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A new report, distribution, host plants, and biological management of the Common Owlet Moth *Spirama helicina* (Hubner, 1831) (Lepidoptera: Erebidae: Catocalinae) from Aligarh, Uttar Pradesh

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Research Article

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ABSTRACT

The new record of *Spirama helicina* (Hubner, 1831), the Common Owlet Moth from Aligarh (Uttar Pradesh), and its systematic account, range, life cycle, host plants, and biological control are discussed in this communication.

Keywords: Aligarh, Common Owlet Moth, New Record

INTRODUCTION

Very little is known about the moth fauna in Aligarh, Uttar Pradesh. Husain et al. (2020) documented the range, host plants, management strategies, and systematic account of *Spoladea recurvalis* (Fabricius, 1775). Other elements of certain moths, including *Earias vitella*, *Helicoverpa armigera*, *Spodoptera littoralis*, *S. litura*, and *Plutella xylostella*, were covered by Ahmad et al. (2009), Ahmad & Ansari (2010), Ali & Choudhury (2009), and Muslim et al. (2017). This is the first report from Aligarh (Uttar Pradesh) of a vividly colored moth that was recently seen in Hayat Manzil, Qila Road, Aligarh. Upon study, it was discovered to be *Spirama helicina* (Hubner, 1831), the Common Owlet Moth, which is a member of the family Erebidae and has never been seen before.

Study site: Aligarh's Hayat Manzil

Location: Aligarh is situated between the Ganga and Yamuna rivers in western Uttar Pradesh at coordinates 27.88° N 78.08° E, at an elevation of around 178 meters. Hayat Manzil is a residential kothi/bungalow on Qila Road in Aligarh, next to Flyover Shamshad Market and AhmadI Blind School.

Climate: humid subtropical climate. The monsoon season begins in late June and lasts until early September, with high humidity of 75% in August and average annual rainfall of 728 mm with a maximum of 235 mm in August. Summers (April–June) are hot, with a maximum temperature of 47°C in May; winters (December–February) are cool, with a minimum temperature of 0°C in January and heavy fog.

Flora: In and around the research site (Er. T. R. K. Sherwani and colleagues, Aligarh; Husain et al., 2020; Saddam et al., 2017):

Trees: *Annona squamosa* (Fruta-do-conde), *Araucaria columnaris* (Araucária de Cook), *Artocarpus heterophyllus* (Jaca), *Azadirachta indica* (Neem), *Citrus limon* (Limão), *Citrus maxima* (Pomelo), *Cordia mixa* (Lasura), *Cycas revoluta* (Cica), *Dalbergia sissoo* (Palo Santo indiano), *Delonix regia* (Flame of Forest, Gulmohar), *Dyopsis lutescens* (Palmeira Areca), *Ficus carica* (Figo), *F. elastica* (Árvore da borracha), *F. religiosa* (Peepal), *Limonia acidissima* (Maçã-de-marmelo), *Mangifera indica* (Manga), *Mimusops elengi* (Maulshree), *Morus alba* (Amoreira branca), *Musa* sp. (Banana), *Carica papaya* (Papaya), *Phoenix dactylifera* (Date Palm), *Phyllostachys aurea* (Golden Bamboo), *Pithecellobium dulce* (Manila Tamarind), *Psidium guajava* (Guava), *Punica granatum* (Pomegranate), *Saraca asoca* (Asoka), *Vachellia nilotica*/Acacia arabica (Babool), *Wodyetia bifurcata* (Fox-tail Palm), *Ziziphus mauritiana* (Jujube) etc. **Flowering Plants:** *Bougainvillea* sp., *Lilium* sp. (Day Lily, Spider Lily, Monsoon Lily, Ball Lily), *Calendula* sp., *Cestrum nocturnum* (Raat-Rani), *Chrysanthemum* sp., *Combretum indicum* (Rangoon Creeper), *Helianthus annuus* (Sunflower), *Hibiscus rosa-sinensis* (Gurhal), *Ipomea cairica* (Railway Creeper), *Jasminum sambac* (Bela), *Lawsonia inermis* (Hina), *Plumeria alba* (Pagoda or Wood Rose), *Rosa* sp. (Rose), *Pyrostegia venusta* (Flaming Trumpet), and *Tagetes* sp. (Marig).

Vegetables: *Abelmoschus esculentus* (okra, ladyfinger), *Allium cepa* (onion), *A. sativum* (garlic), *Beta vulgaris* (beet), *Brassica oleracea botrytis* (cauliflower), *B. oleracea italic* (broccoli), *B. oleracea* var.? (cabbage), *Brassica rapa* (turnip), *Capsicum annuum* (chilli), *Coriandrum sativum* (cucurbits), *Cucurbita pepo* (cucumber, Kheera, or Kakri), *Lagenaria siceraria* (bottle gourd), *Luffa acutangula* (sponge gourd), *Mormodica charantia* (bitter).

***SPIRAMA HELICINA* (HUBNER, 1831)**

Common Owlet Moth

Systematic Account, Distribution and Life Cycle Synonymy:

Hubner, *Speiredonia helicina*, 1831 (1824). *Zutr. Samml. exot. Schmett.*, 3: 14, pl. 76, figs. 437, 438 (type-locality: Berbic [mistake]). Guenee, *Spirama japonica* (1852). *Hist. nat. Ins., Spec. gen. Lepid.*, 7 (Noct. 3): 195 (type-locality: Japan). Butler, *Spirama aegrota*. *Trans. Ent. Soc. Lond.*, 1881: 197 (type-locality: Tokyo, Japan). Hampson, *Spirama retorta* (partim, brilliant form), *Faun.*, 1894. *Moths, Brit. India*, 2: 553-554.

Gurule (2013) *Spirama retorta* (partim, light form). *Moth taxonomy (Lepidoptera: Heterocera) from Maharashtra, India* (Ph. D. Thesis, University of Pune, India). Moore, *Spirama helicina*. *Proc. Zool. Soc. Lond.*, 1878 (4): 849; Kyoun-Sik et al., 2005. *J. Ecol.* Gurule et al., 2010; *Field. Biol.*, 29 (4): 377. Gurule & Nikam, 2011; *Flora and Fauna*, 16 (2): 297, 302, fig. 56. Sivasankaran et al., 2012; *Flora and Fauna*, 17 (1): 172. *Check List*, 8 (4): 761-762; Sivasankaran & Ignacimuthu, 2014. *J. Bombay nat.* Sivasankaran et al., 2017; *Hist. Soc.*, 111 (3): 208. Paul et al., 2017; *Check List*, 13 (6): 1106. *Current Research International Journal*, 9 (8): 56211. Sondhi & Sondhi, 2016; *Spirama cf. retorta*. *Threatened Taxa Journal*, 8 (5): 8762, 8772, fig. 162

Sighting: 1 example (female), 11.vi.2020, Hayat Manzil, Qila road, near Aligarh Muslim University Campus, Aligarh, by Er. T. R. K. Sherwani.

Classification: Class Insecta, order Lepidoptera Linnaeus, 1759; superfamily Noctuoidea Latreille, 1809; family Erebidae Leach, 1815; subfamily Catocalinae Boisduval, 1828; tribe Hypopyrini Guenee, 1852; genus *Spirama* Guenee, 1852 (based on molecular phylogeny, according to Zahiri et al., 2011).

Note: Different researchers have approached the genus' categorization in different ways. Hampson (1894), classified under the Quadrifinae subfamily of the Noctuidae family. Noctuidae is also covered by Kyoun-Sik et al. (2006), *Animaldiversity*, *Discoverlife*, and other books. *Mothsofindia*, *nic.funet.fi*, Shubhalaxmi et al. (2011), Shubhlaxmi (2018), Sivasankaran & Ignacimuthu (2014), Mishra et al. (2016), Sondhi & Sondhi (2016), Sivasankaran et al. (2017), Singh et al. (2018), Gurule & Nikam (2011, 2013). Although they did not address the subfamily, Paul et al. (2016, 2017) and Singh & Ranjan (2016) also took into consideration the family Erebidae. Pathre et al. (2019) classified the family Erebidae into the subfamily Arctinae. Sajap et al. (1997), Sajap & Samad (2000), Gurule et al. (2010), Kirti et al. (2011), Sivasankaran et al. (2012), Kirti & Singh (2013), Sanyal et al. (2013), Uniyal et al. (2013), Sekhon & Singh (2015), and *indiabiodiversity*



preserved in the Noctuidae (subfamily Catocalinae).

Figure 1. *Spirama helicina*, the Common Owlet Moth (Courtesy: Er. T. R. K. Sherwani)

Distribution:

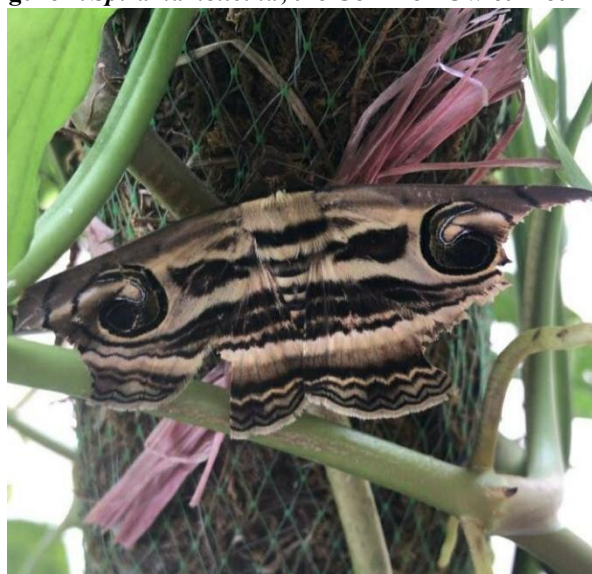
Aligarh (Uttar Pradesh): Hayat Manzil, Qila road, Aligarh (new record).

Rest of India: West Bengal, Assam, Delhi, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Odisha, Punjab, Sikkim, Tamil Nadu, Tripura, and Uttarakhand.

Elsewhere: Bangladesh, China, Hong Kong, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, the Philippines, Russia, Singapore, Sri Lanka, Taiwan, Thailand, and Vietnam

Altitudinal Range: Vellagavi 1343-Doddabetta 2624 m in the Tamil Nadu portion of the Western Ghats; Nilgiri Hills, Nilgiri dist. 2280-2623 m; Kodaikanal, Dindigul dist. 1343-2295 m (Sivasankaran et al., 2017).

Figure 2. *Spirama helicina*, the Common Owlet Moth



(Courtesy: Er. T. R. K. Sherwani)

Diagnostic Features:

Male: Yellowish-brown with a distinctive color pattern; antennae fasciculate; head and collar dark chestnut brown; thorax paler with dark bands; abdomen crimson with black medial stripe; fore-wing with a large "inverted comma" mark, with ochreous and black edges and some white on the inner edge of the "tail," center fuscous black, resembling an eye; two crenulated sub-marginal black lines and two more prominent lines within the margin; hind-wing with a fold on the inner area that contains an erectile ridge of long hair with indistinct sub-marginal lines. Female: brighter with a somewhat bigger "inverted comma" mark; crimson abdomen with triangular black markings and black cross bands; conspicuous crenulated black sub-marginal lines on both wings; brilliant reddish-orange underside with lines

Wing-span: Male 64-76 mm, female 66-88 mm (as *S. retorta* including *helicina*, Hampson, 1894; projectnoah.org); male 68 mm, female 63 mm (as *S. retorta*, Gurule, 2013); 60-70 mm (as *S. helicina*, Wikipedia; as *S. retorta*, thehindu.com); male 64-76 mm, female 66-88 mm (as *S. cf. helicina*, Shubhlaxmi, 2018).

Life-span: 36–37 days (thehindu.com, *S. retorta*).

Deimatic Display: The color pattern on the wings at rest, which resembles a snake's head with large eyes and a slightly open mouth, may be designed to frighten off or temporarily divert prospective predators or provide a chance for escape.

LIFE CYCLE: Since *S. retorta* and *Spirama helicina* are synonyms, the former's life cycle has not been investigated independently. When fed on *Acacia auriculiformis*, the Ear-leaf Acacia, and *A. mangium*, the Black Wattle, Sajap & Samad (2000) observed 412 and 255 eggs, 22.10 and 24.83 days for the larval period, 10.51 and 11.32 days for the pupal period, and 36.51 and 37.94 days for the adult life-span. However, the Muluccan *Albizia* larvae did not survive when fed *Acacia crassicarpa*, the Red Wattle, and *Falcataria moluccana* (= *Paraserianthes falcateria*).

HOST PLANTS: (Sajap & Samad, 2000; Shubhlaxmi, 2018; Sajap et al., 1997). The caterpillars and larvae consume members of the Fabaceae family, including *Acacia auriculiformis* (Ear-pod Wattle), *A. crassicarpa* (Red Wattle), *A. mangium* (Black Wattle), *Albizia lebbeck* (Lebbeck), *Falcateria moluccana* (= *Paraserianthes falcateria*) (Muluccan Albizia), *Senegalia pennata* (= *Acacia pennata*) (Climbing Wattle), and *Senna surattensis* (Glossy Shower).

BIOLOGICAL CONTROL: Sajap et al. (1997) found *Eocanthecona furcellata* (= *Cantheconidea furcellata*) and *Sycanus leucomesus* (Hemiptera), *Vespa affinis indosinensis* (Hymenoptera) and *Mallada basalis* (Neuroptera) feeding on soft-bodied arthropods including *Spirama retorta*. These predators may also be attacking *S. helicina* as both these species mostly co-exist. Natural enemies generally play an important role in controlling the population of insect pests. The tachinid flies (Diptera), *Blepharella* sp., *Carcelia* sp. and *Exorista* sp. parasitize larvae and pupae of insect pests (Sajap et al., 1997). The tachinids, being less host specific than hymenopteran parasitoids (Kalshoven, 1981), are likely to parasitize *S. helicina* too.

REMARKS: Although Hampson (1894) regarded *Speiredonia helicina* Hubner, 1831 as a synonym of *Spirama retorta* (Clerck, 1764), he noted that "the *helicina* form is more brightly colored; female with the ochreous submarginal line of hind wing crenulate." Based on these traits and other distinctions, *helicina* is currently recognized as a legitimate species (Kyoung-Sik et al., 2006; Gurule et al., 2010; Gurule & Nikam, 2011; Sivasankaran et al., 2012; Sivasankaran & Ignacimuthu, 2014; Paul et al., 2017; Sivasankaran et al., 2017 and others). Although Hampson (1894) regarded *Speiredonia helicina* Hubner, 1831 as a synonym of *Spirama retorta* (Clerck, 1764), he noted that "the *helicina* form is more brightly colored; female with the ochreous submarginal line of hind wing crenulate." Based on these traits and other distinctions, *helicina* is currently recognized as a legitimate species (Kyoung-Sik et al., 2006; Gurule et al., 2010; Gurule & Nikam, 2011; Sivasankaran et al., 2012; Sivasankaran & Ignacimuthu, 2014; Paul et al., 2017; Sivasankaran et al., 2017 and others).

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