

Supplementary material

Joint effects of warming and salinization on instream leaf litter decomposition assessed through a microcosm experiment

Gabriela García^{1\$}, Javier Pérez^{1,2\$}, Luz Boyero^{1,2,3}, Alberto Alonso², Anyi Tuñon¹, Edgar Pérez¹ & Aydeé Cornejo^{1,2,4*}

¹Ecology and Aquatic Ecotoxicology Laboratory. Research Center for Emerging and Zoonotic Diseases, Gorgas Memorial Institute of Health Studies, 0816-02593. Divisa, Veraguas province, Panama.

²Department of Plant Biology and Ecology, Faculty of Science and Technology, University of the Basque Country (UPV/EHU), Leioa, Spain.

³IKERBASQUE, Bilbao, Spain.

⁴National Research System of Panama, Panama City, Panama.

\$ G.G. ([0000-0003-2604-1516](#)) and J.P. ([0000-0001-6305-4151](#)) equally contributed to this work.

*Corresponding author: acornejo@gorgas.gob.pa

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Table S1. Results of linear mixed models exploring temporal variation in physical and chemical variables [temperature, °C; pH; conductivity, mS cm⁻¹; salinity, PSU; total dissolved solids (TDS), g L⁻¹; dissolved oxygen (DO), mg L⁻¹] measured in microcosms subjected to different temperature (26 °C, 29 °C and 32 °C) and salinity treatments [control (C), no NaCl addition; low (L), NaCl concentration 0.1 gL⁻¹; moderate, 1 gL⁻¹; and high, 10 gL⁻¹].

Response variable	Factor	df	F	p
Temperature	Temperature treatment (Te)	2	139983	<0.001
	Salinity treatment (Sa)	3	1	0.4837
	Time (Ti)	6	129	<0.001
	Te × Sa	6	7	<0.001
	Te × Ti	12	37	<0.001
	Sa × Ti	18	4	<0.001
	Te × Sa × Ti	36	3	<0.001
pH	Te	2	700	<0.001
	Sa	3	3185	<0.001
	Ti	6	1848	<0.001
	Te × Sa	6	114	<0.001
	Te × Ti	12	65	<0.001
	Sa × Ti	18	21	<0.001
	Te × Sa × Ti	36	4	<0.001
Conductivity	Te	2	12271	<0.001
	Sa	3	1585929	<0.001
	Ti	6	337	<0.001
	Te × Sa	6	53	<0.001
	Te × Ti	12	36	<0.001
	Sa × Ti	18	84	<0.001
	Te × Sa × Ti	36	4	<0.001
Salinity	Te	2	188.5	<0.001
	Sa	3	1306538.9	<0.001
	Ti	6	327.0	<0.001
	Te × Sa	6	64.1	<0.001
	Te × Ti	12	17.4	<0.001
	Sa × Ti	18	87.6	<0.001
	Te × Sa × Ti	36	2.3	<0.001
TDS	Te	2	94256	<0.001
	Sa	3	1655063	<0.001
	Ti	6	326	<0.001
	Te × Sa	6	57	<0.001
	Te × Ti	12	32	<0.001
	Sa × Ti	18	83	<0.001
	Te × Sa × Ti	36	4	<0.001
DO	Te	2	12055	<0.001

Sa	3	1222	<0.001
Ti	6	24	<0.001
Te $\times$ Sa	6	10	<0.001
Te $\times$ Ti	12	40	<0.001
Sa $\times$ Ti	18	11	<0.001
Te $\times$ Sa $\times$ Ti	36	7	<0.001

1 **Fig. S1.** Variation of water physical and chemical variables [temperature, °C; pH; conductivity, $\mu\text{S cm}^{-1}$; salinity, PSU; total dissolved
2 solids (TDS), g L^{-1} ; dissolved oxygen (DO), mg L^{-1}] measured on days 0, 3, 6, 9 and 12 of the experiment in microcosms exposed to
3 different temperature (26 °C, 29 °C and 32 °C) and salinity treatments [control (C), no NaCl addition; low (L), NaCl concentration 0.1
4 g L^{-1} ; moderate, 1 g L^{-1} ; and high, 10 g L^{-1}].

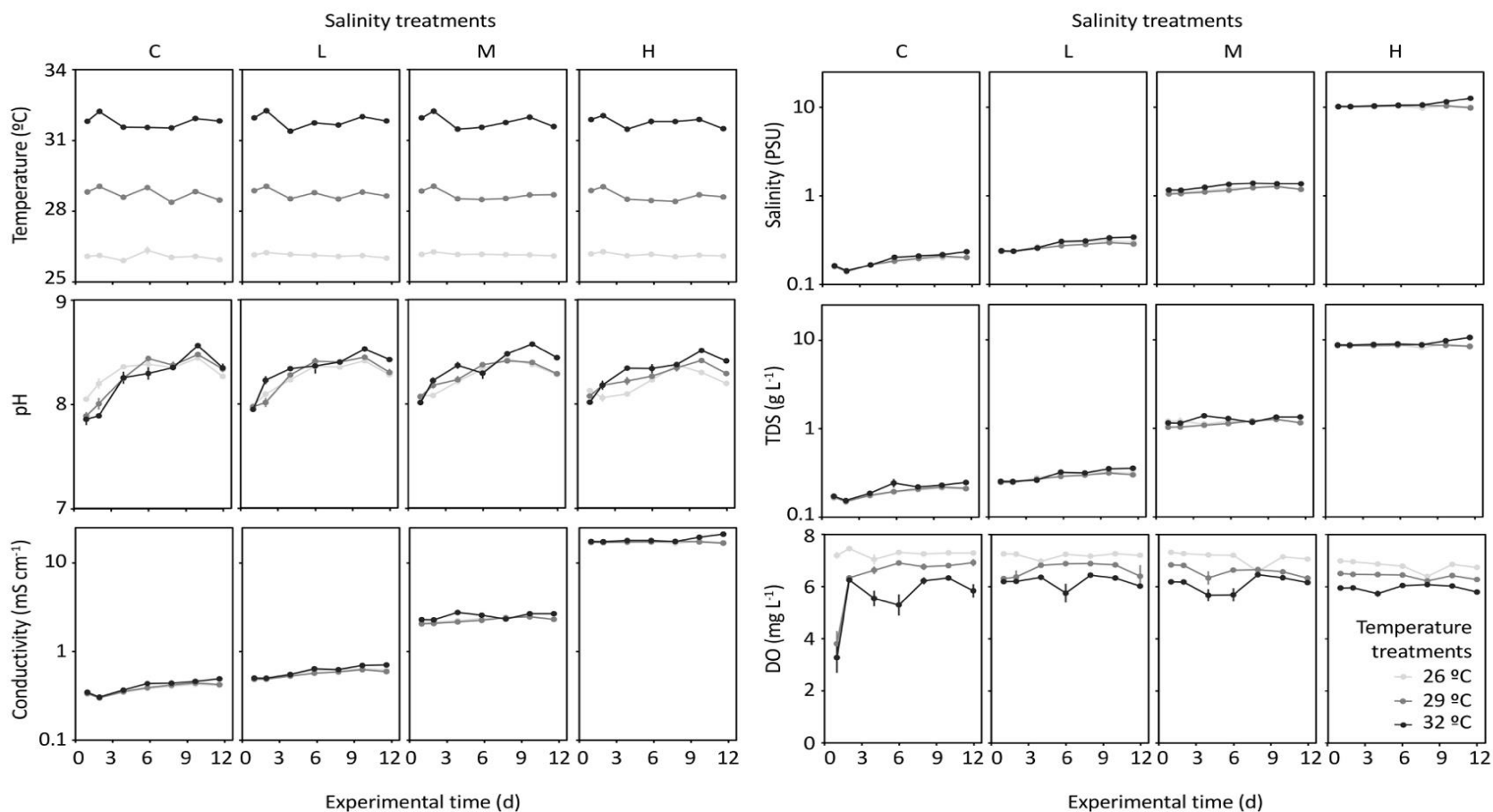


Fig. S2. Results of Tukey tests comparing total decomposition (proportion of leaf litter mass loss, LML) for all combinations of temperature (26 °C, 29 °C and 32 °C) and salinity treatments [control (C), no NaCl addition; low (L), NaCl concentration 0.1 gL⁻¹; moderate, 1 gL⁻¹; and high, 10 gL⁻¹]. Different lower-case letters denote significant differences.

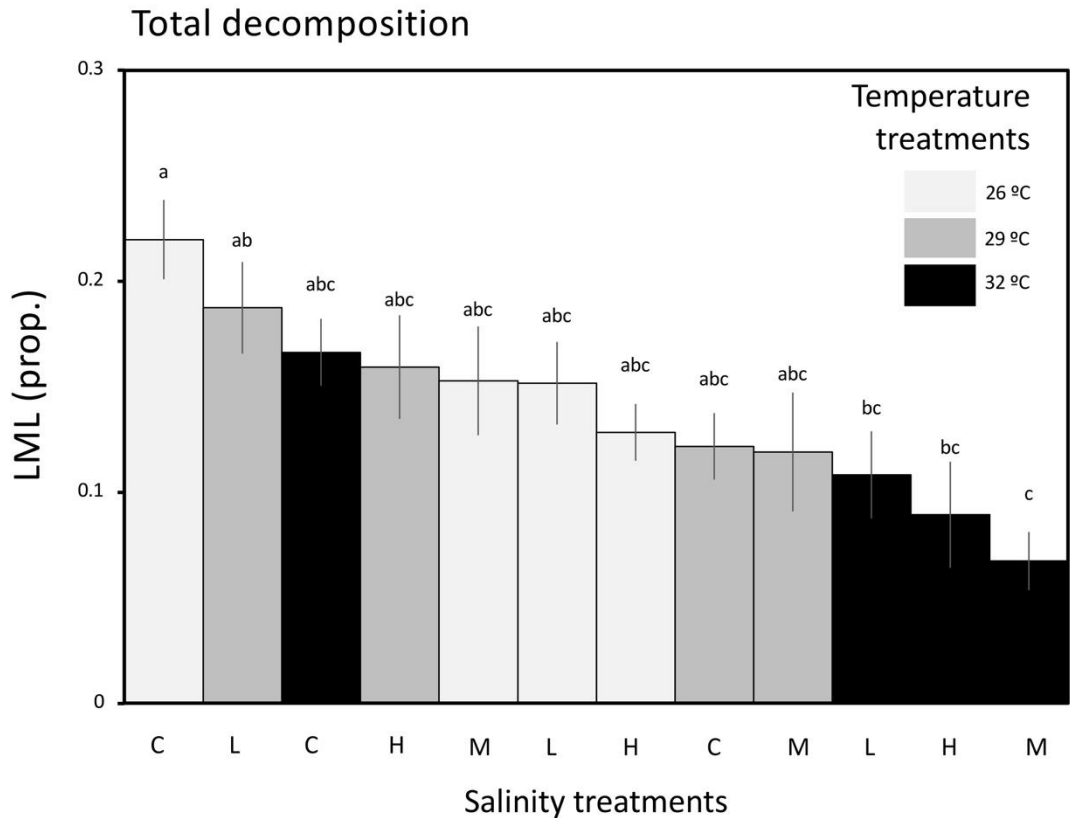


Fig. S3. Total, microbial and detritivore-mediated linear decomposition rates in terms leaf loss by time (b_d , % day⁻¹) or by accumulated heat (b_{dd} , % degree-day⁻¹) in microcosms exposed to different temperature (26 °C, 29 °C and 32 °C) and salinity treatments [control (C), no NaCl addition; low (L), NaCl concentration 0.1 gL⁻¹; moderate (M), 1 gL⁻¹; and high (H), 10 gL⁻¹].

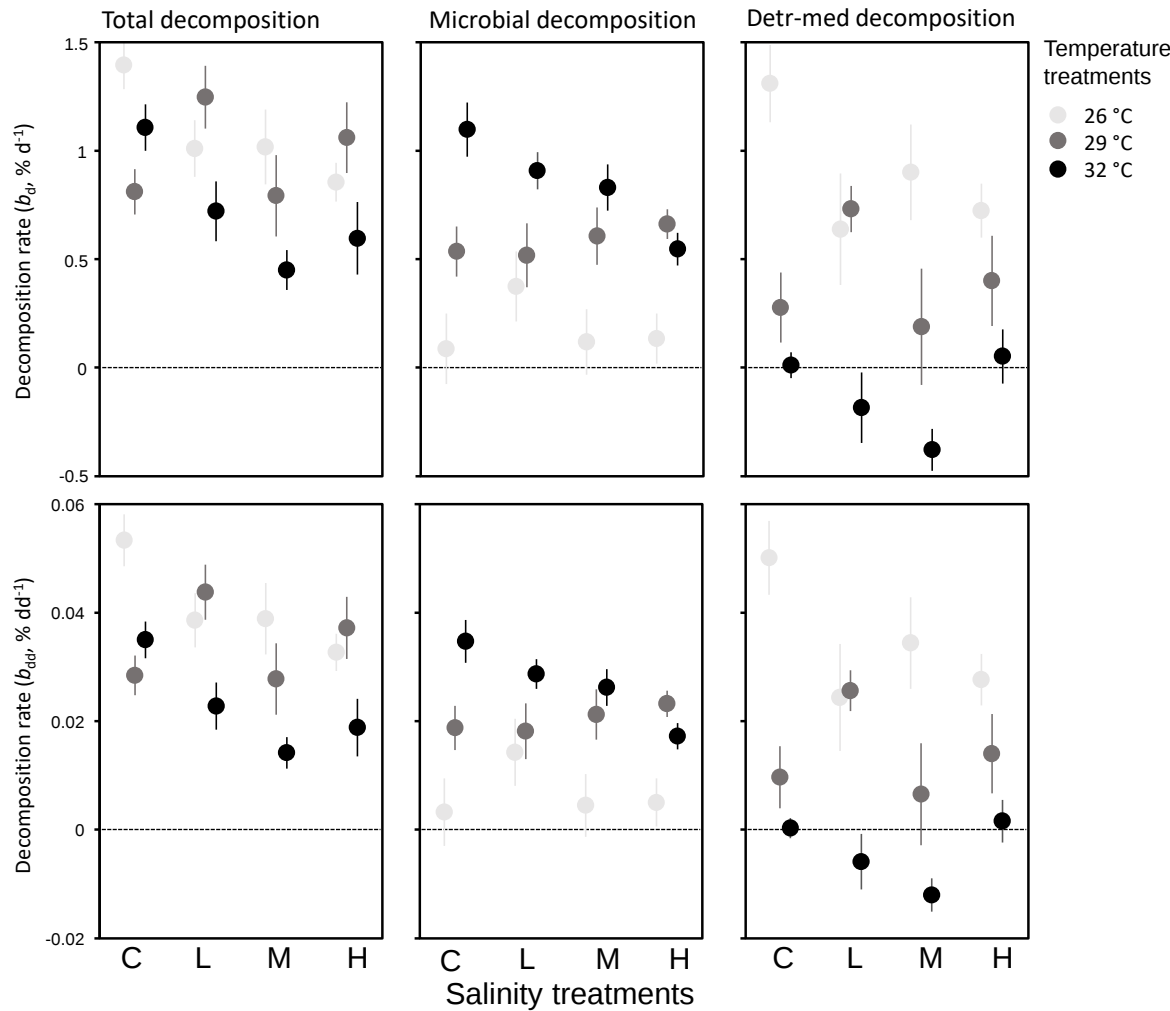


Fig. S4. Total, microbial and detritivore-mediated linear decomposition rates in terms leaf loss by time (b_d , % day⁻¹) and decomposition rates corrected by detritivore loss ($*b_d$, % day⁻¹) in microcosms exposed to different temperature (26 °C, 29 °C and 32 °C) and salinity treatments [control (C), no NaCl addition; low (L), NaCl concentration 0.1 gL⁻¹; moderate (M), 1 gL⁻¹; and high (H), 10 gL⁻¹].

