

|| : || :

Tornacia sarjeantii

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تابع

چکیده

Daillydium pentaster, *Papulogabata annulata*, *P. lobata*, *Cymatiosphaera perimembrana*, *C. radiosepta*, *Chomotriletes vedugensis*, *Deltotosoma intonsum*, *Crassiangulina tesselita*, *Tornacia sarjeantii*, *Gorgonisphaeridium ohioense*, *Unellium lunatum*, *Unellium piriforme*, and *Retispora lepidophyta*.

Gorgonisphaeridium ohioense, *Daillydium*

pentaster, *Unellium lunatum*, *Unellium piriforme*, *Tornacia sarjeantii*

Tornacia (LOO)

(FOO)

T. sarjeantii range zone

sarjeantii

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Tornacia sarjeantii :

Cymatiosphaera perimembrana, *Chomotriletes vedugensis*, *Gorgonisphaeridium ohioense*, *Daillydium pentaster*, *Maranhites britoi*, *Unellium lunatum*, *U. piriforme*, *Tornacia sarjeantii* (Molyneux et al. 1996)

(Wicander in Molyneux et al. 1996)

(*sensu lato*)
 (Martin 1985; Vanguetaine et al. 1983)
 (Brito 1971; Quadros 1988; Wicander 1975)
 (Jardiné et al. 1974; Streel et al. 1988)
Tornacia sarjeantii

(Playford 1993)

(Playford & Dring 1981; Wicander & Wood 1981; Vanguetaine et al. 1983; Vanguetaine 1986; Wicander 1984; 1986; Le Hérissé 2002; Le Hérissé & Deunff 1988; Vavrdová 1991; Ottone 1996; Higgs et al. 2002; Playford & McGregor 1993; Filipiak 2005; González, Playford & Moreno 2005; González, Moreno & Playford 2005)

3- Morphotypes
 4- Cosmopolitan

1- Cyst
 2- Prasinophytes

1979; Bozorgnia 1973; Coquel et al. 1977;
Ghavidel-Syooki 1994; 1995; Dashtban &
Racheboeuf 2001; Hashemi & Fahimi 2006).

(Hashemi & Playford 1998

()

.(Vanguestaine 1986, fig. 5f)

)

(

A

(Assereto & Gaetani 1964)

B-D

(Stöcklin 1972)

.(Glaus 1965; Allenbach 1966; Stepanov 1967)

()

Gaetani (1965)

Ptychomaletoechia elburzensis, *P.? detidialis*, and

Productella zones

(Bozorgnia 1973)

(Assereto 1963)

(Alavi & Bolourchi 1973)

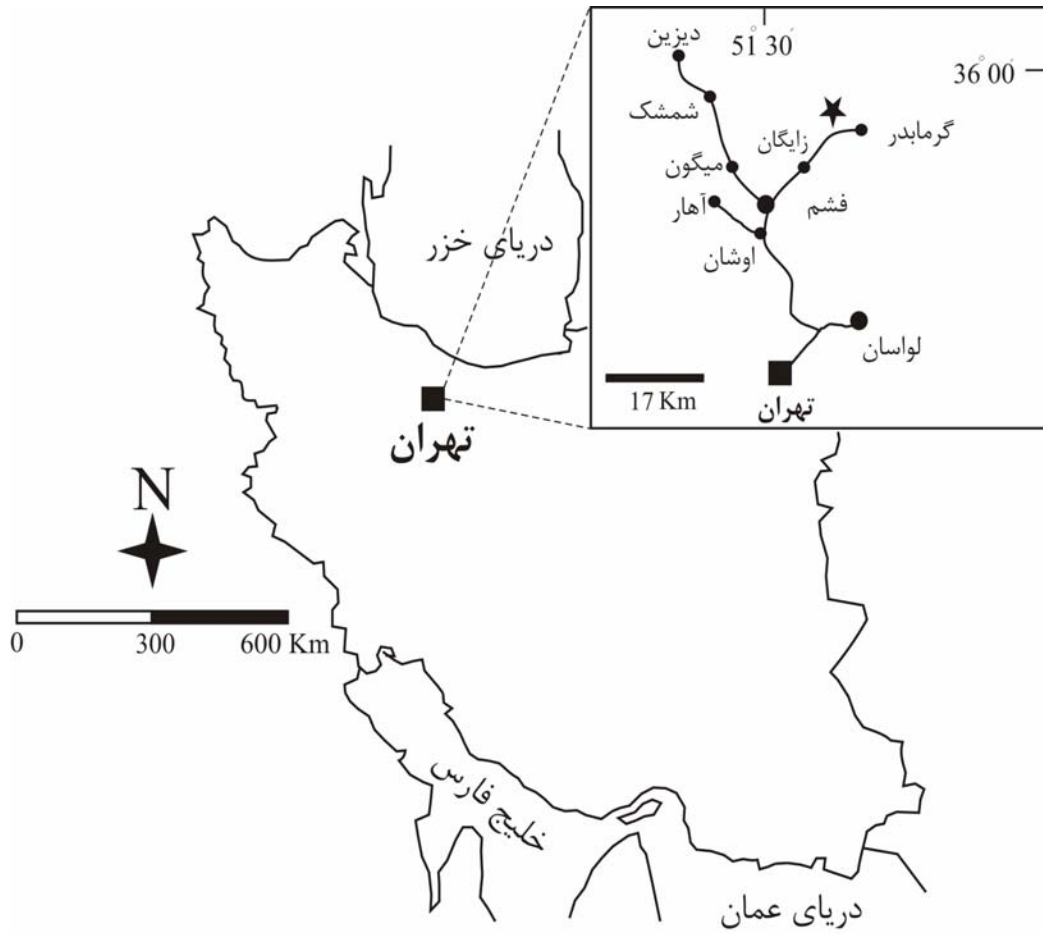
(niveau à plantes

d'âge Famennien supérieur of Sartnaer 1964)

Vanguestaine)

.()

Gaetani 1965; Sartnaer 1964; Kimyai 1972;



★ موقعیت جغرافیایی برش چینه شناسی مورد مطالعه

Archi

(Traverse 2007)

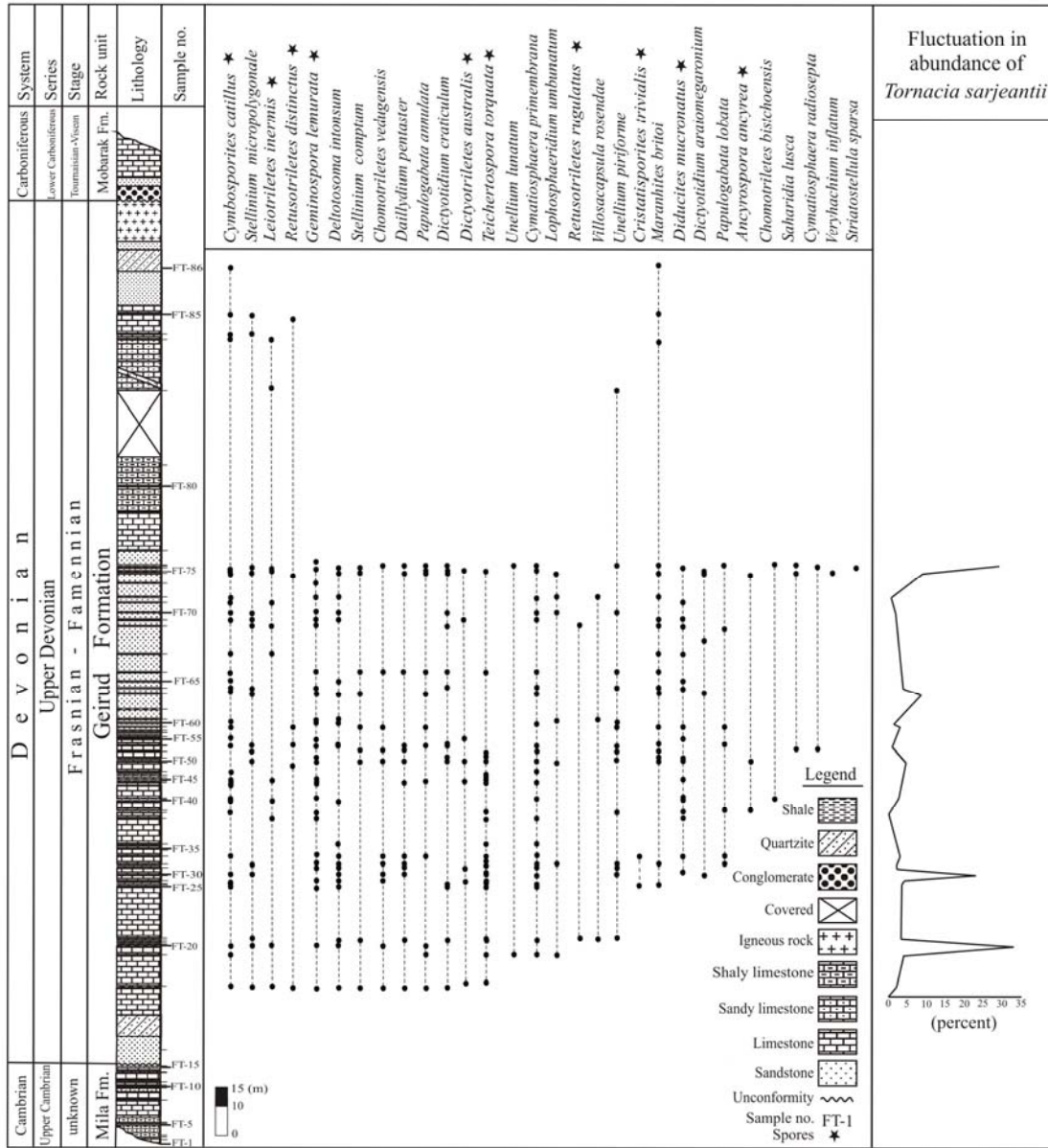
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Tornacia sarjeantii

(LOO)

(FOO)

(Playford 1977)

HCL-HF-HCL

)

(Hashemi & Playford 1998;

(Wood et al. 1996; Traverse 2007)

)

(Molyneux et al. 1996)

(

(Wicander & Playford 1985)

) solid

Ammonidium loriferum (Deunff) (

) hollow

(

(Tappan 1980; Strother 1996)

T. sarjeantii Stockmans & Willière 1966

T. sarjeantii

(Plate 1)

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T. sarjeantii range biozone

5 -Vesicle
6 -Psilate
7- Processes

1 -Maceration
2- Concentration
3 -Long-range
4 -Long-distance correlation

(

.()

(Ghavidel-Syooki 1994)

()

(Ghavidel-Syooki 1988)

T. sarjeantii

Stockmans & Willière (1966)

Becker et al. (1974)

Vanguetaine (1986)

(McNestry 1988)

(Playford 1976 ; Colbath 1990)

(Gao Lianda 1986)

Tornacia sarjeantii

)

Hashemi & Playford 1998

Daillydium pentaster, *Papulogabata annulata*, *P. lobata*, *Cymatiosphaera perimembrana*, *C. radiosepta*, *Veryhachium inflatum*, *Maranhites britoi*, *Chomotriletes vedugensis*, *C. bistchoensis*, *Deltosoma intonsum*, *Stellinium micropolygonale*, *S. comptum*, *Unellium piriforme*, *U. lunatum*, *Lophosphaeridium umbunatum*, *Villosacapsula rosendae*, *Saharidia lusca*, *Striatostellula sparsa*, *Dictyotidium craticulum*, *D.*

7- Habitats

-
- 1- First observed occurrence
 - 2- Last observed occurrence
 - 3- Eilyma
 - 4- Hollow
 - 5- Excystment
 - 6- Cyclopylome

()
 (Stockmans & Willière 1960 ; 1962a , b, 1969 ;
 1974 ; Bain & Doubinger 1965 ; Deunff 1965 ;
 1981 ; Górká 1974a , b, Vanguetaine 1978 ; 1986 ;
 Martin 1981, 1982, Loboziak et al. 1983 ;
 Vanguetaine et al. 1983 ; Amirie 1984 ; Higgs et
 al. 2002 ; Le Hérissé 2002 ; González, Playford &
 Moreno 2005)

()
 (Daemon 1974; Brito 1978; Pöthe de Baldis 1979)
 ()
 (Jardiné et al. 1972; 1974; Streel et al. 1988)
 (Playford & Dring 1981; Colbath 1990)
 (Sheshégova 1971; Lu & Wicander 1988;
 Ghavidel-Syooki 1995; Hashemi & Playford 1998)

(Vanguetaine et al. 1983; Vanguetaine 1986)
 (Wicander 1975)

(Jardiné et al. 1974)

(Brito 1971; Quadros 1988)

.()

(Vf: *Visbysphaera? fecunda*, Vg: *Villosacapsula
 globosa*, Bm: *Baltisphaeridium medium*, Bb:
Baltisphaeridium basiconstrictum, and Pw:
 (I-V) *Puteoscortum williereae*)

araiomegaronium, *Retusotriletes distinctus*, *R.
 rugulatus*, *Dictyotriletes australis*, *Ancyrospora
 ancyrea*, *Teichertospora torquata*, *Geminospora
 lemurata*, *Leiotriletes inermis*, *Diducites
 mucronatus*, *Cymbosporites catillus*

.(Molyneux et al. 1996)

U.

lunatum, *U. piriforme*, *Daillydium pentaster*

.(Vanguetaine 1986; Streel et al. 1988)

(Staplin 1961; Playford 1977; Wicander &
 Loeblich 1977; Wicander 1974; 1975; 1983; 1986;
 Molyneux et al. 1984; Wicander & Playford 1985;
 Turner 1986; 1991; Playford & McGregor 1993)

1- Euramerica

Horologinella,*Crassiangulina Umbellasphaeridium*

(Vanguetaine et al. 1983; Martin 1985)

Vanguetaine (1986) .

(Vf=I, Vg=II,

Bm+Bb=III, Pw=IV+V)

*P. B. medium, V. fecunda**T. sarjeantii* range biozone*Tornacia sarjeantii, williereae,*

L7

L4-L6

*Gorgonisphaeridium winslowiae**T. sarjeantii* range biozone

(O, P, Qs, Qi)

Solimões Maranhão

(Sl, Pl)

.(Brito 1971; Quadros 1988)

(Strunian)

O

Pl, P, Qs, Qi

*Cymatiosphaera labyrinthica, Muraticavea**T. sarjeantii* range biozone*enteichia, Gorgonisphaeridium winslowiae,**Navifusa drosera Acriora petala*

.(Wicander 1975)

Me, Ap, Go

Cl

Illizi-Tinrhert

(L4-L7)

.(Jardiné et al. 1974)

		Stages													
		1	2	3	4	5	6	7							
Upper Devonian	Strunian	<i>Tornacia sarjeantii</i>	L7	O	Sl	Nd									
						Cl									
						Me									
						Ap									
	Famennian		L6		Pl	P			Vg	II	Pw	V			
											Bb	IV			
												Bm	III		
											Frasnian	L5	Qs	Vf	I
	L4		Qi												

(Brito 1971; Quadros : (Jardiné et al. 1974) :
 .(Vanguetaine et al. 1983; Martin 1985) : (Wicander 1975) : 1988)

(FOO)

Tornacia sarjeantii (LOO))

T. sarjeantii range biozone

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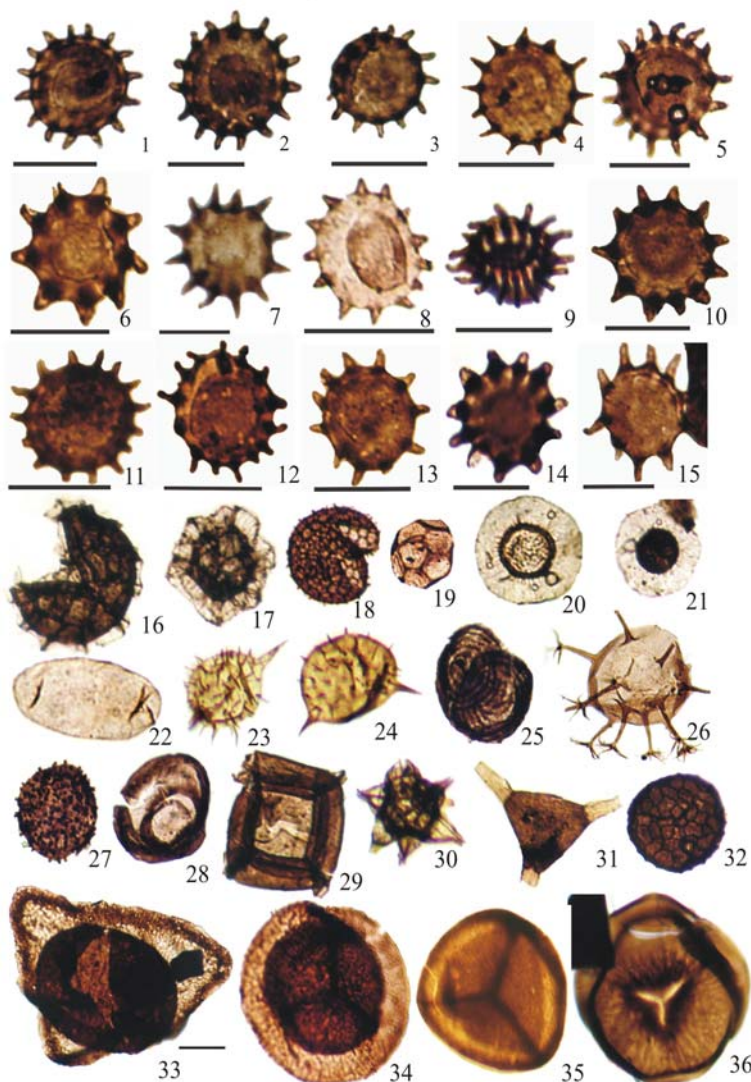
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PLATE 1



EXPLANATION OF PLATE 1

Scale bar for figures 1-15 and 33 equals 20 μ m; others \times 1000.

Figs. 1-15. *Tornacia sarjeantii* Stockmans & Willière 1966. Fig. 16. *Cymatiosphaera perimembrana* Staplin 1961. Fig. 17. *Cymatiosphaera radiosepta* Hashemi & Playford 1998. Fig. 18. *Dictyotidium craticulum* (Wicander & Loeblich) Wicander & Playford 1985. Fig. 19. *Dictyotidium araiomegaronium* Hashemi & Playford 1998. Fig. 20. *Pterospermella hermosita* Cramer 1964. Fig. 21. *Pterospermella* sp. cf. *P. onondagaensis* (Deunff) Eisenack et al. 1973. Fig. 22. *Navifusa exilis* Playford 1981. Fig. 23. *Unellium lunatum* (Stockmans & Willière) Eisenack et al. 1979. Fig. 24. *Unellium piriforme* Rauscher 1969. Fig. 25. *Chomotriletes vedugensis* Naumova 1953. Fig. 26. *Ammonidium loriferum* (Deunff) Hashemi & Playford 1998. Fig. 27. *Lophosphaeridium umbunatum* Hashemi & Playford 1998. Fig. 28. *Saharidia lusca* Playford & Dring 1981. Fig. 29. *Polyedryxium embudum* Cramer 1964. Fig. 30. *Daillydium pentaster* (Staplin) emend. Playford in Playford & Dring 1981. Fig. 31. *Tyligmasoma* sp. A. Fig. 32. *Dictyotriletes australis* de Jersey 1966. Fig. 33. *Teichertospora torquata* (Higgs) McGregor & Playford 1990. Fig. 34. *Diducites mucronatus* (Kedo) Van Veen 1981. Fig. 35. *Geminospora lemurata* Balme emend. Playford 1983. Fig. 36. *Retusotriletes rugulatus* Riegel 1973.