SSRS INABIODIV
SPECIES PROFILE AND INFORMATION
Data is from direct observation and review on recent research paper

Vol 2: No. 0009 (Version 25 February 2026)

Online Profile

Vestalis luctuosa (Female)

(Nila Flawing)

Popi Ithriyatina, Fathan Nurhuda, Aisyah Salsabillah Putri, Avinda Fani Ari Umayana, Fildzah Wahyu Izzati, Usnil Khotimah, Amelia Dwi Kurnia Hidayah, Aulia Ulfa, M. Miftakhul Ulum, Muhammad Desna Noronhae, Senjaya Mercusiana

Corresponding Author
ithriyatinapopi@apps.ipb.ac.id

CONSERVATION STATUS

IUCN RedList
Least Concern (2019)

CITES
This species is not listed in the CITES Appendices

Government of Indonesia
Not Protected (Regulation of the Minister of Forestry Number 106 of 2018)

OVERALL DISTRIBUTION
Indonesia

OVERVIEW

Vestalis luctuosa is a species of damselfly from the family Calopterygidae, commonly found in the tropical forests of Southeast Asia, including Indonesia. *Vestalis luctuosa*a typically inhabits small, shallow, and shaded forest streams with relatively calm flow. This species is often seen perching on twigs or low leaves near the water surface, and the females lay their eggs on plants growing along stream edges or on submerged vegetation. This damselfly also has significant potential as an indicator of water quality because its presence is highly dependent on clean and stable stream conditions, making population changes a reflection of local environmental health. In addition, *V. luctuosa* provides important ecosystem services for humans and the surrounding environment, especially as a predator of small insects. In agricultural contexts, damselflies are often considered natural enemies of pests because they prey on various types of crop-damaging insects.

Citation
Ithriyatina P, Nurhuda F, Putri AS, Umayana AFA, Izzati FW, Khotimah U, Hidayah ADK, Ulfa A, Ulum MM, Noronhae MD, Mercusiana S. 2026. Indonesia Species Profile of Vestalis luctuosa (Odonata: Calopterygidae). *SSRS INABIODIV Species Profile and Information*. Vol.2: No. 0009. https://publishing.ssrs.or.id/ojs/index.php/ssrs-inabiodiv

Author affiliation:
IPB Sustainable Science Research Students Association - IPB University (PI, FN,ASP, AFAU, FWI, UK, ADKH, AU); Undergraduate Student in Department of Plant Protection - IPB University (PI, AFAU, UK, ADKH); Undergraduate Student in Department of Forest Resource Conservation and Ecotourism - IPB University (FN); Undergraduate Student in Department of Biology - IPB University (ASP, AU); Undergraduate Student in Department of Artificial Intelligence - IPB University (FWI); SSRS Indonesia Biodiversity Hub (UK, AU); Agency of National Park of Gunung Halimun Salak (MMU, MDN, SM).

IDENTITY

Scientific Name
Vestalis luctuosa (Burmeister, 1839)

Synonym
Vestalis submontana Fraser
Vestalis amabilis Lieftinck
Vestalis amoena Selys
Vestalis lugens Selys
Vestalis amaryllis Lieftinck
Vestalis amethystina Lieftinck
Vestalis amoena Hagen
Vestalis atropha Lieftinck
Vestalis beryllae Laidlaw
Vestalis gracilis Rambur

Common Name (Indonesia)
Capung Jarum Hutan

Indonesia Local Name
Capung Rembes (Sunda)

CLASSIFICATION

Kingdom	:	Animalia
Phylum	:	Arthropoda
Class	:	Insecta
Order	:	Odonata
Family	:	Calopterygidae
Genus	:	*Vestalis*
Species	:	*Vestalis luctuosa* (Burmeister, 1839)

DESCRIPTION

Specimen of *Vestalis luctuosa* (female) has a total body length of approximately 5.6 cm. The abdominal length measures about 4.5 cm, while the thorax is approximately 0.7 cm long with a pronotum length of around 0.2 cm. The wing length is about 4 cm. The head and thorax exhibit a metallic green coloration, whereas the abdomen appears brownish and elongated. The compound eyes are large and laterally positioned, typical of damselflies. The legs are slender and relatively long. All four wings are translucent with a light brown tint, appearing slightly clearer toward the wing bases.

ECOLOGY AND HABITAT

Vestalis luctuosa is a damselfly from the family Calopterygidae that is commonly found from lowland areas up to elevations of 2000 m with a localized distribution pattern due to its strong dependence on microhabitats such as clear, shallow, partially shaded forest streams with gentle flow (Nugrahani et al. 2022). This species has a wide flight range in both open and sheltered areas, and environmental temperature greatly influences the emergence of adults; during cloudy or rainy conditions, *V. luctuosa* rests by hanging on vegetation along the riverbank while vibrating its wings to maintain body temperature. In terms of reproductive behavior, after copulation the pair moves to riverside vegetation, and the female performs endophytic oviposition by inserting her ovipositor

into the tissues of aquatic or semi-submerged plants in shallow, slow-flowing parts of the stream (Bora et al. 2019). The larvae live on the streambed among leaf litter, roots, and decaying wood that provide protection, making water quality and habitat stability crucial factors determining the successful development and survival of this species.

DISTRIBUTION

Distribution Region
Java Island, Sumatra Island, Bali Island

Distribution Type
Endemic in Sundaland (Java Island and Sumatera Island)

Distribution Map

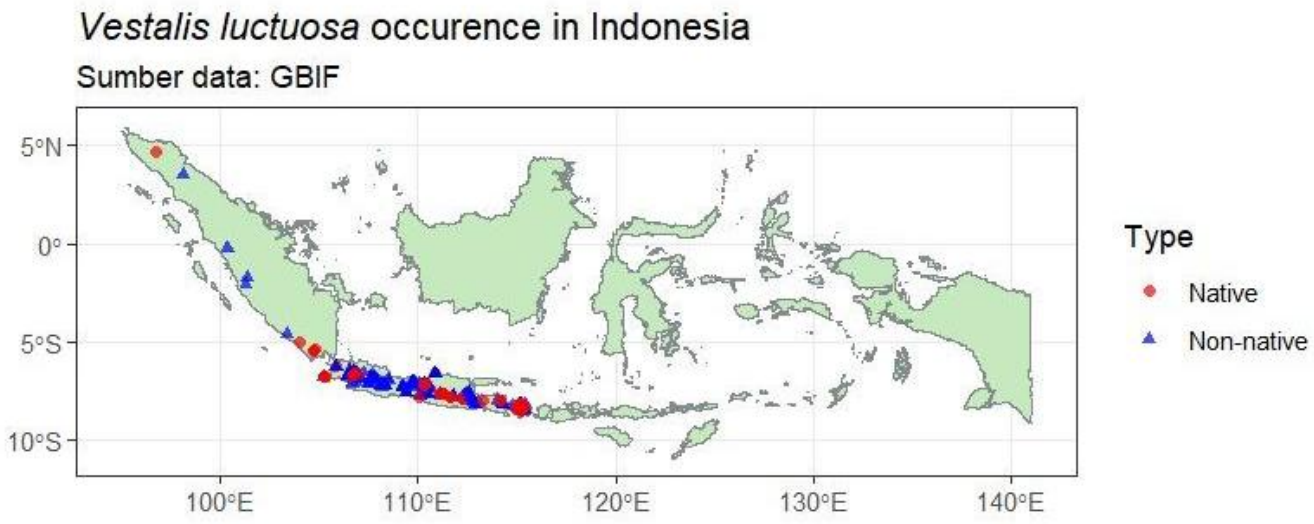


Figure 1. Distribution map *Vestalis luctuosa* in Indonesia

Statistical Overview of Distribution

Indicator	Bioregion	Value (total, mean ± SD, range)	Unit
Distribution (GBIF on 2025)	Jawa	387	Record
	Sumatera	10	Record
Bioclimatic – Elevation (DEM SRTM)	Jawa	778,14 ± 362,20 (22 – 2195)	Mean Sea Level (m)
	Sumatera	869,8 ± 564,68 (241 – 2057)	Mean Sea Level (m)
Bioclimatic – Precipitation (CHIRPS UCSB) (2015-2025)	Jawa	3497,32 ± 669,05 (1942,86 – 4836,48)	mm / years
	Sumatera	2685,78 ± 495,57 (1840,21 – 3222,48)	mm / years

Bioclimatic – Temperature (CHIRTS UCSB) (2015-2025)	Jawa	26,99 ± 2,25 (22,393 – 33,06)	Mean Tmax (°C)
	Sumatera	27,90 ± 2,59 (23,63 – 31,61)	Mean Tmax (°C)

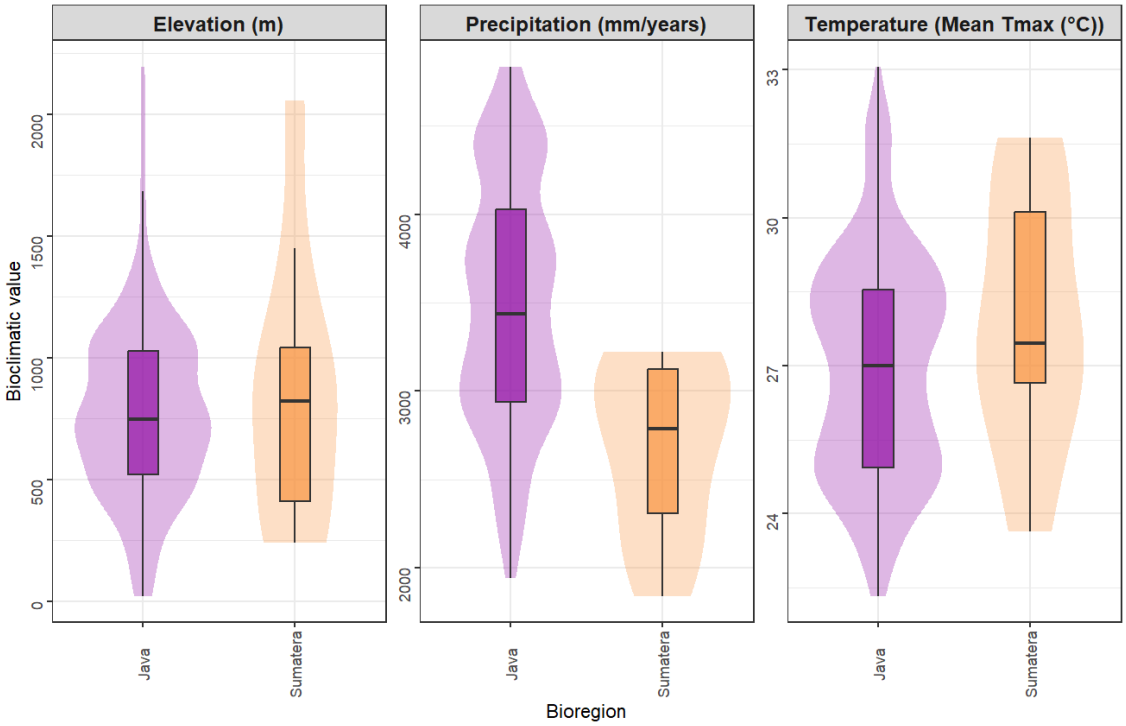


Figure 2. Statistical of bioclimatic characteristic

Distribution Map Based on Indonesia Bioregion – Java

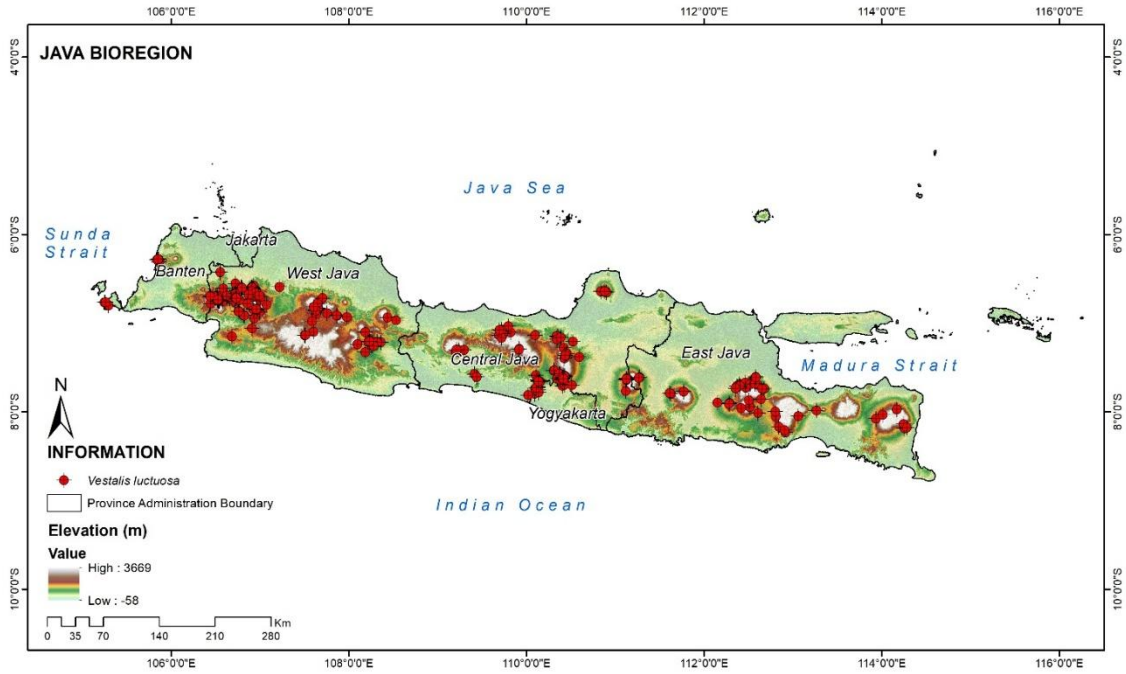


Figure 3. Distribution map *Vestalis luctuosa* in Java bioregion

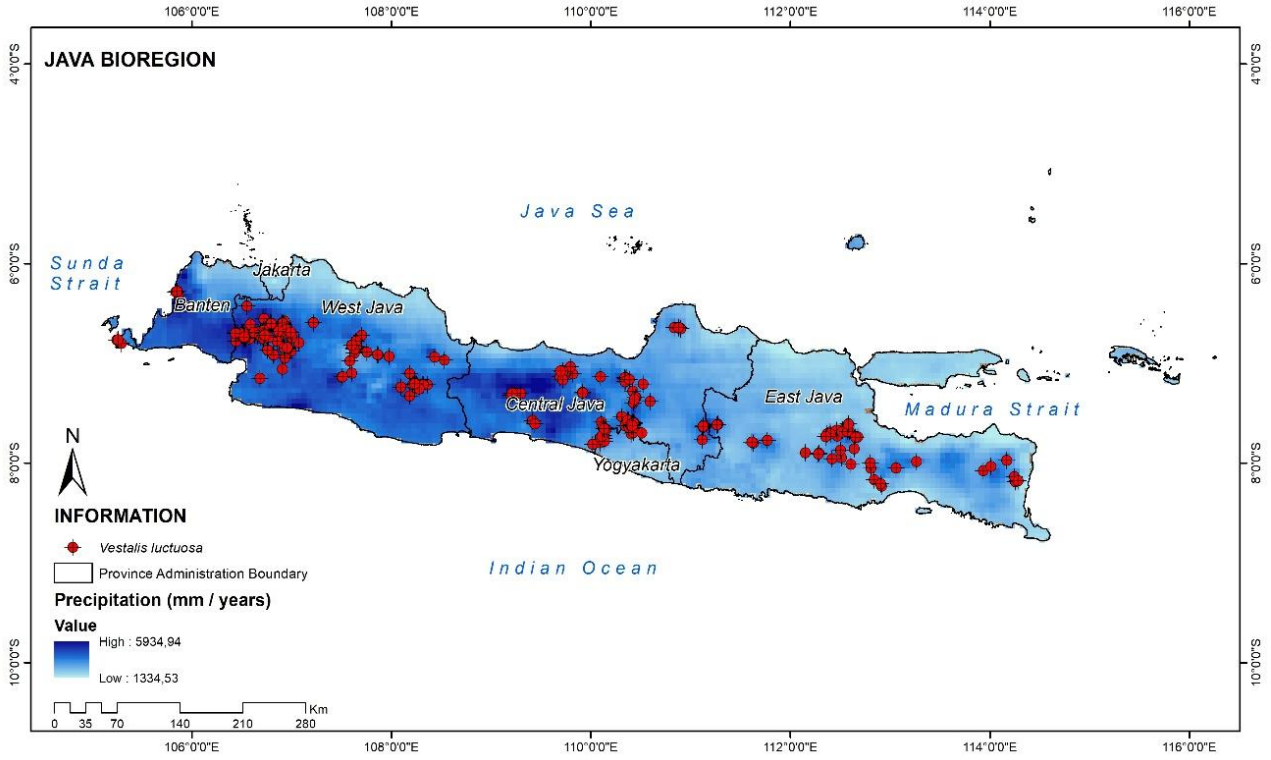


Figure 4. Distribution map of *Vestalis luctuosa* in Java bioregion by precipitation gradient

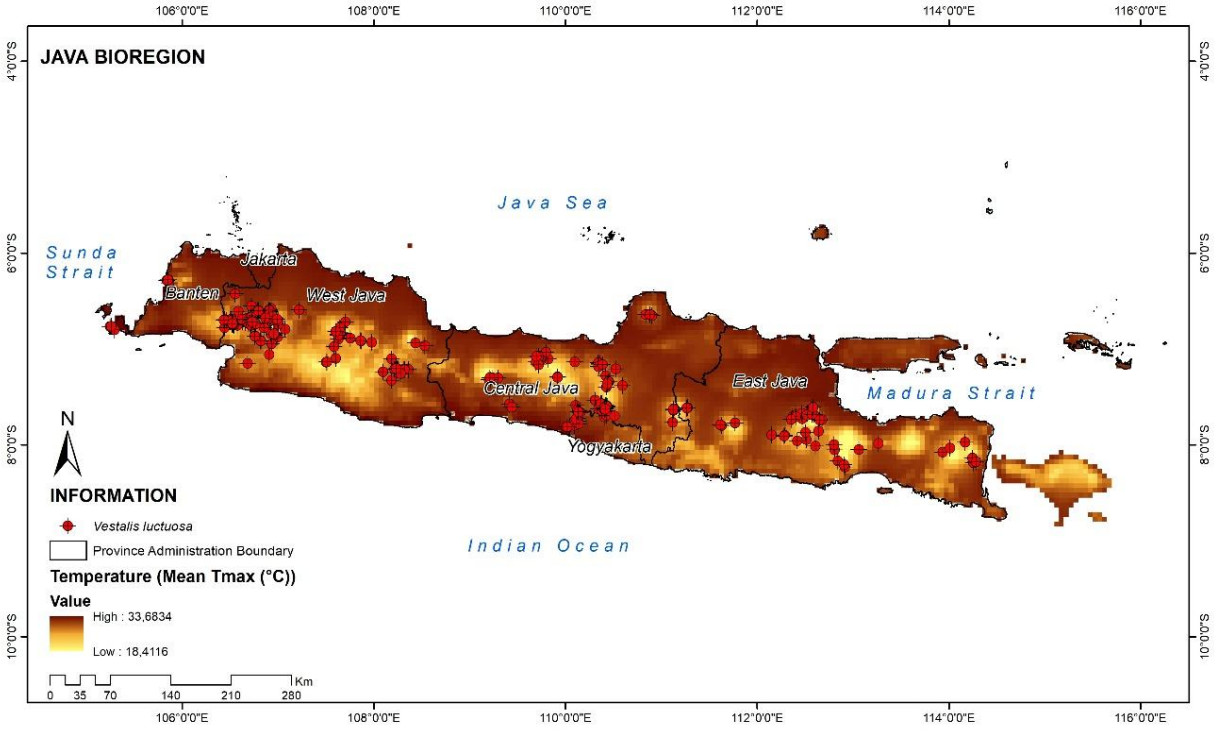


Figure 5. Distribution map of *Vestalis luctuosa* in Java bioregion by temperature gradient

Distribution Map Based on Indonesia Bioregion – Sumatera

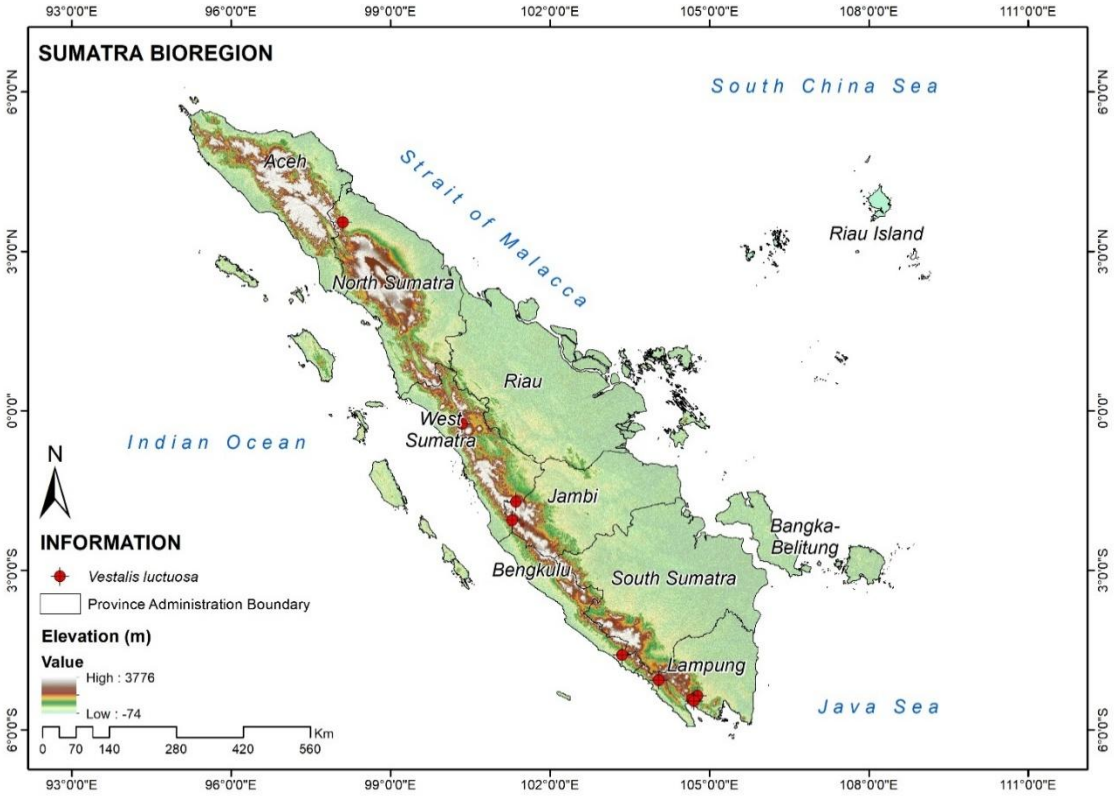


Figure 6. Distribution map *Vestalis luctuosa* in Sumatera bioregion

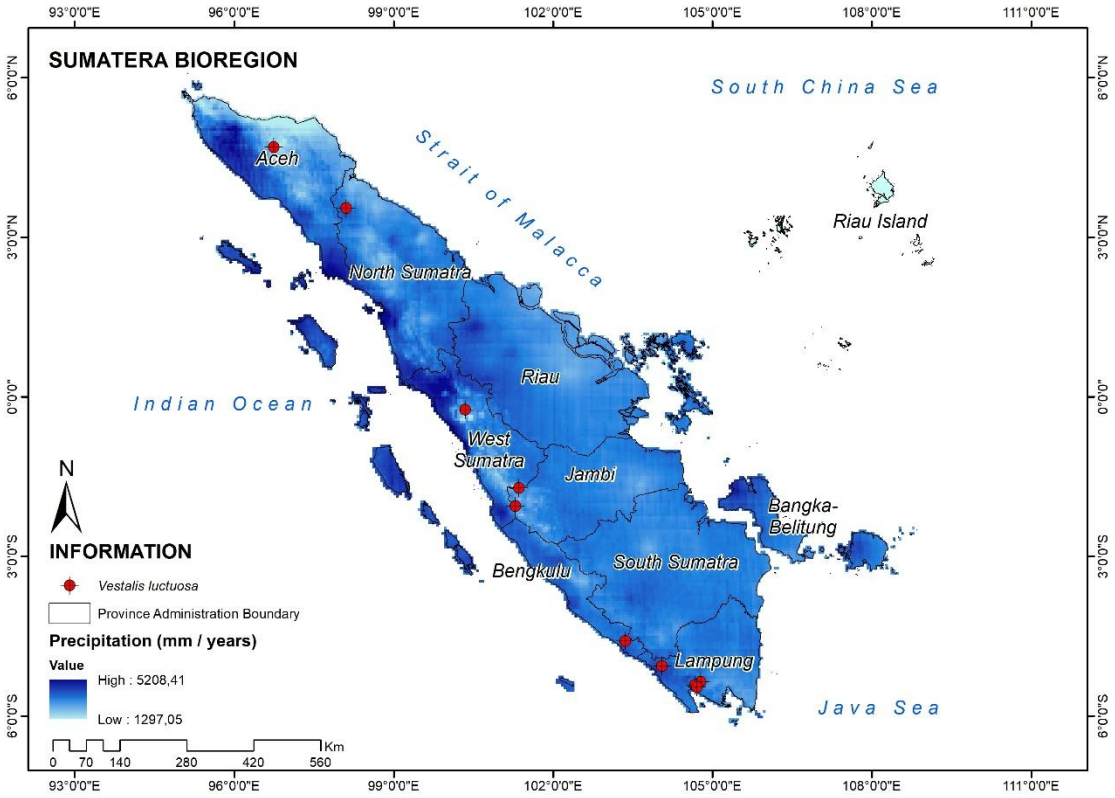


Figure 7. Distribution map of *Vestalis luctuosa* in Sumatera bioregion by precipitation gradient

gradient

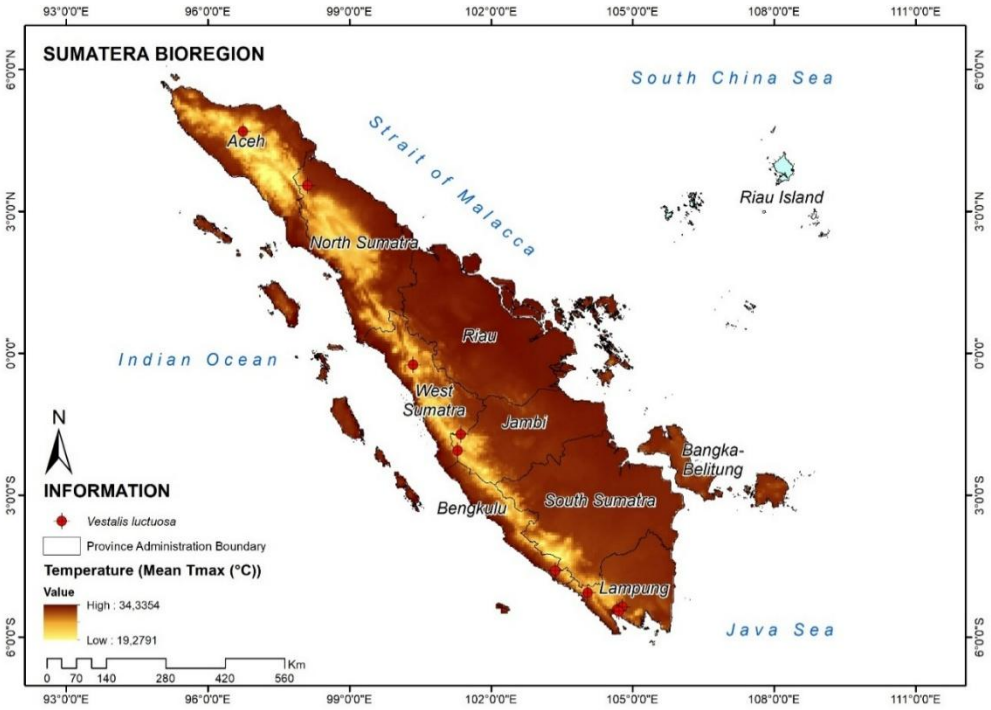


Figure 5. Distribution map of *Vestalis luctuosa* in Sumatera bioregion by temperature gradient

SPECIES VALUE

Ecological Value

Vestalis luctuosa plays an important role in maintaining the stability of riparian and forest stream ecosystems. Females typically occupy shaded, canopy-covered areas with clear water, making their presence a strong indicator of healthy and minimally disturbed habitats (Zahro et al. 2024). Their sensitivity to changes in temperature, light intensity, humidity, and water quality makes female *V. luctuosa* a reliable ecological indicator of environmental conditions (Rohman et al. 2024). In addition, as predators of small insects such as mosquitoes and other riparian invertebrates, females help regulate insect populations and maintain balance within the food web.

Economic Value

Vestalis luctuosa provides significant indirect economic value through its role as a natural bioindicator of water quality, pollution levels, and habitat integrity in riverine systems (Berliani et al. 2024). Because this species can only thrive in clean, well-preserved freshwater habitats, it is used in environmental monitoring programs that support sustainable management of ecotourism sites such as waterfalls and forest rivers (Zahro et al. 2024). Its presence also benefits biodiversity based ecotourism, including nature observation and macro photography, which increases the recreational and educational value of natural areas (Rohman et al. 2024). Additionally, by preying on small insects that may become agricultural pests, the species contributes ecological services that indirectly support local agricultural productivity and community. (Berliani et al. 2024).

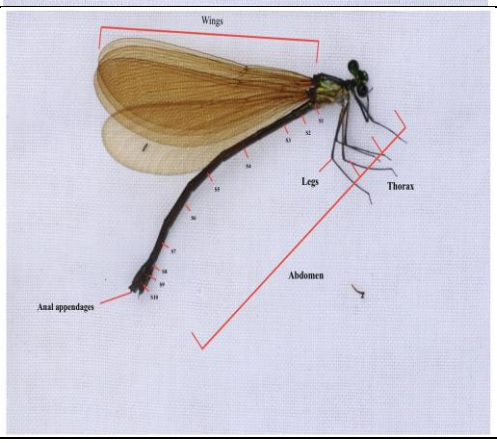
Socio-Cultural Value

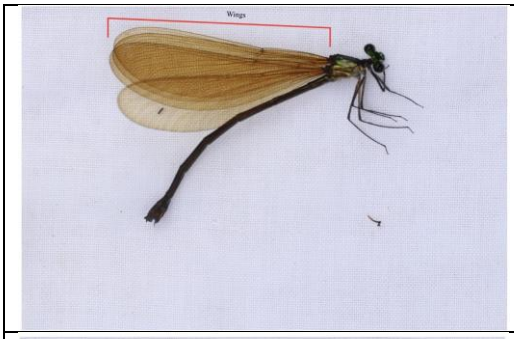
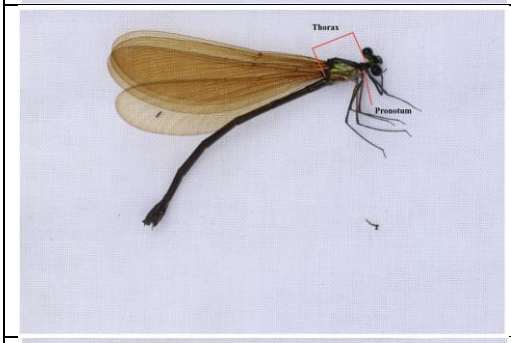
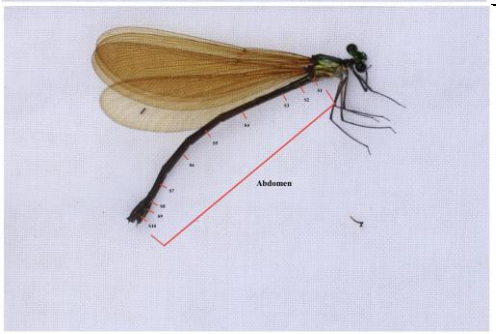
Not identified

THREATS

Agriculture

DOCUMENTATION

Picture	Title	Caption
	In habitat	*Vestalis luctuosa*, male, in Gunung Halimun Salak National Park (Cikaniki), Desa Malasari Kec. Nanggung, Kab. Bogor, Jawa Barat, 26 Oktober 2025.
	Lateral view	*Vestalis luctuosa*, female, in Gunung Halimun Salak National Park (Cikaniki), Desa Malasari Kec. Nanggung, Kab. Bogor, Jawa Barat, 26 Oktober 2025.
	Lateral view	*Vestalis luctuosa*, male, in Gunung Halimun Salak National Park (Cikaniki), Desa Malasari Kec. Nanggung, Kab. Bogor, Jawa Barat, 26 Oktober 2025.
	Morphology	Total body length: 5.6 cm

	Wings	Wing length: 4 cm
	Thorax	Thorax : 0.7 cm Pronotum : 0.2 cm
	Abdomen	Abdominal length: 4.5 cm

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