

(2)		(1)	(1)	
-	-	-	-	(1)
-	-	-	-	(2)

2010/05/16

2010/11/29

Braun- 2009 Relevé 18 . 2007
 . Blanquet

Pinus brutia Ten.*Quercus cerris* L. subsp. *pseudocerris* (Boiss.) Chalabi*Pistacia* *Phillyrea media* L. *Quercus infectoria* Oliv.*Laurus nobilis* L. *Rhus cotinus* L. *palaestina* Boiss.*Trachynia distachya* (L.) Link*Echinops viscosus* DC. *Cistus* spp.

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Studying the Effect of Fire on Regeneration of Natural Vegetation in Kassab

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ABSTRACT

The aim of this research was to investigate the changes of vegetation and regeneration of plant species in Kassab forest after 2007 fire. The study area is located in North Western part of Syria in the middle of Al-Baier and Al-Bassit forests to the North of Latakia. Eighteen plant surveys (Relevés) were carried out in the study area during 2009 according to Braun-Blanquet method included the burned area and nearby locations of non-burned forest. By comparing plant surveys (Relevés), the results showed good regeneration of most plant species that were in the study area before the fire either by seed or vegetatively during two years after the fire as *Pinus brutia* Ten., *Quercus cerris* L. subsp. *pseudocerris* (Boiss.) Chalabi, *Quercus infectoria* Oliv., *Phillyrea media* L., *Pistacia palaestina* Boiss., *Rhus cotinus* L., and *Laurus nobilis* L. The results showed the abundance of light-tolerant grass species as *Trachynia distachya* (L.) Link and drought-tolerant species as *Cistus* spp. and *Echinops viscosus* DC. at burned sites.

Keywords: Fire, Al-Fronloq, Kassab, Vegetation, Natural Regeneration.

) 232840
 %1.26 (1993
 .(%18) (%19) (%29)
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2000) (Alexanderian *et al.*, 1999)
 (2004
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) 1500
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.(Gromtsev, 2002 ; Parviainen, 1996)

Pyrophytes

.(2002)

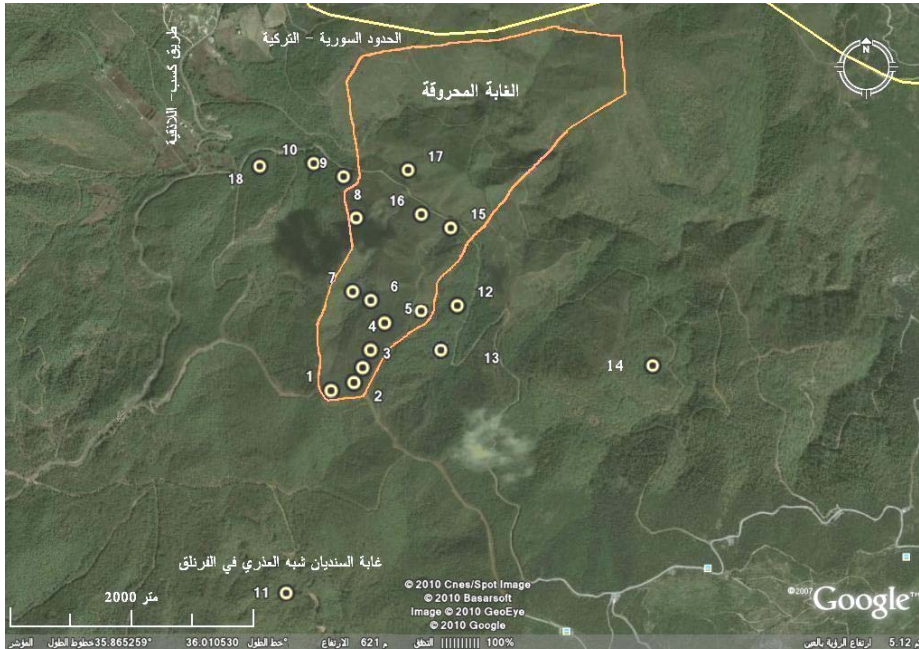
2007

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(35.87295-35.85181 36.03805-35.9911)

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Relevés

(1)

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.GIS

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Pinus brutia Ten.

Quercus cerris L. subsp. *pseudocerris* (Boiss.) Chalabi

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) 450 .) 792 ((Ministry of State for Environment Affairs, 2001)

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.(Ministry of State for Environment Affairs, 2001)
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1245	238.4	124.3	92.7	19.5	11.4	3.6	15	52.5	90.4	152.4	196.5	248.3	P
16.1	9.3	13.9	19.3	22.4	23.6	23.2	21.5	18.2	14.8	11.1	8.18	7.26	T

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1245

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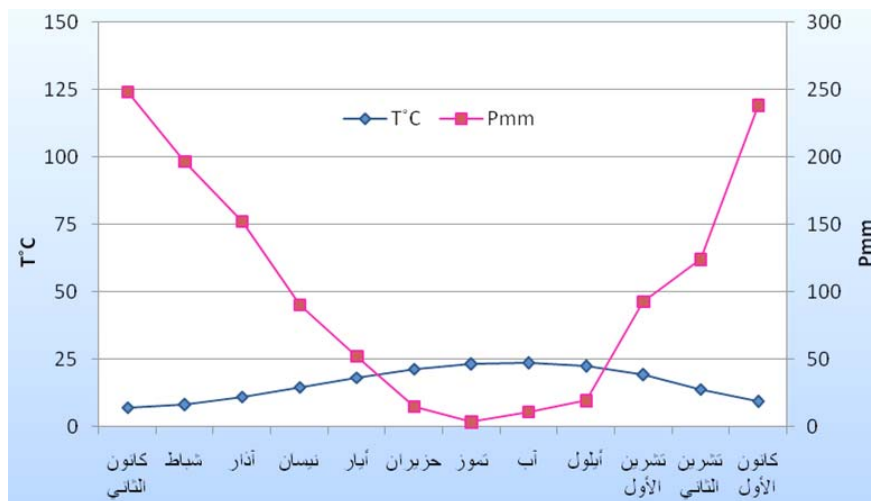
$$Q_2 = \frac{2000p}{M^2 - m^2}$$

Q₂

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(183.3)

.(4)



(4)

(1990 - 1960 :

1245:

550 :

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-450)

(792

Quercus cerris L. subsp. *pseudocerris* (Boiss.) Chalabi

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(*Quercus cerris* L. subsp. *pseudocerris* (Boiss.) Chalabi

Pinus brutia Ten.

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.(Ministry of State for Environment Affairs, 2001)

Carpinus orientalis Mill.

Alnus orientalis Decne

.*Styrax officinalis* L. ()

General Organization for Remote)

.(Sensing, 1991

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(Ministry of State for Environment Affairs, 2001)

Quercus cerris L. subsp.

Pistacia palaestina *pseudocerris* (Boiss.)Chalabi

() *Carpinus orientalis* Mill. Boiss.

.*Styrax officinalis* L.

Platanus orientalis L.

Salix libani Bornm.

.(1998) *Alnus orientalis* Decne

325

(31 73 232)
(%40) (%20)

Ministry of State for Environment)

(%8)

.(Affairs, 2001

.(1998)

Quercus cerris L. subsp. *pseudocerris* (Boiss.) Chalabi
.(Chalabi, 1980) *Pinus brutia* Ten.

:

Cercis siliquastrum L., *Rhus cotinus* L., *Juniperus oxycedrus* L.,
Ferulago autumnalis Thieb., *Centaurea arifolia* Boiss., *Alyssum*
crenulatum Boiss., *Euphorbia cassia* Boiss., *Thymus cilicicus* Boiss.
et Bal., *Scutellaria heterophylla* Montbr. et Auch., *Lathyrus libani*
Fritish., *Silene confertiflora* Chowdhuri, *Euphorbia macrostegia*
Boiss. (Chalabi, 1980), *Genista anatolica* Boiss., *Erica verticillata*
Forssk.. (1998)

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Relevé phytosociologique 18 أ.
2007 Braun-Blanquet 2009

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Chalabi,) Ellenberg

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		%20
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	Relevés	
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		20 •
		8 •
	.(2)	27 •
:		20 .2
<i>Echinops viscosus</i> DC., <i>Lactuca saligna</i> L., <i>Trachynia distachya</i> (L.) Link. <i>Serratula cerinthifolia</i> (Sm.) Boiss., <i>Melica angustifolia</i> Boiss. et Bl., <i>Laserpitium glaucum</i> Post, <i>Galium tricornutum</i> Dandy, <i>Michauxia campanuloides</i> L'Herit., <i>Teucrium polium</i> L., <i>Stachys</i> <i>diversifolia</i> Boiss., <i>Bromus</i> sp., <i>Allium artemisietorum</i> Eig et Feinbrun, <i>Allium paniculatum</i> L., <i>Allium sativum</i> L., <i>Alyssum</i> <i>crenulatum</i> Boiss. <i>Anthemis tinctoria</i> L., <i>Calamintha vulgaris</i> (L.) Halacsy., <i>Cerastium dubium</i> (Bast.) Schw., <i>Cytisus cassius</i> Boiss., <i>Sorbus torminalis</i> (L.) Crantz		
	:	8 .3
4	(<i>Cercis siliquastrum</i> L. <i>Ostrya carpinifolia</i> Scop.)	
	<i>Paliurus spina-christi</i> Mill. <i>Myrtus communis</i> L.)	
	(<i>Hedera helix</i> L. <i>Erica manipuliflora</i> Salisb.	
	.(<i>Lathyrus inermis</i> Rochel <i>Tulipa praecox</i> Ten.)	

() .4 :

Quercus cerris L. subsp. *pseudocerris* (Boiss.) Chalabi

.(2002)

) 2.2 – 687 12

11) 3.4 (*Erica manipuliflora* Salisb.

624

Ostrya carpinifolia Scop. *Quercus infectoria* Oliv.
.(*Styrax officinalis* L.

15 25-10

Quercus cerris L. subsp. *pseudocerris* (Boiss.) Chalabi

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.(5) 2 1 (3.3) (2.2)



2007



15

(5)

(2) %25 777

—
Rhus cotinus L. . 2 3.3
Trachynia distachya (L.) *Rubus sanctus* Schreb.
 .Link.

:*Pinus brutia* Ten.

((11))
 3.3 2.2 -
Quercus cerris L. subsp. *pseudocerris*
Quercus infectoria Oliv. (Boiss.) Chalabi
Rhus cotinus L. *Pistacia palaestina* Boiss.
Styrax officinalis L.

%50
² 100 10-3
 .(6) 20-10



2007

(6)

Quercus infectoria* Oliv.*:*Quercus infectoria* Oliv. subsp. *microphylla* (Ky) Chalabi 1980***Quercus infectoria* Oliv.*Quercus infectoria* Oliv. subsp. *microphylla* (Ky) Chalabi 1980
(2.3) (+.1) –*Quercus infectoria* Oliv.

15

.(7) 20 – 10

*Quercus infectoria**Quercus infectoria* Oliv. subsp.

Oliv.

microphylla (Ky) Chalabi 1980

(2.2) (+.1)

–

. 80 20

:*Phillyrea media* L.

.(2.2) (+.1)

-

%50

:*Pistacia palaestina* Boiss.

1.2

–

%50

:*Rhus cotinus* L.

.(2.3) (+.1)

:*Laurus nobilis* L.

1.5

(6)

:*Rubus sanctus* Schreb.

.(8) 20 15

15



2007

15

(7)



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15

(8)

Rhamnus

Ruscus *Fraxinus ornus* L. *palaestina* Boiss.

Styrax officinalis L. *Smilax aspera* L. *aculeatus* L.

Pterosimopappus bracteatus Boiss. *Asparagus acutifolius* L.

Asplenium

Dryopteris libanotica (Ros.) A. Christensen *adiantum-nigrum* L.

.(9)

*Fraxinus ornus* L.*Ruscus aculeatus* L.*Dryopteris libanotica* (Ros.) A. Christensen
2007*Asplenium adiantum-nigrum* L.
(9)

Arbutus : .5
(10) *andrachne* L.
Asparagus acutifolius L. (2.2) (+.1) –
Ruscus aculeatus L. *Phillyrea media* L.
Quercus infectoria Oliv. *Pistacia palaestina* Boiss.
(Marozas et al., 2007)

Arbutus *Phillyrea media* L. *Quercus infectoria* Oliv.
(2000) *Asparagus* sp. (2002) *andrachne* L.



Arbutus andrachne L. (10)

Trachynia : .6
 (11) *distachya* (L.) Link
 (3) 3.4 1.2 –
Serratula cerinthifolia (Sm.) Boiss. *Cytisus cassius* Boiss. *Cistus spp.*
Allium paniculatum L. *Allium artemisiatorum* Feinbrun

.7
Calycotome *Lactuca saligna* L. *Echinops viscosus* DC.
villosa (Vahl) Link

: .8
Quercus cerris L. subsp. *pseudocerris* (Boiss.) –
 .(3.3) (2.2) – Chalabi
 – *Trachynia distachya* (L.) Link. –
 .(3.4) (1.2)



Trachynia distachya (L.) Link (11)

:

- Phillyrea media* L. —
- Serratula cerinthifolia* (Sm.) Boiss. —
- Ruscus aculeatus* L. —
- Quercus infectoria* Oliv. —
- Rhus cotinus* L. —
- Cytisus cassius* Boiss. —
- Ptosimopappus bracteatus* Boiss. —

:

Trachynieto – Quercetum pseudocerridis
%65

. 2

(2)

	كشوف المنطقة المحروقة												كشوف المنطقة غير المحروقة (المواقع الشاهدة)												معامل الحضور
	رقم الكشف	4	5	1	2	3	6	17	16	7	8	15	18	9	10	13	12	11							
	الإندثار %	70	60	40	70	45	70	75	75	60	50	60	30	15	20	15	15	70							
المعرض		شمالي غربي	شمالي	شمالي	شمالي غربي	شمالي غربي	غربي	جنوبي غربي	شمالي شرقي	شمالي شرقي	شرقي	شمالي غربي	شمالي غربي	شمالي غربي	شمالي غربي	شمالي غربي	شمالي غربي	شمالي شرقي							
الارتفاع		746	704	792	777	771	632	578	573	643	649	583	562	505	543	610	687	624							
التغطية الكلية		30	55	60	60	60	30	15	25	45	55	65	80	50	75	70	60	90							
تغطية شجرية		0	0	0	0	0	0	0	5	0	3	0	45	30	35	35	5	75							
تغطية شجيرية		20	30	15	40	15	20	5	5	20	12	30	15	5	30	20	15	5							
تغطية عشبية		10	25	45	20	45	10	10	15	25	40	35	20	15	10	15	40	10							
<i>Serratula cerinthifolia</i>	1.2	2.2	+1		+1				+1	1.2	1.2	+1							III						
<i>Trachynia distachya</i>		2.3	9.4	2.3	9.4				1.2	2.2	2.3	2.3							III						
<i>Lactuca saligna</i>			+1	1.2		2.2			+1	+1									II						
<i>Cerastium dubium</i>			2.2	1.2	1.2														I						
<i>Cytisus cassius</i>		1.2	+1	+1		+1				1.2	1.2	+1							III						
<i>Echinops viscosus</i>	+1				+1				1.2		+1	+1							II						
<i>Galium tricornutum</i>	+1	+1		+1		+1	1.2												II						
<i>Allium artemisietorum</i>	1.2	1.2								+1									I						
<i>Alyssum crenulatum</i>			+1																I						
<i>Anthemis tinctoria</i>			+1																I						
<i>Calamintha vulgaris</i>			+1																I						
<i>Allium paniculatum</i>					+1														I						
<i>Allium sativum</i>	1.2																		I						
<i>Laserpitium glaucum</i>				+1															I						
<i>Melica angustifolia</i>			+1																I						
<i>Michauxia campanuloides</i>						+1			+1										I						
<i>Stachys diversifolia</i>			+1																I						
<i>Teucrium polium</i>								1.2											I						
<i>Bromus sp.</i>								+1											I						
<i>Sorbus torminalis</i>			+1	+1															I						
<i>Cercis siliquastrum</i>													+1		+1				I						
<i>Erica manipuliflora</i>													+1		2.3	2.3			I						
<i>Hedera helix</i>																	2.3		I						
<i>Lathyrus inermis</i>																	+1		I						
<i>Myrtus communis</i>														1.2		1.2			I						
<i>Ostrya carpinifolia</i>																	2.3		I						
<i>Paliurus spina-christi</i>																1.2			I						
<i>Tulipa praecox</i>																	+1		I						

(2)

	كثوف المنطقة المحروقة															كثوف المنطقة غير المحروقة (المواقع الشاهدة)															معامل الحضور
	رقم الكشف	4	5	1	2	3	6	17	16	7	8	15	18	9	10	13	12	11													
	الاتحاد %	70	60	40	70	45	70	75	75	60	50	60	30	15	20	15	15	70													
الأصناف التي تحددت وازداد انتشارها بعد الحريق	المعرض	شمالي غربي	شمالي	شمالي	شمالي غربي	شمالي غربي	غربي	جنوبي غربي	جنوبي شرقي	شمالي شرقي	شرقي	شمالي غربي	شمالي غربي	شمالي	شمالي	شمالي	شمالي غربي	شمالي شرقي													
	الارتفاع	746	704	792	777	771	632	578	573	643	649	583	562	505	543	610	687	624													
	التغطية الكلية	30	55	60	60	60	30	15	25	45	55	65	80	50	75	70	60	90													
	تغطية شجرية	0	0	0	0	0	0	0	5	0	3	0	45	30	35	35	5	75													
	تغطية شجيرية	20	30	15	40	15	20	5	5	20	12	30	15	5	30	20	15	5													
	تغطية عشبية	10	25	45	20	45	10	10	15	25	40	35	20	15	10	15	40	10													
الأصناف التي تحددت بعد الحريق وتحتاج إلى حماية لتسهيل انتشارها وسكانها	<i>Phillyrea media</i>	2.2	1.2		+1	+1	1.2	1.2	1.2	2.2	2.2	+1	1.2	1.2	1.2	+1			V												
	<i>Quercus infectoria</i>		1.2		+1	1.2		1.2	1.2		+1	+1	+1	+1	+1		+1	2.3	IV												
	<i>Arbutus andrachne</i>	2.2	2.2			+1	1.2			2.2	1.2	2.2	1.2	+1					III												
	<i>Ruscus aculeatus</i>		1.2	+1	1.2	1.2			+1		1.2	+1	1.2		+1			2.2	III												
	<i>Asparagus acutifolius</i>	+1	+1		+1		1.2		+1							+1			II												
	<i>Pistacia palaestina</i>	1.2		1.2					1.2	1.2	1.2						+1	+1	III												
	<i>Quercus infectoria</i> Oliv. <i>subsp. microphylla</i>	1.2		2.2												1.2	+1		II												
	<i>Cistus</i> sp.	+1						1.2	1.2	2.3	2.2						+1		II												
	<i>Calycotome villosa</i>									1.2	1.2						+1		I												
	<i>Fraxinus ornus</i>			1.2	+1							1.2		+1					II												
	<i>Rubus sanctus</i>				2.2												+1		I												
	<i>Eryngium falcatum</i>					+1			+1			+1		+1					II												
	<i>Coronilla emeroides</i>						+1							+1					I												
	<i>Quercus cerris</i> L. subsp. <i>pseudocerris</i>	1.2	2.3	2.2	3.3	2.3	2.2		2.2	2.2	2.2	3.3	3.3	2.3	3.3	2.3	2.2	3.4	V												
	<i>Pinus brutia</i>			+1			+1		+1	+1		1.2	3.3	3.3	3.3	3.3	2.2		III												
	<i>Centaurea ptosimopappa</i>	+1		+1		+1			+1		1.2	1.2	1.2	2.2	2.2	1.2	1.2		IV												
	<i>Rhus cotinus</i>			1.2	2.3	+1	1.2		1.2		2.2	1.2	1.2	1.2	1.2	1.2	2.2		IV												
	<i>Sideritis perfoliata</i>	+1	+1						+1			1.2	+1	+1	+1		1.2		III												
	<i>Smilax aspera</i>		+1				1.2		+1	1.2		+1	+1	+1	+1	+1			III												
	<i>Rhamnus palaestina</i>	+1						1.2	+1							+1	2.2	2.2	II												
<i>Styrax officinalis</i>								+1	+1	1.2	2.2	2.3				1.2	2.2	III													
<i>Asplenium adiantum-nigrum</i>						+1											1.2	I													
<i>Centaurea arifolia</i>								+1					+1	+1				I													
<i>Dactylis glomerata</i>											+1		+1			+1		I													
<i>Daphne oleifolia</i>	+1												+1			2.2		I													
<i>Dryopteris libanotica</i>	+1				+1	+1							+1	+1	+1			II													
<i>Laurus nobilis</i>						2.3		+1					+1		+1	+1		I													

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Cistus spp. *Trachynia distachya* (L.) Link

Pinus brutia Ten.

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