

Full Proposal

EXAMINATION OF UPPER THRESHOLD
EVENTS ON THE NECROBIOME
ASSOCIATED WITH HUMAN
DECOMPOSITION IN A SUBTROPIC
ECOSYSTEM

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ABSTRACT

Texas State is ideally situated to be at the forefront of research on the ecology of carrion (dead animal) decomposition in terrestrial ecosystems. Understanding carrion decomposition is an issue shared by numerous scientific disciplines. In the past, we have attempted to understand the complexity of carrion recycling using methods and theories from various disciplines. However, complex issues such as carrion recycling requires an interdisciplinary approach where multiple disciplines cooperate to develop new methods and theories that transcend each discipline. We are developing an interdisciplinary research program that will utilize the expertise of the investigators and existing facilities to conduct discovery and translational research in the field and laboratory that establishes a science-based foundation and develops methodology and standard procedures for understanding the phenomena of decomposition ecology of vertebrate carrion. The proposed research will use an interdisciplinary approach to investigate the effects of upper environmental threshold events (e.g., high temperature and solar radiation) on human decomposition processes, especially the release of organic material into the soil and the biodiversity of bacterial and arthropod species, and how this affects estimations of time-since-death in medicolegal death investigations. The proposed research will be used as a pilot study and proof-of-concept for seeking federal and industry external funding for research that fill critical scientific and industry gaps and initiates further basic and applied research. The overall goal of the program is produce knowledge applicable to real-world issues in several fields including forensic science, biology, soil ecology, clinical microbiology, and others associated with carrion recycling.