External Morphological Study of *Aporiacrataegi* (Linnaeus, 1758), (Lepidoptera: Pieridae). Northern Iraq

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Abstract

This work was included external morphological study of male Black veined white butterfly *Aporiacrataegi* L. 1758. The study involved morphological characters of many body regions, in addition the male genitalia. This morphological characters study supported by illustrations, it should be noted the work specimens were collected from northern Iraq.

Keywords: Butterfly, Lepidoptera, Pieridae, Aporia, Description.

Introduction

The species *Aporiacrataegi* L. 1758 is one of the largest butter flies belongs to family Pieridae Swainson 1820, subfamily Pierinae Duponchel 1835 [1]. The species *Aporiacrataegi* attacks the almond leaves basically, as well as larvae are attacking the plants and family Rosaceae such as Hawthorn, Pears, Peaches and Almonds. It is thus, this insect is one of the most important economic pests [2]. Spread of the adult insects depends on the altitude of the sea level where they are located at an altitude ranging from 500-200 m [3, 4]. Adult's flight time is set within the early monthly for April and July [5].

The females of this species have characteristic behavioral traits that rubbing their wings together leading to the fall of many scales to the extent that it is difficult to distinguish them as they become transparent compared to male whose wings remain white keeping their scales [6]. This genus contains 30 species in the world most of them in Tibet, Mongolia and China [7, 8].The species *Aporiacrataegi* L. one of the most common species of this genus as it is spread in cultivated land, orchids, forests and wooded mountains of Europe especially in England, Finland and Spain, it also spreads in Asia, especially in northern China, it spread to North Africa so prepare global proliferation [9]. One of the beautiful behaviors of this species is the presence in south and central Siberia composition of white swarms along the river's edges [10, 11].The species *Aporiacrataegi* L. is prepares one of the most wide spread species in the coastal countries of Syria and Lebanon [12] and it also recorded it is presence in the highest mountain areas of Iraq [13]. The study aims at shedding light the characteristics of the external morphology of the male *A. crataegi* L. and to indicate their taxonomic importance in the definition of species.

Materials and Methods

Adults were collected from (kali ali beck resort), erbil northern Iraq duration (April-May 2016) by using the air network and follow the sweep method [14]. The adults were killed after placing them in appropriate bottles containing an absolute alcohol then installed by pins install butterflies and saved in insect preservation boxes sterilized with naphthalene balls, information on the data and place of collection has been shown on special papers attached to the pins, and studied the characteristics of the external morphological of taxonomic importance which include the head, prothorax, venation wings as well as the genitalia using the method followed by Wallenmaier [15]. The parts were drawn using a Dissecting stereomicroscope by using an ocular micrometre lens and stage micrometer. The shapes of the Androconia...
were studies by taking different swabs from four areas of the hind wing are the anterior basal third; posterior basal third, posterior third and upper third in a way of scraping followed by Aga[16].

**Results and Discussion**

*Aporia crataegi* (Linnaeus, 1758) ♀

(Black veined white butterfly)

**Body**

Thin and elongated, coated with white scale, the thorax and front of the abdominal area are clothed with soft yellowish – white hairs. (Pic.1)

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**Head**

Oval black coated with successive black scale with other yellowish- white especially between the eyes.  (Fig.1-A)

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![Picture 1: Aporia crataegi (Male)](image)

**Figure 1: Aporia crataegi**

A-Head capsule  
B-Labial palp  
C-Antennae
**Vertex**
A little convex, clothed with soft black hair sequentially with slightly yellowish-white.

**Front:** Wide, the side edges are undulating, it is outer edge is convex at the middle and interior is straight.

**Compound Eye**
Large oval shape and distinguished, bold brown.

**Antennal Pit**
It’s attached to the compound eyes.

**Orbit**
A thin, narrow and black plate surrounds the compound eye from inside.

**Gena**
Small and very narrow adjacent to the eye orbit.

**Labrum**
Very thin cross-sectional plate.

**Proboscis**
Elongated, distinguished and dark brown.

**Labial Palp**
It consists of three segments, the basal segment is largest pieces, the apical segment is pointed end and clothed with thick black hair often alternates with a little white. (Fig.1-B)

**Antennae**
It's clavate and long, about half the length of the fore wing, black covered with little white scales, scape segment is flat and wide, pedicel is narrow, flagellum segments are filament and homogeneous of thickness, the last segments of 5-6 are overgrown, The last segment is pointed with white scales in a spot at its free end. (Fig.1-C)

**Pronotum (Prothorax):** (Fig.2)

![Figure 2: Pronotum of Aporia crataegi](image)

It's medium size, crown shaped, dark black, wide at its base and gradually narrowing toward the top and consisting of the following corneal plates:

**Patagium**
A pair of small plates with a fork-end.

**Para Patagium**
A pair of large plates occupy the middle third of the pronotum, outer edges are undulating and the interior curved.

**Neck Organ**
A pair of jointed free plates similar to a letter 'T' and opposite, responsible for the movement of the head at multiple angles.

**Coxal Cavity**
A ring installation represents the contact area of the fore leg coxa.

Wings (Pic.2)
Fore Wing
The upper side is quite similar to the underside, white, the veins are fully coated with dark black-brown scales, the costal margin is straight, outer slightly curved, the interior is slightly concave in the center, there is a small black spot occupying the middle of the discoed cell and is visible on the underside. (Pic.2-A)

Hind Wing
Similar to the fore wing, short oval (Pic.2-B)

Wing Venation
Fore Wing
Sc short arises from the base of the wing and closes at the basal third; R1+R2 created from the discodel cell, adjacent, vein R1 is short and closes at the medial third, R2 closes at the apical third, R3 is very short and arises from the R4 just before the apex slightly and closes at the apex of the wing; R4 arises from the upper angle of the middle of the discodel cell (dis.c) and represents (R4+R5) and closes at the apical angle; M1 is released from stem of the veins (R3 and R4+R5); M2 is released from the middle disco cellular (mdc); M3 is released from the lower disco cellular (Idc); Cu1+Cu2 are arising from the discodel cell and they are parallel; 1A is arises from the base wing and closes at the end of outer margin; the (dis.c) is about half the length of the wing, upper disco cellular (udc) is missing; (mdc) is elongated and oblique; (Idc) is short concave. (Pic.2-A)

Hind Wing
Precostal vein (Pcv) short and spur shaped; Sc vein represent Sc+R1 curved arises from the base of the wing and it’s reached almost middle of the costal margin; Radius sector (Rs) arises from the (dis.c) and it ends slightly before the apical area curved towards M1; M1 is long and straight arises from the (udc) and it ends at the apex of the wing; M2 arises from the (mdc); M3 arises from the (Idc) and a little convex, M2+M3 are parallel; Cu1+Cu2 are parallel and releases from the cell; 1A+2A are arising from the base of the wing and closes at the anal angle and they are parallel, 1A vein long; 3A short and reaches the medial third of the wing; (dis.c) represent about half the length of the wing; (mdc) longer than (udc) and (Idc) slightly undulate. (Pic.2-B)

Androconia :(Pic.3)
Found on the hind wing is scattered among the usual small scales, almond shape consist of two parts basal lobe and it's free margin is fringed provider with a pubescence, linked to the gonads and responsible for secretion of the pheromones to attract the mate when mating.

**Male Genitalia: (Fig.3)**

**Uncus**

Elongated plate with wide base and its apex is pointed like a beak, outer and inner margins are undulating.

**Tegumen**

Expended transverse plate when connected to uncus and tight tubular when connected to the vinculum, its base is concave at the center. (Fig.3-B)

**Viniculum**

Annular tubular plate with a spiked apex and almost broad suppressive base when connected to the saccus and works to connect parts of the male genitalia.

**Saccus**

A short expanded plate is like a jug, stabilized the aedeagus

**Valve**

The largest male genitalia plates, it's apex is pointed and it's base stretches to the side with two asymmetric cusp and it's side edges are undulating, the two thirds of the upper and middle are surrounded by a row of rough bristles.

**Aedeagus**

Extrusion plate similar to a dagger shape, its upper part is wide and tapered at its tip, its base similar to the handle, the cal appendage mutated in to a small membranous cusp on the ventral side. (Fig.3-C)

**References**


