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Dictyophyllum cf. acutilobum, Baiera muensteriana, Podozamites distans, Nilssonia harrisi, Pterophyllum schenki, Pterophyllum bavieri, Scytophyllum persicum

Introductin of Some Plant Macrofossils from Shemshak Formation at Tilabad Area

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Abstract

The shemshak Formation includes a widespread area in the Alborz Basin. Its thickness is greater than 2000 meter in the study area and consists of sandstone, shale, siltstone and conglomerate. Based on lithology, this formation can be subdivided into three members.

Plant macrofossils mainly occur as leaves in the sediments of the lower parts of Shemshak Formation, in the Tilabad area. In this study, 7 macrofossil species were identified, including: *Dictyophyllum cf. acutilobum*, *Baiera muensteriana*, *Podozamites distans*, *Nilssonia harrisi*, *Pterophyllum schenki*, *Pterophyllum bavieri*, *Scytophyllum persicum*.

Based on stratigraphical distributions of the encountered macrofossils Late Triassic age is suggested for the lower unit of the Shemshak Formation. The collected flora suggests a subtropical conditions at the time of deposition of the Shemshak Formation.

Keywords: Plant macrofossils, Late Triassic, Tilabad, Shemshak Formation.

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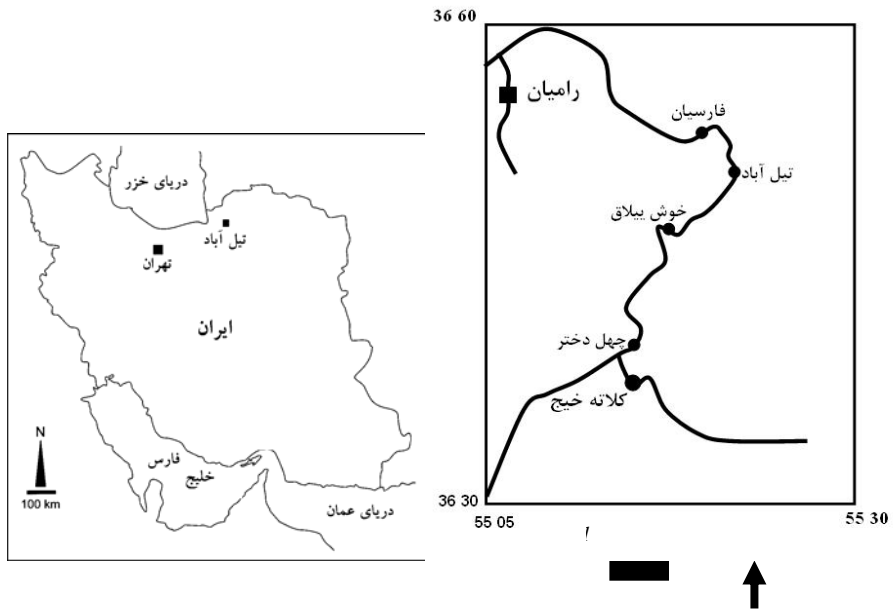
Assereto, (1966); Barnard, (1965, 1967, 1976); Kilpper, (1968, 1971, 1975) Harris, (1932); Fakhr (1977); Sadovnikov, (1976); Vaez-Javadi (2006); Vaez-Javadi

36°56'25"

55°28'18"

55°26'

36°57'13"



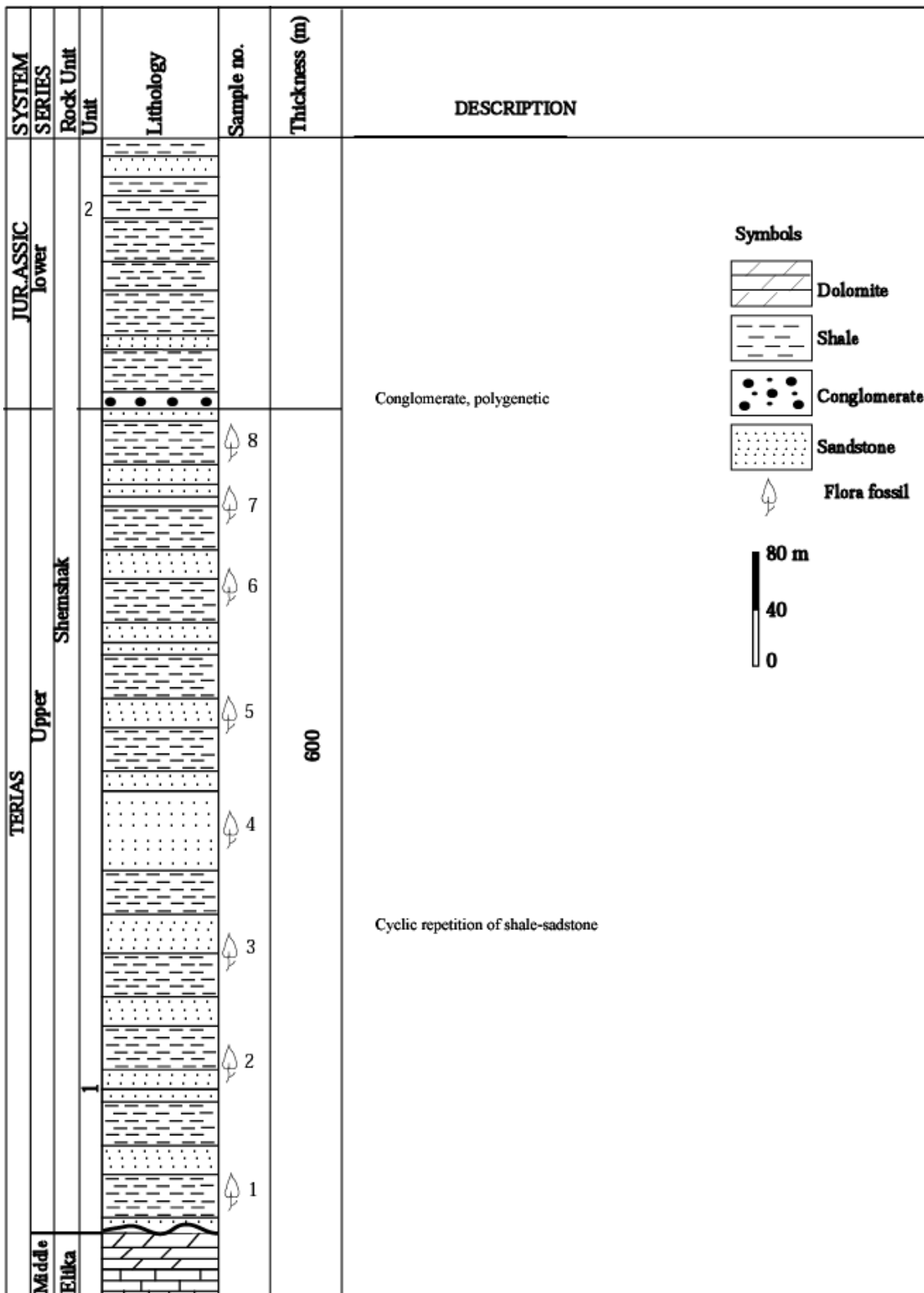
& Gavidel-Syooki (2002); Schweitzer & Kirchner (2000); Schweitzer and Kirchner (2003)

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(1978)

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Division **Filicophyta**
Class **Leptosporangiopsida**
Order **Filicales**
Family **Dipteridaceae**
Genus **Dictyophyllum** Lindley & Hutton, 1834



105, pl.27 ,fig. 3.

1876 Baiera muensteriana (Presl) Heer; p. 51.

1887 Ginkgo munsteriana - Schenk; p. 8, pl. 8, fig. 44.

1891 Ginkgo muensteriana - Krasser; p. 430.

1905 Baiera muensteriana - Zeiller; p. 194.

1964 Baiera muensteriana - Lorenz; p. 22, pl. 4, fig. E.

1967 Baiera muensteriana - Barnard; pp. 568-571, pl. 48, fig. 4; pl. 49, fig. 2; text-fig. 5 D,E.

1971 Baiera cf. muensteriana - Kilpper; pp. 94-95, pl. 26, figs. 5,6 ,text-figs. 7,8.

1972 Baiera muensteriana - Kimyai; p. 17, fig. 13.

1976 Baeira muensteriana - Sadovnikov; p. 106, pl. 5, fig. 9.

1977 Baiera muensteriana - Fakhr; p. 128, pl. 45, figs. 5, 6; pl. 47 ,fig. 4; text-fig. 19A.

1984 Baiera muensteriana - Vassiliev; pl. 40, figs. 2, 4; pl. 42, fig. lb.

1995 Baiera muensteriana - Schweitzer & Kirchner, pp. 20-24, pl. 5, figs. 1-9; text-figs. 11 a-I, 12.

2006 Baiera muensteriana - Vaez-Javadi, pp. 406, pl. 5, figs.5, 6, 7.

Dictyophyllum cf. acutilobum

Pl. 1, Fig. 1

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D. nathorsti D.nilssonina D. exile

D. nathorsti

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D. exile

D. nilssonina

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T1 :

B. munsteriana

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B. () .(Barnard,1967)

B. conconna) . munsteriana

Division **Ginkgophyta**

Order **Ginkgoales**

Genus Baiera Braun, 1843 emend. Florin, 1936

Baiera muensteriana (Presl, 1838) Heer, 1876

Pl. 4, Fig. 1

1838 Sphaerococcites mnsteriana Presl in Sternberg; p.

B. guilhaumati (Heer)

B. asadai (Yabe a Oishi)

P. distans

P. lanceolatus

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Schweitzer and

Vaez-Javadi, (2006) Kirchner (2003)

T2 :

Division **Coniferophyta**

Order **Coniferales**

Genus Podozamites Braun, 1843

Podozamites distans (Presl, 1838) Braun, 1843

Pl. 4, Fig. 2

1838 Zamites distans Presl in Sternberg; p. 196, pl. 4, fig. 1.

1843 Podozamites distans (Presl) Braun; pp. 33,36.

1967 Podozamites distans - Barnard; pp.572-573, text-fig. 5A.

1977 Podozamites distans - Corsin & Stampfli; p. 536, pl. 1, fig. 2.

1977 Podozamites distans - Fakhr; p. 141, pl. XLVIII, figs. 1,2.

1996 Podozamites distans - Schweitzer & Kirchner, pp. 88-91,pl. 1, figs. 1-5, text-fig. 2 a-f.

2006 Podozamites distans - Vaez-Javadi, pp. 406, pl. 5, fig.4.

P. distans

Corsin and

Vaez-Javadi, (2006) Stampfli, (1977)

T3 :

Division **Cycadophyta**

Class **Cycadopsida**

Order Nilssoniales

Genus Nilssonia Brongniart, 1842

Nilssonia harrisi Barnard and Miller 1976.

PL. 3 Fig. 1

1964 Nilssonia sp. B. Harris, s.58, Text-fig. 26

1970 Nilssonia sp. B.Harris, s. 199, Tf. 2, figs. 4,5

P.

P. distans

lanceolatus

N. N. polymorpha Schenk

N. compta (Phillips) brevis Brongniart

N. polymorpha

Barnard (1967) Harria (1926)

2003 *Pterophyllum schenki* - Schweitzer & Kirchner, pp. 71- 74,pl. 15, figs. 1-3; text-fig. 25 a-c.

2006 *Pterophyllum schenki* - Vaez-Javadi, pp. 404, pl. 4, figs. 3, 4.

mm * cm

N. brevis .

N. harrisi

N. compta .

T4 :

Order **Cycadales**

Ctenis sp.

Pl.3, Fig. 2

Schweitzer and

Vaez-Javadi (2006) Kirchner (2003)

T6 :

***Pterophyllum bavieri* Zeiller, 1903**

Pl. 2, Fig. 2

1887 *Pterophyllum braunianum* - Schenk; p. 6, pl. 7, figs. 38-40.

1903 *Pterophyllum bavieri* (Schenk) Zeiller; p. 198, pl. 49, figs. 1-3.

1964 *Pterophyllum bavieri* - Lorenz; p. 23, pl. 3, fig. B.

1967 *Pterophyllum bavieri* - Barnard; pp. 559-561, pl. 47, figs. 2,3,7 ,text-fig. 3£.

1972 *Pterophyllum bavieri* - Kimyai; p. 14-15, fig. 9.

1977 *Pterophyllum bavieri* - Corsin & Stampfli; p.531, pl. 5, fig 8 ;pl. 6, fig. 1.

1977 *Pterophyllum bavieri* - Fakhr; pp. 124-125, pl. 38, figs. 3-6; text-fig. 13A,B.

1984 *Pterophyllum bavieri* - Vassiliev; pl. 23, fig. 1.

2003 *Pterophyllum bavieri* - Schweitzer & Kirchner, pp.

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T5 :

Order: Bennettitales

Genus *Pterophyllum* Brongniart 1824

Pterophyllum schenki (Zeiller, 1886) Zeiller, 1903

Pl 2, Fig 1

1886 *Anomozamites schenki* Zeiller; p. 460; pl. 24, fig. 9.

1903 *Pterophyllum schenki* (Zeiller) Zeiller; p. 181, pl. 43, fig. 7.

1977 *Pterophyllum schenki* - Fakhr; p. 121, pl. 38, figs. 1,2; figs.14 A-C; 15 A-F.

1977 *Pterophyllum* cf. *schenki* - Corsin & Stampfli; p. 533, pl. 8,fig. 6.

1984 *Pterophyllum schenki* - Sadovnikov; pl. 30, fig. 8.

) P. bavieri 62-67, pl. 13, figs. 1-8, text-figs. 21a,b; 22 a-f.
 .(2006 Pterophyllum bavieri - Vaez-Javadi, pp. 403, pl. 4,
 () P. ptillum fig. 6.
 .() /
 P. tabassicum /
)
 .()
 () : /
 Vaez-Javadi (2006)

T7 :

Division **Pteridospermophyta**

Class **Pteridospermopsida**

Order **Peltaspermales**

Family Peltaspermaceae

Genus Scytophyllum Bornemann, 1856

Scytophyllum persicum (Schenk, 1887) Kilpper,
 1975

Pl. 1 Fig. 2

1887 Pecopteris persica Schenk; pp. 3-4, pl. 1, figs. 5,6.

1905 Pecopteris persica - Zeiller; p. 194.

1975 Scytophyllum persicum Kilpper; pp. 146-148, pl.
 1, fig. 1, text-figs. 4 A-C, 5. 1976 Scytophyllum

persicum - Sadovnikov; p. 89, pl. 3, figs. 1,2.

1984 Scytophyllum persicum - Vassiliev; pl. 12, fig. 1a.

2003 Scytophyllum persicum - Schweitzer & Kirchner,
 pp. 20-22, pl. 2, figs. 1,2; pl. 3, fig. 1-11; text-figs. 2,3.

2006 Scytophyllum persicum- Vaez-Javadi, pp. 402, pl.
 1, fig. 1

Ziller (1903)

Barnard (1965, 1967)

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P. bavieri

P. bavieri

P. ptillum Haris, 1932, (P. 61.pl. v, figs. 1-5, figs. 30-
 31)

P. contigum Schenk (1833, p. 262, pl. 33, figs. 6)

P. tabassicum Vassiliev (1985)

P. ptillum

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P. bavieri

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P. ptillum

and Kirchner (2003)

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(subopposite)

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S. persicum Kilpper, 1975

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T8 :

; Kilpper (1975)

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Schweitzer Vaez-Javadi (2006)

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