



A new record for the Flora of Turkey: *Anchusa aegyptiaca* (L) A. DC. (Boraginaceae)

Hasan YILDIRIM ^{*1}, Yusuf GEMICI ¹

¹ Ege University, Faculty of Science, Department of Biology, Bornova-Izmir, Turkey

Abstract

Anchusa aegyptiaca (L) DC., was collected during a field trip to the around Cennet-Cehennem (Silifke, Mersin province) caverns. It is reported for the first known locality of *A. aegyptiaca* for the Flora of Turkey.

Key words: *Anchusa*, Boraginaceae, New record, Turkey

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Türkiye Florası için yeni bir kayıt: *Anchusa aegyptiaca* (L) DC. (Boraginaceae)

Özet

Anchusa aegyptiaca (L) DC., Cennet-Cehennem (Silifke, Mersin) mağaraları civarına düzenlenen arazi çalışması esnasında toplandı. Bu lokalite Türkiye florası için *A. aegyptiaca*'nın bilinen ilk lokalitesi olarak kaydedildi.

Anahtar kelimeler: *Anchusa*, Boraginaceae, Yeni kayıt, Türkiye

1. Introduction

Anchusa L. is one of the major genera of the tribe Boragineae, a group of 15 genera and c . 170 taxa native to the temperate and subtropical areas of the Old World. It is morphologically characterized by bracteate cymes, hypocrateriform corollas with a long tube, spreading limb and faucal scales at the throat, and by strophiolate mericarps with ventral attachment to a planar gynobase. When delimited in a narrow sense, it includes 27–30 species mainly distributed in the Mediterranean basin and Middle East with only three disjunct members, one in the Ethiopian-West Arabian highlands (*A. affinis* R.Br.) and two in South Africa (*A. capensis* Thunb. and *A. riparia* DC.) (Selvi & Bigazzi, 2003).

The Genus *Anchusa* in Turkey was revised by D.F. Chamberlain (1978) in *Flora of Turkey and the East Aegean Islands*, volume 6, in which he recognized 15 species, and 1 doubtful species. He mentioned that the *A. aegyptiaca* only found the *Khalki*, *Rodhos* and *Salakos* islands. *Anchusa barrelieri* (All.) Vitman var. *orientalis* Guşul. was reduced to synonymy under *Cynoglottis chetikiana* Vural & Kit Tan subsp. *paphlagonica* (Hauskn. ex Bornm.) Vural & Kit Tan (Vural & Tan, 1988). So, total number of *Anchusa* species was reduced 14.

2. Materials and methods

In late Spring 2009, during a botanical trip to the Cennet-Cehennem (Silifke, Mersin provinces), the authors collected interesting flowering and fruiting specimens of *Anchusa*. These specimens were identified as *A. aegyptiaca* (L) DC. according to Flora of Turkey and the East Aegean Islands (Chamberlain, 1979), Flora Europaea (Chater, 1972), Flora Hellenica (Strid, Tan eds., 1997), Flora Aegea (Rechinger, 1943), Flora of Syria, Palestine and Sinai (Post, 1932), Student's Flora of Egypt (Tackholm, 1974), Conspectus Florae Graecae (de Halácsy, 1902), Flora Iranica (Riedl, 1967),

* Corresponding author / Haberleşmeden sorumlu yazar: hasanyldrm@gmail.com

Flora SSSR (Popov, 1953), Prodromus Florea Peninsulae Balcanicae (Hayek, 1927) and Revision of genus *Anchusa* (Boraginaceae-Boragineae) in Greece (Selvi & Bigazzi, 2003).

As a result of this new record of *A. aegyptiaca*, the total number of *Anchusa* species in Turkey increased to 15.

3. Results and discussion

A. aegyptiaca (L) DC., Prodr. 10: 48 1(846) (Figure 1, 2)

Syn.: *Lycopsis aegyptiaca* L., *Sp. Pl.* 138 (1753).

Asperugo aegyptiaca L., *Sp. Pl.* ed. 2: 198 (1763).

Anchusa flava Forssk., *Fl. Aegypt.-Arab.* 40 (1775).

Anchusa verrucosa Lam., *Encycl.* 1:504 (1783).

Annual herbs. Indumentum hispid-strigose with dense, short, hairs and stout trichomes inserted on prominent basal tubercle of whitish colour. Stems 30–55 cm, decumbent to ascending, branched from the base. Lower cauline leaves 28–63 × 10–19 mm, oblanceolate to oblong-ovate, obtuse, with denticulate or erose-dentate margins. Inflorescence with leafy cymes; pedicels 2–3 mm in flower, to 15 mm in fruit; bracts leaf-like, exceeding calyx. Calyx 4–5 mm in flower, 7–8 mm in fruit, divided almost to the base into linear-lanceolate lobes. Corolla slightly zygomorphic, pale to cream yellow, with tube c. 4 mm, straight, slightly shorter than calyx; limb 4–6 mm in diameter, often slightly obliquous, subrotate, with 5 slightly unequal lobes; Stamens inserted in the lower half of the tube near the middle, two higher than the other three; style included. Faucal scales exerted, yellowish-white hairy and curved outwards. Nutlets 2–3 × 4–5 mm, with a sub-vertical, acute beak and a thick basal ring; coat surface strongly reticulate-rugose, yellowish-white. *Fl.* 3–5: *Opening area between limestone rocks.*

Locality and Habitat: C5: Mersin, Silifke, around Cennet-Cehennem caverns, opening area between limestone rocks.

N: 36° 26' 32", E: 034° 06' 46", 53 m, 16.04.2009, *H. Yıldırım* 1534 (EGE).



Figure 1. *A. aegyptiaca* A) habit and habitat, B) flower

A. aegyptiaca is distribution on the Egypt, Iran, Iraq, Syria, Palestine, Israel, Jordan, Tunisia, Saudi Arabia, Cyprus, Crete, western Aegean islands (Dokos, Salamis), eastern Aegean Islands (Rodhos, Kassos, Karpathos, Khalki, Tilos), Cyclades (Astipalea, Sifnos, Thira).

No clear locality was given in Med-checklist Vol. 1 (Greuter *et al.*, 1984) though it was indicated Asiatic Turkey (An) a distribution area of *A. aegyptiaca*. Although Flora of Turkey Vol. 10 (Davis *et al.*, 1988) , Flora of Turkey Vol. 11(Güner *et al.*, 2000) and Check-List of Additional Taxa to the Supplement Flora of Turkey I-II-III-IV (Özhatay *et al.*, 1994, 1996, 2004, 2009) were published after Med-checklist Vol. 1 (Greuter *et al.*, 1984), no data about *A. aegyptiaca* distribution in Turkey was found in these references.

A. aegyptiaca was not previously recorded in Turkey up to date. It was found in a narrow area at around Cennet-Cehennem (Korykos, Korykion-Antron) caverns by us. Finally, this locality is first known locality of *A. aegyptiaca* for Flora of Turkey.

A. aegyptiaca is clearly different from other *Anchusa* species. It can be easily distinguished from other *Anchusa* species by the following features. Indumentum stout trichomes inserted on prominent basal tubercle, Corolla pale to cream yellow. Nutlets sub-vertical and acute beak, calyx divided almost to the base.



Figure 2. *A. aegyptiaca* A) habit, B) flower, C) nutlet D) indumentum of leaves

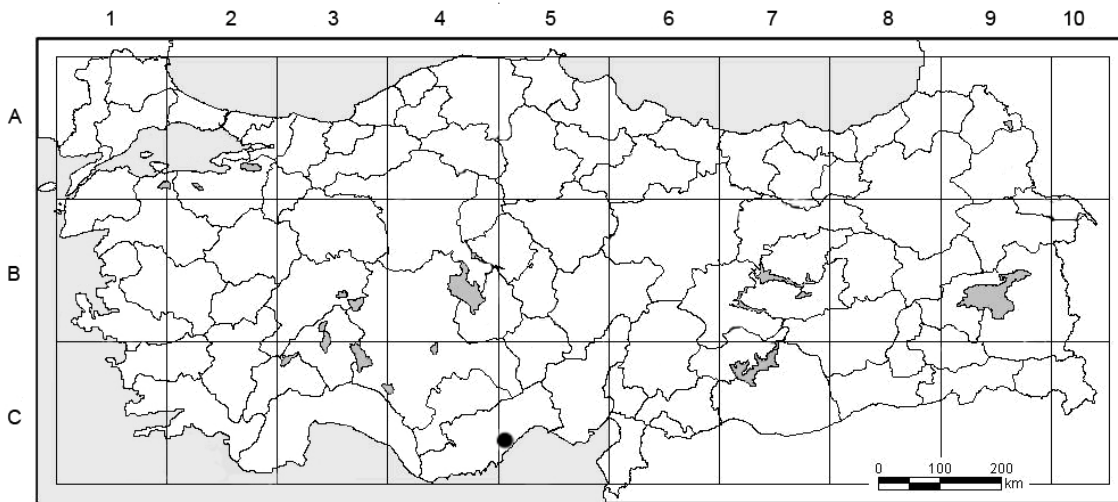


Figure 3. Distribution map of *A. aegyptiaca* (●) in Turkey

References

- Chamberlain, D.F. 1979. *Anchusa* L.–In: Davis PH, ed. Flora of Turkey and the East Aegean Islands Vol. 6. Edinburgh: Edinburgh University Press, 388-402.
- Chater, A.O. 1972. *Anchusa* L.–In: Tutin TG, Heywood VH, Burges NA, Moore DM, Valentine DH, Walters SM, Webb DA, eds. *Flora Europaea* 3. Cambridge: Cambridge University Press, 106-109.
- Davis, P.H., Mill, R.R. & Tan, K. 1988. Flora of Turkey and the East Aegean Islands (supplement 1). Edinburgh Univ. Press. Edinburgh Vol.10, 189.
- de Halácsy, E. 1902. *Conspectus Florae Graecae*, 2. Lipsiae:–Engelmann, 321-330.
- Güner, A., Özhatay, N., Ekim, T. & Başer, K.H.C. (eds). 2000. Flora of Turkey and the East Aegean Islands. Vol. 10 (supplement 2). Edinburgh. Edinburgh University Press.
- Hayek, A. 1927. *Anchusa* L.–In: Hayek. *Prodromus Floreae Peninsulae Balcanicae*. Band Dicotyledonae Sympetalae, Dahlem bei Berlin, 58-67.
- Greuter, W., Burdet, H.M., Long, G. 1984. *Med-Checklist*, Vol. 1:–Pteridophyta, Gymnospermae, Dicotyledones (Acanthaceae–Cneoraceae). Genève: Conservatoire et Jardin Botaniques, 69-72.
- Popov, M.G. 1953. *Boraginaceae*.–In: Komarov VL, ed. *Flora SSSR*, Vol. 19. Moskva-Leningrad: Akademii Nauk SSSR, 565-691.
- Post, G.E. 1932. *Flora of Syria, Palestine and Sinai* (2nd ed. revised by J. E. Dinsmore). American Press, Beirut, 224-228.
- Özhatay, N., Kültür, Ş., Aksoy, N. 1994. Check-List of Additional Taxa to the supplement Flora of Turkey I. *Turk. J. Bot.* 18(6). 497-514.
- Özhatay, N., Kültür, Ş., Aksoy, N. 1999. Check-List of Additional Taxa to the supplement Flora of Turkey II. *Turk. J. Bot.* 23(3). 151-169.
- Özhatay, N., Kültür, Ş. 2006. Check-List of Additional Taxa to the supplement Flora of Turkey III. *Turk. J. Bot.* 30(4). 281–316.
- Özhatay, N., Kültür, Ş., Aslan, S. 2009. Check-List of Additional Taxa to the supplement Flora of Turkey IV. *Turk. J. Bot.* 33(3). 191-226.
- Rechinger, K.H. 1943. *Flora Aegea. Flora der Inseln und Halbinsel der ägäischen Meeres*. Akademie der Wissenschaften Wien, Mathematisch-Naturwissenschaftliche Klasse, Denkschriften 105 (1): 447-450.
- Riedl, H. 1967. *Anchusa* L.– In: Rechinger, K.H. et al. *Flora Iranica*. Graz, Austria, 48: 232-228.
- Selvi, F., Bigazzi, M. 2003. Revision of genus *Anchusa* (Boraginaceae-Boragineae) in Greece. *Botanical Journal of the Linnean Society*, 142, 431-454.
- Strid, A., Tan, K., eds. 1997. *Flora Hellenica*, Vol. 1. Königstein: Koeltz.
- Tackholm, V. 1974. *Anchusa* L.–In: Tackholm. *Student's Flora of Egypt*, ed. 2. Publ. Cairo Univ., Beirut, 446.

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