

# Pathogenic soil bacterium is influenced by land management practices

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Researchers from Menzies School of Health Research in Darwin, Australia have found that the soil bacterium *Burkholderia pseudomallei*, which causes the emerging infectious disease melioidosis in humans and animals, is associated with land management changes such as livestock husbandry or residential gardening. The study, published January 20 in the open-access journal *PLoS Neglected Tropical Diseases*, sheds light on the environmental occurrence of this bacterium in the soil.

*B. pseudomallei* lives in tropical soil and is endemic in southeast Asia and northern Australia, where it can be a common cause of fatal community-acquired bacterial pneumonia. In predisposed hosts such as those with diabetes, it can also lead to systemic sepsis, with mortality rates over 50 percent.

Through a large survey in the tropical Darwin area of Australia, the study's authors found that the environmental factors describing the soil habitat of *B. pseudomallei* differed between undisturbed sites and environmentally manipulated areas. At undisturbed sites, *B. pseudomallei* was primarily found in close proximity to streams and in grass-rich areas, whereas at environmentally disturbed sites, *B. pseudomallei* was associated with the presence of livestock animals, lower soil pH and irrigation. Highest *B. pseudomallei* counts were retrieved from paddocks, pens and kennels holding livestock and dogs.

"These findings raise concerns that *B. pseudomallei* may spread due to the influence of land management changes," said study author Dr

Mirjam Kaestli. "This would increase the risk of human and livestock exposure to these potentially deadly bacteria which are transmitted by contact with contaminated soil or surface water through cuts in the skin or inhalation."

In-depth analysis of the influence of anthropogenic factors upon *B. pseudomallei* and further studies in other endemic areas are needed to confirm the results of this study.

Citation: Kaestli M, Mayo M, Harrington G, Ward L, Watt F, et al. (2009) Landscape Changes Influence the Occurrence of the Melioidosis Bacterium *Burkholderia pseudomallei* in Soil in Northern Australia. PLoS Negl Trop Dis 3(1): e364. doi:10.1371/journal.pntd.0000364, [dx.plos.org/10.1371/journal.pntd.0000364](https://doi.org/10.1371/journal.pntd.0000364)

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