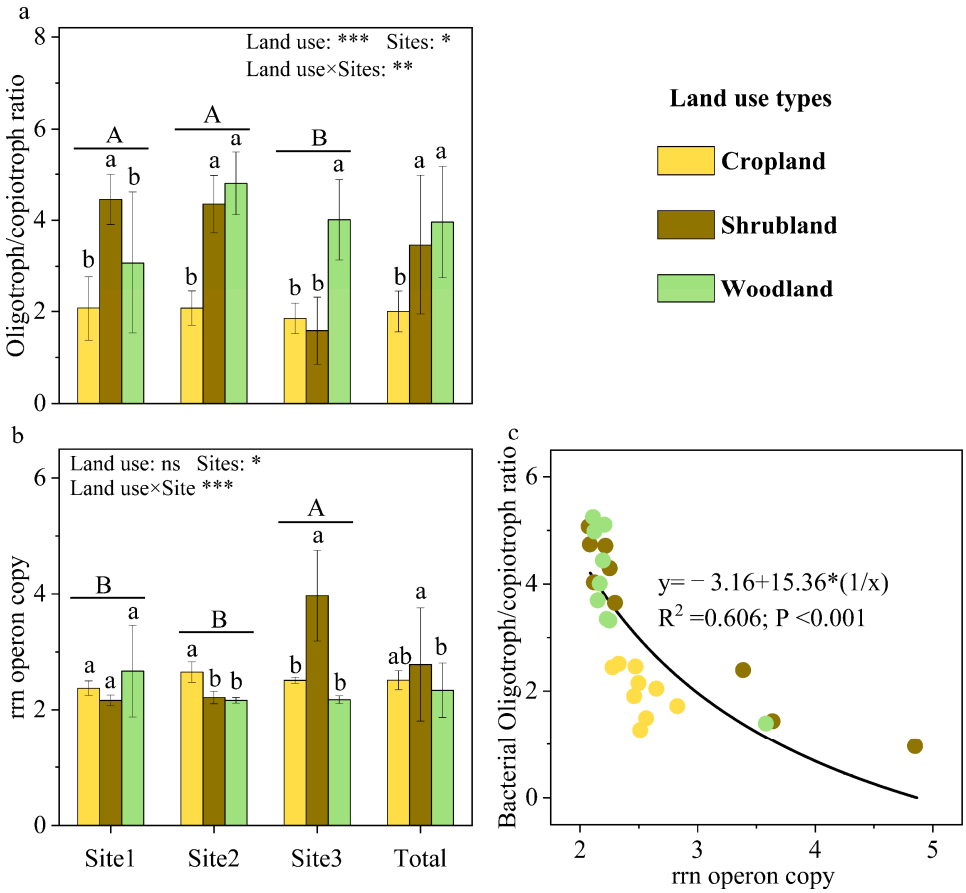

Figure S1. The (a) oligotrophs/copiotrophs ratio and (b) rrn operon copy number in different land use types, and (c) the relationship between bacterial rrn operon copy number and oligotrophs/copiotrophs ratio (n = 9). "ns", "*", "**", and "***" represent $p > 0.05$, $p < 0.05$, $p < 0.01$, and $p < 0.001$, respectively. Different letters indicated significant difference between different land use types ($p < 0.05$).

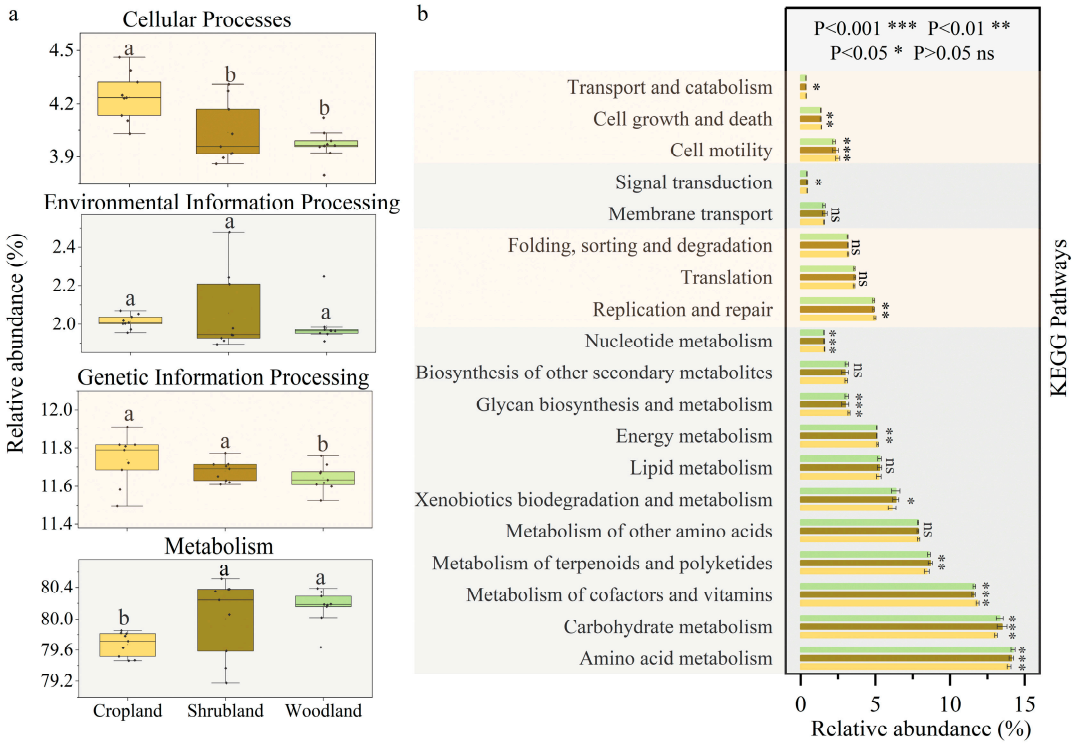

Figure S2. (a) 4 key bacterial ecologically relevant functions and (b) their sub-functions based on PICRUSt2 prediction (n = 9). "ns", "*", "**", and "***" represent $p > 0.05$, $p < 0.05$, $p < 0.01$, and $p < 0.001$, respectively. Different letters indicated significant difference between different land use types ($p < 0.05$).

Table S1. Contextual characteristics of the study sites.

	Land use Types	Coordinates	Aridity index	Species	Understory vegetation richness	Average tree hight (m)	Canopy density (%)
Site1	Cropland	39.55°N; 108.50°E	0.176	*Zea mays* L.	-	-	-
	Shrubland	39.55°N; 108.50°E		*Artemisia ordosica Krasch*	13.3	-	45
	Woodland	39.55°N; 108.50°E		*Pinus sylvestris*	7.8	6.55	80
Site2	Cropland	38.18°N; 107.82°E	0.226	*Zea mays* L.	-	-	-
	Shrubland	38.18°N; 107.82°E		*Caragana intermedia*	3	-	20
	Woodland	38.18°N; 107.51°E		*Pinus sylvestris*	3.33	9.89	85
Site3	Cropland	38.23°N; 108.21°E	0.239	*Zea mays* L.	-	-	-
	Shrubland	38.23°N; 108.21°E		*Caragana intermedia*	4.67	-	65
	Woodland	38.23°N; 108.21°E		*Populus simonii*/ *Ulmus pumila L.*	14	23.2	85

Note: The aridity index is calculated as the mean annual precipitation divided by the potential evaporation. The higher the aridity index value the higher the humidity.