

SHORT NOTE - NOTA BREVE

PERSICOSTROBUS VAEZ-JAVADI N. GEN.. A NEW EQUISETALEAN STROBILUS FROM THE TRIASSIC OF IRAN

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Abstract. Well-preserved and abundant plant megafossils were found in the basal part of the Shemshak Formation on Ozon Mountain, Alborz, NE Iran. *Persicostrobis* is a new equisetalean strobilus from the Rhaetian (Upper Triassic) strata. *Persicostrobis ghavideli* is described as the type species of this genus. *Persicostrobis* sp. is an immature cone of this genus.

Riassunto. Megafossili di piante, abbondanti e ben conservati, sono stati rinvenuti nella parte basale della Formazione Shemshak dei monti Ozon nella catena dell'Elburz, NE Iran. *Persicostrobis* è un nuovo strobilo di Equisetales rinvenuto negli strati di età Retica (Triassico superiore), la cui specie-tipo viene descritta con il nome di *Persicostrobis ghavideli*. Viene inoltre descritto *Persicostrobis* sp. come cono immaturo di questo genere.

Introduction

The area studied is located on Ozon Mountain, 56° 32' E and 37° 02' N, 15 Km northeast of Jajarm. Jajarm is located northwest of the Khorasan province, 175 Km from the city of Bojnurd (Fig. 1). The study area is about 1000 m above sea level.

The Shemshak Formation is well-exposed at Kuh-e-Ozon which is about 800 Km from its type locality in the Central Alborz. The Shemshak Formation has a thickness of 2080 m in Kuh-e-Ozon and consists mainly of sandstones, grey shales intercalating with coal seams and a few limestone beds. Afshar-Harb (1979) described the Shemshak Formation in Kuh-e-Ozon, and on the ba-

sis of Ammonite fossils he suggested a Middle Toarcian-Lower Aalenian age for this unit. Soheili (1982), preparing a geological map for this area, mentioned that there are no fossils in the basal part of this unit up to 750 m. He suggested a Toarcian-Bathonian age for the upper part of this unit, based on Ammonite fossils.

Both Afshar-Harb and Soheili, while recording presence of Ammonites in some horizon of the Shemshak Formation, did not report any plant megafossils. Vaez-Javadi & Ghavidel-Syooki (2002) identified 17 species of various orders. On the basis of *Dictyophyllum exile*, *Equisetites arenaceus*, *Podozamites latissimus* and *Nilssonina polymorpha* the basal part of the Shemshak Formation is dated as Rhaetian.

Stratigraphy

The Shemshak Formation in the Jajarm area consists mainly of sandstone, shale, coal seams, and conglomerate horizons in the lower part and limestones containing ammonites and bivalves in the upper part. The Shemshak Formation disconformably overlies on the Elika Formation and the upper contact of this formation with the Bash-Kalateh Formation (Afshar-Harb 1979) is gradational. The lower part of the Shemshak Formation begins with a conglomerate bed, 16 m thick, followed by medium-coarse grained sandstones alternating with olive-grey shales. The shales contain well-preserved and abundant plant megafossils such as *Equisetites aren-*

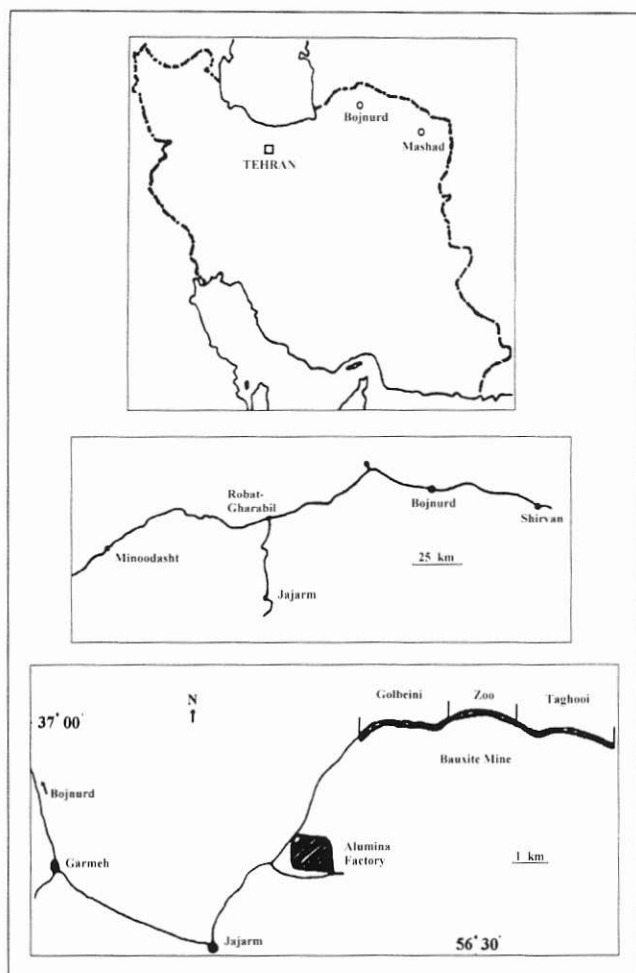


Fig.1 - Location map of studied area.

aceus from the Rhaetian (Upper Triassic) (Vaez-Javadi & Ghavidel Syooki 2002) and *Persicostrobus ghavideli* n. gen., n. sp.. The specimens described were collected at 40 m from the base of the alternations, i.e. 56 m from the base of the unit.

Systematic paleontology

Systematic paleontology based on Cleal (1993, pp. 779-794).

Division **Pteridophyta**

Class **Equisetopsida** Takhtajan ex Nemejc, 1963

Order **Equisetales** Trevisan, 1876

Persicostrobus Vaez-Javadi n. gen.

Type species: *Persicostrobus ghavideli* Vaez-Javadi n. sp.

Derivative name. *Persico* from Persia means Iran, *strobus* means cone.

Diagnosis. Isolated, terminal strobilus, generally rectangular-ellipsoidal in shape, consisting of whorls of tetragonal sporangiophores, arranged in columns and rows in the middle part; fine and linear leaves at the top of the strobilus and fine, short leaves at the base.

Age. Rhaetian.

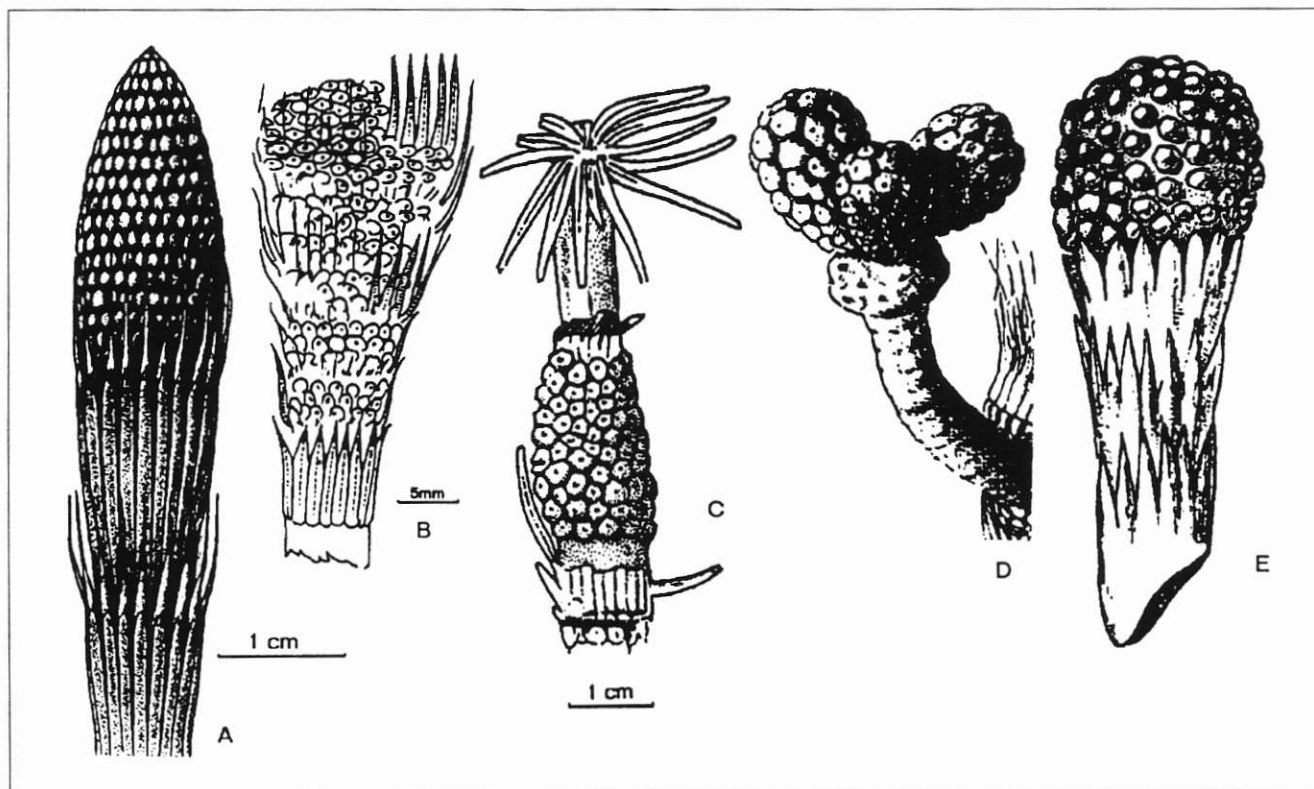


Fig. 2 - A, *Equisetites columnaris* (after Schweitzer et al 1997); B, *Equisetites bracteosus* (after Kon'no 1962); C, *Equisetinostachys grandis* (Rasskazova 1961); D, *Equisetites arenaceus* (after Frentzen 1933); E, *Equisetites meunsteri* (after Boureau 1964).

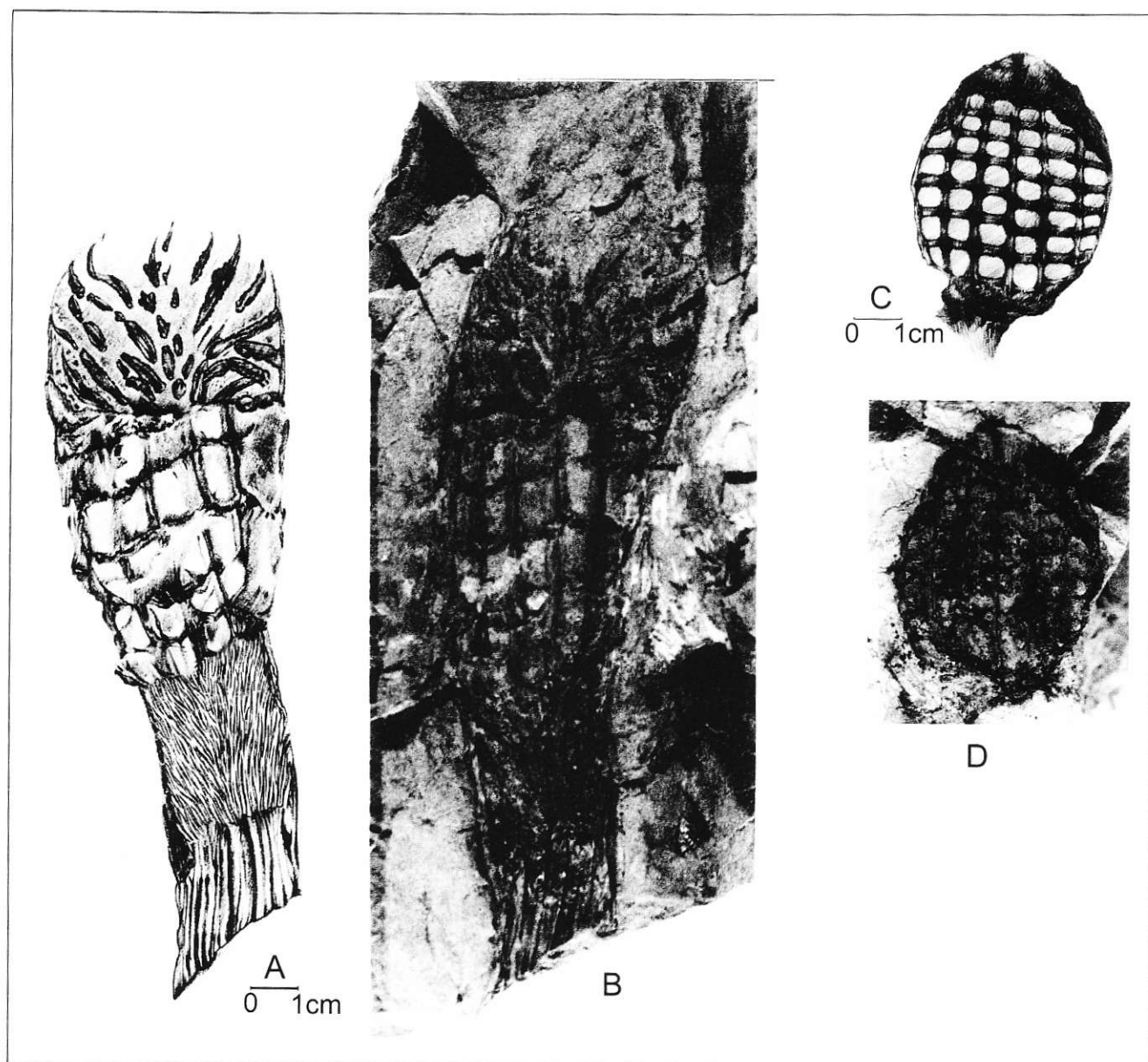


Fig. 3 - a-b, *Persicostrobus ghavideli* Vaez-Javadi n. sp.; c-d, *Persicostrobus* sp.

Comparisons. Several species of equisetalean strobili were introduced by Boureau (1964, p. 431-435), Schweitzer et al. (1997, p. 135), Kelber & van Konijnenburg-van Cittert (1998, p. 3, 4) but none of these species has rectangular sporangiophores and upper or lower filiform leaves. In addition, the size of this genus is much bigger than the previous known strobili (Fig. 2). Since the upper leaves have acute apices and an irregular arrangement they can not be the stalks of sporangiophores. The stalks should have wider apices to attach the sporangiophores.

Persicostrobus ghavideli Vaez-Javadi n. sp.

Holotype. Sample no. FJ-7; Text-Fig. 3a, b.

Type locality. Shemshak Formation, 56° 32' E and 37° 02' N Ozon Mountain, East Alborz, NE Iran.

Repository. Laboratory of Paleobotany, University of Shiraz, Iran. Sample Number FJ- 7.

Derivation of name. In honor of the author's supervisor Dr. Mohammad Ghavidel-Syooki.

Description. An isolated terminal strobilus, big in size, 15.5 cm in length, 4.5 cm in width, with fine and linear leaves at the top and short, filiform leaves, 4.5 cm in length, at the base of the strobilus. The body is the main part of the cone, 5 cm in length and 3.5 cm in width. The body consists of several whorls including five tetragonal-rectangular sporangiophores. Each of these sporangiophores varies in dimension (8-9 mm x 10-12 mm). The lower part of the cone is about 3 cm

in length. No three-dimensionally specimens preserved were found. In loose material neither sporangia borne on the peltate sporangiophore nor basal scars of sporangia in an inner view of sporangiophore heads have yet been observed. The strobilus attached to a stem which contains 5-6 wide ridges.

Comparisons. This new species differs from previous strobili of this family, and even of this order, by its much bigger size and its tetragonal-rectangular shape of the sporangiophore heads. For example, *Equisetites arenaceus* described by Kelber and van Konijnenburg-van Cittert (1998) has smaller strobili (21-35 mm in length and 17-22 mm in maximum width) and pentagonal-hexagonal sporangiophores.

Persicostrobos sp.

Fig. 3c, d

Description. Strobilus oval in shape, 44 mm in length and 35 mm in width, consisting of nine whorls including five to six rounded tetragonal sporangiophores in each row. It is a terminal strobilus.

Discussion. This specimen seems to be an immature cone of *Persicostrobos ghavideli* because of its terminal position and the shape of its sporangiophores.

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