TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Environmental Sciences, Chair of Forest Policy and Forest Resource Economics

Tiny but powerful: How bark beetles are changing forest policies

Prof. Dr. Norbert Weber

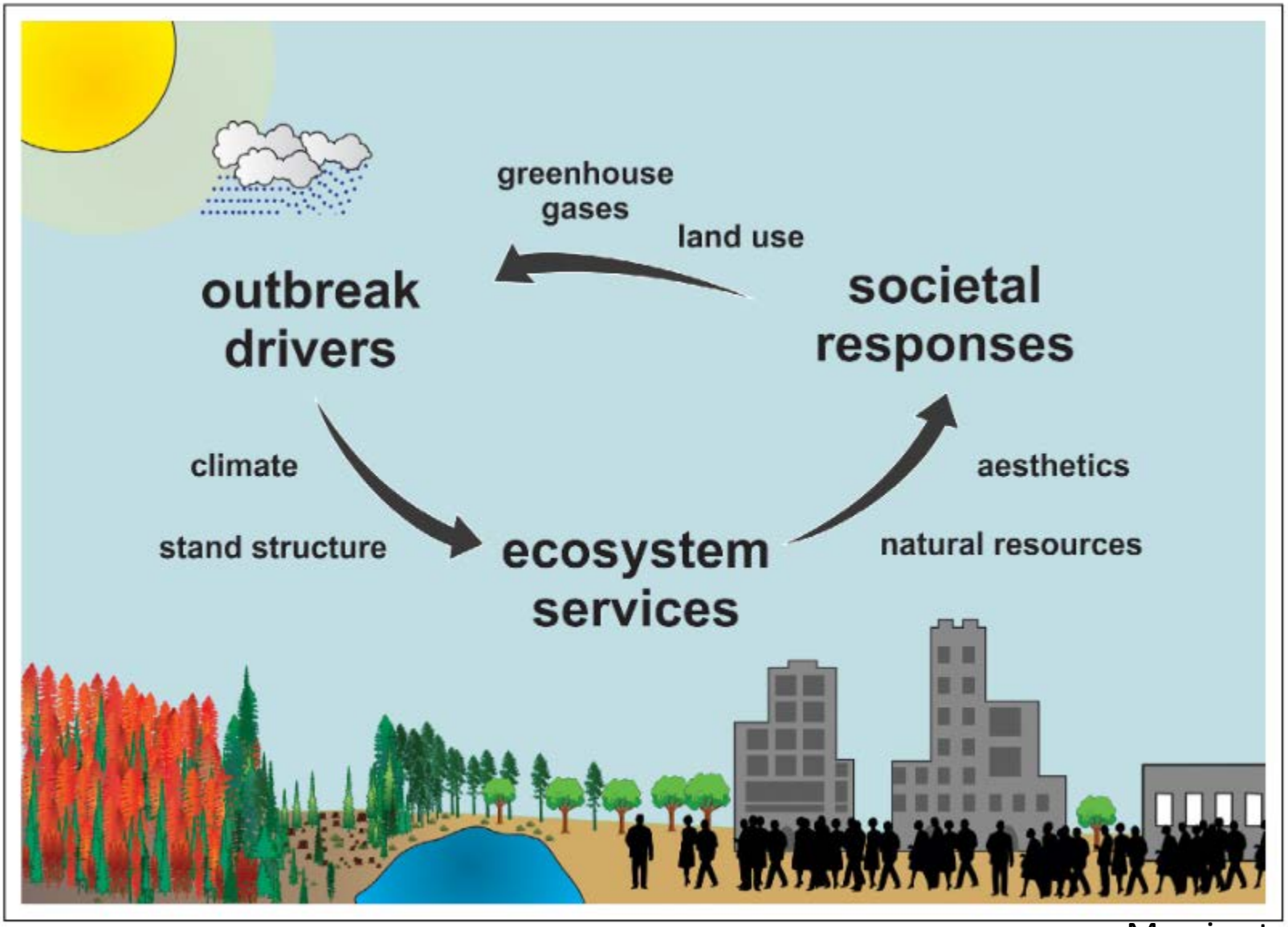
Online-Meeting **FORESTS‘ FUTURE 2021**

March 24, 2021

Outline

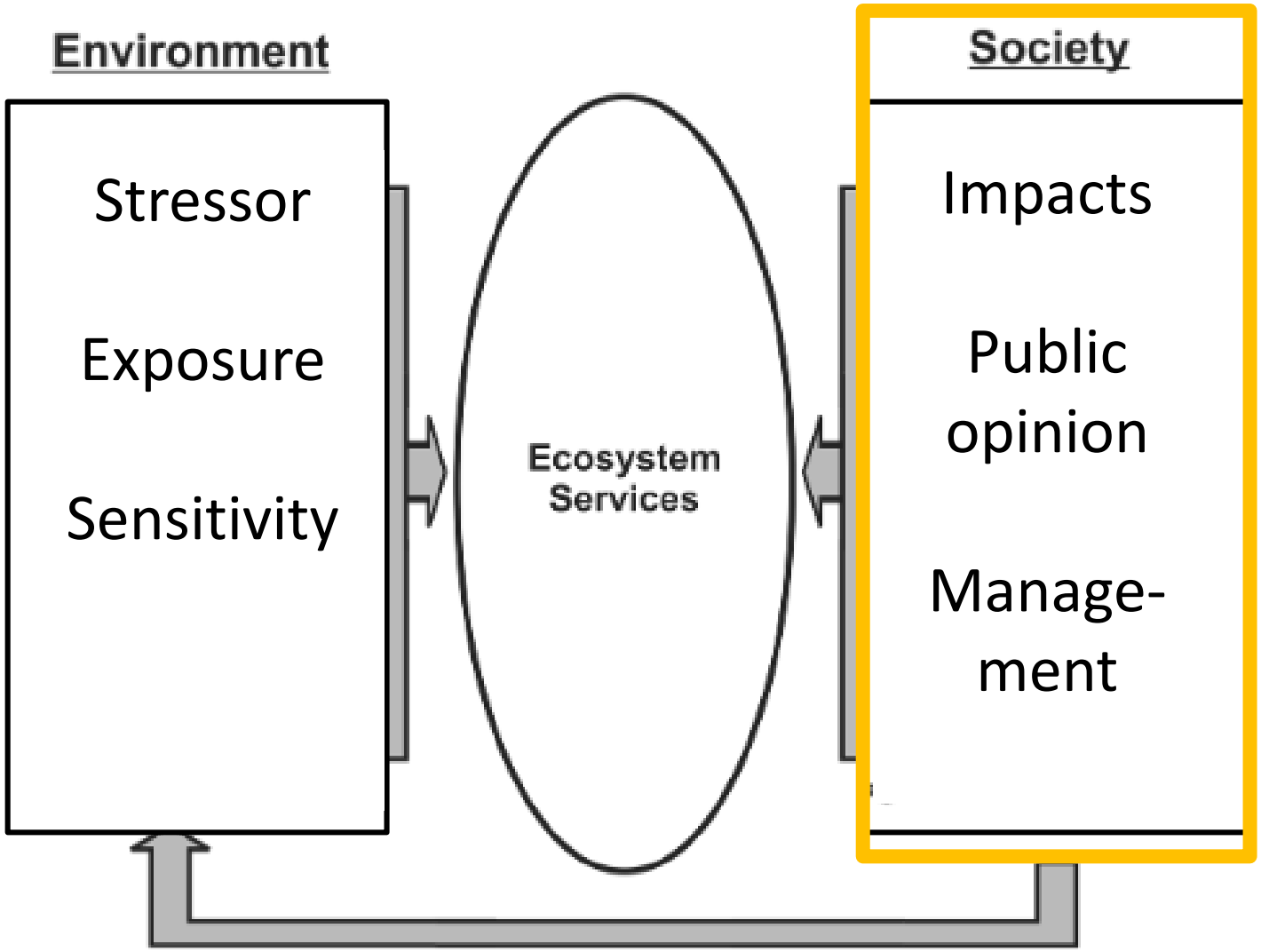
1. Bark beetle outbreaks in the context of social-ecological systems
2. The aim: Increasing adaptive capacity
3. The challenges
   - differentiated impacts of BB disturbances
   - opposing views on the role of bark beetles
4. Potential solutions
   - diversifying management paradigms
   - redesigning crisis communication
5. Conclusions

Bark beetle disturbances within a social-ecological system



Morris et al. 2018

Adaptive capacity in social-ecological systems



Cottrell et al. 2020, modified

Differentiated impacts of BB outbreaks

Scale (small-scale, large-scale)

Time (short-term, long-term)

Proximity (near, remote)

Region (old-new; lowlands - mountains; crossborder)

Beetles (endemic, invasive)

Trees („traditional hosts“ or new host species)

Forests (public or private; managed or protected areas)

concomitant threats -

economic situation +/-

learning, innovation +

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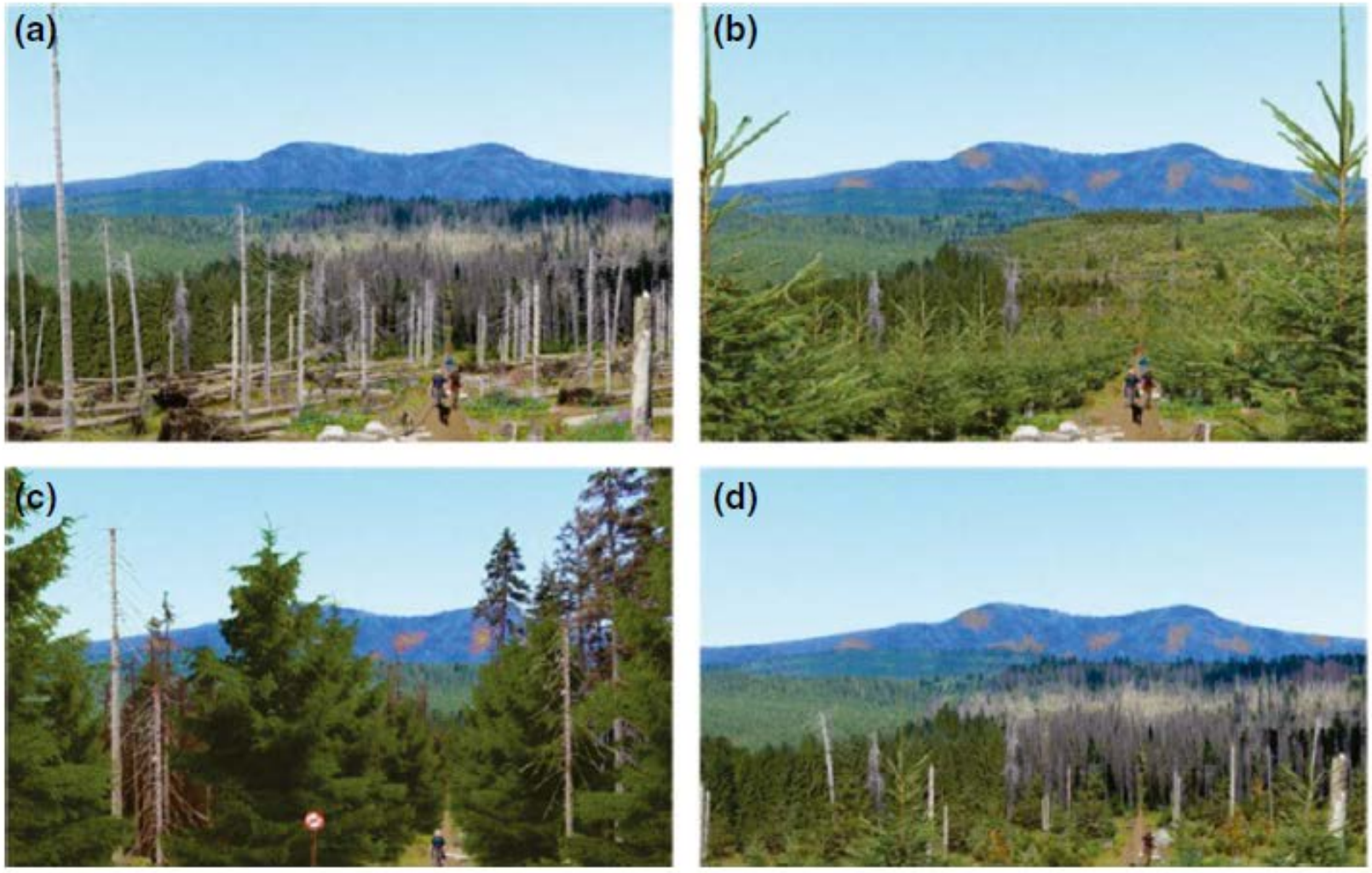
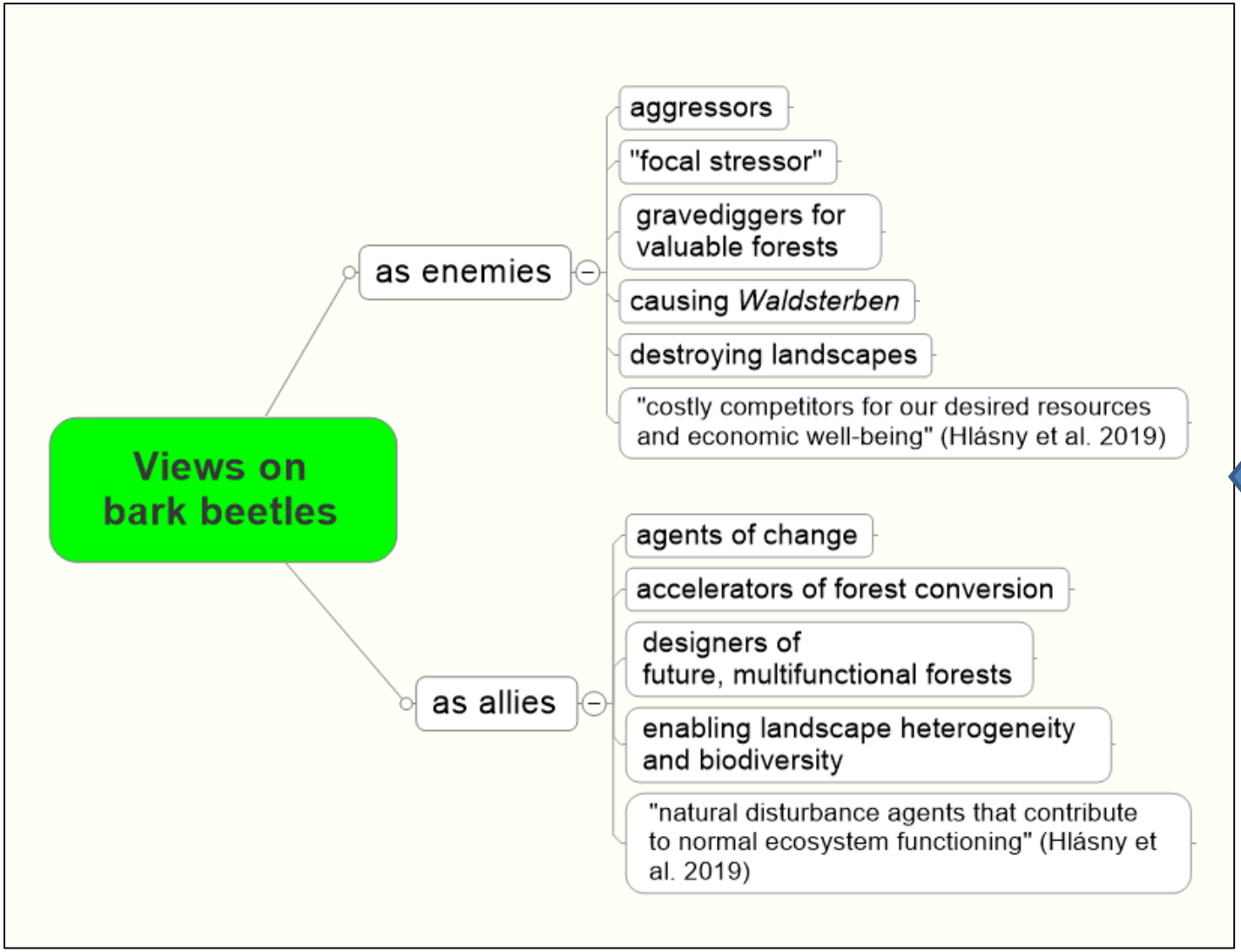
Views on the role of bark beetles (1)



Morris et al. 2017

Views on the role of bark beetles (2)



Scale
Ownership
Proximity
Socialisation
Value orien-tation

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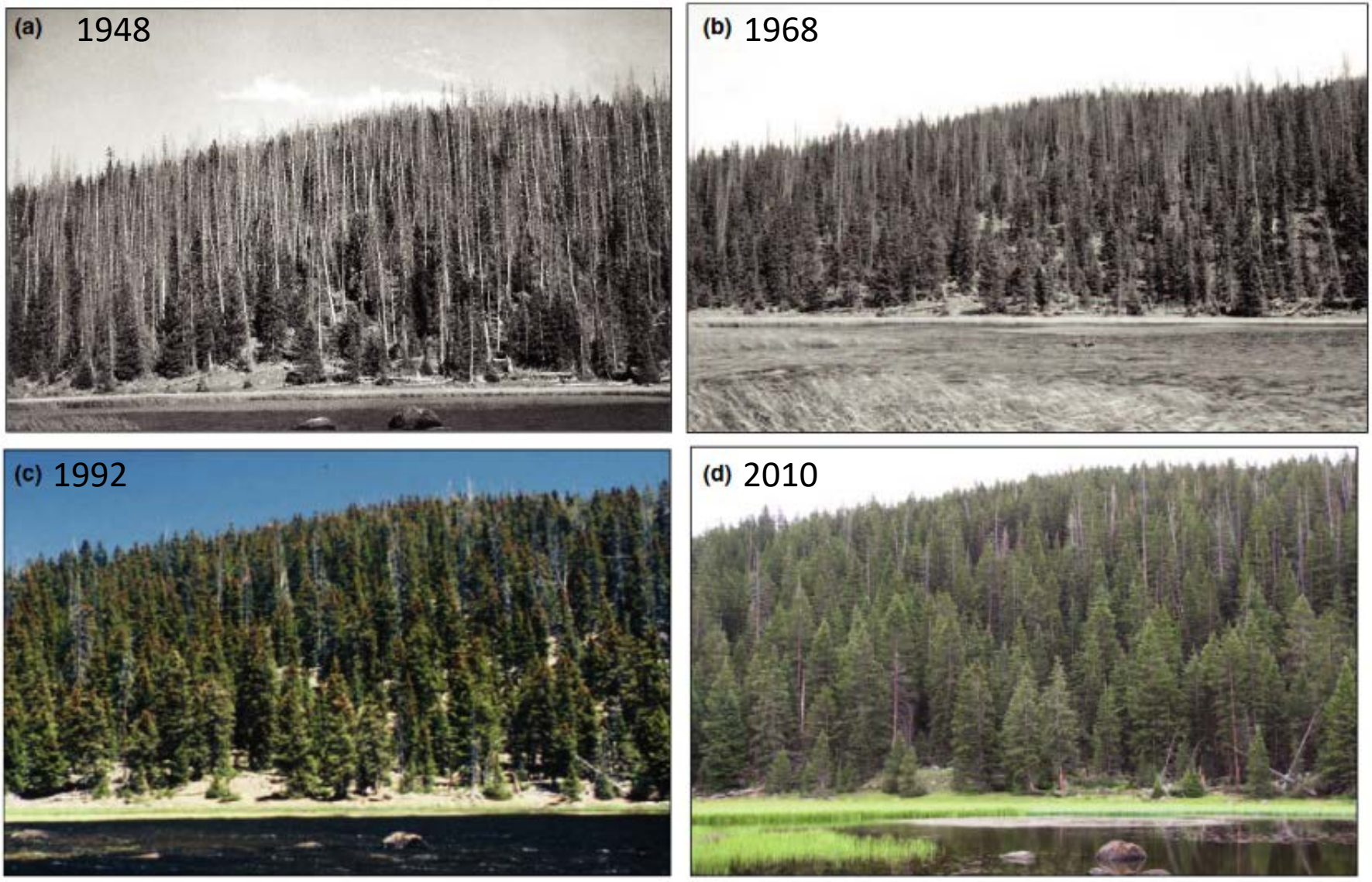
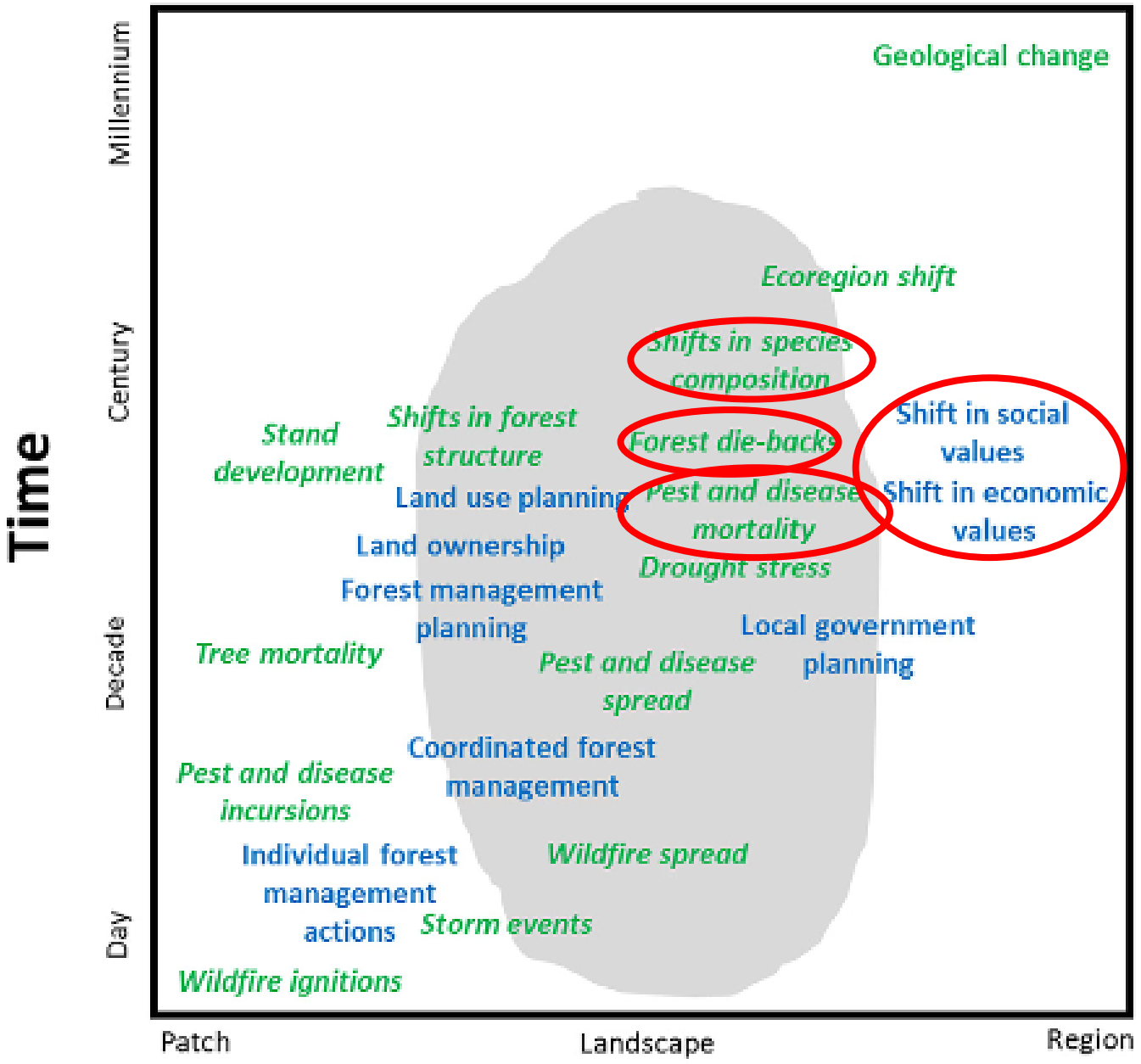
Forest recovery after bark-beetle attack aorund Purple Lake, Utah



Morris et al. 2018

Spatial and temporal scales of social processes and ecological processes



Fischer 2018, amended

Triad approach to sustainable forest management

- intensive timber management (including SRC)
- conservation management (multifunctional silviculture)
- preservation management (protected areas)

Carbone 2014; Pearce, Putz & Vanclay 2003; Seymour & Hunter 1992

Possible reactions to large-scale BB outbreaks

Management Paradigm	
Intensive timber production	**active intervention**; salvage logging; using clearcut areas for (short rotation) timber production, „shifting plantations“; trials with new tree species
Multifunctional forest management	**active intervention**; reforestation; retention management; climate-adapted tree species; pioneer species
Preservation management	**non-intervention; delineated intervention** for nature-conservation purposes (species, habitats) and wildfire prevention

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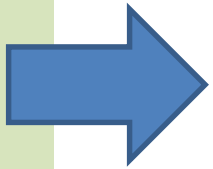
Criteria for successful communication of crisis and risk in forestry

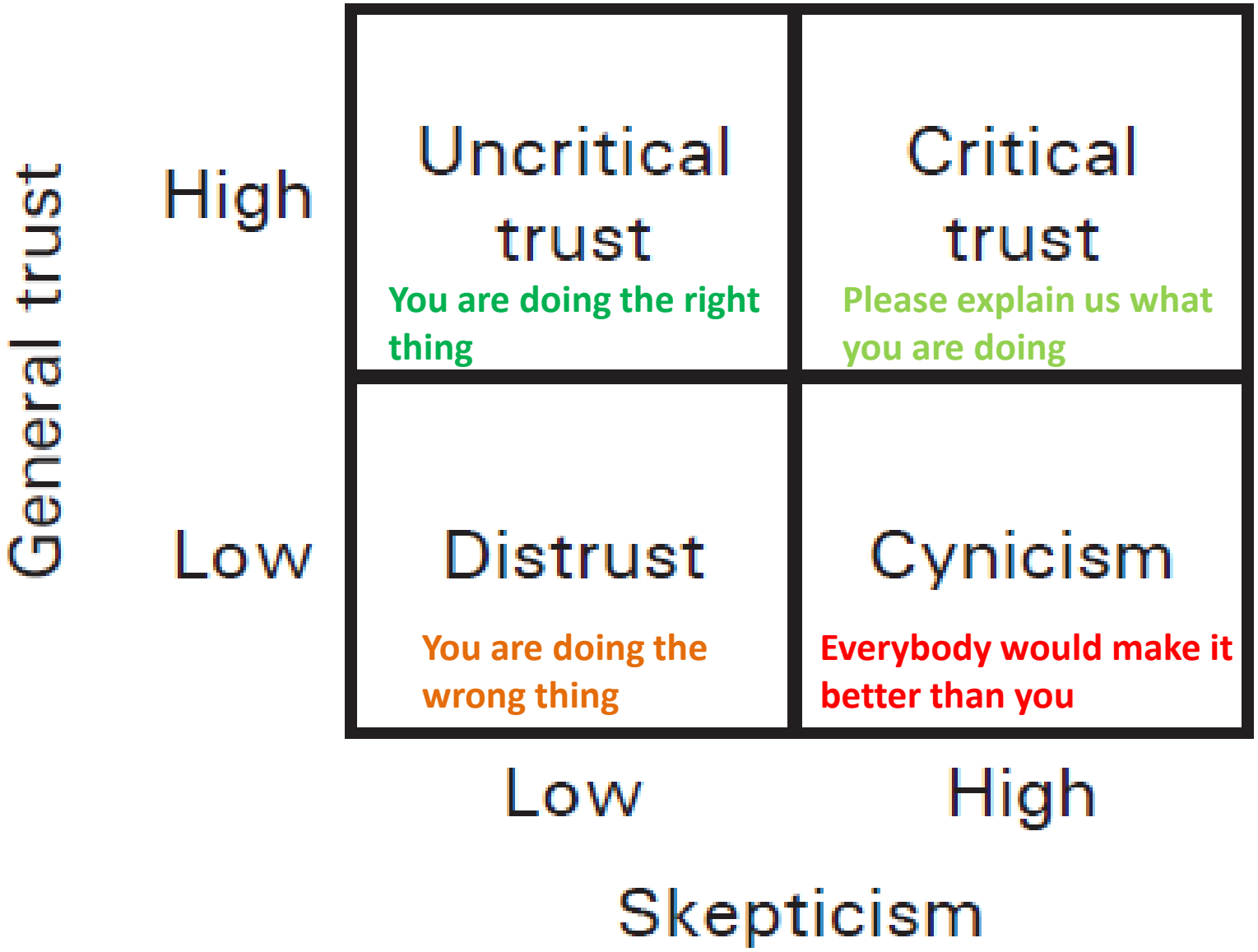
- Comprehensibility
- Transparency
- Fairness
- Respect
- Directness
- Responsiveness
- Credibility



Acceptance
Trust

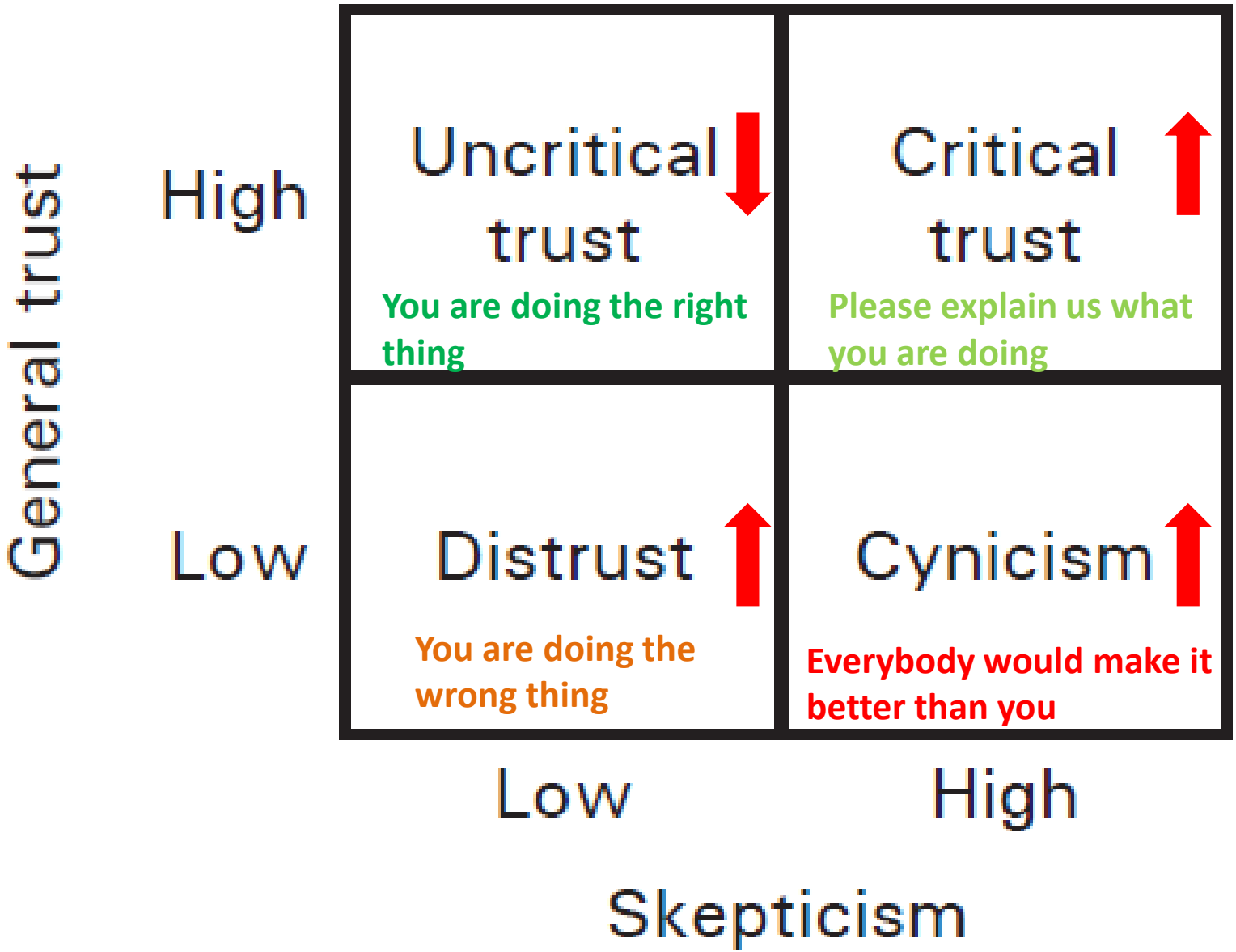
Austen & Deeg 2021, modified

Conceptual typology of trust



Russell Parkins &Mcfarlane 2015 after Poortinga and Pidgeon (2003), amended

Conceptual typology of trust (2)



Russell Parkins &Mcfarlane 2015 after Poortinga and Pidgeon (2003), amended

Conclusions

- Unprecedented, *large-scale* BB outbreaks, in combination with concomitant disturbances, cause mainly negative impacts on ecosystem services
- The role of bark beetles is contested, the discussion being embedded in overarching value conflicts (*commodity* vs. *amenity, science* vs. *„religion“)*
- Management of large-scale damaged areas needs a triad approach (timber, multifunctional forestry, preservation)
- Both intervention and non-intervention necessitate professional crisis communication.