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Redescription and New Record of *Lampides Boeticus* L. (Lycaenidae: Lepidoptera) from Jamshoro, Sindh, Pakistan

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Abstract: *Lampides boeticus* L. is the species of the family Lycaenidae. It is small sized butterfly and distributed in many parts of the world. This species has very importance, adults of this species fly over a long distance from one flower to another flower, cause the cross pollination in the plants and the larvae are pests of the legume family. In the present study, it is redescribed here with reference to morphological and internal male and female genitalic characters. This species is recorded from Jamshoro for the first time.

Keywords: New record, *Lampides boeticus* L., Jamshoro, Sindh, Pakistan.

1. INTRODUCTION

Lampides boeticus (Linnaeus, 1767) belonging to family Lycaenidae, commonly called "Long-Tail Blue Butterfly", because in their hind wings small filamentous tail-like structure is present. This tail-like structure separates from other blue species of the Lycaenidae (Poltavsky and Artohin 2000). *Lampides boeticus* L. is small sized and fast flying butterfly which is distributed in many parts of the world such as Africa, Europe, Australia, South, Southeast Asia, India, Pakistan, Japan, Sri Lanka and Philippines. This species is found in open warmer regions and wood land, and breed throughout the year (Ford, 1967). The larvae of *Lampides boeticus* L. eat leaves, flowers and pods of the family Fabaceae and Leguminosae. This species is considered as pest of Bean (*Vicia faba*), Peas (*Pisum sativum*) and Sweet Pea (*Lathyrus odoratus*), but the adults of this species is excellent pollinators, fly from one flower to another flower, which cause the cross pollination in plants (Zimmerman, 1958). This species is fast flying migratory butterfly, able to cross seas, oceans and low mountains. *Lampides boeticus* L. fly about one meter above the ground, females mostly remains close to the host plants and males move away towards the terrestrial regions. On setting, they close or partially open and rub their hind wings up and down (Poltavsky and Artohin 2000). Very little work has done on the *Lampides boeticus* L. from Pakistan. Presently, this species is documented for the first time from Jamshoro, Sindh, Pakistan.

2. MATERIALS AND METHODS

The specimens of *Lampides boeticus* L. were collected during March and April 2015 from the garden of University of Sindh and agriculture field of different localities of the Jamshoro. The collected butterflies were brought to the entomology laboratory, Department of Zoology. The specimens were put in the refrigerator for killing, after that stretched on the stretching board and kept in that position for twenty four hours, then transferred to the insect wooden box. For identification, morphological characters were followed of Hampson (1892) and wing venation of Miller (1970). For the dissection of internal male and female genitalia, first of all the abdomen of specimens were separated from the rest of body then boiled in the solution of 10% of potassium hydroxide (KOH) for the five minutes, after that the abdomen were dissected from the lateral side, the genital materials were removed with fine forceps, washed with tap water, and then the genital materiel were preserved in the glycerin and pinned along with the identified with the specimen (Puri, 1931; Zimmerman,1958). Genital terminology was used of Klots (1970) and Winter (2000).

3. RESULTS

***Lampides Boeticus* Linnaeus 1767 (Fig. A1 and B1)** (Long-tailed Pea-Blue)

COLOURATION

Head, eyes and antennae black, antennal shaft ringed with white scales, maxillary palpi white, proboscis brown; thorax black, fore wings, violet-blue, termen brown, hind wings, brownish, terminal eight or nine pale brown fasciae, legs white; abdomen black.

HEAD (Fig. C1)

Head round, antennae, apical part spoon shaped, maxillary palpi well developed, eyes round, covered with small hair, proboscis elongated and coiled.

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THORAX, Short and broad.

FORE WINGS (Fig. D1)

Triangular, longer than hind wing, costa very straight; apex somewhat round, termen sinuated, tornus angular, dorsum slightly curved, discal cell closed; veins, Subcosta (Sc) arised from the base of the fore wing, reached at the half of the costal margin, Radial (R) arised parallel and next to Subcosta, and distally forked into R1 and Rs, further divided into R, R3, and R4, R2 reached near to apex of the fore wing, R3 and R4 highly stalked, started from the near of the upper angle of the discoidal cell, anastomosing with M1, R3 reached up to apex of the fore wing, R4 reached to the terminal margin of fore wing, M1 began from the upper angle of discoidal cell, M2 began from the middle portion of the discoidal cell, M3 began from lower angle of the discoidal cell, Cu1 arised from lower angle of the discoidal cell, Cu2 arised from the discoidal cell, which is parallel to Cu2, reached at the terminal margin of the fore wing, A2 arised from the base of the fore wing, segregate from the discoidal cell reached to the tornus of the fore wing.

HIND WINGS (Fig. E1)

Somewhat triangular shaped, costa arched, apex sub-rounded, termen slightly sinuated with tail, tornus sub-rounded, dorsum slightly sinuated, discoidal cell opened, Sc+ R1 arised from the base of the hind wing, reaching middle of the costal margin, humeral (h) absent, Rs separated from Sc+R1, ending at the apex of the hind wing, M1 began from the upper side of the discoidal cell, M2 began from the half of the discoidal cell, M3 arised from lower angle of the discoidal cell, Cu1 began from the lower angle of the discoidal cell, Cu2 arised from the discoidal cell, parallel to Cu1, reaching at the tail of the terminal margin, A2 arised from the axillary of the wing, reaching at the tornus of hind wing, Symmetrical, uncus sclerotized, stumpy in lateral view, ventrally somewhat triangular, tegumen sclerotized, laterally broad, appendices reduced, vinculum larger than the tegumen, laterally curved inward, fultura inferior reduced, saccus reduced, valva elongated, costa margin slightly curved in lateral view with hair, apex pointed, ventral margin convex with hair, aedeagus sclerotized **(Fig. 2),** ventrally curved, conjunctival membrane present.

MALE GENITALIA (Fig. A2 and B2)

Symmetrical, uncus sclerotized, stumpy in lateral view, ventrally somewhat triangular, tegumen sclerotized, laterally broad, appendices reduced, vinculum larger than the tegumen, laterally curved inward, fultura inferior reduced, saccus reduced, valva elongated, costa margin slightly curved in lateral view with hair, apex pointed, ventral margin convex with hair, aedeagus sclerotized (Figure C2), ventrally curved, conjunctival membrane present.

FEMALE GENITALIA (Fig. D2)

Papillae analis small, triangular in shape, covered with small hair, apophysis posterior hair-like and large, apophysis anterior not well developed, ductus bursae very long, curved and corpus bursa rod-shaped, without cornuti.

COMPARATIVE NOTES

Lampides boeticus is very closely related to the *Lampides lacteata* in having thorax and abdomen black, but differ in the colouration of the fore and hind wings and terminal structure.

4. DISCUSSION

Lampides boeticus L. is described from the different localities of the world. Previously entomologists described this species on the basis of the morphological characters. From Pakistan very little work has done on this species. In the present study, this species is recorded for the first time from the Jamshoro, Sindh, Pakistan. *Lampides boeticus* L. is described on the external morphological characters, body colour and internal male and female genitalia. For the identification, main characters were used such as Head (eyes, antennae, maxillary palpi and proboscis), thorax (wing colour and venation) and Abdomen (male and female genitalia). These characters will help to clear identification of *Lampides boeticus* L. The mean and standard deviation of the different body parts of the *Lampides boeticus* L. were also given **(Table 1).**

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Table 1. Measurements of different body parts of *Lampides boeticus* L.

Body parts of Specimens	(Male) Range (mm)	Mean (mm)	St. Dev. (mm)	(Female) Range (mm)	Mean (mm)	St. Dev. (mm)
Length of head	1.4-1.8	1.55	±0.16	1.4-1.8	1.61	±0.14
Length of thorax	3.9-4.3	4.06	±0.16	4.0-4.4	4.18	±0.14
Length of abdomen	4.8-5.3	5.05	±0.18	4.8-5.4	5.06	±0.21
Total body length	10.2-10.5	10.3	±0.12	10.2-10.6	10.36	±0.16
Length of antenna	6.0-6.3	6.15	±0.13	6.0-6.4	6.21	±0.14
Length of fore wing	15-18	16.5	±1.37	16-19	17.16	±1.32
Length of hind wing	11-15	12.83	±1.47	12-16	14.33	±1.63

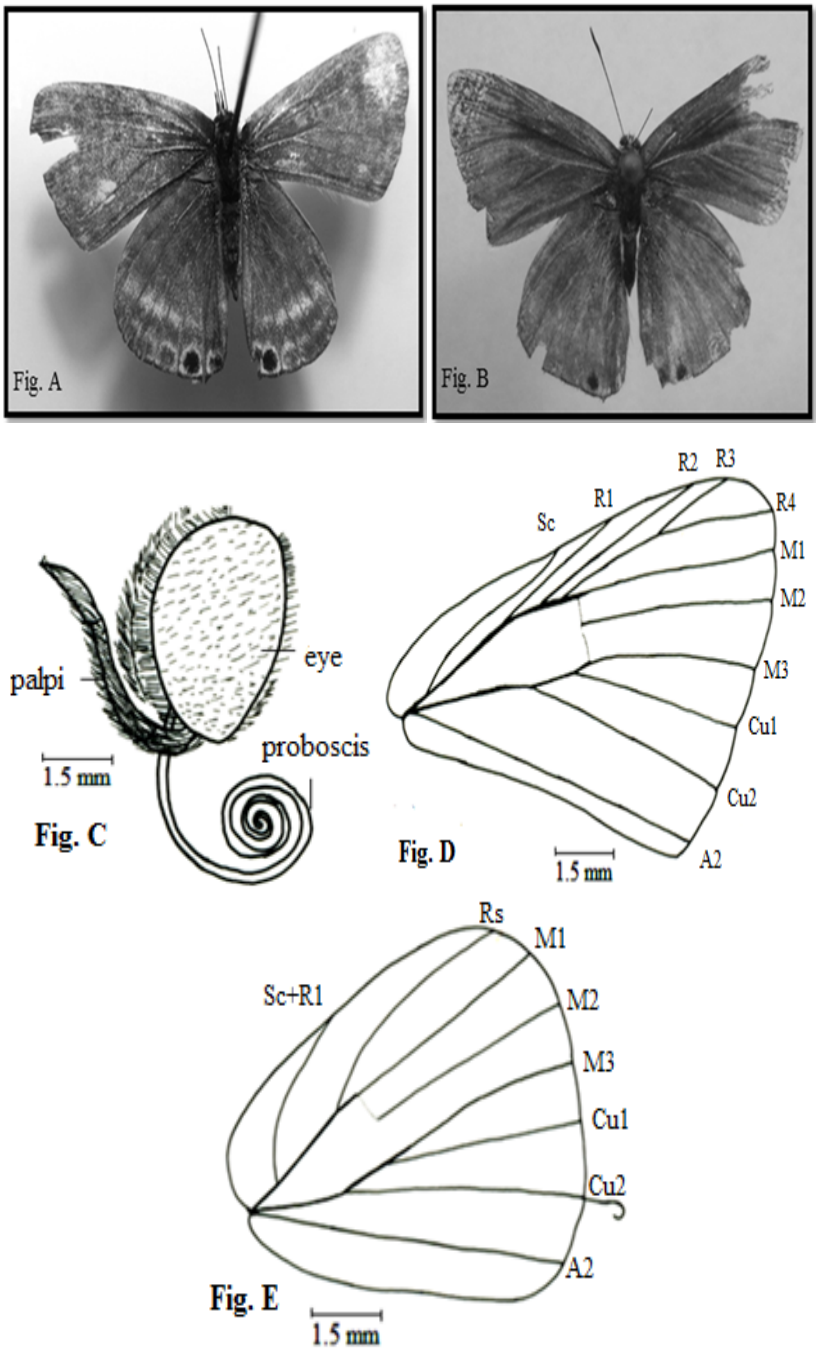

Fig 1. *Lampides boeticus* L.: A. Female (Dorsal side); B. Male (Dorsal side); C. Head (Lateral side); D. Fore wing; E. Hind wing.

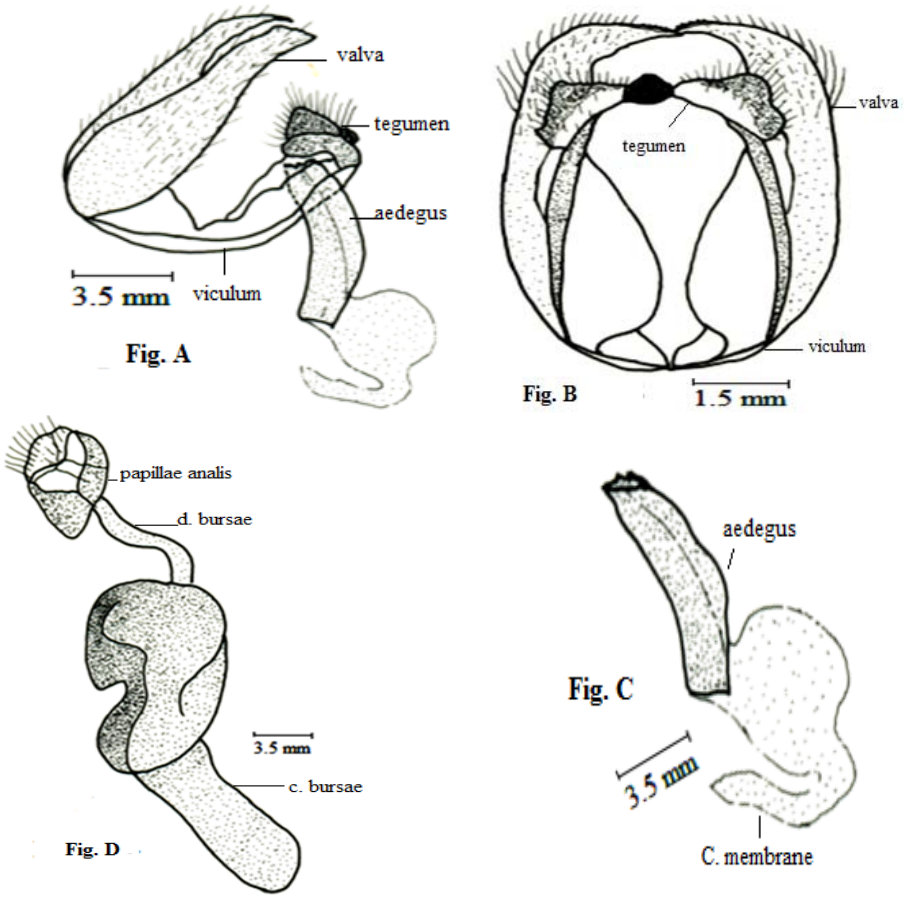

Fig. 2. Genitalia of *Lampides boeticus* L.: A. Male genitalia (Lateral side); B. Male genitalia (Dorsal side); C. Aedegus (Lateral side); D. Female genitalia.

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