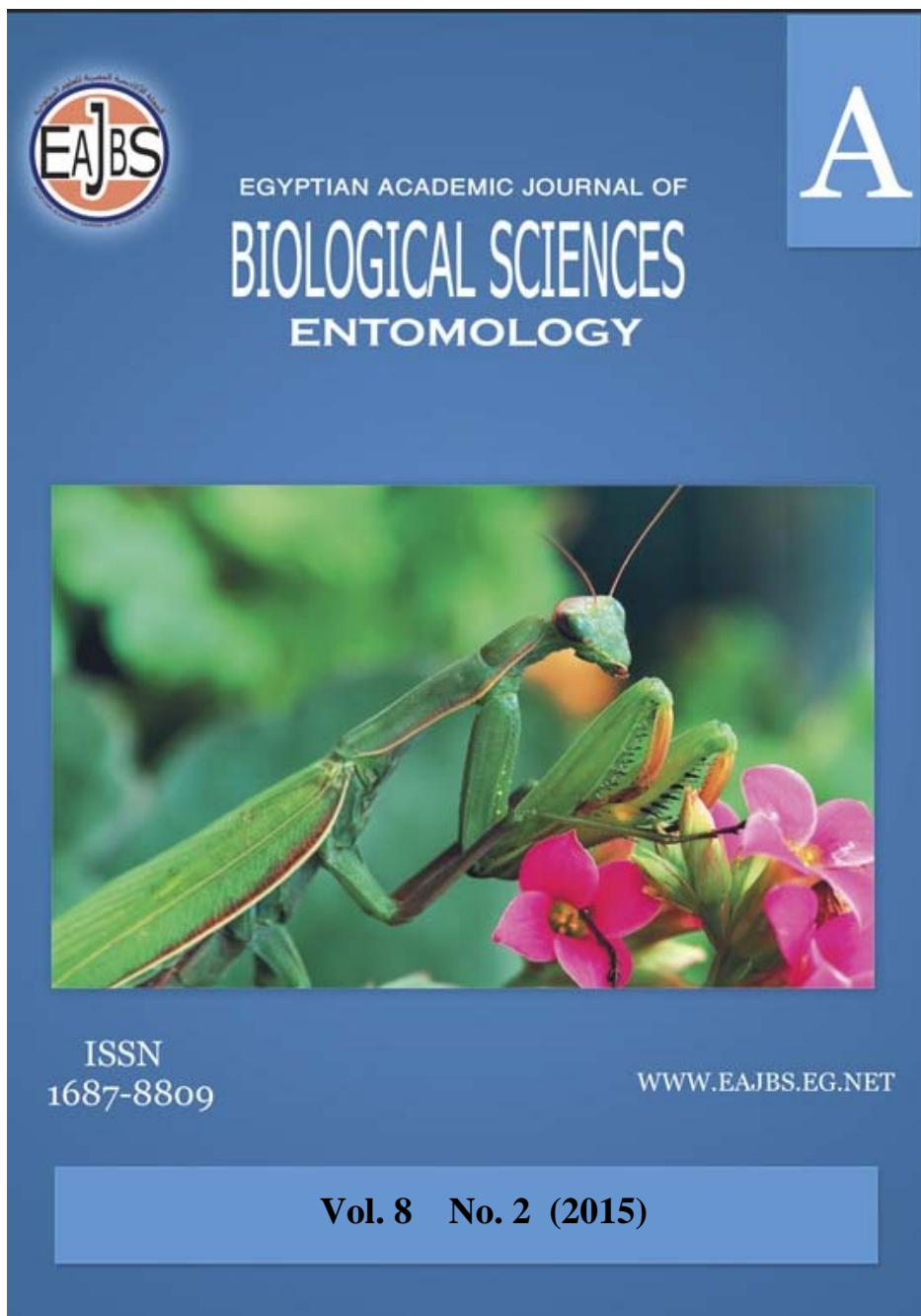


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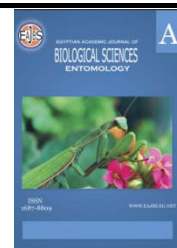


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**Thysanoptera (Insecta) recorded from Saudi Arabia,
Part II. Suborder Tubulifera**

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ABSTRACT

The Thysanoptera (thrips) known to exist in Saudi Arabia are presented in two parts: Part I dealt with the suborder Terebrantia and the present work (part II) deals with the suborder Tubulifera.

The Tubulifera of Saudi Arabia presented here includes 17 species belonging to 6 genera of two subfamilies (Idolothripinae and Phlaeothripinae) under only one family (Phlaeothripidae) and one superfamily (Phlaeothripoidea).

Alltaxa, the suborder, the family, subfamilies, genera and species are diagnosed. Taxonomic notes, distribution, importance, habitat and host records for each Tubuliferanspecies are given. Updated scientific names and taxonomic position, synonyms and types are also included.

INTRODUCTION

The order Thysanoptera (known as thrips) are a relatively large group of insects, comprising about 6000 or so known species, widespread throughout the world. Their habitats range through forests, grasslands, scrub, desert, most cultivated crops and gardens, and they include phytophagous and carnivorous species, gall makers and inquilines as well as themselves being prey for other arthropods and vertebrates. They are minute to small, slender, usually dark colored insects, comprises an array of beautiful and diverse creatures, either brightly colored or somberly shaded, often intricately sculptured. The variety ofform and structure provides a basis for the taxonomic and systematic classification of the group.

Many species are beneficial as they are predators on many pests and various other small insects or mites, but most are plant feeders sipping plant sap. They attack a wide variety of vegetation. Several species are serious pests of field crops, causing damage through feeding and transmitting plant diseases.

Valuable works have been made on the thrips of economic importance in different parts of the world such as Bagnall, 1908, 1926 and 1933; Priesner, 1921, 1930, 1931, 1949, 1950, 1960; Karny, 1926; Bhatti, 1969,2006; Strassen, 1979, 1980 and 2003; Hill, 1983; Mound & Palmer, 1983;Strassen and Harten,2008; Bhatti, *et al.*, 2009; Mound, 2009 and others.

Strassen (1979) reporting on the Thysanoptera of Saudi Arabia, mentioning that, the Thysanopterous fauna of Saudi Arabia is largely unknown and only a couple of species has so far been recorded. In his work, 17 species were collected of which four

were described as new to science (*Aeolothrips asirensis* sp. n., *Aeolothrips sobrinus* sp. n., *Thripslomatus* sp. n., *Capnothrips ruficaudis* gen. n., sp. n.). All four new taxa are indigenous to the Asir mountains in the western Arabian peninsula.

Unfortunately much of the information about Thysanoptera is fragment and scattered and often inadequate to secure. Also, the scientific names and taxonomic position of many of these species have often undergone changes during the last decades as a result of more critical studies. Bhatti (2006) raised the suborders Terebrantia and Tubulifera into orders.

The present work has been prepared, therefore, to highlight these tiny but important insects known to occur in the kingdom of Saudi Arabia, together with updating scientific names and categories.

MATERIALS AND METHODS

The present study is based on literature and all records of the species belonging to the suborder Tubulifera (Thysanoptera) reported from Saudi Arabia. Recent taxonomic position, updating scientific names (according to the most recent taxonomic works), synonyms, common names, host records and distribution for each species are presented where available.

All taxa, the suborder, the family, subfamilies, genera and species are diagnosed and are alphabetically arranged. The classification adopted here followed Bhatti, 2006 and Mound, 2009.

RESULTS AND DISCUSSION

The taxa and the taxonomic position of the suborder Tubulifera in Saudi Arabia are as follows:

Suborder Tubulifera Haliday, 1836

The Suborder Tubulifera consists of about 3500 species in 450 genera placed in the single family Phlaeothripidae (Mound, 2011).

Diagnosis :Body more strongly flattened than in Terebrantia. Antennae mostly 8-segmented, sometimes segments 7 and 8 fused. Sense-cones never forked, but sometimes several of them on one segment. Ocelli present or wanting. Prothorax trapezoidal. Fore legs frequently enlarged. Fore and hind wings little differing in length and width, membranous, all around with long fine fringe cilia. Wings without microtrichia, with only few basal bristles, without marginal vein, with a basal rudiment of a longitudinal vein bearing usually three setae. Fringe long and regular. Female without ovipositor. The 10th abdominal segment tube-like, never split beneath. Major anal setae arising from separate plates adjacent to the tube; females without ovipositor. Sexual dimorphism much less pronounced than in Terebrantia. Many genera are bark inhabiting, others inhabit turf, leaves or inflorescences, sucking the sap of the plants or eating the spores of fungi, some are predaceous on insects and mites.

Superfamily Phlaeothripodea Hood, 1915

Family Phlaeothripidae Uzel. 1895

Tube-tailed thrips

This is the only family currently assigned to the suborder. Representatives occur throughout the world are known from Oligocene (Baltic amber) to the present. The Phlaeothripidae is particularly species-rich and fairly common in tropical and subtropical areas, and no species appears to be resident at high altitudes on mountains,

nor in the subarctic and subantarctic regions. The family comprises about 2700 described species (Mound *et al*, 1980).

Diagnostic characters of the family: Members of this family are structurally uniform and are generally larger than those in the suborder Terebrantia (containing all other thrips). Surface of body, at least of head, roughened with small tubercles. Head rarely with conspicuous cheek-spines. Antennae 4-7 segmented. Wings wanting or very weak and narrow, sparingly fringed. In contrast to all other Thysanoptera, the forewings have no microtrichia on the surface, there are no distinct longitudinal veins, and the marginal cilia are immersed into the wing membrane rather than arising from normal setal bases. Tergites 2-9 almost linear, strongly transverse. The last abdominal segment, segment X, is tubular with the anus at the apex and the genital opening at the base, although this tube is variously swollen in a few rare species. Anal hairs long, several times as long as tube. The ovipositor is an eversible chute-like structure.

Remarks: About half of The Phlaeothripidae feed on leaves of green plants. In tropical countries often inducing galls (Ananthakrishnan, 1978). Although, in temperate zones, they are most commonly in flowers of Gramineae and Compositae (Mound *et al*, 1976). However, mostly others are associated with fungi-under bark, on dead twigs and branches or in leaf litter.

Subfamily Idolothripinae Bagnal, 1908

Diagnosis: Adults of Idolothripinae have the maxillary stylets broad, the bases of all maxillary stylets are equally stout. The species placed in Idolothripinae range from the largest of Thysanoptera to some of the smallest, and from jet black, fully winged individuals to pale yellow, wingless adults. Many species appear to be sub-social with behaviour that involves male fighting, large males of a species may have unusual structures, such as horns on the thorax, that are not developed in small males. Males of Idolothripinae never have a pore plate on sternite 8. setae S2 on tergite 9 are equal in size. In some species the sternites are longer than the tergites, and the tube is broadly conical. Many of the smaller species in the subfamily that live at ground level have the habit of lifting the tip of the abdomen over the head,

Remarks: Idolothripinae are most diverse in tropical areas, particularly the wet tropics, and only a few species occur in temperate parts of the World, and very few in arid areas. Members of this subfamily are presumed to all feed on fungal spores. These thrips are found in leaf litter, on dead branches, and on dead hanging leaves, and the species on dead branches and in bunches of dead leaves sometimes produce colonies of hundreds of individuals. Some genera are associated primarily with fungi at the bases of grasses and reeds.

Genus *Capnothrips* Strassen, 1979

Capnothrips Strassen, 1979. Fauna of Saudi Arabia, 1: p. 99

Type species: *Capnothrips ruficaudis* Strassen, 1979.

Diagnosis: Head longer than wide, longer than the pronotum and the tube, with straight sides. Eyes small, engaging, at the posterior margin with a single enlarged Ommatidium. Mouth conerounded, big and wide. Antennal joint 2 with areola lying in the center, joints 3 and 4 each with two small and short sense cones. Joint 8 wide, close to the joint 7 and sitting up (sessile). All bristles of pronotum developed pointed (sharp, acute). Epimeres separately with a long button fastening weak bristle. Praepectus absent. Legs normal, Front tarsus with teeth. Tube with weakly S-shaped curved (Tube curving with weak S-shaped sides). Abdominal bristles long and pointed.

Remarks: This genus is described from Saudi Arabia as new genus by Strassen, 1979.

Host records: Unknown.

Habitat: : Fungal spores eater, inhabiting Fungi branches.

Distribution: Saudi Arabia.

Remarks: This genus is described from Saudi Arabia as new genus by Strassen, 1979
***I-Capnothrips ruficaudis* Strassen, 1979**

Holotype: female (Basel museum), Saudi Arabia, Asir mountain, Qaraah village, 16/4/1976. Buttiker & Wittmer.

Diagnostic characters: Body brown plain dark, while head and abdominal segments VIII and IX darkest; tube striking reddish brown, its apical edge but black. Legs dark brown, only apical edge of the tibiae and the tarsi brown. Body bristles light yellow or yellow. Sides of head almost straight, slightly divergent basad. Cheeks occupied with 8-10 thin small bristles. Surface with a slightly indicated reticulated sculpture that is slightly more concise at the posterior margin. All post ocular bristles pointed, like all body bristles. Eyes even relatively small, ocelli absent. Antennal joint 3 stalked shank-like, ventral seated sense cones short. Joints 3 and 4 with two long sense cones. Pronotum at the widest are afree of sculpture, antero-lateral marginal area with few transverse lines. Abdomen wide, pelt hat shaped without distal bristle spores. All abdominal bristles sharply pointed. Bristles of tergites 3-6 slightly curved S-shaped.

Distribution: Saudi Arabia

Habitat: The species inhabited fungi branches. It isa fungal spore seater and is likely to come from the dead animals.

Remarks: This species is described from Saudi Arabia as new species by Strassen, 1979.

Subfamily Phlaeothripinae Priesner, 1923

Diagnosis: Head longer than broad, longer than the prothorax. Checks set with small warts bearing each a small bristle or spine. Mouth- cone pointed. Wings always developed in both sexes, evenly wide. For tarsi with tooth. Sides of abdominal tergites with a striate or reticulate area clothed with microtrichia. Males of Phlaeothripinae have a pore plate on sternite8, and they have setae S2 on tergite9 shorter and stouter than setae S1. The last abdominal segment, the tube, varies in shape between genera, such that it is in the form of a moderately long simple tube in *Haplothrips* species, but almost as long as the rest of the abdomen and or about as wide as long in some other genera. Some groups of Phlaeothripinae, such as members of the large genus *Haplothrips* and most species-rich genus, *Liothrips* are remarkably constant in general body form. In contrast, fungus-feeding Phlaeothripine species are highly variable in structure, both between and within species. In many of them, large males look very different from small males and females, and this structural variation causes taxonomic problems.

Remarks: Phlaeothripinae exhibit a wide range of biologies. Species of *Haplothrips* usually feed and breed within the florets of Asteraceae flowers, although some breed in grass florets (Mound & Minae, 2007). Species of *Liothrips* and *Gynaikothrips*, also many related genera, breed on leaves, and some of these induce galls (Mound, 2008). A few species of Phlaeothripinae, such as some species of *Karnyothrips*, are known to be predators, either on mites or the sedentary stages of coccoids and Aleyrodidae, or more rarely on small larvae of some Lepidoptera (Palmer & Mound, 1991). However, at least 40% of Phlaeothripinae species feed on fungal hyphae, and can be found living in leaf-litter, on dead branches and twigs, and on dead leaves.

Genus *Dolichothrips* Karny, 1912

Type genus: *Dolichothrips longicollis* Karny, 1912

Diagnosis: Head long and slender, narrowed posteriorly. Cheeks smooth, without bristle-bearing warts. Antennae 8-segmented. Front ocellus overhanging. No setae at sides of front ocellus. Mouth-cone pointed, surpassing middle of prosternum. Prothorax as long as head, anteriorly half as wide, posteriorly as wide as long. Fore tarsi with blunt triangular tooth. Wings elongate sole-shaped. Abdomen slender, tapering towards apex. Tube much shorter than head, without prolongation of segment 9 of male.

2-Dolichothrips micrurus Bagnal, 1914

Dolicholepta micrurus Bagnal, 1914.

Dolicholepta giraffe Karny, 1920.

Liothripsmi crurus Bagnal, 1914.

Diagnostic characters: Black or blackish-brown, all tarsi dark. Body with much purple pigment, reaching into legs. Surface with violet-blue luster. Antennal joints 1, 2, 7 and 8 dark brown, 2 pale brown towards apex, 3 and 4 pale yellow, 4 slightly shaded towards apex, 5 and 6 usually yellow or testaceous in basal half, dark in apical half. Wings hyaline also at base, basal bristles colorless. Prothoracic bristles dark, dorsal abdominal bristles usually darkened, on segment 9 pale. Head about 1.5 times as long as broad. Mouth-cone very long and sharply pointed. Pronotum with extremely fine and dense transverse striae, comparatively narrow. Wings rather narrow, with dense fringe. Bristles on abdominal segment 9 long, pointed. Tube short, conical. Anal setae short.

Distribution:

Saudi Arabia: Riyadh, Wadi Durmah, Wadi Hanifa, Wadi Khumra, Wadi Shija, Wadi Salbukh, Wadi Wutai Wiyah, Wadi Mizbil, Chureis, Abha, Gizan, Wadidilla.

World: Egypt, Saudi Arabia, Sudan, Algeria, Morocco and Seychelles.

Host records: *Acacia nilotica*, *A. sejal*, *Zizyphus spina christi* and *Albizia lebbekh*.

Habitat: Leaf inhabitant, possibly as a predator, collected mostly on *Acacia*, *Albizia*, and *Zizyphus*, all the year.

Importance: It is supposed to be predaceous on other insects.

Remarks: This species reported as new record in Saudi Arabia by Strassen, 1979.

Collected specimens reported by Strassen, 1979: Riyadh, in the road to Dammam, 26. 4. 1976, Buttiker & Wittmer; Riyadh, Wadi Durmah, 27. 4. 1976, Buttiker & Wittmer; Riyadh, Wadi Hanifa, 7. 5. 1976, Buttiker; Riyadh, Wadi Khumra, 14. 5. 1976, Buttiker; Riyadh, Wadi Shija, 2. 12. 1976; 25. 12. 1976; both samples by Buttiker; Riyadh, Wadi Sha'ib, 15.1.1977; Buttiker; Riyadh, Wadi Salbukh, 9.9.1977, Buttiker; Wutai Wiyah, 3.9.1976, Buttiker; Wadi Mizbil, 16/17.9.1976; 10/11.6.1976, both samples by Buttiker; Chureis, 3 /4.6.1976, Buttiker; Wadi Wutai Wiyah, 18.3,1977, Buttiker; Asir mountain, Abha, Gizan, Wadidilla, Buttiker & Wittmer.

Genus Haplothrips Amyot & Serville, 1843

Haplothrips Amyot & Serville, 1843

Type species: *Phloeothrips albipennis* Burmeister 1836, by monotypy *Anthothrips* Uzel, 1895

Type species: *Thrips aculeata* Fabricius 1803, by monotypy. *Zygothrips* Uzel, 1895

Type species: *Zygothrips minutus* Uzel, 1895, by monotypy. *Anthemothrips* Karny, 1907

Type species: *Anthemothrips reuteri* Karny, 1907, by monotypy. *Hindsiana* Karny, 1910

Type species: *Hindsiana flavicineta* Karny, 1910, by monotypy. *Porphyrothrips* Vuillet, 1913

Type species: *Porphyrothrips cotei* Vuillet, 1913, by monotypy. *Zygothrips* - *Chonothrips* John, 1924

Type species: *Zygothrips (Chonothrips) crassicornis* John 1924, by monotypy. *Arrhenochiris* Enderlein, 1929

Type species: *Arrhenochiris retamae* Enderlein, 1929, by monotypy. *Haplothrips* Bagnall, 1934

Type species: *Haplothrips globiceps* Bagnall, 1934, by monotypy. *Haplothrips* - *Anchylothrips* Hood, 1939

Type species: *Haplothrips (Anchylothrips) preeri* Hood, 1939, by monotypy. *Haplothrips* - *Pallidothrips* Pelikan, 1963

Type species: *Haplothrips (Pallidothrips) yakhontovi* Pelikan 1963, by monotypy. *Haplothrips* Dyadechko, 1964

Type species: *Haplothrips zhigajevi* Dyadechko 1962, by monotypy. *Segnothrips* Ananthkrishnan, 1965

Type species: *Segnothrips trivandrensis* Ananthkrishnan, 1965, by monotypy. *Hexagoniothrips* Johansen & Oca, 1989

Type species: *Hexagoniothrips axochoensis* Johansen & Oca, 1989, by monotypy. Synonymised by Mound & Marullo, 1996

Jironiella Retana-Salazar & Soto-Rodriguez, 2007

Type species: *Jironiella saidi* Retana-Salazar & Soto-Rodriguez, 2007, by monotypy. Synonymised by Goldarazena *et al.*, 2008

Diagnosis: Head about as long as prothorax or somewhat longer; Mouth-cone broadly rounded or more strongly narrowed towards apex and narrowly rounded. Fore tarsi unarmed or with more or less stout tooth; fore femora simple or much enlarged. Bristles of body moderately long, rarely long. Wings narrowed at middle, sole-shaped. Tube often short, conical or moderately long. For the major part they live in and feed on the inflorescences of plants. Few species live under leaf sheaths of Graminae, and some are predaceous on other thrips or scale insects or mites.

Remarks: This genus comprises many species found worldwide, most of them difficult to distinguish. For the major part they live in and feed on the inflorescences of plants. A comparatively small number of species live under leaf-sheaths of Gramineae and some are predaceous on other thrips or scale insects or Acarina.

3-Haplothrips articulatus Bagnal, 1926

Haplothrips articulatus Bagnall, 1926

Holotype: (*Haplothrips articulatus*), The Natural History Museum, London.

Haplothrips trybomianus Priesner, 1927

Syntype: (*Haplothrips trybomianus*), Naturhistoriska Riksmuseet, Stockholm.

Haplothrips (Trybomiella) tertius Bagnall, 1934

Paratype: (*Haplothrips tertius*), The Natural History Museum, London.

Haplothrips (Trybomiella) derisor Priesner, 1935

Holotype: (*Haplothrips derisor*), The Natural History Museum, London.

Haplothrips jordanicus Priesner, 1936:

Diagnostic characters: Body elongate. blackish brown, middle and hind legs blackish, fore tibiae grayish-yellow in apical half, fore tarsi yellowish, Antennae somewhat dark, joints 3-5 yellowish very faintly tinted with grey, particularly in apical portion, of joints 4, and 5, joint 6 brown grey, somewhat paler basally, joints 7 and 8 dark grey. Wings and bristles hyaline. Head elongate, mouth cone short, broadly rounded. Antennae short, joint 3 shorter than 2, 4 or 5, about 1.2 times as long as broad, joint 7 about 2.5 times as long as broad; joint 3 with 2 sense cones, joint 4 with 4 sense cones; post ocular bristles very moderately long, blunt, closer to eyes..

Prothorax bristles blunt, not dilated at tip, antero-angulars short, but well developed. Fore legs stout, with small tarsal tooth. Wings distinctly constricted at middle, fringe smooth, double fringe wanting; basal wing bristles dilated at tip. Bristles on segment 9 about pencil-shaped, not hair like. Tube broad, sharp evenly conical.

Distribution:

Saudi Arabia: Asir mountain, the road from Abha to Taif

World: Kenya, Sierra Leone, Mali, Tanzania, Israel, India, Sudan, Yemen, Zaire, Nigeria, Ghana, Tanganiqua and Malawy.

Host records:

In Saudi Arabia: Compositae

Other countries: *Erigeron sumatrensis*, *Coreopsis* sp.

Habitat: Probably blossoms residents seem to prefer Astraceae (Compositae)

Remarks: This species is described from Kenya as (*Anthothrips bagnalli* var. *pallicornis*, *Haplothrips trybomianus*), Sierra Leone as (*Haplothrips derisor*), Mali as (*Haplothrips tertius*), Tanzania as (*Haplothrips articulatus*) and Israel as (*Haplothrips jordanicus*).

This species was reported as new record in Saudi Arabia by Strassen, 1979.

Collected specimens as reported by Strassen, 1979: Asir mountain, the road from Abha to Taif, 20.4.1976 (zur Strassen, 1979).

4-*Haplothrips cahirensis* (Trybom, 1911)

Anthothrips cahirensis Trybom, 1911

Haplothrips juncorum Karny, 1921

Diagnostic characters: Blackish-brown to black, with crimson pigment. Fore tibiae yellow, darkened near base, fore tarsi yellow, middle and hind tarsi slightly shaded with grey. Antennal segments 1 and 2 concolorous with head, 2 paler at apex, segments 3-6 pale yellow, infumation at most on joint 6, joints 7 and 8 grey-brown. Bristles on prothorax black, with white tips, those on base of wing and on abdomen pale, anals darker at base. Head broad, very slightly narrowed towards apex. Fore tarsi unarmed. Wings narrow, clear inclusive of basal plate, basal bristles knobbed, fringe cilia smooth; 9-10 cilia duplicated. Bristles on segment 9 of abdomen fine, pointed. Tube conical, short.

Distribution: Egypt, Sudan, Algeria, Morocco, Kenya, Uganda.

Host records: It is found in association with *Gynaikothrips ficorum*, the acarina; *Tenuipalpus* sp. & *Anychus orientalis*, it feeds on eggs and young larvae of coccidae such as *Pulvinaria floccifera*, *Crysomphalus aonidum*, *Cocco-mytilus halli* and *Asterolecanium pustulans*.

Habitat: It is a very common species, in the flowers and on leaves of many plant species and in the galls produced by *Gynaikothrips ficorum*. It is probably a predator on other insects, particularly thrips, coccids & red spiders.

Remarks: This species was reported as new record in Saudi Arabia by Strassen, 1979.

Collected specimens as reported by Strassen, 1979: Riyadh, in the road to Dammam, 26. 4. 1976, Buttiker & Wittmer; Riyadh, Wadi Durmah, 27. 4. 1976, Buttiker & Wittmer; Riyadh, Wadi Khumra, 14. 5. 1976, Buttiker; Wadi Mizbil, 25.2.1977, Buttiker; Asir mountain, Khamis Mushayt, Wadi Marba, 17.4.1976, Buttiker & Wittmer.

5-*Haplothrips clarisetis* Priesner, 1930

Haplothrips dolichothripoides Bagnal, 1933

Diagnostic characters: Black with crimson mesodermal pigment; legs black, fore tibiae yellowish towards apex, fore tarsi grey-yellow, middle and hind tarsi dark.

Antennae black, joint 3 yellowish slightly infumated, 4 darker, but paler than the black remaining joints. Wings hyaline, basal plate and alula brown. Body bristles hyaline, except bases of anal setae. Head elongate, cheeks always parallel, widened towards base. Antennae elongate, joint 3 with 2 sense-cones, 4 with four. Antero-angular bristles of prothorax knobbed and open at tip, well developed. Legs comparatively very slender, fore tarsi unarmed. Wings moderately broad, distinctly constricted at middle, without double fringe, basal bristles knobbed. Abdomen slender, bristles on segment 9 hyaline. Tube short. This species is similar to *Haplothrips tardus*, but differing in the chaetotaxy of the prothorax and in having smooth fringe cilia.

Distribution: Central Sahara, Egypt, Palestine, Sudan, South Africa.; India, Jordan, Israel, Algeria, Angola.

Host records: *Gynandrops ispentaphylla*, *Beta cicla* and *Chenopodium* spp., *kochia muricata*, *Vitex agnus-cactus* and *Cruceferae*, *Anabasis setifera*, *Aerva tomentosa*, *Artemisia herba-alba* and *Juncus acutus*.

Habitat: Likely blossoms residents on flowering plants of many occurring families. Very common and presumably polyphagous with the early stages. Found all the year. In the desert it was found on *Anabasis setifera*, *Aerva tomentosa*, *Artemisia herba-alba* and *Juncus acutus*.

Importance: Important pest, Polyphagous.

Remarks: This species was reported as new record in Saudi Arabia by Strassen, 1979.

Collected specimens as reported by Strassen, 1979: Riyadh, Wadi Hanifa, 25.4.1976, Buttiker & Wittmer; Riyadh, in the road to Dammam, 26.4.1976, Buttiker & Wittmer; Riyadh, Wadi Khumra, 21.1.1977, Buttiker; Riyadh, Wadi Durmah, 27.4.1976, Buttiker & Wittmer; Riyadh, Wadi Shija, 4.11.1976 by Buttiker.

6-*Haplothrips ganglbaueri* Schmutz, 1965

Haplothrips vernoniae Priesner, 1921

Zygothrips andhra Ramakrishna, 1928

Haplothrips priesnerianus Bagnall, 1933

Haplothrips tolerabilis Priesner, 1936

Syntypes: (*Haplothrips vernoniae*), Senckenberg Museum, Frankfurt.

Lectotype: male (*Haplothrips priesnerianus*), The Natural History Museum, London.

Common name: The cereal thrips

Diagnostic characters: More or less dark brown with profuse mesodermal pigment of orange to crimson colour; middle and hind tibiae dark, fore tibiae yellow at apex, fore tarsi pale yellow, middle and hind tarsi slightly grey or dark. Antennal joints 1 and 2 and 6-8 dark and 4 pale yellow. Wings hyaline, bristles, also of body, pale, anals darkened. Head as long as wide, cheeks slightly arched and converging posteriorly; mouth-cone short, broadly rounded. Antennae short, joint 1 narrowed towards apex. Fore legs not enlarged. Wings very narrow with only slight narrowing at middle and comparatively sparingly set cilia; basal wing bristles short, knobbed, 3 very long, rounded or narrowly knobbed; 5-8 cilia duplicated; fringe smooth. Bristles on segment 9 pale, pointed. Anal setae longer than tube.

Distribution: It is widely distributed species. Solomon archipelago, Philippines, Taiwan, Malaysia, Bangladesh, Pakistan, Ceylon, Saudi Arabia, Egypt, Libya, Algeria, Morocco, Sri Lanka, India, Sudan, Java, Yemen, Indonesia. Recorded from Japan (Okajima, 2006).

Host records:

In Saudi Arabia: *Zea mays* (Gramineae)

Other countries: *Lantana* sp., *Cymbopogon nervatus*, *Imperata cylindrical*, *Eleusine coracana*, *Pennisetum typhoideum*, *Zea mays*, sorghum, rice, wheat, and barley.

Habitat: Anthophilous, polyphagous species. Very widely distributed all over India, Pakistan, Ceylon and Sri Lanka mainly as a pest of rice, occurring in considerable numbers in cereal crops, but also encountered in flowering dicotyledon plants.

Importance: Severely damage in inflorescences.

Remarks: The species was reported from Saudi Arabia by Priesner, 1946 (as *Haplothrips tolerabilis* Priesner, 1936).

7-*Haplothrips leptadeniae* Priesner, 1936

Diagnostic characters: blackish brown to black, fore tibiae pale yellow, dark at extreme base, middle and hind tibiae dark, pale yellow at extreme apices. All tarsi pale yellow. Antennae with joint 1 and basal half of 2 dark, the remainder of 2 and 3-6 pale yellow, 7 yellow in basal half, slightly pale grey in apical half, like the whole of joint 8. Bristles of head and thorax pale grayish, those of abdomen light. Wings colorless. Head distinctly knobbed; front ocellus on the same level as inter antennal projection; mouth cone short, narrowly rounded. ; intermediate joints elongate, 3 only slightly asymmetrical, with only one sense cone, joint 8 short, evenly conical, broadly attached to 7; joint 1 narrowed towards apex. Antero-angular bristles of prothorax well developed. Fore femora distinctly enlarged, fore tibiae stout, fore tarsi with stout tooth arising from broad base, yellow. Wings rather narrow beyond middle, little widened towards apex; fringe smooth, basal wing bristles knobbed. Bristles of segment 9 of abdomen moderately long. tube very short, conical.

Distribution: Egypt, Sudan and Saudi Arabia

Host records: *Leptadenias paratium*.

Habitat: Found in the inflorescences of *Leptadenias paratium*.

Remarks: Rare species. Described from Sudan (north Kordofan), reported from Saudi Arabia by Strassen, 1979.

8-*Haplothrips ochradeni* Priesner, 1930

Haplothrips ochradeni Priesner, 1930, Bull. Soc. R. Ent., Egypte, pp. 234, 268

Diagnostic characters: Blackish-brown, body pigment orange. Antennal joint 1 and 2 concolorous with head, 2 yellow at apex, 3-6 pale yellow, 4 sometimes faintly shaded with grey at apex, 5 so in distal half, 6 pale at base, 7 and 8 grey brown. Femora dark, fore tibia dark at base and margins, apex yellow. Middle and hind tibiae and tarsi yellow. Wings clear, basal plate pale. Bristles of head and prothorax dark with white tips, those on abdomen pale, anal bristles dark at base. Head with cheeks very slightly arched. Mouth-cone not very broadly rounded. Wings narrow, distinctly sole-shaped, with all three basal bristles knobbed. Fore femora nearly weak, fore tarsi unarmed. Bristles on abdomen fine, those on segment 9 pale, pointed. Male a little less stout than the female and antennae a little more slender, having joint 3 long, tarsi with small tooth. Double fringe composed of 5-7 cilia.

Distribution: Egypt.

Host records: *Ochradenus baccatus* (Resedaceae)

Habitat: Found in the inflorescences of *Ochradenus baccatus* in Spring and in the galls of *Ceutorrhynchus* in hiding.

Importance: A little known species, which has been frequently found on the Resedaceae (*Ochradenus baccatus*).

Remarks: Rare species, Described from Egypt from *Ochradenus baccatus*. This species was reported as new record in Saudi Arabia by Strassen, 1979.

Collected specimens as reported by Strassen, 1979: Riyadh, Wadi Durmah, 27. 4. 1976, Buttiker & Wittmer; Wadi Mizbil, 10/11.6.1976, Buttiker.

9-*Haplothrips pharao*Priesner, 1930

Diagnostic characters: Dark brown, joints 1 and 2 of antennae concolorous with head, 2 paler at apex, joints 3- 8 clear lemon-yellow; distal half or more of fore tibiae yellow, middle and hind tibiae dark; all tarsi yellow. Body bristles light. Wings hyaline, basal plate pale yellow. Head large, elongate, normally narrowed towards base. Eyes comparatively small, larger in male; post ocular bristles short, shorter than eye. Fore tarsi with small tooth. Wings moderately broad, strongly constricted at middle; fringe cilia smooth, 4-8 cilia duplicated. Bristles on segment 9 practically pointed.

Distribution: Egypt, Saudi Arabia, Yemen.

Host records: Gramineae: *Pannisetum dichotomum* and *Panicum turgidum*

Habitat: Found all the year round, on Gramineae

Remarks: Common and widely distributed over the Egyptian desert, common in the eastern desert, also at Gebel Elba, particularly on the Gramineae: *Pannisetum-dichotomum* and *Panicum turgidum*, which are no doubt host plant. Found all the year. This species is reported from Saudi Arabia by Strassen, 1979.

10- *Haplothrips salvadorae*Priesner, 1950

Haplothrips salvadorae Priesner, 1950, Bull. Soc. Fouas 1 Ent., pp. 84, 108, 112.

Diagnostic characters: blackish-brown or black, with profusely developed mesodermal pigment. Femora and tibiae as dark as head, middle and hind tibiae abruptly yellow at apices, tarsi pale yellow. Joint 1 of antennae concolorous with head, joint 2 mostly yellow in apical half, joints 3-6 pale lemon-yellow, 4-6 may be grayish at apices. Postocular and prothoracic bristles dark with white heads. Basal wing and abdominal bristles hyaline, anal setae dark at base. Wings hyaline, only indistinctly infumated at base. Head elongate. Fore femora not enlarged, fore tarsi unarmed. Tube short, conical.

Distribution:

Saudi Arabia: Wadi Qalah.

World: Egypt, Saudi Arabia, Israel, Yemen.

Host records: *Salvadora persica*

Habitat: Found on leaves of *Salvadora persica*.

Remarks: Described from Egypt, recorded in Saudi Arabia from Wadi Qalah, in January on leaves of *Salvadora persica*. This species is reported from Saudi Arabia by Strassen, 1979.

11-*Haplothrips sorghi* (Bagnal, 1933)

Haplothrips sorghi Bagnal, 1933, Ann. Mag. Nat. Hist.(10), 11, p.331.

Diagnostic characters: length 1.2 mm, dark grey-brown or blackish-brown with legs, wings, and bristles dark; antenna with joint 3 lemon-yellow, 4 dull yellow, 5 deeper in color than 4 and 6 light yellow-brown, and 7-8 light grey-brown. Fore wings with basal setae colourless, set in almost a straight line. Male smaller and more slender. Duplicated cilia of fore wing 6. The postocular setae are finer than the pronotal setae, which are very stout.

Distribution: Sudan, Egypt.

Host records:

In Saudi Arabia: *Punica granatum* (Punicaceae)

Other countries: Cotton, *Medicago sativa* and from twig galls on *Zizyphusspina-christi*.

Habitat: Flower buds and twig galls from July to October.

Remarks: Types from the Sudan. This species is reported from Saudi Arabia by Al-Ahmadi and Salem, 1999.

12-*Haplothrips talpa* Priesner, 1930

Haplothrips talpa Priesner, 1930, Bull. Soc. R. Ent., Egypte, p. 243, pl. XII, fig. I.

Diagnostic characters: Blackish brown with rich crimson pigmentation. Antennae rather dark, joints 3 and 4 brownish with irregular paler spots, following joints dark brown. Legs wholly dark, forelegs in distal half yellowish or brownish-yellow in male. Wings clear, basal plate and alula dark. Bristles on body clear. Anal setae darker. Head long, 1.3 times as long as wide. Cheeks straight, a little converging towards base. Antennae short; segment 3 comparatively very short, long and broad in male; 4, 5, and 6 subequal in length; joint 3 with one sense cone, joint 4 with four sense cones. Prothorax comparatively narrow. Legs short, fore legs very little enlarged in female, strongly enlarged in male; fore tarsi with stout tooth about middle. Wings broad, strongly sole-shaped. Basal bristles in triangle pointed. All abdominal bristles pointed. Tube short.

Distribution: Widely distributed species. Lybia, Egypt, Sudan, South Africa, south West Africa India, Tadshkistan, Algeria, Lesotho (Basuto-land).

Host records:

In Saudi Arabia: Grasses (In general)

Other countries: Gramineae, *Panicum*, *Imperata cylindrica* and *Hordium*, *Retama raetam*, *Odontospermum graveolens* and *Plantago*.

Habitat: Live on Gramineae. sometimes also be found on dicotyledonous plants.

Remarks: This species is reported from Saudi Arabia by Strassen, 1979.

Collected specimens as reported by Strassen, 1979: Chureis, 3 / 4 .6.1976. by Buttiker; (Strassen, 1979).

13-*Haplothrips tardus* Priesner, 1923

Haplothrips tardus Priesner, 1923, Entom. Mitteil., 12, p. 117.

Haplothrips bagnalli Priesner, 1923

Diagnostic characters: Black or blackish brown, apex of fore tibiae and the fore tarsi grayish yellow; Antennae dark. Wings clear. Bristles of body hyaline. Head as long as wide or little wider than long. Cheeks slightly rounded. Antennae short. Fore legs short and stout, fore tarsi with small tooth. wings sole shaped, moderately broad, cilia plumose; without double fringe; basal wing bristles knobbed. Tube short. Bristles on segment 9 nearly pointed.

Distribution: Having a wide distribution. Lybia, Egypt, Sudan, Palestine, Hedjas, Yemen, west and south Africa. Saudi Arabia, Israel, Algeria, Morocco. Zaire, Senegal.

Host records: *Francoeuria crispa* (Compositae)

Habitat: Regular inhabitant of the flowers of *Pulicaria crispa* and is very common; in the cold season it may be found under fallen leaves.

Remarks: The species was recorded from Saudi Arabia by Priesner (1950), and reported by Strassen (1979).

Collected specimens as reported by Strassen, 1979: Riyadh, Wadi Hanifa, 25.4.1976, Buttiker & Wittmer; Asir mountain, Khmis, Wadi Marba, 17.4.1976, Buttiker & Wittmer.

Genus *Gynaikothrips zimmerman*, 1900

Gynaikothrips zimmerman, 1900, Bull. Inst. Bot. Buitenzorg, 7, p. 13.

Diagnosis: Head longer than broad and longer than the pronotum. Vertex slightly conically produced, bearing anterior ocellus at apex, sometimes constricted behind

eyes; ocellar hump reticulate; mouth-cone short, bluntly rounded or truncate at apex. Antennae 8-segmented. Cheeks either spinulose or normal. Pronotal bristles well developed. Fore wings broad or moderate so, not constricted at middle, with a series of duplicated cilia. Legs normal, fore tarsi mostly with tooth in both sexes. Tube much elongate, with a slight convexity anterior to apex. Gall inhabiting, probably all species on *Ficus* spp.

14-*Gynaikothrips ficorum* (Marshall, 1908)

Phloeothrips ficorum Marshall, 1908

Gynaikothrips uzeli Senevet, 1922

Leptothrips flavicornis Bagnall, 1909

Liothrips bakeri Crawford DL, 1910

Leptothrips reticulatus Karny, 1912

Gynaikothrips flavus Ishida, 1931

Haplothrips blesai Plata, 1973

Holotype: (*Gynaikothrips flavus*), Hokkaido University, Sapporo

Syntype: (*Leptothrips flavicornis*), The Natural History Museum, London.

Common name: Cuban laurel thrips

Diagnostic characters: Body black, fore tibiae yellow, base slightly darkened, middle and hind tibiae pale yellow in their distal parts, all tarsi pale yellow. Antennal joints 1 and 2 dark, the remainder pale yellow, joint 7 in apical half and the whole 8 shaded with grey, wings wholly hyaline. Bristles pale, those of segments 9 and 10 darkened basally. Head parallel sided, about 1.3 times as long as broad. Vertex transversely striate, mouth-cone nearly truncate at apex, short. Post ocular bristles short. Legs slender. Wings moderately broad, basal bristles light, slightly knobbed, in one row, double-fringe consisting of 17-20 cilia. Abdominal segments 1 and 2 reticulate at middle. Abdominal bristles pencil-shaped, bristles on segment 9 long, hair-like.

Distribution: Cuba, Taiwan, Japan, North America, Mexico, Canary islands, Algeria, Spain, Egypt, India, Sumatra, Java, Formosa

Host records:

In Saudi Arabia: *Ficus nitida*, *Ficus religiosa* (Moraceae).

Other countries: *Ficus microcarpa*.

Habitat: It is native to Indian region. The insect accommodates in its galls some predators, as *Haplothrips chhirensis* and Hemiptera, *Teratophylum insigne* and *montandoniola moraguesi*,

Importance: A pest causing galls (Leaf rolls), has also been mentioned as a predator.

Remarks: Described from Algeria. Reported from Saudi Arabia by Abu Thuraya (1982)

Genus *Leptothrips* Hood, 1909

Leptothrips Hood, 1909, Ent. News, p. 249.

Type species: *Cryptothrips aspersus* Hinds, 1902, by monotypy; synonym of *Phloeothrips mali* Fitch.

Diagnosis: Body usually slender. Head long, narrow, nearly twice as long as broad, widest across eyes, narrowed at base. Eyes finely faceted, prominent, bulging, projecting. Vertex elevated, prolonged, bearing the anterior ocellus at its extremity. Mouth-cone moderately short, about as long as its breadth at base. Prothorax about half as long as head; spines short, blunt, scarcely visible. Legs slender, fore femora not enlarged; tarsi unarmed in both sexes. Wings slender, not very closely fringed, distinctly narrowed at middle. Abdomen long and slender, about three and one-half times as long as wide. Leaf inhabiting.

Remarks: Species of this genus mostly Predatory species.

15-*Leptothrips karnyi* Trybom, 1911

Odontothrips karnyi Trybom, 1911

Diagnostic characters: Body brown (probably faded, legs wholly dark; Antennae dark, joint 3 and base of 4 pale yellow, somewhat shaded with grey. Wings hyaline, basally somewhat brownish yellow. Head elongate, about as long as broad; cheeks smooth; front ocellus on a hump. No major postocular bristles present. Antennae about one fourth to one third longer than head, joint 1 cylindrical, 3-5 elongate; Prothorax about half as long as head, about as long as width of head. Legs slender, unarmed. Wings narrowed at middle, basal wing bristles blunt, long. Length of segment 9 of abdomen one-tenth of its width. Tube only one-half as long as head. Bristles on 9 pointed.

Distribution: Sudan, Egypt, Saudi Arabia

Host records:

In Saudi Arabia: *Acacia* spp.

Other countries: *Acacia* spp., *Ochradenus baccatus*.

Habitat: Probably blossoms resident repeatedly collected from broad leaves and twigs of *Acacias* spp., from October to March and flowers of *Ochradenus baccatus*.

Remarks: This species is not common. Recorded from Saudi Arabia: Asir mountain, Khamis, WadiMarba, 17. 4. 1976, Buttiker&Wittmer; Asir mountain, the road from Abha to Taif, 20.4 1976. Buttiker&Wittmer; (Strassen, 1979).

Genus *Liothrips* Uzel, 1895

Phyllothrips Buffa, 1908

Phyllothrips Hood, 1908

Smerinthothrips Schmutz, 1909

Diagnosis: Head longer than broad, cheeks smooth. Antennae long and slender, 8-segmented. Mouth- cone pointed or narrowly rounded at apex. One pair of posterior bristles present. Wings always developed, evenly wide, with well developed basal bristles and double fringe. Legs slender. Tarsi without tooth. Fore femora not enlarged or moderator so. Abdomen slender, bristles long.

Remarks: Species of this genus mostly leaf inhabiting.

16- *Liothrips oleae* (Costa, 1857)

Thripsolivarius Tamburin, 1842

Thripsoleae Costa, 1857

Leurothrips linearis Bagnall, 1908

Cryptothrips novaki Karny, 1916

Smerinthothrips olitorius Morison, 1958

Syntype: (*Leurothrips linearis*), The Natural History Museum, London.

Common name: Olive thrips

Diagnostic characters: The adult insect is 2.1 – 2.3 mm long with black color, bulky body and crawls.

Distribution: Palestine, France, Yemen, Canary islands and former Yugoslavia

Host records: *Olea europaea* (Oleaceae)

Habitat: In all Mediterranean countries where olive tree is cultivated.

Importance: Attack leaves, sprouts, flowers and fruits. The result of the damage is the yellowing and the dessication of damaged areas. The fruits also become deformed and are smaller than normal. Floral buds from the attack are destroyed.

Remarks: Described from Italy. Reported from Saudi Arabia by Martin (1972) and Abu Thuraya (1982).

17-Liothrips reuterii Bagnal, 1913

Liothrips reuterii Bagnal, 1913, Ann. Mag. Nat. Hist., (8), 12, p. 295.

Compsothrips reuterii Bagnal, 1913

Liothrips dampfi Karny, 1914.

Diagnostic characters: body black, legs (inclusive of tarsi) black. Antennal joints 1 and 2 dark, the later brown towards apex, 3 pale yellow, 4 yellow, slightly grey at apex, 5 yellow, with dark apical half, 6 dark brown-grey, pale at base, 7 and 8 dark; joint 3 mat shaded at apex. Body bristles dark. Wings hyaline, rarely infumated, basal bristles dark. Head 1.4 to 1.5 times as long as broad, with cheeks parallel; front ocellus posited on a small hump. Postocular bristles vestigial. Wings elongate, but comparatively moderately long, 1.6 to 1.7 times as long as head, with segments much varying in length, 3 with one sense cone, joint 4 with three sense cones. Prothorax at least 2.8 times as broad as long, all bristles developed, epimerals longest, but comparatively short, all blunt, or with white end. Wings rather broad, with 7-12 double-fringe cilia. Legs unarmed, tibiae convex exteriorly. Abdominal bristles blunt, those on segment 9 shorter than tube; anal bristles shorter than tube. Tube conical, twice as long as broad at base and twice as broad at base than at apex.

Distribution: Egypt, south Europe, Morocco, Algeria, Saudi Arabia and India.

Host records: *Tamarix* spp.

Habitat: The species is common all the year on *Tamarix* spp.

Remarks: Reported from Saudi Arabia by Strassen, 1979

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