

Appendix 5. The outcomes of frame analysis regarding framing scale challenges as derived from existing power relationships and learning processes. The numbers within parentheses indicate how many participants can be attributed to each code. GR refers to the participants of the focus group discussions in Greece and FIN refers to those in Finland.

Scale-related problems
(Diagnosis and roles of actors)

Codes

Mismatches between conservation objectives and human action (in terms of time, space, knowledge)

Conceptual and geographic boundaries between the objects of conservation and human communities are too often set arbitrarily (GR: 9; FIN: 8)

In defining conservation goals the way that social and natural scales coproduce each other is either ignored or not sufficiently taken into account (GR: 8; FIN: 8)

Governance is responsive to market and not environmental dynamics (GR: 7; FIN: 7)

There is only a limited position for social learning in integrating different types of knowledge and conservation policy across scales (GR: 6; FIN: 9)

Research is not sufficiently directed toward investigating the role of social-ecological change in the production of scale (GR: 7; FIN: 6)

Human activities take place in a “unbounded” space that is fragmented for administrative reasons, inevitably creating mismatches (GR: 5; FIN: 6)

Institutionalizing technologies and practices leads to a static stabilization of conservation scaling (GR: 6; FIN: 5)

The persistence of systematic conservation planning leads to the ignorance of the role of social, economic, and cultural aspects in scale configurations (GR: 5; FIN: 3)

Problems in choosing boundaries and implementing zoning plans within conservation areas

The overemphasis on the notion of boundaries in nature conservation is itself problematic (GR: 9; FIN: 9)

Decisions regarding boundaries and zones are insufficiently based on the spatial-temporal patterning of human-nature relationship (GR: 8; FIN: 8)

Dominant values and interests affect how boundaries and

zoning are set, producing scale bias (GR: 8; FIN: 7)

Decisions on boundaries between conservation areas and human communities are often being made on the basis of a priori technical understandings of scale (GR: 8; FIN: 5)

Administrative levels are being approached as “natural” boundaries underestimating their historical, political, and economic underpinnings (GR: 5; FIN: 7)

Boundaries of natural resources, e.g., catchment areas, are not approached as both natural and anthropogeographical conditions (GR: 7; FIN: 5)

Underestimation of the way that scale challenges are related to justice and power

Conservation scaling produces uneven ecological and social consequences at a variety of scales (GR: 6; FIN: 5)

Dominant approaches consider conservation scaling and relevant socio-spatial transformations as objective processes and not as outcomes of social struggles to gain control and access over resources (GR: 5; FIN: 5)

Conflicts over the appropriate scale for governing resources are insufficiently understood as linked to power struggles (GR: 6; FIN: 4)

Administrative levels, and power positions associated with them, are taken for granted (GR: 5; FIN: 5)

The production of networks of protected areas, e.g., Natura 2000, is related to the rescaling of conservation interests in the context of European integration (GR: 4; FIN: 2)

Conservation scaling and scaling of resource-dependent livelihoods do not intersect (GR: 4; FIN: 2)

Ineffective coordination of conservation policies across different governance and/or administrative levels

Biodiversity loss produced by drivers originating in other policy sectors cannot be solved only by conservation sector at any administrative level (GR: 9; FIN: 9)

Conservation goals set at higher administrative levels ignore the cross-scale character of the relationship between local communities and conservation objectives (GR: 6; FIN: 7)

Ignorance of the fact that the choice of the scale is related to the societal problem with which we have to deal (GR: 4; FIN: 3)

Problems in integrating the biodiversity dimension into other policies across different governance and/or administrative levels

Fragmentation of governance is often used as an excuse to hide the contradictory character of policies across sectors and administrative levels (GR: 8; FIN: 4)

Too often biodiversity is interpreted based on species, and the more holistic approach of ecosystems and social-ecological systems is missing (GR: 6; FIN: 5)

Institutionalized organizational practices often lend inertia to power structures creating a difficult context for rescaling conservation through social learning (GR: 6; FIN: 4)

Solutions to identified problems
(Prognosis and roles of actors)

Resolving mismatches between conservation objectives and human action (in terms of time, space, knowledge)

Approaching protected areas' establishment as the creation of social-ecological settings with specific, albeit dynamic, temporal and spatial characteristics (GR: 8; FIN: 8)

Approaching drivers of biodiversity loss as drivers of social-ecological change with specific, albeit dynamic, temporal and spatial characteristics (GR: 7; FIN: 8)

Approaching mismatches as outcomes of the inherent contradiction of dominant policies between conservation and promoting economic growth (GR: 7; FIN: 8)

Shifting research toward the exploration of the way that ecological and social change influence each other in space and time (GR: 6; FIN: 6)

Approaching mismatches in a dynamic way since the notion of mismatch is changing due to social-ecological change in space and time (GR: 5; FIN: 4)

Integrating dynamic ecological concepts into current static conceptualizations of ecological scale to guide conservation scaling (GR: 5; FIN: 3)

How to choose boundaries and implement zoning plans within conservation areas

Boundaries between natural resources and human communities should be decided through democratic, participatory processes and negotiations (GR: 8; FIN: 6)

Administrative borders should not be approached as a priori

given natural entities (GR: 6; FIN: 6)

Boundaries of conservation should be flexible, dynamic, and multidimensional (GR: 5; FIN: 5)

Explicitly incorporate lay knowledge to understand how the spatial patterning of the relationship between biodiversity and people has evolved over time (GR: 4; FIN: 3)

Shift research and policy focus toward unraveling the spatial patterning of human-environment interaction (GR: 4; FIN: 3)

Acknowledgment of the way that scale challenges are related to justice and power

Approaching scales as dynamic and evolving, and exploring the roles and power positions of actors in producing them (GR: 9; FIN: 9)

Integrating local cultural and economic practices with local actors' perspectives into decision processes (GR: 6; FIN: 6)

Unravel how actors are scaling conservation issues to either claim or reject responsibility (GR: 5; FIN: 3)

Conservation scaling should be explicitly related to the issue of socio-spatial justice (GR: 3; FIN: 4)

Effective coordination of conservation policies across different governance and/or administrative levels

An effective policy should take into account the continual interaction between scales (GR: 9; FIN: 9)

Conservation scaling should take place through democratic public participation to increase cross-scale cooperation of social groups in decision making processes (GR: 6; FIN: 4)

Administrative boundaries should be considered as an a priori problem and everything else as an effort to transcend them (GR: 4; FIN: 3)

Integration of the biodiversity dimension into other policies across different sectors, governance and/or administrative levels

Biodiversity conservation is part of a complex phenomenon affected by and affecting other sectors (GR: 8; FIN: 6)

Social and ecological connectivity as complementary goals (GR: 7; FIN: 6)

Creating and using integrative concepts, e.g., social-ecological change, and methods to help communication and to increase commitment (GR: 5; FIN: 5)

Approaching learning as organizational endeavor to support

better cross-level and cross-sectional cooperation (GR: 5;
FIN: 3)

Encouraging conservation approaches based on the
emergent and dynamic processes of social-ecological
systems across scales toward integrative land and water
management (GR: 3; FIN 2)