



Hydrophyte Plant Species Naturally Distributed in Artvin Province and Their Medicinal-Aromatic Uses

Özgür EMİNAĞAOĞLU¹ Hayal AKYILDIRIM BEĞEN^{2*}

¹Department of Forest Engineering, Faculty of Forestry, Artvin Çoruh University, 08000 Artvin, Türkiye

²Health Services Vocational School, Artvin Çoruh University, 08000 Artvin, Türkiye



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 <https://orcid.org/0000-0003-0064-0318>
 <https://orcid.org/0000-0003-2028-5827>

*Corresponding author's:
Hayal AKYILDIRIM BEĞEN
Health Services Vocational School, Artvin
Çoruh University, 08000 Artvin, Türkiye.
[✉: h.akyildirim@artvin.edu.tr](mailto:h.akyildirim@artvin.edu.tr)

Abstract: Artvin Province, with 2,727 plant taxa, is Turkey's richest region in terms of plant diversity. This study aimed to list the hydrophyte plant species distributed in Artvin and its districts, quantify them based on aquatic plant types, sample them from the field, and determine their medicinal-aromatic uses. Floristic studies conducted between 2013 and 2024 identified natural plant species growing in aquatic habitats, and their habitat, flowering period, and medicinal-aromatic uses were documented. A total of 236 hydrophyte taxa belonging to 48 families and 135 genera were identified in Artvin Province. When categorized by habitat, 160 species were classified as marsh hydrophytes, 56 species as amphibious hydrophytes, 2 species as free-floating hydrophytes, 9 species as fixed-floating hydrophytes, and 8 species as submerged hydrophytes. The families with the highest number of species were Poaceae (45 taxa), followed by Cyperaceae (43 taxa), and Lamiaceae (10 taxa). 126 taxa were found to have medicinal uses, while 109 taxa had no recorded medicinal-aromatic uses. Additionally, threats and threat categories for these species were identified and documented.

Keywords: Artvin, hydrophytic plant, threat categories, medicinal-aromatic, Türkiye.

Artvin İlinde Doğal Yayılış Gösteren Hidrofit Bitki Türleri ve Tıbbi-Aromatik Kullanımları

Öz: Artvin ili 2727 bitki taksonu ile bitkisel çeşitlilik açısından Türkiye'nin en zengin ilidir. Bu çalışmada, Artvin ili ve ilçelerinde yayılış gösteren hidrofit bitki türlerinin listelenmesi, sucul bitki tiplerine göre sayısal olarak ifade edilmesi, alandan örneklenmesi ve tıbbi-aromatik kullanımlarının belirlenmesi amaçlanmıştır. 2013-2024 yılları arasında yapılan floristik çalışmalarda sucul alanlarda yetişen doğal bitki türleri belirlenmiş, habitat, çiçeklenme dönemi ve tıbbi-aromatik kullanımları verilmiştir. Artvin ilinde 48 familya 135 cinse ait 236 hidrofit takson tespit edilmiştir. Sucul bitki türlerini habitatlarına göre kategorilendirdiğimizde, 160 türün bataklık hidrofitleri, 56 türün amfibiye hidrofit, 2 türün serbest yüzen hidrofitler, 9 türün sabit yüzen hidrofit, 8 tür ise su altında yaşayan hidrofitler olduğu tespit edilmiştir. En fazla tür tespit edilen ilk üç familya, Poaceae 45 takson, Cyperaceae 43 takson, Lamiaceae 10 taksondur. Bu bitkilerden 126 taksonun tıbbi amaçla kullanıldığı, 109 bitkinin tıbbi-aromatik kullanımının bulunmadığı tespit edilmiştir. Bu türleri tehdit eden unsurlar ve tehdit kategorileri verilmiştir.

Anahtar Kelimeler: Artvin, hidrofit bitki, tehdit kategorileri, tıbbi-aromatik, Türkiye.

INTRODUCTION

Wetlands and aquatic plants hold a significant place within Türkiye's rich biodiversity. Wetlands not only host numerous plant and animal species but also influence the climatic conditions of the regions they are located in. They are vital and dynamic components of the global ecosystem, providing a wide range of ecosystem services, including

water regulation and biodiversity support. Although there is no fixed definition of a wetland, ecologically, it is described as: "All natural or artificial, permanent or seasonal bodies of water, whether brackish, fresh, or saline, flowing or still, with depths not exceeding six meters during low tide, and providing a habitat for living organisms." Wetlands are critical for maintaining ecological balance and supporting diverse life forms (Anonim 1999; 2000).

Wetlands are areas where the soil is completely or partially covered with water, at least periodically, and especially during the vegetation period. They also serve as transitional zones between terrestrial and aquatic ecosystems (Cowardin et al., 1979). Wetlands have influenced social, cultural, and economic processes throughout human history due to their ecological significance (Tırlı, 2006). Such areas facilitate the collection and retention of water, providing a habitat for numerous plant and animal species (Greb et al., 2006; Sarpdağ & Eminağaoğlu, 2020).

A plant that grows in an aquatic habitat or needs to spend at least part of its life cycle in water is called an "aquatic plant." Aquatic plants can exist in various forms, including submerged, free-floating on the surface, rooted at the surface, marsh plants, and amphibious plants (capable of growing both on land and in water) (Figure 1) (Maliya, 2006). These plants play a crucial role in ecological processes, supporting the growth of other organisms such as fish and aquatic insects, and helping to maintain the cleanliness of water surfaces. Aquatic plants are also vital for absorbing solar energy and determining the primary productivity of aquatic ecosystems (Biswas & Calder, 1937; Cook, 1996; Lavania et al., 1990; Sukumaran & Jeeva, 2011). Aquatic medicinal and aromatic plants are species that grow in aquatic habitats and possess medicinal or aromatic properties. These plants are particularly used for health and natural therapeutic purposes and often contain aromatic compounds. The medicinal and aromatic uses of aquatic plants are commonly found in traditional medicine or modern phytotherapy practices (Cook, 1996). Among these, *Nymphaea* spp. (Water Lilies) are commonly known for their sedative and analgesic properties, with certain species being used for medicinal purposes. *Mentha aquatica* (Water Mint) is used to treat ailments such as stomach problems, digestive disorders, and headaches. These plants also have pleasant aromas and offer various benefits, *Lemna minor* (Duckweed) contains nutrients beneficial for the body and is used in traditional medicine, *Typha angustifolia* (Cattail) is utilized both as food and medicine, it plays a role in regional healing practices, *Hydrocotyle* spp. (Water Pennywort) is known for benefiting skin health and accelerating wound healing, *Echinodorus* spp. (Sword Plants) is traditionally used as a diuretic and blood purifier, *Scripus* spp. (Bulrush) is believed to have detoxifying effects on the body and support the digestive system (Cook, 1996; Sukumaran & Jeeva, 2011). These plants not only contribute to vegetation but also provide various health benefits to humans by maintaining balance in the ecosystem. Aquatic plants are also used in the cosmetic and perfume industries due to their aromatic properties.

Artvin province, with 2,727 plant taxa, is the richest in Türkiye in terms of plant diversity and some of these

plants are distributed in and around rich wetlands such as streams, lakes and swamps. The streams, located in deep valleys, have created areas suitable for agriculture and settlement. Many villages and towns in Artvin are established around these streams. The water in these streams has become a vital source of life for the people living in the area. Locals use the streams to irrigate their gardens and fields, and they rely on the water from these streams for drinking and other daily needs (Eminağaoğlu et al., 2015). The aim of this research is to reveal the aquatic plant diversity in Artvin province and its districts. Therefore, a comprehensive field study was conducted to create a detailed list of aquatic plants in the region. The diversity, distribution, habitat ecology, and relationships of the aquatic plants were examined, along with their potential medicinal and aromatic significance.



Figure 1. Some hydrophyte species from Artvin a- *Epilobium hirsutum* L. b- *Alisma plantago-aquatica* L.

MATERIAL AND METHOD

Study Area: Artvin province is located within the A8-A9 grid of P. H. Davis's system. Situated in the Eastern Black Sea region, it spans from 40°35' to 41°32' North latitude and from 41°07' to 42°00' East longitude. It is bordered by Ardahan to the east, Erzurum to the south, Rize to the west, the Black Sea to the northwest, and Georgia to the north. The province ranges in elevation from sea level to 3,937 meters. Artvin is one of the most important provinces in Türkiye in terms of biological diversity, with its four significant plant and nature areas (Karçal Mountains, Çoruh Valley, Eastern Black Sea Mountains, and Yalnızçam Mountains), one biosphere reserve (Camili), two national parks (Karagöl-Sahara and Hatila Valley), three nature conservation areas (Camili-Efeler Forest, Camili-Gorgit, and Çamburnu), and five nature parks (Borçka-Karagöl, Altıparmak, Balıklı Güneşli Waterfalls, Tavşan Hill, and Cehennem Deresi Canyon). The region lies within the "Caucasus Biodiversity Hotspot," one of the world's 36 most biologically diverse and simultaneously endangered biodiversity hotspots. Additionally, Artvin is part of both the

"Caucasus-Anatolia-Hyrcanian Temperate Forests," one of the 200 priority ecological regions for conservation worldwide, and the "Northeastern Anatolia Plant Diversity Center". Artvin has many rivers, large and small. Most of the rivers in this region are relatively short; they originate from high altitudes and have fast currents. After converging in main rivers, they flow into the Black Sea. The longest river among them is the Çoruh River, which is 438 kilometers long (Eminağaoğlu et al., 2015). Specialized vegetation groups are found along these rivers (Eminağaoğlu, 1994).

Field Survey and Data Collection: Detailed field studies and sample collection activities were conducted between 2013 and 2024. Flora and vegetation studies were carried out with the aim of identifying wetland plants. Collection date, collection number, flowering period, distribution, and habitat was recorded. All important details about the wetland plants were documented in the field notebook on-site. Non-flowering plants (ferns) and herbaceous taxa of flowering plants were collected as research material. When collecting these plant samples, care was taken to include organs such as flowers, fruits, buds, leaves, stems, and roots that would assist in identification. The wetland plant specimens collected during the field study were pressed, dried, and properly preserved according to standard herbarium techniques. The collected plant specimens were identified using the work titled Flora of Turkey and the East Aegean Islands (Davis, 1965-1985; Davis et al., 1988; Güner et al., 2000). All specimens were

examined under a stereozoom microscope (Nikon 750, 1000 1X–2X).

The Turkish plant names and their spelling in the floristic list were derived from the List of Plants of Türkiye (Vascular Plants) source (Güner et al., 2012). Habitat and distribution data were compiled from both the observations made during field studies and the flora and vegetation research conducted (Seçmen & Leblebici, 1991; Seçmen & Leblebici, 1997; Korkmaz & Mumcu, 2013; Eminağaoğlu, 1994).

Determining Medicinal-Aromatic Plants: As a result of field studies conducted in Artvin province and its districts, the medicinal and aromatic uses of some identified aquatic plant species were determined through a comprehensive literature review (Eminağaoğlu, 2005; Eminağaoğlu & Özcan, 2014; Eminağaoğlu et al., 2017; Eminağaoğlu, 2023; Eminağaoğlu et al., 2023; National Library of Medicine, 2024; Natural Herbs, 2024; Wildflowerweb, 2024; Eminağaoğlu & Akyıldırım Beğen, 2024).

RESULTS AND DISCUSSION

As a result of field studies carried out in aquatic habitats in Artvin province and its districts, a total of 236 aquatic plant taxa belonging to 48 families and 135 genera were identified. Habitat information, medicinal and aromatic uses, and herbarium numbers for these species are also listed (Table 1; Figure 4-8).

Table 1. List of hydrophyte plants distributed in Artvin.

Family	Taxon	Turkish Local Name	IUCN	Flowering Time	Habitat	Medicinal-Aromatic Usage (Eminağaoğlu, 2005; Eminağaoğlu et al., 2017, 2023; Natural Herbs, 2024)	Herbarium Number
Adoxaceae	<i>Sambucus ebulus</i> L.	Mürver otu		4-6	Wetlands, roadsides	From sinus infections (used in a nasal spray) to lowering blood pressure	ARTH 18313
Alismataceae	<i>Alisma plantago-aquatica</i> L.	Çoban düdüğü	LC	6-9	In marshy and shallow waters along lake and stream shores, at elevations ranging from 0 to 1850 meters.	Cystitis, dysentery, renal calculus, gravel	ARTH 17536
Alismataceae	<i>Sagittaria sagittifolia</i> L.	Suoku	LC	6-9	Along lake shores, in marshy areas, and within water bodies, at elevations ranging from 0 to 1500 meters.	Indigestion, skin problems, as an anti-rheumatic, anti-scorbutic, a diuretic and to reduce milk flow in lactating mothers, inducing premature birth	ARTH 18326
Amaranthaceae	<i>Chenopodium glaucum</i> L.	Göksiriken		7-9	Along lake shores and muddy grounds, at elevations ranging from 0 to 980 meters.	Pathogenic diseases	ARTH 18327
Amaranthaceae	<i>Salsola kali</i> L.	Döngele		5-7	In marshy or muddy areas along saline water shores, at elevations ranging from 0 to 1010 meters.	Regulate the blood pressure effect on vasoconstriction and hydrastine in its effect on the smooth muscles of the uterus cathartic, diuretic, emmenagogue, stimulant, and vermifuge	ARTH 18328
Amaryllidaceae	<i>Allium flavum</i> subsp. <i>tauricum</i> (Besser ex Rehb.) K.Richt.	Toros sarısı		5-8	In marshy grounds near water channels.	No data	ARTH 18329
Apiaceae	<i>Sium sisarum</i> var. <i>lanceifolium</i> L.	Sukerevizî		6-8	In marshes along lake shores, at elevations of 1050 to 1150 meters.	Dermatology, Diabetes	ARTH 18330
Araceae	<i>Lemna minor</i> L.	Sumercimeği	LC	7	In lakes, ponds, streams, water channels, water sources, and rice fields, at elevations ranging from 0 to 1650 meters	Colds, measles, oedema and difficulty in urination	ARTH 18332
Araceae	<i>Lemna trisulca</i> L.	Yivli sumercimeği	LC	6-7	In freshwater and saline lakes, as well as water sources, at elevations ranging from 0 to 1650 meters.	Treatment of swellings	ARTH 18331
Araliaceae	<i>Hydrocotyle ramiflora</i> Maximow.	Sarı sutaşı		7	Along water edges.	Treatment of rheumatic troubles, skin diseases including syphilis and liver complaints	ARTH 18333
Asparagaceae	<i>Ornithogalum montanum</i> Cirillo	Geniş yapraklı tükürükotu		5-7	In marshes and wet meadows, at elevations ranging from 1200 to 2270 meters.	No data	ARTH 18334
Asteraceae	<i>Bidens tripartita</i> L.	Üç suketeni	LC	7-9	In marshes and along stream banks, at elevations ranging from 0 to 1000 meters.	Catarrhal rhinitis, angina, acute respiratory infections, and as an anti-inflammatory in colitis, gout, and infantile rickets	ARTH 18337
Asteraceae	<i>Cirsium arvense</i> (L.) Scop.	Köygöçüren		5-10	In wetland areas along lake and stream shores, at elevations ranging from 0 to 1150 meters.	Eye diseases, skin wounds, bleeding hemorrhoids, anti-diabetic, anti-oxidant, hepato-protective, anti-inflammatory, vasorelaxant, anti-cancer.	ARTH 17605
Asteraceae	<i>Cirsium canum</i> (L.) All.	Gri devedikeni		7-8	In marshes along lake and water shores, at elevations ranging from 1000 to 1500 meters.	No data	ARTH 18336
Asteraceae	<i>Crepis vesicaria</i> L.	Kese kiskısı		4-6	In marshes at sea level.	No data	ARTH 17613
Asteraceae	<i>Eupatorium cannabinum</i> L.	Koyuntırpağı		5-9	Marshy areas	Anti-inflammatory agent for respiratory tract diseases	ARTH 17619
Asteraceae	<i>Jacobaea mollis</i> (Willd.) B.Nord.	Yumuşak kanarya otu		7-9	In wet areas along marshes and stream banks, at elevations ranging from 850 to 1110 meters.	No data	ARTH 18335
Asteraceae	<i>Pulicaria dysenterica</i> (L.) Bernh.	Yara otu		7-9	In marshy and muddy grounds along lake and water shores, at elevations ranging from 0 to 1150 meters.	Dysentery	ARTH 17640
Boraginaceae	<i>Aegonychon purpurocaeruleum</i> (L.) Holub	Göktaşkesen		4-7	Meadows situated on the edge of the woodlands	Gynecological disorders	ARTH 18477

Boraginaceae	<i>Echium vulgare</i> L.	Engerek otu	LC	4-8	Meadow	Treatment of snake bites	ARTH 17681
Boraginaceae	<i>Myosotis laxa</i> Lehm. subsp. <i>caespitosa</i> (C.F. Schultz) Hyl. ex Nordh.	Hüthütgözü	LC	5-8	In marshy areas along lake shores, at elevations ranging from 0 to 1500 meters.	No data	ARTH 18338
Brassicaceae	<i>Aethionema arabicum</i> (L.) Andr. ex Rechb.	Arap taşcantası	LC	4-6	Meadows situated on the edge of the woodlands,	No data	ARTH 17693
Brassicaceae	<i>Barbarea vulgaris</i> R.Br.	Nicarotu	LC	4-5	In marshy meadows, at elevations ranging from 0 to 1500 meters.	Wound healing, appetizing, curative of scurvy and diuretic, kidney failure	ARTH 17702
Brassicaceae	<i>Cardamine raphanifolia</i> Pourr. subsp. <i>acris</i> (Gris.) O.E. Schulz	Çeykodim	LC	6-8	Along lake shores in high elevations, approximately at 1100 meters.	No data	ARTH 18341
Brassicaceae	<i>Lepidium draba</i> L.	diğnik	LC	4-6	Meadows and pastures, cultivated fields, home gardens, national parks and wasteland	Antiscorbutic, cure for flatulence and fish poison	ARTH 18478
Brassicaceae	<i>Lepidium latifolium</i> L.	Nujdar	LC	6-8	In marshy environments along lake shores, at elevations ranging from 900 to 1000 meters.	Stomach tonics and diuretics, hypertension, diabetes	ARTH 18340
Brassicaceae	<i>Nasturtium officinale</i> R.Br.	Suteresi	LC	3-7	In clean spring waters and channels, at elevations ranging from 0 to 1100 meters.	Essential oil, Hypertension, hyperglycemia, renal colic, anti-cancer, anti-oxidant, diuretic, expectorant, anti-diabetic	ARTH 18339
Brassicaceae	<i>Rorippa austriaca</i> (Crantz) Spach	Topçakandura	LC	5-6	In wet marshes and muddy grounds, at elevations ranging from 0 to 1020 meters.	No data	ARTH 17716
Brassicaceae	<i>Rorippa sylvestris</i> (L.) Besser	Çakandura	LC	6-9	In shallow waters along lake shores and marshy grounds, at elevations ranging from 0 to 2000 meters.	Kidney stones, urinary tract infections, and edema	ARTH 17717
Butomaceae	<i>Butomus umbellatus</i> L.	Bataklığülü	LC	5-9	In lakes, puddles, shallow waters, and marshes, at elevations ranging from 0 to 1950 meters.	No data	ARTH 18342
Caryophyllaceae	<i>Cerastium chlorifolium</i> Fisch. & C.A.Mey.	Parlak boynuzotu	LC	5-7	Marshy areas	Fever, cough, and colds.	ARTH 17747
Caryophyllaceae	<i>Holosteum marginatum</i> C.A.Mey.	Kaşıkçalan	LC	5	Marshy areas	No data	ARTH 18480
Caryophyllaceae	<i>Spergularia media</i> (L.) C. Presl.	Kuş remilotu	LC	5-8	In saline marshes along the coast or inland, at elevations ranging from 0 to 1100 meters.	No data	ARTH 18343
Caryophyllaceae	<i>Stellaria aquatica</i> (L.) Scop.	Vergelotu	LC	7-8	Marshes, fens, streamsides, ditches and damp woods at low altitudes	Galactagogue, fistula	ARTH 17776
Caprifoliaceae	<i>Cephalaria aristata</i> K.Koch	Orumotu	LC	6-8	Marshy areas	No data	ARTH 18479
Celastraceae	<i>Parnassia palustris</i> L.	Yürekyaprağı	LC	7-9	In marshy meadows along the shores of high-altitude lakes, at elevations ranging from 1500 to 1660 meters.	Treat disorders of the liver and indigestion, kidney stones.	ARTH 18344
Convolvulaceae	<i>Calystegia sepium</i> (L.) R. Br.	Çit denizsarmaşığı	LC	5-9	It is typically found as a climber on the stems of Phragmites australis in wetland and marshy areas along lake and stream shores, at elevations ranging from 0 to 1000 meters.	Gallbladder, sedative, analgesic, laxative, diuretic, antipyretic, potent cleaner.	ARTH 17784
Convolvulaceae	<i>Calystegia silvatica</i> (Kit.) Griseb.	Bürük	LC	4-8	They are found as climbers on plants in wetland areas along lake shores, at elevations ranging from 0 to 1100 meters.	Digestive problems, skin conditions, and respiratory issues	ARTH 17785
Convolvulaceae	<i>Convolvulus arvensis</i> L.	Tarla sarmaşığı	LC	4-9	It is found as a climber on other plants in marshy and wetland areas along lake and stream shores, at elevations ranging from 0 to 1150 meters.	Laxative, diuretic, abortifacient.	ARTH 17787
Cyperaceae	<i>Blasmus compressus</i> (L.) Panz. ex Link	Yassı hasırotu	LC	5-8	Freshwater and saline marshes, and wetland areas that dry up in summer, at elevations ranging from 850 to 1500 meters.	Eat digestive problems, skin diseases, and respiratory issues	ARTH 18377
Cyperaceae	<i>Bolboschoenus maritimus</i> (L.) Palla	Sandalyesazı	LC	7-8	Brackish to saline marshes and coastal strands	It is used as a poison and a medicine	ARTH 18374
Cyperaceae	<i>Bulbosylis hispidula</i> (Vahl) R.W.Haines.	Karakofa	LC	6-8	Roadsides, bamboo zones, heath scrub, ericaceous zone, moorland	No data	ARTH 18352
Cyperaceae	<i>Bulbosylis tenerrima</i> (Fisch. & Mey. ex Ledeb.) Palla	Kancıkofa	DD	6-7	Roadsides, bamboo zones, heath scrub, ericaceous zone, moorland	No data	ARTH 18351
Cyperaceae	<i>Carex acuta</i> L.	Bataklıksazı	LC	5-6	Along lake and water shores, in shallow waters, at elevations ranging from 0 to 1660 meters.	No data	ARTH 18369
Cyperaceae	<i>Carex acutiformis</i> Ehrh.	Çayrsazı	LC	5-6	Wet meadows, and wetland areas along lake and stream shores, at elevations ranging from 0 to 1900 meters.	No data	ARTH 18362
Cyperaceae	<i>Carex canescens</i> L.	Hanmsaparna	LC	5-6	In bog marshes and along lake shores, at elevations ranging from 1400 to 2650 meters.	Digestive issues, menstrual cramps, and skin conditions	ARTH 18380
Cyperaceae	<i>Carex distans</i> L.	Ayrık saparna	LC	5-6	Saline and slightly saline marshes, wet and marshy meadows, at elevations ranging from 0 to 1000 meters.	Colds, coughs, diarrhea	ARTH 18384
Cyperaceae	<i>Carex divisa</i> Huds.	Zevçirçimeni	LC	3-6	In saline marshy meadows, along soda lake shores, and in rice fields, at elevations ranging from 0 to 1700 meters.	No data	ARTH 17804
Cyperaceae	<i>Carex echinata</i> Murray	Dikenli saparna	LC	5-6	Wet meadows and marshes, at approximately 10 meters.	No data	ARTH 18361
Cyperaceae	<i>Carex flacca</i> subsp. <i>erythrostachys</i> (Hoppe) Holub.	Yanık çayrsazı	LC	5-6	Wet meadows and lake shores, at elevations ranging from 0 to 1600 meters.	No data	ARTH 18365
Cyperaceae	<i>Carex hirta</i> L.	Tüylü çayrsazı	LC	5-6	Wet meadows and muddy grounds, at elevations ranging from 50 to 1500 meters.	The rhizome is diuretic	ARTH 18381
Cyperaceae	<i>Carex hordeistichos</i> Vill.	Arpa çayrsazı	LC	5-6	Marshes and shallow waters along lake and stream shores, at elevations ranging from 860 to 1050 meters.	No data	ARTH 18367
Cyperaceae	<i>Carex leporina</i> L.	Tülüsazotu	LC	5-6	In wet meadows, at approximately 1500 to 1660 meters.	No data	ARTH 18360
Cyperaceae	<i>Carex magellanica</i> Lam. subsp. <i>irrigua</i> (Wahlenb.) Hitonen	Yaman sazotu	LC	5-6	Marshy meadows and lake shores, at elevations ranging from 1750 to 2900 meters.	Diarrhea, fever, headaches	ARTH 18385
Cyperaceae	<i>Carex melanostachya</i> M.Bieb. ex Willd.	Benli ayakotu	LC	5-6	Marshes, wet meadows, at elevations ranging from 50 to 1200 meters.	No data	ARTH 18363
Cyperaceae	<i>Carex panicea</i> L.	Darimsi saparna	LC	5-6	Marshy grounds, at elevations ranging from 1500 to 1600 meters.	No data	ARTH 18366
Cyperaceae	<i>Carex pendula</i> Huds.	Asık saparna	LC	5-6	Water edges, at approximately 50 meters.	No data	ARTH 17805
Cyperaceae	<i>Carex remota</i> L.	Nazlısaparna	LC	5-6	In marshy grounds beneath forests, at elevations ranging from 0 to 880 meters.	Digestive problems, skin irritations, and infections	ARTH 18379
Cyperaceae	<i>Carex rostrata</i> Stokes	Sırıksaparna	LC	5-6	Lake shores, marshes, at approximately 1500 meters.	No data	ARTH 18364
Cyperaceae	<i>Carex sylvatica</i> Hudson subsp. <i>latifrons</i> (V. Krecz.) Ö. Nilsson	Enliraz	LC	5-6	Wet meadows, at elevations ranging from 1000 to 2000 meters.	Diarrhea, fever, and respiratory problems	ARTH 18383
Cyperaceae	<i>Carex umbrosa</i> subsp. <i>huertiana</i> (Boiss.) Soó	Gölge seven saparna	LC	5-6	The edges of water sources, at elevations ranging from 1600 to 3350 meters.	No data	ARTH 18368
Cyperaceae	<i>Cyperus glaber</i> L.	Kösnüotu	LC	7-9	In marshes, water edges, rice fields, and along lake shores, at elevations ranging from 50 to 1150 meters.	No data	ARTH 18345
Cyperaceae	<i>Cyperus difformis</i> L.	Göcelebüken	LC	7-8	Along lake shores and in rice fields, at elevations ranging from 0 to 1890 meters.	No data	ARTH 18346
Cyperaceae	<i>Pycurus flavescens</i> (L.) P.Beauv. ex Rechb.	Samanderdi	LC	8-9	Lake and stream shores, at elevations ranging from 140 to 1150 meters.	No data	ARTH 18347
Cyperaceae	<i>Pycurus flavidus</i> (Retz.) Koyama	Sarıberdi	LC	7-8	In marshy slopes and along water sources, at elevations ranging from 0 to 140 meters.	No data	ARTH 18348
Cyperaceae	<i>Pycurus sanguinolentus</i> (Vahl.) Nees	Berdi	LC	8	Along water edges and at stream mouths, at elevations ranging from 0 to 900 meters.	No data	ARTH 18349

Cyperaceae	<i>Fimbristylis dichotoma</i> (L.) Vahl.	Çatalberdi		7-9	At stream mouths.	No data	ARTH 18350
Cyperaceae	<i>Eleocharis quinqueflora</i> (Hartmann) O.Schwarz	Seyrüksaz	LC	5-8	In marshes, marshy meadows, and along water edges, at elevations ranging from 1400 to 1950 meters.	No data	ARTH 18353
Cyperaceae	<i>Eleocharis palustris</i> (L.) Roemer & Schultes	Delisaz	LC	3-9	Lake shores, water channels, saline and freshwater marshes, and marshy meadows, at elevations ranging from 0 to 2600 meters.	No data	ARTH 18354
Cyperaceae	<i>Eleocharis uniglumis</i> (Link) Schult.	Kaplıksazı	LC	5-8	In shallow waters along lake and stream shores, and in slightly salty marshes, at elevations ranging from 905 to 1660 meters.	No data	ARTH 18355
Cyperaceae	<i>Isolopis setacea</i> (L.) R. Br.	Tüylü knotu	LC	5-10	In marshes and oxygen-poor puddles, at approximately 770 meters.	No data	ARTH 18356
Cyperaceae	<i>Scirpus sylvaticus</i> L.	Topakbedri	LC	5-7	Marshes and water edges, at approximately 50 meters.	No data	ARTH 18357
Cyperaceae	<i>Eriophorum latifolium</i> Hoppe	Pambikotu	LC	5-6	Wet meadows, at elevations ranging from 1200 to 2100 meters.	No data	ARTH 18358
Cyperaceae	<i>Rhynchospora alba</i> (L.) Vahl.	Aksazberdi	LC	5-8	In acidic bog areas, at approximately 1600 meters.	No data	ARTH 18359
Cyperaceae	<i>Carex vesticaria</i> L.	Bohçalısaparna	LC	5-6	In marshes along lake and water shores, at elevations ranging from 850 to 1850 meters.	Urinary tract infections, kidney stones, and diarrhea	ARTH 18382
Cyperaceae	<i>Cyperus serotinus</i> Rottb.	Gelgit hasırn		8-9	In mud and marshes along lake shores, at approximately 140 meters.	No data	ARTH 18370
Cyperaceae	<i>Eriophorum vaginatum</i> L.	Bataklık keteni		5-6	Marshy meadows and lake shores, at approximately 1750 meters.	Anti-inflammatory and diuretic agent. Plant extracts with the fruits of this plant are used as a pain reliever, antipyretic and sedative.	ARTH 18376
Cyperaceae	<i>Fimbristylis bisumbellata</i> (Forssk.) Bubani	İkiz telberdi		7-9	In marshy areas, at approximately 70 meters.	Urination problems and kidney problems.	ARTH 18371
Cyperaceae	<i>Schoenoplectus tabernaemontani</i> (C.C.Gmel.) Palla.	Ayna semerotu	LC	4-8	In lakes, lagoons, water edges, and irrigation channels, at elevations ranging from 0 to 2600 meters.	Leaf juice used in attempt to cure blindness	ARTH 18372
Cyperaceae	<i>Schoenoplectiella mucronata</i> (L.) Jung & H.K.Choi	Sivriberdi	LC	7-10	In rice fields, at elevations ranging from 0 to 1000 meters.	Release heat, to clear the eyes and to relieve coughing.	ARTH 18373
Cyperaceae	<i>Schoenus nigricans</i> L.	Inekgözü	LC	3-7	Saline marshes and thermal waters, at elevations ranging from 0 to 950 meters.	Respiratory problems and skin irritation	ARTH 18378
Cyperaceae	<i>Scirpoides holoschoenus</i> (L.) Soják	Vurla	LC	4-8	Marshes, streams, irrigation channels, and crater lakes, at elevations ranging from 0 to 1150 meters.	Root is a cure for snake and scorpion bites, uterine discharge, overdose causes the uterus to prolapse, diuretic, removes stones from the area and is extremely useful for edema.	ARTH 18375
Equisetaceae	<i>Equisetum fluviatile</i> L.	kırkboğum			Swamps, lakes, streams, ditches	No data	ARTH 18481
Equisetaceae	<i>Equisetum hyemale</i> L.	ulamotu			In open or wooded areas along streams, on alluvial flats, and on wet ledges;	No data	ARTH 18482
Equisetaceae	<i>Equisetum giganteum</i> L.	kırkkilitotu			In open or wooded areas along streams, on alluvial flats, and on wet ledges;	Diuretic and hemostatic in urinary disorders	ARTH 18483
Euphorbiaceae	<i>Euphorbia heteradena</i> Jaub. & Spach	Kerigan		5-9	In marshes along lake shores, at elevations ranging from 1000 to 2300 meters.	No data	ARTH 18386
Euphorbiaceae	<i>Euphorbia hirsuta</i> L.	Kılız sütleğen		4-9	In saline marshes and marshy meadows at sea level.	Female disorders, respiratory ailments (cough, coryza, bronchitis, and asthma), worm infestations in children, dysentery, jaundice, pimples, gonorrhea, digestive problems, and tumors	ARTH 17835
Euphorbiaceae	<i>Euphorbia esula</i> subsp. <i>tommasiniana</i> (Bertol.) Kuzmanov.	Eşek sütleğeni		4-9	Marshes and water edges, at elevations ranging from 1000 to 3000 meters.	Potential cytotoxic effects in several human tumor cells.	ARTH 17842
Fabaceae	<i>Astragalus odoratus</i> Lam.	Misk geveni		6-7	In marshes along lake shores, at elevations ranging from 850 to 1950 meters.	All parts of the plant are toxic, particularly the seeds, however poisoning from this genus is only a hazard after four to eight weeks of chronic ingestion of the plant material. Symptoms include paralysis, bradycardia, shallow breathing, muscular tremors and convulsions, and severe cases are potentially fatal	ARTH 17850
Fabaceae	<i>Lathyrus nissolia</i> L.	Çimenburçak		5-7	In marshes, at elevations ranging from 0 to 1900 meters.	No data	ARTH 17866
Fabaceae	<i>Lathyrus pratensis</i> L.	Tarla burçağı		6-7	In marshy meadows along lake shores, at elevations ranging from 850 to 1500 meters.	No data	ARTH 17867
Fabaceae	<i>Lotus corniculatus</i> var. <i>tenuifolius</i> L.	Gazel boynuzu		4-9	In marshes along lake shores, at elevations ranging from 0 to 1700 meters.	Anti-oxidant, immunostimulant.	ARTH 17874
Fabaceae	<i>Melilotus officinalis</i> (L.) Desr.	kokulyonca		5-9	Prairies, savannas, dunes, hillsides, ravine shores, roadsides and forest edges	Reduce the risk of phlebitis (inflammation of a vein) and thrombosis.	ARTH 17881
Fabaceae	<i>Securigera varia</i> L.	körigen		6-9	Meadows and fields, shores of rivers or lakes	Insecticide	ARTH 17858
Gentianaceae	<i>Centaurium pulchellum</i> (Swartz) Druce	Pembe tukul	LC	4-7	Marshy areas, at elevations ranging from 0 to 850 meters.	No data	ARTH 18387
Gentianaceae	<i>Centaurium tenuiflorum</i> subsp. <i>acutiflorum</i> (Schott) Zeltner	Zarif çiçekli kantaron		6-7	In slightly saline or non-saline marshes, at elevations ranging from 0 to 950 meters.	Inflammation, digestive issues	ARTH 18388
Gentianaceae	<i>Swertia iberica</i> Fisch. ex Boiss.	Safraca	LC	7-8	In marshes at high altitudes, at elevations ranging from 1600 to 2700 meters.	Hepatitis, cholecystitis, pneumonia, osteomyelitis, dysentery, and scabies	ARTH 18389
Geraniaceae	<i>Geranium rotundifolium</i> L.	helilik		5-9	Shores, floodplains, rocks and barren places	Throat, bleeding, nephritis and bruises	ARTH 17927
Haloragidaceae	<i>Myriophyllum spicatum</i> L.	Sucivanperçemi	LC	3-9	In lakes, irrigation channels, and slow-flowing streams, at elevations ranging from 0 to 1670 meters.	Demulcent, febrifuge	ARTH 18390
Hypericaceae	<i>Hypericum venustum</i> Fenzl	Tentürdiyototu		7-8	In marshy environments along lake shores, at approximately 1500 meters.	No data	ARTH 18391
Iridaceae	<i>Iris pseudacorus</i> L.	Batak süseni		5-7	In wet meadows along lake shores, at approximately 1890 meters.	Stimulant, tonic, anticonvulsant and diuretic, cure epilepsy	ARTH 18392
Iridaceae	<i>Gladiolus kotschyanus</i> Boiss.	Çayır kılıçotu		4-8	In marshy areas along lake and stream shores, at elevations ranging from 400 to 2900 meters.	Peptic Ulcer, skin infections, gut, urogenital system, upper respiratory tract, gonorrhea, dysentery, other infectious conditions.	ARTH 18393
Iridaceae	<i>Sisyrinchium micranthum</i> Cav.			3-7	on roadsides at 0-10 m with <i>Oxalis corniculata</i> L., <i>Plantago major</i> L.	No data	ARTH 17303
Juncaceae	<i>Juncus inflexus</i> L.	Sazak	LC	4-8	Along water edges, marshy grounds, and wet meadows, at elevations ranging from 0 to 1990 meters.	No data	ARTH 18394
Juncaceae	<i>Juncus conglomeratus</i> L.	Hasırsazı	LC	4-7	Along water edges, at elevations ranging from 0 to 1600 meters.	No data	ARTH 18395
Juncaceae	<i>Juncus compressus</i> Jacq.	Karahasırlık	LC	5-7	In marshy and muddy areas along lake shores, at elevations ranging from 0 to 1500 meters.	No data	ARTH 18396
Juncaceae	<i>Juncus bufonius</i> L.	Kurbağa hasırotu	LC	3-9	In marshy and muddy grounds, at elevations ranging from 0 to 2600 meters.	No data	ARTH 18397
Juncaceae	<i>Juncus effusus</i> L.	Has kofa	LC	4-7	In marshy areas along lake shores, at elevations ranging from 0 to 1620 meters.	Sore throats, jaundice, oedema, acute urinary tract infection and morbid crying of babies.	ARTH 17943
Juncaceae	<i>Juncus filiformis</i> L.	Kızısaçı	LC	6-8	Marshy meadows at high altitudes, at elevations ranging from 2000 to 2750 meters.	Infections, kidney stones	ARTH 18398
Juncaceae	<i>Juncus articulatus</i> L.	Camışotu	LC	4-8	In marshes along lake shores, at elevations ranging from 0 to 1990 meters.	Hypnagogic, sedative, spasmolytic, local anesthetic, anticancer agent	ARTH 18399
Juncaginaceae	<i>Triglochin maritima</i> L.	Sahil okotu		5-8	Marshes, at elevations ranging from 900 to 1890 meters.	No data	ARTH 18400
Juncaginaceae	<i>Triglochin palustris</i> L.	Suğengeli	LC	5-9	Marshes and along lake shores, at elevations ranging from 850 to 1700 meters.	No data	ARTH 18401
Lamiaceae	<i>Glechoma hederacea</i> L.	yemanesi		3-6	Meadows and fields	Diuretic and stimulant	ARTH 17956
Lamiaceae	<i>Mentha aquatica</i> L.	Su nanesi	LC	7-10	Along lake and stream shores, in marshes, at elevations ranging from 0 to 1200 meters.	Sedative, analgesic, carminative, stomach stimulant, anti-nausea. excessive consumption may cause miscarriage.	ARTH 17968

Lamiaceae	<i>Prunella vulgaris</i> L.	Geliciklemeotu		6-9	In marshes and muddy grounds along water edges, at elevations ranging from 0 to 1660 meters.	Allergy, anti-inflammatory, anti-HIV, skin irritation healer, germicide, wound healer, astringent, Antipyretic, diuretic, strengthening, prevents mouth sores, goiter, diarrhea and boils.	ARTH 17984
Lamiaceae	<i>Mentha spicata</i> L.	Başlıklı nane	LC	6-8	In mudflats and wet meadows along water edges that dry up in summer, at elevations ranging from 0 to 140 meters.	Antimicrobial, antispasmodic, choleric, carminative Anti-cramp, carminative, bile enhancer, anti-inflammatory, disinfectant, pain reliever, soothing	ARTH 17972
Lamiaceae	<i>Mentha pulegium</i> L.	Yarpuz	LC	6-9	In mudflats and wet meadows along water edges that dry up in summer, at elevations ranging from 0 to 140 meters.	Strengthening, digestive, phlegm, bile expectorant, menstrual inducing, nausea treatment.	ARTH 17971
Lamiaceae	<i>Mentha longifolia</i> (L.) Hudson	Pünk	LC	6-8	Along water edges and in marshes, at elevations ranging from 100 to 1990 meters.	Strengthening, digestive, anticonvulsant, antitussive, insecticidal properties, A strongly aromatic culinary herb used in infusion, liquid extract, syrup, powder, essence, fruit juice, and tobacco, perfume, drink raw materials, anti-septic, sedative, midevi, carminative, anti-nausea, anti-diarrheal phlegm.	ARTH 17970
Lamiaceae	<i>Lycopus europaeus</i> L.	Avrupa kurt ayağı	LC	6-10	In marshy areas along lake shores and in temporary water bodies, at elevations ranging from 0 to 1600 meters.	No data	ARTH 17964
Lamiaceae	<i>Teucrium scordium</i> L. subsp. <i>scordioides</i> (Schreber) Maire & Petitmenin	Bataklık kısamahmutotu		5-9	Freshwater or slightly saline marshes, at elevations ranging from 0 to 1100 meters.	Anthelmintic, antifungal, antiseptic, diaphoretic, skin, tonic, antidote for poisons, anthelmintic, tonic, diaphoretic actions for all inflammatory diseases	ARTH 18019
Lamiaceae	<i>Scutellaria galericulata</i> L.	Miğferli kalkantaç		6-8	In marshes along lake and stream shores, at elevations ranging from 0 to 1500 meters.	Anti-inflammatory, antispasmodic, slightly astringent, febrifuge, nervine, strongly tonic, throat infections	ARTH 18402
Lamiaceae	<i>Stachys palustris</i> L.	Gölsırganı	LC	6-10	In wet marshy areas along lake shores, at elevations ranging from 0 to 950 meters.	Emetic, antiseptic, nervine, sedative, antispasmodic, emmenagogue, hemostatic, vulnerable, expectorant, tonic agent	ARTH 18009
Linderniaceae	<i>Lindernia procumbens</i> (Krock.) Philcox	Sürüncüki kutuotu	Bern LC	6	In marshy areas, at sea level.	No data	ARTH 18403
Linderniaceae	<i>Lindernia diffusa</i> (L.) Wettst.	Som kutuotu	LC	6	In marshy areas, at sea level.	No data	ARTH 18404
Lythraceae	<i>Lythrum salicaria</i> L.	Hevhulma	LC	6-8	Along lakes, streams, and water edges, at elevations ranging from 0 to 1620 meters.	Diuretic, astringent, haemorrhagic, strengthening, against eczema, hemorrhoids, dysentery prevention	ARTH 18035
Malvaceae	<i>Athaea cannabina</i> L.	Gülhannaz		6-8	In marshes, at elevations ranging from 1250 to 1500 meters.	Asthma, bronchitis, cold, sore throat, cough, ulcerative colitis, stomach ulcers, weight loss, wound healing, anti-tussive, diuretic, emollient, laxative, odontalgic.	ARTH 18405
Menyanthaceae	<i>Menyanthes trifoliata</i> L.	Suyoncası	LC	7-8	In lakes and marshes at high altitudes, at elevations ranging from 850 to 1660 meters.	No data	ARTH 18406
Onagraceae	<i>Epilobium parviflorum</i> Schreber	İraz yakiotu	LC	5-9	In marshy and muddy areas along lakes and water edges, at elevations ranging from 0 to 2000 meters.	Prostate gland, urinary bladder and treatment of kidney diseases, anti-inflammatory.	ARTH 18048
Onagraceae	<i>Epilobium angustifolium</i> L.	Dar yapraklı yakiotu		6-8	In muddy grounds along lakes and water edges, at approximately 1000 meters.	Anti-spasmodic (contraction and compression of smooth muscles such as kidneys and stomach), astringent (more contraction of tissues caused by tannins), demulcent (softening of wounds), emollient (condition of skin softening, healing state), hypnotic, laxative (cleansing the intestines, relieving constipation) and tonic effect.	ARTH 18045
Onagraceae	<i>Epilobium hirsutum</i> L.	Hasan hüseyin çiçeği	LC	6-9	In marshy areas, at elevations ranging from 0 to 1660 meters.	In the treatment of eczema, acne, burns, ulcers, skin diseases, inflammations, bladder health protection, maintenance of men's health, hormonal imbalances, urinary system health.	ARTH 18046
Onagraceae	<i>Epilobium anatolicum</i> Hausskn.	Ana yakısı	LC	7-8	In muddy environments along lake shores, at an elevation of 1660 meters.	No data	ARTH 18407
Onagraceae	<i>Epilobium palustre</i> L.	Bataklık yakiotu		7-8	In marshy grounds along lakes and water edges, at elevations ranging from 850 to 1620 meters.	No data	ARTH 18408
Onagraceae	<i>Epilobium confusum</i> Hausskn.	Mukaddes defne	LC	7	In marshes and wet meadows at high altitudes, at approximately 2660 meters.	No data	ARTH 18409
Onagraceae	<i>Epilobium montanum</i> L.	Dağ yakiotu		7-8	In wet muddy areas in forest clearings at high altitudes, at approximately 800 meters.	Kidney, urinary tract, prostate diseases, anticancer	ARTH 18410
Onagraceae	<i>Epilobium tetragonum</i> L.	Dört köşeli yakiotu		6-8	In muddy and marshy areas along lake shores, at elevations ranging from 1100 to 1500 meters.	Skin irritations, wounds, digestive problems, anti-inflammatory, analgesic properties	ARTH 18411
Onagraceae	<i>Epilobium minutiflorum</i> Hausskn.	Küçük çiçekli yakiotu	LC	6-8	In marshy grounds along lakes and water edges at high altitudes, at elevations ranging from 1000 to 1100 meters.	Constipation	ARTH 18412
Orchidaceae	<i>Dactylorhiza urvilleana</i> (Steudel) Baumann & Künkele	Balkaymak		6-8	Water sources and meadow at elevations ranging from 0 to 2500 meters.	Treat skin problems such as wounds, abscess, inflammation, and as tonic	ARTH 18065
Orchidaceae	<i>Dactylorhiza euvina</i> (Nevski) Czerep	Laz salebi	NT	6-8	Peat meadows, along water sources, at elevations ranging from 1150 to 2900 meters.	Cough, inflammation, skin, affections, used as aphrodisiac, tonic, cure wounds	ARTH 18058
Orchidaceae	<i>Dactylorhiza saccharifera</i> (Bronn.) Soó	Keselisalep		6-8	Forests, forest edges, water source edges, streams, 800–1680 m.	Tuber used in decoction as panacea, and breath shortness tubers harvested for Salep	ARTH 18061
Orchidaceae	<i>Epipactis palustris</i> (L.) Crantz	Danakıranotu	LC	7	Marsh meadows, at elevations ranging from 0 to 1750 meters.	No data	ARTH 18069
Orchidaceae	<i>Anacamptis palustris</i> (Jacq.) R.M.Bateman, Pridgeon & M.W.Chase.	Bataklık salepotu	LC	6-7	Marsh and wet meadows, at elevations ranging from 850 to 1500 meters.	No data	ARTH 18051
Orchidaceae	<i>Dactylorhiza umbrosa</i> (Kar. Et Kir.) Nevski	Gövdelisalep		6-8	Marsh, at elevations ranging from 1500 to 3300 meters.	No data	ARTH 18060
Orchidaceae	<i>Neottia ovata</i> (L.) Bluff & Fingerh.	Çalı salebi		5-6	Near water sources and wet meadows, at elevations ranging from 50 to 1700 meters.	Clears heat, moves the blood, promotes healing	ARTH 18413
Orchidaceae	<i>Dactylorhiza ibérica</i> (Bieb. ex Willd.) Soó	Kırım salebi		5-8	Wet meadows, swamps, and the edges of lakes and water sources, at elevations ranging from 1000 to 1500 meters.	Hemorrhoids	ARTH 18059
Orchidaceae	<i>Dactylorhiza osmanica</i> (Kl.) Soó	Osmanlı salebi		6-7	Swamps, water sources, and riverbanks.	Metabolic inflammation, cancer	ARTH 18062
Orobanchaceae	<i>Euphrasia hirtella</i> Jord. ex Reut.	Yayla gözotu		6-9	Marshy areas	No data	ARTH 18484
Orobanchaceae	<i>Rhynchochorys elephas</i> (L.) Griseb.	Filburnu		4-8	Sulak alanlara, alpin çayırlara ve yamaçlara	No data	ARTH 18094
Orobanchaceae	<i>Rhynchochorys stricta</i> (K.Koch) Albov	Hoş filburnu		4-8	Sulak alanlara, alpin çayırlara ve yamaçlara	No data	ARTH 18095
Plantaginaceae	<i>Plantago major</i> L.	İri yapraklı sinirliotu		4-6	Wetlands, alpine meadows and hillsides	Diarrhea, gastritis, peptic ulcer, irritable bowel syndrome, hemorrhage, hemorrhoids, cystitis, bronchitis, catarrh, sinusitis, asthma, hay fever.	ARTH 18131
Plantaginaceae	<i>Plantago lanceolata</i> L.	Mızraklı yapraklı sinirliotu		4-10	In marshy soils, 0-70 m.	Ulcer, hemorrhoids, bronchitis, sinusitis, asthma	ARTH 18130
Plantaginaceae	<i>Veronica serpyllifolia</i> L.	Kekik yapraklı tavşanotu		4-7	At the water's edge, marshy meadows, and muddy soils, 50-70 m.	Treat a variety of ailments, including coughs, colds, and digestive problems.	ARTH 18414
Plantaginaceae	<i>Plantago scabra</i> Moench	Sinirek		5-11	In marshy and muddy areas along the sea and lake shores, 0-1250 m.	No data	ARTH 18415
Plantaginaceae	<i>Veronica agallisaquatica</i> L.	Sugedemesi	LC	4-9	Wetlands, alpine meadows and hillsides	Appetizing, stimulating, burn treatment	ARTH 18133
Plantaginaceae	<i>Veronica beccabunga</i> L.	Atteresi		5-8	Wetlands, alpine meadows and hillsides	Treatment of scurvy, diuretic, menstrual flow promoter, antipyretic, laxative effect, treat blood rashes, impurity of blood, burns and ulcers.	ARTH 18136
Plantaginaceae	<i>Plantago maritima</i> L.	Sahil sinirliotu		5-8	In salty wetlands along lake and sea shores, 900-1700 m.	Laxative, soothing irritated membranes	ARTH 18132

Poaceae	<i>Cynosurus cristatus</i> L.	Tarakotu		5-8	Marshy areas	Catarrhal diseases of the bladder, Diuretic demulcent.	ARTH 18485
Poaceae	<i>Festuca drymeja</i> Mert. & W.D.J.Koch	Çalı yumağı		6-7	Marshy areas	No data	ARTH 18486
Poaceae	<i>Lolium perenne</i> L.	Çim		4-8	Grasslands, pastures, dunes, wastelands, 0-2050 m	Treatment of cancer, diarrhoea, haemorrhages and malaria	ARTH 18487
Poaceae	<i>Lolium rigidum</i> Gaudin	sert çim		4-9	Cereal grain fields, orchards, vineyards, and roadsides	No data	ARTH 18488
Poaceae	<i>Poa angustifolia</i> L.	Dar salkimotu		5-8	marshes, high steppe to low alpine vegetation	No data	ARTH 18489
Poaceae	<i>Poa diversifolia</i> (Boiss. & Balansa) Hack. ex Boiss.	Zarif salkimotu		5-8	marshes, high steppe to low alpine vegetation	No data	ARTH 18490
Poaceae	<i>Poa masenderana</i> Freyn & Sint.	Pala salkimotu		5-8	marshes, high steppe to low alpine vegetation	No data	ARTH 18491
Poaceae	<i>Poa nemoralis</i> L.	Ormansalkımı		5-8	marshes, high steppe to low alpine vegetation	No data	ARTH 18492
Poaceae	<i>Phragmites australis</i> (Cav.) Trin. ex Steudel	Kamış	LC	8-10	In freshwater and brackish wetlands and marshes along lakes, rivers, irrigation channels, and sea shores, 0-2000 m.	Diuretic, diaphoretic, blood purifier, preventive of gout, rheumatism, toothache, bronchitis, measles.	ARTH 18416
Poaceae	<i>Elymus repens</i> (L.) Gould	Sürüncü yabancı arpa		6-8	Open areas with moderate to high nutrient levels	Treatment of kidney, heart and cardiac diseases, Roots are antilogs, relaxing, sedative, central expectorant, emollient, lithotropic and tonic, Tea made from the roots is used for the duration of its requirement and deworming cystitis and urethritis.	ARTH 18417
Poaceae	<i>Elymus hispidus</i> (Opiz) Melderis subsp. <i>barbulatus</i> (Schnur) Melderis	Tüylü yabancı arpa		6-8	In low-salinity mud areas, approximately 905 m.	No data	ARTH 18418
Poaceae	<i>Eremopyrum orientale</i> (L.) Jaub. & Spach	Acemtarığı		3-5	Brackish mud areas along lake shores, approximately 905 m.	No data	ARTH 18419
Poaceae	<i>Hordeum brevisabulatum</i> (Trin.) Link.	Morumsu arpa		6-8	Swampy areas along the water, at 1660 meters	No data	ARTH 18420
Poaceae	<i>Hordeum marinum</i> Huds.	Sahil arpası		5-6	Saline wetlands, 0-1600 m	No data	ARTH 18421
Poaceae	<i>Rostraria cristata</i> (L.) Tzelev	Gagaotu		4-7	Brackish wetland soil, sea level.	No data	ARTH 18422
Poaceae	<i>Deschampsia caespitosa</i> (L.) P.Beauv.	Çayırşacı		6-8	Swampy meadows, 1050-1890 m.	No data	ARTH 18423
Poaceae	<i>Calamagrostis epigejos</i> (L.) Roth	Bekarotu		6-7	Lake shores, wet meadows, 0-1990 m.	No data	ARTH 18424
Poaceae	<i>Calamagrostis pseudophragmites</i> (Haller E) Koeler	Sazçimi	LC	6-8	At the water's edge, 0-1660 m.	No data	ARTH 18425
Poaceae	<i>Calamagrostis stricta</i> (Timm) Koeler	Kamışotu		7-8	In wetland areas at the lake shore, ca. 1950 m	No data	ARTH 18426
Poaceae	<i>Agrostis stolonifera</i> L.	Tavusotu	LC	6-8	In wetlands at the lake shores, 0-2600 m	No data	ARTH 18427
Poaceae	<i>Zingeria pisdica</i> (Boiss.) Tutin	Burdur oyalsalkımı	LC	5-8	Swamps, ca. 1600 m.	No data	ARTH 18428
Poaceae	<i>Phalaris arundinacea</i> L.	Kanyuş	LC	5-9	Swamps along lakes and streams, 0-1950 m.	No data	ARTH 18429
Poaceae	<i>Alopecurus arundinaceus</i> Poir.	Kamış tilkikuyruğu	LC	4-8	Swamps, wet meadows, 800-1700 m.	No data	ARTH 18430
Poaceae	<i>Alopecurus myosuroides</i> Huds.	İnce tilkikuyruğu		3-8	Swamps and water edges, 0-900 m.	No data	ARTH 18150
Poaceae	<i>Phleum pratense</i> L.	Çayır itkuyruğu		6-8	Marshy meadows, ca. 1890 m.	No data	ARTH 18431
Poaceae	<i>Glyceria fluitans</i> (L.) R. BR.	Dere tatlıçımı	LC	4-6	Along lake shores, 800-1000 m.	No data	ARTH 18432
Poaceae	<i>Eragrostis barrelieri</i> Daveau	Salkımyulaf		7-8	In muddy areas along water edges, ca. 1050 m.	No data	ARTH 18433
Poaceae	<i>Crypsis alopecuroides</i> (Piller Et Mitterp.) Schrader	Dere bakakotu	LC	7-9	Swamps, 10-70 m.	No data	ARTH 18434
Poaceae	<i>Crypsis schoenoides</i> (L.) Lam	Bakakotu	LC	4-9	Lake shores, 10-1950 m	No data	ARTH 18435
Poaceae	<i>Tragus racemosus</i> (L.) All.	Salkım dikençayır		5-9	On the muddy shores of hot spring lakes, ca. 370 m	No data	ARTH 18436
Poaceae	<i>Paspalum distichum</i> L.	Yalandarısı		6-10	Lake and stream shores, wetlands, and wet meadows, 0-400 m	No data	ARTH 18437
Poaceae	<i>Agrostis gigantea</i> ROTH	Kocatavusotu		7-8	In wetlands, 0-1500 m	No data	ARTH 18438
Poaceae	<i>Anthoxanthum odoratum</i> L. subsp. <i>alpinum</i> (A. & D. Löve) B. Jones & Melderis	Kokulu haşışe		4-5	In the marshy areas of clearings in Fagus orientalis forests, 1000-1300 m.	Anti-blood clotting, anti-spasmodic methods, treatment of rheumatic pain, insomnia in children, neurological insomnia.	ARTH 18439
Poaceae	<i>Alopecurus aequalis</i> Sobol.	Kınalı tilkikuyruğu	LC	6-8	Marshes at the water's edge, 850-1900 m.	Antiphlogistic, depurative, diuretic	ARTH 18440
Poaceae	<i>Phleum alpinum</i> L.	Alp itkuyruğu	LC	6-8	In wetland areas at the lake shores, 1500-3175 m.	Treat digestive disorders, skin diseases, fever.	ARTH 18441
Poaceae	<i>Festuca arundinacea</i> Schreber	Yumakotu		6-7	Wet meadows and lake shores, 1000-1670 m.	Antibacterial, antioxidant, anticancer	ARTH 18442
Poaceae	<i>Catabrosa aquatica</i> (L.) P.Beauv.	Pınarotu		5-8	In lakes and slow-flowing rivers, in water bodies, 40-1950 m.	Stimulant, tonic	ARTH 18443
Poaceae	<i>Sclerochloa dura</i> (L.) P. Beauv	Microtu		5-6	In wetland areas along lake and spring shores, ca. 905 m.	Menstrual disorders	ARTH 18444
Poaceae	<i>Briça media</i> L.	Zembilotu		5-8	Swamp, ca. 1500 m.	Fever, diarrhoea, skin diseases.	ARTH 18445
Poaceae	<i>Briça minor</i> L.	Küçükzembil		5	Swamp areas, 0-30 m.	coughs, colds, fever.	ARTH 18446
Poaceae	<i>Arundo donax</i> L.	Kargı		9-10	Shorelines, 0-250 m.	Diaphoretic, diuretic, emollient galactofuge, stimulate menstrual discharge, diminish milk flow	ARTH 18447
Poaceae	<i>Eragrostis minor</i> Host	Küçük çayırüzeli		6-11	Hot water pools, lake shores, and wetlands, 0-2700 m.	Flu In the event of an epidemic	ARTH 18448
Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	Büyük ayrık		4-9	Freshwater wetlands, lake shores, 0-1950 m.	Anasarca, cancer, convulsions, cough, cramps, diarrhoea, dropsy, dysentery, epilepsy, headache, hemorrhage, hypertension, hysteria, measles, rubella, snakebite, sores, stones, tumors, urogenital disorders, warts and wounds	ARTH 18153
Poaceae	<i>Cynodon dactylon</i> (L.) Pers. var. <i>villosus</i> Regel	Büyük ayrık		5-9	Freshwater wetland areas along the shores, 0-1400 m.	Anasarca, cancer, convulsions, cough, cramps, diarrhoea, dropsy, dysentery, epilepsy, headache, hemorrhage, hypertension, hysteria, measles, rubella, snakebite, sores, stones, tumors, urogenital disorders, warts and wounds.	ARTH 18449
Poaceae	<i>Echinochloa crus-galli</i> (L.) P. Beauv.	Darcan	LC	6-10	In mud areas along stream banks, wetlands, and rice fields, 0-1800 m	Spleen disease, preventative and tonic, carbuncles, haemorrhages, sores, spleen trouble, cancer, wounds.	ARTH 18450
Polygonaceae	<i>Rumex crispus</i> L.	Labada		5-8	In wetlands and along lake shores, 70-1150 m.	It prevents stomach and intestinal complaints, is a bile remover, antipyretic, boil-ripening, blood, cleansing the intestines, reducing itching, preventing wounds and eczema	ARTH 18451
Polygonaceae	<i>Rumex pulcher</i> L.	Eğşlik		5-7	Lake shores, wetlands, marshy areas, and shallow waters, 0-1150 m	No data	ARTH 18163
Polygonaceae	<i>Polygonum persicaria</i> L.	Sөгütotu		6-12	Lake shores, wetlands, and irrigation channels, 0-1700 m.	No data	ARTH 18452
Polygonaceae	<i>Persicaria hydropiper</i> (L.) Delarbre.	Su biberi	LC	6-8	At lake shores, at sea level.	Hemorrhoids, antifertility, diarrhoea, dyspepsia.	ARTH 18453
Polygonaceae	<i>Persicaria lapathifolia</i> (L.) Delarbre.	Tırşon		6-9	At lake shores, wetlands, and irrigation canals, 0-1150 m.	Antibacterial, antiviral, anti-inflammatory astringent, antiseptic, anti-stomach complaint, hepatoprotective, antifungal uses in addition to its use for the treatment of dysentery, burns, fevers	ARTH 18454
Polygonaceae	<i>Persicaria amphibia</i> (L.) Delarbre.	Yerdeğıştiren	LC	6-9	In lakes or along lake shores, saline water lagoons, and irrigation canals, 0-2000 m.	Stomach pains and children with diarrhoea, chest colds	ARTH 18455
Polygonaceae	<i>Persicaria bistorta</i> (L.) Samp.	Çimen cveleđi		5-9	Shorelines, wet meadows	Diarrhoea, abdominal pain, bleeding.	ARTH 18456
Potamogetonaceae	<i>Potamogeton lucens</i> L.	Tel susümbülü	LC	4-7	Lakes, puddles, slow-flowing streams, water channels, 0-2000 m	No data	ARTH 18457

Potamogetonaceae	<i>Potamogeton gramineus</i> L.	Çim susümbülü	LC	5-7	In lakes and rivers, 10-2600 m	No data	ARTH 18458
Potamogetonaceae	<i>Potamogeton perfoliatus</i> L.	Sarıcı yapraklı susümbülü	LC	4-8	In lakes and deep waters, 0-2000 m	No data	ARTH 18459
Potamogetonaceae	<i>Zannichellia palustris</i> L.	Sukılı	LC	4-9	Fresh and saline waters, lakes, puddles, rivers, and canals, 0-1660 m.	No data	ARTH 18460
Potamogetonaceae	<i>Potamogeton natans</i> L.	Suotu	LC	5-8	Lakes, puddles, 70-2000 m.	Stomach cramps, diarrhea, antiscorbutic, wound healing	ARTH 18461
Potamogetonaceae	<i>Potamogeton nodosus</i> Poiret	Düğmeli suotu	LC	4-8	Lakes, rivers, and water channels, 0-1150 m	Cancer, tuberculosis, acne, common cough, cold, wounds and abdominal discomfort	ARTH 18462
Potamogetonaceae	<i>Potamogeton crispus</i> L.	Susümbülü	LC	4-8	In lakes and channels, 0-1150 m.	Immunity-regulation and tumour proliferation-slowing, colourants and antioxidants in food additives, cancer treatment	ARTH 18463
Potamogetonaceae	<i>Stuckenia pectinata</i> (L.) Börner	Tarakçı susümbülü		4-9	In freshwaters, brackish lagoons, and puddles, 0-1600 m.	Treatment of a feverish liver	ARTH 18464
Potamogetonaceae	<i>Groenlandia densa</i> (L.) Fourr.	Suteleşği	LC	5-9	In streams, springs, water edges, and typically flowing waters, 40-1660 m.	Arthritis, rheumatism, menstrual cramps.	ARTH 18465
Primulaceae	<i>Lysimachia vulgaris</i> L.	Adi kargaotu	LC	4-9	In wetlands, 0-1850 m	Poisonous, against insect bites, soothing the stomach.	ARTH 18466
Primulaceae	<i>Lysimachia verticillaris</i> Spreng.	Hilal kargaotu		7-8	Meadows	Cough and bronchitis	ARTH 18493
Ranunculaceae	<i>Caltha palustris</i> L.	Lilpar		4-7	At the edges of lakes and wetlands, 1000-1140 m.	Blood strengthener, against internal diseases.	ARTH 18467
Ranunculaceae	<i>Ranunculus caucasicus</i> subsp. <i>subleucarpus</i> (Sommier & Levier) P.H.Davis	Sarıyaraotu			wetlands	No data	ARTH 18494
Ranunculaceae	<i>Ranunculus lateriflorus</i> DC.	Yamuk çirnikotu	LC	4-5	In marshy and muddy environments, 0-1300 m	No data	ARTH 18468
Ranunculaceae	<i>Ranunculus repens</i> L.	Tiktakdana		5-7	In wetlands and marshy meadows, 0-2600 m	Analgesic, a skin irritant, treat wounds, muscle aches, rheumatic pain.	ARTH 18194
Rosaceae	<i>Geum urbanum</i> L.	Meryemotu		5-7	In wet, shaded meadows along lakes and water edges, 0-1700 m.	Astringent herb, mouth, throat and gastro-intestinal tract.	ARTH 18227
Rosaceae	<i>Potentilla reptans</i> L.	Beşparmakotu		5-8	In wet and marshy meadows along lake shores, 0-1990 m.	Shows moderate antimicrobial activity against wound pathogens	ARTH 18237
Rosaceae	<i>Geum coccineum</i> Sibth. & Sm	Alkırızı karanfilotu		5-7	In mud areas along water edges, 1200-1400 m	No data	ARTH 18225
Rosaceae	<i>Filipendula ulmaria</i> (L.) Maxim.	Çayırkraliçesi	LC	5-8	At the lake shores, in the wet meadows along the water edges, around 1500 m.	Reduces swelling	ARTH 18469
Rosaceae	<i>Comarum palustre</i> L.	Bataklik parmakotu		5-7	At the lake and swamp shores, around 1500 m.	Anti-inflammatory, antibacterial, diuretic, diaphoretic, temperature-reducing, bleeding-stopping, pain-relieving, hypotensive properties, anti-tumor plants	ARTH 18470
Rosaceae	<i>Potentilla anserina</i> L.	Kaz parmakotu		5-8	In wetlands along lake and river banks, 2000-2600 m	Infectious diarrhea with fever, roots and rhizomes are applied as an antiseptic remedy	ARTH 18471
Rosaceae	<i>Geum rivale</i> L.	Su karanfilotu		5-7	In wet meadows and wetlands along water edges, 1250-3000 m	Treating children with dysentery, coughs or colds.	ARTH 18226
Rubiaceae	<i>Galium palustre</i> L.	Su iplikçığı	LC	5-7	In wetlands, 0-1200 m.	Treat wounds, to help stop bleeding	ARTH 18472
Scrophulariaceae	<i>Limosella aquatica</i> L.	Su çamurotu		3	In mud areas at the edges of water bodies, 0-2900 m.	No data	ARTH 18473
Tamaricaceae	<i>Tamarix tetrandra</i> Pall. Ex Bieb.	Gezik	LC	3-5	Lake shores, slightly salty wetlands, environments where water recedes in summer, and drainage channels, at sea level.	Gastro-intestinal disorders, wounds, diabetes, dental problems.	ARTH 18302
Tamaricaceae	<i>Tamarix smyrnensis</i> Bunge	Ilgın		3-7	Lake, river, canal edges, slightly salty wetlands, and coastal wetlands, 0-1990 m.	No data	ARTH 18301
Typhaceae	<i>Typha shuttleworthii</i> W.D.J.Koch & Sond.	Puf Sazi		6-10	Lake, river, irrigation channels, aquatic areas, and wetlands, 40-1660 m	No data	ARTH 18474
Typhaceae	<i>Typha laxmannii</i> Lepech.	Papur		6-10	Lake, river, and water channels, 0-1660 m.	No data	ARTH 18475
Typhaceae	<i>Sparganium erectum</i> L.	Kozakamışı		5-8	Lake and river shores, wetlands, and water channels, 0-1850 m.	No data	ARTH 18476
Verbenaceae	<i>Verbena officinalis</i> L.	Tıbbi minceçeği		6-8	In wetland and mud areas along lake shores, 0-1660 m.	Diuretic, expectorant and antirheumatic, anti-inflammatory, analgesic, antioxidant	ARTH 18312

As a result of the study, when the distribution of taxa by families was examined, 45 taxa from Poaceae (Grass family), 43 taxa from Cyperaceae (Sedge family), 9 taxa from Lamiaceae, 9 taxa from Onagraceae and Potamogetonaceae, 8 taxa from Orchidaceae, Polygonaceae, and Brassicaceae, and 7 taxa from Plantaginaceae, Juncaceae, Asteraceae, and Rosaceae were identified (Figure 2).

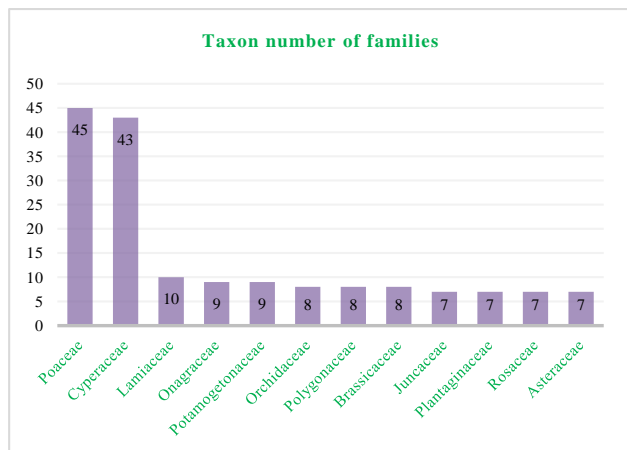


Figure 2. Family wise distribution hydrophyte plants in Artvin.

When the hydrophyte plant species were categorized according to their habitats, it was found that 160 species are Wetland hydrophytes, 56 species are Amphibious hydrophytes, 2 species are Free-floating hydrophytes, 10 species are Fixed-floating hydrophytes, and 8 species are Submerged hydrophytes (Figure 3).

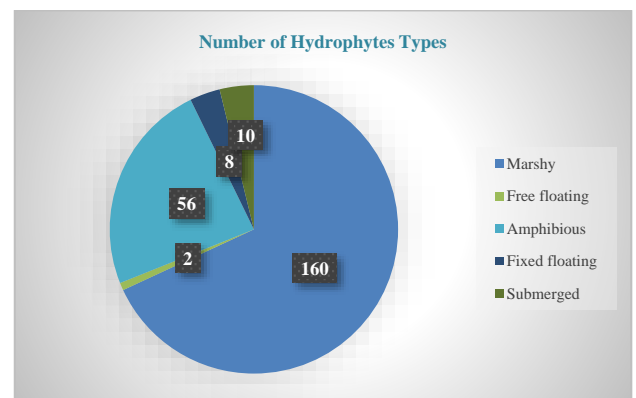


Figure 3. Family wise distribution hydrophyte plants in Artvin.

One of the hydrophyte species, *Lindernia procumbens* (Krock.) Philcox is distributed naturally the temperate to tropical zones of Eurasia, and included in the

Annex IV of the 92/43/EEC “Habitat” Directive and Annex I of Bern Convention. The species is in the LC (Least Concern) category according to IUCN lists. However, they are a species that is under threat due to human activities and their widespread distribution in agricultural areas.



Figure 4. Hydrophyte insectivorous plant; *Drosera rotundifolia* L.

The insectivorous plant species *Drosera rotundifolia*, which occurs in the area, has been recorded in this region (Figure 4). The local people use 112 hydrophyte plant species to treat various human diseases. Among the hydrophytic plant species in Artvin, 96 were identified as LC (Least Concern), 1 as DD (Data Deficient), 1 as NT (Near Threatened), and 1 species was found to be subject to the BERN Convention (Table 1) (IUCN, 2024



Figure 5. Fixed floating hydrophytes a-*Hydrocotyle ramiflora* Maxim. b-*Nasturtium officinale* W.T.Aiton.

Herbal medicines have long been considered more effective and beneficial worldwide compared to synthetic drugs, especially antibiotics. Behera and Satapathy, (2020) reported on approximately 45 plant species used to treat various ailments. Among these, hydrophytes with medicinal properties include *Trapa natans* (with antidiabetic, antibacterial, and neuroprotective effects), *Nymphoides indica* (with anticonvulsant, antioxidant, hepatoprotective, cytotoxic, antitumor, and antimicrobial effects), and *Lippia javanica* (with anticancer, antiamoebic, antidiabetic, antimalarial, antioxidant, and antiviral properties). These plants are reported to possess potent curative properties.



Figure 6. Some hydrophytes; a- *Potamogeton natans* L. (fixed floating) b-*Lemna minör* L. (free floatig).

Atamov et al., (2017) conducted a field study between 2013 and 2015 to reveal the plant diversity in Azerbaijan's aquatic ecosystems. The study identified a total of 502 taxa from 62 families and 208 genera. The number of species identified accounted for 11.2% of Azerbaijan's total plant species. The most frequently encountered families in this study were Poaceae, Cyperaceae, Ranunculaceae, Fabaceae, and Potamogetonaceae, similar to the findings of other similar research.



Figure 7. Some marshy hydrophytes; a- *Swertia iberica* Fisch. ex C.A.Mey. b- *Butomus umbellatus* L.

Aksoy et al., (2023) conducted field studies in 2022 in the aquatic habitats of Bolu Yedigöller National Park, Kargalı Gölcük, and Göksu Nature Parks to track plant species and identify threats. The study identified natural and foreign plant taxa in the lakes and coastal areas. In Yedigöller National Park, 37 taxa from 25 families and 35 genera were identified, in Kargalı Gölcük Nature Park, 8 taxa from 6 families and 6 genera, and in Göksu Nature Park, 18 taxa from 12 families and 14 genera. Similarly, Jhan, (2022) identified 40 plant species of economic importance in 10 aquatic areas in the Nadia region of India. Of these, 38 species were Angiosperms and 2 were Gymnosperms. It was noted that 38 of these plants were used for 49 different diseases in traditional medicine.



Figure 8. *Cardamine raphanifolia* Pourr. near the wetland

Behera and Satapathy, (2021) conducted a study on the diversity and distribution of aquatic plants in the Odisha state of India. In their study, they identified 211 hydrofit plant species from 61 families and 135 genera across 10 different aquatic sites. The aquatic plants were categorized based on their habitat preferences. Marshy hydrophytes had the highest diversity with 131 species, followed by amphibious hydrophytes with 38 species, free-floating hydrophytes with 11 species, submerged hydrophytes with 15 species, and fixed-floating hydrophytes with 9 species. The study revealed that the Poaceae family was the most dominant with 42 species. Other notable families included Cyperaceae with 34 species, Scrophulariaceae with 11 species, Asteraceae with 10 species, Hydrocharitaceae and Commelinaceae with 6 species each, Fabaceae with 5 species, and Alismataceae, Nymphaeaceae, Polygonaceae, and Onagraceae each with 4 species. Kocabaş et al., (2020) conducted a flora study in Kahramanmaraş, where they identified 109 aquatic plant taxa from 30 families and 62 genera. The families with the highest number of aquatic plant taxa in the region were as follows: Poaceae (21 species), Asteraceae, Cyperaceae, and Polygonaceae (8 species each), Onagraceae (6 species), and Lamiaceae, Rosaceae, and Scrophulariaceae (5 species each). Other families such as Fabaceae, Gentianaceae, Plantaginaceae, and Tamaricaceae were represented by 4 species each.

This study provides important baseline data for the conservation of the biological richness of the region by revealing the hydrophyte plant diversity, seasonal variations, and medicinal potential of Artvin province and its districts.

CONCLUSION

Hydrophyte plants occupy different ecological niches in aquatic environments. While these species are of great importance for ecosystems and human life, they face various challenges. These problems stem from both natural factors (changing climate, e-commerce and invasins.,

expanding hydropower, emerging contaminants...) and human activities (organic pollutants, infectious disease agents, pesticides, solid wastes). Issues such as global warming, climate change, pollution, and invasive species have affected the distribution and population sizes of aquatic plants. Some conservation strategies are recommended such as using remote sensing and development of Probabilistic Support Vector Machines (SVM's) model assisted with the GIS technique to study habitat fragmentation and eutrophication.

This study presents data on the hydrophyte plant diversity, identification, habitat information, and local medicinal-aromatic uses of aquatic plants in Artvin province, which contains some of the most natural areas of our country. The data obtained from this study will be highly valuable for future taxonomic and environmental management research, particularly in areas affected by water pollution due to road, dam, and mining activities in Artvin. The study also reveals that 126 hydrophyte plant species found in Artvin have medicinal and aromatic properties, making them economically significant. These species could potentially be collected from the field or cultivated to create value-added products.

This study provides a comprehensive, field-based dataset on the distribution of wetland plants in the region, addressing the knowledge gaps in the Eastern Black Sea region, and having broader implications for wetland management policies and practices. Unfortunately, wetlands in the study area are under significant pressure due to factors such as population growth, overgrazing, deforestation, and construction of buildings and roads. The filling of these water bodies is leading to a loss of hydrofit species diversity. Therefore, it is essential that these wetlands be properly conserved and effectively protected from anthropogenic degradation.

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