SHORT COMMUNICATION

BUTTERFLY DIVERSITY (LEPIDOPTERA: RHOPHALOCERA) ASSOCIATED WITH NECTAR FEEDING ON ZIZIPHUS MAURITIANA LAMARCK (ROSALES: RHAMNACEAE) FLOWERS IN CHUADANGA, BANGLADESH

Tahsinur Rahman Shiihan

26 April 2017 | Vol. 9 | No. 4 | Pp. 10109–10114
10.11609/jott.2515.9.4.10109-10114
Butterfly diversity (Lepidoptera: Rhopalocera) associated with nectar feeding on Ziziphus mauritiana Lamarck (Rosales: Rhamnaceae) flowers in Chuadanga, Bangladesh

Tahsinur Rahman Shihan

Department of Zoology, Jahangirnagar University, Savar, Dhaka, Bangladesh. Present Address: Belgachi Railgate Para, Chuadanga, Bangladesh

shihanrahman87@gmail.com

Abstract: A study was conducted during the flowering season of Ziziphus mauritiana from September 2015 to October 2015 in Belgachi Railgate Para, Chuadanga, Bangladesh. The study recorded 265 individuals of 39 butterfly species belonging to five families and 32 genera nectar feeding on Z. mauritiana flowers. Amongst the families, Lycaenidae was dominant with 33.33% (n=13). Amongst the species Parnara bada (Moore, 1878) (Hesperiidae) was the most dominant species followed by Ypthima baldus (Fabricius, 1775) (Nymphalidae). Virachola isocrates (Fabricius, 1793) (Lycaenidae) spent the maximum time (60–120 sec) nectar feeding on Z. mauritiana amongst the 39 species sampled.

Keywords: Chuadanga, Lycaenidae, Parnara bada, Virachola isocrates, Ziziphus mauritiana.

Nectar is an important factor influencing the level and persistence of butterfly populations, but particular sources of nectar may not be optimal for all species. In a homestead vegetation context, it is not always clear whether nectar sources used by butterflies are good quality species. They may be used opportunistically in the absence of true preferences, therefore possibly limiting maximal reproduction (Gillespie & Wratten 2013). The nectar of flowers is the main source of adult nutrition and butterflies exhibit distinct differences for flower preference (Jennersten 1984; Ômura & Honda 2005). They choose plants as nectar sources depending on various factors including colors and odors of flowers (Jolivet 1986; Weiss 1997; DeVries et al. 1999; Dosa 1999; Sourakov et al. 2012). Odor sometimes acts as a synergist with color as the important cue for foraging (Ômura & Honda 2005). The usefulness of butterfly foraging depends on corolla depth and proboscis length, which limits the range of flowers from which nectar can be extracted (Porter et al. 1992; Corbet 2000).

The floral syndrome of Ziziphus mauritiana Lamarck (Family Rhamnaceae) reflects its adaptation to insects as well as butterflies. Flower emergence and development lasts for one month from late September to late October in Bangladesh. Morphology: Inflorescence axillary cymes, 01–02 cm long, with 07–20 flowers; peduncles 02–03 mm long; flowers are small 02–03 mm across and inconspicuous, greenish-yellow, faintly fragrant; pedicels 03–08 mm long; calyx with five deltoid lobes, hairy outside, glabrous within; five petals, subspathulate, concave, reflexed (Orwa et al. 2009). Z. mauritiana is a fruit tree well known for its nutritional and medicinal benefits. It is a spiny, evergreen shrub or small tree up to 15m high, with trunk 40cm or more in diameter; spreading crown; stipular spines and many drooping...
branches. The plant is native to Afghanistan, Algeria, Australia, Bangladesh, China, Egypt, India, Indonesia, Iran, Kenya, Libyan Arab Jamahiriya, Malaysia, Nepal, Pakistan, Thailand, Tunisia, Uganda, Vietnam in southern Asia and eastern Africa (Mishra et al. 2004; Sellers 2014; Ashraf et al. 2015).

Earlier Mishra et al. (2004) studied the diversity of flower-visiting insects in relation to plant density of *Z. mauritiana* in Awadhesh Pratap Singh University campus (24°33′59.88″N & 81°19′49.21″E), Rewa, Madhya Pradesh in India and reported 18 species of butterflies as visitors to this flower. On the other hand, in Bangladesh, studies have been carried out on the morphology and taxonomy of different butterfly species but data on the nectar feeding behavior of adult butterflies are scanty (Begum et al. 2014). Therefore, the objective of the present investigation was to study the butterfly diversity association with *Z. mauritiana* flowers and nectar feeding behavior of butterfly species.

**Study Area:** Belgachi Railgate Para (23°37′53.90″N & 88°51′0.53″E) was the study site which is 1.79km away from the main town named Chuadanga. It is situated in the southwestern part of Bangladesh (Fig. 1). This area is covered with cultivated land, wetland and homestead vegetation include trees, herbs, shrubs, grasses and climbers which support butterflies species for their larval food, nectar feeding and resting (Shihan 2016).

**METHODS**

The author monitored three *Z. mauritiana* flowering trees daily, in the morning from 08:00–11:00 hr and in the afternoon 15:30–17:00 hr from September 2015 to October 2015. Digital photographs of adult butterflies that were nectar feeding on flowers were taken with a zoom lens. Species were identified with help of literature (Kunte 2000; Kehimkar 2008) and classifications follow by literature Varshney & Smetacek (2015).

**Result and Discussion**

Two-hundred-and-sixty-five individuals of 39 butterfly species belonging to five families and 32 genera were recorded. Among the families, Lycaenidae was dominant with 33.33% (*n*=13) representation followed by the Nymphalidae 28.20% (*n*=11), Hesperiidae 23.07% (*n*=9) and both Pieridae and Papilionidae at 7.69% (*n*=3) (Fig. 2). The details of the number of individuals visiting flowers and range of feeding time of each species are given in Table 1.

**Lycaenidae:** *Anthene emolus* was the most abundant (*n*=17) visitor followed by *Rathinda amaurota* (*n*=13), respectively. *Virachola isocrates* (60–120 sec) and *Tajuria cippus* (45–60) spent the maximum time on nectar feeding.

**Nymphalidae:** *Ypthima baldus* (*n*=22) and *Junonia almana* (*n*=19) were the dominant species. Again *Y. baldus* (40–45 sec) spent the highest time on nectar feeding.

**Pieridae:** *Catopsilia pomona* (*n*=5) was the dominant species and spent the highest time (30–35 sec) on nectar feeding.

**Papilionidae:** *Graphium agamemnon* (*n*=6) was the dominant visitors of this family and spent the highest time (10–20 sec) on nectar feeding.
Butterflies associated with *Ziziphus mauritiana* Shihan

Hesperiidae: *Parnara bada* was the most dominant (n=32) species and *Pelopidas subochracea* spent the highest time (45–110 sec) on nectar feeding.

Members of the Lycaenidae family were dominant in the study area because most of the species were small in size with short proboscis length and easily fed on nectar from the small flower. Orwa et al. (2009) mentioned that *Z. mauritiana* flowers were protandrous. Hence, the fruit set depends on crosspollination by insects attracted by the fragrance and nectar. The pollen of the flower is described as ‘heavy and thick’. In India, different species of honeybees, *Apis* spp. and house flies *Musca*

### Table 1. List of butterflies recorded nectar feeding on *Ziziphus mauritiana* flowers in Chuadanga, Bangladesh (September–October 2015).

<table>
<thead>
<tr>
<th>Common name</th>
<th>Scientific name</th>
<th>No. of individuals recorded</th>
<th>Time spent on nectar feeding (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciliate Blue</td>
<td><em>Anthene emolus</em> (Godart, 1824)</td>
<td>17</td>
<td>05–12</td>
</tr>
<tr>
<td>Pointed Ciliate Blue</td>
<td><em>Anthene lycaenina</em> (Felder, 1868)</td>
<td>01</td>
<td>05</td>
</tr>
<tr>
<td>Common Pierrot</td>
<td><em>Castalis rosomom</em> (Fabricius, 1775)</td>
<td>05</td>
<td>20–25</td>
</tr>
<tr>
<td>Lime Blue</td>
<td><em>Chilades Iajus</em> (Stoll, [1780])</td>
<td>02</td>
<td>05–07</td>
</tr>
<tr>
<td>Gram Blue</td>
<td><em>Euchrysops cneus</em> (Fabricius, 1798)</td>
<td>01</td>
<td>25–30</td>
</tr>
<tr>
<td>Quaker</td>
<td><em>Neopteileps zalmaro</em> (Butler, 1870)</td>
<td>01</td>
<td>20–25</td>
</tr>
<tr>
<td>Tailless Linblue</td>
<td><em>Prostasias dubiosa</em> (Semper, [1879])</td>
<td>01</td>
<td>10</td>
</tr>
<tr>
<td>Common Guava Blue</td>
<td><em>Virachola isocrates</em> (Fabricius, 1793)</td>
<td>05</td>
<td>60–120</td>
</tr>
<tr>
<td>Slate Flash</td>
<td><em>Rapala manea</em> (Hewitson, 1863)</td>
<td>07</td>
<td>20–40</td>
</tr>
<tr>
<td>Monkey Puzzle</td>
<td><em>Rothinda amor</em> (Fabricius, 1775)</td>
<td>13</td>
<td>18–30</td>
</tr>
<tr>
<td>Common Silverline</td>
<td><em>Spindasis vulcanus</em> (Fabricius, 1775)</td>
<td>05</td>
<td>10–13</td>
</tr>
<tr>
<td>Peacock Royal</td>
<td><em>Tajuria cippus</em> (Fabricius, 1798)</td>
<td>07</td>
<td>45–60</td>
</tr>
<tr>
<td>Common Guava Blue</td>
<td><em>Virachola isocrates</em> (Fabricius, 1793)</td>
<td>05</td>
<td>60–120</td>
</tr>
<tr>
<td>Angled Caster</td>
<td><em>Ariadne ariadne</em> (Linnaeus, 1763)</td>
<td>04</td>
<td>03–05</td>
</tr>
<tr>
<td>Common Pamfly</td>
<td><em>Elymias hypermenstra</em> (Linnaeus, 1763)</td>
<td>03</td>
<td>20–21</td>
</tr>
<tr>
<td>Common Fivering</td>
<td><em>Yphima bolus</em> (Fabricius, 1775)</td>
<td>22</td>
<td>40–45</td>
</tr>
<tr>
<td>Common Fivering</td>
<td><em>Yphima huebneri</em> Kirby, 1871</td>
<td>04</td>
<td>30–31</td>
</tr>
<tr>
<td>Common Crow</td>
<td><em>Euoploea core</em> (Cramer, [1780])</td>
<td>01</td>
<td>05–08</td>
</tr>
<tr>
<td>Common Baron</td>
<td><em>Euthalia aconthea</em> (Cramer, [1777])</td>
<td>10</td>
<td>35–45</td>
</tr>
<tr>
<td>Commander</td>
<td><em>Moduza procis</em> (Cramer, [1777])</td>
<td>03</td>
<td>07–09</td>
</tr>
<tr>
<td>Great Eggfly</td>
<td><em>Hypolimnas bolina</em> (Linnaeus, 1758)</td>
<td>04</td>
<td>07–12</td>
</tr>
<tr>
<td>Peacock Pansy</td>
<td><em>Junonia almana</em> (Linnaeus, 1758)</td>
<td>19</td>
<td>30–34</td>
</tr>
<tr>
<td>Grey Pansy</td>
<td><em>Junonia alitis</em> (Linnaeus, 1763)</td>
<td>07</td>
<td>28–32</td>
</tr>
<tr>
<td>Common Leopard</td>
<td><em>Phalantha phalantha</em> (Drury, [1773])</td>
<td>06</td>
<td>05–07</td>
</tr>
<tr>
<td>Common Emigrant</td>
<td><em>Catopsilia pomona</em> (Fabricius, 1775)</td>
<td>05</td>
<td>30–35</td>
</tr>
<tr>
<td>Mottled Emigrant</td>
<td><em>Catopsilia pyranthe</em> (Linnaeus 1758)</td>
<td>04</td>
<td>27–30</td>
</tr>
<tr>
<td>Common Jezebel</td>
<td><em>Delia eucharis</em> (Drury, 1773)</td>
<td>07</td>
<td>40–45</td>
</tr>
<tr>
<td>Common Pam - <em>Papilio polytes</em> Linnaeus, 1758</td>
<td>02</td>
<td>05–07</td>
<td></td>
</tr>
<tr>
<td>Common Snow Flat</td>
<td><em>Tagiades japonica</em> (Stoll, [1781])</td>
<td>02</td>
<td>26–40</td>
</tr>
</tbody>
</table>
Butterflies associated with *Ziziphus mauritiana* are reported to be important pollinators; the wasps *Polistes hebraceus* and *Physiphora* spp. have also been observed on flowers. Cross-incompatibility occurs, and cultivars have to be matched for good fruit set; some cultivars produce good crops parthenocarpically (Orwa et al. 2009). Mishra et al. (2004) recorded butterfly visiting flowers namely *Zizula hylax*, *Tarucus theophrastus indica*, *Eurema hecabe*, *Junonia almana*, *Elymnias hypermnestra*, and *Ypthima baldus*. © Tahsinur Rahman Shihan
Butterflies associated with *Ziziphus mauritiana* Shihan


*Pieris brassiceae*, *Spindasis* spp., *Euploea core* and *Phalanta phalantha*.

In the late monsoon (September–October), the numbers of plants producing nectar are few, so butterflies choose *Z. mauritiana* flowers as a source of nectar in the study area. In the flowering season, a large numbers of flowers bloom together in a single tree and provide nectar for butterflies.
Butterflies associated with Ziziphus mauritiana

Shihan

Images 31–36. 31 - Parnara bada; 32 - Suastus gremius; 33 - Telicota bambusae; 34 - Telicota colon; 35 - Tagiades japetus; 36 - Virachola isocrates. © Tahsinur Rahman Shihan

References


The Journal of Threatened Taxa is dedicated to building evidence for conservation globally by publishing peer-reviewed articles online every month at a reasonably rapid rate at www.threatenedtaxa.org. All articles published in JoTT are registered under Creative Commons Attribution 4.0 International License unless otherwise mentioned. JoTT allows unrestricted use of articles in any medium, reproduction, and distribution by providing adequate credit to the authors and the source of publication.

ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)
April 2017 | Vol. 9 | No. 4 | Pages: 10021–10140
Date of Publication: 26 April 2017 (Online & Print)
DOI: 10.11609/jott.2017.9.4.10021-10140
www.threatenedtaxa.org

Articles

Distribution and population status assessment of the endemic grass-like palm Butia marmorii (Arecales: Areceae) in Paraguay
-- Irene Gauto, Fernando Palacios, Pamela Marchi, Nelson Silva & Gloria Céspedes, Pp. 10021–10034

Conservation of the Southern River Terrapin Batagur affinis (Reptilia: Testudines: Geemydidae) in Malaysia: a case study involving local community participation
-- Pelf Nyok Chen, Pp. 10035–10046

Butterflies associated with major forest types in Arunachal Pradesh (eastern Himalaya), India: implications for ecotourism and conservation planning
-- Arun P. Singh, Pp. 10047–10075

Communication

Traditional home garden agroforestry systems: habitat for conservation of Baya Weaver Ploceus philippinus (Passeriformes: Ploceidae) in Assam, India
-- Yashmita-Ulman, Awadhesh Kumar & Madhubala Sharma, Pp. 10076–10083

Peer Commentary

Livestock and wild herbivores in the western Himalaya: competition or co-existence?
-- Zarreen Syed & Mohd Shahnawaz Khan, Pp. 10084–10088

Short Communications

Conservation status assessment and new population record of the threatened Golden Himalayan Spike Phlomoides superba (Royle ex Benth.) Kamelin & Makhm. from Jammu & Kashmir, India
-- Amber Srivastava, Yash Pal Sharma, O.P. Sharma Vidyarthi & Sunil Kumar Srivastava, Pp. 10089–10095

Host specificity of some wood-decaying fungi in moist deciduous forests of Kerala, India
-- A. Muhammed Iqbal, Kattany Vidyasagar & Narayan Ganesh, Pp. 10096–10101

New records of social wasps (Hymenoptera: Vespinae: Vespa and Provespa) from Bhutan
-- Phurpa Dorji, Thinley Gyeltshen, Wim Klein & Tshering Nidup, Pp. 10102–10108

Butterfly diversity (Lepidoptera: Rhopalocera) associated with nectar feeding on Ziziphus mauritiana Lamark (Rosales: Rhamnaceae) flowers in Chuadanga, Bangladesh
-- Tahsinur Rahman Shihan, Pp. 10109–10114

First record of a Wrinkle-lipped Free-tailed Bat Chaerephon plicatus Buchanan, 1800 (Mammalia: Chiroptera: Molossidae) colony in Sri Lanka, with notes on echolocation calls and taxonomy
-- Tharaka Kusuminda & Wipula B. Yapa, Pp. 10115–10120

Density and obligatory feeding habits of an isolated Golden Jackal Canis aureus L. (Mammalia: Carnivora: Canidae) population in Pirotan Island, Gulf of Kachchh, India
-- Kamaraj Ramkumaran, Rethnaraj Chandran, Chowdula Satyanarayana, Kailash Chandra & Tikadar Shaymal, Pp. 10121–10124

Notes

The seasonal occurrence of the Whale Shark Rhincodon typus (Smith, 1828) (Orectolobiformes: Rhincodontidae) along the Odisha coast, India
-- Shesdev Patro, Biraja Kumar Sahu, Chandanlal Parida, Madhusmita Dash & K.C. Sahu, Pp. 10125–10129

A new record of Gunther’s Waspfish Snyderina guentheri (Boulenger, 1889) (Scorpaeniformes: Tetrarogidae) from Visakhapatnam, India
-- Muddula Krishna Naranji & Sujatha Kandula, Pp. 10130–10132

First record of Neojurtina typica from India (Hemiptera: Heteroptera: Pentatomidae)
-- S. Salini, Pp. 10133–10137

Xenomerus orientalis Walker (Hymenoptera: Platygastridae): a new distribution record for India