

The invasive species *Cydalima perspectalis* (Walker.) as a threat to the natural boxwood (*Buxus sempervirens*) populations in the Republic of North Macedonia



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Presenter: Blagoj Shurbevski



Introduction to the species

Common name: Box tree moth

Taxonomy

Order: Lepidoptera

Family: Crambidae



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Larval feeding damage



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Eggs and newly hatched caterpillars



Range and spread

- *Cydalima perspectalis* (Walker, 1859), is native to East Asia, India (Hampson, 1896); China (Walker, 1859); Japan (Inoue, 1982), Taiwan, Korea (Park, 2008) and Eastern Russia (Kirpishnikova, 2005).
- The species is easily introduced accidentally with its host plants, which are extensively traded all over the world, and therefore presents a serious threat.
- In Europe it was introduced most probably with *Buxus* seedlings (Mally & Nuss, 2010).
- It was initially registered in southwestern Germany in 2006 (Krüger, 2008), while in 2007 was found in Switzerland (Käppeli, 2008; Sigg, 2009) and the Netherlands (Muus et al, 2009).
- In 2008, it was found in Great Britain (Mitchell, 2009), France (Feltrauer et al, 2009) and Austria (Roedelan, 2009).



- It appeared in Hungary for the first time in 2011 (Safian & Horvath, 2011), as well as in Romania, (Szekely et al., 2011), Turkey (Hizal, Kose, Yesiland & Kaynar, 2011), Belgium (Casteels et al., 2011) and Slovakia (Pastoralis et al., 2013).
- Slovenia in 2012 (Seljak, 2012; M. Jez, 2012) and later in Denmark (Hobern, 2013).
- This species then spread to Croatia (Koren & Črne, 2012, Matošević, 2013), Serbia (Konjević et al., 2015), Montenegro (Hrnčić & Radonjić, 2014), Bosnia and Herzegovina in 2014 (Ostojić et al. 2015). Greece (Strachinis et al., 2015) and Bulgaria (Beshkov et al., 2015).



Host species

- Its main host species are all boxwood species (*Buxus spp.*)
- Very common on popular ornamental species.

Buxus microphylla

Buxus sinica

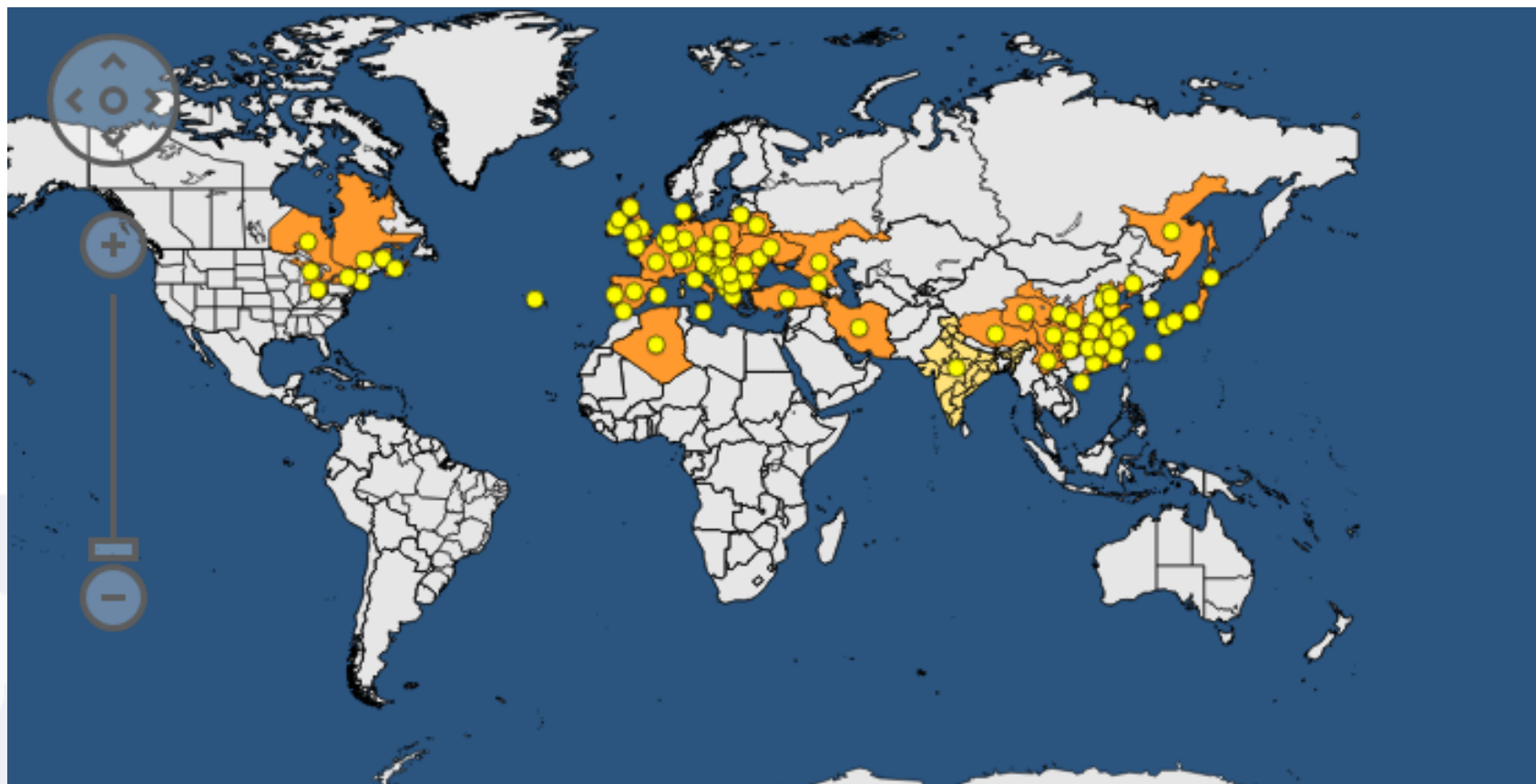
Buxus sempervirens

- In its native range it feeds on other species as well, such as *Euonymus* and *Ilex* however it seems to not typically feed on them in Europe (Ferracini et al. 2022)

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Source: EPPO Global Database



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- In North Macedonia, the species was first registered in July 2014, in the Skopje urban area (Nacheski, 2018)



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4-6 June 2024



- In the very next year (2015), *Cydalima perspectalis* was found for the first time in the natural populations of *Buxus sempervirens* near Skopje





Overview of the spread in the country

No.	Localities	Reporting year	Infested area (ha)	Defoliation (%)
1	Skopje – urban area	2014	/	75 - 100
2	Skopje – urban area Vodno - Skopje	2015	100	85-100 30-85
3	Vodno - Skopje Matka - Skopje	2016	500	55-90
4	Vodno - Skopje Matka - Skopje	2017	1000	75-100 25-80
5	Vodno and Matka	2018	Entire area	75-100
6	All urban areas in the country Vodno, Matka, Kadina Reka and Glumovo – Skopje Demir Kapija gorge	2019	5000	75-100 30-100 25-80



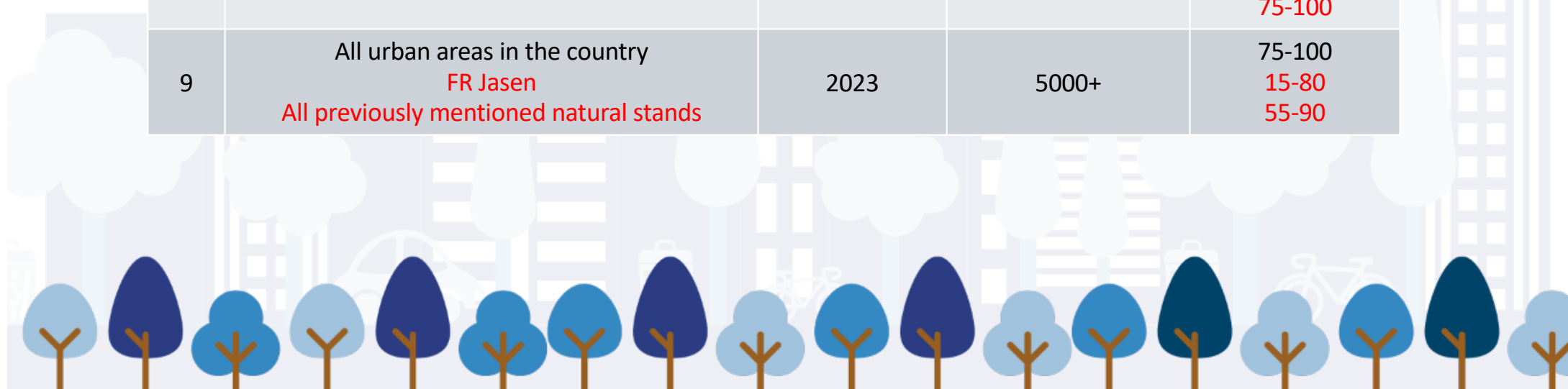
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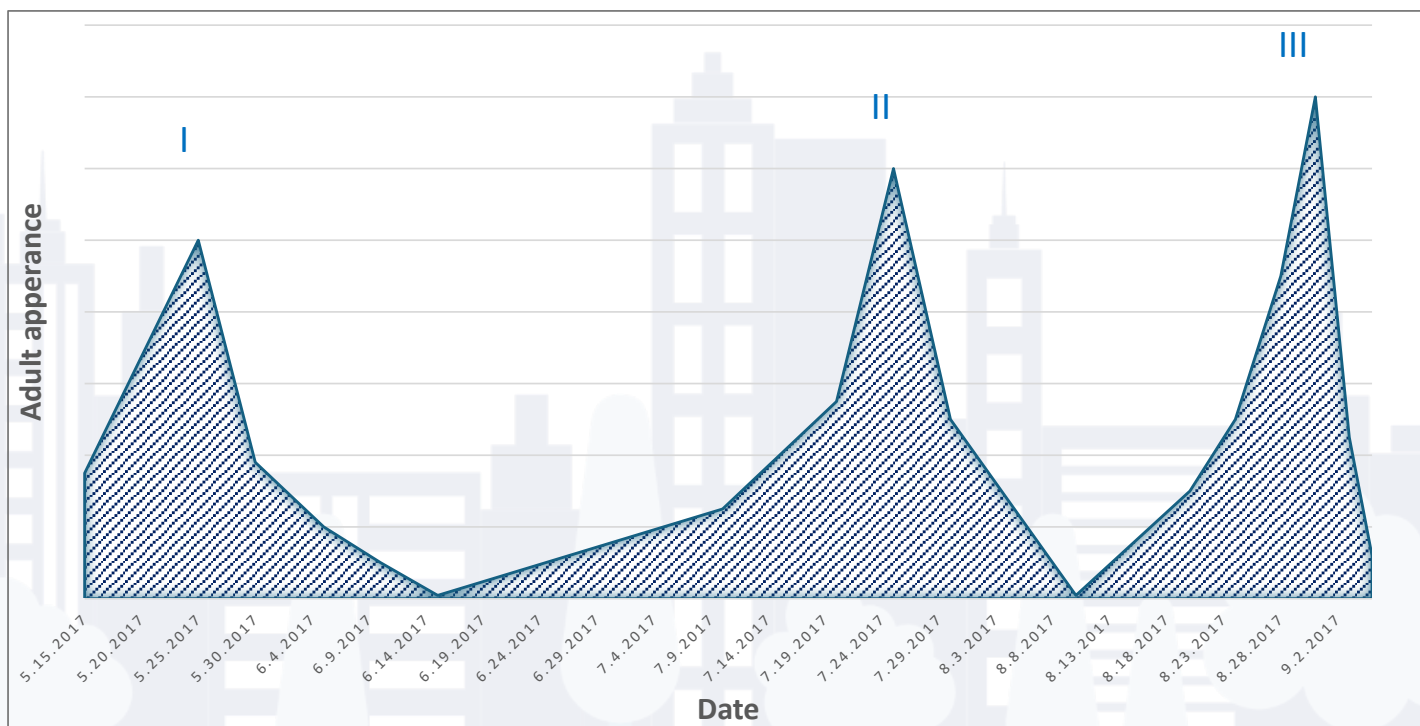
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7	All urban areas in the country Vodno, Matka, Kitka, Kadina Reka – Skopje Demir Kapija gorge Galichica	2020	5000	75 – 100 55-90 55-90 55-90
8	All urban areas in the country Vodno, Matka, Kitka, Kadina Reka – Skopje Demir Kapija gorge Galichica Tetovo area	2021	5000	85-100 75-100 75-100 75-100 75-100
9	All urban areas in the country FR Jasen All previously mentioned natural stands	2023	5000+	75-100 15-80 55-90



Flight period and generations



Challenges in suppression and prevention

- Its host species are regularly traded and transported countrywide and internationally.
- Adults (moths) are really active in flight and quickly colonize nearby suitable host plants.
- First and second instar larvae are quite small and reclusive, meaning are hard to detect.
- The larvae at first feed on the inward positioned leaves of the plant. When the damage starts being easily noticeable, the defoliation is already severe.
- Ecologically adaptable species, with preference of warmer temperatures.
- No natural predators established in Europe, including our region.
- The species has multiple generations per year (in N.Macedonia – 3) and they sometimes overlap.



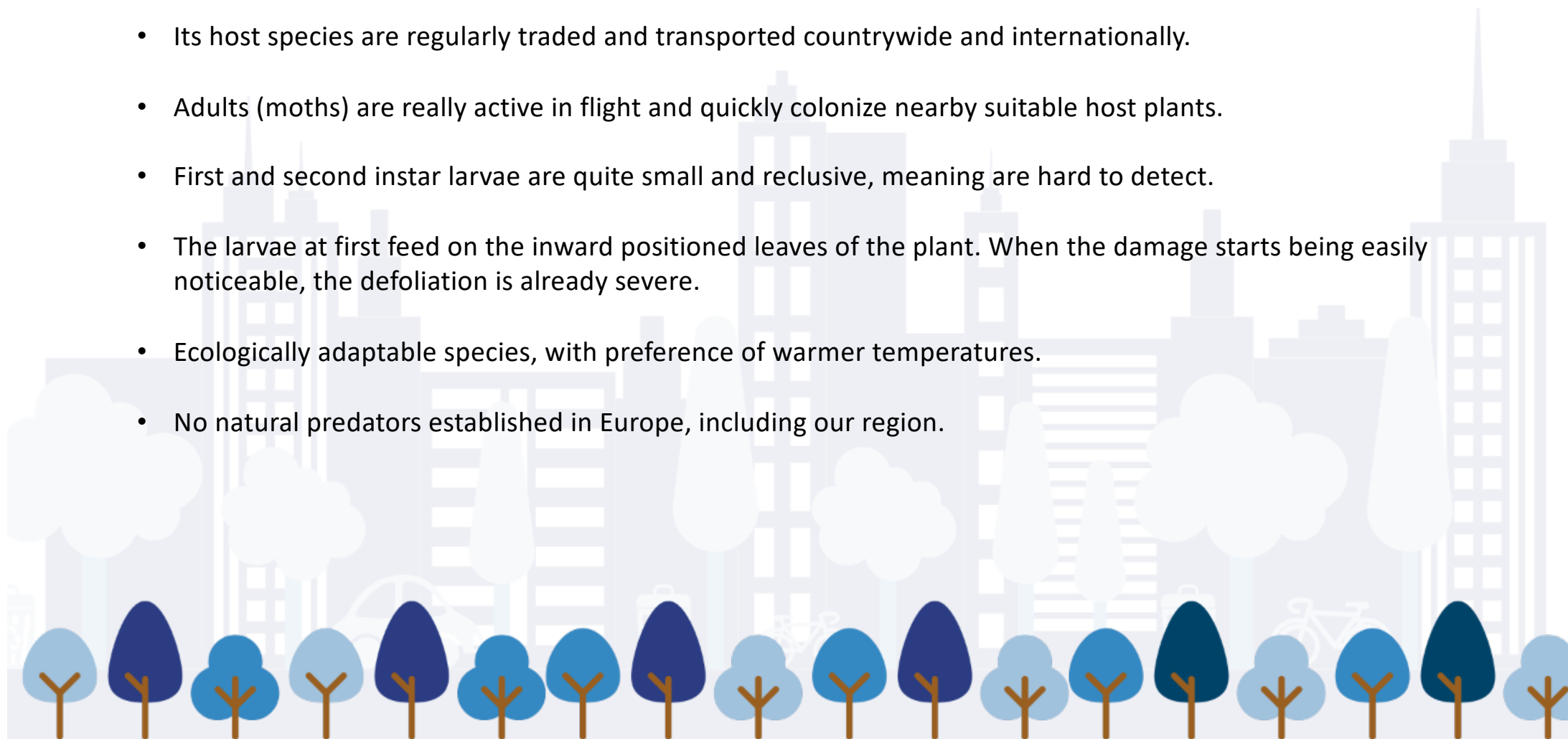
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Thank you for your attention!

