

FIELD NOTE

A Note on the Occurrence of *Pieris canidia* (Lepidoptera: Pieridae) on Garden Nasturtium from Northeast India

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Abstract

The Asian Cabbage White, *Pieris canidia* (Sparrman, 1768) (Lepidoptera: Pieridae), is primarily known to utilise plants of the family Brassicaceae as larval hosts. During a field survey in January 2026 on the campus of ICAR-Indian Agricultural Research Institute, Assam, larvae of *P. canidia* were observed feeding on the leaves of Garden Nasturtium, *Tropaeolum majus* L. (Tropaeolaceae), grown in pots. The larvae were reared and the adults were identified based on external morphology and examination of the female genitalia. The observation confirms the utilisation of *T. majus* as a larval host by *P. canidia* and adds to the growing list of non-brassicaceous plants utilised by this species. The present observation also provides an updated review and analysis of the trophic spectrum of known larval host plants of *P. canidia*, encompassing both brassicaceous and non-brassicaceous hosts.

Keywords: Host-plant association; Larval feeding; Trophic spectrum; Tropaeolaceae; *Tropaeolum majus*; Pierinae; Host range; Assam; Butterfly ecology

Introduction

The genus *Pieris* Hübner, 1819 was established with *Papilio brassicae* Linnaeus, 1758, described from Sweden, as its type species. The genus currently comprises approximately 38 species worldwide (Häuser et al. 2026), of which 10 species are recorded from India (Smetacek 2025). The larvae of *Pieris* are predominantly associated with plants of the order Brassicales, particularly members of the family Brassicaceae (the mustard or cabbage family). Brassicaceous plants are characterised by the presence of glucosinolates and other secondary metabolites that serve as chemical defences against herbivory. Larvae of *Pieris* have evolved specialised physiological mechanisms that enable them to tolerate, detoxify, and utilise these compounds, facilitating their exploitation

of brassicaceous hosts. However, host-plant use varies among *Pieris* species, with individual species exhibiting preferences for particular groups of brassicaceous plants. Such host-plant specificity is influenced, at least in part, by differences in the chemical composition of their host plants (Braby & Trueman 2006; Okamura et al. 2019).

Although members of *Pieris* are strongly associated with Brassicaceae, several species are known to utilise plants outside their principal host-plant family. Host-plant associations can vary geographically and among closely related species, and occasional records on non-brassicaceous plants may provide useful insights into the ecological plasticity of these butterflies. Published records indicate that the larvae of *P. canidia* utilise a range of brassicaceous plants, but non-

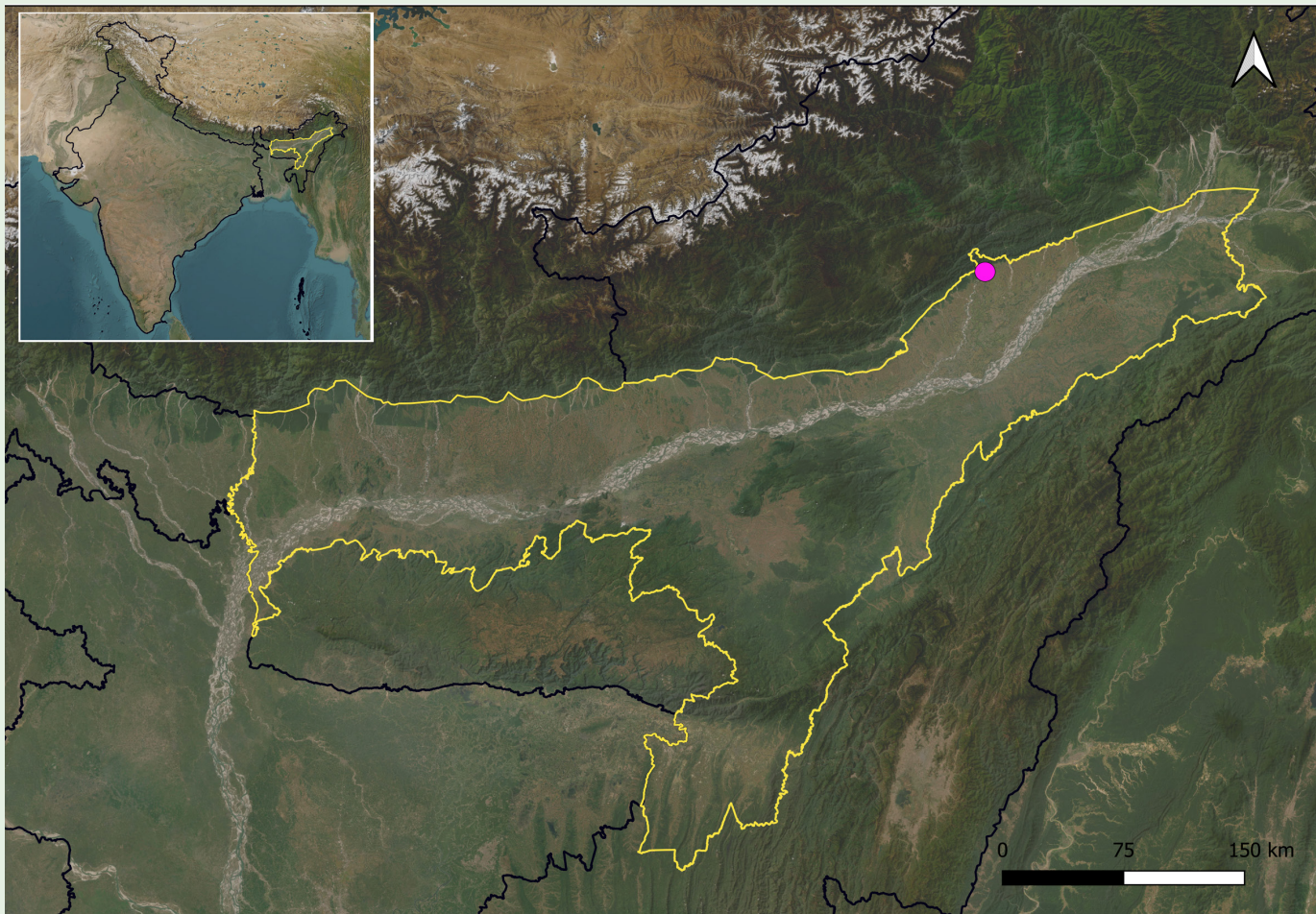


Figure 1. Map depicting the survey location, ICAR-Indian Agricultural Research Institute, Assam, India

brassicaceous hosts belonging to Cleomaceae, Apocynaceae, Tropaeolaceae and Amaranthaceae have also been documented (Thapa et al. 2025). Among these, records involving Tropaeolaceae are particularly noteworthy because Garden Nasturtium, *Tropaeolum majus* L., is a commonly cultivated ornamental plant and is taxonomically distant from the principal brassicaceous hosts of *Pieris*.

During a field survey on the campus of ICAR-Indian Agricultural Research Institute, Assam, we encountered larvae of *P. canidia* feeding actively on potted *T. majus*. The larvae were collected and reared to adults, allowing confirmation of their identity. The present observation also provides an updated review of the known larval host plants of *P. canidia* and an analysis of its trophic spectrum,

encompassing both brassicaceous and non-brassicaceous hosts.

Taxonomic Position

Class Insecta Linnaeus, 1758

Order Lepidoptera Linnaeus, 1758

Superfamily Papilionoidea Latreille, 1802

Family Pieridae Swainson, 1820

Subfamily Pierinae Swainson, 1820

Tribe Pierini Swainson, 1820

Genus *Pieris* Hübner, 1819

Type species: *Papilio brassicae* (Linnaeus, 1758); by original designation.

Species ***Pieris canidia* (Sparrman, 1768)**

Common name: Indian Cabbage White or Asian Cabbage White.



Figure 2. Caterpillars of *Pieris canidia* on leaves of Garden Nasturtium.

Subspecies

Pieris canidia is represented by two recognised subspecies in India: *Pieris canidia* subsp. *canis* Evans, 1912, distributed in Kerala, Karnataka and Tamil Nadu; and *Pieris canidia* subsp. *indica* Evans, 1926, recorded from Ladakh, Jammu and Kashmir, Northeast India, Delhi, Rajasthan, Punjab, Haryana, Uttar Pradesh, Bihar, Odisha, Chhattisgarh, Madhya Pradesh and Gujarat (Smetacek 2025).

Observation and Examination

During field surveys conducted in January 2026 on the campus of ICAR–Indian Agricultural Research Institute (ICAR–IARI), Assam (Figure 1), caterpillars were observed (Figure 2) feeding on the leaves of Garden Nasturtium, *Tropaeolum majus* L. (Tropaeolaceae), grown in pots. Approximately one to three larvae were observed on each plant, causing irregular defoliation of the leaves. Late-instar caterpillars were collected and reared on

fresh leaves of the same host plant in a rectangular plastic container (22 × 15 × 6 cm) at room temperature until pupation and adult emergence. The larvae pupated (Figure 3) after approximately 5–7 days, and adults (Figure 4) emerged 8–10 days later.

Adult specimens were examined under a Quasmo® SZB 65A stereo-zoom microscope. Female genitalia were prepared by macerating the abdomen in 10% KOH for 5–7 minutes, followed by rinsing and cleaning in 50% ethanol. Images of the live caterpillar, pupa and adult habitus were



Figure 3. Pupae of *Pieris canidia*



Figure 4. Adult Habitus of *Pieris canidia* (scale bar: 1 cm)

taken using a Sony® DSC-HX400V digital camera equipped with a Raynox® DCR-250 macro lens. Images of the female genitalia were obtained using a Quasmo® ULTRACAM 5.0 MP microscope camera (UC-5) attached to the same microscope. Multiple images were captured at different focal depths and subsequently stacked and post-processed using Adobe Photoshop®. The dissected genitalia were preserved in glycerol in a vial and stored with the corresponding specimen. The examined specimens are deposited in the insect reference collection of ICAR–Indian Agricultural Research Institute, Assam. The collection locality map (Figure 1) was prepared using QGIS v. 3.24.3 (Tisler) (QGIS Development Team 2022). A bipartite network illustrating the trophic spectrum of the species and its subspecies was generated using RAWGraphs 2.0 (alluvial diagram module) and subsequently post-processed in Adobe Illustrator® v. 27.0 (Windows).

Material Examined

1 (female), India: Assam, Gogamukh, IARI–Assam campus, 27°30'09"N, 94°17'54"E, 127mt., 10.i.2026, Kishore Chandra Sahoo (IARI–Assam–LEP–PIE–01); 1 (female), same as previous, 16.i.2026 (IARI–Assam–LEP–PIE–02).

Diagnosis

The species closely resembles *Pieris rapae* (Linnaeus, 1758), but can be distinguished by

the following combination of female genitalial characters (Figure 5): corpus bursae large and spherical; signum nearly bilobed, disc-shaped, and bearing radially arranged, tooth-like scobinations; and a crescent-shaped sclerotized patch present at the junction of the corpus bursae and ductus bursae (Kirti et al. 2020).



Figure 5. Female genitalia of *Pieris canidia*

Host Range

The Asian Cabbage White, *Pieris canidia*, is principally associated with plants of the family Brassicaceae during its larval stage. However, its larvae have also been reported to utilise non-



Figure 6. Associated host plants and trophic spectrum of the two different subspecies of *Pieris canidia*.

brassicaceous host plants belonging to the families Cleomaceae, Apocynaceae, Tropaeolaceae and Amaranthaceae. Thapa et al. (2025) recently summarised the known larval host plants associated with the two recognised subspecies of *Pieris canidia*. The currently documented host-plant records are presented in Table 1 and Figure 6.

Conclusion

The present observation documents the feeding and successful development of *Pieris*

canidia on Garden Nasturtium, *Tropaeolum majus*, in Assam. Although *P. canidia* is predominantly associated with Brassicaceae, its ability to utilise plants from different families indicates a degree of flexibility in larval host selection. The successful rearing of larvae to adults and confirmation of the adults through female genitalia examination provide reliable evidence for this association. Further observations from different localities and systematic host-plant surveys may reveal whether

Table.1 Host plants of the two subspecies of *Pieris canidia* (Updated after Thapa et al. 2025).

Subspecies	Host Plants	Family	References
<i>Pieris canidia indica</i>	<i>Brassica nigra</i> (L.)	Brassicaceae	Karmakar et al. 2018; Robinson et al. 2023
	<i>Rorippa indica</i>	Brassicaceae	Robinson et al. 2023
	<i>Lepidium virginicum</i>	Brassicaceae	Robinson et al. 2023
	<i>Cleome spinosa</i>	Cleomaceae	Robinson et al. 2023
	<i>Cleome gynandra</i>	Cleomaceae	Robinson et al. 2023
	<i>Cardamine scutata</i>	Brassicaceae	Robinson et al. 2023
	<i>Cardamine flexuosa</i>	Brassicaceae	Robinson et al. 2023
	<i>Cardamine impatiens</i> (L.)	Brassicaceae	Smetacek & Smetacek, 2011
	<i>Brassica oleracea</i> var. <i>capitata</i> (L.)	Brassicaceae	Robinson et al. 2023; Rasool & Mir, 2023
	<i>Brassica oleracea</i> var. <i>botrytis</i> (L.)	Brassicaceae	Rasool & Mir, 2023
	<i>Brassica oleracea</i> var. <i>acephala</i> DC.	Brassicaceae	Rasool & Mir, 2023
	<i>Brassica oleracea</i> var. <i>gongylodes</i> (L.)	Brassicaceae	Rasool & Mir, 2023
	<i>Alstonia scholaris</i>	Apocynaceae	Robinson et al. 2023
	<i>Tropaeolum</i> sp.	Tropaeolaceae	Robinson et al. 2023
	<i>Tropaeolum majus</i> L.	Tropaeolaceae	Present Study
	<i>Sinapis arvensis</i> (L.)	Brassicaceae	Mukherjee & Mondal, 2023
	<i>Matthiola incana</i> (L.)	Brassicaceae	Thapa et al. 2025
	<i>Spinacia oleracea</i> (L.)	Amaranthaceae	Thapa et al. 2025
<i>Pieris canidia canis</i>	<i>Brassica oleracea</i> var. <i>capitata</i> (L.)	Brassicaceae	Wynter-Blyth 1957; Kunte, 2000; Robinson et al. 2023
	<i>Rorippa dubia</i>	Brassicaceae	Nitin et al. 2018
	<i>Rorippa indica</i>	Brassicaceae	Nitin et al. 2018
	<i>Sisymbrium</i> sp.	Brassicaceae	Nitin et al. 2018

the use of *T. majus* is a localised association or represents a more widespread but previously overlooked host-plant relationship of *P. canidia*.

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