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Knowledge about *Ips typographus* alone is not enough - the motivation and practical support of forest owners is crucial.

Research objective:
 to analyze the socioeconomic impact of the spruce bark beetle on non-industrial private forest owners in Latvia and assess the potential for their involvement in risk mitigation.



Introduction

Under the influence of climate change, the spruce bark beetle (*Ips typographus*) is becoming a significant factor destabilizing forest ecosystems in Latvia.

The fragmented ownership structure of private non-industrial forests means that limiting the spread of the pest largely depends on the decisions and actions of individual forest owners.

However, there is still limited understanding of how private forest owners' knowledge and perceptions translate into actual management decisions.

Methodology

A cross-sectional survey was conducted among private forest owners (n = 75) using a structured questionnaire.

The survey collected self-reported data on knowledge, perceptions, and management practices related to *Ips typographus*.

Descriptive statistical analysis was used to examine relationships between awareness and reported management actions.

Results and Discussion

A higher level of knowledge increases the likelihood of action, but does not guarantee it. These findings align with behavioral decision-making theories (e.g. Ajzen, 2020; Michie et al., 2011), suggesting that knowledge alone is insufficient to trigger action without adequate motivation and enabling conditions.

	Low knowledge	High knowledge
Low engagement	Inert/ unmotivated owners (difficult to engage)	Potentially active owners (persuadable)
High engagement	Practically active but uninformed owners (persuadable)	Established professionals (no need for persuasion)

Fig. 1. Distribution of respondents by knowledge and involvement, indicating the potential for persuading these groups to change their existing opinions

Risk gap: some owners notice damage but do not take action.

Do you have any knowledge about the spruce bark beetle? Have you observed bark beetle damage in your forest?	Have you taken any measures in your forest to prevent the threat of the spruce bark beetle?			
	Yes	I plan to do	I don't plan to in the near future	No
No No	0	0	0	1
No I don't know what they look like	0	0	1	0
I've heard of one No	0	1	0	9
I've heard of one I don't know what they look like	0	1	1	2
I've heard of one Yes	1	0	1	6
Yes No	1	0	4	17
Yes Yes	20	2	2	5

Fig. 2. Risk group matrix by knowledge level and action status

■ high ■ average ■ low ■ controlled ■ neutral

Non-industrial private forest owners develop different knowledge and involvement profiles: a single information solution is not effective.

Respondents show interest in a simple, free digital tool with a clear action algorithm.

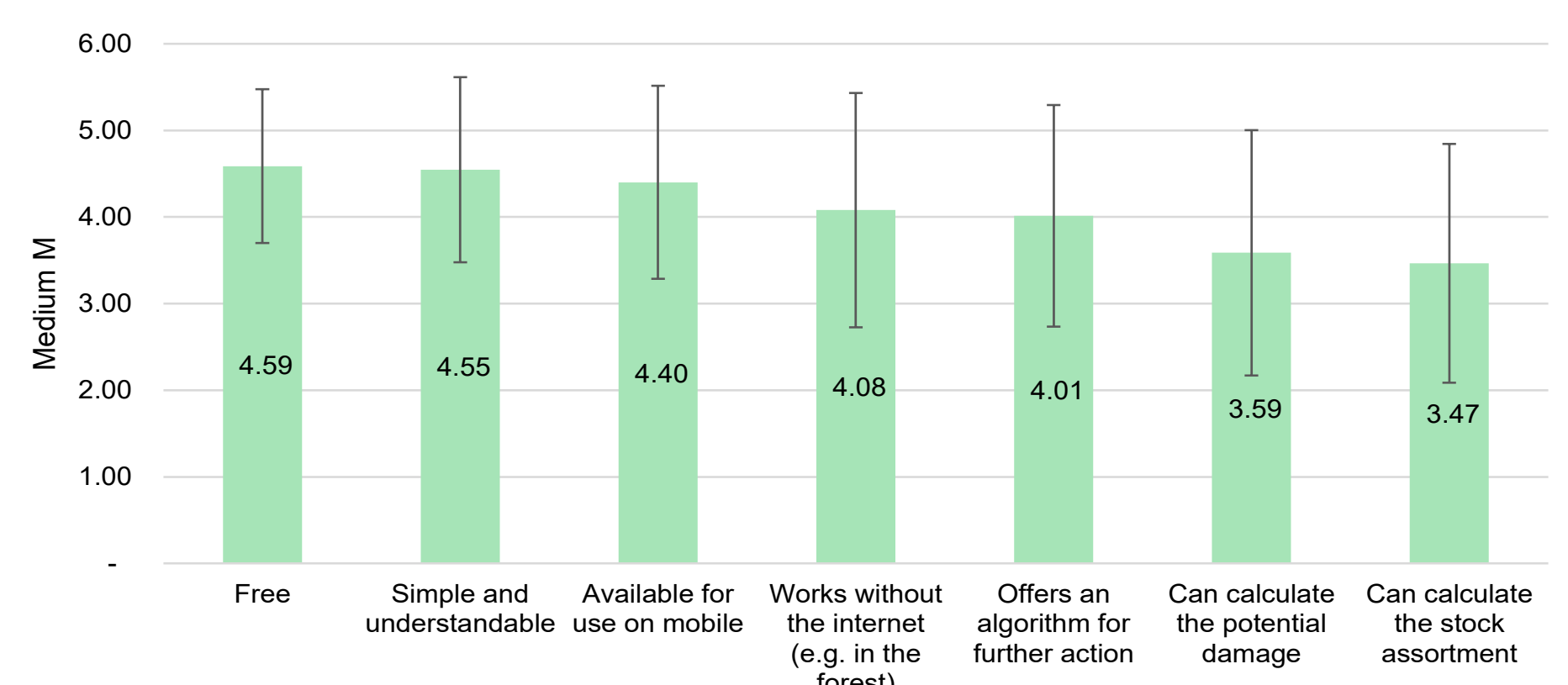


Fig. 3. What functions and features would be important for using a digital tool? (on a scale from 5 (very important) to 1 (not important)).

Conclusion

Private forest owners play an important role in reducing the risks associated with *Ips typographus*, yet knowledge alone does not necessarily translate into action.

The findings suggest that effective risk mitigation requires not only awareness, but also motivation, practical support, and accessible decision-making tools. This highlights the need for targeted measures that strengthen owner engagement and support timely forest management decisions.