

Stakeholder awareness, detection and management of new and emerging tree pests and diseases in Europe – a survey

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New tree pests and diseases in Europe are increasing in number and range, with big impacts on biodiversity and forest services.

Stakeholders are well placed to detect and manage new and emerging tree pests and pathogens (PnPs), and more collaboration is valuable in reducing these emerging threats.

■ Stakeholder survey

237 researchers, managers, owners, advisors, forestry authorities, forest health surveyors and interested citizens in 15 European countries responded to our online surveys on:

- ◆ knowledge and concerns regarding new and emerging tree PnPs,
- ◆ tools and methods currently used for detection, identification and management of PnPs in European forests, and what additional tools they would wish to have available.



Damage caused by the spruce bark beetle (*Ips typographus*) in the Bavarian Forest National Park, August 2022 (photo by K. Dehnen-Schmutz).

■ What do stakeholders want?

Most stakeholders would like to have access to more tools and methods for detection, identification, and management of PnPs to help facilitate better forest health across Europe. They called for:

- ◆ increased long-term citizen science monitoring,
- ◆ access to maps showing spread and range of new PnPs,
- ◆ smartphone apps for new pest identification,
- ◆ handheld detection devices,
- ◆ eDNA applications,
- ◆ drone monitoring,
- ◆ non-destructive metabarcoding,
- ◆ development of mixed forests,
- ◆ less movement of nursery stocks,
- ◆ information and data sharing between organisations

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– We need rapid detection tools

– I'd like access to maps showing range, spread, recent sightings

– Apps for identifying specific pests and pathogens would be very useful

Stakeholder comments

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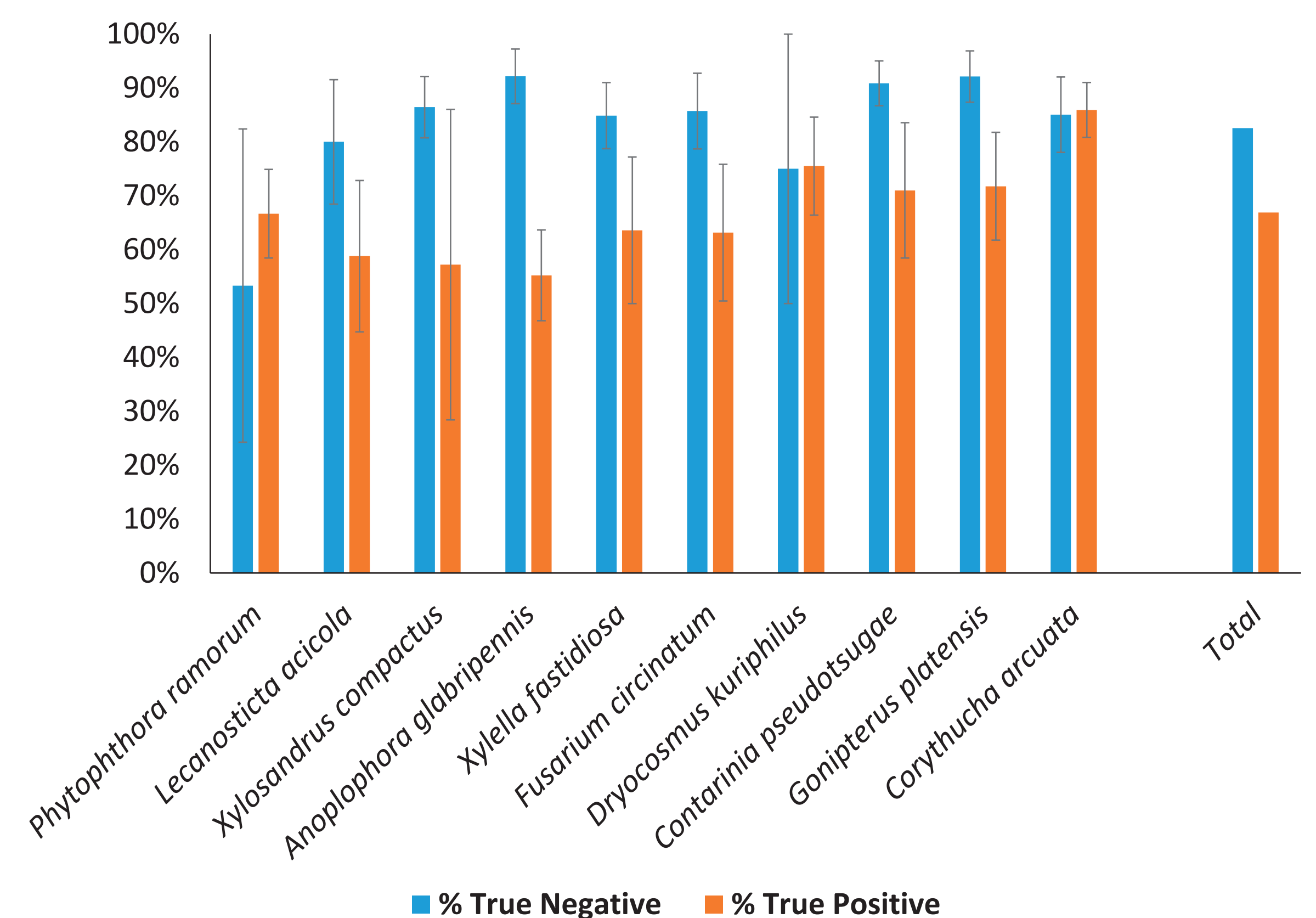


Figure 2: Stakeholders' knowledge on the status of PnPs in their country, showing the real positives (real presence) and the real negatives (real absence) for the main tree PnPs in Europe.

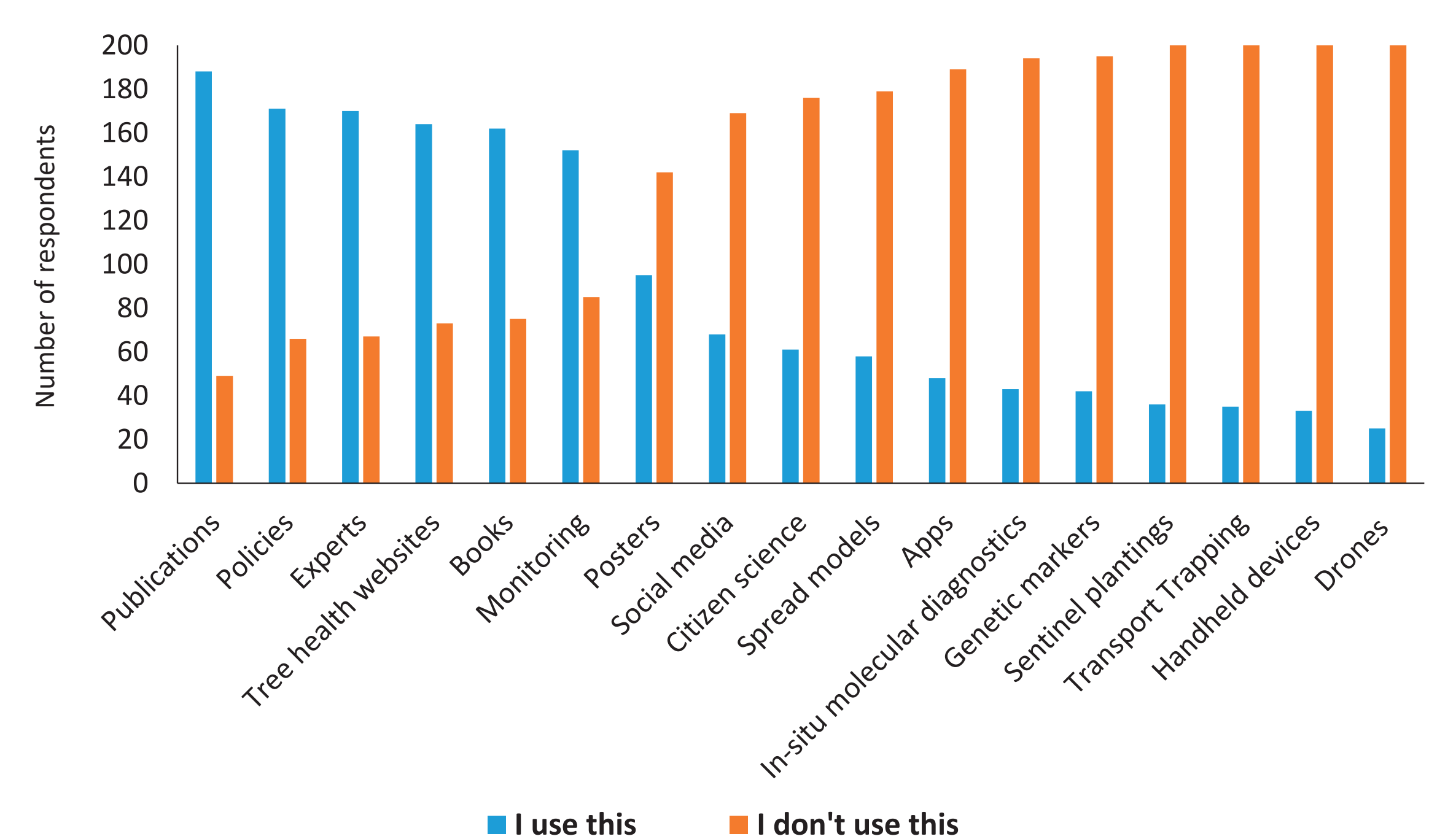


Figure 3: Tools and methods currently used for detecting and identifying new, emerging forest pests and pathogens (required answer for all respondents). The scale shows the number of responses given by stakeholders.

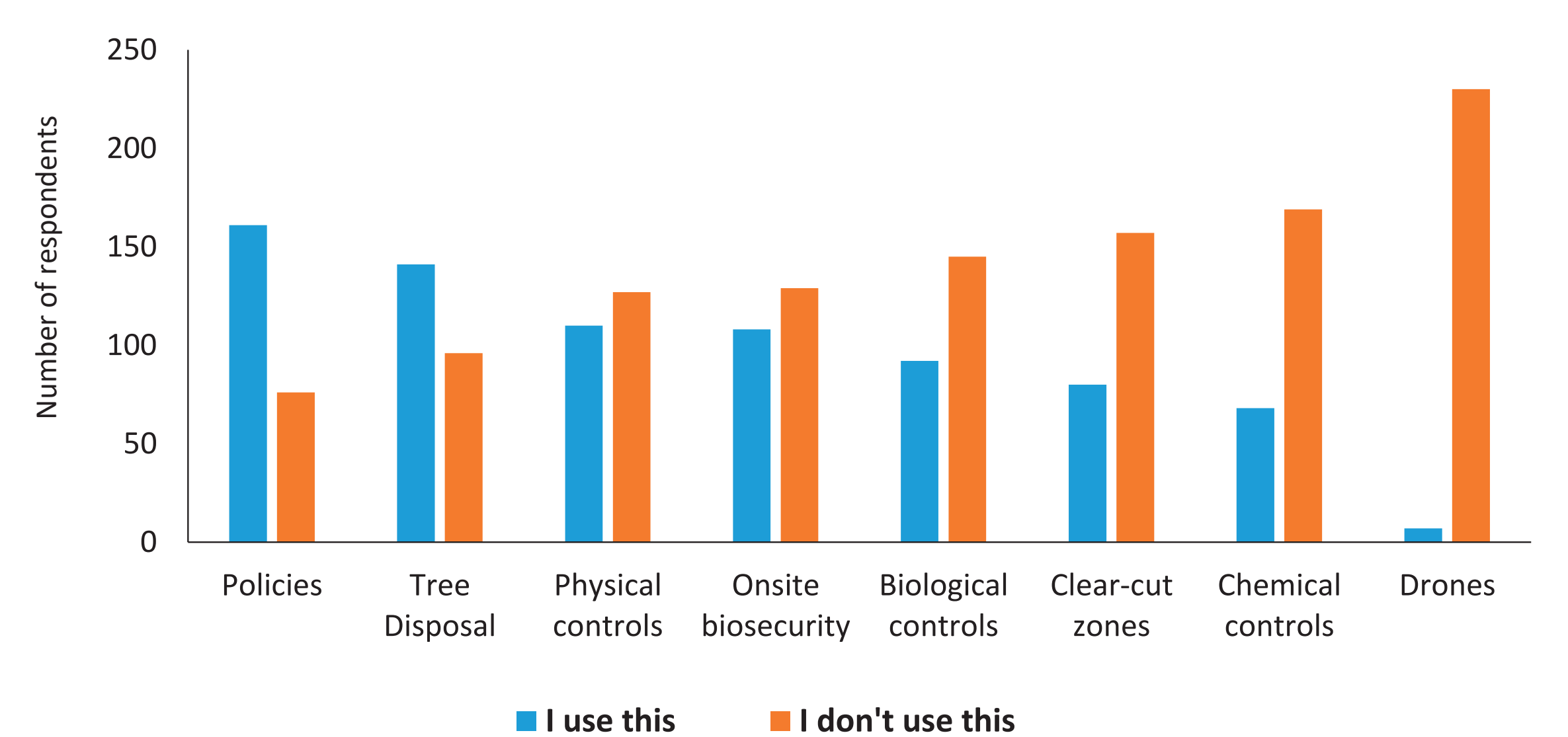


Figure 4: Tools and methods currently used by stakeholders for managing new, emerging forest pests and pathogens (required answer by respondents).

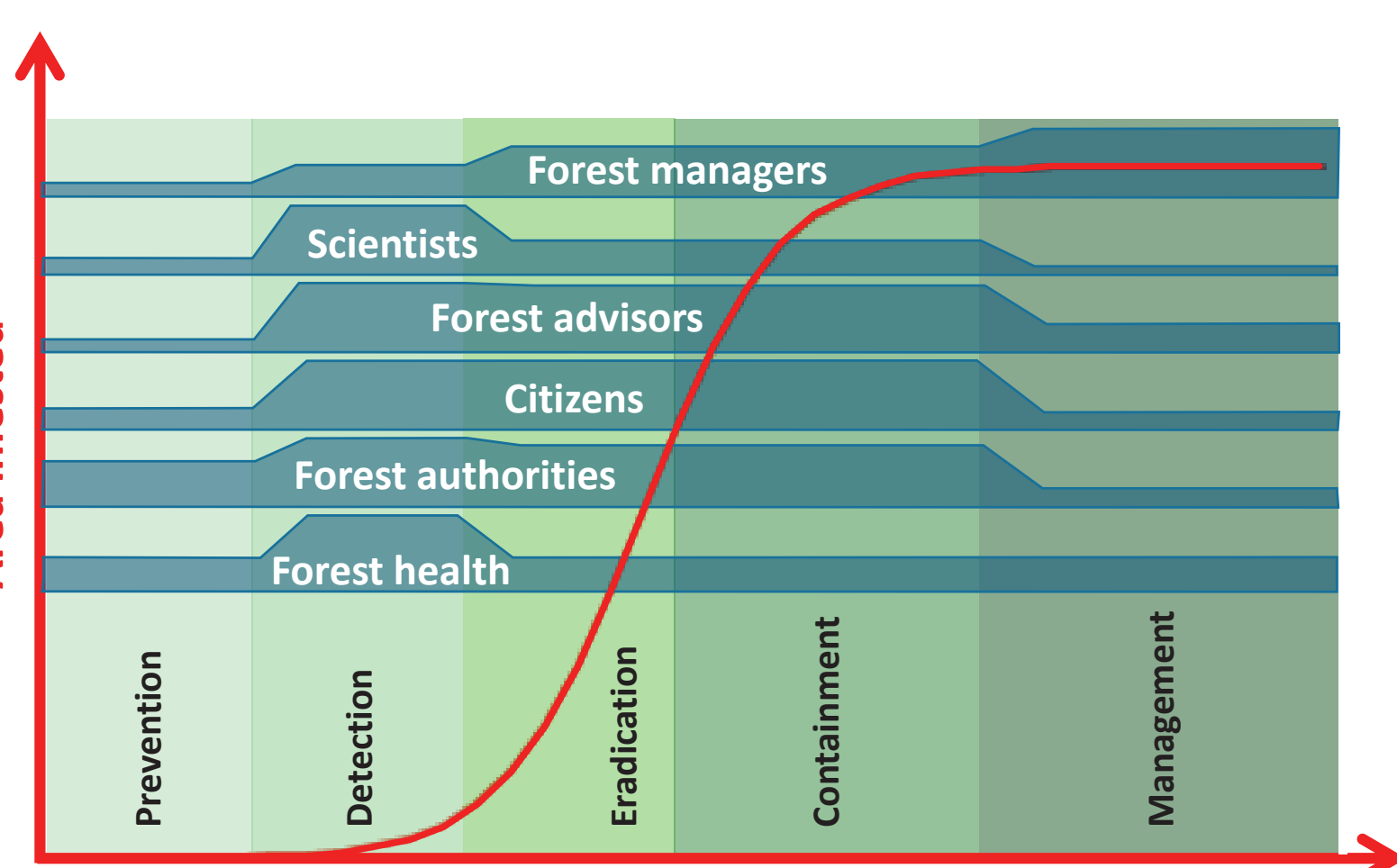


Figure 1: Engagement of different stakeholder groups in the management responses to the different stages of the invasion process by a non-native pest.

■ What are stakeholders experiencing?

We found that new, emerging pests on the European list of 'priority pests' were better known than those not listed. Stakeholders working in urban environments were more aware of PnPs compared to those working in rural areas. The number of PnPs present in a country did not have an impact on the probability of knowing them. Respondents who listed their experience of an invasion stage of a PnP, were well aware of the 18 most frequent PnPs in Europe and listed a further 37 pest species and 21 pathogen species. Stakeholders seem to know more about PnP absence than presence in their country (true negative rates are consistently more common than true positive rates).

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