



THINKFOREST

# Living with bark beetles: impacts, outlook and management options

## Presentation of a new EFI study

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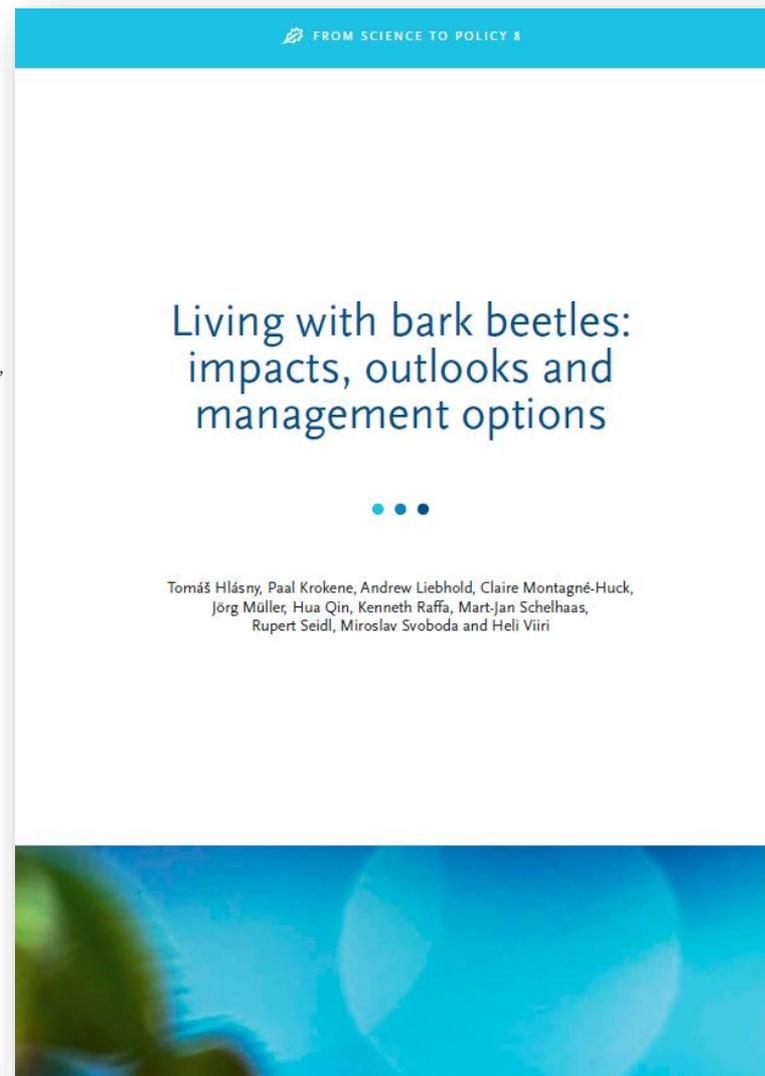
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[http://www.efi.int/sites/default/files/files/publication-bank/2019/efi\\_fstp\\_8\\_2019.pdf](http://www.efi.int/sites/default/files/files/publication-bank/2019/efi_fstp_8_2019.pdf)



# Bark beetles and their role in the forest

- Part of the forest contributing to proper ecosystems functioning, with positive effects on biodiversity or nutrient cycling
- Costly competitors for our desired forest resources and economic well-being

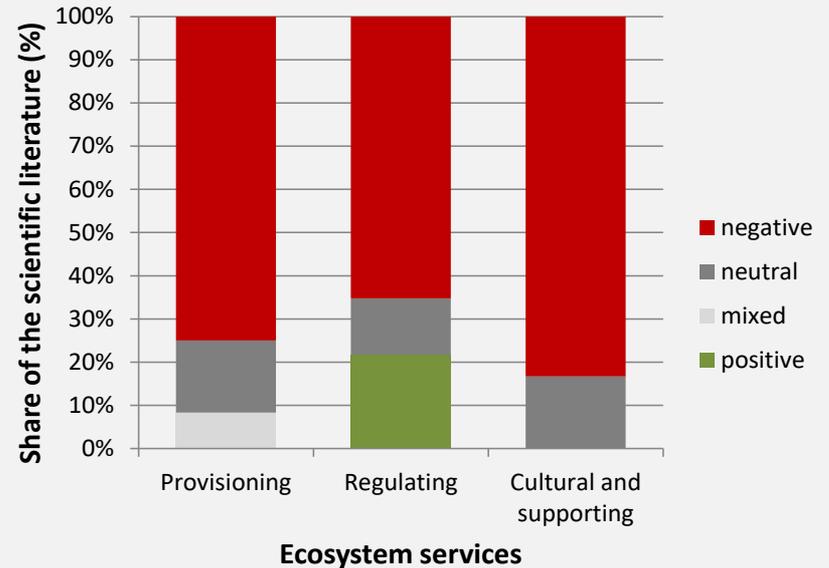


# Bark beetles and their outbreaks

- Recent outbreaks have reached unprecedented intensities
- Year 2018 being a manifestation of „new“ outbreak dynamics
- At least 18 non-native species have become established in Europe
- Future outbreaks will be strongly amplified by climate change
- Will be reaching supranational scales and coming in waves synchronized by extreme weather
- Expanding to new territories
- Risk of „ecological surprises“ from bark beetles will increase

# Impacts of bark beetle outbreaks

- Ecosystem services – negative impacts dominate
- Economy – complex pattern of losers and winners with overall negative balance
- Social – rather uncertain, with research lacking for Europe



# Notes on the current management

- Traditional outbreak management measures are losing efficiency when outbreaks are large and climate warmer
- Efficiency, economy and collateral impacts of broadly applied management approaches are often not known or not considered in management decisions
- Insufficient transnational collaboration, data sharing, and monitoring reduce our ability to take efficient actions



# How can we manage future outbreaks?



## Preparedness

- Improved education and training
- Strengthened collaboration
- Improved knowledge transfer
- Strengthened dialogue

- Improved forest roads
- Established monitoring programmes
- Increased capacity of nurseries
- Increased timber storage capacities

## Prevention

- Establishing early warning systems
- Improving landscape configuration
- Preventing invasions
- Reducing rotation
- Conducting proper forest sanitation

## Response

- Increasing salvaging efficiency
- Reducing planned harvests
- Subsidizing response measures
- Improving communication

## Recovery

- Supporting forest structure and diversity
- Utilising advanced regeneration
- Integrating biological legacies
- Planting disturbed sites
- Protecting regeneration

# Selected recommendations

- Utilize „**integrated disturbance management**“ that combines monitoring, sanitation, silviculture and non-intervention rather than „forest protection“
- **Revise current interpretation** of sanitation and salvage logging, and beetle trapping in view of the emerging scientific understanding of their effectiveness, economy and collateral impacts
- **Relax legal constraints** that hamper more comprehensive disturbance management, e.g. the requirement on fast regeneration after disturbance or insufficient flexibility in rotation period



## Recommendations ctnd.

- Extend disturbance management from tree- and stand-scale to **landscape scale**, which is the scale of outbreaks
- Better balance between **risk reduction** approaches, and approaches fostering **forest resilience**
- Actively **exploit post-disturbance conditions** to create climate change-adapted and resilient forests





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