




UNIVERSITÀ
DEGLI STUDI
DI PADOVA

First preparatory Seminar for the Conference 'Rewilding. Socio-spatial Trends in Fragile Rural Areas'

Socialisation and Mobilisation Capacity of Rewilding
15 November 2023

**Rewilding vs. land abandonment:
an economic perspective**

Davide Pettenella e Mauro Masiero



Horizon 2020
European Union funding
for Research & Innovation




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Outline

- Background
- Rewilding as non-choice (“passive” rewilding)
- Rewilding as a marketing strategy
- Rewilding as an explicit nature protection policy (“active” rewilding)

Slides available in internet; google “Pettenella”




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Italy: the country in the EU with the largest bioiversity (European Environment Agency data)

- In Italy: **50% of the plant species and 1/3 of the animal species of Europe**: 120 different species of trees, 350 species of shrubs, 2,000 species of fungi, 2,145 species of lichens, 27 species of terrestrial mammals, 250 species of breeding birds, 56 species of reptiles and 46 species of amphibians.
- **132 habitat types**: approx. 57% of all those included in Annex I to the Habitats Directive
- **637 species protected by European directives**,
 - of which 340 are included in the Habitats Directive (approximately 25% of all species in the Directive),
 - and 297 protected bird species, i.e. approximately 65% of the species in the Birds Directive.

Why this high biodiversity in a densely populated country?

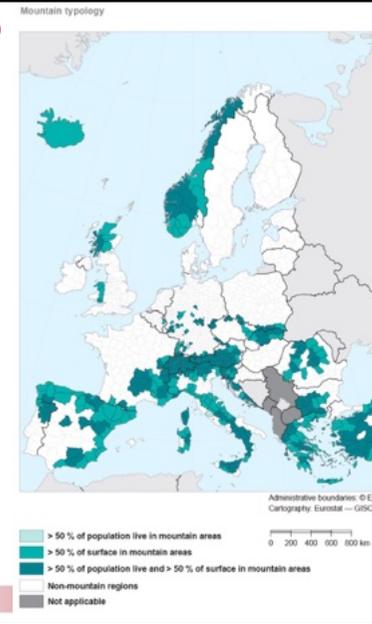
- Large extension of mountain, marginal areas



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Mountain areas (source: Eurostat)

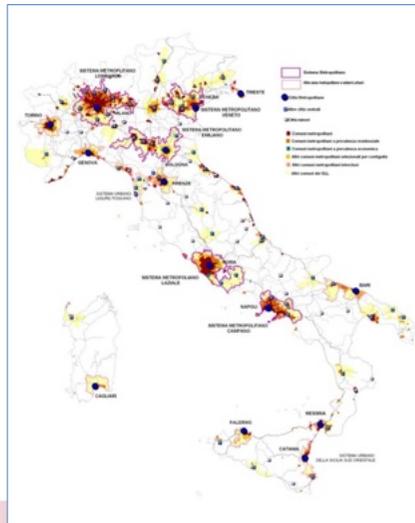
Italy	66.0%
France	20.6%
Germany	11.8%
UE	32.6%



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Why this high biodiversity in a densely populated country?

- Large extension of mountain, marginal areas
- High concentration of population in urban areas



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Why this high biodiversity in a densely populated country?

- Large extension of mountain, marginal areas
- High concentration of population in urban areas
- 3.2 M ha of protected areas (24 National Parks; 152 regional and inter-regional Parks; 139 state nature reserves, 166 old-growth forests, 4,006 monumental trees)



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**The most remarkable change in land use:
the spontaneous conversion of marginal
farmland to forests**

Forest cover doubled in
the last 70 years

11.9 M ha forests
(Inventario sull'Uso delle Terre in
Italia 2023)

- 36.7% of the territorial
area
- 65% above 500 meters
a.s.l.



An impressive overlap

Mountains = Forests



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The most remarkable change in land use: the spontaneous conversion of marginal farmland to forests

Forest cover doubled in the last 70 years

The increased forest cover is the results of the **progressive abandonment of marginal farmland** (mountain pastures, grassland and crops) much more than a planned afforestation program in mountain areas.

**The most remarkable change in land use:
the spontaneous conversion of marginal
farmland to forests**

11.9 M ha forests

**«passive»
rewilding**

37.4% of the forest without any intervention (National Forest Inventory - NFI, 2015)

15.3% of forest with a management plan (NFI, 2015)

2.9 M ha of forest in active farms (Agriculture Census, 2020)

**An unplanned
(and largely ignored)
process**

*A falling tree makes more
noise than a growing forest*

- No much perception, neither governance (no investments, no employment, no communication and awareness among residents and outsiders)
- Some environmental problems (invasive species)

The problem of invasive tree species in Italian forests

- Ailanthus (*Ailanthus altissima*)
- black locust (*Robinia pseudoacacia*)
- late cherry (*Prunus serotina*)
- red oak (*Quercus rubra*)
- American maple (*Acer negundo*)
- paulownia (*Paulownia sp.*)
- Siberian elm (*Ulmus pumila*)
- paper mulberry (*Broussonetia papyrifera*)
- St. Andrew's tree (*Diospyros lotus*)
- Chinese palm (*Trachycarpus fortunei*) and others



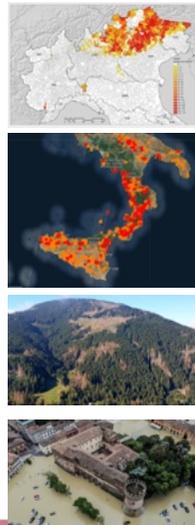
An unplanned (and largely ignored) process

A falling tree makes more noise than a growing forest

- No much perception, neither governance (no investments, no employment, no communication and awareness among residents and outsiders)
- Some environmental problems (invasive species)
- Increased vulnerability to fires, storm, flood and insect attacks

Damages from extreme events and increased wilderness: correlation or causation?

- Vaia storm 2018: 10.2 M m³
- Forest fires in 2020 (record year) and 2021 (new record year): 170,000 ha destroyed
- 2021-3: bark beetle (*Ips Typographum*) → 2 times (?) more damaged forests than Vaia
- 2003: 2 floods in Romagna



Large unmanaged wild areas as drivers of large fire events



An unplanned (and largely ignored) process

A falling tree makes more noise than a growing forest

- No much perception, neither governance (no investments, no employment, no communication and awareness among residents and outsiders)
- Some environmental problems (invasive species)
- Increased vulnerability to fires, storm, flood and insect attacks
- Some social problems




il Dolomiti

Zecche, nel 2023 già 4 casi di Tbe nel Bellunese. "Ci aspettiamo aumento dopo le abbondanti piogge e il ritorno del caldo. Importante vaccinarsi"

Le due principali patologie causate dalle zecche sono la borreliosi di Lyme e la encefalite (Tbe). Entrambe hanno fatto registrare un notevole incremento negli ultimi anni, spiegabile sia con le mutate condizioni climatiche sia con la maggiore attenzione nel diagnosticarle. La vaccinazione contro la Tbe nel Bellunese è gratuita e le 85mial dosi erogate sino ad oggi dall'Usls1 rappresentano i due terzi di tutte quelle fatte in Veneto



The mint problem



Bellunese invaso dalle zecche. «Ora si possono trovare anche zone urban»

Home > Cronaca > Provincia > Bellunese invaso dalle zecche. «Ora si possono trovare anche zone urban»







Grandi carnivori in Trentino

L'ORSO | IL LUPO | LA LINCE | RAPPORTO ORSO E GRANDI CARNIVORI | CONTATTI | COMUNICAZIONE | LINK

HOME/PAGE / COMUNICAZIONE / FAQ / I TURISTI NON VENGONO PIÙ IN TRENTINO PER PAURA DELL'ORSO

I turisti non vengono più in Trentino per paura dell'orso

È accertato che non tutti i turisti gradiscono la presenza dei grandi carnivori: la maggior parte di essi, tuttavia, li considera un forte motivo di fascino e richiamo. Nel 2002 il Parco Naturale Adamello Brenta ha effettuato un sondaggio tra i possibili turisti delle regioni limitrofe al Trentino allo scopo di verificare quale sia l'impatto della presenza dell'orso sui flussi turistici: il 78% degli intervistati si è dichiarato maggiormente interessato a una vacanza in Trentino proprio per la presenza dell'orso. L'esempio del Parco Nazionale d'Abruzzo conferma questo dato: in quelle zone infatti (dove è presente anche il lupo) si è dovuto ricorrere al numero chiuso in alcune aree per far fronte alla domanda sempre in aumento da parte dei turisti, attratti anche dalla presenza di questi animali.

<https://grandicarnivori.provincia.tn.it/Comunicazione/FAQ/I-turisti-non-vegnono-piu-in-Trentino-per-paura-dell-orso>

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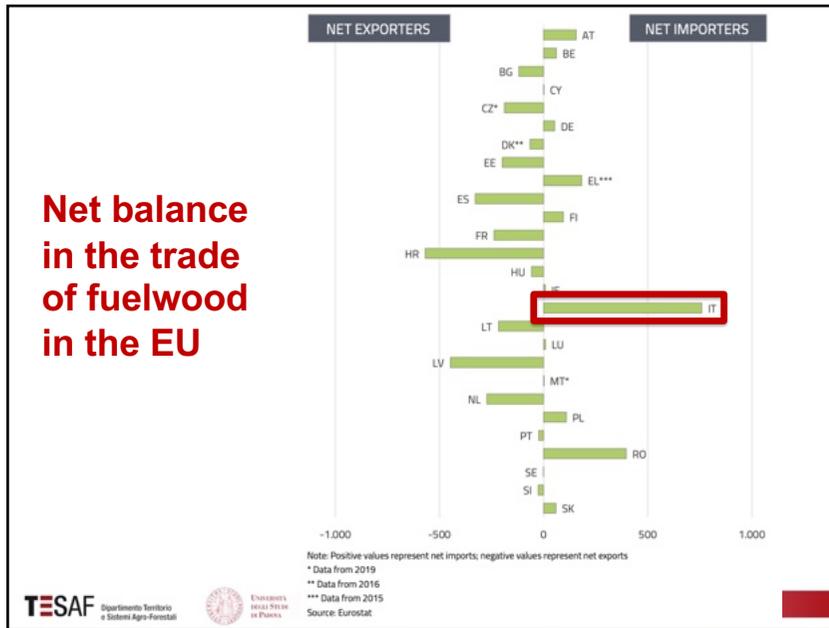
An unplanned (and largely ignored) process

A falling tree makes more noise than a growing forest

- No much perception, neither governance (no investments, no employment, no communication and awareness among residents and outsiders)
- Some environmental problems (invasive species)
- Increased vulnerability to fires, storm, flood and insect attacks
- Some social problems
- Missed potential advantages

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Production and trade of wood products in Italy (1,000 m3 or tons; 2022)

	Fattore conversione	Import (m3 eq.)	Export (m3 eq.)	Produzione (m3 eq.)	Consumo apparente	Tasso di autoappr.
Legna da ardere, conifere	m3	1,00	82	24	1.180	1.238 95,3%
Legna da ardere, latifoglie	m3	1,00	459	18	9.850	10.100 95,6%
Tondame industriale, conifere	m3	1,00	841	416	4.125	4.550 90,6%
Tondame industriale, latifoglie	m3	1,00	2.228	149	877	2.956 29,7%
Legno grezzo, conifere	m3	1,00	923	440	5.309	5.788 91,7%
Legno grezzo, latifoglie	m3	1,00	2.687	167	10.536	13.056 80,7%
Totale legname grezzo			3.610	607	15.841	18.844 84,1%
Carbone da legna	t	6,00	57	340	10	60 115 52,0%
Cippato e legname in particelle	m3	2,43	559	1.358	678	1.600 8,629 101,4%
Pellet di legno	t	2,19	1.916	4.195	7	15 450 986 2.894 34,1%
Altri agglomerati a fini energetici	t	1,83	151	277	7	13 20 37 181 20,2%
Segati di conifere	m3	1,82	5.243	9.543	19	351 400 728 5,778 12,6%
Segati di latifoglie	m3	1,95	818	1.596	357	697 500 975 1,436 67,9%
Trancianti						433 48,4%
Compensati						566 107,7%
Pannelli di particelle						851 47,9%
OSB						420 40,0%
Pannelli ad alta densità						289 8,7%
MDF						2.513 68,3%
Altri pannelli di fibra						83 4,6%
Paste meccaniche e semichimiche						725 76,9%
Paste chimiche						3.132 1,9%
Totale parziale semilavorati legno			39.112	6.705	0	15.290 28.047 54,5%
Carta da macero	t	1,19	296	352	1.481	1.762 5,394 6,419 5,008 128,2%
Prodotti legnosi riciclati	t	2,37	525	1.245	24	56 1,749 4,069 5,258 77,4%
Totale prodotti legnosi riciclati			1.597	1.818	0	10.267 102,2%

Wood recycling is more than two times the amount of timber cut in Italian forests

Source: FAOSTAT and Rilegno)

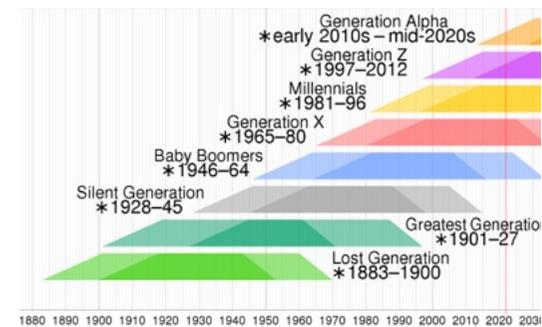
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Important changes on the demand side

Generation shift and new segments of consumers



LOHAS (Lifestyle Of Health and Sustainability) consumers

5 specific reference values

- Health** (Functional and nutraceutical products)
- Localism** (0 km products)
- Greening** (Organic, wild products, local products, carbon and water footprints, GMO free)
- Solidarity** (Fair trade products)
- Origin** (products of specific origin)
- No animal cruelty**

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Wild food

«Forest eggs»

<http://www.uovodiselva.it>

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Wild meat

foodunfolded

also hunted for wildlife management: deer and wild boar can be destructive to crops and habitats, so are hunted as 'pests'. In recent decades, deer and boar populations have boomed, and so have a number of animals being hunted. Red deer harvest has grown particularly fast in Sweden and Spain,¹⁰ for example.

Environmental advantages of wild meat



<https://www.1000010000.com/articles-wild-game-meat-good-for-the-environment>

WILD GAME MEATS			
	Calories (kcal/100g)	Protein (grams)	Fat (grams)
Alligator	143	29	3
Bear	161	20.3	8.3
Bison	109	21.6	1.8
Mallard Duck	152	23.1	2.0
Elk	137	22.8	0.9
Goose	161	22.8	7.1
Moose	130	22.1	0.5
Pheasant	148	25.7	0.6
Quail	134	21.8	4.5
Rabbit	153	21.9	2.4
Squirrel	149	21.4	3.2
White-tailed Deer	149	23.6	1.4
Wild Boar	160	28.3	4.38

<https://www.therusticelk.com/game-meats-guide/>

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Wild herbs → Foraging



<http://www.wood-ing.org/>

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Sap water



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Rediscovered wild products

Pine resin



Manna



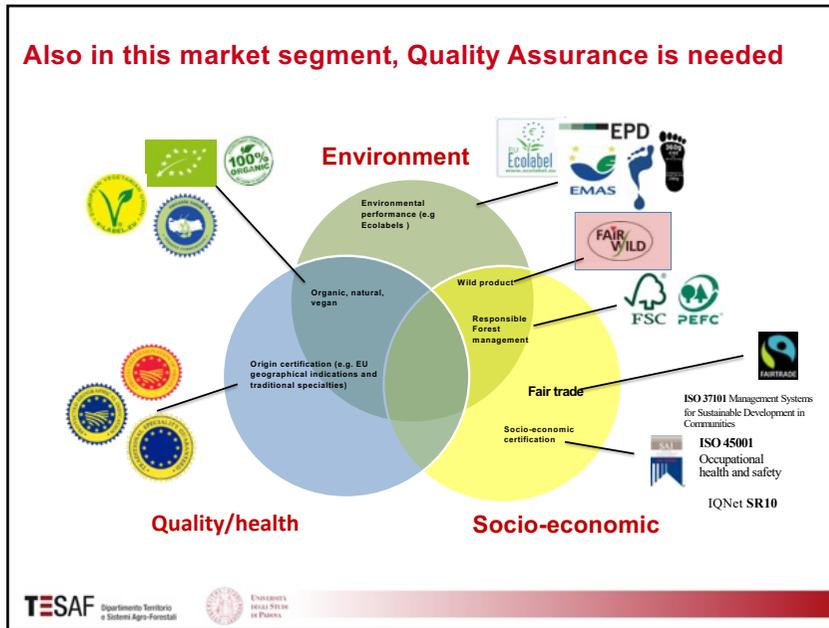
Tannin



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Also in this market segment, Quality Assurance is needed

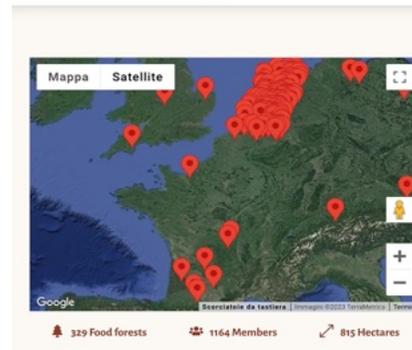


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Wilderness ranking: the case of food forests

from the totally wild areas, through the cultivated forest and to the orchard (all in one site)

FOOD from the FOREST



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Two overall objectives of a nature protection policy (also in New Green Deal)

- Climate mitigation
- Biodiversity protection

To achieve improvements in these two area of policy action: Nature-Based Solutions

Three classes of Nature-Based Solutions (NBS)

- **Rewilding**: “reinstating natural processes that would have occurred in the absence of human activity” (Wentworth and Alison, 2016).
- **Proforestation** (i.e. halting forest management to allow spontaneous development), a low-cost NBS increasing sequestration of atmospheric C with potential long-term benefits for biodiversity (Moomaw et al., 2019).
- **(Land) restoration**: a managed process reinstating lost features to fully (or partly) return to the original state.

More active investments

Three classes of NBS: the Italian context

- **Rewilding**: «active» rewilding through land use planning in protected areas (“*zone di protezione integrale*”); no large-scale policy
- **Proforestation**: spot initiatives (e.g.: coppice conversion to highforests through ageing)
- **(Land) restoration**: initiatives after extreme events (e.g. some plantations after Vaia), post-fire management practices, but, with the recent approval of the Land Restoration Regulation, very ambitious, large-scale, initiatives have to be planned

An interesting case-study: the Cansiglio forests (1)

- Till the recent past: a well managed (and productive) pure beech and beech/fir/spruce forests
- With the decision to ban hunting (**active rewilding**), the deer population grew from 800 to 3,000 heads

An interesting case-study: the Cansiglio forests (2)

With the growing number of deers:

- extremely serious problem of natural regeneration (deer eating the seedlings)
- Forest regeneration becomes possible only by fencing the forest (high costs → reduced wood harvesting)
- many cases of **proforestation**

An interesting case-study: the Cansiglio forests (3)

la Repubblica

Troppi cervi al Cansiglio, ci pensa il lupo

di Jenner Meletti



▲ Cervo maschio con il suo harem di femmine nel **piana del Cansiglio**; ne sono rimasti circa duecento
(giacomo de donat)

Per un errore umano, i cervi nelle foreste del Bellunese erano passati da ottocento a tremila. Devastando habitat e coltivazioni. Si pensava così di abatterli. Finché non è arrivato lui...

10 DICEMBRE 2021 PUBBLICATO PIÙ DI UN ANNO FA 3 MINUTI DI LETTURA

The (unplanned) arrival of wolves is reducing the deer population, allowing the forest to be regenerated

Managing heavy herbivory

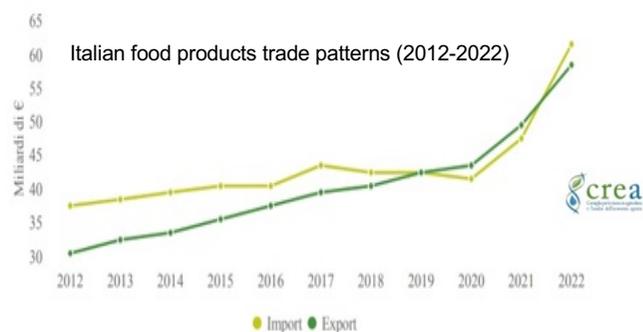
Whereas *herbivory* can foster plant diversity in natural ecosystems, it **can suppress plant abundance and diversity in degraded ecosystems undergoing restoration**. Managing herbivory can enhance the success of vegetation restoration efforts, which are increasing globally.

<https://www.science.org/toc/science/382/6670>



Herbivory management

To provoke thought: in a country that extensively imports meat and milk, why opt for importing meat from Brazil when we could consider reintroducing the traditional herbivory (cows) to our abandoned mountain mountains?



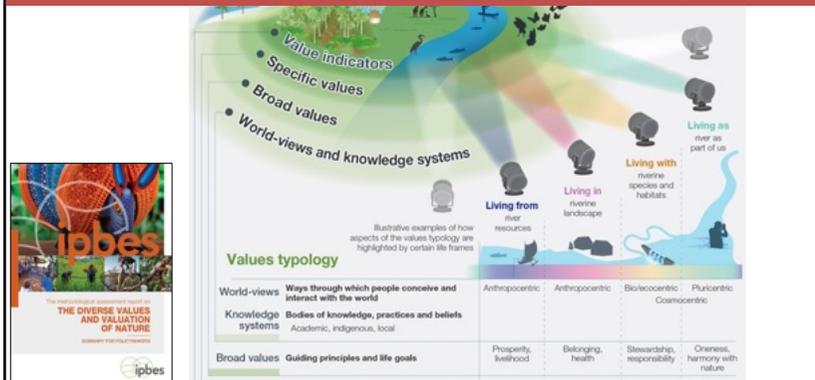
IPBES Methodological Assessment Report: an extraordinary attention to the social dimension of biodiversity protection

«The Assessment demonstrates that *recognizing and respecting* the worldviews, values and traditional knowledge of *indigenous peoples and local communities* lead to the formulation of policies that are more inclusive, with *better outcomes for people and nature*»

Source: IPBES (2022). Methodological Assessment Report (...)

**«Living in harmony with nature»:
from, in, with, as nature**

Value recognition → assessment → policy action



https://zenodo.org/record/7410287/files/EN_SPM_VALUES_V8D_DIGITAL.pdf



Take home messages

- Rewilding is a nuanced and multifaced process
- «Passive» rewilding has numerous negative impacts (but itself is an indicator of lack of adequate land planning and lack of governance)
- “Active” rewilding should be grounded in robust scientific evidence supporting its positive environmental outcomes and a results of the rigorous assessment of the trade-off with other environmental and social objectives





WILDCARD project
HORIZON-CL5-2022-D1-02 05

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