

# Preliminary note on the range expansion of *Papilio demoleus* (Lepidoptera: Papilionidae) in south-eastern Turkey, and on the first documented arrival of this invasive species at the Mediterranean coast of Syria

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**Abstract.** The aim of this short note is to summarise recent reports of the extensive spread of *Papilio demoleus* in south-eastern Turkey and in regions adjacent to the north-eastern Mediterranean. *P. demoleus*, a papilionid of Oriental origin, is recognized in some Citrus-growing areas of the world as an invasive pest species and hence its arrival is of potential economic importance.

**Samenvatting.** Het doel van deze korte nota is om de recente waarnemingen van de verspreiding van *Papilio demoleus* in Zuidoost-Turkije en in de aanpalende noordoostelijke mediterrane gebieden samen te vatten. *P. demoleus*, een Papilionidae van oriëntaalse oorsprong, wordt in sommige citrus-kwekerijen van de wereld beschouwd als een invasieve pestsoort en dus heeft de komst van deze soort mogelijk een economische betekenis.

**Résumé.** Le but de cette petite note est de résumer les rapports récents de la distribution de *Papilio demoleus* dans le sud-est de la Turquie et dans les régions limitrophes au nord-est de la région méditerranéenne. *P. demoleus*, un papilionide d'origine orientale, est reconnu dans certaines régions productrices de citrus du monde comme une espèce invasive nuisible et, par conséquent, son arrivée présente une importance économique potentielle.

**Key words:** *Citrus* – New records – Alien Invasive Species – Mediterranean region.

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## Introduction

The first record of *Papilio demoleus* Linnaeus, 1758 (TL: Canton, China) in Turkey was reported by Koçak *et al.* (2006), prior to which the closest known record to Turkey (and Syria) was from Hillah in Iraq's central plain (Wiltshire 1957: 19). The first Turkish record of *P. demoleus* (otherwise known as the Lime or Chequered Swallowtail) was from Nusaybin, Mardin Province, a border village to that of Kameshli (Al Quamishli) in Syria. Based on proximity, this Turkish record was also assigned to the Syrian fauna by Koçak *et al.* (2006), although no actual observations of the species were made there. Benyamini *et al.* (2007) reported the finding of *Papilio demoleus* in the central Syrian city of Palmyra, noting this as the first confirmed presence of *demoleus* in Syria. The Nusaybin record was stated as the only known location for the species in Turkey by Koçak *et al.* (2006), a situation that appears to have persisted until at least 2008 (Kemal *et al.* 2008).

## Observations in the current decade

Subsequently, however, in 2012 and 2014 *Papilio demoleus* was observed in small numbers at Ceylanpınar (Şanlıurfa Province, Turkey), a location 100 km east of Nusaybin (Kesran 2016). Since then, the authors of this article have been investigating possible new locations for the species in an attempt to determine the degree of

expansion of *P. demoleus* (Fig. 1) in the region. From these studies, it is clear that *P. demoleus* is extending its range, not only by moving westwards as anticipated along the Syria–Turkey border, but also in an easterly direction where suitable climate and habitat conditions permit. A northerly movement in Turkey is not predicted due to unsuitable climatic conditions, higher topo-graphical elevations and a lack of *Citrus* trees required as food plant for the caterpillar of the species.

In parallel to the studies in Turkey, observations in Syria were undertaken simultaneously and here we report that, as in Turkey, *P. demoleus* is extending its distribution in Syria, but considerably more extensively. However, it should be pointed out that opportunities for research in border areas are severely restricted due to this being a conflict zone. Our studies have 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.

As well as being of interest (in that they demonstrate further evidence of climate change), these observations are of potential economic importance due to the recognized status of *P. demoleus* as an invasive pest species (CABI Datasheet 2018). A paper, currently in preparation by the authors of this brief account, will discuss and illustrate these findings in greater detail when our investigations are further advanced.



Fig. 1. *Papilio demoleus*, Mardin Turkey, 2.11.2018. © Onat Başbay.

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