Attractiveness of Forest Landscapes under Close-to-Nature Management

Public Recreation and Landscape Protection 2026

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ONE NATURE

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Forest management practices in focus

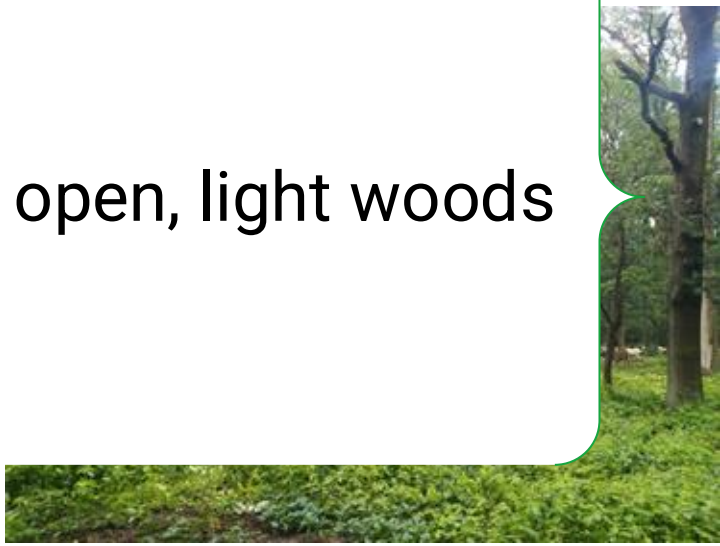
Coppicing

- Traditional way of harvesting fuel wood
- Completely abandoned, now reintroduced for conservation purposes

Forest grazing (silvopasture)

- Historically common practice
- Today rarely practiced
- Reintroduced for conservation purposes

→ open, light woods



Deadwood management

- Historically not typical in cultural forests
- Now practiced to support biodiversity

Public perception of unusual forest management practices

Coppicing

- preparatory thinning → unnecessary intervention in a healthy forest
- young coppice → resembles wild succession

Forest grazing (silvopasture)

- preparatory thinning → unnecessary intervention in a healthy forest
- grazing livestock → perceived hazard
- fences → obstacle

Deadwood management

- woody debris on the ground → risk of injury, perceived obstacle
- woody debris on the ground→ fire hazard
- potential fuel wood left to decompose → poor resource management

Perception of forests in the Czech Rep.

Stachová and Čermák (2018; 2023)

- grown trees > young trees; safe > dangerous environments
- tidy > wild environments; continuous > scarce tree cover

Sklenička and Molnárová (2010)

- managed coniferous forests > other types
- older stands > younger stands

Braun Kohlová et al. (2021)

- higher preference for older, higher, more permeable and maintained forests

Melichar et al. (2021)

- mixed-aged and combined forests were found to be preferred over even-aged forests
- more so if labelled as ecologically valuable

Kneifl et al. (2016)

- high forest > coppice-with-standards > coppice

Perception of forests in the Czech Rep.

→ general tendencies

- Preference for a closed-canopy forests over open-forest environments
- Well-maintained forests preferred over wild forest stands
- Older forests preferred over younger stands
- Complex (mixed-aged) forests preferred over even-aged monocultures
- Ecological context may affect preference

What shapes perception of natural environments

- prospect
- naturalness
- complexity
- historicity
- coherence
- stewardship

→ aesthetic factors

- permeability
- familiarity
- fear

→ experiential factors

- Kaplan & Kaplan, 1989
- Tveit et al., 2006
- Gatersleben & Andrews, 2013
- Van der Berg et al., 2016

…

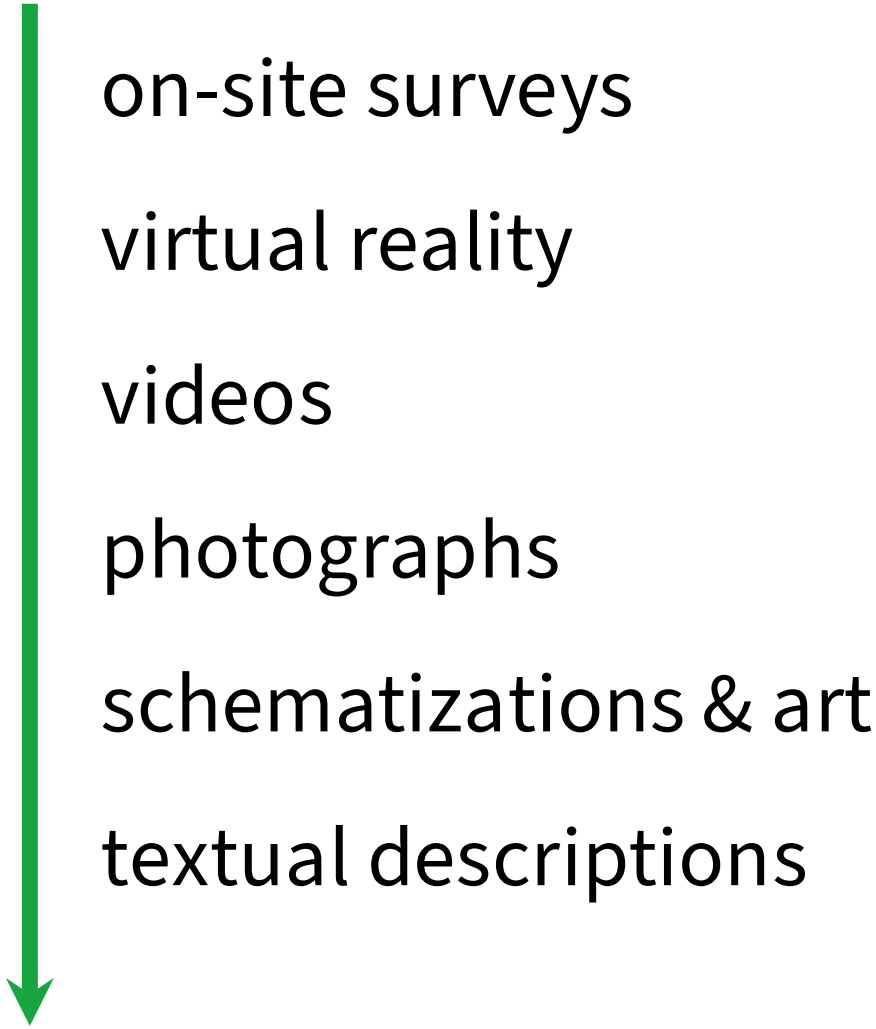
Perception of unusual forest managements

- Interplay of aesthetic and experiential factors
- Low preference for unusual managements mitigated by highlighting the environmental impact
- Traditional practices may resonate with people who are sensitive to cultural and historical aspects of landscape

The experiment

- Forest managements represented via visual stimuli
- Forest environment variations through digital manipulation of photographs
- Manipulation of contextual information
- Preference and observed characteristics of forests assessed via questionnaire items and behavioral measures (RT)

Representation of forest environments: ecological validity



Representation of forest environments: ecological validity

on-site surveys

virtual reality

videos

photographs

schematizations & art

textual descriptions

- Real-life photographs contain unwanted noise
  - perspective, vantage point, horizon, sky
  - lighting variation
  - ephemera
- Limited applicability of AI tools (cannot reproduce naturalistic images, can help with quality enhancement (upscaling))
- Digital manipulation offers highest degree of control over environmental attributes
- Balance between no. of degrees of freedom and naturalness can be achieved via extensive testing

Visual stimuli

- Digitally altered photographs of management locations
- Open forest landscape → baseline
- Manipulated attributes
  - stand density → typical commercial forest
  - young coppices → coppicing
  - sheep → silvopasture
  - woody debris → deadwood

Visual stimuli

Visual stimuli

Visual stimuli

Visual stimuli

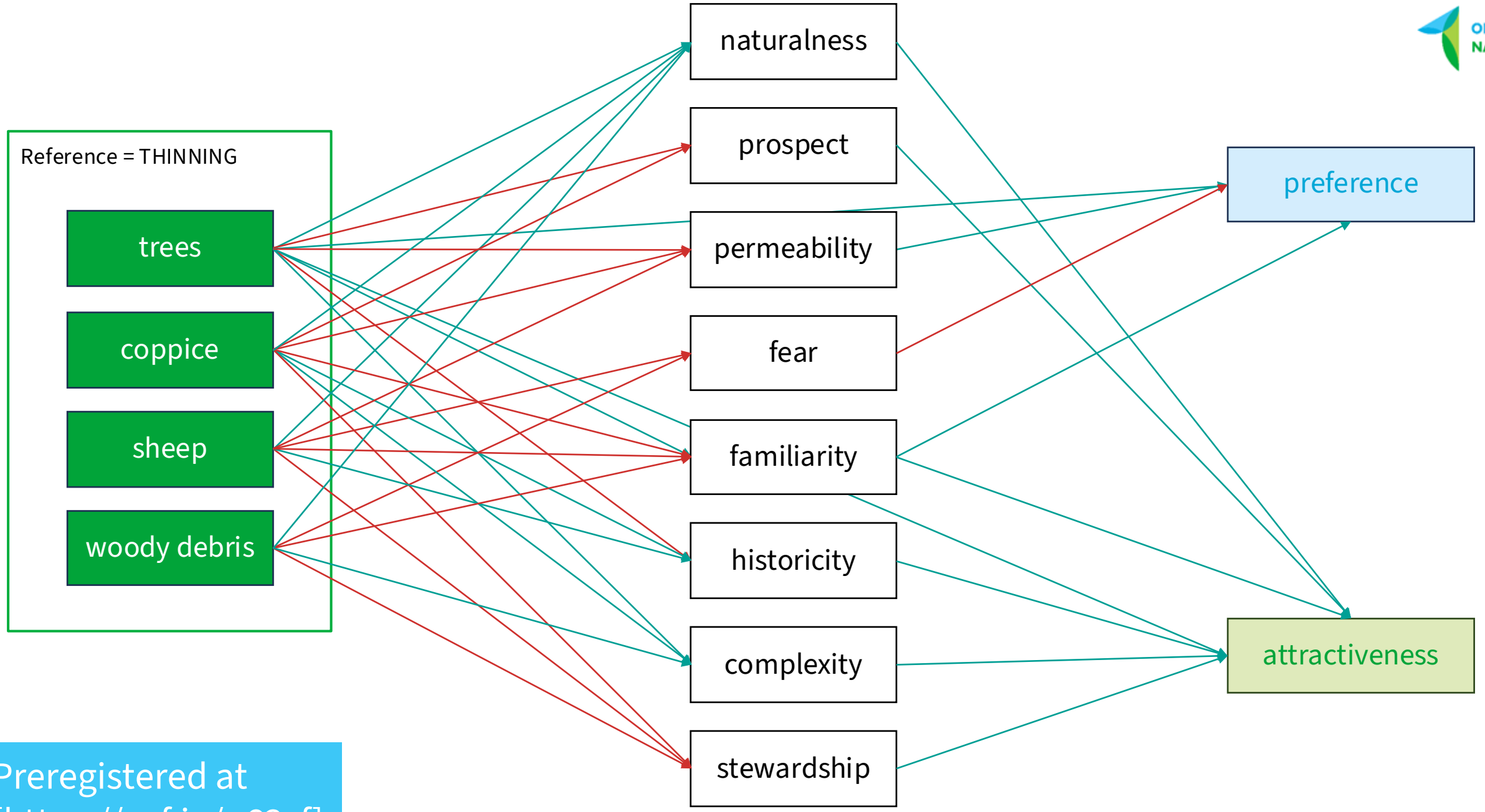
Visual stimuli

Contextual information

- Images supplemented with text labels
- Texts based on info signs installed at management sites
- Label conditions:
  - Ecological focus – simple
  - Ecological focus – complex
  - Historical focus – simple
  - Historical focus – complex
  - No label

Study design

- Perception experiment
- 3 visual stimuli:
  - thinning, closed-canopy forest, open-forest environment:
    - Either coppicing, forest grazing or deadwood
- Label conditions:
  - no label, ecological / historical framing × label complexity
- Questionnaire items:
  - Visual attractiveness, recreational preference
  - Perceived attributes
  - Standardized batteries: environmental and cultural identity



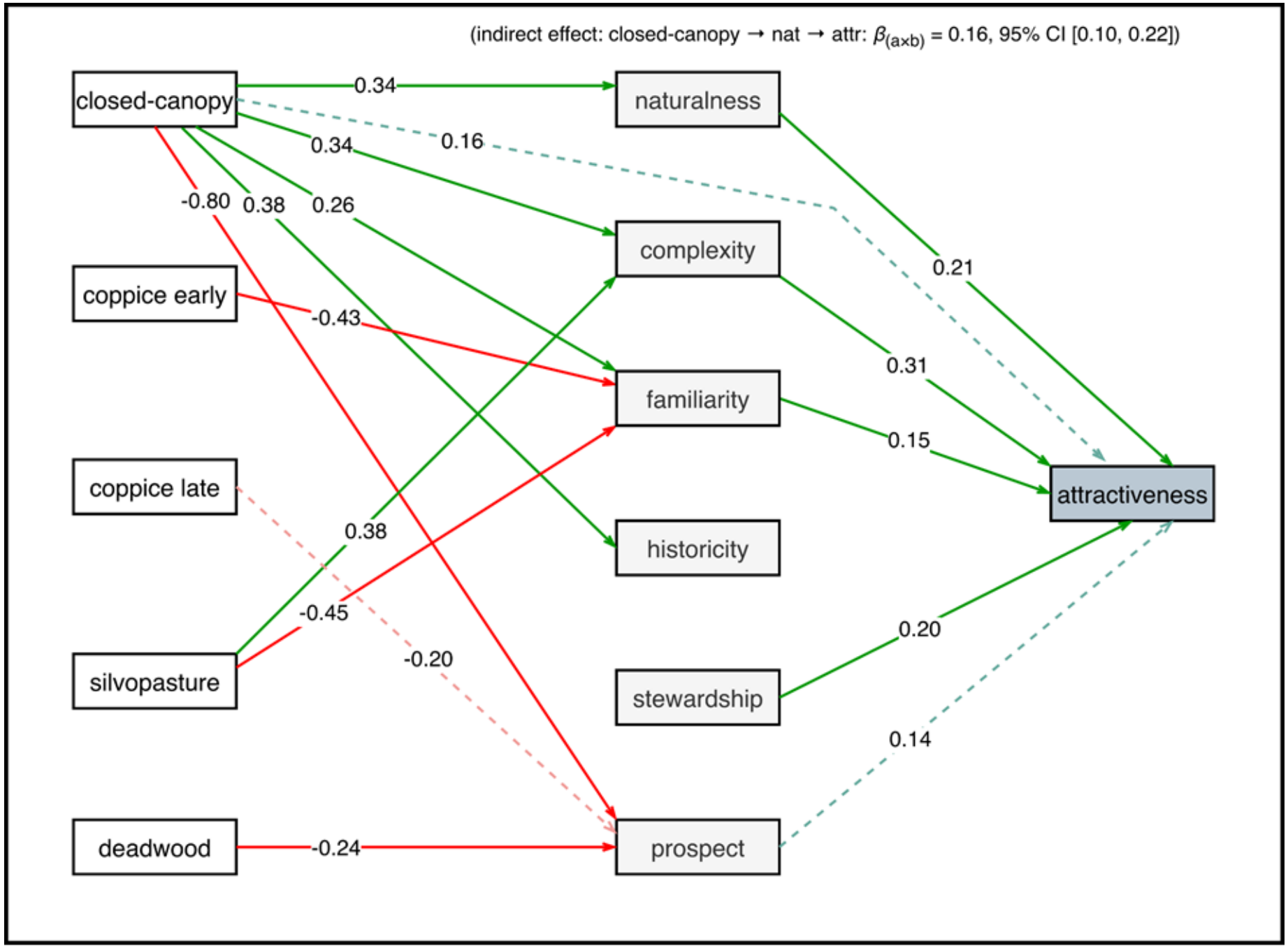
Preregistered at [https://osf.io/p63vf]

Data

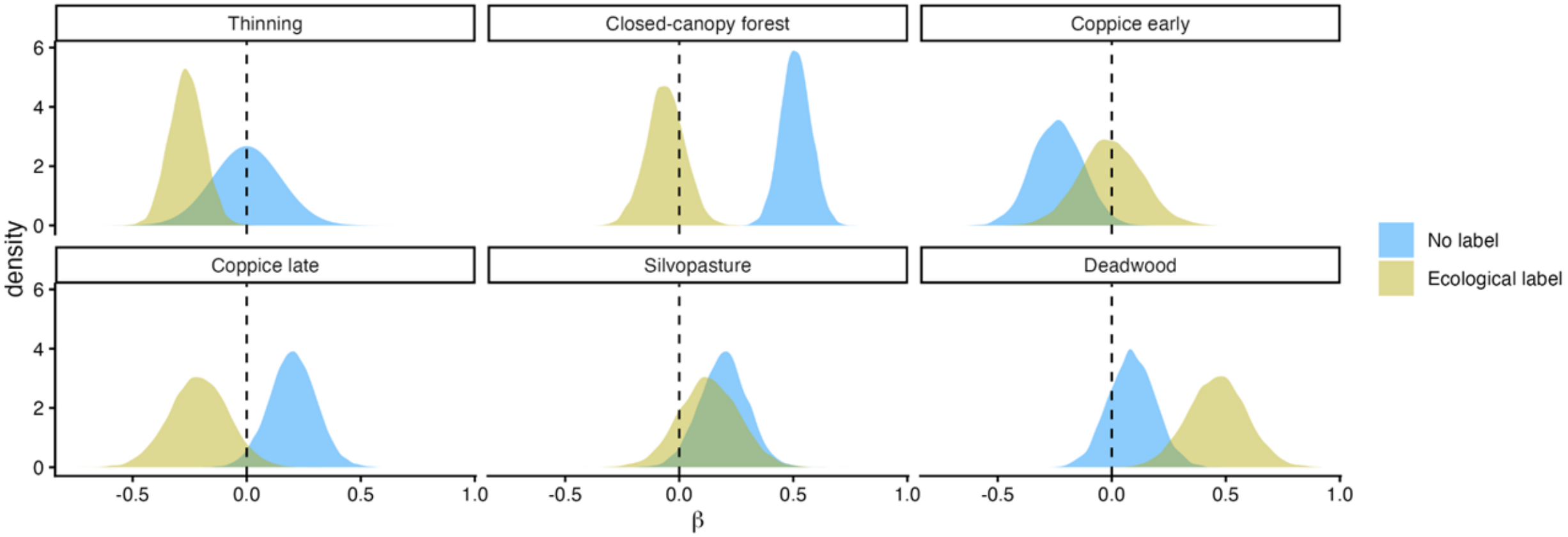
- 2 200 participants (1153 women, 1046 men, 1 undisclosed, mean age 50, age range [18; 86])
- The sample was balanced in terms of education, socioeconomic status, region
- Data from 41 participants were discarded due to suspicious response uniformity

Results (visual attractiveness)

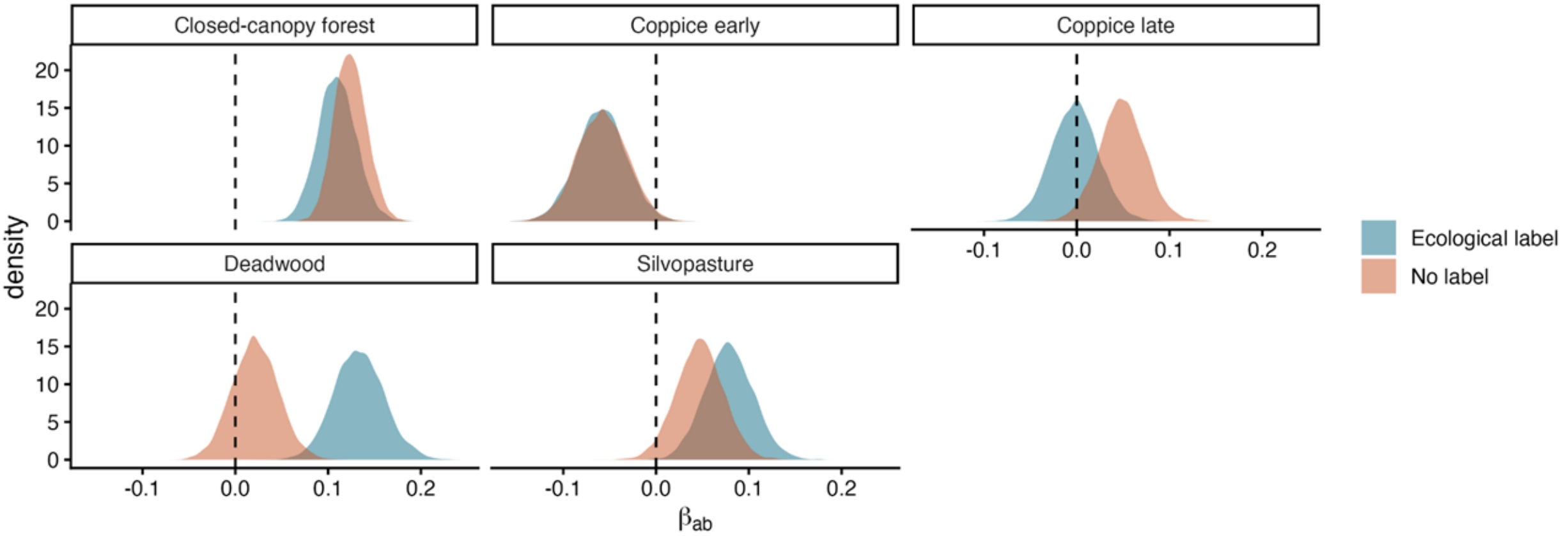
- Attractiveness ratings were generally high across all managements in no-label condition
- Open environments → lowest average rating
- Late coppice and closed-canopy → highest average rating
- Separate Bayesian multilevel models in R (‘brms’ package) for no label, and for ecological and historical labels


(indirect effect: closed-canopy → nat → attr: $\beta_{(a \times b)}$ = 0.16, 95% CI [0.10, 0.22])
closed-canopy
coppice early
coppice late
silvopasture
deadwood
naturalness
complexity
familiarity
historicity
stewardship
prospect
attractiveness
0.34
0.34
0.16
-0.80
0.38
0.26
0.21
-0.43
0.31
0.15
0.38
-0.45
-0.20
0.20
0.14
-0.24

Management*label → naturalness



Management*label → naturalness → attractiveness



Conclusion

- Attractiveness is primarily driven by perceived naturalness and complexity, with additional contributions from stewardship and familiarity
- Increased tree density (closed-canopy) consistently increases attractiveness through strong indirect effects of these perceptual dimensions, despite reducing visual openness of the scene
- Labels selectively modify how specific forest features are interpreted, particularly enhancing the perceived naturalness of ambiguous elements such as woody debris.

Conclusion

- Different perceptual pathways can counterbalance each other and lead to relatively small differences in overall attractiveness
- In the future, Czech public will encounter forms of forest management that now less familiar more frequently
- Perceptions of forestry practices are, among other aspects, grounded in how close to nature and how diverse (visually complex) the forests are
- Framing can draw attention to certain elements within forest scenes and thereby affect the overall attitude towards close-to-nature managements.

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Thank you for your attention.

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Jakub Jehlička
Charles University Environment Centre
jakub.jehlicka@czp.cuni.cz

&

Kateřina Mácová
Jan Melichar
Bronislav Farkač
Hana Škopková
Emily J. Hanson

Ministry of the Environment of the Czech Republic

NATURE CONSERVATION AGENCY OF THE CZECH REPUBLIC

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