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***Cossus ramoni* – a new species from northeastern Iran (Lepidoptera, Cossidae, Cossinae)**

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Received 4 November 2023 | Accepted by V. Pešić: 22 November 2023 | Published online 23 November 2023.

Abstract

New species *Cossus ramoni* sp. n. is described from northeastern Iran. It is compared with closely distributed Iranian subspecies of *Cossus cossus* (Linnaeus, 1758) and *Cossus afghanistana* Daniel, 1953.

Key words: biodiversity, fauna, taxonomy.

Introduction

The genus *Cossus* Fabricius, 1794 (Lepidoptera, Cossidae, Cossinae) (type species – *Phalaena cossus* Linnaeus, 1758, by monotypy) – the nominate genus for carpenter moths; it comprises ten species distributed across the Palaearctic Region (excluding northern Siberia and the North of the Russian Far East) (Yakovlev 2009, 2011; Yakovlev *et al.* 2015a, 2015b, 2019; Yakovlev & Witt 2016; Streltzov *et al.*, 2022).

The Iranian Cossidae were recently revised by Alipanah *et al.* (2021) ending up with the list of 69 species and by Rajaei *et al.* (2023) with 82 species and four erroneously reported ones. In the Middle East two species of *Cossus* occur: *Cossus cossus* (Linnaeus, 1758) (Figs 1–7) and *Cossus afghanistana* Daniel, 1953 (Figs 8–9). Three subspecies of *C. cossus* were recorded for the Iranian Fauna: *Cossus cossus kossai* Wiltshire, 1957 (type locality: Iraq, Shaqlawa) from southern Iran (Figs 2–3); *Cossus cossus araraticus*

Teich, 1896 (type locality: Igdyn [?Turkey] and Mugansteppe [Azerbaijan]) from northern and central Iran (Figs 4–5); and *Cossus cossus kopetdaghi* Yakovlev, 2009 (type locality: Turkmenistan, Kopet-Dagh Mts., Valley Point-Kala and Ipay-Kala rivers) from northeastern Iran (Figs 6–7). Here we describe a new species *Cossus ramoni* sp. n. It occurs sympatrically with *C. c. kopetdaghi* but very different morphologically.

Material and methods

Male genitalia were mounted in Euparal on slides following Lafontaine (2004). Slide-mounted genitalia were photographed with a Canon EOS 600D digital camera mounted on an Olympus U-CTR30-2 trinocular head combined with a Carl Zeiss microscope body. Sets of about 10 images were taken for each specimen and assembled to deep-focused images using Helicon Focus 6 and edited in Adobe Photoshop CS5.

Specimens of Cossidae from the following collections have been examined:

ASV – research collection of Aidas Saldaitis, Vilnius, Lithuania;

GMM – research collection of Günter Müller, Freising, Germany & Bamako, Mali;

MWM – Museum of Thomas Witt, Munich, Germany;

NHMUK – Natural History Museum, London, UK;

WIGJ – World Insect Gallery, Joniškis, Lithuania;

ZSM – Zoologische Staatssammlung, Munich, Germany.

Taxonomical part

Description of new species

Cossus ramoni sp. n.

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(Figs 10–11, 18–19)

Material. Holotype, ♂, Iran, Khorasan prov., Kuh-E-Binalud Mt., Dorrut loc., h=1720 m, 12.v.2017, (slide Prozorov 2022 0355, WIGJ).

Paratypes: 4♂, same locality and data (slide Prozorov 1305, ASV, GMM).

Description. Male (Figs 10–11). Forewing length of holotype is 27 mm, paratypes 28–31 mm. Antenna dark-brown, basal third of flagellum covered with cream-colored scales. Head, thorax and abdomen speckled brown and cream-colored. Thorax has dark-brown somewhat W-shaped pattern and paler medial spot. Abdomen bears pale cream-colored and dark brown stripes. Forewing speckled brown and cream-colored with dark brown marble-like pattern less pronounced in basal half of the wing, one dark brown transversal line is well pronounced. Hindwing dark brown with darker marble-like pattern. Fringe speckled brown and cream-colored, paler between veins. Female remains unknown.

Male genitalia. Uncus triangular, elongated, slightly concave basally, more sclerotized and pointed apically. Tegumen broader than uncus, somewhat trapezoid. Arms of gnathos C-shaped, slender; gnathos small, semi-round, covered with minute hair-like outgrowths. Valva semilanceolate with dorsoapical sclerotized ridges, apical membranous field covered with setae, and smooth concavity in ventral margin. Transtilla sclerotized, elongated, claw-shaped. Juxta somewhat H-shaped or consisting of two medially joint rhombs elongated in dorsoventral direction. Saccus semi-spherical with ventral semi-spherical concavity. Phallus narrow, long, slightly c-shaped, about the length of valva. Vesica elongated, cylindrical.

Variability. Adults may be overall paler (Fig. 11) or darker (Fig. 10); with more (Fig. 11) or less (Fig. 10) pronounced pattern. Transtilla may be longer (Fig. 19) or shorter (Fig. 18).

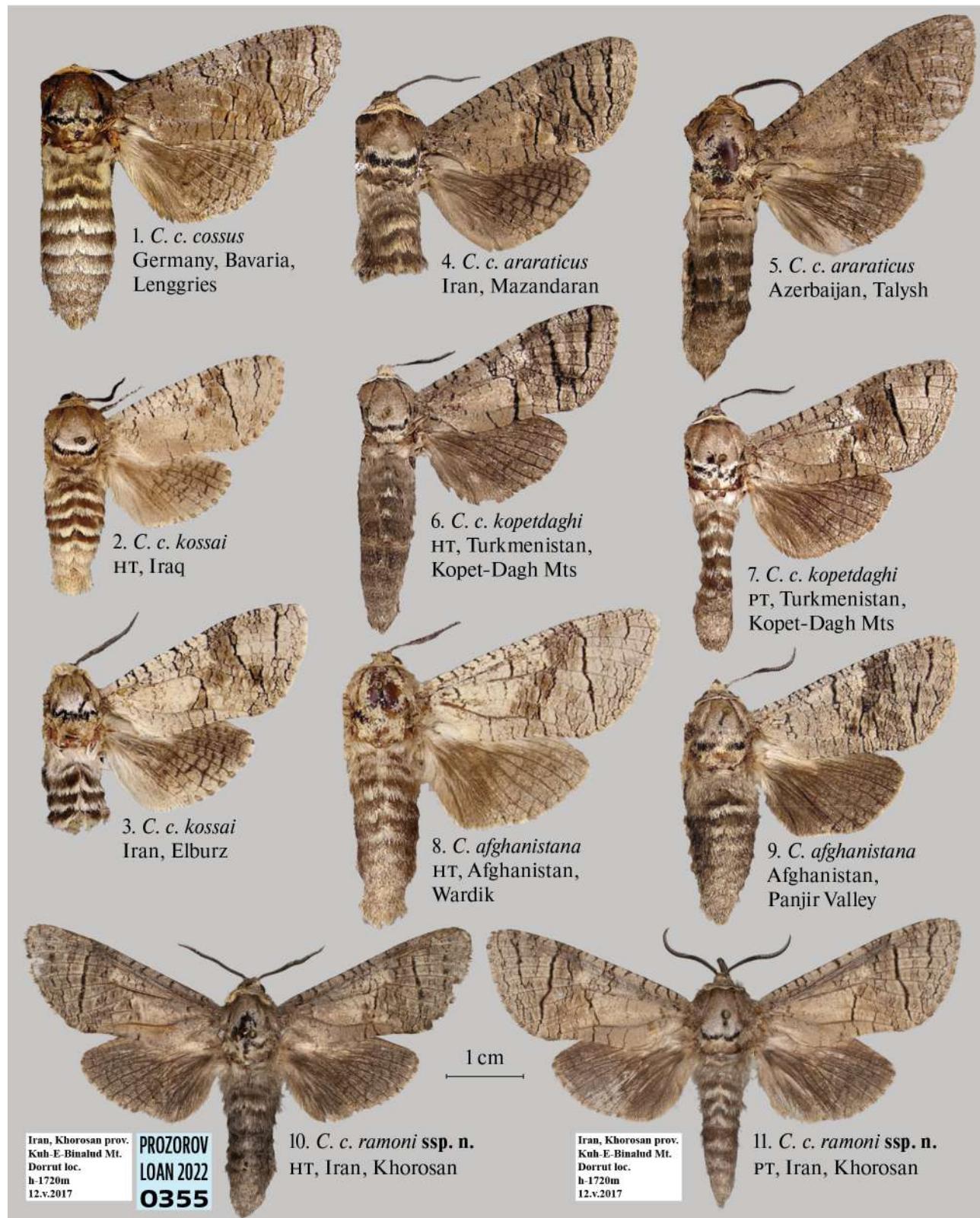
Distribution. So far known from one locality in the Binalud Mountain Range, Razavi Khorasan Province, northeastern Iran.

Diagnosis. The new species *C. ramoni* sp. n. differs from:

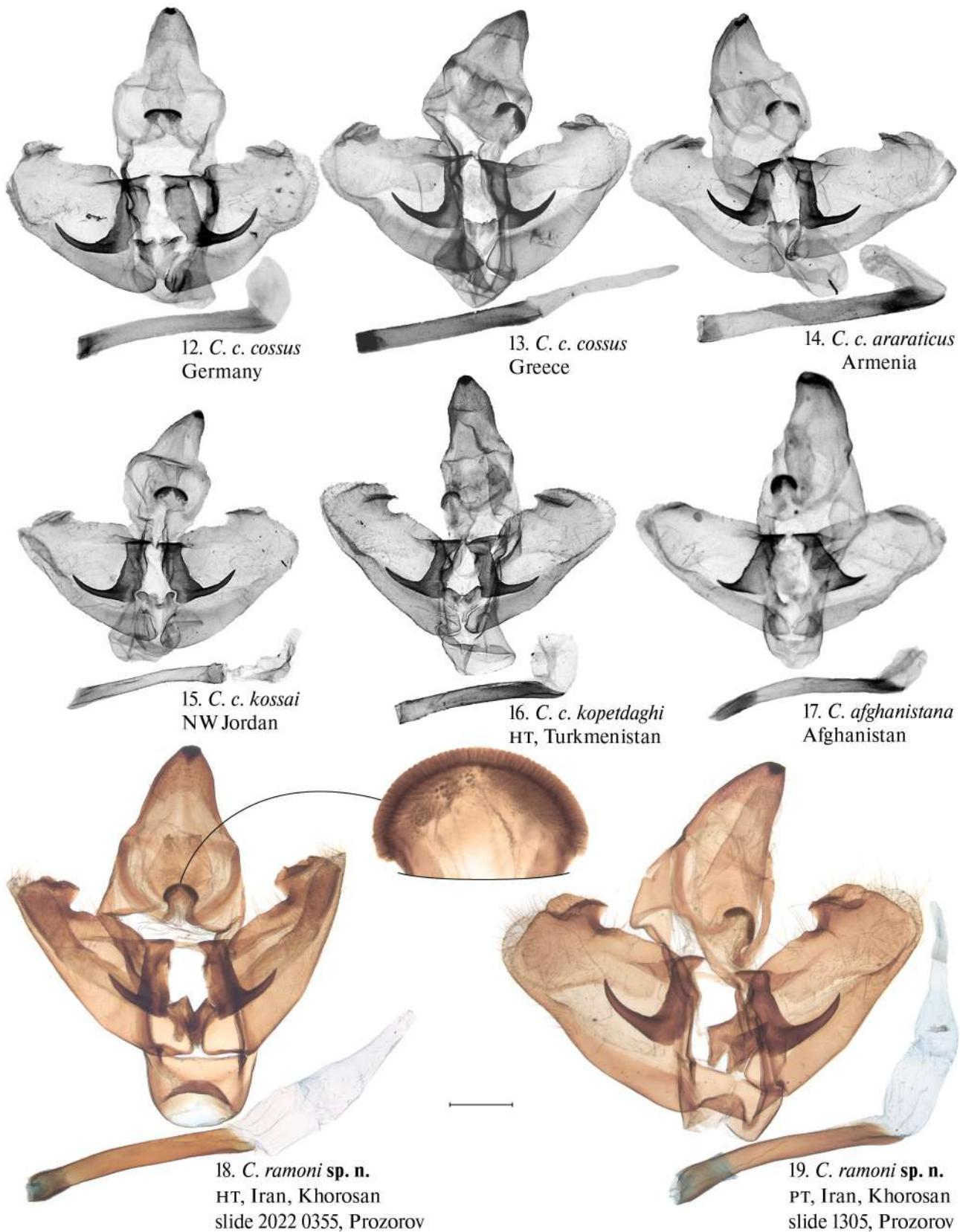
1) *C. c. kossai* by longer forewing, lack of contrast in wing pattern, darker coloration; longer uncus; parapatric distribution in north-eastern instead of southern Iran;

2) *C. c. araraticus* by less contrast in wing pattern, rather darker hindwings; wider uncus, narrower gnathos; parapatric distribution in north-eastern instead of northern and central Iran;

- 3) *C. c. kopetdaghi* by less contrast in wing pattern, rather darker hindwings; wider uncus;
 4) *C. afghanistana* by less contrast in wing pattern, darker coloration, massive extension on costal margin of valva, longer extensions of transtilla;



Figures 1–11. Adult males of *Cossus* spp. Depositories of the specimens: 1–9 in MWM/ZSM; 10 in WIGJ; 11 in ASV; Scale bar – 1 cm.



Figures 12–19. Male genitalia of *Cossus* spp. after Yakovlev (2009) and original. Depository of the dissected specimens: 12–17 in MWM/ZSM; 18 in WIGJ; 19 in GMM. Scale bar for Figs 15–16 – 1 mm.

Etymology. The new species is named after our colleague Ramon Hulbosch (Echt, the Netherlands) for his valuable contribution to the systematics of Cossidae.

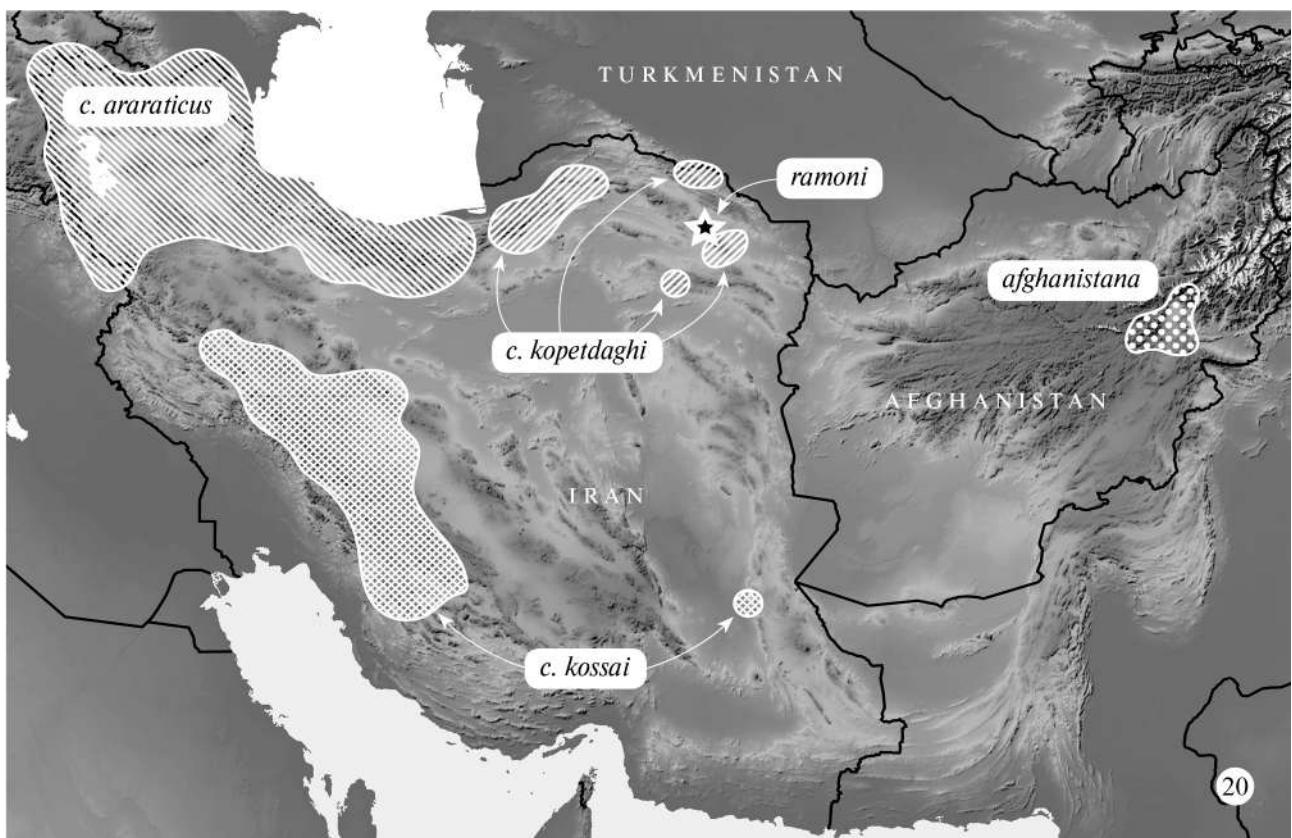


Figure 20. Map of distribution of Iranian and Afghanian taxa of *Cossus*.

Acknowledgments

The authors are grateful to owners and curators of the following entomological collections for providing material and helping to process it: †Thomas Witt and Harald Sulak (MWM), Juozas Dūda (WIGJ), and Axel Hausmann (ZSM).

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