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LIFE17 GIE/IT/000561



Rapporto tra gestione forestale e conservazione della biodiversità

RENZO MOTTA (UNIVERSITÀ DI TORINO)



FIRENZE | 20 MARCH 2023

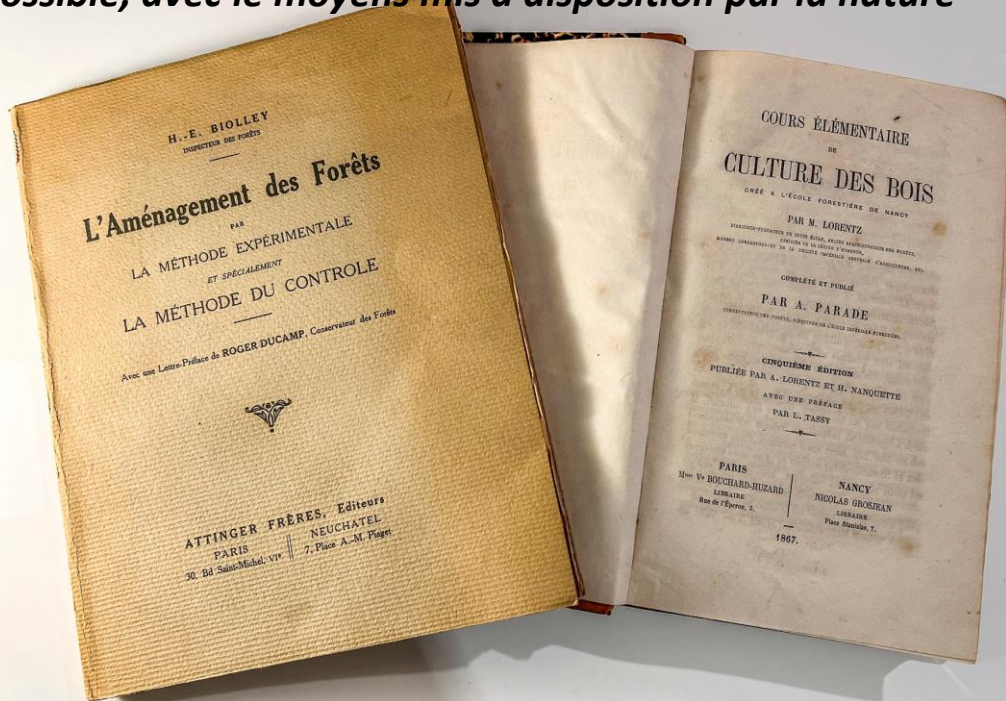
**GOOD PRACTICES TO MANAGE FORESTS
WHILE PRESERVING BIODIVERSITY**

FINAL CONFERENCE

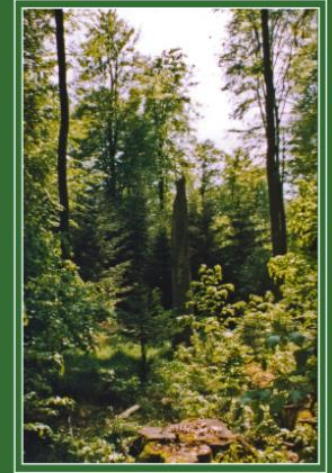
- Selvicoltura e biodiversità nel contesto storico
- Selvicoltura e misure di conservazione
- Strategie, trade-off tra i vari servizi ecosistemici
- Diversità bio-culturale, Range di variabilità naturale, Popolamenti giovani
- Selvicoltura «più» prossima alla natura
- Cambio di paradigma culturale

Produire de façon ininterrompue, le plus possible, le mieux possible, avec le moyens mis a disposition par la nature

- Scu
- Scu
- Gur
- (fine
- Gay
- Lei
- forest
- Mli
- witl



PRO SILVA PRINCIPLES



English - Français - Deutsch

on of Foresters

- Pro Silva Apeldoorn (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* »

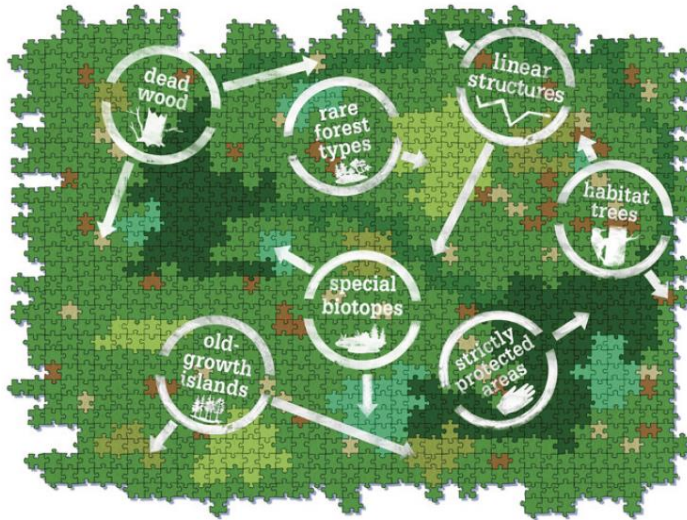
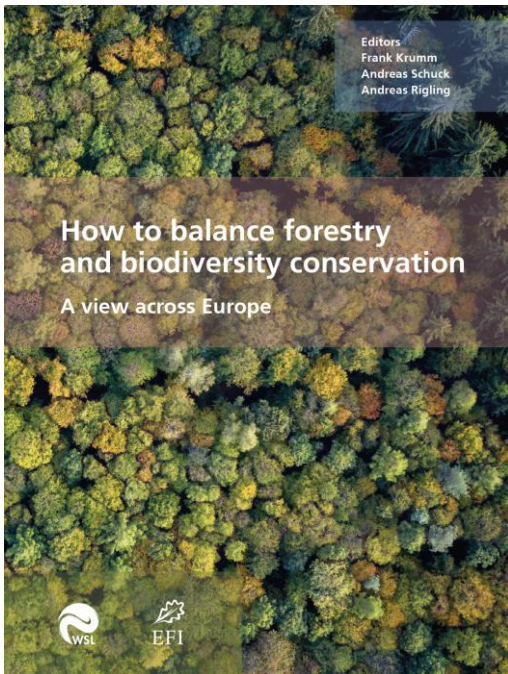
- Biological diversity, Norse, McManus (White House Council Env. Quality), 1980
- «**Biodiversity**»: Walter Rosen, NRC/NAS Forum on biological diversity, **1985**
- National Forum on Biodiversity (NAS/Smithsonian Inst.), 1986
- BioDiversity, Wilson E.O. (Ed.) National Academic Press, Washington, DC., 1988
- **Convention on Biological Diversity**, Rio de Janeiro **1992**
- 2005 MILLENIUM ECOSYSTEM ASSESSMENT



La selvicoltura è lo “strumento di **conciliazione** tra le **esigenze ecologiche** della foresta (la sua perpetuazione) e le **esigenze economiche e sociali**” (Mazzucchi M)



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”*



Foreste e biodiversità Un patrimonio da tutelare

Specie forestali autoctone sporadiche

- Acer campestre, A. opulifolium, A. platanoides, A. pseudoplatanus
- Ulmus glabra, U. laevis, U. minor
- Fraxinus excelsior, F. oxyphyllus
- Prunus avium, P. padus
- Malus sylvestris
- Pyrus pyraeaster
- Taxus baccata
- Ilex aquifolium
- Sorbus torminalis, S. aucuparia, S. domestica, ibridi di Sorbus spp
- Tilia cordata, T. platyphyllos
- Pinus sylvestris in pianura e collina (sotto i 700 metri s.l.m.)
- Fagus sylvatica nei rilievi collinari (sotto i 700 metri s.l.m.).

La tutela delle specie forestali spontanee sporadiche (art. 42), con il rilascio di quelle elencate nell'Allegato D in occasione degli interventi selvicolturali, se presenti con meno di 20 esemplari ad ettaro.

La conservazione di alberi ad invecchiamento indefinito nei tagli di utilizzazione (art. 42 bis), con il rilascio di almeno un albero vivo e, ove presente, anche un albero morto ogni 5.000 metri quadrati o frazione di bosco interessato dall'intervento, con priorità per gli alberi grandi, di specie autoctone caratteristiche del luogo e per i soggetti con cavità o nidi.

Il contenimento delle specie esotiche invasive (art. 42 ter): quercia rossa, ciliegio tardivo, ailanto, acero americano, olmo siberiano e paulonia (cfr. *Le specie forestali arboree esotiche*).

La conservazione della biodiversità genetica nei boschi da seme (art. 35), con la tutela delle piante portaseme nei boschi classificati (cfr. *SIFOR*).

La conservazione della diversità specifica nei castagneti e nei robinieti (art. 55), con il rilascio di piante e polloni di altre specie autoctone fino al 25% della copertura delle chiome.

Il rilascio in bosco dei residui degli interventi selvicolturali (art. 33): ramaglie, cimali e altro materiale legnoso di piccole dimensioni, per mantenere la fertilità e proteggere il suolo dall'erosione.

La tutela dell'avifauna lungo i corsi d'acqua e nelle garzaie (art. 37), con la sospensione dei tagli nei periodi di nidificazione.

Bosco coltivato

Novelleto
Spessina

20 anni

40 anni

Perticaia

80 anni

Fustaia adulta

120 anni

Fustaia matura e
stramatura

200 anni

300 anni

400 anni

500 anni

DIFFERENZE

- Struttura
- Turni brevi (boschi giovani)
- Mancano fasi mature e stramature
- Mancano alberi di grandi dimensioni (vivi e morti)
- Quantità e qualità del legno morto (CWD)

Bosco naturale

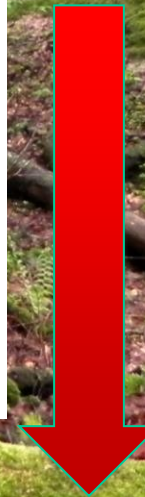
Insediamiento

Pole stage

Understory re-
initiation

Old-growth

**Qs parte del processo
dinamico (che ospita una
flora ed una fauna
peculiare) manca nelle
foreste coltivate**



The EU Biodiversity Strategy for 2030

Bringing nature back into our lives

European Green Deal - von der Leyen Comm

Protect Nature



Protect 30% of EU land and sea

- Based on Natura 2000 and nationally designated areas
- EU wide target, take into account specific situation in MS
- Integrate ecological corridors to build coherent network

Strictly protect a third of these areas

- Covering areas of very high biodiversity value & important for mitigation and adaptation to climate change, **including all primary and old growth forest***



New EU Forest Strategy for 2030



Key elements to be considered for the new EUFS

To strategy will:

- Support restoration of damaged areas and ecosystems.
- Enhance forest protection to meet the EU biodiversity objectives.
- Ensure sustainable management of all EU forests and demonstrate their effective contribution to the EU objectives.
- Promote afforestation (3 bn additional trees by 2030) contributing to climate neutrality, the circular bioeconomy, and biodiversity.
- Build forest resilience, enhance prevention and secure forests health.



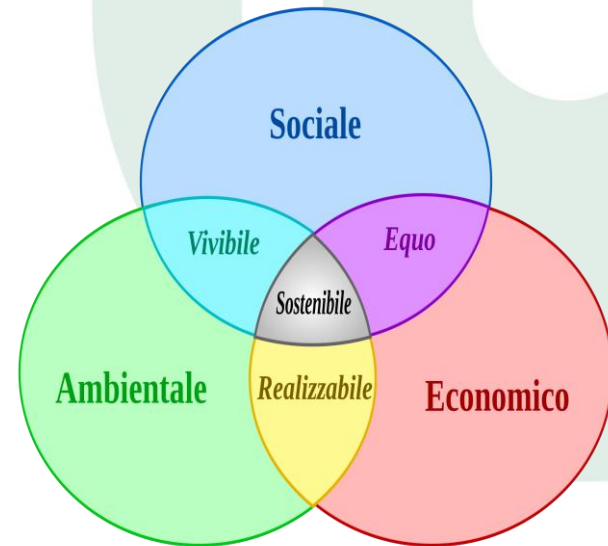
Sustainable development...the capacity to meet the needs of the present without compromising the ability of future generations to meet their own needs”
 (Gro Harlem Brundtland Commission, 1987)

**OUR
COMMON
FUTURE**

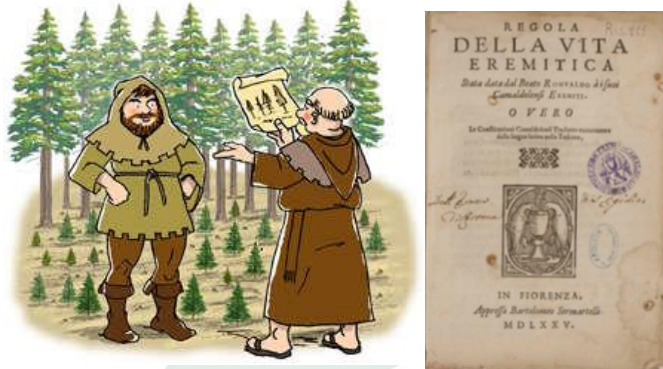
THE WORLD COMMISSION
ON ENVIRONMENT
AND DEVELOPMENT



SUSTAINABLE DEVELOPMENT GOALS



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



- Repubblica di Venezia (1600)

- *Sylvicultura Oeconomica oder Anweisung zur wilden Baumzucht* Carl von Carlowitz (1713)



La sostenibilità fu inventata oltre 300 anni fa quale principio economico nella silvicoltura. Un sovrintendente minerario e amministratore contabile forestale ha così cambiato il mondo in maniera tranquilla e silenziosa.

- Un articolo del Dr. Horst Sproßmann di [ThüringenForst](#) -



Contents lists available at ScienceDirect
Biological Conservation
 journal homepage: www.elsevier.com/locate/biocon

Hard choices: Making trade-offs between biodiversity conservation and human well-being

Thomas O. McShane^{a,*}, Paul D. Hirsch^b, Tran Chi Trung^c, Alexander N. Songorwa^d, Ann Kinzig^e, Bruno Monteferrri^f, David Mutekanga^g, Hoang Van Thang^c, Juan Luis Dammert^f, Manuel Pulgar-Vidal^f, Meredith Welch-Devine^h, J. Peter Brosius^h, Peter Coppolillo^g, Sheila O'Connor^a

SCIENTIFIC REPORTS
 nature research

Check for updates

OPEN Identifying trade-offs between biodiversity conservation and ecosystem services delivery for land-use decisions

Constance Fastré^{1,2,3}, Hugh P. Possingham^{2,3}, Diederik Strubbe^{1,4,5} & Erik Matthysen¹

Biological Conservation 207 (2017) 9–16

Contents lists available at ScienceDirect
Biological Conservation
 journal homepage: www.elsevier.com/locate/biocon

Trade-offs in carbon storage and biodiversity conservation under climate change reveal risk to endemic species



April Elizabeth Reside^{a,b,*}, Jeremy VanDerWal^{b,c}, Catherine Moran^{d,e}

scientific reports

OPEN Biodiversity response to forest management intensity, carbon stocks and net primary production in temperate montane forests

Thomas Asbeck^{1,2,3}, Francesco Sabatini^{2,3}, Andrey L. D. Augustynczyk⁴, Marco Basile², Jan Helbach⁴, Marlotte Jonker^{4,5}, Anna Knuff⁶ & Jürgen Bauhus¹

Global Change Biology

PRIMARY RESEARCH ARTICLE

Trade-offs between carbon stocks and biodiversity in European temperate forests

Francesco Maria Sabatini✉, Rafael Barreto de Andrade, Yoan Paillet, Péter Ódor, Christophe Bouget, Thomas Campagnaro, Frédéric Gosselin, Philippe Janssen, Walter Mattioli ... See all authors

First published: 22 November 2018 | <https://doi.org/10.1111/gcb.14503> | Citations: 27

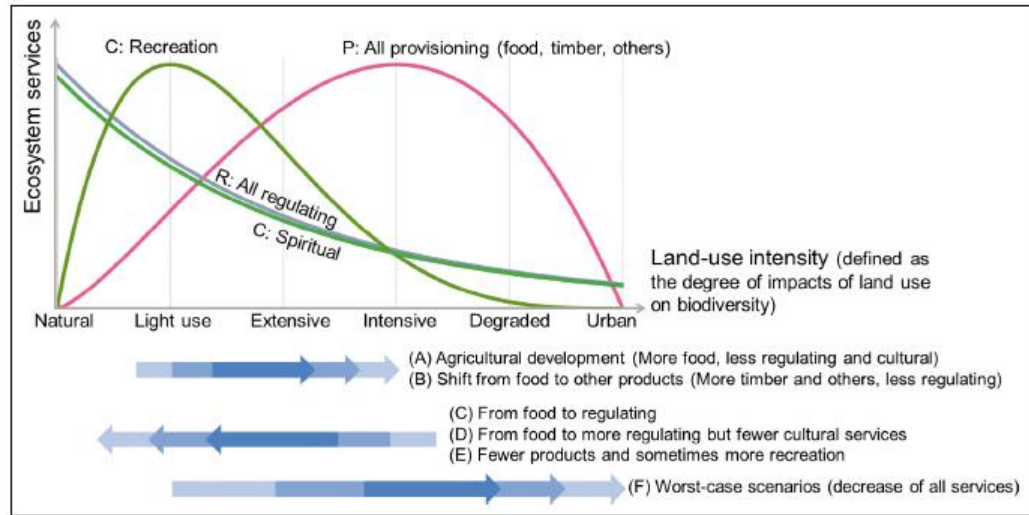


Figure 1. Stylized model (line graph) proposed by Braat and Ten Brink (2008) and De Groot et al. (2010), linking the supply of four types of ecosystem services (ES) to land-use intensity. P = provisioning services; R = regulating services; C = cultural services. Archetypes of ES trajectories (A to F) in this model are shown below the graph's x axis (arrows and accompanying text).





Ambiente | Dossier | Ultime notizie

Taglio di alberi in Italia: un massacro

By Francesca Canino | 25 Aprile 2020 | 7995 | 11



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SEGUICI > Mi piace 37,643

LO PREVEDE LA LEGGE E IL BUONSENSO

Fermare il taglio indiscriminato di alberi



The Campaign for Europe's Forests

To conserve forests, we should ban cutting down of trees completely. Do you agree?



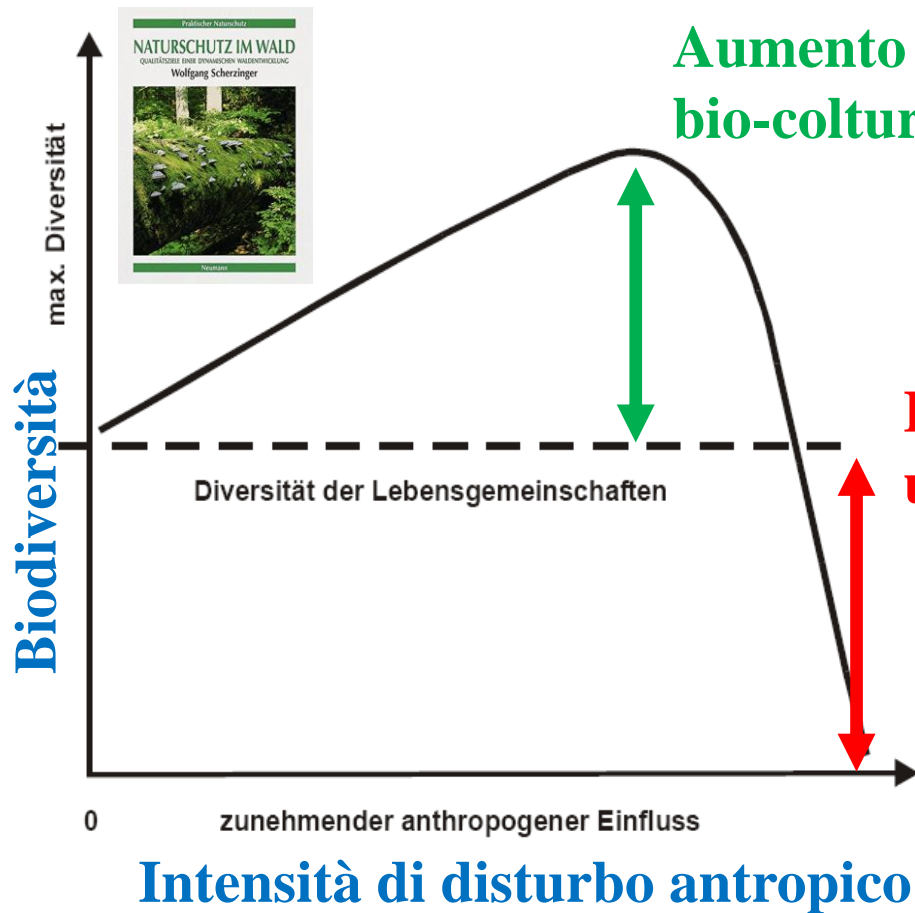
COMUNICATO STAMPA

"No al Decreto sulle normative in materia di foreste; basta tagli di alberi che aumentano l'inquinamento atmosferico"

Energia per l'Italia



1) Diversità bio-culturale



- 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*)

(Waldensphul in Scherzinger, 1996)

2) Range naturale di variabilità

Dinamica naturale

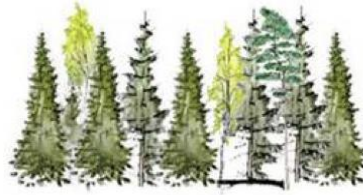
Disturbo (*stand replacing*) da vento, fuoco, insetti

Disturbo (*stand replacing*) da vento, fuoco, insetti

Processo di successione con fase di insediamento seguita da fase di popolamenti densi con forte competizione (perticaia)

Fase di maturità, differenziazione struttura verticale

Fase di vetustà, differenziazione struttura verticale ed orizzontale, disturbi a piccola scala



Fase di insediamento con presenza di *legacies* del popolamento precedente

Fase di perticaia-competizione

Fase di maturità

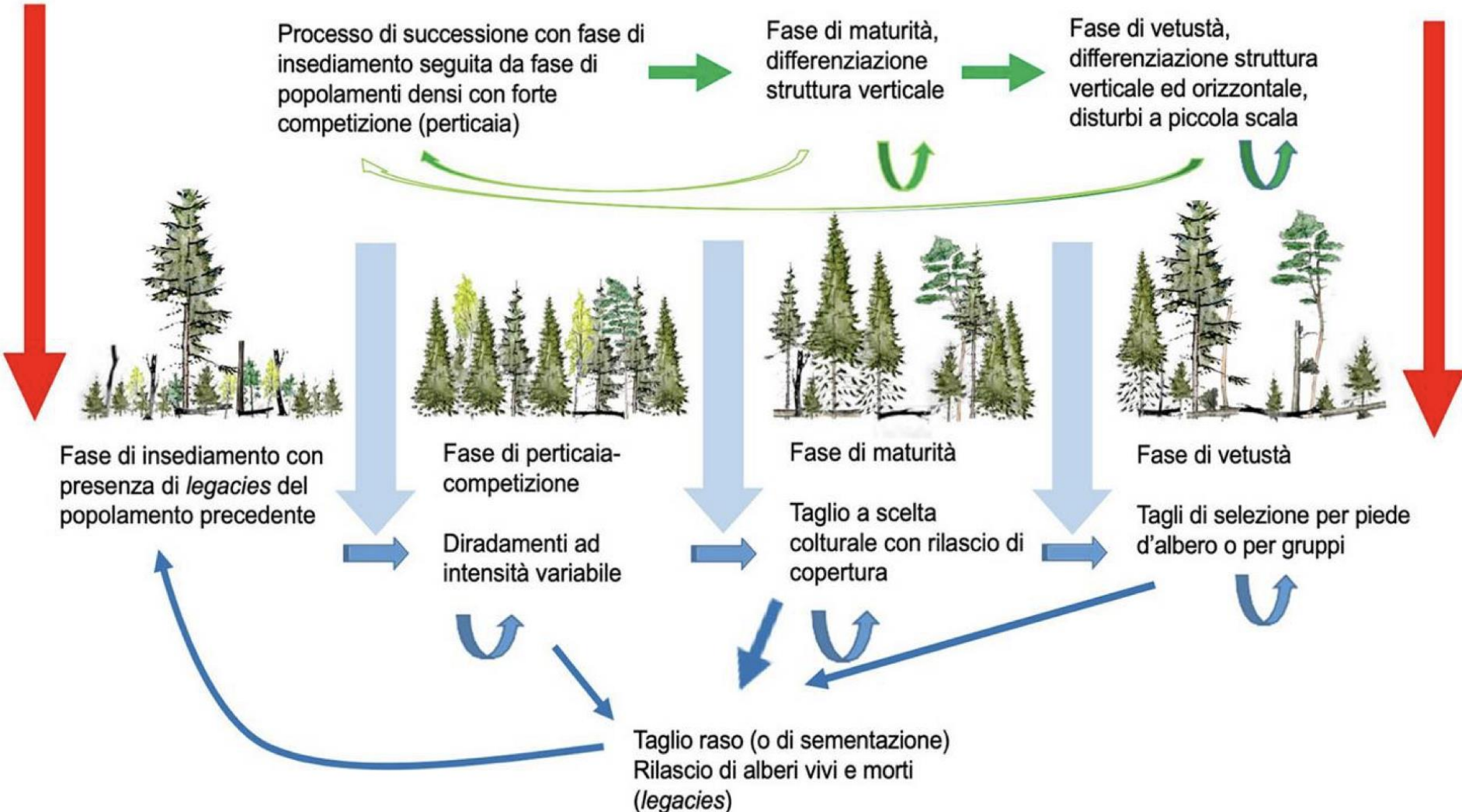
Fase di vetustà

Diradamenti ad intensità variabile

Taglio a scelta culturale con rilascio di copertura

Tagli di selezione per piede d'albero o per gruppi

Taglio raso (o di sementazione)
Rilascio di alberi vivi e morti (*legacies*)



2) Range naturale di variabilità

HRV- The Historical Range of Variation or Variability (HRV) is a **description of the change over time and space in the ecological condition of potential natural vegetation types and the ecological processes that shape those types** (Morgan et al., 1994)

1182

INVITED FEATURE

Ecological Applications
Vol. 9, No. 4

Status	Graphical representation	Management action
$NV \geq DFC \geq CC$		Maintain
$NV \geq DFC \neq CC$		Restore
$NV \neq DFC \geq CC$		Evaluate carefully: assess risks, sustainability, and external subsidies of DFC; reevaluate social objectives of DFC
$NV \geq CC \neq DFC$		
$NV \neq DFC \neq CC$		

FIG. 1. Diagrammatic comparison of current conditions (CC, denoted as XX in the graphical representation), desired future conditions (DFC, ---) or the social objectives for public lands jointly decided by managers and stakeholders, and the ecological conditions defined by natural variability (NV, —), illustrating the range of differences among these. The width of the bars represent the spatial or temporal variation in conditions. DFCs are portrayed as narrower than (or as a subset of) NV. Only extreme cases are shown here; partial overlap among NV, DFC, and CC will likely be more common. A “greater than or equal to” sign (\geq) denotes that a condition is within the bounds of the preceding condition (e.g., in the top row, current conditions are within the bounds of desired future conditions, and these are within the bounds of natural variability).



Rinaturalizzazione/rinselvatichimento



FIRENZE | 20 MARCH 2023

**GOOD PRACTICES TO MANAGE FORESTS
WHILE PRESERVING BIODIVERSITY**

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3) Importanza dei popolamenti giovani



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

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

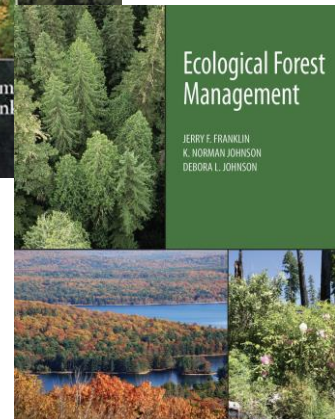
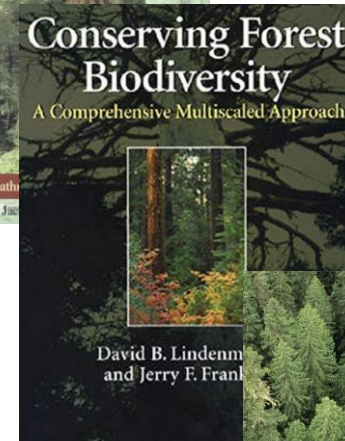
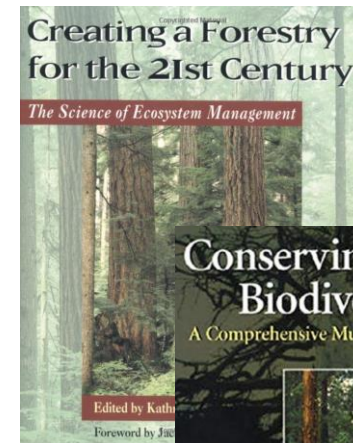
Franklin admits that, like many forest scientists, he once dismissed early seral landscapes, treating them as something to be ignored or replanted as quickly as possible. (On private timber lands, managers often use herbicides to keep shrubs from choking out the emerging conifers.) "It took me about 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

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

Mark E Swanson^{1*}, Jerry F Franklin², Robert L Beschta³, Charles M Crisafulli⁴, Dominick A DellaSala⁵, Richard L Hutto⁶, David B Lindenmayer⁷, and Frederick J Swanson⁷



Forest@

Rivista di Selvicoltura ed Ecologia Forestale

Commenti e Prospettive
doi: 10.3832/efor4124-019
vol. 19, pp. 52-62

Un nuovo paradigma per la gestione forestale sostenibile: la selvicoltura
“più” prossima alla natura

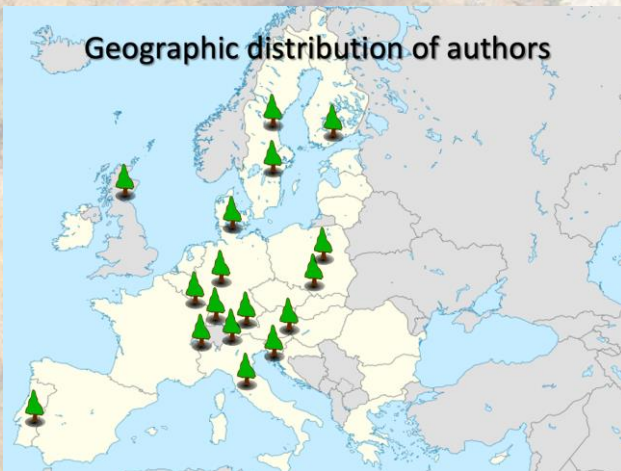
Renzo Motta⁽¹⁾,
Jørgen Bo Larsen⁽²⁾

*A new paradigm for sustainable forest management: closeR to nature forest
management*

Closer to Nature Forest Management*

Principles, strategies and a
framework for flexible European-
wide implementation

Geographic distribution of authors



EUROPEAN FOREST
INSTITUTE

• • • From Science to Policy 12

Closer-to-Nature Forest Management

• • •

Jørgen Bo Larsen, Per Angelstam, Jürgen Bausch, João Fidalgo Carvalho,
Jurij Diaci, Dorota Dobrowolska, Anna Gazda, Lena Gustafsson,
Frank Krümm, Thomas Knoke, Agata Konczal, Timo Kuuluvainen, Bill Mason,
Renzo Motta, Elisabeth Pötzelsberger, Andreas Rigling, Andreas Schuck

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

Réka Aszalós¹ | Dominik Thom^{2,3,4} | Tuomas Aakala⁵ | Per Angelstam^{6,7} |
Guntis Brūmelis⁸ | László Gálhidy⁹ | Georg Gratzner¹⁰ | Tomáš Hlásny¹¹ |
Klaus Katzensteiner¹⁰ | Bence Kovács¹ | Thomas Knoke¹² |
Laurent Larrieu^{13,14} | Renzo Motta¹⁵ | Jörg Müller^{16,17} |
Péter Ódor¹ | Dušan Roženberger¹⁸ | Yoan Paillet¹⁹ | Diana Pitar²⁰ |
Tibor Standovár²¹ | Miroslav Svoboda¹¹ | Jerzy Szwagrzyk²² |
Philipp Toscani²³ | William S. Keeton^{3,24}

**While the past management was concentrated on extracting products from the forest, the present one emphasizes what is being left
(Kohm, Franklin, 1997)**

1. **Conservazione (*retention*)** di necromassa, alberi habitat e biotopi di particolare interesse naturalistico;
2. Uso e promozione di **specie autoctone** ma con attenzione, dove esistono le condizioni, anche a specie esotiche produttive;
3. Privilegiare la **rinnovazione naturale**;
4. Favorire **utilizzazioni parziali del soprassuolo (*partial harvest*)** e formazione di popolamenti eterogenei dal punto di vista strutturale;
5. Promozione di **popolamenti misti** ed attenzione anche alla **diversità genetica**;
6. **Mitigazione dell'impatto degli interventi**, limitarne l'estensione e l'intensità;
7. Attenzione a **eterogeneità e processi naturali (disturbi)** a scala di paesaggio ed alla **diversità bioculturale**.

Grazie per l'attenzione!

“Many organism exist because of certain catastrophic factors or extreme conditions and not in spite of them ”

“When a living thing community or system cease to change is nonfunctioning, decadent or dead ” (Vogl, 1983)

