

First record of *Papilio demoleus* Linnaeus, 1758 (Lepidoptera: Papilionidae) from Aleppo, West Syrian Levant

Первое указание *Papilio demoleus* Linnaeus, 1758 (Lepidoptera: Papilionidae) из Западносирийского Леванта (Алеппо)

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Ключевые слова: Алеппо, изменения климата, Lepidoptera, *Papilio demoleus*, Сирия.

Abstract. The Lime Swallowtail *Papilio demoleus* Linnaeus, 1758 (Lepidoptera: Papilionidae) is an ecological indicator in Syria and the most studied butterfly species since it is widespread and dangerous to agriculture. Since its first appearance in Palmyra in 2003–2006, this is curiously the first time it has been recorded in Aleppo; its appearance is probably associated with abandoned agricultural areas due to the war or with climate change.

Резюме. Парусник *Papilio demoleus* Linnaeus, 1758 (Lepidoptera: Papilionidae) является одним из экологических индикаторов в Сирии и наиболее изученным видом бабочек, частично вследствие широкого распространения и вреда для сельского хозяйства. После первого указания Д. Беньямином и др. из Пальмиры в 2003–2006 г., вид впервые указывается из Алеппо. Появление его здесь может быть связано с образованием заброшенных вследствие военных действий сельскохозяйственных земель или с изменениями климата.

Introduction

Lime Swallowtail *Papilio demoleus* Linnaeus, 1758 (Lepidoptera: Papilionidae) is an Indo-Australian species originally distributed from the Arabian Peninsula in the west through tropical Asia to Okinawa in the east, and mainland Southeast Asia in the south, occupying several isolated territories. This species also has been recorded in Australia and southern Papua New Guinea. As far as it is known, different populations of the species are well differentiated in DNA structure, morphology, and life cycle [Zakharov et al., 2004; Smith, Vane-Wright, 2008]. At the west *P. demoleus* extends from Iran into Iraq and around the Persian Gulf, following the cultivation of *Citrus* [Larsen, 1977, 1984; Nazari, 2003] and eastern Arabia from Oman through UAE to Qatar, Bahrain and Kuwait [Walker, Pittaway, 1987; Al-Houty, 2000]. In the New world, it was introduced to the Caribbean where it was first reported in 2004 from the Dominican Republic [Guerrero et al., 2004] and in 2006 from Puerto Rico [Homziak, Homziak, 2006]. The first record of the Lime Swallow-

tail in Europe in Portugal, Algarve, in 2012 by D. Morgan and M. Wiemers [2012].

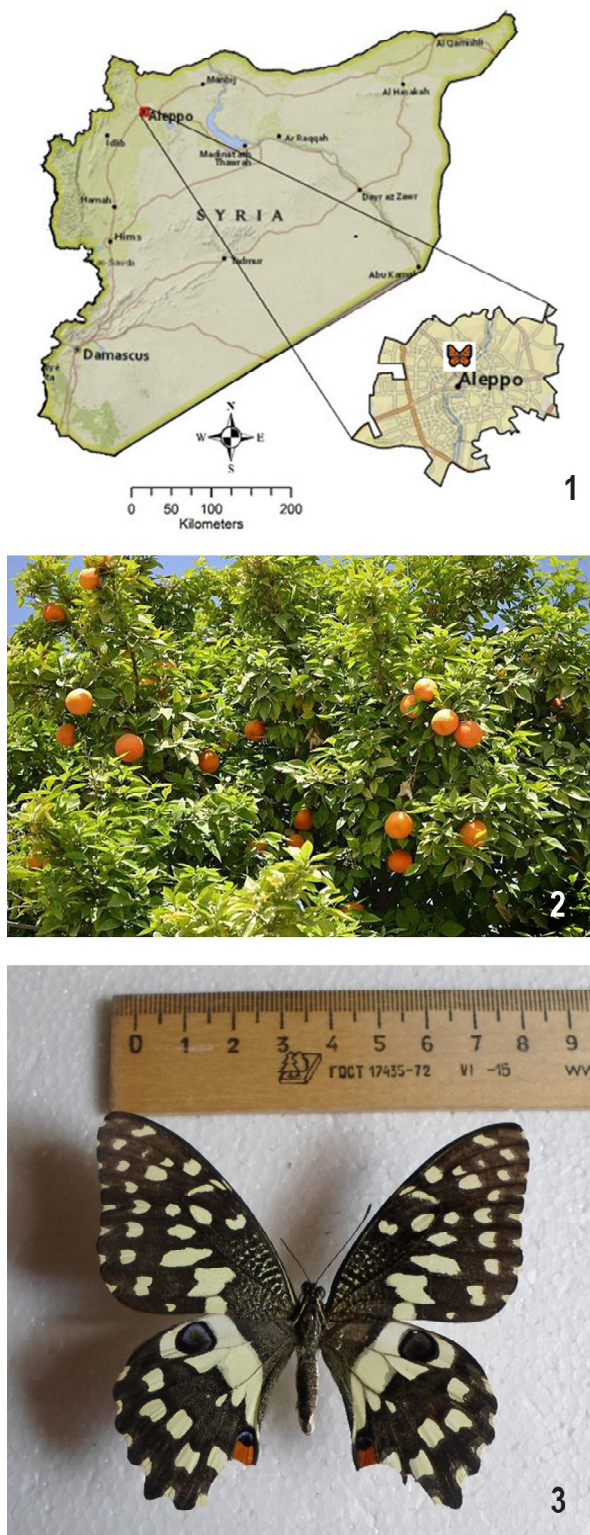
The first observation of *P. demoleus* for Turkey was by Ahmet Koçak [Koçak et al., 2006], who discovered it at Nusaybin (Nisibin), South East Turkey, which faces the Syrian border city of Al Qāmişlī; on the basis of the proximity of Nusaybin to the Syrian border, Koçak reasonably decided that *P. demoleus* should also be added to the Syrian faunistic list. The first official record of *P. demoleus* for Syria was by D. Benyamini [Benyamini et al., 2007] from Al Qaryatayn west of Palmyra in 2003. Finally, O. Başbay summarizes recent reports of the extensive spread of *Papilio demoleus* in south-eastern Turkey and in regions adjacent to the north-eastern Mediterranean [Başbay et al., 2020], they confirmed the presence of *P. demoleus* in the Latakia Mountains of western Syria, with numerous later observations of the butterfly and its early stages in *Citrus* groves along the Mediterranean coast of Syria.

Materials and methods

The two specimens of *Papilio demoleus* were collected from the Aleppo city (Fig. 1) from 5–10.07.2019 from the point 36.220777° N, 37.158261° E, where located an abandoned garden of *Citrus aurantium* tree (Fig. 2); and the temperature was 37 °C /19 °C. Both specimens were males (Fig. 3). Other specimens were observed visiting the citrus trees every morning at the same time (8:30–9:00 am) until the end of October.

Discussion

Recording of the arrival of *P. demoleus* to Aleppo is important, because it shows further expansion westwards and it actually appeared for the first time in the Levant less than 100 kms from the East Mediterranean coast. Being well-known migrants, a large-scale movement of this species supposed to be achieved from Al-Qaryatayn since 2003 (the first observation in Syria) to



Figs 1–3. *P. demoleus* from Aleppo, West Syrian Levant. 1 — map location, 2 — the host plant tree *Citrus aurantium*, 3 — *P. demoleus* recorded from Aleppo.

Рис. 1–3. *P. demoleus* из Алеппо, Западносирийский Левант. 1 — место сбора, 2 — кормовое растение *Citrus aurantium*, 3 — *P. demoleus* из Алеппо.

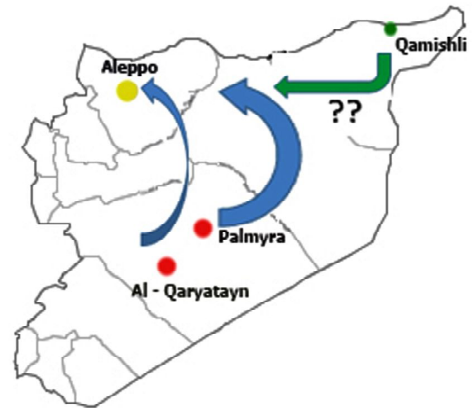


Fig. 4. *P. demoleus* supposed migration directions in Syria.
Рис. 4. Предполагаемые направления миграции *P. demoleus* в Сирии.

the Aleppo region (Fig. 4). The real duration period of this migration, stopping points in various regions and being the seasonal movement of these species is a regular component of their life history matters that are still arguable. In addition, it is not clear if the migration of this species to the west is reversible in the cold seasons.

However, the only explanation for the westward expansion of the species is the favorable warm climate, due to ongoing climate changing process in the area. This species distribution to the west must consider as an indicator of climate changing during last two decades.

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