Literature Cited

- 1. Oechel WC, Hastings SJ, Vourlrtis G, Jenkins M, Riechers G, Grulke N. Recent change of Arctic tundra ecosystems from a net carbon dioxide sink to a source. Nature. 1993. pp. 520–523. doi:10.1038/361520a0
- 2. Piao S, Ciais P, Friedlingstein P, Peylin P, Reichstein M, Luyssaert S, et al. Net carbon dioxide losses of northern ecosystems in response to autumn warming. Nature. 2008;451: 49–52.
- 3. Ahlström A, Raupach MR, Schurgers G, Smith B, Arneth A, Jung M, et al. Carbon cycle. The dominant role of semi-arid ecosystems in the trend and variability of the land CO₂ sink. Science. 2015;348: 895–899.
- 4. Chang J, Ciais P, Gasser T, Smith P, Herrero M, Havlík P, et al. Climate warming from managed grasslands cancels the cooling effect of carbon sinks in sparsely grazed and natural grasslands. Nat Commun. 2021;12: 118.
- 5. McGuire KL, Treseder KK. Microbial communities and their relevance for ecosystem models: Decomposition as a case study. Soil Biology and Biochemistry. 2010. pp. 529–535. doi:10.1016/j.soilbio.2009.11.016
- 6. Dutta H, Dutta A. The microbial aspect of climate change. Energy, Ecology and Environment. 2016. pp. 209–232. doi:10.1007/s40974-016-0034-7
- 7. Cavicchioli R, Ripple WJ, Timmis KN, Azam F, Bakken LR, Baylis M, et al. Scientists' warning to humanity: microorganisms and climate change. Nat Rev Microbiol. 2019;17: 569–586.
- 8. Walker TWN, Kaiser C, Strasser F, Herbold CW, Leblans NIW, Woebken D, et al. Microbial temperature sensitivity and biomass change explain soil carbon loss with warming. Nat Clim Chang. 2018;8: 885–889.
- 9. Zhou J, Xue K, Xie J, Deng Y, Wu L, Cheng X, et al. Microbial mediation of carbon-cycle feedbacks to climate warming. Nature Climate Change. 2012. pp. 106–110. doi:10.1038/nclimate1331
- 10. Bahram M, Hildebrand F, Forslund SK, Anderson JL, Soudzilovskaia NA, Bodegom PM, et al. Structure and function of the global topsoil microbiome. Nature. 2018;560: 233–237.
- 11. Romero-Olivares AL, Meléndrez-Carballo G, Lago-Lestón A, Treseder KK. Soil Metatranscriptomes Under Long-Term Experimental Warming and Drying: Fungi Allocate Resources to Cell Metabolic Maintenance Rather Than Decay. Front Microbiol. 2019;10: 1914.
- 12. Voříšková J, Elberling B, Priemé A. Fast response of fungal and prokaryotic communities to climate change manipulation in two contrasting tundra soils. Environ Microbiome. 2019;14: 6.
- 13. Jansson JK, Hofmockel KS. Soil microbiomes and climate change. Nature Reviews Microbiology. 2020. pp. 35–46. doi:10.1038/s41579-019-0265-7
- 14. Christiansen CT, Haugwitz MS, Priemé A, Nielsen CS, Elberling B, Michelsen A, et al. Enhanced summer warming reduces fungal decomposer diversity and litter mass loss more strongly in dry than in wet tundra. Glob Chang Biol. 2017;23: 406–420.

- 15. Yuste JC, Peñuelas J, Estiarte M, Garcia-Mas J, Mattana S, Ogaya R, et al. Drought-resistant fungi control soil organic matter decomposition and its response to temperature. Global Change Biology. 2011. pp. 1475–1486. doi:10.1111/j.1365-2486.2010.02300.x
- 16. Naylor D, Sadler N, Bhattacharjee A, Graham EB, Anderton CR, McClure R, et al. Soil Microbiomes Under Climate Change and Implications for Carbon Cycling. Annual Review of Environment and Resources. 2020. pp. 29–59. doi:10.1146/annurev-environ-012320-082720
- 17. Andlar M, Rezić T, Marđetko N, Kracher D, Ludwig R, Šantek B. Lignocellulose degradation: An overview of fungi and fungal enzymes involved in lignocellulose degradation. Eng Life Sci. 2018;18: 768–778.
- 18. Rodriguez RJ, White JF Jr, Arnold AE, Redman RS. Fungal endophytes: diversity and functional roles. New Phytol. 2009;182: 314–330.
- 19. Müller MM, Valjakka R, Suokko A, Hantula J. Diversity of endophytic fungi of single Norway spruce needles and their role as pioneer decomposers. Molecular Ecology. 2001. pp. 1801–1810. doi:10.1046/j.1365-294x.2001.01304.x
- 20. Yuan Z, Chen L. The role of endophytic fungal individuals and communities in the decomposition of Pinus massoniana needle litter. PLoS One. 2014;9: e105911.
- 21. Wenndt AJ, Evans SE, van Diepeningen AD, Robert Logan J, Jacobson PJ, Seely MK, et al. Why Plants Harbor Complex Endophytic Fungal Communities: Insights From Perennial Bunchgrass Stipagrostis sabulicola in the Namib Sand Sea. Frontiers in Microbiology. 2021. doi:10.3389/fmicb.2021.691584
- 22. Wolfe ER, Ballhorn DJ. Do Foliar Endophytes Matter in Litter Decomposition? Microorganisms. 2020;8. doi:10.3390/microorganisms8030446
- 23. Baker NR, Khalili B, Martiny JBH, Allison SD. Microbial decomposers not constrained by climate history along a Mediterranean climate gradient in southern California. Ecology. 2018. pp. 1441–1452. doi:10.1002/ecy.2345
- 24. Logan JR, Robert Logan J, Jacobson KM, Jacobson PJ, Evans SE. Fungal Communities on Standing Litter Are Structured by Moisture Type and Constrain Decomposition in a Hyper-Arid Grassland. Frontiers in Microbiology. 2021. doi:10.3389/fmicb.2021.596517
- 25. Jacobson K, van Diepeningen A, Evans S, Fritts R, Gemmel P, Marsho C, et al. Non-rainfall moisture activates fungal decomposition of surface litter in the Namib Sand Sea. PLoS One. 2015;10: e0126977.
- Greenfield M, Pareja R, Ortiz V, Gómez-Jiménez MI, Vega FE, Parsa S. A novel method to scale up fungal endophyte isolations. Biocontrol Science and Technology. 2015. pp. 1208–1212. doi:10.1080/09583157.2015.1033382
- 27. Allison SD, Lu Y, Weihe C, Goulden ML, Martiny AC, Treseder KK, et al. Microbial abundance and composition influence litter decomposition response to environmental change. Ecology. 2013;94: 714–725.
- 28. Berg B. Foliar Litter Decomposition: A Conceptual Model with Focus on Pine (Pinus) Litter—A

- Genus with Global Distribution. ISRN Forestry. 2014. pp. 1–22. doi:10.1155/2014/838169
- 29. Carini P, Marsden PJ, Leff JW, Morgan EE, Strickland MS, Fierer N. Relic DNA is abundant in soil and obscures estimates of soil microbial diversity. Nat Microbiol. 2016;2: 16242.
- 30. Rajala T, Peltoniemi M, Hantula J, Mäkipää R, Pennanen T. RNA reveals a succession of active fungi during the decay of Norway spruce logs. Fungal Ecology. 2011. pp. 437–448. doi:10.1016/j.funeco.2011.05.005
- 31. Chemidlin Prévost-Bouré N, Christen R, Dequiedt S, Mougel C, Lelièvre M, Jolivet C, et al. Validation and application of a PCR primer set to quantify fungal communities in the soil environment by real-time quantitative PCR. PLoS One. 2011;6: e24166.
- 32. Blankinship JC, Becerra CA, Schaeffer SM, Schimel JP. Separating cellular metabolism from exoenzyme activity in soil organic matter decomposition. Soil Biology and Biochemistry. 2014. pp. 68–75. doi:10.1016/j.soilbio.2014.01.010
- 33. Alster CJ, Allison SD, Glassman SI, Martiny AC, Treseder KK. Exploring Trait Trade-Offs for Fungal Decomposers in a Southern California Grassland. Frontiers in Microbiology. 2021. doi:10.3389/fmicb.2021.655987
- 34. Voříšková J, Baldrian P. Fungal community on decomposing leaf litter undergoes rapid successional changes. ISME J. 2013;7: 477–486.
- 35. Chavez-Vergara B, Merino A, Vázquez-Marrufo G, García-Oliva F. Organic matter dynamics and microbial activity during decomposition of forest floor under two native neotropical oak species in a temperate deciduous forest in Mexico. Geoderma. 2014. pp. 133–145. doi:10.1016/j.geoderma.2014.07.005
- 36. Reed HE, Martiny JBH. Testing the functional significance of microbial composition in natural communities. FEMS Microbiol Ecol. 2007;62: 161–170.
- 37. Santonja M, Fernandez C, Gauquelin T, Baldy V. Climate change effects on litter decomposition: intensive drought leads to a strong decrease of litter mixture interactions. Plant and Soil. 2015. pp. 69–82. doi:10.1007/s11104-015-2471-z
- 38. Dirks I, Navon Y, Kanas D, Dumbur R, Grünzweig JM. Atmospheric water vapor as driver of litter decomposition in Mediterranean shrubland and grassland during rainless seasons. Global Change Biology. 2010. pp. 2799–2812. doi:10.1111/j.1365-2486.2010.02172.x
- 39. Saura-Mas S, Estiarte M, Peñuelas J, Lloret F. Effects of climate change on leaf litter decomposition across post-fire plant regenerative groups. Environmental and Experimental Botany. 2012. pp. 274–282. doi:10.1016/j.envexpbot.2011.11.014
- 40. Santonja M, Fernandez C, Proffit M, Gers C, Gauquelin T, Reiter IM, et al. Plant litter mixture partly mitigates the negative effects of extended drought on soil biota and litter decomposition in a Mediterranean oak forest. Journal of Ecology. 2017. pp. 801–815. doi:10.1111/1365-2745.12711
- 41. Talbot JM, Treseder KK. Interactions among lignin, cellulose, and nitrogen drive litter chemistry–decay relationships. Ecology. 2012. pp. 345–354. doi:10.1890/11-0843.1

- 42. Glassman SI, Weihe C, Li J, Albright MBN, Looby CI, Martiny AC, et al. Decomposition responses to climate depend on microbial community composition. Proc Natl Acad Sci U S A. 2018;115: 11994–11999.
- 43. Albright MBN, Runde A, Lopez D, Gans J, Sevanto S, Woolf D, et al. Effects of initial microbial biomass abundance on respiration during pine litter decomposition. PLoS One. 2020;15: e0224641.
- 44. Fanin N, Lin D, Freschet GT, Keiser AD, Augusto L, Wardle DA, et al. Home-field advantage of litter decomposition: from the phyllosphere to the soil. New Phytol. 2021;231: 1353–1358.
- 45. Schimel J, Balser TC, Wallenstein M. Microbial stress-response physiology and its implications for ecosystem function. Ecology. 2007;88: 1386–1394.
- 46. Treseder KK, Alster CJ, Cat LA, Gorris ME, Kuhn AL, Lovero KG, et al. Nutrient and stress tolerance traits linked to fungal responses to global change: Four case studies. Elementa: Science of the Anthropocene. 2021;9: 00144.
- 47. Gessner MO, Swan CM, Dang CK, McKie BG, Bardgett RD, Wall DH, et al. Diversity meets decomposition. Trends Ecol Evol. 2010;25: 372–380.
- 48. Arnold AE. Understanding the diversity of foliar endophytic fungi: progress, challenges, and frontiers. Fungal Biology Reviews. 2007. pp. 51–66. doi:10.1016/j.fbr.2007.05.003
- 49. Osorio M, Stephan BR. Life cycle of Lophodermium piceae in Norway spruce needles. Forest Pathology. 1991. pp. 152–163. doi:10.1111/j.1439-0329.1991.tb01419.x
- 50. Osono T. Phyllosphere fungi on leaf litter of Fagus crenata: occurrence, colonization, and succession. Canadian Journal of Botany. 2002. pp. 460–469. doi:10.1139/b02-028
- 51. Koide K, Osono T, Takeda H. Colonization and lignin decomposition of Camellia japonica leaf litter by endophytic fungi. Mycoscience. 2005. pp. 280–286. doi:10.1007/s10267-005-0247-7
- 52. O'Brien LT, Bart HL, Garcia DM. Why are there so few ethnic minorities in ecology and evolutionary biology? Challenges to inclusion and the role of sense of belonging. Social Psychology of Education. 2020. pp. 449–477. doi:10.1007/s11218-019-09538-x
- 53. McGill BM, Foster MJ, Pruitt AN, Thomas SG, Arsenault ER, Hanschu J, et al. You are welcome here: A practical guide to diversity, equity, and inclusion for undergraduates embarking on an ecological research experience. Ecol Evol. 2021;11: 3636–3645.
- 54. Plutzer E, McCaffrey M, Hannah AL, Rosenau J, Berbeco M, Reid AH. Climate confusion among U.S. teachers. Science. 2016;351: 664–665.
- 55. Webster C, Figueroa-Corona L, Méndez-González I, Soto-Álvarez L, Neale D, Jaramillo-Correa JP, et al. Comparative analysis of differential gene expression indicates divergence in ontogenetic strategies of leaves in two conifer genera. doi:10.22541/au.163255161.16327043/v1