



# Two New records of the genus *Padenia* Moore, 1882 (Lepidoptera: Erebidae: Arctiinae: Lithosiini) from India

Jagbir Singh Kirti<sup>1</sup>, Harvinder Singh Datta<sup>1</sup>, Santosh Singh Bisht<sup>1</sup>,  
Harsimranjeet Singh Param<sup>1</sup> and Navneet Singh<sup>2\*</sup>

<sup>1</sup>Department of Zoology & Environmental sciences, Punjabi University, Patiala – 147 002, Punjab, India

<sup>2</sup>Zoological Survey of India, Prani Vigyan Bhawan, New Alipore, Kolkata – 700053, West Bengal, India

Email: nsgill007@gmail.com

## Abstract

In the present manuscript, two species of genus *Padenia* Moore, 1882 i.e., *P. obliquifascia* Rothschild, 1920 and *P. acutifascia* De Joanis, 1928 are reported for the first time from India. Earlier, *P. obliquifascia* was reported from Sumatra, Java, Thailand, Peninsular Malaysia and Borneo whereas, *P. acutifascia* was reported from Cambodia, Thailand, Vietnam and China. Illustrations of Indian *Padenia* and a world checklist of the genus are provided.

**Keywords:** Andaman Islands, North East India, *P. acutifascia*, *Padenia obliquifascia*

## Introduction

Genus *Padenia* Moore, 1882 was established for its type species *Cyllene transversa* Walker, 1854 from Sri Lanka. The genus is mainly diagnosed by the light forewing with dark bands. The male genitalia are distinguished by reduction of the saccular part of the valva and presence of a long, slender process from the base of the valva costa. This is very variable in form, but usually unequally bifurcate or trifurcate. Ventral to it is a much narrower and shorter rod-like process arising from the center of the base of the valva. Female genitalia are characterized by the broad and trapezoid ductus bursae, bearing irregular field of small spines which are more numerous at junction of corpus bursae; the latter is asymmetric with zone of small spines, continuous with the spines of ductus bursae (Holloway, 2001). The distributional territory of the genus *Padenia* is Indo-Australian tropics (except Australia). The genus is known by 11 species from the world with only two from India.

In the present manuscript, two further species i.e., *Padenia obliquifascia* Rothschild, 1920 and *Padenia acutifascia* de Joannis, 1928 are reported for the first time from India. Illustrations of Indian *Padenia* and a world checklist of the genus are provided.

## Material and Methods

Collection was done from the localities mentioned in material examined. For collection and preservation of adult moths, standard techniques of Lepidopterology have been followed. LEICA microscope model number M165C used for the photography of adults and genitalia. The material used in this paper is deposited in the Lepidoptera Section of Zoological Survey of India, Kolkata, India.

## Results

### Systematic Account

Order LEPIDOPTERA

Family EREBIDAE

Subfamily ARCTIINAE

Tribe **Lithosiini**

Genus *Padenia* Moore, 1882

*Padenia transversa* (Walker, 1854)  
(Figures 1, 2, 8, 9, 10)

1854. *Cyllene transversa* Walker, *List Spec. Lepid. Insects Colln. Br. Mus.*, 2: 544.

\* Author for correspondence

*Type locality:* Sri Lanka

*Material examined:* 01 ♂, Karnataka, Madikeri, 12.417563°N, 75.726894°E, 24.ix.2003, *leg.* Navneet Singh; 02 ♀, Karnataka, Madikeri, 12.417563°N, 75.726894°E 25.ix.2003, *leg.* Navneet Singh; 03 ♀, Karnataka, Madikeri, 12.417563°N, 75.726894°E, 23.xi.2003, *leg.* Navneet Singh; 01 ♂, 01 ♀, Karnataka, Madikeri, 12.417563°N, 75.726894°E, 15.i.2005, *leg.* Navneet Singh; 01 ♀, Karnataka, Madikeri, 12.417563°N, 75.726894°E, 13.xi.2005, *leg.* Navneet Singh; 01 ♀, Karnataka, Madikeri, 12.417563°N, 75.726894°E, 14.xi.2005, *leg.* Navneet Singh; 01 ♂, 05 ♀, Karnataka, Madikeri 12.417563°N, 75.726894°E, 19.xi.2009, *leg.* Rahul Joshi; 01 ♀, Karnataka, Chickmagalur, 13.321630°N, 75.770903°E, 23.xi.2003, *leg.* Rahul Joshi; 01 ♀, Karnataka, Bhagamandala, 12.386843°N, 75.531488°E, 31.vii.2004, *leg.* Navneet Singh; 01 ♀, Karnataka, Ganeshgudi, 15.283461°N, 74.530917°E, 13.xi.2003, *leg.* Navneet Singh; 01 ♂, Karnataka, Ganeshgudi, 15.283461°N, 74.530917°E, 14.x.2005, *leg.* Navneet Singh; 01 ♂, 02 ♀, Karnataka, Ganeshgudi, 15.283461°N, 74.530917°E, 13.ix.2007, *leg.* Navneet Singh; 01 ♂, Karnataka, Ganeshgudi, 15.283461°N, 74.530917°E, 13.ix.2009, *leg.* Rahul Joshi; 03 ♂, Karnataka, Kulagi, 15.165658°N, 74.635759°E, 27.x.2009, *leg.* Rahul Joshi; 03 ♀, Karnataka, Castle Rock, 15.399728°N, 74.341595°E, 31.x.2009, *leg.* Rahul Joshi; 01 ♂, 01 ♀, Kerala, Vallakadavu, 8.477099°N, 76.927507°E, 09.ix.2004, *leg.* Navneet Singh; 02 ♂, 02 ♀, Kerala, Vallakadavu, 8.477099°N, 76.927507°E, 10.ix.2004, *leg.* Navneet Singh; 02 ♂, 02 ♀, Kerala, Kumily, 9.603219°N, 77.167526°E, 24.xi.2008, *leg.* Rahul Joshi; 01 ♂, 02 ♀, Kerala, Vadaserikara, 9.344761°N, 76.83487°E, 7.ix.2004, *leg.* Navneet Singh; 01 ♀, Kerala, Vadaserikara, 9.344761°N, 76.83487°E, 11.viii.2017, *leg.* H.S. Datta; 01 ♀, Kerala, Neyyar, 8.533929°N, 77.150663°E, 9.viii.2017, *leg.* Santosh Singh; 02 ♀, Kerala, Konni, 9.231558°N, 76.844723°E, 10.viii.2017, *leg.* H.S. Datta; 01 ♂, Kerala, Konni, 9.231558°N, 76.844723°E, 11.viii.2017, *leg.* Santosh Singh; 01 ♂, 01 ♀, Kerala, Periyar, 9.597379°N, 77.165479°E, 12.viii.2017, *leg.* H.S. Datta; 03 ♀, Kerala, Periyar, 9.597379°N, 77.165479°E, 13.viii.2017, *leg.* Santosh Singh; 03 ♂, Kerala, Parambikulam, 10.444326°N, 76.812204°E, 2.xi.2017, *leg.* Santosh Singh; 02 ♀, Kerala, Mukkali, 11.444326°N, 76.812204°E, 16.viii.2017, *leg.* Santosh Singh; 02 ♀, Kerala, Mukkali, 11.444326°N, 76.812204°E, 5.xi.2017, *leg.* Santosh Singh; 01 ♀, Kerala,

Mukkali, 11.444326°N, 76.812204°E, 6.xi.2017, *leg.* Santosh Singh; 02 ♀, Tamil Nadu, Gudalur, 11.498372°N, 76.469256°E, 27.ix.2003, *leg.* Navneet Singh; 01 ♀, Tamil Nadu, Gudalur, 17.xi.2005, *leg.* Navneet Singh; 01 ♂, 01 ♀, Tamil Nadu, Kotagiri, 11.430095°N, 76.868165°E, 22.xi.2005, *leg.* Navneet Singh; 01 ♂, 01 ♀, Andhra Pradesh, Vishakhapatnam, 17.973333°N, 83.226874°E, 6.ix.2018, *leg.* Navneet Singh.

*Diagnosis:* *P. transversa* is distinct due to broader bands of forewing. Additionally, the inner side of the postmedial band of forewing has a small protrusion near upper angle of cell and antemedial band is slightly indented at middle.

*Distribution in India:* Tamil Nadu (Nilgiris), Odisha (Ganjam), Andamans (Hampson, 1894, 1900), Karnataka, Kerala, Andhra Pradesh (Present study). *Elsewhere:* Sri Lanka, Sumatra (Hampson, 1900; Holloway, 2001).

*Remark:* Except the South India, Andaman, Sri Lanka and Sumatra, *P. transversa* is also recorded from China (Fang, 2000) and Manipur, NE India (Chaudhary, 2004; Singh *et al.*, 2014). Fang (2000) provided photograph of adult which clearly resembles *Padenia duplicana*, but not with the *P. transversa*. The diagnosis of Chaudhary (2004) indicates that the author is referring to *P. duplicana*. Singh *et al.* (2014) listed the distribution of *P. transversa* as North East India by referring Chaudhary (2004), only. Furthermore, the authors have examined the collection of *Padenia* housed in ZSI, Kolkata and found none of the specimen from North East India which belongs to *P. transversa*. Therefore, it is concluded that *P. transversa* is restricted to South India (extended extremely to Ganjam), Andamans, Sri Lanka and Sumatra only and the records of *P. transversa* from China, and North East India are due to wrong identification.

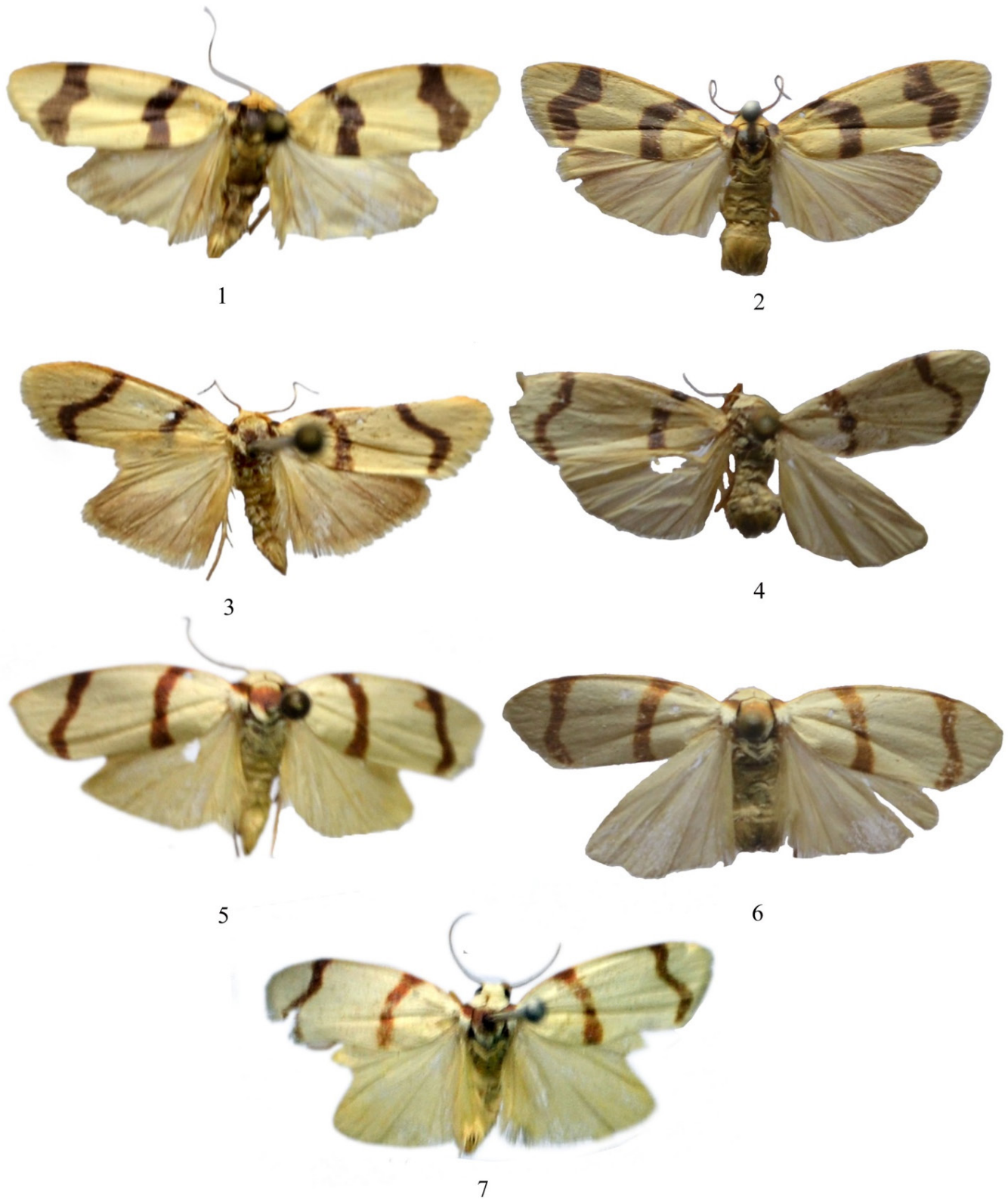
***Padenia obliquifascia* Rothschild, 1920**

(Figures 5, 6, 14, 15, 16)

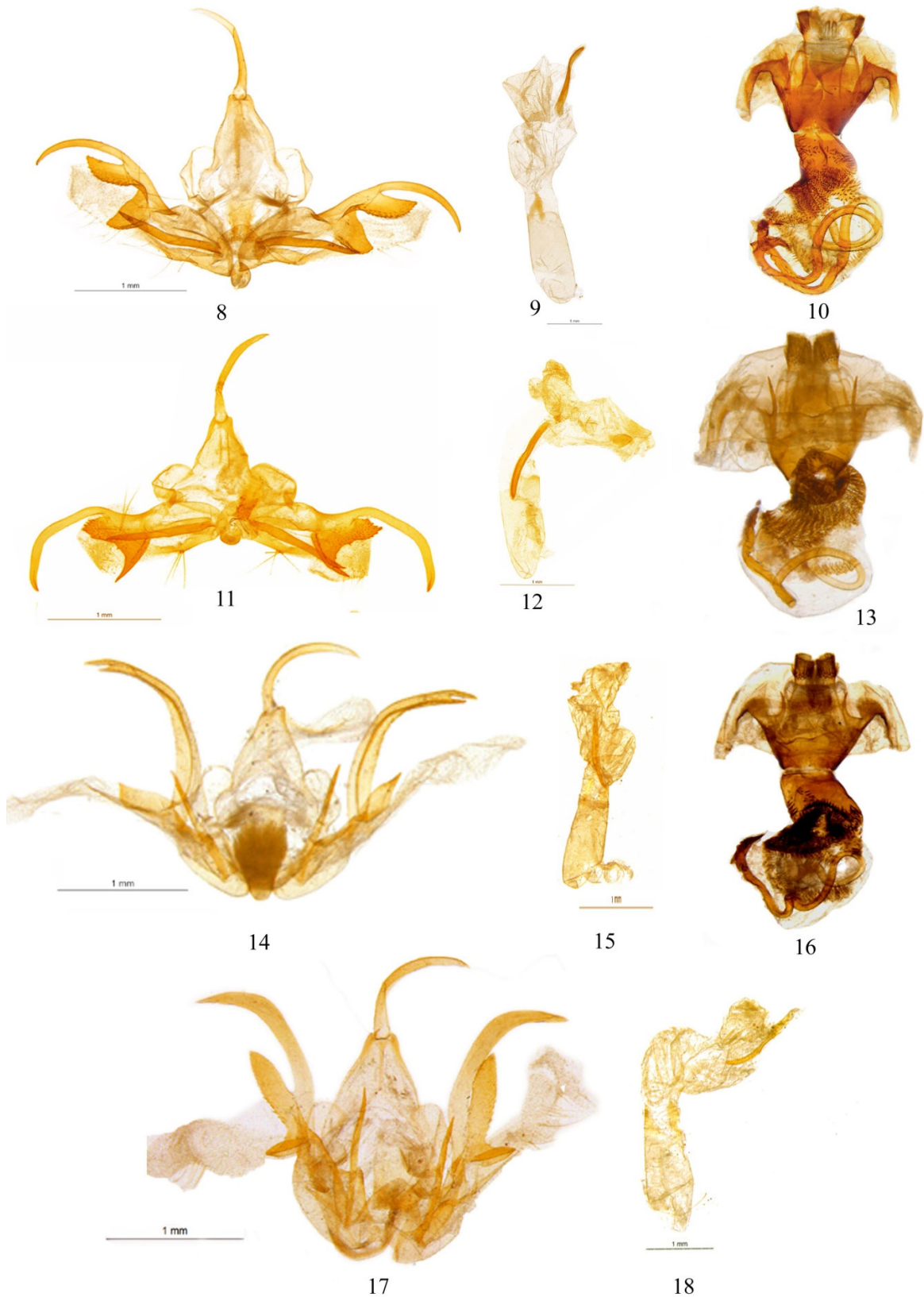
1920. *Padenia obliquifascia* Rothschild, *J. Fed. Malay States Mus.*, 8(3): 111.

*Type Locality:* Sumatra

*Material examined:* 01 ♂, Andaman & Nicobar Islands, Betapur, 12.506242°N, 92.800488°E, 04.i.2018, *leg.* Santosh Singh; 01 ♂, 01 ♀, Andaman & Nicobar Islands, Baratang, 12.261356°N, 92.800488°E, 08.i.2018, *leg.* H.S. Datta; 01 ♂, Andaman & Nicobar Islands, Swarajdweep,



**Figures 1–7.** *Padenia* spp. adults 1. *P. transversa* ♂; 2. *P. transversa* ♀; 3. *P. acutifascia* ♂; 4. *P. acutifascia* ♀; 5. *P. obliquifascia* ♂; 6. *P. obliquifascia* ♀; 7. *P. duplicana* ♂ give.



**Figures 8–18.** *Padenia* spp.. adults.. Male & female genitalia; 8, 9 & 10. *P. transversa*; 11, 12 & 13. *P. acutifascia*; 14, 15 & 16. *P. obliquifascia*; 17 & 18. *P. duplicana*.

11.973333N, 92.989805°E, 10.i.2018, leg. H.S. Datta.

**Diagnosis:** This and the next three species are closely similar due to narrower bands on the forewing, of which, the antemedial band is smoothly curved (whereas in *P. transversa*, forewing bands are broader and the antemedial band is indented at middle). *Padenia obliquifascia* is distinct from its other closely similar species *i.e.*, *P. acutifascia* and *P. duplicana* by the postmedial band of forewing being less sigmoid. In the male genitalia, *P. obliquifascia* is distinct from all its other Indian congeners by the bifid costal process. In female genitalia, neck of corpus bursa is broader than in other congeners, densely scobinated, spines covered about 1/3 of corpus bursae.

**Distribution in India:** North Andaman (Present study). **Elsewhere:** W. Sumatra (Rothschild, 1920), Java, Borneo (Holloway, 2001), Thailand (Černý & Pinratana, 2009); Malaysia (Bucsek, 2012).

***Padenia acutifascia*** de Joanis, 1928

(Figs. 3, 4, 11, 12, 13)

1928. *Padenia acutifascia* de Joannis, *Ann. Soc. Ent. Fr.*, **97**: 260.

**Type Locality:** Vietnam (Hong Suphi)

**Material examined:** 01 ♀, Arunachal Pradesh, Ziro, 27.541993°N, 93.824248°E, 29.viii.2005, leg. Navneet Singh; 01 ♀, Meghalaya, Nehu, 25.616005°N, 91.899510°E, 9.ix.2015, leg. D.P. Singh; 01 ♀, Mizoram, Zotlang, 23.741174°N, 92.708244°E, 15.iv.2017, leg. H.S. Datta; 01 ♂, Mizoram, Reiek, 23.694457°N, 92.605700°E, 19.iv.2017, leg. H.S. Datta.

**Diagnosis:** *Padenia acutifascia* is closely similar to *P. duplicana* but is distinct due to fuscous hindwing. In male genitalia, the costal process of valva is asymmetrically trifurcated: dorsal one slender, rod shaped and the basal ventral process bifid to form crab claw like structure. In female genitalia, ductus bursae more convoluted and broader, spines covered about 1/2 section of corpus bursae.

**Distribution in India:** Arunachal Pradesh, Mizoram, Meghalaya (Present Study). **Elsewhere:** China (Fang, 2000); Vietnam, Thailand (Černý & Pinratana, 2009); Cambodia (Bae *et al.*, 2016).

***Padenia duplicana*** (Walker, 1863)

(Figures 7, 17, 18)

1863. *Tospitis duplicana* Walker, *List Spec. Lepid. Insects Colln. Br. Mus.*, **28**: 429.

**Type locality:** Sarawak, Borneo

**Diagnosis:** Discussed in the diagnosis of earlier species.

**Material examined:** 01 ♂, Arunachal Pradesh, Deomali, 27.192749°N, 95.469239°E, 05.ix.2005 leg. Navneet Singh; 04 ♂, Arunachal Pradesh, Deomali, 27.192749°N, 95.469239°E, 06.ix.2005, leg. Navneet Singh; 02 ♂, Meghalaya, Baghmara, 25.210177°N, 90.634310°E, 12.iv.2009, leg. Rahul Joshi.

**Distribution in India:** Arunachal Pradesh (Kirti & Singh, 2015); Meghalaya (Present study). **Elsewhere:** Myanmar (Hampson, 1900); Philippines, Sulawesi, Sundaland, Thailand (Černý & Pinratana, 2009); Cambodia (Bae *et al.*, 2016); Borneo (Holloway, 2001); Malaysia (Bucsek, 2012).

## Discussion

The present study deals with the new records of two Lithosiini from India: *P. obliquifascia* and *P. acutifascia*. The former species *i.e.*, *P. obliquifascia* is distributed in Java, Sumatra, Borneo, Thailand, Peninsular Malaysia and mainly flies from the lowland forests to an altitude of about 1670 m (Holloway, 2001). In India, *P. obliquifascia* is reported to be distributed at an elevational range of 36 m to 100 m above mean sea level in evergreen and semievergreen forest of Baratang, Betapur and Swarajdweep (Havlock) of Andaman Islands. The second newly recorded species, *P. acutifascia* shows a broad array of distribution in the subtropical and temperate forests of North East India *i.e.* in Arunachal Pradesh (Ziro), Mizoram (Zotlang, Reiek), Meghalaya (Nehu) and West Bengal (Kalimpong) with an elevational range of 1200 m to 1600 m. The distribution of *P. acutifascia* in India is so far restricted to NE India only. With the present study, the genus *Padenia* will be known by four Indian species, *P. transversa*, *P. obliquifascia*, *P. acutifascia* and *P. duplicana*.

### Checklist of genus *Padenia* (Walker, 1854)

#### 1. *Padenia acutifascia* De Joanis, 1928

1928. *Padenia acutifascia* Joanis, *Ann. Soc. Ent. Fr.*, **97**: 260-261.

**Distribution:** India (Arunachal Pradesh, Mizoram, Meghalaya (Present study)); China (Fang, 2000), Vietnam,

Thailand, (Černý & Pinratana, 2009), Cambodia (Bae *et al.*, 2016).

**2. *Padenia bifasciata*** Rothschild, 1912

1912. *Padenodes bifasciatus* Rothschild, *Nov. Zool.*, **19**: 234.

*Distribution*: New Guinea (Rothschild, 1912).

**3. *Padenia cupreifascia*** Rothschild, 1912

1912. *Garudinia cupreifascia* Rothschild, *Nov. Zool.*, **9**: 233.

*Distribution*: Sumbawa (Indonesia) (Rothschild, 1912), Tambura (Hampson, 1914).

**4. *Padenia duplicana*** (Walker, 1863)

1863. *Tospitis duplicana* Walker, *List spec. lepid. Ins. Colln. Br. Mus.*, **28**: 429.

*Distribution*: India (Arunachal Pradesh (Kirti & Singh, 2015); Philippines, Sulawesi, The Sundaland, Thailand (Černý & Pinratana, 2009), Cambodia (Bae *et al.*, 2016); Borneo (Holloway, 2001).

**5. *Padenia intermedia*** Eecke, 1929

1929. *Padenia intermedia* Eecke, *Tre. Rec. Tra. Zool. Hyd. Oce.*, **7**: 346.

*Distribution*: Buruana (Eecke, 1929).

**6. *Padenia moluccensis*** Eecke, 1920

1920. *Padenia moluccensis* Eecke, *Zool. Med.*, **5**(1): 135.

*Distribution*: Indonesia (North Halmahera) (Eecke, 1920).

**7. *Padenia obliquifascia*** Rothschild, 1920

1920. *Padenia obliquifascia* Rothschild, *J. Fed. Malay States Mus.*, **8**(3): 111.

*Distribution*: India (North Andaman (Present study); Sumatra, Java, Borneo, Thailand (Černý and Pinratana, 2009), Malaysia (Bucsek, 2012).

**8. *Padenia sordida*** Rothschild, 1912

1912. *Padenia sordida* Rothschild, *Nov. Zool.*, **19**: 234.

*Distribution*: Malay Peninsula Malaysia (Bucsek, 2012).

**9. *Padenia transversa*** (Walker, 1854)

1854. *Cyllene transversa* Walker, *Cat. Lep. Het. Br. Mus.*, **2**: 544.

*Distribution*: India: Tamil Nadu (Nilgiris), Odisha (Ganjam), Andamans (Hampson, 1894, 1900), Karnataka, Kerala, Andhra Pradesh (Present study); Sri Lanka (Holloway, 2001).

**10. *Padenia triseparata*** Debauche, 1938

1938. *Padenia triseparata* Debauche, *Bull. Mus. Roy. Hist. Nat. Belg.*, **14**(9): 6-8.

*Distribution*: Belgium (Brussels) (Debauche, 1938).

**11. *Padenia unifasciana*** Strand, 1922

1922. *Padenia unifasciana* Strand, *Lep. Cat. Arct., Litho.*, **26**: 649-650.

*Distribution*: New Guinea (Strand, 1922).

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