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Morphological and distributional characteristics of natural *Sideritis* L. taxa in Isparta province (Türkiye)

Isparta ilindeki (Türkiye) doğal *Sideritis* L. taksonlarının morfolojik ve yayılış özellikleri

Güliz Türkmenoğlu[1]
Hüseyin Fakir[2]

[1] Alanya Alaaddin Keykubat Üniversitesi Alanya
[2] Isparta Uygulamalı Bilimler Üniversitesi, Isparta

Sorumlu yazar (*Corresponding author)*
Güliz Türkmenoğlu
guliz.turkmenoglu@alanya.edu.tr

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Fahrettin Atar
fatar@ktu.edu.tr

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Abstract

This study was conducted between 2020 and 2023 through fieldwork carried out across the Isparta province in southwestern Türkiye, aiming to determine the distribution, morphological characteristics, and habitat preferences of species belonging to the genus *Sideritis*. As a result of the research, a total of 14 taxa were identified in the region (*S. condensata* Boiss. & Heldr.*, S. congesta* P.H. Davis & Hub.-Mor.*, S. cilicica* Boiss. & Balansa, *S. dichotoma* Huter, *S. erythrantha* Boiss. & Heldr. subsp. *erythrantha, S. hispida* P.H. Davis*, S. libanotica* Labill. subsp. *libanotica*,, *S. libanotica* Labill. subsp. *linearis* (Benth.) Bornm., *S. leptoclada* O. Schwarz & P.H. Davis*, Sideritis perfoliata* L., *S. pisidica* Boiss. & Heldr.*, S. phrygia* Bornm. *S. syriaca* L. subsp. *nusairiensis* (Post) Hub.-Mor. and *S. stricta* Boiss. & Heldr.). Twelve of these taxa, excluding *S. libanotica* subsp. *libanotic*a and *S. perfoliata*, are endemic to Türkiye. Morphological characters of each taxon, such as leaf and flower structure, were measured in 50 individuals. The tallest plant was recorded as *S. perfoliata* (81.1 cm), while the shortest was *S. condensata* (24.7 cm). The habitats in which these taxa were observed typically included stony and rocky slopes, forest gaps, maquis clearings, and roadsides. These sites were found on slopes ranging from 5% to 45% and at elevations between 331 m and 2565 m. These results indicate that *Sideritis* species exhibit broad ecological tolerance and can adapt to a wide range of altitudinal zones.

Keywords: *Sideritis* spp., endemic, morphological characteristics, distributional characteristics, Isparta

Öz

Bu çalışma, 2020-2023 yılları arasında Isparta ili genelinde yürütülen arazi çalışmalarıyla, S*ideritis* cinsine ait türlerin yayılışları, morfolojik özellikleri ve habitat tercihlerini belirlemek amacıyla gerçekleştirilmiştir. Araştırma sonucunda, bölgede toplam 14 taksonun (*S. condensata* Boiss. & Heldr.*, S. congesta* P.H. Davis & Hub.-Mor.*, S. cilicica* Boiss. & Balansa, *S. dichotoma* Huter, *S. erythrantha* Boiss. & Heldr. subsp. *erythrantha*, *S. hispida* P.H. Davis*, S. libanotica* Labill. subsp. *libanotica*,, *S. libanotica* Labill. subsp. *linearis* (Benth.) Bornm., *S. leptoclada* O. Schwarz & P.H. Davis*, Sideritis perfoliata* L., *S. pisidica* Boiss. & Heldr.*, S. phrygia* Bornm. *S. syriaca* L. subsp. *nusairiensis* (Post) Hub.-Mor. and *S. stricta* Boiss. & Heldr.) yayılış gösterdiği belirlenmiştir. Bu taksonlardan on ikisi, *S. libanotica* subsp. *libanotica* ve *S. perfoliata* hariç olmak üzere, Türkiye'ye endemiktir. Her bir taksona ait 50 birey üzerinde yaprak ve çiçek yapısı gibi morfolojik karakterler ölçülmüş; en uzun bitki boyunun *S. perfoliata*'da (81,1 cm), en kısa boyun ise *S. condensata*'da (24,7 cm) olduğu tespit edilmiştir. Taksonların yayılış gösterdiği habitatlar genellikle taşlık ve kayalık yamaçlar, orman içi ve maki açıklıkları ile yol kenarları olup, %5–45 eğim aralığında; 331 m ile 2565 m arasında değişen rakımlarda yer almaktadır. Bu durum, *Sideritis* türlerinin geniş bir ekolojik toleransa sahip olduğunu ve farklı yükseklik kuşaklarında adapte olabildiğini göstermektedir.

Anahtar Kelimeler: *Sideritis* spp., endemik, morfolojik özellikler, yayılış alanı özellikleri, Isparta

1. Introduction

Türkiye hosts a remarkable diversity of medicinal and aromatic plants, largely due to its extensive geographical area and; location at the crossroads of continents, and its range of climatic zones (Ceylan, 1995; Arslan et al., 2000; Başer, 2000). The term *medicinal and aromatic plants* encompasses a broad spectrum of species that are rich in bioactive compounds and serve a variety of purposes. In response to increasing global demand for natural and organic products, interest in these plants particularly those cultivated through organic practices has grown significantly (Adam, 2005; HG, 2006). In Türkiye, the use of these plants has risen considerably in recent years, both in raw and processed forms. These plants are utilized not only as culinary ingredients but also as raw materials in pharmaceutical, cosmetic, and industrial applications. As their areas of use continue to expand, the global market for these products shows a consistent upward trend (Soysal, 2000; Baydar, 2016).

Among the vascular plant families rich in medicinal and aromatic species, Lamiaceae is particularly prominent. Predominantly distributed across the Northern Hemisphere, this family ranges from the Arctic to the Himalayas and from Southeast Asia to Hawaii, with extensions into Australia, Africa, and the Americas (Arslan et al., 2000). One of its key to genus, *Sideritis* spp. commonly known as "mountain tea" or "highland tea" is notable for its high species diversity, comprising over 150 recognized taxa. These species are found primarily in regions extending from the Canary Islands and Madeira to the Caucasus, with Spain and Türkiye recognized as major centers of diversity (Gonzales et al., 2011; Kırımer et al., 2001).

In Türkiye, *Sideritis* taxa are crowded mostly in the Mediterranean Region (Baytop, 1984; Sezik and Ezer, 1983; Heywood, 1996; Başer et al., 1997), with 44 species and a total of 55 taxa recorded- 40 of which (approximately 74%) are endemic to Türkiye (Duman et al., 2005; Güner et al., 2012).

Sideritis taxa has long been used in traditional medicine for various purposes, including herbal tea (Baytop, 1991), flavoring agents, analgesics (Bondi et al., 2000), anti-ulcer treatments (Kırımer et al., 1996), antimicrobials (Aytaç and Aksoy, 2000; Kılıç et al., 2003), wound healing agents (Mummenhoff et al., 1997; Hernández-Pérez and Rabanal, 2002; Dulger et al., 2005), muscle relaxants (Yeşilada and Ezer, 1989; Başer et al., 1986; Polat and Satıl, 2012), and antiepileptics (Gergis et al., 1990; Darias et al., 1990), as well as for digestive regulation (Heywood et al., 1978; Kırımer et al., 1999). It is known in Turkish as "yayla çayı" (highland tea) because of its use in treating wounds (Kırımer et al., 1991; Yordanova and Apostolova, 2000).

In recent years, scientific interest in the genus has increased, focusing on its potential in treating colds (Koedam, 1986; Hatipoğlu, 1995), as well as its antioxidant (Bathori et al., 2003; Arabacı et al., 2014; Göger and Krckovska, 2022), antibacterial, antifungal (Tomas-Barberán et al., 1987), anti-inflammatory, immunomodulatory, antistress, and antimicrobial properties (Onat et al., 2015; Yıldırım and Felek, 2023; Günbatan et al., 2023). These biological activities have enhanced interest on *Sideritis* species across various sectors, especially in the pharmaceutical, food, and cosmetics industries, leading to a growing demand for sustainable and high-quality production (Gümüşçü et al., 2011; Öztürk et al., 2012; Çiçekli, 2014).

Field surveys carried out in Isparta province, Türkiye, identified the natural distribution of 14 *Sideritis* taxa*: Sideritis perfoliata* L.*, S. hispida* P.H. Davis*, S. libanotica* Labill. subsp. *linearis* (Benth.) Bornm., *S. libanotica* Labill. subsp. *libanotica* Labill.*, S. condensata* Boiss. & Heldr.*, S. cilicica* Boiss. & Balansa*, S. congesta* P.H. Davis & Hub.-Mor.*, S. stricta* Boiss. & Heldr.*, S. leptoclada* O. Schwarz & P.H. Davis*, S. syriaca* L. subsp. *nusairiensis* (Post) Hub.-Mor.*, S. pisidica* Boiss. & Heldr.*, S. phrygia* Bornm.*, S. dichotoma* Huter and *S. erythrantha* Boiss. & Heldr. subsp. *erythrantha*.. This study aims to examine the morphological characteristics and distribution patterns of these taxa, in order to support their potential applications and contribute to their conservation.

2. Material and Method

This study is based on specimens of 14 different *Sideritis* taxa collected during fieldwork conducted in Isparta province, Türkiye, between 2020 and 2023. The specimens were gathered from predefined sampling sites during the natural flowering seasons of the plants. To ensure representative sampling, sites reflecting a range of ecological conditions were selected. In total, samples were collected from 154 distinct localities within the boundaries of Isparta province (Figure 1).

Prior to the main fieldwork, preliminary surveys were conducted throughout Isparta to determine the natural distribution sites of *Sideritis* taxa. The coordinates of the sites were recorded using the Global Positioning System (GPS), and sampling locations were subsequently selected based on these data. Site selection criteria included the dominance of the target *Sideritis* taxon, the presence of healthy

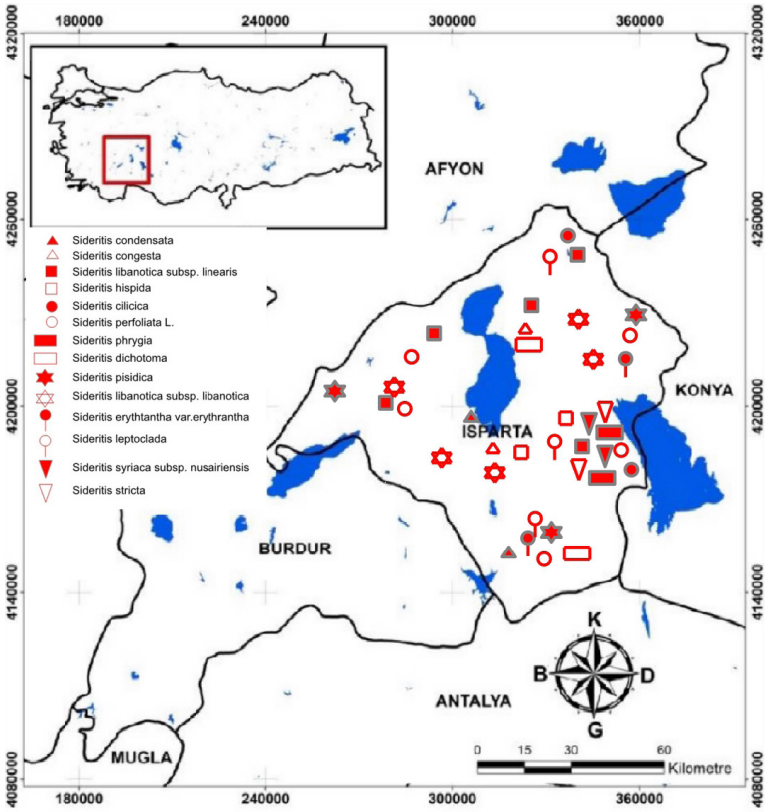

Figure 1. Distribution of sampling sites for *Sideritis* taxa in Isparta province
Şekil 1. Isparta ilindeki *Sideritis* taksonları için örnekleme alanlarının dağılımı

and phenologically mature individuals, representation of varied ecological conditions, and minimal human or animal disturbance.

Sampling was carried out in 20×20 meter (m) plots established at each site. Plant specimens were collected from the plots for herbarium preservation. The sampling process involved the use of standard field equipment.

Collected specimens were transported to the Forest Botany Laboratory at the Faculty of Forestry, Isparta University of Applied Sciences. They were dried under semi-shaded conditions using standard herbarium procedures and deposited in the Herbarium of the Faculty of Forestry, Isparta University of Applied Sciences.

The geographic coordinates of the sampling sites were recorded using a GPS device, whereas elevation, aspect, and slope were determined using an altimeter, a compass, and a clinometer, respectively.

To evaluate morphological variation, 50 individuals per taxon were randomly selected, and morphological traits were measured using a digital caliper. Recorded parameters included leaf width, leaf length, petiole length, calyx length, calyx tooth length, corolla length, and plant height. These measurements provided the primary data for the assessment of morphological variability within natural populations.

3. Results

3.1. Morphological characteristics of *Sideritis* taxa

Morphological measurements including leaf width, leaf length, petiole length, calyx length, calyx tooth length, corolla length, and plant height were conducted on 50 individuals from each of the 14 *Sideritis* taxa naturally occurring in Isparta province. The mean values obtained from these measurements are presented in Table 1. These morphological measurements reveal significant size differences among *Sideritis* taxa. Notable variations have been observed in leaf width, leaf length, plant height, petiole length, and calyx dimensions. While some species exhibit small and compact structures, others are characterized by larger and taller plants. These morphological differences suggest that the species develop under varying environmental conditions and likely employ different adaptation strategies.

Table 1. Measurements for leaf, calyx, corolla, and plant height of *Sideritis* taxa
Tablo 1. *Sideritis* taksonlarının yaprak, kaliks, taç ve bitki boyu ölçümleri

Variety	*S. erythrantha* var *erythrantha* (Endemic, Figure 2 B)		
Measurements	Min. (cm)	Max.(cm)	Mean(cm)
Leaf width	0.5	1.4	1.1
Leaf length	1.4	2.5	1.9
Petiole length	0.1	0.6	0.3
Calyx length	0.5	0.6	0.6
Calyx tooth length	0.1	0.2	0.2
Corolla length	0.6	0.7	0.6
Plant height	24	36	28.1

Species	*S. leptoclada* (Endemic, Figure 2 D)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	2.4	5.6	3.6
Leaf length	1.4	3.1	2.6
Petiole length	0.1	0.7	0.3
Calyx length	0.6	0.7	0.6
Calyx tooth length	0.1	0.2	0.1
Corolla length	0.9	1.2	1.0
Plant height	30	49	36.4

Subspecies	*S. libanotica* subsp. *linearis* (Endemic, Figure 2 F)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	0.3	2	1.1
Leaf length	1.3	7.2	4.2
Petiole length	sessile	sessile	sessile
Calyx length	0.5	0.7	0.6
Calyx tooth length	0.5	0.7	0.6
Corolla length	1	1.3	1.1
Plant height	35	76	52.3

Subspecies	*S. libanotica* subsp. *libanotica* (Figure 2 H)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	0.4	2	1.9
Leaf length	1.3	7.6	4.1
Petiole length	sessile	sessile	sessile
Calyx length	0.5	0.7	0.6
Calyx tooth length	0.1	0.2	0.1
Corolla length	1	1.2	1.1
Plant height	35	76	52.7

Species	*S. perfoliata* (Figure 2 K)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	2.4	3.6	2.9
Leaf length	5.4	6.9	5.9
Petiole length	sessile	sessile	sessile
Calyx length	1	1.4	1.16
Calyx tooth length	0.3	0.5	0.38
Corolla length	1.3	1.5	1.4
Plant height	52	92	81.1

Species	*S. condensata* (Endemic, Figure 2 C)		
Measurements	Min. (cm)	Max. (cm)	Mean (cm)
Leaf width	2.1	2.9	2.6
Leaf length	3	5	3.6
Petiole length	0.1	0.7	0.3
Calyx length	0.8	0.9	0.8
Calyx tooth length	0.3	0.4	0.3
Corolla length	0.9	0.11	1
Plant height	21	31	24.7

Species	*S. congesta* (Endemic, Figure 2 E)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	0.5	1.3	0.9
Leaf length	2	3	2.5
Petiole length	sessile	sessile	sessile
Calyx length	0.7	1.2	0.9
Calyx tooth length	0.3	0.5	0.4
Corolla length	1.2	1.6	1.44
Plant height	31	42	36.4

Species	*S. pisidica* (Endemic, Figure 2 G)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	0.9	2.4	1.6
Leaf length	4	9	6.6
Petiole length	1	1.7	1.4
Calyx length	0.8	1	0.9
Calyx tooth length	0.2	0.4	0.34
Corolla length	0.9	1.4	1.17
Plant height	63	78	64.4

Species	*S. phrygia* (Endemic, Figure 2 I)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	0.5	1.1	0.9
Leaf length	2.8	4.1	3.8
Petiole length	sessile	sessile	sessile
Calyx length	0.8	1	0.9
Calyx tooth length	0.1	0.2	0.2
Corolla length	0.2	0.3	0.3
Plant height	30	41	36.3

Species	*S. stricta* (Endemic, Figure 2 L)		
Measurements	Min. (cm)	Max. (cm)	Mean (cm)
Leaf width	0.6	1.2	0.9
Leaf length	3.2	5.4	3.6
Petiole length	sessile	sessile	sessile
Calyx length	0.97	1.11	1.02
Calyx tooth length	0.3	0.5	0.34
Corolla length	1.2	1.5	1.37
Plant height	52	67	58.7

Table 1 (continued). Measurements for leaf, calyx, corolla, and plant height of *Sideritis* taxa
Tablo 1 (devamı). *Sideritis* taksonlarının yaprak, kaliks, taç ve bitki boyu ölçümleri

Species	*S. dichotoma* (Endemic, Figure 2 M)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	0.8	1.2	0.8
Leaf length	4.1	5.7	5.1
Petiole length	1	3.3	1.9
Calyx length	0.8	1	0.9
Calyx tooth length	0.3	0.4	0.3
Corolla length	0.7	0.9	0.8
Plant height	21	31	26.1

Species	*S. cilicica* (Endemic, Figure 2 O)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	1	3	1.8
Leaf length	3	6	5.1
Petiole length	sessile	sessile	sessile
Calyx length	1	1.2	1.1
Calyx tooth length	0.2	0.5	0.33
Corolla length	1.1	1.3	1.2
Plant height	31	46	38.7

Subspecies	*S. syriaca* subsp. *nusairiensis* (Endemic, Figure 2 N)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	1.1	1.6	1.4
Leaf length	3	6	3.5
Petiole length	Sessile	sessile	Sessile
Calyx length	0.7	0.9	0.76
Calyx tooth length	0.2	0.26	0.22
Corolla length	0.8	1.4	1.08
Plant height	19	31	24.6

Species	*S. hispita* (Endemic, Figure 2 P)		
Measurements	Min.(cm)	Max.(cm)	Mean(cm)
Leaf width	0.4	1.2	0.8
Leaf length	1	8	5.5
Petiole length	Sessile	sessile	sessile
Calyx length	1	1.2	1.1
Calyx tooth length	0.3	0.4	0.33
Corolla length	1.1	1.4	1.1
Plant height	34	51	38.9

3.2. Habitat characteristics of *Sideritis* taxa

In this study, the ecological distribution characteristics of 14 *Sideritis* taxa occurring within Isparta province were thoroughly evaluated. The habitats in which these taxa are found generally consist of rocky and stony terrains, forest clearings, roadsides, maquis vegetation, cliffs, and sloping hillsides, with observations predominantly concentrated on slopes ranging from 5% to 55%. In terms of aspect, south, southeast, and southwest-facing slopes are predominant, although some taxa were also found on north, northeast, northwest, and east-facing slopes.

There are significant differences in the altitudinal distribution ranges among taxa. For instance, *Sideritis syriaca* subsp. *nusairiensis* has the highest recorded altitude at 2,564 m, whereas *S. libanotica* subsp. *libanotica* is found at the lowest elevation, 335 m. Additionally, taxa such as *S. condensata*, *S. perfoliata*, and *S. dichotoma* are notable for their wide altitudinal distribution ranges.

Tree species co-occurring in the distribution areas include *Pinus brutia* Ten., *P. nigra* Arnold, *Cedrus libani* A. Rich., *Juniperus excelsa* M. Bieb. subsp. *excelsa*, *Juniperus oxycedrus* L. var. *oxycedrus*, *Quercus cerris* L., *Q. infectoria* G. Olivier, *Abies cilicica* (Antoine & Kotschy) Carrière, *Cupressus sempervirens* L., *Platanus orientalis* L. and *Taxus baccata* L. These taxa act as either dominant or accompanying elements in the habitats of the respective taxa, depending on elevation and local environmental conditions.

Regarding the shrub layer, species such as *Pistacia terebinthus* L., *Daphne sericea* Vahl., *Myrtus communis* L., *Quercus coccifera* L., *Crataegus monogyna* L., *Paliurus spina-christi* Mill., *Styrax officinalis* L., *Phillyrea latifolia* L., *Fontanesia phillyreoides* Labill., *Nerium oleander* L., *Vitex agnus-castus* L., *Rubus sanctus* Schreber, and *Spartium junceum* L. were frequently recorded in the sampling sites. Most of these species are drought-tolerant and represent xerophytic elements characteristic of Mediterranean shrublands.

The herbaceous layer is highly diverse. Commonly observed species include *Helichrysum italicum* (Roth) G. Don subsp. *italicum*, *Salvia tomentosa* Mill., *Origanum onites* L., *Trifolium arvense* L., *Coronilla varia* L., *Senecio vulgaris* L., *Anthemis cretica* L., *Astragalus onobrychis* L., *Asparagus acutifolius* L., *Lathyrus annuus* L. and *Micromeria myrtifolia* Boiss. & Hohen. These species are typically found in rocky, sun-exposed habitats and can be considered ecological indicator components.

The ecological characteristics of the habitats where *Sideritis* taxa are distributed show considerable variation in terms of habitat types and plant communities. This diversity indicates that both microclimatic and edaphic factors play significant roles in habitat preference. Moreover, the rich accompan-

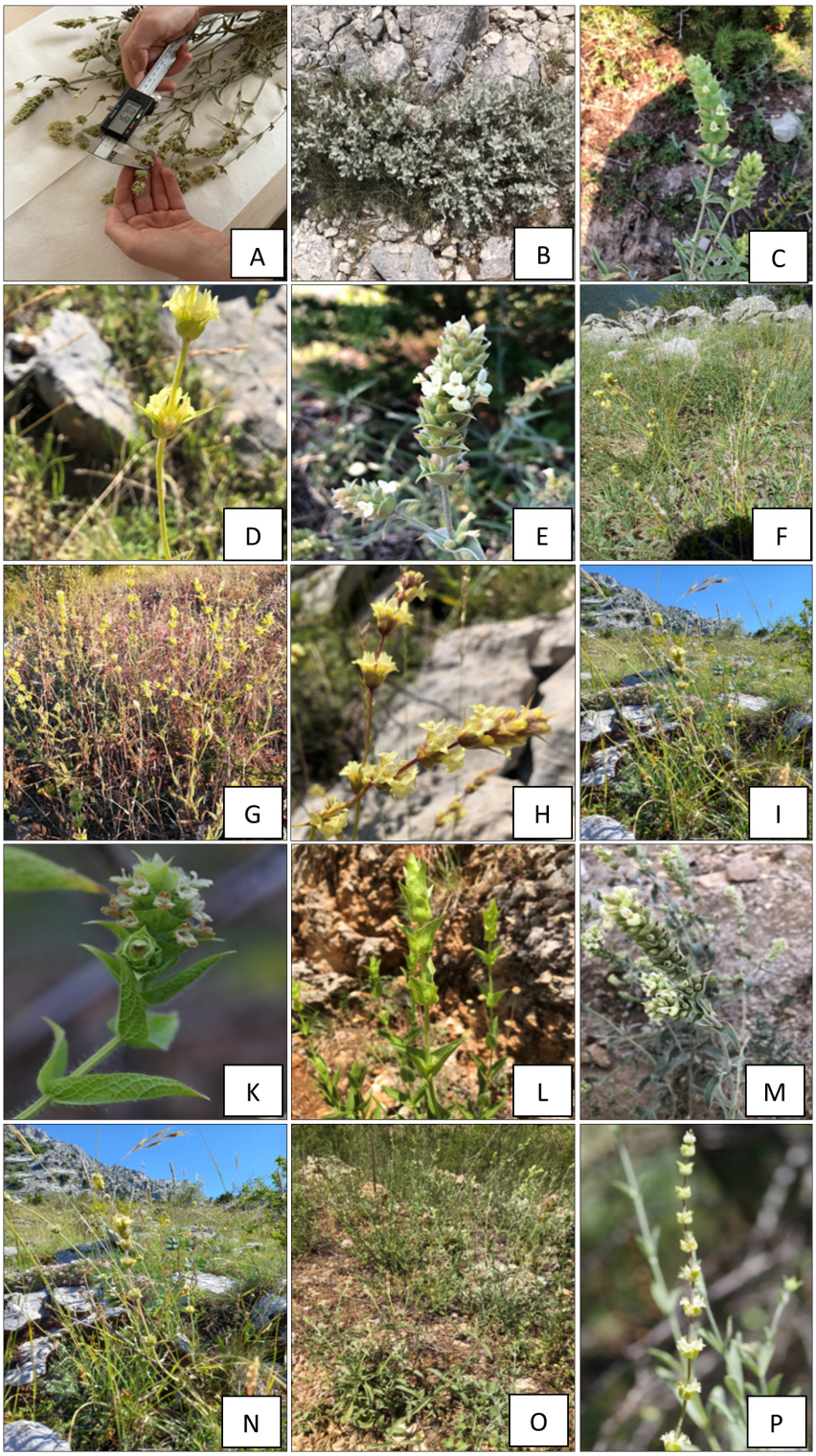

Figure 2. Leaves and flowers of *Sideritis* taxa: A) Measurements taken with a digital caliper, B) *S. erythrantha*, C) *S. condensata*, D) *S. leptoclada*, E) *S. congesta*, F) *S. libanotica* subsp. *linearis*, G) *S. pisidica*, H) *S. libanotica* subsp. *libanotica*, I) *S. phrygia*, K) *S. perfoliata*, L) *S. stricta*, M) *S. dichotoma*, N) *S. syriaca* subsp. *nusairiensis*, O) *S. cilicica*, P) *S. hispida*

Şekil 2. *Sideritis* taksonlarının yaprak ve çiçekleri: A) Dijital kumpasla alınan ölçümler, B) *S. erythrantha*, C) *S. condensata*, D) *S. leptoclada*, E) *S. congesta*, F) *S. libanotica* subsp. *linearis*, G) *S. pisidica*, H) *S. libanotica* subsp. *libanotica*, I) *S. phrygia*, K) *S. perfoliata*, L) *S. stricta*, M) *S. dichotoma*, N) *S. syriaca* subsp. *nusairiensis*, O) *S. cilicica*, P) *S. hispida*

ying flora identified in these areas highlights the ecological value and biodiversity significance of the ecosystems where *Sideritis* taxa occur.

4. Discussion and Conclusion

This study investigated the morphological and habitat characteristics of 14 *Sideritis* taxa naturally occurring in the Isparta province. The findings were compared with the descriptions provided in Flora of Turkey and the East Aegean Islands (Davis, 1982) and the Revision of Turkish *Sideritis* L. Species (Duman et al., 2005). Overall, the morphological traits of most taxa were found to be consistent with the descriptions reported by Davis (1982) and Duman et. al. (2005); however, minor variations were noted in key characteristics

Deviations were observed in traits such as calyx tooth length, leaf width, corolla length, verticillaster spacing, and plant height in taxa like *S. libanotica* subsp. *linearis*, *S. leptoclada*, *S. perfoliata*, *S. phrygia*, *S. dichotoma*, and *S. erythrantha* subsp. *erythrantha*. For example, the calyx tooth length of *S. libanotica* subsp. *linearis* was measured at 6 mm, significantly higher than the 1.5-2.5 mm range indicated by Davis (1982). Similarly, the leaf width of *S. leptoclada* (3.6 cm) and the verticillaster spacing of *S. phrygia* (10.6 cm) exhibited substantial deviations from the values reported in the literature.

These differences are likely attributed to factors such as genetic variation among populations, microhabitat differences, ecological conditions, local adaptations, and phenotypic plasticity. Especially in species with a wide distribution range, morphological characters may vary in response to geographic or environmental pressures.

In contrast, the morphological characteristics of taxa such as *S. cilicica*, *S. congesta*, *S. pisidica*, and *S. stricta* were found to largely align with the values provided by Davis (1982) and Duman et al. (2005). This suggests that some taxa may exhibit more stable morphological forms with less phenotypic plasticity in response to environmental fluctuations.

Additionally, in some taxa, measurements that consistently deviated from the values may be due to technical factors, such as variations in measurement methodology, developmental stage (juvenile/adult individuals), sampling time, and whether the material was fresh or pressed. Therefore, it is essential to adopt standardized methods in morphological assessments to ensure that samples represent a wide geographical distribution and that results are reproducible across different studies. This study provides valuable data on the ecological and morphological variations of *Sideritis* taxa, offering insights for future research in the fields of floristics, taxonomy, and conservation biology.

This study revealed that the habitat preferences and ecological distribution characteristics of 14 *Sideritis* taxa naturally occurring in Isparta province are highly diverse. The occurrence of these taxa across varying slope gradients, aspects, and altitudinal ranges indicates their considerable adaptability to environmental factors. Furthermore, the rich accompanying woody and herbaceous flora demonstrates that these habitats are ecologically significant ecosystems, not only for *Sideritis* taxa but also for the overall biodiversity of the region. The contribution of microclimatic and edaphic conditions to this diversity is evident, and these findings provide a solid foundation for future studies aimed at understanding the ecological requirements and conservation of *Sideritis* species.

Author Contributions

Concept/Planning: G. Türkmenoğlu, H. Fakir-Data Collection/Processing: G. Türkmenoğlu, H. Fakir -Literature Review: G. Türkmenoğlu, H. Fakir-Writing: G. Türkmenoğlu, H. Fakir-Review and Editing: G. Türkmenoğlu, H. Fakir

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