

Gone with the wind? *Condica capensis* (Guenée 1852), a migrant species new for Italy (Lepidoptera: Noctuidae)

Giuseppe Rijllo*, Sara la Cava, Giada Zucco, Stefano Scalercio

Abstract - Pushed by southern winds, many Lepidoptera can fly from the sub-Saharan region to Sicily or Calabria in a short time. Thanks to a long-term monitoring program, we found for the first time in Italy a migrating specimen of *Condica capensis* (Lepidoptera: Noctuidae). This finding is likely linked to the strong winds blowing from North Africa just before the collection of the specimen. *Condica capensis* is considered to be a migrant to the European continent except for Spain, where it is resident. It is found across Africa, the Indian sub-continent, South-East Asia, and Australia.

Key words: distribution, long-term monitoring program, Mediterranean Basin, migration, new record.

Riassunto - Via col vento? *Condica capensis* (Guenée 1852), una specie migratrice nuova per l'Italia (Lepidoptera: Noctuidae).

Spinti dai venti meridionali, molti lepidotteri possono volare dalla regione sub-sahariana alla Sicilia o alla Calabria in breve tempo. Grazie a un programma di monitoraggio a lungo termine abbiamo trovato per la prima volta in Italia un esemplare migrante di *Condica capensis* (Lepidoptera: Noctuidae). Abbiamo collegato questo ritrovamento con i forti venti che soffiavano dal Nord Africa poco prima della raccolta dell'esemplare. *C. capensis* è considerata migratrice nel continente europeo, tranne che in Spagna, dove è stanziale. È presente in Africa, nel subcontinente indiano, nel Sud-est asiatico e in Australia.

Parole chiave: Bacino del Mediterraneo, distribuzione, migrazione, nuova segnalazione, Programma di monitoraggio a lungo termine.

INTRODUCTION

The genus *Condica* Walker 1856 (Lepidoptera: Noctuidae: Condicinae) consists of about 77 medium-sized species (Poole, 1989), but the number is still in doubt as a revision of the genus is needed and some species listed as

Perigea Guenée 1852 should also be taken into consideration in a revision of *Condica* (Fibiger & Hacker, 2007). The autapomorphy of the genus is the uncus of male genitalia that shows a pair of small but well-defined lateral lobes at the base separated by a depression (Holloway, 1988).

In Europe two species occur, *Condica viscosa* (Freyer 1831), described from Sicily, Italy, and *C. capensis* (Guenée 1852), described from Cape of Good Hope, South Africa. One more species was described from South Italy, *Condica (Platysenta) europaea* Parenzan 1980, lately recognised as a synonym of *C. viscosa*. As deducible from their type localities, they prefer warm and open habitats.

Condica viscosa is a resident in Europe, known from most of North Mediterranean coasts, except for Sardinia, Corsica, most of French coasts, central and North Italy, and northernmost Adriatic coast (Fibiger & Hacker, 2007). Apart from Sicily, from where it was described, in Italy it has only been found in Apulia, Basilicata, and Calabria (Parenzan & Porcelli, 2006).

Condica capensis is migrant in Europe, recognized only in southern Spain as resident. Very few records are known from Europe: a few from Spain, one from England, and one from Denmark (Fibiger & Hacker, 2007). Very recently, it has also been recorded from France (Viallet, 2021). Outside Europe it has been found across most of Africa, the Indian sub-continent, South-East Asia (Fibiger & Hacker, 2007), and Australia (Rodeland, 2009).

Pushed by southern winds, many insects can fly from the sub-Saharan region to Europe in a short time (Pedgley *et al.*, 1995). For example, Dantart *et al.* (2009) proved that the finding of *Cornifrons ulceratalis* (Lepidoptera: Crambidae) in Spain and France are due to the warm south-westerly winds accompanied by suspended dust, that blew towards the north-western Mediterranean basin.

Four years ago, a long-term monitoring program (LTMP) of nocturnal Lepidoptera was established in South Italy (Zucco & Scalercio, 2023), having among its aims the study of moth migrations, their magnitude and frequency, and the identification of the species involved. This study is favoured by the daily inspection of traps and the location of the study site in the middle of the Mediterranean Basin, a potentially early warning station for migratory events. During the autumn 2023, the effective-

Council for agricultural research and economics (CREA),
Research Centre for Forestry and Wood, Via Settimio Severo 83,
87036 Rende (Cosenza), Italia.

* Corresponding author: giuseppe.rijllo@crea.gov.it

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Stefano Scalercio

Received for publication: 8 November 2023

Accepted for publication: 24 January 2024

Online publication: 17 April 2024



Fig. 1 - Collecting site of *Condica capensis* in South Italy. Trap A, experimental farm of the Research Centre for Forestry and Wood (Rende, Italy). / Sito di raccolta di *Condica capensis* nel Sud Italia. Trap A, azienda sperimentale del Centro Ricerche per la Silvicoltura e il Legno (Rende, Italia).

ness of this LTMP for detecting migration events was confirmed by the first finding of *Condica capensis* (Guenée 1852) in Italy.

MATERIAL AND METHODS

The collecting site (Fig. 1) is located at an elevation of 205 m a.s.l., inside the experimental farm of the Research Centre for Forestry and Wood, municipality of Rende (Cosenza, Calabria). The area is a mosaic of urbanized and cultivated land, with only few remnants of seminatural vegetation mostly represented by riparian woodlots (Zucco & Scalercio, 2023). Two light traps with 160W mercury vapour lamps were activated since mid-October 2019 and daily inspected. No killing agents were used inside the traps (for more details see: Zucco & Scalercio, 2023).

The identification of the specimen was based on Fibiger & Hacker (2007), although in the study area it cannot be confused with any other moth species.

The specimen is now kept in the entomological collection of the Wildlife Management and Forest Biodiversity Laboratory of the Research Centre for Forestry and Wood.

Wind maps (Beccario, 2020) were used to identify the possible wind mediated migration event of *Condica capensis* in Italy.

RESULTS AND DISCUSSION

Condica capensis (Guenée 1852) (Noctuidae: Condicinae) (Fig. 2)

1 male, 01.XI.2023, Research Centre for Forestry and Wood, experimental farm, Trap A, contrada Li Rocchi, Rende, Cosenza, Italy, 205m a.s.l., 39.3674°N; 16.2279°E (Fig. 3).



Fig. 2 - *Condica capensis*, male, Rende, Italy. Wingspan: 28 mm. / *Condica capensis*, maschio, Rende, Italia. Apertura alare: 28 mm.

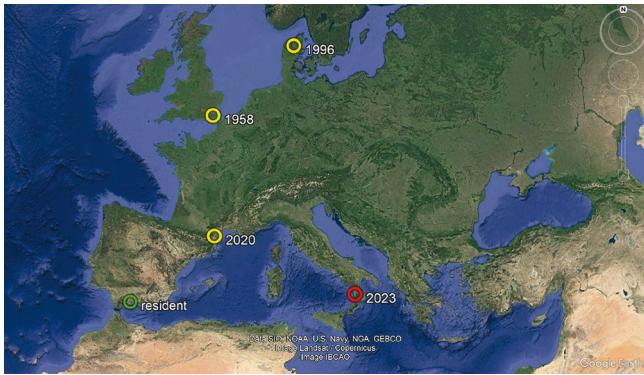


Fig. 3 - Distribution of *Condica capensis* in Europe with year of record. Green circle: probably resident population; yellow circles: migrant individuals; red circle: first migrant individual in Italy (from GoogleEarth). / Distribuzione di *Condica capensis* in Europa con anno di segnalazione. Cerchio verde: popolazione probabilmente residente; cerchi gialli: individui migranti; cerchio rosso: primo individuo migrante in Italia (da GoogleEarth).

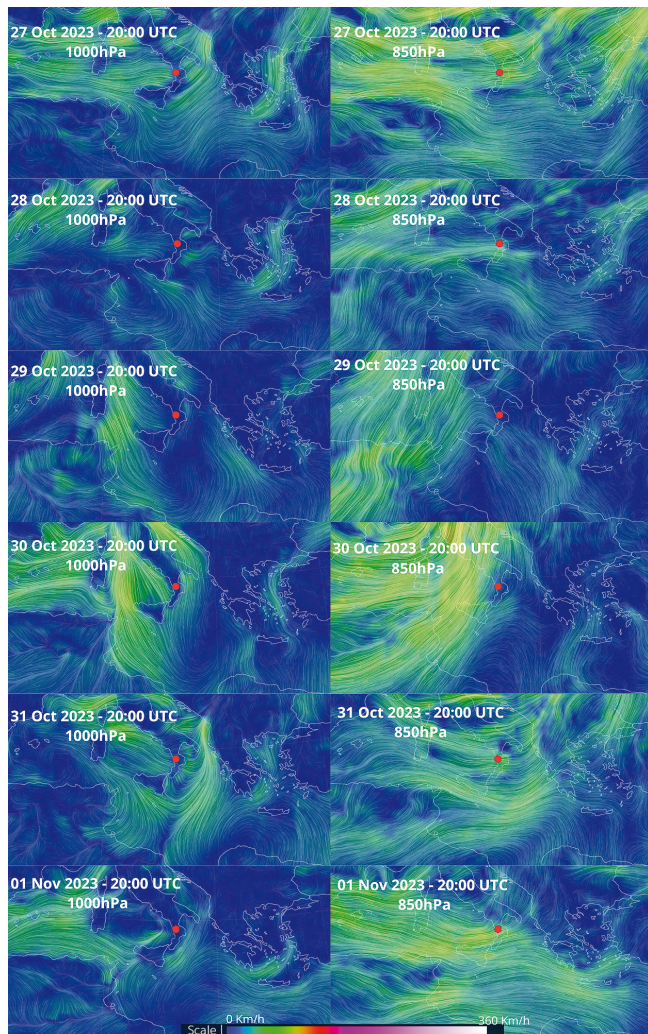


Fig. 4 - Wind maps of the Mediterranean area from 27th October to 1st November 2023 at 20:00 h. Maps refer to wind at 1000 hPa/100 m of elevation (left) and at 850 hPa/1500 m of elevation (right) (Beccario, 2020). / Mappe dei venti dell'area mediterranea dal 27 ottobre al 1 novembre 2023 alle ore 20:00. Le mappe si riferiscono al vento a 1000 hPa/100 m di altitudine (a sinistra) e a 850 hPa/1500 m di altitudine (a destra) (Beccario, 2020).

From the 27th to the 29th October 2023 the wind map centred on Calabria showed the presence of West dominant winds at about 1500 m of elevation not compatible with a wind mediated migration event from North Africa to South Italy (Fig. 4). The days immediately before the collecting night were characterized by strong southerly winds, likely favouring the northward migration of *C. capensis* and other species (Fig. 4). Wind direction and speed at 1500 m of elevation seem to be better correlated than winds at 100 m of elevation for a wind-mediated migration of *C. capensis* in Italy (Fig. 4), as already observed for several insect species (Riley *et al.*, 1983; Drake, 1985; Riley *et al.*, 1995; Chapman *et al.*, 2002; Feng *et al.*, 2005). In detail, the most likely period for the arrival of our specimen in the study area was during the night between the 30th and the 31st of October when winds reached a speed of about 45 km/h and a temperature of 18.7 °C at 1500 m of elevation (Fig. 5). During the same collecting night, we observed 21 macromoth species. Among them, eight species are migrant, namely *Mythimna unipuncta* (Haworth 1809), *Noctua pronuba* (Linnaeus 1758), *Spodoptera exigua* (Hübner [1808]), *Agrotis ipsilon* (Hufnagel 1766), *Spodoptera cilium* Guenée 1852, *Utetheisa pulchella* (Linnaeus 1758), *Eilema caniola* (Hübner [1808]). Most of these species are usually found all over the year, but they are particularly abundant during late summer and early autumn (Scalercio *et al.*, 2007; Infusino & Scalercio, 2018; Zucco & Scalercio, 2023). Similarly, in 1958 it was found in Cornwall (south-western England) together with a massive migration of several other species, as it likely also occurred for the record of 1996 from Jutland, Denmark (Fibiger & Hacker, 2007). The recent finding in France shares some similarity with that of ours. The specimen was collected at Leucate, île des Coussoules, Aude department, only one week before our record on 24th of October, and also with other migrants such as *Hellula undalis* (Fabricius 1781), *Spoladea recurvalis* (Fabricius 1775), *Utetheisa pulchella* (Linnaeus 1758), *Earias insu-*

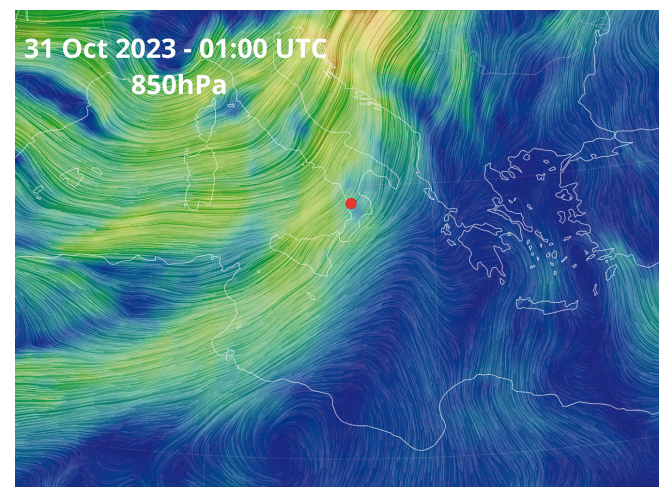


Fig. 5 - Wind maps of Mediterranean area with air temperatures at 01:00 on 31st October 2023. Map refers to wind at 850hPa/1500 m of elevation (Beccario, 2020). / Mappe del vento nell'area mediterranea con temperature dell'aria alle ore 01:00 del 31 ottobre 2023. La mappa si riferisce al vento a 850hPa/1500 m di altitudine (Beccario, 2020).

lana (Boisduval 1833), *Spodoptera ciliatum* Guenée 1852, and *Garella nilotica* (Rogenhofer 1882) (Viallet, 2021).

In its native range, *C. capensis* generally lives in open semi-desert areas covered by sparse vegetation and shows multiple generations (Fibiger & Hacker, 2007). Nonetheless, migrant individuals can be found virtually everywhere. According to Fibiger & Hacker (2007), the larvae feed on *Acanthus* sp.pl. and *Bidens pilosa* L., but in India the species can also be found as a pest in plantations of sunflower *Helianthus annuus* L. (Rangarajan *et al.*, 1975), safflower *Carthamus tinctorius* L. (Balikai, 2000), and Bt cotton (Kranthi *et al.*, 2011). Due to the amplitude of the larval diet, attention should be paid to this species in the future to prevent potential threats to European agriculture.

Acknowledgments

Project funded under the National Recovery and Resilience Plan (NRRP), Mission 4 Component 2 Investment 1.4 - Call for tender No. 3138 of 16 December 2021, rectified by Decree n.3175 of 18 December 2021 of Italian Ministry of University and Research funded by the European Union – NextGenerationEU; Project code CN_00000033, Concession Decree No. 1034 of 17 June 2022 adopted by the Italian Ministry of University and Research, CUP 83D21014060006, Project title “National Biodiversity Future Center - NBFC”. The authors acknowledge Alberto Zilli (Natural History Museum, London) and an anonymous reviewer for their suggestions that strongly improved the manuscript.

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