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Typha minima FUNCK in Greece

By

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With 1 Figure

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Summary

YANNITSAROS A. & VASSILIADES D. 2003. *Typha minima* FUNCK in Greece. – Phyton (Horn, Austria) 43 (2): 263–269, 1 figure. – English with German summary.

Typha minima FUNCK (*Typhaceae*), a species protected in Europe, was found recently near the site of ancient Olympia (Nomos Ilias, Peloponnisos, Greece), far from the closest known localities in Italy, former Yugoslavia and Turkey. This represents a new record for the Greek flora. Ecological notes on the habitat are given, as well as a distribution map for Greece and neighbouring countries. Finally previous doubtful records are critically checked and discussed, as well as the placing of the species in the Red List category of VU (vulnerable) for Greece within the system of IUCN. Another species previously considered doubtfully present in Greece, *Typha angustifolia* L., has been recorded recently by several authors and its presence in Greece is thereby confirmed.

Zusammenfassung

YANNITSAROS A. & VASSILIADES D. 2003. *Typha minima* FUNCK in Griechenland. – Phyton (Horn, Austria) 43 (2): 263–269, 1 Abbildung. – Englisch mit deutscher Zusammenfassung.

Typha minima FUNCK (*Typhaceae*), eine in Europa geschützte Art, wurde jüngst an einer Stelle nahe dem alten Olympia (Nomos Ilias, Peloponnes, Griechenland) gefunden, weit abgesprengt von den Vorkommen in Italien, im ehemaligen Jugosla-

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wien und in der Türkei. Dies ist ein neuer Nachweis für Griechenland und der einzige aktuelle Standort. Begleitflora und eine Karte der Verbreitung in Griechenland und den Nachbarländern werden gebracht. Alte, zweifelhafte Angaben werden geprüft und die Art wird für die IUCN-Kategorie VU (vulnerable) vorgeschlagen. *T. angustifolia* L. ist neuerdings von einigen Autoren sicher für Griechenland nachgewiesen.

1. Introduction

The genus *Typha* L., the only genus of the small family *Typhaceae*, includes about 15 aquatic or semi-aquatic species which grow in shallow water of swamps, lakes, rivers, ponds, marshes and other aquatic habitats (LAWRENCE 1955, HUMPHRIES 1978). Three species are stated with certainty in the two modern floras that cover at least partly the area of Greece (TUTIN & al. 1968–1980, 1993, DAVIS 1965–1985, DAVIS & al. 1988): *Typha domingensis* (PERS.) STEUDEL, *T. latifolia* L. and *T. laxmannii* LEPECHIN. The presence of one more species, namely *T. angustifolia* L. is in doubt (COOK 1980) or ignored completely (BAYTOP 1984), although there exist old reports by several authors (BOISSIER 1884, C. CANDARGY 1889, P. CANDARGY 1898, STEPHANIDES 1948a, LAVRENTIADES 1956, HOFMANN 1968, GANIATSAS 1970, VOLIOTIS 1979). Probably some of these records seemed not reliable, because of the lack of detailed data or herbarium specimens. Nevertheless, there are recent records of *T. angustifolia* (BABALONAS 1980, PAVLIDES 1985, GEORGIADIS & al. 1990, DROSSOS 1992, PAPASTERGIADOU & BABALONAS 1992, BORKOWSKY 1994, CHRONOPOULOS & CHRISTODOULAKIS 1996, SARIKA-HATZINIKOLAOU & al. 1996, GEORGIADIS & al. 1997, KOUMPLI-SOVANTZI & al. 1997), that verify the presence of this species in Greece. Although some of these reports might be erroneous and could be referring to *T. domingensis*, we have checked specimens from Peloponnisos and Ipiros (herbarium L. KOUMPLI-SOVANTZI no. 3276a, 3319, kept in ATHU and herbarium M. SARIKA-HATZINIKOLAOU no. 935, 977, 988, 1047, 1053, kept in ATHU) that belong to *T. angustifolia*.

2. Material and Methods

Collections and field observations were carried out by the authors on 12. 5. 1996, 22. 10. 1997, 6. 5. 1998 and 18. 7. 1998.

The nomenclature of the taxa in this study follows mainly GREUTER & al. 1984, 1986, 1989 or TUTIN & al. 1968–1980, 1993.

3. New Record for Greece

Lately *Typha minima* FUNCK was found in Greece by the authors (YANNITSAROS & VASSILIADES 1998). It is characterised by narrow leaves not more than 3 mm wide, male flowers without hairs or scales, and female flowers with clearly swollen hairs at the top. Other characteristics of the species are the generally delicate appearance and the relatively low height,

which is usually not more than 75 cm. Also, the oblong-ovate, ovate, globose, or cylindrical female part of the inflorescence, 1.5–4.5 cm long, which is dark brown and often subtended by a leaf like bract. For detailed descriptions see COOK 1980, CASPER & KRAUSCH 1980 and BAYTOP 1984.

All features correspond with the typical material, with the exception of the form of the inflorescence (COOK, in litt.). In spite of that, our plant belongs to the typical *T. minima* FUNCK, and not to *T. lugdunensis* P. CHAB. (Eurasia), that is considered by some authors as a variety of the former (*T. minima* FUNCK var. *gracilis* DUCOMM.).

According to COOK 1980, *T. minima* extends from Central Europe (Austria, former Czechoslovakia, Germany, Switzerland, Hungary) to East Romania, former Yugoslavia, Italy (Fig. 1) and South-east France. BAYTOP 1984, who considers the species sensu lato, reports it also from south and east Anatolia (Turkey), favouring swamps, riversides and riverbeds from 970 up to 1440 m. COOK 1980 mentions that it is a somewhat calcicole species that usually grows on river gravels.

In Greece, *T. minima* grows along the banks of river Kladeos, a tributary of Alfeios, NE of Kladeos village, near the archeological site of

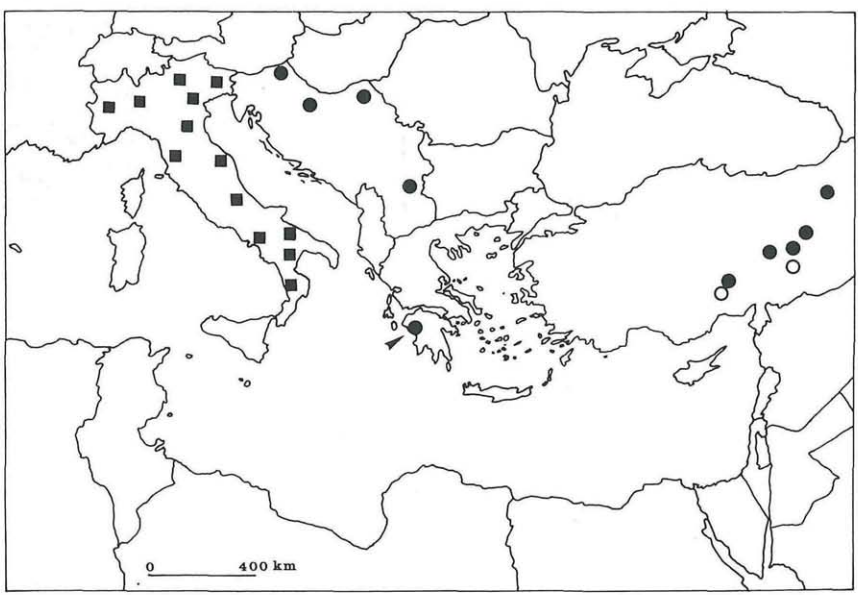

Fig. 1. Map of the known distribution of *Typha minima* FUNCK in the Eastern Mediterranean countries. The arrow shows the new locality. Open circles in Turkey correspond to var. *gracilis* DUCOMM. Squares (Italy) do not represent localities but only the occurrence in a given region. Data are compiled from PIGNATTI 1982, BAYTOP 1984, TRINAJSTIC & al. 1985, WRABER & SKOBERNE 1989 and RANDJELOVIC (in litt.).

Olympia (Nomos Ilias, Peloponnisos), at an altitude of c. 100 m, on alluvial deposits. This population is isolated from the populations of the species in Italy, former Yugoslavia and in Turkey. The Greek population consists of many clumps formed over a stretch of c. 2 km along the river Kladeos. Water from this small river is used to irrigate the adjoining fields, which occasionally are ploughed close to the water. According to the collected material and field observations during our visits, *T. minima* there frequently grows together with *T. domingensis* in dense clumps. It is an early flowering species, producing mature inflorescences by early May, in contrast to *T. domingensis*, which flowers in July; by that time, *T. minima* is rather inconspicuous, as its inflorescences tend to disintegrate soon after fruit ripening.

Other mainly hygrophilous companions on this site are *Adiantum capillus-veneris*, *Pinus halepensis*, *Salix* sp., *Platanus orientalis*, *Ranunculus* sp., *Rubus* sp., *Trifolium repens*, *Trifolium angustifolium*, *Dorycnium rectum*, *Scorpiurus muricatus*, *Linum pubescens*, *Cucurbita* sp. (escaped from cultivation), *Lythrum salicaria*, *Lythrum* sp., *Foeniculum vulgare*, *Daucus carota* s.l., *Mentha* sp., *Plantago lanceolata*, *Sonchus asper* s.l., *Conyza albida*, *Anthemis* sp., *Cirsium creticum*, *Dittrichia viscosa*, *Scirpus holoschoenus*, *Imperata cylindrica*, *Juncus* sp., *Paspalum distichum*, *Phragmites australis*, *Carex* sp.

Greek specimens examined

Greece, Peloponnisos, Nomos Ilias, Eparchia Ilias, banks of the river Kladeos, NE of the village Kladeos, alt. c. 100 m., 12. 5. 1996, VASSILIADES s.n. (Herb. A. YANNITSAROS kept in ATHU). Ibid., 22.10.1997, VASSILIADES s.n. (Herb. A. YANNITSAROS kept in ATHU).

4. Discussion

The finding of *T. minima*, which is rare and threatened throughout Europe, in the area of river Kladeos is new for the Greek flora. Possibly it had been found in Greece earlier, following some information coming from the so-called 'grey' bibliography. The record of *T. minima* HOPPE (obviously misinterpreted from *T. minima* FUNCK in HOPPE) from the valley of river Spercheios (STEPHANIDES 1948b), with the note that it was "plentiful" in that area, is doubtful. As there exists no herbarium material, we searched in the valley of river Spercheios (Eastern Central Greece) in June 1998, without positive results. It is possible, however, that the plant had been there but became extinct because of pollution or correction of the river banks, or even that it is still growing in limited numbers of individuals at spots that we did not check.

STEPHANIDES 1948a also reports *T. minor* W. from the Ionian island of Zakinthos. This record is based on MAZZIARI's manuscript 'Flora Septin-

sularis', Zante 1851, with no further data. We are not aware of the existence of this taxon, and its relationship with *T. minima*, but it is also known that MAZZIARI's records are unreliable. *T. domingensis* seems to be the only *Typha* species growing on the island of Zakinthos today (GUTERMANN 1995).

We also examined two specimens from herbarium W determined as *Typha minima* FUNCK :

Thrakien, E-Ufer des Limni Vistonis: ca. 4 km W Salpi, Nomos Rodopi; Schwarzpappel-Wald mit anschliessendem Tamarisken-Gebüsch, 5-28.VI.1965, K. BAUER & F. SPITZENBERGER 1939, det. H. RIEDL 1968.

Thrakien, Porto Lago: 4 km ESE, Nomos Rodopi; Salicornia-Fluren am E-Rand der Lagunen. 19.IX – 8.X.1966, K. BAUER & F. SPITZENBERGER 1232, det. H. RIEDL 1968.

The examination of these specimens showed that they do not belong to *Typha minima*. Specimen no. 1939 lacks inflorescences, but it has leaves c. 7 mm wide, much wider than those of *T. minima*. Specimen no. 1232, apart from its wider leaves (c. 10 mm), also lacks the characteristic swelling of the hair apices of the female flowers, typical for *T. minima*. Due to the incomplete nature of the specimens, a positive identification was not possible.

T. minima, a species with horticultural interest on account of its small size and attractive inflorescences, is generally considered threatened in the area of Europe and it is included in the list of the strictly protected species (Appendix I) of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) of the Council of Europe. As *Typha minima* is a rare species, probably sensitive to pollution by herbicides, drought and other factors, we suggest that for Greece it should be classified in the VU (vulnerable) Red List category of IUCN and that certain immediate measures for the protection of the population should be taken. Specifically, ex situ cultivation should be initiated and the plant re-introduced in suitable habitat patches in the particular area of western Peloponnisos so as to increase the possibility of spontaneous colonisation. The particular stretch of Kladeos river should be regularly checked and the population monitored.

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6. References

BABALONAS D. 1980. Vegetationseinheiten und Vegetationskartierung in dem Mündungsgebiet des Flusses Evros. – Feddes Repert. 91 (9–10): 615–627.

BAYTOP A. 1984. *Typha* L. – In: DAVIS P. H. (Ed.), Flora of Turkey and the East Aegean Islands, 8: 558–563. – Edinburgh.

BOISSIER E. 1884. Flora orientalis, 5. – Genevae et Basileae.

BORKOWSKY O. 1994. Übersicht der Flora von Korfu. – Braunschweiger geobotanische Arbeiten. – Braunschweig.

CANDARGY C. A. 1889. Flore de l'île de Lesbos. Plantes sauvages et cultivées. – Uster-Zürich.

CANDARGY P. C. 1898. Flore de l'île de Lesbos. – Bull. Soc. bot. Fr. 45: 181–192.

CASPER S. J. & KRAUSCH H.-D. 1980. *Pteridophyta* und *Anthophyta*. 1. Teil: *Lycopodiaceae* bis *Orchidaceae* – In: ETTL H., GERLOFF J. & HEYNIG H. (Eds.), Süßwasserflora von Mitteleuropa, 23. – Stuttgart, New York.

CHRONOPOULOS G. & CHRISTODOULAKIS D. 1996. Contribution to the urban ecology of Greece. The flora of the city of Patras and the surrounding area. – Bot. helv. 106: 159–176.

COOK C. D. K. 1980. *Typha* L. – In: TUTIN T. G., HEYWOOD V. H., BURGES N. A., MOORE D. M., VALENTINE D. H., WALTERS S. M. & WEBB D. A. (Eds.), Flora Europaea 5: 275–276. – Cambridge.

DAVIS P. H. (Ed.) 1965–1985. Flora of Turkey and the East Aegean Islands, 1–9. – Edinburgh.

—, MILL R. R. & TAN K. (Eds.) 1988. Flora of Turkey and the East Aegean Islands, 10. – Edinburgh.

DROSSOS E. 1992. A floristic study of Mitrikou Lake and the lagoons of Nomos Rodhopi in W Thrace (N Greece). – Willdenowia 22: 97–117.

GANIATSAS K. 1970. I chloris ke i vlastisis tis limnis ton Ioanninon (The flora and vegetation of the lake of Ioannina). – Ipirotiki Estia: 1–20 (in Greek).

GEORGIADIS TH., DIMOPOULOS P. & DIMITRELLOS G. 1997. The flora and vegetation of the Acheron Delta (W Greece) Aiming at Nature Conservation. – Phyton (Horn, Austria) 37 (1): 31–60.

—, ECONOMIDOU E. & CHRISTODOULAKIS D. 1990. Flora and vegetation of the Strofilia coastal area (NW Peloponnesos-Greece). – Phyton (Horn, Austria) 30 (1): 15–36.

GREUTER W., BURDET H. M. & LONG G. 1984, 1986, 1989. Med-Checklist. A critical inventory of vascular plants of the Circum-Mediterranean countries 1,3,4. – Genève.

GUTERMANN W. 1995. Catalogus abbreviatus plantarum vascularium ex Ionii insulis cognitarum. – Vindobonae.

HUMPHRIES C. J. 1978. *Typhaceae*. – In: HEYWOOD V. D. & al. (Eds.), Flowering plants of the world, p. 293. – Oxford, London, Melbourne.

HOFMANN U. 1968. Untersuchungen an Flora und Vegetation der Ionischen Insel Levkas. – Vierteljahrs. naturforsch. Gesellschaft Zürich 113 (3): 209–256.

KOUMPLI-SOVANTZI L., VALLIANATOU I. & YANNITSAROS A. 1997. A contribution to the hydrophilous flora of Peloponnisos (Greece). – Feddes Repert. 108 (5–6): 453–461.

LAVRENTIADES G. 1956. Erevne epi tis idroviou ke eloviou chloridos ton emvriophyton tis ellinikis Makedonias. (Studies on the aquatic and marshy flora of Embryophyta of hellenic Macedonia). – Diss., Thessaloniki (in Greek with English summary).

LAWRENCE G. H. M. 1955. Taxonomy of vascular plants. – New York.

PAPASTERGIADOU E. & BABALONAS D. 1992. Ecological studies on aquatic macrophytes of a dam lake – Lake Kerkini, Greece. – Arch. Hydrobiol., Suppl. 90 (2): 187–206.

PAVLIDES G. A. 1985. Geovotaniki meleti tou ethnikou drymou ton Prespon Florinis. Meros A', oikologia, chlorida, phytogeografia, vlastisi [Geobotanical study of the national park of lakes Prespa (NW Greece). Part A', Ecology, Flora, Phytogeography, Vegetation]. – Thessaloniki.

PIGNATTI S. 1982. Flora d' Italia, 3. – Bologna.

SARIKA-HATZINIKOLAOU M., KOUMPLI-SOVANTZI L. & YANNITSAROS A. 1996. The vascular flora of Lake Kalodhiki (Ipiros, NW Greece). – Webbia 50 (2): 223–236.

STEPHANIDES Th. 1948a. The aquatic and semi-aquatic flora of the Ionian islands. (D. MAZZIARI: "Flora Septinsularis", Zante 1851). – In: STEPHANIDES TH., A survey of freshwater biology of Corfu and of certain regions of Greece. – Prakt. hellen. hydrobiol. Inst. Acad. of Athens 2: 187–201.

— 1948b. Synoptic notes on the fresh-water organisms of certain regions of Macedonia, Epirus and Central Greece. – Prakt. hellen. hydrobiol. Inst. Acad. of Athens 2: 205–213.

TRINAJSTIC I., LOVASEN-EBERHARDT Z. & TOMEC M. 1985. Phragmiti-Typhetum minimae in the vegetation cover of Northern Croatia. – Acta bot. croatica 44: 53–57.

TUTIN T. G., HEYWOOD V. H., BURGES N. A., MOORE D. M., VALENTINE D. H., WALTERS S. M. & WEBB D. A. (Eds.) 1968, 1972, 1976, 1980. Flora Europaea 2–5. – Cambridge.

—, BURGES N. A., CHATER A. O., EDMONDSON J. R., HEYWOOD V. H., MOORE D. M., VALENTINE D. H., WALTERS S. M. & WEBB D. A. (Eds.) 1993. Flora Europaea, 1 (second edition). – Cambridge.

VOLIOTIS D. 1979. Flora und Vegetation des Voras-Gebirges. – Sci. Annals, Fac. Phys. & Mathem., Univ. Thessaloniki 19: 189–276.

WRABER T. & SKOBERNE P. 1989. Rdeči seznam ogroženih praprotnic in semenk SR Slovenije. – Varstvo Narave 14–15: 326.

YANNITSAROS A. & VASSILIADES D. 1998. *Typha minima* FUNCK. – In: GREUTER W. & RAUS TH. (Eds.), Med-Checklist Notulae, 17. – Willdenowia 28: 174.