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The genus *Tamarix* (*Tamaricaceae*) in Apulia (southern Italy)

Abstract

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This survey is part of the floristic exploration activities on the Italian territory related to the identification of spontaneous and cultivated plants of the genus *Tamarix* L. A list of tamarisks from Apulia (southern Italy) is here reported together with ecological and distributive data. On the whole, 7 species and 1 variety were recorded in the Apulian region. *T. arborea* var. *arborea* is the species with the widest distribution in the Apulian territory. The presence of *T. canariensis*, *T. dalmatica* and *T. gallica*, previously indicated for Apulia by other authors, is currently not confirmed.

Key words: Tamarisks, Ecology, Distribution, Mediterranean Area.

Introduction

An intensive floristic exploration has been carried out in Italy aimed at the characterization of the genus *Tamarix* L., notoriously a critical genus of the Italian vascular flora (Venturella & al. 2007; Alaimo & al. 2013; Tuttolomondo & al. 2014; Grisafi & al. 2016).

Until a few years ago, knowledge of this genus for the region was very limited. In fact, “An annotated checklist of the Italian vascular flora” (Conti & al. 2005) reports only 3 taxa for Apulia: *Tamarix africana* Poir., *T. canariensis* Willd., and *T. gallica* L.

T. africana Poir. and *T. gallica* L. were also cited by Mele & al. (2006) in the annotated checklist of the flora of Salento Peninsula.

The recent exploration of the territory aimed at knowledge of this genus brought to the report of new species: *T. macrocarpa* (Ehrenb.) Bunge, collected in the Gargano National Park, has been reported as a new species for Europe (Mandracchia & al. 2017).

In 2017, the author of this paper, together with Prof. G. Venturella, provided (*in verbis*) some data on the distribution, nomenclature and taxonomy about *Tamarix* species in Apulia for the updated checklist of the Flora of Italy. These data have been included in Bartolucci & al. (2018) that reports for Apulia six native species: *T. africana*, *T. arborea* (Ehrenb.) Bunge, *T. canariensis*, *T. dalmatica* Baum, *T. gallica*, *T. hampeana* Boiss. & Heldr. and in Galasso & al. (2018) that adds two more naturalized species: *T. macrocarpa* and *T. meyeri* Boiss.

The aim of this paper is to characterize the tamarisk flora of Apulia providing new and/or additional notes on the ecology and distribution of each taxa and to contribute to the knowledge of this still under investigated genus of vascular plants.

Materials and Methods

On the basis of the methodology proposed by Venturella & al. (2007), a several number of branches and racemes taken from wild, naturalized, and cultivated tamarisks growing on the Apulian territory were analyzed.

The exsiccata are kept in the Herbarium of the Department of Agricultural, Food and Forest Sciences (SAF). The geographic coordinates of the localities of collection have been obtained from Google Maps finder.

List of collected species, distribution and ecological notes

Tamarix africana Poir. var. *africana*

San Pietro in Bevagna, Manduria, province of Taranto, wild plant, on the beach, 3 m, 15 Apr 2011, 40°18'25.329"N, 17°40'20.89"E, *M.L. Gargano & G. Venturella*; SAF 01ap.
Lido La Baia, Marina di Pulsano, province of Taranto, wild plant, on the beach, 0 m, 15 Apr 2011, 40°21'11.149"N, 17°21'49.878"E, *M.L. Gargano & G. Venturella*; SAF 02ap.

Tamarix africana Poir. var. *fluminensis* (Maire) Baum

Saturo, Marina di Leporano, province of Taranto, cultivated, seafront, 8 m, 15 Apr 2011, 40°22'26.004N, 17°18'22.599E, *M.L. Gargano & G. Venturella*; SAF 03ap.

Tamarix arborea (Ehrenb.) Bunge var. *arborea*

Castrignano del Capo, Santa Maria di Leuca, province of Lecce, wild plant, on the cliff, 123 m, 15 Apr 2011, 39°49'53.72N, 18°21'7.242E, *M.L. Gargano & G. Venturella*; SAF 04ap.
Torre Colimella, Manduria, province of Taranto, at the entrance of the Natural Reserve "Salina dei Monaci e dune di Torre Colimena", wild plant, on dune, 1 m, 15 Apr 2011, 40°17'44.864N, 17°45'6.144E, *M.L. Gargano & G. Venturella*; SAF 05ap.
Punta Prosciutto, Porto Cesareo, province of Lecce, wild plant, on the beach, 1 m, 15 Apr 2011, 40°17'42.063"N, 17°46'16.445"E, *M.L. Gargano & G. Venturella*; SAF 06ap.
Porto Cesareo, province of Lecce, Oriented Regional Natural Reserve "Palude del Conte e Duna Costiera" cultivated, 4 m, 15 Apr 2011, 40°18'02.126"N 17°45'30.902"E, *M.L. Gargano & G. Venturella*; SAF 07ap.
Torre Lapillo, province of Lecce, naturalized, on sand, 2 m, 15 Apr 2011, 40°17'19.222"N, 17°51'8.061"E, *M.L. Gargano & G. Venturella*; SAF 08ap.
Porto Cesasero, province of Lecce, naturalized, seafront, on sand, 4 m, 15 Apr 2011, 40°15'37.346N, 17°53'35.128E, *M.L. Gargano & G. Venturella*; SAF 09ap.
Sant'Isidoro, Nardò, province of Lecce, cultivated, seafront, 0 m, 15 Apr 2011, 40°13'4.431N, 17°55'38.338E, *M.L. Gargano & G. Venturella*; SAF 10ap.

- Marina di Leporano, Baia d'Argento-Porto Saguerra, province of Taranto, cultivated, close to the dock, 3 m, 15 Apr 2011, 40°21'22.209N, 17°21'10.794E, *M.L. Gargano & G. Venturella*; SAF 11ap.
- Marina di Leporano, crossroads Lungovivo road, Km. 3,800, road 122, province of Taranto, wild plant, 7 m, 15 Apr 2011, 40°18'0.026N, 17°32'42.097E, *M.L. Gargano & G. Venturella*; SAF 12ap.
- Lido Onda Blu, Torretta, province of Taranto, wild plant, on dunes, 0 m, 15 Apr 2011, 40°19'58.894N, 17°25'5.615E, *M.L. Gargano & G. Venturella*; SAF 13ap.
- Le Conche, Lizzano, province of Taranto, naturalized, 1 m, 15 Apr 2011, 40°19'10.011N, 17°27'23.695E, *M.L. Gargano & G. Venturella*; SAF 14ap.
- Campomarino di Maruggio, province of Taranto, naturalized, 1 m, 15 Apr 2011, 40°18'14.462N, 17°41'54.191E, *M.L. Gargano & G. Venturella*; SAF 15ap.
- Torre Ovo, province of Taranto, cultivated in a seaside villa, 13 m, 15 Apr 2011, 40°18'10.913N, 17°30'19.438E, *M.L. Gargano & G. Venturella*; SAF 16ap.
- San Pietro in Bevagna, Manduria, province of Taranto, naturalized, on the beach, 3 m, 15 Apr 2011, 40°18'25.329"N, 17°40'20.89"E, *M.L. Gargano & G. Venturella*; SAF 17ap.
- Gallipoli, province of Lecce, cultivated, 14 m, 15 Apr 2011, 40°03'21.063N, 17°59'33.409E, *M.L. Gargano & G. Venturella*; SAF 18ap.
- Santa Cesarea Terme, province of Lecce, cultivated, 23 m, 15 Apr 2011, 40°02'6.786N, 18°27'21.217E, *M.L. Gargano & G. Venturella*; SAF 19ap.
- La Fraula, Santa Cesarea Terme, province of Lecce, cultivated, 40 m, 15 Apr 2011, 40°04'28.867N, 18°28'46.27E, *M.L. Gargano & G. Venturella*; SAF 20ap.
- Polignano a Mare, province of Bari, naturalized, on the cliff, 23 m, 16 Apr 2011, 40°59'41.639N, 17°13'21.14E, *M.L. Gargano & G. Venturella*; SAF 21ap.
- Cozze, province of Bari, naturalized, on the cliff, 4 m, 16 Apr 2011, 41°02'18.803N, 17°08'20.157E, *M.L. Gargano & G. Venturella*; SAF 22ap.
- Torre a Mare, Bari, cultivated, 4 m, 16 Apr 2011, 41°05'6.824N, 16°59'56.228E, *M.L. Gargano & G. Venturella*; SAF 23ap.
- San Giorgio, Bari, cultivated, 7 m, 16 Apr 2011, 41°05'36.556N, 16°58'18.445E, *M.L. Gargano & G. Venturella*; SAF 24ap.
- Bari, cultivated, seafront, 9 m, 16 Apr 2011, 41°07'1.716N, 16°52'18.737E, *M.L. Gargano & G. Venturella*; SAF 25ap.
- Molfetta, province of Bari, naturalized, on the beach, 0 m, 16 Apr 2011, 41°12'9.996N, 16°35'55.387E, *M.L. Gargano & G. Venturella*; SAF 26ap.
- Bisceglie, province of Barletta, cultivated, along the road, 9 m, 16 Apr 2011, 41°14'33.814N, 16°30'7.434E, *M.L. Gargano & G. Venturella*; SAF 27ap.
- Barletta, cultivated, along the road, 15 m, 16 Apr 2011, 41°19'10.789N, 16°17'1.754E, *M.L. Gargano & G. Venturella*; SAF 28ap.
- Gattarella Resort, Lama le Canne, Vieste, province of Foggia, cultivated, 14 m, 16 Apr 2011, 41°50'18.564N, 16°11'6.64E, *M.L. Gargano & G. Venturella*; SAF 29ap.
- Lido Cristalda Beach, Vieste, province of Foggia, cultivated, 0 m, 16 Apr 2011, 41°53'9.395N, 16°10'16.435E, *M.L. Gargano & G. Venturella*; SAF 30ap.
- Mattinata, province of Foggia, along the road, cultivated, 85 m, 16 Apr 2011, 41°42'38.229N, 16°02'56.717E, *M.L. Gargano & G. Venturella*; SAF 31ap.

***Tamarix hampeana* Boiss. & Heldr.**

Gallipoli, province of Lecce, cultivated, 14 m, 15 Apr 2011, 40°03'21.063N, 17°59'33.409E, *M.L. Gargano & G. Venturella*; SAF 32ap.

***Tamarix macrocarpa* Bunge**

Manacore, Peschici (province of Foggia), county road n° 52, km 13, along the road, group of small trees, 8 m, 41°56'14.19", 16°04'14.913", 16 April 2016, *M.L. Gargano & G. Venturella*, SAF 075 (*Mandracchia et al.* 2017).

***Tamarix meyeri* Boiss.**

Porto Tricase, Tricase, province of Lecce, wild plant, close to the beach, 0 m, 15 Apr 2011, 39°56'2.829N, 18°23'46.227E, *M.L. Gargano & G. Venturella*; SAF 33ap.

Porto Cesasero, province of Lecce, naturalized, seafront, on sand, 4 m, 15 Apr 2011, 40°15'37.346N, 17°53'35.128E, *M.L. Gargano & G. Venturella*; SAF 34ap.

Santa Cesarea Terme, province of Lecce, cultivated, 23 m, 15 Apr 2011, 40°02'6.786N, 18°27'21.217E, *M.L. Gargano & G. Venturella*; SAF 35ap.

Polignano a Mare, province of Bari, cultivated, close to Arco Marchesale, 23 m, 16 Apr 2011, 40°59'41.639N, 17°13'21.14E, *M.L. Gargano & G. Venturella*; SAF 36ap.

Cozze, province of Bari, naturalized, on the cliff, 4 m, 16 Apr 2011, 41°02'18.803N, 17°08'20.157E, *M.L. Gargano & G. Venturella*; SAF 37ap.

***Tamarix parviflora* DC.**

Lido La Baia, Marina di Pulsano, province of Taranto, cultivated, seafront, 0 m, 15 Apr 2011, 40°21'11.149"N, 17°21'49.878"E, *M.L. Gargano & G. Venturella*; SAF 38ap.

Gallipoli, province of Lecce, cultivated, 14 m, 15 Apr 2011, 40°03'21.063N, 17°59'33.409E, *M.L. Gargano & G. Venturella*; SAF 39ap.

Castrignano del Capo, Santa Maria di Leuca, province of Lecce, naturalized, along the road, 23 m, 15 Apr 2011, 39°49'53.72N, 18°21'7.242E, *M.L. Gargano & G. Venturella*; SAF 40ap.

Marina Serra, Tricase, province of Lecce, naturalized, along the road, 66 m, 15 Apr 2011, 39°54'51.868N, 18°23'26.214E, *M.L. Gargano & G. Venturella*; SAF 41ap.

Polignano a Mare, province of Bari, cultivated, close to Arco Marchesale, 23 m, 16 Apr 2011, 40°59'41.639N, 17°13'21.14E, *M.L. Gargano & G. Venturella*; SAF 42ap.

Polignano a Mare, province of Bari, naturalized, on the cliff, 23 m, 16 Apr 2011, 40°59'41.639N, 17°13'21.14E, *M.L. Gargano & G. Venturella*; SAF 43ap.

Cozze, province of Bari, naturalized, on the cliff, 4 m, 16 Apr 2011, 41°02'18.803N, 17°08'20.157E, *M.L. Gargano & G. Venturella*; SAF 44ap.

Bisceglie, province of Barletta, cultivated, along the road, 9 m, 16 Apr 2011, 41°14'33.814N, 16°30'7.434E, *M.L. Gargano & G. Venturella*; SAF 45ap.

***Tamarix rosea* Bunge**

Campomarino di Maruggio, province of Taranto, cultivated along the road, 1 m, 15 Apr 2011, 40°18'14.462N, 17°41'54.191E, *M.L. Gargano & G. Venturella*; SAF 46ap.

San Pietro in Bevagna, Manduria, province of Taranto, naturalized, on the beach, 3 m, 15 Apr 2011, 40°18'25.329"N, 17°40'20.89"E, *M.L. Gargano & G. Venturella*; SAF 47ap.

Bisceglie, province of Barletta, cultivated, along the road, 9 m, 16 Apr 2011, 41°14'33.814N, 16°30'7.434E, M.L. Gargano & G. Venturella; SAF 48ap.

Conclusions

Currently, 7 species and 1 variety characterize the tamarisk flora of Apulia. As shown in Figs. 1-2, the population of *Tamarix africana* var. *africana* and *T. africana* var. *fluminensis*, the latter is a cultivated plant in the seafront, are concentrated in the province of Taranto. *T. arborea* var. *arborea* is the species with the widest distribution in the Apulian territory. The plant is used as an ornamental mainly in coastal cities, along the promenades, the roads, and the public and private gardens. As wild plant, *T. arborea* var. *arborea*, colonize cliffs, dunes, beaches and, road margins. Some plants, growing on sand, observed in different localities of the provinces of Taranto and Bari are naturalized. Also *T. parviflora* has a wide distribution in Apulia as cultivated plant along the roads and the seafronts. As naturalized plant, *T. parviflora* can be observed along the roads in the province of Lecce and on the cliffs of Polignano a Mare (Fig. 1) and Cozze. *T. hampeana* is an uncommon

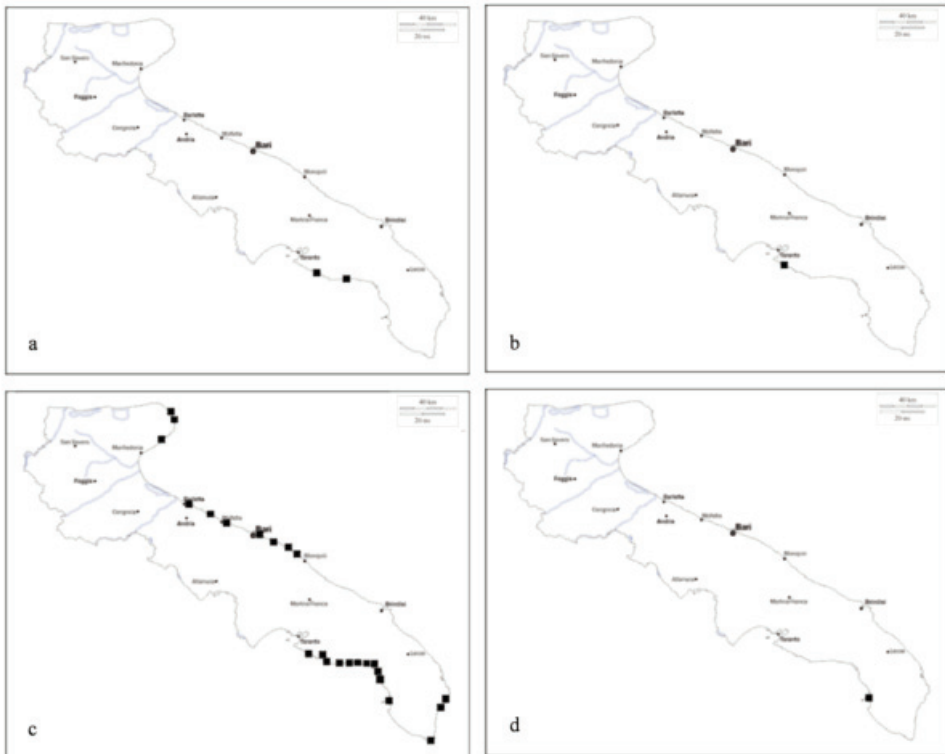


Fig. 1. Distribution of: **a)** *Tamarix africana* var. *africana*; **b)** *T. africana* var. *fluminensis*; **c)** *T. arborea* var. *arborea* and, **d)** *T. hampeana*.

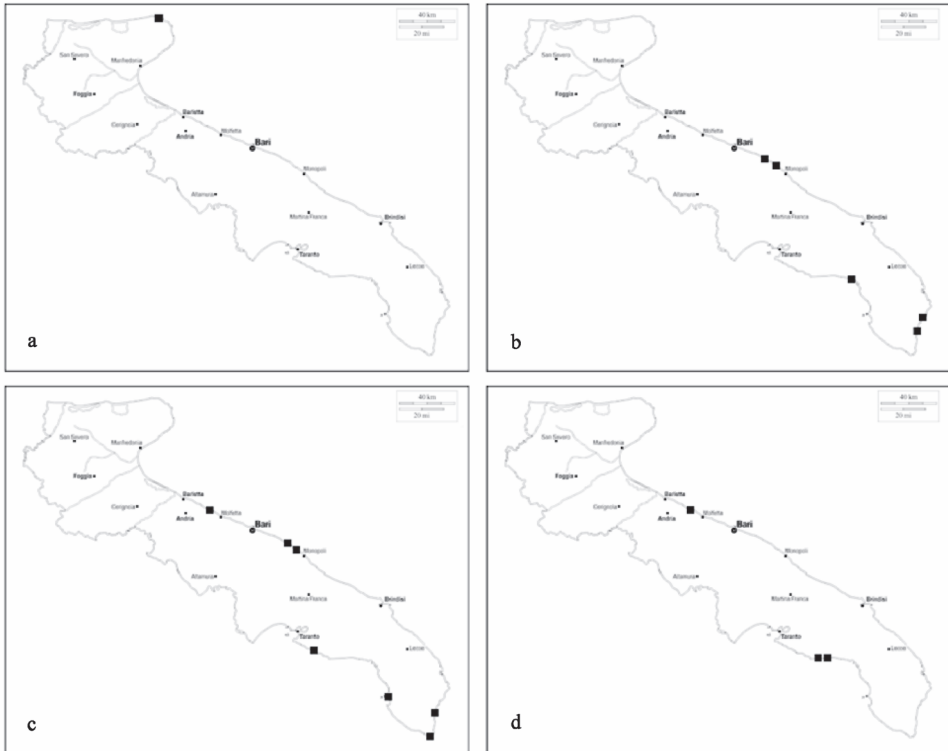


Fig. 2. Distribution of: **a)** *Tamarix macrocarpa*; **b)** *T. meyeri*; **c)** *T. parviflora* and, **d)** *T. rosea*.

species currently observed in the Apulian territory only as cultivated, while in Calabria (Venturella & al. 2008) and Sicily (Venturella & al. 2007) it was also found as a wild species. *T. rosea*, a species cultivated in some Italian regions, is reported for the first time as a wild plant on the beach of San Pietro in Bevagna in the province of Taranto. *T. meyeri*, previously recorded from Sicily, Calabria, Marche, Abruzzo, Veneto and Piemonte (Venturella & al. 2012) has been collected as wild, naturalized and cultivated plant in different localities in the provinces of Lecce and Bari.

The presence in the region of *T. canariensis*, *T. dalmatica* and *T. gallica* included in Bartolucci & al. (2018), is currently not confirmed.

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