

CYDALIMA PERSPECTALIS (WALKER, 1859)
(LEPIDOPTERA: PYRALOIDEA: CRAMBIDAE: SPILOMELINAE) –
NEW INVASIVE PEST MOTH IN BULGARIA

¹STOYAN BESHKOV, ¹STANISLAV ABADJIEV AND ²DESISLAV DIMITROV

¹ National Museum of Natural History, 1, Tsar Osvoboditel Blvd, Sofia 1000, Bulgaria
(stoyan.beshkov@gmail.com; s.abadjiev@gmail.com)

² University Botanic Garden, PO box 56, Balchik 9600, Bulgaria
(desislav_geo@abv.bg)

Abstract

Cydalima perspectalis (Walker, 1859) (Lep.: Crambidae) is reported here as a new genus and species for Bulgaria, from three remote localities in disjunct parts of the country. All localities are in urban areas. At one of the localities the new species has become a pest, reproducing and causing serious damage to *Buxus* spp.

Introduction

Cydalima perspectalis has a primarily eastern Asiatic distribution: China, Korea and Japan, but from 2006 was introduced accidentally in Europe where it spreads extremely rapidly on ornamental Box (*Buxus*) communities (Leraut, 2012). It was registered as new for Europe by Billen (2007) in the state of Baden-Wuttemberg (Germany), where the species was probably introduced in 2005. It is reported also as a new for Europe by Kruger (2008). At present in Europe it is known on ornamental box, but not yet on communities of autochthonous box in Germany, the Netherlands, Switzerland, Great Britain, France (Leraut, 2012), Romania (Iamandei, 2010), Austria, Italy, Czech Republic, Hungary, Turkey and Slovenia (Ramel & Rossi, 2013). It is a very characteristic, large species (Plate 1) and confusion with other species is impossible.

Results and discussion

In spite of intensive light trapping and other studies during the past several years, including close to the localities mentioned below, *C. perspectalis* has not been found in a natural or semi-natural environment. Almost all examples encountered were observed resting, in the day time, in villages or towns with gardens containing *Buxus* spp. The only exception was at the Penny Market in Balchik, where examples were resting on the wall near lamps and there were no box nearby. As an active pest, *Cydalima perspectalis* is recorded only in the Botanical Garden at Balchik.

At present in Bulgaria, *C. perspectalis* is known from the following localities:

Black Sea coast: Balchik, The Botanical Garden, 43°24'17.90"N, 28°08'49.40"E – UTM grid reference 35TNJ90, 18.viii.2014, S. Beshkov, S. Abadjiev & D. Dimitrov leg; Balchik Town, Penny Market, 43°25'40.80"N, 28°09'41.00"E – UTM grid reference 35TNJ90, 18.viii.2014, S. Beshkov & S. Abadjiev leg; Albena Resort,

UTM grid reference 35TNJ80, D. Dimitrov (pers. comm.); Zlatni Tyasatsi Resort, UTM grid reference 35TJH89, D. Dimitrov (pers. comm.); Varna town, UTM grid reference 35TNH78, D. Dimitrov (pers. comm.); Varna Zhurnalists Resort, 9.x.2014, photographed by N. Draganova.

South-west Bulgaria: Usoyka Village - 42°11'32.92"N, 23°03'36.71"E – UTM grid reference 34TFM77, 11.viii.2014, S. Beshkov & S. Abadjiev leg.

South-east Bulgaria: Strandzha Mts, Gramatikovo Village – 42°03'43.84"N, 27°39'17.24"E — UTM grid reference 35TNG55, 13.viii.2014, N. Simov leg.



Plate 1. *C. perspectalis*, Balchik, The Botanical Garden, 18.viii.2014.

These localities are indicated in the map Fig. 1 and suggest that in the near future *C. perspectalis* might also be detected in the Republic of Macedonia and in Greece.

According to plant protection experts, there are no reports of *C. perspectalis* in the north-eastern coastal area of Bulgaria in 2013. However, its presence there in that year seems possible, perhaps in low density in gardens and near villages with planted Box. According to the same specialists there is now evidence for its presence along the northern Black Sea coast as indicated above, but no reports are available from countryside areas.

In the Botanical Garden at Balchik, *C. perspectalis* is recorded as mature larvae at the end of June and beginning of July 2014. Eggs are laid on the underside of the leaves in groups of different sizes (Plate 2a). First instar larvae can be found in March/April. These feed as miners within the leaves and then skeletonise them (Plate 2b). Last instar larvae (Plate 2c) feed on the leaves surrounded by loose webbing,

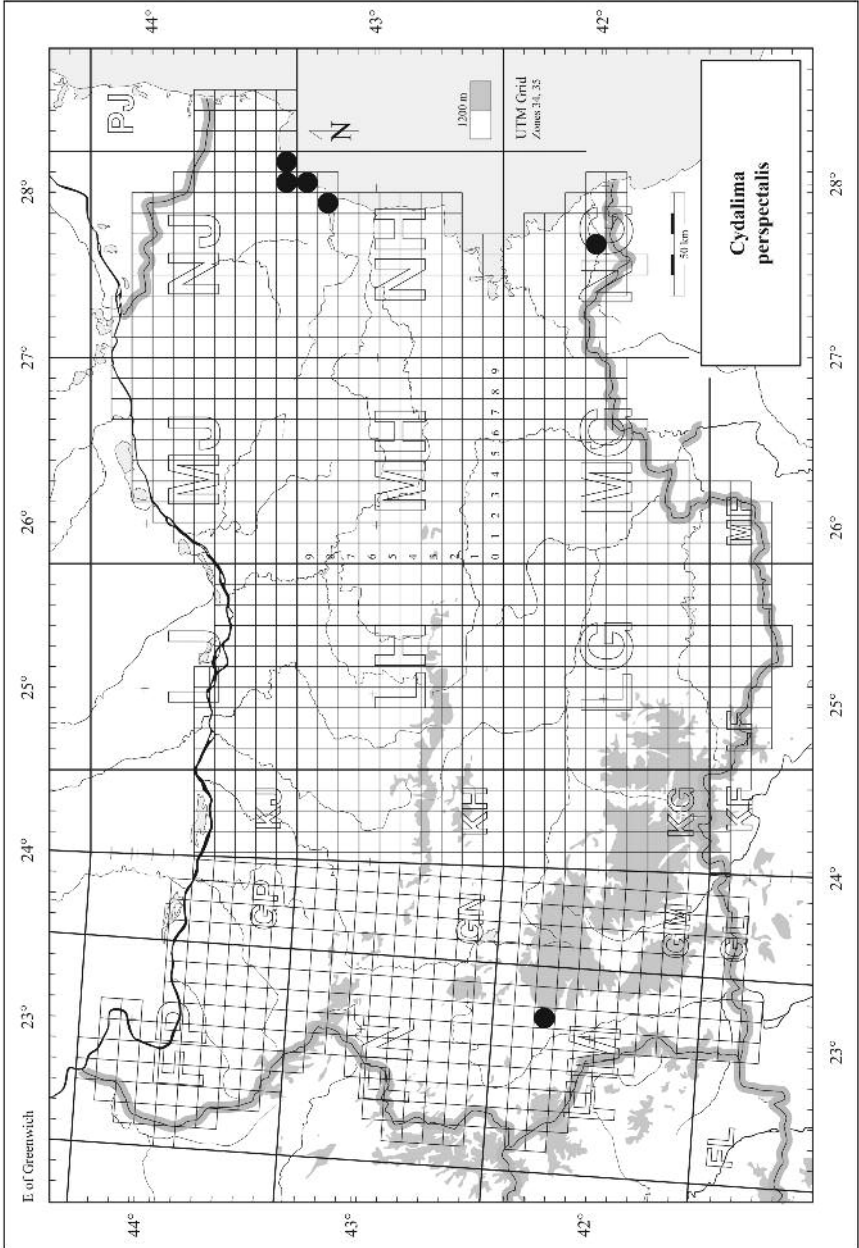


Figure 1. Known distribution of *C. perspectalis* in Bulgaria.

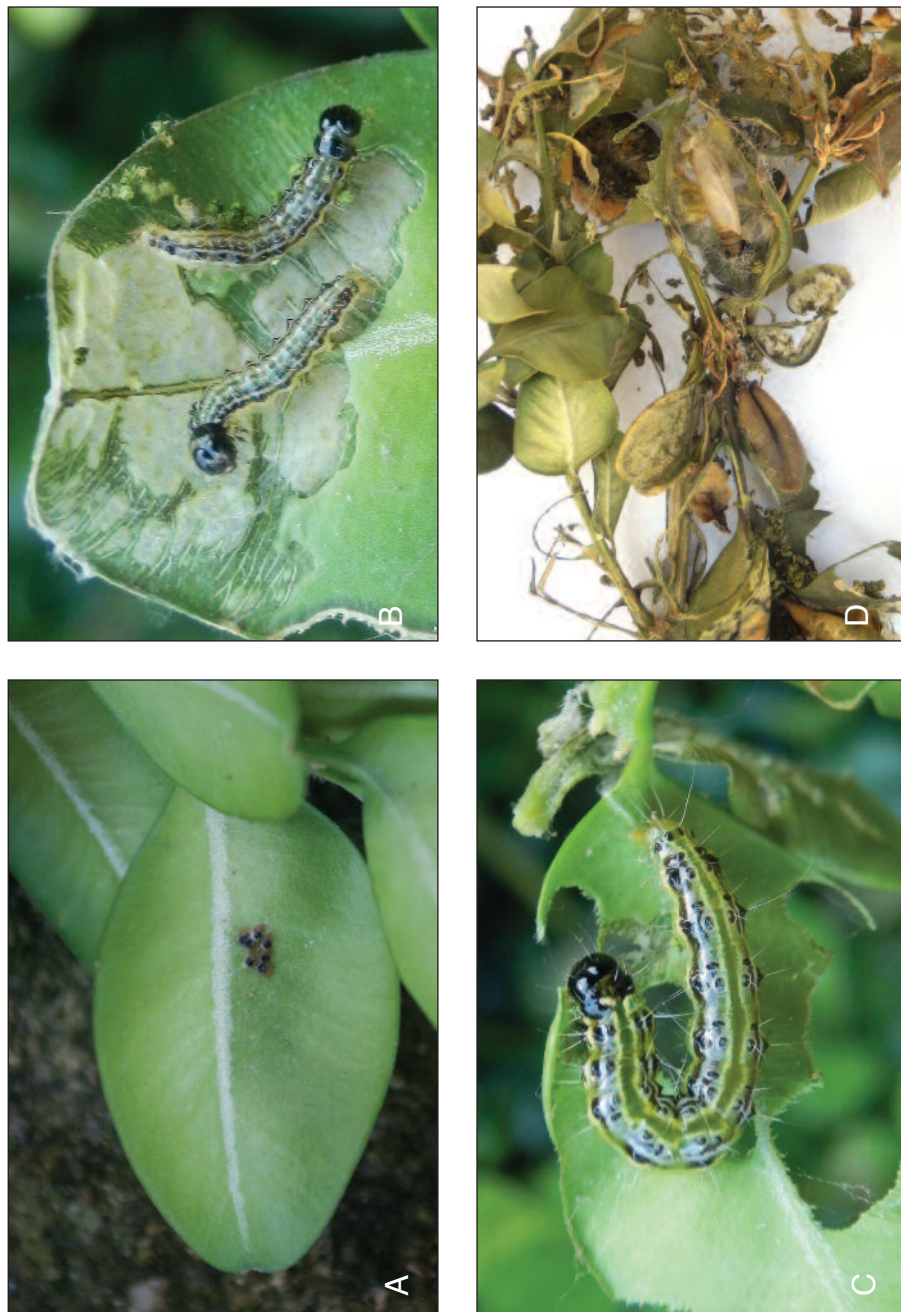


Plate 2. Developmental stages of *Cydalima perspectalis* at Balehik Botanical Gardens, Bulgaria. **a.** Eggs, 18.viii.2014; **b.** Young larvae, 18.viii.2014; **c.** Final instar larva, 18.viii.2014; **d.** Larval feeding damage and cocoon in a web, 10.viii.2014.



Plate 3. Damage on Box, Balchik, The Botanical Garden, 18.viii.2014.

pupating within a web (Plate 2d). In the Botanical Garden we observed that the life cycle is more intensive on Box plants in shaded positions, because the upper temperature tolerance of *C. perspectalis* is about 30°C. In the beginning of July there were two rows of *Buxus* sp. with height of about 1 m on relatively shady place, which were almost completely destroyed in a short period of one week. Similar rows on sunny places were in relatively good condition. On 19 August 2014, affected Box plants were sprayed with a strong water jet, which washed away the larvae and the eggs an effective alternative to chemical and biological control methods.

References

- Billen, W., 2007. *Diaphania perspectalis* (Lepidoptera:Pyralidae) – a new moth in Europe. *Mitteilungen der Entomologischen Gesellschaft Basel* **57**: 135-137.
- Iamandei, M., 2010. *Diaphania perspectalis* (Walker, 1859) (Lepidoptera: Crambidae) a new pest of *Buxus* spp. in Romania. *Lucrări științifice USAMVB, Seria B* **54**: 787-793.
- Ramel, J.-M. & Rossi, J.-P., 2013. Geographical range of *Cydalima perspectalis* (Walker, 1859) [Lepidoptera: Pyraloidea: Crambidae: Spilomelinae] and its recent expansion in France. *XVIII European Congress of Lepidopterology, Blagoevgrad, Bulgaria. Abstract book*: 70-71, Pensoft Publishers.
- Kruger, E. O., 2008. *Glyphodes perspectalis* (Walker, 1859) – neu für die Fauna Europas (Lepidoptera:Crambidae). *Entomologische Zeitschrift* **118**: 81-83.
- Leraut, P. 2012. *Moths of Europe, Vol. III: Zygaenids, Pyralids 1 and Brachodids*. N.A.P. Editions.