



**First Record and Redescription of *Tarucus Theophrastus* Fabricius (Papilionoidea, Lycaenidae) from Jamshoro**

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**Abstract:** *Tarucus theophrastus* Fabricius (1793) is a small sized butterfly belonging to the order Lepidoptera. It is commonly called “Tiger Blue”, its body colour is pale purple to violet with outer border dark blue. This species is redescribed here based on external morphology, especially colouration of wings, structure of mouthparts, antennal structure, internal male genitalia (uncus, tegumen, vinculum, saccus and valvae) and female genitalia (papillae analis, ductus bursae and corpus bursae). A general description of *T. theophrastus* is also given. This species of butterflies is a new record from district Jamshoro, Sindh, Pakistan.

**Keywords:** First record, Redescription, *T. theophrastus* F., Jamshoro, Sindh

1.

**INTRODUCTION**

*Tarucus theophrastus* (Fabricius, 1793) belonging to genus *Tarucus*, (Lepidoptera: Lycaenidae). It is commonly called “Tiger Blue”. The adults are always found near the host plants, around which they fly irregularly, settling either on these or low shrubs nearby (Arturo, 1988). The larvae feed on brushes and trees of *Zizphus* sp., eating the leaves. In nature, ants in a symbiotic relationship tend the larvae, but in internment, they will develop acceptable without the attention of ants (Larsen and Larsen,1980). This is species of dessert and dry areas, found in the Old World tropics that flies from Morocco and Southern Spain through the barren Sahel zone of Africa to South-Western Arabia, Dhofar (Larsen, 1984) and Yemen (Balleto and Larsen). It is reported from Arabia, Africa; Baluchistan, Himalayas; Persia; Punjab; Northern and Western N.W. Western, Central and Southern India; Ceylon; Assam; Upper Burma (Bingham, 1907). (Khatri, 1987) also recorded from India. (Brower and Andrew 2008) reported twenty two species of genus *Tarucus* found in the world; out of these nine species are found in the South Asia namely *T. alteratus* Moore, 1882; *T. ananda* De Nicéville, 1884; *T. callinara* Butler, 1886; *T. extricatus* Butler, 1886; *T. venosus* Moore, 1882; *T. indica* Evans, 1932; *T. nara* Kollar, 1848; *T. venosus* Moore, 1882; *T. waterstradti* Druce, 1895 and *T. waterstradti dharta* Bethune-Baker, 1918. There is very limited knowledge about *T. theophrastus* in Pakistan specially from Sindh. The aim of present study was to illustrate the morphological characters, male and female genitalia of *T. theophrastus*. This study will be helpful to understand the species or subspecies of genus *Tarucus* that is widely distributed throughout the world.

2.

**MATERIALS AND METHODS**

The specimens of *Tarucus theophrastus* were collected from the different localities of district Jamshoro during April 2014. The specimens were sacrificed in killing jar, then stretched on the stretching board, kept in that position for 24 hours, ~~after that~~ preserved in the insect box. Terminology of external characters used of (Talbot, 1939) and veinations nomenclature followed of (Miller, 1970). Dissection of genitalia was made by standard technique (Kaminski *et. al.*, 2008). The abdomens of the specimens were exised at the base and then boiled in 10% Potassium Hydroxide (KOH) for five minutes. Genital material was removed from the abdomen with the help of fine forceps, washed with tap water and observed under the dissecting microscope. Genital material was preserved in micro vial with a drop of Glycerin and pinned with specimen. Figures were drawn with the help of ocular micrograph on graph paper and then traced on tracing paper with the help of rotering pointers with size (0.5 and 0.2). Genitalic terminology of male and female used that is given by (Klotsk, 1956) and (Winter, 2000)

3.

**RESULTS**

**TARUCUS THEOPHRASTUS F. (Figs. 1A-1B)**  
*Hesperia theophrastus* Fabricius, 1793

**Coloration**

Head, eyes and antennae black, palpi white, proboscis brown; thorax black covered with violet-blue scales, legs white, fore wings, ground colour violet blue, one black spot between interspaces 5 and 6, hind wings, ground colour, termen black, one black spot at the base of tail, violet-blue, abdomen with black and white.

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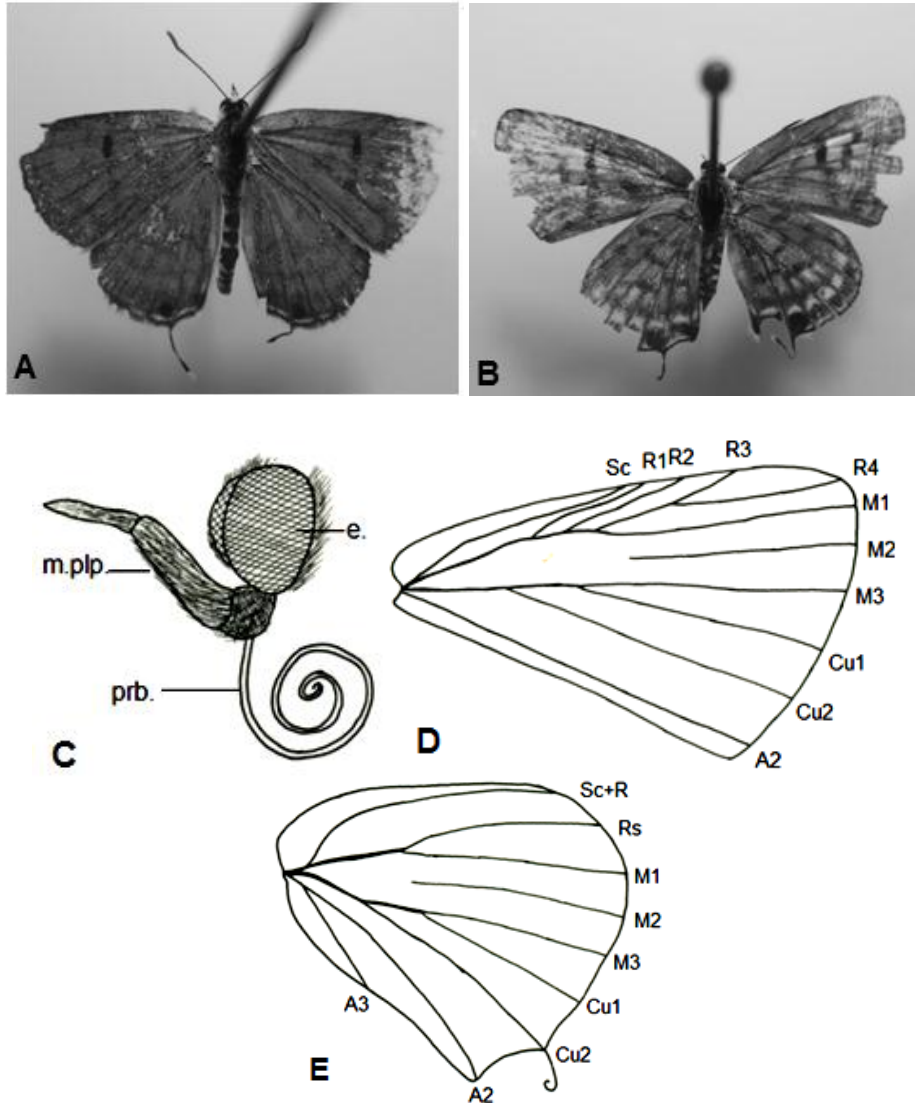


Fig. 1. A. *Tarucus theophrastus* (Male), B. *Tarucus theophrastus* (Female), C. Head, D. Fore wing venation, E. Hind wing venation

#### Head: (Fig. 1C)

Head round, eyes convex, antennae, apical part spoon shaped, maxillary palpi well developed, proboscis large, highly coiled.

#### Thorax

**Forewings:**(Fig. 1D) Triangular, costa straight, apex rounded, termen arched, tornus angular, dorsum straight, discal cell opened; veins, subcosta (Sc) originated from the axillary region, ending at the middle of the costal margin, radial (R) originated from the axillary region, next and parallel to Sc upon reaching half of the discal cell forked into R1 and radius (Rs), later being divided into R2, R3 and R4, R2 ending at the costal margin of the wing, R3 and R4 largely stalked, anastomosing with M1, started from the upper angle of the discal cell, R3 ending before apex of the wing, R4

ending at the apex of the wing, M1 started from the upper angle of the discal cell, M2 started from the middle of the discal cell, M3 started from the upper angle of the discal cell, anastomosing with Cu1, Cu1 starts from the upper angle of the discal cell, Cu2 began from the lower side of the discal cell, parallel with Cu1, A2 originates from the axillary region of the wing, separately from the discal cell, ending at the tornus of the cell.

**Hindwings: (Fig. 1E)** Leaf shaped, costa curved, apex sub-rounded, termen convex, slightly sinuated with tail, tornus angular, dorsum curved, discal cell opened; veins, Sc+R1 originated from the axillary region, ending at the apex of the wing, humeral (h) absent, Rs forked from Sc+R1, ending at the apex of the cell, M1 began from the upper angle of the discal cell,

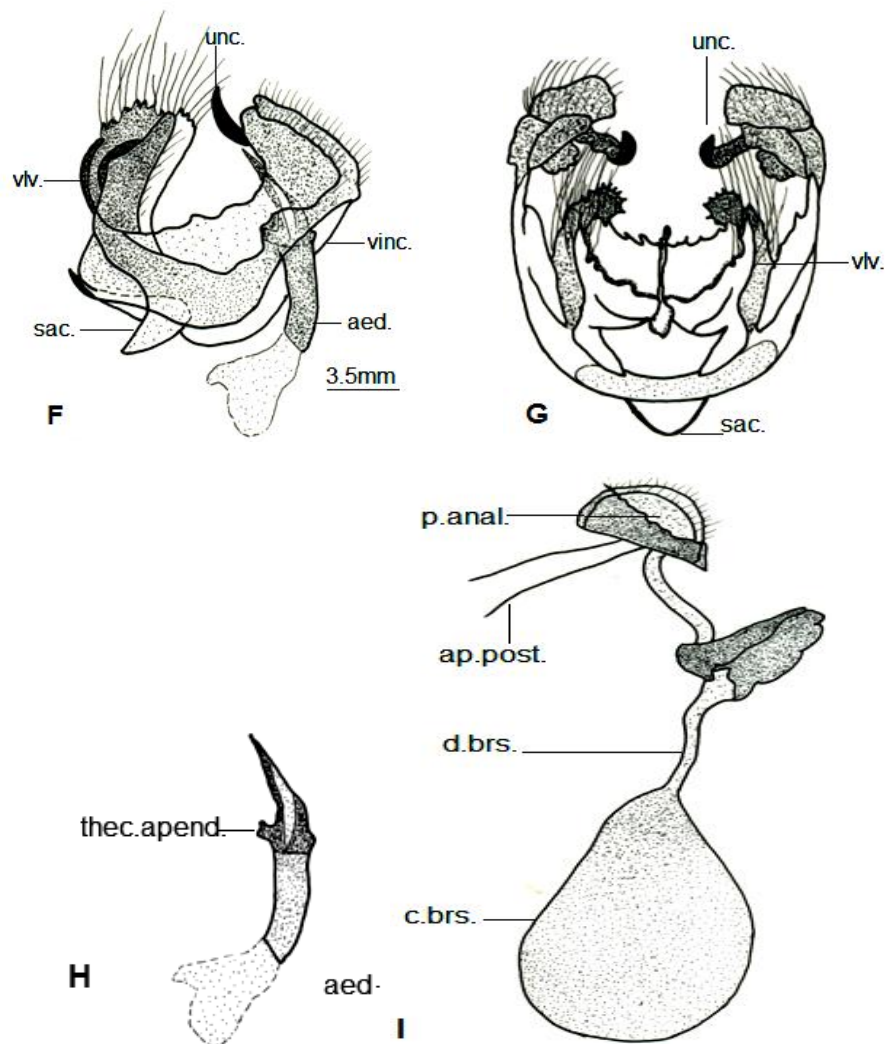


Fig. 2. F. Male genitalia (Lateral view), G. Male genitalia (dorsal view), H. Aedeagus, I. Female genitalia.

M2 started from the middle of the discal cell, M3 started from the lower angle of the discal cell, Cu1 started from the lower angle of the discal cell, anastomosing with M3, Cu2 started from the discal cell, ending at the tail of terminal margin, A2 and A3 originated from the axillary region of the wing, A2 straight, ending at distal tornus of wing, A3 slightly curved, ending at middle of the dorsal margin of the wing.

#### Abdomen

**Male genitalia:** (Fig. 2F-2G) Symmetrical, uncus sclerotised, sickle shaped in lateral view, tegumen sclerotised, laterally broad, proximal pointed in lateral view, appendices reduced, vinculum broad with hair, larger than the tegumen, laterally curved inward, fultura inferior triangular, saccus stumpy, V-shaped in ventral view, valva elongated, costa margin slightly curved in lateral view with long hair, apex pointed with sinuated

process, ventral margin convex with long hair, aedeagus (Fig. 2H) sclerotised, ventrally curved, apex pointed, conjunctival membrane present.

**Female genitalia:** (2I) Papillae analis small, somewhat round, with small hair, apophysis posterior large, needle-like, apophysis anterior reduced, ductus bursae long, curved, corpus bursae balloon-like, without cornuti.

#### Comparative notes

*Tarucus theophrastus* is very closely related to *Tarucus venosus* in having eyes without hair, but differ in having fore and hind wings, upper side colouration and terminal margins.

#### Material examined:

3♂ and 2♀, Sanghar, 06.v.2014. Leg. (B. Mal), deposited at Entomology laboratory, Department of Zoology, University of Sindh.

## 4.

**DISCUSSION**

*Tarucus theophrastus* (Fabricius 1793) is a small sized butterfly; found flying actively near to the host plant. Previously, entomologists documented this species from different regions of world and discussed about the diversity and abundance, without any detailed description. *T. theophrastus* has been first time recorded from the district Jamshoro, Sindh, Pakistan. The main external morphological characters used for

identification at the species level of the genus *Tarucus* are head, mouthparts, antennae, maxillary palpi, proboscis; Thorax, wing veinations; abdomen, male genitalia (uncus, tegumen, vinculum, saccus and valvae) and female genitalia (papillae analis, ductus bursae and corpus bursae). The mean and standard deviation of different body parts of *T. theophrastus* is also given (**Table 1**). This study is significant in understanding the external morphology of *T. theophrastus*.

**Table No. 1. Measurements of different body parts of *Tarucus theophrastus* F.**

Body parts of specimens	(Male ♂) Range (mm)	Mean (mm)	St. Dev. (mm)	(Female X) Range (mm)	Mean (mm)	St. Dev. (mm)
Length of head	1.0-1.2	1.11	±0.09	1.0-1.3	1.18	±0.11
Length of thorax	4.0-4.3	4.11	±0.11	4.1-4.5	4.23	±0.15
Length of abdomen	5.0-5.5	5.26	±0.15	5.2-5.5	5.35	±0.10
Total body length	10-10.3	10.18	±0.11	10.1-10.5	10.26	±0.13
Length of antenna	12-12.5	12.3	±0.16	12.3-12.6	12.4	±0.12
length of fore wing	10-13	11.33	±1.21	11-14	11.66	±1.36
Length of hind wing	5.0-7.0	6.0	±0.89	5.0-9.0	7.0	±1.41
Length of wing span	24-28	25.33	±1.50	25-29	26	±1.78

Values represent mean and st.dev. of Ten Replicates.

## 5.

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