Bull. Iraq nat. Hist. Mus.
(2004) 10 (2): 9-37

*KEYS FOR IDENTIFICATION OF GENERA AND SPECIES OF THRIPS (THYSANOPTERA: THRIPIDAE) FROM MIDLE OF IRAQ

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ABSTRACT

Keys for 22 species representing 10 genera of Thripidae were provided collection of samples carried out during 1999-2001 in different localities in the middle of Iraq. Of them four species are described as new to science, *Frankliniella megacephala* sp. nov; *Retithrips bagdadensis* sp. nov; *Chirothrips imperatus* sp. nov; *Taeniothrips tigridis* sp. nov; Another fourteen species are recorded for the first time in Iraq; *Thrips meridionalis* (Pri.); *Microcephalothrips abdominils* (Crawford *Scolothrips sexmaculatus* (Pergande),);Scolothrips pallidus (Beach); *Scritothrips mangiferae* Pri.; *Frankliniella tritici* Bagnall; *Frankliniella schultzie* Trybom; *Frankliniella unicolor* Morgan; *Retithrips aegypticus* Marchal; *Retithrips javanicus* Mayet; *Taeniothrips gowdeyi* (Bagnall); *Chirothrips meridionalis* Bagnall; *Chirothrips mexicanus* Crawford; *Chirothrips hamatus* Trybom; and four species reported previously for Iraq; *Thrips tabaci* Lindeman; *Retithrips syriacus* Mayet; *Parascolothrips priesneri* Mound; *Anaphothrips sudanensis* Trybom; on different plants.

INTRODUCTION

Family Thripidae is one of the largest Thysanoptera families, included four subfamilies, and 1710 species (Mound, 1997; Heming, 2000). In Iraq no more studies to identification thrips, found in filed, garden, green house, A wild distribution, and need different temperature and humidity, Some species can found on one plant as *Microcephalothrips abdomenalis* (Crawford) called (a composite thrips) and *Anaphothrips sudanensis* Trybom (called a grass thrips) and *Chirothrips* spp. a (gramany thrips).

RESULT

Diagnostics characters of family Thripidae:

Antennae eight-nine segments, sense cone on third and fourth segments simple or forked, maxillary palp two-three segment, legs normal tarsi with one-two segment some times with a claw, reticular only on pterothora10. Pronotum with a micro seta on a disk, each hind angle carried pair of consumption seta, wings pale with two-three longitude veins on fore wing only, upper vein elongate behind anterior marginal wig (coastal wing), hind wing pale without

* Apart of M. Sc. Thesis of the first author.

veins, abdomen normal, posterior margin of eight segment carried a comb, some times absent.

To ideated insects use the keys in references as Bailey, 1937. Bhatti, 1978. Bryan, and Smith, 1956. Gentile, and Bailey, 1968. Hood 1932; Marullo1993. Morgan, 1925. Si10 Mound, 1967. Mound, 1968. Mound, and Walker, 1982. Priesner1932. 1949a. - 1949b. 1950. Rivany, 1939.; Steinweden, 1933.

The family divided to four subfamilies: Panchaetothripinae, Thripinae, Sericothripinae and Dendrothripinae.

1- Subfamily Panchaetothripinae:

Reticulum on whole body, antennae heliothripod, and eight segments longer than seventh segment. Wings broad at base, first vein fused with coastal margin and content the ambient vein. Apex of abdomen provide with a spiny or strongly seats. There are 33 genera and 120 species beyond to this subfamily. In this study recorded only genus Retithrips.

2- Subfamily Sericothripinae:

Pale yellowish in color, small in size, antennae eight segmented sense cone on third and fourth segments forked, seta of wing sperted on first vein, and a serial on seconded vein, hind angel of Pronotum carried one seta at each side, whole body covered with a micro seta's specially on abdominal segmented one-eight and became less at segments nine and ten (Mound & Walker, 1982), In this study recorded genus Scritothrips.

3- Subfamily Thripinae:

It is the largest one for this family, different in their characters, the reticulum weakly on pterothorax only, antennae six-eight or nine segmented, the apex segmented small or some time equal in length, wings vein prominent, apex of abdominal segment provide with long, strong seta some times a spiny. Divided to two Tribe : Chirothripini; Thripini (Mound & Walker, 1982).

A- Tribe Chirothripini:

Head e1ongted between antennae basic, antennae eight segmented, seconded segmented with a projection at outer side, sense cone on third and fourth segments simple or forked, Pronotum not equal in anterior and posterior margin the lateral as 1.2 – 1.3 times as the first. Abdomen provide with a strong seta at apex, as in genus *Limothrips*, in Iraq recorded only genus *Chirothrips*.

B- Tribe Thripini:

Antennae six-eight or nine segmented, sense cone on third and fourth segmented simple or forked. Pronotum equal in there anterior and posterior margins, different in habit, feeding on wild host plant, some of them are predator, feeding on small Arthropod, in Iraq recorded the genera; *Thrips; Microcephalothrips; Scolothrips; Parascolothrips; Anaphothrips; Taeniothrips; Frankliniella*.

Key to the Iraqi genera of family Thripidae:

1- Reticulum at whole body, antennae heliothripod, Pronotum equal at anterior and posterior margins, more longer that the lateral, three callosities on fore wing, ambient vein present, posterior margin of abdominal segmented with a strongly structure like teeth on each sides, comb present, dark brown color on Vitis leaf (fig.1) ……..*Retithrips* Marchal

- Not as above……...2

2- Antennae 7 segmented……..…3

- Antennae 8-9 segmented……..5

3- Hind angel of Pronotum with One pair of short seta, posterior margin with 4-5 pairs of micro seta , posterior margins of abdomenal segment 1-8 with chitin structure, wings seta few, distance at arranged, brown-yellowish in color. On sunflower, (Fig.2) ……..*Microcephalothrips abdominals* Bagnall.

- Hind angel of Pronotum with Two pairs of long seta, consumption, more than 5 pairs seta on posterior margin, posterior abdomenal segmented smooth, color and size different……..…4

4- Antennae segmented carried micro seta, maxillary palp 3 segmented, comb present, abdomenal segment cylindrical in shape, wild distribution (Fig.3)...……..…*Thrips* Linn.

- Antennae segmented without micro seta, maxillary palp 2 segments, fore wing with 3 brown spots, comb absent, posterior abdominal margin not slightly, and pale brown in color, predator on small insects. (FIg.4) ……...*Parascolothrips priesneri* Mound.

5- Pronotum symmetrical in shape, hind angle with 1-2 seta or none.2nd antennal segment symmetrical, sense cone on segment 3,4 forked, head normal,……..….6

- Pronotum a symmetrical, hind margin with 1.2 – 1.3 times as fore margin,2nd antennal segment asymmetrical with projected at the outer side, sense cone on segments 3,4 forked or simple, head e1ongend between antennae basal (Fig.5)……...…*Chirothrips* Haliday

6- Fore and hind Pronotum angels provide with 1-2 long seta, abdomenal segmented carried a micro seta or none……..……..9

- Fore Pronotum angels without seta, hind angel with 1-2 prominent seta, that's on tip abdomenal strong……...7

7- One seta at each hind angel of Pronotum or none, comb present, different in size and color……8

- 2 seta at each hind angel of Pronotum, no micro seta at abdomenal segment, brown-yellowish in color (Fig.6)……*Taeniothrips* Amyot & Serville

8- One seta at each hind angel of Pronotum, abdomen covered with micro seta, seta on abdomenal segments 9 and 10 long, pale (Fig.7)……..…*Scirtothrips* Shull (as *Scir.mangiferae* Pri)

- Hind angels of Pronotum without seta, that's on abdomenal segmented 9-10 strong and long (Fig.8)…….*Anaphothrips* Uzel (as *Ano sudanensis* Trybom) .

9- Bodies seta long, pale, fore wing with three brown spots, setae of veins a few, distances

arrange, pale brown-yellowish in color, predator (Fig.9*)*……..*Scolothrips* Hinds

- Bodies seats shorter, dark or brown, fore wing pale, setae of veins arranged in a serial on veins, color and size different (Fig.10)…….*Frankliniella* Karny

Key to the Iraqi species of Thrips L.

1- Abdomenal sternites 2-8 provide with a ccsossary seta, lateral target of abdomenal segment without micro seta, Ovipositor short, base of sixth antennal segment convex, large species 1.4-1.5 mm in length, brown-yellowish in color (Fig,11)……..*meridionalis*(Priesner)

- Abdomenal segmented without a ccsossary seta, lateral target with micro seta, ovipositor long, base of sixth antennal segment circular, o.9-1.5 mm in length, pale yellowish, brown-yellowish in color, wild distribution (Fig.3)……*tabaci* Lindeman

Key to the Iraqi species of Scolothrips Hinds

1- First spot's wing attach the fore margin, antennae segmented 2-8 shaded with grayish color, lateral segments 3, 4 not circular (Fig.12)……..……*sexmaculatus* (Pergande)

- First spot's wing not attaches the fore margin, antennal segments 2-8 not shaded, lateral segmented 3, 4 circular (Fig. 9*)*…….*pallidus* (Beach)

Key to the Iraqi species of Retithrips Marchal

1- Fore wing with three callosities, sense cone on segments 3, 4 simple or forked……..2

- Fore wing two callosities, sense cone simple (Fig.13)……..*javanicus* Karny

2-All callosities at straight……...3

- Callosities not at a straight, sense con on 3rd antennal segment very short (Fig.14)……..*bagdadensis* sp.nov.

3-Sense cone on segments 3, 4 forked (Fig.15)……*aegypticus* Marchal

- Sense cone simple, normal in length (Fig.1)…….*syriacus* (Mayet)

Key to the Iraqi species of Frankliniella Karny

1- Comb present, abdomenal segmented 9 with 4 long seta, that's on wings; 23:18:15, dark brown in color (Fig.16)……..….*tritici* Bagnall

- Comb absent, more than 4 seta on abdomenal segmented 9, setae of wing different, color and size different ……..……2

2- Tubular ocelli present, eyes close at head side, anteocular setae airside at front, setae of wing; 20:18:14 (Fig.10)……*schltzie* Trybom

- Tubular ocelli wanting, eyes far away from head sides, anterocular seta different in placed, setae of wing different ……..……3

3- Eyes distance 9-10 M from head sides, anterocular seta within it, setae of wing; 25:17:12 (Fig.17*)*……*unicolr* Morgan

- Eyes distance 28-30 M, anterocular seta airside at anterior ocelli, setae of wing; 27:19:15 (Fig.18)…….*megacephala* sp. nov.

Key to the Iraqi species of Taeniothrips Amyot & Serville

1- Ommatidia not arranged as serial on outer margin of eyes, primary comb present, setae of wing;23:11:13 (Fig.6)……..…..*gowdeyi*(Bagnall)
- Ommatidia arranged as serial on outer margin of eyes, comb absent, setae of wing; 27:10:13 …(Fig.19)……...*tigridis* sp. nov.

Key to the Iraqi species of Chirothrips Haliday

1- 2nd antennal segment with a projection at outer side……2
- 2nd antennal segment normal……3

2- Sense cones on antennal segments 3,4 forked, head not elongate between antennal basal, scallopus on pterothorax weakly, posterior margin of abdomenal segmented 2-8 provided with chitin structure, male winged, glandular area circular, small in size (Fig.20)…..*meridionalis* Bag.
- Sense cones on antennal segmented 3,4 simple, head elongate between antennal basal, scallopus strongly on pterothorax, posterior margin of abdomenal segmented 2-8 smooth (Fig.2.....…..*mexicanus* Crawford

3-Fore tibia dented in sex, male wingless, ocelli absent, (Fig.22) ……...*imperatus* sp. nov.

-Fore tibia not dented, male unknown (Fig.5*)*……..*hamatus* Trybom

REFERENECES

Bailey, S.F 1937. The composite Thrips Microcephalothrips abdominalis (Crawford). Canad. Ent. 69(1):121-126.

Bhatti, J.S. 1978. Systematic of Anaphothrips Uzel. 1895 sensu latu and some related genera (Insecta:Thysanoptera:Thripidae). Senckenbergiana biol. 59(1-2):85-114.

Bryan, D. E. and Smith, R.F. 1956. The Frankliniella occidentalis (Pergande) comple10 in California (Thysanoptera:Thripidae). Univ. Calif. Public. Ent. 10(6):359-410.

Gentile, A.G. and Bailey, S.F. 1968. A revision of the genus Thrips Linnaeus in the new world with a catalogue of the world species (Thysanoptera: Thripidae). Univ. Calif. Publi. Ent. 51:1-80.

Hood, J.D 1932. New species of the genus Thrips from central Africa and Egypt. Bull. Soc. Ent. Egypt. Egypt. Cairo. 21:115-140.

Marullo, R. 1993. Le specie italiane del genera Frankliniella Karny. In for matore Fitopatologico 11:37-44.

Morgan, A.C. - 1925. Si10f new species of Frankliniella Karny and a key to the American species. Canad. Ent. 57:136-147.

Mound, L. A. 1967. A new genus and species of Thysanoptera predatory of mites in Iraq. Bull. Ent. Res. 57:315-319.

---------- 1968. A review of R. S. Bagnall's Thysanoptera collections. Bull. Br. Mus. Nat. Hist. (Ent.). Suppl. 11:1-181.

Mound, L.A. and Walker, A.K. 1982. Terebrantia (Insecta: Thysanoptera) no. I Fauna of NewZealand, 1, 113 pp.

Priesner, H. 1932. Preliminary notes on Scirtothrips in Egypt with key and catalogue of the Scirothrips species of the world. Bull. Soc. Ent. Egypt. 16:141-155.

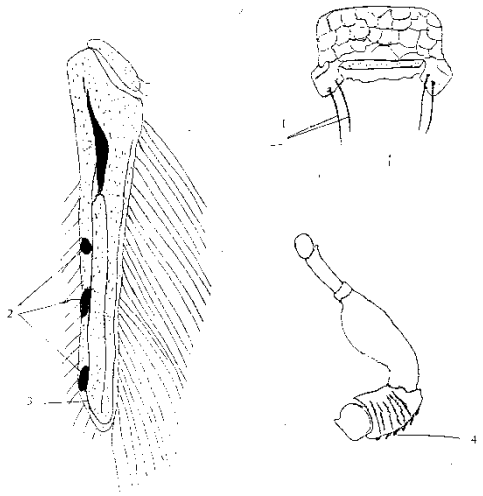
---------- 1949a. Genera Thysanoptera, keys for the Identification of the genera of the order Thysanoptera. Bull. Soc. Ent. Egypt. 33:31-157.

---------- 1949b. Studies on the genus Chirothrips Haliday. Bull. Soc. Ent. Egypt. 33:159-174.

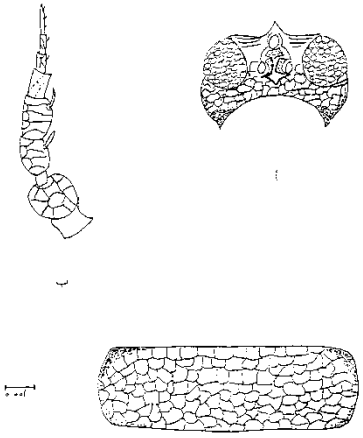
---------- 1950. Studies on the genus Scolothrips Hinds. Bull. Soc. Ent. Egypt. 34:39-67.

Rivany, E. 1939. Studies in the biology and ecology of Retithrips syriacus Mayet with species attention to its occurrence in Palestine. Bull. Soc. Ent. Egypt. 23:150-181.

Steinweden, J.B. 1933. Key to all known species of the genus Taeniothrips Amyot & Serville. Trans. Amer. Ent. Soc. 59(978):269-295.



(A)



(B)

Fig. 1
Retithrips syriacus (*Mayet)*
(A) – a Metasternum. 1-long seta (400x) b-fore leg,4- the dentate c-fore wing, 2-the three spots on the anterior m

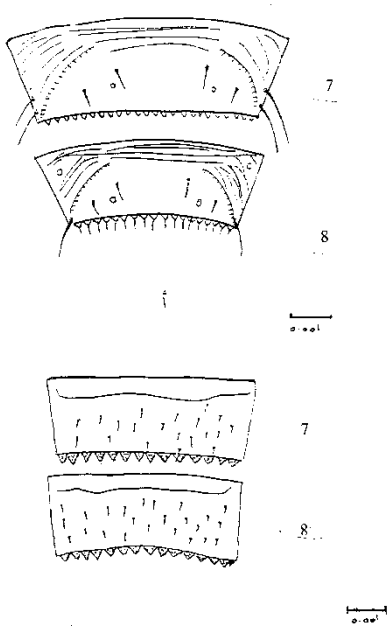


Fig. 2
Microcephalothripa abdominalis Bagnall
7^{th} ,8^{th} abdominal segment
a- on tergum, b- on sternum
argin, 3- the ambient.
(B)- a head. b- antenna c- pronotum,(400x)

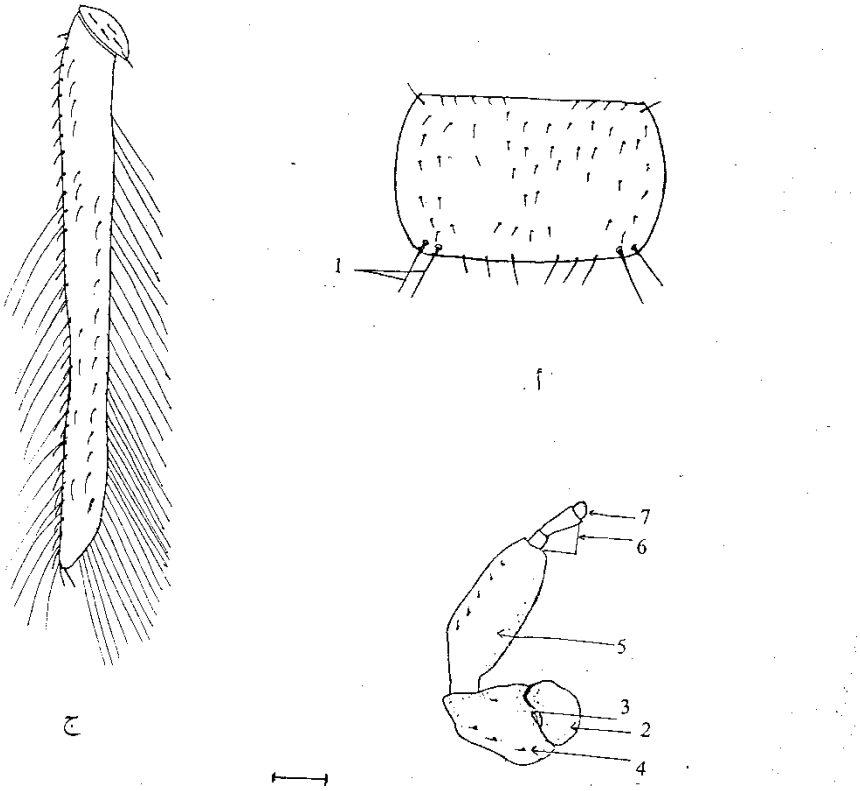
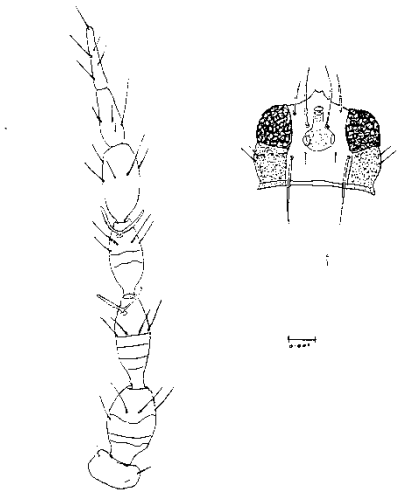
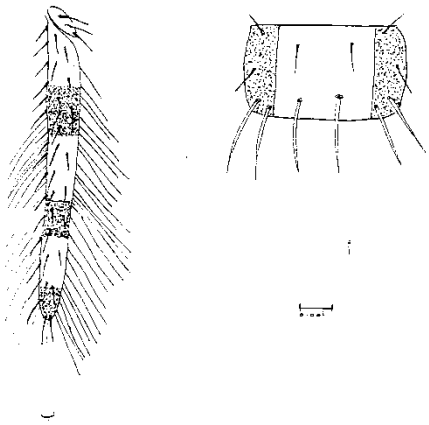


Fig.3
Thrips tabaci Lind.
a- pronotum (400x). b- fore leg (400x), 2- coxa, 3- trochnter, 4- fumer, 5- tibia, 6- tarsus ,7- bladder. C- fore wing (400x).



(A)



(B)

Fig.4
Parascolothrips priesneri Mound
(A) - a- head with tubular oclli (400x) . b- antenna (1000x).
(B) a- pronotum (400x). b- fore wing (200x).

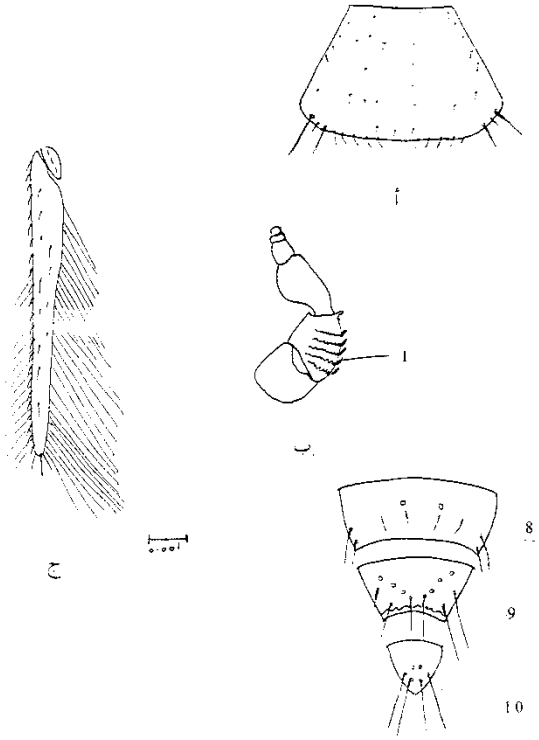


Fig.5
Chirothrips hamatus Trybom
a- prothorax (400x). b- fore leg (400x), 1- the dentate on outer fumer margin, (400x). c- fore wing (400x). d- abdominal segment 8-10 (400x).

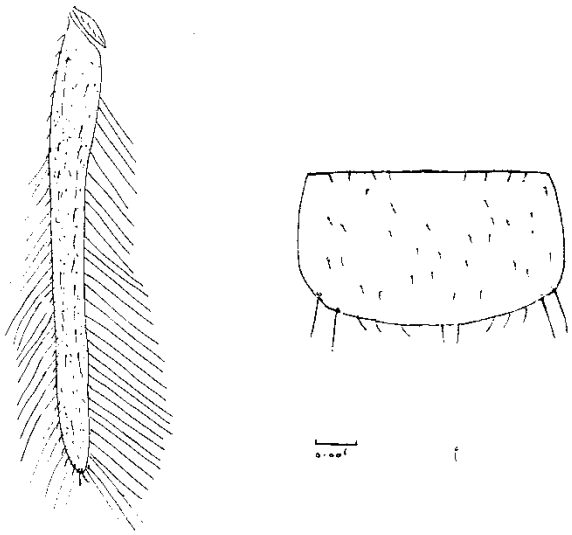


Fig.6
*Teaniothrips gowdeyi (*Bagnall)
a- pronotum (400x). b- fore wing (200x).

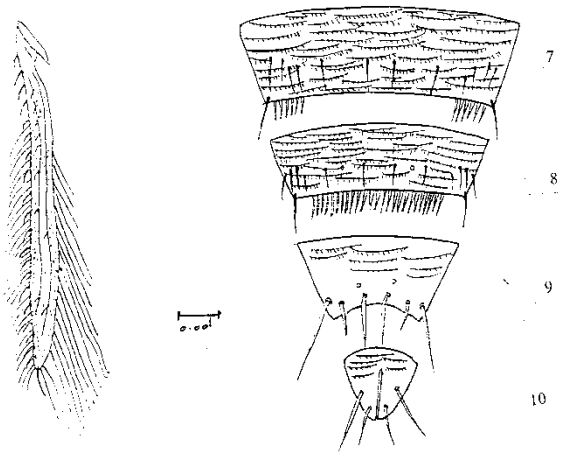


Fig.7
Scirtothrips mangiferae Priesner
a- fore wing (200x). b- abdominal segment 7-10 (100x)

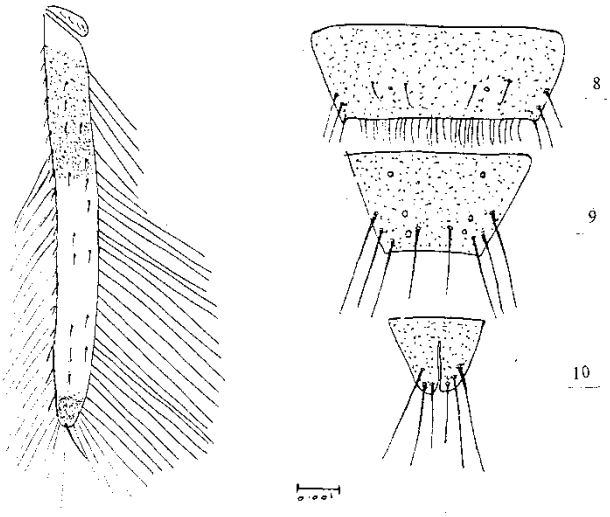
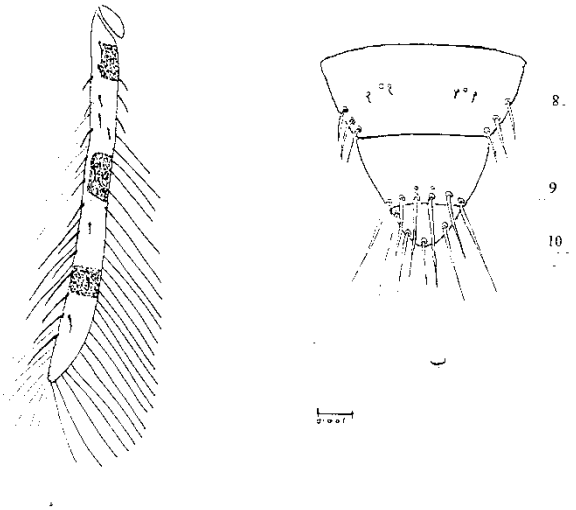
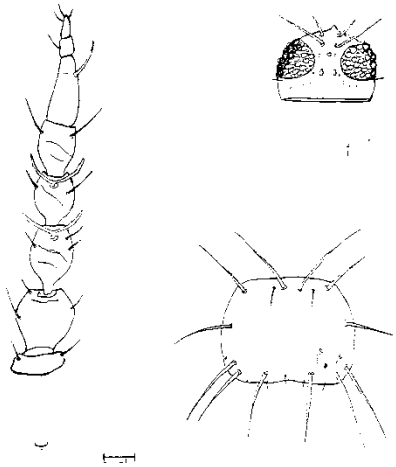


Fig.8
Anophthrips sudanesis Uzel
a- fore wing (200x). b- abdominal segment 8-10 (400x).



(B)



(A)

Fig.9
Scolothrips pallidus (Beach)
(A)- a- head (400x). b- antenna (1000x). c- prothorax (400x).
(B)- a - fore wing (200x). b- abdominal segment 8-10 (400x).

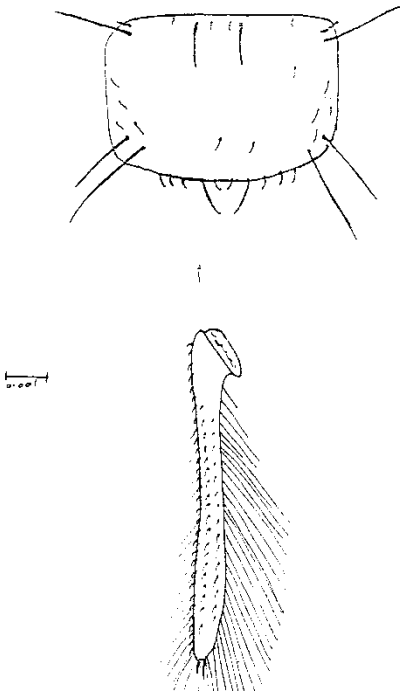
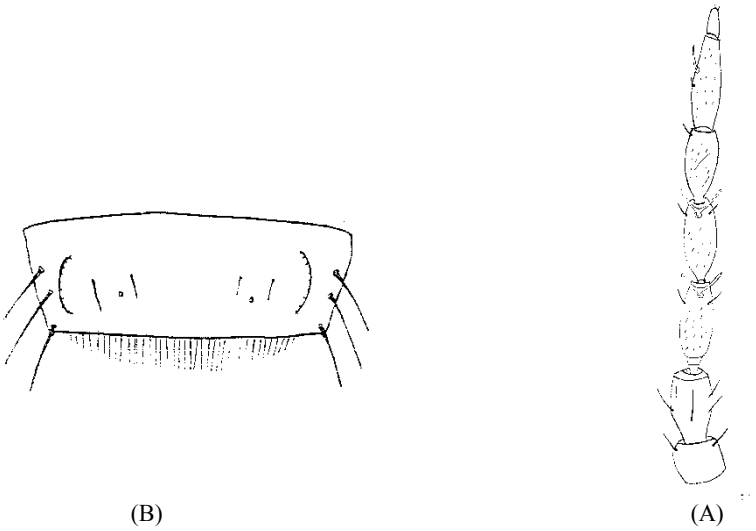


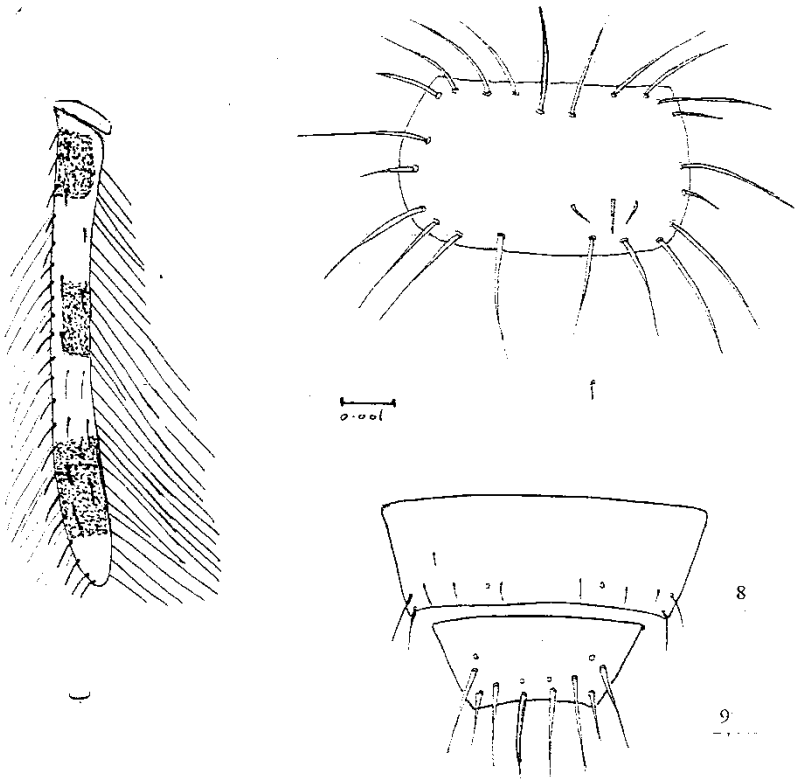
Fig.10
Franklinella schultzie (Trybom)
a- pronotum (400x). b- fore wing (200x).



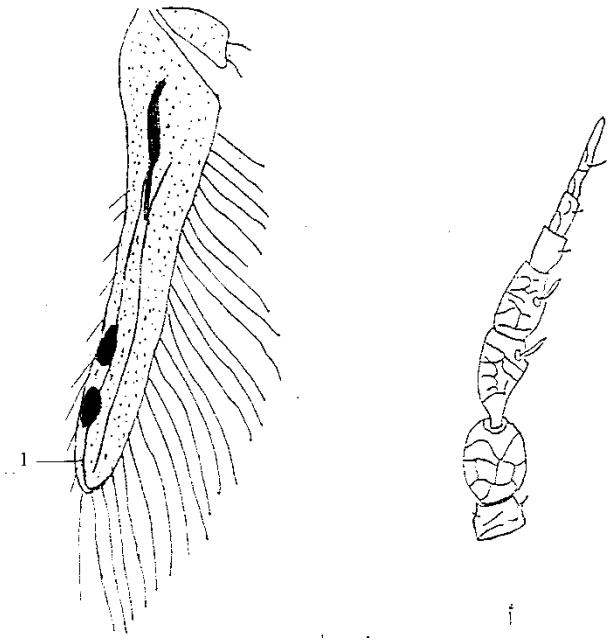
(B) (A)

(Fig.11)
Thrips meridionalis (Pri.)
(A)- antenna (1000x). (B)- 8th abdominal segment

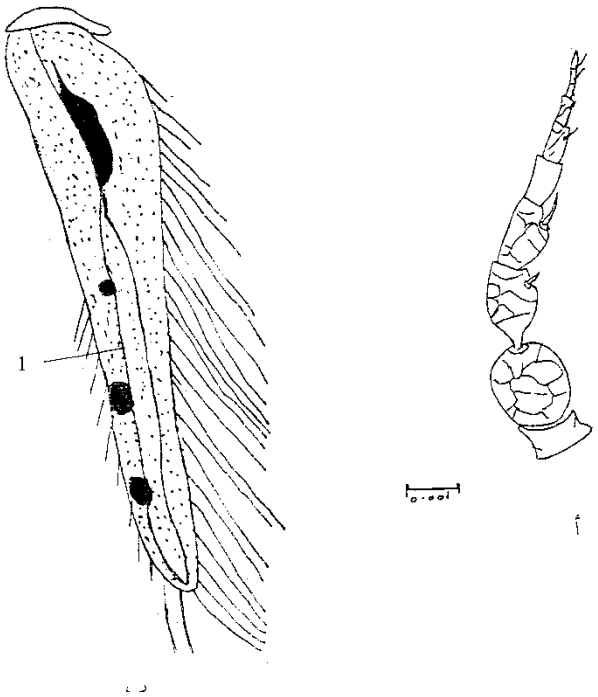
Key for Identification



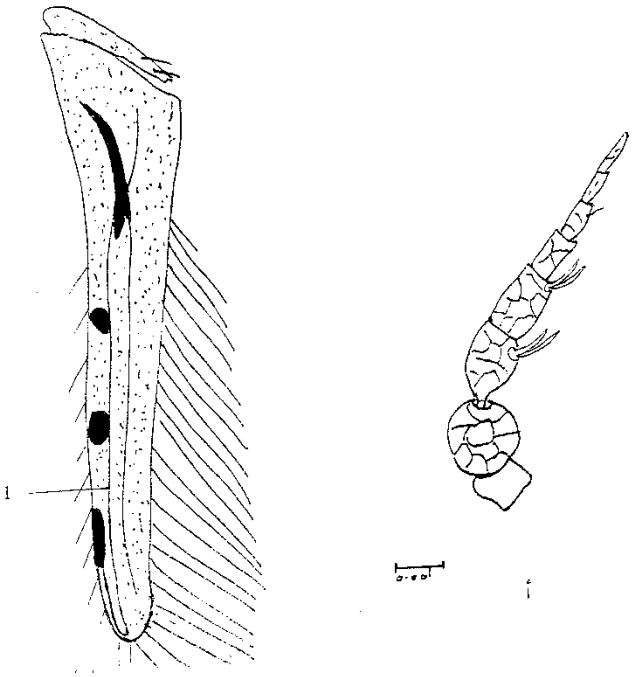
(Fig.12)
Scolothrips sexmaculata (Pergande)
A-Pronotum (400x). B- fore wing (200x). C- 8th, 9th abdominal segment.



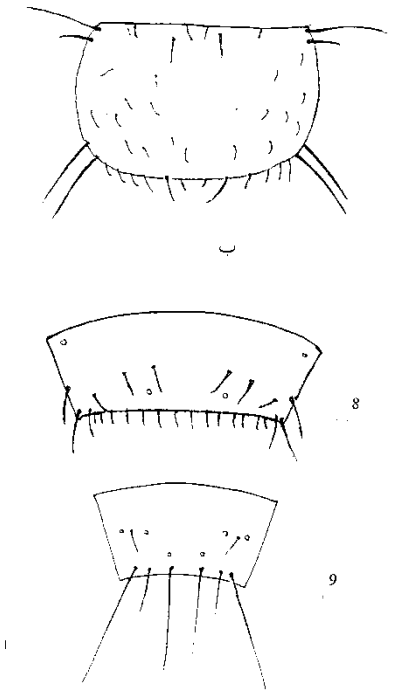
(Fig.13)
Retithrips javanicus Mayet
a- antenna (1000x). b- fore wing (200x), 1- the ambient vein.



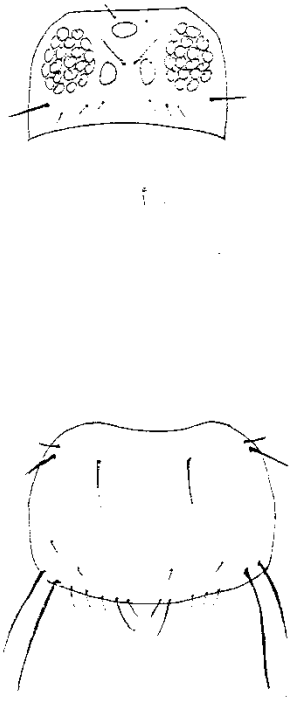
(Fig.14)
Retitheips bagdadensis sp.nov.
a-antenna. (400x). b- fore wing (200x), 1- the ambient veiv.



(Fig. 15)
Retithrips aegypticus Marchal
A- antenna with forced sence cones on 3rd ,4th segments (400x). B- fore wing, 1- the ambient vein (200x).

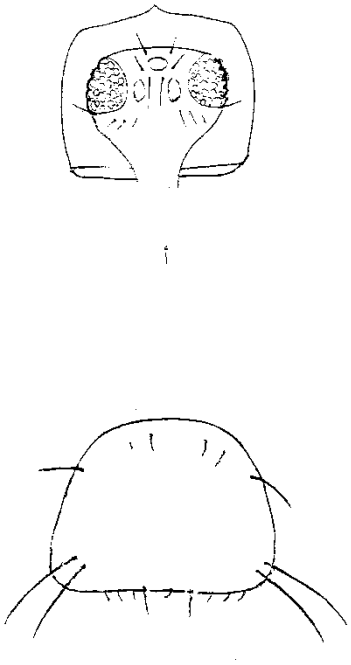


(Fig. 16)
Frankliniella tritici Bagnall.
B- Pronotum (400x). C- abdomen segment 8,9 (400x).

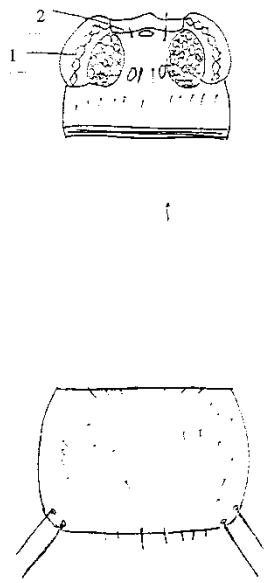


(Fig. 17)
Frankliniella unicolor Morgan.
A- Head (400x). C- pronotum (400x).

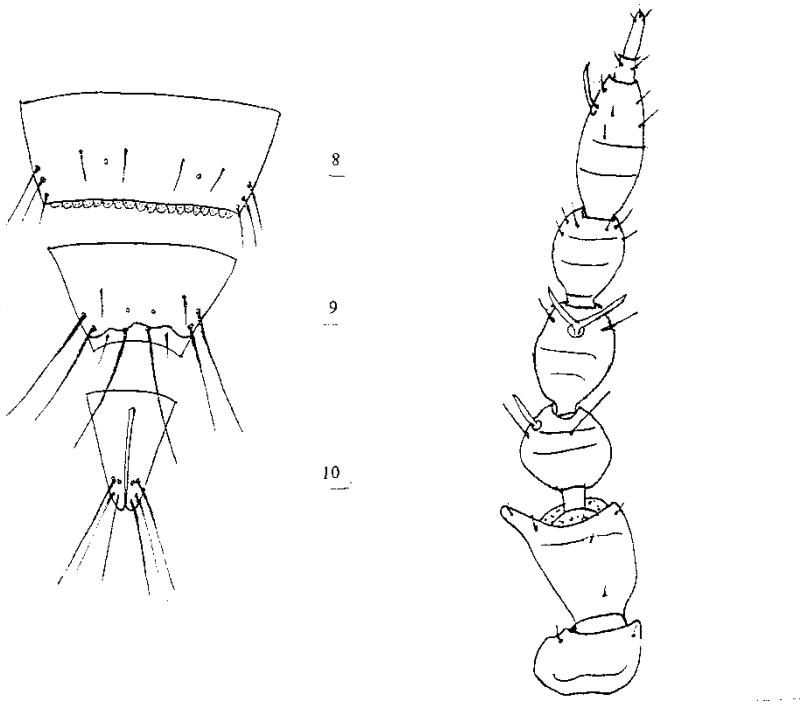
Key for Identification



(Fig.18)
Frankliniella megacephala sp.nov.
A- Head (400x). C- pronotum (400x).



(Fig.19)
Teaiothrips tigridis sp.nov.
A-Head, 1-serial ommatidia. 2- the bridge on frons.(400x).
C- prothorax (400x).



(B)

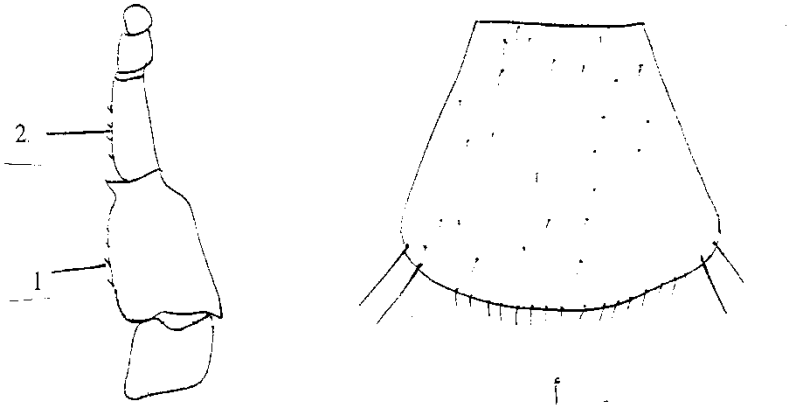
(A)

(Fig.20)
Chirothrips meridionalis Bagnall
A- Antenna (1000x).
B- Abdomen segment 8,9,10 (400x).

(B) (A)

(Fig.21)
Chirothrips mexicanus Crawford

(A)- Head (400x).
(B)- The scallopus on prterothorax from tergum (400x).



(Fig. 22)
Chirothrips imperatus sp.nov.
(A)- prothorax (400x).
(B)- fore leg (400x), 1,2 the dentine on fumer and tibia.

Bull. Iraq nat. Hist. Mus.
(2004) 10 (2): 9-37

*ضٌخشة تح ا نف ص اج أ عو نأوس وتا ا (THYSANOPTERA: THRIPIDAE)ن م قا ر لاطو

و يد و حح غلاا لد عفط ا ع ***ل وسر الد ب ح لمدمحم**
**قسم وقاية النبات، كلية الزراعة، جامعة بغداد
***متحف التاريخ الطبيعي، جامعة بغداد، بغداد، العراق

ص يخ شل لحيتا امت عد و ٢٢ دوعتا اعونل إس بترا ن م س نج قش ع ن مت مجم ذا م ل ا ا فلتخم طانم خ قا ر لاطو في ة ١٩٩٩-٢٠٠١. ملعلا ةديد عون ةعبر تضو لهنم و ي هو:

Frankliniella megacephala sp. nov; *Retithrips bagdadensis* sp. nov; *Chirothrips imperatus* sp. nov; *Taeniothrips tigridis* sp. Nov.

ي هو قا ع لاقرم لا لات لد س ً عونشعة ع ر او:

Thrips meridionalis (Pri.); *Microcephalothrips abdominils* (Crawford *Scolothrips sexmaculatus* (Pergande),);Scolothrips pallidus (Beach); *Scritothrips mangiferae* Pri.; *Frankliniella tritici* Bagnall; *Frankliniella schultzie* Trybom; *Frankliniella unicolor* Morgan; *Retithrips aegypticus* Marchal; *Retithrips javanicus* Mayet; *Taeniothrips gowdeyi* (Bagnall); *Chirothrips meridionalis* Bagnall; *Chirothrips mexicanus* Crawford; *Chirothrips hamatus* Trybom.

ي هو قاعلا ً ق ب لد لحمعونا ة ع ر او:

Thrips tabaci Lindeman; *Retithrips syriacus* Mayet; *Parascolothrips priesneri* Mound; *Anaphothrips sudanensis* Trybom.

*ثحا ل اقحورطا ن م ءز ج لولأا هارو كدلاا تاهشلا يذل.