



Atheta basraiensis sp.n ?? (Coleoptera: Staphylinidae) from Iraq

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Abstract:

Atheta basraiensis sp.n.?? is described and illustrated from Basrah province, South of Iraq. male and female habitus, as well as, male and female genitalia, together with other important taxonomic characters are all illustrated. Comparing between this species and others very closed to it, were discussed.

Key words: *Atheta*, Staphylinidae, Coleoptera, Basrah, Iraq.

Introduction

The genus *Atheta* belongs to order Coleoptera, family Staphylinidae, sub family Aleocharinae, the Athetini tribe (Vogel, 2004). family Staphylinidae includes 32 subfamily, 3449 genus and 52344 species, however, subfamily Aleocharinae is the largest, it includes around 62 tribes ,1151 genus and 12851 species, this subfamily has a great importance in ecological balance and biodiversity, it is abundant in forests, coasts and agricultural ecosystem (Betz and Irmeler, 2018). *Atheta* genus have about 1200 species recorded around the world, they are belong to 13 subgenus (Klimaszewski *et al.* 2020). This group is poor in taxonomic characteristics, Sawada (1972) explained 17 illustrative traits that can be relied upon in defining species. Studies on subgenus are few, especially subgenus *Microdota*, 60 species were recorded in China (Volker Assing, 2006). 15 species were recorded in Korea (Li and Zhou, 2010). Klimaszewski *et al.* (2015), described 13 species in Canada. Sawada (1987), was described 4 species in Singapore. only 2 species were recorded in Africa (Pace, 2012).

Materials and methods

Study area: The study area was conducted at Shat-Alarab district , Basrah province south of Iraq (map, 1, coordinates (30.65800 ,47.89619)), from fields planted with alfalfa and leeks , during the period from 1 January to 15 March, 2021.

Specimens were collected at sunset time using aspirator, then preserved in 70% ethanol, investigation and photographed of the specimens has been done at laboratory of insect researches, department of biology, college of science. using Leica EZ 4HD binocular dissecting microscope.

Identification was done according to Klimaszewski *et al.* (2020) and Sawada (1977), for the genus, however, subgenus was identified according to Klimaszewski *et al.* (2015) and Lee and Ahn (2015).

Material examined: 30 male, 18 female.

Results and discussion**Taxonomic position:**

Kingdom: Animalia

Phylum: Arthropod

Class: insecta

Order: Coleoptera

Family: Staphylinidae

Subfamily: Aleocharinae

Tribe: Athetini

Genus: *Atheta* Thomson, 1858

Subgenus: *Microdota* Mulsant and Rey

Species: *basraiensis* ??

Morphological description:

The target taxonomic traits that isolated the model from the rest of the species in the genus *Atheta* some of the following taxonomic characteristics: VII tergite contains a prominent bump or protrusion, this edge emerges from the front inner

surface of VII tergite overlapping the back edge of VI tergite (fig.6B). Labral chaetotaxy, the pair of m setae is centered between the two pairs, p and d, whereas d2 emerged from the circumference of the outer edge, and p2 was below it, similar to the rest of the species (fig.6A, C). Integument for the labrum surface contains punctuates arranged in the form of V (fig.6D). Absence of median costa of aedeagus median lobe (fig5b). Although the apex of the paramere contains four setae like the rest of the species, but the arrangement of the setae differed, a large seta at the edge of the apex is adjacent to it with a curved seta, the third is below them, and the fourth is at the far end(fig.5D).

Male (Pl. 1)

Coloration: black, IX abdomen segment slightly blackish-brown, pronotum and elytra yellowish- black, legs and antennae yellowish-brown (pl. 1).

Total length: 3-3.5 mm

Head: mm, Head and pronotum width is longer than length by about 1.2, 1.3 respectively, elytra is wider than pronotum and abdomen, compound eyes are a bit small antennal socket in front of eyes and adjacent to outer articulation of mandible, antenna 11 segments: scape very small (fig.1).

Mouth parts : Mandibles are narrowly and similar, characterized by apex and plate without teeth (fig.2 A), maxillae is composed of lacinia that contains soft teeth, galea contains fine hair, and the maxillary palpus is articulated from four segments, the first is very small, the second and third are slightly swollen, the fourth is slender and elongated (fig.2B), labrum is a broad bilobed with small setae(fig.2C), ventral aspect of labium characterized by protruding V-shaped, ligula with two setae at its base (fig.2D), the labial palpus consists of three segments, the first being longer and wider than the second, while the third is thinner and longer(fig2E)

Tarsal formula: 4-5-5, last segment is longer than the rest (fig.3)

Abdomen: is composed of six visible tergites, in male VIII segment sternite longer than tergite (fig.4A, B) While in the female, both are approximately equal in length, but the posterior edge of the sternite is round (fig.4C, D).

Male genitalia: aedeagus, ventral view median lobe is shorter than the paramere, the length of tubus to the width of the bulbus is about 1.2, velar sacs of paramere are large and clear, wings like, (fig.5A), dorsal view for the median lobe arcuate costae are about 2.1 times longer than proximal costa, accessory costa is about 1.2 times wider than median foramen(fig.5B). tip of paramere with 4 distinctive setae (fig.5D).

Female: (pl.)

look like male except some differences, the VIII segment both sternite and tergite are equal in size and the posterior edge of the sternite is round (fig.4).

Female genitalia: Spermatheca contains a distinct capsule and has a clear apical invagination, while the end of the duct is twisted like a sprinkle (fig.5C).

Study of the seasonal emergence of insects

Insects were collected at sunset by the net for the period from 15-Jan to 01-Mar 2021 by dividing the field into three sectors and five replicates for each sector. Temperature and humidity of the field during the collection period were measured by digital thermometer and hygrometer. The data was analysed by SPSS.

Table 1. Number of collected insects during the study period

Plants time	leeks				alfalfa				Temp.°c	Humi. %
	Mean	Std.	Mini	Maxi	Mean	Std.	Mini	Maxi		
15/jan	.66	.70	.00	2.00	.63	.73	.00	2.00	19.00	47.11
1/feb	1.88	.92	1.00	3.00	1.22	.83	.00	2.00	20.44	61.77
15/feb	3.22	1.98	1.00	7.00	1.66	1.22	.00	4.00	21.00	63.33
1/mar	1.11	.92	.00	3.00	.44	.88	2.00	2.00	23.44	39.66

Leeks* time : df=35 ,f=7.32 ,pvalue=0.00 alfalfa* time df=35 ,f=3.15 pvalue=0.031,

Remarks:

- subgenera *Microdota*

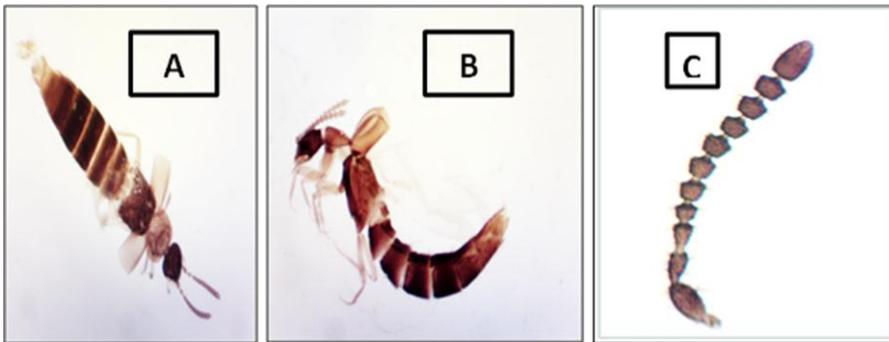
antennomere, pronotum, width longer than length by 1.2, visible hypomera, tarsal segments 4-5-5, developed sac of aedeagus(Lee and Ahn, 2015). eighth tergite for the male, tarsal segments, aedeagus description(Klimaszewski et al. 2020). antennomere I segment larger than II,III segments, the structure of ligula split resembles Y-shaped, maxillary palpus is articulated from four segments, labial palpus consists of three segments, aedeagus with a relatively large bulbus (Klimaszewski et al. 2015)

Microdota's species

The taxonomic characteristics of the specimens are somewhat similar to some of the studied species around the world . VIII tergite of the male and spermatheca are similar to *Atheta altincisa* nov.sp, but aedeagus with a large bulbus compared to the length(V Assing ,2009). Antenna segment III is

shorter than II one , the width of the pronotum is 1.2 times wider than the length, VIII tergite ,sternite of the male and spermatheca as in description *Atheta geostiboides* sp.(Volker Assing ,2004).

Similar to *Atheta xueica* by Sternite VIII longer than tergite, spermatheca, tubus of median lobe Slightly longer and bulbus thinner(Volker Assing ,2006). Some structures are similar to *Atheta* (*Microdota*) *lucifera*, color of the legs, the antenna, the pronotum and the elytra reddish-yellow, the male VIII tergite is transverse without the teeth ,Sternite VIII are slightly elongated, aedeagus bulbus is rounder, wider than tubus, the spermathecal capsule has a visible apical invagination and a coiled end of the canal(Klimaszewski et al. 2020).



Figure(1) : habitus of male, A: Dorsal view; B; Lateral view,C: Antenna.

Scale bars A,B=0.5mm C=0.3mm

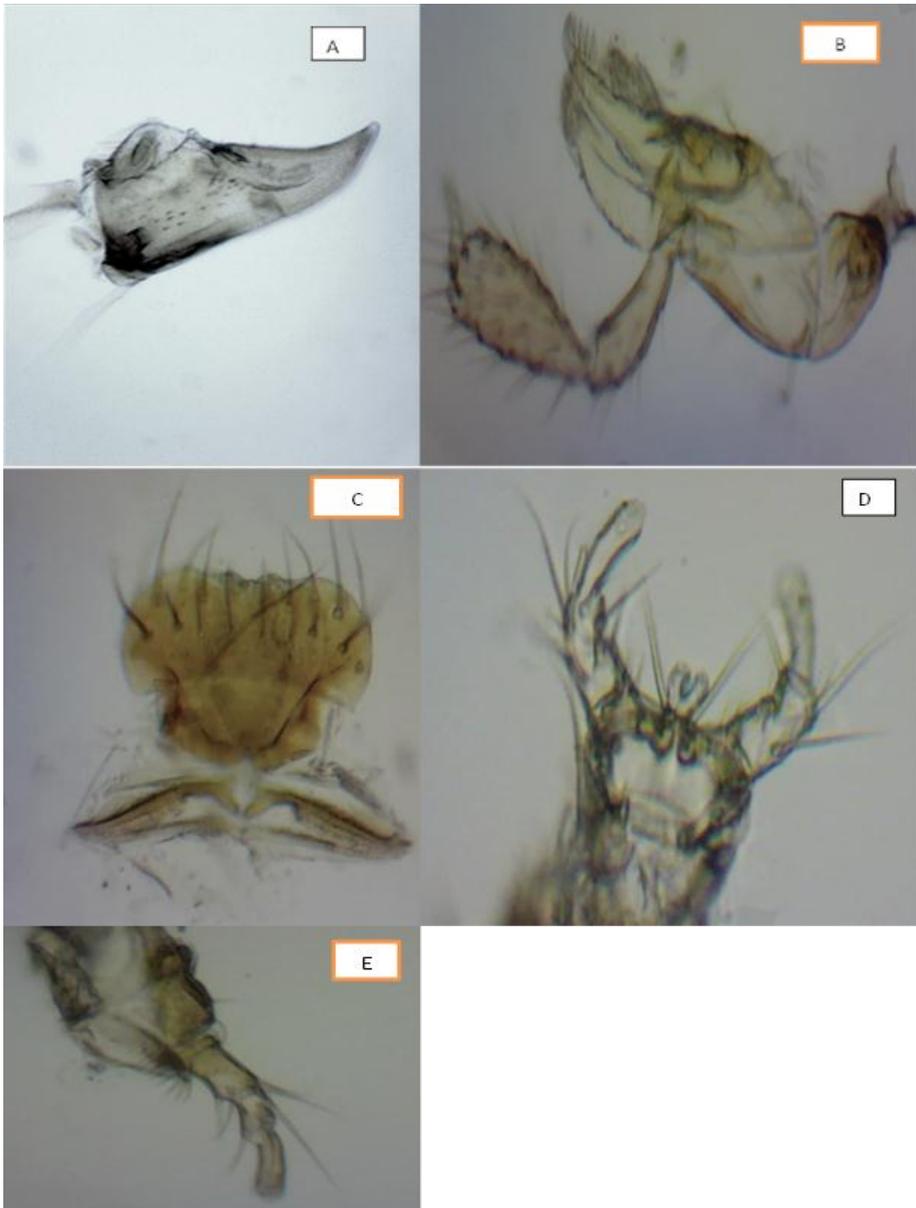


Fig (2). Mouth parts , A mandible , B maxillae, C labrum, D labium, E labial palpus , Scale bars =0.2mm



Fig.3 Tarsal formula A proleg , B midleg, C hindleg
Scale bars =0.3mm

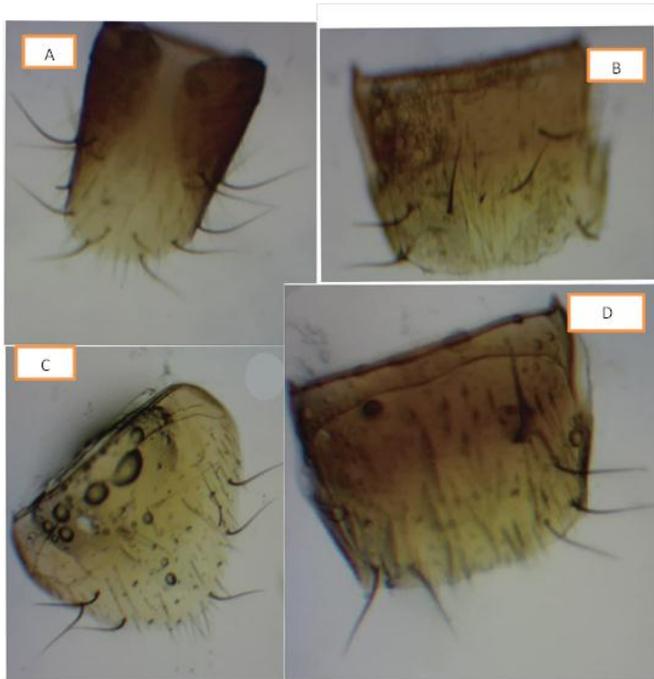


Fig 4 . VIII Abdominal segments A male sternite , B male tergite
C female sternite , D female tergite Scale bars =0.3mm

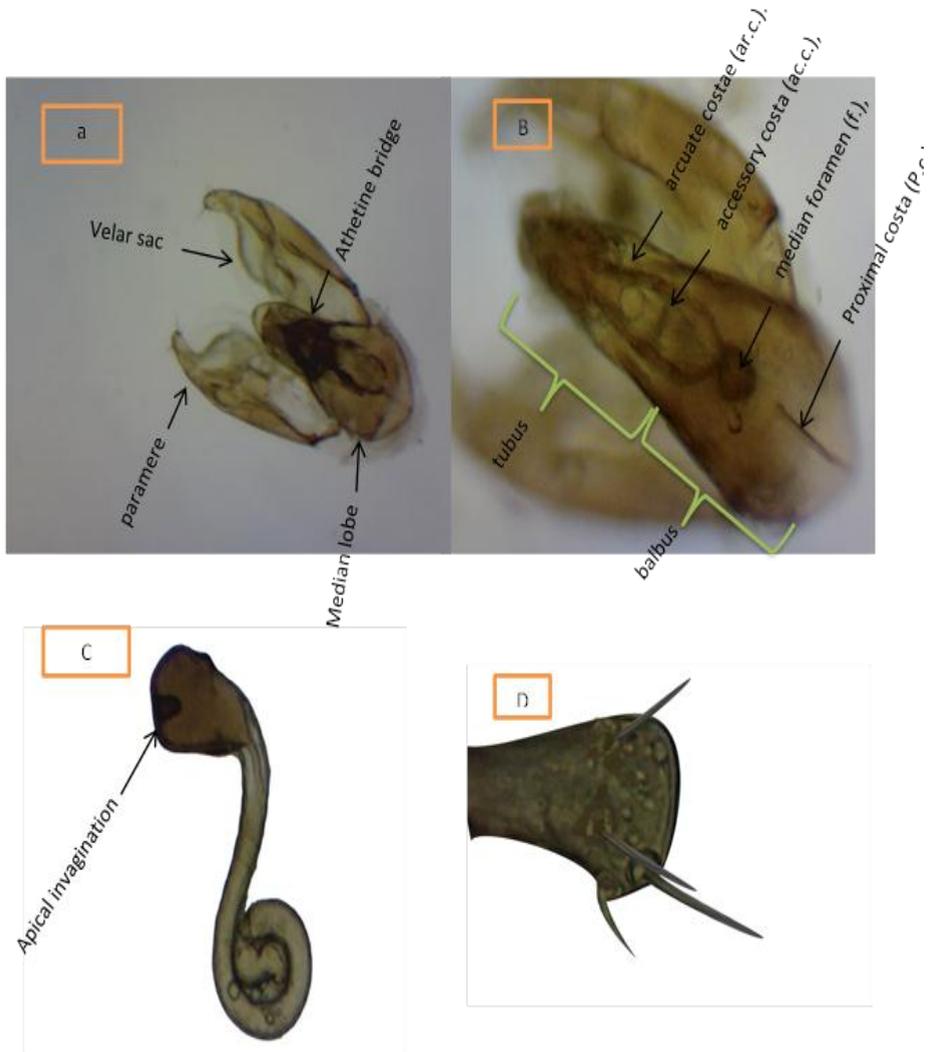


Fig.5 A aedeagus, ventral view, B dorsal view, C Spermatheca ,D Tip of paramere Scale bars=0.1mm

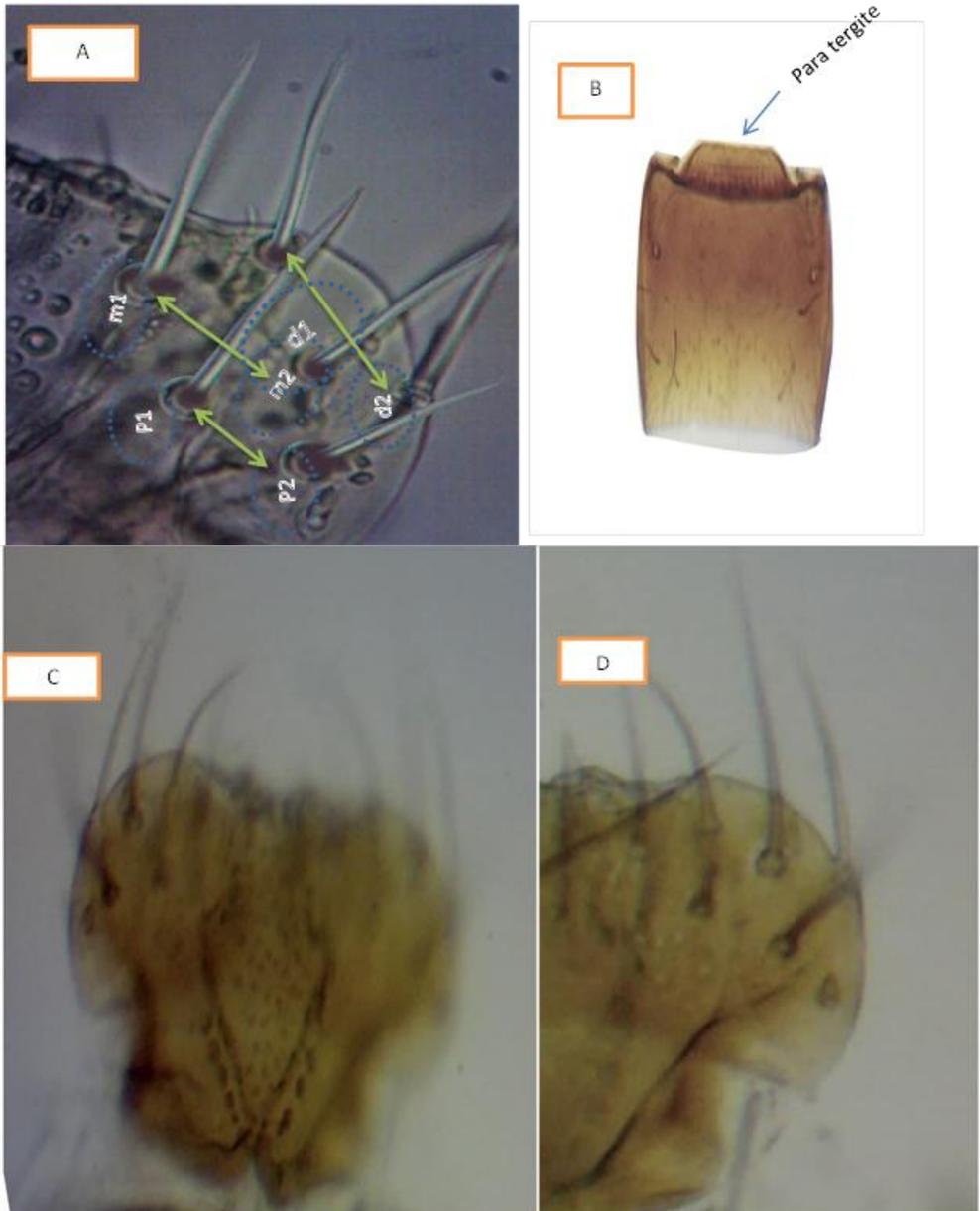


Fig6 A,c,d labrum , B VII tergite Scale bars A=0.1mm
B,c,d=0.3mm



Map 1 The location of the field study and sample collection

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