

Soil Microbial Community in Relation to Soil Organic Carbon and Labile Soil Organic Carbon Fractions under Detritus Treatments in a Subtropical Karst Region during the Rainy and Dry Seasons

Peiwen Liu ^{1,2}, Suyu Ding ^{1,2}, Ning Liu ^{1,2}, Yanhua Mo ^{2,3}, Yueming Liang ⁴ and Jiangming Ma ^{1,2,3*}

1 Key Laboratory of Ecology of Rare and Endangered Species and Environmental Protection, Guangxi Normal University, Ministry of Education, Guilin 541006, China

2 Guangxi Key Laboratory of Landscape Resources Conservation and Sustainable Utilization in Lijiang River Basin, Guangxi Normal University, Guilin 541006, China

3 Institute for Sustainable Development and Innovation, Guangxi Normal University, Guilin 541006, China

4 Key Laboratory of Karst Dynamics, Ministry of Natural and Resources & Guangxi Zhuangzu Autonomy Region, Institute of Karst Geology, Chinese Academy of Geological Sciences, Guilin 541004, China

*Correspondence: mjming03@gxnu.edu.cn; Tel.: +86-158-7835-3825

Table S1. DIRT (Detritus Input and Removal Treatments) experiment description. CK—control; NL—no litter; NR—no roots; NI—no inputs; DL—double litter.

Treatments	Method
CK	Normal litter inputs
NL	Above-ground inputs were excluded from plots. Leaf litter was totally removed by rake. This process was repeated each month
NR	The plots were trenched around 40 cm wide and 100 cm deep. Excavated soil was piled outside the plot. High-density PVC board, which was 0.5 mm thick and 1 m wide, was put in the trenches. Then the trenches were filled with soil. To eliminate root production, plants were cleared.
NI	Above-ground inputs were excluded from plots, and below-ground inputs were provided as in NR plots. This treatment is the combination of NR+ NL
DL	Above-ground leaf inputs were doubled by adding leaf litter removed from NL plots

Table S2. Relative abundance of dominant phyla in different seasons and detritus treatments.

CK—control; NL—no litter; NR—no roots; NI—no inputs; DL—double litter.

		RUIN					ARID				
		CK	NL	NR	NI	DL	CK	NL	NR	NI	DL
Fungal	<i>Ascomycota</i>	37.12%	40.77%	42.93%	32.70%	43.31%	31.82%	29.94%	31.85%	35.15%	34.72%
	<i>unclassified_k_Fungi</i>	33.31%	31.84%	30.74%	34.44%	28.70%	34.58%	44.03%	40.08%	45.21%	35.37%
	<i>Basidiomycota</i>	21.87%	21.72%	18.12%	26.10%	19.19%	30.30%	22.04%	24.35%	16.33%	25.49%
	<i>Rozellomycota</i>	3.59%	2.26%	3.34%	2.83%	2.24%	0.59%	0.38%	0.40%	0.69%	0.47%
	<i>Glomeromycota</i>	0.90%	1.01%	0.63%	1.16%	0.34%	1.45%	1.89%	1.23%	1.13%	0.77%
	<i>Mortierellomycota</i>	0.68%	0.95%	1.87%	0.78%	4.01%	0.15%	0.08%	0.22%	0.24%	0.50%
	<i>Kickxellomycota</i>	0.76%	0.88%	0.40%	0.97%	0.90%	0.51%	1.26%	1.08%	0.29%	1.34%
	<i>Chytridiomycota</i>	0.73%	0.43%	1.02%	0.58%	0.81%	0.33%	0.25%	0.52%	0.28%	0.95%
	others	1.04%	0.15%	0.94%	0.46%	0.50%	0.27%	0.13%	0.26%	0.68%	0.38%
Bacterial	<i>Proteobacteria</i>	22.14%	25.41%	25.21%	26.28%	26.37%	21.88%	20.03%	23.18%	22.49%	24.27%
	<i>Actinobacteriota</i>	22.43%	20.13%	21.59%	19.97%	19.91%	26.54%	27.51%	27.75%	27.39%	26.00%
	<i>Acidobacteriota</i>	19.31%	18.48%	17.15%	16.81%	17.97%	15.26%	12.72%	12.11%	12.99%	14.27%
	<i>Chloroflexi</i>	8.11%	7.69%	7.98%	8.45%	7.45%	9.62%	16.02%	11.96%	12.79%	9.51%
	<i>Verrucomicrobiota</i>	7.54%	8.79%	8.92%	8.73%	8.58%	10.80%	10.67%	11.95%	10.12%	10.49%
	<i>Methylomirabilota</i>	6.44%	5.49%	5.16%	5.33%	5.08%	2.90%	1.75%	1.98%	2.92%	2.85%
	<i>Planctomycetota</i>	2.11%	2.29%	2.38%	2.42%	2.36%	4.22%	4.63%	4.54%	3.81%	4.91%
	<i>Myxococcota</i>	3.42%	3.22%	3.35%	3.63%	3.59%	2.05%	1.37%	1.50%	1.94%	1.96%
	<i>unclassified_k_norank_d__</i>	2.14%	2.00%	2.26%	1.99%	2.29%	2.53%	1.67%	1.74%	2.05%	2.22%
	<i>Bacteria</i>										
	<i>Bacteroidota</i>	1.14%	1.34%	0.99%	1.15%	1.55%	0.68%	0.40%	0.37%	0.45%	0.52%
	<i>Firmicutes</i>	1.21%	0.76%	0.80%	1.07%	0.73%	0.19%	0.34%	0.36%	0.31%	0.18%
	others	4.02%	4.41%	4.23%	4.18%	4.10%	3.35%	2.89%	2.57%	2.74%	2.82%

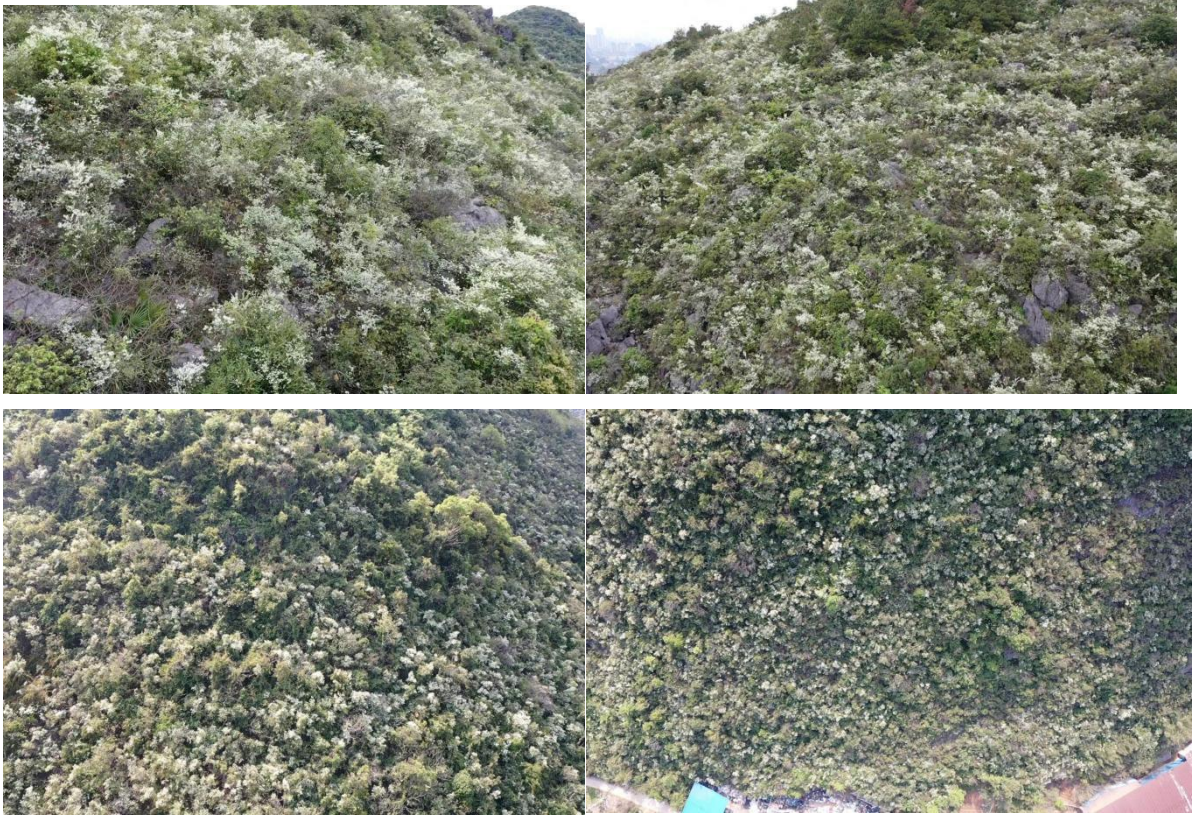


Figure S1. Aerial photo of the at the study site.

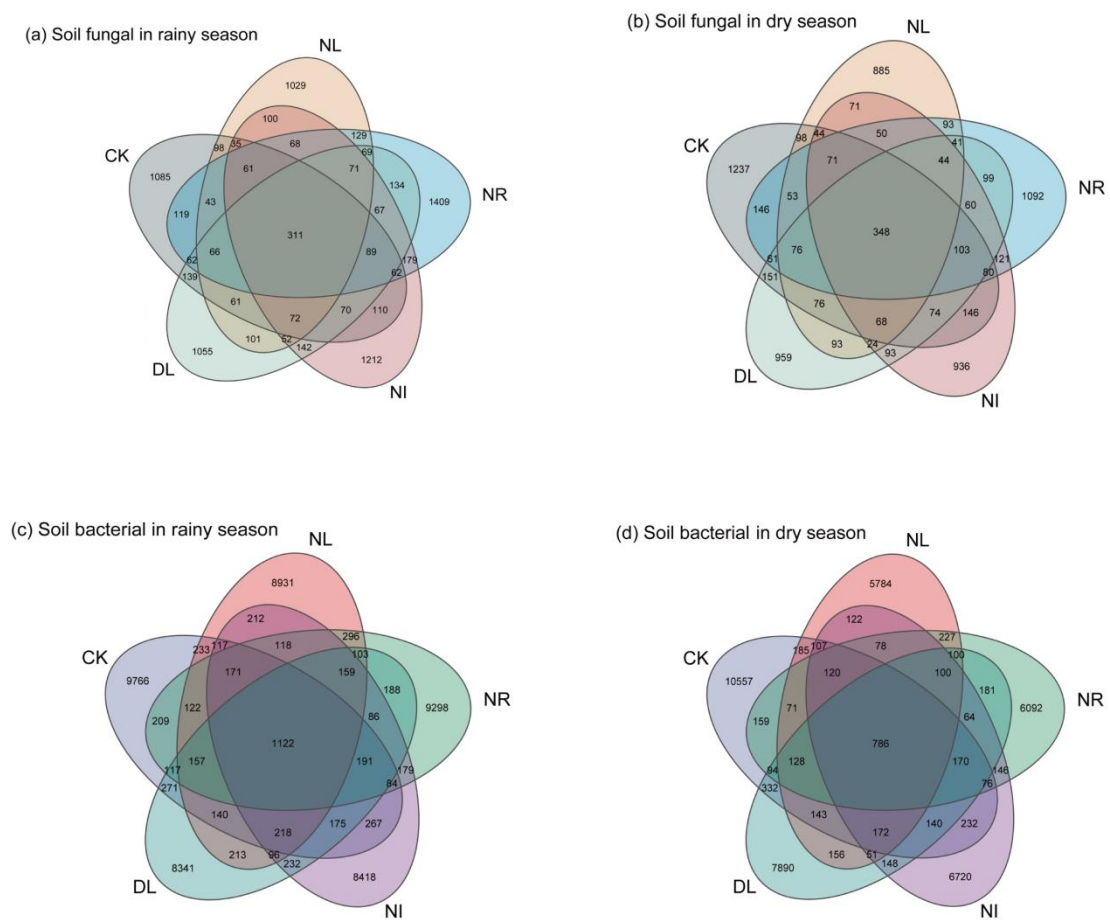


Figure S2. Venn diagram of soil fungal (a-b), and bacterial (c-d) OTUs in the rainy and dry season under different detritus treatments. CK—control; NL—no litter; NR—no roots; NI—no inputs; DL—double litter.