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Research article

# Extremely rare case of melanistic greater flamingo *Phoenicopterus roseus* documented for the first time in Europe in Lake Kerkini National Park, Northern Greece

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**Abstract:** The last decade a couple of observations of melanistic greater flamingos have been reported across Southern Mediterranean region. In October 2014 a melanistic greater flamingo was observed and photographed for the first time in Europe in Lake Kerkini National Park in Northern Greece. All the decade's observations could concern the same individual if we considered that melanism is an extremely rare genetic mutation and flamingos are moving across different lakes around the Mediterranean region.

**Keywords:** flamingo, melanism, plumage aberration

Flamingos are well known due to their remarkable plumage colouration. Red and pink colour on adult flamingos is a result of carotenoids, which are common pigments deposited in feathers (McGraw, 2006) and are obtained through their diet. In contrast, juvenile flamingos have a brownish plumage, lacking the pink colouration found in adults (Johnson et al., 1993). However, melanin that is the prevalent pigment and being responsible for the black and brown colours (McGraw, 2006), is gradually replaced by carotenoids as the flamingos grow older. It takes between four to six years for juvenile flamingos to progressively change their plumage colour from brown to pink. This delay observed in plumage maturation is a common phenomenon in large-bodied avian species (Hawkins et al., 2012) and is believed to assist with thermo-regulation as well as offer protection against potential predators (Johnson et al., 1993).

Plumage abnormality is not a common phenomenon, but it can be found in avian species. Several reasons could result in an aberrant plumage, including, feather staining hybridisation and hormonal imbalances (Guay et al., 2012). Plumage aberration could be due to abnormal deposit of melanin in

feathers, resulting in black colour (melanism), or lack of deposited pigment in feathers (or part of plumage), resulting in white colour (leucism). There are more categories of plumage aberration like albino, dilution, ino, progressive greying and brown, with the last two categories to be considered as the most common (Mahabal et al., 2016). In flamingos, plumage abnormalities are extremely rarely found. Nevertheless, some cases of melanistic greater flamingos have been reported over the last decade in the Mediterranean region. The very first “black” flamingo was observed at the salt pans of Umm Al-Rashrash (Eilat) in March 2013 and once more in the same area in February 2014 (Khalaf-Sakerfalke von Jaffa, 2017). Eight months later, on 5 October 2014, a melanistic greater flamingo was observed by the author at Lake Kerkini National Park (41°14'02.4"N 23°06'58.1"E) in northern Greece, becoming the first documented observation of a melanistic flamingo in Europe. The bird was spotted with binoculars at a significantly long distance and then photographed for further investigation. At first it looked as an oiled-up bird, but careful examination of the photos revealed an extremely rare melanistic flamingo.



Fig. 1. Melanistic greater flamingo *Phoenicopterus roseus* in Lake Kerkini, Greece.



A melanistic flamingo was observed again in April 2015 by a local birdwatcher at the Salt Lake of Akrotiri on the southern coast of Cyprus. Some years later, in October 2018 a melanistic flamingo was spotted again

in Eilat, but this time the bird could be a different individual from the previous observations, as it had a “pinkish” plumage almost to the whole length of its neck, which can be clearly seen from the photo taken



and uploaded in Israel Birding online report (Shalev, 2018). Nevertheless, the observations before 2018 could concern the same individual if we considered that melanism is an extremely rare genetic mutation and flamingos are moving across different lakes around the Mediterranean region. Moreover, as it can be seen in Fig. 1 the individual, observed in Greece, had a uniformly black plumage on body and neck except from a pale patch on the undertail feathers, which shows a plumage pattern identical to the bird seen in Cyprus and Eilat.

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# Additional records of family Dolichopodidae (Diptera: Empidoidea) for the fauna of the Balkan Mountains, Bulgaria

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**Abstract:** The paper gives information about 21 dolichopodid species distributed in the Balkan Mountains, Bulgaria. Four of them are newly recorded for the studied region, as for *Chrysotus hubenovi* described soon, it is the second locality for Bulgaria and for the Palaearctic realm in general. For *Dolichopus linearis* known also with one locality from Bulgaria this research provides two new ones.

**Keywords:** Balkan Mountains, *Chrysotus hubenovi*, Dolichopodidae, fauna, new records

## Introduction

Family Dolichopodidae encompasses small to medium sized predatory flies (from 1 to 10 mm). The family is one of the most species-rich of Diptera Brachycera in the world, with about 8000 species known so far. For the fauna of Bulgaria are known 211 dolichopodids and for the Balkan Mountains the number is 72 species up to now (Kechev & Koychev, 2021).

The main purpose of this work is to provide new data for the distribution of the family Dolichopodidae for the Balkan Mountains.

## Material and methods

The material for the present work was collected in the studied area by the authors from eight localities with a sweeping net plus in one locality with Malaise trap by D. Ganeva and T. Ljubomirov (Fig. 1). After collecting, the adults have been stored in vials containing 75% ethanol. The species have been sorted in the laboratory, using a stereo microscope Carl Zeiss. For the determination of dolichopodids identification guides

by Parent (1938), Negrobov & Stackelberg (1969), d'Assis Fonseca (1978) and Grichanov (2007) have been used. The material presented in this paper is kept in Mihail Kechev's collection at the Department of Forest Entomology, Phytopathology and Game Fauna, Forest Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria.

## Collecting sites

- Site 1 Tserovo Village, near Svoge, Iskar River (Fig. 2), 21.ix.2022, 43.0086°N 23.3524°E, 432 m a.s.l., sweeping net, M. Kechev & B. Koychev
- Site 2 Cherepish monastery, Iskar River, 24.vii.2022, 43.0952°N 23.6136°E, 261 m a.s.l., sweeping net, B. Koychev
- Site 3 Lyutibrod Village, Iskar River, 24.vii.2022, 43.1089°N 23.6272°E, 234 m a.s.l., sweeping net, B. Koychev
- Site 4 Rebarkovo Village, Iskar River, 43.1132°N 23.6762°E, 223 m a.s.l., sweeping net, B. Koychev  
4a – 5.vi.2022  
4b – 24.vii.2022



Fig. 1. Map of the Balkan Mountains with localities of collecting.

Site 5 Kreta Village, Vratsa District, Iskar River, 43.1208°N 23.7013°E (Fig. 3), 220 m, sweeping net, B. Koychev

5a – 19.vi.2022

5b – 8.vii.2022

5c – 12.viii.2022

5d – 28.viii.2022

Site 6 Mezdra, Iskar River, 19.vi.2022, 43.1338°N 23.7044°E, 210 m a.s.l., sweeping net, B. Koychev

Site 7 near Kalofer Monastery, 20.vii–1.viii.2010, 42.641355°N 24.950285° E, 530 m a.s.l., Malaise trap, D. Ganeva & T. Ljubomirov

Site 8 Planinitsa Village, 27.vii.2022, 42.891613°N 27.172142°E (Fig. 4), 242 m a.s.l., sweeping net, M. Kechev.

### Faunistic results

#### Diaphorinae

*Asyndetus latifrons* (Loew, 1857) – Material examined: site 3: 1 ♂.

*Chrysotus angulicornis* Kowarz, 1874 – Material examined: site 3: 1 ♂, 2 ♀♀.





Fig. 2. Iskar River near Tserovo Village.

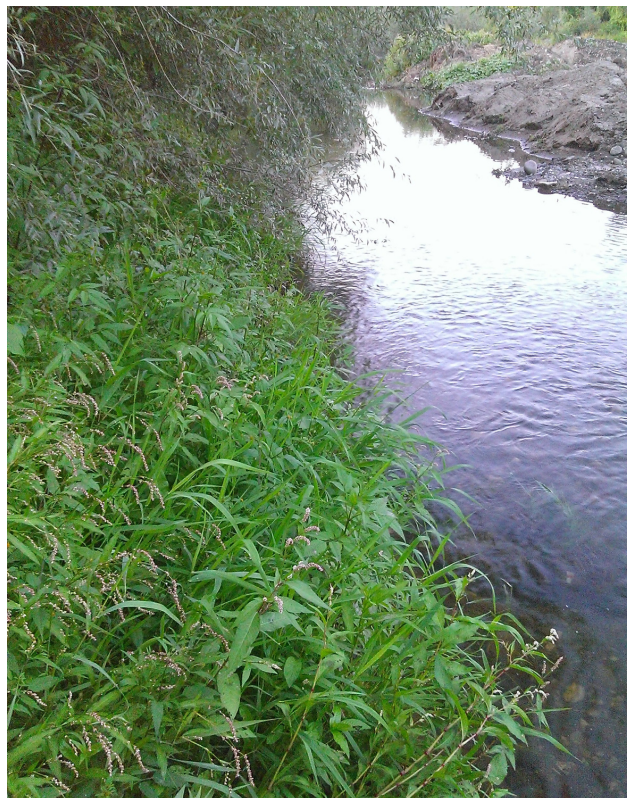


Fig. 3. Iskar River near Kreta Village.



Fig. 4. A small streamlet near fountain in Planinitsa Village.



Fig. 5. *Chrysotus hubenovi* Kechev, Naglis, Negrobov, 2022, female: A – habitus, B – head.

*Chrysotus cilipes* Meigen, 1824 – Material examined: site 4b: 2 ♂♂; site 5a: 3 ♂♂.

*Chrysotus femoratus* Zetterstedt, 1843 – Material examined: site 4b: 4 ♂♂.

*Chrysotus hubenovi* Kechev, Naglis, Negrobov, 2022 (Fig. 5) – Material examined: site 7: 1 ♀. First record for the Balkan Mountains.

*Chrysotus laesus* (Wiedemann, 1817) – Material examined: site 6: 1 ♂.





Fig. 6. *Rhabdium micans* (Meigen, 1824), habitus.

#### Dolichopodinae

*Dolichopus linearis* Meigen, 1824 – Material examined: site 4a: 1 ♂; site 5a: 1 ♂. First record for the Balkan Mountains.

*Dolichopus pennatus* Meigen, 1824 – Material examined: site 5b: 1 ♂, 2 ♀♀.

*Gymnopternus aerosus* (Fallén, 1823) – Material examined: site 1: 1 ♂.

*Hercostomus plagiatus* (Loew, 1857) – Material examined: site 5a: 2 ♀♀. First record for the Balkan Mountains.

*Tachytrechus notatus* (Stannius, 1831) – Material examined: site 5d: 1 ♂, 2 ♀♀. First record for the Balkan Mountains.

#### Medeteranae

*Medetera micacea* Loew, 1857 – Material examined: site 8: 2 ♂♂.

*Thrypticus bellus* Loew, 1869 – Material examined: site 5d: 1 ♂.

*Chrysotimus molliculus* (Fallén, 1823) – Material examined: site 2: 26 ♂♂, 9 ♀♀; site 3: 2 ♂♂.

#### Rhaphiinae

*Rhabdium appendiculatum* Zetterstedt, 1849 – Material examined: site 5c: 1 ♂.

*Rhabdium caliginosum* Meigen, 1824 – Material examined: site 5b: 1 ♂; 5c: 1 ♂, 2 ♀♀.

*Rhabdium micans* (Meigen, 1824) (Fig. 6) – Material examined: site 2: 1 ♂, 3 ♀♀.

#### Sympycninae

*Sympycnus pulicarius* (Fallén, 1823) – Material examined: site 5d: 2 ♂♂.

*Sympycnus simplicipes* Becker, 1908 – Material examined: site 5d: 1 ♂.

*Syntormon pallipes* (Fabricius, 1794) – Material examined: site 5b: 2 ♂♂; site 8: 1 ♂.

*Teuchophorus monacanthus* Loew, 1859 – Material examined: site 5d: 1 ♂.

#### Discussion

Four dolichopodid species are recorded for the first time for the Balkan Mountains in the territory of Bulgaria. For the species *Chrysotus hubenovi*, described from the West Rhodope Mountains from 1100 m altitude (Kechev et al., 2022), this work gives the second locality from Kaloferska Planina Mt at an altitude of 530 m. The species *Dolichopus linearis* until now was known in Bulgaria with only one locality – one male specimen from the town of Chirpan (Kechev, 2011) – and here we reported two new ones.

*Hercostomus plagiatus* was known with two localities in Bulgaria, Basha Place, near Chirpan and Sarnena Sredna Gora Mt, Chehlaré Village. This species inhabits riverbeds and small ponds in Bulgaria (Kechev & Ivanova, 2015; Kechev, 2016).

*Tachytrechus notatus* is widespread in Bulgaria and is known from Pancharevo (Nedelkov, 1912), Varna, on the sea rocks (Beschovski, 1964), Gorno Belevó Village, along the banks of Omurovska River (Kechev et al. 2014).

*Rhabdium micans* distributed throughout all Europe and for the Balkan Mts was published from the Serbian part of the mountain (Grichanov, 2016). For Bulgaria it was known from two localities so far. The first one is Sofia (Nedelkov, 1912) and the second locality Rebarokovo Village in the Balkan Mts (Kechev & Koychev, 2021), situated close to the one pointed out in this study. This species does not appear to be as widespread as the other two species of the genus *Rhabdium* mentioned above – *Rh. appendiculatum* and *Rh. caliginosum*, which are known from many localities in the country and from different habitats.

With this research the total number of the dolichopodid species for the Balkan Mountains is increasing to 76.

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## Research article

# New evidence for the recent presence of the lynx, *Lynx lynx* (Linnaeus), in Western Stara Planina Mountains, Bulgaria

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**Abstract:** The data presented here argue for the regular recent presence of the lynx in the north-western mountainous border region of Bulgaria.

**Keywords:** Bulgaria, *Lynx lynx*

The Eurasian lynx, *Lynx lynx* (Linnaeus), was assumed to be extinct in Bulgaria at the beginning of the 40s of the 20th century (Spiridonov & Spassov, 1985). After this period and until now, there are some reports of its appearance in different parts of the country (Spassov, 2007; Natura Bulgaria, 2013). Most of them are questionable to one extent or another, some simply false. Some of them seem credible, but difficult to prove. It was observed in 2000 – in the region to the south of Stakevtsi Village (E. Dzhuninski, pers. comm.) and in 2004 – in the same region – Stakevtsi Hunting Farm by Ts. Mihaylov. Its presence was documented (Fig. 1) and proved in the same region in 2005 (Spassov et al., 2006), where a lynx was killed illegally a year later. These are the first reliable data on the reappearance of the lynx in Bulgaria. In 2008 it was detected by a camera trap (Zlatanova et al., 2009) on Osogovo Mountain also on the western border of the country, and then photographed twice more in the same place until 2011, when one animal was killed by poaching (Zlatanova, pers. comm.). At the same time, the track of a couple established in the breeding season was identified at the highland, open part of the mountain (V. Ivanov, pers. comm.). Sounds apparently made by a lynx (compared with recordings of a lynx's voice) during the breeding season (in March) were

heard in 2022 on the southern slopes of the Western Stara Planina, in the Godech Region (Vasil Ivanov, pers. comm.). Obviously, these lynxes are part of the population formed in the last ca. 25 years in Eastern Serbia by animals that settled on their own from the Carpathian Mountains (Spassov et al., 1999; Grubač, 2000). It could be considered that the species is entering more suitable mountainous biotopes of the country, but definitive evidence has not been found so far. A photo from the Western Rhodopes shows a probable presence of the species there. This can be taken as a sign of dispersal, but it is said to have been encountered as early as the 1960s (Spassov et al., 2015). There is, although difficult to prove, data about poached lynx entering, as it seems, from the western mountain border into the interior of Bulgaria. Poaching seems to be thwarting the establishment of a permanent population in the country as yet. The lynx is included in the Red Data Book of Bulgaria (second edition) as critically endangered (Spiridonov & Spassov, 2015).

The data presented here speak of the regular presence of the lynx in recent years in the western mountainous border region of the country. In 2017, a lynx was observed by Tsvetko Tsvetkov, a director of Chuprene State Forestry. The meeting took place in the evening and the animal approached almost ten metres



Fig. 1. A lynx track in Stakevtsi Hunting Farm, Western Stara Planina (March 2005, photo: V. Pochekanski).



Fig. 2. Lynx next to a game feeder in the Stakevtsi game section of Chuprene State Forestry (photo by camera trap, Tsvetan Michailov, 8.07.2020).



Fig. 3. The approximate lynx habitat in Northwestern Bulgaria, in the area of the Bulgarian-Serbian border between the villages of Chiprovsi in the south and Stakevtsi in the north.





Fig. 4. Habitat of the lynx in the region of Stakevtsi Hunting Farm area in NW Stara Planina (Bulgaria).

away, not suspecting the presence of the person. In 2020, a lynx was captured on a camera placed by Ts. Mihaylov (Fig. 2) next to a game feeder in the Stakevtsi Hunting Reserve of the Chuprene State Forestry. In 2020/2021 roe deer were found in the area, killed and eaten in a manner different from the manner of the wolf that is permanently present in the area (Ts. Mihaylov, pers. observations). These observations indicate the regular habitation of the common border territory between Serbia and Bulgaria (Fig. 3). The noted mountainous region is particularly suitable, judging after the game abundance and the quality of the forests (Fig. 4). The Stara Planina Nature Park in Serbia, located right next to the border has an area of about 1,400 sq. km. A proposal for the creation of a Natural Park on the adjacent Bulgarian territory, covering an area of about 1,300 sq. km was submitted to the Ministry of the Environment and Waters in 2003 and was updated at the end of 2022. It includes natural coniferous forests, high-stemmed broad-leaved forests over 40 years old and mature coppice forests, high-mountain and mid-mountain shrub and grass

ecosystems and rocks, as well as less than 25% connecting areas. According to the 2003 proposal (L. Mileva, pers. comm.), the total area of beech forests is about 48,000 ha, of which representative and medium-aged high-stemmed beech forests occupy about 28,000 ha. Of these, less than half of the area falls on forests aged between 100 and 200 years. According to our observations, the main food of the lynx, the roe deer, is in sufficiently high numbers (according to data from the hunting officials of the forestry), for which the care taken in the hunting areas is important.

The individual territory of Eurasian lynx varies greatly from 130–1400 sq. km (Herfindal et al., 2005), and according to other data (Breitenmoser et al., 2005) 180–2780 sq. km for males and 98–759 sq. km for females. In good habitats, such as those in the Western Stara Planina, the territory of a male is probably about 400/500–600 sq. km, judging by the data of the approximate number of adult individuals and the territory inhabited by the Balkan lynx in the Western Balkans (Melovski et al., 2015). The data available today lead us to think that the lynx is present from south to north at least from Chiprovtsi area to Selash Village. This territory covers the forested mountainous region, both from Bulgaria and Serbia with an approximate area of about 600 sq. km. At least one male and about two female adults may inhabit this area. The territory that will eventually be protected by the two adjacent Serbian and Bulgarian parks will cover an area of about 2,700 sq. km, most of which (ca. 1,500 sq. km) represents a suitable habitat for the species. This territory (the Chuprene State Forestry included) would provide suitable conditions for the existence of approximately 7–9 adult lynxes. This territory represents a population core for the potential dispersal of young individuals to the east in the Bulgarian mountainous territories.

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