JUNIPERUS DELTOIDES, A NEW SPECIES, AND NOMENCLATURAL NOTES ON JUNIPERUS POLYCARPOS AND J. TURCOMANICA (CUPRESSACEAE)

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ABSTRACT

A new Juniperus species from the Mediterranean, Juniperus deltoides R. P. Adams is recognized based on published data on DNA RAPDS, nrDNA sequence, morphology and terpenoids. Juniperus turcomanica B. Fedtsch is recognized as a variety of J. polycarpos K. Koch [Juniperus polycarpos K. Koch var. turcomanica (B. Fedtsch) R. P. Adams], based on RAPD data, terpenoids and morphology.

KEY WORDS: Juniperus, Cupressaceae, nomenclature.

Adams et al. (2003) examined the relationships among Juniperus drupacea Labill., J. macrocarpa Sibth. & Sm., J. navicularis Grand., J. oxycedrus L. (Greece and Spain), J. oxycedrus var. badia H. Gay comparing nrDNA (ITS) sequences, Random Amplified PolymorphicDNAs (RAPDs), Inter-Sequence Simple Repeats (ISSR) and terpenoids. Although the purpose of that work was to evaluate different kinds of data, we found that the two populations of J. oxycedrus (Greece, Spain) were as different in the these four data sets as the other recognized species in the study. Comparing the specimens of J. oxycedrus, Spain, with the Linnaeus type for J. oxycedrus (LINN!) revealed that they are the same. Thus, the plants from Greece are appropriately recognized as a new species:

Juniperus deltoides R. P. Adams sp. nov. TYPE: GREECE. 14 km e. of Archova, 420 m, Lat. 38° 26.720' N; Long. 22° 41.678' E, 22 May 2001, R. P. Adams 9436 (HOLOTYPE: BAYLU, Paratypes: K, NY)
Plantas dioicas; frutices vel arbores usque 12 m, saepe coronis pyramidalis. Folia aciculares 9-17 mm longae 1.5-2.4 mm latae, base folio fere latiora quam lamina. Folia vittis glaucis duabus in superficiebus adaxialis plerumque non impressis. Strobilus in anno secundo maturescens, globosus viridis stramineo-brunneolescens atrorubens in maturitate. Semina plerumque tres.

Plants dioecious; shrubs or trees to 12m, often with pyramidal crowns. Leaves acicular, 9--17 mm long, 1.5--2.4 mm wide, base of the leaf nearly as wide the blade. Leaves with two glaucous bands on the adaxial surface, generally not sunken. Cone ripening in second year, globose, dark red when ripe, green turning to brownish yellow when ripening. Seeds usually 3.

*Juniperus oxycedrus* (sensu stricto) can be distinguished from *J. deltoides* by having a narrowing of the leaf base (Fig. 1, a), whereas the leaf base is almost as wide as the blade (Fig. 1, b) in *J. deltoides* (thence the name). In addition, the stomatal bands in *J. oxycedrus* are sunken (Fig. 1 a), giving the midrib a raised appearance. In contrast, in *J. deltoides*, most of the leaves have stomatal bands that are not sunken, giving the leaf a flat surface appearance (actually concave as illustrated in Fig. 1 b).

![Fig. 1. Leaves *J. oxycedrus* (a) and *J. deltoides* (b).](image_url)

**Representative Specimens Examined.**

Bulgaria. s Varna, 7 Dec 1923, *B. Gilliat-Smith* 373 (K).


Greece. Crete, Mt. Spathi, 1760m, 16 May 1967, *G. Barclay* 257 (K).

14 km e Arachova, 420 m, 22 May 2001, *R. P. Adams* 9436, 9437,


Italy. 3 km w Raiano, 520 m, 26 May 2001, R. P. Adams 9445, 9446, 9447 (BAYLU).

Macedonia. near Zelenikovo, 23 Dec 1935, Mrs. Illic s.n. (K).

Slovenia. between Parenzo & Rovigno, 16 Aug 1922, W. B. Turrill 1009 (K). sw Trebnje, 18 Apr 1935, Jackson & Turrill 86 (K).

Turkey. 30 km n of Eskieshir, 1064 m, 20 May 2001, R. P. Adams 9430, 9431, 9432 (BAYLU). 8 km from Belen towards Antakya, 600 m, 6 May 1965, M. J. E. Coode & B. M. G. Jones 324 (K). Macka, 300m, 2 Apr 1960, Stainton 8152 (K). Elmali, 1800m, 19 Apr 1936, T. A. Tengwall, 400 (K). Artvin, 700m, 27 Jun 1957, Davis & Hedge 30095 (K). above Ankara, 400m, 5 Jul 1974, P. H. Davis 13062 (K).

Ukraine. Yalta, near Nikita, 150m, 29 May 1959, Davis 33086 (K).

Juniperus polycarpos K. Koch from central Asia is a very polymorphic species that is often included as a variety of J. excelsa M.-Bieb. (Farjon, 2001). Adams (2001) examined populations referable to J. polycarpos (sensu stricto) from Armenia, J. seravschanica Kom. (Kazakhstan, Pakistan) and J. turcomanica B. Fedtsch. (Turkmenistan). Both terpenoids and RAPDs showed J. excelsa to be quite resolved from the J. polycarpos complex (three aforementioned taxa). The leaf terpenoids showed that J. turcomanica to be somewhat different from J. polycarpos of Armenia and J. seravschanica from Kazakhstan and Pakistan. The RAPDs data suggested that the recognition of J. polycarpos K. Koch. var. seravschanica Kom.) Kitamura and J.
turcomanica as a infraspecific taxon of J. polycarpos might be warranted. Re-examination of the morphology of J. polycarpos and J. turcomanica suggests to the author that it would be prudent to recognize J. turcomanica as a variety of J. polycarpos.

Juniperus polycarpos K. Koch var. turcomanica (B. Fedtsch.) R. P. Adams, comb. nov.


Distribution: Elburz and Kopet Mts. of Iran and Turkmenistan.

The following key may be used to distinguish the recognized varieties of J. polycarpos:

1. Foliage slender, 0.7-0.8 mm in cross section
   on ultimate branchlets, seed cones 7-9(-10) mm,
   scale leaves tightly appressed, giving a smooth
   branchlet, (1-)2-3(-4) seeds/cone ..................................
   .........J. polycarpos K. Koch var. turcomanica (B. Fedtsch) R. P. Adams

1. Foliage stout, 0.9-1 mm in cross section
   on ultimate branchlets, seed cones 9-11 mm or
   more, scale leaves with a beak or keel so branchlet
   appears as a string of beads, 3-6 seeds/cone

2. Seed cones 9-11 mm, at least some scale leaves
   with very narrow, elongated, brown glands,
   not ruptured ...................................J. polycarpos K. Koch var. polycarpos

2. Seed cones 8-10 mm, scale leaves with clear,
   ellipsoid glands, often ruptured, with a clear exudates ..................
   ..........J. polycarpos K. Koch var. seravschanica (Kom.) Kitamura
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LITERATURE CITED


