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Parasitic Angiosperm Plants of Turkey

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ABSTRACT: Aim of this study was created a list of parasitic flowering plants of Turkey in light of recent researches. Therefore, we compiled various studies about parasitic flowering plants and flora in Turkey. Additionally, biogeographic characterization and IUCN categories of these plants were determined using literature. As a result, 146 species, subspecies and varieties belonging to 5 families and 30 genera were determined. Considering life types, while 91 taxa are hemi-parasitic, the others are holo-parasitic plants. The number of endemic taxa was 19 and this number constitutes 13.19% of the total parasitic flowering plants. The biogeographic distribution of the species are: Irano – Turanian 23 (15.49%), Euro – Siberian 38 (25.35%), Mediterranean 18 (12.68%) and unknown region 63 (46.48%). The distribution of the endemic and rare taxa according to IUCN categories are: 2 taxa in critically (CR), 2 taxa in endangered (EN), 13 taxa in vulnerable (VU), 4 taxa in near threatened (LR-nt), 17 taxa in least concern (LR-lc) and 1 taxa in conservation dependent (LR-cd) and 4 taxa in data deficient (DD).

Keywords: Biogeography, flora, parasitic angiosperm, risk category, Turkey

Türkiye'nin Parazit Angiosperm Bitkileri

ÖZET: Bu çalışmanın amacı son çalışmalar ışığında Türkiye'nin parazit çiçekli bitkilerinin bir listesini oluşturmaktır. Bu yüzden, Türkiye'deki parazit çiçekli bitkiler ve flora hakkında çeşitli çalışmaları karşılaştırıldı. Ayrıca, türlerin biyocoğrafik karakterleri ve IUCN kategorileri literatüre desteği ile belirlendi. Sonuç olarak 5 familya ve 30 cinse ait 146 tür, alttür ve varyete tespit edildi. Yaşam tipleri dikkate alındığında bunların 91 tanesi yarı parazit iken diğerleri ise tam parazittir. Endemik tür sayısı 19 ve toplam parazit çiçekli bitkilerin 13%'ünü oluşturmaktadır. Biyocoğrafik dağılım ise: Iran – Turan 23 (15.49%), Avrupa – Sibirya 38 (25.35%), Akdeniz 18 (12.68%) ve bilinmeyenler ise 63 (46.48%) tanedir. Endemik ve nadir türlerin IUCN kategorilerine gore dağılımı ise: 2 takson Kritik düzeyde (CR), 2 takson Tehlike altında (EN), 13 takson zarar görebilir (VU), 4 takson tehdit altına girebilir (LR-nt), 17 takson en az endişe verici (LR-lc), 1 takson koruma önlemi gerektiren düzeyde (LR-cd) ve 4 takson ise yetersiz veri (DD) düzeyindedir.

Anahtar Kelimeler: Biyocoğrafik karakter, flora, parazit angiosperm, risk kategorisi, Türkiye

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INTRODUCTION

Turkey has different floristic regions namely Euro-Siberian, Mediterranean and Irano-Turanien. So, Turkey is different from neighboring countries from floral point of view (Kutbay et al., 2014). This difference is valid for parasitic flowering plants. Parasitic flowering plants are occupied an important place in the plant kingdom. They represent about 1% of angiosperm plants and they have got 22 angiosperm family and 270 genera (Nickrent et al., 1998). In flora of Turkey, there are 11 335 angiosperm plants (Güner ve ark., 2012) and about 1% of these plants are parasitic flowering plants. Number of parasitic angiosperm plants is 146. This ratio (parasitic angiosperm plants/angiosperm plants) is same with percentage in the world. Aim of this study, (1) make a list of parasitic flowering plants of Turkey, (2) determine biogeographic characterization and IUCN categories of these parasitic flowering plants.

MATERIAL AND METHODS

This study was conducted as considering various scientific publications. The most important of these publications are Flora of Turkey (Davis, 1965-1988) and A Checklist of the Flora of Turkey (Vascular Plants) (Güner ve ark., 2012).

RESULT AND DISCUSSION

In Table 1, 146 parasitic flowering plants belonging to five families were confirmed considering recent studies. 3 new species was added to Flora of Turkey. These are *Orobanche longibracteata* Schiman-Czeika (Zare and Yıldırımlı, 2012), *Orobanche owerini* (Beck) Beck (Zare and Dönmez, 2013), *Orobanche turcica* (Zare and Dönmez, 2014) and *Orobanche reticulata* Wallr. was also confirmed by Zare and Dönmez (2013). 16 species have been synonym in Table 2. Parasitic angiosperm families are Apodanthaceae, Cytinaceae, Santalaceae, Loranthaceae, Orabanchaceae but formerly, there were six families in Flora of Turkey (Rafflesiaceae, Loranthaceae, Santalaceae, Cuscutaceae, Orabanchaceae, Scrophulariaceae) (Uludağ and Nemli, 2009). However, Rafflesiaceae of these families divided two families which are Apodanthaceae, Cytinaceae. Scrophulariaceae has been Orabanchaceae and Cuscutaceae has been Santalaceae. Loranthaceae having 4 species has been Santalaceae in Table 1. 7 parasitic flowering plants namely *Cuscuta approximata* Bab. var. approximate, *Cuscuta lupuliformis* Krocker, *Cuscuta epilinum* Weihe, *Orobanche sanguinea* C. Presl, *Euphrasia drosocalyx* Freyn, Euphrasia nemorosa (Pers.) Wallr., *Euphrasia willkommii* Freyn, were removed from Turkey Flora according to recent flora studies (Güner ve ark., 2012).

Floristic regions, synonyms, life types and traditional names are given in Table 1. Number of hemi parasite plants are 91 and number of holo parasite plants are 55 in Table 1. The biogeographic distribution of the species are: Irano – Turanian 23 (15.49%), Euro – Siberian 38 (25.35%), Mediterranean 18 (12.68%) and unknown region 63 (46.48%) in Figure 1. Irano – Turanian and Mediterranean floristic regions have three families, Euro – Siberian floristic region has two families in Figure 2. Unknown floristic region has maximum genus and Irano – Turanian and Mediterranean floristic regions have nine genus in Figure 3. 14 parasitic flowering plants are endemic and 2 species in critically "CR", 2 species in endangered "EN", 13 species in vulnerable "VU", 4 species in near threatened "LR(nt)", 17 species in least concern "LR(lc)" and 1 species in conservation dependent "LR(cd)" and 4 species a in data deficient "DD" in Table 3 (Ekim ve ark., 2000; Zare, 2012).

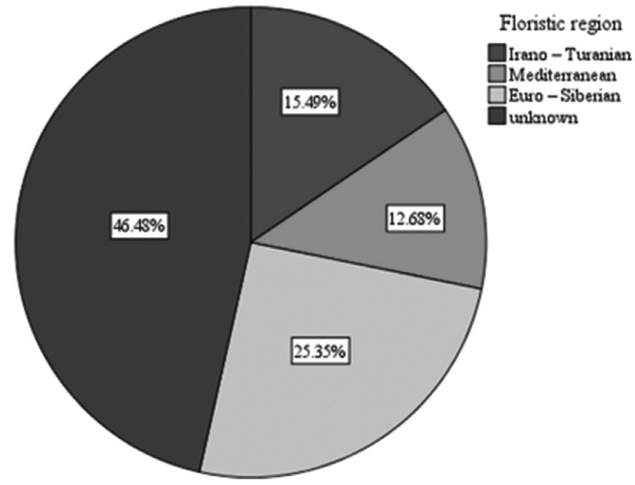

Figure 1. Percentage of parasitic plant species by floristic reagions

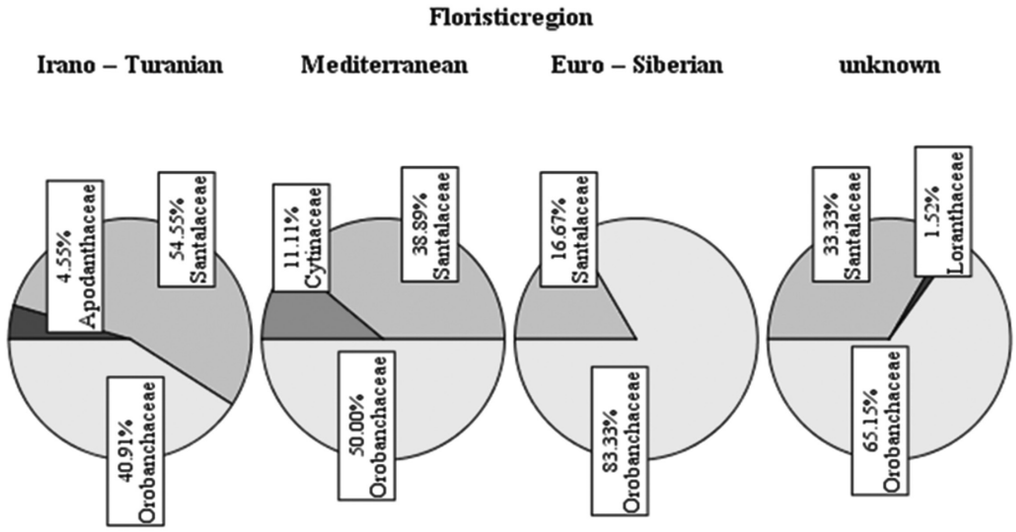

Figure 2. Percentage of parasitic plant families for each floristic regions

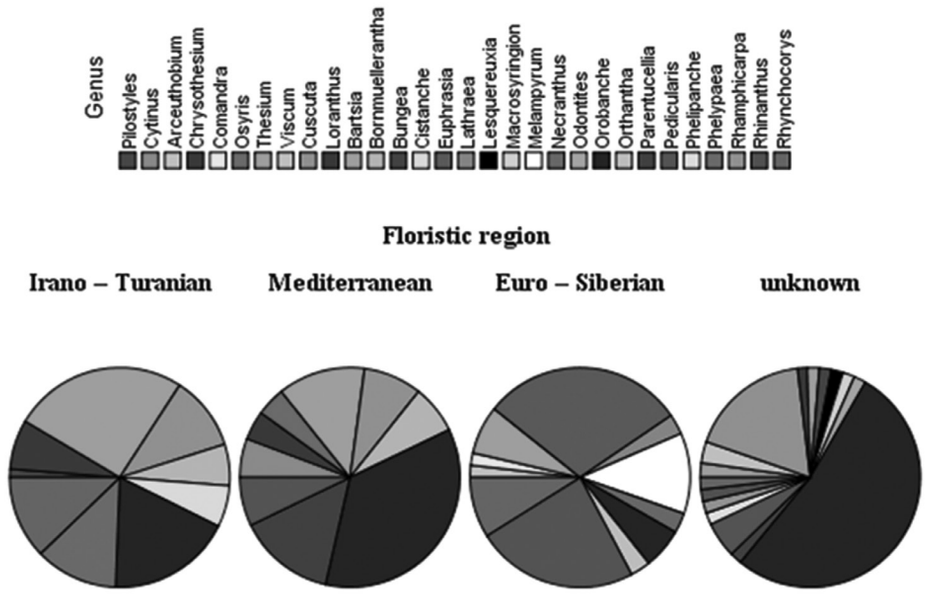

Figure 3. Parasitic plant genus in each floristic regions

Table 1. List of parasitic flowering plants in Turkey

Family	Genus / Species	Life Type	Floristic region	Traditional Name
Apodanthaceae [1]	*Pilostyles*			
Apodanthaceae [1]	*P. haussknechtii Boiss.*	Holo	Ir-Tr	Kızılsaya
Cytinaceae [1]	*Cytinus*			
Cytinaceae [1]	*C. hypocistis (L.) L. subsp. orientalis Wettst.*	Holo	Med	İnek memesi
Cytinaceae [1]	*C. ruber (Fourr.) Fritsch*	Holo	Med	Yernarı
Santalaceae [2]	*Arceuthobium*			
Santalaceae [2]	*A. oxycedri (DC.) M.Bieb.*	Hemi	Eu-Sib	Ardıç güveleği
Santalaceae	*Chrysothesium*			
Santalaceae	*C. aureum (Jaub. & Spach) Hendrych*	Hemi	Ir-Tr	Anagüvelek

Family	Genus / Species	Life Type	Floristic region	Traditional Name
Santalaceae	*C. cilicium (Hausskn. ex Bornm.) Hendrych*	Hemi	Med	Toros güveleği
Santalaceae	*C. stelleroides (Jaub. & Spach) Hendrych*	Hemi	Ir-Tr	Ana güvelek
Santalaceae	*Comandra*			
Santalaceae	*C. umbellata (L.) Nutt. subsp. legans (Roch. ex Sprengel) Piehl*	Hemi	Eu-Sib	Er güvelek
Santalaceae	*Osyris*			
Santalaceae	*O. alba L.*	Hemi	Med	Morcak
Santalaceae	*Thesium*			
Santalaceae	*T. alpinum L.*	Hemi	Eu-Sib	Yayla güveleği
Santalaceae	*T. arvense Horv.*	Hemi	Eu-Sib	Tezgüvelek
Santalaceae	*T. bergeri Zucc.*	Hemi	Med	Koru güveleği
Santalaceae	*T. bertramii Aznav.*	Hemi	Ir-Tr	Öz güvelek
Santalaceae	*T. billardieri Boiss.*	Hemi	Ir-Tr	Meşe güveleği
Santalaceae	*T. brachystegium Post*	Hemi	Med	Gavur güveleği
Santalaceae	*T. compressum Boiss. & Heldr.*	Hemi	Ir-Tr	Tuz güceleği
Santalaceae	*T. divaricatum Jan. ex Mert. & W.D.J. Koch*	Hemi	Eu-Sib	Çatal güvelek
Santalaceae	*T. humile Vahl*	Hemi	Med	Bodur güvelek
Santalaceae	*T. kotschyanum Boiss.*	Hemi	Ir-Tr	Koç güveleği
Santalaceae	*T. linophyllon L.*	Hemi	Eu-Sib	Ulu güvelek
Santalaceae	*T. macranthum Fenzl*	Hemi	Ir-Tr	Koca güvelek
Santalaceae	*T. oreogetum Hendrych*	Hemi	Ir-Tr	Artos güveleği
Santalaceae	*T. procumbens C.A.Mey.*	Hemi	Eu-Sib	Yer güveleği
Santalaceae	*T. scabriflorum P.H.Davis*	Hemi	Ir-Tr	Kaba güvelek
Santalaceae	*T. tauricolum Boiss. & Hausskn.*	Hemi	Ir-Tr	Güvelek
Santalaceae [2]	*Viscum*			
Santalaceae [2]	*V. album L. subsp. abietis (Wiesb.) Abromerit*	Hemi	n/a	Göknar güveleği
Santalaceae [2]	*V. album L. subsp. album*	Hemi	n/a	Ökse otu
Santalaceae [2]	*V. album L. subsp. austricum*	Hemi	n/a	Çam güveleği
Santalaceae [3]	*Cuscuta*			
Santalaceae [3]	*C. approximata Bab.*	Hemi	n/a	Bağboğanotu
Santalaceae [3]	*C. araratica Butk.*	Hemi	n/a	İnce bağboğanotu
Santalaceae [3]	*C. babylonica Aucher ex Choisy var. babylonica*	Hemi	n/a	Gelinsaçı
Santalaceae [3]	*C. babylonica Aucher ex Choisy var. elegans (Boiss. et Bal.) Engelm.*	Hemi	Ir-Tr	Gelinsaçı
Santalaceae [3]	*C. balansae Boiss. & Reuter ex Yunck.*	Hemi	n/a	Cazısaçı
Santalaceae [3]	*C. campestris Yuncker*	Hemi	n/a	Kafirsaçı
Santalaceae [3]	*C. epithymum Murray subsp. epithymum*	Hemi	n/a	Cinsaçı
Santalaceae [3]	*C. epithymum Murray subsp. kotschyi (Des Moul.) Arcangeli*	Hemi	n/a	Eftimon
Santalaceae [3]	*C. europaea L.*	Hemi	n/a	Bostanbozan
Santalaceae [3]	*C. globularis Bertol*	Hemi	n/a	Top bostanbozan
Santalaceae [3]	*C. hyalina Roth*	Hemi	n/a	Zar bostanbozan
Santalaceae [3]	*C. kotschyana Boiss. var. caudate Bornm. & Schwarz*	Hemi	Ir-Tr	Koçbostanbozan
Santalaceae [3]	*C. kurdica Engelm.*	Hemi	Ir-Tr	Uslu çisacı

Family	Genus / Species	Life Type	Floristic region	Traditional Name
Santalaceae [3]	*C. monogyna Vahl subsp. esquamata (Engelm.) Plitman*	Hemi	n/a	Som kızılkurtotu
Santalaceae [3]	*C. monogyna Vahl subsp. monogyna*	Hemi	n/a	Kızılkurtotu
Santalaceae [3]	*C. obtusata (Engelm.) Trabut*	Hemi	Med	Küt bostanbozan
Santalaceae [3]	*C. palaestina Boiss.*	Hemi	n/a	Arap çinsaçı
Santalaceae [3]	*C. planiflora Ten.*	Hemi	n/a	Gökten yağan
Santalaceae [3]	*C. pedicellata Ledeb.*	Hemi	n/a	Boğmacaotu
Santalaceae [3]	*C. scandens Brot. subsp. cesatiana (Bertol.) Greuter & Burdet*	Hemi	n/a	Serend
Santalaceae [3]	*C. scandens Brot. subsp. scandens*	Hemi	Med	Som bostanbozan
Santalaceae [3]	*C. subuniflora K.Koch*	Hemi	n/a	Tekcinsaçı
Loranthaceae	*Loranthus*			
Loranthaceae	*L. europaeus Jacq.*	Holo	Eu-Sib	Ardıçburcu
Orabanchaceae [4]	*Bartsia*			
Orabanchaceae [4]	*B. trixago L.*	Hemi	n/a	Karaballıbaba
Orabanchaceae [4]	*Bornmuellerantha*			
Orabanchaceae [4]	*B. aucheri (Boiss.) Rothm.*	Hemi	Ir-Tr	Sadırlı davunotu
Orabanchaceae	*B. alshebbaziana*	Holo	Med	Has davunotu
Orabanchaceae [4]	*Bungea*			
Orabanchaceae [4]	*B. trifida (Vahl) C.A.Mey.*	Hemi	n/a	Üç kernekotu
Orabanchaceae	*Cistanche*			
Orabanchaceae	*C. salsa (C.A.Mey.) G.Beck*	Holo	Ir-Tr	Turfas
Orabanchaceae [4]	*Euphrasia*			
Orabanchaceae [4]	*E. amblyodonta Juz.*	Hemi	Eu-Sib	Kaçkar gözotu
Orabanchaceae [4]	*E. hirtella Jord. ex Reut.*	Hemi	Eu-Sib	Yayla gözotu
Orabanchaceae [4]	*E. juzepczukii Denissova*	Hemi	Eu-Sib	Ağrı gözotu
Orabanchaceae [4]	*E. lebardensis Kem.-Nath.*	Hemi	Eu-Sib	Yamaç göz otu
Orabanchaceae [4]	*E. minima Jacq.ex DC. subsp. davisii Yeo*	Hemi	Eu-Sib	Gözlükkıran
Orabanchaceae [4]	*E. pectinata Ten.*	Hemi	Eu-Sib	Gözotu
Orabanchaceae [4]	*E. petiolaris Wettst.*	Hemi	Eu-Sib	Mercan gözotu
Orabanchaceae [4]	*E. rostkoviana Hayne subsp. rostkoviana*	Hemi	Eu-Sib	Güzel gözotu
Orabanchaceae [4]	*E. salisburgensis Funk ex Hoppe*	Hemi	Eu-Sib	Ulu gözotu
Orabanchaceae [4]	*E. sevanensis Juz.*	Hemi	Eu-Sib	Dağ gözotu
Orabanchaceae [4]	*Lathraea*			
Orabanchaceae [4]	*L. squamaria L.*	Hemi	Eu-Sib	Gizli ot
Orabanchaceae [4]	*Lesquereuxia*			
Orabanchaceae [4]	*L. syriaca Boiss. & Reut.*	Hemi	n/a	Arap davunotu
Orabanchaceae	*Macrosyringion*			
Orabanchaceae	*M. glutinosum (M. Bieb.) Rothm.*	Holo	n/a	Sarı gözotu
Orabanchaceae [4]	*Melampyrum*			
Orabanchaceae [4]	*M. arvense L., var. arvense*	Hemi	Eu-Sib	Inekbuğdayı
Orabanchaceae [4]	*M. arvense L., var. elatius Boiss.*	Hemi	Eu-Sib	Inekbuğdayı
Orabanchaceae [4]	*M. cristatum L.*	Hemi	Eu-Sib	Tilki buğdayı
Orabanchaceae [4]	*M. pratense L.*	Hemi	Eu-Sib	Pişmezot
Orabanchaceae	*Necranthus*			
Orabanchaceae	*N. orobanchoides Gilli*	Holo	Eu-Sib	Gulik
Orabanchaceae [4]	*Odontites*			

Family	Genus / Species	Life Type	Floristic region	Traditional Name
Orabanchaceae [4]	*O. vulgaris Moench*	Hemi	n/a	Davunotu
Orabanchaceae	*Orobanche*			
Orabanchaceae	*O. aegyptiaca Pers.*	Holo	n/a	Dinlendiren
Orabanchaceae	*O. alba Stephen ex Willd. subsp. alba*	Holo	n/a	Boğasak
Orabanchaceae	*O. alba Stephen ex Willd. subsp. xanthostigma Ratzel*	Holo	n/a	Kısa boğasak
Orabanchaceae	*O. amethystea Thuill*	Holo	n/a	Yitik canavarotu
Orabanchaceae	*O. anatolica Boiss. & Reut. ex Reut.*	Holo	n/a	Ana canavarotu
Orabanchaceae	*O. arenaria Borkh.*	Holo	n/a	Deli canavarotu
Orabanchaceae	*O. armena Tzvelev*	Holo	Ir-Tr	Has canavarotu
Orabanchaceae	*O. bungeana Beck*	Holo	Eu-Sib	Kernek canavarotu
Orabanchaceae	*O. caesia Rchb.*	Holo	n/a	Mavi veremotu
Orabanchaceae	*O. caryophyllacea Sm.*	Holo	n/a	Kokulu süpürgeotu
Orabanchaceae	*O. caucasia Beck*	Holo	n/a	Kaf canavarotu
Orabanchaceae	*O. cernua Loefl.*	Holo	n/a	Deli yergöbeği
Orabanchaceae	*O. cilicica Beck*	Holo	n/a	Toros veremotu
Orabanchaceae	*O. coelestis Boiss. & Reut. ex Reut.*	Holo	n/a	Göz zıpırotu
Orabanchaceae	*O. coerulescens Sttephan ex Willd.*	Holo	n/a	Gmk canavarotu
Orabanchaceae	*O. crenata Forssk.*	Holo	n/a	Zıpırotu
Orabanchaceae	*O. elatior Sutton*	Holo	n/a	Boylu canavarotu
Orabanchaceae	*O. fuliginosa Reut. ex Jard.*	Holo	Med	İsli canavarotu
Orabanchaceae	*O. gamasepala Reut.*	Holo	Eu-Sib	Yel canavarotu
Orabanchaceae	*O. gracilis Sm.*	Holo	n/a	Yer göbeği
Orabanchaceae	*O. grisebachii Reut*	Holo	n/a	Deli veremotu
Orabanchaceae	*O. hadroantha Beck*	Holo	n/a	Has yergöbeği
Orabanchaceae	*O. hederae Duby*	Holo	n/a	Tez canavarotu
Orabanchaceae	*O. kurdica Boiss. & Hausskn. ex Boiss.*	Holo	Ir-Tr	Şark baklakıranı
Orabanchaceae	*O. lavandulaceae Rchb.*	Holo	Med	Lavanta kıran
Orabanchaceae	*O. longibracteata Schi-man-Czeika*	Holo	n/a	-
Orabanchaceae	*O. lutea Baumg.*	Holo	n/a	Sarı canavarotu
Orabanchaceae	*O. minor Sm.*	Holo	n/a	Göveotu
Orabanchaceae	*O. mutelii F.W. Schultz*	Holo	n/a	Baklakıran
Orabanchaceae	*O. nana Noë ex Reut.*	Holo	n/a	Veremotu
Orabanchaceae	*O. oxyloba Beck*	Holo	n/a	Kazıkotu
Orabanchaceae	*O. owerini (Beck) Beck*	Holo	n/a	-
Orabanchaceae	*O. palaestina Reut.*	Holo	n/a	Alukotu
Orabanchaceae	*O. picridis F.W. Schultz*	Holo	Med	Papatya kıran
Orabanchaceae	*O. pubescens d'Urv.*	Holo	n/a	Tüylü kazıkotu
Orabanchaceae	*O. purpurea Jacq.*	Holo	n/a	Mor veremotu
Orabanchaceae	*O. ramosa L.*	Holo	n/a	Narin canavarotu
Orabanchaceae	*O. rechingeri Gilli*	Holo	n/a	Kır canavarotu
Orabanchaceae	*O. reticulata Wallr.*	Holo	n/a	Kayıp veremotu
Orabanchaceae	*O. schultzii Mutel*	Holo	Med	Kırk veremotu
Orabanchaceae	*O. serratocalyx Beck*	Holo	n/a	Dişli yergöbeği
Orabanchaceae	*O. sideana Gilli*	Holo	Med	Side canavarotu
Orabanchaceae	*O. sintenisii Beck ex Bornm.*	Holo	Ir-Tr	Fırat canavarotu
Orabanchaceae	*O. turcica*	Holo	n/a	-

Family	Genus / Species	Life Type	Floristic region	Traditional Name
Orabanchaceae [4]	*Orthantha*			
Orabanchaceae [4]	*O. lutea A. Kern. ex Wettst.*	Hemi	Eu-Sib	Sarı davunotu
Orabanchaceae [4]	*Parentucellia*			
Orabanchaceae [4]	*P. viscosa (L.) Caruel*	Hemi	Med	Salgılı üçdilotu
Orabanchaceae [4]	*P. latifolia (L.) Caruel subsp. latifolia*	Hemi	Med	Üçdilotu
Orabanchaceae [4]	*P. latifolia (L.) Caruel subsp. flaviflora (Boiss.)*	Hemi	n/a	Sarı üçdilotu
Orabanchaceae [4]	*Pedicularis*			
Orabanchaceae [4]	*P. atropurpurea Nordm.*	Hemi	Eu-Sib	Zarif bitotu
Orabanchaceae [4]	*P. cadmea Boiss.*	Hemi	Med	Has bitotu
Orabanchaceae [4]	*P. caucasica M. Bieb.*	Hemi	Eu-Sib	Kesgerotu
Orabanchaceae [4]	*P. comosa L. var. acmodonta (Boiss.) Boiss.*	Hemi	n/a	Hotozlu bitotu
Orabanchaceae [4]	*P. comosa L. var. sibthorpii (Boiss.) Boiss.*	Hemi	n/a	Hotozlu bitotu
Orabanchaceae [4]	*P. condensata M.Bieb.*	Hemi	Eu-Sib	Kırk bitotu
Orabanchaceae [4]	*P. crassirostris Bunge*	Hemi	Eu-Sib	Pabuççiçeği
Orabanchaceae [4]	*P. nordmanniana Bunge*	Hemi	Eu-Sib	Mevzeotu
Orabanchaceae [4]	*P. olympica Boiss.*	Hemi	Eu-Sib	Uludağ bitotu
Orabanchaceae [4]	*P. palustris L. subsp. opsiantha (Ekman) Almq.*	Hemi	n/a	Çamur bitotu
Orabanchaceae [4]	*P. pontica Boiss.*	Hemi	Eu-Sib	Şimal bitotu
Orabanchaceae [4]	*P. wilhelmsiana Fisch. ex M.Bieb.*	Hemi	Eu-Sib	Telekli bit otu
Orabanchaceae	*Phelipanche*			
Orabanchaceae	*P. tzvelevii Teryokhin*	Holo	n/a	Aslanparmağı
Orabanchaceae	*P. coccinea (M.Bieb.) Poir.*	Holo	Ir-Tr	Kardaşkanı
Orabanchaceae	*P. tournefortii Desf.*	Holo	Ir-Tr	Ayıpparmağı
Orabanchaceae [4]	*Rhamphicarpa*			
Orabanchaceae [4]	*R. medwedewii Albov*	Hemi	n/a	Şakşak out
Orabanchaceae [4]	*Rhinanthus*			
Orabanchaceae [4]	*R. angustifolius C.C.Gmel. subsp. randiflorus (Wallr.)*	Hemi	n/a	Horozotu
Orabanchaceae [4]	*Rhynchocorys*			
Orabanchaceae [4]	*R. elephas (L.) Griseb. subsp. elephas*	Hemi	Eu-Sib	Filburnu
Orabanchaceae [4]	*R. elephas (L.) Griseb. subsp. boissieri (Post) R.B.Burb. & I. Rich.*	Hemi	n/a	Has filburnu
Orabanchaceae [4]	*R. kurdica Nábelek*	Hemi	Ir-Tr	Şark filburnu
Orabanchaceae [4]	*R. odontophylla R.B.Burb. & I. Rich.*	Hemi	Ir-Tr	Özge filburnu
Orabanchaceae [4]	*R. orientalis (L.) Benth.*	Hemi	Eu-Sib	Koca filburnu
Orabanchaceae [4]	*R. stricta (K.Koch) Albov*	Hemi	Eu-Sib	Hoş filburnu

* Exponential numbers represent to old families: 1-Rafflesiaceae, 2-Loranthaceae 3-Cuscutaceae, and 4-Scrophulariaceae

Table 2. Accepted and synonym species names

Accepted species	Synonym species
Chrysothesium aureum	*Thesium aureum* Jaub. & Spach
Chrysothesium cilicium	*Thesium cilicium* Hausskn. ex Bornm.
Chrysothesium stelleroides	*Thesium stelleroides* Jaub. & Spach
Thesium kotschyanum	*Thesium impressum* Steud. ex DC.
Cuscuta approximata	*Cuscuta approximata* Bab. var. *macranthera*
Cuscuta balansae	*Cuscuta palaestina* Boiss. subsp. *balansae* (Yuncker) Plitm.

Accepted species	Synonym species
Cuscuta epithymum subsp. *kotschyi*	*Cuscuta epithymum* Murray var. *scabrella*
Cuscuta globularis	*Cuscuta brevistyla* A.Braun in A.Rich
Cuscuta scandens subsp. *scandens*	*Cuscuta australis* subsp. *tinei*
Bartsia trixago	*Bellardia trixago* (L.) All.
Bornmuellerantha aucheri	*Odontites aucheri*
Macrosyringion glutinosum	*Odontites glutinosa* (Bieb.) Bentham
Odontites vulgaris	*Odontites verna* (Bellardi) Dumort.
Orobanche coelestis	*Orobanche heldreichii* (Reuter) G. Beck
Orthantha lutea	*Odontites lutea* (L.) Wettst
Orthantha lutea	*Odontites lutea* (L.) Wettst

Table 3. IUCN categories and endemism of parasitic flowering plants

Species	IUCN Categories	Endemism
Chrysothesium aureum	*LR(cD)*	Endemic
Chrysothesium cilicium	*LR(nt)*	Endemic
Chrysothesium stelleroides	*VU*	Endemic
Thesium bertramii	*VU*	Endemic
Thesium humile	*DD*	-
Thesium oreogetum	*EN*	Endemic
Thesium scabriflorum	*VU*	*Endemic*
Thesium tauricolum	*LR(nt)*	-
Cuscuta araratica	-	*Endemic*
Cuscuta obtusata	*DD*	Endemic
Bornmuellerantha alshebbaziana	*CR*	*Endemic*
Euphrasia amblyodonta	*VU*	-
Euphrasia minima subsp. davisii	*LR(lc)*	Endemic
Melampyrum arvense var. elatius	*LR(nt)*	Endemic
Necranthus orobanchoides	*DD*	Endemic
Orobanche alba subsp. alba	*LC*	-
Orobanche anatolica	LC	-
Orobanche arenaria	LC	-
Orobanche armena	EN	Endemic
Orobanche caryophyllacea	LC	-
Orobanche cernua	LC	-
Orobanche. crenata	LC	-
Orobanche elatior	LC	-
Orobanche fuliginosa	LC	-
Orobanche gamasepala	VU	-
Orobanche gracilis	LC	-
Orobanche hadroantha	VU	Endemic
Orobanche hederae	LC	-
Orobanche kurdica	LC	-
Orobanche lutea	LC	-
Orobanche minor	LC	-
Orobanche palaestina	VU	-
Orobanche picridis	LC	-
Orobanche pubescens	LC	-
Orobanche reticulata	VU	-
Orobanche sideana	CR	Endemic
Orobanche sintenisii	VU	-
Pedicularis atropurpurea	VU	-
Pedicularis cadmea Boiss.	LR(lc)	Endemic
Pedicularis crassirostris	DD	-
Pedicularis olympica	VU	Endemic
Rhynchocorys elephas subsp. boissieri	DD	Endemic
Rhynchocorys kurdica	LR(nt)	Endemic
Rhynchocorys odontophylla	VU	-
Rhynchocorys stricta	VU	-

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