al., 2019).



Figure 2. Basidiocarps (a) and basidiospores (b) of *Melanophyllum haematospermum* (bar: 10 µm).

Hymenogastraceae Vittad.

33. *Hebeloma cavipes* Huijsman

Muradiye District centre, among leaf litter under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 35.

34. *Hebeloma crustuliniforme* (Bull.) Quéf.

Görecek village, among leaf litter under *Populus* sp., 39°03'520"N, 43°45'517"E, 1865 m, 20.10.2014, Çağlı. 136; Muradiye district centre, 38°59'783"N, 43°46'093"E, 1724 m, Çağlı. 155; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, 24.10.2014, Çağlı. 164; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, 19.05.2015, Çağlı. 224.

35. *Hebeloma pusillum* J.E. Lange

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, Şelale dere yanı; 39°03'913"N, 43°45'400"E, 1828 m, 20.10.2014, Çağlı. 141, 142.

36. *Psilocybe coronilla* (Bull.) Noordel.

Çayırılık, Kemerköprü köyü; 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 21; Görecek village, 39°03'520"N, 43°45'517"E, 1865 m, 24.10.2014, Çağlı. 168; Ayrancı village, 39°06'405"N, 43°50'567"E, 1972 m, Çağlı. 242.

Incertae Sedis

37. *Panaeolus papilionaceus* (Bull.) Quéf.

Muradiye district centre, on manured soil, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 40; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 24.10.2014, Çağlı. 176; Gönderme village, 39°05'152"N, 43°49'028"E, 1907 m, 27.05.2015, Çağlı. 270.

Inocybaceae Jülich

38. *Inocybe dulcamara* (Pers.) P. Kumm

Muradiye District centre, among grass under *Populus* and *Salix* sp., 38°59'783"N, 43°46'093"E, 1724 m, 03.05.2014, Çağlı. 1; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 03.06.2014, Çağlı. 96; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, 03.05.2015, Çağlı. 207.

39. *Inocybe flocculosa* Sacc

Değerbilir village, among grass under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 137; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 213.

40. *Inocybe rimosa* (Bull.) P. Kumm.

Populus sp. altı, Görecek village, among grass, 39°03'520"N, 43°45'517"E, 1865 m, 26.05.2014, Çağlı. 76; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, Çağlı. 92; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, 03.06.2014, Çağlı. 98; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, Çağlı. 99; Keçikıran village, 38°58'252"N, 43°38'170"E, 1705 m, Çağlı. 100; Ünseli village, 38°58'821"N, 43°35'283"E, 1667 m, 20.10.2014, Çağlı. 134.

41. *Inocybe splendens* R. Heim

Populus sp., altı, Şelale yanı; 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 231.

Marasmiaceae Roze ex Kühner

42. *Marasmius oreades* (Bolton) Fr.

Kemerköprü village, meadow, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 25; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, Çağlı. 275; Alkasnak village, 39°58'171"N, 43°38'317"E, 1702 m, 27.05.2015, Çağlı. 288.

Mycenaceae Roze

43. *Mycena galericulata* (Scop.) Gray

Değerbilir village, on decaying *Quercus* sp. stump, 39°03'646"N, 43°44'799"E, 1806 m, 06.05.2014, Çağlı. 34; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, 19.05.2015, Çağlı. 259.

44. *Mycena niveipes* (Murrill) Murrill

Muradiye District centre, on decaying stump, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 88.

45. *Hemimycena delectabilis* (Peck) Singer

Around Muradiye Waterfall, on leaf litter under *Populus* sp., 39°03'915"N, 43°45'400"E, 1828 m, 20.10.2014, Çağlı. 114.

Pleurotaceae Kühner

46. *Pleurotus eryngii* (DC.) Quéf.

Around Muradiye Waterfall, on *Eryngium* sp. remains, 39°03'915"N, 43°45'400"E, 1828 m, 06.05.2014, Çağlı. 3.

47. *Pleurotus ostreatus* (Jacq.) P. Kumm.

Değerbilir village, on *Populus* and *Salix* sp. stumps, 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 11; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 89; Karahan village, 38°56'725"N, 43°39'836"E, 1645 m, Çağlı. 105; Değerbilir village, 39°03'646"N, 43°44'799"E, 1806 m, 20.10.2014, Çağlı. 195; Kemerköprü village, 39°01'701"N, 43°43'921"E, 1822 m, 27.10.2015, Çağlı. 263.

Pluteaceae Kotl. & Pouzar

48. *Pluteus salicinus* (Pers.) P. Kumm.

Değerbilir village, on wood remains, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 110; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, 24.10.2014, Çağlı. 170.

49. *Volvopluteus gloiocephalus* (DC.) Vizzini, Contu & Justo

Değerbilir village, among grass, 39°03'646"N, 43°44'799"E, 1806 m, 19.05.2015, Çağlı. 253.

Psathyrellaceae Vilgalys, Moncalvo & Redhead

50. *Coprinellus disseminatus* (Pers.) J.E. Lange

Muradiye District centre, around *Salix* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 28; Karahan village, 38°56'725"N, 43°39'836"E, 1645 m, 03.06.2014, Çağlı. 104; Balaklı village, 38°58'507"N, 43°44'083"E, 1695 m, 19.05.2015, Çağlı. 220.

51. *Coprinellus micaceus* (Bull.) Vilgalys, Hopple & Jacq. Johnson

Değerbilir village, around *Salix* sp. stump, 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 10; Açıkyol village, 38°57'997"N, 43°42'0568"E, 1673 m, 03.06.2014, Çağlı. 48; Muradiye District centre, 38°59'783"N,

43°46'093"E, 1724 m, 20.10.2014, Çağlı. 102; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 132; Görecek village, 39°04'881"N, 43°45'514"E, 1813m, 19.05.2015, Çağlı. 234; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 27.05.2015, Çağlı. 262.

52. *Coprinopsis atramentaria* (Bull.) Redhead, Vilgalys & Moncalvo

Muradiye District centre, around decaying *Populus* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 37; Değerbilir village, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 151; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 233.

53. *Coprinopsis marcescibilis* (Britzelm.) Örstadius & E. Larss.

Görecek village, among leaf litter, 39°03'520"N, 43°45'517"E, 1865 m, Çağlı. 167; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 24.10.2014, Çağlı. 177; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 235.

54. *Coprinopsis patouillardii* (Quél.) G. Moreno

Muradiye District centre, on manured soil, 38°59'783"N, 43° 46'093"E, 1724 m, 20.10.2014, Çağlı. 156.

55. *Parasola plicatilis* (Curtis) Redhead, Vilgalys & Hopple

Küçükköy village, on manured soil among grass, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 79.

56. *Psathyrella bipellis* (Quél.) A.H. Sm.

Görecek village, among grass under *Populus* sp., 39°04'881"N, 43°45'514"E, 1813 m, 20.10.2014, Çağlı. 147.

57. *Psathyrella candolleana* (Fr.) Maire

Muradiye District centre, around *Populus* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 43; around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 20.10.2014, Çağlı. 119; Değerbilir village, 39°03'732"N, 43°45'169"E, 1827 m, Çağlı. 123; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, Çağlı. 203; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 27.05.2015, Çağlı. 264.

58. *Psathyrella corrugis* (Pers.) Konrad & Maubl.

Muradiye District centre, among leaf litter under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 19.05.2015, Çağlı. 257.

59. *Psathyrella microrhiza* (Lasch) Konrad & Maubl.

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 122.

60. *Psathyrella prona* (Fr.) Gillet

Populus sp. altı, Merkez; 38° 59'783"N, 43° 46'093"E, 1724 m, 26.05.2014, Görece eski köy; 39° 04'881"N, 43° 45'514"E, 1813 m, Balaklı köyü; 38° 58'507"N, 43° 44'083"E, 1695 m, 19.05.2015, ÇAĞLI. 41, 222, 244.

61. *Psathyrella pseudogracilis* (Romagn.) M.M. Moser

Muradiye District centre, on decaying stump, 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 186.

62. *Psathyrella spadiceogrisea* (Schäeff.) Maire

Küçükköy village, on decaying stump, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 66; Gönderme village, 39°05'152"N, 43°49'028"E, 1907 m, 24.10.2014, Çağlı. 175.

Strophariaceae Singer & A.H. Sm.

63. *Agrocybe dura* (Bolton) Singer

Görecek village, meadow, 39°03'520"N, 43°45'517"E, 1865 m, 06.05.2014, Çağlı. 7; Kemerköprü village, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 18; Ünseli village, 38°58'821"N, 43°35'283"E, 1667 m, 26.05.2014, Çağlı. 45.

64. *Agrocybe paludosa* (J.E. Lange) Kühner & Romagn. ex Bon

Muradiye District centre, meadow, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 30.

65. *Agrocybe pediades* (Fr.) Fayod

Kemerköprü village, meadow, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 20; Keçikıran village, 38°58'252"N, 43°38'170"E, 1705 m 26.05.2014; Çağlı. 42; Alkasnak village, 39°58'171"N, 43°38'317"E, 1702 m 19.05.2015, Çağlı. 238.

66. *Agrocybe praecox* (Pers.) Fayod

Muradiye District centre, among grass, 38°59'783"N, 43°46'093"E, 1724 m, Çağlı. 44; Küçükköy village, 38°59'473"N, 43° 46'421"E, 1667 m, 26.05.2014, Çağlı. 55; around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 208.

67. *Agrocybe vervacti* (Fr.) Singer

Kemerköprü village, among leaf litter under *Populus* sp., 39°01'701"N, 43°43'921"E, 1822 m, Çağlı. 23; Değerbilir village, 39°03'646"N, 43°44'799"E, 1822 m, 06.05.2014, Çağlı. 24.

68. *Cyclocybe cylindracea* (DC.) Vizzini & Angelini

Muradiye District centre, around *Populus* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 192.

69. *Deconica merdicola* (Huijsman) Noordel.

Değerbilir village, on manure, 39°03'646"N, 43°44'799"E, 1806 m, 20.10.2014, Çağlı. 152.

70. *Hypoloma fasciculare* (Huds.) P. Kumm.

Muradiye District centre, around *Salix* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 33.

71. *Pholiota aurivella* (Batsch) P. Kumm.

Küçükköy village, on *Salix* sp. trunk, 38°59'473"N, 43° 46'421"E, 1667 m, 26.05.2014, Çağlı. 80; Değerbilir village, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 135.

72. *Pholiota conissans* (Fr.) M.M. Moser

Küçükköy village, among grass around *Populus* sp. stump, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2015, Çağlı. 81.

73. *Pholiota gummosa* (Lasch) Singer

Değerbilir village, around *Salix* sp. stump, 39°03'646"N, 43°44'799"E, 1806 m, Çağlı. 149; Karahan village, 38°56'725"N, 43°39'836"E, 1645 m, 20.10.2014, Çağlı. 150.

Tricholomataceae R. Heim ex Pouzar

74. *Melanoleuca excissa* (Fr.) Singer

Değerbilir village, among grass, 39°03'646"N, 43°44'799"E, 1806 m, 19.05.2015, Çağlı. 241.

75. *Tricholoma populinum* J.E. Lange

Görecek village, under *Populus* sp., 39°03'520"N, 43°45'517"E, 1865 m, 24.10.2014, Çağlı. 163.

76. *Tricholoma scalpturatum* (Fr.) Quéf.

Değerbilir village, under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 154.

77. *Lepista irina* (Fr.) H.E. Bigelow

Muradiye District centre, under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 90.

78. *Lepista nuda* (Bull.) Cooke

Muradiye District centre, under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 189.

79. *Lepista personata* (Fr.) Cooke

Değerbilir village, under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 03.06.2014, Çağlı. 13; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 31; Açıkyol village, 38°57'997"N, 43°42'0568"E, 1673 m, 24.10.2014, Çağlı. 188; Duruktaş village, 38°57'391"N, 43°40'898"E, 1670 m, Çağlı. 258.

Tubariaceae Vizzini

80. *Tubaria furfuracea* (Pers.) Gillet

Muradiye District centre, on soil among leaf litter, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 29; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, Çağlı. 53; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, 26.05.2014, Çağlı. 54.

Boletales E.-J. Gilbert

Paxillaceae Lotsy

81. *Paxillus involutus* (Batsch) Fr.

Değerbilir village, among grass under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, Çağlı. 125; Karahan village, 38°56'725"N, 43°39'836"E, 1645 m, 20.10.2014, Çağlı. 145.

Hymenochaetales Oberw.

Hymenochaetaceae Donk

82. *Phellinus igniarius* (L.) Quéf.

Küçükköy village, on *Salix* sp. trunk, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 83.

Polyporales Gäum.

Polyporaceae Fr. ex Corda

83. *Cerioporus squamosus* (Huds.) Quéf.

Değerbilir village, on *Populus* sp. stump, 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 14; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, 19.05.2015, Çağlı. 219.

84. *Lentinus tigrinus* (Bull.) Fr.

Muradiye District centre, around *Salix* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 27; 26.05.2014, Çağlı. 87; 24.10.2014, Çağlı. 191; Küçükköy

village, 38°59'473"N, 43°46'421"E, 1667 m, 19.05.2015, Çağlı. 260.

85. *Polyporus rhizophilus* Pat.

Kemerköprü village, meadow, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 22.

Russulales Kreisel ex P.M. Kirk, P.F. Cannon & J.C. David

Russulaceae Lotsy

86. *Lactarius controversus* Pers.

Değerbilir village, in poplar grove, 39°03'732"N, 43°45'169"E, 1827 m 20.10.2014, Çağlı. 146; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 190.

4. Discussions

Eighty six macrofungi species belonging to 50 genera, 25 families, seven orders and three classes were determined from Muradiye district of Van province. Ten of the determined taxa belong to *Ascomycota* (1 *Helotiales*, 9 *Pezizales*) while 76 belong to *Basidiomycota* (70 *Agaricales*, 1 *Boletales*, 1 *Hymenochaetales*, 3 *Polyporales*, 1 *Russulales*).

The taxa are distributed in 25 families. *Agaricaceae* and *Psathyrellaceae* were found to the most crowded families each with 13 taxa. *Strophariaceae* is the second crowded one with 11 taxa. Two of the families (*Bolbitiaceae*, *Tricholomataceae*) comprises 6, two of them (*Hymenogastraceae*, *Inocybaceae*) comprises 4, three of them (*Morchellaceae*, *Mycenaceae*, *Polyporaceae*) comprises 3 taxa, five of them (*Helvellaceae*, *Pezizaceae*, *Pyronemataceae*, *Pleurotaceae*, *Pluteaceae*) comprises 2 taxa, and the rest of the 10 families comprises 1 taxon.

Thirty five (%40.79) of the determined taxa are edible. But only three of them are collected and consumed by local people. Among them *Agrocybe dura* is known as "çimen mantarı" in the region while *Pleurotus ostreatus* is known as "ağaç/kavak mantarı" and *Pleurotus eryngii* is known as "heliz mantarı". Forty two (%48.84) of them are inedible and 9 (%10.47) of them are more or less poisonous.

The taxa determined in Muradiye district were compared with the findings of the studies carried out in neighbouring regions and some similarities were observed. These studies and the similarity percentages are given in Table 1.

Table 1. Similarity percentages of neighbouring studies with Muradiye district.

Neighbouring study	# of identical taxa	Total taxa	Similarity (%)
Demirel (1996)	18	50	36.00
Demirel et al. (2002)	23	45	51.11
Demirel et al. (2003)	23	114	20.18
Demirel et al. (2004)	17	162	10.49
Akçay et al. (2010)	20	50	40.00
Demirel & Koçak (2016)	46	96	47.92
Demirel et al. (2017)	21	172	12.21

Among the determined taxa, *Bovista plumbea*, *Coprinus comatus*, *Psilocybe coronilla*, *Volvopluteus gloiocephalus* and *Polyporus rhizophilus* were also recorded from the region by Demirel (1996). All the other taxa are new for the region while *Melanophyllum haematospermum* are new for Turkish mycobiota at genus level.

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Dieffenbachia plant poisoning cases and effects on human health

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Dieffenbachia bitkisi zehirlenme vakaları ve insan sağlığı üzerine etkileri

Abstract: Many plants, such as *Dieffenbachia* Schott, which are poisonous and can be life threatening, are present in the habitats of people. *Dieffenbachia* is widely used for ornamental purposes in living quarters, but it is a plant species that can harm human health as a result of contact, chewing or ingestion. The aim of this work is to attract the attention of researchers to the role of the *Dieffenbachia* plant, often used for ornamental purposes in homes, especially in the case of home accidents that children are exposed to and the likelihood of abuse. For this reason, *Dieffenbachia* poisoning cases in the literature have been discussed in the context of resources. A total of 7 cases were studied, including three cases of 1-3 years of age, 3 cases of 7-12 years and a case of adult age of 69, obtained by investigating the literature. *Dieffenbachia* plant can cause vital signs, such as airway obstruction and respiratory failure, as well as mild skin reactions, depending on the type of contact and amount of exposure. Care should be taken and caution should be exercised on the use of plants such as *Dieffenbachia* and similar plants in houses, playgrounds and other green area regulations.

Key words: *Dieffenbachia*, toxic plants, child poisoning

Özet: *Dieffenbachia* Schott gibi zehirli etkisi olan ve yaşamı tehdit edebilen birçok bitki bilerek ya da bilmeyerek insanların yaşam alanlarında bulunmaktadır. *Dieffenbachia*, yaşam alanı olan evlerde süs amacıyla yaygın olarak kullanılmaktadır, ancak temas edilmesi, çiğnenmesi ya da yutulması sonucunda insan sağlığına zarar verebilen bir bitki türüdür. Bu çalışmanın amacı, evlerde sıklıkla süs amacıyla kullanılan *Dieffenbachia* bitkisinin, özellikle çocukların maruz kaldığı ev kazalarındaki rolü ve kötüye kullanım ihtimaline karşı araştırmacıların dikkatini çekmektir. Bu sebeple literatürde bulunan *Dieffenbachia* zehirlenmesi olguları kaynaklar çerçevesinde tartışılmıştır. Literatür taranarak elde edilen 1-3 yaş arası üç vaka, 7-12 yaş arası 3 vaka ve 69 yaş bir yetişkin vakası olmak üzere toplam 7 olgu ele alınmıştır. *Dieffenbachia* bitkisi, temas şekli ve maruz kalma miktarına bağlı olarak hafif cilt reaksiyonlarının yanı sıra havayolu tıkanıklığı ve solunum yetmezliğine kadar giden hayati bulgulara neden olabilmektedir. Evler, çocuk oyun alanları ve diğer yeşil alan düzenlemelerinde *Dieffenbachia* ve benzer özellikteki bitkilerin kullanımını konusunda dikkatli olunmalı ve gerekli tedbirler alınmalıdır.

Anahtar Kelimeler: *Dieffenbachia*, zehirli bitkiler, çocuk zehirlenmeleri

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1. Introduction

Humans have benefited from plants for different purposes for nearly 50,000 years (Özbek, 2005). People have used the plants obtained from nature in fields such as medicine, medicine industry, cosmetics, perfume, soap, essence, toothpaste, soft drinks, confectionery, healing and relaxing tea production, painting, ornament and landscape in houses (Sıcak et al., 2013; Gül, 2014). Instinctively, they have learned which plants are poisonous or healing through trial and error. (Faydaoğlu and Sürücüoğlu, 2013; Yılmaz et al., 2006). Research shows that there are about 200 poisonous plants that can threaten human and animal health in Turkey (Yılmaz et al., 2006).

When consumed, plants that contain toxic substances that can result in death or disease for humans and animals are called "Poisonous Plants". Poisonous plants have always attracted the attention of people and tried to classify the poisons and medicines obtained from such plants (Balabanlı et al., 2006; Yılmaz et al., 2006). There are many species and types of poisonous substances from different families. Alcohols, phytotoxins, oxalates, and resins are some toxic substances that are the result of plant metabolism. While the dose and quality of the poison vary according to the living species, they cause poisoning when

they are taken into the body (Balabanlı et al., 2006; Yılmaz et al., 2006; Yılmaz et al., 2007). *Aesculus hippocastanum* L. (Horse chestnut), *Brassica nigra* L. (Black mustard), *Lantana camara* L. (Mine flower), *Laurus nobilis* L. (Laurel), *Caesalpinia gilliesii* Benth. (Peacock flower), *Hedera helix* L. (Wallflower), *Nerium oleander* L. (Oleander), *Atropa belladonna* L. (Belladonna), *Colchicum speciosum* Steven (Crocus) and *Dieffenbachia picta* Schott (crying flower), *Rhus radicans* L. (Poison ivy) are plants having toxic leaf and fruit (Balabanlı et al., 2006; Yılmaz et al., 2006).

Dieffenbachia (Figure 1) plants belong to the family *Araceae* and naturally grow in tropical regions (Dip et al., 2004; Şişmanlar et al., 2010; Porsuk et al., 2014). These flowers, which are imported to Turkey, are often preferred for decoration in homes because they are grown easily, grow fast and like the shade environments (Akpınar et al., 2016). It is called "crying flower" among the people and can cause poisoning (Akpınar et al., 2016). Particularly the colorful leaves are attractive to children (Barnes and Fox, 1955). *Dieffenbachia* poisonings can manifest themselves in systemic or local effects in humans and animals (Akpınar et al., 2016). Vigorous clinical findings such as airway obstruction and respiratory insufficiency can occur with mild findings such as swelling, burning and pain in the



Figure 1. *Dieffenbachia* plants.

tongue and lips with the chewing of this plant (Dip et al., 2004; Şişmanlar et al., 2010).

The aim of this work is to attract the attention of researchers to the role of the *Dieffenbachia* plant, often used for ornamental purposes in homes, especially in the case of home accidents that children are exposed to and the likelihood of abuse. For this reason, *Dieffenbachia* poisoning cases in the literature have been compiled and discussed in the context of resources. A total of 7 cases, including three cases of 1-3 years, three cases of 7-12 years and a case of adults of 69 years, were obtained by searching the literature.

2. Case Studies from Literature

It is stated that two children aged between 1-3 years of age chew this plant by taking it to the mouth and that one of them was exposed to the grape juice which was transmitted to the hand because the bite of the plant was not bite (Şişmanlar et al., 2010; Akça et al., 2014; Porsuk et al., 2014). In the case reported by Şişmanlar et al. (2010), a 3-year-old boy was brought to the Pediatric Emergency Service with difficulty in breathing, swelling of the tongue and lips. Half an hour before the complaint of the child's clinical trait emerged, it was found that the house chewed the plant named *Dieffenbachia*, the ornamental plant. After half an hour, there was an increase in the amount of mouth saliva, swelling of the mouth and lips. The findings of life were normal and there was no foreign body aspiration on the chest x-ray. It has been seen that the patient has edema in his tongue and lips, breathing by opening his mouth, and having difficulty speaking a few words. Antihistamine and steroid treatment were given and the patient was discharged after 4 hours of observation and follow-up (Şişmanlar et al., 2010). According to Akça et al. (2014) a 23-month-old male patient with no history of disease was admitted to the hospital with complaints of swelling and redness on his lips. In the story of the patient, it was determined that a piece of *Dieffenbachia* plant, which is present in the house, was chewed by taking the leaf in her mouth and the complaints that emerged later appeared. It is stated that the complaints were brought to the hospital 2 hours after the emergence of the complaints. The patient was kept under observation for 24 hours and discharged because of complaints (Akça et al., 2014). In the case reported by Porsuk et al. (2014), A 25-month-old male infant was crying and crying and was noticed by the family that the home-grown *Dieffenbachia* plant was broken. Since there is no trace of bite in the plant, it has been thought that the juice of the louse is licked or the

juice of the infected water is drained. The family was referred to the hospital emergency department within 15 minutes. The National Poison Counseling Center (UZEM) for hospital consultation and the treatment recommended by UZEM have been applied. No complications occurred in the patient and the patient was discharged (Porsuk et al., 2014).

There are different symptoms in spite of the fact that oral exposure is seen in all cases. While there was difficulty breathing and edema when exposed to the rub, only the juvenile licking child had no significant symptoms. Besides, the time to reach the hospital after exposure is stated as 15 minutes, 30 minutes and 2 hours. The child brought to the hospital at the end of 2 hours has swelling and redness on the lips, and there is no obvious symptom in the child brought to the hospital in 15 minutes. Early treatment of the disease is thought to reduce complaints. However, compared to other cases, the child brought to the hospital after 30 minutes has more severe symptoms such as difficulty in breathing, tongue and swelling in the mouth. This can be related to the amount of chewing gum in the mouth and the length of the chewing time. The difference in symptoms can be due to the elapsed time in the patient's hospitalization and the exposure patterns.

When three cases between 7 and 12 years of age were examined, it was found that a 7-year-old boy bruised and smelled *Dieffenbachia* planta by hand, (Akpınar et al., 2016), a 9-year-old boy chews the leaf of the plant (Adhikari, 2012) and it is stated that the 12-year-old female patient consumed the plant leaf (Sinajdaufa et al., 2005). In the case presented by Akpınar et al. (2016) a boy who is 7 years old and has no known illness stories is referred to the hospital with urticaria findings (swelling, redness in the hands, itching and burning in the whole body) as a result of hand rubbing and smelling of *Dieffenbachia* plant. It was determined that the findings of life were normal, physical examination revealed urticarial plaques on the whole body. After the treatment, the patient was discharged (Akpınar et al., 2016). In the work done by Adhikari (2012) a 9-year-old boy has been admitted to the emergency room with irritation, pain, difficulty swallowing and salivation in the mouth. It was mentioned that the child chewed the leaf of a plant while playing in the park by the family of the child and the family brought the plant emergency service. Severe pain in the upper abdomen, erythema in the mouth and throat were detected in the physical examination. The patient's treatment started and at the end of 3 days the swelling and redness on the back decreased, the abdominal pain decreased and the liquid diet started to feed. The patient was discharged at the end of 4 days (Adhikari, 2012). In a phenomenon conveyed by Sinajdaufa et al. (2005) a 12-year-old female patient consumed the leaf of *Dieffenbachia* plant at home for suicide and applied to the emergency service after 6 hours. Parts of the plant were removed by washing with stomach lavage, but esophagitis was detected on the endoscope. After 14 days of treatment, the patient was referred to the hospital with bloody stool and bloody vomiting after 2 days. After the examinations, a 3 mm wide fistula was found between the patient's chest, food tube and aorta and necessary treatments were applied. The aorta-esophageal fistula could be detected five weeks after the procedure. Seven years after the patient's normal swallowing function has come and is not sequelae (Sinajdaufa et al., 2005).

When examined, the patterns of exposure and symptoms are different. Only smell and contact with urticaria were seen, resulting in both severe symptoms and late complications. The plant was eaten abundantly for suicide purposes and the patient was brought to the hospital six hours after consumption. Both the amount of plant exposed and the duration of exposure are prolonged. It is also thought to be more fragmented and more active substance released because it is deliberately chewed. Especially late complications are related to late arrival and abundant consumption.

When a 69-year-old adult case is examined, it is seen that *Dieffenbachia* plant is taken orally. A 69-year-old male patient with asthma and pericarditis was admitted to the hospital with complaints of dysphagia, salivation and glossitis. Thirty minutes before his hospitalization, the patient thought that he was eating sugarcane and he ate *Dieffenbachia* plant but he spit it out without swallowing. The life of the patient was normal but lip, soft palate, uvula, laryngeal edema and, epiglottic enlargement were detected. The speech is expressed as muffled but understandable. Despite the initial treatment of the patient, the dyspnea increased after 1 hour and the patient had to open the tracheostomy. A chest tube was applied to treat the resulting lung injury. Oropharyngeal swelling gradually decreased within 3 days and after the treatment, tracheostomy and chest tube were terminated (Cumpston et al., 2003).

There was no adult case that could be compared with this case in the literature review. It is seen that the symptoms are less in the case of the child who is exposed to the same period and brought to the hospital in the same time period compared with the examined child cases and the severity of the dyspnea complaint is increased. Tracheostomy due to increased dyspnea had to be opened and a chest tube was applied. More severe complaints may be associated with older age and existing chronic diseases.

3. Discussions

In the 2006 toxic substance exposure report of the US Toxic Substances Control Center, 44710 of the 64236 cases related to interacting with plants are composed of children under the age of five (Akpınar et al., 2016). Only 4.9% of the 61 patients who received *Dieffenbachia* orally according to the local poison counseling center reported symptoms in the first five minutes and symptoms were resolved with minimal supportive care. Poisoning treatment varies according to the clinical condition of the patient. Cold applications such as intubation or tracheostomy may be needed to provide antihistamines, steroid drugs and airway remodeling in severe cases, while cold application and pain relievers are sufficient for mild cases (Şişmanlar et al., 2010).

The homeland of the *Dieffenbachia* plant is tropical America and is known as the most poisonous among the plants imported to Turkey. This property has been used for various purposes since ancient times. The Tucuna Indians who lived in the Amazon used it as an arrow poison, on the slaves of Western Indians for torture. In order to prevent the conversation, the plant sap was brought to the grave and the slaves were punished. Brazilian Indians have added the poison of this plant to food, in anticipation that their

enemies will prevent their reproductive ability (Barnes and Fox, 1955; Şişmanlar et al., 2010).

The mechanism of toxic effect in cases of poisoning with *Dieffenbachia* plant is not fully known. Calcium oxalate crystals, oxalic acid and protease are thought to be effective (Gardner, 1994; Akpınar et al., 2016; Akça et al., 2014). In the cells of the plant, needle-shaped calcium oxalate crystals are present intensively and the plants are protected against herbivores (Cote, 2009; Adhikari, 2012; Akpınar et al., 2016). Calcium oxalate crystals and proteolytic enzymes that are present in the leaves in the event of the plant's rubbing, rupturing or chewing cause inflammation, local irritation and tissue damage (Şişmanlar et al., 2010; Porsuk et al., 2014).

If the *Dieffenbachia* plant is carelessly battered, thousands of crystal arrows on the leaves and stems can spurt and cause some injuries, especially in the eyes (Akpınar et al., 2016). In case of contact with the eye, serious pain, chemosis (conjunctiva edema), blepharospasm, photophobia, lacrimation, corneal abrasion and keratoconjunctivitis occur (Şişmanlar et al., 2010; Porsuk et al., 2014). In one study, three cases were reported with characterization of pain and blurred vision after *Dieffenbachia*'s blooming contact. The complaints of the patients started within 5-18 hours after admission and were fully recovered within one week after treatment (Hsueh et al., 2004). In a study performed on the albino rabbits, it was determined that the juice of the plant suffers damage to the conjunctiva and the cornea when dropped (Fochtman et al., 1969). In contact with the skin, mild dermatitis can cause symptoms to severe burns (Şişmanlar et al., 2010; Porsuk et al., 2014). If the leaves are chewed, the crystals will cause a burning sensation in the mouth and throat, and if they are swallowed, they will cause a temporary disability (Porsuk et al., 2014; Akpınar et al., 2016). In a study it was reported that *Dieffenbachia* prevented talking, that a criminal drove eyewitnesses into the mouth and that witnesses could not testify (Barnes and Fox, 1955). If ingested by mouth, pain, edema, increase in mouth secretions, ulceration, vomiting, diarrhea and swallowing difficulty can be seen (Gardner, 1994; Cumpston et al., 2003; Şişmanlar et al., 2010; Porsuk et al., 2014; T.C. Sağlık Bakanlığı, 2007). In addition, as a result of the ingestion of leaves, death due to acute airway edema is observed and it is known that this plant was used to punish prisoners in olden days (Akpınar et al., 2016). When different animal studies are examined, it can be seen that when the leaves of this plant are taken orally (Müller et al., 1998), it is also stated that a dog has dysphagia and airway obstruction (Peterson et al., 2009; Akça et al., 2014). In another study, it was stated that the dog, breaking the plant roots, had locally wide ulcerative glossitis and severe respiratory distress and that the dog had died despite the treatment (Loretti et al., 2003). In a study on mice, it was determined that the juice dropped on the mouth was similar to the reactions in the human body (Fochtman et al., 1969).

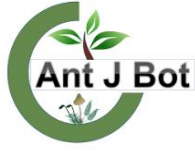
As a result, this plant, which has many harmful effects on human health and used for torture and punishment, is in our homes for decoration purposes. In addition to mild effects on health, studies with serious effects have been shown. Especially in the home environment where children can easily reach, children are at risk. It is considered that parents are able to be aware of this issue and to prevent possible risks by making the home environment safe. Information on the poisoning rate, effects and toxic parts

should be provided by the businesses to which the sale is made in order to raise awareness of the user on the plant. Care should be taken and caution should be exercised on

the use of plants such as *Dieffenbachia* and similar plants in houses, playgrounds and other green area regulations.

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Pericarp anatomy and surface micromorphology of some orchids in the Black Sea Region

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Karadeniz bölgesinde yayılış gösteren bazı orkidelerin perikarp anatomisi ve yüzey mikromorfolojisi

Abstract: In this study, we have investigated the anatomy and ultrastructure of the pericarp to determine important characters of the fruits belonging to some Turkish orchidoid species, and to determine which features are related to ecological or habitat preferences. For the purpose, the samples belonging to 19 orchid taxon were collected in the Black Sea Region. SEM and light microscopy photographs were taken with the standard techniques. Variations among taxa were evaluated using various statistical methods such as correlation and discrimination analysis. Among the investigated characteristics, fruit surface ornamentation is related to habitat preferences of the species while morphometric properties of epidermal cells and structural features such as the type of crystal inclusions are important characters at the genus level.

Key words: Anatomy, discrimination analysis, micromorphology, *Orchidaceae*, *Orchidoideae*

Özet: Bu çalışmada, bazı orkide türlerine ait meyvelerin önemli özelliklerini belirlemek ve hangi özelliklerin ekolojik veya habitat tercihleriyle ilişkili olduğunu tespit etmek için perikarp anatomisi ve mikromorfolojisi incelenmiştir. Bu amaçla, Karadeniz Bölgesi'nde 19 orkide taksonuna ait örnekler toplanmıştır. Standart tekniklerle SEM ve ışık mikroskobu fotoğrafları çekilmiştir. Taksonlar arasında çeşitlilik arz eden özellikler korelasyon ve ayırım analizleri gibi çeşitli istatistiksel yöntemler kullanılarak değerlendirilmiştir. İncelenen özellikler arasında meyve yüzey desenlenmesi türlerin habitat tercihleri ile ilişkili iken epidermal hücrelere ait morfolojik özellikler ile kristal inklüzyonların çeşidi gibi yapısal özellikler cins seviyesinde önemli ayırt edici karakterlerdir.

Anahtar Kelimeler: Anatomi, ayırım analizi, mikromorfoloji, *Orchidaceae*, *Orchidoideae*

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1. Introduction

Orchidaceae is one of the largest families in terms of biodiversity and is flowering plants with wide area of distribution excluding extreme habitats (Dressler, 1993). With more than 800 genera and nearly 27.000 species, new members are added to the orchid family every year (Chase et al., 2015; The Plant List, 2018). In Turkey, it is possible to encounter over 200 taxa from sea level to over 2000 m elevation (Davis and Davis, 1982; Güner et al., 2012). Additionally, the economic value of these plants is increased through widespread use in food, cosmetic and pharmaceutical industries (Sezik, 1984).

Structural studies of orchids have focused on flower parts generally due to the morphological variety and unrivaled pollination strategies of flowers (Stpiczyńska, 2003; Cozzolino and Widmer, 2005; Schiestl, 2005; Bell et al., 2009; Vereecken, 2009; Anton et al., 2012; Nunes et al., 2015). Furthermore, studies about the internal and surface structure of seeds rather than fruit, symbiotic-asymbiotic germination trials or orchid-fungus relationships are seen to be more notable (Gamarrá et al., 2007; Chemisquy et al., 2009; Chen et al., 2012; Gamarrá et al., 2012; Tesitelová et al., 2012; Bektaş et al., 2013). Though seeds are very small, they show high rates of variety in testa structure. The physical properties of seeds and the functional outcomes of these properties were revealed in detail by Arditti and Ghani (2000). Also, some studies

have revealed the developmental features of seed coats (Molvray and Chase, 1999; Lee et al., 2005, 2007). Many micromorphological studies have stated that seed shape, surface patterning, anticlinal and periclinal wall structures or shape of testa cells are characteristic at different systematic categories and are reliable character to contribute to solving systematic problems in the family (Gamarrá et al., 2012; Barthlott et al., 2014; Akbulut and Şenel, 2016; Şeker and Şenel, 2017; Gamarrá et al., 2018).

The most accepted opinion related to developmental features of orchid fruit is that they comprise three carpels and the midvein of the carpel is located immediately below the stigma lobes. Orchids have marginal placentation (Brown, 1831; Payer, 1857; Van Tieghem, 1871). Additionally, according to the split-carpel model, the fruit is thought to occur by joining of other flower parts like sepal and petals. In this model, the sepals divide the carpels into two equal pieces and each petal joins to two separate carpel sections to form the fruit (Rasmussen and Johansen, 2006). In spite of detailed investigation of the internal structure of the carpel in these studies, the pericarpic surface morphology or morphometric features have been ignored compared to the seed.

Due to excessive number of species, high rate of variation in flowers or hybridization capacity, revealing characters rapidly and reliably for solutions to systematic problems carries great importance for orchids (Arditti, 1977;

Dressler, 1993). Many problems have not been solved due to identification based on flower morphology. With the more common use of molecular markers in recent years, systematic categories of many species have changed (Bateman et al., 2003).

However, the main disadvantages of these methods are high cost and requirement for additional approaches to differentiate closely-related taxa. In this study, the aim was to determine distinguishing features for the pericarp of closely-related orchid species, identification of whether

these features are useful for classification and research of the relationships with habitat and ecological preferences of taxa.

2. Materials and Method

Samples were collected from different localities in the Black Sea Region from 2012-2016 (Table 1). Species identification was completed using Flora of Turkey and Türkiye Bitkileri Listesi (Davis and Davis, 1982; Güner et al., 2012). Fruits were fixated in formalin-acetic acid-alcohol (FAA) and then stored in 70% ethyl alcohol.

Table 1. List of *Orchidaceae* taxa and localities.

Taxa	Locality	Voucher
<i>Anacamptis laxiflora</i> (Lam.) R.M.Bateman, Pridgeon & M.W.Chase	Ondokuzmayıs, Samsun	Ss,36
<i>Anacamptis laxiflora</i>	Terme, Samsun	Ss,37
<i>Anacamptis papilionacea</i> (L.) R.M.Bateman, Pridgeon & M.W.Chase	Avdan, Canik, Samsun	Omuhb,7226
<i>Anacamptis papilionacea</i>	Kurupelit, Samsun	Omuhb,7827
<i>Anacamptis pyramidalis</i> (L.) Rich.	Kurupelit, Samsun	Omuhb,4141
<i>Anacamptis pyramidalis</i>	Avdan, Canik, Samsun	Omuhb,4142
<i>Coeloglossum viride</i> (L.) Hartm.	Köprübaşı, Trabzon	Omuhb,8253
<i>Dactylorhiza euxina</i> (Nevski) H.Baumann & Künkele	Köprübaşı, Trabzon	Mka,15
<i>Dactylorhiza euxina</i>	Kavron, Rize	Mka,18
<i>Dactylorhiza romana</i> (Seb.) Soó	Kurupelit, Samsun	Mka,11
<i>Dactylorhiza romana</i>	Abant, Bolu	Ss,10
<i>Dactylorhiza saccifera</i> (Brongn.) Soó	Ayder, Rize	Mka,19
<i>Dactylorhiza saccifera</i>	Köprübaşı, Trabzon	Mka,20
<i>Gymadenia conopsea</i> (L.) R.Br.	Köprübaşı, Trabzon	Mka,27
<i>Himantoglossum caprinum</i> (M. Bieb.) Spreng.	Bayabat, Sinop	Mka,28
<i>Himantoglossum caprinum</i>	Kurupelit, Samsun	Omuhb,7739
<i>Neotinea tridentata</i> (Scop.) R.M.Bateman, Pridgeon & M.W.Chase	Maraşlı, Çaykara, Trabzon	Mka,42
<i>Neotinea tridentata</i>	Kurupelit, Samsun	Ss,26
<i>Neotinea tridentata</i>	Fatsa, Ordu	Ss,25
<i>Ophrys apifera</i> Huds.	Kurupelit, Samsun	Ss,39
<i>Ophrys apifera</i>	Avdan, Canik, Samsun	Omuhb,7716
<i>Ophrys oestrifera</i> M. Bieb.	Kurupelit, Samsun	Omuhb,7717
<i>Ophrys oestrifera</i>	Kavak, Samsun	Omuhb,7727
<i>Orchis mascula</i> L.	Kurupelit, Samsun	Omuhb,7712
<i>Orchis mascula</i>	Abant, Bolu	Ss,16
<i>Orchis mascula</i>	Çambaşı, Ordu	Omuhb,7829
<i>Orchis pallens</i> L.	Abant, Bolu	Ss,17
<i>Orchis pallens</i>	Köprübaşı, Trabzon	Mka,22
<i>Orchis purpurea</i> Huds.	Kurupelit, Samsun	Ss,14
<i>Orchis purpurea</i>	Fatsa, Ordu	Ss,21
<i>Orchis purpurea</i>	Abant, Bolu	Ss,22
<i>Orchis purpurea</i>	Kavak, Samsun	Ss,24
<i>Platanthera chlorantha</i> (Cruster) Rchb.	Kurupelit, Samsun	Omuhb,4123
<i>Platanthera chlorantha</i>	Kavak, Samsun	Mka,33
<i>Serapias orientalis</i> Greuter	Kurupelit, Samsun	Ss,35
<i>Spiranthes spiralis</i> (L.) Chevall	Kurupelit, Samsun	Mka,38
<i>Spiranthes spiralis</i>	Köprübaşı, Trabzon	Mka,49
<i>Steniella satyrioides</i> (Spreng.) Schltr.	Kurupelit, Samsun	Omuhb,3041
<i>Steniella satyrioides</i>	Ünye, Ordu	Mka,50
<i>Steniella satyrioides</i>	Bafra, Samsun	Mka,40

To determine the anatomical and morphometrical characters, cross-section and surface sections were taken from fruit samples from at least three different individuals in each taxon. Anatomical features were investigated using a light microscope (Zeiss AxioLab A1 microscope and the Zeiss AxioCam 105 imaging system) and morphometric features were assessed with at least 30

measurements for each character. Furthermore, pericarp surface micromorphology was identified with scanning electron microscope studies. Samples were passed through alcohol series (30%, 50%, 70% and 95%) to remove excess water from tissues and dried with a critical point dryer. After coating with 15 nm gold-palladium (SEM coating system, SC7620), surface investigations were

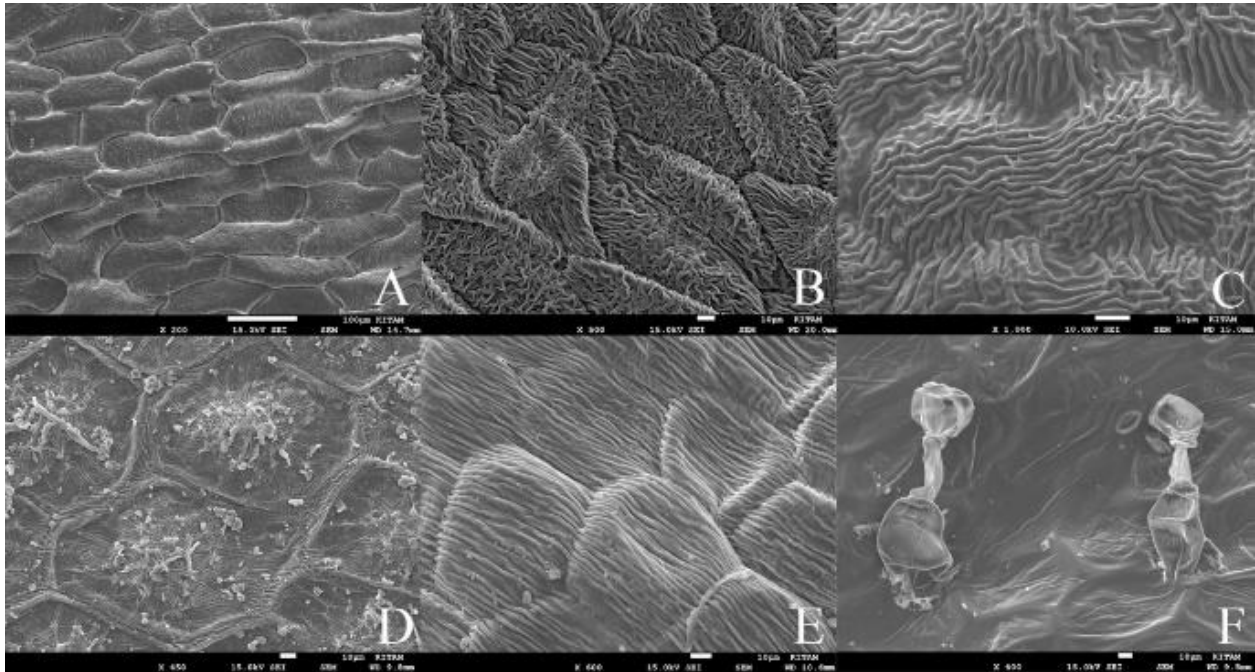


Figure 1. SEM image of the fruit surface: (A) *H. caprinum*, (B) *S. orientalis*, (C) *O. pallens*, (D) *N. tridentata*, (E) *D. euxina*, (F) *S. spiralis*.

completed with a JEOL JMS-7001F brand scanning electron microscope (SEM, 5-15 kV voltage). For organization of photographs the Photoshop CS6 program was used.

Correlation analyses were performed to assess the correlation between structural features and ecological or habitat preferences and ordination tests (CDA: canonical discrimination analysis) were used to identify the effect of characters on taxa differentiation. Tests were completed with the aid of SPSS (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.) program.

3. Results

The fruit structure of 19 studied orchid taxa were investigated in terms of a variety of features like epidermal cell size, cell shape, surface ornamentation, presence of hairs or papillary structures, and inclusion of crystal or starch grains. On the valves of *S. spiralis* species, secretory hairs of a variety of sizes were identified. However, hairs were not encountered in the other taxa.

Additionally, the epidermal cell margins were unclear in *S. spiralis* and there was no surface ornamentation. In other taxa, ornamentation was longitudinal, transversal or in both directions, with striate or undulate. However, SEM photographs of the fruit surface of *N. tridentata* show reticulate pattern and accumulations similar to secretions on the surface. Similar accumulations were present in *S. satyrioides* (Figure 1, Table 3).

According to correlation analysis results applied with the aim of identifying the correlation between fruit structural character and ecological needs or habitat preferences of taxa, there was a positive correlation between fruit surface ornamentation and habitat preferences (Table 2).

Table 2. Correlation between structural features and ecological or habitat preferences.

Correlations			Elevation	Habitat
Epidermal cell shape	Correlation Coefficient		.126	.011
	Sig.		.607	.966
Ornamentation	Correlation Coefficient		.296	.654**
	Sig.		.218	.002
Ornamentation direction	Correlation Coefficient		.094	.364
	Sig.		.701	.126
Surface secretion	Correlation Coefficient		-.393	.067
	Sig.		.096	.786
Hair	Correlation Coefficient		-.270	.046
	Sig.		.264	.852
Papillary structure	Correlation Coefficient		-.270	-.391
	Sig.		.264	.098
Crystal	Correlation Coefficient		-.071	.374
	Sig.		.779	.126
Starch	Correlation Coefficient		-.303	.183
	Sig.		.222	.468
Placenta	Correlation Coefficient		-.024	-.248
	Sig.		.924	.322
Spearman's rho	Elevation	Correlation Coefficient	1.000	.192
	Sig.			.432
Habitat	Correlation Coefficient		.192	1.000
	Sig.		.432	
Pearson	Epidermal cell length	Pearson Correlation	-.354	.300
		Sig.	.150	.227
	Epidermal cell width	Pearson Correlation	-.107	-.349
		Sig.	.672	.156
	Epidermal cell height	Pearson Correlation	-.099	-.159
		Sig.	.696	.528
*. Correlation is significant at the 0.05 level (2-tailed).				
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 3. Qualitative characteristics and ecological preferences of taxa.

Taxa/ characters	Epidermal cell shape	Ornamentation	Ornamentation direction	Surface secretion	Hair	Papillary structure	Crystal	Starch	Elevation (m)	Habitat
<i>A. laxiflora</i>	Isodiametric to elongated	Striate	Transversal	-	-	+	Raphide	+	0-500	Wet meadows
<i>A. papilionacea</i>	Isodiametric to elongated	Striate	Vertical	-	-	-	Raphide	+	1500-2000	Meadows, Open areas, Edges of forests
<i>A. pyramidalis</i>	Elongated	Striate	Double direction	-	-	-	Raphide	+++	500-1000	Meadows, Open areas, Edges of forests
<i>C. viride</i>	Isodiametric to elongated	Undulate	Transversal	-	-	-	Prismatic	+	1000-1500	Meadows
<i>D. euxina</i>	Isodiametric	Striate	Transversal	-	-	-	Raphide	+	1500-2000	Wet meadows
<i>D. romana</i>	Isodiametric	Striate	Vertical	-	-	-	Raphide	+++	500-1000	Meadows, Open areas, Edges of forests
<i>D. saccifera</i>	Isodiametric to elongated	Undulate	Double direction	-	-	-	Raphide	+	1500-2000	Meadows, Open areas, Edges of forests
<i>G. conopsea</i>	Isodiametric to elongated	Undulate	Vertical	-	-	-	Raphide	+	1500-2001	Meadows
<i>H. caprinum</i>	Elongated	Undulate	Double direction	-	-	-	Raphide	+++	1500-2002	Meadows, Open areas, Edges of forests
<i>N. tridentata</i>	Isodiametric	Reticulate	Double direction	+	-	-	Raphide	+++	0-500	Meadows
<i>O. apifera</i>	Isodiametric to elongated	Striate	Vertical	-	-	-	Raphide	+++	0-500	Forest
<i>O. oestrifera</i>	Isodiametric to elongated	Striate	Vertical	-	-	-	Raphide	+	0-500	Forest
<i>O. mascula</i>	Isodiametric to elongated	Striate	Transversal	-	-	-	Absent	+++	500-1000	Meadows, Open areas, Edges of forests
<i>O. pallens</i>	Isodiametric	Undulate	Double direction	-	-	-	Raphide	+	1000-1500	Meadows, Open areas, Edges of forests
<i>O. purpurea</i>	Elongated	Undulate	Vertical	-	-	-	Raphide	+	500-1000	Meadows, Open areas, Edges of forests
<i>P. clorantha</i>	Isodiametric to elongated	Striate	Vertical	-	-	-	Raphide	+++	500-1000	Forest
<i>S. orientalis</i>	Isodiametric to elongated	Undulate	Double direction	-	-	-	Prismatic	+++	0-500	Meadows
<i>S. satyrioides</i>	Isodiametric to elongated	Striate	Vertical	+	-	-	Raphide	+	0-500	Forest
<i>Spiranthes spiralis</i>	Isodiametric	Absent	Transversal	-	Secretory hair	-			0-500	Meadows, Open areas, Edges of forests

Epidermal cells are isodiametric or elongated, and are pentagonal or hexagonal. In the cross-sections of *A. laxiflora*, elongated papillary structures is notable between the epidermal cells. Also, starch grains or crystals are clear with density on the mesocarp varying from species to species. While fruits are commonly observed to have raphide bundles, prismatic crystals found in species like *S. orientalis* and *C. viride*. Vascular bundles are collateral. In all taxa, the placenta is characterized by a single row cells with large nuclei and dense cytoplasm (Figure 2, Table 2).

Circular graphs were used with the aim of comparing the mean epidermal cell sizes between taxa (Figure 3). Accordingly, among the three features, the largest epidermal cells were found in *O. mascula*.

However, the cell length for *D. euxina*, cell width for *C.*

viride and cell height for *G. conopsea* had smallest values measured.

Canonical discrimination analysis was used with the aim of determining the degree of accuracy of groupings according to fruit structural features and which feature was more effective in this grouping. Figure 4 shows the distribution of taxa based on the first two components. Accordingly, at genus level, taxa were accurately grouped with 94.4% success rate.

The most effective characters in canonical discrimination analysis were the morphometric features of epidermal cells like length, width and height. Additionally, the presence and variety of crystal in the tissue or habitat preferences of taxa came to the fore during taxon grouping (Table 4).

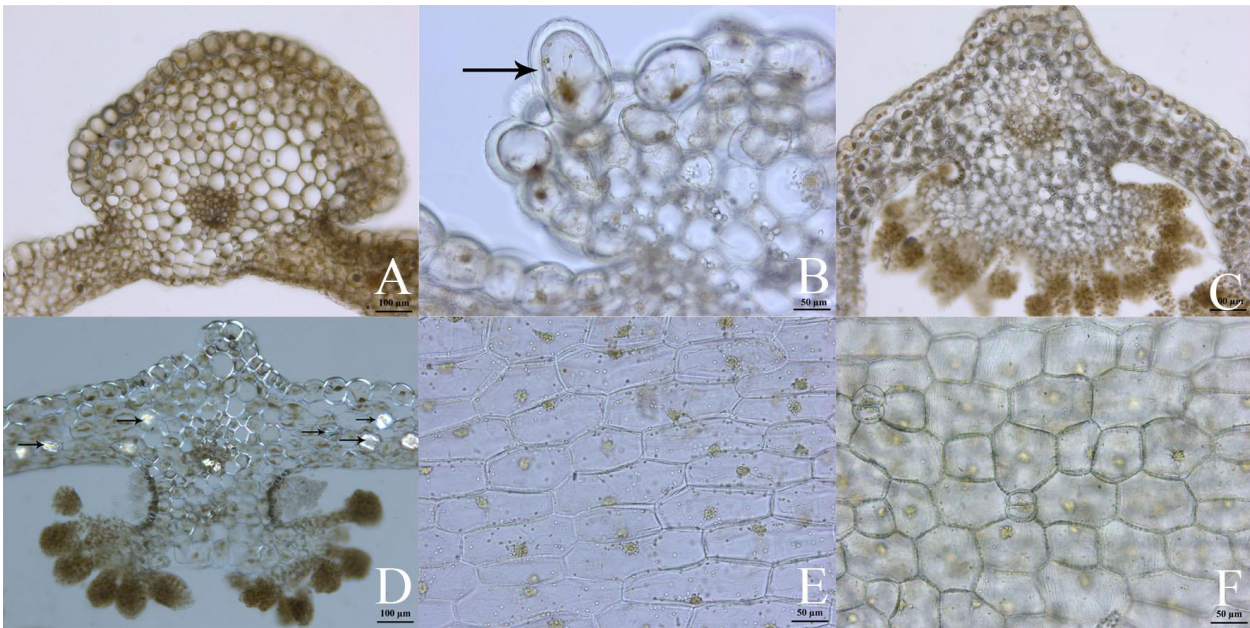


Figure 2. Light microscope image of pericarp in transverse and surface sections: (A) *O. purpurea*, (B) *A. laxiflora*, (C) *P. chlorantha*, (D) *D. saccifera*, (E) *A. papilionacea*, (F) *N. tridentata*.

4. Discussions

In the literature, hair with a variety of sizes and structures were reported on the vegetative and generative organs of orchids. Mainly researched for floral structures, these secretory hairs are emphasized to have functions in attracting pollinators acting as osmophore or nectarium due to secretions like mucilage, lipophilic compounds, pectic acid or phenolic compounds (Stpiczyńska and

Davies, 2009; Nunes et al., 2014, 2015). In the literature, endocarpic hairs are mentioned in epiphytic species and it was emphasized that this type of trichome was only found on epiphytes (Beer, 1857; Horowitz, 1901-1902). As seen in our anatomical investigations, the lack of these types of structure in terrestrial species supports this view.

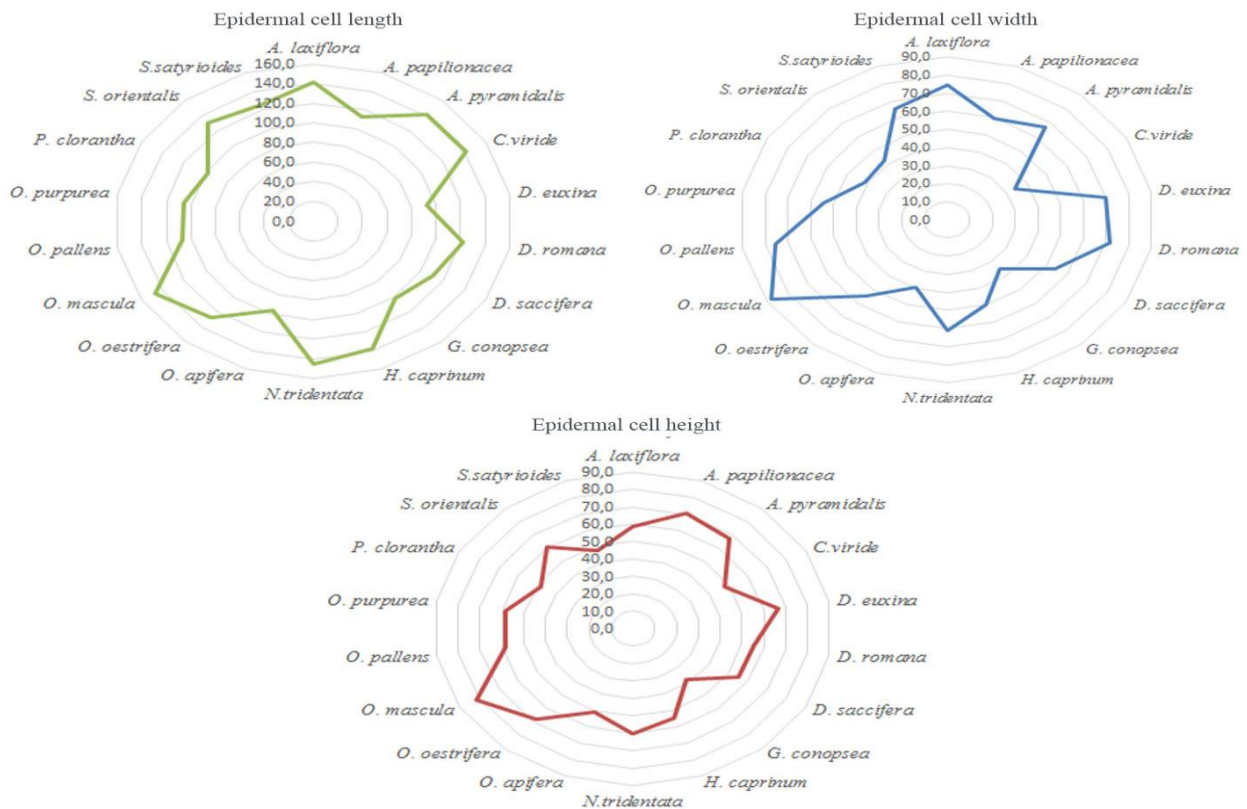


Figure 3. Circular plots of quantitative epidermal features.

Correlation analysis results mean that in habitats with higher humidity rates, the cuticle layer or secondary wall thickness reduces on the fruit surface and indicates that the surface ornamentation may be related to ecological adaptation rather than being a differentiating character for species.

As emphasized in previous research, though orchid fruit display homogeneous structure in terms of basic structural features, there is variety in terms of features like the shape, size and content of pericarp cells (Mayer et al., 2011). Though studies about orchid fruit have noted different features for identification of taxa, micromorphological and morphometric features have been ignored. For example, Prillieux (1857) identified 7 different fruit according to dehiscence type and stated that this variety may be useful to characterize species according to some criteria like apically fused vs. free, recurving valves, and valve number. Horowitz (1901–1902) in a study of many orchids classified taxa according to number and distribution of vascular bundles.

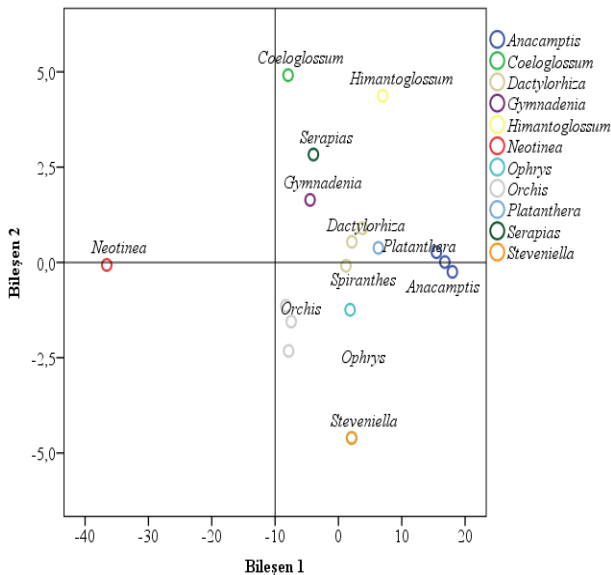


Figure 4. Distribution of genera on canonical discrimination components.

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In morphometrical investigation, the cell sizes for *D. euxina*, *C. viride* and *G. conopsea* had smallest values. A study using molecular markers like ITS proved the close phylogenetic relationships between these three taxa (Shipunov et al., 2004). Moreover, Bateman et al. (1997) included the *C. viride* (*D. viridis*) species in the *Dactylorhiza* species and this new classification has been adopted by many researchers. In our study, this common morphometric feature in the pericarp epidermal cells of the three taxa support this view.

In this study, though structural character has low differentiation power for *Ophrys* taxa, discrimination analysis was found that fruit morphometric features have high rates of success for differentiation of other taxa. According to this finding, the pericarp features of orchidoid species may be effective for classification of genus and upper categories.

Table 4. Characters associated with discrimination components.

Characters	Function	
	1	2
Epidermal cell length	.024	-.752*
Epidermal cell width	.271	-.587*
Epidermal cell height	.199	-.568*
Epidermal cell shape	.031	.051
Papillae	.021	.000
Starch	-.009	.056
Habitat	-.479	-.147
Ornamentation direction	-.011	.024
Ornamentation	-.085	.243
Crystal	-.005	.301
Elevation	.018	.229
Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions Variables ordered by absolute size of correlation within function.		
*. Largest absolute correlation between each variable and any discriminant function		

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“Genjer” Yellow Velvetleaf used as indigenous vegetable in Indonesia

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Endonezya'da yerli sebze olarak kullanılan “Genjer” Sarı Kadife Yaprak

Abstract: Indigenous vegetables are native to or originating from a particular region or ecosystem. Indigenous vegetables may have evolved from foreign plants introduced to the region from another geographical area over a long period of time. *Limnocharis flava* (L.) Buch. (sawah lettuce, velvet leaf) had an enormous impact on agriculture and food systems all over the world especially has been identified as exotic weed invasion. This plant appears in the aquatic environment and included in the *Limnocharitaceae* family. Yellow Velvetleaf (*L. flava*) has been utilised in Indonesia as vegetable and animal feed. Processing of this plants is done by steaming, boiling, and stirfrying. Young leaves with petioles and young, unopened inflorescences are eaten as a vegetable in Indonesia, especially in West Java region.

Key words: Genjer, indigenous vegetable, Indonesia, *Limnocharis flava*

Özet: Yerli sebzeler, belirli bir bölge veya ekosisteme özgüdürler veya bu bölgeden kaynaklanırlar. Yerli sebzeler uzun bir süre boyunca bölgeye başka bir coğrafi bölgeden tanıtılan yabancı bitkilerden evrilmiş olabilirler. *Limnocharis flava* (L.) Buch. (bataklık marulu, kadife yaprağı) tüm dünyada tarım ve gıda sistemleri üzerinde büyük bir etkiye sahiptir, özellikle ekzotik ve istilacı bir yabancı ot olarak tanımlanmaktadır. Bu bitki su ortamında görülür ve *Limnocharitaceae* ailesine dahildir. Sarı Kadife Yaprak (*L. flava*) Endonezya'da sebze ve hayvan yemi olarak kullanılmaktadır. Bu bitkinin işlenmesi buharda pişirilerek, kaynatılarak ve karıştırılarak yapılır. Saplı genç yapraklar ve açılmamış genç çiçek durumları Endonezya'da, özellikle Batı Java bölgesinde sebze olarak yenir.

Anahtar Kelimeler: Genjer, yerli sebze, Endonezya, *Limnocharis flava*

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1. Introduction

Worldwide, 1500 to 2000 plant species have been used as vegetables; for Southeast Asia, the number is close to 1000 species (Siemonsma and Piluek, 1994). About 120 species are cultivated for sale or home consumption. Indigenous vegetables have become popular in recent Indonesian diet, but agronomic studies on these crops are limited (Santosa et al., 2015). Indigenous vegetables are native to or originating from a particular region or ecosystem. They may have evolved from foreign plants introduced to the region from another geographical area over a long period of time. Indigenous vegetables are mainly planted in home gardens, or used by a small group of people in a limited geographical area (Engle and Faustino, 2007). In some cases, these plants naturalized and evolved in the new environment; such as *Limnocharis flava* (L.) Buch. (sawah lettuce, velvet leaf) brought from Central America to Southeast Asia (Siemonsma and Piluek, 1994) as part of the great transmigration of plants that followed the voyages of Christopher Columbus to the Americas, which had an enormous impact on agriculture and food systems all over the world.

This plant appears in the aquatic environment and included in the family *Limnocharitaceae*. Factors which influences the existence of *L. flava* are land use or land cover pattern, depth water, nutrients, and associations with other species (Abhilash et al., 2008). The utilization of yellow velvetleaf can be implemented for human, environment, and livestock. Commonly, this plant is consumed by human as

vegetable due to its fibre. Furthermore, yellow velvetleaf is also used as livestock feed and fish feed, phytofiltration plant for eliminating pollution in the water, an ornamental plant in pond, and fertilizer (Abhilash et al., 2009). Research of Maisuthisakul et al. (2008) shows that *L. flava* in the Thailand region contains a total phenolic of 5.4 mg GAE/g db and total flavonoids of 3.7 mg RE/g db. Research of Ogle et al. (2001) show that *L. flava* contains carotene as much as 50 µg/g.

Yellow Velvetleaf processing in Indonesia is done by steaming, boiling, and stirfrying. Steaming is the process of heating at more water temperature from 66 to 82 °C, aiming to deactivate the enzyme and change the color, taste, and nutritional value (Jacobs et al., 2010). The aim of this paper is to give information about the ethnobotany and the importance of Genjer in Indonesia as an indigenous vegetable.

2. Yellow Velvetleaf (*Limnocharis flava* (L.) Buch)

2.1. Description and classification

Limnocharis flava (Fig. 1) is a perennial, robust, erect, lactiferous, marsh herb, 20-100 cm tall, rooting in mud and strongly tillering. Leaves basal, rosulate, glabrous, long-petioled, orbicular or ovate, 5-30 × 4-25 cm, entire, yellowish-green, curvined, transversely latticed-veined, underneath at apex with a purple-rimmed water pore, folded lengthwise in bud; with numerous air chambers, 5-75 cm long. Inflorescence axillary, long-peduncled, umbelliform, glabrous, 5-15-flowered, erect, recurved after

fruiting until it reaches the water or mud; peduncles 10-90 cm long. Flowers rather large, in the axils of membranous bracts; pedicels 3-7 cm long; sepal 3, enlarged and clasping the fruit after anthesis, yellow-green, ovate-elliptic, 7-25 × 5-15 mm; petals 3, pale yellow, obovate, very thin, 1.5-3 × 0.7 x 2 cm, becoming a slimy mass after anthesis; apex rounded, base darker coloured. Stamens more than 15, surrounded by a whorl of staminodes. Ovaries numerous in one whorl, superior, laterally much compressed, simulating a single, deeply incised ovary; stigmas narrowly linear, sessile. Compound fruit 1.5-2 cm in diameter, enclosed by the sepals. Seeds numerous, minute, horseshoe-shaped, dark brown, 1-15 mm long, testa spongy with thin transverse ridges (CABI, 2019).



Figure 1. *Limnocharis flava* habit (Plantmor, 2019).

Edible parts of Genjer are the petioles, leaf blades, peduncles, and the unopened inflorescences.

The very large and somewhat fleshy leaves (Fig. 2) arise from the base of the plant, and are borne in clusters along a short thick upright (i.e. erect) stem (about 3 cm long and 3 cm wide).

The leaves are hairless (i.e. glabrous) and contain a milky sap (i.e. latex). They are borne on long three-angled stalks (i.e. trigonous petioles) 5-90 cm long and have rounded (i.e. orbicular) leaf blades. The leaf blades (5-30 cm long and 4-25 cm wide) have blunt tips (i.e. obtuse apices) and entire or wavy (i.e. undulate) margins (Lucidcentral, 2019).



Figure 2. *Limnocharis flava* leaves (Keyserver, 2019).

The flowers (Fig. 3) are borne in loose clusters (containing 2-15 flowers) at the top of long stalks (20-120 cm long). These upright flower stalks (i.e. erect peduncles) emerge from the base of the plant and are three-angled (i.e. trigonous), like the leaf stalks (i.e. petioles). About one to four of these flowering stalks are produced amongst each cluster of leaves.



Figure 3. *Limnocharis flava* flower (Keyserver, 2019).

The individual flowers (2-4 cm across) are borne on short thick stalks (i.e. pedicels), 2-7 cm long, that emerge from the same point at the top of the flowering stems (i.e. they are arranged in an umbel). There are usually some small papery bracts present amongst the flower stalks (i.e. pedicels). Each flower has three large pale yellow petals (20-30 mm long and 10-20 mm wide), three overlapping green sepals (15-20 mm long and 10-15 mm wide), and a cluster of numerous bright yellow stamens at its centre. Flowering occurs throughout the year, depending on conditions (i.e. it usually flowers during wetter periods) (Lucidcentral, 2019).

The upright flower stalks (i.e. peduncles) begin to droop as the fruit mature, and the persistent sepals become enlarged and enclose the developing fruit. The fruit are rounded 'capsules' (i.e. spherical follicles), 15-20 mm across, that split up into several (10-20) floating segments when mature. Each segment is semi-circular in shape and contains numerous ridged seeds (1-1.5 mm long) that are dark brown in colour and horseshoe-shaped (Lucidcentral, 2019).

Limnocharis flava flowers the whole year round. The flowers open in the morning and close after a few hours. There is no record of any pollinating agent. After anthesis, the sepals enlarge and surround the fruit whereas the petals become a slimy mass. When ripe, the fruit carpels fall into the water where they release the seeds, which sink to the bottom. The downturned inflorescence which rests on the water surface often produces a new plant (Van den Bergh, 1993).

This species reproduces by seed (Fig. 4) and vegetatively via creeping underground stems (i.e. rhizomes). Small plants (i.e. ramets) are sometimes also produced at the tops of the flowering stems.

Although it is not a floating plant, its seeds are carried away by water streams. Yellow velvetleaf grows generally wherever there is not very deep stagnant fresh water, in swampy areas. It sometimes invades rice fields where it can become a weed. As an invasive species it has become a pest in some wetlands in other parts of the World (Santosa et al.,

2015). The seeds and vegetative shoots are usually spread by water, but may also be dispersed in dumped garden and aquarium waste.



Figure 4. *Limnocharis flava* seeds (Keyserver, 2019).

The position in classification and the taxonomic hierarchy for *L. flava* as follows (CABI, 2019).

Domain: *Eukaryota*

Kingdom: *Plantae*

Phylum: *Spermatophyta*

Subphylum: *Angiospermae*

Class: *Monocotyledonae*

Order: *Hydrocharitales*

Family: *Limnocharitaceae*

Genus: *Limnocharis*

Species: *Limnocharis flava*

***Limnocharis flava* (L.) Buchenau**

Syn : *Alisma flava* L., *Damasonium flavum* (L.) Mill. Gard., *Limnocharis emarginata* Humb. et Bonpl., *Limnocharis laforesti* Duchas. Ex Griseb, *Limnocharis mattogrossensis* O. Ktze., *Limnocharis plumieri* Rich., Mem.

International common names of *L. flava* are Hermit's waterlily, sawah lettuce, velvet leaf, yellow sawah lettuce, yellow velvetleaf, yellow bur-head (English); Cebolla de chuchó (Spanish); Buchon (French). But the preferred common name is Yellow bur-head.

Local common names used for *L. flava* are Kalmi or kengkong (Bangladesh); Barata (Brazil); Trakiet (Cambodia); Manja payal (India); Bangeng, eceng, enceng, berek, gunda, genjer (Indonesia); Kibana omodaka (Japan); Kaanz choong (Laos); Jinjir, paka rawan, paku rawan (Malaysia); Bon cheen, taalapat rueseen, bonchin, nangkwak, talapatrusi (Thailand); k[ef]o n[ef]o; n[ee] th[ar]o (Vietnam).

2.2. Habitat and distribution

Limnocharis flava is a perennial herb that prefers wet conditions such as lowland ricefields, and shallow waters in canals, swamps, pools and ditches. In Kerala, India, the weed density decreases as water depth increases, as *L. flava* is a rooted emergent preferring shallow water bodies and marshy areas (Abhilash et al., 2008). Abandoned paddy fields and reclaimed coconut fields with marshy areas are the main habitat in Kerala. The soil is generally fertile in areas where the weed occurs.

Though it is a perennial, *L. flava* behaves as an annual in certain habitats. It reproduces by seed and vegetatively (by stolons). It is hydrochorous, and is a prolific seed-producing plant, with individual plants capable of yielding up to 1,000,000 seeds per year. The mechanism of seed dispersal is discussed in Nayar and Sworupanandan (1978).

Limnocharis flava is spread throughout South-East Asia (Malaysia, Indonesia, Thailand, South Myanmar, Sri Lanka, India and Vietnam), especially in rice-growing areas, and in South America and the USA. It has recently been reported in northern Queensland, Australia, where it is the target of an eradication campaign (Waterhouse et al., 2003).

2.3. History of introduction and spread

Limnocharis flava is native to tropical and subtropical America (i.e. northwestern Mexico, Nicaragua, Costa Rica, Panama, Cuba, Haiti, Dominican Republic, Windward Islands, Colombia, Venezuela, Ecuador, West Indies, Peru and Brazil) and has been introduced to southern USA and parts of Asia. It was introduced into Southeast Asia from tropical and subtropical America, and naturalized in Indonesia, Malaysia and Thailand (Van den Bergh, 1994). Abhilash et al., (2008) report that the earliest record of its introduction to Asia is as an ornamental in the Botanic Gardens, Bogor, Indonesia in 1866, and that by 1870 it was mentioned as 'a newly introduced alien' on the banks of the river flowing through the Botanic Gardens. It now occurs throughout Indonesia and the rest of South-East Asia. Abhilash et al., (2008) describe its spread in Asia. In Sri Lanka it was introduced as an ornamental in 1998 and subsequently became naturalized and a serious weed in rice fields.

It propagates mainly by seeds. Sometimes they are also carried with the mud sticking to the feet of birds, by man and agricultural implements (Kotalawala, 1976). *L. flava* seeds throughout the year. A single fruit produces about 1,000 seeds and a single plant may produce as 1,000,000 seeds per year. Human agency is also responsible for the spread of this plant due to the popular belief that the leaves of this plant, when eaten as a partly cooked salad, cures rheumatism. Some have deliberately planted this weed without realizing the danger to rice fields when it gets out of control.

2.4. Uses and Agronomy

Young leaves with petioles and young, unopened inflorescences are eaten as a vegetable in Indonesia, especially West Java, in Malaysia and in Thailand. Usually they are not eaten raw but heated above a fire or cooked for a short time. The older leaves have a bitter taste. Whole plants are given as fodder to pigs or fish. *L. flava* also serves as an ornamental plant in ponds. Plants are often ploughed in as green manure in rice fields (PROSEA, 2019).

Limnocharis flava can be cultivated the whole year round. It is propagated by layers, but propagation by seed is also possible. It needs a fertile soil; 1-2 weeks before planting, the soil should be enriched with organic fertilizer (10 t/ha). Planting distance is about 30 cm square. In a fertile sawah it will grow very fast and the leaves and inflorescences can

be harvested after 2-3 months. If not harvested regularly the plant population will soon become too dense and should be renewed to maintain quality. After harvesting, the leaves and inflorescences are bundled together or separately and sold in small bunches (PROSEA, 2019).

In West Java *L. flava* is a common vegetable in markets and supermarkets but data on production are rare. In an integrated system of pisciculture and genjer cultivation, an Indonesian farmer harvested about 1000 bunches/ha in 3 months (1 bunch = 20 sprouts) (PROSEA, 2019).

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