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A Comparative Study of Human Decomposition Research Facilities in the United States: The Role of "Body Farms" in Forensic Applications

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A COMPARATIVE STUDY OF HUMAN DECOMPOSITION RESEARCH FACILITIES IN
THE UNITED STATES: THE ROLE OF “BODY FARMS” IN FORENSIC APPLICATIONS

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Arts

in

The Department of Geography and Anthropology

by

Nicole Suzanne Klein
B.A. University of Tennessee, 2008
May 2014

This thesis is dedicated to the late Charlene Marie Shubinski, for without her, I may never have fallen in love with the field of anthropology as well as to the late Steven Charles Anderson, because through his passing, he taught me how to truly live.

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DISCLAIMER: USING THE TERM “BODY FARM”

During my undergraduate years at the University of Tennessee, I was told never to use the term “body farm” when describing the Anthropological Research Facility (ARF) because of its derogatory implication. So, I never did. But, for the practicality of this paper, the phrase cannot always be avoided. And, in fact, upon speaking with Bass himself, I learned that he enjoys the term, and uses it frequently. Bass sees the “body farm” as a nickname that has brought attention to the ARF and, therefore, attention to the field of human decomposition research. Regardless, old habits die hard and the phrase rarely makes an appearance within this work. But when it does, please see it as a term that has brought infamy and knowledge to a field for which I have the utmost respect, rather than solely as an offensive expression.

GLOSSARY OF COMMON ACRONYMS

AAFS: American Academy of Forensic Sciences

ADD: Accumulated Degree Days

ARF: Anthropological Research Facility (outdoor facility at the University of Tennessee)

BBP: Bloodborne Pathogen

CFAR: Complex for Forensic Anthropology Research (outdoor facility at Southern Illinois University)

CMU: Colorado Mesa University (where the Forensic Investigation Research Station is located)

FAC: Forensic Anthropology Center (organization at the University of Tennessee which encompasses the outdoor facility, indoor labs, and skeletal collections)

FACTS: Forensic Anthropology Center at Texas State

FARF: Forensic Anthropology Research Facility (outdoor facility at Texas State University)

FIRS: Forensic Investigation Research Station (outdoor facility at Colorado Mesa University)

FOREST: Forensic Osteology Research Station (outdoor facility at Western Carolina University)

GEFARL: Grady Early Forensic Anthropology Laboratory (one of Texas State University's indoor labs, houses skeletal collections, equipment, and offices)

IRB: International Review Board

LSU: Louisiana State University

MRSA: methicillin-resistant *Staphylococcus aureus*

ORPL: Osteology Research Processing Laboratory (intake and processing lab at Texas State University)

PMI: Postmortem Interval

PPE: Personal Protective Equipment

SHSU: Sam Houston State University (where the Southeast Texas Applied Forensic Science Facility is located)

SIU: Southern Illinois University (where the Complex for Forensic Anthropology Research is located)

SOP: Standard Operating Procedure

STAFS: Southeast Texas Applied Forensic Science Facility (outdoor facility at Sam Houston University)

TCRI: Tennessee Cadaver Research Institute (an outdoor facility attempting establishment in Jefferson County, Tennessee)

TRACES: Taphonomic Research in Anthropology: Centre for Experimental Studies (outdoor non-human decomposition facility in the United Kingdom)

TSU: Texas State University (where the Forensic Anthropology Research Facility is located)

TXSTDSC : Texas State University Donated Skeletal Collection (located in the Grady Early Forensic Anthropology Laboratory)

UT: University of Tennessee (where the Anthropological Research Facility is located)

WCHIL: Western Carolina Human Identification Laboratory (indoor laboratory)

WCU: Western Carolina University (where the Forensic Osteology Research Station is located)

ABSTRACT

The first human decomposition facility, the University of Tennessee's Anthropological Research Facility, or the "Body Farm," as it is more commonly known, was established in 1980. Not until the year 2006 did another of its kind open. In the past six years, the number of such facilities has tripled. Human decomposition facilities, and their amenities, are being used for research purposes more frequently each year, although there is little in the literature that describes the facilities themselves.

Interviews with facility representatives were used to gather data in order to better understand how these facilities are initiated, the difficulties and successes that come with such a facility, and their uses beyond decomposition research. Also, surveys were distributed to forensic professionals (including Physical Anthropologists) in the American Academy of Forensic Sciences and to university students to understand perceptions on the utilization and usefulness of human decomposition facilities, and what place they have in the future of the forensic sciences.

Results show that the majority of those involved in the forensic sciences, and especially, forensic anthropology, find that human decomposition facilities provide vital research opportunities. Based on both interview and survey responses, more human decomposition facilities should be established, in unique climate regions, in order to better understand decomposition rates. Also, individuals affiliated with facilities that are already established intend to continue collaboration with one another, to extend research opportunities to other departments and universities, and to expand their own research goals. Finally, the perceptions of non-forensic

professionals (as represented by university students), regarding both human decomposition facilities and the role of forensic anthropology, appear to be influenced by the popular media.

In order to realize the full potential of these facilities, representatives and researchers must continue to provide factual information, and publishable material, to counter misconceptions that are so readily provided by popular culture. The human decomposition facility provides a unique opportunity for research, training, and hands-on experience for all that use them. The continuation of these facilities is vital to better understanding taphonomic changes and, thereby, assisting in a medicolegal context.

PART 1: PRELIMINARY INFORMATION

Chapter 1 **Introduction**

The term “body farm” was coined by Patricia Cornwell for her 1994 publication The Body Farm in order to describe the University of Tennessee’s (UT) Anthropological Research Facility (ARF). The first of its kind, the “body farm” started as a small plot of land that anthropologist Dr. William M. Bass used in the 1980s to conduct research on how the human body decomposes after death. Since then, Tennessee’s facility has grown in size. Numerous decomposition studies have been conducted there. These studies have demonstrated that the process of human decay is affected by a number of variables including: insect activity, temperature, humidity, whether a body is buried or on the ground surface, and whether clothes are present provide a few examples (Rodriguez and Bass, 1983, 1985; Mann *et al.*, 1990; Vass *et al.*, 1992; Marks, 1995; Shirley *et al.*, 2011).

Since the establishment of ARF, similar decay facilities have opened in different areas of the United States in order to conduct more research and to compare and contrast how the variables mentioned above differentially impact decomposition in various environments. Two are located in Texas, another in North Carolina, one in Illinois, and one in Colorado (Figure 1). Another facility is in the process of being created in Nevada. In addition to the facilities in the United States, at least one decomposition facility, the Taphonomic Research in Anthropology: Centre for Experimental Studies (TRACES) is located in the United Kingdom. With the emergence of multiple decomposition facilities, the research completed at them is diverse and vast (Reeves, 2009; Parks, 2011; Rippley *et al.* 2012; Widya *et al.*, 2012; Dabbs and Martin,

2013). Although the existence of research facilities generally is known to the public, few people are aware of the varied services such facilities provide.

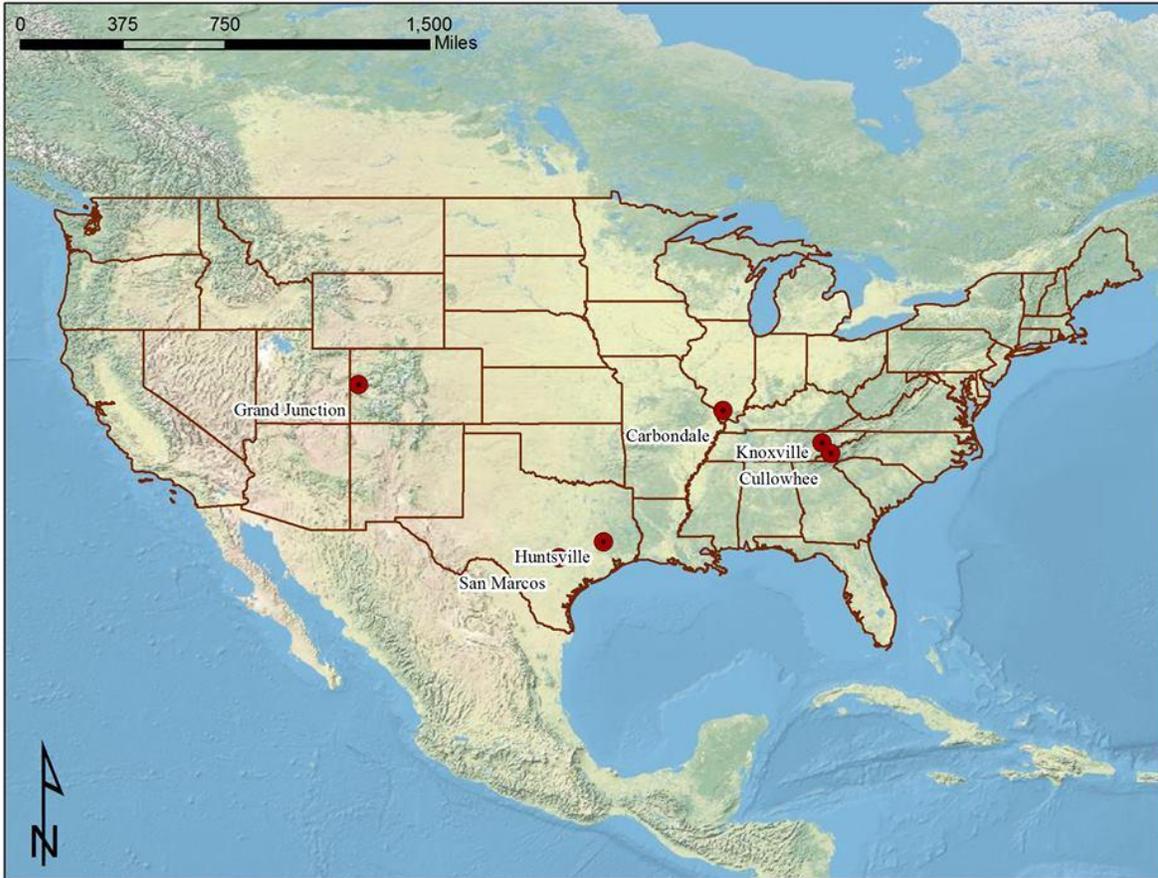


Figure 1: Map showing facility locations
Map created using ESRI's Arc10 Software

As a former volunteer at the ARF, I often fielded questions from friends and family. Based on these experiences, the public perception of decomposition facilities appears to be one of embellishment and/or macabre notions. In reality, decomposition facilities are used for researching the postmortem interval, but their utility is much broader than many people realize. For example, only some of the many body donations received by the ARF are used specifically for research on decomposition. For others, the facility is only the means through which they are

prepared and incorporated into the teaching and research collection. Once skeletonized, the donations are used as classroom models and for research projects conducted by students and scholars from other institutions. Also, cranial and postcranial measurements are taken, entered into the Forensic Data Bank (Jantz and Ousley, 2013), and then used to help suggest the biological profile of individuals in active forensic cases.

In addition to being utilized for research, ARF also is the location of a number of short courses and workshops used to teach law enforcement, other professionals, and students in the techniques of mass disaster and general body recovery procedures. Other facilities hold courses to train cadaver dogs. Thus, decomposition facilities are more versatile in their use than they first appear.

Although there are numerous scholarly articles published about decomposition research, little information is available regarding the facilities themselves. The exception is the ARF. With this project, I plan to provide an all-encompassing look into the “Body Farm” as a whole. Using data collected from personal interviews and surveys, I addressed the following questions: how such decomposition facilities are started, what they are used for, how their utilization may have changed since their inception, and what their role is in the future of forensic anthropology. Forensic science has gained a wealth of knowledge since the decomposition facility idea was first introduced. The intention of this research is to present a complete overview of these facilities in order to open up dialogue so that their benefits may be fully realized by the forensic community, scholars, and the public as a whole.

Chapter 2 **Methods**

The purpose of this thesis is to explore the role and evolution of decomposition research facilities. Data for this project were gathered in a number of ways, including personal interviews with staff and/or students at multiple facilities, as well as through surveys distributed to forensic professionals and undergraduate college students. Permission and approval to include human subjects in this research were obtained from the Institutional Review Board (IRB) at Louisiana State University (LSU) on June 13, 2013 (Appendix 1).

Firstly, personal interviews were conducted with directors, staff and students at six different human decomposition facilities associated with universities in the United States, as well as with staff at one non-university linked location (Table 1). These personal interviews were conducted in addition to numerous follow-up e-mails and inquiries with these same representatives. The interview process began with a specific list of questions (Appendix 2); however, unplanned questions were also included based on the answers received and the flow of the conversation. Unless cited otherwise, all information stated in this thesis is a result of personal communication.

Secondly, multiple surveys were distributed to forensic professionals and university students to find out how decomposition facilities are perceived (all surveys are included in Appendices 3-5). The first such survey was disseminated through the American Academy of Forensic Sciences (AAFS) listserv. This survey was created to gauge what other professionals in the forensic community think and know about decomposition facilities. An optional extended survey was available for members of the Physical Anthropology section of AAFS that addressed more specific questions about human decomposition facilities and how they are, or are not,

Table 1: Interviews Conducted

University/Association Name	Decomposition Facility Name	Date of Interview	Persons Interviewed	Additional Associated Facility Staff
Western Carolina University	FOREST (Forensic Osteology Research Station)	July 15, 2013	Dr. John Williams (Director)	Dr. Cheryl Johnston
Southern Illinois University	CFAR (Complex for Forensic Anthropology Research)	July 23, 2013	Dr. Gretchen Dabbs (Co-Director) David Martin (Co-Director) Lindsey Roberts (1 st year PhD) Dr. Susan Ford (Interim Dean of the Graduate School)	--
Sam Houston State University	STAFS (Southeast Texas Applied Forensic Science Facility)	August 22, 2013	Dr. Joan Bytheway (Director) Kevin Derr (STAFS staff) Stacey Gray (STAFS staff)	--
Texas State University	FARF (Forensic Anthropology Research Facility)	August 23, 2013	Dr. Daniel Wescott (Director)	Dr. Michelle Hamilton Dr. Kate Spradley
Tennessee Cadaver Research Institute	--	October 11, 2013	Dr. BJ Ellington (Co-Director)	Mr. Art Bohanan
University of Tennessee	ARF (Anthropological Research Facility)	October 14, 2013	Dr. Giovanna Vidoli (Assistant Director) Dr. Dawnie Steadman (Director) Cristina Figueroa-Soto (2 nd year PhD) Dr. William Bass (Founder of ARF) Jake Smith (2 nd year MA)	Dr. Lee Meadows Jantz Dr. Joanne Devlin Dr. Walter Klippel Dr. Amy Mundorff Dr. Graciela Cabana Dr. Benjamin Auerbach
Colorado Mesa University	FIRS (Forensic Investigation Research Station)	January 31, 2014	Dr. Melissa Connor (Director)	--

utilized by the universities in which they are located. A third survey was distributed to college students in introductory anthropology classes at Western Carolina University, Southern Illinois University, Texas State University, Sam Houston State University and Louisiana State University. The first four universities have affiliated body farms; the last one does not. The results from this survey will demonstrate what students know about human decomposition facilities and whether or not attending classes at a university with such a facility impacts their beliefs.

Data in this thesis are presented in four parts. Part 1, comprised of Chapters 1-2, provides the introductory information for this thesis. In Part 2, I will address the current facilities. In Chapters 3-8 I summarize the information obtained during interviews. In each Chapter, I cover a particular facility using the following subcategories: Start-up, Funding, Facilities (Landscape, Buildings, Maintenance, Security), Personnel, Donation Protocols, Facility Usage, and Future Plans. In Chapter 9, I summarize the trends for all current facilities. In Part 3 of the thesis, Chapters 10-12, I address the survey data. In Chapter 10, I discuss the results from the professionals in the field; in Chapter 11, I address physical anthropologists specifically; and in Chapter 12, I discuss the results of the student surveys. Lastly, I conclude my thesis with Part 4, consisting solely of Chapter 13, in which I compile and compare all information from Part 2 and Part 3 as well as suggest what the future of the body farms may entail.

PART 2: CURRENT HUMAN DECOMPOSITION FACILITIES

Chapter 3 **The University of Tennessee and the ARF**

Startup

Dr. William Bass had no idea that his interest in the mechanics of human decomposition would one day become world renowned. Several sources attribute Bass's idea for a body farm to the case of Colonel Shy, a soldier and casualty of the Civil War buried in Tennessee. In 1977, Shy's tomb was disturbed by a vandal, unearthing evidence of an actively decaying body, and creating the hypothesis that a recent homicide victim had been placed within the old grave (Bass, 1984; Bass and Jefferson, 2003). Bass was asked to establish a time since death estimate. While in the field, he suggested that the death had occurred recently within the year. However, upon further analysis in the lab, Bass determined that the remains were those of Colonel Shy and that the initial estimate was inaccurate by over 100 years. The discrepancy between the actual and estimated postmortem interval (PMI) in Colonel Shy's case not only furthered Bass's curiosity about human decomposition, but also demonstrated to him the need for decomposition research.

The experience with Colonel Shy was not the first instance in which Bass noted the need for decomposition research. From 1960 to 1971, while teaching at the University of Kansas in Lawrence, Bass helped local law enforcement agencies identify skeletal material. In the late 1960s, cattle rustling was prevalent in the area. Cattle raiders would find a large ranch, kill and butcher the animals, hang the meat in rented refrigerated trucks, and leave the cattle carcasses in the field where the rancher would not find them until weeks later. Eventually, the director of the Kansas Bureau of Investigation called Bass, asking if he could determine how long the remains had been out and, thereby, help law enforcement track the raiders. Bass perused the literature,

but found little information on decomposition other than a thirteenth-century guidebook of forensic medical practice from China (Sung Tz'u, translated and published by McKnight, 1981). Bass replied to the director, stating as such and offering to conduct an experiment: if a rancher were willing to kill a cow, Bass would study the remains every day, making notes on the changes the body underwent. Ideally, Bass stated, four cows would be obtained for study, one for each season of the year. Though nothing came of this offer, Bass remembers this occasion as the first time the idea occurred to him that there was a need for decomposition research.

Bass arrived at the University of Tennessee (UT) in Knoxville in June, 1971, where he had accepted a position as professor and head of the Department of Anthropology. Also at that time, Dr. Jerry Francisco, the chief medical examiner in Tennessee, offered Bass a position on his staff as state forensic anthropologist. Bass agreed and Francisco advised all 95 medical examiners in Tennessee that the state now had a forensic anthropologist to assist with their casework. Almost immediately, medical examiners began approaching Bass for help. While in Kansas, most of the human remains Bass was called to examine were skeletal in nature. In Tennessee, he began to receive more cases of "fresh," tissue-covered remains. Bass attributed this difference in case work to the fact that, though Kansas has approximately twice the amount of land as Tennessee, Kansas has roughly half the number of people. Therefore, when a person died in Tennessee, the body usually was found more quickly and was still undergoing the early stages of decomposition. At this time, the Department of Anthropology did not have cold storage space for bodies. Bass, at one point, stored a plastic wrapped, bloated and decomposing body in a mop closet of a restroom near his office. A janitor found the remains over the weekend and clearly expressed his dissatisfaction with the current storage location. With the high number of

cases, and absolute lack of space for body storage, Bass approached the Dean in September, 1971.

The Dean granted Bass the use of a sow barn located at Holston Farm, approximately ten miles from the University. The barn was an open, three-sided barn, that would have ample room for the storage of bodies until Bass and his students were able to return the remains to the Department of Anthropology, where they could be processed and analyzed. This space was used for a number of years, until the late 1970s when Bass began to notice footprints, or that a body was in a slightly different position than when it had been left. Eventually the discovery was made that inmates from a nearby county correctional facility had noticed the barn while working on the penal farm grounds and had taken interest in the barn's contents. Although nothing had been stolen, Bass decided he needed more security for his case work.

In addition to evidence tampering, space in the sow barn was becoming limited. In 1980, Bass again approached the Dean and, this time, was given space near the University of Tennessee Medical Center, previously used by the hospital to dump and burn trash. Although the area utilized has expanded tremendously, this land still is the location of the current facility. A road was laid and a small clearing was made so that the area, approximately 50 yards from the hospital parking lot, could be reached. Bass and his students built a 16x16 foot concrete slab and storage shed. They enclosed the area on all sides with a chain link fence using funding provided by the Chancellor. Although this fence would offer no obstruction from view, Bass did post a sign warning possible wanderers of what lay ahead. The outdoor research area was built and ready for use. Medical examiners, many who already knew Bass personally, were made aware of the new facility. In 1981, the first human donation was received and placed at the Anthropological Research Facility (ARF).

Not surprisingly, due to the lack of privacy, a number of calls from concerned citizens were received by local law enforcement and the FBI. However, by this time, these agencies had worked with Bass so the complaints were quelled. Bass faced two additional complaints. A local group called Solutions to Issues of Concerned Knoxvilleians (“SICK”) voiced concern about contamination. They asked that Bass move his research area to Oak Ridge, approximately 25 miles away from the location near the hospital. However, Bass and his research were already well known and appreciated by the university. To appease the public, the University provided funding to install a modest fence was installed. SICK’s complaints ceased.

The other complaint came in the late 1980s from the Tennessee State Department of Veteran Affairs. Members learned that the bodies of veterans had been donated, and their skeletal remains were being kept as part of a skeletal collection in the Department of Anthropology. At that time, all bodies were provided by medical examiner’s offices and Bass had never considered asking for personal history information. Bass received a letter from Veteran Affairs requesting that the remains of all veterans be released for proper burial. Even after the request was fulfilled, the group drafted a bill to close the facility. Bass contacted a number of district attorneys he had helped with past cases and explained the situation to them. The attorneys went to the legislature and the bill was quickly defeated. This incident was the last complaint Bass received about the body farm.

The relative ease with which the ARF opened (compared to later facilities) may be partially attributed to less strict guidelines implemented at the time. The continued support of the university’s administration, as well as the community, may be based on a completely different factor. Dr. Dawnie Steadman, current Director of the ARF, voiced her opinion that a key reason for the prolonged support may be Bass himself:

“I attribute [prolonged support] to [Bass]... Because he is such an ambassador. For science. For the facility. And for communicating in an accessible way, what we do here, to the general public. Whether through his books, through the many many many public lectures around the community. People, I know when I moved here, people feel connected and proud of this facility. And this program” (personal communication, October 14, 2013).

Funding

Because the decay facilities cannot rely solely on their university for financial support, additional funding must be obtained in other ways. The majority of the ARF’s funding comes from National Institute of Justice (NIJ) grants. Such grants are created and submitted by all senior faculty associated with the Forensic Anthropology Center (FAC), including those on which UT subcontracts as well as stand-alone applications. Researchers writing NIJ grants often contact Steadman with requests to travel to UT’s FAC to conduct research using either the curated skeletal collection or the outdoor facility. If use of the ARF or collections in the FAC are determined to have a significant intellectual contribution to the project, a committee will request that a FAC representative be added to the grant as a collaborator, resulting in a subcontract. These grants demonstrate that UT not only provides a facility for people to utilize, but that they are also “contributing intellectually to the science that is being done” (Steadman, personal communication, October 14, 2013). The benefits to these grants are straightforward: if awarded a grant, a program will gain money to conduct research which, when published, brings attention to the program and results in the likelihood of obtaining more grants in the future.

The ARF also obtains funding through personal financial donations. The FAC has the William M. Bass Endowment for these gifts. Initiated in 1995 through a monetary contribution from Bass, the endowment is allocated to students and faculty within UT’s Department of Anthropology to further their ability to make lasting contributions within the field of forensic

anthropology (UT Department of Anthropology, n.d.). The funds are frequently used to assist students with traveling expenses for data collection and conference attendance, to help with research expenses, and, occasionally, to supply often expensive laboratory equipment.

Funds for the ARF are also acquired through teaching short courses. The courses can be geared toward law enforcement, criminalistic (crime scene) professionals, students aged from elementary through high school, as well as to the general public.

Finally, because of its notoriety, the ARF benefits from financial sources that other facilities are less likely to have. The collaborative efforts of writer Jon Jefferson and Bass have resulted in ten books, eight fiction and two nonfiction, that continue to bring money to the university. Additionally, UT has FAC merchandise available to the general public for purchase, including t-shirts, hats, pins, lanyards and patches. Items are currently only available through direct contact with the FAC, but eventually will be purchasable online.

Facilities

Landscape

The ARF originally was located in a small clearing on land that was adjacent to the Tennessee River and several parking lots. In the late 1980s, Bass requested more land so that research could be conducted on unused, and untainted, soil. This request resulted in the hospital leasing the land extending from the edge of the previous location to the associated parking lot (Jantz and Jantz, 2008). Soon after, the hospital reclaimed some of this land, but provided an even larger area in exchange. Although this new area encompassed more land, the area also included a large hill that still makes body placement difficult today (Jantz and Jantz, 2008). Another addition to the ARF occurred in 2003, when the eastern and northernwestern boundaries

were extended to the river and adjacent parking lot, respectively (Jantz and Jantz, 2008); (Figure 2).

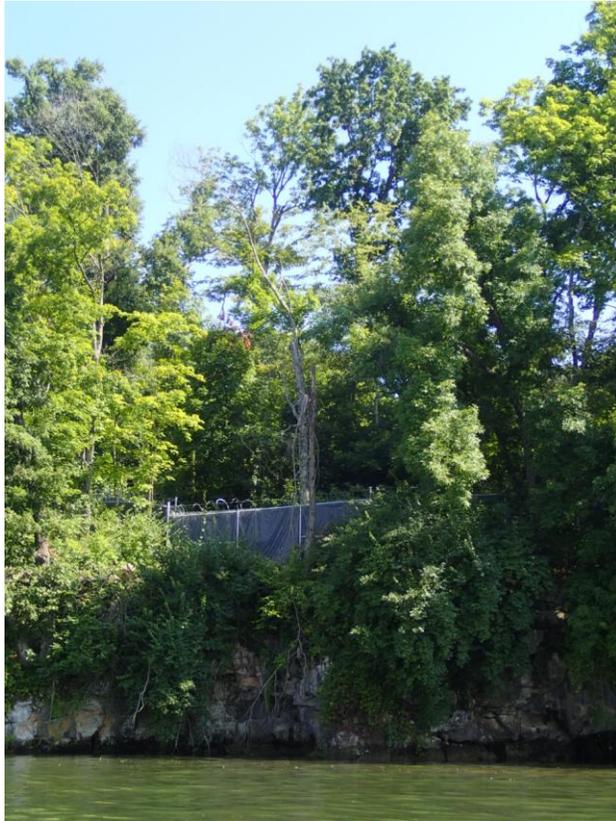


Figure 2: UT's ARF, as seen from the Tennessee River
Image Credit: N Klein, 2013

This expansion was necessary due to both the increase in body donations as well as to meet the demand for additional training opportunities. With the most recent expansion in 2011, the outdoor facility now includes approximately three acres located on a forested bluff (Figure 3). Scavengers that frequent the facility include fox, birds, mice, rats, and finally, raccoons, the latter of which most commonly affect the bones.



Figure 3: Outlined area is the ARF, surrounded by the Tennessee River and hospital property
Image Credit: Courtesy of the FAC, n.d.

Buildings

In the early years, the process of retrieving donated remains from the ARF that had reached advanced decomposition was undertaken by staff and students from the UT Department of Anthropology. Once collected from the ARF, remains were transported across the river to the Anthropology Annex, a building shared with zooarchaeology specimens. Today, all of the post-decomposition processing is done at the William M. Bass Forensic Anthropology Building (Figure 4), which was officially dedicated in September, 2011 (UT Department of Anthropology, n.d.).



Figure 4: The new Bass building at UT
Image Credit: Courtesy of the FAC, n.d.

In comparison to prior amenities, the 5,000 square foot building provides adequate space for their needs. Processing, which involves removal of remaining tissues from the skeleton, takes place constantly in the Bass building, with two shifts on Mondays and three every other day of the work week. The laboratory has an area specifically designed for processing that includes the standard equipment: a fume hood, autopsy sink, kettles and crock pots. Remains are placed in specific locations for cleaning, drying, or as “special” cases (Smith, personal communication, October 14, 2013). There is a forensic evidence locker where case work and unidentified remains are often kept.

UT is only one of two schools visited that had a lab adjacent to their decomposition facility. Because of the proximity to the decomposition area, the lab also contains an “intake room”. This room has a large, floor level scale, as well as space to take various samples and

measurements from human donations. There is a large freezer with four shelves on either side, two tables, and room for one gurney, enabling storage for up to 11 bodies.

In addition to the scientific assets, there are locker room facilities, a laundry room, and storage space. Two offices are utilized by outside researchers and UT's staff and students. A large classroom space is available for short course instruction. The amenities that the ARF and FAC have at their disposal are sophisticated and not the norm compared to facilities at other universities.

Maintenance

Upkeep at the ARF is minimal so the natural surroundings are not disturbed. The paths that are used for vehicles and personnel are maintained, and weeds and overgrowth in these and the front areas are eliminated. Graduate assistants that work at the ARF often walk the perimeter of the facility to make sure there are no fencing breaches or to remove any limb debris that might have accumulated. The ARF staff leaves the area as natural as possible, but make sure the facility is safe for whoever uses it. The indoor laboratory also requires upkeep, with the lecture areas and offices cleaned by UT custodial personnel. The more secure areas are maintained by FAC staff and volunteers.

Security

In the late 1980s, chain link fencing, with concertina wire atop, was erected around the facility (Jantz and Jantz, 2008). As more land was acquired, the need for more security increased and an eight foot privacy fence was added outside of the chain link fence. An access gate, secured by a chain and padlock, complete the perimeter security. The ARF does not have security cameras. Although the facility has had at least one security breach in the past, there are no plans to install such equipment, due to the finances required to both setup and maintain.

Steadman stated that if someone was determined to get into the facility, he/she would do so regardless of cameras, especially since blind spots are unavoidable.

In addition to security apparatuses used for the outdoor facility, certain areas within the Bass building are controlled as well. A card reader is located outside of the processing and intake areas. Although staff and graduate students are granted access using their card at any time, undergraduates must use their student identification card and are only approved during the hours of their volunteer shift.

Personnel

The ARF, the Bass building, and the skeletal collections are all part of the larger organization, the FAC, which requires an extensive amount of effort to organize and sustain. Dr. Dawnie Wolfe Steadman came to UT in August, 2011, to fill the position which she currently holds, Director of the FAC. Although she has several responsibilities as Director, her primary role is to generate and cultivate research that makes use of the FAC's resources. She also frequently fields facility startup inquiries and interview requests, which she receives approximately every other month and daily, respectively. In addition to the Director, the FAC also has two Assistant Directors and a Coordinator. The Coordinator position, currently held by Dr. Lee Meadows-Jantz, is responsible for the body donation program and the curation of the skeletal collections. The Assistant Directors, Dr. Giovanna Vidoli and Dr. Johanne Devlin, are responsible for coordinating short courses and training opportunities, as well as fostering and initiating research projects. Each of these individuals also holds faculty positions in the Department of Anthropology, ranging from Professor to Instructor. The FAC also receives help

from, and provides research areas for, many of the other faculty and staff members within the Department of Anthropology.

In addition to a number of full-time staff members, the FAC has graduate assistants and both student and faculty volunteers. There are usually seven to eight graduate assistants at a time whose tasks include donation coordination, facility maintenance and upkeep, skeletal collection management, and decomposition data documentation. For example, one of the tasks assigned to a graduate student is photographing each donation, every day, until the skeletonization stage is reached.

FAC volunteers undergo Bloodborne Pathogen (BBP) training, online video training, and a walk-through training experience. They must receive Hepatitis B immunizations as well as a tetanus shot. The number of undergraduate volunteers is immense, with approximately 70 students available. Undergraduates are mostly responsible for processing, with two shifts on Mondays, and three shifts Tuesday through Friday. Occasionally, volunteers help with body pickups as well. Starting in 2013, the FAC began a training course available to any enrolled UT graduate student or faculty member, to teach intake and donation pickup procedures. After completing the course, participants may volunteer for these specific tasks. Since Steadman's hire, she has tried to make the FAC a more inclusive entity, allowing people interested in the machinations of the facility the opportunity to participate.

Donation Protocol

Due to the ARF's notoriety, the living donor wait list has now reached over 3,300. Both pre- and post-death donations are possible, but at this time, in order to ensure there is space for pre-death donors, the ARF is limiting post-death donor acceptance. If a post-death donation is

offered, and the donation may be used in an upcoming course or research project, the donation may be accepted. However, most post-death donations are declined and families are advised of other options where donations may be made. If a post-death donor is in close proximity to another human decomposition facility, the FAC will provide the donor's family this information.

Donation forms are available on the FAC's website, with donors and next of kin having the option to allow or decline destructive trauma research (Appendix 6). The FAC accepts any information and documentation donors are willing to provide, including medical and dental histories and pictures. Although there are no physical limitations for donors, those with communicable diseases and antibiotic resistant bacterial infections are not accepted unless cremated.

The FAC provides transportation if a donor dies within 100 miles of Knoxville. If that mileage is exceeded, the family must arrange to transport the remains to the Bass Building. After a donation undergoes intake procedures, the body is either placed within the ARF, or stored for later research. Donations are placed at the facility in various stages of dress, depending on the research being conducted. Most are unclothed. Once the donation has been placed at the ARF, body locations are mapped. With technological advances over the years, these maps have become more detailed and the guidelines for them more stringent. There are between 140 and 200 donated human subjects at ARF on any given day. This number fluctuates based on the rate of donations received, as well as on the needs of short courses and research requests. The facility at UT does not have a research focus per se but, instead, works to improve the information already available and to introduce new research that is not. Integration and collaboration with other departments are encouraged.

When the remains have become skeletonized or the research project is complete, the donation is returned to the Bass Building for processing. Upon completion of these procedures, the remains, if applicable, are added to the William M. Bass Donated Skeletal Collection located across the river in the Department of Anthropology. The William M. Bass Donated Skeletal Collection is the largest collection of contemporary modern humans available in the United States for research with some 1,200 individuals. The remains are stored in cardboard boxes, the bones within situated in a specific order. For curation, the boxes are categorized by year and donation/case number.

Occasionally, a family of a donor has requested the return of remains and, although this is not encouraged, the FAC will work with the family in such a situation. If family members want to “visit” the deceased after the donation has been curated within the donated collection, they are permitted to do so.

Facility Usage

As previously mentioned, the ARF has been the location of a number of groundbreaking decompositional studies. The facility has a number of structures (i.e. a car, a shed) where specific research may be conducted. There are currently areas isolated for longitudinal animal projects. Otherwise, there is no other specific segregation between human and nonhuman species. Knoxville is located in a broad valley between the Cumberland Mountains and the Great Smoky Mountains, which greatly impacts the climate. These mountain ranges retard the more extreme winter winds as well as mollify the hotter temperatures felt by nearby locations. Even with the higher elevation, Knoxville is considered part of the humid subtropical climate zone. Daily average temperatures reach 88.4°F (July) and 39.2°F (January). Annual precipitation is

approximately 48 inches, of which 6.4 inches are attributed to snow (National Climatic Data Center, 2013). The rate of decomposition at the ARF varies depending on the season and location in which the donation is placed. For example, if placed on the surface, in the sun, during the summer months, skeletonization may be reached in as little as two weeks.

In addition to benefiting students and faculty at UT, outside researchers are allowed to utilize the decomposition facilities as well. To conduct any type of research through the FAC, approval must first be obtained. Two request forms are available on the FAC website; one form is for working with the donated skeletal collection, the other form is for research at the ARF (Appendix 7). Approximately 90 percent of requests are received for use of the skeletal collection. If the proposed research does not fit clearly into one of these categories, Steadman will try to accommodate the researcher. The author of this work is a prime example.

Those who complete request forms are rarely turned away based on the presumption that, if one has taken the time to complete the necessary paperwork, the idea has been well thought out (Vidoli, personal communication, October 14, 2013). Declined requests are rare, and are often requests that cannot be physically accommodated (e.g., a researcher may need to examine 100 Japanese skeletons, a number that the Bass Collection cannot meet). Although the ARF is made available for research throughout the year, the number of outside researchers that utilize the FAC amenities depends largely on the season, with more long-term studies conducted during the summer months than at other times. Research requests extend globally, coming from as far away as Spain and England.

If a donation is not being used for a specific research project, the donation may be utilized for law enforcement training or short course opportunities. The variety in the short courses offered by the ARF is high. Participants have traveled from as far away as Australia,

Spain, and England. The National Forensic Academy, a training program funded by the Bureau of Justice Assistance and intended to meet the needs of law enforcement agencies in evidence recognition, gathering, and conservation, works closely with the ARF, utilizing their amenities frequently. Excavation and recovery technique courses usually are geared toward law enforcement. However, courses are available to the general public as well, with past topics including entomology and geophysics. Lab-based courses, covering subject matters such as human identification, the biological profile, and osteology, are also available to both law enforcement and the general public. The FAC also holds courses and lectures geared more toward elementary and high-school students, some lasting hours and others lasting about a week. Staff will tailor the course to the audience's needs, which is necessary when those as young as third grade visit the FAC for lectures. The FAC staff also provides guest lectures, traveling extensively, from as close as a local school, to across the country. Requests made to tour the outdoor facility are not permitted. In addition to short courses and lectures, an internship opportunity was initiated in 2013, and both national and international applications are received.

Future Plans

Future plans for the ARF are extensive. With the new Bass Building also came an expansion of the ARF, with an accumulation of between $\frac{2}{3}$ and $\frac{3}{4}$ of an acre. With this addition, there is little room for ARF to expand in its current location. The possibility of acquiring land elsewhere is being considered. However, a new plot of land would raise issues with logistics as well as what zoning permissions would need to be obtained for a tract unassociated with the university.

Researchers who represent the facility at UT are not looking to focus on one specific area in the future. Rather, they hope to move from more general questions such as examining postmortem interval through accumulated degree days, to more focused projects. For example, ARF faculty are interested in the effects of disease on decomposition. By obtaining future donations of individuals who had cancer or underwent chemotherapy in life, they may be able to determine if such factors affect whether or not insects are attracted to the body, and in what ways. Additionally, a grant was received recently by the FAC to carry out a decomposition study comparing humans, pigs, and rabbits. The FAC hopes to determine if certain animals are more appropriate models than others for human decomposition research, a question that is often debated. There is also interest in how technology can contribute to and quantify the information obtained in prior research. In addition to creating and using more technologically advanced equipment, the implementation of interdepartmental collaboration is a high priority for those at UT. Currently, two soil scientists from the Department of Agriculture are studying isotopes and microbes in the soil and trying to determine how they are displaced, in part, by bacteria that seep into the ground during decomposition.

Finally, the entire Department of Anthropology is eagerly anticipating relocation in 2016 from their current space in the football stadium (Figure 5) to a newly renovated building across campus. The new building will include the Department of Anthropology and the Earth and Planetary Sciences Department. Current plans also involve the inclusion of Biology and Chemistry teaching labs, the Anthropological genetics labs, the human gross anatomy teaching lab, and the Zooarchaeology processing lab. Collaboration between the ARF and other university-affiliated facilities is important to the staff at the FAC and, with this move, instances of such will continue to increase.



Figure 5: The current home of UT's Anthropology Department
Image Credit: N Klein, 2013

Chapter 4 Western Carolina University and the FOREST

Startup

Western Carolina University's (WCU) Forensic Osteology Research Station (FOREST) was the first human decay facility to open after ARF, more than 20 years after the Body Farm's inception. The forensic program at WCU began in 2003 with the hiring of Dr. John A. Williams, who was brought to the university with the intention of running such a program, as well as starting up and maintaining a human decomposition facility. An initial attempt to start a facility in 2004 was discontinued due to backlash from the community which began as soon as individuals learned about the endeavor. Two years passed before a new location was found. This time, the Chancellor's office took responsibility for soliciting support from the community and nearby property owners. When WCU continued with their plans at the new location, there was no community backlash because everyone who was going to be affected by the facility was already aware of the plans. The FOREST was opened in 2006 and they received their first official human donation in 2008.

Funding

The original funding for WCU's decomposition facility was provided by the chancellor. This consisted of funds for facility site preparation and fencing costs, totaling approximately \$45,000, as well as for outfitting the Western Carolina Human Identification Laboratory (WCHIL), which cost in excess of \$100,000. Since the initial monetary contribution, the FOREST has largely supported itself by offering cadaver dog training courses. The money from these courses covers some supplies and donor transportation, while the university continues to provide funds for other basic supplies such as latex gloves and masks, and biohazard costs. The

small size of both the decomposition facility and the lab keeps costs low. However, there is concern over from where funds would be received should something happen at the outdoor facility, such as a major fencing breach.

Facilities

Landscape

The FOREST is located on a small, one-tenth of an acre tract of land situated in the rural, mountainous area of Cullowhee, North Carolina. Viewed from the air during the summer, specimens placed in the FOREST are not visible due to the plentiful tree cover. The straight line distance from the outdoor facility to the university is approximately one-half to one mile, and about one-half mile away from the nearest residence. Fencing keeps out most scavengers, but vultures, raccoons, other small animals, and even a bobcat, have been sighted within the facility. Bears cannot penetrate the facility fence, but do frequent the outer area.

Buildings

The open-air facility is run in conjunction with the indoor laboratory, the WCHIL, which is devoted to post-decomposition processing, as well as to the analysis and storage of human remains (Figure 6). Much like the outdoor facility, WCU's lab is also small, but nevertheless, houses a fume hood, cooking containers, a one-body morgue refrigerator, and one gurney.

Maintenance

The staff at the FOREST, like at other human decay facilities, tries to alter the landscape as little as possible. When the site was initially prepared, the only trees cut down were those that needed to be removed for fencing purposes. Occasionally, a tree within the facility may fall, in

which case the debris will be removed. Other than these rare occurrences, biohazard waste removal is the only upkeep necessary at the FOREST.



Figure 6: WCHIL
Image Credit: N Klein, 2013

Security

The FOREST's security consists of an outer 10 foot fence, with two feet buried underground, and concertina wire atop. There is an inner 10 foot wooden privacy fence, constructed so that the interior cannot be seen. A lockable gate allows staff and volunteers entry. Security cameras are present. There have been no security breaches at the FOREST, but the staff constantly checks the perimeter for fencing damage.

Personnel

FOREST and the WCHIL personnel include a director, assistant director, one staff position and multiple volunteers. Williams serves as Director, not only of the decomposition

facility and associated laboratory, but also of the Forensic Anthropology program at WCU. The Assistant Director, Dr. Cheryl Johnston, is responsible for activities that take place within the decomposition facility such as general data collection, as well as for guiding the program's undergraduate students in their research. Assisting with the daily maintenance of the facility and laboratory are a staff position filled by a lecturer within the Department of Anthropology and, during the school year, approximately six to eight student volunteers.

In order to volunteer, students are chosen based on their GPA, reliability, and professionalism. They are expected to maintain this professionalism throughout their time volunteering, and must sign a confidentiality waiver which, if broken, may result in a meeting with the student judicial board. Most volunteers are juniors and seniors and, many times, have already spent time in the WCHIL. Before volunteering, students are required to receive a tetanus shot, as well as Hepatitis A and B immunizations.

Donation Protocol

The annual number of human donations received at WCU varies, although the total tends to be consistently small (i.e., 10 donations in both 2011 and 2012, three donations as of July 2013). Yet, with its small storage space and outdoor facility, the small number is expected and, in fact, preferred. There have been times, especially when students are off campus on breaks or holidays, that post-death donations have been turned down due to a lack of space or personnel. When space is available, those people who wish to donate their body to WCU's facility must not have any communicable diseases. The individual (if a pre-death donor) or their family (if post-death) must provide proof of this information. The exception to this rule is that those with

Hepatitis may donate their cremains. Those people with HIV are turned away. Unlike some facilities, the FOREST has no donor weight limit.

The current donation forms, a pre-death and a post-death form, are revised versions of the State Anatomy Commission form, which states that donations are used for “scientific research.” Eventually the forms will be modified so the facility will have express approval from donors and their families to do research more specific than “scientific.” The donation form is available only through personal contact with the program, rather than online, for a number of reasons. Williams prefers that those interested in donating speak with someone in the program so that all the information they receive is up-to-date and accurate. Additionally, with 45 people already registered as pre-death donors, donation acceptance has the potential to become selective, keeping in mind the size of the accommodations.

If a donation is established before death and is within 200 miles of WCU, the FOREST takes care of transportation and its associated costs. If the donation was not prearranged, transportation costs are not covered by the program. The staff at the FOREST does not provide the donor transport themselves, but instead utilize transportation services associated with funeral homes.

Upon obtainment, donations are placed at the facility the same way in which they were received. If the body was clothed upon obtainment, the body will be placed at the FOREST with those same clothes. The same goes for unclothed remains. Additionally, donations at the facility are not caged or covered with tarp, unless a research experiment requires as such. Once the bodies have reached the last stage of the decomposition process, skeletonization, they are bagged at the facility and driven the short distance to the WCHIL for processing. At the time of this interview, there were 15 human donations undergoing decomposition at the FOREST.

Since the first human donation was received in 2008, WCU has received 31 additional donations, for a total of 32. After decomposition and processing, the skeletal remains become part of the curated collection. Currently, the skeletal collection consists of 13 individuals and three sets of cremains. In the past, one family did request that remains be returned to them. Although the program prefers to keep the skeleton for future study, exceptions may be made at the families' monetary expense. All of the remaining 31 donations are of Caucasian ancestry, with the majority being elderly. Because of its homogenous composition, this collection is not ideal for outside research as of yet, but still proves useful for teaching opportunities.

Facility Usage

Most of the research previously conducted at the FOREST has been basic decompositional data collection or, more specifically, how climate affects the decomposition rate of a human body in the environment specific to a single location. Residing in a thermal valley, Cullowhee's climatic changes between summer and winter are generally moderate, although considerable variation in temperature may occur from day to day in the summer, as well as in the other seasons. These traits are indicative of a temperate climate (National Climatic Data Center, 2013). In order for a human donation to reach complete skeletonization, approximately one to two years are necessary. In addition to continually collecting such data, the center is beginning to segue into scavenger related research using cameras and tracking bone movement patterns. Research within the fenced portion of the facility is devoted solely to human decomposition studies, with students having permission to conduct pig decomposition research in the surrounding, non-fenced area. This outer area is easily accessible from the road and has also been used for field recovery classes in which bear or, occasionally, pig remains are buried. Bears

are prevalent in the area and the FOREST receives bear remains as donations, mostly from the Department of Natural Resources. Other departments at WCU are encouraged to conduct research at the FOREST. In addition to students and faculty, outside researchers have also inquired about conducting decomposition research at the FOREST, though no proposals have yet been submitted. At this time, no protocol has been established for handling future proposals.

In addition to human decomposition research, the FOREST is used to hold cadaver dog training classes (Figure 7). Additionally, law enforcement short courses have been offered before at the FOREST. Although there has been talk of reinstating such programs, one has not been held in over two years.



Figure 7: Cadaver dog training at the FOREST
Image Credit: WCU Department of Anthropology, n.d.

Future Plans

Williams voiced plans of the FOREST expanding in the future, hoping to add another one-half acre of land about 300 to 400 yards away from its current location. The proposed site is more open and would be dedicated to burial research. Because all human donations will be buried, the level of necessary security and, therefore, fencing, is anticipated to be much smaller than the present one. Even with a proposed budget that is significantly lower than the original and prior approval of the additional physical space, funding is not currently available. Therefore, plans for expansion are temporarily on hold. With regard to future research conducted at WCU's decomposition facility, Williams hopes to continue with basic climatic data, scavenging and, once the human donation form has been revised, destructive, trauma-based experimentation.

Chapter 5 Texas State University and the FARF

Startup

In 2008, the third and, currently largest, outdoor human decomposition facility in the USA opened at Texas State University (TSU). The Forensic Anthropology Research Facility (FARF), like many of the other facilities, encountered problems in the years prior to its official opening date. Despite support from university administration (including the Chair of the Department of Anthropology, the Dean of the College, and the Provost), TSU and the FARF faced obstacles in finding a permanent location for their facility. Private land donations were considered, but all land were too far from the university. At the time, Dr. Jerry Melbye, a professor in the Department of Anthropology, was in charge of overseeing the planning. A list of university-owned properties was made available to Melbye for consideration; however, all sites ultimately were rejected either because they were already in use by other departments or because their proximity to the community elicited concerns (both real and imaginary) from the citizens. For example, the location of one site near the local airport raised fears that vultures attracted to the decomposing bodies would interfere with air traffic. The use of another site was contested by locals who, according to a petition, “worried about body parts falling from the sky onto their children as they play[ed] in the back yard, and [that] the stench and pollution from rotting bodies would render their homes unlivable and unsalable” (Melbye, personal communication, July 6, 2013).

The search for land continued until a property that had been willed to TSU and that was held in trust by a local bank, was selected. Although the land’s use as a decomposition facility was initially disputed by the bank’s Board of Trustees, the matter was eventually resolved. The

Freeman Ranch or, “the Ranch,” as it is commonly referred to by staff and volunteers, became the location of the FARF (Figure 8). No other disputes or complications have arisen since then.



Figure 8: Entrance to Freeman Ranch, where FARF is located
Image Credit: N Klein, 2013

Funding

The Forensic Anthropology Center at Texas State (FACTS), which includes FARF, was funded originally by the university. The center continues to receive about \$5,000 annually, through the University. As this amount is equivalent to the average monthly expenditures at the

FARF, other expenses are covered by grants, contracts, and donations, the latter of which include monetary gifts from one major donor as well as donations sent to the FACTS in lieu of flowers. Even with the university's and community's financial support, the FACTS yearly budget reaches close to \$100,000 per year, with salaries (including staff and graduate students) comprising the largest amount, followed by transportation costs.

Facilities

Landscape

The FARF, located in San Marcos, Texas, consists of about 26 total acres, of which only five are currently utilized. The area is relatively flat, with elevations ranging from 670 to 940 ft (Parks, 2011). Vegetation includes live oak, Ashe juniper, prickly pear cactus, elm, and cedar (Parks, 2011; Wescott, personal communication, August 23, 2013), which are all dispersed through relatively open space. Multiple fences are in place to keep out intruders and scavengers, although some animals still manage to enter the facility. Coyotes, fox, raccoons, skunks, and rattlesnakes are commonly sighted within the fences at the FARF. At the present time, the only structures at the FARF are two large concrete water tanks, and a water source. Neither structure has yet been utilized for research purposes (Figure 9). The outdoor decomposition facility is located approximately seven miles from TSU's main campus. Apart from the ranch manager's house one mile away, the FARF is many miles away from the nearest residence.



Figure 9: FARE- Concrete water tanks (right); water source (background); examples of vegetation
Image Credit: N Klein, 2013

Buildings

The FACTS (which also encompasses FARE) includes the Grady Early Forensic Anthropology Laboratory (GEFARL) as well as the Osteology Research Processing Laboratory (ORPL). The GEFARL, located about two miles from campus, is named after Dr. Grady Early, an advocate of the FACTS for a number of years. Housed in this building are the Texas State University Donated Skeletal Collection (TXSTDSC), an animal skeletal collection, five offices for FACTS staff, and ample storage space. Additionally, there is also a photography studio, a full histology lab, a GIS station, and equipment for research and training including scanners,

microscopes, digitizers, geometric morphometric instruments, and other metric and nonmetric osteological equipment. The lab also hopes to acquire a micro-CT scanner in the near future.

The ORPL, which opened in 2011, is located within the Freeman Ranch Multi-Purpose Facility, a building through which one must pass in order to reach the FARF. This building has classroom space for workshops and lectures and, although the area may be requested for use by anyone on campus, FACTS has priority. The Multi-Purpose Facility also contains an office, a full kitchen, and a shower facility. The laboratory is equipped with autopsy and processing equipment, a small dry lab, cold storage space, geometric morphometric and other osteometric equipment, and radiographic and photographic equipment. This lab is used for casework, intake, and the processing of donated skeletal material after it has been transported from the FARF, but before the remains are brought to the GEFARL for curation.

Maintenance

Because of its mostly open environment, upkeep at the FARF is minimal. Occasionally, ranch hands will be asked to mow certain areas and fallen trees may be removed if they interfere with research. Also, staff will walk the perimeter fence to check for damaged areas and biohazardous waste must be collected and disposed.

Security

With such sensitive research material in their possession, facility directors consider security a top priority. Quite possibly, the best security at the FARF is its remote location on the 4,200 acre Freeman Ranch. Both the FARF and ORPL are located on the ranch, with the ORPL within sight of the ranch hand's house. Anyone entering the processing lab or the FARF must sign in at each location. Access to the Ranch is controlled at a single gate, which is manually locked and unlocked each night and morning, respectively. FACTS staff hopes to automate the

gate in the near future with swipe card activation and a camera system positioned to photograph the license plate of any car that passes through the gate.

Although the new gate system and camera are not currently in place, other cameras are placed at specific locations within the outdoor facility. Cameras situated on top of posts run continuously and, although they are not always monitored, they can be remotely accessed at any time by local police. The facility is almost entirely surrounded by two fences, approximately 10 feet in height, with only a portion in the rear of the facility that is singularly fenced. To enter the gate at the FARF's first fence, a key is required and, at the second gate, a swipe card. The second fence also has a wire running throughout that detects motion, which is monitored by the police. For example, if someone were to attempt to climb the fence, an email would automatically be sent to both the police and to the FARF Director, and the police would then remotely access the cameras within the facility. These security "breaches" are rare, but when they have occurred, have been the result only of animals or student volunteers.

Personnel

FACTS personnel includes a Director, two fulltime faculty members, a coordinator, three graduate assistants and numerous graduate and undergraduate student volunteers. Although the FACTS was first directed by Melby, Dr. Daniel Wescott became the director in 2011 when Melby retired from the university. Wescott and the other senior staff also hold academic positions in the TSU Department of Anthropology. Graduate volunteers rotate between data collection at the FARF and body pickups and placements. Undergraduate volunteers generally process remains that have reached the ORPL. Although most student volunteers are enrolled at TSU, the FACTS also has volunteers from other schools, including Baylor and Trinity

University. These students may help during the school year, but mostly volunteer during the summer months when TSU students are not as readily available. Unlike other locations, the FARF does not require its volunteers to receive immunizations, but recommends that they get Hepatitis A and B shots. Pre-volunteer training is required and is composed of BBP classes, and instruction on associated Standard Operating Procedure (SOP) guidelines. TSU volunteers must have osteology, as well as skeletal biology and methods classes before they are permitted to volunteer; those from other schools are expected to have their university's class equivalents.

Donation Protocol

Human donations to the FARF are received quite frequently, at a rate of approximately six per month. As of August, 2013, the FARF had already received approximately 155 human donations, four of which are cremated. About 200 living donors are on a waitlist.

The FACTS accepts both pre-death and post-death donors and has separate forms for each. Similar to UT's donor forms, FARF forms have an area to initial if a donor is willing to be part of trauma analysis. Although the actual percentage is not tracked, Wescott indicated that most donors give permission (Wescott, personal communication, August 23, 2013). Also, like UT's donor program, TSU additionally attempts to collect any information about the donor that he or she, or the family, is willing to provide. The information obtained from donors varies from basic data such as name and age to expansive medical histories. For those concerned with the donation process, the FACTS provides the opportunity of touring the GEFARL to see where the donated remains would ultimately reside.

The FARF will not accept a full body donation with an active infectious disease. Additionally, those that weigh over 500 pounds will not be accepted, although both will be

accepted as cremains. The purpose of the weight restriction is for the safety of the student volunteers. Because donations may be received at any time of the day, bodies occasionally are placed in the FARF at night. Having a donor weight limit reduces the potential of accidents occurring during body placement after hours.

To obtain donations, FACTS staff will personally pick up remains in a transport van and cover the transportation fees if donors are located within approximately 200 miles of the facility. Occasionally, individuals whose location exceeds the mileage limit still wish to donate to the FARF, in which case the transportation costs in excess of 200 miles may be paid for by the family.

Once the donation has been received, it is taken to the ORPL for intake. Samples are taken, including hair and blood, as well as measurements and x-rays. After intake, the donation is ready for placement. The composition of TSU's outdoor facility is quite different from that of the more mountainous environments of Tennessee and North Carolina. The land at Freeman Ranch is flat. This proves beneficial for the staff at the FARF, allowing a rolling gurney to be used throughout the area and facilitating donor transportation and placement. Most donations are placed unclothed, so as to reduce costs and allow easier observation. However, donations may be wrapped or clothed if research protocol requires such. All donations are situated under metal cages (Figure 10) unless they are being monitored for specific research that requires otherwise, such as vulture scavenging studies. Donation placement locations are marked on a map, and, periodically, personnel from the Department of Geography will assist with GPS point mapping. When remains have reached the dry stage (and, quite often, mummification), they are transported back to the ORPL for processing, which usually involves leaving them to soak for about a week due to their mummified state.



Figure 10: Cages at FARF
Image Credit: N Klein, 2013

From the beginning of the donation process, the FACTS staff strongly emphasizes that donations made to the FARF are final. If a family wants any of the remains returned to them, they are advised to reconsider their donation. As of yet, no family has requested their loved one's remains be returned. Although a donation may not be returned to a family, the FACTS provides the family the option to come "visit" their loved one at the GEFARL after processing, an occurrence that has happened only once.

During the summer of 2013, the FARF had approximately 50 bodies placed at the Ranch, although the size of the outdoor facility allows space for many more. Areas left devoid of remains are done so purposely, so that some land will be unaffected by decompositional materials and remain "pure" for future research projects.

Facility Usage

San Marcos typically has a warm, humid, temperate climate with hot summers, and with documented low and high temperatures of 14° F in February and 96.8° F in August, respectively. Additional recorded weather conditions include a “mean humidity of 77%, 63 inches of precipitation and an average wind speed of 3.6 mph” (data compiled in 2007) (Parks 2011). According to Wescott, the majority of human remains never reach what is considered skeletonization, but rather conclude in some form of mummification, usually within two to three weeks. In addition, mold often appears on the human subjects. This phenomenon occurs regardless of if the bodies are caged or covered with tarp.

The FARF uses every donation for research purposes so, although a donation may not be used for a specific project, all contribute to longitudinal research. For all donations, decomposition is documented in photographs and climatic information is collected. This “basic” information is used frequently in other research projects and, in some cases, may be involved in more than one study. Because the FARF is a human decomposition research facility, most of the research conducted uses human subjects. If a research project specifically calls for animal remains, those studies may be carried out within the open air location. In addition to basic decomposition and climatic data for estimating PMI, other research topics at FARF include the effect of vulture scavenging on decomposition and remains dispersal, as well as decomposition of individuals who perish while attempting to cross into the United States from Mexico (i.e., “border crosser deaths”).

FACTS also offers researchers from other regions the opportunity for conducting research at the FARF from remote locations. If a researcher is willing to provide the cameras necessary, the FACTS staff will set up the cameras and allow the researcher to remotely access

them through a password protected website, viewable from any location. This allows the researcher to show his work to others, such as a dissertation committee. Additionally, if a researcher is only able to visit the facility for a short period of time, he or she can have TSU graduate students continue data collection after his or her departure. For their contribution, the graduate students will receive compensation (i.e. assistantship, hourly wage, or acknowledgements or their names in the publication).

No researcher who has submitted a proposal has yet been turned away. Like Tennessee, FACTS staff presumes that anyone who takes the time to write a proposal will have a concise and well thought-out research idea. In the case of federally funded grants, the FACTS only asks that the researcher help support the facility with a financial contribution for basic facility-associated costs.

In addition to research, TSU also uses the FARF for cadaver dog training courses. There have been a number of such courses held at the FARF and the desire to continue, and increase, these training opportunities is present. Because of its vast size, the FARF has the advantage of having areas in which human remains have never been placed, which is ideal so as not to confuse or distract the dogs during training.

The FACTS amenities also are used for law enforcement training and public outreach. Although tours of the FARF are not permitted other than to law enforcement, anthropologists or others researchers, tours may be given at both the ORPL and the GEFARL to laypeople. During the school year, usually two to three presentations are held a month, with many local high schools showing interest in such opportunities.

The donated skeletal collection at the GEFARL, in addition to being used for teaching purposes, is utilized by researchers from TSU as well as outside establishments. The majority of

the collection is comprised of white males, although both Hispanic and black individuals are included as well. Thus far, most of the research requests have been from individuals at schools nearby, such as Texas A&M and Texas Tech. However, FACTS staff anticipates that the number of research requests from other institutions will increase as the collection grows. For researchers interested in using one of the FACTS facilities, there are three separate forms, one for each of the three labs: the FARF, the ORPL and the GEFARL. At this time, the number of research requests for use of the FARF is greater than those for use of the skeletal collection (approximately 75% to 25%, respectively), but this, too, may change as the collection continues to grow.

Future Plans

In the future, Wescott hopes for, and expects, that requests for permission to utilize the FACTS amenities will increase. Some researchers hold the misconception that these facilities are not open to outside researchers (Wescott, personal communication, August 23, 2013) and, as those at the FARF continue to produce, and present, research, this misconception should fade. Wescott would also like to see the expansion of interdepartmental inclusion in research endeavors, possibly carrying out studies on microbes and soil chemistry. Additionally, although there is no need to expand the FARF's acreage, there is a need for structures that can be used in research. The local police department plans to donate a car to the facility, and one day, Wescott would like to have a building, complete with a heat and air system, so that specific structure studies may be carried out at the FARF.

Chapter 6
Sam Houston State University and the STAFS

Startup

The Southeast Texas Applied Forensic Science (STAFS) Facility opened in March, 2009. While all of the other university-affiliated human decomposition facilities are associated with anthropology departments, the STAFS is associated with the College of Criminal Justice at Sam Houston State University (SHSU). The idea for the facility at SHSU was initiated twofold. In 2007, when the current director, Dr. Joan Bytheway, approached the Dean of the College with the idea of starting a human decomposition facility, she was told that a member of the Board of Regents, who was a Sam Houston alumnus, had also recently approached him with the same idea.

A parcel of land was chosen for the location of the new facility. Because the proposed land was in close proximity to hunting areas within the Sam Houston National Forest, local authorities were made privy to the plans for the STAFS facility location and use. There was no resistance. Although site location was the reason that the authorities were approached, site location was also the reason the public was not. Because the indoor laboratory was already present and had been used previously by the Department of Biology, university administrators believed that nearby residents were already used to Sam Houston and student vehicles frequenting the area and would not object. There was never any public backlash during the startup process and, even with a public that Bytheway says is very aware of the facility now, there continues to be no trouble.

Funding

All of the initial funds associated with the STAFS outdoor facility, as well as its amenities, were provided internally through the university. The university also continues to provide some annual funding for the facilities as well as for additional equipment through a Higher Education Assistance Fund (HEAF). The STAFS also offers short courses as a means to raise support.

Facilities

Landscape

The STAFS facility, which includes both a small building and an outdoor facility, is located in Huntsville, Texas, at the edge of the Sam Houston National Forest, approximately seven miles from campus and one mile away from the nearest residence. Ten acres have been allocated to the program, of which two have maximum security at this time. Vegetation present at the STAFS includes loblolly trees, sweet gum trees, and numerous pine trees, as well as miscellaneous weeds and shrubbery.

The composition of the outdoor facility is fairly flat, much like the facility at TSU (Figure 11). Scavengers seen at the outdoor facility are comparable to those at other facilities, although the STAFS also has an abundance of wild boar that enter the facility by burrowing under the fencing. The boars will tamper with the human remains, an occurrence that the staff hopes to prevent with the use of cages and continuous perimeter maintenance. Vultures are also prevalent.

The STAFS outdoor facility is separated by a fence into two sections, each approximately one acre in size, with one side being where the majority of the research takes place. Located within this portion of the outdoor decomposition facility is a remote weather station, as well as a

data station that houses power and computer equipment. Heavy machinery, including a Bobcat and a Gator, are also available for use. A shed-like structure was recently obtained, and an air conditioning unit purchased to place inside the structure, so that, in the future, within-structure decomposition studies may be conducted. A car is also located within this section of the facility, but thus far has not been utilized for research purposes.



Figure 11: Topography and vegetation at the STAFS
Image Credit: N Klein, 2013

The second section of the outdoor facility is directly adjacent to the first and contains mostly burials used for law enforcement recovery classes. Additionally, because there are no remains placed on the surface, this area is often used for tours given to high school students and other public groups.

Buildings

Within walking distance of the outdoor facility is a building that houses a laboratory, the STAFS Donated Skeletal Collection, and office space. The laboratory contains a walk-in cooler, a freezer, and a lift for transporting heavier donations. There is also an area for maceration, as well as one for processing that includes sinks and kettles. In addition to post-processing skeletal analysis, university classes and portions of law enforcement short courses, also are taught within the lab. The donated collection room is located in the same building and can hold up to 288 boxed skeletal donations.

Maintenance

Although the staff tries not to alter the environment at the outdoor facility, maintenance is often necessary. Within the fenced portion, pathways are weeded and sprayed on a regular basis, and tree overgrowth must be contained. In addition to groundwork, the area is monitored for fencing breaches (often caused by wild boars), and cages are checked periodically for damage or placement alteration. These tasks are taken care of by the STAFS staff, with the grounds outside the fence being maintained by university personnel.

Security

For security purposes, each of the two sectioned acres of the STAFS is enclosed by eight-foot-high chain link fencing with security slats, adorned with razor wire on top (Figure 12). There are two main gates and two vehicle gates. Additionally, the open air facility has a number of motion detecting cameras which can be accessed by the police department. Anyone that visits the facility, or uses any of the available amenities, must sign a confidentiality form.



Figure 12: The STAFS Fencing
Image Credit: N Klein, 2013

Personnel

Personnel at the STAFS include a Director, a full time lab manager, a part-time lab technician, and numerous student volunteers. Bytheway serves as the Director, while two SHSU graduates fill the lab manager and technician positions. Both employees and volunteers must undergo annual bloodborne and airborne pathogen training and must receive a Hepatitis C and Tetanus shot. Although donations with airborne pathogens are not accepted, a donation with methicillin-resistant *Staphylococcus aureus* (MRSA) was once accidentally received, and Bytheway prefers that the STAFS volunteers and employees are prepared to deal with a similar situation should it occur again. The STAFS facility is the only one of its kind that requires airborne pathogen training.

Donation Protocol

Although it has been open for less than five years, the STAFS has received a substantial amount of donations. Bytheway attributes this to the facility's proximity to Houston, currently the fourth largest city in the United States (United States Census Bureau, n.d.). Compared to other decomposition facilities, the STAFS facility guidelines for donations are less stringent. Both Hepatitis and HIV infected donors are accepted. Only two HIV positive donations have been made, but a number of hepatitis cases have been received, the majority of them being prisoners from local jails and prisons. Nonetheless, not all infected donations are accepted. Those with MRSA and tuberculosis are denied, although individuals with those diseases are still accepted as cremated remains.

The STAFS facility has two sets of donation forms - one for pre-death donations, and the other for body donation release, or post-death, donation. These forms are similar to those of other body donation programs, although SHSU also has a "special disposition of body request form" which gives donors (or families) the option of requesting that cremated remains be returned up to five years after research is complete. If a family requests the remains but the form was not completed prior to donation, Bytheway will work with family and make the arrangements for their return. At this time, there are approximately 100 living donors.

The STAFS provides transportation for donations that are within a designated pickup range, with staff members using a commercial van for such pickups. Once the donation is obtained, intake occurs in the prep lab. Each body is weighed, and documentation from the family and donor institute is organized. Photographs are not taken until a body is ready to be placed; if medical records for the donor indicate evidence of past trauma or pathology, the body is x-rayed.

After prep is complete and once the research need is present, the body will be placed within the outdoor facility. Unless a research project requests a specific stage of dress, donations are placed unclothed. Some, though not all, human donations are placed within metal cages at the STAFS facility (Figure 13). One reason for the metal cages is due to the acceptance of donors with infectious diseases. Because data are limited regarding the transmission of infectious diseases through animal scavenging, Bytheway hopes that the cages will serve as a preventative measure for remains dispersal. Also, if a donation is of a particular ancestry that is underrepresented in the STAFS Donated Collection, the remains will be caged to prevent avian and terrestrial scavenging activity. Finally, donations with trauma are also caged.



Figure 13: Caged donation at the STAFS, cameras present above
Image Credit: N Klein, 2013

With Texas' specific climate and scavenger activity, a body exposed to the elements can reach skeletonization within two weeks. However, if caged or blocked from animal activity, the decomposition process proceeds more slowly. For example, one donation took 25 months to complete all stages of decomposition. Also, because of the dry climate, almost all remains go through a natural mummification process. In an attempt to prevent this from occurring, tarps were used to cover the bodies. However, the remains continued to mummify, and began to grow mold as well. Tarps are no longer used. After proceeding through all stages of decomposition, the remains are transported the short distance to the indoor lab, where they are processed and then curated.

The STAFS Donated Skeletal Collection currently consists of 127 individuals, including one cremation, with the majority being white males. Outside researchers have requested access to the collection often, and, as the collection grows, Bytheway anticipates that so, too, will the number of research requests. The public also benefits from this collection through occasional displays at museums in the area.

A practice unique to the STAFS facility is that of a service held for donor families. Every May, the STAFS facility holds a memorial service for all the families that have donated that year. In addition, each family is given a coin (Figure 14) in remembrance of the valuable gift they have given, with the donor's name, date of birth, and date of death engraved on one side.



Figure 14: The STAFS medal given to donor's families during an annual memorial service
Image Credit: N Klein, 2013

Facility Usage

Although the STAFS facility has received a large number of donations in its short lifetime, staff is still in the process of collecting baseline data. An unusual drought occurred about two years ago, making the data documented at that time unusable. Therefore, the focus of the STAFS facility research at this time is to accumulate baseline data in a sub-tropical area, as well as to gather information on scavenging patterns of rodents and animals prevalent to the area. The climate in this area is humid subtropical with hot summers. Winters are usually mild, with below-freezing temperatures occurring, on an average, about 25 days a year; the average length of the warm season (or freeze-free period) is approximately 270 days. Precipitation is fairly evenly distributed throughout the year, with the heaviest rainfall in the late spring (National Climatic Data Center, 2013).

In addition to motion sensing cameras used for security, the STAFS facility also contains five HD cameras that can be set up to document human decomposition and that have the ability to take a picture every 15 minutes. These cameras can also be accessed from a computer so that live footage may be viewed. Bytheway hopes that these cameras will one day be utilized by outside researchers, both nationally and internationally.

General climatic data gathering takes precedence, although four to five research projects of a more specific nature may be in progress at the STAFS outdoor facility at any given time. A number of burial studies are also conducted. For one specific project started two years ago, three donations were buried at differing depths and will be left there for an additional three years, for a total of five years. This project began as a way to demonstrate to law enforcement that methods such as ground penetrating radar can still prove beneficial years after a body has been buried. On average, there are altogether 20 to 40 human donations placed in the STAFS outdoor facility.

Research that requires animal remains must be conducted on nearby biology property because only human remains are allowed at the STAFS facility. Bytheway stresses that the STAFS facility is a *human* decomposition facility and, in order to ensure that respect and appreciation are shown to the donor families, research with non-human remains is not allowed.

The STAFS facility is the only university-run program that is not conjoined to an anthropology department, but is rather part of the Criminal Justice program at SHSU. Most of the researchers from SHSU are undergraduates who are either part of the forensic anthropology minor that is associated with the Criminal Justice program or biology students. The creation of an anthropology major and an anthropology department, is expected in the future.

Although most interdepartmental research is carried out by undergraduates, the majority of outside researchers are graduate students from surrounding schools, such as the University of

Houston and Texas A&M. Those wishing to conduct research using the STAFS amenities may access an application on the lab's website. Health insurance is required, and a waiver must be signed removing the university from liability. Additionally, Bytheway encourages that researchers have a knowledgeable background in the subject matter in which they will be researching, although the topic does not need to be anthropologically based. In fact, interdisciplinary research is encouraged. Entomologists, microbiologists, and soil scientists have all completed research at the outdoor facility. In addition to providing human subjects for decomposition studies, soft tissue samples have also been requested, and provided in order to conduct DNA and toxicology research. Sound research ideas are generally accepted. Cadaver dog research of any kind is not permitted within the facility, a decision made that Bytheway attributes to a need to respect the donor and the donor's family. As of the writing of this thesis, there are seven outside research projects taking place, two skeletal studies and five human decomposition studies.

Short courses offered at the STAFS facilities include training seminars for law enforcement and for high school forensic science teachers. The law enforcement courses typically are offered twice per year, while those for high school teachers are offered mostly in the summer months. These classes generate the majority of the STAFS facility's operating budget, with four to five classes offered annually. Because of the connection to criminal justice, classes are not specific to forensic anthropology but, instead, include other topics in criminal justice, including blood spatter and trace evidence. Classes may be taught by the STAFS staff, but are often taught by outside professionals who rent the facility space. Tours of the "burial portion" of the outdoor facility are available to some outside groups, and public outreach is

periodically offered, although it is not considered a priority. Finally, the STAFS staff is often asked by law enforcement to assist with forensic cases, as many as three per month.

Future Plans

In the future, Bytheway would like to continue to facilitate interdepartmental interest and usage of the STAFS facility. For example, a nursing program was recently started at the university, and Bytheway hopes that these students will soon be able to use the STAFS amenities. Although public outreach is important, Bytheway stresses the facility's benefits for students. She would like to see the facility used by students from all over the nation and, eventually, have an international showing in the published literature.

Chapter 7 Southern Illinois University and the CFAR

Startup

The idea for a decomposition facility at Southern Illinois University (SIU) began in 2008 with a graduate student in Anthropology, Mr. David Martin, who was interested in conducting human decomposition research. The support of the Chair of the Department of Anthropology, Dr. Susan Ford, and the addition of a new faculty member interested in creating such a decomposition facility, Dr. Gretchen Dabbs, resulted in the establishment of the Complex for Forensic Anthropology Research (CFAR). After considering multiple sites, the current location was selected and the CFAR opened in October, 2010. Ford and Dabbs, with support from the University's Vice Chancellor of Research, opened the facility without informing the neighboring community beforehand. By doing so, they avoided negative publicity often associated with the creation of decomposition facilities. They reasoned that, should any complaints ever surface, they would be able to effectively demonstrate that the facility has been operating without a negative impact on the community. They have not received any complaints thus far.

Funding

Funding for the facility was provided in part by the University, as well as from a grant Martin received for his research. Initial costs were minimal, as the land was already fenced and only needed a few repairs. Operating costs for the facility currently are funded through law enforcement training seminars which are held on an annual basis, as well as from continuing education training for the Illinois Coroners and Medical Examiners Association.

Facilities

Landscape

The CFAR, which refers only to the outdoor decomposition facility, is located on one-third acre of somewhat secluded grassy land located amongst a larger area of natural overgrowth on the SIU campus in Carbondale, Illinois. There is no foliage directly above the facility, although the surrounding trees give partial shade over parts of the CFAR at certain times of the day (Dabbs and Martin, 2013). The vegetation on two sides of the facility is thick, with the other two less dense sides encompassed by fencing. Vultures are prevalent in the area, with as many as fifty or sixty viewable from the facility at any given time, but large-bodied terrestrial scavengers are mostly prevented access to the facility by fencing.

Buildings

The CFAR also is associated with an indoor facility, the Forensic Anthropology and Bioarchaeology Laboratory, which is located on SIU's campus in the same building as the Department of Anthropology. This lab consists of a single room with storage space and includes a freezer and refrigerator, which currently holds a number of animal donations with which Dabbs hopes to start a small animal collection. There is also basic maceration and processing equipment (fume hood, kettles, crockpots) as well as research and learning devices (computers, camera stand, lighting equipment, and casts).

Maintenance

The thick vegetation within the boundaries of the CFAR requires a lot of maintenance, for which the staff is responsible. Initially, trees that interfered with the perimeter fence were removed and stumps were pulled. Approximately every quarter (except during the summer months when maintenance is required more frequently), the staff makes a thorough inspection of

the facility, checking fencing, mowing the lawn, and removing debris, while trying to keep the land as close to its original state as possible.

Security

Upon obtainment, the CFAR's original fence was approximately six feet in height. A 10-foot fence with an additional two feet of razor wire on top was installed in the front and on one side of the facility. The other side and the back of the facility are so heavily wooded that fencing is not needed. In addition to these fences, the CFAR is protected through the use of motion activated cameras. Though the CFAR is located some distance from the main road, campus police, nonetheless, provide additional security, circling the area multiple times a week to check for disturbances.

Personnel

Personnel at the CFAR includes co-Directors Dabbs and Martin and numerous graduate student volunteers. Students who wish to volunteer or work in the lab or the research facility are required to have Hepatitis A and B vaccinations in addition to a tetanus shot. They must also take part in BBP, personal protective equipment (PPE), and laboratory-specific training each year. Volunteers alternate collecting data, with the amount of time devoted to such activities depending on what research projects are underway at the time.

Donation Protocol

Initially, only swine subjects were used at the CFAR, but beginning in February, 2012, human donations have also been accepted. At the time of this interview, the CFAR had received a total of ten human donations. Also, at the time of interview, IRB approval to collect data on

pre-death donations had not been obtained. Therefore, all of the CFAR's donations are currently postmortem, with approval provided by the next of kin or the coroner. In Illinois, the coroner has the responsibility of disposing of unclaimed remains. Due to the CFAR's close relationship with the coroner's office, many of these unclaimed remains are donated to the facility to be used for decomposition research. The CFAR's final source for donations is the SIU medical school. The anatomical donation program has fairly strict physical regulations and those that do not meet certain guidelines are encouraged to donate to the CFAR. Additionally, when the medical school has reached donation capacity, potential donors may donate to the CFAR facility instead.

Modeled off UT ARF's forms, the CFAR donation program has a packet for post-death donations. The first page provides basic information about the CFAR's donation program, followed by a release form. The final three pages are comprised of the body donation questionnaire, and a section where the next of kin may provide information about the donor's lifestyle, physical features, and medical history. Pictures as well as other supporting documents, such as dental and medical records, are readily accepted along with the donor packet. At this time, the CFAR has not encountered a situation in which the family requests the return of a donation. Although their donation forms specifically state that remains will not be returned to a family, the staff believes they would be ethically obligated to return the remains, as long as the request is sanctioned by law.

The CFAR does not have any body type requirements for its human donations, but they will decline a donation that has an infectious disease or an antibiotic resistant infection such as MRSA. Donations that may not be beneficial for decomposition research, such as individuals who have undergone an autopsy or organ donation, are still accepted and used for human variation research.

After all the donation paperwork is complete and the remains are in SIU's possession, the donations are placed at the facility under large cages covered in chain-link grooves in order to prevent vulture activity. At this time, there are nine human donations and multiple animal donations in place at the CFAR.

When remains have reached skeletonization or mummification, they are transported from the facility to the processing lab at SIU. Upon completion of maceration and processing procedures, the remains are stored in archive boxes. At the time of interview, the CFAR had only one individual in the collection. This individual was donated and processed before the outdoor facility was functioning. No cremains have yet been received, although they would be accepted in order to be used for teaching purposes. The CFAR donated collection as well as two other teaching collections are housed in the SIU Department of Anthropology. Unlike some of the other facilities, SIU and the CFAR do not maintain forensic cases within their collection. These remains are the responsibility of the coroner and are returned upon completion of analysis.

The CFAR continues to accept pig donations from a swine center, receiving between two and four pigs approximately every eight weeks. These donations are beneficial in that they may be used for research that requires a large sample size, which currently is unavailable through human donations. Other animal remains are decomposing at the CFAR, including a dog, an opossum, a beaver, and a snake. All four specimens are contained in one cage and, upon reaching skeletonization, will be processed and added to the animal collection.

Facility Usage

The CFAR currently is used primarily for baseline data research on how decomposition occurs in southern Illinois. Carbondale is found in the northern limits of a humid subtropical

climate, and experiences four distinct seasons. Monthly average temperatures range from 32.4°F (January) to 78.1°F (July). Annual precipitation is approximately 47 inches, 11 of which are snow. Thunderstorms occur about 50 days per year and, especially in the spring, may become severe and result in destructive weather including high winds, hail, and tornadoes (National Climatic Data Center, 2013).

A small number of research projects also have been conducted, including a comparative study on vulture scavenging (Dabbs and Martin, 2013) and a technical publication on lawn mower induced trauma (Martin *et al*, 2013). Other studies at the CFAR have involved the decompositional differences between fresh and frozen pigs, as well as the effects of concrete burials on decomposition. No outside researchers have yet utilized the CFAR's amenities, although the staff is not opposed to the idea.

Besides being a place of research, the CFAR is used for law enforcement and continuing education training for nearby Illinois coroners and medical examiners. These classes are usually comprised of one-half day in a classroom setting (Figure 15), followed by the remainder of the day at the outdoor facility. The focus of these sessions varies and has included excavation and



Figure 15: Dabbs and a Carbondale police officer during a training class
Image Credit: Saluki Times, 2013

recovery protocols, identification of burials, and the benefits of magnetometer use in burial recovery. Individuals occasionally attend more than one session; therefore, the variety of topics provided is favorable. In addition to those previously mentioned, groups that have attended and benefited from such classes include the mobile training Unit 15, which covers the southern 15 counties of Illinois, county sheriffs, SIU police, prison guards, FBI agents, and park service personnel.

Future Plans

As the CFAR is one of the more recently established human decomposition facilities, the staff has a number of plans for the future. Dabbs hopes to expand the CFAR's acreage, possibly by an additional seven acres. This extension potentially could include different environments, such as more densely wooded areas, as well as a pond or other waterway. The staff also would like to provide more opportunities for law enforcement training and public outreach. Additionally, they hope to receive IRB approval for pre-death donations. The implementation of pre-death donation would allow donors themselves to fill out the body donation questionnaire and, thereby, provide more accurate life history information than is possible from the next of kin. With regard to research, Dabbs would like to continue to take basic climatic data, as well as move forward into how ecological factors, such as humidity and windspeed, affect decomposition rates. Finally, Martin, upon completion of his degree, hopes to start a decomposition facility at the university where he is hired, further adding to the decompositional information available to researchers.

Chapter 8 Colorado Mesa University and the FIRS

Startup

The most recently established university-affiliated decomposition facility is the Forensic Investigation Research Station (FIRS) at Colorado Mesa University (CMU). The facility was initiated by Dr. Michael Bozeman, a criminal justice instructor at the university. After holding a series of public information meetings to discuss community concerns, the University selected the current location, which is next to a landfill. The FIRS officially opened in 2012, with the first pig donation placed in September and the first human donation in November.

Funding

Funding for FIRS was provided by CMU's general fund. Because of its recent inception, the FIRS has not yet accrued many other expenses.

Facilities

Landscape

The FIRS is comprised of a one-acre plot of sloped, university-owned land approximately 4,780 feet above mean sea level, located in Grand Junction, Colorado. The facility is about 10 miles from campus, and more than a mile from the nearest residence. Because of its desert like nature, there is little vegetation at the FIRS. There are no trees, although saltbush is present, as are some weeds. The perimeter fencing keeps out most scavengers, with the exception of a few small mammal species and birds.

Buildings

The outdoor decomposition facility is located adjacent to a 2,700 square foot indoor lab that is used for donor intake and processing. There is a morgue area with standard equipment and a cooler, as well as a classroom, secure storage space, and an office (Figure 16).



Figure 16: Indoor laboratory area with the FIRS outdoor facility in the background
Image Credit: Courtesy of Dr. Melissa Connor, n.d.

Maintenance

When the facility was constructed, the sparse vegetation present at the site was cleared. However, saltbush has been replanted to recreate the original environment. Upkeep at the FIRS involves mostly pulling weeds when they appear, especially *krucera*.

Security

Security at the outdoor facility consists of a double fence around the outdoor entrance, and a single fence around the remainder of the perimeter. The fence is 10 feet tall with razor wire on top, with another two feet buried below the surface. The front gate has a locking mechanism, and there are no security cameras present within the FIRS. The indoor laboratory requires keycard access. Thus far, there have been no attempts at infringement at either location.

Personnel

The staff at FIRS at the time of the interview consisted solely of the Director, Dr. Melissa Connor, who came to CMU in 2012. If Connor is not available to receive donations, two faculty members in the Department of Anthropology have access to the facility and can assist. Thus far, their services have not been needed. Connor also has interns who help when necessary. Interns are required to enroll in a minimum of a one hour “internship” credit with CMU, and to take BBP training. Immunizations are not required. Currently, there are four student interns. Connor allows no student volunteers.

Donation Protocol

The FIRS has received only two donations thus far: one in 2012 and one in 2013. Both pre- and post-death donations are accepted, with separate forms for each type, based on those from UT’s ARF. Standard biographical information is requested and additional supporting documents are encouraged. There are no physical requirements or limitations, although, like many others, donors with communicable diseases are not accepted. The transport of donations varies, and they are received at the indoor laboratory for intake.

The information recorded upon arrival depends on what information had been previously attained, and taking a significant amount of photographs is the standard. After intake is complete, donations are then placed at the FIRS. Those received clothed are placed in their undergarments so as to better observe the postmortem changes. Donations are placed in a supine position and are not obstructed by cages or tarps.

Once reaching the dry stage, remains will be processed and curated as part of a donated skeletal collection. With the two current donations still *in situ*, the collection has not yet been established. However, the collection will grow as the number of donations increases. There are currently approximately 50 pre-death donors.

Facility Usage

Research at the FIRS is focused on documenting climatic information and associated decompositional patterns. The site's elevation, combined with the annual average of only 8.6 inches of rain with 60% humidity, creates a very arid environment. This aridity, in conjunction with the area's average of approximately 70% days per year of sunshine, allows for a unique environment when compared to other human decomposition facilities. Additionally, both animal and human studies are conducted within the outdoor decay facility. Finally, according to Connor, research collaboration between the FIRS and other facilities has already begun. The facility is open to research proposals from CMU students and faculty associated with any department, as well as to those from outside researchers.

The FIRS is used for law enforcement training, with the possibility of cadaver dog training classes taking place there in the future. Requests for public group lectures and information are obliged, although tours of the FIRS are prohibited.

Future Plans

At the present time, future plans for the FIRS do not involve land expansion, However, plans are being considered for a regional law enforcement training center as well as regional medical examiners facilities, both of which, Conner hopes, FIRS will be an integral part. Additionally, the increase of the donated skeletal collection will provide research opportunities. Finally, FIRS's location at a high altitude and its desert environment will provide new and essential taphonomic data to the literature on decomposition.

Chapter 9
Summary of PART 2: Trends in Current Facilities

Startup

After interviewing multiple directors, co-directors, assistants, students, and volunteers, the data from this research are clear: there is no standard set of requirements an organization must go through in order to initiate a human decomposition facility and the difficulty of starting one varies greatly from site to site. Factors that contribute to the difficulty include what state the proposed land is in, whether the facility is associated with a university or not, and the question of if and when the community should be approached. Most facility directors with whom I spoke agreed that the support of the University administration is imperative when trying to create a human decomposition facility. Without strong administrative commitment, which includes the willingness to handle public relations or legal problems and to provide financial or other means of support for potentially years to come, the idea of creating a human decomposition facility may never become a reality.

Although there may be some initial complications, once a facility is operating, the general consensus among directors is that few problems arise. Once community support is established, there seem to be few concerns that follow. A number of individuals interviewed mentioned that they relied upon the support and suggestions from other facility directors (namely, from UT and TSU). When asked about the most enjoyable aspects of running a decomposition facility, all current directors found the position rewarding either for the research benefits, the academic opportunities, or the service component. The least enjoyable aspect included administrative paperwork and fundraising

Funding

The funding required for both the startup and upkeep of decay facilities can be quite steep. If the interest is there, the University administration may pay those first expenses associated with startup, with the assumption that facility directors will find the majority of the means to maintain the facility on their own. Some universities may also provide a yearly allotment of money, though it is often quite small in comparison to what is needed and may only cover basic operating costs. The means of obtaining financial support are fairly consistent among the current facilities, and include obtaining grants and offering short courses. These courses can be geared toward law enforcement, cadaver dogs, criminalistic (crime scene) professionals, forensic science teachers, and even school children from elementary through high school. Finally, facilities may obtain funding through personal financial donations.

When asked what component is most costly, a majority of directors stated security fencing, followed by personnel. One director felt that the most difficult part of running the facility at his university was raising enough money to keep the outdoor facility relevant. Regular costs for operating a facility, in addition to those listed above, include vehicle maintenance, gas for traveling between labs and decomposition facilities as well as for donor pickups, cages, tarps, body bags, and PPE. Another expense that is less regular, but far more costly, is for the purchase of replacement, and new, laboratory equipment such as gurneys, kettles, and other high-tech equipment.

In sum, funding continues to be a problem for many human decomposition facilities. While it appears that university administrators may be willing to fund the one-time start up costs, they are unlikely to provide more permanent funding.

Facilities (Landscape, Buildings, Maintenance, Security)

There is variation in the size, natural environmental composition, and climate among the current facilities. With the exception of the ARF in Tennessee, many are located in mostly rural areas, away from busy streets, buildings, and residences. They vary in size from one-eighth of an acre to 25 acres. Vegetation in the different regions varies, as does the amount of wooded versus open land, the type of scavengers that are prevalent, and the geographic topography. Most of the facilities are in temperate climates, with the exception of one in a high altitude and arid climate (Figure 17).

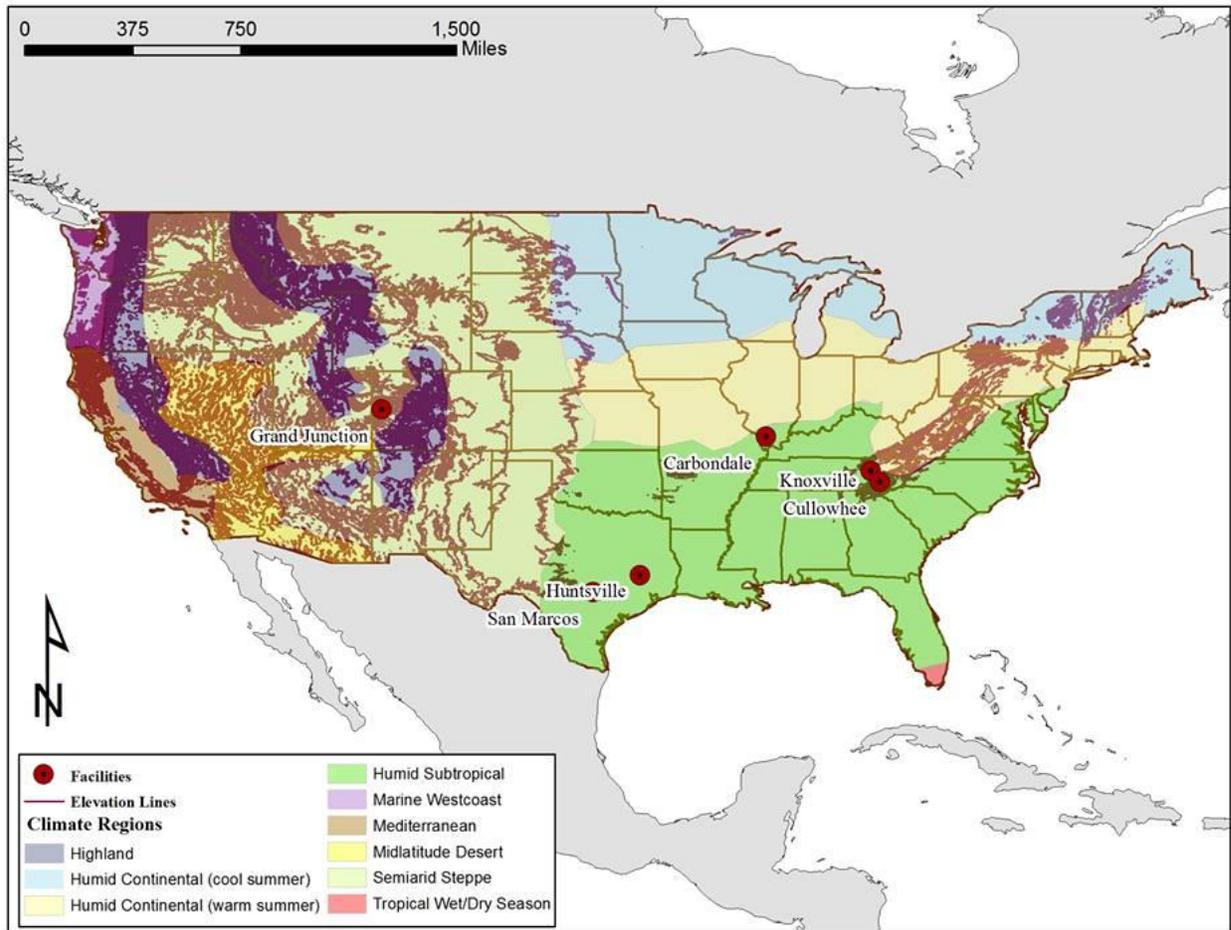


Figure 17: Map showing facilities locations, with climate region and elevation
Map created using ESRI's Arc10 Software, climate information from National Climatic Data Centre, 2013

Although climate is known as the factor that contributes the most toward decomposition, other aspects such as soil types, scavengers present, and insect activity must be taken into account. Therefore, each facility has the opportunity to cater to a specific research focus based on its location.

All facilities attempt to maintain as natural a setting as possible within their respective outdoor sites. All require some maintenance, although the amount depends mostly on the topography, with those in more forested areas requiring the most.

With such sensitive research material in their possession, facility directors consider security a top priority. Most facilities are situated in “hard to find” locations, this being their first line of defense. All have some form of fencing or gating as well as restricted access, with some facilities adding additional precautionary devices such as alert e-mails, motion detecting cameras, and swipe cards. Police patrol certain facilities as well. Overall, few security breaches have occurred at the outdoor facilities, regardless of the extent in which security measures are enacted.

Personnel

In addition to the actual open-air decomposition sites, departments must have resources to process the remains after they have decomposed, as well as space to store the skeletal material. Although the basic requirements are the same, schools differ in the specific equipment they possess. The number of faculty, staff, and volunteers is associated with the size of the corresponding facility and its associated amenities. Most facilities require or strongly suggest certain immunizations before volunteering to work with human remains, in addition to participation in training classes such as bloodborne and airborne pathogens and laboratory safety

and protocols. TSU's FARF accepts volunteers from outside the university; however, the others accept only their universities' students, although they may come from a number of different departments (e.g., UT's ARF, SHSU's STAFS).

Donation Protocol

The means in which human donor programs are managed are generally consistent, although the annual number of donations received per facility varies. There appears to be an association between facility acreage and the number of donors received per year. This relationship may be attributed to the larger facilities having space for more bodies. The public's familiarity with facilities may also contribute to the difference. The ARF at UT consistently receives the most donations per year, with the two smaller facilities, WCU (FOREST) and SIU (CFAR), receiving the least (FIRS, in Colorado was excluded from this category due to its recent inception). Most directors expressed that their donation forms are based on the ARF's, and request the same information of their donors. The majority of programs have similar donation requirements, with few taking individuals with communicable diseases. Some facilities also have weight restrictions. Many facilities provide transportation within a certain distance and pickups are generally carried out by volunteers. Placement of the donation at each facility varies based primarily on scavenger prevalence. Whether donations are clothed depends largely on what the research necessitates, with most being placed naked, or nearly naked, in order to better view decompositional rates. All facilities process the remains when decomposition is complete and incorporate the individuals into a teaching and research collection.

Facility Usage

A primary research focus of all facilities is to track baseline data to determine the number of accumulated degree days (ADDs) needed for a human body to undergo all the stages of decomposition. A number of facilities only allow human subjects to be placed within the fenced portions, while others allow both human and animal. In addition to serving students and faculty at the host university, most facilities welcome outside researchers as well, though the smaller facilities (i.e., WCU, SIU) receive fewer requests than the larger, more established ones (i.e., UT and TSU).

The forensic community benefits from human decomposition facilities not only through the research conducted, but also from the variety of short courses that are offered. Most facilities provide law enforcement and/or canine training classes, as well as other courses for teachers and younger students. Public outreach is a priority for some facilities, while others prefer to keep a more reserved appearance. Tours of the outdoor facilities are mostly prohibited to the general population; however, tours of the indoor labs may be given, where human remains are not on display.

The size of the skeletal collections associated with each facility is, of course, directly related to the number of donations received per year. Also, the larger facilities tend to have more variety in the demographic composition of their collection. Only slight differences exist among facilities in the types of container used to store remains and the method for identifying curated skeletons.

Future Plans

Plans (or hopes) for the future include expansion for several of the smaller facilities either in physical space (land) or in the number of donations or requests for research received. The newer facilities plan to continue collecting climatic data, as well as directing research on more specific topics. All human decomposition facility directors hope to continue to collaborate with one another in the future.

PART 3: SURVEY DATA

Chapter 10 **Perceptions of Professionals**

According to their website, “the American Academy of Forensic Sciences [AAFS] is a multi-disciplinary professional organization that provides leadership to advance science and its application to the legal system” (American Academy of Forensic Sciences Membership Overview, 2013). As of writing this thesis, the Academy consisted of 6,389 members, divided into eleven sections: Criminalistics, Digital and Multimedia Sciences, Engineering Sciences, General, Jurisprudence, Odontology, Pathology/Biology, Physical Anthropology, Psychiatry and Behavioral Science, Questioned Documents, and Toxicology. Members include attorneys, chemists, criminalists, dentists, digital evidence experts, document examiners, educators, engineers, physical anthropologists, physicians, physicists, psychiatrists, toxicologists, and others. A survey was disseminated to all eleven sections in hopes of receiving a diverse representation of a worldwide forensic community (see Appendices 3-5 for the survey questions). So that the maximum number of surveys could be obtained, the option to skip any question on the survey was present. Eight hundred and one surveys were returned to this researcher, and through the use of a random sample generator, 200 respondent’s surveys were selected for reporting in this thesis. As made evident by Figures 18 and 19, the percentage of responses received per section closely matches the percentage of members per section, with the exception of the Physical Anthropology section which has over two times the percentage of responses versus members. This difference is most likely due to the Physical Anthropologists vested interest in the topic at hand.

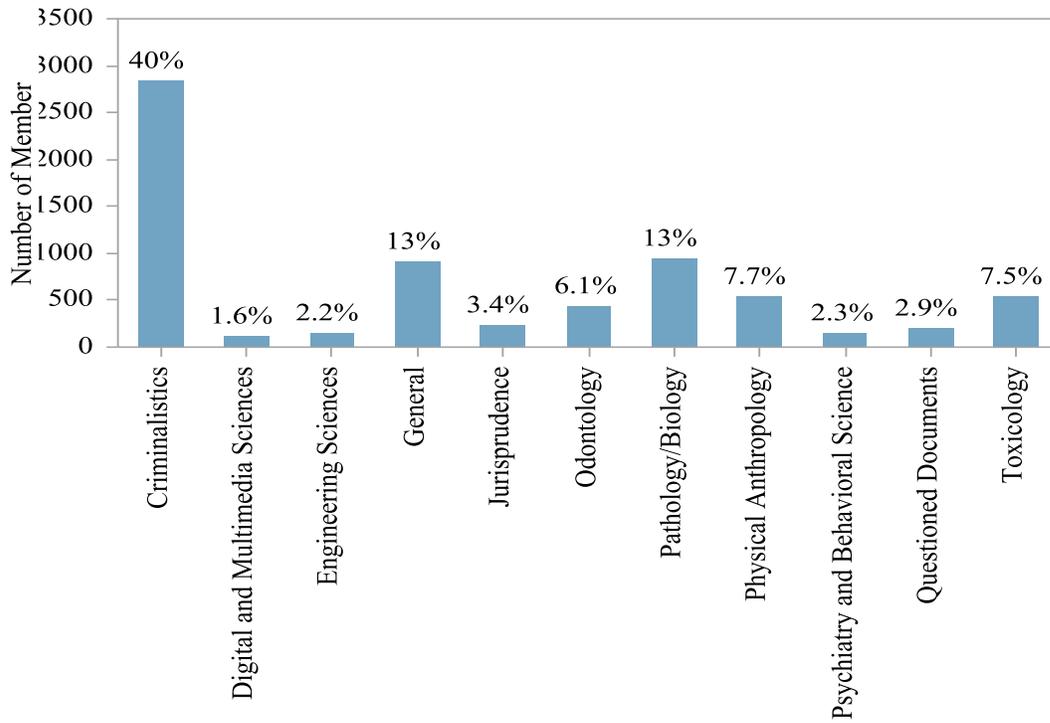


Figure 18: AAFS membership grouped by section

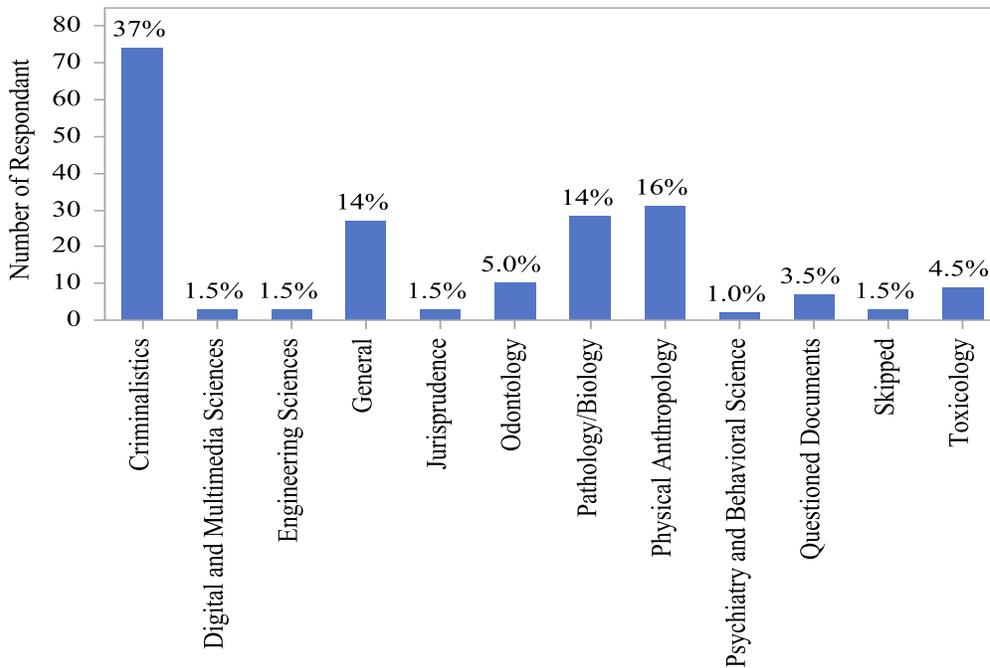


Figure 19: Survey respondents grouped by section

Additionally, in Question nine (Figure 20) although not used for the reported calculations, I asked respondents (n=197) to check the box indicating the number of years spent in their current career. Data are reported in the order of the questions on the survey. Questions in which the total number differs from 200 are those that were skipped by respondents.

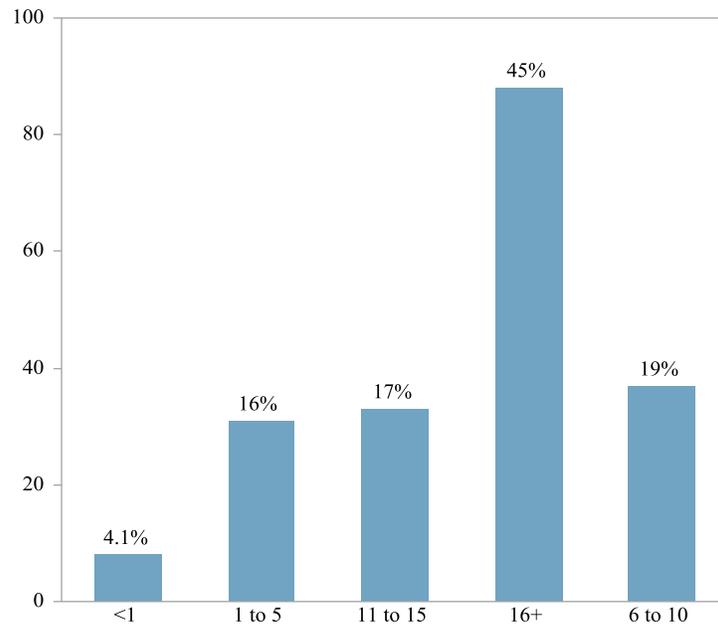


Figure 20: AAFS respondents grouped by years spent in current career

Question 1

Q1 requested a two part answer from the respondent: first, to check a box indicating how familiar one was with human decomposition facilities and, secondly, to give as many examples as possible of specific locations. The majority of respondents (60.1%; n=119) were “somewhat familiar” with human decomposition facilities (See Figure 21), 26.77% (n=53) were “not at all familiar,” and 13.13% (n=26) were “very familiar.”

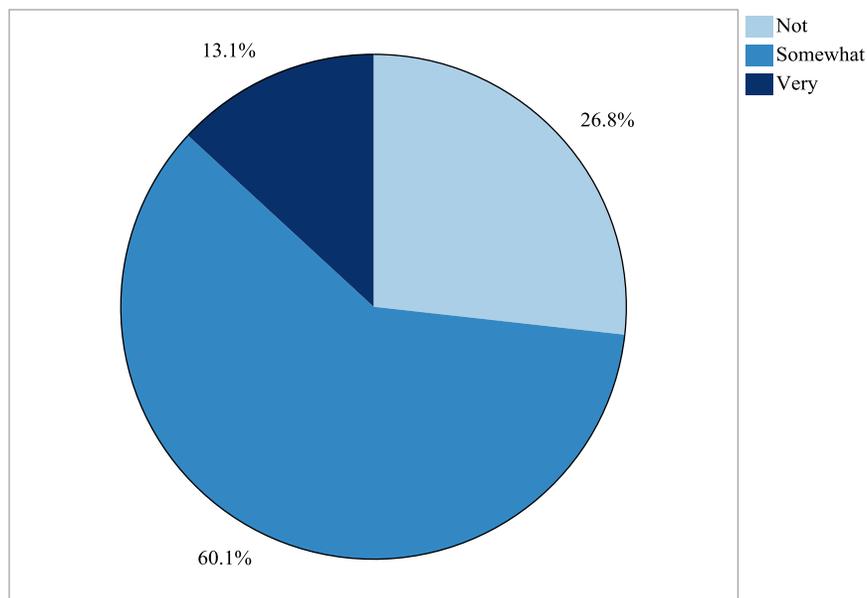


Figure 21: AAFS respondents familiarity with human decomposition facilities

Of the 13.13% that were “very familiar” with the concept, the majority belong to the Physical Anthropology section (n=15), followed by Criminalistics (n=5), Pathology (n=3), and General, Odontology, and Jurisprudence (n=1 each). Of these sections, all but Jurisprudence often deal with human remains; therefore, their familiarity is expected. If respondents had any familiarity with these facilities, they were asked to give examples of where they are located. Of the established facilities, Tennessee’s ARF was most commonly given (n=111), followed by Texas State’s FARF (n=36), Western Carolina’s FOREST (n=23), Sam Houston’s STAFS (n=20), Mesa’s FIRS (n=14) and Southern Illinois’ CFAR (n=2). The state of Texas was also given (n=9), as was the general term “Body Farm” (n=12). “A facility” (in addition to the ARF) located in Tennessee was given twice, and “Other” examples, including internationally located facilities, animal research facilities and schools and states where this researcher had not heard of such facility locations, were also given (n=23).

Question 2:

In Q2, I asked what types of research/work the respondent thought may be conducted at a decomposition facility. Six boxes supplied examples, with two additional boxes for “None of the above” and “Other (Please specify)”. Respondents were asked to check all that apply. The answers given for Q2 were varied (Figure 22), with “Decomposition studies using humans” listed most frequently (n=181), followed by “Decomposition studies using animals” (n=162), “Cadaver dog training” (n=147), “Law enforcement training” (n=139), “Mass disaster recovery” (n=104), “Trauma analysis” (n=102), “Other” (n=21), and “None of the above” (n=0; omitted from Figure 23). There was no clear pattern divisible by AAFS section. Decomposition studies using humans and/or animals, trauma analysis, cadaver dog training, law enforcement training, and mass disaster recovery training are all examples of research and training opportunities carried out at the six established human decomposition facilities, although not all of these opportunities are available at every facility at the present time. Respondents that marked “Other” were asked to specify their additional answers. Entomology was given most frequently, followed by a variety of other responses including chemical compound analysis, meteorological tracking, zoology studies, animal scavenging patterns, odor analysis, isotope and DNA studies, scene mapping (GIS/GPS), archaeological excavations and GPR, botanical studies, soil analysis, toxicological studies, and microbial analysis. Some expressed PMI studies and other similar answers, of which this researcher considered to be a part of “decomposition studies using humans.”

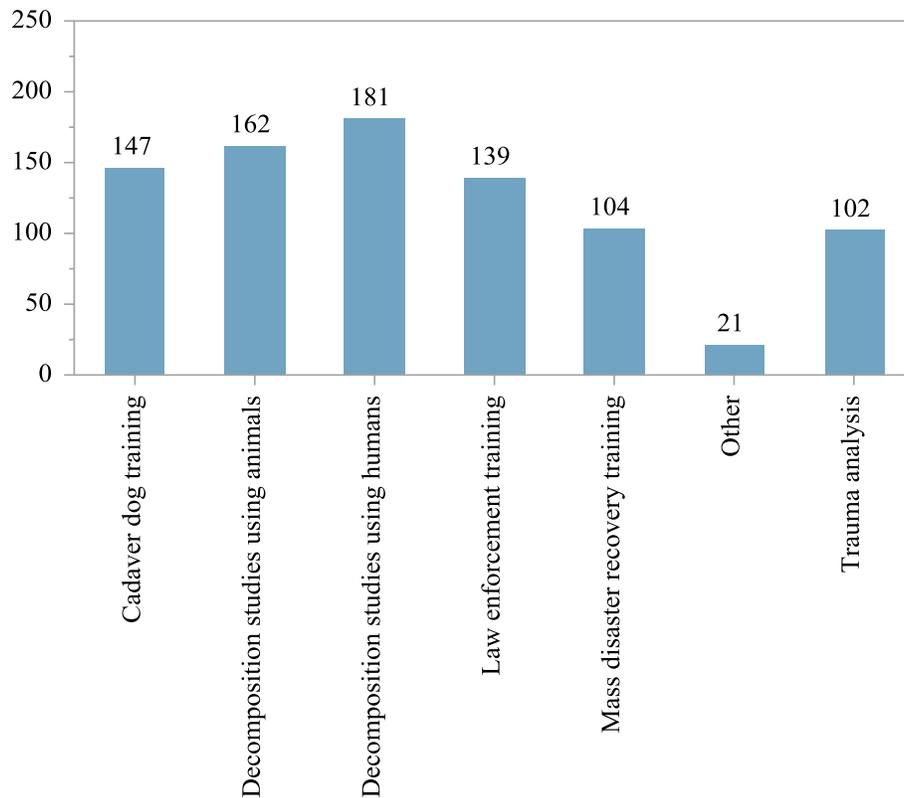


Figure 22: AAFS respondents on research/work availabilities at human decomposition facilities

Question 3:

In Q3, I asked if respondents believe decomposition facilities are beneficial to the forensic community, or if such research can be conducted in an indoor laboratory instead. The answers for Q3 were open-ended. To better understand these answers, this researcher read through the answers and divided them into four categories: Yes (outdoor labs are beneficial and necessary), No (they are not beneficial or can be replaced with indoor labs), Somewhat (responses were a combination of Yes and No), and Don't Know (the respondent did not feel comfortable or qualified to answer the question). Of the 193 responses received for Q3, 175 (90.7%) believe that human decompositional facilities are beneficial to the forensic community and that the information obtained from their use is invaluable and unable to be replicated within

an indoor lab setting (Figure 23). Eight (4.1%) responses indicated that these facilities were somewhat beneficial, while 10 (5.2%) were unsure. There were no responses stating that human decay facilities were not beneficial, or that standalone research conducted in an indoor laboratory was sufficient.

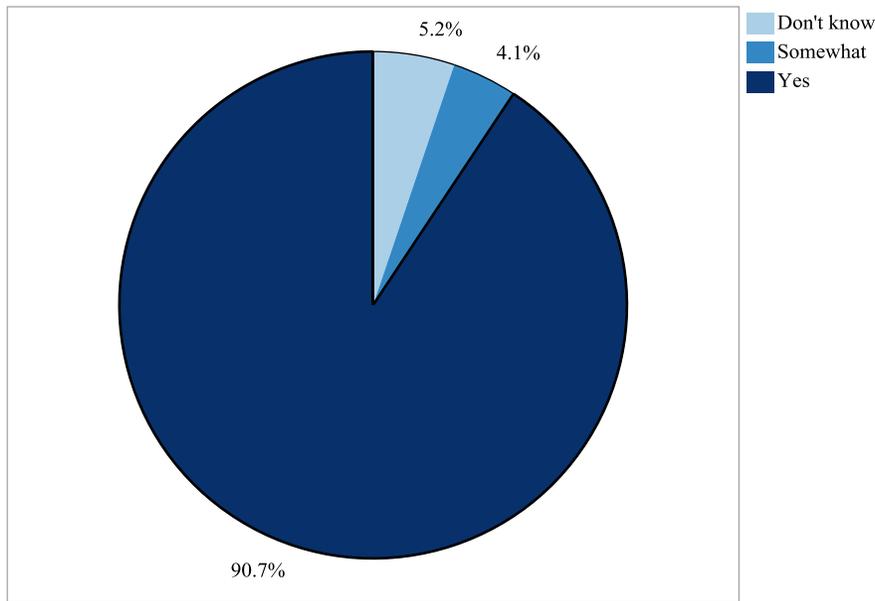


Figure 23: AAFS responses on whether or not outdoor human decomposition facilities are beneficial to the forensic community

Of those that explained why they think outdoor facilities are necessary, the most prevalent answer gave some indication that a natural, or real life, setting cannot be achieved solely through indoor research (n=93). Different climates, environments, body locations (i.e. car, submerged in water), animal scavenging and insect activity were all given as variables that are monitored and studied at outdoor facilities that cannot be replicated indoors. One respondent also mentioned the opportunity for “accidental” research that most likely would only result in an outdoor setting. The second most common reason given for the necessity for outdoor human

decay facilities was the availability of training opportunities (n=19). Descriptions of the benefits that law enforcement, students, and scientists may garner from hands-on experience were plentiful. The third answer most commonly received was that the availability in space that an outdoor facility provides versus an indoor one (n=3) allows more research opportunities.

Although the need for an outdoor decomposition facility was commonly voiced, many respondents believe that the research conducted outdoors should be used to complement research carried out indoors, deeming both necessary. One respondent explained that research may best be completed in an indoor laboratory first (when possible) in order to indicate proof of concept, saving valuable field resources and the researcher's time for what may prove to be a poorly constructed experiment. Once the research has proven sound, an outdoor scenario may then be enacted.

Those individuals who find outdoor facilities only somewhat beneficial tend to take issue with the science they provide, or do not provide. Some question the utility of taphonomic research in general, explaining that, because there are so many variables known to effect postmortem remains, the possibility of getting a true grasp on decomposition rates and scenarios may be impossible due to the impracticality of having such a facility in every climatic area. Another respondent voiced the same concern in a different way, stating that, although nothing can replace a real-life setting, because of the myriad of variables affecting decomposition, the facilities in place now are too specific to a certain location and climate, and are therefore not helpful for an overall assessment of decomposition.

Another respondent voiced concern that, in the future, there is only a limited amount of "truly beneficial" research to be done within an outdoor facility without replicating the same thing "over and over." Finally, another response that deems discussion first mentions that the

research that comes from outdoor human decomposition facilities is essential to the forensic community, but that such research will only prove useful if eventually it is published. The respondent specifically mentions the ARF in Tennessee and voices concern that there should be many more publications from a facility that has been established for over 30 years, and that has had thousands of donations in that time.

Although these responses show that some may find outdoor taphonomic research of lesser utility than other types of research, the fact still stands that, of the responses in this sample, none stated that indoor lab research could or should replace the information gleaned in an outdoor setting. The majority of these responses find little fault with outdoor human decompositions specifically, but rather, question the reliability and reproducibility of taphonomic research in general.

Question 4

In Q4, I asked survey participants if they believe human subjects are necessary for decompositional studies, or if they believe animal replacements (i.e. pigs) are sufficient. Answers were open-ended, and once read, the researcher categorized each into one of the following categories: Human, Animal, Both, Don't Know and Other. Of the 192 answers, 65.1% (n=125) believe that human decompositional studies require the use of human subjects, 3.65% (n=7) believe only animals should be used, 22.92% (n=44) see the benefit in using both humans and animals for various reasons, 5.73% (n=11) did not know, and 2.6% (n=5) gave a response that could not be easily categorized within the graph (Figure 24).

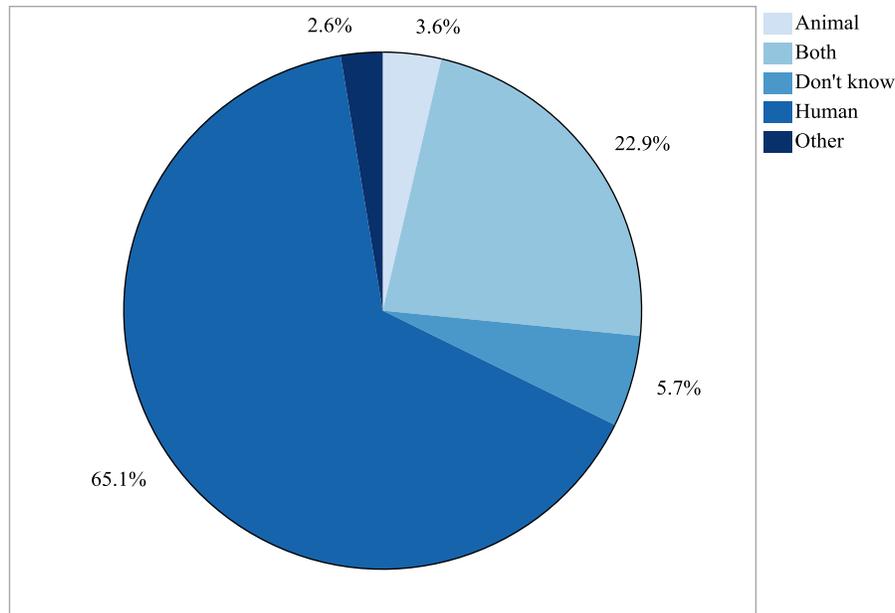


Figure 24: AAFS responses indicating whether human subjects are needed, or whether animal replacements are sufficient for decomposition studies

The overwhelming response for why human subjects are necessary for human decompositional studies is similar to the response for Q3 regarding outdoor versus indoor studies: research setting and subjects need to be as similar as possible to the real-life situations. Therefore, if one is trying to show how a human body will decompose during the summer months, laying supine on the ground surface in a wooded area, that exact situation should be used for the experiment. Although pigs may be used as a replacement if necessary, if a human subject is available, it should be used; there is always the potential for differences in the composition of decay and the types of animals and insects that are attracted to different species. According to the majority of Q4 respondents, although pigs are anatomically similar to humans, they are not humans, and should only be used as a last resort.

For those who suggested that both animals and humans could be used, many did not give a specific reason why, but rather simply stated that both were ideal. Some respondents said that

pigs are suitable replacements for most studies, and should be used frequently, with humans subjects being used sparingly. One respondent believed animals should be used first and, once the research has proven its validity, a human subject may then be used in a secondary study. Finally, a number of respondents explained that human donations may be in short supply and, as a result, animal replacements should be used more often.

For those who believed animal replacements were best, there were two common answers. The first answer was that animal replacements are necessary, but only when the research requires a large number of subjects which a facility may not be able to obtain at once. The other, more prevalent answer, was that animal replacements should be used so as to not run into opposition from the community. One respondent noted religious segments of the population that do not approve of the use of humans as research subjects and pointed out that, eventually, researchers may have no choice but to use animal replacements. Finally, one response that was categorized as “other” stated that the respondent was undecided at this time, but felt that more human versus pig research should be a necessity in the future.

Overall, the majority of those who answered Q4 believe that humans are always preferable when conducting research that is supposed to be indicative of human decomposition, although they also recognized that obtainment of human subjects is not always possible. When human subjects are not able to be acquired, pigs, preferably adult sized, may be used as a replacement, although results may need to be qualified due to differences in size, physiology, or other factors affecting decomposition between species.

Question 5

Question 5 required an open-ended response. I asked survey takers where the next human decomposition facility should be established. Answers were combined into four categories: Climate (answers that involved establishing a facility in various climates and environments); No need (for answers that stated another facility was not necessary); Don't know (for those who did not feel qualified to answer); and Other (compiled of answers that did not fit the other categories) (Figure 25).

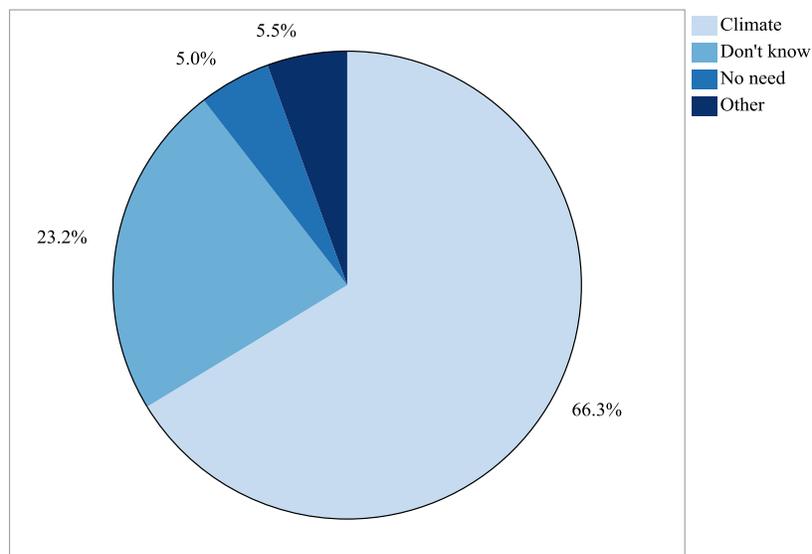


Figure 25: AAFS respondents on where the next facility should be established, with answers broken down into categories

Of the 181 responses used, the majority (66.3%, n=120) included some reference to the need for establishment in a unique climate or environment. Because of the nature of the question, survey participants were able to list as many answers as they saw fit. Some provided specific regions where they would like to see a facility established: North (6); Northeast (1); Northwest (4); Southwest (3); West (2); Midwest (3); and the West Coast (3). Some gave a specific state, with Florida being the most popular (3) and Virginia getting one vote (because the respondent lives in the state and would like a nearby facility). An urban area was suggested (3), as was a

rural one (1). Other respondents suggested an international location (7). Some respondents would ideally like to see an outdoor human decay facility in every state (5), and others gave the broad location of “everywhere” (3). Different climatic types were also listed including a cold/frozen location (9), a dry/desert location (12), somewhere with high altitude (3), and finally, water regions such as a swamp, a coastline, and an “underwater” area were each suggested once.

Nearly five percent (4.97%, n=9) of respondents do not see the need to establish another facility in the future. Of those individuals, 33.33% (n=3) felt that coordination and cooperation between the already established facilities needs to take place before any others open. Another 33.33% felt that enough regions were covered or that they already had a facility in their area and did not see the need for another. The other 33.33% of respondents did not give a specific reason for their answer.

Over five percent (5.52%, n=10) gave answers that were placed within the “Other” category and included the following: the internet, an isolated area, wherever needed, at a medical university (2) or morgue, Texas, a university with an established forensic center, and not in my backyard (NIMBY). One respondent stated that several facilities should open across the country so that traveling to them is easier. The final 23.2% (n=42) of answers were placed into the “Don’t know” category.

All answers to question five were then grouped according to AAFS section. Figure 26 shows that, for the most part, all sections agree that the next facility should be in a different climate, environment, or setting from those that are already established.

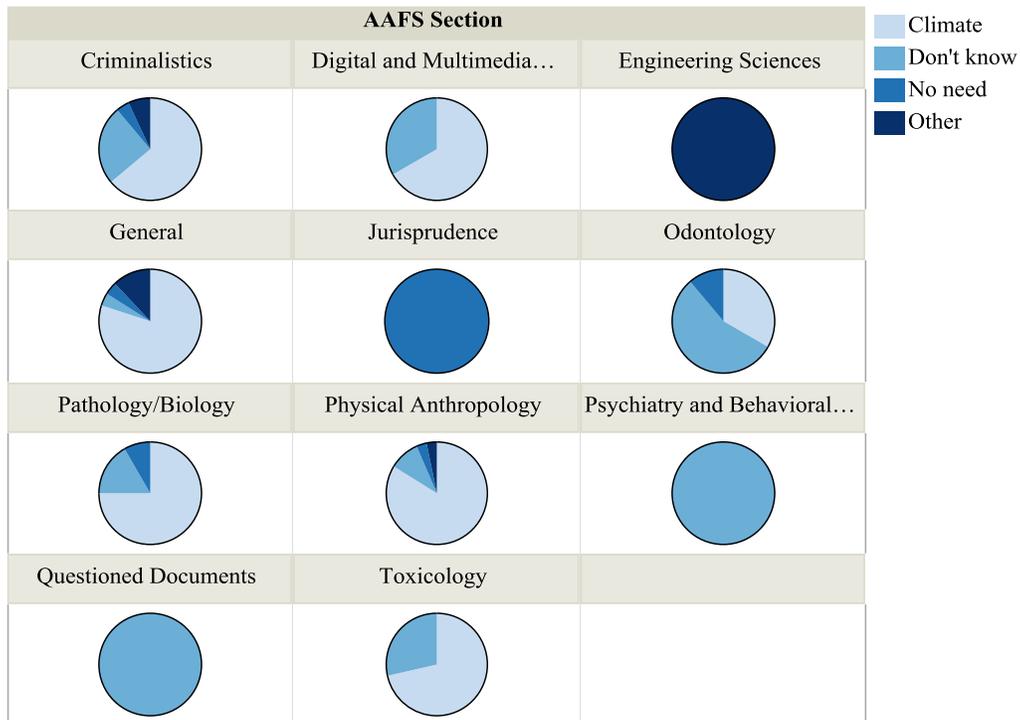


Figure 26: AAFS respondents, by section, on where the next facility should be established, with answers broken down into categories

Question 6

Similar to Q1, in Q6 I assessed awareness within the forensic science community of human decomposition facilities, asking respondents where they thought the first decomposition facility was established, by whom, and in approximately what year. The open-ended answers were read and grouped as follows: Yes (if the respondent gave some version of UT/ARF/TN's Body Farm; Bass; and 1980 +/- 2 years); Partial (if the respondent answered at least one portion of the question correctly); and No (if no part was answered correctly). One hundred eighty responses were tabulated, indicating that 30% (n=54) answered the question completely correct, 35% (n=63) gave a partially correct answer, and the final 35% (n=63) were incorrect (Figure 27).

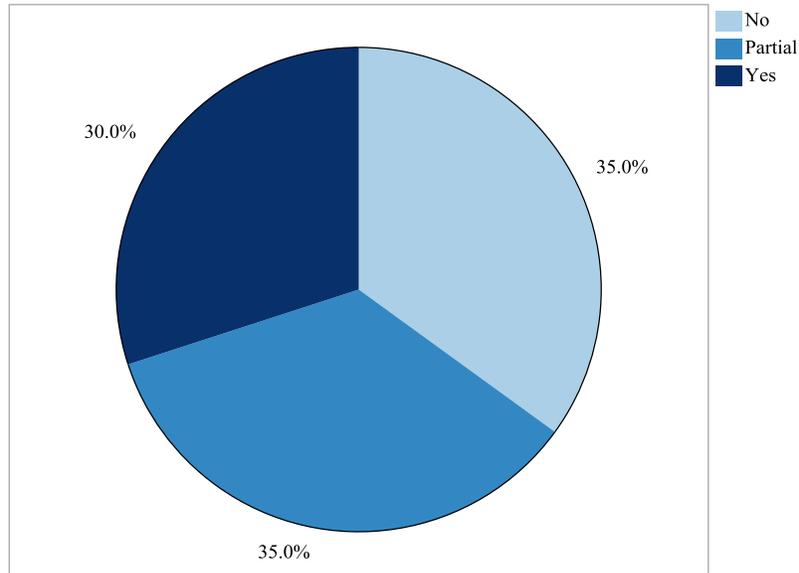


Figure 27: Graph showing if AAFS respondents were able to correctly identify where, when and by whom the first human decomposition facility was established

Question 7

In Q7, I asked respondents what they believed to be the future of the decomposition facility. One hundred sixty-four responses were obtained and categorized into the following groups: Expand (for those answers that described additional facilities opening); Continue (answers that mentioned continuing research and facility use in the future, but did not specify any new facilities opening); Problems (answers that described potential issues that human decomposition facilities may face in the future, in addition to answers that stated the possibility of facility closures); Don't know (for those respondents that did not feel qualified to answer); and Other (answers that did not specifically answer the question) (Figure 28).

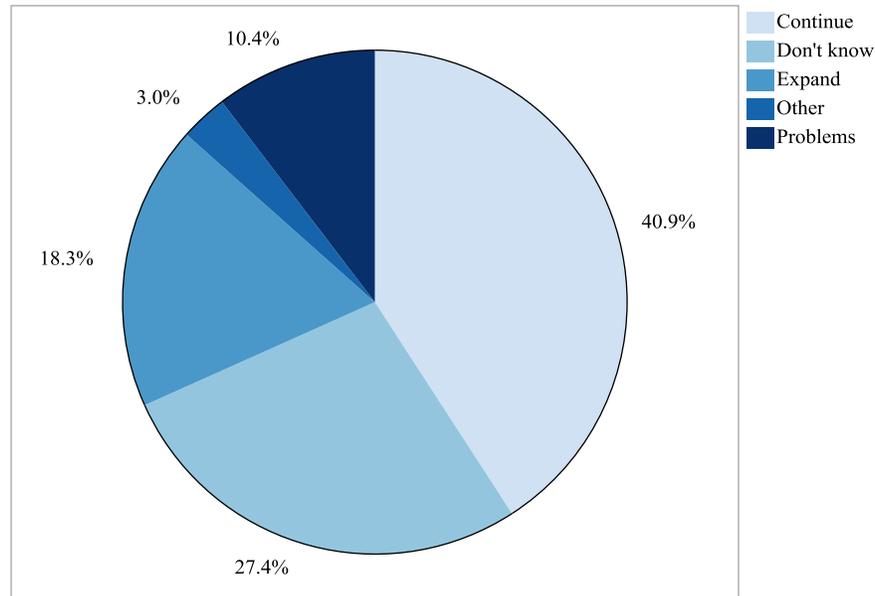


Figure 28: AAFS respondents answers on what the future of the human decomposition facility is, broken down into categories

Of the responses received, 18.29% (n=30) hope and/or believe that the future of the human decomposition facility includes expansion. These respondents often voiced the opinion that the research obtained from such facilities is vital to the forensic community and expansion in additional locations (i.e. different climates) will continue to prove beneficial. Many respondents, (40.85%, n=67) believe that outdoor decay facilities, or at least those already established, will remain open and relevant. Another 10.37% (n=17) foresee future problems for decomposition facilities, with many citing government/legal obstacles, lack of funding, or negative public opinion as possible complications. One respondent questioned the scientific validity of such facilities, and another believed that “market saturation” would eventually be met and new facilities would no longer be established. Finally, 27.44% (n=45) were unsure of the decay facility’s future and 3.05% (n=5) gave other answers.

When broken down by section, Physical Anthropology had the largest percentage that hoped and expected expansion (40.7% n=11), with none of the other sections having a similar

percentage (Figure 29). With regard to continuation, many sections had higher percentages in comparison to their expansion percentage: 43.75% (n=28) from Criminalistics believe that human decomposition facilities should continue on in the future, as well as 37.04% (n=10) of Physical Anthropologists, 41.67% (n=10) from the General section, and 36.36% (n=10) of Pathology/Biology. Members of each of these sections have the potential to work with human remains; thus respondents may have been more likely to answer the question.

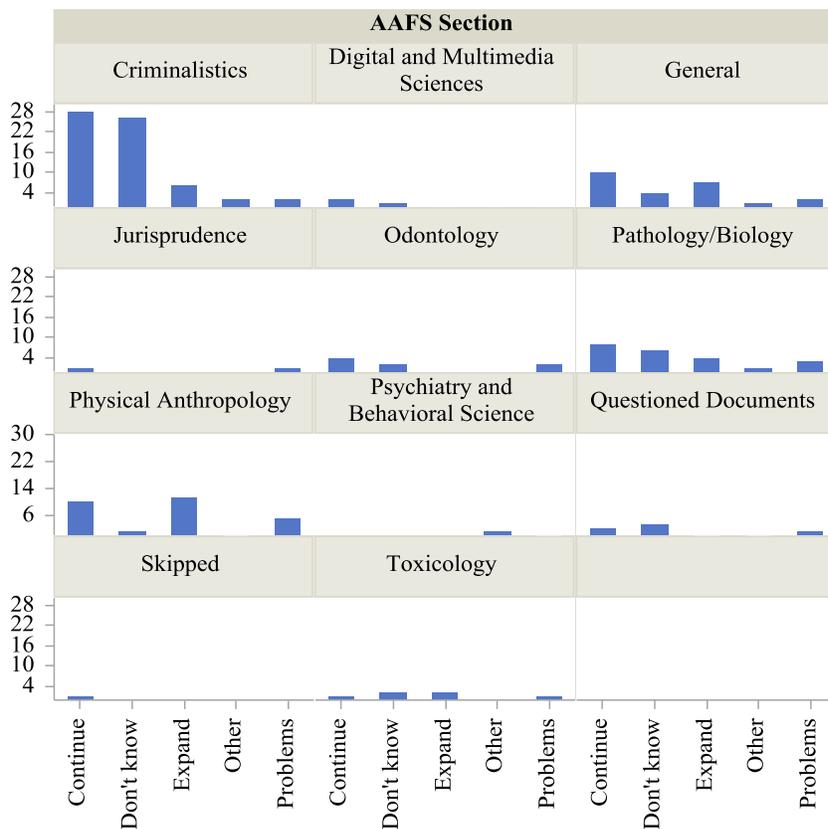


Figure 29: AAFS respondents answers, divided by section, on what the future of the human decomposition facility is, broken down into categories

Questions 8, 9, 10

Questions 8 and 9 (requesting section information and years of experience, respectively) were posed so as to better group answers for reporting. Q10 was used to link to an additional survey for those in the Physical Anthropology section which will be covered in the next Chapter.

Chapter 11 Perceptions of Physical Anthropologists

This survey was comprised of four open-ended questions that were posed to gauge beliefs about the uses of human decomposition facilities from individuals in the Physical Anthropology section. This group, largely comprised of academics or students who may conduct decomposition research, have the most to benefit from such facilities. Fifty-nine surveys were received and, using a random sample generator, 50 were selected for reporting in this thesis. Participants who chose to skip a question were removed from the sample for that particular question only.

Question 1

In the first question, I asked if the respondent's university did not have a facility, did he or she think the university should, and to explain his or her answer. Forty-nine answers were received and were divided into five categories (Figure 30): Yes (for participants who would like

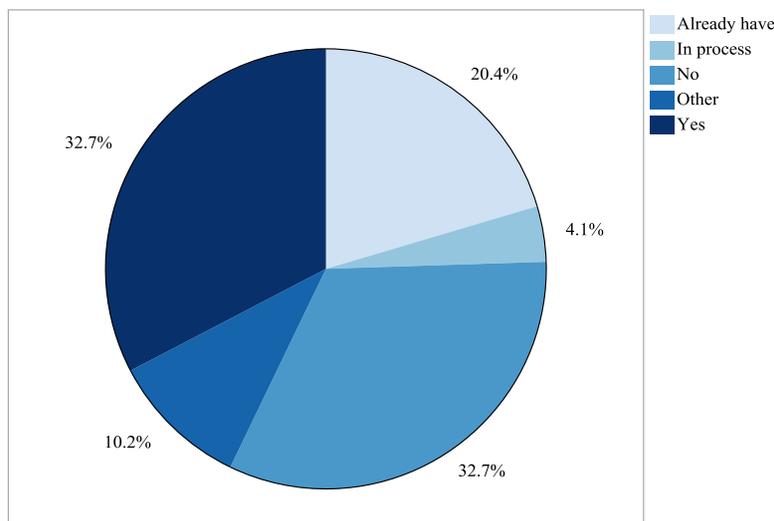


Figure 30: Physical Anthropologists responses on whether or not their university should have a human decomposition facility

to have one, but do not); No (for those with no interest in a facility at their university); and Other (for answers that did not fit into the abovementioned categories).

Of the surveys received, the more frequent responses fell into the “Yes” and “No” categories. Nearly one-third of the respondents (32.65%, n=16) would like to have a human decomposition facility at their university. Furthermore, many also stated that, not only they personally, but also the school itself, would also benefit from such an addition. Respondents gave various explanations for why they believe their university should have one. Most participants who answered “Yes” explained that, because their university is in a location with an environment unique to where facilities are already established, the addition of one in their region would produce beneficial decomposition research and better enable them to assist local law enforcement. The second most common answer described the many teaching and training opportunities that having such a facility would allow.

An equal number, 32.65% (n=16), responded “No,” that they do not believe their university needs a human decomposition facility. The most common reasons why included not enough space/land, no upper level students that would benefit from the research opportunities, the costs and legal hassles of starting a facility, and departments that specialized in areas other than taphonomic research. One respondent said the addition of a facility would not be beneficial because there have been many animal decomposition studies done in the area, and using a human facility would garner very few original results. Another said current facilities first need to collaborate before others are established.

The remaining answers were comprised of 20.41% (n=10) “Already have”, 4.08% (n=2) “In process” and 10.2% (n=5) “Other.” “Already have” and “In process” were chosen to be separate groups because, as has already been noted, even with plans to establish a human

decomposition facility, a number of factors are involved, resulting in complications that may stop the process before inception.

Question 2

Q2 was similar to Q1, but I asked specifically *why* the participants' universities did not have an outdoor human decay facility. Those with already established facilities are separated into one group, with the other answers categorized by similarities. Forty-seven responses were received, eight of which (17.02%) came from individuals who work in universities that already have this type of facility. Other responses were varied and are provided below (Figure 31).

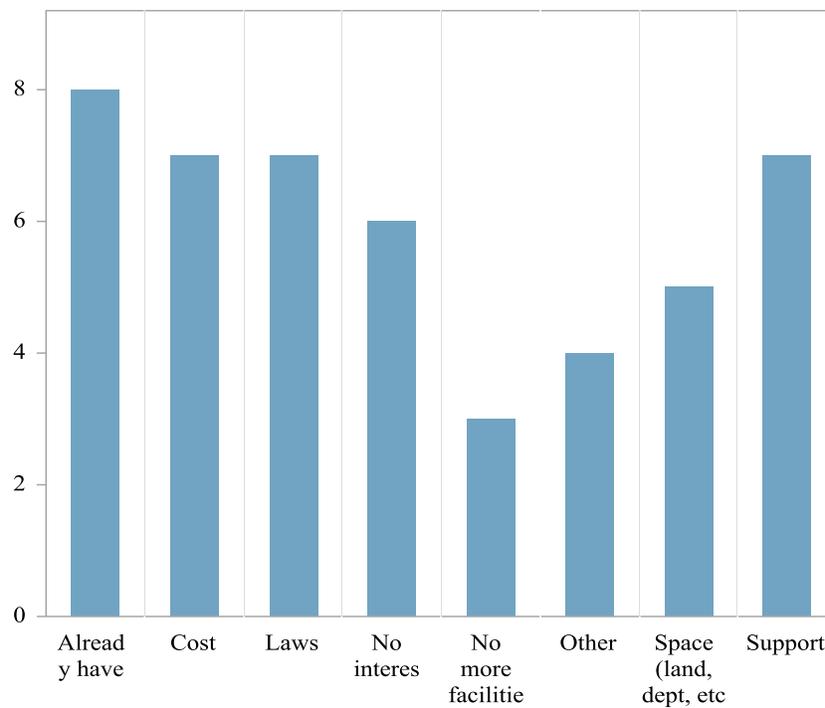


Figure 31: Per Physical Anthropologists, reasons why their university does not have a human decomposition facility, broken down into categories

A number of regions, especially internationally, do not allow for human decomposition research; therefore, respondents are unable to have a facility (these responses were categorized under “Laws”). Some respondents said either their university, their department, or they,

themselves, had no interest in taking on such an endeavor (categorized under “No interest”). Others felt the number of such facilities has already peaked, negating the necessity of additional facilities (“No more facilities needed”). Lastly, lack of space, including physical land area and department size, was a factor for some respondents (“Space”), while support from administration and the community (or lack thereof) was an issue for a number of others (“Support”).

Question 3

In Q3, I asked respondents to describe any amenities located at their university, other than a human decomposition facility, where decomposition research may take place. Forty-nine answers were received and are divided into (Figure 32): “Already have” (a human decomposition facility), “Yes”, “No,” and “Other.”

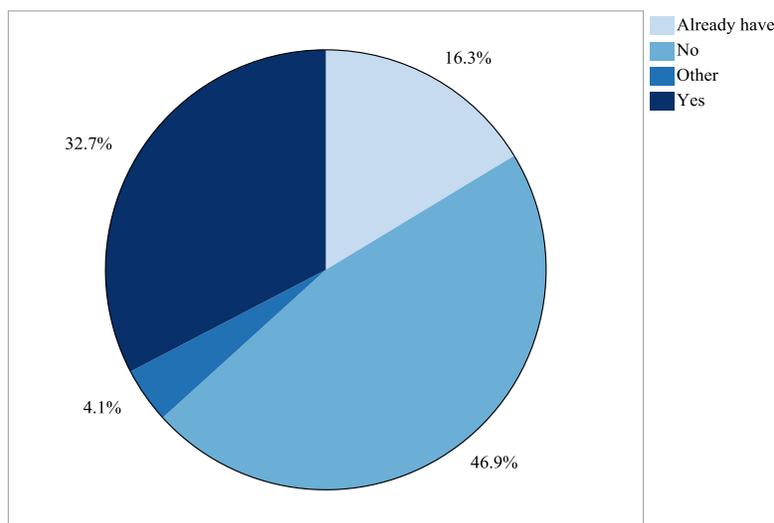


Figure 32: Physical Anthropologist’s responses on whether or not their university has other amenities where decomposition research may take place

Most respondents (32.65%, n=23) did not have any area or space where taphonomic research could be carried out. Those who did (32.65%, n=16) described both indoor (n=7) and outdoor areas (n=10) available, with one school having both available for decay studies. The

outdoor areas were usually university-owned lands, and were shared with other departments (i.e. agriculture, entomology). Other responses included a rooftop area used by one respondent's university, a decomposition facility that uses rabbits and pigs for research (TRACES), and a law enforcement training center. One participant was advised of land made available to the university specifically for decomposition research; however, the land is located 90 miles from the university, and uses dog subjects donated by the veterinary school as well as rats and other "animal tissues." The remaining responses include "Already have" with 16.33% (n=8) and "Other" with 4.08% (n=2).

Question 4

The final question I posed to the Physical Anthropology section asked the respondent if students from his/her university had ever traveled to another university that has a human decomposition facility in order to conduct research. Forty-eight answers were received and are grouped into "Yes," "No," "Already have" a facility, and "Other" (Figure 33).

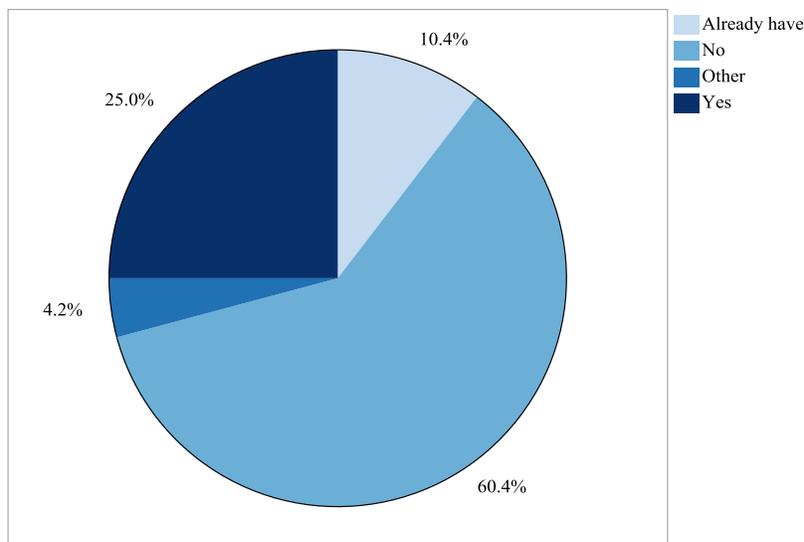


Figure 33: Physical Anthropologist's responses on whether or not any of their students have traveled to a facility-affiliated university for research

Most of the respondents (60.42%, n=29) said they are unaware of any students from their university traveling to a university-affiliated facility in order to do research. Those that responded “Yes” (25%, n=12) most often described student’s travelling to the FAC at UT to use the Bass Donated collection, rather than to the ARF. Others mentioned TSU’s FARF. Some respondents did not specify a location, but rather described the type of research (i.e. general taphonomic, scavenging patterns) conducted by students. Two answers (4.17%) fall into the “Other” category, but are worth noting. One respondent stated that a student did not actually travel to one of these facilities, but was accessing prior research from them, and collaborating with representatives, to conduct his own research. The second respondent was not aware of a student visiting for research, but knew of multiple local police officers who traveled to the FAC at UT for training.

Chapter 12 **Perceptions of Students**

The final survey administered for this research was disseminated to university students at LSU, as well as to schools that have an established facility. This survey was distributed to determine whether or not having a human decomposition facility at one's university affects the understanding of such facilities amongst students. At LSU, the survey was distributed to introductory anthropology and women and gender studies classes. Of the schools with facilities, responses were received from Texas State University, Sam Houston University and Southern Illinois University, from students in introductory anthropology classes. Facility-affiliated schools were grouped into one category (n=32), and the LSU students into another (n=55). A random sample was generated for each, resulting in 30 respondents for each category.

In order to ascertain if the two groups were similar in nature, questions, including age range, major or concentration, and year in school, were asked of respondents (Q6, 7, and 8). The ages and year in school for LSU students were typically lower than that of the facility-affiliated universities. The distribution of majors and concentrations was more similar between the two groups. One aspect to note is that while some respondents marked "Other" to identify themselves as Anthropology (LSU, TSU, SIU) or Criminal Justice (SHSU) majors, others with these majors may have categorized themselves within the choices listed (i.e., social sciences or humanities). Additionally, for the schools that have a facility, the "Other" category, and hence "Anthropology" or "Criminal Justice," was chosen 23% more. This finding may be attributed to students choosing a school based on the availability of such a facility. (Figures 34-39).

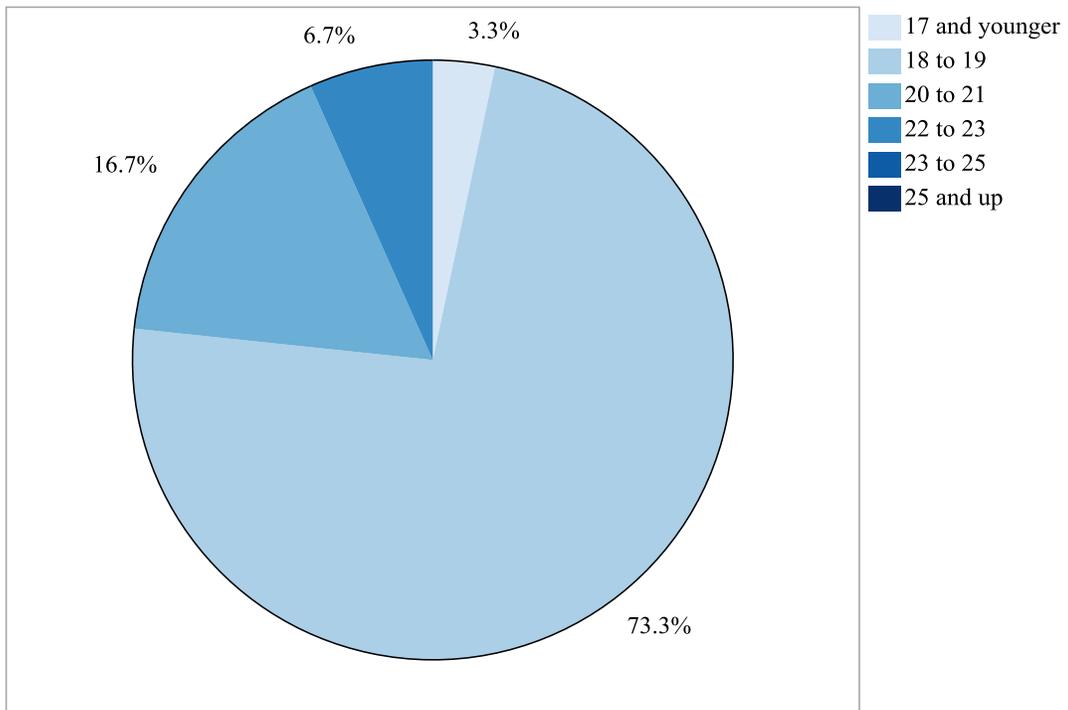


Figure 34: LSU respondent's ages

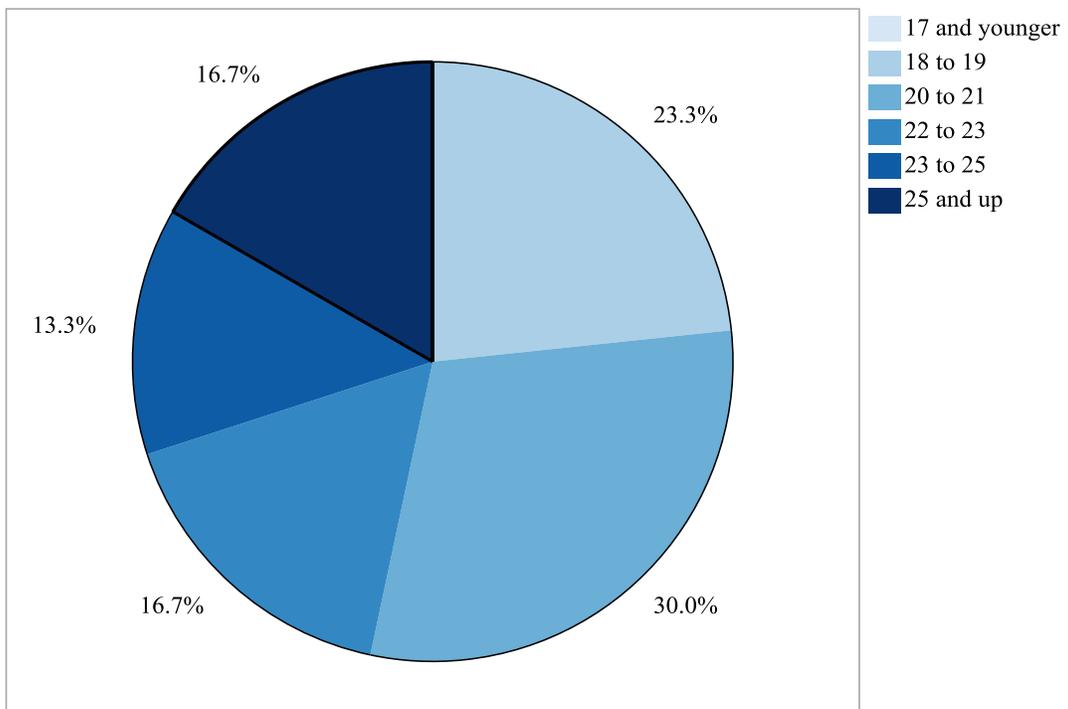


Figure 35: Facility-affiliated respondent's ages

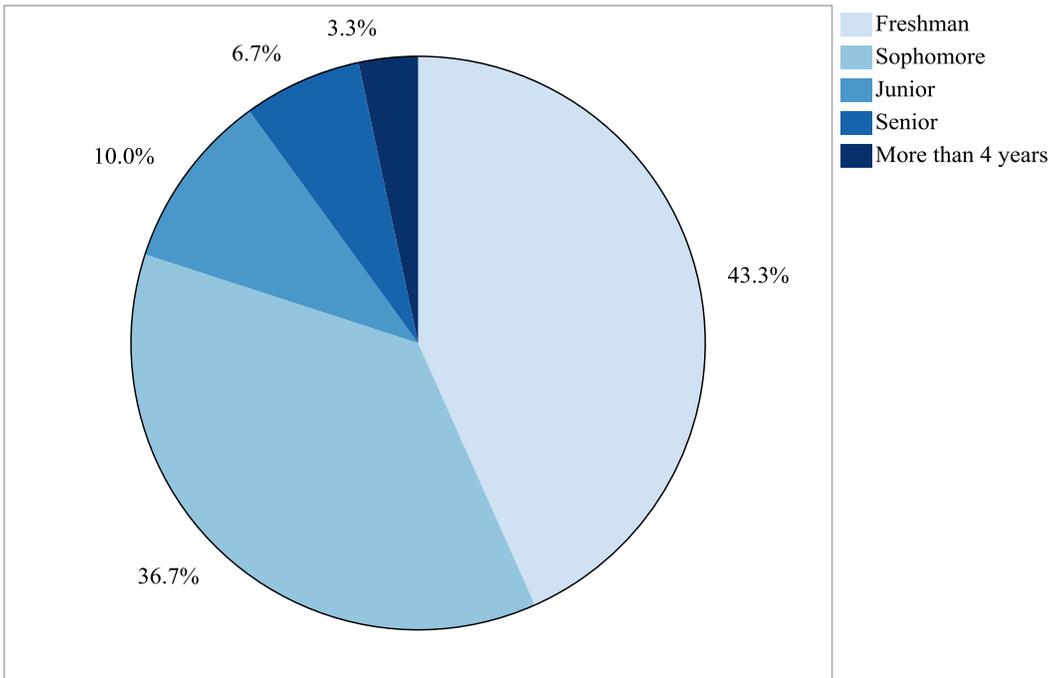


Figure 376LSU student's year in school

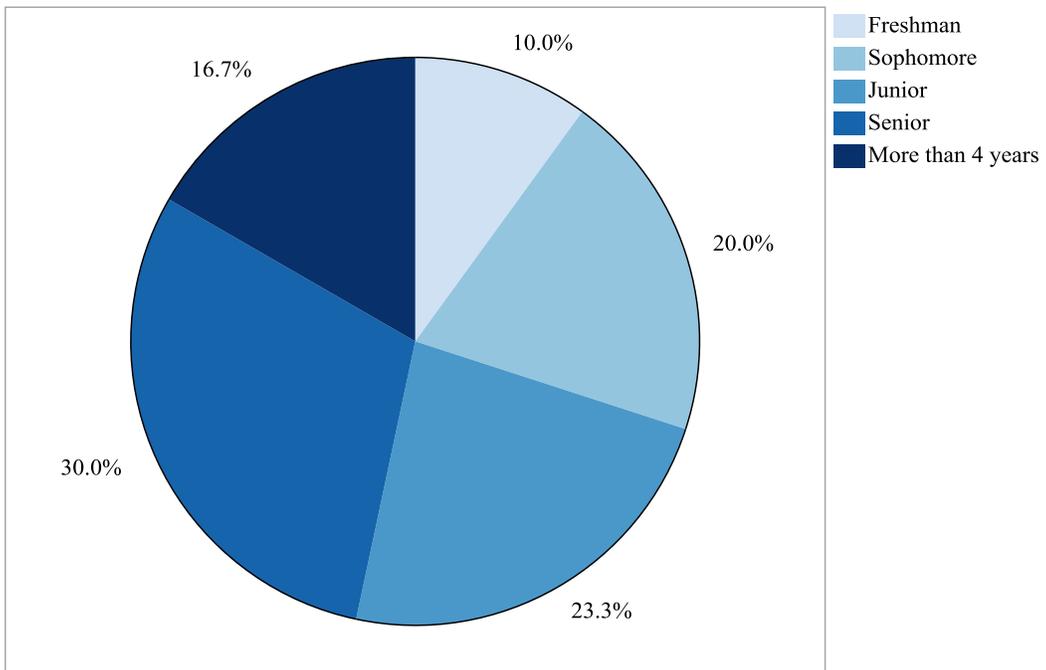


Figure 37: Facility-affiliated student's year in school

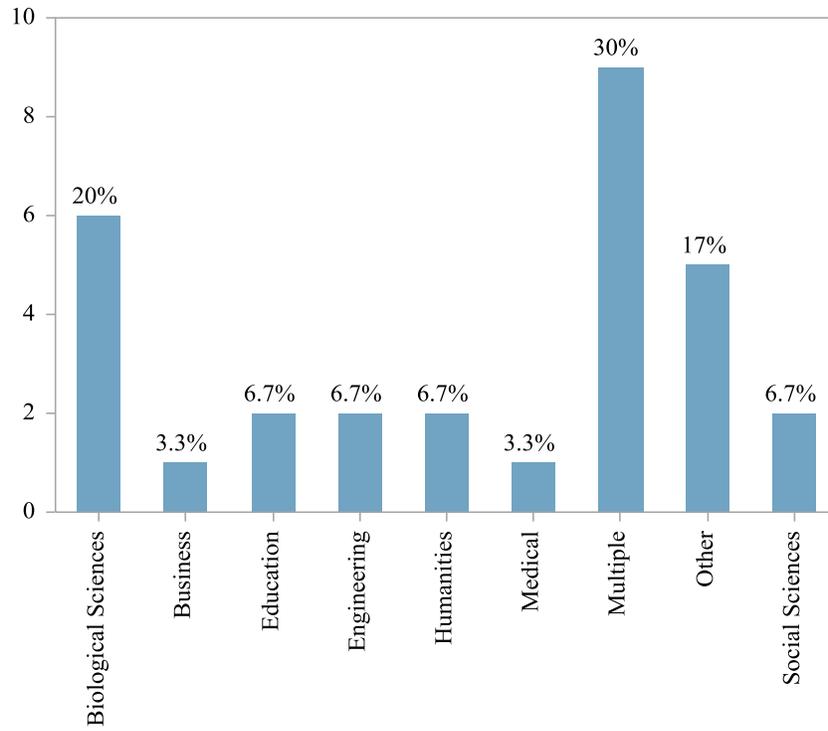


Figure 38: LSU respondents, sectioned by major

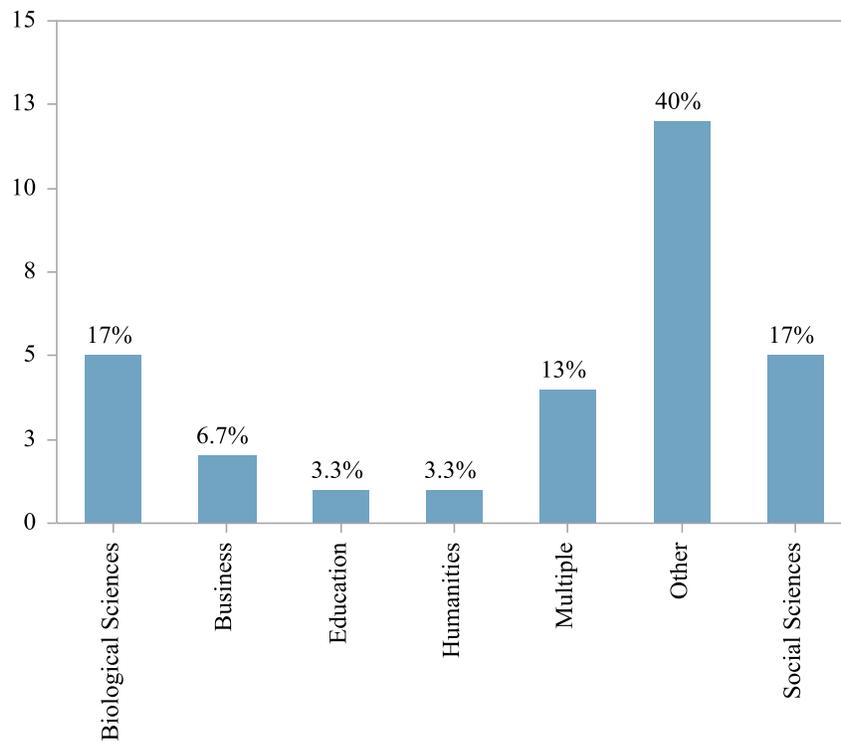


Figure 39: Facility-affiliated respondents, sectioned by major

Question 1

The first question on this survey was the same as the AAFS survey, in that I asked respondents their familiarity with human decomposition facilities, with the exception of the answer groupings: Yes, No, and Maybe. All participants from each division answered this question and results were tabulated (Figures 40 and 41).

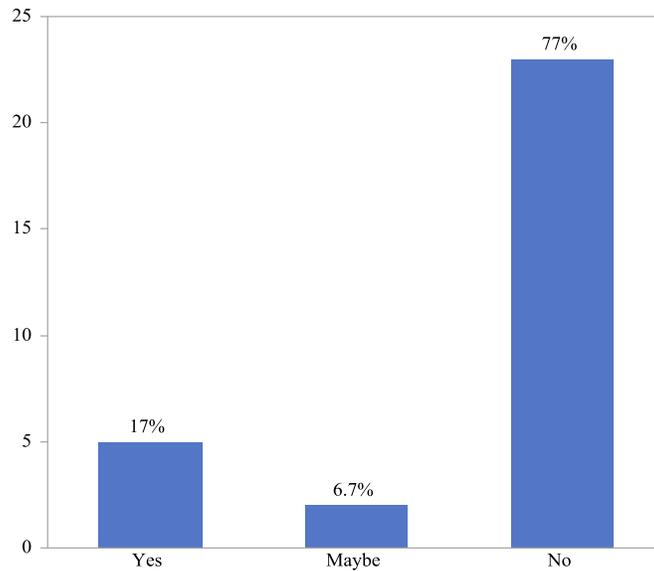


Figure 40: LSU respondents familiarity with decomposition facilities

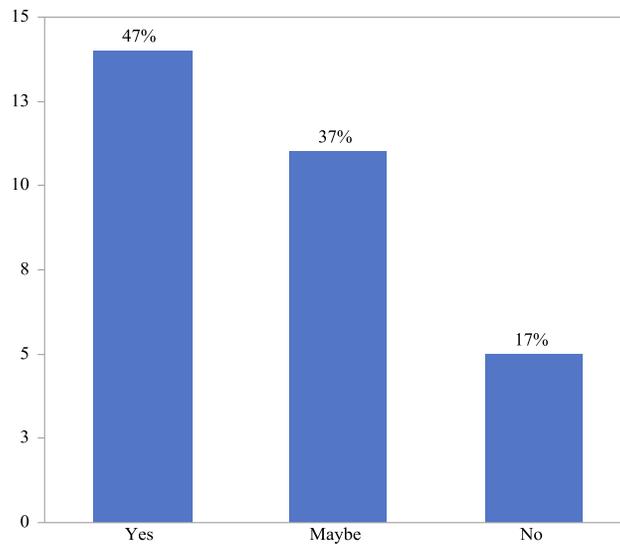


Figure 41: Facility-affiliated respondents familiarity with decomposition facilities

As these bar graphs show, many more students that attend a facility-affiliated university are aware of what a human decomposition facility is, as compared to their counterparts at LSU. However, the fact that a greater proportion of facility-affiliated respondents are upperclassmen, compared to the primarily freshmen and sophomore LSU respondents also likely impacted these results. Upperclassmen might have been exposed to more anthropology classes and, thus, have had more opportunities to hear about human decomposition facilities.

Question 2

This question was a follow up to Q1, and I asked if students were aware of a facility, to give an example of one's location, listing as many as possible. All but four LSU students skipped this question (86.67%, n=26), with two of the remaining students giving incorrect answers (6.67%, n=2) and the other two giving correct ones (6.67%, n=2). Of the correct answers, one student listed "The University of Tennessee" and the other listed "Tennessee's Body Farm" in addition to mentioning they had heard of possible new facilities being established in Texas and Arizona.

The students who attended SIU, TSU and SHSU were better able to list examples, with 50% (n=15) correctly identifying at least one facility, and 50% (n=15) skipping the question. No student who attempted the question answered incorrectly. The entire facility-affiliated group was then broken down into three groups based on university attended.

Two of the respondents were from SIU and, although one answered that he or she was "maybe" aware of what a decomposition facility is, both of these students skipped Q2. Eleven of the 23 (47.83%) TSU students were able to name at least one facility. TSU's own FARF was listed most commonly (10 times), with the UT's facility listed 3 times, followed by SHSU's

twice. One student that mentioned both UT and TSU wrote that he/she had heard the Texas facility was located under the football stadium, which is a rumor that is usually associated with Tennessee’s facility. Lastly, out of the 30 total facility-affiliated respondents, five attended SHSU. Of those five, four were able to name at least one facility. All four listed their own facility, and UT and TSU were each mentioned once.

Question 3

In Q3, I asked students to choose what types of research/work they believe are carried out at a decomposition facility. The same choices provided to the AAFS respondents were provided here, with the exception of “None of the above.” LSU students did not select as many answers as did the other students (Figure 42 and 43). Additionally, six facility-affiliated university students

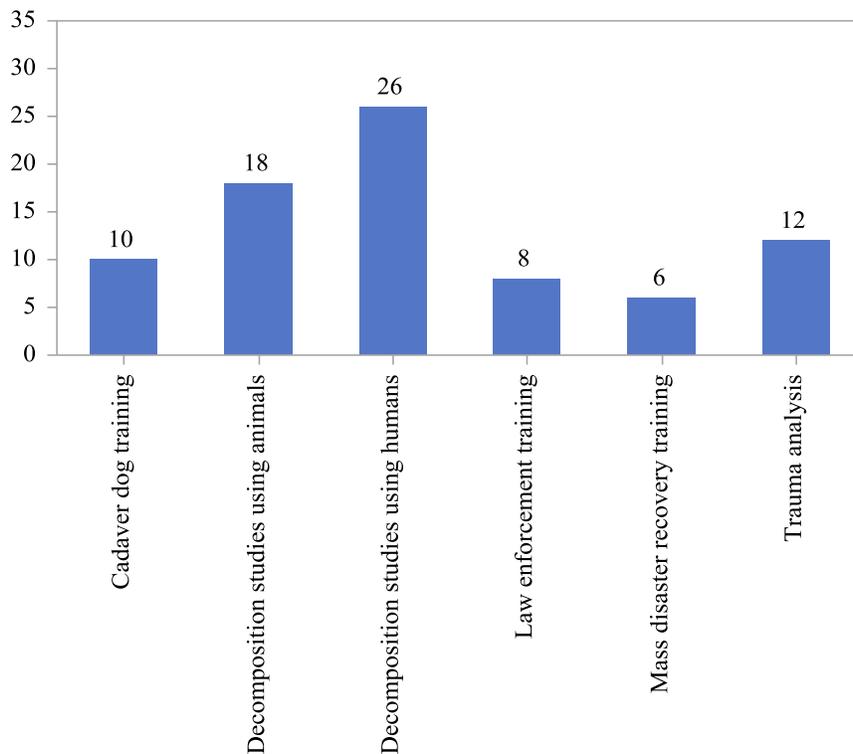


Figure 42: Possibilities at human decomposition facilities; per LSU respondents

marked all six options (which is correct as each type of research minimally is available at each facility in the United States). Only three LSU students selected all options.

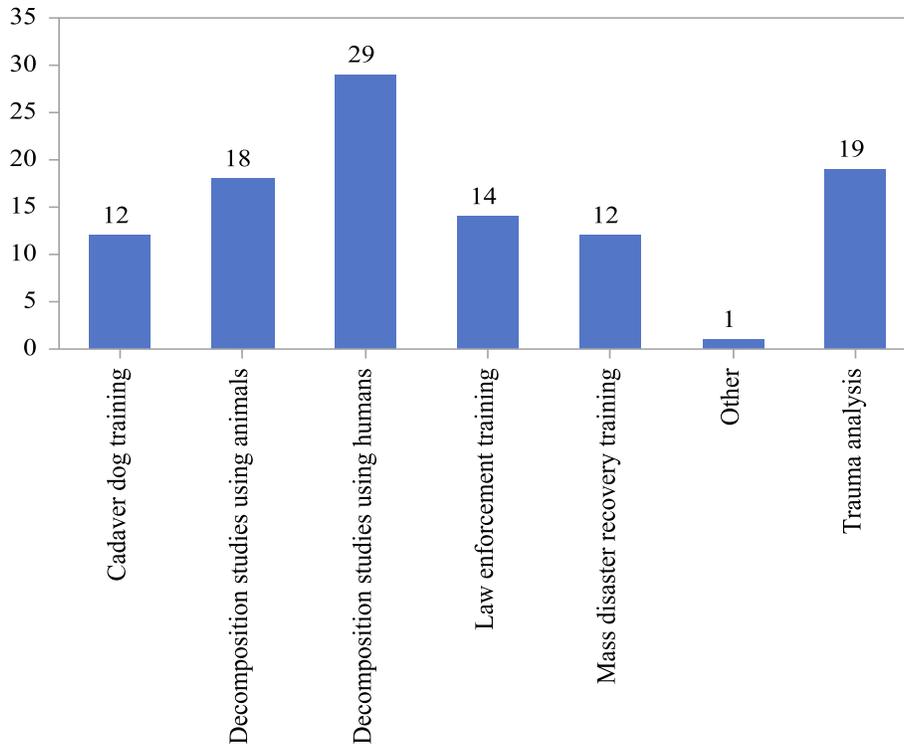


Figure 43: Research/work availabilities at human decomposition facilities; per facility-affiliated respondents

Question 4

Q4 was open-ended and I asked respondents to list three tasks that might be part of a forensic anthropologist's job description. Of the LSU respondents that answered the question (n=27), the most common responses pertained in some way to providing cause of death (n=8), looking at decomposition and determining time since death, or the PMI (n=10), and trying to identify remains, or provide a biological profile, be it through age (n=6), sex (n=3), ancestry (n=2), or indications of their previous lifestyle (n=3). Although there were many other responses, few were duplicates. Some of these responses pertained to other specializations within anthropology (e.g., primates, cultural studies, fossils), while others were more indicative of

criminalistics, or of what is seen on television (e.g., one participant answered “like Bones”).

These answers also included evidence (n=4) and bodily fluid (n=1) collection and toxicological processing techniques (n=2).

The most common answers from facility-affiliated students were similar to those given at LSU: cause of death (n=7), time since death (n=7); and biological profile and identification (n=5) through age (n=8), sex (n=4), ancestry (n=2), stature (n=2) and lifestyle (n=2). Other common answers included determining animal versus human bone (n=5), assisting with legal entities (i.e. testifying, helping medical examiners, law enforcement) (n=6), and trauma analysis (n=8). Although both groups gave correct answers many times, the facility-affiliated group answered correctly at a higher rate than the LSU students.

Question 5

In Q5, I listed 13 popular television shows that are often associated with criminalistics, forensic science, and forensic anthropology. Students were asked to mark all that they watched, with the option to instead mark “None of the above.” For LSU viewers (n=29), the mean number of shows watched was 2.93, with a range of 0 – 9. For the other group (n=30), the mean number of shows watched was 4.2, with a range of 0 – 13. While most of the LSU viewers watched a moderate number of these shows, there were four facility-affiliated students who watched more than the maximum LSU student (i.e., 10, 11, or 13 of the 13 shows). One possible reason for this pattern of viewing is a higher interest in such shows by those who are in Anthropology/Criminal Justice programs.

PART 4: CLOSING INFORMATION

Chapter 13 **Discussion and Conclusions**

We live in a time where technology is ever-present. Many families own at least one TV, advertisements and television news programs are played on screens on our gas pumps, and podcasts, news articles, and social networking are all immediately available at our fingertips. With this technology comes an increase in factual and beneficial knowledge, but also an increase in biased and factually-unsound information. This influx of misinformation may be the biggest threat to the future of the human decomposition facility.

The public perception of what decomposition facilities are used for is often vastly different from their actual use. This misconception is, in part, due to the misinformation relayed by the media, and found in popular books and television shows. The inaccurate information contributes to what is known as the “CSI effect”, loosely defined as the belief that crimes are solved in a matter of days using high-tech equipment by professionals that are knowledgeable in all things forensic (National Institute of Justice, 2013). As a result of these misrepresentations, facility representatives (both professional and students) questioned during interviews about their television viewing habits, often voiced discontent with popular shows such as CSI, Bones, and NCIS. The major fault found in these programs was the lack of valid scientific practices, or at best, an exaggeration of those used. When asked if such shows were watched, two facility representatives stated that occasionally they would, in order to keep up with current mainstream misconceptions in order to better prepare to refute them. Others shared that they did not because they rarely watched TV. Finally, the occasional person admitted to catching an episode once and

awhile, but only because they enjoyed the plot lines or an actor present in the show, never because of the validity of science displayed.

A direct link between televisions shows watched and informational bias could not be established based on the information obtained from the surveys distributed to university students. Both LSU students, and those affiliated with a university with a facility, enjoy watching shows such as *Bones* and *CSI*; however, the data suggest there may be a difference in how students perceive the reality of these shows. When asked to list three tasks that may be part of a forensic anthropologist's job description (Q4), students who attend LSU, more often than those who attend a university with a facility, gave answers consistent with what is seen on the television shows (e.g., evidence collection, talking to suspects, etc.). The fact that the facility-affiliated university students also watch these shows, but did not give similar answers, suggests that these students have a more realistic understanding of what forensic scientists (or forensic anthropologists) do. Whether or not this understanding is due to their attending a university with a facility that specializes in decomposition research, or to their slightly older and more experienced status as upper classmen (who have taken more topically-related coursework) cannot be determined at this time. Similar informational biases were also described by facility representatives during their interviews; several individuals stated that friends, family, or acquaintances, when first learning of their role at a human decay facility, assumed that they are like *Bones*, or had a gruesome idea of what takes place at these facilities. This finding begs the question of what other inaccurate perceptions may be held by the public. If a university student, possibly even one that is majoring in Anthropology, does not have the accurate information about what decomposition facilities are, the probability that the general public would be correctly informed is even more remote.

The popular phrase “Not In My Backyard” (NIMBY) has been used by forensic anthropologists to describe the negative reaction of community members and the general populace when the idea of a new human decomposition facility arises. This reaction can possibly be attributed to misconceptions about what takes place at these outdoor facilities, where the donations are obtained, and how such a site will affect community health and property values. In fact, the histories of the current facilities demonstrate that when a university is able to inform the public through factual correspondence, NIMBY problems tend to dissipate. When questioned about their community’s perceptions about their respective facilities, most representatives believe that community members are supportive and, possibly even more surprisingly, even more aware of the facilities than university students not directly associated with the facility. In fact, according to representatives interviewed at the STAFS, FOREST, and CFAR, the university-wide student body generally appears to be unaware of the presence of these facilities on (or associated with) their respective universities, despite the publicity these facilities have received.

The exceptions to the lack of awareness is, of course, the UT ARF, but also TSU. Steadman believes that the majority of the student population at UT is aware of the facility due to the media attention and notoriety that the ARF receives (Steadman, personal communication, October 14, 2013). Additionally, many young people are now taking forensic-related classes, mostly in high school, but the FAC also has had students as young as elementary school-aged visit. Steadman believes this early introduction to forensics as a whole makes the students more aware. Similarly, at TSU, Wescott believes that, although the community is more aware of the FARF, the student populace as a whole is mostly aware also. Both UT and TSU have been the focus of multiple documentaries, articles, and publications. Furthermore, they represent two of the three older and larger facilities and are, thereby, considered as having a “rock star” status

(Wescott, personal communication, August 23, 2013). As mentioned by both Steadman and Bass, UT is known first for its football team, and second, by its body farm (personal communication, October 14, 2013).

With regard to public relations, facility representatives do their best to reverse common misconceptions. Bytheway described how individuals from the general populace tend to have a very gruesome view of what takes place at the facility, and are “almost afraid.” However, once she explains to them or, in some cases, shows them what takes place at the facility, they realize the scientific nature of the facility and are more accepting. She also explains how a number of students have signed up for classes held at the facility because of an expressed interest after seeing popular television shows depicting “forensics,” only to realize the true nature of the facility is nothing like what they have seen portrayed (personal communication, August 22, 2013).

Interviews with local, regional, or national media also help portray these facilities in a more positive, and factual, light. UT’s ARF most likely receives the most interview requests, with numerous calls received every day (Steadman, personal communication, October, 14, 2013), although these requests are not always granted. Due to representatives ultimately having little control over how their words will be portrayed, interviews occasionally may prove detrimental, rather than beneficial, to a facility’s reputation. Bytheway described a call she received with a journalist inquiring about “zombie decomposition” and, in the case of a zombie apocalypse, questioned how long would zombies be able to walk around while decomposing. Most questions Bytheway fields are more mundane though, with the STAFS facility being featured on television or in a “large” newspaper once or twice a year and, in more local print, every couple of months (personal communication, August 22, 2013). SIU’s CFAR director also

fields questions and calls, usually a couple per month (Dabbs, personal communication, July 23, 2013). In addition to interviews, public lectures, presentations, and publications can also help to disseminate positive and factual information to the community.

Nonetheless, even with damage control, some facilities may never reach their inception, partly due to the media, as well as to other circumstances. In the course of researching the current facilities, information was found on three other facilities, two of which failed to get started, the third of which was closed down. The first of these facilities is the Tennessee Cadaver Research Institute (TCRI), proposed by Dr. BJ Ellington, a professor of nursing, and Mr. Arthur Bohannon, a forensic consultant. The focus of research at the TCRI was to be on the environmental impact of decomposition rather than on the decomposition process per se. The location of the TCRI was Jefferson, Tennessee, and Ellington and Bohannon explored both options of having the facility set up as a private institution or, perhaps, associated with a nearby Carson-Newman University. However, despite extensive planning, the TCRI has, thus far, been unable to garner the necessary funding to get started or to overcome strong community resistance, some of which was the result of media and social networking interference.

A second example of a decomposition facility that was unsuccessful in starting is one associated with the Institute for Criminological and Forensic Sciences at California University of Pennsylvania (CALU), located in California, Pennsylvania. Dr. Joan Bytheway (currently the director of SHSU STAFS) previously was on the faculty at CALU and was involved in the attempt to start the facility. However, the facility has not come to fruition and no information is available on the current website. An email sent to the department inquiring about further progress received the reply that the facility was “unfortunately...not up and running yet”

(Institute of Criminological and Forensic Sciences representative, personal communication, August 1, 2013). Additional emails have received no response.

One final facility is one that once existed but has since closed. The facility was associated with the Department of Anthropology at University of New Mexico, and was located near the university at Kirtland Air Force Base. However, after September 11, 2001, access to the base changed drastically and the facility was closed in 2002. Upon more recent correspondence with Dr. Debra Komar, a faculty member during the facility's existence (2008), as well as with another faculty member during the summer of 2013, no human decomposition facility has been established since. The examples of facilities that have struggled either to open or to remain opened are a testament to the difficulties faced with this type of research as well as with the implementation of the facilities in which such research is conducted.

Despite the difficulties with media misrepresentation, community protests, or obtaining funding, facility representatives and AAFS respondents alike believe there is a need for these outdoor human decomposition facilities. During interviews, every single person asked voiced the belief that the number of human decomposition facilities must continue to grow in order to gain a more complete idea of how taphonomic processes affect human decomposition. Furthermore, the majority of survey respondents agree; only five percent (4.97%, n=9) indicated that they do not see the need to establish another facility in the future. As to *where* new facilities should be established, suggested locations from interviews mirrored those of survey respondents (see Figure 26) and ranged from general regional recommendations (e.g., northern, extreme north, southwest desert, southeast) to specific cities (e.g. Boston) or states (e.g., Alaska, Arizona, New Mexico, southern California, southern Florida), Finally, a popular answer was some form of “anywhere there is not one already” and that which contains diverse ecosystems such as a

tropical environment, underwater, in acidic soil, or in a sandy based region. At this time, five of the six established facilities are located within similar regions (Figure 44).

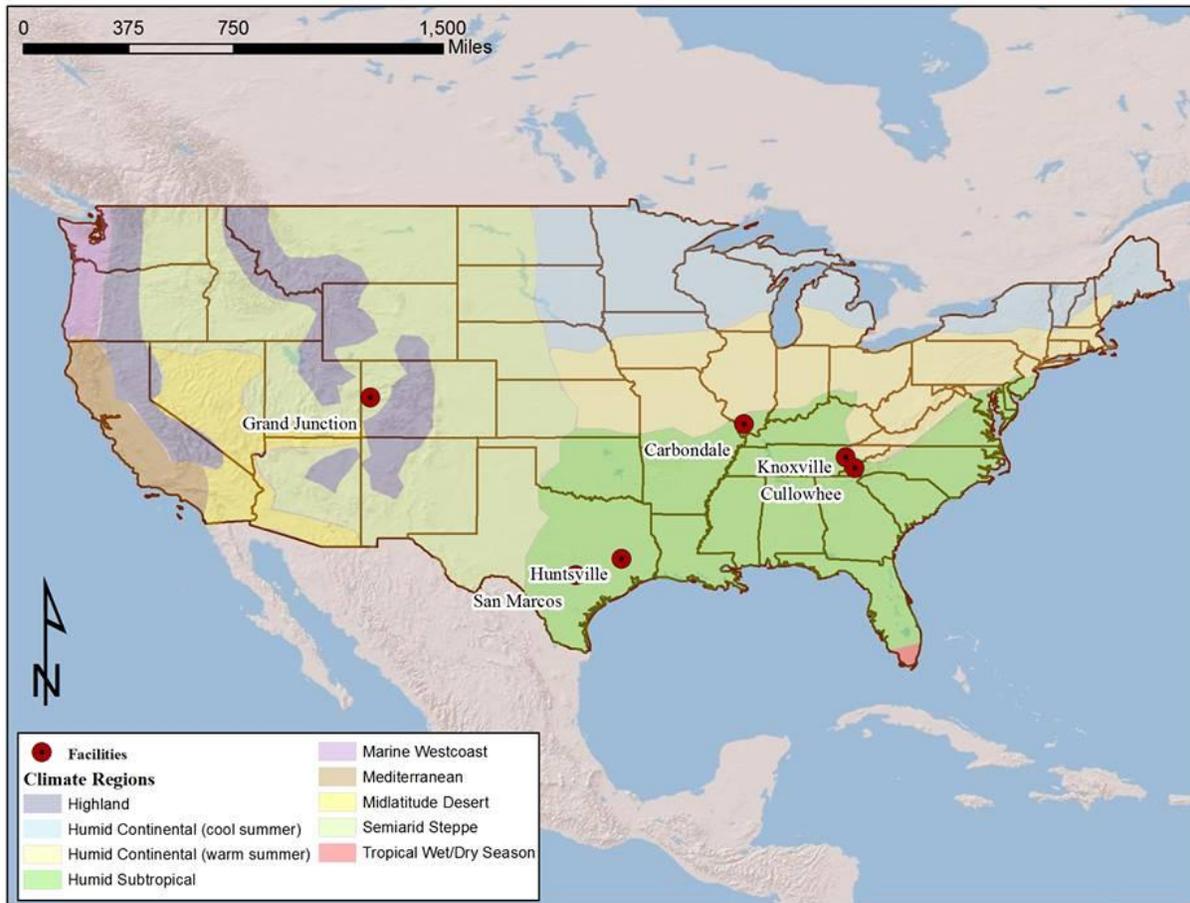


Figure 44: Map showing facility locations, divided into climate regions
 Map created using ESRI's Arc10 Software, climate information from National Climatic Data Center, 2013

Establishing human decomposition facilities in unique climatic regions and various topographies is necessary if these facilities are to reach their true potential (Appendix 8).

For individuals interested in starting a facility, most of the current directors are willing to provide information and suggestions to help make the process as painless as possible. For example, Steadman (UT ARF) fields calls related to facility startups as much as once every other month. Although the rate of these may seem insignificant, when one considers how few of these

facilities exist today, the level of inquiry is quite high. These calls come from the United States as well as other countries throughout the world. Steadman voices support for these endeavors and often invites interested parties to come tour the amenities that UT provides. Although she has only been at UT for two years, Steadman fully grasps the requirements for maintaining a well functioning and world renowned decomposition facility and often fields questions similar to: How do we get started? What permissions do we get? Are permits necessary? What do I need to do to get started? How do we DO this? (Steadman, personal communication, October 14, 2013).

The establishment and maintenance of a human decomposition facility is a long term commitment that many interested parties may not fully grasp initially. The amount of inquiries that Steadman receives from individual entities is large, but the actual follow through is slim. One possible reason for this fact is that schools and organizations may feel they have the support of their administration and the necessary funding for startup, only later realizing the true obligation necessary. Rarely does Steadman receive more than one or two calls from any given person before the inquisition abruptly ends.

Although the popularity and establishment of these facilities has increased since the ARF's inception and, although the need for more facilities is evident, the need for collaboration and correspondence among those already established, as well as between the facilities and the forensic community, may be more pressing. Surprisingly, when examining data from both interviews and surveys, it became evident that certain misinformation is not limited to the public, but is also found amongst forensic professionals, particularly with regard to locations where facilities may or may not be established (e.g., Wichita, Boston, JPAC and Hawaii, Maine, Australia, and India, among others). Whether or not these locations have indeed established

human decomposition facilities remains unknown to this researcher, despite extensive research and inquiries.

The task of opening the dialogue about “body farms” should not fall solely on facility directors and representatives, but on the forensic community as a whole. Researchers who use and benefit from these facilities could make such utilizations obvious, by including facility information in proceedings, presentations, and publications. Although the inclusion might seem obvious, this researcher noted a number of instances from the 2014 AAFS conference where information relating to the facility used for research, though mentioned in the verbal presentation, was not included in the abstract Proceedings. Because the Proceedings are distributed to the entire AAFS community, as well as posted on the organization’s website, the opportunity to disseminate data about decomposition facilities was missed.

Despite the challenges of establishing and maintaining a human decomposition facility, the benefits to the students, university, and law enforcement community are many. Aside from the teaching and research opportunities, such facilities bring invaluable notoriety to the host-university and department through the workshops, publication of research, and forensic anthropological assistance provided to law enforcement. For example, several volunteers who were interviewed admit to having first been attracted to the school because it was the location of a human decomposition facility. Additionally, student volunteers are able to gain practical experiences which help place them in graduate programs or in positions within the law enforcement or medicolegal communities. In fact, a number of students hope to use the knowledge gained while volunteering to start their own human decomposition facility one day.

Although I began this research with the hope of creating a document to assist with the startup and continuation of facilities both past and present, my goals were more difficult to

achieve than first realized. Just as those who try to start a human decay facility may not initially comprehend the enormity of the task at hand, I, too, did not realize the extent of this project. I set out expecting to find clear answers and an easily definable end in my research; I now realize there is so much more to be said. Although the original facility, so popularly called the “Body Farm,” has been established for over thirty years, extending the concept of the decomposition facility beyond the original to different settings and environments is still in its infancy.

Additionally, though much research has been conducted over the years, PMI is highly variable and there is still much to learn. With the creation of each new facility, forensic anthropologists make progress in their efforts to help law enforcement with the task of determining time since death and, thereby, to bring closure to many families that are the victims of crime. The continued collaboration between facilities, the creation of new research goals and questions, and the persistent dissemination of accurate information about these facilities is key to their future.

With the completion of this thesis, my hope is that the information presented within can be used by the forensic and lay communities to understand the benefit of human decomposition facilities, including how they are started, the requirements of daily maintenance and operation, and their uses beyond taphonomic research. To paraphrase an answer provided by an AAFS survey respondent, “the future is now for these facilities.” If the current trend of newly established human decomposition facilities continues (e.g. University of Nevada-Reno is currently in the process of establishment), the continuation of publishable research will help to keep these facilities running, and relevant, for years to come.

WORKS CITED

- Bass, W. "Time Interval Since Death: A Difficult Decision." *Human Identification: Case Studies in Forensic Anthropology*. Ed. T Rathbun and J Buikstra. Springfield: Charles C. Thomas, 1984. 136-47.
- Bass, W, and J Jefferson. *Death's Acre: Inside the Legendary Forensic Lab--The Body Farm--Where Dead Do Tell Tales*. New York: Putnam, 2003.
- Dabbs, G, and D Martin. "Geographic Variation in the Taphonomic Effect of Vulture Scavenging: The Case for Southern Illinois." *Journal of Forensic Sciences* 50.S1 (2013): S20-25. Print.
- Department of Anthropology. *Forensic Anthropology Center*. The University of Tennessee , n.d. Web. 5 Jan. 2014. <<http://fac.utk.edu/endowment.html>>.
- Department of Anthropology. *Forensic Anthropology Center*. The University of Tennessee , n.d. Web. 5 Jan. 2014. <<http://fac.utk.edu/bassbuilding.html>>.
- Department of Anthropology. *Cadaver Dog Training*. Western Carolina University, 2014. Web. 19 Jan. 2014. <<http://www.wcu.edu/academics/edoutreach/conted/profdev/cadaver-dog-training/index.asp>>.
- Hahn, A. "Forensic Anthropologist Gets to the Bare Bones." *Saluki Times*. SIU Carbondale, 2 Mar. 2011. Web. 18 Apr. 2013. <<http://news.siu.edu/2011/03/030211amh11045.html>>.
- Jantz, L, and R Jantz. "The Anthropology Research Facility: The Outdoor Laboratory of the Forensic Anthropology Center, University of Tennessee." *The Forensic Anthropology Laboratory*. Ed. M Warren, H Walsh-Haney, A Heather, and L Freas. Boca Raton: CRC Press, 2008. 7-21.
- Jantz, R, and S Ousley. "Introduction to Fordisc 3." *Forensic Anthropology: An Introduction*. Ed. M Tersigni-Tarrant and N Shirley. Boca Raton: CRC Press, 2013. 253-69.
- Mann, R, W Bass, and L Meadows. "Time Since Death and Decomposition of the Human Body: Variable and Observations in Case and Experimental Field Studies." *Journal of Forensic Sciences* 35.1 (1990): 103-11.
- Marks, M. "William M. Bass and the Development of Forensic Anthropology in Tennessee." *Journal of Forensic Science* 40.5 (1995): 741-50.
- Martin, D, G Dabbs, and L Roberts. "Lemonade from Lemons: The Taphonomic Effect of Lawn Mowers on Skeletal Remains." *Journal of Forensic Sciences* 58.5 (2013): 1273-78.

- Membership Overview*. American Academy of Forensic Sciences, 2013. Web. 2 Mar. 2014. <www.aafs.org>.
- National Climatic Data Center*. National Oceanic and Atmospheric Administration, 2013. Web. 7 Mar. 2014. <<http://www.ncdc.noaa.gov/>>.
- National Institute of Justice. *The 'CSI Effect': Does It Really Exist?*. Office of Justice Programs, Mar. 2008. Web. 19 Mar. 2014. <www.nij.gov/journals>.
- Northwest Alliance for Computational Science and Engineering, Oregon State University. *PRISM Climate Data*. PRISM Climate Group, 2013. Web. 15 Feb. 2014. <<http://www.prism.oregonstate.edu/>>.
- Parks, C. "A Study of the Human Decomposition Sequence in Central Texas." *Journal of Forensic Sciences* 56.1 (2011): 19-22.
- Reeves, N. "Taphonomic Effects of Vulture Scavenging." *Journal of Forensic Sciences* 54.3 (2009): 523-28.
- Ripley, A, N Larison, K Moss, J Kelly, and J Bytheway. "Scavenging Behavior of *Lynx rufus* on Human Remains During the Winter Months of Southeast Texas." *Journal of Forensic Sciences* 57.3 (2012): 699-705.
- Rodriguez, W, and W Bass. "Insect Activity and its Relationship to Decay Rates of Human Cadavers in East Tennessee." *Journal of Forensic Sciences* 28.2 (1983): 423-32.
- Rodriguez, W, and W Bass. "Decomposition of Buried Bodies and Methods that May Aid in Their Location." *Journal of Forensic Sciences* 30.3 (1985): 836-52. Print.
- Shirley, N, R Wilson, and L Jantz. "Cadaver Use at the University of Tennessee's Anthropological Research Facility." *Clinical Anatomy* 24 (2011): 372-80.
- Tz'u, S. *The Washing Away of Wrongs: Science, Medicine and Technology in East Asia I*. Trans. Brian McKnight. Ann Arbor: Center for Chinese Studies/The University of Michigan, 1981.
- United States Census Bureau* . N.p., n.d. Web. 1 Nov. 2013. <<http://www.census.gov/>>.
- Vass, A, W Bass, J Wolt, J Foss, and J Ammons. "Time Since Death Determinations of Human Cadavers Using Soil Solution." *Journal of Forensic Sciences* 37.5 (1992): 1236-53.
- Widya, M, C Moffatt, and T Simmons. "The Formation of Early Stage Adipocere in Submerged Remains: A Preliminary Experimental Study." *Journal of Forensic Sciences* 57.2 (2012): 328-33.

APPENDICES

Appendix 1: IRB Approval

ACTION ON PROTOCOL APPROVAL REQUEST



Institutional Review Board
Dr. Robert Mathews, Chair
131 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.6792
irb@lsu.edu | lsu.edu/irb

TO: Ginesse Listi
Anthropology
FROM: Robert C. Mathews
Chair, Institutional Review Board
DATE: June 13, 2013
RE: IRB# 3391
TITLE: What is the role of the "Body Farm"?

New Protocol/Modification/Continuation: New Protocol

Review type: Full ___ Expedited X **Review date:** 6/14/2013

Risk Factor: Minimal X Uncertain _____ Greater Than Minimal _____

Approved X **Disapproved** _____

Approval Date: 6/14/2013 **Approval Expiration Date:** 6/13/2014

Re-review frequency: (annual unless otherwise stated)

Number of subjects approved: 1000

Protocol Matches Scope of Work in Grant proposal: (if applicable) _____

By: Robert C. Mathews, Chairman 

**PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is CONDITIONAL on:**

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. SPECIAL NOTE:

**All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>*

Application for Approval of Projects Which Use Human Subjects

This application is used for projects/studies that cannot be reviewed through the exemption process.



Institutional Review Board
 Dr. Robert Mathews, Chair
 131 David Boyd Hall
 Baton Rouge, LA 70803
 P: 225.578.8692
 F: 225.578.5983
 irb@lsu.edu
 lsu.edu/irb

-- Applicant, Please fill out the application in its entirety and include two copies of the completed application as well as parts A-E, listed below. Once the application is completed, please submit to the IRB Office for review and please allow ample time for the application to be reviewed. Expedited reviews usually takes 2 weeks. Carefully completed applications should be submitted 3 weeks before a meeting to ensure a prompt decision.

- A Complete Application Includes All of the Following:
 - (A) Two copies of this completed form and two copies of part B thru F.
 - (B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1&2)
 - (C) Copies of all instruments to be used.
 - *If this proposal is part of a grant proposal, include a copy of the proposal and all recruitment material.
 - (D) The consent form that you will use in the study (see part 3 for more information.)
 - (E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing or handling data, unless already on file with the IRB. Training link: (<http://phrp.nihtraining.com/users/login.php>)
 - (F) IRB Security of Data Agreement: (<http://research.lsu.edu/files/item26774.pdf>)

1) Principal Investigator*: Rank
 *PI **must be** an LSU Faculty Member

Dept: Ph: E-mail:

2) Co Investigator(s): please include department, rank, phone and e-mail for each

3) Project Title:

4) Proposal Start Date: 5) Proposed Duration Months:

6) Number of Subjects Requested: 7) LSU Proposal #:

8) Funding Sought From:

IRB# 3391 LSU Proposal # _____

Full

Expedited

Human Subjects Training

Complete Application

ASSURANCE OF PRINCIPAL INVESTIGATOR named above
 I accept personal responsibility for the conduct of this study (including ensuring compliance of co-investigators/co-workers) in accordance with the documents submitted herewith and the following guidelines for human subject protection: The Belmont Report, LSU's Assurance (FWA00003892) with OHRP and 45 CFR 46 (available from <http://www.lsu.edu/irb>). I also understand that copies of all consent forms **must be maintained at LSU for three years after the completion of the project**. If I leave LSU before that time, the consent forms should be preserved in the Departmental Office.

Signature of PI *Ginesse Listi* Date 5/13/13

ASSURANCE OF STUDENT/PROJECT COORDINATOR named above. If multiple Co-Investigators, please create a "signature page" for all Co-Investigators to sign. Attach the "signature page" to the application.

I agree to adhere to the terms of this document and am familiar with the documents referenced above.

Signature of Co-PI (s) *Nicole Klein* Date 5/13/13

Study Approved By:
 Dr. Robert C. Mathews, Chairman
 Institutional Review Board
 Louisiana State University
 203 B-1 David Boyd Hall
 225-578-8692 | www.lsu.edu/irb
 Approval Expires: 6/13/2014

1. Study Title: The Role of the "Body Farm": Past, Present and Future
2. Performance Site: University of Tennessee, Western Carolina University, Southern Illinois University, Sam Houston University, Texas State University
3. Investigators: The following investigators will be available for questions about this study,
M-F, 9:00 A.M. -4:30 P.M.
Nicole Klein 865-254-8627
Ginesse Listi 225-281-6929
4. Purpose of this study: The purpose of this thesis is to explore the role and evolution of the decomposition research facility by addressing the following questions: how such facilities are started, what they are used for, how their utilization may have changed since their inception, and what their role is in the future of forensic anthropology.
5. Subject Inclusion: Individuals that are associated with decomposition facilities.
6. Number of subjects: Approximately 10 people (max) at each university.
7. Study Procedures: This study will consist of interviews conducted at different universities around the country. Directors, staff, representatives, students, and volunteers may be interviewed. A digital recorder may be used and/or notes taken, depending on the preference of the interviewee. Additionally, tours of facilities, campuses, and labs may also take place, as allowed by each university.
8. Benefits: This study will hopefully yield valuable information about the role of decomposition facilities as they apply to forensic anthropology, and may lead to additional, similar research.
9. Risks: Because this research is interview and survey based, there is no risk involved.
10. Right to Refuse: Subjects may choose not to participate or to withdraw from the study at any time without penalty.
11. Privacy: Results of this interview may be published. Each person interviewed will have the opportunity to read over a copy of the finished material to verify that they were portrayed in an appropriate manner. Additionally, the person interviewed may choose to remain anonymous. All notes and transcripts from

interviews will remain in a locked file cabinet available only to interviewer and her thesis committee.

12. Signatures:

The study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigators. If I have questions about subjects' rights or other concerns, I can contact Robert C. Mathews, Institutional Review Board, (225) 578-8692, irb@lsu.edu, www.lsu.edu/irb.

I agree to participate in the study described above and acknowledge the investigator's obligation to provide me with a signed copy of the consent form.

Subject Signature: _____ Date: _____

The study subject has indicated to me that he/she is unable to read. I certify that I have read this consent form to the subject and explained that by completing the signature line above, the subject has agreed to participate.

Signature of Reader: _____ Date: _____

Study Approved By:
Dr. Robert C. Mathews, Chairman
Institutional Review Board
Louisiana State University
203 B-1 David Boyd Hall
225-578-8692 | www.lsu.edu/irb
Approval Expires: 6/13/2014

Appendix 2: Facility Interview Questions

1. When did your facility open? Who initiated the addition of a decomposition facility to your university?
2. Did the university run into any problems when the facility was beginning?
3. How do you get funding for your facility? Do you get support from the state? Federal?
4. Do you conduct research with human subjects, animal subjects, or a combination?
5. Do you believe decomposition facilities are beneficial to the forensic community, or can most of the research conducted at a facility be replaced with laboratory research?
6. Do you have a donor program? What information do you collect about these donations?
7. Are there different forms for donors to fill out? (i.e., one for skeletal research only, one specifically for decomposition studies, etc)
8. How many bodies have you had donated/have you received?
9. What do you do with these donations?
10. What is the size of this facility? How many “projects” are usually being worked on at any one time?
11. In addition to conducting decomposition research, in what other ways is your facility used?
12. Do you have a skeletal collection as part of your facility/department?
13. What is the focus of your facility? What do you hope to understand or learn from the research conducted there?
14. Have you seen a shift in the types of research conducted at your facility?
15. What other areas in the US/in the world do you think should start a facility?
16. Have you ever had problems with people trying to break into the facility?

17. What is maintenance like? Daily upkeep?
18. When did you begin working/volunteering here?
19. How many fulltime, part-time employees and volunteers do you have at your facility?
20. What immunization requirements do you have for your employees?
21. What is your academic background?
22. What is your role at the facility?
23. What is the most beneficial part of your job?
24. What do you like least about your job?
25. From personal experience, what do people perceive your job to entail?
26. Can you give some examples of the kinds of questions people ask you about the facility/your work there?
27. What do you think the future of the decomposition facility is?

Appendix 3: All Sections AAFS Survey Questions

1. How familiar are you with human decomposition facilities? If you are familiar, are you able to give an example(s) of where one is located? List as many as possible.

Very familiar Somewhat familiar Not at all familiar

2. What types of research/work do you think are conducted at a decomposition facility?

Please check all that apply.

- | | |
|--|--|
| <input type="checkbox"/> Decomposition studies using humans | <input type="checkbox"/> Cadaver dog training |
| <input type="checkbox"/> Decomposition studies using animals | <input type="checkbox"/> Law enforcement training |
| <input type="checkbox"/> Trauma analysis | <input type="checkbox"/> Mass disaster recovery training |
| <input type="checkbox"/> None of the above | <input type="checkbox"/> Other (Please specify) |

3. Do you believe decomposition facilities are beneficial to the forensic community, or can most of the research conducted at a facility be replaced with laboratory research? Please briefly explain.

4. Do you believe decomposition studies need human subjects or are animal replacements (i.e., pigs) sufficient? Please briefly explain your reasoning.

5. Where do you think the next decomposition facility should be established? Why? Or if you do not think there is a necessity for another facility, please explain why.

6. Where was the first decomposition facility established? By whom? What year (approximately)?

7. What do you think the future of the decomposition facility is? Please briefly explain.

8. To what AAFS section do you belong?

- | | |
|--|--|
| <input type="checkbox"/> Criminalistics | <input type="checkbox"/> Digital and Multimedia Sciences |
| <input type="checkbox"/> Engineering Sciences | <input type="checkbox"/> General |
| <input type="checkbox"/> Jurisprudence | <input type="checkbox"/> Odontology |
| <input type="checkbox"/> Pathology/Biology | <input type="checkbox"/> Physical Anthropology |
| <input type="checkbox"/> Psychiatry and Behavioral Science | <input type="checkbox"/> Questioned Documents |
| <input type="checkbox"/> Toxicology | |

9. How many years of experience do you have in your current career?

- | | |
|-------------------------------|--------------------------------|
| <input type="checkbox"/> < 1 | <input type="checkbox"/> 1-5 |
| <input type="checkbox"/> 6-10 | <input type="checkbox"/> 11-15 |
| <input type="checkbox"/> 16+ | |

10. If you are in the Physical Anthropology section and work in an academic setting, in addition to the above questions, please copy and paste this additional link to briefly answer 4 more questions: <https://www.surveymonkey.com/s/ZPSNX97>. Make sure to click Done for this survey before completely exiting the browser.

Appendix 4: AAFS Physical Anthropology Section Survey Questions

1. If your university does not have a facility, do you think your university should have one?
Why or why not?
2. If your university does not have a facility, please briefly describe why it does not have one.
3. Does your university have any other type of facility (lab, etc) where decomposition studies are conducted? If yes, please list them.
4. Do you know of any students from your university that have traveled to other schools (with a decomposition facility) to conduct research at that facility? If yes, could you briefly describe the type of research done?

Appendix 5: University Students Survey Questions

1. Are you familiar with what a decomposition facility is?

Yes No Maybe

2. If yes, are you able to give an example(s) of where one is located? List as many as possible.

3. What types of research/work do you think are conducted at a decomposition facility?

Please check all that apply.

- | | |
|--|--|
| <input type="checkbox"/> Decomposition studies using humans | <input type="checkbox"/> Cadaver dog training |
| <input type="checkbox"/> Decomposition studies using animals | <input type="checkbox"/> Law enforcement training |
| <input type="checkbox"/> Trauma analysis | <input type="checkbox"/> Mass disaster recovery training |
| <input type="checkbox"/> Other (Please give an example) | |

4. Please list three tasks that might be part of a forensic anthropologist's job description.

5. Do you watch any of the following? Please check all that apply

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> NCIS | <input type="checkbox"/> Law and Order: Criminal Intent |
| <input type="checkbox"/> CSI | <input type="checkbox"/> Law and Order: Special Victims Unit |
| <input type="checkbox"/> CSI Miami | <input type="checkbox"/> The First 48 |
| <input type="checkbox"/> CSI New York | <input type="checkbox"/> Without a Trace |
| <input type="checkbox"/> Bones | <input type="checkbox"/> The Mentalist |

- Law and Order Castle
 Hawaii Five-O None of the above

6. Please check the box that indicates your age

- 17 and younger 22-23
 18-19 23-25
 20-21 25 and up

7. Please check the box that includes your major or concentration:

- Humanities Business
 Biological Sciences Engineering
 Social Sciences Medical (Pre-Med, Nursing, Dentistry)
 Education Other (please specify)
 Undecided I am not a degree seeking student

8. Please check the box that indicates your year in school:

- Freshman Sophomore
 Junior Senior
 More than 4 years I am not a degree seeking student

9. Please check the box that indicates what school you attend.

- Western Carolina University Southern Illinois University
 Texas State University Sam Houston University

- University of Tennessee Louisiana State University
 University of Nevada Reno Mesa State College

Appendix 6: FAC Body Donation Program Packet



Forensic Anthropology Center, University of Tennessee, Knoxville Body Donation Program Policy



The donation of a person's body after death is a tremendous gift. We are grateful for everyone who expresses an interest in body donation. We appreciate your attention to the following.

1. Unlike medical schools, we **do not** return remains to the family. The skeletal remains are a very important component to our research and teaching program. The first donation made to our program in 1981 continues to be studied by researchers today.
2. We reserve the right to decline donations of individuals who have some form of infectious disease such as HIV, tuberculosis, hepatitis of any kind, or antibiotic resistant infections such as MRSA, even if contracted after donation is arranged.
3. Donors with an infectious disease who still wish to donate may do so by choosing to have their remains cremated. We have a growing collection of cremains that provides an invaluable learning resource. People choosing this option should contact us prior to making arrangements. This allows us to work with the crematory involved to ensure the remains are not pulverized. The family must assume responsibility for the arrangement and cost of cremation.
4. We also reserve the right to decline a donation if our facility is at capacity. In case of denial by the University, alternate final arrangements should be discussed by the donor and/or the family.
5. We will arrange transportation to our facility if the deceased is located within the state of Tennessee **and** within 100 miles of Knoxville. Outside the state of Tennessee or more than 100 miles from Knoxville, the donor and/or the donor's family must make arrangements for the transportation of the body to our facility and assume responsibility for any associated costs.
6. We are unable to transport from a private residence or nursing home facility. The donor's family must arrange for transportation and assume responsibility for the cost. We will transport a body from a hospital, funeral home, forensic center, or some healthcare facilities that are within the geographic limits stated above.
7. We need to have signed donation documents or releases prior to transporting. This may be a faxed copy, but the original must be sent as soon as possible. Your donation paperwork will not be complete until originals are returned.
8. Pre-donor paperwork needs to be returned to the Forensic Anthropology Center at the time of completion in order for a file to be established. Changes of address or medical status should be sent to keep donor files up to date.
9. Pre-donor paperwork needs 2 witnesses to verify your signature, but does not need to be notarized.
10. We do not perform autopsies to determine cause of death on donations to our program.

If you have any questions or concerns that have not been addressed in this letter, please feel free to contact us at 865-974-4408 or donateinfo@utk.edu.

V8_2012

Replicated Courtesy of the FAC



Forensic Anthropology Center, University of Tennessee, Knoxville
Body Donation Program Instructions for Donors



This packet contains all the forms required for registering with our body donation program; policy sheet, body donation document, and body donation questionnaire. Please feel free to contact us with any questions you may have.

Body Donation Document

A. Copies of the Form

- a. Three copies of the body donation document are provided to you. We need an original with a valid signature returned with your donation paperwork. The other 2 copies should be retained by you and/or your family for your records.

B. Signature Completion of the Form

- a. Top portion of the form is to be completed by the donor. The donor should be of sound mind and aware of the nature of our program at the time of signing.
- b. The middle portion is to be completed by two adult witnesses. At least one witness should be someone other than a close family member, guardian, or who exhibits a special care for the donor.
- c. A notary is not required for completion of this portion of the form.

C. Trauma Research request

- a. Knowledge of how trauma occurs is of significant interest to the biomedical and anthropological communities. Understanding trauma allows us to better interpret forensic case material and help us to work towards the prevention of such trauma in living patients. This would directly benefit the legal community and aid military personnel protective equipment needs.
- b. Please initial the statement at the bottom of the form if you are interested in participating in trauma related research. A donation will **only** be used for this type of research when initials are present and there is a need.

D. Simulation Center training (Graduate School of Medicine)

- a. Medical residents at the UT Graduate School of Medicine use cadavers occasionally to learn new medical procedures. The FAC and the Simulation Center are partnering to provide cadavers for temporary use for this training. The remains are then returned to the FAC.
- b. Please initial the statement at the bottom of the form if you are interested in participating in trauma related research. A donation will **only** be used for this type of research when initials are present and there is a need.

E. Special Requests

- a. We ask that you state any special requests you may have as to how we use your remains at the bottom of this document or on an attached sheet. We will make every effort to honor any requests.

Biological Questionnaire

- A. Please complete this form to the best of your ability.
- B. Information provided is needed for the completion of the Certificate of Death and contributes information for our research.
- C. We ask that any changes of your statistical information be forwarded to us (ex. Name change, address change, significant health changes) in order for us to keep our record updated.

Acceptance into Program

- A. Acceptance into our donation program will be determined once forms are completed and mailed back to us. Please see points 2 and 4 in the Program Policy Sheet.
- B. You will receive a letter of acceptance and a donor card with contact information to carry in your wallet.



Forensic Anthropology Center, University of Tennessee, Knoxville
Body Donation Document



I, _____, do hereby dispose of and give my
(donor's name)
 body, after my death, to The University of Tennessee, Knoxville, for use by the Department of Anthropology or its designee, for educational and research purposes. I request, authorize, and instruct my surviving spouse, next-of-kin, executor or the physician who certifies my death to notify The University of Tennessee, Department of Anthropology (telephone: (865) 974-4408), immediately after my death of the availability of my body.

Witness my hand and seal this _____ day of _____, _____, at _____.
(day) (month) (year) (time)

 Donor's Signature

Address

On this _____ day of _____, _____, signed this Body Donation Document in
(day) (month) (year)
 our presence and we, as attesting witnesses, at the request of the Testator and in his/her presence and in the presence of each other have also signed this document.

WITNESSES:

Name: _____
(Print Name) (Signature)

Address: _____

Name: _____
(Print Name) (Signature)

Address: _____

_____ I wish for my remains to be used for trauma research/Simulation Center that will provide the foundation for training professionals in life saving techniques and in the construction of equipment that would enhance and/or prevent the need for these measures.



Forensic Anthropology Center, University of Tennessee, Knoxville
Body Donation Document



I, _____, do hereby dispose of and give my
(donor's name)

body, after my death, to The University of Tennessee, Knoxville, for use by the Department of Anthropology or its designee, for educational and research purposes. I request, authorize, and instruct my surviving spouse, next-of-kin, executor or the physician who certifies my death to notify The University of Tennessee, Department of Anthropology (telephone: (865) 974-4408), immediately after my death of the availability of my body.

Witness my hand and seal this _____ day of _____, _____, at _____.
(day) (month) (year) (time)

Donor's Signature

Address

On this _____ day of _____, _____, signed this Body Donation Document in
(day) (month) (year)
our presence and we, as attesting witnesses, at the request of the Testator and in his/her presence and in the presence of each other have also signed this document.

WITNESSES:

Name: _____
(Print Name) (Signature)

Address: _____

Name: _____
(Print Name) (Signature)

Address: _____

_____ I wish for my remains to be used for trauma research/Simulation Center that will provide the foundation for training professionals in life saving techniques and in the construction of equipment that would enhance and/or prevent the need for these measures.



Forensic Anthropology Center, University of Tennessee, Knoxville
Body Donation Document



I, _____, do hereby dispose of and give my
(donor's name)

body, after my death, to The University of Tennessee, Knoxville, for use by the Department of Anthropology or its designee, for educational and research purposes. I request, authorize, and instruct my surviving spouse, next-of-kin, executor or the physician who certifies my death to notify The University of Tennessee, Department of Anthropology (telephone: (865) 974-4408), immediately after my death of the availability of my body.

Witness my hand and seal this _____ day of _____, _____, at _____.
(day) (month) (year) (time)

Donor's Signature

Address

On this _____ day of _____, _____, signed this Body Donation Document in
(day) (month) (year)
our presence and we, as attesting witnesses, at the request of the Testator and in his/her presence and in the presence of each other have also signed this document.

WITNESSES:

Name: _____
(Print Name) (Signature)

Address: _____

Name: _____
(Print Name) (Signature)

Address: _____

_____ I wish for my remains to be used for trauma research/Simulation Center that will provide the foundation for training professionals in life saving techniques and in the construction of equipment that would enhance and/or prevent the need for these measures.



Forensic Anthropology Center
 University of Tennessee
 Body Donation Program



The Forensic Anthropology Center (FAC), Department of Anthropology at the University of Tennessee relies on people like you, and we are very appreciative. As you know our research focus has always been on human remains following death. However, we have been considering some research areas that could involve you as a living subject.

Examples of living subject research by faculty and students of the FAC might include such things as surveying why you are interested in donating your body at death, or taking body measurements or 3D scans of faces and fingerprints.

Each research proposal will be subject to the University of Tennessee’s Internal Review Board for use of living human subjects for approval.

(please circle your desire for this program)

Yes, I would like to be considered for living subjects related research.

No, I would not to be considered for living subjects related research.

Print Name _____

Signature

Date



**Forensic Anthropology Center
University of Tennessee, Knoxville**



Body Donation Questionnaire
Please complete the following information by filling in the blank and/or circling an option.
If you need more space, additional sheets may be attached.
All of the information will be considered confidential.

Name _____ / _____ / _____ **Sex:** male ___ female ___
Last First Middle

Social Security # _____ — _____ — _____ **Race:** White / Black / Hispanic / Other _____
(circle one)

Date of Birth ___ / ___ / ___ **Age** ___ **Place of Birth (city/state)** _____

Home Address _____

City _____ **County** _____ **State** ___ **Zip** _____

Phone Number _____ **Inside City Limits:** yes ___ no ___

Mother's Name (include maiden) _____ **Place of Birth** _____

Father's Name _____ **Place of Birth** _____

Driver's License Height _____ **Weight** _____ **Recent Weight Loss:** yes ___ no ___

Handedness: Right ___ Left ___ **Shoe size** _____ **Blood Type** _____ **Hair Color** _____
(natural)

Marital Status: (circle one) Never Married Married Widowed Divorced Unknown Other

Spouse: _____ / _____ / _____ **Living** ___ **Deceased** ___ **Unknown** ___
Last (include maiden) First Middle

Number of Children: _____

Highest Education Level (indicate number of years) **Military Service:** yes ___ no ___
Elem/Second (0-12): _____ College (1-4; 5+): _____

Childhood Socio-Economic Status: (circle one) Lower Lower Middle Middle Upper Middle Upper

Usual (life-long) Occupation _____ **Business/Industry** _____

Residence History (list additional locations as necessary)

Childhood Hometown (0-15 years of age):

City _____ State _____ Start Date _____ End Date _____

City _____ State _____ Start Date _____ End Date _____

City _____ State _____ Start Date _____ End Date _____

Location as an Adult (any place you have lived for more than 1 year)

City _____ State _____ Start Date _____ End Date _____

City _____ State _____ Start Date _____ End Date _____

City _____ State _____ Start Date _____ End Date _____

City _____ State _____ Start Date _____ End Date _____

PLEASE CONTINUE ON NEXT PAGE

Name _____ / _____ / _____
Last First Middle

Dental History – Check all that apply

- | | | |
|---|---|-------------------------------|
| <input type="checkbox"/> Extensive Dental work | <input type="checkbox"/> Most/all teeth | Teeth Missing |
| <input type="checkbox"/> Lower Dentures: When _____ | <input type="checkbox"/> Bridge | <input type="checkbox"/> Few |
| <input type="checkbox"/> Upper Dentures: When _____ | <input type="checkbox"/> Gum Disease | <input type="checkbox"/> Many |
| <input type="checkbox"/> Upper and Lower Dentures: When _____ | <input type="checkbox"/> Dental Disease | <input type="checkbox"/> All |
| <input type="checkbox"/> Partial Plate | <input type="checkbox"/> Other _____ | |
| <input type="checkbox"/> Braces | _____ | |

Medical History (please indicate the approximate year for each). Please do not provide just a Doctor's name.

- | | |
|---|---|
| <input type="checkbox"/> Surgery (general) _____ | <input type="checkbox"/> Plastic Surgery (indicate type and location) _____ |
| _____ | _____ |
| <input type="checkbox"/> Fractures _____ | <input type="checkbox"/> Cancer (type) _____ |
| _____ | Treatment: _____ |
| | Length of Illness: _____ |
| <input type="checkbox"/> Auto Accident (traumatic) | <input type="checkbox"/> Smoker If yes, how long? _____ |
| <input type="checkbox"/> Spinal Injuries | <input type="checkbox"/> Alcoholism |
| <input type="checkbox"/> Open Heart Surgery | <input type="checkbox"/> Diabetes Type: _____ |
| <input type="checkbox"/> Amputations | <input type="checkbox"/> Other (Including childhood disorders) _____ |
| <input type="checkbox"/> Prosthetics (e.g. Hip or knee replacement) | _____ |
| When: _____ | _____ |

Medical History (continued) –

Please describe the above and any other information you feel may be important, including current medications, timing of injuries, the locations of traumatic injuries, or a family history of an illness, etc. Please attach additional pages as necessary.

Habitual Activities (i.e., jogging, repetitive motions, life-long occupation activities, etc.) -

PLEASE CONTINUE ON NEXT PAGE

Name _____ / _____ / _____
Last First Middle

Eye Color Blue Green Gray Brown Hazel Other _____

Tattoo(s) Yes If yes, Description: _____
 No Body Location: _____

Body Piercing(s) Yes If yes, Description: _____
 No Body Location: _____

Next of Kin Information

Name _____ Relationship _____
Address _____ Phone number _____
City _____ State _____ Zipcode _____ email: _____

Informant Information (if other than donor or Next of Kin)

Name _____ Relationship _____
Address _____ Phone number _____
City _____ State _____ Zipcode _____ email: _____

DO NOT CONTINUE IF YOU ARE A LIVING DONOR

Location of death (if applicable) **Date of Death** _____

Institution/Hospital _____
Address _____
City _____ County _____ State _____ Zip code _____

Thank you for taking the time to fill out this questionnaire.
If we can be of further assistance, please feel free to contact us.

Return completed forms to:
Dr. Lee Meadows Jantz
Department of Anthropology
250 South Stadium Hall, Knoxville, TN 37996-0720
email: donateinfo@utk.edu
phone: (865) 974-4408

Appendix 7: FAC Research Request Forms



**Forensic Anthropology Center
COLLECTIONS RESEARCH REQUEST FORM**



Name _____

Department/Institution _____

Address _____

City/State _____ Zip Code _____

e-mail _____ Telephone _____

Student: Yes* No

*If yes, please provide the name of your advisor and your status (e.g. Ph.D. candidate, undergraduate). A signed letter from the advisor must accompany this application. See the Protocol for Research Requests. _____

Proposed Dates for Study: _____

What is your proposed sample size and composition?

What is the research question and scientific merit of the proposed research?

FAC Research Request Form: V-2
Approved Date: October 2011
Effective Date: January 2012
Approved by: Director

Page 1 of 2



**Forensic Anthropology Center
COLLECTIONS RESEARCH REQUEST FORM**



What specific collection(s) do you wish to study and how is this collection(s) relevant to your research question?

Provide a synopsis of the examination procedures (methods) to be followed. You may also submit a research or grant proposal as an attachment (this is highly encouraged).

Does your research at the FAC involve radiographs? Yes* No

Does your research at the FAC involve photographs? Yes No

*Be sure to follow the guidelines of the FAC Protocols for Research Requests for radiographic equipment.

I agree to the following:

1. Provide the Forensic Anthropology Center with a copy of the data collected.
2. Provide the Forensic Anthropology Center with a copy of all results, including theses, dissertations, manuscripts and publications.
3. Provide the Forensic Anthropology Center with a copy of any photographs taken.

I have read the attached Guidelines for Collection Research.

Signature

Date

FAC Research Request Form: V-2
Approved Date: October 2011
Effective Date: January 2012
Approved by: Director

Page 2 of 2



**Forensic Anthropology Center
ANTHROPOLOGY RESEARCH FACILITY RESEARCH REQUEST FORM**



Name _____

Department/Institution _____

Address _____

City/State _____ Zip Code _____

e-mail _____ Telephone _____

Student: _____ Yes* _____ No

*If yes, please provide the name of your advisor and your status (e.g. Ph.D. candidate, undergraduate).
A signed letter from the advisor must accompany this application. See the Protocol for Research Requests. _____

Proposed Dates for Study: _____

What is your proposed sample size and composition?

What is the research question and scientific merit of the proposed research?

FAC ARF Research Request Form: V-2
Approved Date: October 2011
Effective Date: January 2012
Approved by: Director



**Forensic Anthropology Center
ANTHROPOLOGY RESEARCH FACILITY RESEARCH REQUEST FORM**



Provide a synopsis of the examination procedures (methods) to be followed. You may also attach a research or grant proposal as an attachment.

Does your research require electricity or other infrastructure? If so, explain.

By signing below you agree to the following:

1. Provide the Forensic Anthropology Center with a copy of the data collected.
2. Provide the Forensic Anthropology Center with a copy of all results, including theses, dissertations, manuscripts and publications.
3. Provide the Forensic Anthropology Center with a copy of any photographs taken.

I have read the attached Guidelines for Collection Research

I have received the Hepatitis B vaccine _____ (initials)

I have had a tetnus booster in the past 10 years _____ (initials)

Signature

Date

FAC ARF Research Request Form: V-2

Approved Date: October 2011

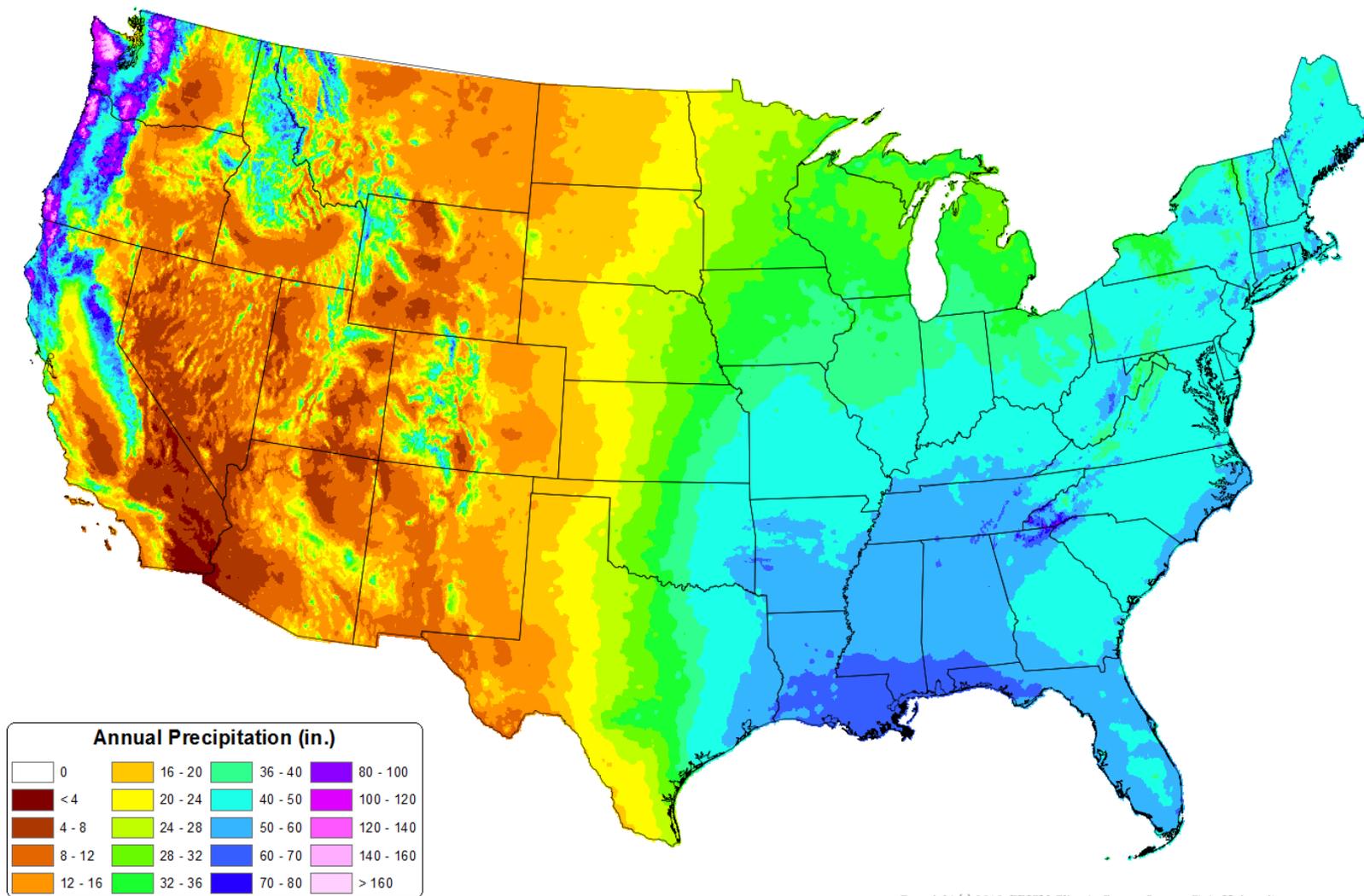
Effective Date: January 2012

Approved by: Director

Page 2 of 2

Appendix 8: Climate Data Maps

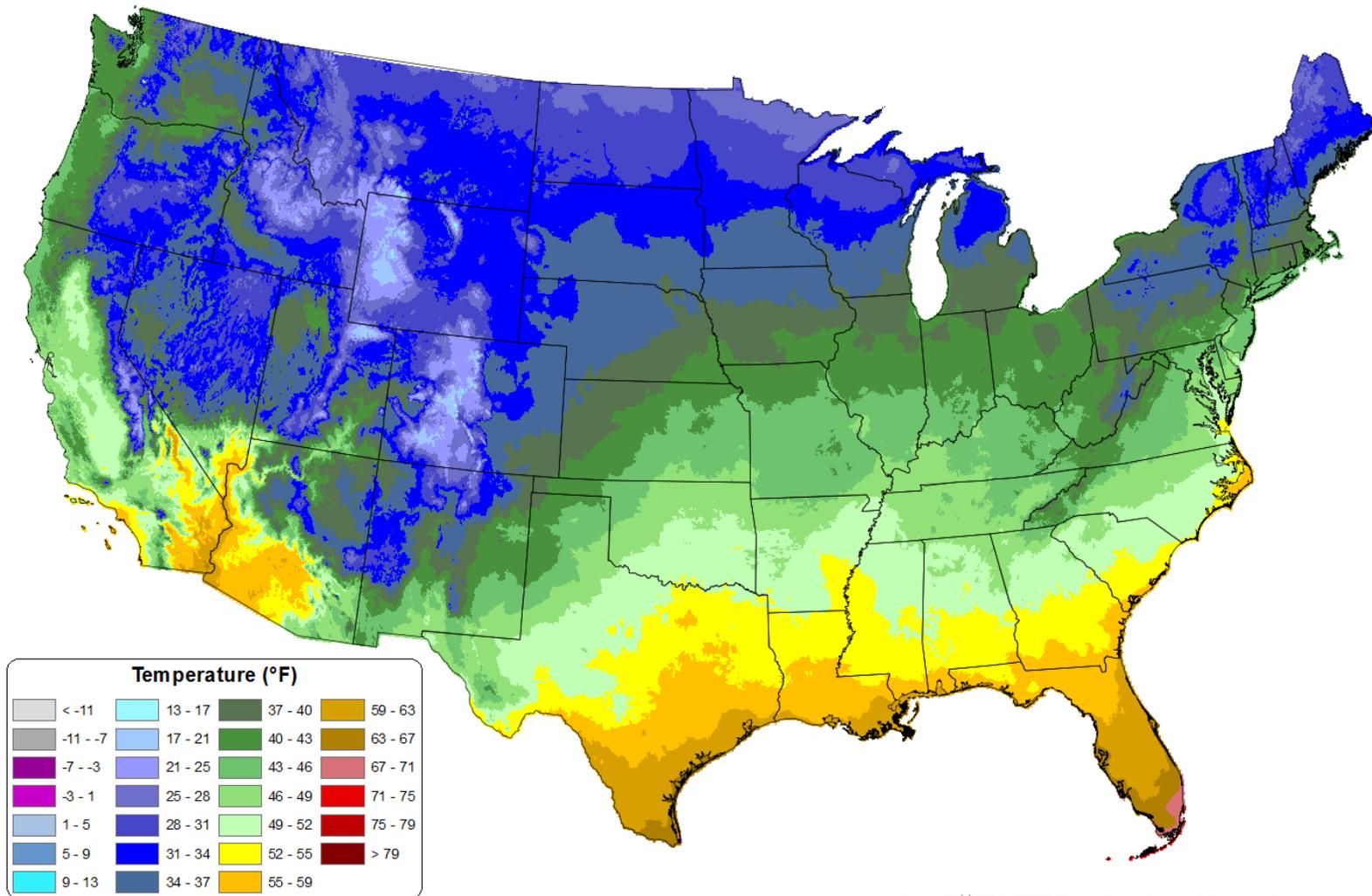
30-yr Normal Precipitation: Annual Period: 1981-2010



Copyright (c) 2013, PRISM Climate Group, Oregon State University

<http://www.prism.oregonstate.edu/>

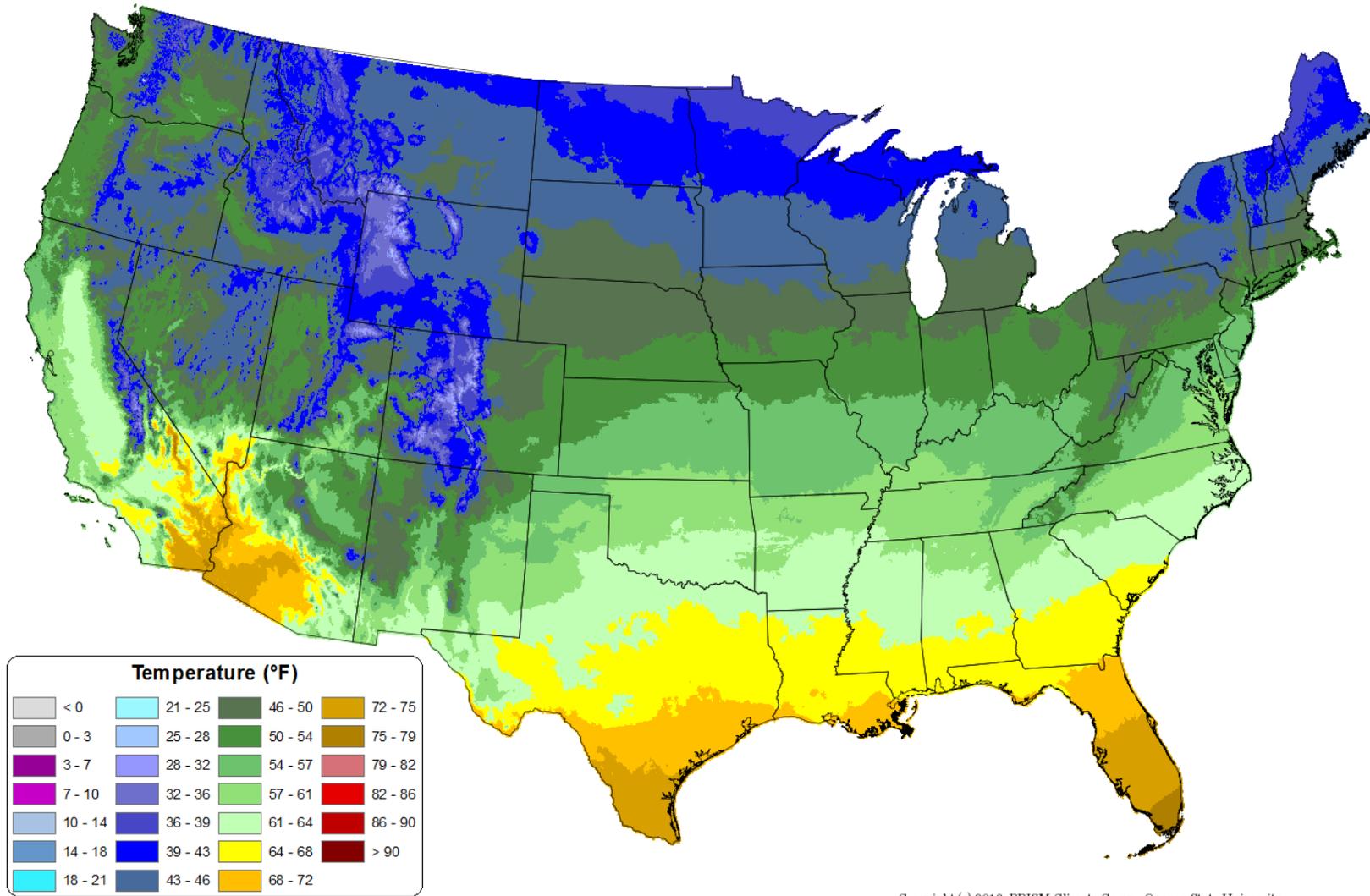
30-yr Normal Minimum Temperature: Annual
Period: 1981-2010



Copyright (c) 2013, PRISM Climate Group, Oregon State University

<http://www.prism.oregonstate.edu/>

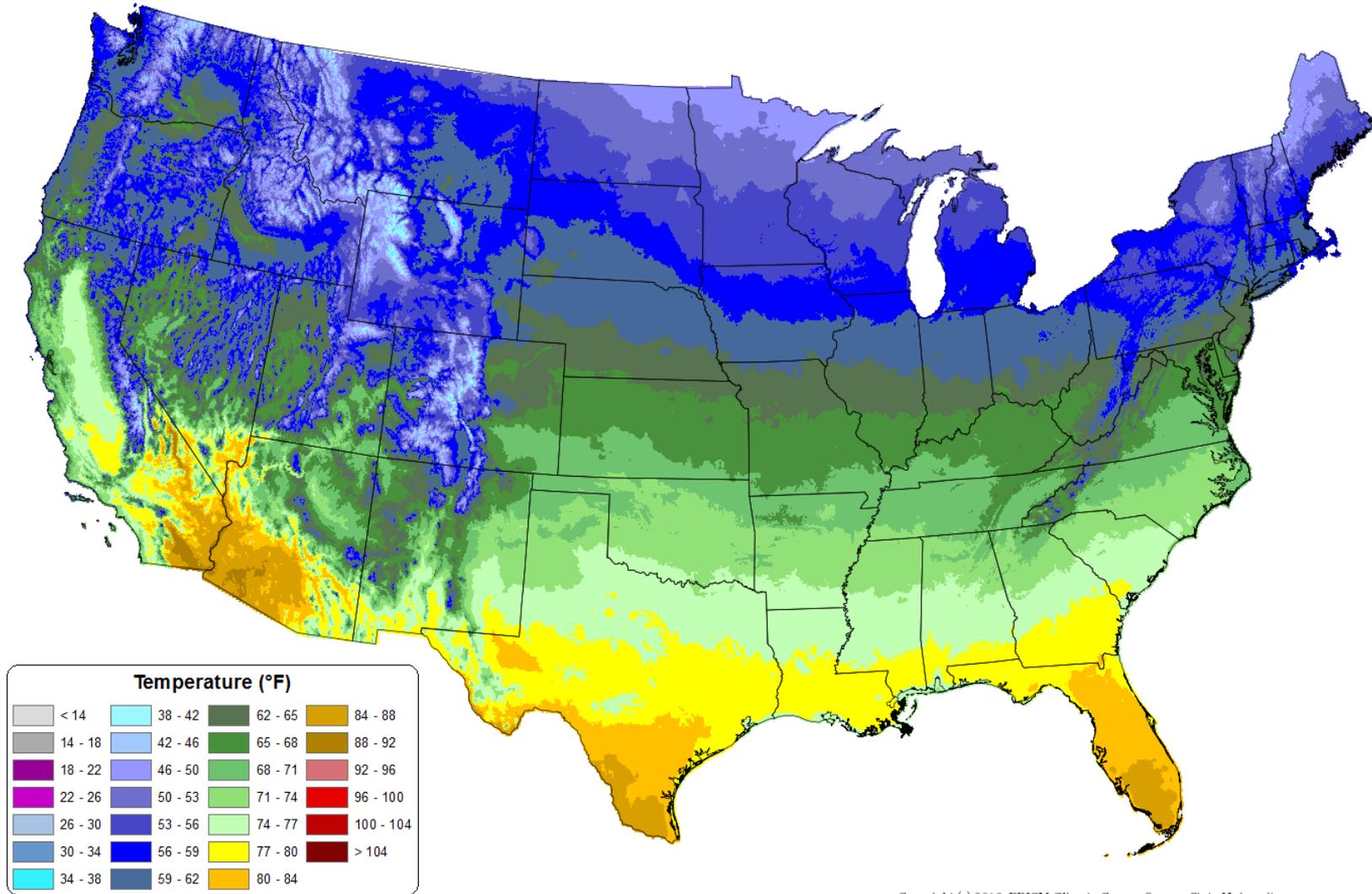
30-yr Normal Mean Temperature: Annual
Period: 1981-2010



Copyright (c) 2013, PRISM Climate Group, Oregon State University

<http://www.prism.oregonstate.edu/>

30-yr Normal Maximum Temperature: Annual
 Period: 1981-2010



Copyright (c) 2013, PRISM Climate Group, Oregon State University

<http://www.prism.oregonstate.edu/>

Appendix 9: Human Decomposition Facility Websites

The University of Tennessee's ARF: <http://fac.utk.edu/>

Western Carolina University's FOREST: <http://www.wcu.edu/academics/departments-schools-colleges/cas/casdepts/anthsoc/academic-programs/foranth/western-carolina-human-identification-laboratory.asp>

Texas State University's FARF: <http://www.txstate.edu/anthropology/facts/>

Sam Houston State University's STAFS: <http://www.shsu.edu/~stafs/>

Southern Illinois University's CFAR: none available

Colorado Mesa University's FIRS: <http://www.coloradomesa.edu/firs/index.html>

Tennessee Cadaver Research Institute: <http://thebodyfarm.org/>

Appendix 10: Additional “Body Farm” Resources and Appearances

Books

Beyond the Body Farm: A Legendary Bone Detective Explores Murders, Mysteries, and the Revolution in Forensic Science: Dr. Bill Bass and Jon Jefferson; second nonfiction collaboration between the authors

Bodies We’ve Buried: Inside the National Forensic Academy, the World’s Top CSI Training School: Jarrett Hallcox and Amy Welch; book about the NFA that collaborates with UT’s ARF; with a foreword by Dr. William Bass

The Body Farm: Patricia Cornwell; novel in which character Dr. Thomas Katz is based upon Dr. William Bass; book that gave Tennessee’s ARF its nickname

The “Body Farm Novel” series (eight total): Jefferson Bass; written under a pseudonym for Jon Jefferson and Dr. William Bass; character Dr. Bill Brockton based on Dr. William Bass, set in Knoxville, TN

Stephen Fry in America: Stephen Fry; book with chapter dedicated to a visit at UT’s ARF

Stiff: The Curious Lives of Human Cadavers: Mary Roach; contains a chapter that features UT’s ARF

Television

Episode 6.17 of “Bones” titled “The Feet on the Beach”: Dr. Temperance Brennan and her partner visit a fictional human decomposition facility at the University of Hogsburg, NY

Episode 2.15 of CSI: Crime Scene Investigation titled “Burden of Proof”: a murder victim’s body is dumped at a “body farm”, amongst research subjects

Episode 3.2 of Law and Order: SVU titled “Wrath”: Several murder victim’s bodies are dumped at a “body farm,” amongst research subjects

Episode 2 of documentary series “Stephen Fry in America”: Fry visits UT’s ARF

NOVA scienceNOW documentary titled “Death Detectives”: features TSU’s FARF

National Geographic series titled “Biography of Corpse”: episode one features UT’s ARF

VITA

Nicole Klein was born in 1985 in Orange Park, Florida. She spent her younger years in Florida, before moving to where she truly considers home, Knoxville, TN. Nicole graduated from Karns High School in 2004 and, later that year, began attending the University of Tennessee in Knoxville. Under the guidance of Dr. Richard Jantz, Nicole spent time volunteering at the Anthropological Research Facility, processing human remains, and helping within an historical archaeology laboratory. In May, 2008, she graduated Magna Cum Laude with her Bachelor of Arts in anthropology. She then spent a number of years in the workforce before making the decision to return to school. From 2012 to 2014, Nicole attended Louisiana State University to earn a Master's degree for which this current paper was her thesis. During her time at Louisiana State University, she was provided an assistantship for one year, although under the direction of Ms. Mary Manhein, Nicole was able to help with casework during her time in full. She was able to assist the FACES Lab in a number of on-site body recoveries, active forensic cases, and biological profile identifications. Nicole's future plans include utilizing her acquired knowledge, and applying her hands-on experience, within the medico-legal aspect of forensic anthropology.