

**Assessment of the proposal to delist
Cacoecimorpha pronubana (Lepidoptera, Tortricidae) from the EPPO A2 List of pests
recommended for regulations as quarantine pests**

26-31065

Decision

Based on this PRA, decision was made to remove *C. pronubana* from the EPPO A2 List of pests recommended for regulation as quarantine pests in 2026. *C. pronubana* does not meet the criteria for categorisation of a pest as a quarantine pest for presence or absence, potential for establishment and potential for economic consequences in the PRA area.

Conclusions are summarized in Table 1.

Table 1. Summary of conclusions for all investigated criteria (criteria considered not met for the quarantine pest categorisation are shown in bold)

<i>ISPM 11, Stage 2, section 2.1.1</i> <i>Elements of categorisation</i>	<i>Relevant</i> <i>section in the</i> <i>Express PRA</i>	<i>Conclusion</i>
Presence or absence in the PRA area	6	<i>C. pronubana</i> is considered native to and widespread in the EPPO region where outdoor conditions are suitable for establishment (see also 9).
Regulatory status	5	Although several EPPO countries have removed <i>C. pronubana</i> from their quarantine pest Lists, the pest is still regulated in some EPPO countries.
Potential for establishment in PRA area	9, 10	Considering current distribution and temperature requirements, <i>C. pronubana</i> is likely to already occupy most of the limits of its natural range in the Palaearctic under outdoor conditions.
Potential for economic consequences (including environmental consequences) in the PRA area	12, 13	Considering pest distribution and absence of recent reports of economic impact, it is considered that the pest is currently managed by the horticultural industry.

Suggested citation: EPPO (2026) Pest Risk Analysis to assess delisting of *Cacoecimorpha pronubana*. EPPO, Paris. Available at <https://gd.eppo.int/taxon/TORTPR/documents>

Express Pest Risk Analysis:
***Cacoecimorpha pronubana* (Lepidoptera, Tortricidae)**

Prepared by the EPPO Secretariat and reviewed by the Panel on Phytosanitary Measures in 2025-10, and by the Working Party on Phytosanitary Regulations in 2026-06, following a country consultation in 2026-03/05.

Stage 1. Initiation

Reason for performing the PRA:

C. pronubana was added to the EPPO A2 List in 1975 as *Cacoecimorpha (Tortrix) pronubana* (together with a second carnation moth, *Epichoristodes acerbella*), after publication of Council Directive 74/647/EEC of 9 December 1974 on control of carnation leaf-rollers (repealed in 2016).

In 2009, the Working Party on Phytosanitary Regulations (hereafter ‘the Working Party’) suggested that deregulating *C. pronubana* should be considered. The Panel on Phytosanitary Measure (hereafter ‘the Panel’) discussed in 2010-02 that several elements support the re-evaluation of *C. pronubana*:

- its geographical distribution, as it may have reached its limits,
- its impact, as it does not seem to be a major pest in countries where it is present, and
- the fact that it is not under official control in many countries where it is present.

In 2010, a pest categorization was initiated by the Panel and stopped because the pest was considered no longer fulfilling the criteria of a quarantine pest: The Panel considered that the pest has probably reached the limits of its geographical distribution as it is now occurring in most EPPO member countries. Nevertheless, as no recent pest status from many countries was available, a letter was circulated on 2010-04 to all EPPO member countries requesting official information on geographical distribution (an official pest status), official measures taken and economic impact for this pest (together with 13 additional pests). In total, 24 countries answered¹. Since more than 3 EPPO countries supported maintaining the listing of *C. pronubana*, the pest was not delisted (Suffert, 2012).

In 2024, the Panel on Diagnostics in Entomology considered that ‘*The pest is widespread and not a priority for the region anymore*’, and the Working Party on Phytosanitary Regulations and Council agreed to withdraw PM 7/009(1) *Cacoecimorpha pronubana*.

In 2025, the Working Party agreed that the *Process for delisting of pests from EPPO A1 and A2 Lists* could be tested with three pilot pests, including *C. pronubana*. Consequently, a draft PRA for delisting was prepared following PM 5/5 *Decision-support scheme for an express PRA*, only providing some general information as well as the necessary sections/information which can be used as reasons supporting delisting from EPPO A1/A2 Lists.

The EPPO datasheet (EPPO, 1981; CABI/EPPO, 1992/1997), fully updated in 2023 and now maintained in EPPO Global Database (GD) (EPPO, 2026), was used to develop this PRA.

PRA area: EPPO region as per March 2026 (map at https://www.eppo.int/ABOUT_EPPO/eppo_members).

The proposal uses the EPPO Standard PM 5/5 *Decision-Support Scheme for an Express Pest Risk Analysis* (available at <http://archives.eppo.int/EPPOStandards/pr.htm>), as provided in the *Process for delisting of pests from EPPO A1 and A2 Lists*. This PRA focuses on the criteria that may affect its categorisation as a quarantine pest: only the sections related to presence or absence in the PRA area (see 6), regulatory status (see 5), potential for establishment in the PRA area (see 9, 10) and potential for economic consequences (see 12, 13) have been investigated.

Stage 2. Pest risk assessment

1. Taxonomy

Not developed as reviewed in 2023 (EPPO, 2025).

Investigated?	Yes ☐	No ☒
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¹ Opinion for delisting was indicated as Yes/No in responses by countries, often with no technical justification that the pest still fulfils criteria for listing as a quarantine pest in this country.

2. Pest overview

The Mediterranean carnation leafroller is a highly polyphagous moth. Although carnation (*Dianthus caryophyllus*) is its principal host, it is reported to feed on over 160 plant species in 42 families, including fruit trees, shrubs, ornamentals, and crop plants. The adults can disperse locally, but not over long distances. In international trade, eggs and larvae of *C. pronubana* may be transported on plants for planting or on cut flowers of carnations, chrysanthemums, pelargoniums, roses, and other hosts. In the 2000s, the species was commonly intercepted at US ports of entry on *Ruscus* sp. (Asparagaceae) from Italy and *Capsicum* spp. (Solanaceae) from the Netherlands. In spite of the polyphagous nature of this insect, serious damage is mainly confined to carnation crops in the Mediterranean area, where losses have been reported since the 1920s. Additional information on the pest, including its biology, is available in EPPO (2025).

3. Is the pest a vector?

Investigated?	Yes ☐	No ☒
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No.

4. Is a vector needed for pest entry or spread?

Investigated?	Yes ☐	No ☒
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5. Regulatory status of the pest

Investigated?	Yes ☒	No ☐
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According to 'categorisation' information in EPPO GD, *C. pronubana* is currently regulated by the following EPPO countries (note that this information may not be up-to-date): Azerbaijan, Jordan, Norway, Serbia*, Türkiye* and Ukraine.

*: Countries where the pest is reported to be present

Within this list of countries

- **Norway** is located at the east and north of the January +2°C isotherm, where the pest is unlikely to become established under outdoor conditions. In Norway, the pest is regulated for its potential impact under indoor (protected) conditions (Øverlien AM, Norwegian Food Safety Authority, pers. comm., 2026).
- **Serbia** is situated at the limit of the likely pest distribution under outdoor conditions. For **Ukraine**, the pest was reported in Crimea which is also at the limit (Budashkin, 1993; Trikov & Bagrikova, 2022).
- The pest is reported in **Türkiye** under outdoor conditions. Türkiye is one of the leader exporting countries of carnation cut flowers in Europe (<https://www.cbi.eu/sites/default/files/pdf/research/712.pdf>), with a flower industry heavily focused on the production of carnation (Baris & Uslu, 2009; Yarba & Çetintaş, 2025). However, the pest seems mostly reported in this country in orchards.

More information in sections 6 *Distribution* and 9 *Likelihood of establishment outdoors in the PRA area*.

Its quarantine pest status was removed from the following countries:

- **EU countries**. Remark: when regulated under Council Directive 74/647/EEC, measures at import only related to cut flowers, with possibility to accept some tolerance under certain period. Same was included in the measures recommended by EPPO in 1975.
- **Israel**. The presence of *C. pronubana* was confirmed in 2006 (EPPO GD, 2026) on avocado. Previous records of presence were thought to be based on misidentification (CABI, 2021; citing Opatowski, pers. comm., 2006).
- **The Russian Federation**. The quarantine pest status was removed when establishing a quarantine pest List for the Eurasian Economic Union in 2016 because the pest was already known to be present in the Russian Federation under protected conditions as well as outdoor (see EPPO Global Database).

Although several EPPO countries have removed *C. pronubana* from their quarantine pest lists, the pest is still regulated in some EPPO countries.

6. Distribution

Investigated?	Yes ☒	No ☐
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C. pronubana is native to the Mediterranean Region. Meijerman & Ulenberg (2000) reported the pest as present throughout much of Europe, Asia Minor, and Northern Africa. It was unintentionally introduced to North America (See Fig. 1, EPPO, 2025).

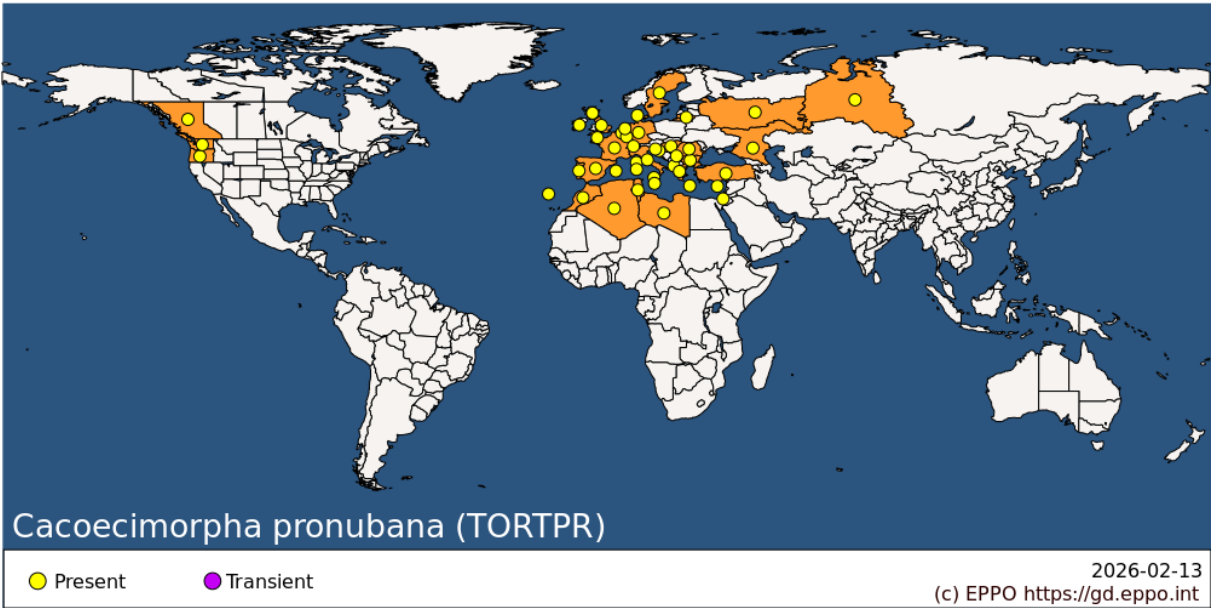


Fig 1. Distribution in EPPO Global Database <https://gd.eppo.int/taxon/TORTPR/distribution> (EPPO GD, 2026). Legend: Data on presence is shown by displaying a bright yellow dot together with an orange background. For large countries, geographical data is given as far as possible at provinces/state level.

Remarks:

- Larvae had been observed in the Absheron Peninsula and the Lankaran district of **Azerbaijan** (Eastern and South-Eastern territories) on *Laurus nobilis* and *Ligustrum lucidum*, between 1997 and 2008 (Maharramova & Ayberk, 2017). However, the pest was not detected during surveys conducted by the Food Safety Agency of the Republic of Azerbaijan in 2023-2025.
- In the **Netherlands**, records from citizen science since 2000—available via [Carnation Tortix - Cacoecimorpha pronubana - Waarneming.nl](https://www.waarneming.nl)—indicate an ubiquitous distribution.
- In **Poland**, unconfirmed reports are available in GBIF (2026).
- In **Türkiye**, *C. pronubana* is mostly reported in this country in orchards e.g. olive (*Olea europaea*), peach (*Prunus persica*), sweet cherry (*Prunus avium*) and sour cherry (*Prunus cerasus*) (Kaçar & Ulusoy, 2008; Kaçar, 2015; Tezcan & Gülperçin, 2024).

The ubiquitous presence of the pest in certain countries, such as the Netherlands, suggests that the pest is likely established in more countries than currently reported, or more widespread than officially reported.

***C. pronubana* is considered native to and widespread in the EPPO region where conditions are suitable for establishment under outdoor conditions (see Section 9).**

7. Host plants and their distribution in the PRA area

Investigated?

Yes ☐

No ☒

See EPPO Global Database <https://gd.eppo.int/taxon/TORTPR/hosts>.

8. Pathways for entry

Investigated?

Yes ☐

No ☒

9. Likelihood of establishment outdoors in the PRA area

Investigated?

Yes ☒

No ☐

Research in Germany (EPPO, 2025; citing Herfs, 1963) suggested that the insect is unlikely to become established to the east and north of the January +2°C isotherm, which continues to gradually shift northward with global climate change. Based on this temperature threshold (see Figure 2), the insect

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may already occupy the limits of its natural range in the Palaearctic. However, global climate change may provide an opportunity for further range expansion, e.g. in western Poland (PL, 2016).

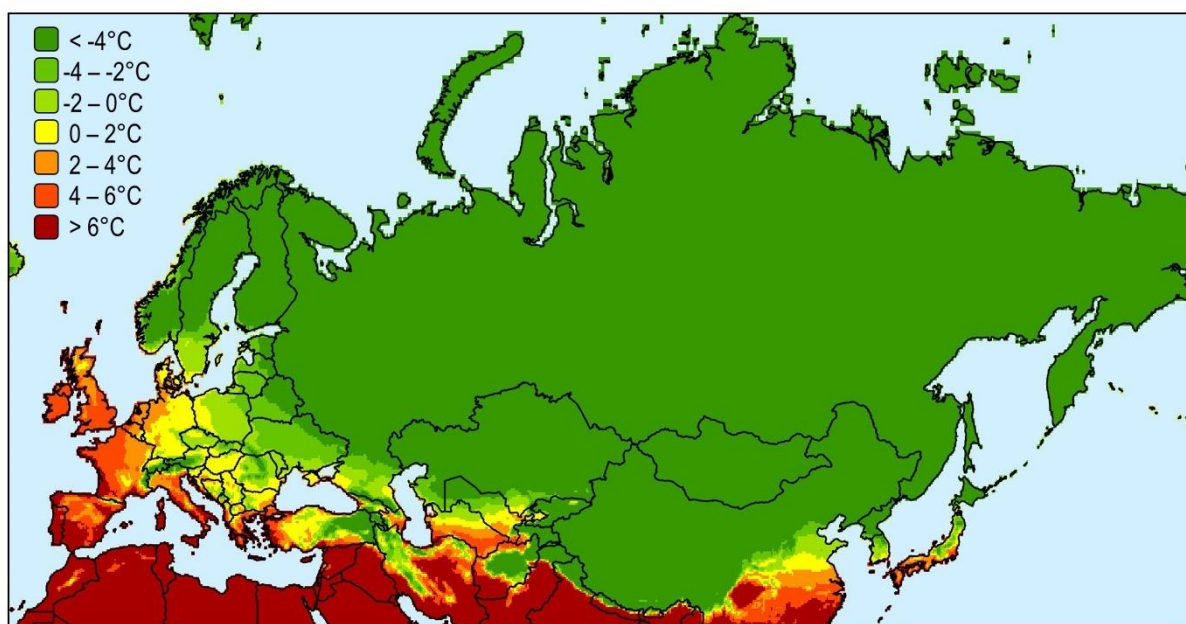


Fig. 2. Average January temperatures over the time period 2006 to 2025 in 0.25 degree resolution (about 28 km at the equator) according to the ERA5 climate data (Copernicus Climate Change Service, 2023; Hersbach et al., 2023) (prepared by J. Tuomola, Finnish Food Authority, 2026)

Figure 3 shows the proportion of years in which the average January temperature is +2 °C or higher, illustrating uncertainties in the area of potential outdoor establishment.

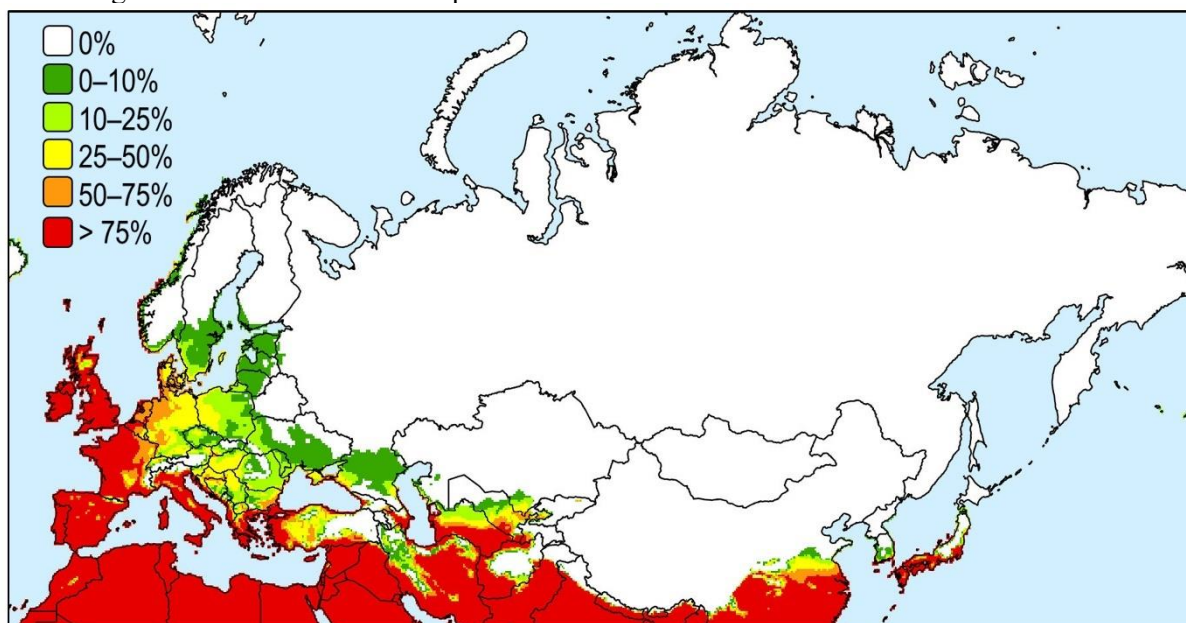


Fig. 3. Proportion of years during the last 20 years (from 2006 to 2025) in which the average temperature in January has been +2°C or more (same dataset as for Fig. 2 is used) (prepared by J. Tuomola, Finnish Food Authority, 2026).

Additional data: Temperature minimums for copulation, egg laying, and hatching are 10.5, 12–13 and 14°C, respectively. Pupae cannot survive 2 h at -4°C, and therefore are incapable of overwintering in the northern part of the range (EPPO, 2025; citing Fisher, 1924; Bestango, 1955; Balachowsky, 1966).

Considering current distribution and temperature requirements, the insect is likely to already occupy most of the limits of its natural range in the Palaearctic under outdoor conditions.

10. Likelihood of establishment in protected conditions in the PRA area

Investigated?	Yes X	No ☐
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C. pronubana is already reported as a common greenhouse pest in many parts of Europe (Alford, 2012). Greenhouse production systems throughout the EPPO region, especially those cultivating carnations and other flowers and ornamentals, provide temperatures and humidity conducive to the development of the pest:

The development of carnation is not suitable to extreme temperatures. The ideal range of temperature for carnation is considered to be 10–20°C and humidity in the range of 50–60% (Gobade, 2024), making commercial cut-flower carnation production typically grown as a cool greenhouse crop. Carnations can be propagated through both sexual and asexual methods, either cultivated from seeds or propagated by cuttings, layering (in pots or directly in the ground), grafting or micrografting (Gobade, 2024). In Türkiye, Antalya region, greenhouse carnation production is predominantly carried out by family owned and corporate enterprises, which specialize in a single crop (farms of 3400 m² greenhouses in average) to enhance efficiency and expertise (95% monoculture) (Yarba & Çetintaş, 2025). Such monoculture, combined with these growing conditions, favours the pest's potential establishment under protected cultivation.

11. Spread in the PRA area

Investigated?	Yes ☐	No X
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12. Impact in the current area of distribution

Investigated?	Yes X	No ☐
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The larvae are voracious feeders, feeding on foliage, buds and flowers (Alford, 2012).

In spite of the polyphagous nature of this insect, serious damage is mainly confined to carnation crops in the Mediterranean area, where losses have been reported since the 1920s. Near Nice, France, 25–35% of carnations were affected in 1972–1973, and losses in consignments for export were valued at about 100 000 francs (equivalent to 15 000 euros in 1972) (EPPO, 2025). Some damage was reported in the Pays de la Loire region of France in 2005, prompting some flower growers to begin monitoring *C. pronubana* populations as part of their integrated pest management efforts (DRDAF, 2005). In Morocco, *C. pronubana* was first detected in 1933 on citrus, but with some reports of the larvae damaging foliage and fruit only when it became a widespread pest on this crop 20 years later. In Algeria, *C. pronubana* is found mainly on lemons, but is not considered a serious pest. In Italy (Sicily) surveys reported *C. pronubana* mainly on olive trees, weeds, and roses, but not on lemons (EPPO, 2025; citing Inserra *et al.*, 1987; Siscaro *et al.*, 1988). While damage has occasionally been reported, confirmed economic impacts in the Mediterranean region appear to be rare and primarily based on old reports.

In Central and Northern Europe (e.g., Poland, the Netherlands), *C. pronubana* has the potential to be 'an important pest' in greenhouses (EPPO, 2025). Under greenhouses, it is most notable for the damage it inflicts on carnations and strawberries (Koppert, 2025). However, Alford (1975) and Cross *et al.* (2001) indicate that tortricid moths on strawberry "... are a more benign pest that is often believed and spray treatment cannot often be economically justified" (EPPO, 2025). No recent clear evidence of impacts was found. The pest is often not specifically mentioned in carnation production manuals. In the Russian Federation, economic impact is believed to be low (Kulinich, All-Russian Plant Quarantine Center, pers. comm. 2025).

The egg and larvae of this pest are controlled mainly by the use of synthetic pesticides (e.g., neonicotinoids and pyrethroids), bio-pesticides (e.g., *Bacillus thuringiensis* Berliner, 1915), or natural enemies. The most efficient monitoring method of populations of this moth are pheromone traps (Zielonka *et al.*, 2021).

C. pronubana is a pest that can be managed by the horticulture industry given that there are effective chemical controls and physical methods available for commercial management of the pest (DEFRA, 2009). Overall, although some damage had been reported, the pest is not considered to have a significant economic impact (PL, 2016).

13. Potential impact in the PRA area

Investigated?	Yes ☒	No ☐
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C. pronubana can generally be controlled more easily in greenhouses (PL, 2016), especially when located in countries with cold winters which would help reduce external population pressure, but the pest can persist inside heated greenhouses. Similar impact as in the current area of distribution is expected.

Considering pest distribution and absence of recent reports of economic impact, it is considered that the pest is currently managed by the horticultural industry.

14. Identification of the endangered area

Investigated?	Yes ☐	No ☒
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15. Overall assessment of risk

Based on this assessment, *C. pronubana* does not meet the criteria for categorisation as a quarantine pest for presence/absence, potential for establishment and potential for economic consequences in the PRA area. Deletion from the EPPO A2 List is therefore recommended.

Stage 3. Pest risk management

16. Phytosanitary measures

Investigated?	Yes ☐	No ☒
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Not developed.

17. Uncertainty

No key uncertainty were identified affecting the recommendation for delisting.

The following uncertainties were identified:

- Limits of the area of potential establishment in the EPPO region.
- Lack of information for current regulations in some countries and/or official control.

18. Remarks

Not developed.

19. REFERENCES

Alford DV (2012) Pests of ornamental trees, shrubs and flowers. Second Edition. Manson publishing. ISBN: 978-1-84076-162-7

Balachowsky AS (1966) *Entomologie Appliquée à l'Agriculture* Tome II, Vol. I, pp. 563–578. Mason et Cie, Paris, France.

Baris ME & Uslu A (2009) Cut flower production and marketing in Turkey. *African Journal of Agricultural Research* 4(9), pp. 765-771. Available at https://www.researchgate.net/publication/228470441_Cut_flower_production_and_marketing_in_Turkey

Bestango G (1955) [Biological observations and experience of control of *Cacoecia pronubana* in 1954]. *Rivista della Ortoflorofrutticoltura Italiana* 39, 439-454.

Budashkin Y (1993) New materials for taxonomy and biology of palaearctic tortricid moths (Lepidoptera, Tortricidae). *Vestn. Zool N2*. Available at http://mail.izan.kiev.ua/vz-pdf/1993/N_2_93/93_2_09-Budashkin.pdf

- CABI/EPPO (1992/1997) *Quarantine Pests for Europe (1st and 2nd edition)*. CABI, Wallingford (GB).
- CABI (2021) Datasheet. *Cacoecimorpha pronubana* (carnation tortrix). Publication 54205. CABI Compendium. Available at <https://doi.org/10.1079/cabicompendium.5420>
- Copernicus Climate Change Service (2023) ERA5 monthly averaged data on single levels from 1940 to present. Copernicus Climate Change Service (C3S) Climate Data Store (CDS). DOI: 10.24381/cds.fl7050d7 (Accessed on 31-12-2025)
- Cross JV, Easterbrook MA, Crook AM, Crook D, Fitzgerald JD, Innocenzi PJ, Jay CN & Solomon MG (2001) Review: Natural enemies and biocontrol of pests of strawberry in northern and central Europe. *Biocontrol Science and Technology* **11**, 165-216.
- DEFRA (2009) Department for Environment, Food and Rural Affairs (DEFRA). Pest Risk Analysis for *Cacoecimorpha pronubana*. Available at <https://pra.eppo.int/pr/184b1293-a116-4777-837f-a514ee5db0e0>
- DRDAF (2005) Rapport annuel qualité et protection des végétaux. Production Horticole. Floriculture : productions horticoles et plantes vertes. DRDAF – Service régional de la protection des végétaux – S.R.P.V
- EPPO (1981) EPPO Data Sheet on Quarantine Organisms no 104: *Cacoecimorpha pronubana*. *EPPO Bulletin* **11**(1), 6 pp. <https://doi.org/10.1111/j.1365-2338.1981.tb01738.x>
- EPPO (2025) *Cacoecimorpha pronubana*. EPPO datasheets on pests recommended for regulation. <https://gd.eppo.int> (accessed 2025-11-26)
- EPPO GD (2026) EPPO Global Database (GD). gd.eppo.int (Accessed on 2026-02-13)
- Fisher RC (1924) The life-history and habits of *Tortrix pronubana* Hb. with special reference to the larval and pupal stages. *Annals of Applied Biology* **11**, 395–447.
- GBIF (2026) <https://www.gbif.org/species/8094357> (Accessed on 2026-02-13)
- Gobade N (2024) Production technology of carnation. In *Production Technology of Fruit and Flower*. Chapter 8. Publisher: Elite Publication House. pp 94-110
- Herfs W (1963) [Open-air experiments on climate resistance of *Tortrix pronubana* in relation to its possible survival in Germany. II. Trials on climate resistance and assessment of establishment potential]. *Zeitschrift für Angewandte Entomologie* **52**, 1–38.
- Hersbach H, Bell B, Berrisford P, Biavati G, Horányi A, Muñoz Sabater J, Nicolas J, Peubey C, Radu R, Rozum I, Schepers D, Simmons A, Soci C, Dee D & Thépaut J-N (2023) ERA5 monthly averaged data on single levels from 1940 to present. Copernicus Climate Change Service (C3S) Climate Data Store (CDS), DOI: [10.24381/cds.fl7050d7](https://doi.org/10.24381/cds.fl7050d7) (Accessed on 2025-12-31)
- Inserra S, Calabretta C & Garzia GT (1987) Attack by *Cacoecimorpha pronubana* (Hbn.) on protected crops of gerbera and rose and possibilities of chemical and biological control. *Difesa delle Piante* **10**, 97–100.
- Kaçar G & Ulusoy MR (2008) A new pest of olive trees : Carnation tortrix, *Cacoecimorpha pronubana* (Hübner), 1796-1799 (Lepidoptera: Tortricidae) in the Eastern Mediterranean Region of Turkey (in Turkish). *Türk. Entomol. Derg* **32**(3), 211-223. Available at <https://scispace.com/pdf/dogu-akdeniz-bolgesi-nde-yeni-bir-zeytin-zararlisi-karanfil-2oyyv10txz.pdf>

Kaçar G (2015) Population dynamic of *Zelleria oleastrella* (Mill.) (Yponomeutidae) and *Cacoecimorpha pronubana* (Hübner) (Tortricidae) (Lepidoptera) in olive groves (in Turkish). *ürk. entomol. Bült* 5(3), 147-157. <http://dx.doi.org/10.16969/teb.07626>

Koppert (2025) *Cacoecimorpha pronubana*, carnation tortrix. Internet site. <https://www.koppert.com/plant-pests/caterpillars/carnation-tortrix/>

Maharramova S & Ayberk H (2017) New records of leafrollers reared in Azerbaijan (Lepidoptera: Tortricidae). *Linzer biol. Beitr.* 49(1), 677-686. Available at https://www.zobodat.at/pdf/LBB_0049_1_0677-0686.pdf

Meijerman L & Ulenberg SA (2000) Arthropods of economic importance: Eurasian Tortricidae. CD produced by Expert Centre for Taxonomic Identifications, Amsterdam.

PL (2016) Poland (PL) Express Pest Risk Analysis for *Cacoecimorpha pronubana* (Hübner, 1799). Available at <https://pra.eppo.int/pr/9a6869b4-043b-4728-bce0-df00177bf602>

Sinev SY (ed.) (2019) Catalogue of the Lepidoptera of Russia. Edition 2. St. Petersburg: Zoological Institute RAS. 448 c.

Siscaro G, Longo S & Ragusa S (1988) Notes on population dynamics of *Archips rosanus* (L.) and *Cacoecimorpha pronubana* (Hbn.) in Sicilian citrus groves. *Bulletin SROP* 6, 32–38.

Suffert M (2012) Re-evaluation of EPPO-Listed pests. *EPPO Bulletin* 42(2), 181-184. Available at <https://doi.org/10.1111/epp.2565>

Tezcan S & Gülperçin N (2024) An evaluation on insect fauna of cherry agroecosystems of Turkey, part III (Insecta: Neuroptera, Raphidioptera, Lepidoptera, Diptera, Hymenoptera). *Munis Entomology & Zoology* 19(1), 461-507.

Trikoz NN & Bagrikova NA (2022) Alien Species of Phytophagous Insects and Plants in the Park-Monuments of Landscape Gardening Art of the Southern Coast of Crimea. Proceedings of the Mordovia State Nature Reserve named after P. G. Smidovich. 2022. N°31. Available at <https://cyberleninka.ru/article/n/chuzherodnye-vidy-fitofagov-i-rastenyi-v-parkah-pamyatnikah-sadovo-parkovogo-iskusstva-yuzhnogo-berega-kryma> (consulted: 08.12.2025).

Yarba MM & Çetintaş R (2025) Corporate structure of the cultivation of gerbera (*Gerbera jamesonii* L.) and carnation (*Dianthus caryophyllus* L.) cultivation in the province of Antalya. *Discover Life* 55, 19. Available at <https://doi.org/10.1007/s11084-025-09698-1>

Zielonka MW, Edwin Harris W, Pope TW & Leather SR (2021) Abundance and phenology of two pest species, *Cacoecimorpha pronubana* and *Epiphyas postvittana* (Lepidoptera: Tortricidae). *Annals of applied biology* 179(2), 207-215. Available at <https://doi.org/10.1111/aab.12692>