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The environmental variables that impact human decomposition in terrestrially exposed contexts within Canada

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1.1. Introduction

Over the past 50 years, there have been many attempts to develop a method of evaluating the level of human decomposition to reliably estimate the post-mortem Interval (PMI) [1] [2] [3] [4] [5][1-5]. The PMI is primarily needed to assist death investigators identify the remains, and when identified, retrace the last days of the victim's life and potentially refute or confirm suspect alibis [6] [7] [8][6-8]. The issue is that there is an unknown complex of environmental, intrinsic or extrinsic variables which may impact the nature and trajectory of human decomposition. Two bodies located in the same environment who died at the same time, but subject to different immediate environmental or intrinsic conditions, can decompose in very diverse manners.

There are three main approaches to the investigation of human decomposition. The first uses pigs as proxies for humans, the second actual donated human remains in experimental settings and the third examines real, but retrospective death scenes. The majority of the previous research using animal proxies was conducted in relation to forensic entomology. Pigs have primarily been the animal of choice [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20] [21] [22] [23] [24] [25] [26] [9-26], [6] [27]; however, guinea pigs [28], rats [29], dogs [30], rabbits [31] [32] and even kangaroos [33] have been also utilized. A study examining the validity of using pigs and rabbits for forensic decomposition research found that decomposition does differ between species [34] and concluded that mammals such as pigs and rabbits should not be used interchangeably with humans to establish or validate decompositional trends for medicolegal purposes. [34].

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