

First record of *Trichosea ludifica* (Linnaeus) from Kazakhstan with notes on its bionomics (Lepidoptera: Noctuidae: Pantheinae: Pantheini)

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Received 20 May 2022 | Accepted by V. Pešić: 30 May 2022 | Published online 30 May 2022.

Abstract

Trichosea ludifica (Linnaeus, 1758) is reported from Kazakhstan (East Kazakhstan Region, West Altai Mountains) for the first time. The species habitat in Kazakhstan is briefly characterized and illustrated. A list of noctuid moths occurring syntopically with *T. ludifica* is also provided.

Key words: new record, distribution, biogeography, bionomics, Altai Mountains, Altai-Sayan Mountain Region, mountain forest, fauna, East Kazakhstan.

Introduction

Up to date, the only noctuid species of the subfamily Pantheinae known from Kazakhstan was *Colocasia coryli* (Linnaeus, 1758) (Kozhantshikov 1950; Kusnetzov & Martynova 1954; Anikin *et al.* 2010; Titov *et al.* 2017). During the entomological expedition in western Altai Mountains in East Kazakhstan, another species of the subfamily, *Trichosea ludifica* (Linnaeus, 1758) was collected by the senior author of the present paper. The nearest known localities of the species are in the central part of the Russian Altai Mountains (Volynkin & Nakonechnyi 2011), and the new finding is the westernmost known locality of *T. ludifica* in the Altai-Sayan Mountain Region.

Material and methods

The specimens examined are deposited in in the research collection of Sergey Titov (STP, Pavlodar, Kazakhstan). The moths were collected using mercury bulbs Osram HWL (MBFT) 250 W and Yalas traps

equipped with UV tubes Sylvania F15w/350bl Black light and Philips TL 8W/05. The mounted specimens were photographed by the senior author with a Canon EOS 5D Mark II camera equipped with Canon EF 100 mm f/2.8L Macro USM lenses.

Results

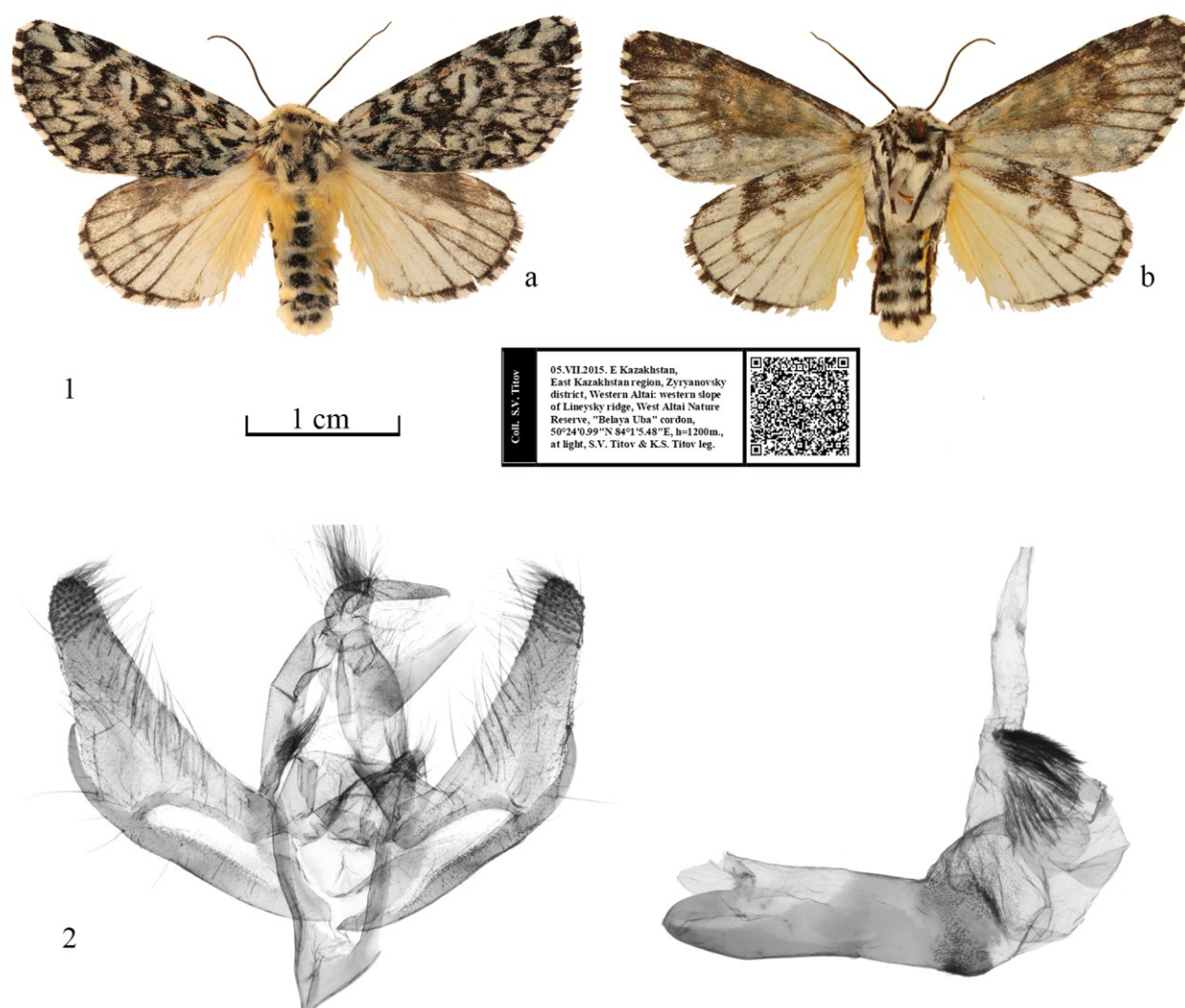
Trichosea ludifica (Linnaeus, 1758)

(Figs 1–3)

Phalaena ludifica Linnaeus, 1758, *Systema Naturae* (Edn. 10), 1: 514 (Type locality: Europe).

Synonymy: *antrotropa* Bryk, 1948; *azugensis* Bryk, 1948.

Material examined. 2 males, 05.VII.2015, E Kazakhstan, East Kazakhstan region, Zyryanovsky district, western Altai: western slope of Lineysky ridge, West Altai Nature Reserve, "Belaya Uba" cordon, 50°24'0.99"N 84°1'5.48"E, h=1200m., at light, S.V. Titov & K.S. Titov leg. (STP).



Figures 1–2. *Trichosea ludifica*: adult (1): dorsal (a) and ventral (b) view, and male genitalia (2). The specimen is deposited in CST.

Bionomics. The species inhabits deciduous, mixed and dark coniferous mountain forests. Moths are on wing from early May to late July. Larvae are feeding on various trees and shrubs of the genera *Quercus* L., *Betula* L., *Prunus* L., *Pyrus* L., *Malus* Mill., *Sorbus* L., *Rosa* L., *Tilia* L., *Ulmus* L., *Carpinus* L., *Rhamnus* L., *Salix*

L., etc. Overwinters as pupa (Kononenko 2010). In East Kazakhstan, *T. ludifica* was found on the western slope of Lineysky Ridge in West Altai Mountains, at the lower boundary of the forest zone in the mixed forest with the dominance of such tree and shrub species as *Pinus sylvestris* L., *Abies sibirica* Ledeb., *Picea obovata* Ledeb., *Betula pendula* Roth, *B. pubescens* Ehrh., *Spiraea media* Schmidt, *Lonicera caerulea* subsp. *altaica* (Pall.) Gladkova, *Ribes rubrum* L., *R. nigrum* L., *Rubus idaeus* L., *Rosa acicularis* Lindl., *R. spinosissima* L., *Sorbus sibirica* (Hedl.) Krylov, and *Padus avium* L. (Figs 3–4). The moths were attracted at light on a rainy night during the passage of a thunderstorm front between 11:00 P.M. and midnight.



Figures 3–4. The habitat of *Trichosea ludifica*: Kazakhstan, East Kazakhstan region, Southwestern Altai: Lineysky Ridge, West Altai, Nature Reserve, "Chernaya Uba" cordon (photos by S. V. Titov).

The noctuid moths occurring syntopically with *T. ludifica* and collected during the same night are as follows. **Erebidae:** *Lymantria dispar* (Linnaeus, 1758), *Gynaephora fascelina* (Linnaeus, 1758), *Leucoma salicis* (Linnaeus, 1758), *Cybosia mesomella* (Linnaeus, 1758), *Atolmis rubricollis* (Linnaeus, 1758), *Coscinia cribraria* (Linnaeus, 1758), *Arctia caja* (Linnaeus, 1758), *A. flavia* (Füssli, 1779), *Diacrisia purpurata* (Linnaeus, 1758), *D. sannio* (Linnaeus, 1758), *Phragmatobia fuliginosa* (Linnaeus, 1758), *Spilarctia luteum* (Hufnagel, 1766), *Hypena proboscidalis* (Linnaeus, 1758), and *Lygephila viciae* (Hübner, 1822). **Noctuidae:** *Autographa buraetica* (Staudinger, 1892), *A. bractea* ([Denis & Schiffermüller], 1775), *Diachrysia stenochrysis* (Warren, 1913), *Euchalcia mongolica* (Staudinger, 1901), *Plusia putnami* Grote, 1873, *Acrionicta alni* (Linnaeus, 1767), *Colocasia coryli*, *Caradrina wulschlegeli* Püngeler, 1903, *Euplexia lucipara* (Linnaeus, 1758), *Dypterygia scabriuscula* (Linnaeus, 1758), *Apamea illyria* Freyer, 1846, *A. crenata* (Hufnagel, 1766), *Oligia latruncula* ([Denis & Schiffermüller], 1775), *Mniotype bathensis* (Lutzau, 1905), *Polia bombycina* (Hufnagel, 1766), *P. nebilosa* (Hufnagel, 1766), *Lacanobia thalassina* (Hufnagel, 1766), *Melanchra persicariae* (Linnaeus, 1761), *Ceramica pisi* (Linnaeus, 1758), *Hadena compta* ([Denis & Schiffermüller], 1775), *Mythimna impura* (Hübner, 1808), *Eriopygodes imbecilla* (Fabricius, 1794), *Diarsia brunnea* ([Denis & Schiffermüller], 1775), *Paradiarsia punicea* (Hübner, 1803), *Graphiphora augur* (Fabricius, 1775), *Anaplectoides prasina* ([Denis & Schiffermüller], 1775), *Xestia collina* (Boisduval, 1840), and *Eugraphe sigma* ([Denis & Schiffermüller], 1775).

Distribution. Eurasian, boreal (boreo-montane) mesophilous species. Europe (probably disappeared in central Europe, currently rare in northern Europe): Sweden, Finland, Estonia, Latvia, Germany, France, Switzerland, Austria, Czech Republic, Serbia, Romania, Italy, and Spain; Kazakhstan (West Altai) (Fig. 5); Russia: European part, North Ural, mountains of South Siberia, southern Russian Far East (including Sakhalin and Kuril Islands); China, South Korea, and Japan (Kozhantshikov 1950; Sugi 1982; Dubatolov *et al.* 1995; Kononenko *et al.* 1998; Zolotarev & Dubatolov 2000; Ahola & Silvonen 2005; Kononenko 2005, 2010; Nupponen & Fibiger 2006; Matov *et al.* 2008; Fibiger *et al.* 2009; Volynkin 2012; Aarvik *et al.* 2017).

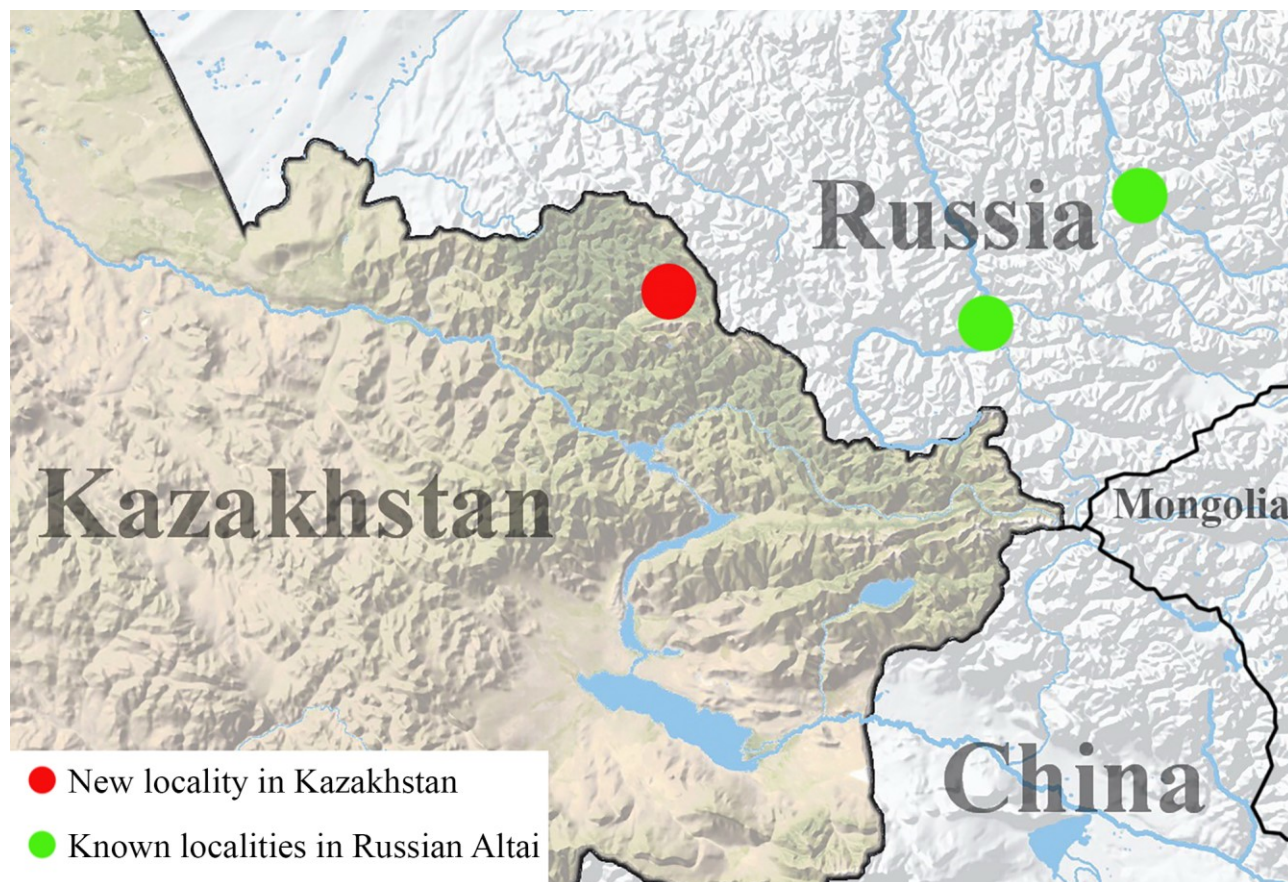


Figure 5. The distribution map of *Trichosea ludifica* in Kazakhstan.

Acknowledgements

The senior author expresses his sincere thanks to A.T. Tokymtaev and L.N. Vinokurova (Ridder, Kazakhstan) for their kind help in organizing the studies in the West Altai Nature Reserve. We are also grateful to N.V. Premina (Ridder, Kazakhstan) for the data on natural and climatic conditions of the area of the ‘Belya Uba’ cordon. The study of Anton Volynkin had no foundation. The study of Sergey Titov was founded by the Science Committee of the Ministry of Education and Science of the Republic of Kazakhstan (Program No. OR11465437).

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