

THE GENUS *JUNONIA* (LEPIDOPTERA: NYMPHALIDAE) IN PAKISTAN

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ABSTRACT

A checklist of butterflies of the genus *Junonia* (Lepidoptera: Nymphalidae) of Pakistan is presented with a new record for Pakistan i.e. *Junonia (Precis) atlites*. In total six species of genus *Junonia* are recorded from Pakistan. A key to the butterfly species of the genus *Junonia* of Pakistan and their distribution is given.

Key Words: Genus *Junonia*, Checklist, Pakistan, key, *Junonia (Precis) atlites*

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INTRODUCTION

The Pansies butterflies belong to genus *Junonia* of family Nymphalidae. The Nymphalid butterflies are diverse and also called brush-footed butterflies as the males have the first pair of legs reduced to brush-like structure. Genus *Junonia* is pretty patterned on the upper wings with bright colour and prominent ocelli. They are often abundant and have the habit of flying low to the ground. Up till now 33 species of genus *Junonia* have been reported all over the world. Among these species five have been reported to occur in Pakistan (Robert, 2001).

Nymphalid butterflies of Pakistan have been investigated by Lesilie and Evens (1903), Puri (1931), Malik (1970 and 1973), Ahsan and Iqbal (1975), Iqbal (1978), Arshad *et al.* (1983), Hassan (1994), Smith and Hassan (1997), Robert (2001), Naz *et al.* (2001), Khan *et al.* (2004) and Khan *et al.* (2007). Among these, Iqbal (1978), Hassan (1994) and Robert (2001) especially focused on the butterflies of Islamabad and adjacent areas. However, these authors have not recorded *Junonia atlites* from Pakistan although it has been reported from India by Bingham (1905). In the present study, this species *Junonia atlites* is also recorded from Pakistan and hence the new checklist and revised key of the genus *Junonia* is prepared.

MATERIALS AND METHODS

The present checklist of genus *Junonia* is prepared after studying the butterfly collection of National Insect Museum NARC, Islamabad, Pakistan and the work of other authors on these butterflies.

During the present survey of butterflies in September 2006, a *Junonia* species was collected on the flowers of *Lantana camara* plant in National Agricultural Research Centre, Islamabad. It was found that this species is different to the previously recorded *Junonia* species from the country. It was identified with the help of "Butterfly Encyclopaedia" by Landmand (1999) as *Junonia atlites* (Linnaeus). It is housed in the butterfly collection of National Insect Museum, NARC, Islamabad, Pakistan.

Material Examined: 2 females, Islamabad, September 18, 2006.

World Distribution: South West Asia, from India to Southern China.

The Islamabad city is situated at the edge of the Pothohar plateau, south of the Margalla hills with latitude 33° North and longitude 73° East. The altitude of Islamabad ranges from 457-610 meter. The area's micro-climate is regulated by three man-made lakes (Rawal, Simli and Khanpur). The city overall has an extreme climate with hot summers with monsoon rains occurring during July and August, and fairly cold winters with sparse snowfall over the hills and sleet in the city. The weather ranges from a minimum of -4 °C in January to a maximum of 45 °C in June (<http://en.wikipedia.org/wiki/Islamabad#External>)

RESULTS AND DISCUSSION

Key to the butterflies of the genus *Junonia* in Pakistan

1. Upper side ground colour yellow.....*Junonia hierta*
- 1'. Upper side ground colour not yellow.....2

2. Upper side ground colour brown.....3
 2'. Upper side ground colour not brown.....4
 3. Forewing without yellow spots or discal band on upperside.....*Junonia iphita*
 3'. Forewing with yellow spots on upper side..... *Junonia lemonia*
 4. Upper side ground colour; fore wing black, hind wing blue.....*Junonia orithya*
 5. Upper side: Ground Colour pale lavender-gray or brown*Junonia atlites*
 6. Upper side: Ground Colour rich orange yellow.....*Junonia almana*

Checklist and Taxonomy of Genus *Junonia* from Pakistan:

Family Nymphalidae

Sub-family Nymphalinae

Genus *Junonia* Hübner, [1819]

- Junonia* Hübner, [1819]; *Verz. bek. Schmett.* (3): 34, , **TS**: *Papilio lavinia* Cramer
Alyconeis Hübner, [1819]; *Verz. bek. Schmett.* (3): 35, , **TS**: *Alyconeis almane* Hübner
Aresta Billberg, 1820; *Enum. Ins. Mus. Billb.*: 79, **TS**: *Papilio laomedia* Linnaeus
Kamilla Collins & Larsen, 1991; in Larsen, *The butterflies of Kenya and their natural history*: 444, **TS**: *Papilio cymodoce* Cramer
Dunonia ; Mabille, 1876, *Bull. Soc. zool. Fr.* **1**: 203 (missp.)

Junonia orithya (Linnaeus, 1758)

(The Blue Pansy)

- Papilio orithya* Linnaeus, 1758; *Syst. Nat.* (Edn 10) **1**: 473.
Junonia orithya Hübner, 1816; *Verz. bek. Schmett.*, p. 34.
Junonia ocyale Hübner, 1816; *Verz. bek. Schmett.*, p. 34.
Junonia isocratia, Hübner, 1816; *Verz. bek. Schmett.*, p. 34.
Cynthia orithya, Donovan, 1842, *Nat. Hist. Ins. China*, p. 64.
Junonia orithya, Kirby, 1871, *Syn. Catal. Diur. Lep.*, p. 187.
Precis adamauana Schultze, 1920; *Ergeb. 2tn. Dt. Zent. Afrika Exp.* **1** (14): 823
Precis orithya ab. jacouleti Watari, 1941; *Zephyrus* **9**: 70-72

Distribution

It has been reported from Baluchistan (Evans, 1933); Peshawar (Arshad *et al.*, 1983); Islamabad (Iqbal, 1978; Hassan, 1994); Karachi, Dadu, Abbottabad, Astolla island, Quetta, Harnai (Malik, 1970, Roberts, 2001); Lahore (Philippe, 1917; Puri, 1931; Ahsan and Iqbal, 1975); Chitral (Leslie & Evans, 1903); Buner (Naz *et al.*, 2001); Lower Swat (Inayatullah *et al.*, 2002); Kotli, Bhimber and Muaffarabad Azad Kashmir (Khan *et al.*, 2004; Khan *et al.*, 2007). During the present survey, it was also collected from Rawalpindi, Turbat and Somiani (Baluchistan), Mansehra (NWFP) and Rawlakot (AJK).

The species is widely distributed globally, ranging in the Oriental region, from Pakistan, Sri Lanka, India, North to South China and Formosa, through Malaysia and the Archipelago to Australia.

Junonia hierta (Fabricius, 1798)

(The Yellow Pansy)

- Papilio hierta* Fabricius, 1798; *Ent. Syst.* (Suppl.): 424
Papilio lintingensis Osbeck, 1765; (suppr. #842)
Junonia aenone, Hubner, 1816, *Verz. bek. Schmett.*, p. 34.

Junonia hierta, Kirby, 1871, *Syn. Catal. Diur. Lep.*, p. 648.
Precis ab. demaculata Neustetter, 1916; *Dt. ent. Z. Iris*, ? **30**: 99
Junonia hierta, Antram, 1924, *Butt. Ind.*, p. 175.

Distribution

It has been reported from Baluchistan (Evans, 1933); Peshawar (Arshad *et al.* 1983); Islamabad (Iqbal, 1978; Hassan, 1994); Karachi, Tando Adam (Malik, 1970); Lahore (Philippe, 1917; Puri, 1931; Ahsan and Iqbal, 1975); Buner (Naz *et al.*, 2001) and Lower Swat (Inayatullah *et al.*, 2002). During present survey, it was also collected from Rawalpindi, Muree and Mansehra. Globally, it is only reported from South West Asia i.e. India, Sri Lanka and Burma.

***Junonia iphita* (Cramer, [1779]):**

(The Chocolate Pansy)

Papilio iphita Cramer, [1779]; *Pap. Exot.* III, p. 30, pl. 209, fig. C, D.
Junonia iphita, Butler, 1869, *Cal. Fabr. Lep. Brit. Mus.*, p. 76.
Precis iphita, Moore, 1881, *Lep. Ceyl.* I, p. 39, pl. 21, figs. 1, 1a.
Junonia iphita, Moore, 1899-1990, *Lep. Ind.* II, p. 63, pl. 19, fig. 84.

Distribution

It has been reported from Lahore (Ahsan and Iqbal, 1975; Puri, 1931) and Lahore, Sialkot, foothills of Himalaya (Roberts, 2001). Recently it was collected from Banjosa lake (AJK) and Islamabad. The species ranges from Pakistan, Sri Lanka and India to South China and through Malaysia to Lesser Sunda Island.

***Junonia almana* (Linnaeus, 1758):**

(The Peacock Pansy)

Papilio almana Linnaeus, 1758; *Syst. Nat.* (Edn 10) **1**: 472.
Papilio asterie Linnaeus, 1758, *Sys. Nat.* ed. 10, p. 472.
Alcyoneis almane Hübner, [1819]; *Verz. bek. Schmett.* (emend.?) (3): 35
Cynthia almana, Donovan, *Ins. Chin.* p. 67, pl. 36, fig. 2.
Junonia almana, Butler, 1869, *Cal. Fabr. Lep. Brit. Mus.*, p. 72.

Distribution

It has been reported from Ghoragali, Islamabad (Iqbal, 1978; Hassan, 1994); Karachi, Peshawar (Malik, 1970); Lahore (Philippe, 1917; Puri, 1931; Ahsan & Iqbal, 1975); Thatta and Larkana (Sindh), Gujranwala, Shaikhupura (Roberts, 2001); Buner (Naz *et al.*, 2001); Lower Swat (Inayatullah *et al.*, 2002) and Muaffarabad Azad Kashmir (Khan, *et al.*, 2004). Our museum also contains specimens of this species from Bakker, Rawalpindi (Punjab), Sakrand, Mirpur Khas (Sindh), Mansehra (NWFP). Globally, the species ranges from Pakistan, Sri Lanka and India to South China and through Malaysia to Celebes and Lesser Sunda island.

***Junonia lemonias* (Linnaeus, 1758):**

(The Lemon Pansy)

Papilio lemonias Linnaeus, 1758; *Syst. Nat.* (Edn 10) **1**: p. 473.
Papilio aonis Linnaeus, 1758; *Syst. Nat.* (Edn 10) **1**: p. 472.
Janonia aonias, Hübner, [1819]; *Verz. bek. Schmett.* P. 34.
Janonia lemoias, Butler, 1869, *Cal. Fabr. Lep. Brit. Mus.*, p. 74.
Precis lemonias f. persicaria Fruhstorfer, 1912; in Seitz, *Gross-Schmett. Erde* **9**: 520

Distribution

It has been reported from Islamabad (Iqbal, 1978), Karachi, Quetta (Malik, 1970), Lahore (Philipe, 1917; Puri, 1931; Ahsan and Iqbal, 1975). During our recent survey, it was also collected from Sakrand, Mirpur Khas (Sindh), Buner, Mansehra (NWFP). Globally, the species is confined to South West Asia (Pakistan, India, Sri Lanka and Burma).

Junonia atlites* (Linnaeus, 1763)*(The Grey Pansy)**

Papilio atlites Linnaeus, 1763; *Amoenitates Acad.*, **6**: 407, **TL**: "Asia" [? Canton]

Papilio laomedia Linnaeus, 1767; *Syst. Nat.* (Edn 12) **1** (2): 772

Precis atlites soera Fruhstorfer, 1912; in Seitz, *Gross-Schmett.* Ede **9** :p. 519

Distribution: This is first time reported from Pakistan during our present survey. The type locality is Islamabad. It has also been reported from South West Asia, India to Southern China (Bingham, 1905).

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