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## The tamarisks of southern Calabria (Italy)

### Abstract

Venturella, G., Mandracchia, G., Gargano, M. L.: The tamarisks of southern Calabria (Italy). — *Fl. Medit.* 18: 421-430. 2008. — ISSN 1120-4052.

The wild and cultivated tamarisks flora of Calabria is here up dated. The presence of *T. africana* var. *africana* is confirmed while *T. africana* var. *fluminensis*, *T. arborea* var. *arborea*, *T. arborea* var. *subvelutina*, *T. dalmatica*, *T. hampeana* and *T. parviflora* are new reports from Calabria.

*Key words:* *Tamarix*, distribution, Flora.

### Introduction

This contribution is part of a wide project oriented to the census of tamarisks of Italy. The need to up-to-date the information on the genus *Tamarix* L., pointed out in *Flora d'Italia* (Pignatti 1982), was previously noticed by De Martis & al. (1984) and subsequently by Venturella (1995) and Venturella & al. (2007). Additional information on the presence of tamarisks species in the Italian regions were included in the “Annotated checklist of the vascular flora” edited by Conti & al., (2005). The objective of this work was to survey the tamarisk flora of southern Calabria providing new and/or additional distributive and ecological data.

### Materials and Methods

A large number of branches and racemes growing on wild and cultivated tamarisks were collected in different localities of southern Calabria. The list of localities investigated are referred to the cartography of I.G.M.I. (Official Map of the Italian State, scale 1:25.000).

The habit, the colour of young branches, the presence of fasciations, the type of flowering (vernal or aestival), the type of inflorescence (simple or composed) were evaluated on the field and the collected plant materials was preserved in plastic bags in order to avoid withering and then subjected to the traditional drying techniques under a plant press. According to the methodology pointed out by B. Baum, the twigs with leaves and racemes were put in a beaker and rehydrated in simmering water for 3-5' and then transferred to a mixture of lactic acid and phenol. The samples were briefly dried in blotting-paper and

immediately examined under a Leica microscope. The observation of the size of disks, flowers, racemes and bracts has been made easier by covering the base of microscope with a sheet of graduate paper. The analysis of the floral parts was carried out through the observation of 100 flowers per raceme.

The specimens are kept in the *Herbarium Mediterraneum Panormitanum* (PAL).

### Data recorded

The observations carried out in twenty-six different localities of southern Calabria – belonging to the provinces of Catanzaro, Reggio Calabria and Vibo Valentia and distributed along the Thyrrenic and Ionian coasts – yielded the identification of seven wild and cultivated taxa. The presence in Calabria of *Tamarix africana* Poir. var. *africana* is confirmed while *T. africana* var. *fluminensis* (Maire) Baum, *T. arborea* (Sieb. ex Ehrenb.) Bge., *T. arborea* var. *subvelutina* Boiss., *T. dalmatica* Baum, *T. hampeana* Boiss. & Heldr. and *T. parviflora* DC. are new reports for the region.

***Tamarix africana*** Poir. var. ***africana*** (Figs. 1, 5a, 5c, 6b)

**Habitat:** sand; cultivated.

**Selected specimens:** *Tropea (Vibo Valentia), on the beach, 28 Mar 2008, 245 I NE bis (Tropea), G. Venturella & M.L. Gargano, s.n., (PAL); Porticello (Reggio Calabria), Torrent Zagarella, 28 Mar 2008, 254 IV SE (Villa S. Giovanni), G. Venturella & M.L. Gargano, s.n., (PAL); Nicotera Marina (Vibo Valentia), seafront, 28 Mar 2008, I SE (Nicotera), G. Venturella & M.L. Gargano, s.n., (PAL); Coccorino Mare (Vibo Valentia), on the beach, 28 Mar 2008, 245 I NE (Spilinga), G. Venturella & M.L. Gargano, s.n., (PAL); Guardavalle Marina (Catanzaro), seafront, 29 Mar 2008, 247 III NO (Stilo), G. Venturella & M.L. Gargano, s.n., (PAL); Montepaone Lido (Catanzaro), on the beach, 29 Mar 2008, 242 III SO (Soverato), G. Venturella & M.L. Gargano, s.n., (PAL).*

***Tamarix africana*** var. ***fluminensis*** (Maire) Baum (Figs. 2, 5b, 5d, 6a)

**Habitat:** sand; cultivated.

**Selected specimens:** *Coccorino Mare (Vibo Valentia), on the beach, 28 Mar 2008, 245 I NE (Spilinga) G. Venturella & M.L. Gargano, s.n., (PAL); Santa Maria di Ricadi (Vibo Valentia), seafront, 28 Mar 2008, 245 I NE (Spilinga), G. Venturella & M.L. Gargano, s.n., (PAL); Marina di Joppolo (Vibo Valentia), seafront, 28 Mar 2008, 245 I NE (Spilinga), G. Venturella & M.L. Gargano, s.n., (PAL); Tropea (Vibo Valentia), on the beach, 28 Mar 2008, 245 I NE bis (Tropea), G. Venturella & M.L. Gargano, s.n., (PAL); San Ferdinando (Reggio Calabria), seafront, 28 Mar 2008, 245 II NE (Gioia Tauro), G. Venturella & M.L. Gargano, s.n., (PAL); San Ferdinando (Reggio Calabria), on the beach, 28 Mar 2008, 245 II NE (Gioia Tauro), G. Venturella & M.L. Gargano, s.n., (PAL); Pietrenere (Palmi, Reggio Calabria), seafront, 28 Mar*



Fig. 1. *Tamarix africana* var. *africana* at the outpouring of Torrent Zagarella (Porticello, province of Reggio Calabria).

2008, 245 II SE (Palmi), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Cannitello (Reggio Calabria), seafront, 28 Mar 2008, 254 IV SE (Villa S. Giovanni), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Ardore Marina (Reggio Calabria), seafront, 29 Mar 2008, 255 I SO (Locri), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Bovalino (Reggio Calabria), seafront, 29 Mar 2008, 255 III NE (Bianco), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Riace (Reggio Calabria), county road (SP) 94, km 0.4, 29 Mar 2008, 247 III SO (Stignano), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Davoli Marina (Catanzaro) seafront, 29 Mar 2008, 247 IV NO (S. Andrea Apostolo dello Ionio), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Catanzaro Lido (Catanzaro), seafront, 29 Mar 2008, 242 III NE (Marina di Catanzaro), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Riace Marina (Reggio Calabria), cultivated land, 29 Mar 2008, 247 III SO (Stignano), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Roccella Jonica (Reggio Calabria), on the beach, 29 Mar 2008, 255 I NE (Roccella Jonica), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Guardavalle Marina (Catanzaro), on the beach, 29 Mar 2008, 247 III NO (Stilo), *G. Venturella & M.L. Gargano, s.n., (PAL)*.

***Tamarix arborea*** (Sieb. ex Ehrenb.) Bge. var. ***arborea*** (Figs. 3a, 5e, 7a)

**Habitat:** cultivated.

**Selected specimens:** Cannitello (Reggio Calabria), seafront, 28 Mar 2008, 254 IV SE (Villa S. Giovanni), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Marina di Gioia Tauro (Reggio Calabria), seafront, 28 Mar 2008, 245 II NE (Gioia Tauro), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Taureana (Palmi, Reggio Calabria), seafront, 28 Mar 2008, 245 II SE (Palmi), *G. Venturella & M.L. Gargano, s.n., (PAL)*; San Nicolò di Ricadi (Vibo Valentia), Robinson Village, 28 Mar 2008, 245 I NE (Spilinga), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Catanzaro Lido (Catanzaro), seafront, 29 Mar 2008, 242 III NE (Marina di Catanzaro), *G. Venturella & M.L. Gargano, s.n., (PAL)*; Soverato Marina (Catanzaro), seafront, 29 Mar 2008, 242 III SO (Soverato), *G. Venturella & M.L. Gargano, s.n., (PAL)*.

***Tamarix arborea*** var. ***subvelutina*** Boiss. (Figs. 3a, 5f, 7b)

**Habitat:** cultivated.

**Selected specimens:** Lido di Palmi (Reggio Calabria), seafront, 28 Mar 2008, 245 II SE (Palmi), *G. Venturella & M.L. Gargano, s.n., (PAL)*.

***Tamarix dalmatica*** Baum (Figs. 4, 8a)

**Habitat:** on a wall.

**Selected specimens:** Saline Joniche (Reggio Calabria), seaport, 29 Mar 2008, 263 I NO (Melito di Porto Salvo), *G. Venturella & M.L. Gargano, s.n., (PAL)*.



Fig. 2. *Tamarix africana* var. *fluminensis* on the beach of Roccella Jonica (province of Reggio Calabria).

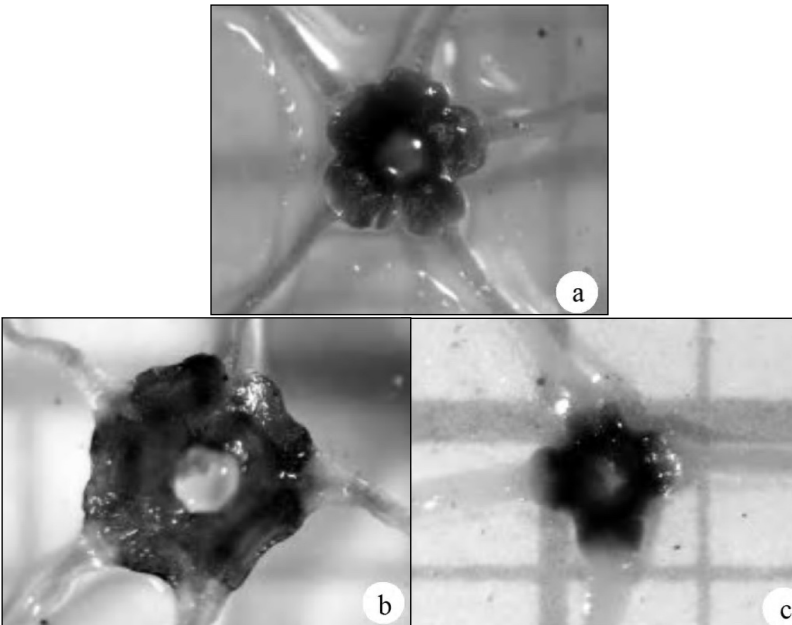


Fig. 3. Types of nectariferous disk: **a**, *Tamarix arborea*, pentamerous, fleshy, paralophic; **b**, *Tamarix hampeana*, pentamerous, fleshy, para-olophic; **c**, *Tamarix parviflora*, tetramerous, fleshy, synlophic.

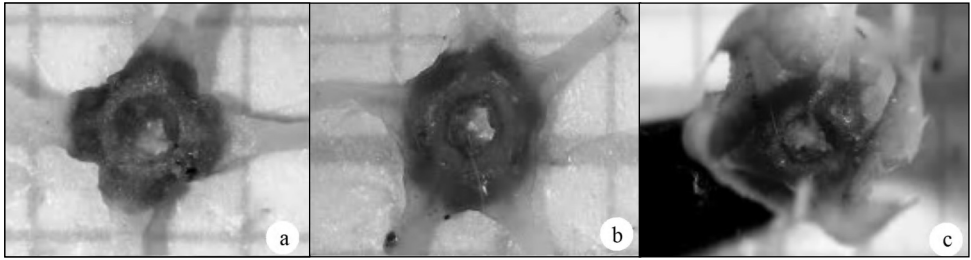


Fig. 4. Types of paralophic nectariferous disk in *Tamarix dalmanica*: **a**, tetramerous haplostemonous; **b**, pentamerous haplostemonous; **c**, tetramerous partially diplostemonous.

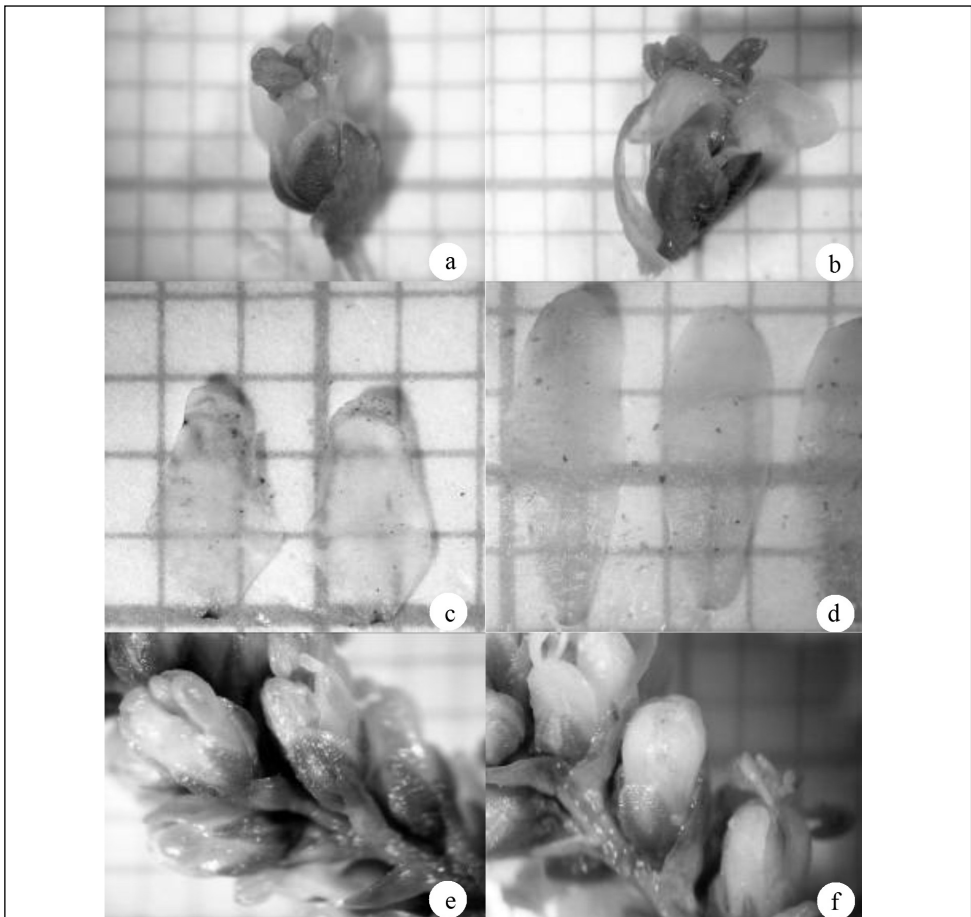


Fig 5. Floral parts of racemes : **a**. floral bract subequalling calyx in *Tamarix africana* var. *africana*; **b**. floral bract exceeding calyx in *Tamarix africana* var. *fluminensis*; **c**. trullate-ovate petals of *T. africana* var. *africana*; **d**. elliptic-obovate petals of *T. africana* var. *fluminensis*; **e**. floral bract shorter than calyx in *Tamarix arborea* var. *arborea*; **f**. floral bract exceeding calyx in *T. arborea* var. *subvelutina*.

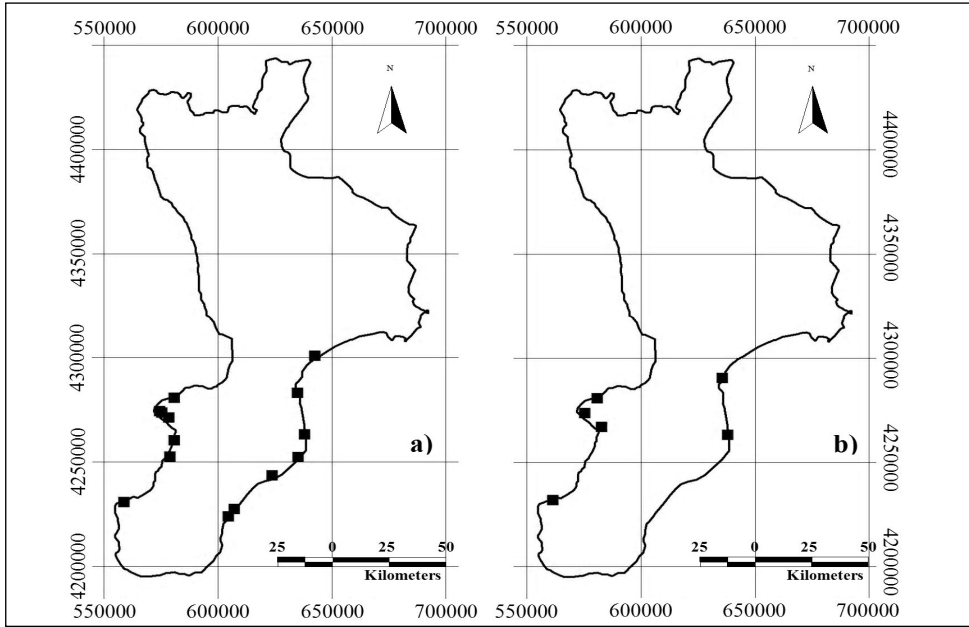


Fig. 6. Distribution of *Tamarix africana* var. *fluminensis* (a) and *T. africana* var. *africana* (b).

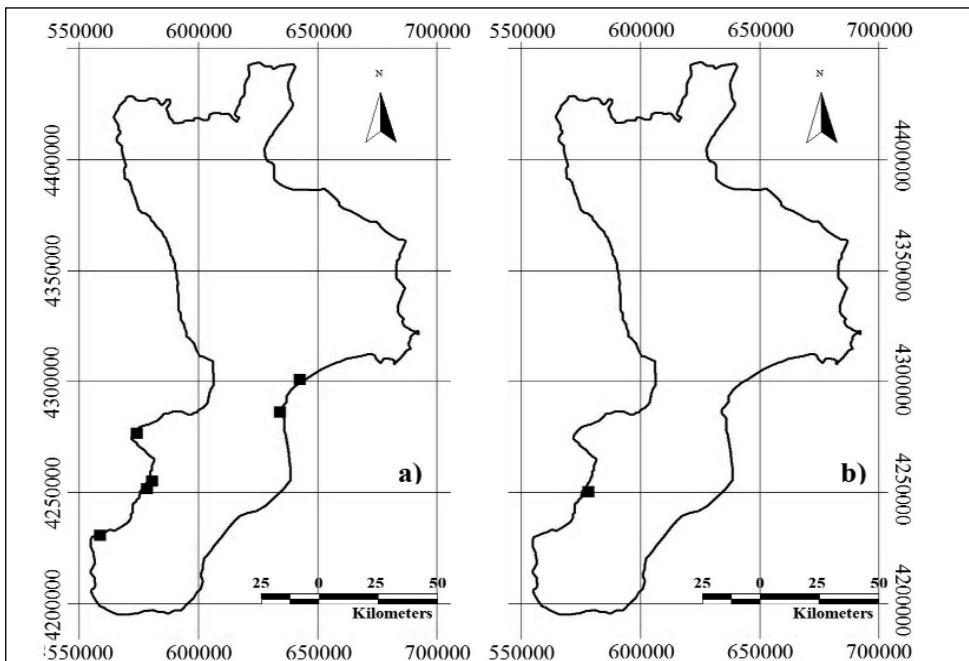


Fig. 7. Distribution of *Tamarix arborea* var. *arborea* (a) and *T. arborea* var. *subvelutina* (b).

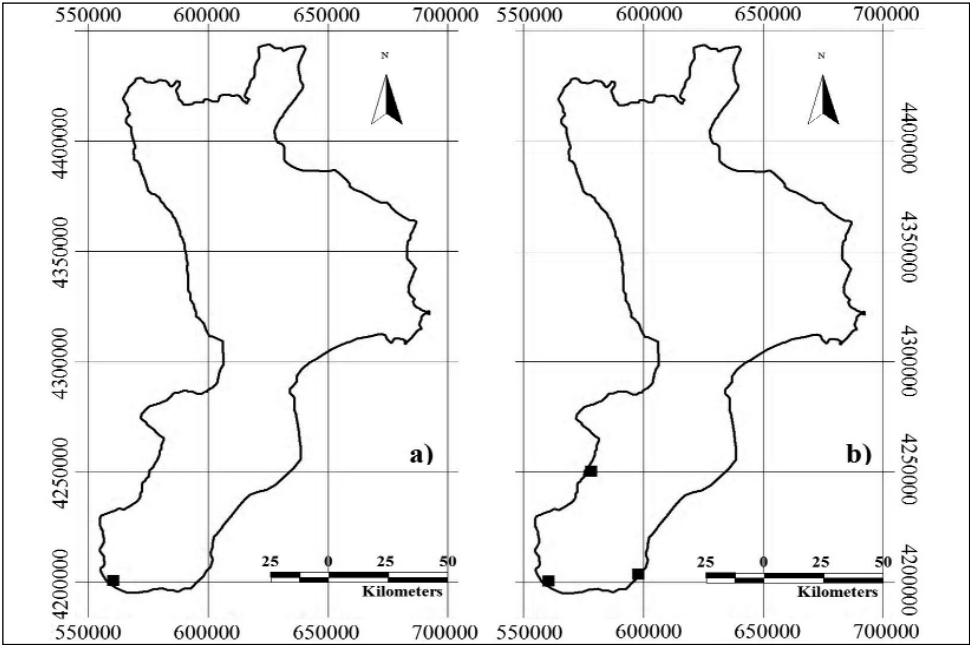


Fig. 8. Distribution of *Tamarix dalmatica* (a) and *T. hampeana* (b).

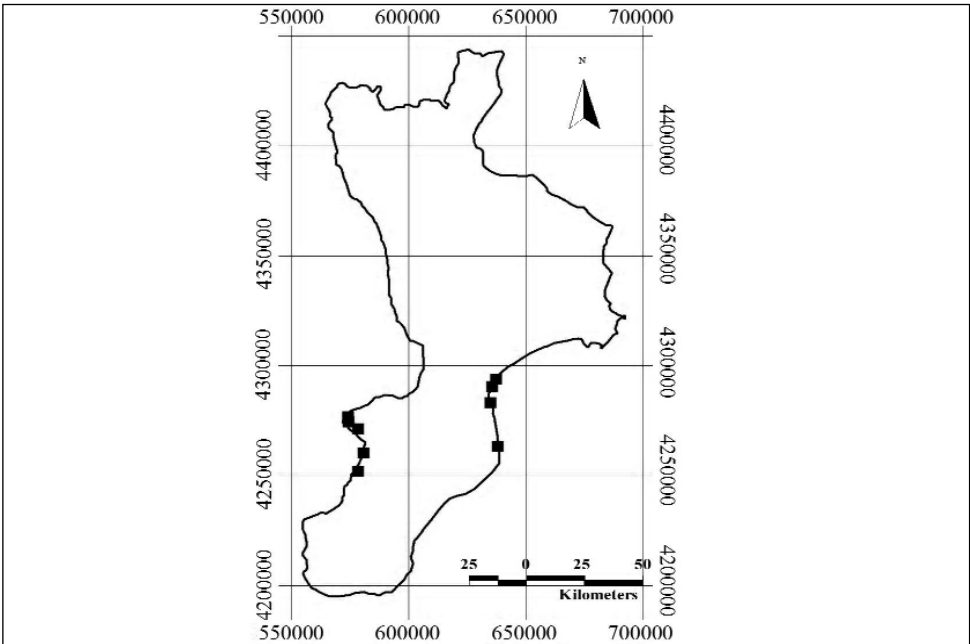


Fig. 9. Distribution of *Tamarix parviflora*.



***Tamarix hampeana*** Boiss. & Heldr. (Figs. 3b, 8b)**Habitat:** roadside; on a wall; cultivated.**Selected specimens:** *Brancaleone Marina (Reggio Calabria), SS 106, km 61, 29 Mar 2008, 264 IV NE (Brancaleone), G. Venturella & M.L. Gargano, s.n., (PAL); Lido di Palmi (Reggio Calabria), seafront, 28 Mar 2008, 245 II SE (Palmi), G. Venturella & M.L. Gargano, s.n., (PAL); Saline Joniche (Reggio Calabria), seaport, 29 Mar 2008, 263 I NO (Melito di Porto Salvo), G. Venturella & M.L. Gargano, s.n., (PAL).****Tamarix parviflora*** DC. (Figs. 3c, 9)**Habitat:** sand; cultivated.**Selected specimens:** *Santa Maria di Ricadi (Vibo Valentia), seafront, 28 Mar 2008, 245 I NE (Spilinga), G. Venturella & M.L. Gargano, s.n., (PAL); San Nicolò di Ricadi (Vibo Valentia), Robinson Village, 28 Mar 2008, 245 I NE (Spilinga), G. Venturella & M.L. Gargano, s.n., (PAL); Marina di Joppolo (Vibo Valentia), seafront, 28 Mar 2008, 245 I NE (Spilinga), G. Venturella & M.L. Gargano, s.n., (PAL); San Ferdinando (Reggio Calabria), seafront, 28 Mar 2008, 245 II NE (Gioia Tauro), G. Venturella & M.L. Gargano, s.n., (PAL); Taureana (Palmi, Reggio Calabria), seafront, 28 Mar 2008, 245 II SE (Palmi), G. Venturella & M.L. Gargano, s.n., (PAL); Copanello Lido (Catanzaro), seafront, 29 Mar 2008, 242 III NO (Squillace), G. Venturella & M.L. Gargano, s.n., (PAL); Davoli Marina (Catanzaro), seafront, 29 Mar 2008, 247 IV NO (S. Andrea Apostolo dello Ionio), G. Venturella & M.L. Gargano, s.n., (PAL); Montepaone Lido (Catanzaro), seafront, 29 Mar 2008, 242 III SO (Soverato), G. Venturella & M.L. Gargano, s.n., (PAL); Guardavalle Marina (Catanzaro), on the beach, 29 Mar 2008, 247 III NO (Stilo), G. Venturella & M.L. Gargano, s.n., (PAL).***Conclusions**

The tamarisks are widely distributed in the investigated territory of Calabria. They are mainly cultivated or growing in different habitats such as dunes, walls or roadsides. The morphological analysis of flower elements showed a wide variability in all the collected specimens. In contrast with data reported in literature (Baum, 1978) the most preeminent differences were observed in *T. hampeana* with vernal racemes not larger than *T. africana* and in the plants of *T. africana* var. *fluminensis* with racemes densely flowered and variable in size. The racemes of *T. africana* var. *fluminensis* are sometimes similar to *T. africana* var. *africana* but never broader than 8 mm as observed in *T. africana* var. *fluminensis* from Sicily (Venturella *et al.*, 2007). The population of *T. africana* var. *fluminensis* in Calabria seem to be predominant on *T. africana* var. *africana* while the latter is more widely distributed in Sicily. *T. canariensis* Willd. and *T. gallica* L., reported from Calabria by Conti *et al.* (2005), were not confirmed in the investigated territory but could not be at

the moment considered excluded from the regional flora since further investigation are in progress in the northern sector of Calabria.

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