

**FIRST REPORT OF LEPIDOPTERAN INSECTS FROM THE
TRANG AN LANDSCAPE COMPLEX, NINH BINH PROVINCE,
WITH TWO NEW COUNTRY RECORDS**

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ABSTRACT

Based on the material collected from the field surveys in 2017–2018, we report the first list of lepidopteran insects from the Trang An Landscape Complex, Ninh Binh Province. A total of 167 species including 62 butterflies and 105 moths have been recorded, of those two species, *Celerena signata* Warren, 1898 and *Nygmia plana* (Walker, 1856) are recorded for the first time from Vietnam.

Keywords: Butterfly, moth, new record, Trang An.

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INTRODUCTION

Located in Ninh Binh Province, the Trang An Landscape Complex (Trang An) is the first area of Vietnam recognized as a World Natural and Cultural Heritage by UNESCO in 2014. Trang An is of global significance as an outstanding humid tropical tower-karst landscape in the final stages of geomorphic evolution. The area is unique in having been invaded by the sea several times in the recent geological past but is now emerging as a land. The blend of towering mountains draped in natural rain forest, with large internal basins and narrow cave passages containing quietly flowing waters, creates an extraordinarily beautiful and tranquil landscape (UNESCO report, 2016). Despite of being one of the most important natural landscape in Vietnam, the biodiversity of Trang An is poorly explored, especially of the insects. Up to date, only nymphs of 21 aquatic insect species and two ichneumonid species were documented from this area (Tran Duc Luong et al., 2011; Pham et al. 2018, 2019). On the basis of our recent surveys on the Trang An Landscape Complex, we herein present the first report of lepidopteran insects with the remarks of two new country records. This paper is our first contribution towards our ongoing effort to study the diversity of insects at the Trang An Landscape Complex.

MATERIALS AND METHODS

Specimens were collected using hand nets and light traps from 2017 to 2018. They are deposited at the collection of the Institute of Ecology and Biological Resources (IEBR), Hanoi, Vietnam. Identification was based on numerous of literature cites: e.g. Hampson (1892); D’Abrera (1982, 1985, 1986); Holloway (1996); Monastyrskii (2005, 2007, 2011); Cotton & Racheli (2007); Kimura et al. (2011) etc.

RESULTS

Species richness of lepidopteran insects in the Trang An Complex Landscape

A total of 167 lepidopteran species including 62 butterflies and 105 moths in 113 genera of 20 families were identified based on the morphological examination and observation of 887 specimens from the Trang An Landscape Complex, Ninh Binh Province, North Vietnam. Noctuidae is the most species-rich family in this area with 45 recorded species, representing 26.9% of the total lepidopteran species, followed by Nymphalidae with 34 species, representing 20.4%, Sphingidae with 29 species (17.4%) and Papilionidae with 12 species (7.2%). Other 16 families have the species below 10, especially only one species each being found in five families (table 1).

Table 1. The list of lepidopteran species in the Trang An Landscape Complex

Family Arctiidae	<i>Danaus genutia genutia</i> (Cramer, [1779])
<i>Amerila astreus</i> (Drury, 1773)	<i>Doleschallia bisaltide continentalis</i> Fruhstorfer, 1899
<i>Barsine striata</i> (Bremer & Grey, 1853)	<i>Euploea core godartii</i> Lucas, 1853
<i>Spilarctia</i> sp.	<i>Euploea eunice coelestis</i> (Fruhstorfer, [1902])
Family Cossidae	<i>Euploea mulciber</i> (Cramer, 1777)
<i>Chalcidica minea</i> (Cramer, 1779)	<i>Euploea tulliolus dehaani</i> Lucas, 1853
Family Crambidae	<i>Hypolimnas bolina jacintha</i> (Drury, [1773])
<i>Palpita asiaticalis</i> Inoue, 1994	<i>Ideopsis similis persimilis</i> (Moore, 1879)
<i>Parotis marginata</i> (Hampson, 1893)	<i>Junonia almana almana</i> (Linnaeus, 1758)
Family Drepanidae	<i>Junonia atlites atlites</i> (Linnaeus, 1763)
<i>Cyclidia orciferaria</i> Walker, 1860	<i>Melanitis leda leda</i> (Linnaeus, 1758)
<i>Cyclidia substigmata</i> (Hübner, [1831])	<i>Melanitis phedima ganapati</i> Fruhstorfer, 1908
Family Geometridae	<i>Mycalesis francisca</i> (Cramer, 1782)
<i>Amraica prolata</i> Jiang, Sato et Han, 2012	<i>Mycalesis mucianus mucianus</i> Fruhstorfer, 1908
<i>Celerena signata</i> Warren, 1898	

<p><i>Cleora</i> sp. <i>Dysphania militaris</i> (Linnaeus, 1758) <i>Godonela nora</i> (Walker, 1861) <i>Ophthalmitis herbidaria</i> (Guenée, 1858) Family HesperIIDae <i>Celaenorrhinus patula</i> de Nicéville, 1889 <i>Hasora badra badra</i> (Moore, [1858]) <i>Hasora malayana malayana</i> (Felder & Felder, 1860) <i>Parnara ganga</i> Evans, 1937 <i>Pseudocoladenia dan fabia</i> (Evans, 1949) Family Lasiocampidae <i>Suana concolor</i> (Walker, 1855) Family Limacodidae <i>Scopelodes testacea</i> Butler, 1886 <i>Susica sinensis</i> (Walker, 1856) Family Lycaenidae <i>Iraota timoleon</i> (Stoll, 1790) <i>Zemerus flegyas flegyas</i> (Cramer, [1780]) Family Lymantridae <i>Lymantria fumida</i> Butler, 1877 <i>Nygmia plana</i> (Walker, 1856) <i>Numenes siletti</i> Walker, 1855 Family Noctuidae <i>Achaea serva</i> (Fabricius, 1775) <i>Anisoneura aluco</i> (Fabricius, 1775) <i>Anisoneura salebrosa</i> Guenée, 1852 <i>Arcte coerula</i> (Guenée, 1852) <i>Artena dotata</i> (Fabricius, 1794) <i>Asota caricae</i> (Fabricius, 1775) <i>Asota egens</i> (Walker, 1854) <i>Asota ficus</i> (Fabricius, 1775) <i>Asota paphos</i> (Fabricius, 1787) <i>Asota plaginota</i> (Butler, 1875) <i>Asota producta</i> (Butler, 1875) <i>Attatha regalis</i> (Moore, 1872) <i>Bastilla arcuata</i> (Moore, 1887) <i>Bastilla fulvotaenia</i> (Guenée, 1852) <i>Bastilla joviana</i> (Stoll, [1782]) <i>Bastilla maturescens</i> (Walker, 1858) <i>Bastilla praetermissa</i> (Warren, 1913) <i>Cyclodes omma</i> (Hoeven, 1840) <i>Dysgonia acuta</i> (Moore, 1883) <i>Ercheia cyllaria</i> (Cramer, 1779) <i>Erebus caprimulgus</i> (Fabricius, 1781) <i>Erebus ephesperis</i> (Hübner, 1827) <i>Ericeia inangulata</i> (Guenée, 1852) <i>Ericeia pertendens</i> (Walker, 1858)</p>	<p><i>Mycalesis perseoides</i> (Moore, [1892]) <i>Mycalesis perseus tabitha</i> (Fabricius, 1793) <i>Neptis hylas kamarupa</i> Moore, [1875] <i>Neptis sappho astola</i> Moore, 1872 <i>Parantica aglea melanooides</i> Moore, 1883 <i>Parantica melaneus</i> (Cramer, [1775]) <i>Polyura athamas athamas</i> (Drury, [1773]) <i>Rohana tonkiniana tonkiniana</i> Fruhstorfer, 1906 <i>Tanaecia jahnu</i> (Moore, [1858]) <i>Terinos atlita miletum</i> Oberthur, 1897 <i>Terinos clarissa falcata</i> Fruhstorfer, 1898 <i>Tirumala limniace limniace</i> (Cramer, [1775]) <i>Tirumala septentrionis septentrionis</i> (Butler, 1874) <i>Vindula erota erota</i> (Fabricius, 1793) <i>Ypthima baldus baldus</i> (Fabricius, 1775) <i>Ypthima singorensis indosinica</i> Uémura & Monastyrskii, 2004 Family Papilionidae <i>Graphium agamemnon</i> (Linnaeus, 1758) <i>Graphium doson axion</i> (Felder & Felder, 1864) <i>Graphium sarpedon sarpedon</i> (Linnaeus, 1758) <i>Lamproptera curius walkeri</i> (Moore, 1902) <i>Lamproptera meges virescens</i> (Butler, [1870]) <i>Papilio clytia clytia</i> Linnaeus, 1758 <i>Papilio helenus helenus</i> Linnaeus, 1758 <i>Papilio memnon agenor</i> Linnaeus, 1758 <i>Papilio paris paris</i> Linnaeus, 1758 <i>Papilio polytes romulus</i> Cramer, 1776 <i>Papilio protenor euprotenor</i> Fruhstorfer, 1909 <i>Troides aeacus aeacus</i> (Felder & Felder, 1860) Family Pieridae <i>Appias albina darada</i> (Felder & Felder, [1865]) <i>Appias lyncida eleonora</i> (Boisduval, 1836) <i>Catopsilia pomona</i> (Fabricius, 1775) <i>Cepora nadina nadina</i> (Lucas, 1852) <i>Cepora nerissa nerissa</i> (Fabricius, 1775) <i>Eurema blanda silhetana</i> (Wallace, 1867) <i>Eurema hecabe hecabe</i> (Linnaeus, 1758) <i>Hebomoia glaucippe</i> (Linnaeus, 1758) <i>Ixias pyrene yunnanensis</i> Fruhstorfer, 1902 Family Saturniidae <i>Actias selene</i> (Hübner, 1806) <i>Antheraea chengtiana</i> Watson, 1923 <i>Attacus atlas</i> (Linnaeus, 1758) Family Sesiidae <i>Macroscelesia</i> sp. Family Sphingidae</p>
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<i>Eudocima phalonia</i> (Linnaeus, 1763)	<i>Acherontia lachesis</i> (Fabricius, 1798)
<i>Hulodes caranea</i> (Cramer, [1780])	<i>Acherontia styx</i> Westwood, 1847
<i>Ischyja manlia</i> (Cramer, 1776)	<i>Acosmeryx anceus</i> (Stoll, 1781)
<i>Lacera procellosa</i> Butler 1879	<i>Acosmeryx pseudomissa</i> Mell, 1922
<i>Lygniodes hypoleuca</i> Guenée, 1852	<i>Acosmeryx pseudonaga</i> Butler, 1881
<i>Neochera dominia</i> (Cramer, 1780)	<i>Ambulyx moorei</i> Moore, 1858
<i>Neochera inops</i> (Walker, 1854)	<i>Ambulyx ochracea</i> Butler, 1885
<i>Ommatophora luminosa</i> (Cramer, 1780)	<i>Callambulyx rubricosa</i> (Walker, 1856)
<i>Ophiusa coronata</i> (Fabricius, 1775)	<i>Cechenena helops</i> (Walker, 1856)
<i>Oxyodes scrobiculata</i> (Fabricius, 1775)	<i>Cechetra lineosa</i> (Walker, 1856)
<i>Peridrome orbicularis</i> (Walker, 1854)	<i>Cephonodes hylas</i> (Linnaeus, 1771)
<i>Pindara illibata</i> (Fabricius, 1775)	<i>Clanis bilineata</i> (Walker, 1866)
<i>Platyja ciacula</i> Swinhoe, 1893	<i>Daphnis hypothous</i> (Cramer, 1780)
<i>Psimada quadripennis</i> Walker, 1858	<i>Macroglossum corythus luteata</i> Butler, 1875
<i>Ramadasa pavo</i> (Walker, 1856)	<i>Macroglossum divergens</i> Walker, 1856
<i>Serrodes campana</i> Guenée, 1852	<i>Marumba dyras</i> (Walker, 1856)
<i>Spirama helicina</i> (Hübner, 1824)	<i>Megacorma obliqua</i> (Walker, 1856)
<i>Spirama retorta</i> (Clerck, 1764)	<i>Cerberonoton rubescens</i> (Butler, 1876)
<i>Thyas honesta</i> Hübner, 1806	<i>Parum colligata</i> (Walker, 1856)
<i>Tinolius eburneigutta</i> Walker, 1855	<i>Pergesa acteus</i> (Cramer, 1779)
<i>Tinolius quadrimaculatus</i> Walker, 1864	<i>Polyptychus trilineatus</i> Moore, 1888
Family Notodontidae	<i>Psilogramma increta</i> (Walker, [1865])
<i>Blakeia marmorata</i> Kiriakoff, 1967	<i>Rhagastis acuta</i> (Walker, 1856)
<i>Cerura priapus</i> Schintlmeister, 1997	<i>Theretra boisduvalii</i> (Bugnion, 1839)
<i>Chadisra bipartita</i> (Matsumura, 1925)	<i>Theretra clotho</i> (Drury, 1773)
<i>Phalera cossoides</i> Walker, 1862	<i>Theretra latreillii</i> (Macleay, 1827)
<i>Phalera torpida</i> Walker, 1865	<i>Theretra nessus</i> (Drury, 1773)
Family Nymphalidae	<i>Theretra oldenlandiae</i> (Fabricius, 1775)
<i>Ariadne ariadne pallidior</i> (Fruhstorfer, 1899)	<i>Theretra silhetensis</i> (Walker, 1856)
<i>Cethosia biblis biblis</i> (Drury, [1773])	Family Uraniidae
<i>Cethosia cyane euanthes</i> Fruhstorfer, 1912	<i>Lyssa zampa</i> (Butler, 1869)
<i>Charaxes aristogiton peridoneus</i> Fruhstorfer, 1914	Family Zygaenidae
	<i>Cyclosia imitans</i> (Butler, 1881)

New country records of lepidopteran insects from the Trang An Complex Landscape

Among 167 lepidopteran species recorded from the Trang An Complex Landscape, two species, viz. *Celerena signata* Warren, 1898 (Lepidoptera: Geometridae) and *Nygmia plana* (Walker, 1856) (Lepidoptera: Lymantridae) are reported for the first time from Vietnam.

Celerena signata Warren, 1898

Celerena signata Warren, 1898. Novit. zool. 5: 231.

Materials examined. 4 female (IEBR), Ninh Binh Province, the Trang An Landscape Complex, 20°15'4.7"N 105°53'15.15"E, 32 m a.s.l., light trap, 21.vi.2017, Pham Thi Nhi & Hoang Vu Tru leg; 2 female (IEBR) same locality and collectors, 22.vi.2017; 11 female, 2 male (IEBR), same locality, 11.vi.2018, Pham Thi Nhi & Dang Thi Hoa; 2 female, 3 male (IEBR) same locality, 12.vi.2018, Pham Thi Nhi & Nguyen Hai Nam.

Distribution. Previously known from Indonesia, Malaysia, Thailand and the Philippines. This is the first record of this geometrid moth from Vietnam.



Figure 1. *Celerena signata* Warren, 1898

Nygmia plana (Walker, 1856)

Euproctis plana Walker, 1856, List Specimens Lepid. Insects Colln. Br. Mus., 7: 1731.

Materials examined. 2 female (IEBR), Ninh Binh Province, the Trang An Landscape Complex, 20°12'54"N 105°53'58"E, 20 m a.s.l., light trap, 15.vi.2018, Pham Thi Nhi & Nguyen Hai Nam leg.

Distribution. Previously known from India, Bhutan, Myanmar, Sri Lanka, and Thailand. This is the first record of this lymantrid moth from Vietnam.



Figure 2. *Nygmia plana* (Walker, 1856)

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REFERENCES

- Cotton A. M., Racheli T., 2007. Preliminary Annotated Checklist of the Papilionidae of Laos with Notes on Taxonomy, Phenology, Distribution and Variation (Lepidoptera, Papilionoidea). *Fragmenta Entomologica*, 38(2): 279–378.
- D'Abrera B., 1982. Butterflies of the Oriental Region, Part 1 Papilionidae, Pieridae, Danaidae. Hill House Publishers: 244 pp.
- D'Abrera B., 1985. Butterflies of the Oriental Region, Part 2: Nymphalidae, Satyridae, Amathusidae. Hill House Publishers: 287 pp.
- D'Abrera B., 1986. Butterflies of the Oriental Region, Part 3: Lycaenidae, Riodinidae. Hill House Publishers: 138 pp.
- Hampson G. F., 1892. The Fauna of British India, including Ceylon and Burma. Moths, Vol 1. Taylor & Francis, London: 527 pp.
- Holloway J. D., 1996. The Moths of Borneo: Family Geometridae, Subfamilies Oenochrominae, Desmobaethrinae and Geometrinae. Malayan Nature Society: 180 pp.
- Kimura Y., Aoki T., Yamaguchi S., Uémura, Y. & Saito T., 2011. The Butterflies of Thailand. Based on Yunosuke KIMURA Collection vol. 1. Hesperidae, Papilionidae, Pieridae. Mokuyosha: 220 pp.
- Monastyrskii A. L., 2005. Butterflies of Vietnam, Vol. 1: Nymphalidae: Satyrinae. Dolphin Media Company: 198 pp.
- Monastyrskii A. L., 2007. Butterflies of Vietnam, Vol 2: Papilionidae. Dolphin Media Company: 189 pp.
- Monastyrskii A. L., 2011. Butterflies of Vietnam, Vol 3: Nymphalidae: Danaeinae, Amathusiinae. Dolphin Media Company: 182 pp.
- Pham N. T., Broad G. R. & van Achterberg C., 2019. A review of the genus *Chrysocryptus* Cameron (Ichneumonidae):

- Phygadeountinae), with description of a new species. *Raffles Bulletin of Zoology*, 67: 60–66.
- Pham N. T., Broad G. R., Zhu C. D. & van Achterberg C., 2018. A review of the genus *Triancyra* Baltazar (Ichneumonidae: Rhyssinae) from Vietnam, with descriptions of three new species. *Zootaxa*, 4377(4): 565–574.
- Tran Duc Luong, Le Hung Anh, Phan Van Mach, Cao Thi Kim Thi & Nguyen Dinh Tao, 2011. Some data on diversity of aquatic plants and animals in karst area of Ninh Binh Province. Proceedings of the 4th National Conference on Ecology and Biological Resources. Agricultural Publishing House, Ha Noi: 707–712 (in Vietnamese).
- UNESCO report, 2016. Trang An Landscape Complex Ninh Binh, Vietnam: 1341 pp.
- Zolotuhin V. V., Ryabov S. A., 2012. The hawkmoths of Vietnam. *Korporatsiya Tekhnologiy Prodvizheniya*. Ulyanovsk. 239 pp.