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Pest survey card on *Ips typographus*

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Abstract

This document provides the conclusions of the pest survey card that was prepared in the context of the EFSA mandate on plant pest surveillance (M-2020-0114) at the request of the European Commission. The full pest survey card for *Ips typographus* is published and available online in the EFSA Pest Survey Card gallery at the following link and will be updated whenever new information becomes available: https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/ips-typographus

Keywords: conifers, delimiting survey, detection survey, eight-toothed spruce bark beetle, IPSXTY, protected zone pest, risk-based surveillance

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1 Introduction

This pest survey card was prepared in the context of the EFSA mandate on plant pest surveillance (M-2020-0114), at the request of the European Commission. Its purpose is to guide the Member States in preparing data and information for *Ips typographus* surveys. These are required to design statistically sound and risk-based pest surveys, in line with current international standards. *Ips typographus* (Coleoptera: Curculionidae) is a well-defined species and a protected zone quarantine pest in Ireland and Northern Ireland (UK), where the import of host plants, wood and bark is regulated. *Ips typographus* completes one to three generations per year. The adults and larvae feed on the phloem of weakened or healthy conifers. The beetle mainly overwinters as an adult. The major host is *Picea abies*. This host is recommended for detection surveys in the protected zones, while other hosts within *Abies*, *Larix*, *Picea*, *Pinus* and *Pseudotsuga* genera should be considered for delimiting surveys. The climate and the host availability in the protected zones of Ireland and Northern Ireland (UK) are suitable for the beetle's establishment and further spread. Natural spread is expected to reach distances of up to 100 km per year. Transportation of conifer wood, bark and wood packing material is the most likely pathway of introduction. Adults can be detected using black interception traps baited with pheromones. Tree symptoms can be observed and can lead to more specific investigations targeting the presence of the pest. *Ips typographus* adults can only be identified in the laboratory, using morphological keys (adults), which requires taxonomic expertise. Various molecular methods can also be adopted (all stages). The best timing for detection is in spring and summer (all stages).

2 The survey preparation

Table 1 addresses the key questions that are relevant for preparing a pest survey. First, the plant pest needs to be characterised in terms of its life cycle and biology. Then, the structure and size of the target population needs to be characterised and these analyses should be tailored to the situation in each Member State. Figure 1 gives examples of the components of a target population for *I. typographus* and is not necessarily exhaustive. Finally, the detection process needs to be characterised in terms of the sequence of detection and identification methods required for the survey.

Table 1: Preparation of surveys for *Ips typographus*

SURVEY QUESTION	SECTIONS	KEY INFORMATION
WHAT?	1. The pest and its biology	*Ips typographus* is a species in the subfamily Scolytinae that can complete one to three generations per year. It feeds on tree phloem and can lead to the death of healthy trees.
WHERE?	2. Target population	Main host is *Picea abies* (detection surveys). The full host range includes plants within *Abies*, *Larix*, *Picea*, *Pinus and Pseudotsuga* (delimiting surveys). Epidemiological units: agricultural, forest and urban areas with at least one host tree.
		Risk areas: areas surrounding risk locations, where host trees are present.
		Inspection unit: individual host tree and/or a trap.
HOW?	3. Detection and identification	Recommended method: black interception traps baited with pheromones and visual examination of tree symptoms. Trapping effectiveness: range from 10 to 50 m.
WHEN?		The best period for detection is in spring and summer (all stages).

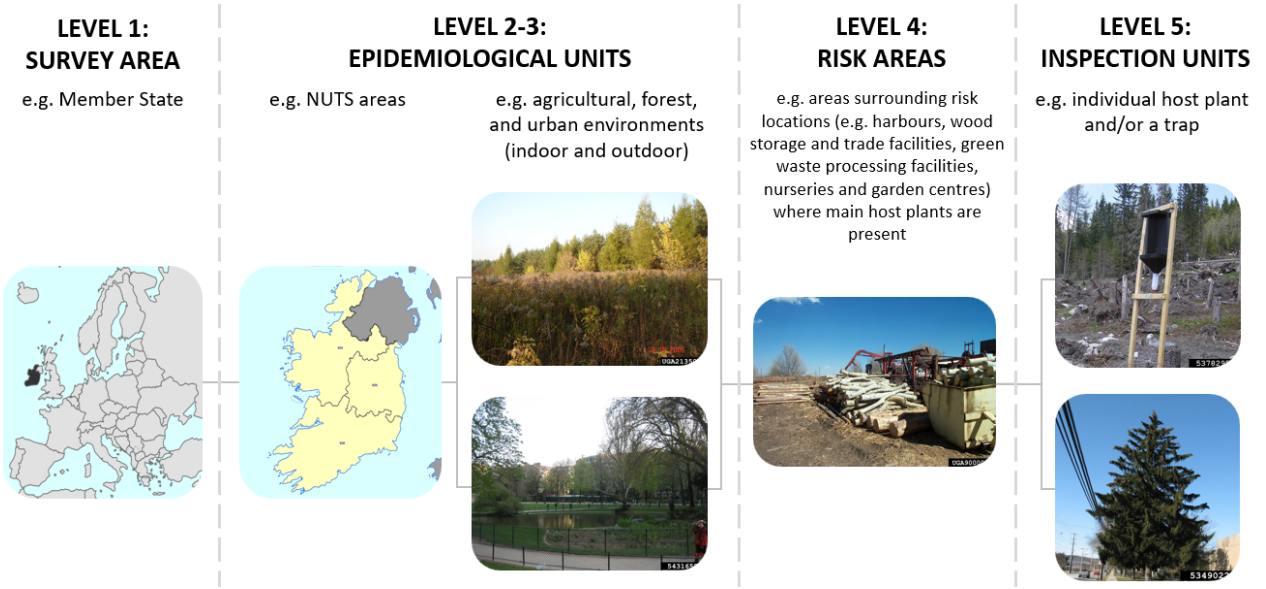

Figure 1: Example of the hierarchical structure of the target population for *Ips typographus* (Sources: Eurostat, 2022 (levels 1–2); Barbara Tokarska-Guzik, University of Silesia, Bugwood.org (level 3, top); Luana Vargas, International Society of Arboriculture, Bugwood.org (level 3, bottom); Doug Page, USFS, BLM, Bugwood.org (level 4); Milan Zubrik, Forest Research Institute – Slovakia, Bugwood.org (level 5, top); Richard Webb, Bugwood.org (level 5, bottom))

3 From survey preparation to survey design

Figure 2 shows the next steps after the survey preparation for designing statistically sound and risk-based detection and delimiting surveys of *I. typographus*. Guidance on the selection of type of survey, related survey preparation and design, is provided in the EFSA general guidelines for pest surveys[1].

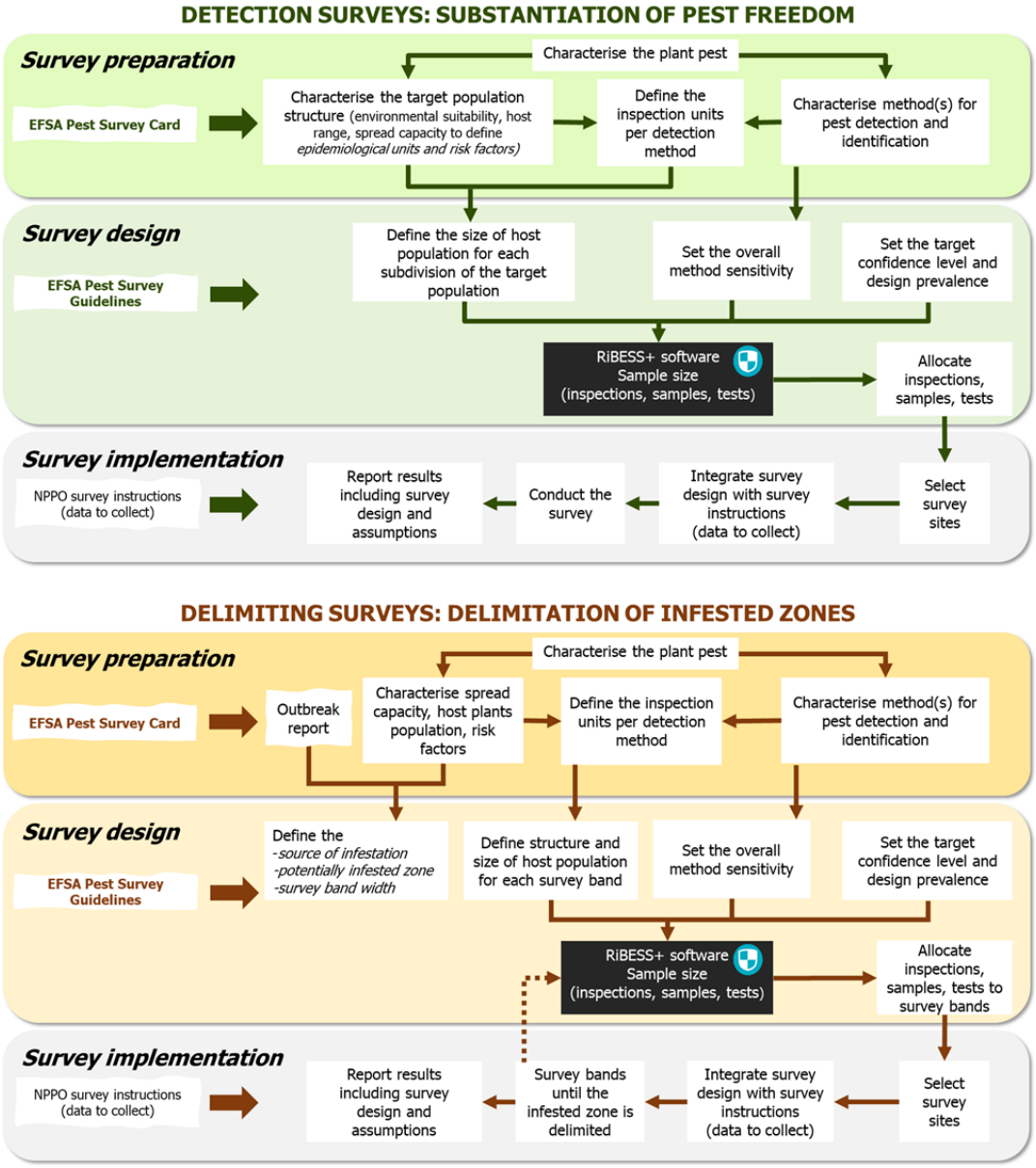

Figure 2: Steps required for the preparation, design and implementation of detection and delimiting surveys, in accordance with the methodology for statistically sound and risk-based surveillance[1]

[1] EFSA (European Food Safety Authority), Lázaro E, Parnell S, Vicent Civera A, Schans J, Schenk M, Cortiñas Abrahantes J, Zancanaro G and Vos S, 2020. General guidelines for statistically sound and risk-based surveys of plant pests. EFSA supporting publication 2020:EN-1919. 65 pp. doi:10.2903/sp.efsa.2020.EN-1919 https://efsa.onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2020.EN-1919

Relevant EFSA outputs

- General guidelines for statistically sound and risk-based surveys of plant pests: https://efsa.onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2020.EN-1919
- Pest survey card on *Ips typographus*: https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/ips-typographus
- Index of the EFSA Plant Pest Survey Toolkit: https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/index
- EFSA Pest Survey Card gallery: https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/gallery
- Pest survey cards: what, when, where and how to survey? https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/video-pest-survey-card
- The statistical tool RiPEST: https://r4eu.efsa.europa.eu/app/surveillance
- The RiPEST manual: https://zenodo.org/doi/10.5281/zenodo.8335472
- The statistical tool RiBESS+: https://r4eu.efsa.europa.eu/app/ribess
- The RiBESS+ manual: https://zenodo.org/doi/10.5281/zenodo.664465
- The RiBESS+ video tutorial: https://youtu.be/qYHqrCiMxDY