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Notocelia mediterranea (Obraztsov, 1952) - a widespread cryptic species in Europe (Lepidoptera: Tortricidae)

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Abstract

Notocelia mediterranea (Obraztsov, 1952) was until recently widely overlooked and combined with its sister species, *Notocelia incarnatana* (Hübner, [1800]). However, detailed evaluation of forewing pattern and genitalia of both sexes, as well as DNA barcode divergence clearly support the existence of two separate species. A brief comparison of the habitus of both species, as well as photographs of adults and genitalia of both sexes are given. Female genitalia of *Notocelia mediterranea* are detailed here for the first time. First records for Spain, France, Austria, Slovenia, Bulgaria, Greece, Croatia, and Montenegro are also given.
Keywords: Lepidoptera, Tortricidae, *Notocelia mediterranea, Notocelia incarnatana*, new records, barcoding, habitus, female genitalia, Europe.

Notocelia mediterranea **(Obraztsov, 1952) - una especie críptica muy extendida en Europa (Lepidoptera: Tortricidae)**

Resumen

Notocelia mediterranea (Obraztsov, 1952) ha sido, hasta hace poco, ampliamente pasada por alto y combinada con su especie hermana, *Notocelia incarnatana* (Hübner, [1800]). Sin embargo, la evaluación detallada de las características de las alas anteriores y la genitalia de ambos sexos, así como la divergencia del código de barras de ADN, apoyan claramente la existencia de dos especies separadas. Se ofrece una breve comparación del hábitus de ambas especies, así como fotografías de adultos y genitalia de ambos sexos. La genitalia de la hembra de *Notocelia mediterranea* se detalla aquí por primera vez. También se dan los primeros registros de España, Francia, Austria, Eslovenia, Bulgaria, Grecia, Croacia y Montenegro.
Palabras clave: Lepidoptera, Tortricidae, *Notocelia mediterranea*, *Notocelia incarnatana*, nuevos registros, código de barras, hábitus, genitalia de la hembra, Europa.

Notocelia mediterranea **(Obraztsov, 1952) - une espèce cryptique largement répandue en Europe (Lepidoptera: Tortricidae)**

Résumé

Notocelia mediterranea (Obraztsov, 1952) était jusqu'à récemment largement négligée et associée à son espèce sœur, *Notocelia incarnatana* (Hübner, [1800]). Cependant, l'évaluation détaillée du dessin des ailes antérieures et des organes génitaux des deux sexes, ainsi que la divergence des codes-barres de l'ADN soutiennent clairement l'existence de deux espèces distinctes. Une brève comparaison de l'habitus des deux espèces, ainsi que des photographies d'adultes et de genitalia des deux sexes sont donnés. Les genitalia femelles de *Notocelia mediterranea* sont détaillés ici pour la première fois. Les premiers signalements pour l'Espagne, la France, l'Autriche, la Slovénie, la Bulgarie, la Grèce, la Croatie et le Monténégro sont également donnés.

Mots clés: Lepidoptera, Tortricidae, *Notocelia mediterranea, Notocelia incarnatana*, répartition, barcoding, habitus, genitalia femelles, Europe.

Introduction

The genus *Notocelia* Hübner, [1825] is represented by eight species in Europe. Close to the genus *Epiblema* Hübner, [1825] among the *Eucosmini*, it is distinguished in males by the presence of a pair of non-deciduous cornuti at the apex of the vesica; in females by the distinct anterior part of the sterigma and semi membranous hairy lobes attached to its posterior corners (Razowski, 2003). The known host plants are Rosaceae.

Among these species, *Notocelia mediterranea* (Obraztsov, 1952) has remained particularly poorly known since its original description, based on two specimens from Italy. Razowski (2003) did not examine the habitus of the female or female genitalia and considered the species a probable synonym of *Notocelia incarnatana* (Hübner, [1800]). However, the validity of *N. mediterranea* as a separate species was recently confirmed by Šumpich et al. (2022), who also illustrated the adults of both sexes. Based on this work, *N. mediterranea* was published as a new species for Slovakia (Tokár et al. 2021) and Hungary (Fazekas et al. 2023). None of these works gave distinguishing features. We here for the first time provide a detailed diagnostic comparison of *N. incarnatana* and *N. mediterranea* based on differences of external morphology, male and female genitalia, barcoding data and publish reliable faunistic records.

Material and methods

The present study is based on material from the following collections:

INRA	Institut National de la Recherche Agronomique, Versailles, France
NMPC	National Museum of the Czech Republic, Prague, Czech Republic
RCJN	Research Collection Jacques Nel, La Ciotat, France
RCJS	Research Collection Jan Skyva, Prague, Czech Republic
RCTV	Research Collection Thierry Varenne, Nice, France
TLMF	Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria

Study specimens collected by the authors were attracted to ultraviolet light (8W/12V tubes), mostly installed in portable light traps or other devices. Other examined material was borrowed from museums or private collections.

Pinned specimens were photographed using a Canon 750D camera in combination with a Canon MP-E-65 mm lens. Slide-mounted genitalia were photographed using a Canon EOS 200D DSLR camera mounted on an Olympus CX-31 stereomicroscope. For each photograph, sets of 10-20 images were taken at different focal planes and focus-stacked using Helicon Focus 6. The final images were edited in Adobe Photoshop.

Tissue samples (dry legs) from *Notocelia* specimens were successfully processed at the Canadian Centre for DNA Barcoding (CBG, Biodiversity Institute of Ontario, University of Guelph) (deWaard et al. 2008), resulting in 520-658 base-pair DNA barcode segments of the mitochondrial COI gene (cytochrome c oxidase 1). The sequences, together with details of the sequenced specimens, were uploaded to the Barcode of Life Data Systems (BOLD; Ratnasingham & Hebert, 2007). Degrees of intra- and interspecific variation of DNA barcode fragments were calculated under the Kimura 2-parameter model of nucleotide substitution using the analytical tools of BOLD. A neighbor-joining tree of DNA barcode data of selected taxa (Figure 1) was constructed using MEGA11 (Tamura et al., 2013) under the Kimura 2 parameter model for nucleotide substitutions.

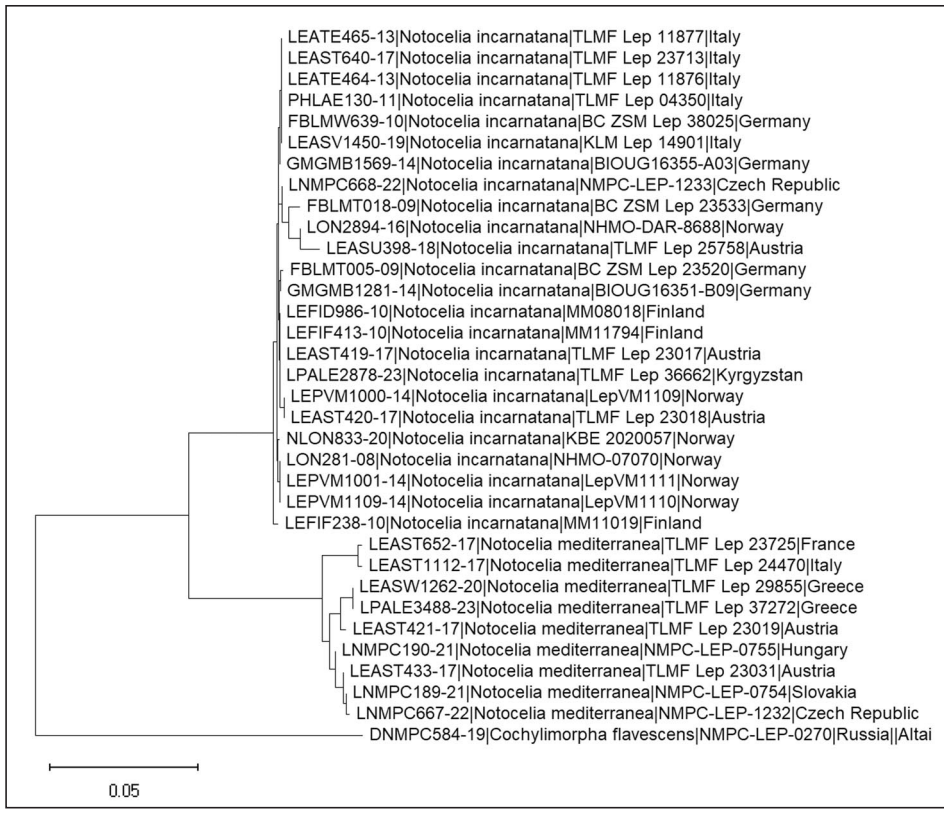

Figure 1. Neighbor-joining tree of *Notocelia* species created from public records in BOLD, with *Cochylimorpha flavescens* Šumpich & Budashkin, 2021 as outgroup. Source: Barcode of Life Database, cf. Ratnasingham and Hebert 2007).

Results

Notocelia incarnatana (Hübner, [1800])
Tortrix incarnatana Hübner, [1800]. *Europ. Schmett. Tor*., pl. 30

Material examined: AUSTRIA, Burgenland, Illmitz, NP Neusiedler See, Biol. Station, 118 m, 17-VIII-2017, 1 ♂, 2 ♀♀, P. Huemer leg. (DNA Barcode IDs TLMF Lep 23017, TLMF Lep 23018) (TLMF); Burgenland, Jois SW, Hackelsberg, 190 m, 1 ♂, 2 ♀♀, 07-IX-2016, P. Huemer leg. (TLMF); Nordtirol, Fliess, 1 ♂, 02-VIII-1972, A. Hernegger leg. (gen. prep. TOR 378 P. Huemer) (TLMF); Nordtirol, Innsbruck, 1 ♀, 27-VII-1968 e. l., K. Burmann leg. (TLMF); Osttirol, Virgen-Obermauern, 1400 m, 1 ♂, 18-VIII-1993, P. Huemer leg. (TLMF). ITALY, Südtirol, Laatsch, 1000 m, 2 ♂♂, 1 ♀, 23-VII-1977, K. Burmann leg (TLMF); Südtirol, Matschertal, Waalweg, 1750 m, 1 ♂, 24-VIII-2017, P. Huemer leg. (DNA Barcode ID TLMF Lep 23713) (TLMF). CZECHIA, Bohemia, Ošelín, Mže env., 1 ♀, 24-VIII-1991, J. Liška leg. (gen. prep. J. Liška) (NMPC); Česk kras (karst), Karlické údolí (valley), 2 ♂♂, 19-VIII-2002, J. Liška leg. (gen. prep. 23053 J. Šumpich) (NMPC); Český kras (karst), Radotín-Cikánka, 1 ♂, 18-VIII-2012, J. Liška leg. (gen. prep. 23058 J. Šumpich) (NMPC); Louny, Raná, 1 ♂, J. Liška leg. (NMPC); Moravia, Kobylí, Kuntínov, 1 ♀, 24-VIII-1994, J. Liška leg. (gen. prep. 23060 J.

Šumpich) (NMPC); Podyjí National Park, Havraníky, 2 ♂♂, 2 ♀♀, 15-IX-2021, J. Liška leg. (DNA Barcode NMPC-Lep-1233) (NMPC). FRANCE, Montagne de l'Alpe, Col de la Bonette, 1800 m, 1 ♂, 29-VII-2003, J. Skyva leg. (gen. prep. 23051 J. Šumpich) (RCJS); Var, Puits-de-Rians, la Planée, 1 ♂, 29-VIII-2004, J. Nel leg. (RCJN); Jura, Bonnefontaine, RD260, 1 ♀, 31-VII-2003, J. Nel leg. (gen. prep. 15953 J. Nel) (TLMF); Haut-Rhin, Gaeschney, 1 ♂, 01-IX-1984, J.-P. Chambon leg. (gen. prep. INRA nº 376) (INRA), (Chambon, 1999, fig. 2255); Alpes-de-Haute-Provence, Meyronnes, 1 ♀, 13-VIII-2016, Th. Varenne leg. (gen. prep. 6018 Th. Varenne) (RCTV); Saône-et-Loire, Préty, 1 ♀, 22-VIII-1995, Th. Varenne leg. (gen. prep. 1251 Th. Varenne) (RCTV); Côte-D'or, Gevrey-Chambertin, 1 spec., 30-VII-1997, Th. Varenne leg. (RCTV); Alpes-Maritimes, Mouans-Sartoux, 1 ♂, 1 ♀, 10-IX-1983, F. Dujardin leg. (TLMF); Hautes-Alpes, Les Vigneaux, 1200 m, 1 ♂, 25-VII-1990, P. Huemer & G. Tarmann leg. (TLMF); Hautes-Alpes, Prelles, 3 ♂♂, VIII-1973, F. Zürnbauer leg. (TLMF); Hautes-Alpes, Prelles, 2 ♂♂, 1 ♀, VIII-1974, F. Zürnbauer leg. (TLMF); Hautes-Alpes, Pelvoux, 2 ♂♂, VIII-1973, F. Zürnbauer leg. (TLMF). GERMANY, Baden-Württemberg, Hoheneuffen, 700 m, 2 ♂♂, 03-VIII-1958, L. Süssner leg. (TLMF); Baden-Württemberg, Markgörningen, Rotenacker, 1 ♀, 14-VIII-1971, L. Süssner leg. (TLMF). SWEDEN, Gotland, Vänge, Gurfiles, 2 ♂♂, 6-VIII-2007, P. Bína leg. (gen. prep. 23059 J. Šumpich) (NMPC). SWITZERLAND, Graubünden, Umbrail, 2200 m, 1 ♂, 3-9-VIII-1975, K. Burmann leg. (TLMF).

Diagnosis: see under *N. mediterranea*.

Redescription: Adult (Figures 2-9). Wingspan 17.0-18.5 mm (males), 12.0-17.0 (females). This species was described in detail by several authors, e. g. Razowski (2003) and Fazekas et al. (2023). Compared to other species of the genus with a grey-brown basal area quite distinct from the rest of the forewing, *N. incarnatana* has relatively slender wings. The subtornal blotch suffused with ochreous (in fresh specimens) is characteristic. Females are usually smaller than males, in some specimens with a slight tendency towards wing reduction. Forewings of both sexes are mostly dusted pinkish.

Variation: The grey coloration can be more or less pronounced, and the median fascia may be interrupted.

Male genitalia (Figures 18-20): The uncus is broadly rounded and well separated from the tegumen, the socii are strongly elongated and reach the inner distal edge of the tegumen (Figures 18-19), the valve horn is slender and well developed, and the cucullus is slender and relatively narrow (Figure 18b). For other figures see Obraztsov (1952), Chambon (1999), Razowski (2003) and Fazekas et al. (2023).

Female genitalia (Figure 24): The outer distal edge of the sterigma is broadly rounded, very slightly convex, the inner distal edge of the sterigma is broadly arched, the distal side angles of the sterigma are relatively short and triangular, the subgenital sternite is wide, the proximal part of the ductus bursae is narrow and the bulla seminalis is small. For other figures see Razowski (2003), Nel (2005) and Fazekas et al. (2023).

Molecular data: BIN: BOLD:AAE5506. The intraspecific average distance of the barcode region is 0.33% (n=29) (maximum 1.77%). The distance to the nearest neighbour, *Notocelia culminana* (Walsingham, 1879) (BIN: BOLD:AAC7221), is 6.17% (p-dist) (Figure 1).

Biology: The larvae can be found in spring living in spun leaves of *Rosa* spp. Moths fly from June to September.

Distribution: Palaearctic Region, however distribution needs to be reassessed for Mediterranean and sub-Mediterranean countries.

Notocelia mediterranea (Obraztsov, 1952)

Epiblema mediterranea Obraztsov, 1952. *Z. Wien. Ent. Ges., 37*, 125

Material examined: AUSTRIA, Burgenland, Illmitz, NP Neusiedler See, Biol. Station, 118 m, 3 ♂♂, 17-VIII-2017, P. Huemer leg. (DNA Barcode ID TLMF Lep 23019) (TLMF); Burgenland, Jois SW, Hackelsberg, 190 m, 1 ♂, 18-VIII-2016, P. Huemer leg. (DNA Barcode ID TLMF Lep 23031) (TLMF); Burgenland, Jois SW, Hackelsberg, 190 m, 3 ♂♂, 07-IX-2016, P. Huemer leg. (TLMF). BULGARIA, Belogradcik, 1 ♂, 26-VIII-1978, J. Skyva leg. (gen. prep. 202434 J. Šumpich) (RCJS).

CROATIA, Krk island, Punat, 3 ♂♂, 1 ♀, 10-16-IX-2000, J. Šumpich leg. (NMPC); same locality but 3 ♂♂, 1 ♀, 20-30-IX-2003, S. Gomboc leg. (NMPC, TLMF); Krk island, Risika, 10-50 m, 2 ♂♂, 2-8-IX-2021, J. Liška leg. (gen. prep. J. Liška) (NMPC); same locality but 1 ♀, 8-13-IX-2002, J. Liška leg. (NMPC); Pag island, Novalja-Potoènica, 5 ♂♂, 2-6-IX-2001, J. Šumpich leg. (NMPC); Rovinj, Kokuletovica, 50 m, 3 ♂♂, 10-IX-2002, H. Deutsch leg. (TLMF). CZECHIA, Moravia, Znojmo, Podyjí National Park, Podmolí-Šobes, 3 ♂♂, 3 ♀♀, 12-IX-2021, J. Liška leg. (DNA Barcode NMPC-Lep-1232; gen. prep. J. Liška) (NMPC); Kobylí, Zázmoníky Nature Reserve, 1 ♂, 18-VIII-2016, J. Liška leg. (gen. prep. 23048 J. Šumpich) (NMPC); same locality but 1 ♂, 27-VIII-2003, J. Liška leg. (NMPC). FRANCE, Montagne du Lubéron, Cavaillon-Oppède, 2 ♂♂, 6-9-IX-2004, J. Procházka leg. (gen. prep. 23054, 202432 J. Šumpich) (RCJS); Bouches-du-Rhône, Ceyreste, la Colle-Noire, 1 ♂, 18-IX-2021, J. Nel leg. (gen. prep. 35415 J. Nel) (RCJN); Fos-sur-Mer, 1 ♂, 13-IX-2007, Th. Varenne leg. (gen. prep. 4197 Th. Varenne) (RCTV); Hautes-Alpes, Saint-Crépin, 1 ♂, 12-VIII-2016, Th. Varenne leg. (gen. prep. 5939 Th. Varenne) (RCTV); Saint-Crépin, la Bourgea, 1 ♂, 28-VIII-2019, J. Nel leg. (gen. prep. 37447 J. Nel) (RCJN); Parc national des Ecrins, Réotier, Saint-Thomas, 1 ♂, 08-IX-2014, J. Nel leg. (gen. prep. 37439 J. Nel) (RCJN); same locality but 1 ♂, 05-IX-2021, J. Nel leg. (RCJN); Alpes-Maritimes, Courségoules, 1 ♀, 14-VIII-2017, Th. Varenne leg. (gen. prep. 170814) (RCTV); Isola-sur-Tinée, 1 ♀, 20-VIII-2018, Th. Varenne leg. (gen. prep.180820) (RCTV); Pyrénées-Orientales, Villefranche-de-Conflent, 1 ♂, 28-VIII-2019, Th. Varenne leg. (gen. prep.190828) (RCTV); Alpes-Maritimes, N Maurion, Fontan, 710 m, 1 ♂, 1 ♀, 11-IX-2017, P. Huemer leg. (DNA Barcode ID TLMF Lep 23725) (TLMF); Alpes-Maritimes, Saint-Barnabé, 1000 m, 10 ♂♂, 1 ♀, 04-IX-1983, F. Dujardin leg. (TLMF); Alpes-Maritimes, St. Vallier, 650 m, 1 ♂, 08-VIII-1978, F. Dujardin leg. (TLMF); Alpes-Maritimes, Vegautier, 1100 m, 09-IX-1967, F. Dujardin leg. (TLMF); Alpes-Maritimes, Col de Braus, St. Laurent, 600 m, 1 ♂, 19-IX-1965, F. Dujardin leg. (TLMF); Alpes-Maritimes, Col de Braus, 1000 m, 2 ♂♂, 28-VIII-1971, F. Dujardin leg. (TLMF); Alpes-Maritimes, Mouans-Sartoux, 1 ♀, 10-IX-1983, F. Dujardin leg. (TLMF); Alpes-Maritimes, St. Blaise, 1 ♀, 06-IX-1981, F. Dujardin leg. (TLMF). GREECE, Piéria, Leptokaria, 1 ♂, 17-22-VIII-1996, J. Skyva leg. (gen. prep. 23057 J. Šumpich) (RCJS); Peloponnes, Exochori, Viros Gorge, 470 m, 2 ♂♂, 2 ♀♀, 12-13-IX-2020, P. Huemer leg. (DNA Barcode IDs TLMF Lep 29855, TLMF_Lep_37272) (TLMF). HUNGARY, Balaton, Balatonakoli, 1 ♂, 28-VIII-1998, J. Ortner leg. (TLMF). Csákberény, 1 ♂, 18-VIII-2000, J. Skyva leg. (RCJS); Bajna, Epöl, 1 ♀, 17-VI-2006, J. Skyva leg. (DNA Barcode NMPC-Lep-0755) (RCJS); Ajka, Pula, Ocs, 1 ♀, 9-IX-2005, J. Liška leg. (gen. prep. 23052 J. Šumpich) (NMPC). ITALY, Gorizia, Duino, S. Giovanni, 70-80 m, 2 ♂♂, 28-IX-2014, H. Deutsch leg. (DNA Barcode ID TLMF Lep 24470) (TLMF); Trento, Pietramurata, 04-IX-1971, 1 ♂, K. Burmann leg. (gen. prep. 85/256 P. Huemer) (TLMF); Verona, Monte, 300 m, 3 ♂♂, 24-VII-1984, K. Burmann leg. (TLMF); Verona, Monte, 300 m, 1 ♂, 13-IX-1984, K. Burmann leg. (gen. prep. 84/245 P. Huemer) (TLMF); Verona, Monte, 300 m, 2 ♂♂, 20-IX-1984, K. Burmann leg. (TLMF); Verona, Monte, 300 m, 2 ♀♀, 03-IX-1986, K. Burmann leg. (TLMF); Verona, Monte, 300 m, 3 ♂♂, 22-X-1994, K. Burmann leg. (TLMF). MONTENEGRO, Tivat, 4 ♂♂, 16-29-IX-1981, J. Skyva leg. (RCJS); same locality but 1 ♂, 20-IX-4-X-1990, J. Skyva leg. (RCJS). SLOVAKIA, Slovenský keas (karst), Plešivec-Ďulová, 2 ♂♂, 3-IX-2016, J. Liška leg. DNA Barcode NMPC-Lep-0754; gen. prep. 202711, 202423 J. Šumpich) (NMPC). SLOVENIA, Karst, Presnica, 3 ♂♂, 09-09-2002, H. Deutsch leg. (TLMF). SPAIN, Teruel, Albarracín, Valdovecar, 2 ♂♂, 3-IX-2002, J. Procházka leg. (RCJS); same locality but 1 ♂, 6-IX-2002, J. Procházka leg. (gen. prep. 23055 J. Šumpich) (RCJS); Teruel, Sierra de Beceite, Beceite, 1 ♂, 9-IX-2002, J. Procházka leg. (gen. prep. 23056 J. Šumpich) (RCJS).

Diagnosis: Compared with *N. incarnatana*, *N. mediterranea* is characterized by a less contrasting forewing pattern, with the pink tinge either completely absent or inconspicuous. The apex of the forewing is usually rounded. Females are usually about the size of, often larger than males. In male genitalia, the protuberance of the valve (valve horn) is slender, comparatively long and rounded at its apex in *N. incarnatana*, whereas in *N. mediterranea* it is smaller, broader at the base and has a sharp tip. The cucullus is slender and longer in *N. incarnatana*, but stouter in *N. mediterranea.* On the lower edge of the valva there is often a distinct bulge in *N. incarnatana*, while in *N. mediterranea* it is weakly

developed or non-existent. In most specimens of *N. mediterranea*, the apex of the uncus is prominently convex, whereas in *N. incarnatana* it is lentil shaped. In female genitalia, ductus bursae is more slender in *N. incarnatana*, there are also minor differences in the area of the sterigma and in the shape of the ostium. Dissection of genitalia is necessary to distinguish this species from worn *N. incarnatana* specimens, however, females can usually be identified reliably from external appearance.

Redescription: Adult (Figures 10-17). Wingspan 13.0-17.0 mm (males), 15.5-19.0 mm (females). Slender wings like *N. incarnatana*, but distinguished by a lighter gray, less contrasting appearance, and an absence of pink diffusion. The apex of the forewing is usually more rounded.

Variation low.

Male genitalia (Figures 21-23): The uncus is narrow, rounded in continuity with the tegumen, the socii are markedly shorter and usually do not reach the inner distal edge of the tegumen, the valve horn is generally blunt, and the cucullus is generally more slender and wider. Male genitalia have been pictured by Obraztsov (1952), Razowski (2003) and Fazekas et al. (2023).

Female genitalia (Figures 25-26). Similar to those of *N. incarnatana*, but the outer distal edge of the sterigma is strongly convex, the inner distal edge deeply excavated, and the distal lateral angles broadly triangular at their base but prolonged, with a relatively long digitiform process. The subgenital sternite is narrow (variability figs 25a, 26a), the proximal part of the ductus bursae wide, and the bulla seminalis large. Female genitalia are detailed here for the first time.

Molecular data: BIN: BOLD:AAY8762. The intraspecific average distance of the barcode region is 1.52% (n=18) % (maximum 2.69%). The distance to the nearest neighbour, *Notocelia incarnatana* (BIN: BOLD:AAE5506), is 6.87% (p-dist) (Figure 1).

Biology: early stages unknown, larva likely on Rosaceae; moths fly from mid-June to late October.

Distribution: Southern parts of Central Europe: Italy (locus typicus), Slovakia (Tokár et al. 2021), Hungary (Fazekas et al. 2023), Czechia (Šumpich et al. 2023), Austria and southern Europe: Spain, France, Slovenia, Croatia, Montenegro, Bulgaria and Greece (first records provided in this paper).

Remarks: probably a much more widespread species but has been overlooked due to its similarity with *N. incarnatana*. Specimens of *N. incarnatana* will need to be re-assessed in collections. Both species have been collected syntopically and synchronically near Saint-Crépin (France, Hautes-Alpes), in southern Moravia (Czechia) and in eastern Austria.

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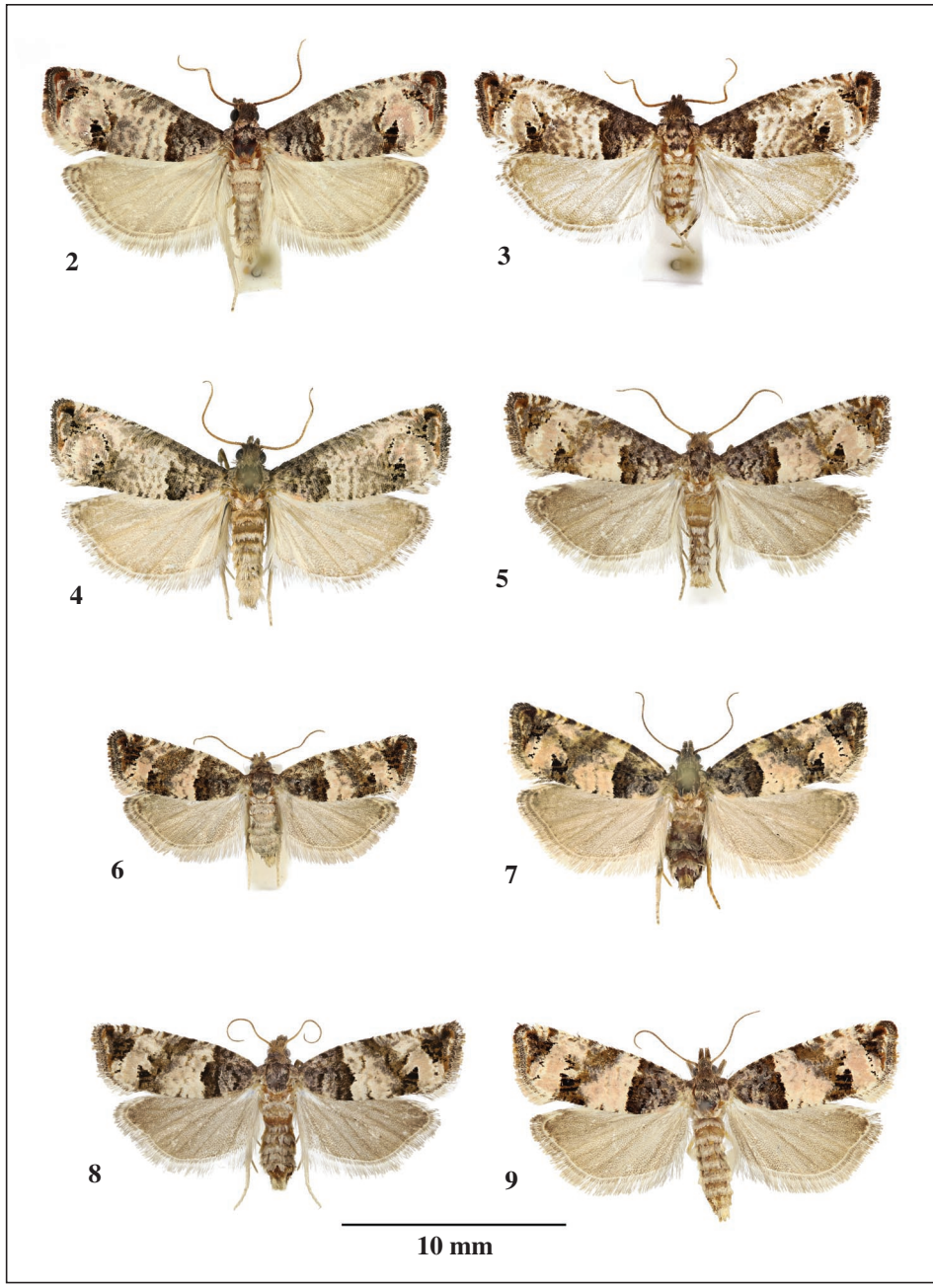
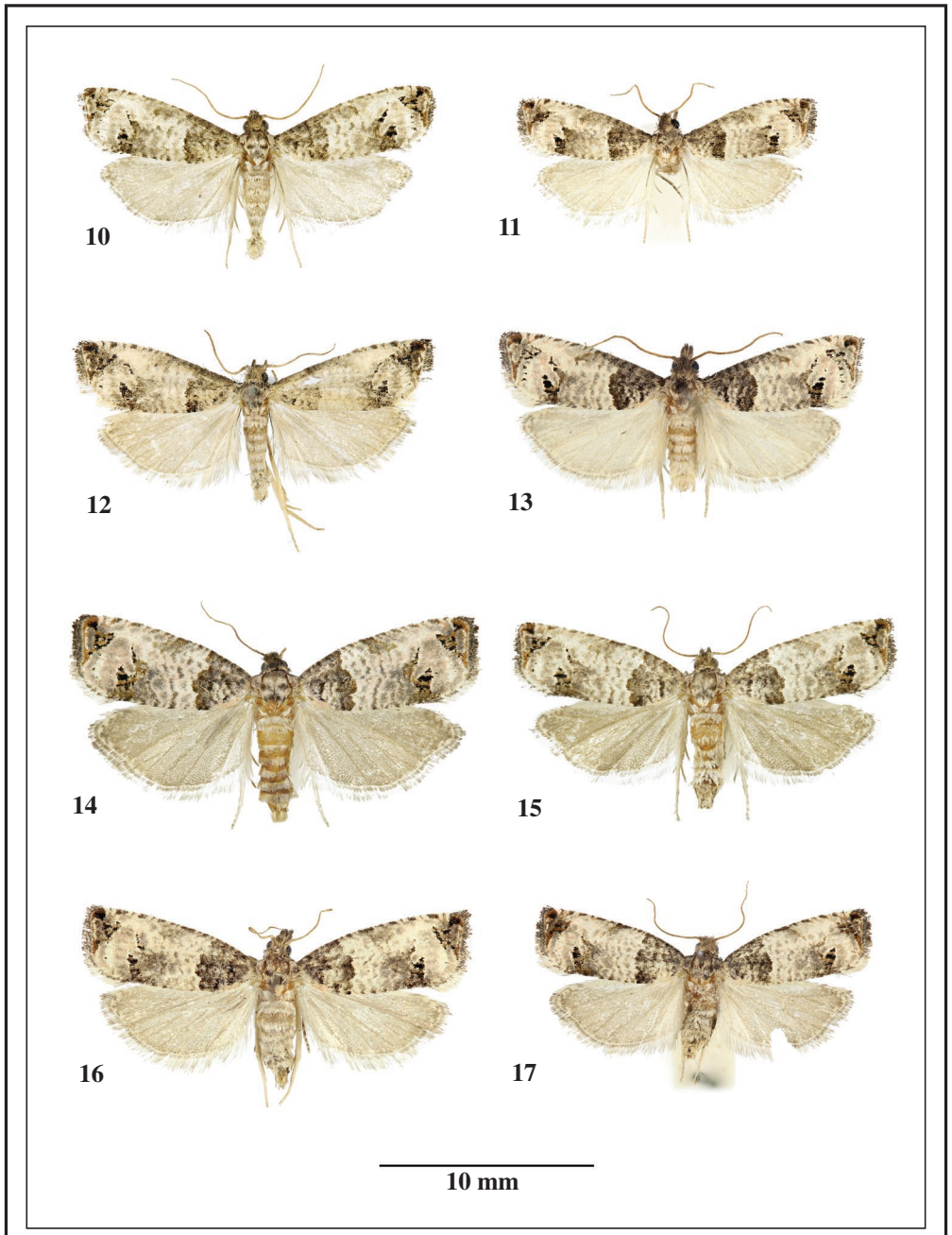
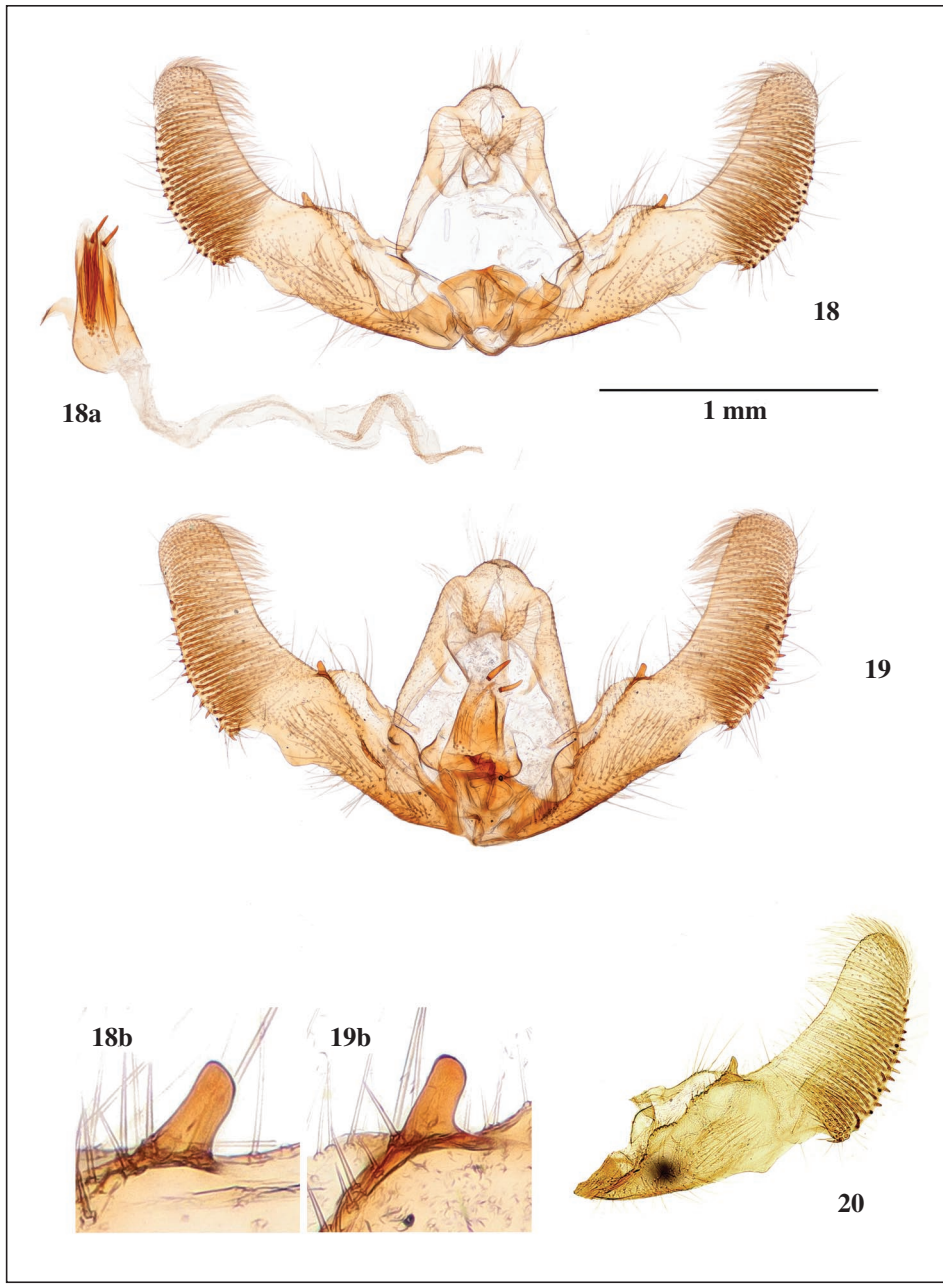


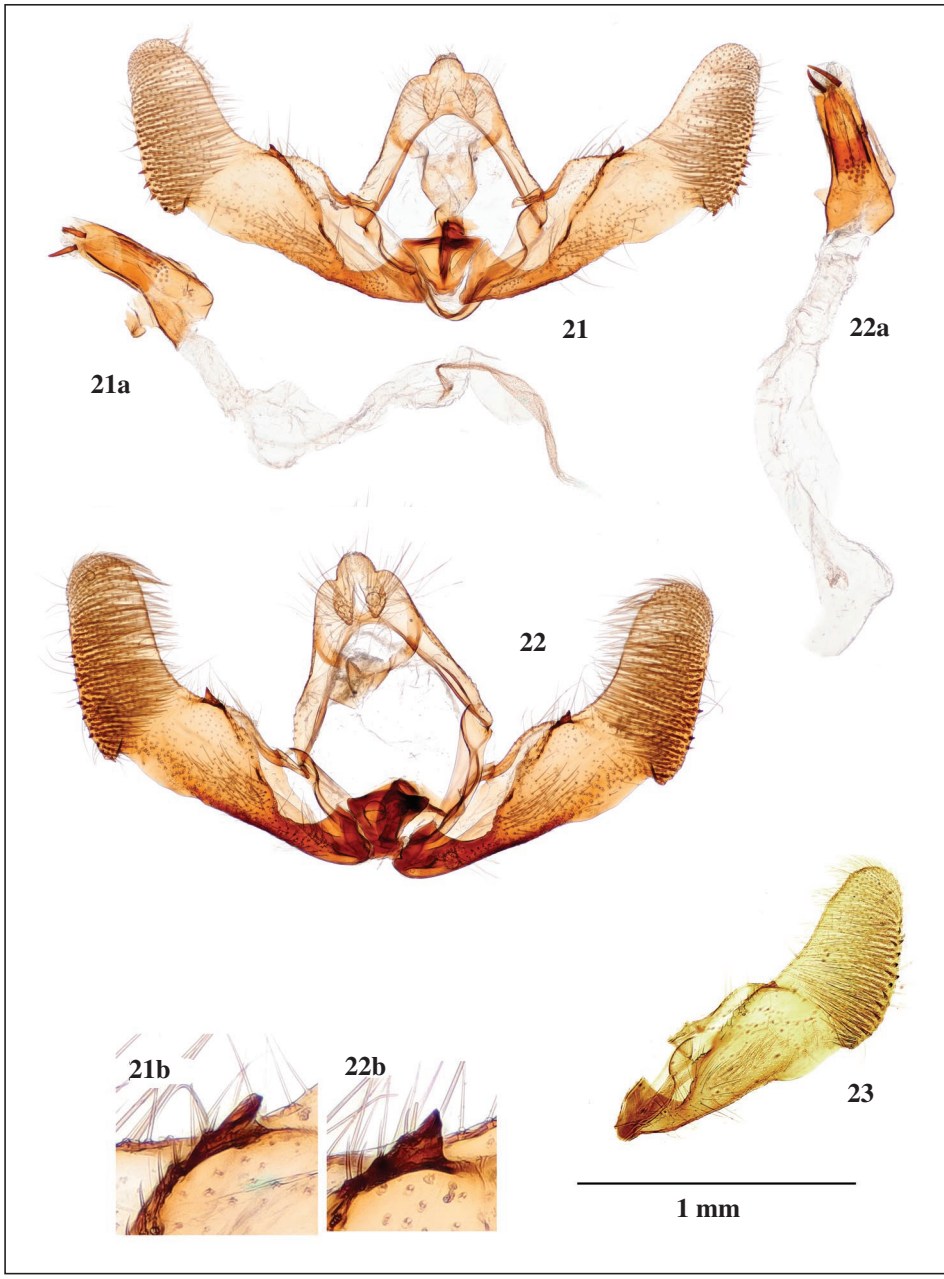
Figures 2-9. *Notocelia incarnatana* (Hübner, [1800]), adults. **2-5.** Males. **2.** Slovakia. **3-5.** Czech Republic. **6-9.** Females, Czech Republic. (4 barcoded).



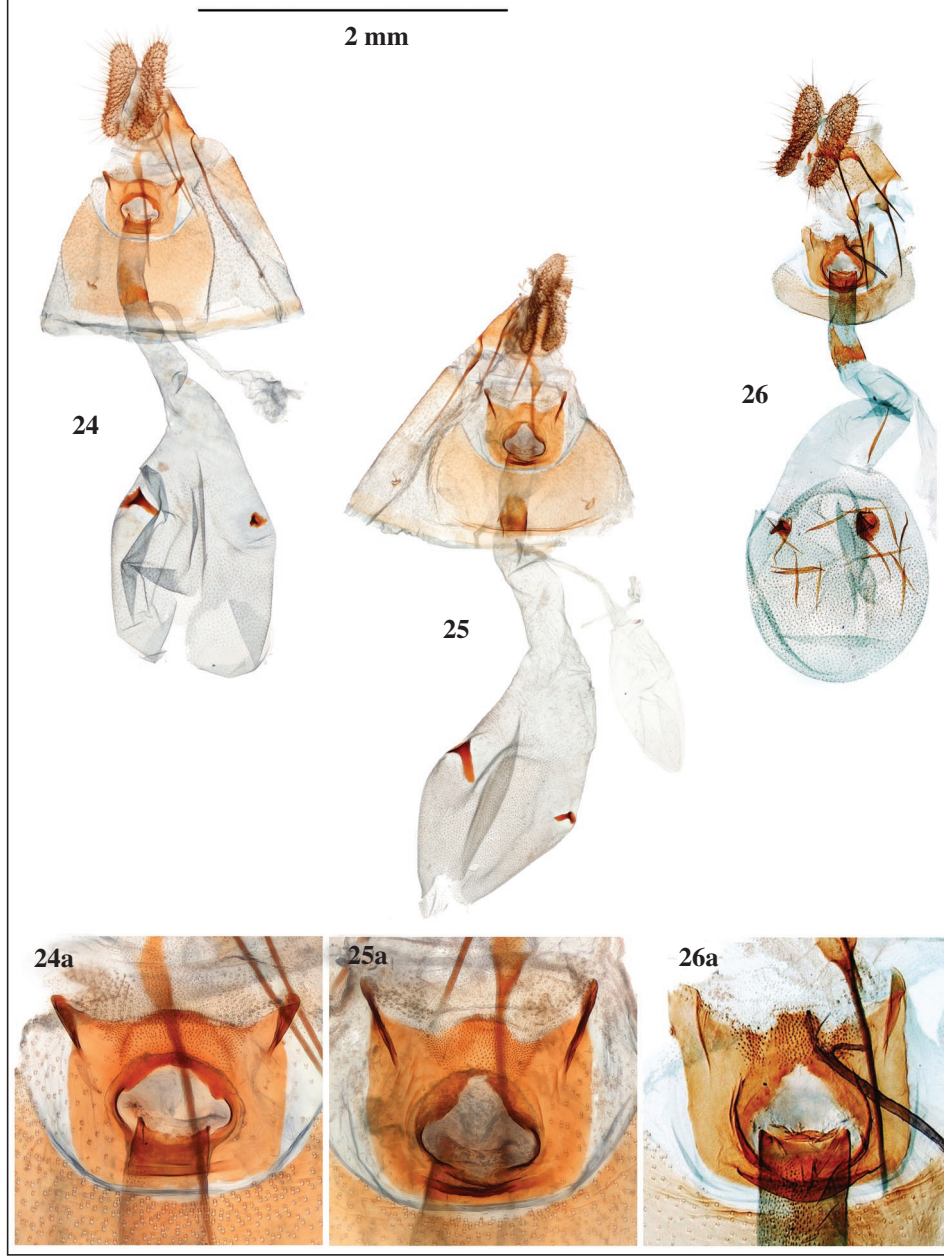
Figures 10-17. *Notocelia mediterranea* (Obraztsov, 1952), adults. **10-13.** Males. **10.** Czech Republic. **11.** Slovakia. **12.** Spain. **13.** Croatia. **14-17.** Females. **14-15.** Czech Republic. **16.** Hungary. **17.** Croatia. (9, 10 barcoded).



Figures 18-20. Male genitalia of *Notocelia incarnatana* (Hübner, [1800]). **18.** Sweeden, gen. prep. 23059 JŠ. **19.** Czech Republic, gen. prep. 23060 JŠ. **20.** France, gen. prep. 37414 JN. (**a** - aedeagus; **b** - detail of valvae protuberance).



Figures 21-23. Male genitalia of *Notocelia mediterranea* (Obraztsov, 1952). **21.** Slovakia, gen. prep. 202711 JŠ. **22.** Czech Republic, gen. prep. 20031 JŠ. **23.** France, gen. prep. 37439 JN. (**a.** aedeagus; **b.** detail of valvae protuberance).



Figures 24-26. Female genitalia. **24.** *Notocelia incarnatana* (Hübner, [1800]), Czech Republic (gen. prep. 23053 JŠ). **25-26.** *Notocelia mediterranea* (Obraztsov, 1952). **25.** Hungary (gen. prep. 23052 JŠ). **26.** France (gen. prep. GF140817 TV). (**a.** detail of sterigma and ostium).