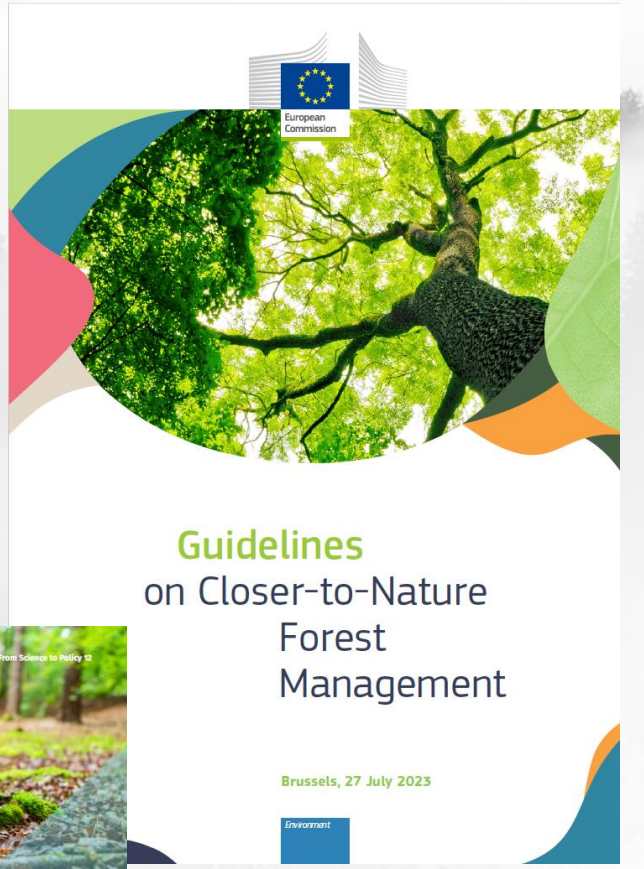
Workshop on the EU Forest Strategy 2030 and Alpine Biodiversity Board of Alpine Convention for the Alpine Biogeographic Region

Closer-to-nature guidelines and link with the Italian forest management

Renzo Motta
University of Turin – Italian Society of Silviculture and Forest Ecology



General principles

While forest management needs a **region- and context-specific approach**, building on Larsen et al. (2022), the **general principles** of closer-to-nature forest management are:

- learning from and permitting **natural processes** to develop;
- maintaining the **heterogeneity and complexity** of forest structures and patterns;
- integrating forest functions at different **spatial scales**;
- using a variety of silvicultural systems **based on natural disturbance** patterns of the region;
- low-impact timber harvesting with equal attention being paid to **what is retained** in the forest and **what is removed**, thus preserving habitats, forest soil and forest microclimates.

"The Camaldolese forest code: 800 years of sustainable forest management."

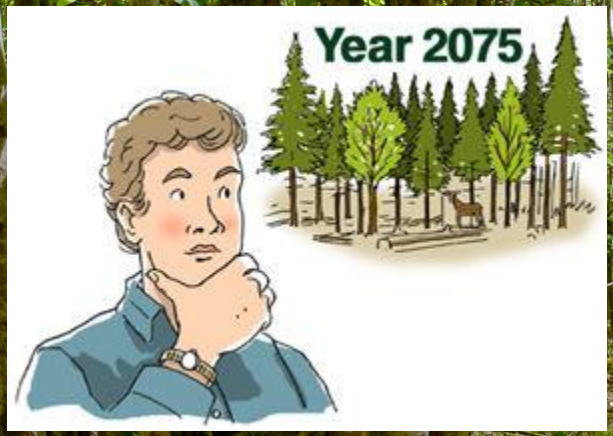
- *Eremiticae Vitae Regula a Beato Romualdo Camaldulensibus Eremitis tradita*, Paolo Giustiniani, Camaldoli (1520)

- Republic of Venice (1600): management plans and selection system in most of the forests


Eremo di Camaldoli, RM


Somadida, RM

-«Biodiversity»: Walter Rosen, NRC/NAS
Forum on biological diversity, 1985
-Mlinsek e Pro Silva Europe 1989
"***European Union of Foresters with Management Concepts close to nature***»
-Pro Silva Apeldorn (1997) «***The maintenance of biodiversity as referred to in Agenda 21 of the Rio Conference: species diversity, genetic diversity, spatial and temporal diversity in structure»***



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Rupf (1960) "**Wake Theory**" or "**Kielwasser Theory**":
"*the growth of biomass is a primary value to be properly managed, whilst all other functions are secondary values, depending on the former*"

Silviculture brings economic, social, ecological and environmental needs together for long-term forest (and ecosystem services) conservation

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Italian forests and CrTNM

- ✓ Sharp increment of forest surface and biomass in the last century (from <15% to 40% forest cover);
- ✓ Italian forests have the highest level of protection in EU: 100% forest cover with landscape bond, naturalistic restrictions and hydrogeologic constraint (100% landscape bonds, 87% hydrogeologic and 34% Parks and Natura 2000);
- ✓ The forest owner does not have the full availability of the property – Public interests prevail over ownership

Italian forests and CrTNM

- 30-40% of the increment removal (73% Europe);
- 80% of timber is imported;
- 50% coppices (42%, most stored and neglected coppices);
- very small average size of the private ownership (less than 0,5 ha);
- low % of forests with management plans (<20%);
- > 40% of the Italian forests are currently withdrawn from regular management (latent reserves);

Piedmont Region Forest Law (RL 4/2009)
Art. 15…**silvicultural interventions are defined according to a silvicultural naturalistic approach…**

Rules for **all regular cutting** (other site-specific rules for Parks and Natura 2000 sites):

- Clearcut is banished (with some notwithstanding);
- Coppice: mandatory 10-20% of living trees retention (forest cover);
- High forest: mandatory > 40% of living trees retention (>50% in most cases);
- Mandatory protection of sporadic autochthonous species: if less than 20 individuals per ha (sycamore, maple, elm, ash, cherry, linden, if…) and in chestnut and black locust stands;
- Mandatory release of 2 aging habitat trees per ha; release 2 standing dead trees per ha (if present);
- Mandatory fight against invasive alien species (listed);
- Mandatory protection of species for seed production (listed);
- Mandatory to leave on the ground most of the post-harvest residuals;

Piedmont Region Forest Law (RL 4/2009)
Art. 15…**silvicultural interventions are defined according to a silvicultural naturalistic approach…**

Piedmont is paying compensation for all the forests included in Natura 2000 sites based on the difference between the potential removal according to the baseline Forest regulations and the removal allowed by Natura 2000 site-specific regulations.

Gruppo	Categoria forestale	Importo annuo dell'indennità (euro/ha)
1	Abetine, Lariceti, Peccete, Robinieti, Querco-carpineti, Cerrete	40
2	Acero-tiglio-frassineti, Faggete, Querceti di rovere, Rimbo-schimenti	30
3	Altre categorie	20

New economic/social reference framework…

New forests (stored coppices, newly established stands, forest withdrawn from regular management…)

New silvicultural models e.g. mixed regeneration

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Priorities for Italian (closer-to-nature) silviculture

- ✔ Rewilding/declines?
- ✔ Coppices
- ✔ Natural disturbance based management
- ✔ Cultural landscapes
- ✔ Young/open stands

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Coppices

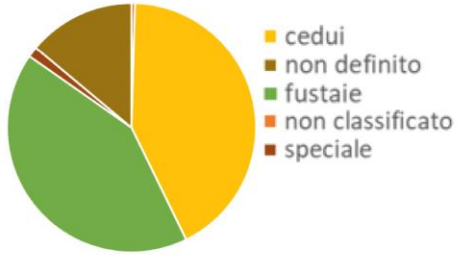
- Business as usual?
- Conversion into high forests?
- Wood assortments?
- Other ecosystem services?

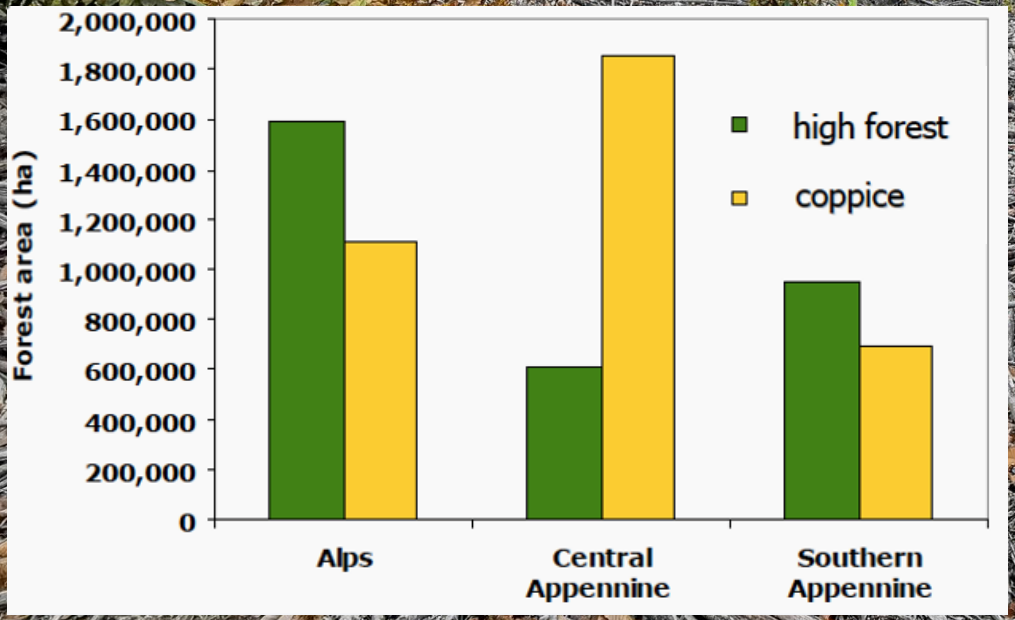
Inventario Forestale Nazionale Italiano - INFC 2015

TIPI COLTURALI E GRADO DI INVECCHIAMENTO

Tipologia	superficie (ha)
Non classificato	41 006
Cedui	3 789 413
Fustaie	3 756 425
Speciale	122
Non definito	1 247 913
Bosco	8 956 787

(senza castagneti da frutto e sugherete)

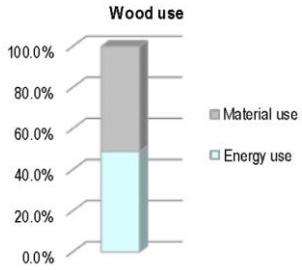




EU-28

Wood Resource Balance 2015

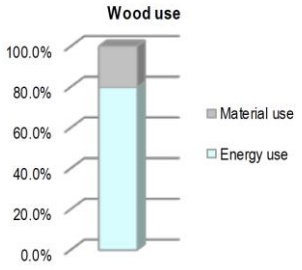
Wood use	1000m³	%
Material use	469,744	51.0%
Energy use	451,082	49.0%



ITALY

Wood Resource Balance 2015

Wood use	1000m³	%
Material use	10,821	20.2%
Energy use	42,701	79.8%

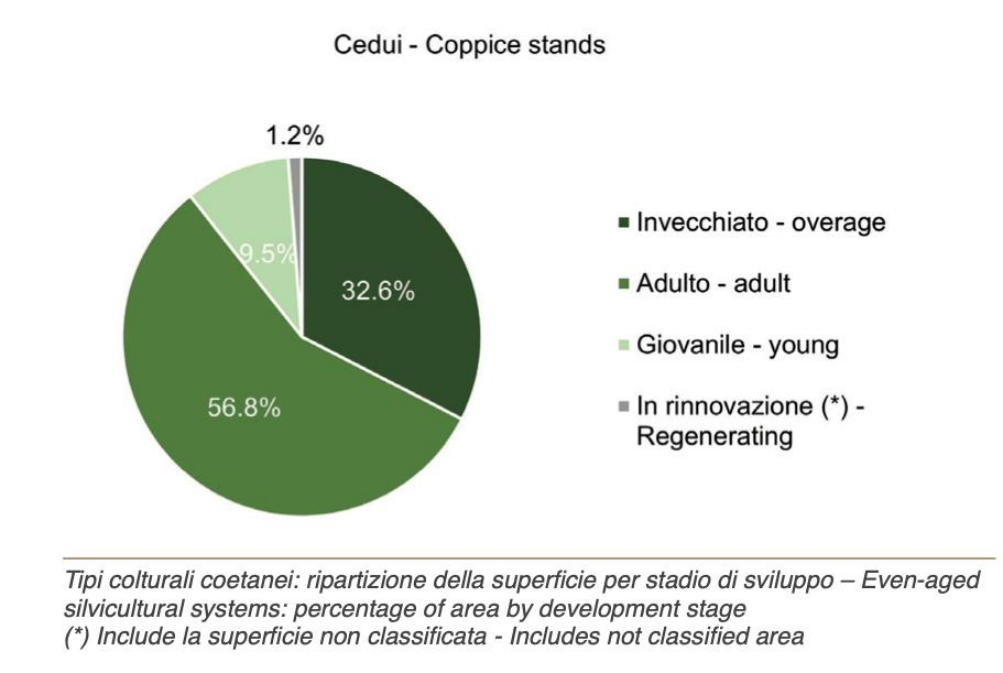


2002 (Ipla 2002): about 60% of beech forests were coppiced

- ✓ **Stand age <25 years 12,4 %**
- ✓ Stand age 25-35 anni 48,3 %
- ✓ Stand age > 35 anni 39,3 %

2020

- ➢ 50% coppices are older than 40 years (high forests). In the next 20 years < 20% of beech forests will be coppiced



Tipi colturali coetanei: ripartizione della superficie per stadio di sviluppo – Even-aged silvicultural systems: percentage of area by development stage
(*) Include la superficie non classificata - Includes not classified area

If you look at the big picture coppice is a type of management in danger of extinction

In a few decades will be necessary to protect the coppice management to provide peculiar ecosystem services, preserve cultural landscape and historical heritage

Natural disturbance regime

Succession after stand-replacing disturbance (fire, storm, insects)

Cohort and patch dynamics driven by partial disturbance

Small-scale gap dynamics

Regeneration

Emulation

Competition

Emulation

Mature forest

Emulation

Old-growth forest

Variable intensity thinning

Partial harvesting with retention

Single-tree and group selection

Clear cutting with retention

Natural disturbance based management

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ARTICLE

ECOLOGICAL APPLICATIONS
ECOLOGICAL SOCIETY OF AMERICA

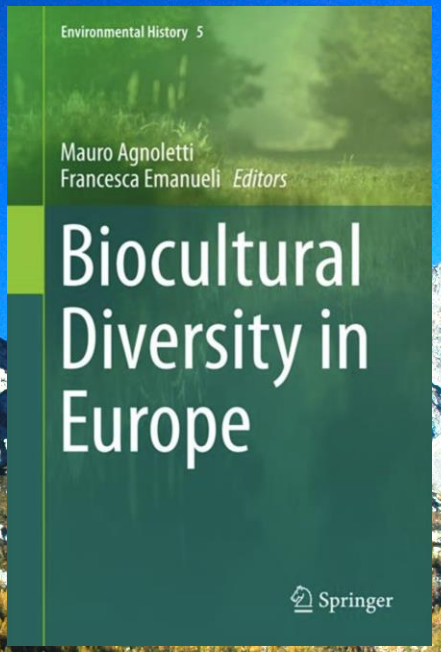
Natural disturbance regimes as a guide for sustainable forest management in Europe

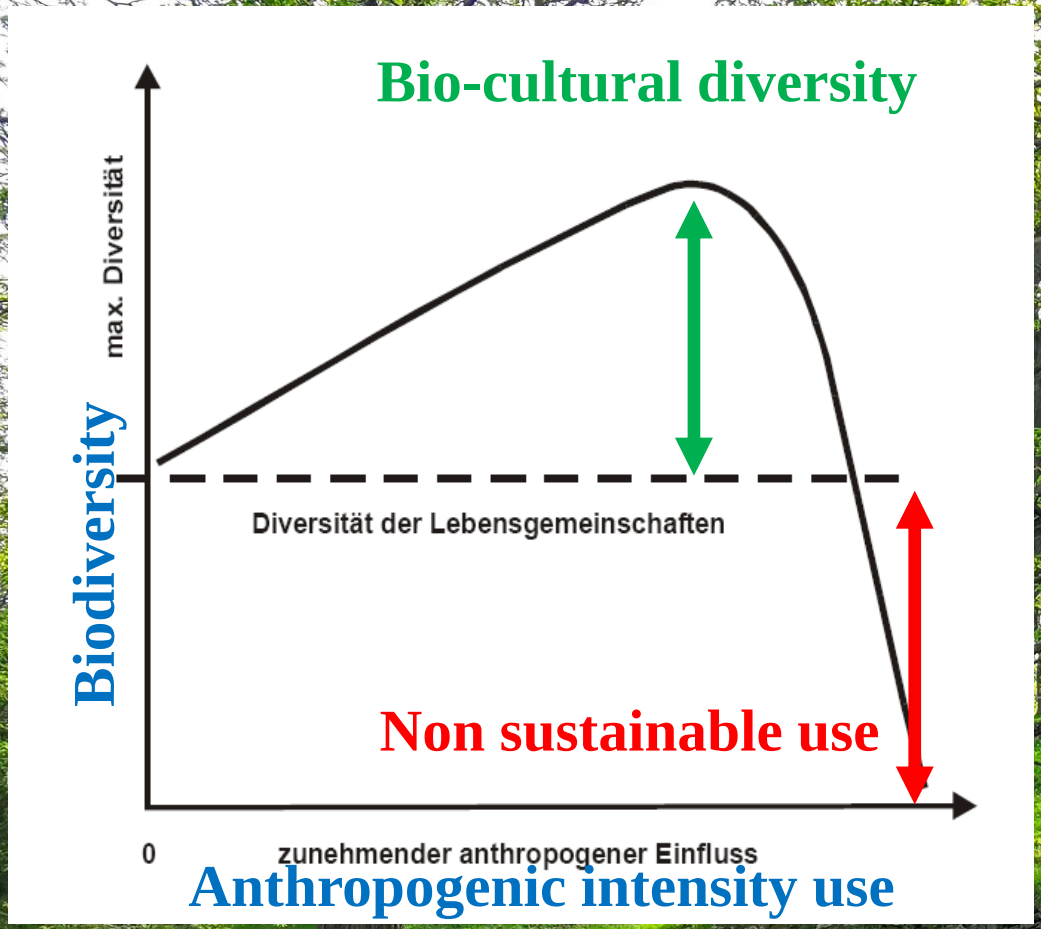
Réka Aszalós[1] | Dominik Thom[2,3,4] | Tuomas Aakala[5] | Per Angelstam[6,7] | Guntis Brūmelis[8] | László Gálhidy[9] | Georg Gratzer[10] | Tomáš Hlásny[11] | Klaus Katzensteiner[10] | Bence Kovács[1] | Thomas Knoke[12] | Laurent Larrieu[13,14] | Renzo Motta[15] | Jörg Müller[16,17] | Péter Ódor[1] | Dušan Roženbergar[18] | Yoan Paillet[19] | Diana Pitar[20] | Tibor Standovár[21] | Miroslav Svoboda[11] | Jerzy Szwagrzyk[22] | Philipp Toscani[23] | William S. Keeton[3,24]

Riserva Valbona, Paneveggio, RM

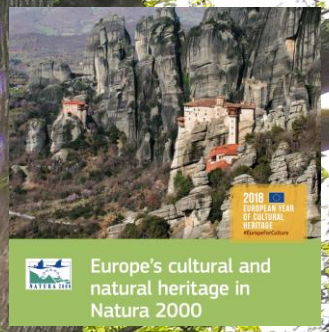

Val Noana, RM

Alpe Veglia, RM





(Waldensphul in Scherzinger, 1996, mod.)



- Boschi di sclerofille utilizzati come pascolo (dehesas)
- Lande a *Calluna vulgaris* delle alte pianure
- Boschi di *Castanea sativa*
- Foreste alpine di *Larix decidua* e/o *Pinus cembra*
- Boschi puri di *Pinus laricio*
- Boschi di *Quercus suber*
- Foreste acidofile montane e alpine di *Picea* (*Vaccinio-Piceetea*)

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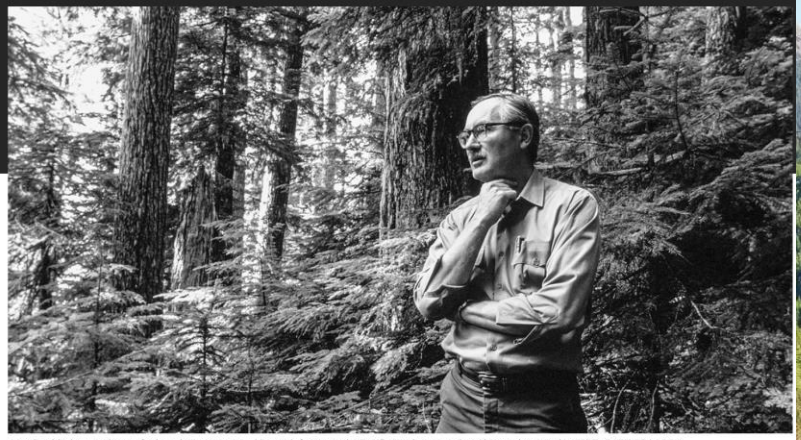
DISAFA

Why does this famous protector of trees now want to cut some down?

Veteran forest ecologist's views have evolved over time

5 OCT 2017 · BY WARREN CORNWALL

Science



Jerry Franklin became known for his role in protecting old-growth forests in the Pacific Northwest, such as this one he visited in 1982. GARY BRAASCH

Franklin admits that, like many forest scientists, he once dismissed early seral landscapes, treating them as something to be ignored or replanted as quickly as possible. (On private timber lands, managers often use herbicides to keep shrubs from choking out the emerging conifers.) "It took me about 15 years wandering around and participating in science on Mount St. Helens to say, 'My God, this is telling us that these … open conditions are just absolutely essential'" to encouraging biodiversity.

One reason is that early seral landscapes are becoming rare. A 2002 study estimated that complex early seral habitat once occupied nearly 20% of forests near the Oregon coast. But just 2% remained by the end of the 20th century, a more recent study concluded. (So-called "simple" early seral habitat—logged areas devoid of trees or carpeted by small replanted conifers—is more common.)

REVIEWS REVIEWS REVIEWS

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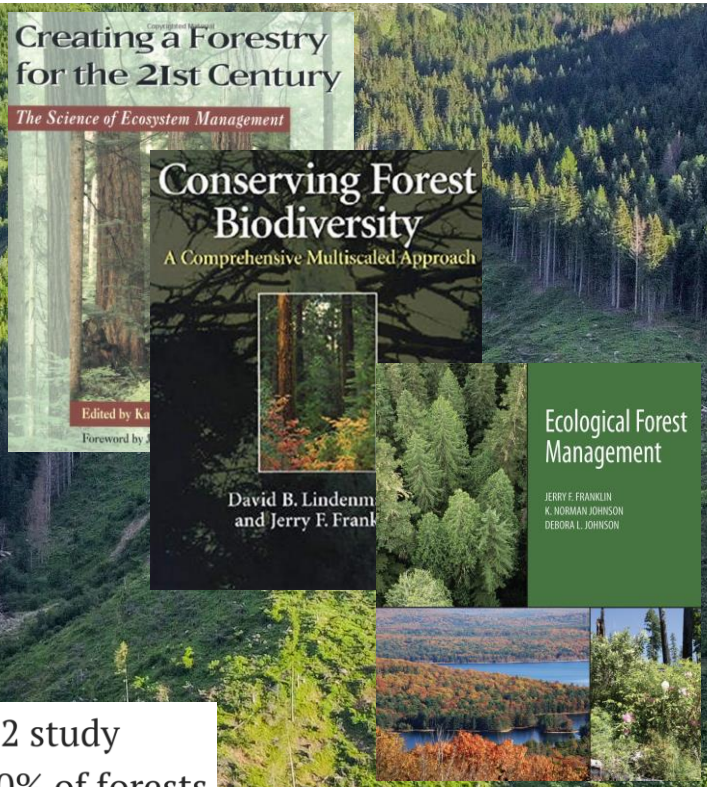
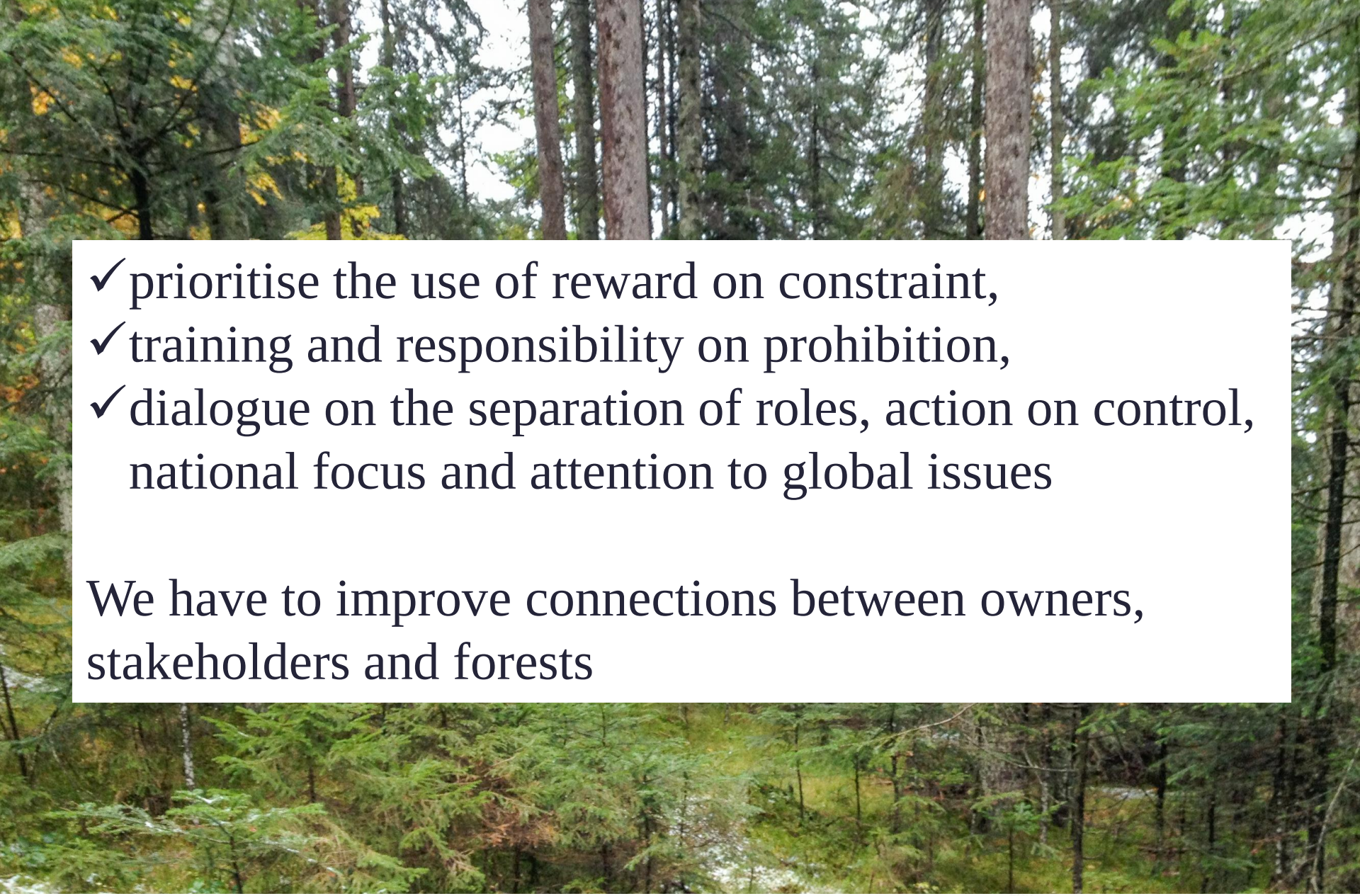
The forgotten stage of forest succession: early-successional ecosystems on forest sites

Mark E Swanson[1*], Jerry F Franklin[2], Robert L Beschta[3], Charles M Crisafulli[4], Dominick A DellaSala[5], Richard L Hutto[6], David B Lindenmayer[7], and Frederick J Swanson[8]





- ✓prioritise the use of reward on constraint,
- ✓training and responsibility on prohibition,
- ✓dialogue on the separation of roles, action on control, national focus and attention to global issues

We have to improve connections between owners, stakeholders and forests

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Bosco della Partecipanza.
Trino, RM

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