



DIPARTIMENTO DI
SCIENZE DELLA VITA

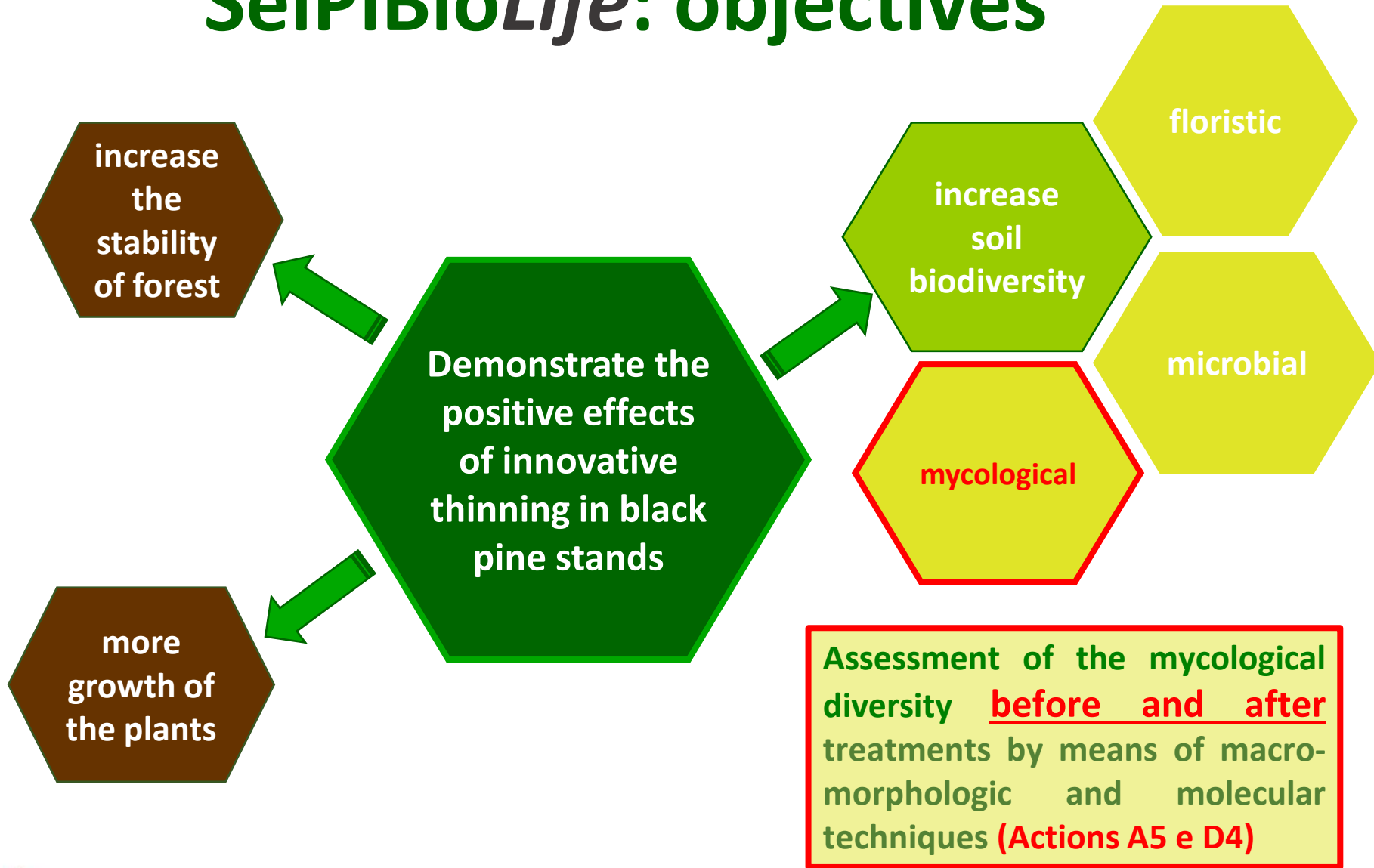
Effetti sulla biodiversità fungina

Elena Salerni

**NUOVI APPROCCI PER LA GESTIONE
SOSTENIBILE DEL PINO NERO:**
biodiversità e mitigazione

MARTEDÌ 14 MAGGIO 2019 | 9.30 - 16.30
Firenze, Sala Giordano - Palazzo Medici-Riccardi

SelPiBioLife: objectives



✓ Methods

❖ **MACROFUNGI:** According to the method described in Arnolds (1981), mycocoenological observations **before** and **after** the silvicultural treatments were made to characterize the macrofungal community. In autumn, when climatic conditions are generally optimal for fungal fruiting in our areas, periodic excursions were organized and all epigeous fruit bodies were registered and counted in 54 plot (27 in Pratomagno area and 27 in Amiata area). Species identification was performed with the usual morphological techniques and employing general analytic keys and monographs. At each sampling for each species fresh and dry weight was also detected in order to have the fungal biomass.

❖ **ECTOMICORRIZAE:** Soil cores of 30 cm in length and 6 cm in diameter were collected in 54 plot before and after the silvicultural treatments. Anatomical structures were examined and described according to Agerer (1991, 1987-2008). ECM tips of each morphotype were counted and morphotypes were molecularly identified using a direct PCR approach as described by Iotti and Zambonelli (2006).



✓ Where & when

PRATOMAGNO				
before	after			
2014	2015	2016	2017	2018
23/9/14	22/9/15	21/6/16	13/6/17	12/6/18
7/10/14	5/10/15	11/10/16	26/9/17	25/9/18
21/10/14	20/10/15	24-25/10/16	10/10/17	9/10/18
4/11/14	2/11/15	9/11/16	23/10/17	22/10/18
18/11/14	17/11/15	21/11/16	8/11/17	5/11/18
8/6/15			22/11/17	19/11/18
AMIATA				
before	after			
2014	2015	2016	2017	2018
1/10/14	28/9/15	20/6/16	20/6/17	11/6/18
15/10/14	12-13/10/15	3/10/16	2/10/17	3/10/18
27/10/14	26-28/10/15	17-19/10/16	16/10/17	15/10/18
11/11/14	09-10/11/15	31/10/16	31/10/17	29/10/18
24/11/14	23/11/15	14/11/16	16/11/17	12-13/10/18
10/6/15			27/11/17	05-06/12/18

➤ Total days of sampling: **63**

➤ Total number of species: **391**

➤ Total number of fruitbodies: **52820**

➤ Total fresh weight: **240 kg**

➤ Total dry weight: **25 kg**

✓ Results

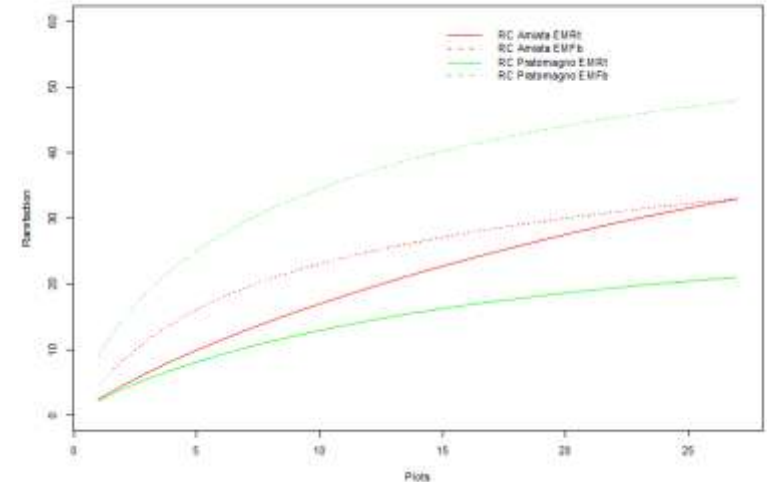
Action A5 - Assessment of the mycological diversity before treatments by means of macro-morphologic and molecular techniques

Which criteria should be considered when appraising ectomycorrhizal communities for forest research?

	Total	Amiata	Pratomagno
Number of plot	54	27	27
EMFb richness	70	33	48
Number of EMFb	2527	1250	1277
EMRt richness	54	26	28
Number of EMRt	2946	1717	1229

PERMANOVA results on the whole presence/absence dataset
*P<0.001

Source of variation	df	MS	F
Zone	1	30,797	8.5637*
Type	1	29,519	8.3906*
Plot	16	3596.2	1.4652*
Zone x Type	1	15,583	4.4296*
Plot x Type	16	3,518.1	1.4334*
Residual	72	2,454.4	
Total	107		



Results of PERMANOVA pairwise test for Amiata and Pratomagno Zones for each pair of levels of factor 'Type'

Type	Amiata	Pratomagno
	<i>t</i>	<i>t</i>
EMRt, EMFb	2.1459**	2.8237*



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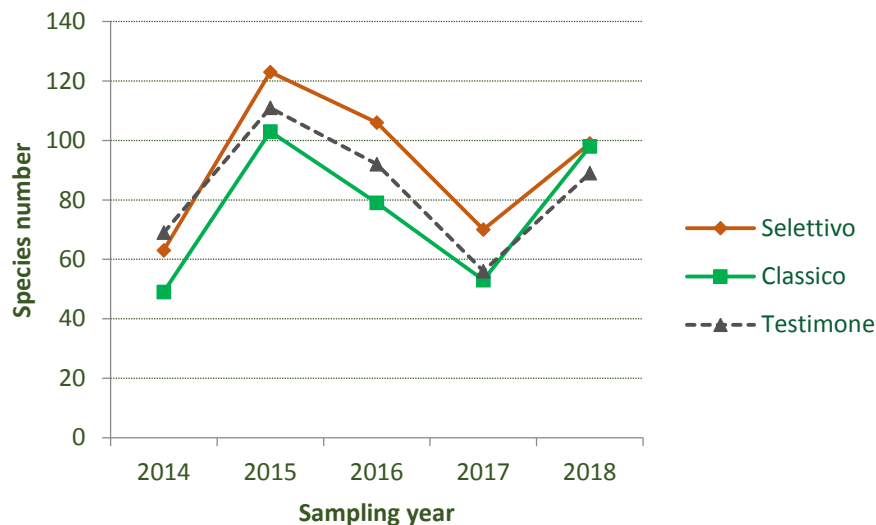
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✓ Results

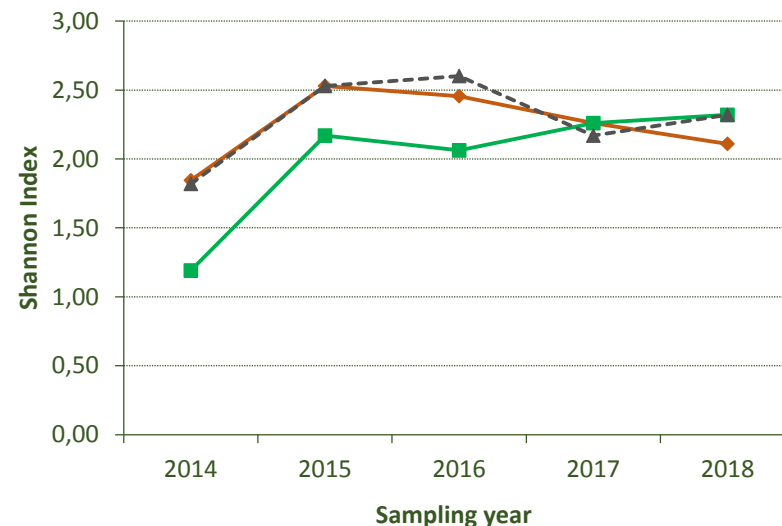
Assessment of the mycological diversity **before and after** treatments by means of macro-morphologic and molecular techniques (Actions A5 e D4)

Vivo d'Orcia - Amiata

Species richness



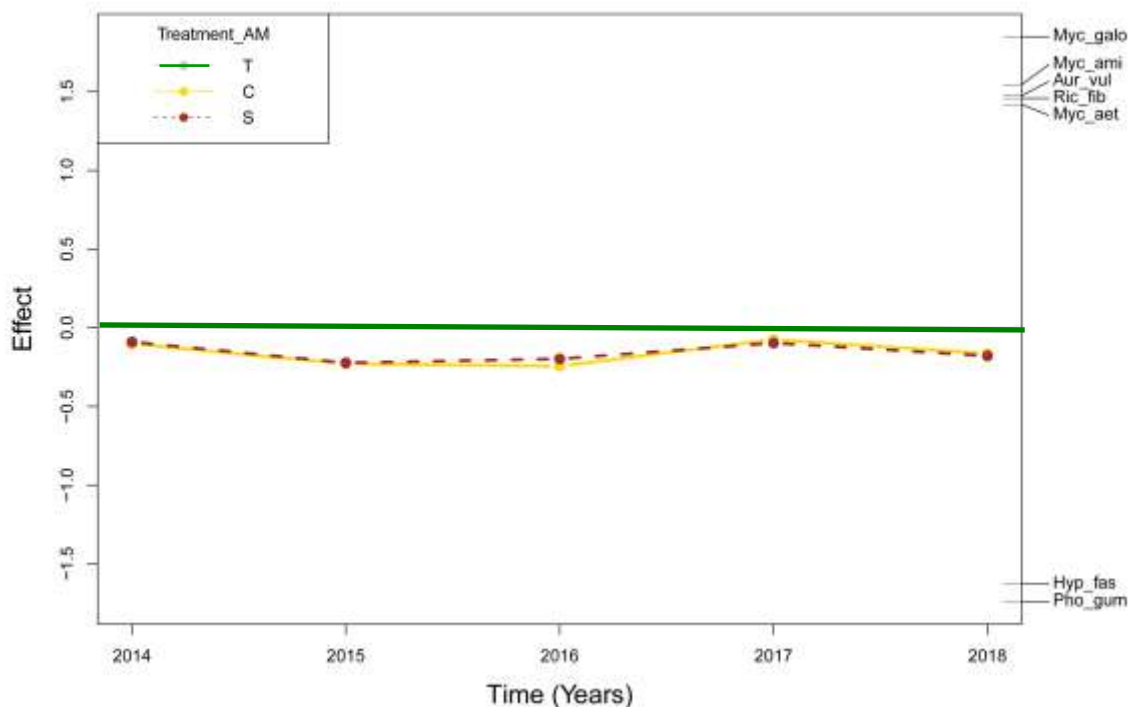
Species diversity



✓ Results

We performed a first **explorative** analysis showing the departure of treatment plots from the control plots using the **Principle Response Curve (PRC)** technique. Whereas other ordinations result in a difficult-to-interpret diagram, PRC related methods are able to show changes in community composition in a diagram that is easy to read. The PRC is used to show **changes in species assemblages over time, contrasting several treatments with a control.**

Amiata

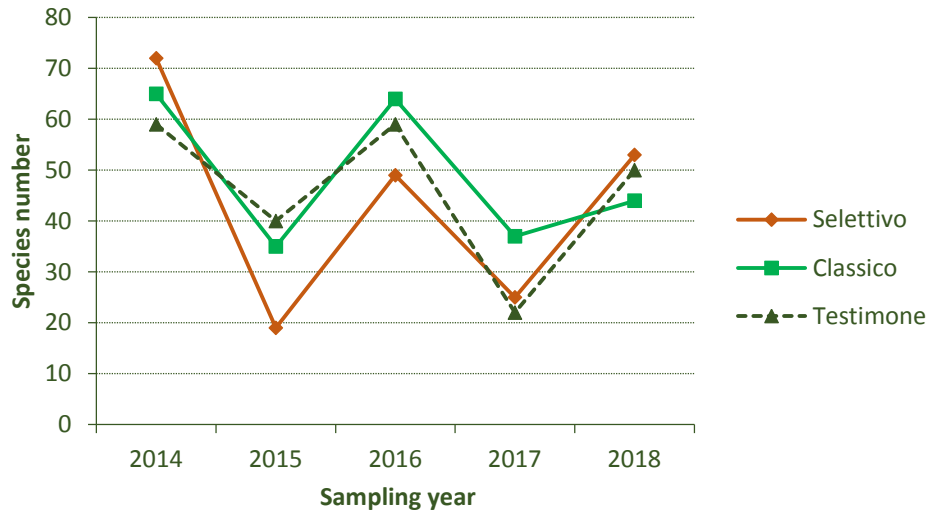


✓ Results

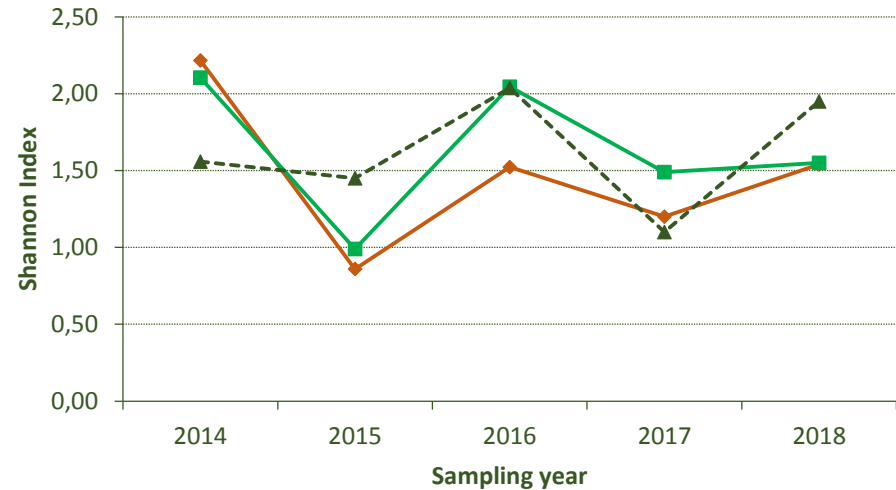
Assessment of the mycological diversity **before and after** treatments by means of macro-morphologic and molecular techniques (Actions A5 e D4)

Pratomagno

Species richness



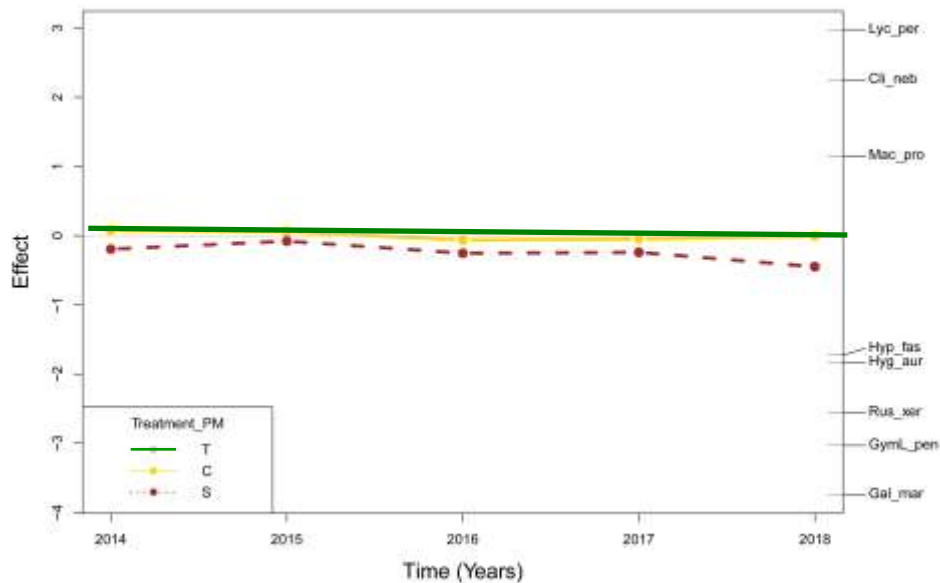
Species diversity



✓ Results

Assessment of the mycological diversity **before and after** treatments by means of macro-morphologic and molecular techniques (Actions A5 e D4)

Pratomagno



Innovative silvicultural treatments to enhance soil biodiversity in artificial black pine stands: rethinking mycological diversity

Infographic detailing innovative silvicultural treatments for enhancing soil biodiversity in artificial black pine stands. It includes sections for 'L' (Litter management), 'M' (Mycological diversity), and 'S' (Soil structure), with various diagrams and text boxes explaining the impact of different treatments.

il progetto SelPiBioLife. Selvicoltura innovativa per accrescere la biodiversità dei suoli in popolamenti artificiali di pino nero (S.U.P.E.R. 13 (04/17/00282))

Project overview for SelPiBioLife, an innovative silviculture project to increase soil biodiversity in artificial black pine stands. It features a circular diagram with five phases: '1. Analisi del sito', '2. Progettazione del trattamento', '3. Realizzazione del trattamento', '4. Monitoraggio e valutazione', and '5. Gestione sostenibile'. Text describes the project's goals and the role of the S.U.P.E.R. 13 research center.

SelPiBioLife: selvicoltura innovativa per accrescere la biodiversità dei suoli in popolamenti artificiali di pino nero

Elena Salerni, C. Perini, E. Bianchetto, S. Bruschini, I. De Meo, S. Mocali, P. Montini, S. Samaden & P. Cantiani

Which criteria should be considered when appraising socio-ecological communities for forest research?

Infographic discussing criteria for appraising socio-ecological communities for forest research. It includes a flowchart with categories like 'Socio-ecological', 'Ecological', and 'Socio-economic'. Text explains the importance of considering both ecological and socio-economic factors in forest management research.



Biodiversità in un rimboscimento di Pinus nigra

Il potenziale ecologico ed economico dei macrofungi

Abstract text discussing the ecological and economic potential of macrofungi in a Pinus nigra reforestation project. It mentions the importance of biodiversity and the role of fungi in forest ecosystems.

F. Leonardi, S. Graziosi, A. Zambonelli, E. Salerni Italian Journal of Mycology vol. 46 [2017] ISSN 2531-7342 DOI: <https://doi.org/10.6080/issn.2531-7342/7387>

The economic potential of mushrooms in an artificial Pinus nigra forest

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Science of the Total Environment

Journal homepage: www.elsevier.com/locate/scotenv

Teamwork makes the dream work: Disentangling cross-taxon congruence across soil biota in black pine plantations

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