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Araştırma Makalesi / Research Article

MORPHOLOGICAL AND CHOROLOGICAL SUTUDY ON THE GENUS *ORCHIS* L. (ORCHIDACEAE) GROWING IN EDIRNE

Necmettin GÜLER*, Nesibe BAŞAK
Trakya University, Faculty of Arts and Sciences, Department of Biology, Gullapoglu Campus, 22030 Edirne-Turkey.
*Corresponding author, e-mail: *nguler@trakya.edu.tr*

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Abstract: This study was performed in order to determine the genus of *Orchis* L. (Orchidaceae) species growing in Edirne. Morphological characters, detailed drawings and distributions of 8 species of the genus *Orchis* growing around Edirne, most particularly inside the A1 (E) square constituting our study area, were reported. The studied species are *O. coriophora* L., *O. tridentata* Scop., *O. purpurea* Hudson, *O. simia* Lam., *O. morio* L. subsp. *morio, O. papilionacea* L. var. *rubra* (Jacq. ex Murray) Brot., *O. pinetorum* Boiss. & Kotschy and *O. laxiflora* Lam.
Keywords: Orchidaceae, *Orchis*, Edirne, Orchids.

Introduction

Orchidaceae is one of the world's richest family in terms of the genera and species involved. It is also one of the largest family of flowering plants over the world with 25.000-35.000 species placed in 600-800 genera (Sezik 1967). It is represented in Turkey with 24 genera, 146 species, 32 subspecies and 10 varieties making a total of 170 taxa and among these *Orchis* genus has 26 species, 7 subspecies and 3 varieties (Sezik 2002). The species of this genus in Thrace region is 13 but 8 of them are present throughout the studied area.

Although Turkey has a rich orchid flora compared to the neighbouring countries and there exist numerous studies on this group (Sezik 1967, 1982, 1984, 2002, Baytop & Sezik 1968, Taubenheim 1979, 1980, Sunderman & Taubenheim 1981, 1982, Renz & Taubenheim 1984, Sezik & Baykal 1991) the studies up to date on Thrace region (Sezik 1988) and Edirne flora are not enough in number and not detailed. So, this study was performed as there was no study so far on distributions and morphological characters of *Orchis* species growing inside the managerial borders of Edirne city. *Orchis* species growing naturally around Edirne was collected and their characteristics were determined by general aspect of the plants and dissected by their parts of the flowers.

The studied area Edirne is an important region as it has borders with both Bulgaria and Greece and is a part of Thrace region which forms a connection bridge between Europe and Anatolia. According to Dönmez (1968) it also possesses importance by being an anthropogenic step area. Apart from these, the vegetation of the region is composed of grasslands and patchy tree formations located among sand dunes, wetlands and agricultural fields.

This study was performed in order to reveal the morphological characteristics of *Orchis* species growing inside Edirne city borders.

Materials and Methods

The material of study was collected between the years 1995 and 1996 in Edirne province. The collection trips were done from March to June, the period when it was flowering and fruiting times. The materials collected are deposited in Edirne Trakya University, Faculty of Arts & Science Herbarium (EDTU). The identified specimens were also compared with the *Orchis* species kept in Istanbul University Pharmacy Faculty Herbarium (ISTE). The distributions of the species determined are shown on map in Figure 1.

Related flora and monographs were used in identification of the specimens (Boissier 1884, Jordanov et al. 1964, Ross-Craig 1971, Renz 1978, Tutin et al. 1980, Renz & Taubenheim 1984, Sezik 1984, Buttler 1986, Delforge 1995, Kreutz 1998, 2000,...). Identifications were based on the collected specimens. For this purpose, a number of specimens were collected from different populations, their photographs were taken in order to show the general appearance, flowers and habitat, their measurements were taken and general appearances as well as some parts of the specimens showing typical characteristics of the species were drawn (Fig. 2-9).

Results

Orchis species are erect perennials with globose to ellipsoid undivided tubers. Leaves unspotted or spotted, ± arranged near base. Emerging spike enclosed by spathe-like leaves, many-flowered, ± cylindrical. Flowers in various shades of red, purple, and yellow, rarely white. Bracts membranous. Lateral sepals spreading to reflexed or all sepals connivent with petals, forming a hood. Labellum ± directed down-wards, entire or 3-lobed, with entire or ± divided middle lobe, glabrous or ± papillose above, with saccate to filiform spur. Another firmly attached to short; erect

column, folded median part of rostellum placed between the parallel anther cells (loculi). Pollinaria 2, clavate, narrowed below to caudicles, attached to separate viscidia, which are enclosed in a single pouch (bursicula). Ovary cylindrical, sessile, twisted, glabrous.

A key is also prepared (adapted from Renz & Taubenheim 1984) for the identifications *Orchis* species growing surrounding Edirne:

1. Spur curving upwards or straight and directed upwards, sometimes ± horizontal
   2. Sepals and petals ± connivent, forming a loose hood **5. *morio*** subsp. ***morio***
   2. Sepals spreading, lateral ± erect or reflexed
      3. Leaves rosulate, oblong-oblanceolate, ± obtuse or acuminate; forest plant **7. *pinetorum***
      3. Leaves not rosulate, lanceolate to linear, tapering; marsh plants **8. *laxiflora***
1. Spur clearly directed downwards
   4. Labellum entire, sometimes minutely emarginate in front **6 . *papilionacea*** subsp**. *rubra***
   4. Labellum 3-lobed, middle lobe ± divided
      5. Middle lobe of labellum rather small, triangular, acute, brownish-purple, often with green stripes, with darker papillae above **1. *coriophora***
      5. Middle lobe of labellum enlarged, 2-lobulate or deeply emarginate
         6. Bracts prominent, equalling ovary; middle lobe of labellum ± emarginate, sometimes with a narrow acute tooth in the notch, sepals and petals with red veins **2. *tridentata***
         6. Bracts much shorter than ovary; middle lobe of labellum deeply bilobed with a conspicuous tooth in between
            7. Segments of middle lobe of labellum similar to lateral lobes, all of them linear-obtuse, slightly involute **4. *simia***
            7. Segments of middle lobe of labellum ± elliptic to oblong or broadly cuneate, distinct from lateral lobes 18. Lobes of labellum with irregular crenulate or dentate margins; sepal hood dark brownish-purple **3. *purpurea***

1. *O. coriophora* L. Sp. Pl. 940 (1753). Fig. 1,2.

Syn: *O. fragans* Pollini, Elem. Bot. Comp. 2:155, t. ult. f.2 (1811); *O. cassides* Bieb., Fl. Taur.-Cauc. 3:600 (1819).

Ic: Reichb. Ic. Fl. Germ. 13/14: t. 14 & 15(1850), as *O. fragans* and *O. coriophra* respectively; Sunderm., Europ. Medit. Orchid. ed. 2:124, f. 7.1 (1975).

Type: Described from S. Europe (Hb. Linn. 1054/18, photo!).

Plant 23-43 cm long. Tubers 2, ovate-oblong, oblong or ellipsoid, 1-2.4 cm. Leaves 12-16, crowded near base; basal leaves 4-10, ± erect, linear-lanceolate, acuminate, slightly keeled, 8-11.5 x 0.8-1.2 cm; cauline leaves 2-5, smaller, sheathing, upper ones bract-like. Spike cylindrical, 13.5-4.5 cm, densely many-flowered (14-50). Bracts linear-lanceolate or linear, acuminate, exceeding ovary 11-16 x 2-3 mm, greenish white, 1-veined. Flowers small, dark purple, brownish-red or greenish-red, foul-smelling or sweet-scented. Sepals united into a hood, with slightly curved apex; dorsal sepal 6-7.5 x 1.5-2.5 mm, ovate-lanceolate to oblong, acute or acuminate, 1-veined; lateral sepals 7.5-9 x 2-3 mm, whitish midrib and dark greenish veined, oblique ovate-lanceolate, acute or acuminate, 1-veined. Petals 4.5-6.5 x 0.7-1 mm, linear-lanceolate, acute or acuminate, inconspicuous 1-veined. Labellum ovate, 5-6.5 x 5-6 mm, inconspicuous 1-veined, 3-lobed, deflexed, reddish-green with purplish papillae and spots; lateral lobes rhombic, ± crenulate, 2.5-4 x 2-2.2 mm; middle lobe ligulate-oblong, entire, exceeding lateral lobes, 2-4 x1.3-2 mm. Spur conical, slightly curved, 5-7 mm, shorter than ovary. Ovary 8-11 mm, twisted, glabrous, cylindrical; column short 3-3.5 mm. *Fl. 4-6. Wet meadows, nr streams, also in dry sandy places, open forests, slightly acid to slightly alkaline soils, 20-1930 m.*

This species was found as very densely represented populations in 3 localities in the study area. It distributes throughout Turkey widespread and throughout the world mainly in N, W & C Europe, Mediterranean area, Caucasia, Turkestan, Transcaspia, N Iraq, N, NW & W Iran.

2. *O. tridentata* Scop. Fl. Carn. ed. 2,2:190 (1772). Fig. 1,3.

Syn: *O. variegata* All., Fl. Pedem. 2:147 (1785); *O. acuminata* sensu Brongn. in Bory, Exped. Sci. Morée 262 (1832) non Desf. (1799); *O. commutata* Tod., Enum. Orch. Sic. 24 (1842) nom. illegit.; *O. brevilabris* Fisch. & Mey. in Ann. Sci. Nat. ser. 4, 1:30 (1854).

Ic: Sunderm., Europ. Medit. Orchid. ed. 2:128, f. 7.3. (1975); Renz in Rech. fil., Fl. Iranica 126: t. 66 (1978).

Type: [Yugoslavia, Slovenia] in collibus circa Idriam, Scopoli.

Plant 18-47 cm. Tubers 2 (scarcely 3), ovate or subglobose, 1-3 cm. Leaves 4-11, crowded near base; basal leaves 3-6, ovate-lanceolate or oblong-lanceolate, 3-12 x 1-2.5 cm and a few amplexicaul sheaths above. Spike globose to ovoid, 2.5-5.5 cm, ± densely flowered (14-40); flowers small, weakly scented. Bracts green or pale pink,

lanceolate, acuminate, equal or shorter than ovary. Sepals and petals connivent in ovoid hood and sepals free at the tip. Sepals oblong-lanceolate, acuminate, veined dark red; dorsal sepal 7-10 x 2-2.5 mm, acute; lateral sepals oblique, 9-13 x 2-3.7 mm, acuminate. Petals ligulate or narrowly lanceolate, 1-veined, 6-8 x 0.7-1 mm. Labellum 6-8 x 5-9 mm, whitish-rose with darker purple dots, papillose, 3-lobed; lateral lobes 3-5 x 1.2-3 mm, falcately-directed forwards, truncate, dentate; middle lobe exceeding lateral lobes, 4-6 x 4-6 mm, cuneate, shallowly notched or bilobed with diverging denticulate lobules, sometimes with a minute tooth between. Spur cylindrical, shorter than ovary, 6-8 mm, descending. Ovary 8-12 mm, twisted, glabrous, cylindrical; column short, 2.5-4 mm. *Fl. 4-5. Grassy places, macchie, scrub, s.l.-1600 m.*

This species was found as very densely represented populations in 17 localities in the study area. It distributes throughout Turkey mainly Outer Anatolia and throughout the world mainly in W. & C. Europe, Mediterranean area, Caucasia, N Iraq, N, NW & W Iran. Mediterranean element.

3. *O. purpurea* Hudson Fl. Angl. ed. 1:334 (1762). Fig. 1,4.

Syn: *O. fusca* Jacq., Fl. Austr. 4:4, t. 307 (1776); ?*O. maxima* C. Koch in Linnaea 19:14 (1846); *O. caucasica* Regel in Ind. Sem. Horti Petrop. 1868: Suppl. 1869:22 (1870).

Ic: Reichb. fil., Ic. Fl. Germ. 13/14: t. 26 (1850); Sunderm., Europ. Medit. Orchid. ed. 2:130, f.7.7 (1975).

Type: [England: Kent] in collibus cretaceis. At Northfleet near Gravesend, Sherard (holo. OXF).

Stout plant, 35-80 cm. Tubers 2 (scarcely 3), oblong-ovoid, elipsoid or subglobose, to 3-5 x 2-3 cm. Leaves near base 5-10, ovate-oblong or broadly ovate-lanceolate, 12.5-25 x 3-10 cm. Spike 5-29 cm tall, ± dense and many-flowered (25-100), flowers large. Bracts small, membranaceous, ovate-lanceolate, 2-4 x 1-2 mm. Sepals ovate, elliptic-ovate, acute or subobtuse-acuminate, 3-veined, 9-14 x 3-9 mm, forming a globose hood, uniformly coloured or with conspicuous dense dark reddish-brown spots outside. Petals linear-lanceolate, narrower near base, 7-12 x 1-1.5 mm, 1-veined. Labellum flat, 10-16 x 10-16 mm, 3-lobed, whitish or pale rose, densely spotted with tufts of reddish-purple papillae; lateral lobes linear, 6-13 x 1-3 mm; middle lobe obcordate or obovate-cuneate, 7-14 x 8-15 mm, slightly bilobed; lobules broadly rhombic, rounded or truncate, irregularly crenulate, mostly with a tooth in between. Spur cylindrical, curved forwards, 4-6 mm, nearly half as long as ovary. Ovary 9-15 mm, twisted, glabrous, cylindrical; column short, about 3 mm. *Fl. 4-5. Glades and edges of deciduous forests, scrub, on calcareous soils, 10-1750 m.*

This species was found as very densely represented populations in 24 localities in the study area. It distributes throughout Turkey mainly Outer Anatolia; rare in S. & Inner Anatolia and throughout the world mainly in N, W, C & S Europe, Cyprus, Caucasia. Euro-Siberian element.

4. *O. simia* Lam., Fl. Fr. ed. 1, 3:507 (1779). Fig. 1,5.

Syn: *O. tephrosanthos* Vill., Hist. Pl. Dauph. 2:32 (1787); *O. simia* Lam. var. *laxiflora* Boiss. Fl. Or. 5:63 (1882)!

Ic: Reichb. fil., Ic. Fl. Germ. 13/14: t. 21 (1850); Renz in Rech. fil., Fl. Iranica 126: t. 39 & 40 (1978).

Type: Described from France (holo. P-Lam.).

Plant 13-45 cm. Tubers 2, ovoid or ellipsoid, 1.3-2.3 x 1.3-2 cm. Leaves 5-7 (near base), broadly lanceolate, oblong-lanceolate or ovate, 5.5-10 x 1.6 x 3.5 cm, upper ones sheath-like. Spike ovoid to conical, 3-6 cm, dense (11-26-flowered) and terminal flowers opening first. Bracts small, membranaceous, triangular-ovate, 1.5-4 x 1-1.5 mm. Sepals 10-11.5 x 2-3.5 mm, ovate-lanceolate, ovate to narrowly elliptic, longer acuminate, hood ash-grey outside with rose dots or veins. Petals 6-8.5 x 0.5-0.7 mm, linear, acuminate, 1-veined. Labellum 10-15 x 6-12 mm, centre whitish-rose with minute purplish papillae, deeply segmented near base into linear lateral lobes, middle lobe ligulate, divided into 2 diverging linear lobules, with prominent tooth in between; all lobules 5-8.5 x 0.4-0.5 mm, darker purple towards apex, ± curled upwards. Spur cylindrical, 4-5 mm, c. half as long as ovary. Ovary 6-9 mm, twisted, glabrous, cylindrical; column short, about 2.5-3.5 mm. *Fl. 3-5. Grassy hillsides, scrub, macchie, on calcareous soils, s.l.-1200 m.*

This species was found as sparsely represented populations in 4 localities in the study area. It distributes throughout Turkey scattered mainly in Outer Anatolia and throughout the world W & C Europe, Mediterranean area, Caucasia, N Iraq, N, NW & W Iran. Mediterranean element?

5. *O. morio* L. Sp. Pl. 940 (1753). Fig. 1,6.

subsp. *morio*

Ic: Reichb. fil., Ic. Fl. Germ. 13/14: t. 11 (1850); Sunderman; Europ. Medit. Orchid. ed. 2:136, f. 7. 11(1975).

Type: Described from Europe (Hb. Linn. 1054/19, photo!).

Plant rather robust, 9-38 cm. Tubers 2, subglobose or ovoid, 1.6-2.3 x 1.3-2.1 cm. Leaves 9-15, oblong-ligulate, rosulate, spreading. Spike ovoid, 5-8 cm, dense or ± elongate and lax (6-27-flowered). Flowers red-purple, rarely

rose or greenish-white. Bracts lanceolate or broadly lanceolate, 1-4-veined, green or reddish, 9-16 x 2.5-4 mm, equalling or exceeding ovary. Sepals forming subglobose obtuse helmet, with conspicuous dark purple or greenish veins; dorsal sepals slightly narrow, 6-8 x 2-3 mm, 3-5-veined; lateral sepals 8-10 x 3-4 mm, 7-10-veined. Petals more narrower and smaller than sepals, oblong, obtuse, 5-7 x 1-2 mm, 1-3-veined. Labellum large, mostly broader than long, transversely ovate to rectangular, 6-9 x 7.5-12 mm, ± 3-lobed; middle lobe usually shorter, truncate to emarginate, irregularly dentate; lateral lobes broadly rounded. Spur cylindrical, ascending, inflated and often ± notched at tip, shorter than ovary, 7-10 mm. Ovary 10-20 mm, twisted, glabrous, cylindrical; column short, 2.5-3.5 mm. *Fl. 3-5. Grassy hillsides, edges and open forest, macchie, scrub, 1-1120 m.*

This species was found as very densely represented populations in 20 localities in the study area. It distributes throughout Turkey mainly N & adjacent W Anatolia; rare in S. and throughout the world mainly in N, W, C & SE Europe, Caucasus.

6. *O. papilionacea* L., Systema ed. 10:1242 (1759). Fig. 1,7.

Syn: *Vermeulenia papilionacea* (L.) Löve & Löve in Acta Bot. Neerl. 21:554 (1972).

var. *rubra* (Jacq. ex Murray) Brot., Phyt. Lusit. 2:17 (1827).

Syn: *O. rubra* Jaq. ex Murray, Syst. Veg. ed. 14:809 (1784); Jacq., Ic. Pl. Rar. 1, 18: t. 183 (1787).

Lectotype: Jacq., op. cit. t. 183 (1787).

Plant 20-26 cm. Tubers 2, globose or ovoid, about 2-3 cm. Leaves 13-14 lanceolate unspotted, crowded near base, 4-7 x 1-1.5 cm, upper leaves erect and sheathing. Spike 3-5 cm, lax, 5-10-flowered. Bracts prominent, lanceolate or ovate-lanceolate, acute, 12-26 x 4-7 mm, red, as long as or exceeding ovary, 7-veined. Flowers rather large. Sepals converging into a loose purple hood, conspicuously 3-5-veined; dorsal sepal 10-12 x 2.5-4 mm, lateral ones sometimes ± spreading, 12-15 x 3-5 mm. Petals linear-oblong, smaller than sepals, 3-4-veined. Labellum undivided, about 12 x 7 mm, rhombic to obovate from a cuneate base, red to rosy, with darker longitudinal stripes and spots, rarely without marks. Spur cylindrical, descending, attenuate towards apex, about 8 mm, half as long as ovary. Ovary 14-16 mm, twisted, glabrous, cylindrical; column short, 3-5 mm. *Fl. 4-5. Dry grassy places, macchie, open Pinus forests, s.l.-1070 m.*

This species was found as rarely represented populations in 2 localities in the study area. It distributes throughout Turkey scattered in Outer Anatolia and throughout the world mainly in Mediterranean area. Mediterranean element.

7. *O. pinetorum* Boiss. & Kotschy, in Boiss., Fl. Or. 5:68 (1882)! Fig. 1,8.

Syn: *O. mascula* (L.) L. subsp. *pinetorum* (Boiss. & Kotschy) G. Camus, Monogr. Orchid. Eur. 156 (1908).

Ic: Renz in Rech. Fil. Fl. Iranica 126: t. 36 (1978).

Type: [Turkey C5 Adana] in sylvis subalpinis montium Kassan Oghlu Ciliciae orientalis ad pagum Gorumse (Görümze nr Feke), 1645 m, [1859], Kotschy 71 (holo. G!).

Plant 25-58 cm. Stem slender, often flexuous. Tubers 2, subglobose, ovoid or ovate-oblong, to 2.3 x 2.1 cm. Basal leaves 3-5, obovate to oblong, spreading, 8-13 x 2-3 cm, shining-green, unspotted (seldom faintly marked with dark lines near base); upper ones sheath-like. Spike 10-20 cm, cylindrical, lax, 15-40-flowered. Flowers mauve to red. Bracts lanceolate or linear-lanceolate acuminate, 8-13 x 2-3 mm, 1-3-veined, red-purple, as long as ovary. Sepals 8-10 x 2.5-4 mm, ovate or oblong-lanceolate, obtuse or acute, 3-4-veined; dorsal sepal ± erect, slightly concave, lateral ones oblique and spreading to reflexed. Petals about 6.5 x 2.1 mm, somewhat loose hood with dorsal sepal, obliquely ovate-lanceolate, ± obtuse, 3-veined. Labellum about 8-15 mm, 3-lobed, convex, with few darker dots near base or undotted; middle lobe elongate, clearly exceeding the ovate lateral lobes, reniform to nearly 2-lobed. Spur slightly curved upwards, ± dilated at tip, 10-12 mm, ± equalling ovary. Ovary 12-13 mm, twisted, glabrous, cylindrical; column short, 4-5 mm. *Fl. 4-5. Glades and edges of coniferous forest, Fagus sp. forest, Quercus sp. scrub, 150-2400 m.*

This species was found as rarely represented populations in 1 localities in the study area. It distributes throughout Turkey widespread and throughout the world mainly in Lebanon; possibly also in Greece, Aegean, Cyprus, Palestine, Latakia? E. Mediterranean element.

8. *O. laxiflora* Lam., Fl. Fr. ed. 1, 3:504 (1779). Fig. 1,9.

Syn: *O. platychila* C. Koch in Linnaea 19:13 (1846).

Ic: Reichb. fil., Ic. Fl. Germ. 13/14: t. 41 f. I(1850); Danesch, Orch. Eur., Südeur. 204(1969).

Type: Described from France (holo. P-Lam., photo!).

Plant 30-90 cm, erect or slightly flexuous. Tubers 2, subglobose or ellipsoid, to 3.3 x 2 cm. Leaves 6-8, ± uniformly arranged on stem, erect, linear to linear-lanceolate, acuminate, 10-35 x 1.5-2.5 cm, ± folded. Spike 10-35 cm, cylindrical or ovoid, rather lax, 13-41-flowered. Bracts 15-35 x 3-4 mm, lanceolate, 3-7-veined, shorter or exceeding ovary. Flowers purple, rarely pink. Sepals oblong, obtuse, 3-5-veined; dorsal sepal ± erect, 7-10 x 3-4 mm, lateral ones erecto-patent, 9-13 x 3-4 mm. Petals oblong, obtuse, 7-10 x 2.5-4.7 mm. Labellum 6-12 x 8-12 mm,

variably in shape and size, centre of labellum whitish without spots; lateral lobes always strongly reflexed (lip folded); middle lobe absent or minute, thus having a distinct recess between the lateral lobes. Spur 12-16 mm, c. half as long as ovary, often flattened and slightly notched at apex. Ovary 18-25 mm, twisted, glabrous, cylindrical; column short, 5-8 mm. *Fl. 4-5. Wet meadows and marshes, s.l.-l400 m.*

This species was found as very densely represented populations in 4 localities in the study area. It distributes throughout Turkey mainly Outer Anatolia, Islands and throughout the world mainly in W & C Europe N to Channel Is. and Mediterranean area. Mediterranean element.

4. Discussions

The present study performed in Edirne revealed that 8 species from the genus *Orchis* occurred naturally here. The distributional maps of each species were given at the end of the monographs. The identifications of the study specimens were made by using the herbarium specimens, alcohol material and photographs prepared and taken *on site* in the field. Detailed characteristics and measurements were determined for each species for monograph preparations. So, a more wide range of information compared to present flora and literature could be obtained and presented. Different scales were used in drawings as we had to place different sized parts of the plants in the same drawing page. However, fixed scales were used for similar plant parts in order to provide a comparison basis for different species.

The related literatures include different information about orchids present in Turkey, their scientific names and systematic positions (species or subspecies). All these sources were checked for these different information and the ones reported in 8^{th} and 11^{th} volumes of Flora of Turkey (Renz & Taubenheim 1984, Kreutz 2000) were adopted.

We revealed that 8 species of the genus *Orchis* occurred inside the city borders of Edirne located in A1(E) square. These species are *O. coriophora, O. tridentata*, *O. purpurea*, *O. simia*, *O. morio* subsp. *morio, O. papilionacea* var. *rubra*, *O. pinetorum* and *O. laxiflora*.

These species are differentiated from each other by definite and clear morphological characteristics and can be grouped into two based on their spur: The first group involves *O. morio* subsp. *morio, O. pinetorum* and *O. laxiflora.* Of these *O. morio* subsp. *morio* differs from the other two by having all their petals and sepals converging into an hood. Lateral sepals of *O. pinetorum* and *O. laxiflora* are directed backwards or spreading to reflexed. *O. laxiflora* can be differentiated from other species by its slightly developed middle lobe, by its lateral lobes directed downwards, its labellum with its white middle part and by its leaves connected to the stem making a 45^{o} angle. *O. pinetorum* has a three-lobed labellum with the middle a two-lobules and its leaves are large. The second group involves the *O. coriophora, O. tridentata, O. purpurea, O. simia* and *O. papilionacea* var. *rubra* whose spurs looking downwards. Of these, *O. papilionacea* var. *rubra* differs from the other three lobed labellum species by its one-lobed labellum. *O. coriophora* and *O. tridentata* have rather long bracts, *O. simia* and *O. purpurea* have reduced minute bracts. Sepals and petals of *O. tridentata* are red veined and their tips are acuminate, middle lobe of labellum is enlarged and its sides irregular dentate, leaves large, oblong and basal one in rosette while upper ones surrounding the stem like a sheath. Labellum of *O. coriophora* is three-lobed with the middle one narrow, three cornered and acuminate, labellum definitely bends downwards, veins greenish, tips of all sepal and petals are present inside in the hood and leaves linear. Lateral lobes and lobule of middle lobe of labellum of *O. simia* are similar to each other, are narrow and long linear shaped. *O. purpurea* is a rather stout plant. This species differs from *O. tridentata* by its small, sheath shaped bracts, reddish brown or blackish brown perianth segments and by its labellum carrying papilla masses. *O. simia* can easily be differentiated from *O. purpurea* by its labellum structure.

Another *Orchis* species reported in literature to occur in Edirne is *O. militaris*. Webb (1966) points out its locality as Ikiztepe/Korudagı but we couldn't find it in our field studies. Besides, as written in Flora of Turkey, this species is considered to be doubtful in terms of its presence in Turkey. Latest field studies have shown that *O. punctulata* Steven ex Lindley is present in the area.

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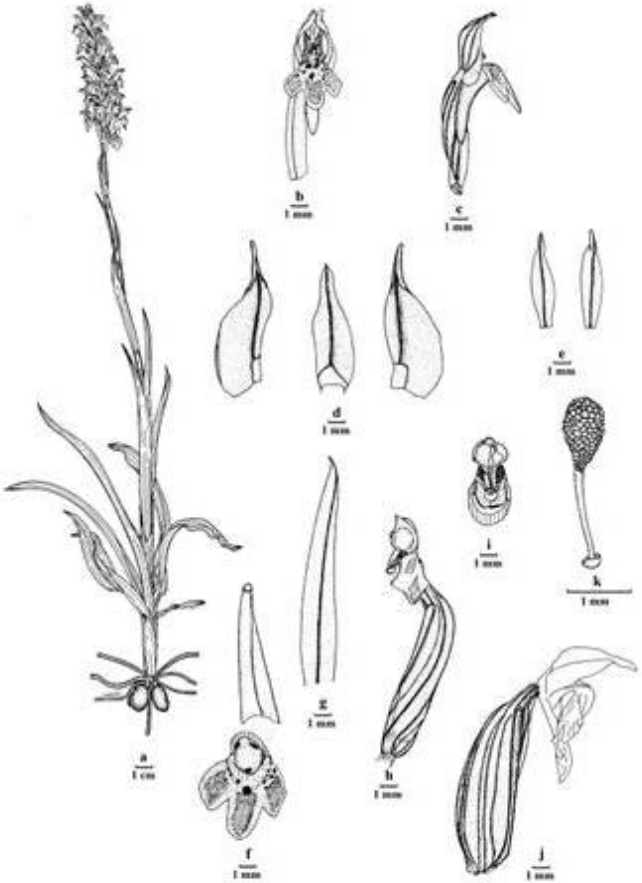

Fig.-2. *O. coriophora*. a. Plant. b. Flower in front. c. Flower in profile. d. Sepals. e. Petals. f. Labellum. g. Bract. h. Ovary and column in profile. j. Column in front. j. Fruit. k. Pollinarium

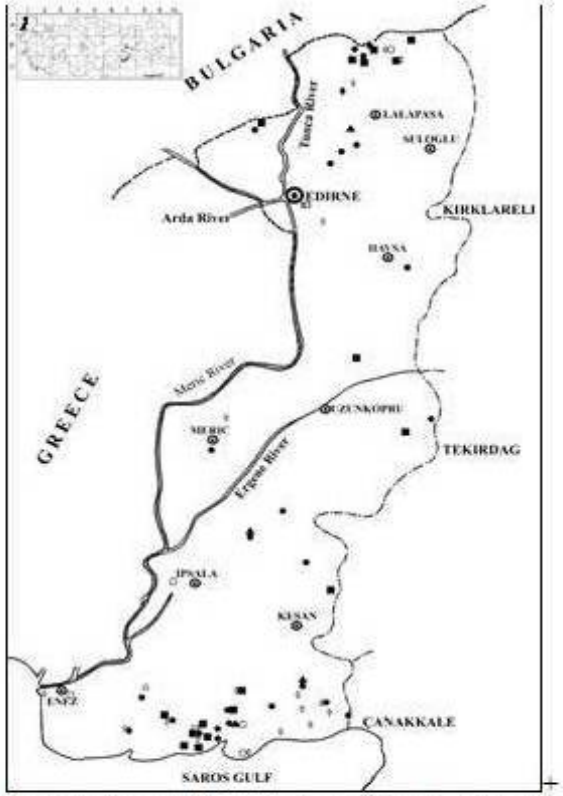

Fig-1. Distribution of *O. coriophora* (♦), *O. tridentata* (■), *O. purpurea* (●), *O. simia* (▲), *O. morio* subsp. *morio* (◇), *O. papilionacea* var. *rubra* (□), *O. Pinetorum* (△) and *O. laxiflora* (**O**).

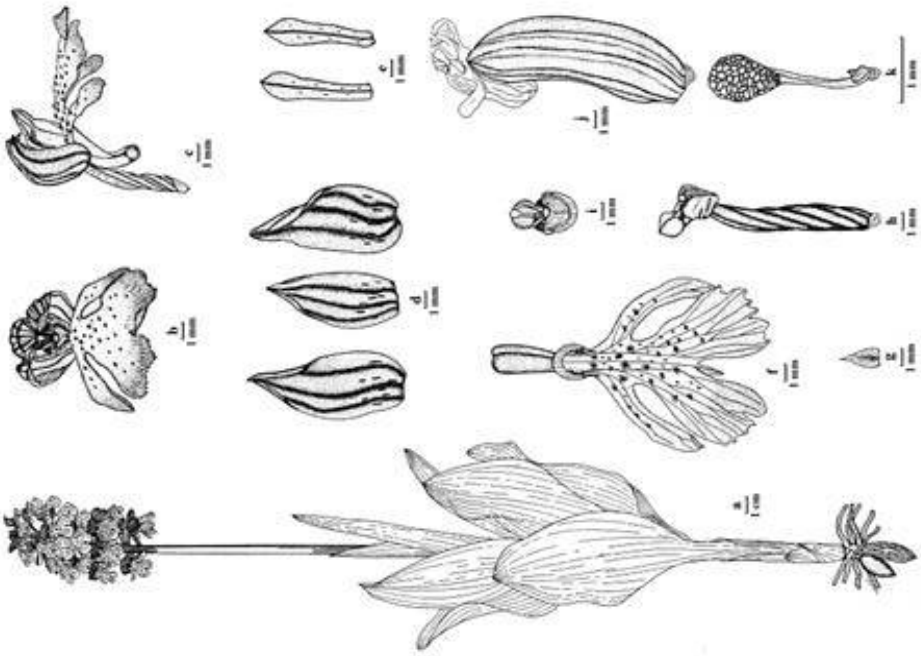

Fig.-5. *O. purpurea.* a. Plant. b. Flower in front. c. Flower in profile. d. Sepals. e. Petals. f. Labellum. g. Bract. h. Ovary and column in profile. i. Column in front. j. Fruit. k. Pollinarium.

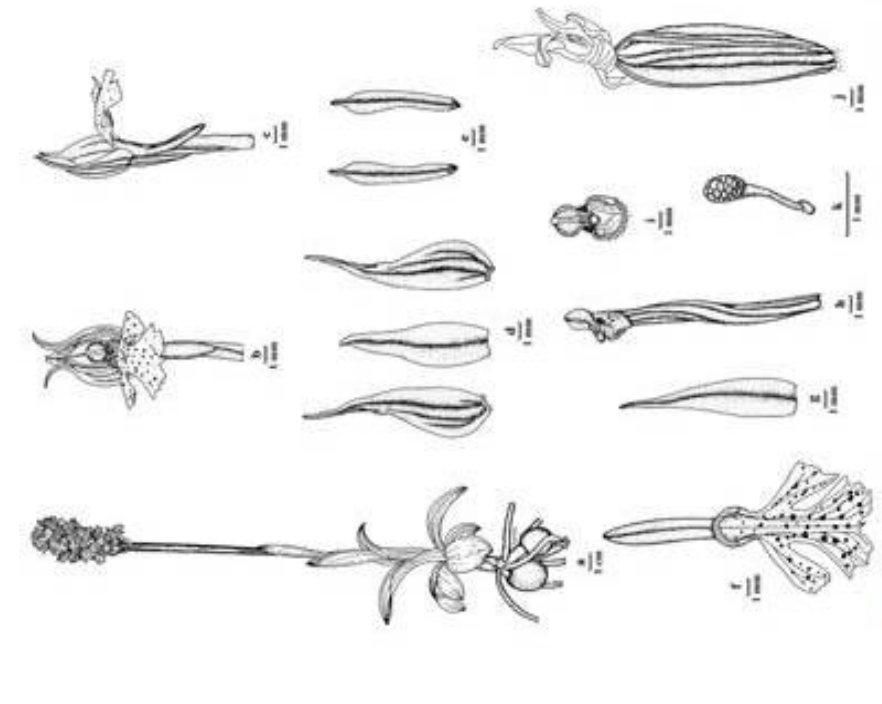

Fig.-3. *O. tridentata.* a. Plant. b. Flower in front. c. Flower in profile. d. Sepals. e. Petals. f. Labellum. g. Bract. h. Ovary and column in profile. i. Column in front. j. Fruit. k. Pollinarium.

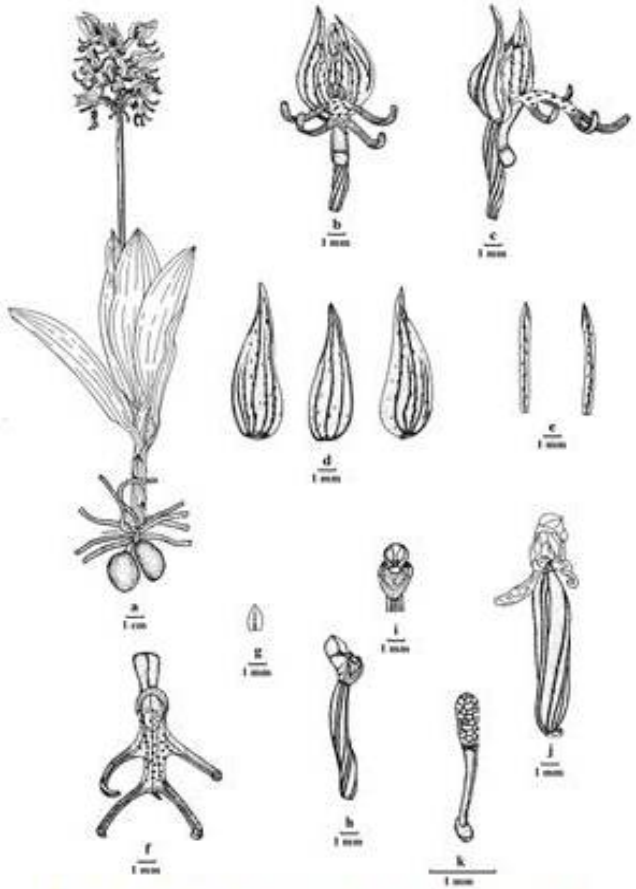

Fig.-6. *O. simia*. a. Plant. b. Flower in front.
c. Flower in profile. d. Sepals. e. Petals. f. Labellum. g. Bract.
h. Ovary and column in profile. i. Column in front.
j. Fruit. k. Pollinarium.

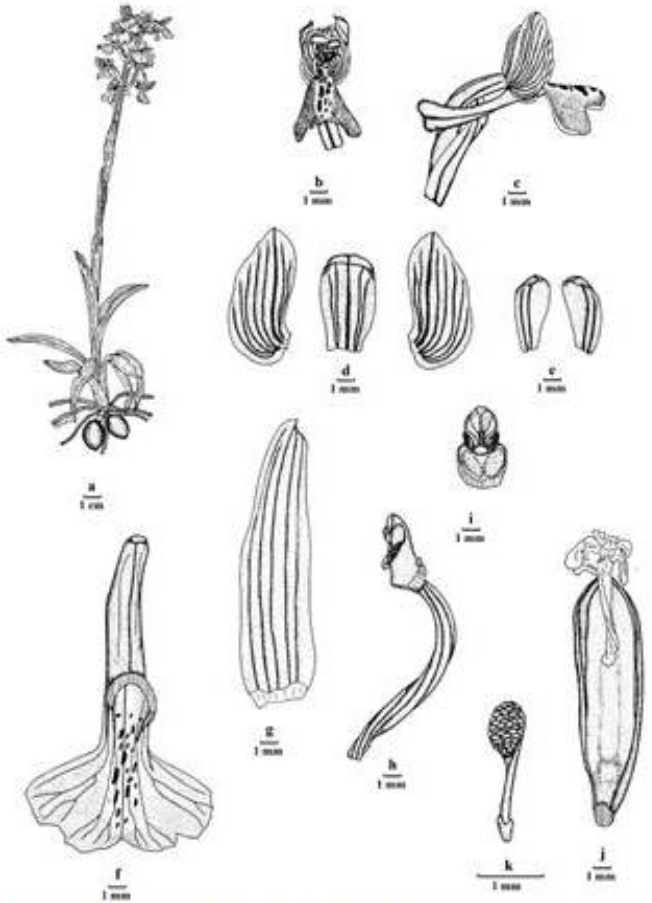

Fig.-7. *O. morio* subsp. *morio*. a. Plant. b. Flower in front.
c. Flower in profile. d. Sepals. e. Petals. f. Labellum. g. Bract.
h. Ovary and column in profile. i. Column in front.
j. Fruit. k. Pollinarium.

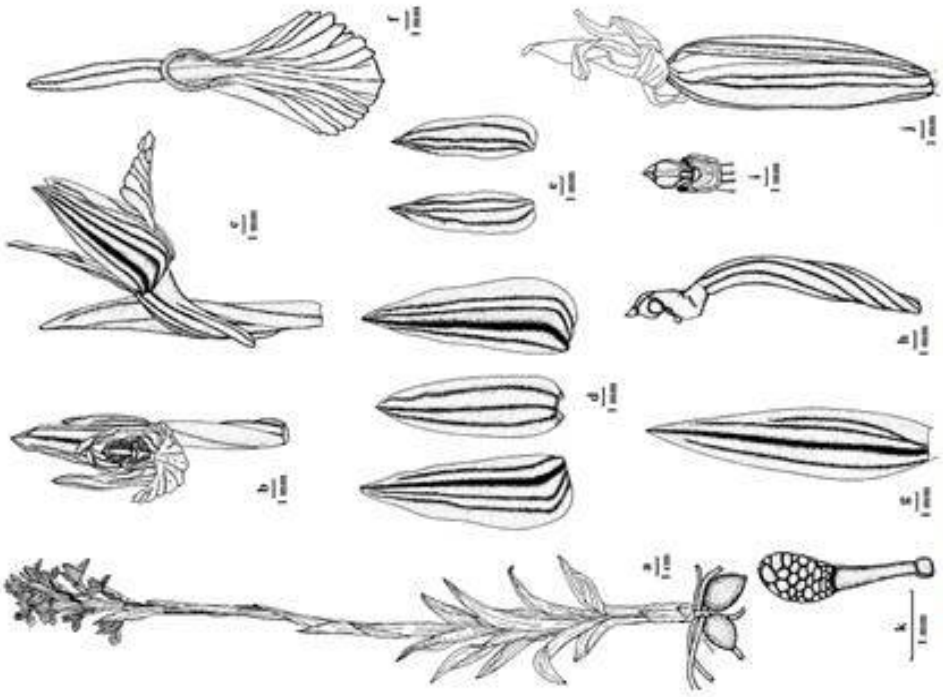

Fig.-8. *O. papilionacea* var. *rubra*. a. Plant. b. Flower in front. c. Flower in profile. d. Sepals. e. Petals. f. Labellum. g. Bract. h. Ovary and column in profile. i. Column in front. j. Fruit. k. Pollinarium.

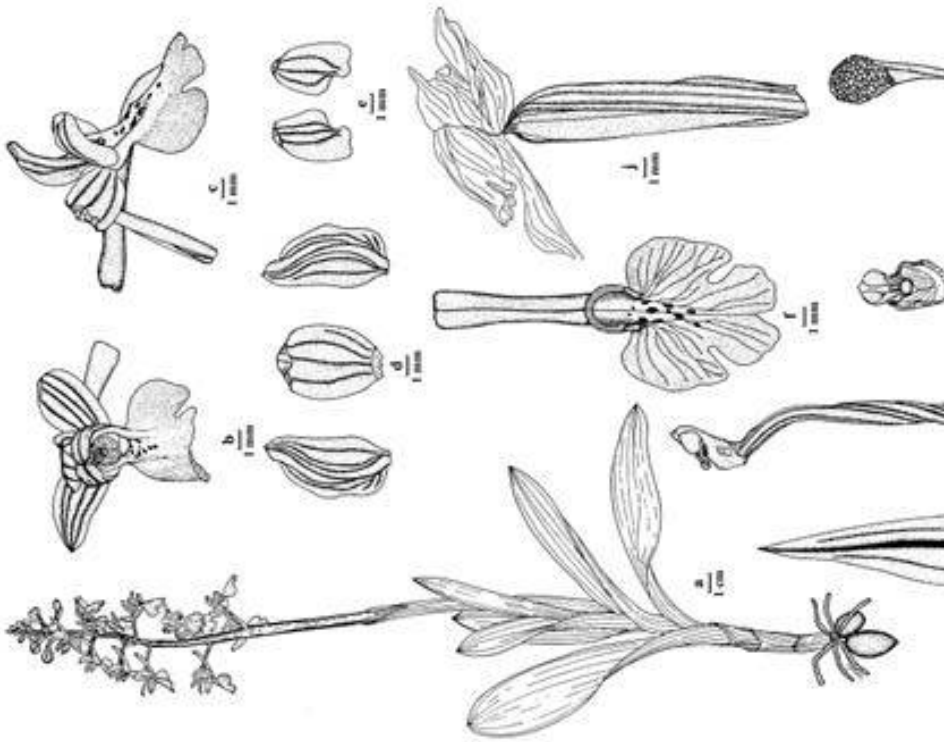

Fig.-9. *O. pinetorum*. a. Plant. b. Flower in front. c. Flower in profile. d. Sepals. e. Petals. f. Labellum. g. Bract. h. Ovary and column in profile. i. Column in front. j. Fruit. k. Pollinarium.

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