

## *Juniperus oxycedrus* f. *yaltirikiana* (Cupressaceae): a new form from NW Turkey

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**Abstract.** A new form of *Juniperus oxycedrus* f. *yaltirikiana* characterized by a narrowly-columnar habit, is described from the vicinity of Zonguldak in NW Turkey as a taxon new to science. The local population of this juniper threatened by extensive exploitation should be propagated from seeds and by cuttings and preserved in botanical gardens. It can also be used as a valuable garden plant in the hot, dry regions of the Mediterranean area.

**Key words:** columnar habit, *Juniperus oxycedrus* f. *yaltirikiana*, negative selection, new form, threatened plant, Turkey

### Introduction

*Juniperus oxycedrus* is one of the most widespread species of the genus, with a range extending from NE Africa and the Iberian Peninsula, throughout Mediterranean Europe and Anatolia to the Caucasus and W Iran (Coode & Cullen 1965; Browicz 1982, 1996; Franco 1986; Christensen 1997; Adams 2004; Farjon 2005; Klimko & al. 2007). Generally, four geographical races usually treated as subspecies have been distinguished: *J. o.* subsp. *oxycedrus* occurring throughout the species range; *J. o.* subsp. *macrocarpa* (Sm.) Ball growing mainly within a narrow belt along the coasts of the Mediterranean Sea and characterized by relatively large cones; *J. o.* subsp. *trans tagana* Franco, occurring locally in the western part of the Iberian Peninsula and characterized by a fastigiated habit and short thick needles, and *J. o.* subsp. *badia* (H. Gay) Debeaux from central Spain and northern Algeria distinguished by pendent twigs and long leaves. The nominative *J. o.* subsp. *oxycedrus* is a shrub or small tree, variable in habit, but no re-

markable taxon of lower rank has been recognized within it until recently. The first such variant, *J. o.* subsp. *oxycedrus* var. *spilina* Yalt., Eliçin & Terzioğlu [as '*spilinanus*'], was described in 2007 from Spildagi National Park in W Turkey (Yaltirik & al. 2007). It is characterized by a creeping habit and short needles and is very much like *J. communis* subsp. *nana* (Willd.) Syme.

### Materials and methods

In the summer of 2007, the first author (M.A.) found an interesting form of *J. oxycedrus*. It was a shrub differing from the type form by a dense, narrowly columnar or fusiform habit (Fig. 1). It was discovered in the northwestern coastal part of Turkey, east of Zonguldak, between Göbü and Türkali villages (Fig. 2). Numerous narrow prickly junipers, up to 2.5–3.5 m high, were scattered on the western slope of Kavaklı hill and on the Kıztaşı ridge, between 100 and 150 m above the sea level, within an area of 1.5–2 km<sup>2</sup> (Fig. 3). A non-



calcareous, brown forest soil covered the flysch dated to the upper Cretaceous (Tokay 1964). The local climate is Mediterranean, with mean annual temperature of 13.4°C, annual precipitation of 1232 mm, and most abundant rains in winter and autumn; however, there is also precipitation in summer (Avci 1998).

## Results and discussion

The local vegetation typical for the Mediterranean region is formed by scattered *Pinus pinea* L. and shrub communities constituted of *Quercus infectoria* Olivier, *Phillyrea latifolia* L., *Pistacia terebinthus* L., *Erica arborea* L., *Myrtus communis* L., *Ruscus aculeatus* L., *Cistus salvifolius* L., *Laurus nobilis* L., and *Jasminum fruticans* L. The abundant occurrence of *Pteridium aquilinum* (L.) Kuhn is also characteristic for the area. The typical broad-crowned form of prickly juniper is absent from the nearest vicinity; hence, intermediate forms do not occur there too.

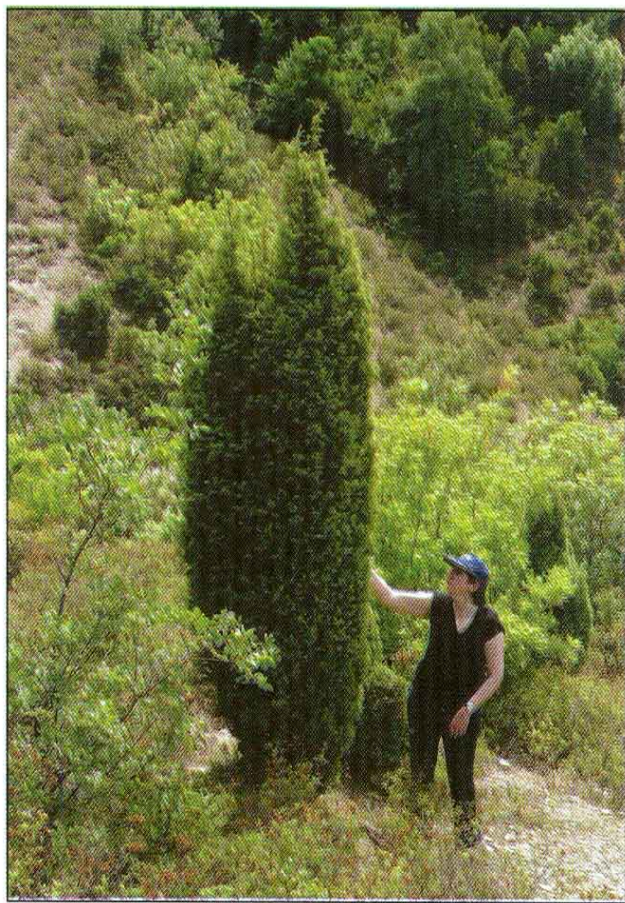


Fig. 1. Typical habit of *J. oxycedrus* f. *yaltirikiana* (photo Sedat Avci).

The columnar *J. oxycedrus* is represented by rather numerous plants but they differ from the typical individuals of the species by habit only; therefore, we describe it formally in the rank of forma.

### *Juniperus oxycedrus* f. *yaltirikiana* Meral Avci & Ziel., f. nov. (Fig. 1)

Narrowly columnar to fusiform, dense shrub up to 2.5 (–3.5) m high, with numerous upright branches and subpatent annual twigs. Leaves subpatent, pungent, up to 12 mm long, 1.5 mm broad, with 2 grey bands of stomata on the adaxial side. Cones brown, up to 8.6 mm in diameter. Seeds usually 3, up to 6×3 mm.

A speciei forma typica habitu anguste columnari usque anguste fusiformi et ramis ascendentibus dense aggregatis differt.

**Type:** NW Turkey, E of Zonguldak, between Göbü and Türkali villages, 100–150 m, 17.08.2007, leg. M. Avci (ISTO 32573 – **holotype**, ISTE 83922 – **isotype**).

*Juniperus oxycedrus* f. *yaltirikiana* honours Faik Yaltırık, a retired professor of the Faculty of Forestry, Istanbul University, the prominent expert on Turkish dendrology and the mentor of the first author.

The taxonomy of *J. oxycedrus* is as follows:

*Juniperus oxycedrus* L., Sp. Pl. 1038 (1753)

subsp. *oxycedrus*

var. *oxycedrus*

f. *yaltirikiana* Meral Avci & Ziel.

var. *spilinanus* Yalt., Eliçin & Terzioğlu, Turk. J. Bot. 31: 38 (2007)

subsp. *transtagana* Franco, Feddes Repert. 68: 166 (1963)

subsp. *badia* (H. Gay) Debeaux, Fl. Kabylie: 411 (1894)

The population of columnar juniper near Zonguldak most likely originated as a result of negative selection. The founder individuals have appeared due to mutations of the typical form which had occurred there earlier but disappeared with time because of excessive exploitation. Columnar shrubs, rare at the very beginning but left in the field as less useful, stabilized by self-breeding and their number increased. In our opinion, the same mechanism is responsible for the origin and high local frequency of the globose and columnar aberrations of *Pinus nigra* J.F. Arnold and *P. sylvestris* L. in the region of Bolu in NW Turkey (Boydak 2001; Tosun 2003).



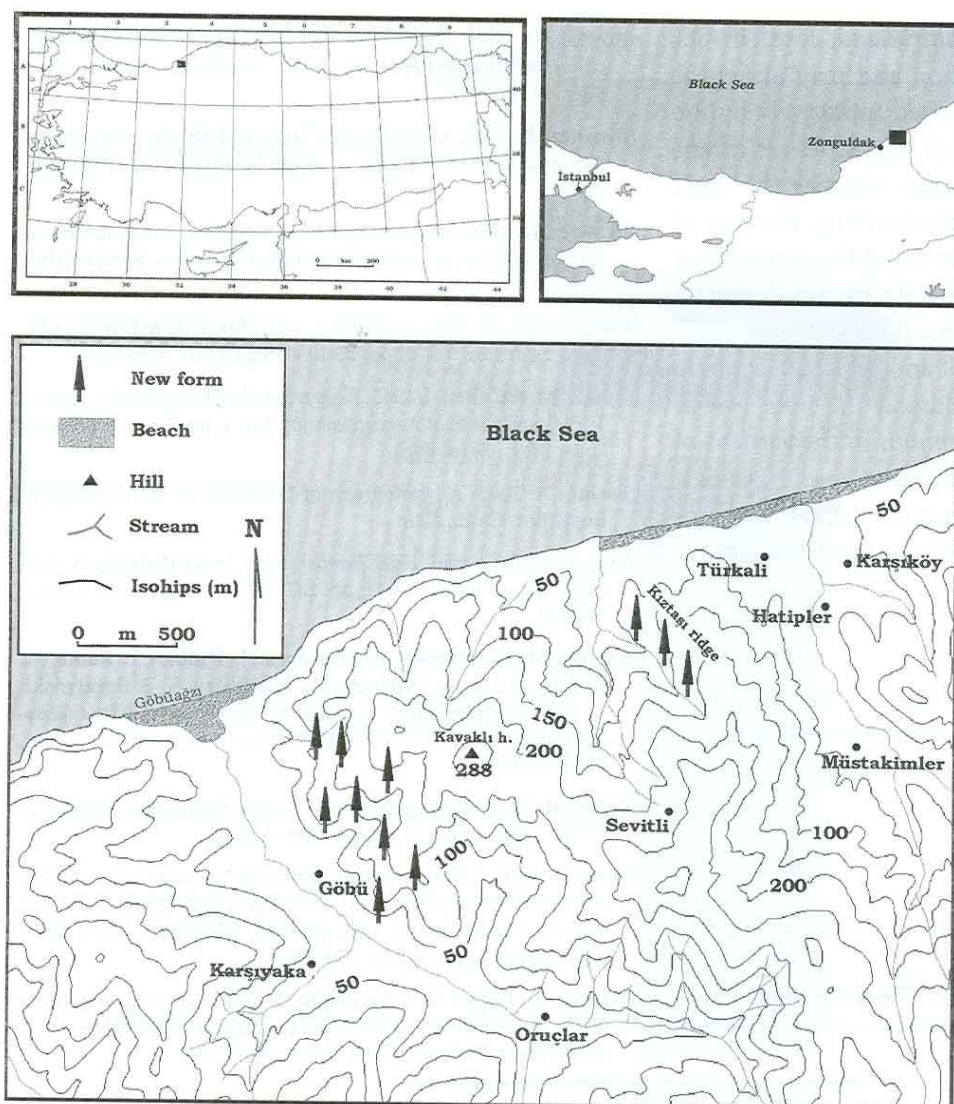


Fig. 2. Locality of *J. oxycedrus* f. *yaltirikiana*.



Fig. 3. *J. oxycedrus* f. *yaltirikiana* in *loco classico* between Göbü and Türkali villages, E of Zonguldak, NW Turkey –juniper specimens are marked by arrows (photo Meral Avcı).

*Juniperus oxycedrus* f. *yaltirikiana*, local in occurrence, is a threatened taxon and may disappear in the near future. It is exploited intensively by the local people for preparation of simple fences or enclosures using the entire plants, whereas the basal parts of the plants are used for kindling. Because of its threatened status, this form should be reproduced both from seeds and vegetatively by cuttings, and preserved in botanical gardens. It may also be a valuable garden plant for the hot and dry regions of the Mediterranean, where it could play the same role as the columnar forms of *J. communis* in the gardens of colder regions. Contrary to the latter species, *J. oxycedrus* is seldom in cultivation and we have been unable to find any named cultivars in dendrological literature.

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