

Copepoda

()

2010/11/22
2011/05/02

calanoida ()

: ()

-*Arctodiaptomus (Rhabdodiaptomus) bacillifer* (Koelbel,1885)
-*Neolovenula alluaudi* (Guerne et Richard,1890).
(24-11)

-1.2) / (1.7-0.2) (9.6-8.48)
/ (1.87)

312 *A. bacillifer* Nauplius
/ (433.3) Copepodid /

(17-15)

Nauplius *N.alluaudi*
Copepodid / (130.5) *N.alluaudi*
/ (120)
(21-19)

.Calanoida Copepoda *N.alluaudi* *A. bacillifer* :

Two Species were recorded from Copepoda in Mshannaf Dam (Assweida - Syria)

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Received 22/11/2010

Accepted 02/05/2011

ABSTRACT

Copepoda has a great importance in the environment because of the important place it has in the food chain, and because it determines the nutritional situation of the lakes and filtration of Phytoplankton, detritus and bacteria.

Two species were recorded *Arctodiaptomus (Rhabdodiaptomus) bacillifer* and *Neolovenula alluaudi* which belong to the order Calanoidae, they were recorded for the first time in Syria in As Sweida governorate (Mshannaf Dam, Ar Roum Dam, and Sahwet Alkhodr Dam).

Water temperature in the Dam during study period ranged (11-24)^oC, PH (8.48-9.6) NH⁴⁺ concentration (0.2-1.7) mg/liter, PO₄⁻³ (1.2-1.87) mg/liter.

A. Bacillifer appeared in dam water at the beginning of April till the end of June, Nauplius phases for *A. Bacillifer* were in April with abundance of 312 individual/ liter, copepod phases in May have reached its maximum abundance 433.3 individual/ liter. Water temperature during flourishing period in April and June was (15-17)^oC.

N. alluaudi appeared at the beginning of June, nauplius phases flourished in July, had a maximum abundance of (130.5) individual/ liter, copepod phases in August have reached its maximum abundance (120) individual/ liter. Water temperature in its flourishing period in June and July was (19-21)^oC.

A decrease of eggs number and a reduction of individual height corresponding was with temperature rises.

Key Words: *A. Bacillifer*, *N. alluaudi*, Copepoda, Calanoida.

Dussart,B.(1969)
 Uye. S. J (1980)
 .Copepodid Nauplius Development
 Gzaika,S.C. (1982)
 Herzig, A. (1983)
 development Beklioglu, M (2003)
) (
 :
 -1
 -2
 Copepodid Nauplius -3

1980

340 2 200 3 1.21

(2-1)

(1)



(2)

()



: -

2009/4/1

(3-2)

2009/10/1

Kemmerer Water
(100-80)

(60)
100

2 Sampler

%5 150
.Melville,G.E.(1994) DPP400W

: -
 Nanocolor 500
 Photometer
 -10) .
 (100
 Dussart,B.(1969),
 .Shiel, R. J. (1995), Dodson, S. I & al. (2001), Petersen, F. (2007)
 (70-60) Negota
 .Pinel-Aloul, B. & al (1989)
 : -
) . 1 :
 .(1990
 : -1
 :
Arctodiaptomus (Rhabdodiaptomus) bacillifer (Koelbel,1885) -
Neolovenula alluaudi (Guerne et Richard,1890) -
 Arthropoda (Latreille,1829)
 Crustacea (Brunnich,1772)
 Copepoda (H.Milne-Edwards,1840)
 Calanoida (Sars,1930)
 Diaptomidae (Sars,1903)
 Diaptominae (Kiefer,1932)
Arctodiaptomus (Kiefer,1932)
Arctodiaptomus (Rhabdodiaptomus) bacillifer (Koelbel,1885) -
 Paradiaptominae (Kiefer,1932)
Lovenula (Schmeil,1898)
Neolovenula (Kiefer,1932)

Ustaoglu, M.R.) *Neolovenula alluaudi* (Guerne et Richard,1890) -
 ((2004)

Diaptomidae (Sars,1930)

:

:
 (First Mandible Antennae Cephalosome
 (first antennae)
 .(4-3) Second Maxilla Maxilla)

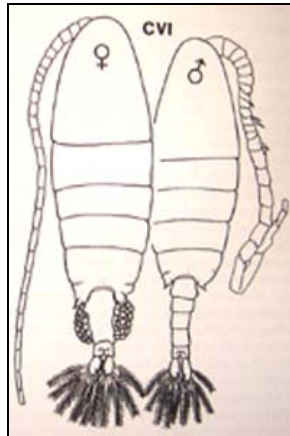
(3)

Calanoida

CVI(Dodson,S.I.&al.2001)

Copepodid6

(

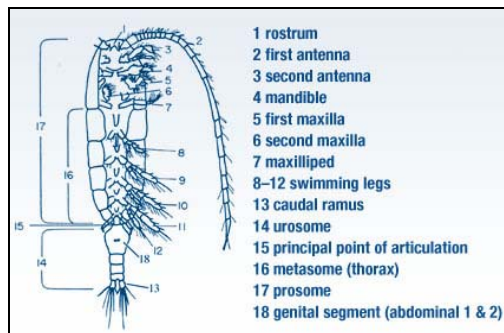


(4)

Calanoida

Dodson, S.)

(I. & al. 2001



25

(23-22) (21-20-19) (19-18)
 (19) (22) (23)

P1-P5

.Maxilliped
.Swimming legs

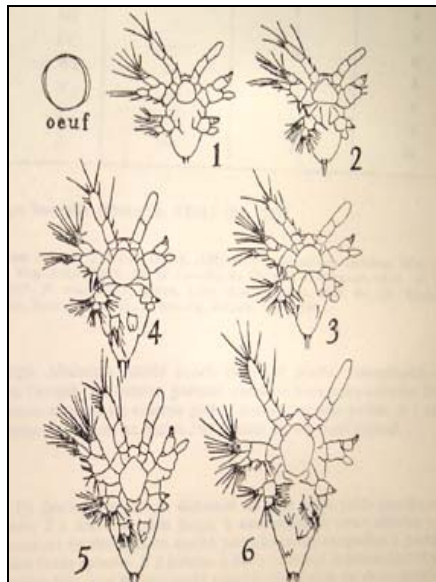
Aculeus

2-4

Nauplius

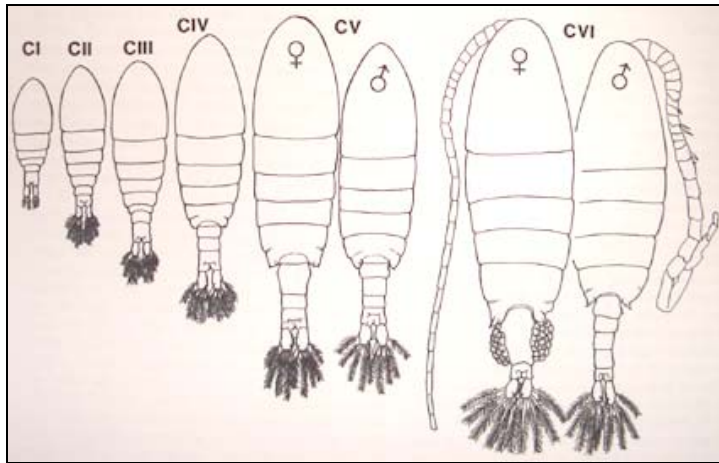
Copopedid

. Dussart, B. (1969) (6-5



Calanoida Nauplius
(Dussart,B.1969)

(5)



Calanoida Copepodid (6)
(Dodson,S.I.&al.2001)
Diaptominae (Kiefer,1932)

Dussart, B. (1969), Shiel, R. J. (1995), *Arctodiaptomus*
Petersen, F. (2007) Dodson, S. I & al. (2001),
Arctodiaptomus (Kiefer,1932) :

.Dussart, B. (1969)

***Arctodiaptomus (Rhabdodiaptomus) bacillifer* (Koelbel,1885)**

Diaptomus gracilis aet b,Wierzejski, 1882, :234: *D. bacillifer*,
Giesbrecht et schmell,1898,: 84: Vandouwe,1909,:11: Pesta, 1928,:
39: Rylou, 1935,: 183: *D.arapahoensis*, Dodds, 1916,: 99.

(17-7) :

3/1

()

25

1.5-1 2-1.4

Dussart, B. (1969) Copepodid Nauplius

(13-7) :

. Dussart,B.(1969)



(400 (8)) *A.bacillifer*

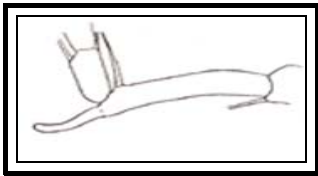


A.bacillifer (40 (7))



(100) *A.bacillifer* (10)

(P5) (9) *A.bacillifer* (Dussart,B.1969)



(12) *A.bacillifer*

(400) *A.bacillifer* (11)

(Dussart,B.1969)



(100) *A.bacillifer* (13)

(17-14) :

2/1

(64-2)

. Dussart,B.(1969)



(15)

A.bacillifer

(400)



(14)

A.bacillifer

(40)



(100)

A.bacillifer

(17)



(16)

A.bacillifer

(Dussart,B.1969)

:

(21-1)

.Dussart,B.(1969) .

Paradiaptominae (Kiefer,1932)

-

-

-

Lovenula

.Dussart,B.(1969)

(Schmeil,1898)

***Lovenula* (Schmeil,1898)**

-

-

.Dussart,B.(1969)

:

Neolovenula (Kiefer,1932)

. Dussart, B.(1969)

***Neolovenula* (Kiefer,1932)**

-

Maxilliped

-

-

. Dussart,B.(1969)

:

-

***Neolovenula alluaudi* (Guerne et Richard,1890)**

Diaptomus alluaudi, de Guerne et Richard, 1890, :198; *D. unguiculatus*, Daday, 1891,:118; *D.lorteti*, Barrois, 1891, :277; *Diaptomus alluaudi*, Richard,1893,:465; Schmeil, 1898,:177; *Giesbrecht et Schmeil*, 1898, :93; *Lovenula alluaudi*, Margalef, 1953, : 72; *Damian-Georgescu*, 1962, :57.

(28-18)

4-3

. Dussart,B.(1969) 2.2-1.8 2-1.6

(24-18) :

25

(21-20-19) (19-18)

(23) (23-22)

(19)

(22)

Dussart,B.(1969)



(19)

(400) *N. alluaudi*

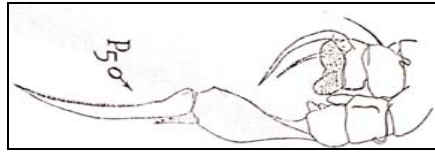


N. alluaudi (18)

(40)



(100) *N.alluaudi* (21)



(P5) (20) *N. alluaudi* (Dussart,B.1969)



(23) *N.alluaudi* (Dussart,B.1969)



(400) (22) *N. alluaudi*



(100) *N. alluaudi* (24)

(28-25) :

-
-

.Dussart,B.(1969)



(26)
(400) *N. alluaudi*



N. alluaudi (25)
(40)



(28)
(100) *N. alluaudi*



(27)
N. alluaudi
(Dussart, B. 1969)

:

-

.Dussart,B.(1969)

: **Nauplius**

Calanoida

Nauplius

: Czaika,S.C.1982

-1

-2

.Nauplius

(34-29) .Nauplius 1 -1

A.bacillifer

. *N.alluaudi*



()

()

(29)

(1)

(30)

(1)

() (400)

A.bacillifer

(100)

A.bacillifer

() " "



()

()

(32)

(1)

(31)

N. alluaudi

(1)

() (400)

A.bacillifer

(100)

() " "



()

()

(34)

N. alluaudi



()

()

(33)

N. alluaudi



() (400)

(1) () (400)

() " "

(40-35)

() " "

Nauplius2

-2

A. bacillifer

. N. alluaudi



()

()

(36)

A. bacillifer



(35)

A. bacillifer

() (400)

(2) (100)

(2)

() " "



(38)

(100)

N. alluaudi

(2)

() (400)



(37)

A. bacillifer

(2)



()

()

()" "



()



()

(40)

N. alluaudi

(2)

(400)

()" "



()

(2)

() (400)

()" "



()

(39)

N. alluaudi

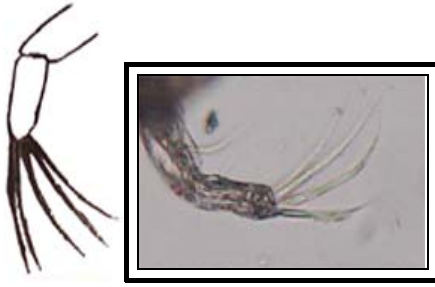





(46-41)

Nauplius3

-3

A. bacillifer

.N. alluaudi

 <p>() ()</p>	
<p>(3) (400) <i>A.bacillifer</i> (42) ()</p> <p>()" "</p>	<p>(41) (3) <i>A.bacillifer</i> (100)</p>
	 <p>() ()</p>
<p>(100) <i>N. alluaudi</i> (44) (3)</p>	<p>() (400) <i>A.bacillifer</i> (43) (3)</p> <p>()" "</p>
 <p>() ()</p>	 <p>() ()</p>
<p>(400) <i>N. alluaudi</i> (46) (3) ()</p> <p>()" "</p>	<p><i>N. alluaudi</i> (45) (3) () (400)</p> <p>()" "</p>

(52-47)

Nauplius4

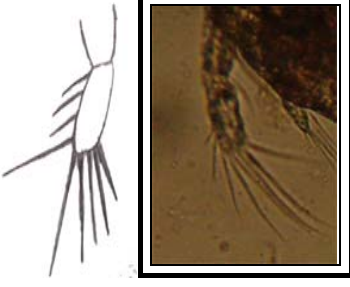
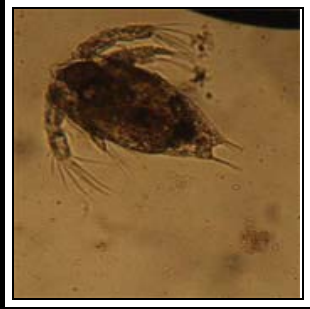

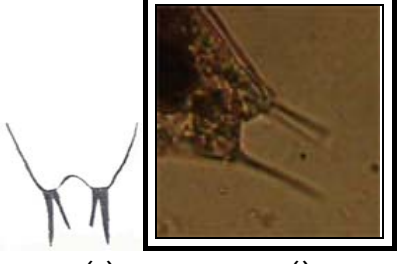
-4





A.bacillifer

.N.alluaudi

A.bacillifer

.N.alluaudi

 <p>() ()</p>	
<p>(48) <i>A.bacillifer</i> (4) () (400))" "</p>	<p>(47) <i>A.bacillifer</i> (4) (100)</p>
	 <p>() ()</p>
<p><i>N. alluaudi</i> (50) (4) (100)</p>	<p>(49) (400) <i>A.bacillifer</i> (4) ()</p> <p>()" "</p>

 ()	 ()	 ()	 ()
()" "	(52) <i>N. alluaudi</i> (4) () (400)	()" "	(51) <i>N. alluaudi</i> (4) () (400)

(58-53)

Nauplius5




-5








A.bacillifer

.N.alluaudi

A.bacillifer

. N.alluaudi

 ()	 ()	
() (400)	(54) <i>A.bacillifer</i> (5)	(53) <i>A.bacillifer</i> (5) (100)
()" "		

	 
<p style="text-align: right;">(56)</p> <p><i>N. alluaudi</i> (5)</p> <p>(100)</p>	<p style="text-align: right;">(55)</p> <p><i>A. bacillifer</i> (5)</p> <p>() (400)</p> <p>() " "</p>
 	 
<p style="text-align: right;">(58)</p> <p>(400) <i>N. alluaudi</i> (5)</p> <p>() " "</p>	<p style="text-align: right;">(57)</p> <p>(400) <i>N. alluaudi</i> (5)</p> <p>() " "</p>

(64-59)

Nauplius6




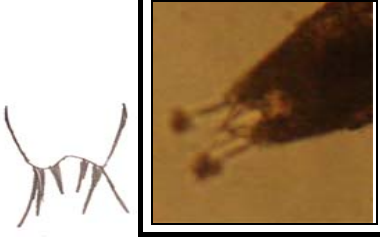
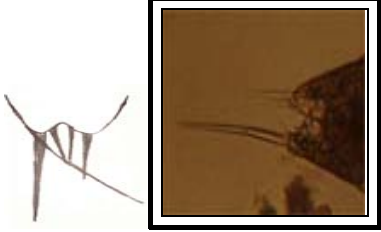

-6

A. bacillifer

N. alluaudi

A. bacillifer

N. alluaudi

 <p>() ()</p>	 <p>()</p>
<p>(6) () (400) ()" <i>A.bacillifer</i> (60) "</p>	<p><i>A.bacillifer</i> (59) (6) (100)</p>
 <p>()</p>	 <p>() ()</p>
<p>(100) <i>N. alluaudi</i> (62) (6)</p>	<p>() (400) <i>A.bacillifer</i> (61) (6) ()" "</p>
 <p>() ()</p>	 <p>() ()</p>
<p>() (400) <i>N. alluaudi</i> (64) (6) ()" "</p>	<p>(400) <i>N. alluaudi</i> (63) (6) () ()" "</p>

Copepoda Czaika,S.C.(1982)
 Nauplius (1-6)
 (2-1)

Czaika,S.C.(1982)
 (1)

Nauplius

N6	N5	N4	N3	N2	N1	Nauplius
16	13	10	6	3	3	<i>Diaptomus spp</i>
11	10	8	6	3	---	<i>Epischura lacustris</i>
14	13	10	6	3	3	<i>Eurytemora affinis</i>
16	13	10	6	3	---	<i>Limnocalanus macrurus</i>
15	12	9	5	3	3	() <i>A.bacillifer</i>
14	11	8	5	3	3	() <i>N.alluaudi</i>









(2)





Nauplius

N6	N5	N4	N3	N2	N1	Nauplius
3	2	2	2	1	1	<i>Diaptomus spp</i>
3	3	3	3	1	----	<i>Epischura lacustris</i>
3	3	3	3	1	1	<i>Eurytemora affinis</i>
2	2	2	2	1		<i>Limnocalanus macrurus</i>
3	2	2	1	1	0	() <i>A.bacillifer</i>
				1	0	() <i>N.alluaudi</i>


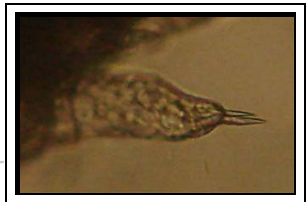
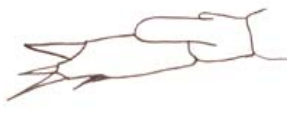

:Copepodit (4-5-6)






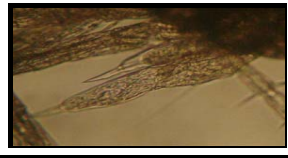


(70-65) *A.bacillifer* :

<p>(65) (4) <i>A.bacillifer</i> () (400) ()" "</p>	 <p>()</p>	 <p>()</p>
<p>(66) (5) <i>A.bacillifer</i> () (400) ()" "</p>	 <p>()</p>	 <p>()</p>
<p>(67) (6) <i>A.bacillifer</i> () (400) ()" "</p>	 <p>()</p>	 <p>()</p>
<p>(68) (4) <i>A.bacillifer</i> () (400) ()" "</p>	 <p>()</p>	 <p>()</p>

<p>(69) (5) (400) <i>A. bacillifer</i> () ()" "</p>	  <p>() ()</p>
<p>(70) (6) <i>A. bacillifer</i> ()(400) ()" "</p>	  <p>() ()</p>

(76-71) *N. alluaudi* :

<p>(71) (4) <i>N. alluaudi</i> () (400) ()" "</p>	  <p>() ()</p>
<p>(72) (5) <i>N. alluaudi</i> () (400) ()" "</p>	  <p>() ()</p>

<p>(73) (6) <i>N. alluaudi</i> () (300) ()" "</p>	 <p>()</p>	 <p>()</p>
<p>(74) (4) <i>N. alluaudi</i> () ()" "</p>	 <p>()</p>	 <p>()</p>
<p>(75) (5) <i>N. alluaudi</i> ()(400) ()" "</p>	 <p>()</p>	 <p>()</p>
<p>(76) (6) <i>N. alluaudi</i> () ()" "</p>	 <p>()</p>	 <p>()</p>

(76-65)

Copepodid5

Copepodid 4

.Copepodit 6

Czaika,S.

.
Diaptomus spp.
 .(6-4) Copepodid

Copepodit6
 C. 1982

: -
 (77) (24-11)
 (9.6-8.48) (78) / (9.2-7.7)
 (79)

.(1972 . 1996 .)

.(1995 . 1992 .)

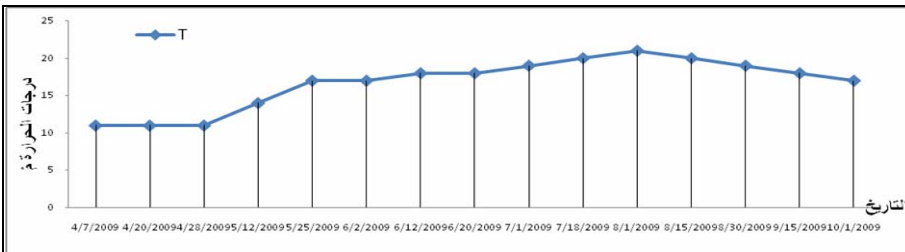
/ (1.7-0.2) NH⁺⁴
 .(81) / (1.87-1.2) PO₄⁻³ (80)

1992)

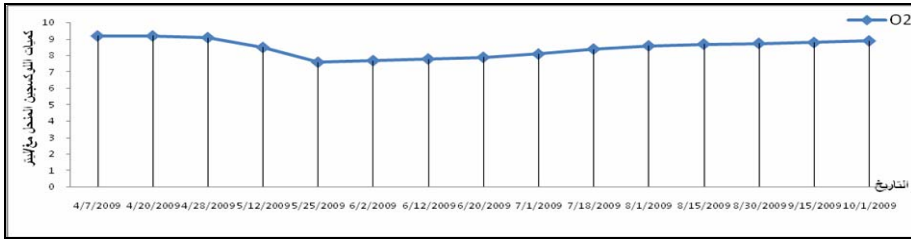
.(1995 .

Cherifi, O. & al

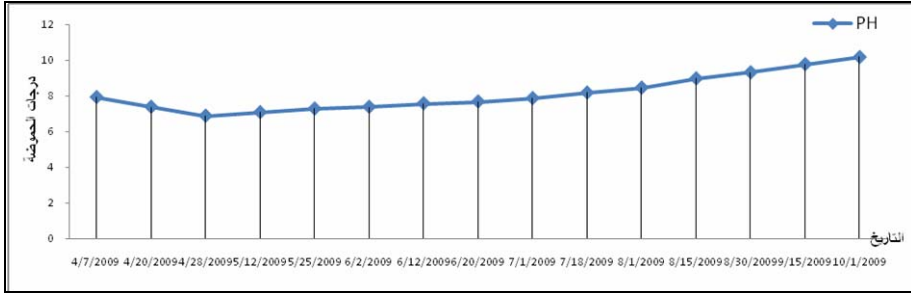
.(1996) . (1993)



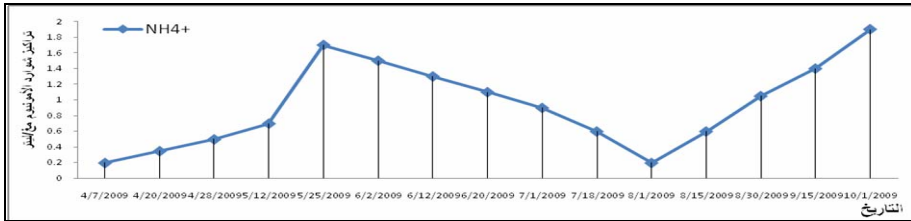
(77)



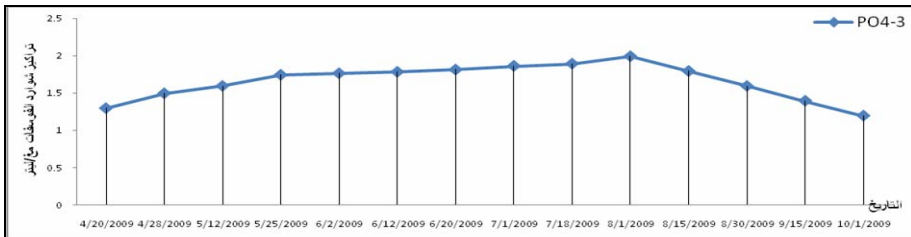
(78)



(79)



(80)



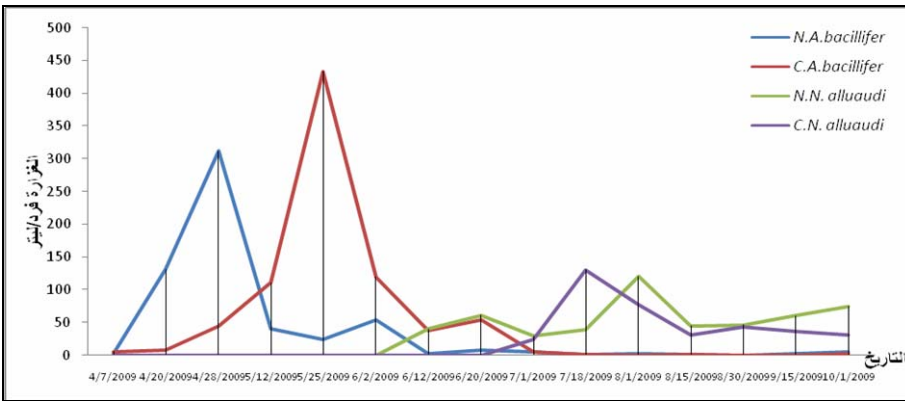
(81)

(A.bacillifer,N.alluaudi)

	(6/12-4/7)				
(6/2)	/	312	(4/28)	-	<i>A.bacillifer</i>
(5/25)			/	54.86	
/	54.86	(6/20)	/	433.3	
					.(82)
					<i>N.alluaudi</i>
/	130.5	(7/18)	:		
/	120	(8/1)			
					.(82)

A.bacillifer

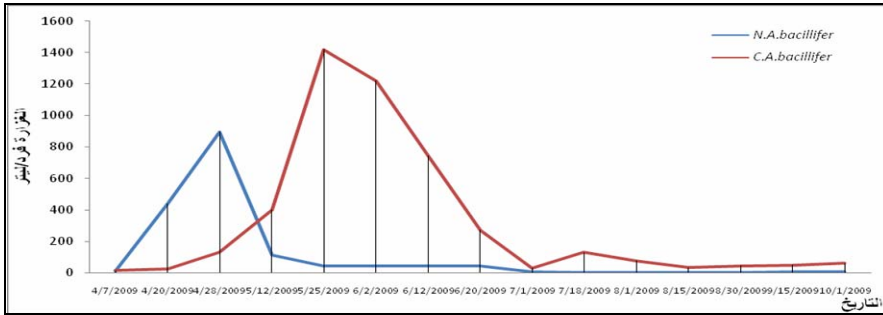
N.alluaudi (17-15)
.Dussart,B.(1969) (25-21)



A. (Nauplius,Copepodid) (82)

N.alluaudi *bacillifer*

<i>A.bacillifer</i>	(6/20-4/7)	
897	(4/28)	
1420	(5/25)	/
		.(83) /



A. (Nauplius, Copepodid) **(83)**
bacillifer

(3)

<i>N.alluaudi</i>	<i>N.alluaudi</i>	<i>A.bacillifer</i>	<i>A.bacillifer</i>		
Bezas Rubiales	L'estuaire de l'oum ER Rbia	Eymir 1999-1993	Mogan		
22.8-10	26.5-15	-----	24-16	19-11	T
10-7.1	8.4-7.6	-----	9.48-8.54	7.95-6.9	PH
0.1-0	-----	-----	0.002	0.45-0.3	NO₂
1-0	-----	-----	0.28	1.7-0.2	NH₄⁺
0.063 -0.032	-----	-----	-----	1.87-1.2	PO₄⁻³
-----	-----	0.727-0.324	-----	0.77-0.32	P
16-1.8	10.8-8.5	-----	23-3.3	9.2-8.1	O₂
-----	-----	0.86-0.052	-----	-----	NH₄-N
-----	-----	0.68-0.051	-----	-----	NO₃-N
-----	-----	-----	0.26	-----	NO₃
-----	-----	-----	-----	-----	N

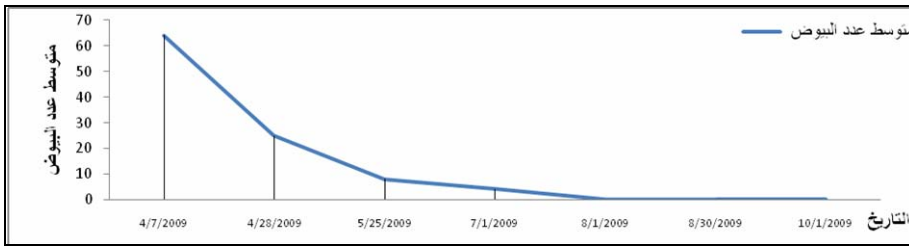
(3)

Beklioglu, M.(2003), Akbulut, N. E.(1997)
.Escriva, A.(2008), El khalki, A (2007)

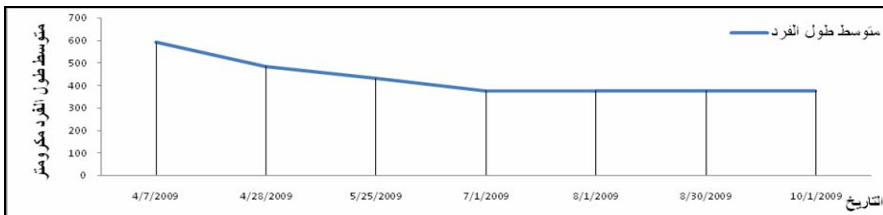
A.bacillifer

A.bacillifer (85-84)

(77)



A.bacillifer (84)



A.bacillifer (85)

31

15

36 *A.bacillifer*

. 20

Carrillo, P. & al. (2001), Jimenez-Melero, & al. (2006), Uye, S-I. (1980), Herzig, A.(1983), Ravra, O. & al. Klein Breteler, W. C. M.& al. (1982), Makino,W.&al.(2000).

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