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**A COMPARISON OF HUMAN DECOMPOSITION IN AN INDOOR AND AN
OUTDOOR ENVIRONMENT**

**A Thesis
Presented for the
Master of Arts Degree
The University of Tennessee, Knoxville**

**Genevieve T. Ritchie
December 2005**

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Dedication

This paper is dedicated to my family and friends without whom I would not have been able to accomplish much. Their support and love have sustained me when nothing else could.

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Abstract

In the medicolegal context, forensic anthropologists assist investigators by gathering information from skeletal remains. While humans decompose in both indoor and outdoor environments, little research has been performed on the differences in the decomposition rate and process between subjects in an indoor environment and subjects in an outdoor environment. Limited accessibility to appropriate facilities for a comparison study between indoor and outdoor decomposition rates has prevented such research from being attempted. Documented through daily notes and photographs, six human subjects were observed from the fresh to the end of the bloat stages of decomposition. Three subjects were placed in an indoor structure. The other three decomposed in an outdoor environment. All subjects were compared to determine if decomposition rates differed between the indoor and outdoor subjects.

From September 2004 through July 2005, six unembalmed, unautopsied human bodies were observed at the Anthropology Research Facility in Knoxville, Tennessee. The indoor structure was heated in winter and air conditioned during the fall. The air conditioner was broken throughout the spring/summer months. Decomposition rates were compared across seven variables and three stages using accumulated degree days (ADD). ADD was calculated for each subject using weather data gathered from an indoor/outdoor thermometer installed in the indoor structure. In the spring, summer, and fall months, indoor subjects decomposed faster than outdoor subjects. During the winter months, the indoor subject decomposed faster. Further research is necessary to determine the exact source of the differences in decomposition rates.

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Chapter I. Introduction and Statement of Purpose

The field of forensic anthropology began as the science of personal identification (Krogman and Isçan 1986, Stewart 1979). The first physical anthropologists working on forensic cases answered questions about whether the remains were human and the number of individuals present, and gave estimations of sex, age, stature, and ancestry for unidentified human skeletal remains (Stewart 1979). Early physical anthropologists and anatomists working in forensic settings, however, rarely visited crime scenes (Stewart 1979). As the field of forensic anthropology is integrated into the medicolegal system, other types of information gathered from human remains or the context in which they were found become increasingly important. While personal identification is still the main goal of forensic anthropological analysis, determining cause and time of death whenever possible also helps investigators establish identity and the circumstances surrounding death.

Over the years, forensic anthropologists have gathered theory and methodology from other disciplines to help answer questions the techniques of physical anthropology cannot answer (Haglund and Sorg 1997b). The field of taphonomy, as defined by archeologists, paleontologists, and paleoanthropologists, originally was developed to study the process of fossilization (Haglund and Sorg 1997b). The study of postmortem processes, however, is particularly applicable to the time since death determinations required of forensic anthropologists. Forensic taphonomy encompasses a number of topics including modifications to soft tissue and bone due to scavenging (Haglund 1992, Haglund et al. 1989), weathering of bone (Lyman and Fox 1997), patterns of dispersal

(Haglund and Reay 1993, O'Brien 1997), and the process of decomposition (Galloway et al. 1989, Mann et al. 1990, Rodriguez and Bass 1983). According to Haglund and Sorg (1997b), "[forensic taphonomy] differs from taphonomic studies in archaeology and paleontology in its focus on events in the recent past, the legal context, and the emphasis on chain of custody." As forensic taphonomy focuses on events in the recent past, researchers have recently attempted to fill a void in the literature concerning the processes and patterns of the decomposition of human bodies (Bass 1997, Galloway et al. 1989, Lane 1975, Mann et al. 1990, Micozzi 1986, Rodriguez and Bass 1983, Vass et al. 1992).

Estimating the time since death (TSD) or the post-mortem interval (PMI) requires an understanding of the process of decomposition and the variables that affect the patterns and rate of decomposition. Various methods including entomology (Rodriguez and Bass 1983), soil analysis (Vass et al. 1992), forensic botany (Hall 1997), and general observation (Bass 1997, Galloway et al. 1989, Mann et al. 1990) have been employed to estimate the PMI. With all available methods, the accuracy of PMI estimations decreases with the time since death (Love and Marks 2003, Rhine 1998). An accurate PMI is critical in narrowing the possible missing persons matches and establishing the time of death for criminal investigations.

General observation studies provide not only a basis for estimating and describing the postmortem interval (PMI), but also a starting place for further investigation. General observation studies are divided into two types: retrospective and prospective or experimental studies (Haglund and Sorg 1997b). Retrospective studies use the case reports and experiences of forensic anthropologists in a geographic area to draw

conclusions about the rates and patterns of human decomposition in that area (Boyle et al. 1997, Galloway et al. 1989, Haglund 1993, Haglund et al. 1990, Komar 1998, Sorg et al. 1997). Due to the wide temporal range of retrospective studies, they are often criticized for their possible sources of inter-observer error (Haglund and Sorg 1997b). Prospective or experimental studies usually have a much shorter temporal scope (Mann et al. 1990, Micozzi 1986, Rodriguez and Bass 1985, Symes 1992). An experimental study allows the researcher to have more control, but experimental situations may not accurately mirror natural processes (Hanson 1980). By conducting experiments in an outdoor facility, however, researchers are more likely to mimic decomposition in a natural environment. Although outdoor experiments avoid artificiality, the variables are not as well controlled.

While experimental studies using nonhuman subjects have been conducted at various locations, only one outdoor research facility exists to study human decomposition. The Anthropology Research Facility (ARF) at the University of Tennessee, Knoxville was created in 1980 by William M. Bass, PhD. The faculty and students of the University of Tennessee have investigated the process of decomposition in a humid, temperate environment and the variables that affect the rate and pattern of human decomposition (Galloway et al. 1989, Mann et al. 1990, Rodriguez and Bass 1983). Most studies at ARF examine outdoor decomposition on the surface, buried, or in water (Mann et al. 1990, Rodriguez and Bass 1983, Rodriguez and Bass 1985). Until recently, no structures have existed at ARF to study the differences between outdoor and indoor decomposition.

With the purchase, remodeling, and placement of a small building at ARF, a study of indoor versus outdoor decomposition is now possible. The building was remodeled with insulation, dry wall, and linoleum to resemble a one-room living space. The nature of the structure limited the access of insects to the remains. Two other small areas were created within the building: a vestibule to counteract the increase in insect access due to daily observation and an area connected to the backseat of a car. The second area, for studies of the process of decomposition in a car, was not used in this study. An air conditioning unit was installed to control the humidity and temperature in the building during the summer. Other studies have suggested that the control and limitation of these variables will have a significant affect on the rate of human decomposition (Galloway et al. 1989, Mann et al. 1990, Rodriguez and Bass 1983). The current study is an attempt to quantify the degree to which the rate of early human decomposition is affected by an indoor environment.

Chapter II. Literature Review

II.1 Introduction

Forensic anthropologists apply the techniques of skeletal biology and taphonomy to unidentified human remains in an attempt to provide information about sex, age, ancestry, stature, pathology, and trauma. The primary goal of forensic anthropology is identification of the individual (Krogman and Iscan 1986, Stewart 1979). Traditional methods of identification such as fingerprinting and visual recognition are quickly affected by bloating, discoloration, and skin slippage early in the process of decomposition (Mann et al. 1990). Besides identification, however, additional information from anthropological investigation can assist national or international law enforcement agencies in criminal prosecution and documentation of the events surrounding death. One piece of particularly essential information is the amount of time that has passed since death. Time since death (TSD) or postmortem interval (PMI) estimations provide a timeline for criminal activity and narrow the possible missing persons matches (Mann et al. 1990, Wells and Lamotte 2001).

Although forensic anthropologists historically analyzed human remains in a laboratory setting, they are becoming increasingly involved in the recovery of remains in the field (Haglund and Sorg 1997a). As a result, forensic anthropologists are seeing more cases of early to advanced decomposition prior to processing of the remains. Borrowing methods and theory from archeology, paleoanthropology, and paleontology, forensic anthropologists can now reconstruct the events surrounding death with more accuracy (Haglund and Sorg 1997b). The techniques of archeological excavation and laboratory analysis have allowed forensic anthropologists to provide more information to law

enforcement. While taphonomic analysis was originally developed to decipher the processes that affect fossil remains, the same ideas can be applied to forensic situations (Haglund and Sorg 1997b). Forensic taphonomy focuses on events in the recent past within a legal context and assists anthropologists in reconstructing events, identifying peri- and postmortem modifications, and estimating time since death (Haglund and Sorg 1997b).

Since taphonomic studies usually concentrate on the processes of fossilization, new research has been necessary to identify the markers of the stages of decomposition and skeletalization (Galloway et al. 1989, Haglund and Sorg 1997b, Mann et al. 1990, Rodriguez and Bass 1983). Research, however, has been difficult due to the nature in which many societies, including American, treat their dead (Haglund and Sorg 1997a, Wells and Lamotte 2001). The first human decomposition studies are anecdotal accounts published by forensic anthropologists and medical examiners working in forensic investigation (Haglund et al. 1989, Haglund and Sorg 1997a, Howard et al. 1988, Snow and Luke 1984). While anecdotal reports help to introduce a subject, they provide little substantial information for fully understanding the processes of decomposition.

Most large decomposition studies exist in the form of retrospective studies. Retrospective studies gather reports from a single forensic jurisdiction in order to examine specific aspects of decomposition (Boyle et al. 1997, Galloway et al. 1989, Galloway 1997, Komar 1998, Rhine 1984). Since many retrospective studies concentrate on a single geographic area, some generalizations can be made about the processes of decomposition in that area. A few retrospective studies attempt to collate data from

more than one area (Rhine and Dawson 1997). Potential sources of error in retrospective studies include interobserver error and inconsistent data collection methods.

Prospective or experimental studies try to overcome the difficulties of retrospective studies by having a set methodology and a limited number of observers (Haglund and Sorg 1997a). Experimental studies using nonhuman subjects have been performed in various locations (Hewadikaram and Goff 1991, Micozzi 1986, Payne 1965, Reed 1958, Shean et al. 1993). Researchers have also created experiments examining bone modifications from carnivore activity, fire, or human interference (i.e. blunt or sharp force trauma, gunshot wound, etc.) (Bass 1984, Bradtmiller and Buikstra 1984, Haglund 1992, Symes 1992). The main criticism of experiments is the possible artificiality introduced through control of the variables in the experiment (Haglund and Sorg 1997b). Field studies performed in a natural environment reduce artificiality, but also limit control of variables (Haglund and Sorg 1997b).

Field studies are divided into two types, cross-sectional and longitudinal. Field studies pose a second difficulty in that they require access to recently deceased human subjects. Cross-sectional field studies are essentially retrospective studies and usually have a larger sample size than longitudinal studies. As with retrospective studies, interobserver error and inconsistent data collection are concerns (Haglund and Sorg 1997b). The small sample size of longitudinal studies is not the only drawback. Longitudinal field studies need a facility in which to study decomposition over a period of time. Only one such facility exists, the Anthropology Research Facility (ARF) at the University of Tennessee in Knoxville.

Overall, decomposition studies are an attempt to provide a more accurate estimation of the postmortem interval (PMI). Estimating the PMI, however, begins with an understanding of the internal and external factors that affect the rate of decomposition. While all human bodies progress through essentially the same stages of decomposition, the amount of time spent in each stage is dependent on numerous environmental and individual variables (Galloway et al. 1989, Love and Marks 2003, Rodriguez and Bass 1983).

II.2 Internal decomposition

Decomposition begins at the time of death with autolysis. Autolysis is an irreversible series of events that leads to cellular death (Love and Marks 2003). Autolysis begins with the cessation of circulation (Clark et al. 1997, Love and Marks 2003). Adenosine triphosphate (ATP) is involved in extracting energy from food and is essential in normal cellular processes. Since respiration and circulation stop at death, the oxygen normally used for ATP production is no longer available. The cells are forced to resort to fermentation to maintain ATP production (and cellular function) (Berne and Levy 1993). The fermentation of lactic acid as part of anaerobic ATP production lowers the pH of the cell (Gill-King 1997). ATP production through fermentation is also not as efficient as aerobic ATP production (Gill-King 1997). As a result, cellular function cannot be maintained (Gill-King 1997).

The anoxic environment that occurs following the cessation of circulation also initiates the failure of normal cellular chemistry by damaging membranes, especially mitochondrial membranes (Gill-King 1997). Membrane failure leads to cellular flooding which causes the release of hydrolytic enzymes into the cytoplasm (Clark et al. 1997,

Spitz 1993). The enzymes are activated by the lowered pH of the cells and begin to digest cells and cellular junctions (Junqueira et al. 1995). Consumption of cells and cellular junctions leads to two visible processes, blanching of color from the skin and skin slippage (Love and Marks 2003). Eventually, autolysis results in tissue destruction with widespread observable color and texture changes of the skin (Clark et al. 1997, Gill-King 1997).

The anaerobic environment is also ideal for the fermentation and reproduction of bacteria that already exist in the body (Gill-King 1997). The destruction of an organism by internal bacteria is called putrefaction (Love and Marks 2003). Mummification and adipocere formation are alternatives to putrefaction in environments unsuitable for bacterial activity (Campobasso et al. 2001). Bacteria are optimally active between 60 and 95°F (Micozzi 1997). Above 100°F and below 55°F, bacterial activity decreases significantly (Love and Marks 2003).

The cecum is the first internal area to be affected by bacterial growth. As the cecum is located in the lower right quadrant of the abdomen, early color changes (light to medium green) occur on the abdomen, especially the lower right quadrant. The bacteria in the digestive tract further accelerate tissue deterioration. The large number of destructive enzymes in the intestines, stomach, pancreas, and liver cause their rapid destruction and destruction of surrounding tissues (Gill-King 1997). The intestines, stomach, accessory organs of the digestive tract, heart, and blood are the first tissues to deteriorate (Gill-King 1997). The air passages and lungs are the next to decay followed by the kidneys and bladder, brain and nervous tissue, skeletal muscles, and connective

tissues, in that order (Gill-King 1997). Skin color proceeds from normal to green to purple and eventually to brown as tissue breakdown commences.

Individual body chemistry, temperature, and body size cause variation in the rate of internal decomposition. Research on the influence of individual body chemistry on the rate of decomposition is difficult. Research suggests temperature, however, has an enormous influence on the rate of decomposition. The effects of ambient temperature are covered in the next section. Increased internal temperature (fever) at the time of death accelerates decomposition by creating a more favorable environment for enzymatic and bacterial activity (Spitz 1993). Body size can be an important factor in decomposition rate, as well (Hewadikaram and Goff 1991, Mann et al. 1990). Obese individuals lose body mass quickly through liquefaction of body fats (Mann et al. 1990). Also, more insects are attracted to the larger body, possible due to the amount of fluids from liquefaction (Hewadikaram and Goff 1991). Liquefaction and increased insect activity accelerate decomposition by as much as two times (Mann et al. 1990).

II.3 External variables affecting decomposition

In addition to internal decomposition through biochemical processes, external decomposition simultaneously occurs through desiccation and/or decay. External decomposition is affected by the outside environment rather than the internal environment. Temperature, access by insects, humidity, aqueous versus terrestrial deposition, trauma, burial depth, access by carnivores and rodents, clothing, rainfall, embalming and body size can all alter the decomposition rate individually and in combination (Komar 1998, Mann et al. 1990). As bacterial activity is temperature dependent, temperature affects both external and internal decomposition.

Ambient temperature is the single most influential factor affecting decomposition (Mann et al. 1990). In warm environments, the body temperature may exceed normal body temperature. As bacteria reproduce faster and enzyme activity increases in moderately high temperatures, high ambient temperatures or the existence of a fever at death accelerates early decomposition (Clark et al. 1997, Spitz 1993). In temperate locations, decomposition proceeds rapidly in the late spring, summer, and early fall.

In areas with freezing temperatures, the chemical changes associated with decomposition proceed at an extremely slow rate or cease completely. Decay and disarticulation, however, can occur at a rapid rate following a thaw (Micozzi 1986, Micozzi 1997). Animal activity also often plays a major role in decomposition rate in areas with prolonged freezes (Komar 1998). In areas with more moderate temperature changes, the body tissues may not freeze completely limiting the effects of freezing and thawing.

Temperature not only affects the chemical changes within a corpse, but also the degree of insect activity (Komar 1998, Lane 1975, Mann et al. 1990, Wells and Lamotte 2001). Warmer temperatures increase the number and types of insects associated with a decomposing body (Rodriguez and Bass 1983). Extremely high temperatures, however, kill some insect species (Wells and Lamotte 2001). In most areas, low temperatures are more likely to halt insect activity. While flies may land on a carcass in cooler weather (5°C to 13°C), they rarely lay eggs below 10°C (Mann et al. 1990). At or below 0°C, fly eggs and maggots die if outside the body (Mann et al. 1990). Once maggots have entered the body cavities, their large numbers create heat that keeps them alive (Mann et al. 1990). The ability of maggots to raise the temperature in the body above the ambient

temperature is referred to as the “maggot mass effect” (Wells and Lamotte 2001).

Maggots also migrate from the body and burrow 1 to 2 inches into the ground to protect themselves from freezing temperatures (Mann et al. 1990).

Other environmental factors that affect the rate of decomposition include humidity versus aridity, sun exposure, rainfall, and soil pH. Desiccation of the remains affects accessibility by insects. In arid environments, insects need to be able to lay eggs on the remains in the early stages of decay or the remains become too desiccated for larvae (Galloway et al. 1989, Mann et al. 1990). Larval stages need moisture and accessibility to air to survive (Galloway et al. 1989). More insect activity, therefore, is often seen in humid environments (Mann et al. 1990, Rodriguez and Bass 1983). Similarly, extensive sun exposure can cause mummification and limited insect activity (Galloway et al. 1989, Srnka 2003). Rainfall only affects fly activity in that flies cannot fly or lay eggs during moderate to heavy rainfall (Mann et al. 1990). Soil pH likely influences the chemistry of decomposition, but the relationship has not been well studied (Mann et al. 1990). The increased acidity, however, may be enhanced by and enhance the pH of the soil which can lead to a favorable environment for fungal growth (Tortora et al. 1994).

Burial and aqueous environments also alter the rate of decomposition (Mann et al. 1990, Rodriguez and Bass 1985, Sorg et al. 1997). Burial alters decomposition rate through protection of the body from environmental factors and insect activity. Consequently, the depth of burial directly affects the degree to which the rate of decomposition is affected. Bodies buried at a depth of three to four feet may take many years to decay (Mann et al. 1990, Rodriguez and Bass 1985). Decomposition in aqueous

environments mirrors decomposition in terrestrial environments in many ways (Sorg et al. 1997). Insects and scavengers still play a major role in decomposition. The insect and scavenger populations, however, can be quite distinct. The energy and movement of water often increases the rate of decomposition. Fresh water and marine environments also have different effects on the body due to the salinity of the water (Boyle et al. 1997). Water from a fresh water environment is absorbed into the circulation. Salt water draws water from the body. The salinity of the water is a major factor in autolysis and the spread of bacteria (Boyle et al. 1997).

After ambient temperature, insect activity is the most influential factor affecting the rate of decomposition (Mann et al. 1990, Rodriguez and Bass 1983, Wells and Lamotte 2001). Most soft tissue destruction is caused by maggot activity (Mann et al. 1990). Accessibility of the body to insects, therefore, has the potential to greatly influence decomposition rate. In an outdoor environment, the succession of insect species has a direct relationship to the rate of decomposition (Rodriguez and Bass 1983). Entomological analysis can, therefore, be used to estimate the PMI (postmortem interval) (Rodriguez and Bass 1983, Wells and Lamotte 2001). The decomposing body, however, may be shielded from insect activity through burial, sealing the body in plastic bags or other material, or by placing the body in an indoor environment (car, house, etc.). The degree of insect activity is then dependent upon how easy it is to access the depositional site.

Flies (Diptera), beetles (Coleoptera), ants and bees/wasps cause the most damage to a decomposing body (Campobasso et al. 2001, Haskell et al. 1997, Rodriguez and Bass 1983). The insects are divided into three main categories: necrophagus, predatory or

parasitic, and omnivorous (Campobasso et al. 2001). The necrophagus species feed on the flesh of the corpse or decomposition fluids. Flies dominate the necrophagus category particularly species from the Calliphoridae and Sarcophagidae families (Campobasso et al. 2001, Haskell et al. 1997). Beetle species from the Silphidae and Dermestidae families are also part of the necrophagus category (Campobasso et al. 2001). Predatory and parasitic insects feed on other insects and include flies in the Calliphoridae and Stratiomyidae families and beetles in the Staphylinidae and Silphidae families (Campobasso et al. 2001). Some of the predatory or parasitic insects only feed on other arthropods in their larval stages. Omnivorous insects are both predatory/parasitic and necrophagus. Ants and bees/wasps feed on decomposing remains and associated insects. Beetles may also feed on both the remains and other insects (Rodriguez and Bass 1983). Large populations of omnivorous insects can inhibit decomposition by reducing the number of beetle and fly species (Campobasso et al. 2001). The species of insects present on a body appear in a successional pattern. The presence of some species and the magnitude of insect activity can reveal information about the amount of time that has passed since death (TSD).

Initially, blow flies and muscid flies are the most commonly seen insects on a decomposing body in east Tennessee (the area of the present study) (Rodriguez and Bass 1983). In favorable environments, the feeding of the blow fly and muscid fly larvae is the most destructive insect activity through the discoloration and bloat stages. On warm days, flies lay eggs within minutes of placing a body outside (Rodriguez and Bass 1983). Eggs generally hatch within six to forty hours (Campobasso et al. 2001, Rodriguez and Bass 1983). Oviposition first occurs in the facial openings (eyes, nose, mouth, and ears)

and the genital area (Campobasso et al. 2001, Haskell et al. 1997, Rodriguez and Bass 1983). Flies also lay eggs in areas of skin breakage. High levels of maggot activity in unusual places can, therefore, indicate the presence of wound(s) (Spitz 1993).

The species of insects that feed on a decomposing body are contingent upon season and stage of decomposition. Decomposition stages will be covered in the next section. While geographic area may also have an effect on the types of insects present on a body, little information is available concerning possible regional genetic and behavioral differences of insect species in diverse geographic locations (Wells and Lamotte 2001). The dissimilarity in methodology between decomposition studies makes simple comparison difficult. Additionally, as the variables affecting decomposition are inextricably interrelated, it is hard to identify actual variation in insect activity.

As described above, weather and seasonality have a profound effect on insect activity (Wells and Lamotte 2001). Temperature, sun exposure, humidity, and rainfall mainly influence the magnitude of insect activity (Mann et al. 1990, Rodriguez and Bass 1983, Wells and Lamotte 2001). Many species of maggots avoid direct sunlight (Rodriguez and Bass 1983). Maggot activity then proceeds under the skin, leaving a protective layer over the maggots. Other maggot species require direct sunlight (Galloway et al. 1989). The types of insects present on the body are, therefore, affected if the body becomes desiccated prior to insect infestation (Galloway et al. 1989). Maggot activity under the skin is inhibited by the desiccated flesh (Galloway et al. 1989).

II.4 Stages of decomposition

Although many factors affect the rate of decomposition, the actual process of decomposition is fairly consistent through a variety of environments. As a result, the

process of decomposition has been artificially divided into stages by a number of researchers to assist in scientific analysis (Clark et al. 1997, Galloway 1997, Galloway et al. 1989, Komar 1998, Reed 1958, Rhine and Dawson 1997, Rodriguez and Bass 1983). As the process of decomposition is continuous, the stages are not mutually exclusive (Bass 1997, Campobasso et al. 2001, Mann et al. 1990). Observations, chemical changes, and insect activity typical to a single stage may be found in other stages. Variation in the stages of decomposition is due to the factors described above including environmental conditions, insect activity, carrion type and size, individual body chemistry and researcher preference (Clark et al. 1997, Galloway 1997, Galloway et al. 1989, Komar 1998, Love and Marks 2003). The first study to suggest decomposition proceeded in stages was done by Reed (1958). Although the names of the stages and occasionally the number of stages differ, Bass (1997), Clark et al. (1997), Galloway (1997), Galloway et al. (1989), Komar (1998), Rhine and Dawson (1997), Rodriguez and Bass (1983) all use essentially the same stages as described by Reed (1958) with minor differences. The process of decomposition is divided by Marks et al. (2000) into the following five stages: fresh, discoloration, bloating, skeletalization and skeletal decomposition. Changes and observations typical to each stage are described below.

Fresh (see Figure 1) – The cessation of circulation immediately following death initiates the destruction of soft tissue (Clark et al. 1997, Gill-King 1997). Loss of skin color, relaxation of muscles, and possibly regurgitation of the gastric contents (only if the body is moved) occur within the first half hour to hour after death (Clark et al. 1997). Algor mortis, or the process by which the body cools to ambient temperature, also begins



Figure 1. Subject D in the fresh stage of decomposition. Livor mortis is visible on face and neck.

shortly after death and ceases within the next day or two (Spitz 1993). The abnormal chemicals in the blood from autolysis (cell death) and lack of respiration begin livor mortis or discoloration (usually purplish-blue) due to the gravitational settling of blood (Spitz 1993). Blood settles in areas closest to the ground (Clark et al. 1997, Spitz 1993). For example, if left in the same position, a person lying on his/her back at the time of death will have discoloration on the posterior portion of the body. The discoloration gradually becomes darker with time. Within the areas of discoloration, some blanching of color may occur through compression of the skin early in the process of livor mortis. Livor mortis may be difficult to observe on people with dark skin or on people with anemia. Within the same time period rigor mortis, or increasing muscle rigidity, becomes apparent. In temperate climates, muscles generally reach maximum rigidity in twelve hours and then become gradually flaccid over the next twelve hours (Love and Marks 2003, Spitz 1993).

Through algor mortis, livor mortis, and rigor mortis, forensic pathologists are able to give a fairly accurate estimation of the postmortem interval. Anthropologists usually do not need to be consulted in cases where the “mortises” are still in effect. After forty-eight hours, however, the specialized knowledge of forensic anthropologists may be necessary to estimate the PMI.

The mortises and pale skin color are the only gross visual signs of decomposition in the fresh stage. While autolysis has begun, the effects are not apparent on a macroscopic level. On microscopic analysis, the organs have a doughy appearance (Clark et al. 1997). The visual signs of autolysis and putrefaction are not evident until the

second stage of decomposition. In warm environments, decomposition quickly progresses through the fresh stage into the next stage of decomposition, discoloration.

Discoloration (see Figure 2) – When the first visible signs of autolysis and putrefaction are apparent, a body has entered the second stage of decomposition, discoloration (Love and Marks 2003). Discoloration begins with green coloring on the abdomen. The large population of bacteria in the organs of the lower abdominal cavity causes putrefaction early in the process of decomposition (Clark et al. 1997, Spitz 1993). Discoloration of the thorax and neck also progresses throughout the discoloration stage. While green coloring can also appear, discoloration of the neck and thorax often begins as orange. In some environments, pink, white, red, orange, and yellow molds grow on the skin. The coloring of the molds can obscure discoloration originating from the internal decomposition.

Bacterial activity is highly dependent on suitable temperatures. Without sufficient bacterial activity, discoloration of the abdomen, thorax and neck may not occur or may appear in a less uniform manner. Small areas of the abdomen, for example, become dark green, but other areas maintain normal skin color.

Skin slippage also starts in the discoloration stage (Love and Marks 2003). As autolysis progresses, cellular junctions disintegrate. Disintegration of the cellular junctions between epidermal and dermal cells causes skin slippage (Clark et al. 1997, Spitz 1993). Often, maggot activity is visible beneath the layer of skin, which accelerates skin slippage (Rodriguez and Bass 1983). In the discoloration stage, skin slippage usually first occurs on the hands and feet. Slippage of the scalp may also occur during the discoloration stage. As the skin on the scalp slips, the hair mat disassociates from the



Figure 2. Subject D in the discoloration stage of decomposition. Note the extensive mold and lack of abdominal bloat.

head (Mann et al. 1990). The hair mat is important to investigators because it can give clues regarding identity and the original location of the body (Bass 1997).

Other characteristics of the discoloration stage include the presence of bullae and marbling. Postmortem bullae are collections of fluid between the dermal-epidermal junction (Clark et al. 1997). Bullae often last through the bloat stage unless the body is moved. Bullae are very fragile and the dermal layer bullae can break releasing the fluid if the body is moved. Marbling is caused by intravascular hemolysis (Clark et al. 1997). As the red blood cells die (through the process of autolysis), bacteria invade the circulatory system (Clark et al. 1997). With the breakdown of the circulatory system, superficial veins and arteries are eventually visible on the skin (Love and Marks 2003). Like bullae, marbling is frequently visible through the bloat stage.

Bloat (see Figure 3) – The bloat stage is characterized by abdominal distention. The bacterial activity of putrefaction in the abdomen has gaseous byproducts. The gases become trapped in the abdomen causing distention or bloat (Clark et al. 1997). The time it takes to reach maximum bloat depends on individual chemistry, body size, ambient temperature, and insect activity. Once maximum bloat is reached, the distention begins to decrease. In warm temperatures, bloat begins a few days after death and lasts up to approximately one month (Bass 1997). As bacterial activity is temperature dependent, bloat does not begin in cold temperatures.

Bloating also progresses through the rest of the body. Neck, face, torso, arms, hands, legs, feet and male genitals have varying degrees of bloat. Bloated areas other than the abdomen are often distended weeks after the abdominal distention is completely



Figure 3. Subject B in the bloat stage of decomposition. Note the tape measure used to record abdomen circumference.

gone. High degree of maggot activity can, in some cases, mirror bloat. For example, the mouth may be filled with maggots and decomposition fluid, which makes the cheeks appear bloated. Distention of the cheeks, however, is not necessarily the result of trapped gases.

Initial skeletalization of the face may be seen in the bloat stage, as well. The degree of skeletalization usually depends on insect activity (Mann et al. 1990). In hot and humid environments, insect activity (specifically maggot infestation) quickly eliminates soft tissue resulting in skeletalization. Soft tissue of the neck and upper chest is also frequently lost during the bloat stage revealing the cervical vertebrae, first ribs, and clavicles. Depending on the degree of maggot activity, skeletalization of the lower limbs is also possible.

Although odors may be present in the discoloration stage, the strongest odors become apparent in the bloat stage. Odors are also the result of bacterial activity (Gill-King 1997). While most of the gases from putrefaction are trapped in the distended body, some escape and can be detected as odors. Recently, the types of gases that escape from a body have been correlated with time as a way to estimate the postmortem interval (Vass 2002).

Small amounts of liquids are present as well. Decomposition fluids are the byproducts of the digestion of carbohydrates, proteins, and lipids by enzymes (Campobasso et al. 2001, Clark et al. 1997). Most of the liquids are trapped in the body and are released as soft tissue deteriorates. The internal pressure from gas buildup may force liquids out of the facial openings and rectum, however, prior to extensive soft tissue

deterioration (Bass 1997, Clark et al. 1997). The fluid leakage is purge fluid or gastrointestinal decomposition fluids (Clark et al. 1997).

Skeletalization (see Figure 4) - The skeletalization stage begins when abdominal bloat has completely subsided (Love and Marks 2003). The soft tissue has deteriorated enough for the gas buildup that caused abdominal bloat to be released through body openings (Galloway et al. 1989, Rodriguez and Bass 1983). Soft tissue deterioration is also sufficient to allow the release of decomposition fluids. Volatile fatty acids are among the decomposition fluids that leach from the body during the skeletalization stage (Bass 1997). Volatile fatty acids kill the vegetation around the body and create a dark stain. The skin also sometimes splits which furthers the release of fluids and gases and makes aerobic bacterial activity possible (Rodriguez and Bass 1983).

The decomposing body remains in the skeletalization stage until all the soft tissue has been consumed. In arid environments or areas with extensive sun exposure, the soft tissue may become desiccated (Galloway et al. 1989, Komar 2001, Mann et al. 1990). Desiccated soft tissue can remain on the body for months to years (Galloway et al. 1989). In moist environments or under water, adipocere forms on the body (Bass 1997). Adipocere is the saponification of lipids (Gill-King 1997). Some individuals have enough water content in their fat cells to produce adipocere even in dry environments (Gill-King 1997). Once all the soft tissue has been destroyed, the body enters the next stage of decomposition, skeletal decomposition.

Skeletal decomposition (see Figure 5) – In the skeletal decomposition stage, all of the soft tissue has been consumed (Love and Marks 2003). The skeleton is also completely disarticulated (Love and Marks 2003). The skeletal decomposition stage usually lasts for



Figure 4. Skeletalization stage of decomposition. Note the release of decomposition fluid and visible right radius, right ulna, and mandible. Subject not used in study.



Figure 5. Skeletal decomposition stage of decomposition. Note little tissue is left on subject. Subject not used in study.

many years depending on environmental factors (Bass 1997, Galloway 1997, Mann et al. 1990). The cortex of the bone begins to exfoliate or flake and crack from weather exposure (Bass 1997). Bleaching from sun exposure is also apparent. Sun bleaching often originates in the skeletalization stage, but the extensive sun exposure following full skeletalization makes bleaching more likely (Galloway et al. 1989).

Although carnivore activity is usually seen in the early stages of decomposition (when soft tissue is still present), the activities of animals and plants are visible on and around the skeleton in the skeletal decomposition stage. Growth of plants in and around the skeleton usually does not affect decomposition. Plant growth, however, may give clues as to the time that has passed since death. On the other hand, rodent gnawing is often present during the skeletal decomposition stage (Bass 1997). Different rodent species gnaw on bone for different reasons including the mineral content of bone, bone marrow, and to decrease the size of the rodents' teeth (Haglund 1992). Some rodent gnawing may be visible on the bones during the bloat and skeletalization stages, but it becomes more extensive during the skeletal decomposition stage.

II.5 Decomposition in indoor versus outdoor environments

Little research has been done on the differences in decomposition rates in indoor versus outdoor environments. A number of factors including humidity, temperature, insect activity, carnivore activity, and rainfall may be limited and/or controlled in a closed structure. The factors separately and in conjunction have a potentially significant effect on the rate of decomposition. Tomlinson (2003) performed a study in Tennessee comparing outdoor decomposition to an insect- restricted environment. Insect access, however, was not well controlled. Temperatures and humidity were not controlled at all.

Only one study has compared the rates of decomposing humans in open air and in closed structures (Galloway et al. 1989).

The Galloway et al. (1989) study is a retrospective study. One hundred eighty-nine cases from the Human Identification Laboratory at the University of Arizona were examined to gain information on decomposition rates in Arizona. The cases extended over a twenty-year period. The remains were located in closed structures in 31% of the cases studied. Little information was given on the exact types of closed structures in which the remains were found.

According to Galloway et al. (1989) humans remained fresh up to three days longer in closed structures. The retention of moisture in some closed structure, however, accelerated exposure of skeletal elements. In structures with drainage or evaporation of fluids through circulation, mummification may occur, but requires up to two weeks longer. Overall, Galloway et al. (1989) found closed structures may “prevent the onset of mummification and accelerate decomposition.”

As the study was done in Arizona, the comparison between decomposition in indoor and outdoor environments is based on decomposition rates in a dry, arid climate. No studies on indoor decomposition have been attempted in other climates. Also, as only a small amount of information was given on the types of structures and the variables controlled and/or limited by the structure, a true comparison between decomposition rates was difficult. Further study, therefore, is necessary to decipher the true differences in decomposition rates in indoor and outdoor environments.

Chapter III. Materials and Methods

III.1 Location

To study the differences between indoor and outdoor decomposition, six adult human subjects were placed at the Anthropology Research Facility (ARF) in Knoxville, Tennessee (see Figure 6). ARF is a 1.5 acre outdoor facility located behind the University of Tennessee Medical Center (see Figure 7). The majority of the area in ARF is wooded, predominantly by maple and oak trees (see Figure 8). ARF is surrounded by a chain-linked fence and a wooden fence (see Figure 9). Both fences are secured with padlocks at two entrances. The fences limit human and nonhuman access. In addition, two smaller areas within ARF are surrounded by a low-voltage electric fence to further limit animal scavenging, especially from raccoons and opossums. Unfortunately, scavenging by rats still occurs, but is partially regulated by the use of rat poisoning.

Knoxville, Tennessee is at approximately 36 degrees latitude and 84 degrees longitude. Temperatures range from a low of 20°F in the winter to a high of 95°F in the summer. High temperatures in the summer usually remain between 80°F and 89°F. High temperatures in the winter vary greatly from 35°F to 70°F. The average yearly rainfall is 47 inches. Humidity in the summer is extremely high, ranging between 80% and 100%. Humidity is significantly lower in the winter, usually staying around 35%. More specific weather information was gathered on site and will be reported in the next chapter.

III.2 Indoor structure

In order to compare indoor and outdoor decomposition, a Dirksen building was added to ARF in August 2004 (see Figure 10). The 10 ft. 3 in. by 16 ft. 3in. structure was placed on cement blocks in a gravel covered area of ARF. The interior was divided



Figure 6. Aerial view of ARF. ARF is located in the center of the upper half of the photograph. The photograph was taken prior to the expansion of ARF.

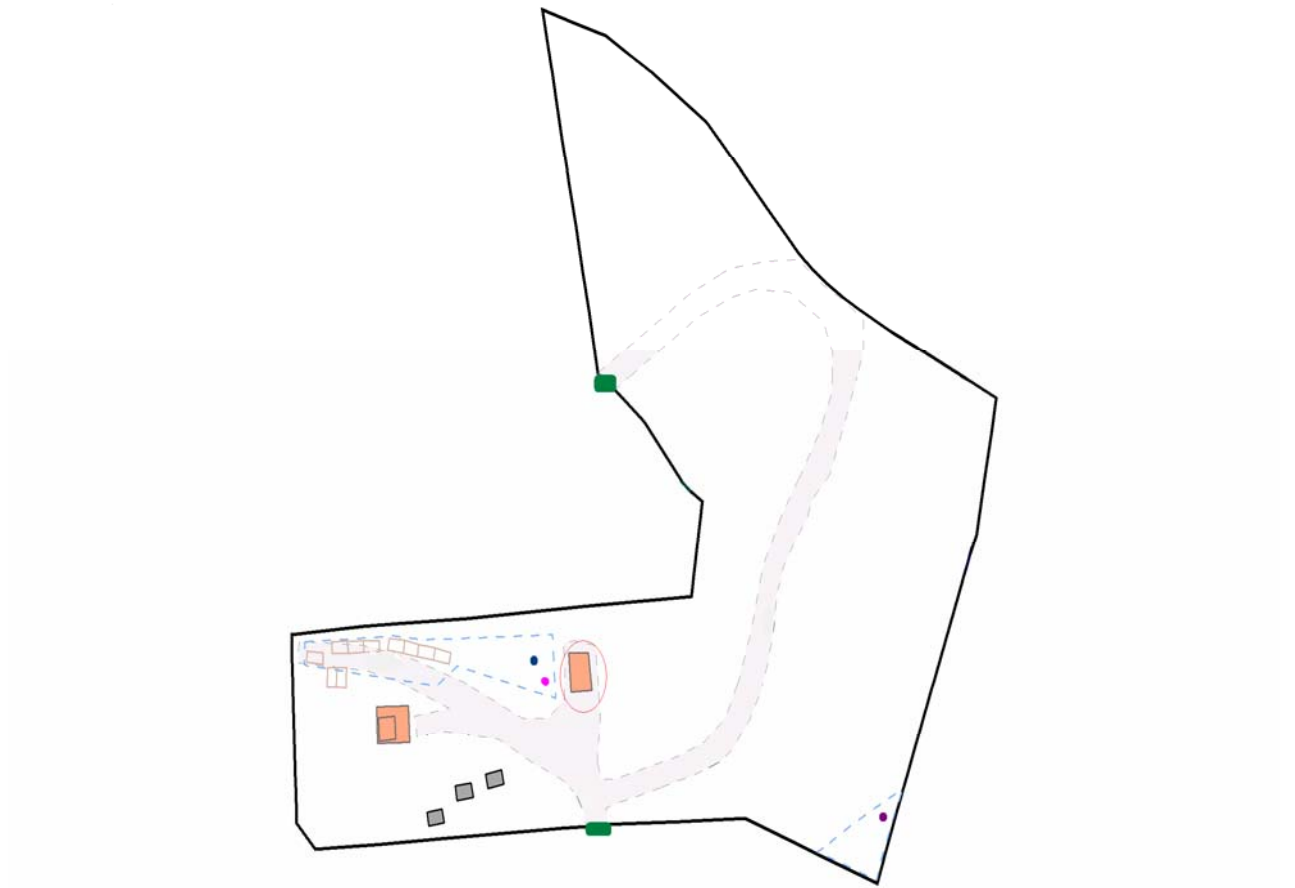


Figure 7. Map of ARF. Indoor structure is circled in red. Gates are shown in green. The pink and blue dots next to indoor structure represent the placement locations of B and D, respectively. The purple dot in the lower right corner represents the placement location of C.



Figure 8. Path at ARF showing extensive tree cover on both sides. Photograph taken on June 17, 2005.



Figure 9. Front gate of ARF showing wooden and chain-link fences.



Figure 10. Indoor structure at ARF. Note the front window and door as well as the car connected to the side by a wooden plank hallway.

into three separate rooms, a 5 ft. 5in. by 3ft. 7 in. foyer, an 11ft. 1in. by 9ft. 9in. main room, and a 4ft. 9in by 3ft. 7in. second room (see Figures 11-15). Doors were installed to make separate each room and restrict insect access as much as possible. The second room was connected to a wood plank hallway attached to the backdoor of a car. The car was used in a different study.

Three windows were installed in the main room and one window was installed in the second room. Fly paper was attached to each window to further limit insect access. The inner walls were covered with drywall. The floor was covered with vinyl flooring. The vinyl flooring made cleaning easier between each subject. A pool with a 4ft. diameter was placed on the floor of the main room to contain decomposition fluid (see Figure 16). The pool was made of heavy plastic which also could be easily cleaned after each subject was removed.

The house was wired for electricity. A Kenmore Plasmair (6000 BTU, 560 W, Model #580.73069300) air conditioner was installed to regulate temperature in the main room during the summer (see Figure 14). During the winter, a free standing Honeywell oil-filled radiator heater with an adjustable thermostat and automatic shut-off (Model # HZ-680) was placed in the main room to help keep the indoor temperature higher than the outdoor temperature (see Figure 17). The oil heater did not regulate the temperature as well as the air conditioner. The temperature in the main room, however, did remain consistently higher than outdoor temperatures.

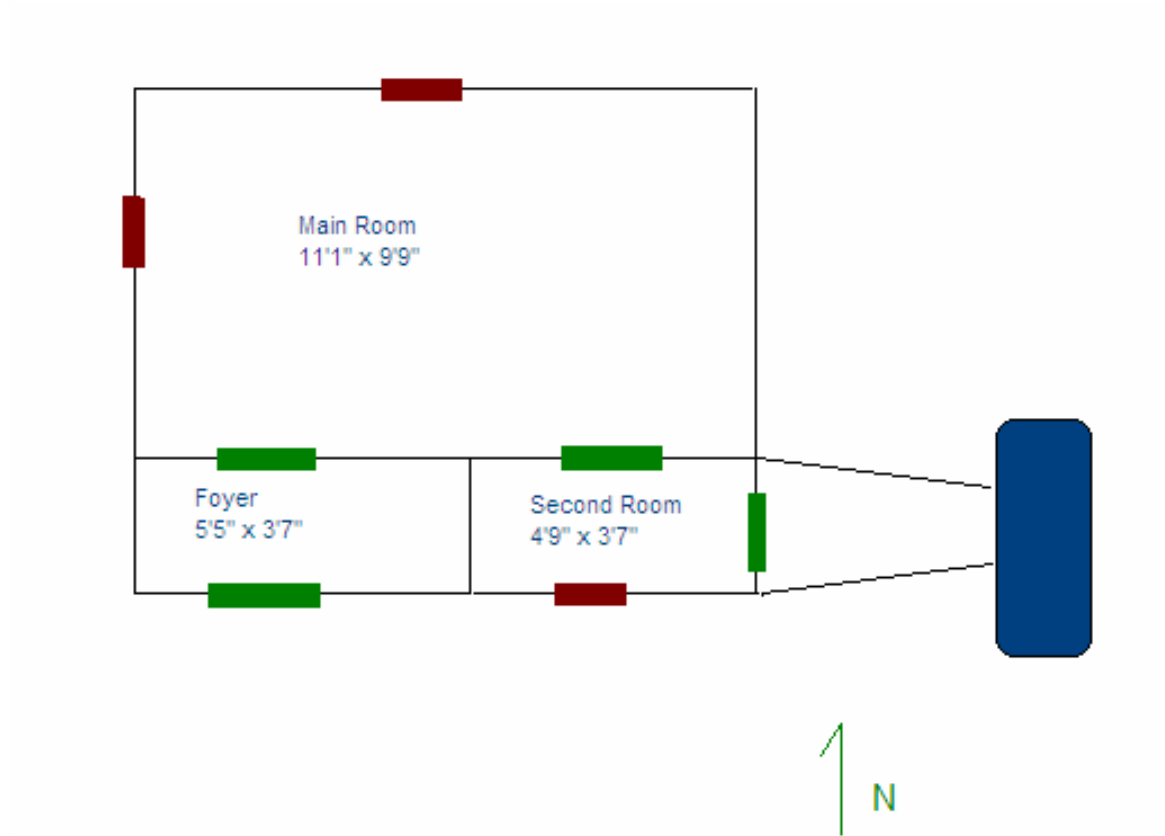


Figure 11. Floor plan of indoor structure. Doors shown in green. Windows shown in red. The large blue object to the east of the structure is a car used in another study connected to the structure by a plank hallway.



Figure 12. Closer view of wooden plank hallway and car attached to side of indoor structure. Child's pool used in study is lying upside down in front of hallway.



Figure 13. Photograph from inside main room of indoor structure. Front door and foyer are visible through open second door.



Figure 14. Photograph of north wall of main room showing air conditioner and window. Thermometer eventually placed next to window shown.



Figure 15. Photograph of west wall of main room showing second window in main room and multiple electrical sockets.



Figure 16. Photograph of child's pool with fleece blankets covering bottom and under feet. Also note vinyl flooring.



Figure 17. Photograph of oil radiator heater used to heat main room during the winter months.

III.3 Equipment

Weather recordings

Outdoor temperatures were recorded from two locations. Indoor daily maximum and minimum temperatures and indoor percent humidity was recorded from a thermometer placed inside the indoor structure. A battery operated Acu-Rite digital indoor/outdoor thermometer was attached to a wall in the main room of the indoor structure (see Figure 18). A probe attached to the thermometer was placed on the outer surface of a nearby window to monitor the outdoor temperature. Although the study began on September 13, 2004, the thermometer was not installed until October 15, 2004. The Acu-Rite thermometer recorded current and maximum/ minimum indoor and outdoor temperature as well as current and maximum/minimum percent humidity. The thermometer had to be reset daily. The same thermometer was used throughout the study.

Hourly temperature, percent humidity, and rainfall readings were recorded at the weather station on the agricultural campus of the University of Tennessee located approximately 2 miles from the study site. The weather readings from the agricultural campus were transferred to an Excel[®] spreadsheet by Wesley Wright and e-mailed to the researcher. The weather readings from the indoor/outdoor thermometer in the Dirksen building were recorded daily and also placed in an Excel[®] spreadsheet. A graphical comparison of the two sets of outdoor temperature readings showed some variation between the two sets (see Combined analysis of variables section). The outdoor temperatures from the indoor/outdoor thermometer were, therefore, used for analysis.

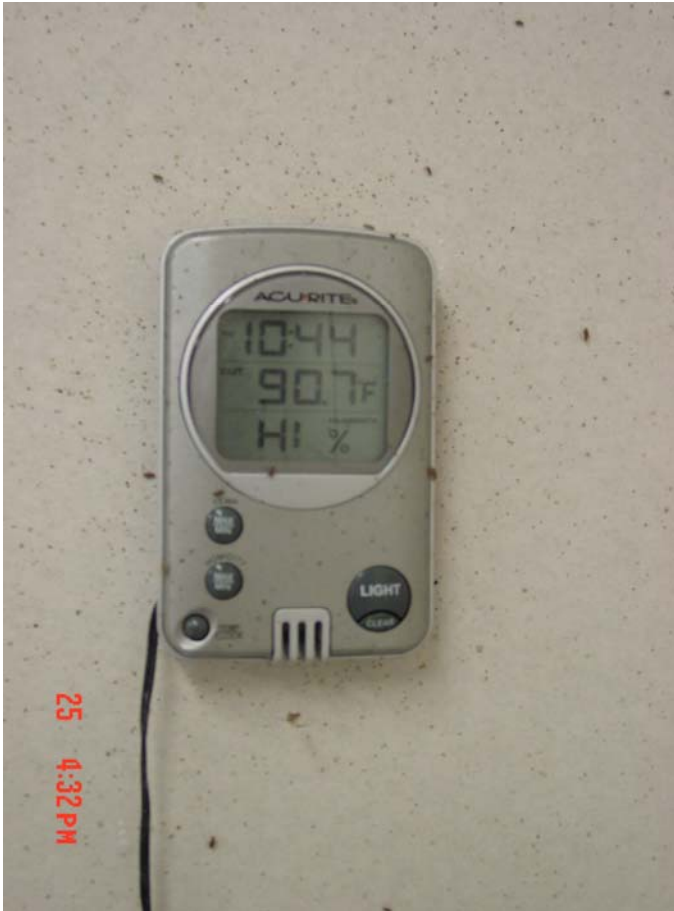


Figure 18. Photograph of digital indoor/outdoor thermometer attached to north wall of main room.

Percent humidity and daily rainfall were assumed to be comparable between ARF and the UT agricultural campus.

Photography equipment

Photographs were taken using a single camera throughout the study. The camera was a Sony MCV-CD300. The camera recorded photographs directly onto 210MD Memorex pocket CD-R. When the CD was full, the photographs were downloaded onto a Toshiba A10-S167 laptop. The photographs were then labeled with subject number, date, and content. All of the photographs taken are included in Appendix D (see attachments)

Measuring equipment

Singer[®] tape measures (Item #00218) were used to measure the circumference of the abdomen daily. The tape measures were made of fiberglass to help prevent shrinking, tearing, and stretching. The tape measures were placed under the small of the back of each subject. The tapes had English measurements on one side and metric measurements on the other side. The measuring tapes were placed so that abdomen circumference could be measured in centimeters.

III.4 General subject information

Six adult human subjects were observed daily for varying lengths of time (through the end of the bloat stage) during the autumn of 2004 and winter and summer of 2005 (see Table 1). The six human subjects were given an identifying number with two elements, m and n, m indicating the year and n indicating the nth body received that year. The identifying number was changed to a letter to protect the privacy of the subjects. The bodies were not autopsied or embalmed prior to arrival at ARF. Subjects were

Table 1. Demographics (sex, ancestry, age, stature, and weight), date of placement, days observed, location of placement, cause of death, and date of death for each subject. Information for Subject G was taken from Srnka (2003).

Subject ID	Date Placed	Days Observed	Location	Ancestry	Sex	Age (years)	Stature (cm)	Weight (lbs.)	Date of Death	Cause of Death
A	9/13/2004	57	Indoor	European	Female	76	166.0	130	9/12/2004	Cancer (liver)
B	10/1/2004	39	Outdoor	European	Male	39	182.9	205	9/20/2004	Drug overdose
C	10/26/2004	16	Outdoor	European	Female	73	157.0	190	10/25/2004	Natural
D	12/27/2004	78	Outdoor	European	Female	82	167.5	120	12/23/2004	Natural
E	1/4/2005	78	Indoor	European	Female	76	149.5	111	12/26/2004	COPD
F	5/12/2005	56	Indoor	European	Female	51	155.0	127	5/10/2005	Lupus, cancer, COPD
G	7/5/2002	85	Outdoor	European	Female	50	154.7	105	7/1/2002	Cardiovascular disease

temporarily held in a morgue cooler at 2-3°C prior to placement. The clothing was removed from each body before placement as clothing can alter decomposition rate (Bailey 2004, Cahoon 1992). Each body was positioned face up with arms and legs spread slightly apart from the torso to make observation of the decomposition process easier. A measuring tape was placed under the small of the back of each body to measure the circumference of the abdomen daily. The subjects were not moved following placement until the end of observation.

Only one body was placed in the indoor structure at a time. The bodies in the indoor structure were put into a child's pool as previously mentioned to contain decomposition fluid. As the diameter of the pool was often less than the height of the individual, the legs were either bent to fit into the pool or hung over the edge. The bottom of the pool was covered with fleece blankets. The blankets were discarded after each body was removed from the indoor structure and the pool was thoroughly cleaned. In addition, the main room of the indoor structure was swept and mopped after each body was removed. The fly paper attached to the windows was also changed before a new body was placed in the structure.

As only an indoor subject was observed through late spring and summer, a seventh subject (G) was added from another study (Srňka 2003). Similar methods of data collection were used in the study by Srňka (2003). The demographics, date of placement, date of death, cause of death, and days observed were included in Table 1. The initial conditions of Subject G were adapted from Srňka (2003) and included in the next section. The Srňka (2003) study compared subjects in sun and shade. Subject G was placed in a shaded area of ARF. A shaded subject was chosen because most of ARF was shaded

during the summer months. A seventh subject, therefore, would likely have been placed in the shade.

III.5 Conditions of subjects at time of placement

Subject A

Day 0 (9/13/2004) – The subject was a 76-year-old female of European ancestry. She died of liver cancer on September 12, 2004. She was placed in the indoor structure located in ARF at 3:45pm on the day following her death. No insects were present in the indoor structure at the time of placement. Her overall skin color was yellow, most likely due to liver damage. Small dark blue spots were observed on her abdomen. Evidence of livor mortis was visible on her back and the back of her legs. Dark brown spots were present on the upper lip. No bloating was visible in the abdomen. Abdominal bloat measurement was recorded as 87.0cm. As rigor mortis had receded, the subject was judged to be in the late phase of the fresh stage at the time of placement.

Subject B

Day 0 (10/1/2004) – The subject was a 39-year-old male of European ancestry. He died of a drug overdose on September 20, 2004. The subject was placed outdoors at ARF on October 1, 2004 at 10:50am. The subject was covered with brush as part of another study. The brush was removed once daily to make observations. Small amounts of dark red blood had leaked out of his nose and pooled on his face. His entire back was bright red from internal settling of blood, or livor mortis. The bottoms of his feet had a light yellow coloring. Small numbers of flies (multiple species) were immediately attracted to the body upon placement. His abdomen showed no signs of swelling. The abdominal bloat measurement was recorded as 101.1cm. The minimal discoloration and

presence of livor mortis indicated the subject was in the late phase of the fresh stage at the time of placement.

Subject C

Day 0 (10/27/2004) – The subject was a 73-year-old female of European ancestry. She died of natural causes on October 25, 2004. She was placed outdoors at ARF on October 26, 2004 late in the afternoon. The subject was placed by Dr. Murray Marks of the University of Tennessee and, therefore, not first observed until the following day (October 27, 2004). The torso had a slight bluish coloring. The wrists, elbows, shoulders, neck, and left ankle had dark blue/purple areas. The subject was beyond the mortises at the time of placement. Multiple fly species immediately landed on the face, neck, armpits, arms, torso, and thighs. The total number of flies present on the body did not exceed twenty. No maggot activity was visible. As an abdominal bloat measurement was not taken on October 26, bloat may have already begun. The first recorded bloat measurement was 117.6cm. Due to the large areas of discoloration, the subject was likely in the late phase of the discoloration stage at the time of placement.

Subject D

Day 0 (1/4/05) – The subject was an 82-year-old female of European ancestry. She died of natural causes on December 23, 2004. She was originally placed at ARF on December 27, 2004 and covered with a black piece of plastic. She was moved into the outdoor electric fenced area on January 4, 2005. Also on January 4 at 4:03pm, the first notes and photographs were taken. As she was originally placed face down, leaves needed to be removed from her face and body. She had undergone little color change between December 23, 2004 and January 4, 2005. An orange/brown spot was visible on

the right hip and red mottling was present towards the posterior of her torso and hips. Dark red/purple marks were present on the right side of her face, left shoulder, and upper left chest. Her right eye was swollen. No maggot activity was visible and no flies were present on the subject. The abdomen was not bloated. The abdominal bloat measurement was recorded as 83.9cm. The presence of little discoloration and no abdominal bloat indicates the subject was in the late phase of the fresh stage at the time of second placement.

Subject E

Day 0 (1/4/2005) – The subject was a 76-year-old female of European ancestry. She died of COPD (chronic obstructive pulmonary disease) on December 26, 2004. She was placed in the indoor structure at ARF on January 4, 2005 at 3:42pm. She had slight orange discoloration covering her entire face. Red/orange spots were scattered across her torso and around her ankles. Mottled light red coloring was visible on her left hip and towards the posterior of her torso. The abdomen showed light green discoloration. Two dark orange scrapes were present on the right forearm and left knee. Bruising was visible around the left wrist. The skin on her nose was beginning to dry. Red coloring was visible on her back as a result of livor mortis. No insects were present in the indoor structure at the time of placement. The abdomen was not swollen on January 4. The first abdominal bloat measurement was 78.6cm. The skin discoloration and lack of bloat indicates the subject was in the late phase of the fresh stage to the early phase of the discoloration stage at the time of placement.

Subject F

Day 0 (5/12/2005) – The subject was a 51-year-old female of European ancestry. She died on May 10, 2005. She had a history of lupus and liver cancer. Lupus, cancer, and COPD are all listed under cause of death. She was placed in the indoor structure at ARF on May 12, 2005 at 10:59am. A large blue/purple spot surrounded by smaller blue/purple spots was visible on her right hip. A white scar extended the length of her hip was also visible. The scar was probably the result of a hip replacement. A second white scar was present above her left knee. Her skin color was yellow overall. Red/blue coloring was present around her wrists and hands. A white film covered her entire chest, genital area, and mouth. A small bulla was present on her left inner thigh. Yellow/orange coloring was visible on her chest, left thigh, and genital area. Small blue spots were present on the lower right abdomen and both sides of her chest. Red areas were visible on her cheeks and neck. The abdomen was not bloated at the time of placement. The abdominal bloat measurement was 87.1cm. The extensive discoloration and lack of abdominal bloat indicates the subject was in the late phase of the discoloration stage.

Subject G

Day 0 (7/5/2002) – the subject had multiple heart conditions including insulin-dependent diabetes, heart, and breathing problems, drug problems, and was known to be an avid smoker. The subject was not in the hospital at the time of death. Cause of death was listed as atherosclerotic cardiovascular disease. She was discovered on 1 July and then placed on 5 July. At the time of placement, the subject was in the last phases of the fresh stage, beyond the mortises. There was green discoloration on the abdomen, large bullae on the ankles, a portion of marbling on the inner knee or thigh, set lividity, and some skin slippage on the posterior side. The subject's hands were already beginning to dry out and darken to black at this time. Multiple ants and about 35 flies (all kinds from large blow flies to small gnats) were immediately attracted and two hours later there were

maggot masses present on the face and genital areas. Bloat measurement was recorded as 81cm (Srnrka 2003: 41).

III.6 Data collection

Each subject was observed daily from Day 0 through the end of the bloat stage (complete deflation of the abdomen). Photographs, notes, temperature readings, and abdominal circumferences were recorded at each observation. Abdominal circumference was taken just above the navel with the previously mentioned tape measure. After measuring, the tape measure was placed to the side of the torso so as not to restrict swelling or interrupt insect activity. Visual observations of the sky conditions were also recorded at each observation time. The sky conditions were recorded as overcast, mostly cloudy, partly cloudy, partly sunny, and sunny. Overcast indicated complete cloud coverage of the sky. Sunny referred to a complete lack of cloud coverage. Mostly cloudy, partly cloudy, and partly sunny indicated to a gradual decrease in cloud coverage. The amount of wind felt during observations was recorded daily as well. The notes and weather observations can be found in Appendix C (see attachments). A condensed version of the daily notes was placed in tabular form and included in the Results section. All photographs were copied to full-size CDs and placed in Appendix D (see attachments).

From the notes, the decomposition of each subject was divided into decomposition stages. The stages were compared between subjects using ADD or accumulated degree days (Vass 1991). The day of onset and end of marbling, skin slippage, bullae, maggot activity, desiccation, and insect presence were also compared between subjects using ADD. The comparisons are presented in graphical and tabular

form (see Results section). ADD was calculated by summing the average daily temperatures (in degrees Celsius). A developmental threshold is often subtracted from the average daily temperatures prior to summation (Megyesi et al. 2005). The developmental threshold chosen for this study was 0°C after Megyesi et al. (2005). At 0°C, decomposition essentially ceases. Temperatures below 0°C, therefore, were not added to ADD.

Unfortunately, ADD only accounts for some of the variation in decomposition rate. According to Megyesi et al. (2005), ADD accounts for 80% of the variation in decomposition. As many factors besides temperature affect decomposition rate, ADD cannot account for all variation. Wells and Lamotte (2001) indicate ADD masks information in decomposition studies by focusing on only one variable (temperature). Other significant differences in observations, therefore, are mentioned in the Results section.

The weather readings from the indoor thermometer and daily abdominal bloat measurements were entered into Excel[®] spreadsheets. The abdominal bloat measurements and weather readings were compared using Excel[®] graphing. The indoor and outdoor temperatures were compared to each other and to the temperature readings from the University of Tennessee agricultural campus. The complete set of weather information from the University of Tennessee agricultural campus was not analyzed, but is included in Appendix A. All of the temperature and humidity readings from the indoor thermometer are included in Appendix B.

III.7 Definitions of variables

Discoloration – Any change of skin color was considered discoloration. Colors included greens, reds, oranges, yellows, browns, grays, white, and black. Skin discoloration was recorded separately from discoloration due to mold growth.

Marbling (intravascular hemolysis) – As bacteria invade the circulatory system, veins and arteries become visible on the skin (see Figure 19).

Skin slippage – With the disintegration of the cellular junctions between the epidermal and dermal cells, the epidermal layer separates from the dermis (see Figure 20).

Bullae – Fluid collects between the epidermal and dermal layers (see Figure 21).

Maggot activity – Maggot activity was noted as scattered, present, or extensive. Scattered maggot activity indicated a small number of maggots scattered across the surface of the body. Maggot activity noted as present consisted of small clumps of maggots. Extensive maggot activity was synonymous with maggot infestation (see Figure 22).

Desiccation – With dehydration, tissues appeared darker and wrinkled. Usually seen during the skeletalization stage of decomposition, desiccation of the fingers and toes was often noted early in the decomposition process.

Insect activity – Insect activity was recorded by broad categories of insects including bees/wasps, flies, gnats, and ants. The number of insects in each category was recorded only as few, some, or many. Few indicated less than ten insects were observed. Some insects referred to between 11 and 20. Many insects indicated more than 21 insects were observed. In the indoor structure, insects were often present in the main room, but not on the subject.



Figure 19. Marbling on the legs of Subject A on October 6, 2004 (three weeks after placement).



Figure 20. Skin slippage of the left hand of Subject B on October 6, 2004 (one week after placement).



Figure 21. Bullae on the right side of the torso of Subject F on May 7, 2005 (five days after placement).



Figure 22. Extensive maggot activity on face, neck, upper chest, and arms of Subject C on October 31, 2004 (four days after placement).

Skeletalization – Skeletalization was simply the exposure of bone. Usually, skeletalization of the head occurs first (see Figure 23). The area of skeletalization was noted in the daily notes.



Figure 23. Skeletalization of the face of Subject B on October 27, 2004 (26 days after placement).

Chapter IV. Results

IV.1 Individual subject results

The individual results showed how quickly each subject progressed through the decomposition process (see Tables 2-7). The individual results tables were created from the full narrative notes included in Appendix C (see attachments). Emphasis was placed on the following variables: marbling, skin slippage, maggot presence, bullae, insect presence, desiccation, and skeletalization. The variables were correlated with day and ADD rather than date to make comparison easier. While the day of onset for all variables was recorded, some variables were noted throughout the study. The variables that continued beyond the observation period were not the same for all subjects. A condensed version of the notes for Subject G was adapted from Srnka (2003) and added as Table 8.

Aside from the variables mentioned above, several significant observations were made, but not analyzed. Subject D (outdoor, winter) and Subject F (indoor, spring/summer) were covered in mold through most of the observation period. The colors of the molds on each subject differed. Subject D was covered in pink and brown molds, while Subject F was covered in white mold. Other mold colors were present, but not dominant.

Secondly, for all indoor subjects (A, E, F), a second set of flies was observed in the room more than a month into the study. The second set of flies likely came from the hatching pupae cases on the subjects. Interestingly, the second set of flies were not observed on the subjects, but instead flew around the room. For Subjects A and E, the

Table 2. Significant observations for Subject A (indoor) with emphasis on the onset and end of marbling, skin slippage, maggot presence, bullae, insect presence, desiccation, skeletalization, and maximum abdominal bloat measurement.

Day	ADD	Significant observations
0	0.0	Overall skin color yellow, discoloration began
2	30.3	Marbling began, bullae visible
5	75.7	Gnats present
11	166.5	Flies present
13	196.8	Desiccation noted on fingers and toes Maggots present on face Skin slippage began
15	227.1	Bullae completely drained
18	272.5	Pupae cases noted on abdomen
25	378.5	Maximum abdominal bloat recorded (103.1cm)
41	632.6	Second set of flies flying around room
46	723.4	Last day marbling was visible
50	808.3	Mold first noted
56	906.5	Last day maggots were present Last day flies were present in building

Table 3. Significant observations for Subject B (outdoor) with emphasis on the onset and end of marbling, skin slippage, maggot presence, bullae, insect presence, desiccation, skeletalization, and maximum abdominal bloat measurement.

Day	ADD	Significant observations
0	0.0	Discoloration began Some liquid from facial openings
1	18.3	Flies and bees present Egg masses present
2	38.1	Skin slippage began Hair mat started to slip Maggots present
7	127.2	Marbling present
10	178.5	Maximum abdominal bloat recorded (117.2cm)
13	237.8	Mold first noted
16	261.6	Maxillary teeth visible
19	329.0	First skeletalization
24	438.2	Last day flies were noted Last day of skin slippage
28	522.3	Desiccation began
32	622.9	Last day maggots were noted

Table 4. Significant observations for Subject C (outdoor) with emphasis on the onset and end of marbling, skin slippage, maggot presence, bullae, insect presence, desiccation, skeletalization, and maximum abdominal bloat measurement.

Day	ADD	Significant observations
0	0.0	Flies present Discoloration began
1	20.1	Maggots first noted
3	67.0	Maximum abdominal bloat recorded (120.5cm) Desiccation began
5	118.2	First skin slippage noted Skeletalization began
11	248.5	Last day skin slippage was noted
13	272.3	Last day flies were noted Maggot activity still strong

Table 5. Significant observations for Subject D (outdoor) with emphasis on the onset and end of marbling, skin slippage, maggot presence, bullae, insect presence, desiccation, skeletalization, and maximum abdominal bloat measurement.

Day	ADD	Significant observations
0	0.0	Discoloration began Desiccation of fingers and toes
8	115.9	First day flies were noted
10	154.0	Mold first noted
14	168.0	Maximum abdominal bloat recorded (86.2cm)
15	168.0	Marbling present
19	181.8	Maxillary teeth visible
26	220.2	Mold covered entire upper body
42	398.5	Last day marbling was noted
50	491.5	Hair mat began to slough off
56	541.8	Desiccation began over entire body

Table 6. Significant observations for Subject E (indoor) with emphasis on the onset and end of marbling, skin slippage, maggot presence, bullae, insect presence, desiccation, skeletalization, and maximum abdominal bloat measurement.

Day	ADD	Significant observations
0	0.0	Discoloration began Desiccation of skin on nose started
6	128.9	Desiccation of fingers, toes, and face
10	218.4	Bullae first noted
23	428.4	First day flies and ladybugs were noted in room
29	539.8	Bullae drained
32	600.0	Maxillary teeth visible
39	751.3	Mold first noted
49	964.4	Maximum abdominal bloat recorded (88.9cm) Second set of flies flying around room
52	1030.9	Marbling present
71	1410.1	Maggots first noted
72	1428.2	Skin slippage present
75	1485.0	Pupae cases first noted
78	1552.4	Last day maggots were visible

Table 7. Significant observations for Subject F (indoor) with emphasis on the onset and end of marbling, skin slippage, maggot presence, bullae, insect presence, desiccation, skeletalization, and maximum abdominal bloat measurement.

Day	ADD	Significant observations
0	0.0	Discoloration began First bulla noted
8	169.5	Hair mat began to slough off Mold first noted Bullae started to drain
9	191.7	Desiccation of fingers and toes began
12	254.6	Marbling first noted First abdominal bloat peak recorded (94.5cm)
20	413.7	Skin slippage first noted
22	454.8	First flies present in room
24	497.3	Maggot activity first noted Pupae cases first noted All bullae drained
32	692.2	Maximum abdominal bloat recorded (103.4cm) Last day marbling was noted
33	716.3	Mold covered entire body
49	1112.6	Last day skin slippage was noted

Table 8. Significant observations for Subject G (outdoor) with emphasis on the onset and end of marbling, skin slippage, maggot presence, bullae, insect presence, desiccation, skeletalization, and maximum abdominal bloat measurement (adapted from Srnka 2003).

Day	ADD	Significant observations
0	0.0	Marbling began
2	53.7	Maggot infestation began Skin slippage began
3	80.9	Desiccation began Skeletalization began Last day marbling was present
4	108.0	Last day skin slippage was present
5	134.1	Maximum abdominal bloat recorded (91cm)
14	356.3	Last day maggots were noted

two sets of flies were clearly separated. The first set of flies was no longer in the room when the second set of flies was observed. For Subject F, the two sets of flies overlapped. A second set of flies, however, was clearly present towards the end of the observation period. As with Subjects A and E, the second set of flies on Subject F was not observed on the subject.

Individual abdominal bloat measurements were taken daily, but only the maximum abdominal bloat measurements were included in the tables. The full set of abdominal bloat measurements was graphed and included in the next section (Combined analysis of variables). The shape of the bloat measurement curves varies greatly between subjects.

The tables facilitated comparison between subjects by showing how long each variable was observed. The variables were compared between subjects through graphs in the next section (Combined analysis of variables) using ADD as a baseline for comparison. As Srnka (2003) used ADD for comparison of the same variables, results of Subject G were added to each graph. The variables were also used to divide the process of decomposition into stages for each subject. The stages were compared between subjects in the next section (Combined analysis of variables) using ADD as well. The results of the decomposition stage comparison were analyzed using both table and graph formats.

IV.2 Weather data analysis

The daily high and low temperatures recorded at ARF and the UT agricultural campus varied by as much as 5°C. The temperatures at ARF were generally higher than the temperatures recorded at the UT agricultural campus. Most of the variation occurred

in the fall and winter (see Figure 24 and Figure 25). Temperature variation was less during the summer months during the summer months (see Figure 26). The temperatures recorded at ARF were, therefore, used whenever possible. The indoor/outdoor thermometer in the indoor structure at ARF, however, was not installed until 33 days after the study began. As a result, the outdoor temperatures recorded at the UT agricultural campus from September 13, 2004 through October 14, 2004 had to be used for analysis of variables occurring at during that time period (see Figure 24).

Indoor and outdoor temperatures recorded at ARF were also compared to determine the temperature fluctuations in each treatment (indoor and outdoor). Again, a thermometer was not installed in the indoor structure at ARF until October 15, 2004. To obtain an indoor high temperature for September 13 through October 14, 2004, the indoor high temperatures from October 15 through November 18, 2004 were averaged. The same indoor high temperature was used for all days in that date range. A similar method was performed on the indoor low temperatures and indoor average temperatures (see Figure 27). While some error was introduced through this method, ADD could not be calculated for Subject A without obtaining an average daily temperature for the first 32 days of the study.

During the winter months, the main room of the indoor structure was heated with an oil radiator heater not central heat. As a result, the temperatures within the indoor structure varied greatly from January through March. The indoor high temperatures, however, remained consistently above the outdoor high temperatures (see Figure 28). The indoor low temperatures fluctuated around the outdoor high temperatures. The

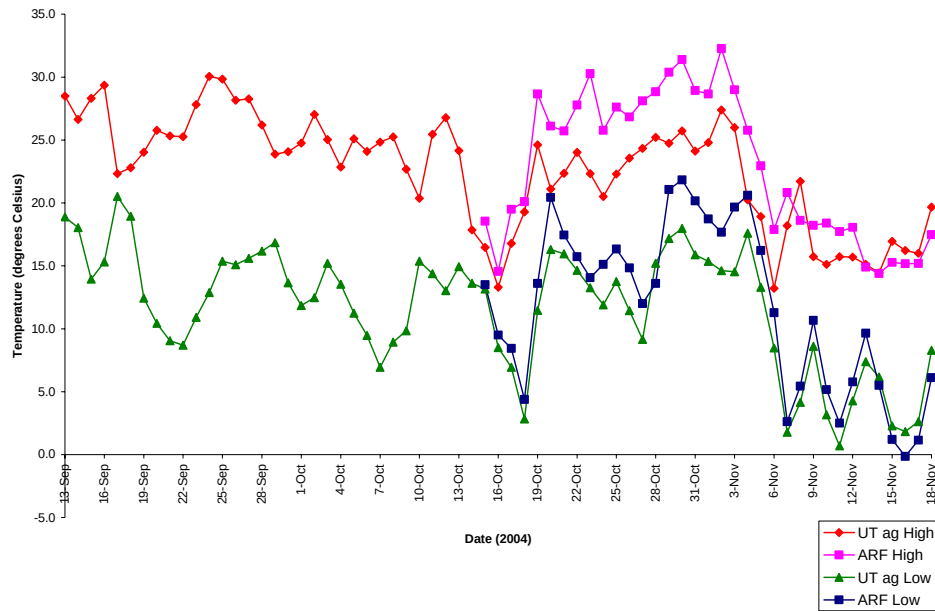


Figure 24. Comparison of high and low temperatures from ARF and the UT agricultural campus from September 13 through November 18, 2004.

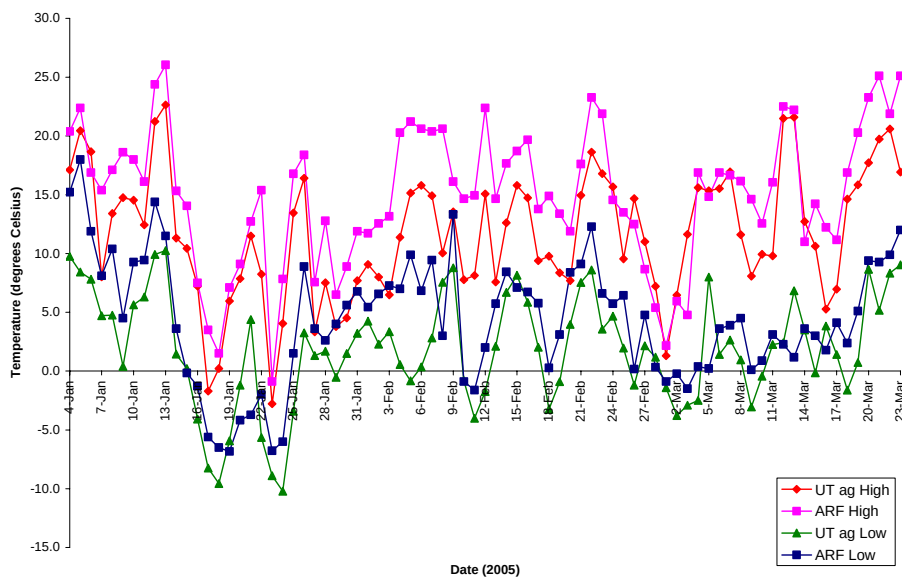


Figure 25. Comparison of high and low temperatures from ARF and the UT agricultural campus from January 4 through March 23, 2005.

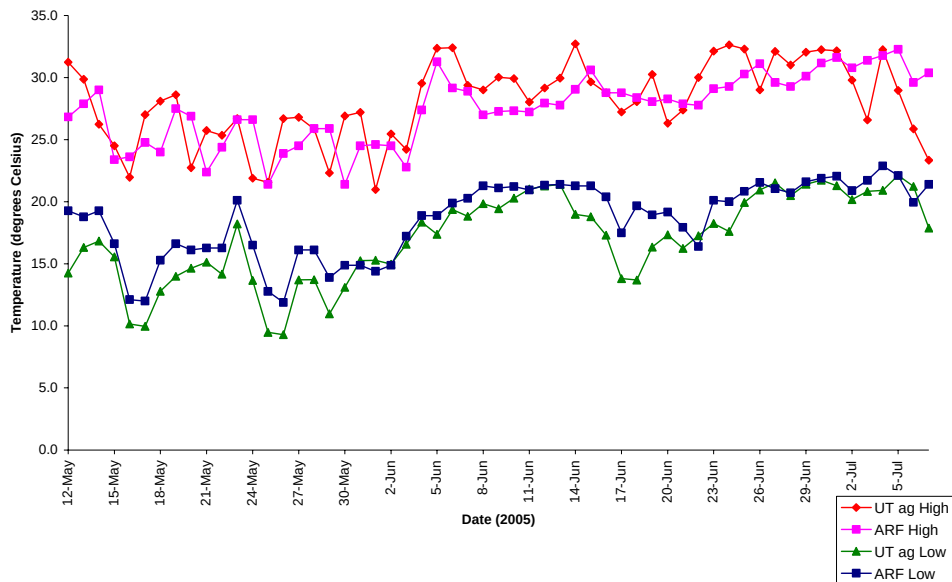


Figure 26. Comparison of high and low temperatures recorded at ARF and the UT agricultural campus from May 12 through July 7, 2005.



Figure 27. Comparison of high and low indoor and outdoor temperatures recorded at ARF from September 13 through November 18, 2004. Indoor temperatures through October 14 are calculated averages.

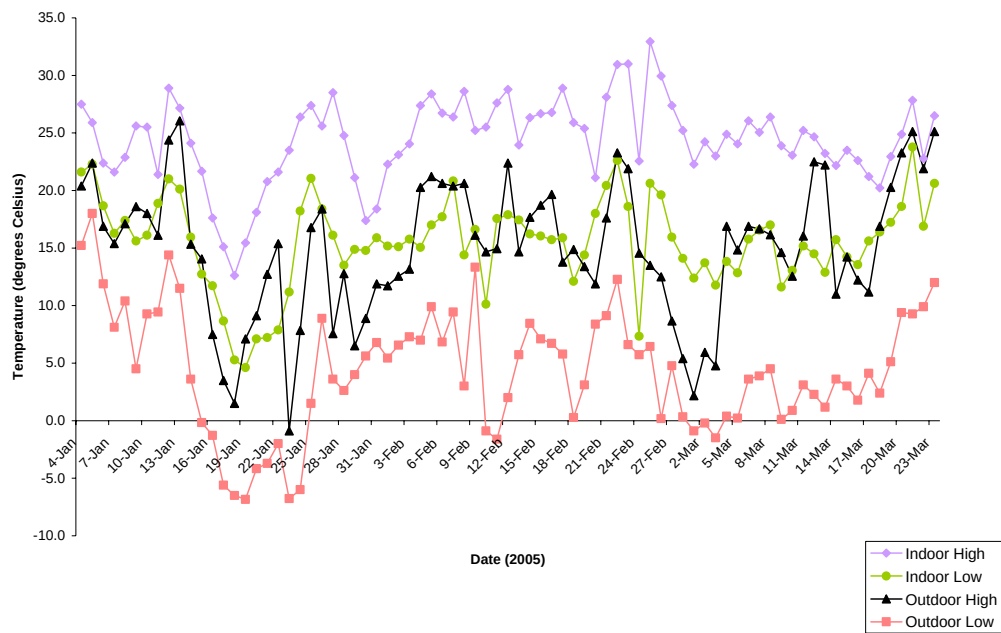


Figure 28. Comparison of high and low indoor and outdoor temperatures recorded at ARF from January 4 through March 23, 2005.

consistently higher temperatures produced variations in decomposition rate (see next section).

The indoor and outdoor temperatures during summer 2005 were very similar (see Figure 29). The air conditioner used in fall 2004 would not start in May 2005 and was not repaired before the end of the study. The temperatures, therefore, remained fairly consistent indoors and outdoors. The temperature fluctuation outdoors, however, was slightly greater than indoors. As a result, any differences in decomposition rate were likely due to differences in humidity, rainfall, and insect access rather than temperature variation between treatments. Since the indoor/outdoor thermometer also recorded percent humidity, differences in percent humidity between the indoor and outdoor environments were explored further.

The fall 2004 weather data obtained from the UT agricultural campus did not include percent humidity. Indoor and outdoor percent humidity, therefore, could not be compared for fall 2004. The indoor percent humidity fluctuated around 50% (see Appendix B). While the indoor environment felt less humid than the outdoor environment, no direct comparison between the two was possible. The winter, spring, and summer 2005 data from the UT agricultural campus, however, included hourly percent humidity. The hourly percent humidity for each day was averaged to obtain a daily percent humidity. The high and low percent humidity from the indoor/outdoor thermometer in the indoor structure at ARF was also averaged to obtain a daily percent humidity. The daily percent humidity from ARF and the UT agricultural campus was graphed for comparison (see Figure 30 and Figure 31).

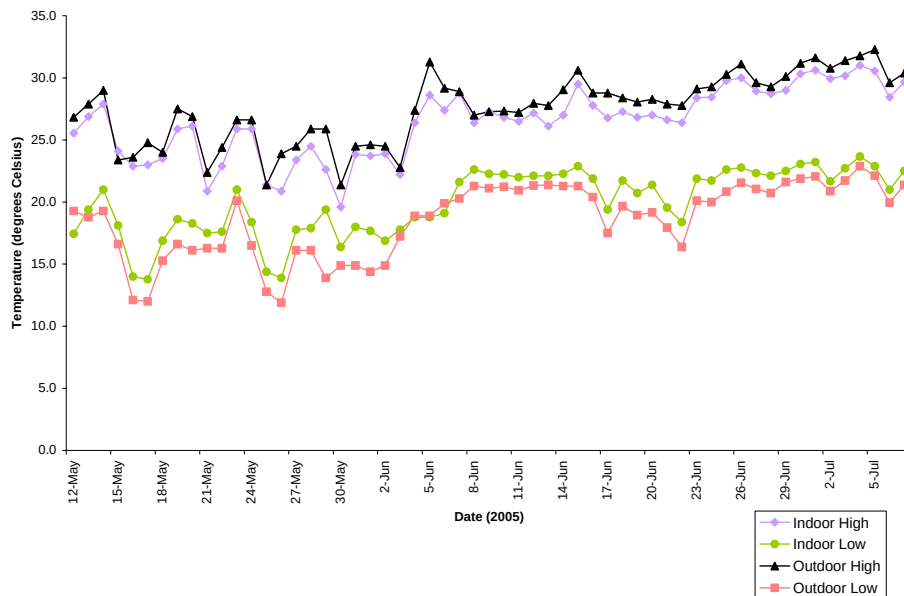


Figure 29. Comparison of high and low indoor and outdoor temperatures from May 12 through July 7, 2005.

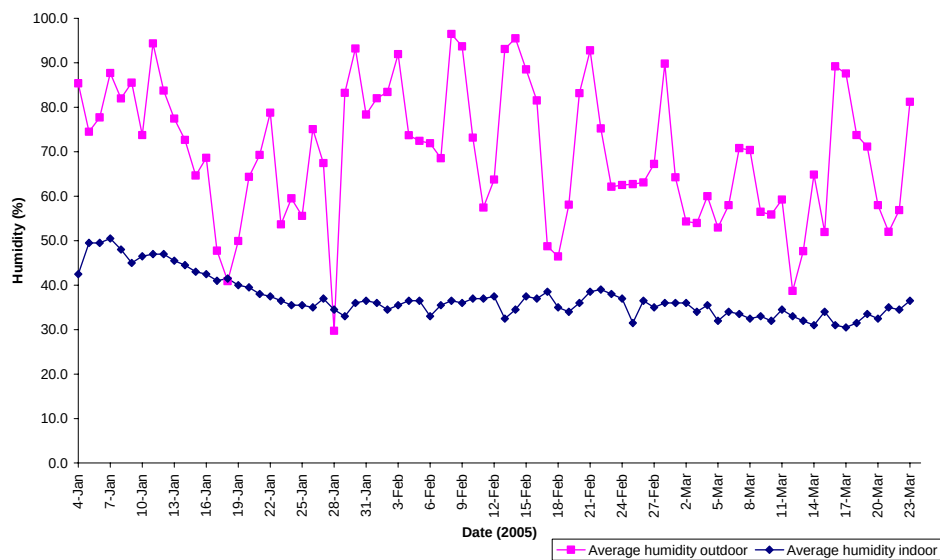


Figure 30. Comparison of indoor and outdoor average percent humidity. Indoor humidity was recorded at ARF. Outdoor humidity was recorded at the UT agricultural campus.

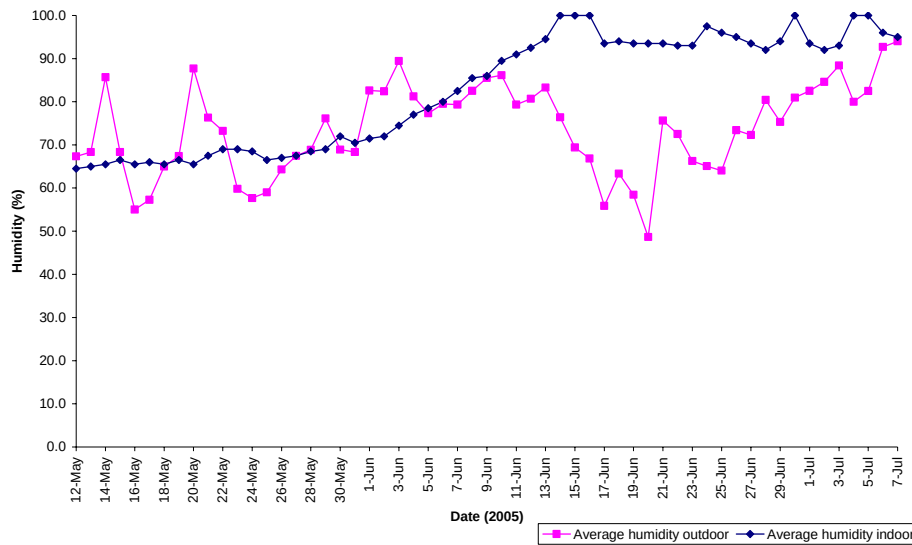


Figure 31. Comparison of indoor and outdoor average percent humidity. Indoor humidity was recorded at ARF. Outdoor humidity was recorded at the UT agricultural campus.

The indoor percent humidity during the winter 2005 was low and relatively even. The outdoor percent humidity during the winter 2005 varied greatly and except on two days remained higher than the indoor percent humidity. The summer 2005 indoor percent humidity increased steadily from May through July. The summer 2005 outdoor percent humidity fluctuated more than the indoor humidity. Unlike the winter 2005 humidity comparison, however, the indoor and outdoor percent humidity overlaps in summer 2005.

All of the weather data from the indoor/outdoor digital thermometer at ARF and the UT agricultural campus weather station was included in Appendices A and B. The weather data from the UT agricultural campus weather station contained a number of variables not analyzed. Most of the weather data from the digital thermometer at ARF was analyzed. Only the percent humidity from October 15 through November 18, 2005 was not examined.

IV.3 Combined analysis of variables

Marbling

Marbling generally lasted longer on the indoor subjects (see Figure 32). Subject A (indoor) had marbling for the longest time period (44 days or 698.6 ADD). Subject C had no marbling. On Subject E, marbling started late (day 52 or 1057.7 ADD). In outdoor environments, marbling appeared to last longer when the decomposition rate was not accelerated (as with Subjects C and G). Subjects C and G passed through the bloat stage in 22 and 14 days, respectively (see Abdominal bloat section). Decomposition rate was considerably slower for all other subjects.

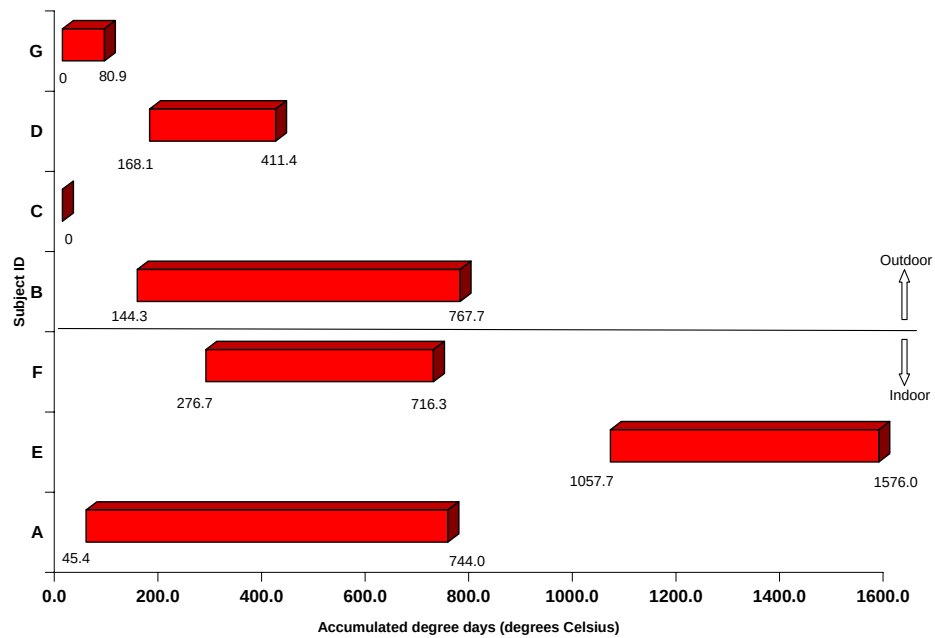


Figure 32. The presence of marbling over accumulated degree days for all subjects. Outdoor subjects are graphed above the line. Indoor subjects are graphed below the line. ADD at onset and last observation are labeled on the bars.

Skin slippage

Skin slippage also generally lasted longer on the indoor subjects (see Figure 33). Subject E was the exception with skin slippage only lasting 6 days or 129.3 ADD. Nevertheless, skin slippage on all the outdoor subjects lasted less time than on Subject E except for on one outdoor subject (Subject B). Skin slippage on Subject B lasted 22 days or 402.0 ADD. Skin slippage also started later on all indoor subjects. As maggot activity contributes to skin slippage, the insect-restricted environment of the indoor structure probably caused the delay in the onset of skin slippage.

Bullae

Bullae did not occur on any of the outdoor subjects observed during this study (see Figure 34). Bullae were present, however, on Subject G for 2 days or 53.7 ADD. The indoor subjects, on the other hand, all had bullae for up to 24 days or 499.5 ADD. Bullae were more likely to appear on the indoor subjects probably due to the protected environment and restricted insect access. On all subjects, skin slippage appeared after bullae had drained. The draining bullae left areas of broken skin which created areas of skin slippage.

Insect presence

As expected, insect presence was delayed for the indoor subjects (see Figure 35). Of the indoor subjects, insects gained access to Subject A first. Insects were also present longer on the indoor subjects. As mentioned earlier, insects came in two waves in the indoor structure. The second set of insects was not observed on the subjects, but simply in the main room of the indoor structure. The length of insect presence, therefore, may not have differed significantly between indoor and outdoor subjects.

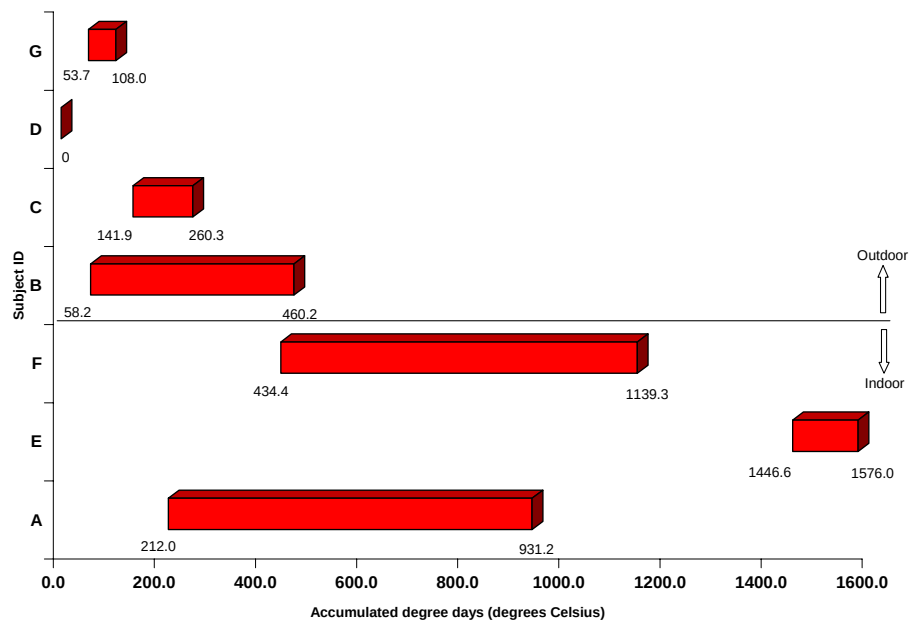


Figure 33. The presence of skin slippage over accumulated degree days for all subjects. Outdoor subjects are graphed above the line. Indoor subjects are graphed below the line. ADD at onset and last observation are labeled on the bars.

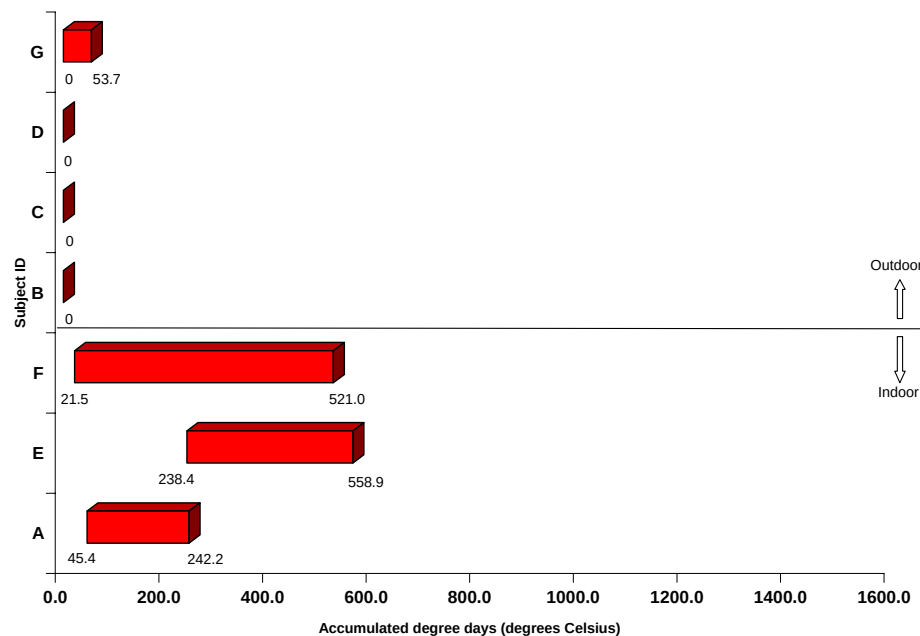


Figure 34. The presence of bullae over accumulated degree days for all subjects. Outdoor subjects are graphed above the line. Indoor subjects are graphed below the line. ADD at onset and last observation are labeled on the bars.

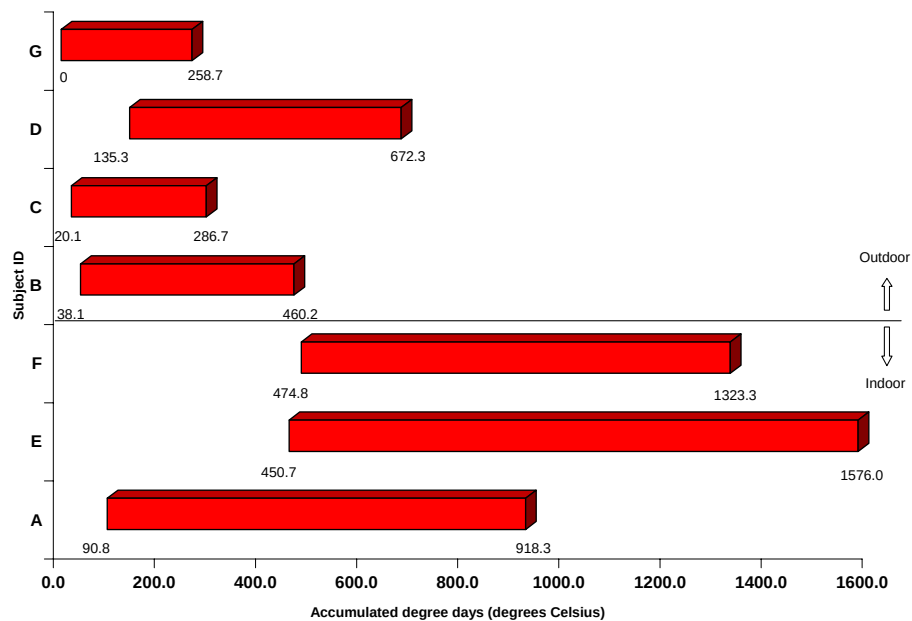


Figure 35. Insect presence over accumulated degree days for all subjects. Outdoor subjects are graphed above the line. Indoor subjects are graphed below the line. ADD at onset and last observation are labeled on the bars.

Maggot presence

Since insect presence was delayed, maggot presence was also delayed (see Figure 36). Of the indoor subjects, maggots first appeared on subject A after 13 days or 212.0 ADD. As insects were observed first on Subject A of the indoor subjects, maggot activity was expected to occur first on Subject A. The length of time maggots were observed was difficult to analyze across subjects because maggot activity on two of the subjects (Subjects C and F) extended beyond the observation period.

Desiccation

The onset of desiccation was not different between the indoor and outdoor subjects (see Figure 37). Once desiccation began, it extended throughout the observation period for all subjects. Although desiccation appeared to continue longer on the indoor subjects, the indoor subjects were generally observed longer than the outdoor subjects. Another factor to consider was the degree of desiccation. Desiccation of the fingers often occurred early. As Figure 37 was not divided by area of the body, the desiccation graph may be misleading.

Skeletalization

Skeletalization only appeared on the outdoor subjects (Figure 38). Of the outdoor subjects, bones were not exposed only on Subject D. As skeletalization is an ongoing process, skeletalization continued beyond the observation period for Subjects C, B, and G. The facial bones and mandible were the first to be exposed on both Subjects C and B. The posterior portion of the cranium was the first area to be exposed on Subject G (Srnrka 2003).

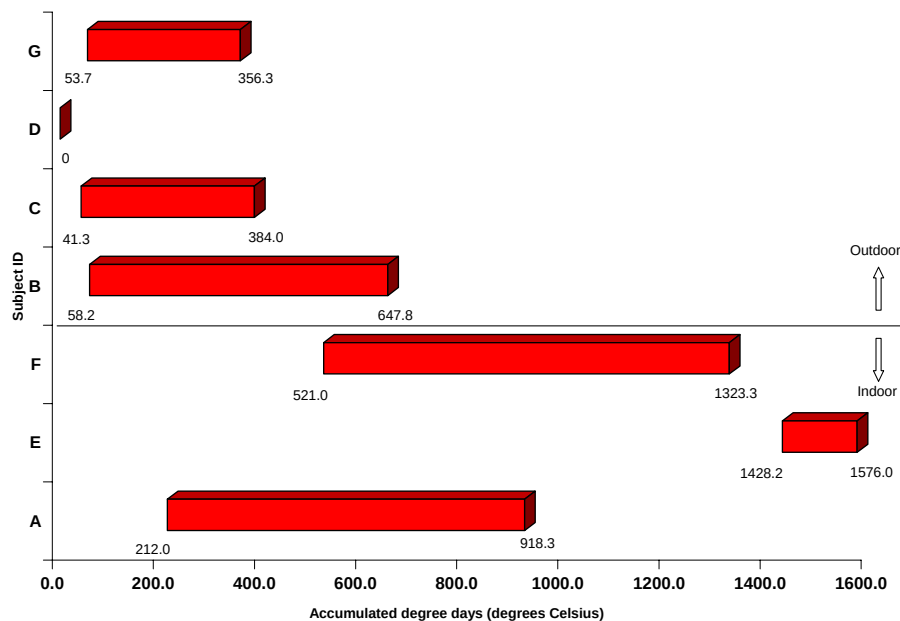


Figure 36. Maggot presence over accumulated degree days for all subjects. Outdoor subjects are graphed above the line. Indoor subjects are graphed below the line. ADD at onset and last observation are labeled on the bars.

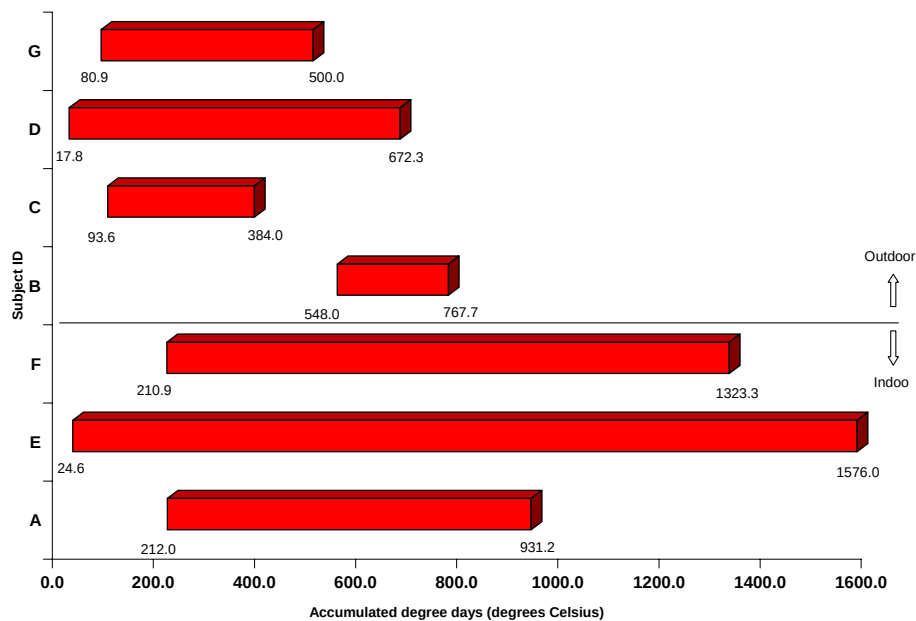


Figure 37. Presence of desiccation over accumulated degree days for all subjects. Outdoor subjects are graphed above the line. Indoor subjects are graphed below the line. ADD at onset and last observation are labeled on the bars.

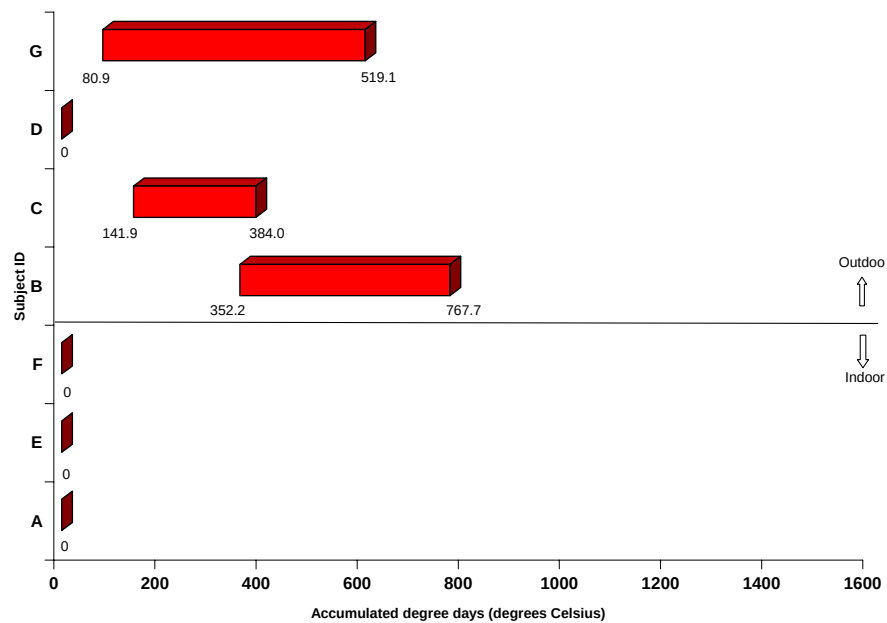


Figure 38. Presence of skeletalization over accumulated degree days for all subjects. Outdoor subjects are graphed above the line. Indoor subjects are graphed below the line. ADD at onset and last observation are labeled on the bars.

Abdominal bloat

The abdominal bloat measurements were graphed to compare the shape of the curves between subjects (see Figure 39). Subject G was not included in Figure 39 as the bloat measurements were not available. Outdoor Subjects C and B quickly progressed through the bloat stage. Both subjects reached maximum abdominal bloat within a few days of placement. Indoor Subject A was observed during the same season as Subjects C and B. The abdominal bloat curve for Subject A, however, was smoother and longer. Indoor Subject E, observed during the winter months, had a smoother and longer curve than Subject A. Although daily notes and abdominal bloat measurements were not taken after March 17, outdoor Subject D was observed until April 1. Abdominal bloat had not occurred by April 1. Bloat measurements for Subject D went steadily down after a small increase from Day 0 to Day 11.

Subject F had two peaks in bloat measurements. The first was a small peak occurring on Day 12. The second abdominal expansion began on the same day that maggot activity was first observed. The first bloat was likely caused by bacterial activity in the digestive system. The second bloat was probably caused in part by the maggot activity. On the last day of observation (July 7), the abdomen had collapsed only in the middle causing the bloat measurement to be higher. Further deflation, however, seemed unlikely.

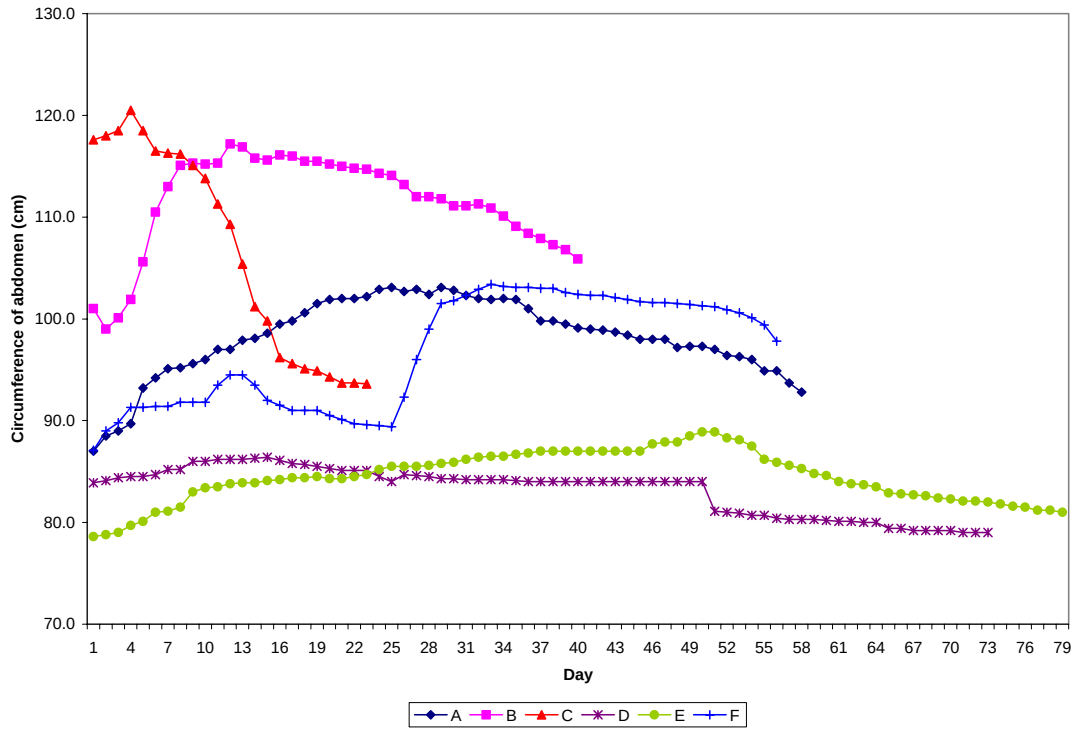


Figure 39. Abdominal bloat (circumference of abdomen) for each subject through the decomposition process measured in days. Subjects A, E, and F were placed indoors. Subjects B, C, and D were placed outdoors.

IV.4 Analysis of decomposition stages

General

The decomposition process was divided into stages for each subject. Subjects were observed only through the bloat stage. The fresh, discoloration, and bloat stages were analyzed by comparing the days spent in each stage and the ADD. ADD was used in the graphical comparison. Both days and ADD were used in the tabular format (see Table 9). The same scale was used for all graphs to better show the amount of time spent in each stage. The daily notes of Subject G were examined so as to include Subject G in the stage graphs.

Fresh stage

Four subjects, two outdoor and two indoor, were beyond the fresh stage at the time of placement (see Figure 40). Subjects A and B were only in the fresh stage for one day (15.1 and 18.3 ADD, respectively). Subject D remained in the fresh stage for two days (38.0 ADD). No differences were apparent between indoor and outdoor subjects.

Discoloration stage

All of the indoor subjects spent fewer ADD in the discoloration stage than the outdoor subjects observed (see Figure 41). Outdoor Subject G was the exception, spending only 27.5 ADD in the discoloration stage. Indoor Subject E, however, was in the discoloration stage twice as long (8 days) as outdoor Subjects B and C (4 days each). Aside from the 3 days spent in the fresh stage, outdoor Subject D was in the discoloration stage for the entire observation period.

Table 9. ADD and days spent in each of the first three stages of decomposition for each subject. ADD is calculated in degrees Celsius. The days and ADD for Subject G were calculated from the daily notes taken by Srnka (2003).

Subject ID														
	A		B		C		D		E		F		G	
Stage	Days	ADD	Days	ADD	Days	ADD	Days	ADD	Days	ADD	Days	ADD	Days	ADD
Fresh	1	15.1	1	18.3	0	0.0	3	38.0	0	0.0	0	0.0	0	0.0
Discoloration	4	45.5	4	58.1	4	67.0	70	619.9	8	18.3	1	23.1	2	27.5
Bloat	53	855.5	35	673.2	19	290.4	0	0.0	71	1406.2	56	1278.7	13	179.4

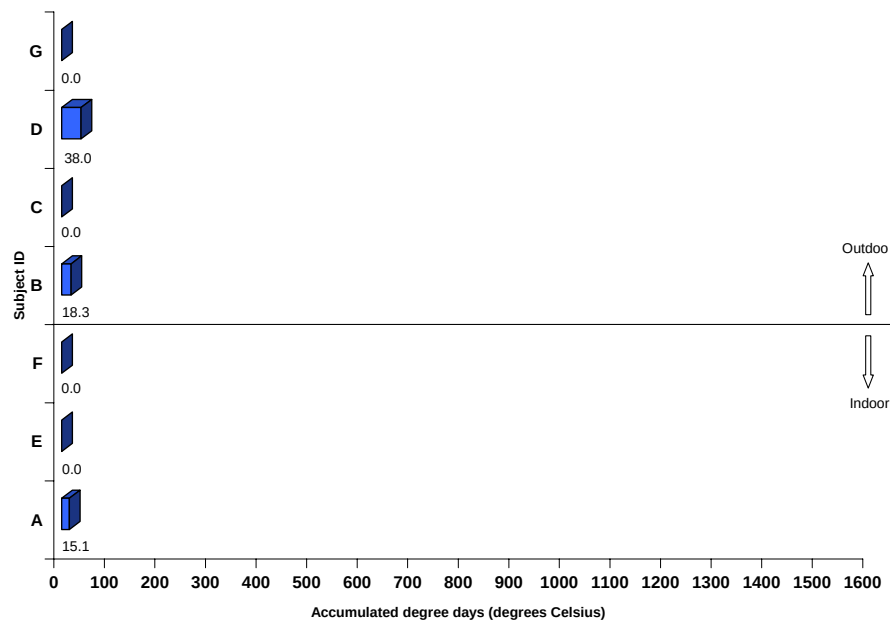


Figure 40. Accumulated degree days the fresh stage of decomposition lasted for each subject. The bars are labeled with ADD. Indoor subjects are graphed below the line. Outdoor subjects are graphed above the line.

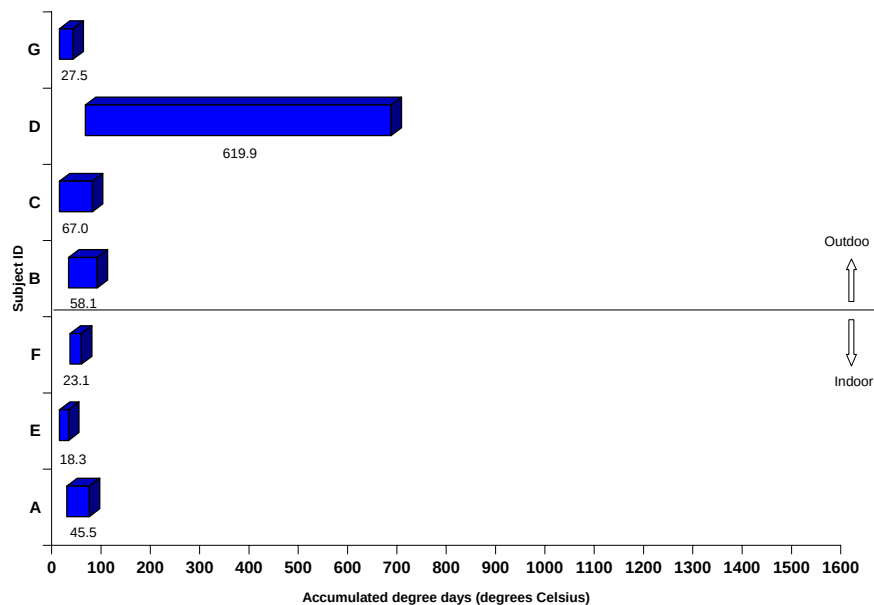


Figure 41. Accumulated degree days the discoloration stage of decomposition lasted for each subject. The bars are labeled with ADD. Indoor subjects are graphed below the line. Outdoor subjects are graphed above the line.

Bloat stage

No difference in the onset of the bloat stage was observed between indoor and outdoor subjects (see Figure 42). The bloat stage lasted longer, however, for the indoor subjects. Subject D did not enter the bloat stage during the observation period. Subject E spent the largest number of days and ADD in the bloat stage (71 days, 1406.2 ADD).

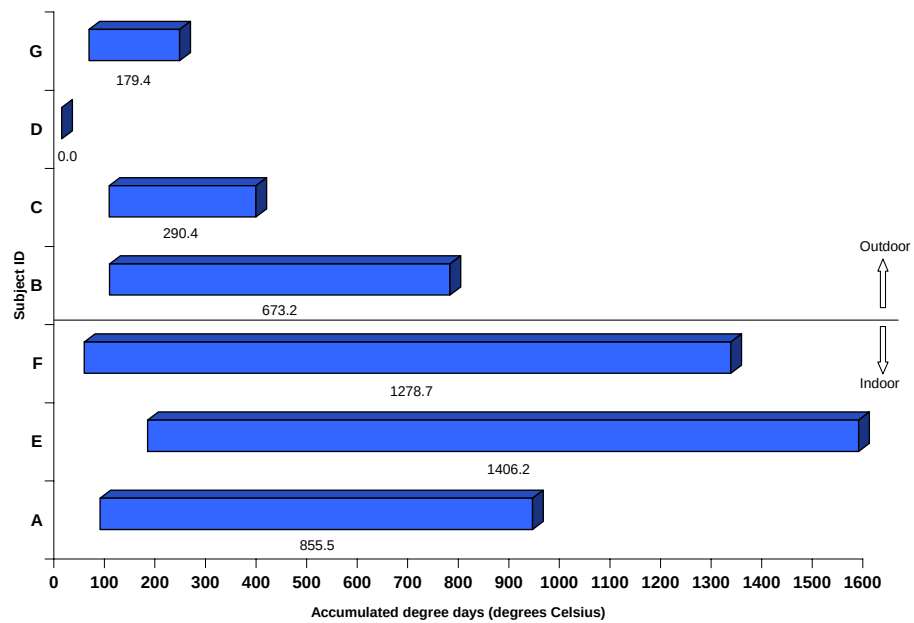


Figure 42. Accumulated degree days the bloat stage of decomposition lasted for each subject. The bars are labeled with ADD. Indoor subjects are graphed below the line. Outdoor subjects are graphed above the line.

V. Discussion

V.1 Overview

Based on the variables and bloat stage, decomposition rate was slower for the indoor subjects (except versus outdoor Subject D). A number of factors contributed to the slower decomposition rate. First, on all indoor subjects the onset of skin slippage, maggot activity, and insect presence was delayed. Skin slippage, maggot activity, and insect presence were delayed due to the insect-restricted environment. While skin slippage occurred without maggot presence, maggots accelerated the process on the outdoor subjects. Secondly, insect presence, desiccation, and abdominal bloat lasted longer (in ADD) on the indoor subjects than on the outdoor subjects. Again, maggot activity can hasten abdominal deflation by breaking down tissues more quickly. The air conditioned and heated environments also had lower humidity. Low humidity can reduce insect activity (Mann et al. 1990). Lastly, initial skeletalization was not observed on any of the indoor subjects. Three of the four outdoor subjects, on the other hand, had some bone exposure at the end of the observation period.

As expected, the decomposition rate was greatly reduced for Subjects E and D (observed during the winter). Subject D had no skin slippage, maggot activity, bullae, bloat, or skeletalization during the observation period. The low temperatures during the winter months effectively decreased the decomposition rate. While decomposition of indoor Subject E progressed faster than outdoor Subject D, the decomposition rate was still slow. The slowed decomposition of Subject E was due to the lack of centralized heat. The oil heater kept the indoor temperatures 2-15°C above the outdoor temperatures,

but the indoor temperatures fluctuated significantly. The temperature fluctuations limited bacterial and insect/maggot activity.

Marbling and bullae did not offer much insight into decomposition rate for the indoor or outdoor subjects. Except for Subject B, however, the outdoor subjects had marbling for less time (in ADD) than the indoor subjects. The brush covering Subject B (mentioned previously) may have caused marbling to linger. Bullae did not appear on any of the outdoor subjects observed. Subject G had bullae for the first two days following placement. As bullae are fragile, the protected environment of the indoor structure encouraged the presence of bullae. The delayed onset of maggot activity also affected the presence of bullae.

Galloway et al. (1989) also found bodies progressed through the early stages of decomposition slower in closed structures. Galloway et al. (1989) suggested skeletalization was accelerated in moist, closed environments, as well. The Galloway et al. (1989) study, however, did not specify the type of enclosed structures used for the comparison. Insect access and temperature control may not have been similar in this study and the Galloway et al. (1989). The two studies were also performed in two different climates. In this study, the indoor environment had an overall lower percent humidity than the outdoor environment. The Galloway et al. (1989) study appeared to have been the opposite. Furthermore, the Galloway et al. (1989) study did not address decomposition variables separately. Tomlinson (2003) examined decomposition in an insect-restricted environment, but the insect access was not sufficiently controlled to make a comparison with the present study. No other researchers have performed studies on indoor decomposition.

V.2 Possible limitations

This study had some limitations. Most importantly, the sample size was small. Despite the addition of a seventh subject from Srnka (2003), the sample size was not large enough to statistically test the above conclusions. Similarly, this study only examined the first three stages of decomposition. Ideally, the subjects would have been observed through the skeletal decomposition stage. A much more extensive study was, therefore, needed to confirm the results. Time limitations, however, prevented the observation of other subjects and limited observation period.

The second major limitation of this study came from the nature of the decomposition process. The decomposition of the subjects progressed along a continuum. The continuum was divided into stages to make analysis easier. The stages overlapped to some extent making the division artificial. The use of ADD to compare both the stages and the variables also had some limitations. As ADD was calculated from temperature readings, the variables/stages were compared to temperature. The comparisons between temperature and variables/stages were then compared across subjects. The ADD comparisons may have masked other interactions between variables (Wells and Lamotte 2001). Whenever possible, though, interactions between variables were mentioned.

Next, the environment in the indoor structure was not strictly controlled. The oil heater did not regulate temperatures as well as centralized heating would. As a result, the winter indoor temperatures were highly variable. Due to the broken air conditioner, the spring/summer temperatures did not vary between the indoor and outdoor environments. Also, the digital thermometer was not installed in the indoor structure until 33 days into

the study. Insect access was a problem as well. To obtain daily notes and photographs, the doors to the indoor structure had to be opened once a day. The foyer and the fly paper attached to the windows were an attempt to prevent insect access as much as possible. Daily records could not have been kept, however, without entering the indoor structure.

Finally, this study was performed in east Tennessee. Consequently, the results may not reflect decomposition in indoor versus outdoor environments in other climates. This study would be hard to replicate in other climates, though, due to the lack of facilities for indoor or outdoor human decomposition research.

VI. Conclusions

From September 2004 through July 2005, six unembalmed, unautopsied human subjects were placed in an indoor and outdoor environment at the Anthropology Research Facility at the University of Tennessee. Photographs, notes, and weather readings were taken daily in both environments. Each subject was allowed to progress through the fresh, discoloration, and bloat stages of decomposition without researcher interference to assess the differences in decomposition rate between the two treatments. Decomposition variables and stages were compared to accumulated degree days calculated from on-site temperature readings.

Few researchers have attempted to examine the potential differences between decomposition in indoor and outdoor areas. The lack of research was likely due to the difficulties in finding a suitable environment for experimental studies. Even ARF was not equipped for an indoor/outdoor study until August 2004. With the addition of an indoor structure, research on indoor and outdoor decomposition rates was possible. Limitations, however, still existed in this study.

Overall, decomposition rate of indoor subjects appeared to be slower than the outdoor subjects. Analysis of the variables showed a delay in insect presence, maggot activity, and skin slippage. Analysis also revealed abdominal bloat, desiccation, and insect presence lasted longer in the indoor environment. The differences in all variables could be correlated to two main factors: insect restriction and controlled temperature. As expected, the temperatures during the winter months inhibited decomposition in both environments.

This study was an initial examination of the decomposition in an indoor and outdoor environment. The study needed to be expanded by increasing both the sample size and observation period. Increasing the sample size would likely include adding different ages, body sizes, sexes, and causes of death. Six of the seven subjects used in this study were older females, which helped eliminate variability. Obtaining subjects with specific demographics for a larger sample, however, would be difficult. Better control of insect access and temperature in the indoor structure would also provide an improved picture of the differences in decomposition between the two treatments. Time and logistic limitations, however, prevented further study.

As initial findings suggested clear differences in decomposition rate exist, further research should be attempted. Increasing the sample size alone would decrease the effects of individual variability. Lastly, decomposition rate was difficult to analyze. Better ways to compare decomposition rates between subjects would improve the results as well.

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Appendices

Appendix A
Weather data from the weather station on the
University of Tennessee agricultural campus

Julian Day	Year	Date	Hr-Min	Cont	Batt. V	Air Temp. (C)	RH %	Rainfall (mm)	Solar R. (MJ/m^2)	Wind Sp. (mps)	Wind Direction (deg.)	Air Temp. (F)
256	2004	13-Sep	700	256.292	12.450	18.89	103.10	0.00	0.05	0.00	144.4	66.002
256	2004	13-Sep	1500	256.625	12.700	28.49	68.09	0.00	2.17	0.19	148.9	83.282
257	2004	14-Sep	800	257.333	12.610	18.04	103.50	0.00	0.16	0.11	139.4	64.472
257	2004	14-Sep	1800	257.75	13.160	26.63	69.19	0.00	0.95	0.08	292.3	79.934
258	2004	15-Sep	600	258.25	12.580	13.94	103.30	0.00	0.00	0.00	172.6	57.092
258	2004	15-Sep	1500	258.625	12.660	28.31	55.81	0.00	2.50	0.40	201.7	82.958
259	2004	16-Sep	700	259.292	12.420	15.30	103.00	0.00	0.04	0.01	145.7	59.54
259	2004	16-Sep	1600	259.667	12.810	29.36	62.58	0.00	1.66	0.46	135.6	84.848
260	2004	17-Sep	700	260.292	12.440	20.53	101.30	0.00	0.02	0.00	237.2	68.954
260	2004	17-Sep	1300	260.542	12.450	22.32	101.40	0.00	0.45	0.05	287.1	72.176
261	2004	18-Sep	1500	261.625	13.150	22.81	81.10	3.40	0.92	2.35	71.3	73.058
261	2004	18-Sep	2300	261.958	12.300	18.95	88.80	0.00	0.00	0.66	69.8	66.11
262	2004	19-Sep	700	262.292	12.370	12.43	100.50	0.00	0.02	0.00	71.9	54.374
262	2004	19-Sep	1600	262.667	12.700	24.03	49.20	0.00	2.00	0.70	77.5	75.254
263	2004	20-Sep	700	263.292	12.470	10.43	101.90	0.00	0.02	0.00	164.5	50.774
263	2004	20-Sep	1600	263.667	12.680	25.77	44.48	0.00	1.98	0.73	166.7	78.386
264	2004	21-Sep	700	264.292	12.430	9.05	102.10	0.00	0.02	0.00	138.9	48.29
264	2004	21-Sep	1600	264.667	12.730	25.33	40.71	0.00	1.98	0.24	163.7	77.594
265	2004	22-Sep	700	265.292	12.400	8.69	103.00	0.00	0.03	0.00	145.5	47.642
265	2004	22-Sep	1700	265.708	12.930	25.27	54.21	0.00	1.29	0.04	189.0	77.486
266	2004	23-Sep	600	266.25	12.520	10.91	103.00	0.00	0.00	0.00	166.9	51.638
266	2004	23-Sep	1700	266.708	13.330	27.82	49.97	0.00	1.20	0.08	151.1	82.076
267	2004	24-Sep	700	267.292	12.400	12.88	103.10	0.00	0.02	0.00	166.0	55.184
267	2004	24-Sep	1700	267.708	13.230	30.06	52.50	0.00	1.19	0.10	159.9	86.108
268	2004	25-Sep	500	268.208	12.540	15.37	103.00	0.00	0.00	0.00	181.4	59.666
268	2004	25-Sep	1600	268.667	12.690	29.84	57.62	0.00	1.69	0.14	200.3	85.712
269	2004	26-Sep	700	269.292	12.380	15.08	103.10	0.00	0.02	0.00	151.7	59.144
269	2004	26-Sep	1400	269.583	12.660	28.17	65.56	0.00	2.41	0.39	309.2	82.706
270	2004	27-Sep	700	270.292	12.440	15.60	102.40	0.00	0.02	0.00	127.1	60.08
270	2004	27-Sep	1500	270.625	12.700	28.27	58.67	0.00	2.05	0.41	171.5	82.886
271	2004	28-Sep	700	271.292	12.420	16.17	99.90	0.00	0.02	0.00	171.1	61.106
271	2004	28-Sep	1400	271.583	13.060	26.19	73.10	0.00	1.35	0.60	157.5	79.142

Julian Day	Year	Date	Hr-Min	Cont	Batt. V	Air Temp. (C)	RH %	Rainfall (mm)	Solar R. (MJ/m^2)	Wind Sp. (mps)	Wind Direction (deg.)	Air Temp. (F)
272	2004	29-Sep	1500	272.625	12.960	23.87	81.80	0.00	1.40	0.96	199.5	74.966
272	2004	29-Sep	2300	272.958	12.330	16.84	102.20	0.00	0.00	0.00	181.7	62.312
273	2004	30-Sep	700	273.292	12.360	13.65	103.50	0.00	0.01	0.00	141.0	56.57
273	2004	30-Sep	1500	273.625	12.850	24.06	65.00	0.00	1.66	0.35	167.1	75.308
274	2004	1-Oct	700	274.292	12.390	11.85	103.20	0.00	0.02	0.00	162.2	53.33
274	2004	1-Oct	1500	274.625	12.700	24.76	63.09	0.00	2.00	0.77	312.3	76.568
275	2004	2-Oct	400	275.167	12.550	12.48	103.10	0	0.00	0.00	182.7	54.464
275	2004	2-Oct	1700	275.708	13.090	27.04	62.67	0	0.89	1.96	152.8	80.672
276	2004	3-Oct	600	276.25	12.520	15.21	102.60	0	0.00	0.05	175.9	59.378
276	2004	3-Oct	1700	276.708	13.350	25.03	71.10	0	0.63	1.40	165.9	77.054
277	2004	4-Oct	1700	277.708	13.370	22.85	60.50	0	0.91	1.44	191.5	73.13
277	2004	4-Oct	2300	277.958	12.440	13.53	101.70	0	0.01	0.00	111.3	56.354
278	2004	5-Oct	300	278.125	12.560	11.24	102.70	0	0.00	0.01	188.7	52.232
278	2004	5-Oct	1700	278.708	13.270	25.10	39.93	0	0.90	1.44	190.3	77.18
279	2004	6-Oct	700	279.292	12.370	9.48	102.80	0	0.01	0.00	143.4	49.064
279	2004	6-Oct	1700	279.708	13.410	24.09	43.07	0	0.96	0.93	168.4	75.362
280	2004	7-Oct	700	280.292	12.380	6.94	102.50	0	0.01	0.00	150.7	44.492
280	2004	7-Oct	1700	280.708	13.320	24.84	38.20	0	0.98	0.25	152.2	76.712
281	2004	8-Oct	600	281.25	12.500	8.94	102.70	0	0.00	0.00	54.1	48.092
281	2004	8-Oct	1700	281.708	13.120	25.26	47.89	0	0.93	0.03	171.3	77.468
282	2004	9-Oct	700	282.292	12.340	9.84	102.80	0	0.01	0.00	88.8	49.712
282	2004	9-Oct	1600	282.667	13.410	22.69	58.73	0	1.10	0.76	195.6	72.842
283	2004	10-Oct	500	283.208	12.560	15.38	99.20	0	0.00	0.00	175.1	59.684
283	2004	10-Oct	1600	283.667	13.040	20.36	83.40	0	0.41	0.00	180.2	68.648
284	2004	11-Oct	700	284.292	12.350	14.37	102.70	0	0.01	0.00	75.8	57.866
284	2004	11-Oct	1400	284.583	12.760	25.45	61.40	0	1.71	0.72	136.6	77.81
285	2004	12-Oct	700	285.292	12.430	13.03	87.70	0	0.01	0.00	76.8	55.454
285	2004	12-Oct	1600	285.667	12.810	26.77	55.63	0	1.18	0.36	183.9	80.186
286	2004	13-Oct	300	286.125	12.540	14.94	101.70	0	0.00	0.00	317.9	58.892
286	2004	13-Oct	1300	286.542	12.720	24.15	76.80	0	0.82	0.38	134.8	75.47
287	2004	14-Oct	200	287.083	12.490	17.85	101.50	0.4	0.00	0.40	257.2	64.13
287	2004	14-Oct	2200	287.917	12.430	13.62	100.80	0.1	0.00	1.60	262.6	56.516

Julian Day	Year	Date	Hr-Min	Cont	Batt. V	Air Temp. (C)	RH %	Rainfall (mm)	Solar R. (MJ/m^2)	Wind Sp. (mps)	Wind Direction (deg.)	Air Temp. (F)
288	2004	15-Oct	600	288.25	12.480	13.16	99.30	0	0.00	1.10	289.9	55.688
288	2004	15-Oct	1700	288.708	13.180	16.46	73.40	0	0.50	2.23	204.4	61.628
289	2004	16-Oct	700	289.292	12.320	8.50	84.50	0.1	0.00	2.35	236.5	47.3
289	2004	16-Oct	1700	289.708	13.200	13.31	61.99	0	0.39	2.75	207.7	55.958
290	2004	17-Oct	1600	290.667	13.160	16.79	36.11	0	1.29	4.43	266.4	62.222
290	2004	17-Oct	2300	290.958	12.470	6.94	80.60	0	0.00	0.24	296.4	44.4866
291	2004	18-Oct	700	291.292	12.470	2.84	101.80	0	0.01	0.00	148.3	37.1048
291	2004	18-Oct	1600	291.667	12.970	19.30	33.92	0	1.20	1.27	191.4	66.74
292	2004	19-Oct	500	292.208	12.560	11.46	92.90	0.1	0.00	0.04	154.7	52.628
292	2004	19-Oct	1500	292.625	13.110	24.62	58.50	0	0.97	4.60	248.4	76.316
293	2004	20-Oct	0	293	12.390	16.31	103.10	0.1	0.00	0.00	283.1	61.358
293	2004	20-Oct	1600	293.667	13.080	21.11	85.40	0	0.56	1.83	221.1	69.998
294	2004	21-Oct	1800	294.75	13.74	22.35	66.35	0	1.229	0.427	239.4	72.23
294	2004	21-Oct	2300	294.958	13.01	15.96	101.1	0	0	0.333	125.3	60.728
295	2004	22-Oct	1600	295.667	14.39	24.02	59.37	0.1	4.531	1.133	279.7	75.236
295	2004	22-Oct	2400	296	13.02	14.65	101.1	0	0.001	0	63.58	58.37
296	2004	23-Oct	300	296.125	12.99	13.26	102.1	0	0.002	0.009	105.6	55.868
296	2004	23-Oct	1700	296.708	14.28	22.33	64.2	0	2.534	0.547	193.5	72.194
297	2004	24-Oct	700	297.292	12.89	11.89	101.9	0	0.002	0.067	86.3	53.402
297	2004	24-Oct	1500	297.625	13.87	20.51	60.92	0	2.357	3.434	237.2	68.918
298	2004	25-Oct	1800	298.75	14.19	22.29	63.92	0	1.681	2.079	244.4	72.122
298	2004	25-Oct	2400	299	13.03	13.75	100.1	0.1	0.001	0	105	56.75
299	2004	26-Oct	1800	299.75	14.26	23.55	40.06	0.1	1.829	0.546	191.1	74.39
299	2004	26-Oct	2400	300	13	11.44	97.5	0	0.001	0.03	92.3	52.592
300	2004	27-Oct	600	300.25	12.9	9.15	101	0	0.003	0.051	101.2	48.47
300	2004	27-Oct	1600	300.667	14.54	24.34	46.12	0	3.755	2.549	268.1	75.812
301	2004	28-Oct	300	301.125	12.93	15.2	98.7	0	0.001	0.165	125.3	59.36
301	2004	28-Oct	1500	301.625	14.16	25.21	66.59	0	3.531	2.843	263.5	77.378
302	2004	29-Oct	400	302.167	12.91	17.17	101.5	0	0	0	91.8	62.906
302	2004	29-Oct	1300	302.542	14.02	24.74	69.66	0	4.063	1.005	222.4	76.532
303	2004	30-Oct	1700	303.708	14.15	25.72	65.32	0	2.487	2.887	230.4	78.296
303	2004	30-Oct	2300	303.958	12.97	17.97	98.7	0	0	0.202	133.8	64.346

Julian Day	Year	Date	Hr-Min	Cont	Batt. V	Air Temp. (C)	RH %	Rainfall (mm)	Solar R. (MJ/m^2)	Wind Sp. (mps)	Wind Direction (deg.)	Air Temp. (F)
304	2004	31-Oct	700	304.2917	12.85	15.89	100.9	0	0	0.118	83.3	60.602
304	2004	31-Oct	1400	304.5833	13.73	24.12	60.52	0	1.884	5.562	265.8	75.416
305	2004	1-Nov	800	305.333	12.83	15.36	100.9	0	0.002	0	65.98	59.648
305	2004	1-Nov	1800	305.75	14.05	24.79	58.53	0	1.314	1.816	289	76.622
306	2004	2-Nov	900	306.375	12.9	14.63	101.2	0	0.279	0.044	60.75	58.334
306	2004	2-Nov	1700	306.708	14.33	27.38	47.76	0	2.562	3.448	239.1	81.284
307	2004	3-Nov	800	307.333	12.9	14.53	99.4	0	0.002	0.347	87.9	58.154
307	2004	3-Nov	1300	307.542	14.01	25.99	56.2	0	2.698	4.18	248	78.782
308	2004	4-Nov	800	308.333	12.85	17.6	100.5	0	0.001	0.221	60.93	63.68
308	2004	4-Nov	1300	308.542	13.41	20.24	79.1	0	1.003	1.624	64.12	68.432
309	2004	5-Nov	1400	309.583	14.39	18.91	55.11	0	4.297	5.125	291.4	66.038
309	2004	5-Nov	2300	309.958	13	13.3	60.53	0	0	3.172	219.1	55.94
310	2004	6-Nov	800	310.333	12.86	8.48	58.5	0	0.001	1.135	49.68	47.264
310	2004	6-Nov	1400	310.583	14.64	13.22	38.82	0	4.537	2.375	217	55.796
311	2004	7-Nov	700	311.292	12.92	1.768	100.5	0	0	0.165	77.4	35.1824
311	2004	7-Nov	1700	311.708	14.47	18.19	31.15	0	2.699	3.101	263.9	64.742
312	2004	8-Nov	800	312.333	12.88	4.156	98.9	0	0.001	0.117	85.6	39.4808
312	2004	8-Nov	1700	312.708	14.46	21.71	46.34	0	2.628	2.769	270.2	71.078
313	2004	9-Nov	900	313.375	12.9	8.6	58.91	0	0.325	0.516	94.7	47.48
313	2004	9-Nov	1700	313.708	14.61	15.73	29.03	0	2.585	2.519	122.6	60.314
314	2004	10-Nov	800	314.333	12.83	3.164	69.56	0	0	1.143	59.95	37.6952
314	2004	10-Nov	1700	314.708	14.64	15.11	26.85	0	2.697	2.153	60.99	59.198
315	2004	11-Nov	800	315.333	12.8	0.699	97.6	0	0	0.284	98.1	33.2582
315	2004	11-Nov	1600	315.667	14.48	15.72	41.64	0	2.52	0.774	250.3	60.296
316	2004	12-Nov	500	316.208	12.87	4.272	98.5	0.1	0	0.286	80.7	39.6896
316	2004	12-Nov	1700	316.708	13.92	15.7	64.32	0	1.13	0.266	178.9	60.26
317	2004	13-Nov	1700	317.708	13.25	14.9	96.6	0	0.467	0.391	56.2	58.82
317	2004	13-Nov	2400	318	12.79	9.65	90.3	0	0.003	2.199	57.77	49.37
318	2004	14-Nov	1800	318.75	14.38	14.39	44.93	0	1.404	2.988	72.8	57.902
318	2004	14-Nov	2400	319	13.01	5.498	86.2	0	0	0.202	76.2	41.8964
319	2004	15-Nov	900	319.375	12.95	1.212	99.7	0	0.235	0.291	85.1	34.1816
319	2004	15-Nov	1700	319.708	14.5	15.28	40.92	0	2.377	0.677	144.6	59.504

Julian Day	Year	Date	Hr-Min	Cont	Batt. V	Air Temp. (C)	RH %	Rainfall (mm)	Solar R. (MJ/m^2)	Wind Sp. (mps)	Wind Direction (deg.)	Air Temp. (F)
320	2004	16-Nov	800	320.333	12.87	-0.147	102.6	0	0.002	0.392	84.4	31.7354
320	2004	16-Nov	1700	320.708	14.46	15.18	34.4	0	2.225	1.279	76.4	59.324
321	2004	17-Nov	500	321.208	12.87	1.143	100	0	0	0.139	78.1	34.0574
321	2004	17-Nov	1700	321.708	14.69	15.19	47.84	0	2.217	0.872	228.8	59.342
322	2004	18-Nov	900	322.375	12.85	6.105	97.8	0	0.165	0.656	79.1	42.989
322	2004	18-Nov	1600	322.667	13.78	17.48	35.7	0	1.334	0.675	208.1	63.464

Day	Year	Hr/Min	Bvoltage	Panel Temp C	Solar MJ/s-m^2	Rain mm	Air Temp C	Humidity %	Wdirection N - 0	Wspeed m/S	BP mbar	Soil Temp C - '1	Soil Temp C - '2
4	2005	1400	12.78	18.21	0.3515	0	17.11	78.5	258.1	0.157	996	11.89	11.18
4	2005	2400	12.66	10.61	0	0	9.75	98.1	211.9	0	993	12.72	11.82
5	2005	300	12.65	9.53	0	0	8.43	98.7	202.4	0	991	12.37	11.87
5	2005	1700	13.12	22.19	0.467	0	20.45	55.13	225.3	0.27	986	12.87	11.71
6	2005	800	12.75	18.48	0	0	18.66	72.8	223.9	0.283	979	12.92	12.18
6	2005	2400	12.66	8.16	0	0	7.82	76.1	280.6	0.031	990	13.07	12.6
7	2005	700	12.62	4.518	0	0	4.714	89.2	225.2	0	991	12	12.53
7	2005	2300	12.61	8.63	0	1.252	8.01	96.4	130	0.013	990	11.22	11.88
8	2005	700	12.6	11.83	0	0	13.41	98.2	285.5	0.411	987	10.2	11.07
8	2005	2400	12.86	3.763	0	0	4.761	87	118.9	0	998	12.13	12.13
9	2005	1000	12.77	-0.295	0.125	0	0.406	99.5	104.8	0	998	9.43	11.41
9	2005	1700	13.88	16.69	1.0365	0	14.76	48.85	232	0.161	995	11.05	11.56
10	2005	100	12.85	3.596	0	0	5.634	94.2	289.2	0.042	993	11.05	11.4
10	2005	1500	14.39	17.15	1.1955	0	14.54	60.3	231.8	0.163	994	11.13	11.62
11	2005	400	12.82	6.158	0	0	6.298	97.4	176.5	0	992	11.09	11.58
11	2005	1800	12.75	13.39	0.0645	0.939	12.44	96.8	111	0.014	989	11.47	11.69
12	2005	200	12.71	11.22	0	0	9.93	98.6	254.1	0	988	12.09	12.15
12	2005	1500	13.74	22.75	1.8035	0	21.23	52.14	241.9	0.391	988	11.45	11.2
13	2005	600	12.82	10.21	0	0	10.26	91.9	180.3	0.032	984	12.7	12.42
13	2005	1600	13.14	23.23	0.632	0	22.64	48.79	224.4	0.3	979	12.96	12.27
14	2005	100	12.76	12.1	0	0.313	11.31	96.5	265.2	0.133	984	13.49	12.73
14	2005	2400	12.84	0.163	0	0	1.442	75.6	112.7	0.128	1005	11.81	12.57
15	2005	800	12.74	-0.55	0	0	0.221	84	108.7	0.055	1005	9.7	12.03
15	2005	1600	13.91	13.33	1.4485	0	10.43	37.54	117.5	0.27	1004	10.24	11.72
16	2005	1400	13.64	11.63	1.073	0	7.23	52.77	269.5	0.535	997	9.74	11.72
16	2005	2400	12.83	-2.75	0	0	-4.089	60.62	194.4	0.555	1004	9.46	11.29
17	2005	900	12.66	-9.18	0.0075	0	-8.25	63.7	165.1	0.464	1007	7.16	10.7
17	2005	1800	13.77	1.148	0.6615	0	-1.701	29.26	183.1	0.381	1006	8.35	10.62
18	2005	900	12.65	-11.14	0.0075	0	-9.56	51.39	124.7	0.173	1009	5.665	9.64
18	2005	1700	13.99	3.009	1.3295	0	0.211	24.6	132.7	0.288	1006	5.929	9
19	2005	200	12.82	-7.94	0	0	-5.927	64.18	57.05	0	1001	5.82	8.91
19	2005	1700	13.99	8.17	1.217	0	5.954	29.54	246	0.443	990	5.79	8.54

Day	Year	Hr/Min	Bvoltage	Panel Temp C	Solar MJ/s-m^2	Rain mm	Air Temp C	Humidity %	Wdirection N - 0	Wspeed m/S	BP mbar	Soil Temp C - '1	Soil Temp C - '2
20	2005	200	12.78	-3.137	0	0	-1.188	78.7	104	0	991	5.706	8.16
20	2005	1800	13.1	8.78	0.317	0	7.86	51.68	207.7	0.163	984	7.17	8.29
21	2005	1700	13.9	14.59	1.2205	0	11.5	54.57	117.4	0.206	986	8.63	8.91
21	2005	2400	12.87	3.942	0	0	4.377	74.7	110.7	0.117	985	8.89	9.06
22	2005	1500	12.7	8.91	0.1135	0	8.24	86.1	278.6	0.704	976	7.6	8.95
22	2005	2400	12.62	-4.874	0	0	-5.636	66.39	238.2	0.387	990	7.27	8.9
23	2005	1000	12.75	-9.2	0.2665	0	-8.9	57.48	193.4	0.564	997	5.192	8.28
23	2005	1800	14.17	0.103	0.829	0	-2.781	32.34	174.7	0.436	999	6.687	8.6
24	2005	800	12.75	-12.12	0	0	-10.22	86.9	95.4	0.002	998	4.59	7.97
24	2005	1800	14.11	5.233	0.871	0	4.043	29.21	263.9	0.342	989	4.168	7.18
25	2005	900	12.7	-4.921	0.0095	0	-3.411	90.5	72.6	0	988	3.976	7.12
25	2005	1800	14.11	15.56	0.7735	0	13.45	25.54	227.9	0.211	982	7.11	7.73
26	2005	100	12.86	1.558	0	0	3.268	70.5	197.9	0.004	981	6.739	7.4
26	2005	1800	14.11	18.08	0.863	0	16.4	48.18	275.6	0.383	980	8.63	8.07
27	2005	200	12.84	4.014	0	0	3.336	72.1	128.3	0.337	990	8.22	8.1
27	2005	1100	60.24	2.914	0.318	0	1.32	57.92	124.3	0.33	986	6.981	7.98
28	2005	1100	13.53	0.578	0.4115	0	1.684	42.38	129.7	0.028	1003	5.109	7.05
28	2005	1600	13.86	10.47	1.064	0	7.52	27.72	142.5	0.035	1001	7.21	8.17
29	2005	100	12.84	4.369	0	0	3.784	29.41	120	0	999	7.76	8.49
29	2005	800	12.72	0.273	0	0	-0.524	88.8	112.6	0.048	997	6.958	8.24
30	2005	200	12.66	2.113	0	0	1.498	97.6	221	0.088	990	6.637	8.02
30	2005	1700	12.67	5.58	0.1575	0	4.518	85.6	159.8	0.163	990	6.671	7.94
31	2005	700	12.59	3.689	0	0	3.217	86.8	101.5	0.051	992	6.577	7.93
31	2005	1600	13.23	9.94	0.9395	0	7.69	66.52	130.2	0.166	993	6.749	7.59
32	2005	1800	13.11	10.43	0.6635	0	9.07	69.95	100.2	0.212	996	7.96	8.25
32	2005	2400	12.61	3.356	0	0	4.242	89.6	115.4	0	997	8.28	8.57
33	2005	700	12.57	1.034	0	0	2.291	90.4	77.2	0.006	996	7.07	8.25
33	2005	1500	13.18	10.11	0.7505	0	8	62.21	182.6	0.223	994	7.05	8
34	2005	800	12.57	4.067	0	0	3.345	98.1	188.9	0	993	7.34	8.32
34	2005	1800	12.61	7.31	0.135	0	6.484	84.3	131.5	0.167	994	7.76	8.38
35	2005	500	12.55	-0.38	0	0	0.567	94	86.3	0.002	997	7.34	8.64
35	2005	1800	13.85	13.66	0.9145	0	11.37	43.75	120.1	0.264	997	9.58	8.88
36	2005	900	12.85	-2.027	0.0265	0	-0.826	97.9	97.5	0.002	999	7.01	8.6

Day	Year	Hr/Min	Bvoltage	Panel Temp C	Solar MJ/s-m^2	Rain mm	Air Temp C	Humidity %	Wdirection N - 0	Wspeed m/S	BP mbar	Soil Temp C - '1	Soil Temp C - '2
36	2005	1800	13.82	16.99	0.9765	0	15.14	32.69	146.5	0.133	997	9.7	8.97
37	2005	900	12.82	-0.362	0.021	0	0.358	98.3	270.9	0	1000	7.44	8.76
37	2005	1700	13.77	18.31	0.833	0	15.79	31.29	181.7	0.103	998	9.57	9.24
38	2005	600	12.83	2.253	0	0	2.823	94.3	126.7	0.005	996	8.65	9.13
38	2005	1800	13.26	15.95	0.4305	0	14.92	31.42	98.3	0.051	992	9.73	9.32
39	2005	600	12.8	7.81	0	0	7.56	97.8	190.5	0.039	991	9.5	9.41
39	2005	1800	12.83	11.45	0.1445	0	10.04	94.7	96.2	0	990	9.95	9.6
40	2005	1800	12.92	14.47	0.411	0	13.54	88.4	215.3	0.165	981	10.5	9.89
40	2005	2400	12.73	9.39	0	0	8.79	79.3	275.1	0.483	984	10.99	10.29
41	2005	100	12.72	8.65	0	0	7.77	76.8	275.2	0.433	985	10.99	10.44
41	2005	2400	12.83	-0.124	0	0	-0.816	57.94	238.7	0.507	995	8.86	9.79
42	2005	900	12.65	-6.048	0.029	0	-4.007	77.3	291.7	0	994	7.28	9.64
42	2005	1800	14.02	9.94	0.9475	0	8.13	40.44	271	0.216	991	8.88	9.49
43	2005	900	12.8	-3.328	0.035	0	-1.743	95.2	144.2	0	991	6.706	8.95
43	2005	1700	13.89	17.34	1.503	0	15.07	30.56	237.8	0.202	987	8.68	8.92
44	2005	500	12.83	0.896	0	0	2.115	92.9	232.3	0	987	8.39	9.08
44	2005	1800	12.83	8.41	0.1345	0	7.57	94.6	114.4	0.166	987	8.52	9.15
45	2005	600	12.72	7.35	0	0.313	6.699	98.4	89.1	0	985	8.63	9.19
45	2005	1900	12.89	13.36	0.189	0	12.62	86.7	243.7	0.237	986	9.84	9.64
46	2005	1800	13.18	17.5	0.6315	0	15.8	64.32	116.3	0.097	987	11.34	9.95
46	2005	2400	12.86	8.2	0	0	8.15	97.1	277	0	986	11.32	10.09
47	2005	1200	12.79	14.15	0.336	0	14.73	91.7	257.3	1.416	984	9.87	9.74
47	2005	2400	12.69	5.956	0	0	5.843	66.82	113	0.065	989	10.63	10.38
48	2005	1700	14.01	11.73	1.757	0	9.39	24.76	278.7	2.761	989	10.25	9.99
48	2005	2400	12.9	-0.13	0	0	2.03	37.04	275.7	0.074	993	10.58	10.37
49	2005	900	12.8	-5.667	0.05	0	-3.25	62.34	160.3	0.006	995	7.82	9.98
49	2005	1700	13.86	11.87	1.7715	0	9.77	29.57	232.3	1.276	994	9.23	9.46
50	2005	800	12.79	-2.636	0	0	-0.901	90.7	325.2	0	997	7.97	9.51
50	2005	1700	13.27	9.42	0.5795	0	8.36	30.31	272.3	0.625	998	8.66	9.22
51	2005	1100	12.79	4.541	0.148	0.313	3.965	90.1	125.5	0.045	997	8.28	9.28
51	2005	2400	12.74	7.79	0	0	7.7	91.8	263.2	0.962	989	8.57	9.24
52	2005	200	12.73	7.92	0	0.313	7.54	95.4	276.8	0.433	988	8.67	9.41
52	2005	1600	13.57	14.89	1.4275	0	14.95	78.4	232.5	1.877	983	8.81	8.7

Day	Year	Hr/Min	Bvoltage	Panel Temp C	Solar MJ/s-m^2	Rain mm	Air Temp C	Humidity %	Wdirection N - 0	Wspeed m/S	BP mbar	Soil Temp C - '1	Soil Temp C - '2
53	2005	900	12.7	8.41	0.0635	0	8.6	86.9	74.8	0.119	990	10.3	10.25
53	2005	1700	13.78	20.05	1.7075	0	18.63	41.74	205.6	1.137	989	12.24	10.12
54	2005	800	12.82	1.909	0	0	3.561	80	121.6	0.227	993	10.69	10.79
54	2005	1700	13.82	18.4	1.5825	0	16.79	36.89	130.7	0.963	988	11.92	10.58
55	2005	1600	13.86	18.19	1.115	0	15.68	49.74	243.8	1.143	982	11.89	11.07
55	2005	2400	12.84	5.559	0	0	4.662	74.2	134.5	1.134	990	12.16	11.3
56	2005	900	12.74	2.282	0.035	0	1.96	71.2	124.6	0.962	991	10.33	11.12
56	2005	1800	13.91	11.76	1.2	0	9.55	39.78	167.6	1.039	990	12.15	11.43
57	2005	800	12.75	-2.977	0.0005	0	-1.194	93.4	93.3	0.004	993	9.5	11.05
57	2005	1800	13.89	17.09	1.167	0	14.67	27.2	137.4	0.985	991	12.38	11.38
58	2005	900	12.79	0.343	0.07	0	2.161	84.3	120.1	0.014	989	9.61	10.82
58	2005	1700	13.18	11.56	0.407	0	11.01	50.29	213.1	0.477	983	10.04	10.7
59	2005	1900	12.77	7.58	0.141	0.313	7.21	91.9	263.4	1.73	973	9.59	10.19
59	2005	2400	12.69	1.397	0	0	1.181	69.5	271.6	1.73	980	9.49	10.53
60	2005	1100	13.1	0.028	0.6015	0	-1.421	78.7	280.4	3.308	980	6.952	9.61
60	2005	1700	14.04	2.396	1.175	0	1.307	47.62	274.7	3.374	983	7.62	9.19
61	2005	800	12.77	-5.154	0.001	0	-3.787	68.72	235	0.136	990	7.03	9.56
61	2005	1800	13.99	8.37	1.3095	0	6.457	29.13	282.2	2.887	988	9.31	9.23
62	2005	800	12.79	-5.227	0.001	0	-2.909	86.6	218.6	0	991	6.979	9.04
62	2005	1800	13.94	13.82	1.297	0	11.63	25.73	215.9	1.727	988	10.12	9.49
63	2005	800	12.79	-4.314	0.0015	0	-2.491	93.8	9.68	0.006	988	7.67	9.24
63	2005	1800	13.94	17.41	1.256	0	15.6	31.21	244.9	2.215	985	9.97	9.47
64	2005	1600	13.8	17.75	2.235	0	15.34	30.7	263.7	3.709	985	10.96	9.76
64	2005	2400	12.91	7.84	0	0	8	55.35	185.8	0.548	992	11.6	10.25
65	2005	900	12.83	-0.497	0.171	0	1.412	94.9	288.4	0.002	992	9.61	10.07
65	2005	1800	13.95	17.16	1.2925	0	15.53	29.88	215.1	1.604	988	12.74	10.77
66	2005	800	12.81	0.58	0.0015	0	2.64	88	317	0.009	983	10.06	10.69
66	2005	1400	13.66	19.74	1.48	0	16.95	42.19	255.5	2.785	978	9.6	10.07
67	2005	100	12.84	12.18	0	4.07	11.6	95.7	258.1	0.892	966	11.57	10.91
67	2005	2400	12.88	-0.584	0	0	0.961	62.71	290.7	0.293	986	10.04	10.57
68	2005	800	12.7	-5.38	0.002	0	-3.053	87.7	171.4	0	987	8.03	10.27
68	2005	1700	13.84	11.39	1.908	0	8.08	36.48	214.1	1.21	982	9.7	9.88
69	2005	800	12.75	-2.002	0.003	0	-0.441	90	307.1	0.02	983	9.29	10.29

Day	Year	Hr/Min	Bvoltage	Panel Temp C	Solar MJ/s-m^2	Rain mm	Air Temp C	Humidity %	Wdirection N - 0	Wspeed m/S	BP mbar	Soil Temp C - '1	Soil Temp C - '2
69	2005	1600	13.78	12.6	2.5415	0	9.94	28.79	243.5	2.036	980	10.04	9.91
70	2005	1200	13.67	11.72	1.334	0	9.8	55.75	257.4	2.396	975	8.46	9.36
70	2005	2200	12.93	1.73	0	0	2.257	64.26	243.4	0.533	980	10.59	10.75
71	2005	100	12.87	1.831	0	0	2.414	65.99	203.1	1.02	978	9.59	10.38
71	2005	1800	13.73	22.86	1.382	0	21.49	24.14	232.9	2.298	972	11.53	10.36
72	2005	1600	13.62	24.19	1.7345	0	21.59	32.13	254.7	1.616	976	12.34	10.64
72	2005	2400	12.9	8.17	0	2.818	6.831	82.6	145.5	1.585	982	13.42	11.44
73	2005	900	12.82	2.916	0.267	0	3.51	80.5	144.1	1.553	985	11.26	11.18
73	2005	1800	13.76	14.83	1.44	0	12.72	41.46	211.4	1.426	987	13.58	11.67
74	2005	800	12.8	-2.313	0.012	0	-0.148	81.2	108.7	0.004	992	10.67	11.53
74	2005	1700	13.93	13.65	1.0425	0	10.62	29.09	171.5	0.826	991	11.33	11.46
75	2005	100	12.91	5.28	0	0	5.274	84.2	98.2	0.525	991	11.4	11.27
75	2005	1000	12.76	4.427	0.051	0.313	3.84	93.1	114.2	0.957	987	10.36	11.2
76	2005	1900	13.3	7.91	0.5255	0	6.965	68.79	108.1	1.222	985	9.26	10.44
76	2005	2400	12.77	0.081	0	0	1.409	95.8	32.58	0	987	9.05	10.27
77	2005	800	12.65	-2.45	0.01	0	-1.609	99.6	281.9	0.012	987	7.59	9.9
77	2005	1800	13.89	16.48	1.388	0	14.63	28.92	153.2	0.871	986	10.88	10.19
78	2005	700	12.84	-0.731	0	0	0.735	97.2	90.3	0.019	988	9.17	10.03
78	2005	1700	13.74	17.08	1.951	0	15.85	39.35	258.4	2.403	986	9.39	9.6
79	2005	500	12.86	7.73	0	0	8.65	80.1	261.3	0.906	988	10.33	10.4
79	2005	1700	13.68	19.47	1.843	0	17.72	28.59	226.8	1.137	988	12.27	10.52
80	2005	800	12.83	3.713	0.0115	0	5.17	81.5	86.4	0.139	988	11.14	11.05
80	2005	1800	13.74	21.07	1.367	0	19.74	23.1	131.7	0.931	985	13.82	11.49
81	2005	600	12.85	7.19	0	0	8.34	45.88	105.6	0.082	986	12.64	12.03
81	2005	1500	13.47	23.76	1.0375	0	20.59	36.19	143.3	1.164	983	12.5	11.65
82	2005	200	12.84	8.59	0	0	9.04	96.7	188.6	0.045	978	12.92	11.9
82	2005	1400	13.54	18.65	1.1565	0	16.94	68.62	250.9	2.408	976	12.16	11.55
83	2005	800	12.77	6.659	0.014	0	6.974	87.7	228.4	0.007	986	12.82	12.54
83	2005	1800	13.88	17.3	1.4005	0	14.9	55.38	172.6	1.309	986	13.64	12.71
84	2005	300	12.85	5.785	0	0	7.2	88	146	0.068	985	13.03	12.42
84	2005	1800	13.72	25.61	1.3825	0	24.15	30.36	247.9	1.548	980	15.38	12.73
85	2005	700	12.82	7.8	0	0	8.58	96.2	313.9	0	984	14.16	13.1
85	2005	1700	13.54	27.17	2.2205	0	25.76	29.27	235.9	1.331	984	15.53	12.96

Day	Year	Hr/Min	Bvoltage	Panel Temp C	Solar MJ/s-m^2	Rain mm	Air Temp C	Humidity %	Wdirection N – 0	Wspeed m/S	BP mbar	Soil Temp C - '1	Soil Temp C - '2
86	2005	800	12.84	13.32	0.006	0	13.72	83.8	155.2	0.035	979	15.67	14.19
86	2005	1600	13.56	28.27	2.595	0	25.45	45.55	253.6	1.485	975	15.96	13.32
87	2005	200	12.9	14.36	0.0005	0.626	13.92	95.1	138.2	0.484	966	17.28	14.58
87	2005	2300	12.77	8.26	0	0	7.56	91.4	223.3	1.378	978	14.65	14.46
88	2005	800	12.73	4.08	0.04	0	5.026	97.9	294	0	983	13.19	14.07
88	2005	1800	13.79	23.16	1.4995	0	22.42	24.48	164	0.694	983	16.46	14.22
89	2005	800	12.83	6.793	0.0335	0	7.9	89.8	83.5	0	984	14.64	14.33
89	2005	1800	13.87	28.66	1.525	0	27.9	18.89	246.2	1.495	981	17.52	14.55
90	2005	200	12.91	12.42	0	0	13.76	74.3	147.4	0.032	982	17.21	14.89
90	2005	1900	13.89	23.02	0.7795	0	21.87	64.18	208.5	0.701	986	17.21	15.27
91	2005	2000	12.95	19.72	0.0085	0	20.36	57.67	213.2	0.997	973	16.47	15.02
91	2005	2400	12.84	12.39	0	6.888	11.62	97.8	255.5	1.042	974	16.14	15
132	2005	700	12.84	14	0.0135	0	14.25	97	79.2	0	991	20.52	19.39
132	2005	1700	13.49	33.32	2.249	0	31.25	32.67	187	0.488	991	22.24	19.42
133	2005	700	12.85	15.98	0.0195	0	16.32	97.2	124.6	0	992	21.52	19.93
133	2005	1600	13.53	32.76	2.456	0	29.87	39.9	255.4	1.566	990	22.47	19.86
134	2005	1600	13.52	29.11	1.7145	0	26.24	56.29	218.8	1.708	985	22.15	20.28
134	2005	2200	12.94	17.58	0	0	16.83	93.2	261.7	0.002	984	23.04	20.88
135	2005	1700	13.5	26.38	2.591	0	24.5	37.37	253.8	1.914	983	22	20.04
135	2005	2400	12.93	15.14	0	0	15.55	53.2	237.1	0.972	986	22.71	20.95
136	2005	600	12.84	8.82	0	0	10.15	75.5	218.5	0.007	987	21.06	20.75
136	2005	1800	13.74	24.79	1.915	0	21.96	33.87	210.6	1.461	986	21.78	20.51
137	2005	700	12.81	8.45	0.026	0	9.97	87.2	74.2	0	988	20.03	20.25
137	2005	1800	14.05	29.56	1.803	0	27.01	32.18	221.9	0.858	986	22.15	20.2
138	2005	700	12.83	12.07	0.024	0	12.79	96.3	94.1	0	988	20.73	20.33
138	2005	1800	14.17	31.05	1.74	0	28.11	35.67	199.2	0.44	986	23.11	20.69
139	2005	700	12.85	13.55	0.0285	0	14	96.5	138.8	0	988	21.29	20.63
139	2005	1700	13.56	30.4	1.9715	0	28.62	44.44	217.5	0.761	984	22.2	20.11
140	2005	600	12.87	15.39	0.0005	4.07	14.64	98.3	158.2	0.471	982	21.34	20.87
140	2005	2000	13.18	25.67	0.5805	0	22.74	70	200.7	0.104	980	22.73	21.36
141	2005	700	12.8	15.55	0.031	0	15.13	98.1	203.1	0	983	21.32	20.87
141	2005	1800	13.56	28.13	2.005	0	25.74	48.82	174.9	0.178	984	22.14	20.53

Day	Year	Hr/Min	Bvoltage	Panel Temp C	Solar MJ/s-m^2	Rain mm	Air Temp C	Humidity %	Wdirection N - 0	Wspeed m/S	BP mbar	Soil Temp C - '1	Soil Temp C - '2
142	2005	600	12.85	14.35	0	0	14.17	96.3	202.9	0	984	21.89	21.05
142	2005	1600	13.52	28.27	2.451	0	25.35	49.08	205.2	0.964	982	22.11	20.54
143	2005	1800	13.87	28.96	1.9625	0	26.7	32.31	269.9	2.449	976	23.79	21.39
143	2005	2300	12.96	18.59	0	0	18.21	72.2	324.6	0	978	24.19	22.04
144	2005	700	12.85	12.9	0.026	0	13.67	93	298.6	0	977	22.27	21.68
144	2005	1600	13.59	25.21	2.634	0	21.9	39.55	222.9	3.461	980	22.18	21.08
145	2005	700	12.83	8.47	0.025	0	9.48	95	78.8	0	982	21.27	21.43
145	2005	1800	13.62	24.62	1.979	0	21.56	39.73	226.9	1.68	984	22.28	21.35
146	2005	700	12.79	8.5	0.031	0	9.29	95.5	293.3	0.004	987	20.61	21.1
146	2005	1800	13.77	29.34	1.8835	0	26.7	31.81	249.8	0.838	985	22.74	21.14
147	2005	600	12.83	13.38	0	0	13.71	96.7	313.9	0	986	21.59	21.08
147	2005	1900	13.69	30.18	1.2835	0	26.8	38.75	231.4	0.907	985	24.87	22.57
148	2005	300	12.84	14.4	0	0	13.72	93.4	309	0	985	23.63	22.53
148	2005	1900	13.59	28.66	1.3015	0	25.86	23.35	247.4	1.597	986	24.69	22.59
149	2005	500	12.79	11.49	0	0	10.97	94.4	259.6	0	987	23	22.66
149	2005	1800	13.74	25.63	0.754	0	22.32	55.58	182.7	0	987	22.93	22.39
150	2005	700	12.75	14.32	0.025	0	13.1	97.3	267.6	0	986	22.11	22.32
150	2005	1700	13.47	30.92	2.239	0	26.91	33.64	136.2	1.452	984	23.55	22.14
151	2005	600	12.78	16.28	0.0005	0	15.26	97.6	129.4	0	986	22.97	22.41
151	2005	1500	13.49	31.84	2.4135	0	27.2	43.06	147.4	1.274	986	22.97	21.95
152	2005	1700	13.72	24.69	1.4255	0	20.98	72.3	127.9	0.665	984	23.27	22.46
152	2005	2400	12.9	17.34	0	4.696	15.28	93.3	152.3	0.233	984	23.53	22.67
153	2005	100	12.88	16.91	0	2.505	14.97	96	124.2	0.574	984	23.28	22.51
153	2005	1800	13.96	30.36	1.3865	0	25.46	63.26	138.2	0.241	982	23.44	22.49
154	2005	700	12.81	18.39	0.016	3.131	16.57	98.1	175.8	0.009	985	23.01	22.35
154	2005	1900	13.59	27.77	0.913	0	24.22	74.5	163.7	0	983	24	22.71
155	2005	600	12.82	19.96	0.0005	0	18.35	97.9	104.7	0	985	23.25	22.38
155	2005	1800	14.25	33.59	1.764	0	29.53	54.12	206.4	0.031	986	25.41	23.09
156	2005	600	12.84	18.65	0.0005	0	17.38	98.3	64.26	0	987	24.47	23.05
156	2005	1800	14.18	37.01	1.7855	0	32.36	45.18	217.8	0.01	987	26.69	23.85
157	2005	700	12.83	20.51	0.065	0	19.37	97.8	44.4	0.002	988	25.3	23.67
157	2005	1600	13.62	37.11	2.0935	0	32.41	40.78	146.3	0.078	986	26.75	24.27
158	2005	600	12.8	20.39	0.0005	0	18.82	97.6	132	0	986	25.96	24.28

Day	Year	Hr/Min	Bvoltage	Panel Temp C	Solar MJ/s-m^2	Rain mm	Air Temp C	Humidity %	Wdirection N – 0	Wspeed m/S	BP mbar	Soil Temp C - '1	Soil Temp C - '2
158	2005	1700	13.44	31.94	2.4035	0	29.38	50.69	136.5	0.03	985	25.29	23.16
159	2005	700	12.87	20.16	0.038	0	19.85	97.9	231.6	0.002	986	24.95	23.55
159	2005	1500	13.53	33.87	2.473	0	29	57.35	219.1	0.077	986	25.31	23.44
160	2005	400	12.88	19.71	0	0	19.45	97.5	165	0	986	25.71	23.84
160	2005	1400	13.42	34.08	3.326	0	30.03	56.65	246.1	0.367	988	24.87	23.26
161	2005	600	12.85	20.35	0.0005	0	20.29	98	86.9	0	988	25.69	24.16
161	2005	1400	13.48	34.77	1.9155	0	29.93	56.27	144.2	0.028	989	25.72	24.08
162	2005	100	12.91	21.48	0	0	21.02	97.9	189.3	0	988	26.11	24.18
162	2005	1500	13.98	30.21	1.572	0	28.03	60.88	131.6	0.162	987	25.39	23.88
163	2005	700	12.86	20.89	0.072	0	21.27	84.5	160.1	0	983	25.35	24.29
163	2005	1800	13.73	32.56	1.5155	0	29.16	71.9	115.7	0.334	982	26.09	24.37
164	2005	1900	13.64	33.12	1.1645	0	29.96	58.15	237.8	0	984	27.16	25.11
164	2005	2400	12.94	21.82	0	0	21.4	96.7	131.8	0	984	26.65	24.64
165	2005	700	12.83	18.92	0.051	0	18.98	98.5	140.6	0	985	25.6	24.52
165	2005	1700	13.6	36.48	2.445	0	32.72	46.79	207.5	0.171	982	28.05	25.77
166	2005	700	12.77	19.86	0.044	0	18.8	98.6	346.1	0	983	27.23	25.96
166	2005	1700	13.48	32.27	2.59	0	29.65	37.67	277.3	0.794	982	27.52	24.95
167	2005	400	12.89	16.93	0	0	17.3	96.4	332.2	0.002	981	26.67	25.26
167	2005	1600	13.46	31.47	2.9425	0	28.77	39.3	268.3	0.643	981	26.26	24.59
168	2005	700	12.83	12.92	0.0405	0	13.81	95.3	325.7	0	982	25.57	25.22
168	2005	1900	13.81	30.72	1.2165	0	27.23	28.25	209.8	0.192	981	27.4	25.64
169	2005	700	12.81	12.91	0.038	0	13.7	97.1	88.3	0	983	24.83	24.96
169	2005	1600	13.45	30.83	2.7635	0	28.06	36.67	238.7	1.094	983	25.09	24.22
170	2005	700	12.81	16.25	0.0465	0	16.35	92.1	266.7	0	987	25.25	25.01
170	2005	1800	13.96	33.22	1.924	0	30.25	31.52	238.2	0.849	988	26.76	24.83
171	2005	500	12.86	16.88	0	0	17.34	87.4	113.4	0	990	25.8	25.04
171	2005	1500	13.59	30.75	1.8195	0	26.33	54.39	241.1	0.738	992	25.23	24.39
172	2005	1700	13.47	30.73	3.706	0	27.38	51.46	202.8	0.109	991	25.93	24.58
173	2005	700	12.79	16.99	0.096	0	17.26	98.2	213.8	0	991	24.84	24.57
173	2005	1800	13.79	32.72	3.074	0	30.01	46.02	188.3	0.004	989	26.44	24.68
174	2005	600	12.83	17.96	0.001	0	18.25	97.6	146.9	0	990	25.41	24.76
174	2005	1600	13.37	34.81	5.906	0	32.13	28.4	171.6	0.133	990	26.23	24.58
175	2005	700	12.8	16.93	0.097	0	17.61	93.6	82.7	0	991	25.41	24.97

Day	Year	Hr/Min	Bvoltage	Panel Temp C	Solar MJ/s-m^2	Rain mm	Air Temp C	Humidity %	Wdirection N – 0	Wspeed m/S	BP mbar	Soil Temp C - '1	Soil Temp C - '2
175	2005	1700	13.55	36.99	4.999	0	32.63	28.19	164.8	0.648	991	28.1	26.19
176	2005	700	12.76	21.08	0.108	0	19.95	86.6	117.1	0.005	991	27.09	26.31
176	2005	1800	14.26	36.56	3.468	0	32.3	28.27	121.5	1.2	989	28.88	26.84
177	2005	600	12.79	22.6	0	0	20.95	90.4	217.3	0	990	27.18	26.29
177	2005	1500	13.67	34.22	3.606	0	29	55.22	153.9	0.666	990	27.51	26.2
178	2005	700	12.76	23.1	0.055	0	21.52	93.4	135.9	0	991	27.2	26.47
178	2005	1800	13.75	36.12	3.227	0	32.11	45.48	200.7	0.055	990	28.74	26.45
179	2005	100	12.9	24.54	0.001	10.33	20.49	89.5	183.6	0.855	991	29.43	27.65
179	2005	1600	13.37	34.75	5.287	0	31.02	53.28	228.5	0.355	988	26.7	25.27
180	2005	600	12.85	21.28	0	0	21.41	93.2	247.5	0	989	27.13	25.84
180	2005	1600	13.36	35.55	5.814	0	32.04	50.92	191.4	0.107	987	27.63	25.71
181	2005	600	12.83	21.8	0	0	21.74	96.8	296.4	0	987	27.61	26.14
181	2005	1600	13.45	35.03	5.053	0	32.25	54.44	246.3	0.224	985	27.98	25.98
182	2005	1400	13.41	38.01	3.198	0	32.16	54.32	216.6	0.238	982	28.67	27.15
182	2005	2400	12.88	22.83	0	0	21.29	95.6	248.3	0	983	29.45	27.61
183	2005	500	12.77	21.55	0	0	20.17	97.9	131.1	0	982	28.56	27.52
183	2005	1800	13.69	32.85	1.499	0	29.8	60.83	168	0.031	983	28.84	27.27
184	2005	500	12.78	22.13	0	0	20.83	95.5	120.2	0	983	28.36	27.43
184	2005	1700	13.57	31.22	1.097	0	26.59	72.5	251.5	0.596	986	28.23	27.3
185	2005	300	12.81	22.23	0	0	20.92	97.9	169.6	0	989	28.05	27.11
185	2005	1800	14.24	37.04	1.705	0	32.24	50.3	207.3	0.141	988	29.78	27.69
186	2005	700	12.78	23.58	0.03	0	22.13	96.4	211.5	0.006	989	28.42	27.28
186	2005	1800	13.59	32.54	1.145	0	28.96	66.97	196.3	0.08	987	29.29	27.55
187	2005	300	12.85	22.49	0	0	21.24	97.1	50.84	0	987	28.56	27.29
187	2005	1200	13.33	28.76	0.912	0	25.86	80.4	163.7	0.037	989	27.55	26.88
188	2005	1000	12.75	19.79	0.138	9.39	17.88	97.8	160.4	0.237	985	26.54	27.01

Appendix B

Weather data from the digital thermometer at ARF

Date	Indoor High (F)	Indoor High (C)	Indoor Low (F)	Indoor Low (C)	Average daily		Outdoor High (F)	Outdoor High (C)	Outdoor Low (F)	Outdoor Low (C)	Average daily		Humidity High	Humidity Low	Average Humidity
					Indoor (C)	Outdoor (C)					Outdoor (C)	Humidity High			
13-Sep	66.7	19.3	51.8	11.0	15.1	83.3	28.5	66.0	18.9	23.7					
14-Sep	66.7	19.3	51.8	11.0	15.1	79.9	26.6	64.5	18.0	22.3					
15-Sep	66.7	19.3	51.8	11.0	15.1	83.0	28.3	57.1	13.9	21.1					
16-Sep	66.7	19.3	51.8	11.0	15.1	84.8	29.4	59.5	15.3	22.3					
17-Sep	66.7	19.3	51.8	11.0	15.1	72.2	22.3	69.0	20.5	21.4					
18-Sep	66.7	19.3	51.8	11.0	15.1	73.1	22.8	66.1	19.0	20.9					
19-Sep	66.7	19.3	51.8	11.0	15.1	75.3	24.0	54.4	12.4	18.2					
20-Sep	66.7	19.3	51.8	11.0	15.1	78.4	25.8	50.8	10.4	18.1					
21-Sep	66.7	19.3	51.8	11.0	15.1	77.6	25.3	48.3	9.1	17.2					
22-Sep	66.7	19.3	51.8	11.0	15.1	77.5	25.3	47.6	8.7	17.0					
23-Sep	66.7	19.3	51.8	11.0	15.1	82.1	27.8	51.6	10.9	19.4					
24-Sep	66.7	19.3	51.8	11.0	15.1	86.1	30.1	55.2	12.9	21.5					
25-Sep	66.7	19.3	51.8	11.0	15.1	85.7	29.8	59.7	15.4	22.6					
26-Sep	66.7	19.3	51.8	11.0	15.1	82.7	28.2	59.1	15.1	21.6					
27-Sep	66.7	19.3	51.8	11.0	15.1	82.9	28.3	60.1	15.6	21.9					
28-Sep	66.7	19.3	51.8	11.0	15.1	79.1	26.2	61.1	16.2	21.2					
29-Sep	66.7	19.3	51.8	11.0	15.1	75.0	23.9	62.3	16.8	20.4					
30-Sep	66.7	19.3	51.8	11.0	15.1	75.3	24.1	56.6	13.6	18.9					
1-Oct	66.7	19.3	51.8	11.0	15.1	76.6	24.8	53.3	11.9	18.3					
2-Oct	66.7	19.3	51.8	11.0	15.1	80.7	27.0	54.5	12.5	19.8					
3-Oct	66.7	19.3	51.8	11.0	15.1	77.1	25.0	59.4	15.2	20.1					
4-Oct	66.7	19.3	51.8	11.0	15.1	73.1	22.9	56.4	13.5	18.2					
5-Oct	66.7	19.3	51.8	11.0	15.1	77.2	25.1	52.2	11.2	18.2					
6-Oct	66.7	19.3	51.8	11.0	15.1	75.4	24.1	49.1	9.5	16.8					
7-Oct	66.7	19.3	51.8	11.0	15.1	76.7	24.8	44.5	6.9	15.9					
8-Oct	66.7	19.3	51.8	11.0	15.1	77.5	25.3	48.1	8.9	17.1					
9-Oct	66.7	19.3	51.8	11.0	15.1	72.8	22.7	49.7	9.8	16.3					
10-Oct	66.7	19.3	51.8	11.0	15.1	68.6	20.4	59.7	15.4	17.9					
11-Oct	66.7	19.3	51.8	11.0	15.1	77.8	25.5	57.9	14.4	19.9					
12-Oct	66.7	19.3	51.8	11.0	15.1	80.2	26.8	55.5	13.0	19.9					

Date	Indoor High (F)	Indoor High (C)	Indoor Low (F)	Indoor Low (C)	Average daily	Outdoor High (F)	Outdoor High (C)	Outdoor Low (F)	Outdoor Low (C)	Average daily	Humidity High	Humidity Low	Average Humidity
					Indoor (C)					Outdoor (C)			
13-Oct	66.7	19.3	51.8	11.0	15.1	75.5	24.1	58.9	14.9	19.5			
14-Oct	66.7	19.3	51.8	11.0	15.1	64.1	17.9	56.5	13.6	15.7			
15-Oct	64.5	18.1	56.9	13.8	15.9	65.4	18.6	56.3	13.5	16.0	54	43	49
16-Oct	57.0	13.9	50.2	10.1	12.0	58.2	14.6	49.1	9.5	12.0	54	45	50
17-Oct	63.9	17.7	46.7	8.2	12.9	67.1	19.5	47.2	8.4	14.0	52	46	49
18-Oct	69.4	20.8	37.0	2.8	11.8	68.2	20.1	39.9	4.4	12.3	56	50	53
19-Oct	74.2	23.4	54.6	12.6	18.0	83.6	28.7	56.5	13.6	21.1	53	47	50
20-Oct	70.1	21.2	63.7	17.6	19.4	79.0	26.1	68.8	20.4	23.3	59	52	56
21-Oct	72.1	22.3	62.8	17.1	19.7	78.3	25.7	63.4	17.4	21.6	45	41	43
22-Oct	73.8	23.2	62.4	16.9	20.1	82.0	27.8	60.3	15.7	21.8	45	44	45
23-Oct	71.3	21.8	58.7	14.8	18.3	86.5	30.3	57.3	14.1	22.2	51	45	48
24-Oct	68.4	20.2	55.6	13.1	16.7	78.4	25.8	59.2	15.1	20.4	53	44	49
25-Oct	71.4	21.9	58.3	14.6	18.3	81.7	27.6	61.4	16.3	22.0	52	49	51
26-Oct	73.5	23.1	57.4	14.1	18.6	80.3	26.8	58.7	14.8	20.8	53	47	50
27-Oct	71.6	22.0	53.1	11.7	16.9	82.6	28.1	53.6	12.0	20.1	55	46	51
28-Oct	73.2	22.9	64.5	18.1	20.5	83.9	28.8	56.5	13.6	21.2	56	50	53
29-Oct	74.7	23.7	63.4	17.4	20.6	86.7	30.4	69.9	21.1	25.7	53	51	52
30-Oct	74.9	23.8	69.0	20.6	22.2	88.5	31.4	71.3	21.8	26.6	58	52	55
31-Oct	73.4	23.0	67.5	19.7	21.4	84.1	28.9	68.3	20.2	24.6	54	50	52
1-Nov	73.1	22.8	65.7	18.7	20.8	83.6	28.7	65.7	18.7	23.7	51	46	49
2-Nov	75.1	23.9	65.6	18.7	21.3	90.1	32.3	63.8	17.7	25.0	51	48	50
3-Nov	67.4	19.7	64.9	18.3	19.0	84.2	29.0	67.4	19.7	24.3	52	49	51
4-Nov	66.5	19.2	63.8	17.7	18.4	78.4	25.8	69.1	20.6	23.2	54	49	52
5-Nov	67.9	19.9	56.1	13.4	16.7	73.3	22.9	61.2	16.2	19.6	53	50	52
6-Nov	58.7	14.8	48.2	9.0	11.9	64.2	17.9	52.3	11.3	14.6	56	51	54
7-Nov	67.8	19.9	35.4	1.9	10.9	69.5	20.8	36.7	2.6	11.7	52	51	52
8-Nov	66.3	19.1	40.2	4.6	11.8	65.5	18.6	41.8	5.4	12.0	53	47	50
9-Nov	61.9	16.6	48.6	9.2	12.9	64.8	18.2	51.2	10.7	14.4	54	46	50
10-Nov	63.6	17.6	37.8	3.2	10.4	65.1	18.4	41.3	5.2	11.8	49	45	47
11-Nov	62.4	16.9	34.1	1.2	9.0	63.9	17.7	36.5	2.5	10.1	49	44	47

Date	Indoor High (F)	Indoor High (C)	Indoor Low (F)	Indoor Low (C)	Average daily		Outdoor High (F)	Outdoor High (C)	Outdoor Low (F)	Outdoor Low (C)	Average daily		Humidity High	Humidity Low	Average Humidity
					Indoor (C)	Outdoor (C)					Outdoor (C)	Humidity (C)			
12-Nov	62.7	17.1	40.5	4.7	10.9	64.5	18.1	42.4	5.8	11.9	49	44	47		
13-Nov	56.3	13.5	47.6	8.7	11.1	59.2	15.1	45.3	7.4	11.3	53	47	50		
14-Nov	56.0	13.3	48.1	8.9	11.1	58.0	14.4	43.1	6.2	10.3	56	50	53		
15-Nov	57.4	14.1	31.4	-0.3	6.9	62.5	16.9	36.1	2.3	9.6	53	47	50		
16-Nov	57.1	13.9	30.9	-0.6	6.7	61.2	16.2	35.3	1.8	9.0	54	49	52		
17-Nov	56.9	13.8	31.2	-0.4	6.7	60.8	16.0	36.7	2.6	9.3	51	48	50		
18-Nov	61.2	16.2	40.6	4.8	10.5	67.4	19.7	46.9	8.3	14.0	58	54	56		
4-Jan	81.5	27.5	70.9	21.6	24.6	68.7	20.4	59.4	15.2	17.8	45	40	43		
5-Jan	78.6	25.9	72.1	22.3	24.1	72.3	22.4	64.4	18.0	20.2	52	47	50		
6-Jan	72.3	22.4	65.6	18.7	20.5	62.4	16.9	53.4	11.9	14.4	51	48	50		
7-Jan	70.9	21.6	61.3	16.3	18.9	59.7	15.4	46.6	8.1	11.8	54	47	51		
8-Jan	73.2	22.9	63.3	17.4	20.1	62.8	17.1	50.7	10.4	13.8	54	42	48		
9-Jan	78.1	25.6	60.1	15.6	20.6	65.5	18.6	40.1	4.5	11.6	49	41	45		
10-Jan	77.9	25.5	61.0	16.1	20.8	64.4	18.0	48.7	9.3	13.6	52	41	47		
11-Jan	70.5	21.4	66.0	18.9	20.1	61.0	16.1	49.0	9.4	12.8	51	43	47		
12-Jan	84.0	28.9	69.8	21.0	24.9	75.9	24.4	57.9	14.4	19.4	51	43	47		
13-Jan	80.9	27.2	68.2	20.1	23.6	78.9	26.1	52.7	11.5	18.8	50	41	46		
14-Jan	75.4	24.1	60.7	15.9	20.0	59.6	15.3	38.5	3.6	9.5	51	38	45		
15-Jan	71.0	21.7	54.9	12.7	17.2	57.3	14.1	31.7	-0.2	6.9	50	36	43		
16-Jan	63.7	17.6	53.1	11.7	14.7	45.5	7.5	29.7	-1.3	3.1	52	33	43		
17-Jan	59.2	15.1	47.6	8.7	11.9	38.3	3.5	21.9	-5.6	-1.1	52	30	41		
18-Jan	54.7	12.6	41.5	5.3	8.9	34.7	1.5	20.3	-6.5	-2.5	53	30	42		
19-Jan	59.8	15.4	40.3	4.6	10.0	44.8	7.1	19.7	-6.8	0.1	51	29	40		
20-Jan	64.6	18.1	44.8	7.1	12.6	48.4	9.1	24.5	-4.2	2.5	48	31	40		
21-Jan	69.4	20.8	45.0	7.2	14.0	54.9	12.7	25.3	-3.7	4.5	45	31	38		
22-Jan	70.9	21.6	46.2	7.9	14.8	59.7	15.4	28.4	-2.0	6.7	43	32	38		
23-Jan	74.3	23.5	52.1	11.2	17.3	30.4	-0.9	19.8	-6.8	-3.8	42	31	37		
24-Jan	79.5	26.4	64.8	18.2	22.3	46.1	7.8	21.2	-6.0	0.9	41	30	36		
25-Jan	81.3	27.4	69.9	21.1	24.2	62.2	16.8	34.7	1.5	9.1	40	31	36		

Date	Indoor High (F)	Indoor High (C)	Indoor Low (F)	Indoor Low (C)	Average daily	Indoor High (F)	Indoor High (C)	Indoor Low (F)	Indoor Low (C)	Average daily	Humidity High	Humidity Low	Average Humidity
					Indoor (C)					Indoor (C)			
26-Jan	78.1	25.6	65.1	18.4	22.0	65.1	18.4	48.0	8.9	13.6	38	32	35
27-Jan	83.3	28.5	61.0	16.1	22.3	45.6	7.6	38.5	3.6	5.6	41	33	37
28-Jan	76.6	24.8	56.3	13.5	19.1	55.0	12.8	36.7	2.6	7.7	38	31	35
29-Jan	70.0	21.1	58.8	14.9	18.0	43.7	6.5	39.2	4.0	5.3	35	31	33
30-Jan	63.3	17.4	58.6	14.8	16.1	48.0	8.9	42.1	5.6	7.3	39	33	36
31-Jan	65.1	18.4	60.6	15.9	17.1	53.4	11.9	44.2	6.8	9.3	39	34	37
1-Feb	72.1	22.3	59.3	15.2	18.7	53.1	11.7	41.8	5.4	8.6	40	32	36
2-Feb	73.6	23.1	59.2	15.1	19.1	54.6	12.6	43.8	6.6	9.6	37	32	35
3-Feb	75.3	24.1	60.4	15.8	19.9	55.7	13.2	45.1	7.3	10.2	39	32	36
4-Feb	81.3	27.4	59.1	15.1	21.2	68.5	20.3	44.6	7.0	13.6	40	33	37
5-Feb	83.1	28.4	62.6	17.0	22.7	70.2	21.2	49.8	9.9	15.6	41	32	37
6-Feb	80.1	26.7	63.9	17.7	22.2	69.1	20.6	44.3	6.8	13.7	35	31	33
7-Feb	79.5	26.4	69.5	20.8	23.6	68.7	20.4	49.0	9.4	14.9	38	33	36
8-Feb	83.5	28.6	57.9	14.4	21.5	69.1	20.6	37.4	3.0	11.8	41	32	37
9-Feb	77.4	25.2	61.9	16.6	20.9	61.0	16.1	56.0	13.3	14.7	40	32	36
10-Feb	77.9	25.5	50.2	10.1	17.8	58.4	14.7	30.4	-0.9	6.9	41	33	37
11-Feb	81.7	27.6	63.6	17.6	22.6	58.9	14.9	29.1	-1.6	6.7	39	35	37
12-Feb	83.8	28.8	64.2	17.9	23.3	72.3	22.4	35.6	2.0	12.2	41	34	38
13-Feb	75.1	23.9	63.4	17.4	20.7	58.4	14.7	42.3	5.7	10.2	35	30	33
14-Feb	79.4	26.3	61.2	16.2	21.3	63.8	17.7	47.2	8.4	13.1	36	33	35
15-Feb	80.0	26.7	60.9	16.1	21.4	65.7	18.7	44.8	7.1	12.9	41	34	38
16-Feb	80.2	26.8	60.3	15.7	21.3	67.4	19.7	44.1	6.7	13.2	40	34	37
17-Feb	84.0	28.9	60.6	15.9	22.4	56.8	13.8	42.4	5.8	9.8	42	35	39
18-Feb	78.6	25.9	53.8	12.1	19.0	58.8	14.9	32.5	0.3	7.6	40	30	35
19-Feb	77.7	25.4	57.9	14.4	19.9	56.1	13.4	37.6	3.1	8.3	37	31	34
20-Feb	70.0	21.1	64.4	18.0	19.6	53.4	11.9	47.1	8.4	10.1	41	31	36
21-Feb	82.6	28.1	68.8	20.4	24.3	63.7	17.6	48.4	9.1	13.4	42	35	39
22-Feb	87.7	30.9	72.7	22.6	26.8	73.9	23.3	54.1	12.3	17.8	41	37	39
23-Feb	87.8	31.0	65.5	18.6	24.8	71.4	21.9	43.9	6.6	14.3	41	35	38
24-Feb	72.6	22.6	45.2	7.3	14.9	58.2	14.6	42.3	5.7	10.1	41	33	37

Date	Indoor High (F)	Indoor High (C)	Indoor Low (F)	Indoor Low (C)	Average daily	Outdoor High (F)	Outdoor High (C)	Outdoor Low (F)	Outdoor Low (C)	Average daily	Humidity High	Humidity Low	Average Humidity
					Indoor (C)					Outdoor (C)			
25-Feb	91.3	32.9	69.1	20.6	26.8	56.3	13.5	43.6	6.4	10.0	33	30	32
26-Feb	85.9	29.9	67.3	19.6	24.8	54.5	12.5	32.3	0.2	6.3	41	32	37
27-Feb	81.3	27.4	60.7	15.9	21.7	47.6	8.7	40.6	4.8	6.7	40	30	35
28-Feb	77.4	25.2	57.4	14.1	19.7	41.7	5.4	32.6	0.3	2.9	41	31	36
1-Mar	72.1	22.3	54.3	12.4	17.3	35.9	2.2	30.4	-0.9	0.6	40	32	36
2-Mar	75.6	24.2	56.7	13.7	19.0	42.7	5.9	31.6	-0.2	2.9	39	33	36
3-Mar	73.4	23.0	53.2	11.8	17.4	40.6	4.8	29.3	-1.5	1.6	37	31	34
4-Mar	76.8	24.9	56.9	13.8	19.4	62.4	16.9	32.7	0.4	8.6	38	33	36
5-Mar	75.3	24.1	55.1	12.8	18.4	58.7	14.8	32.4	0.2	7.5	34	30	32
6-Mar	78.9	26.1	60.4	15.8	20.9	62.4	16.9	38.5	3.6	10.3	36	32	34
7-Mar	77.1	25.1	61.8	16.6	20.8	62.0	16.7	39.0	3.9	10.3	36	31	34
8-Mar	79.5	26.4	62.6	17.0	21.7	61.1	16.2	40.1	4.5	10.3	35	30	33
9-Mar	75.0	23.9	52.9	11.6	17.8	58.3	14.6	32.2	0.1	7.4	36	30	33
10-Mar	73.5	23.1	55.5	13.1	18.1	54.6	12.6	33.6	0.9	6.7	34	30	32
11-Mar	77.4	25.2	59.3	15.2	20.2	60.9	16.1	37.6	3.1	9.6	37	32	35
12-Mar	76.4	24.7	58.1	14.5	19.6	72.5	22.5	36.1	2.3	12.4	35	31	33
13-Mar	73.8	23.2	55.2	12.9	18.1	72.0	22.2	34.1	1.2	11.7	35	29	32
14-Mar	71.9	22.2	60.3	15.7	18.9	51.8	11.0	38.5	3.6	7.3	33	29	31
15-Mar	74.3	23.5	57.6	14.2	18.9	57.6	14.2	37.4	3.0	8.6	36	32	34
16-Mar	72.7	22.6	56.4	13.6	18.1	54.0	12.2	35.2	1.8	7.0	34	28	31
17-Mar	70.2	21.2	60.1	15.6	18.4	52.1	11.2	39.4	4.1	7.6	33	28	31
18-Mar	68.4	20.2	61.5	16.4	18.3	62.4	16.9	36.3	2.4	9.6	34	29	32
19-Mar	73.3	22.9	63.0	17.2	20.1	68.5	20.3	41.2	5.1	12.7	36	31	34
20-Mar	76.8	24.9	65.5	18.6	21.8	73.9	23.3	48.9	9.4	16.3	35	30	33
21-Mar	82.1	27.8	74.8	23.8	25.8	77.2	25.1	48.7	9.3	17.2	38	32	35
22-Mar	73.0	22.8	62.4	16.9	19.8	71.4	21.9	49.8	9.9	15.9	38	31	35
23-Mar	79.7	26.5	69.1	20.6	23.6	77.2	25.1	53.6	12.0	18.6	40	33	37
12-May	78.0	25.6	63.4	17.4	21.5	80.3	26.8	66.7	19.3	23.1	69	60	65
13-May	80.4	26.9	66.9	19.4	23.1	82.2	27.9	65.8	18.8	23.3	69	61	65

Date	Indoor High (F)	Indoor High (C)	Indoor Low (F)	Indoor Low (C)	Average daily	Indoor (C)	Outdoor High (F)	Outdoor High (C)	Outdoor Low (F)	Outdoor Low (C)	Average daily	Humidity High	Humidity Low	Average Humidity
					Indoor (C)						Outdoor (C)			
14-May	82.2	27.9	69.8	21.0	24.4	84.2	29.0	66.7	19.3	24.1	68	63	66	
15-May	75.4	24.1	64.6	18.1	21.1	74.1	23.4	61.9	16.6	20.0	70	63	67	
16-May	73.2	22.9	57.2	14.0	18.4	74.5	23.6	53.8	12.1	17.9	71	60	66	
17-May	73.4	23.0	56.8	13.8	18.4	76.6	24.8	53.6	12.0	18.4	73	59	66	
18-May	74.3	23.5	62.4	16.9	20.2	75.2	24.0	59.5	15.3	19.6	71	60	66	
19-May	78.6	25.9	65.5	18.6	22.3	81.5	27.5	61.9	16.6	22.1	72	61	67	
20-May	79.0	26.1	64.9	18.3	22.2	80.4	26.9	61.0	16.1	21.5	70	61	66	
21-May	69.6	20.9	63.5	17.5	19.2	72.3	22.4	61.3	16.3	19.3	72	63	68	
22-May	73.2	22.9	63.7	17.6	20.3	75.9	24.4	61.3	16.3	20.3	73	65	69	
23-May	78.6	25.9	69.8	21.0	23.4	79.9	26.6	68.2	20.1	23.4	72	66	69	
24-May	78.6	25.9	65.1	18.4	22.1	79.9	26.6	61.7	16.5	21.6	72	65	69	
25-May	70.5	21.4	57.9	14.4	17.9	70.5	21.4	55.0	12.8	17.1	71	62	67	
26-May	69.6	20.9	57.0	13.9	17.4	75.0	23.9	53.4	11.9	17.9	72	62	67	
27-May	74.1	23.4	64.0	17.8	20.6	76.1	24.5	61.0	16.1	20.3	72	63	68	
28-May	76.1	24.5	64.2	17.9	21.2	78.6	25.9	61.0	16.1	21.0	73	64	69	
29-May	72.7	22.6	66.9	19.4	21.0	78.6	25.9	57.0	13.9	19.9	74	64	69	
30-May	67.3	19.6	61.5	16.4	18.0	70.5	21.4	58.8	14.9	18.1	73	71	72	
31-May	74.9	23.8	64.4	18.0	20.9	76.1	24.5	58.8	14.9	19.7	75	66	71	
1-Jun	74.7	23.7	63.8	17.7	20.7	76.3	24.6	57.9	14.4	19.5	77	66	72	
2-Jun	75.0	23.9	62.4	16.9	20.4	76.1	24.5	58.8	14.9	19.7	78	66	72	
3-Jun	72.0	22.2	64.0	17.8	20.0	73.0	22.8	63.0	17.2	20.0	83	66	75	
4-Jun	79.5	26.4	65.8	18.8	22.6	81.3	27.4	66.0	18.9	23.1	80	74	77	
5-Jun	83.5	28.6	65.8	18.8	23.7	88.3	31.3	66.0	18.9	25.1	83	74	79	
6-Jun	81.3	27.4	66.4	19.1	23.3	84.5	29.2	67.8	19.9	24.5	85	75	80	
7-Jun	83.8	28.8	70.9	21.6	25.2	84.0	28.9	68.5	20.3	24.6	88	77	83	
8-Jun	79.5	26.4	72.7	22.6	24.5	80.6	27.0	70.3	21.3	24.1	88	83	86	
9-Jun	81.1	27.3	72.1	22.3	24.8	81.1	27.3	70.0	21.1	24.2	89	83	86	
10-Jun	80.3	26.8	72.0	22.2	24.5	81.2	27.3	70.2	21.2	24.3	93	86	90	
11-Jun	79.7	26.5	71.6	22.0	24.3	81.0	27.2	69.7	20.9	24.1	95	87	91	
12-Jun	80.9	27.2	71.8	22.1	24.6	82.3	27.9	70.4	21.3	24.6	98	87	93	

Date	Indoor High (F)	Indoor High (C)	Indoor Low (F)	Indoor Low (C)	Average daily	Outdoor High (F)	Outdoor High (C)	Outdoor Low (F)	Outdoor Low (C)	Average daily	Humidity High	Humidity Low	Average Humidity
					Indoor (C)					Outdoor (C)			
13-Jun	79.0	26.1	71.8	22.1	24.1	82.0	27.8	70.5	21.4	24.6	100	89	95
14-Jun	80.6	27.0	72.1	22.3	24.6	84.3	29.1	70.3	21.3	25.2	100	100	100
15-Jun	85.1	29.5	73.2	22.9	26.2	87.1	30.6	70.3	21.3	25.9	100	100	100
16-Jun	82.0	27.8	71.4	21.9	24.8	83.8	28.8	68.7	20.4	24.6	100	100	100
17-Jun	80.2	26.8	66.9	19.4	23.1	83.8	28.8	63.5	17.5	23.1	100	87	94
18-Jun	81.1	27.3	71.1	21.7	24.5	83.1	28.4	67.4	19.7	24.0	100	88	94
19-Jun	80.3	26.8	69.3	20.7	23.8	82.5	28.1	66.1	18.9	23.5	100	87	94
20-Jun	80.6	27.0	70.5	21.4	24.2	82.9	28.3	66.5	19.2	23.7	100	87	94
21-Jun	79.9	26.6	67.2	19.6	23.1	82.2	27.9	64.3	17.9	22.9	100	87	94
22-Jun	79.5	26.4	65.1	18.4	22.4	82.0	27.8	61.5	16.4	22.1	100	86	93
23-Jun	83.1	28.4	71.4	21.9	25.1	84.4	29.1	68.2	20.1	24.6	100	86	93
24-Jun	83.2	28.4	71.1	21.7	25.1	84.7	29.3	68.0	20.0	24.6	100	95	98
25-Jun	85.6	29.8	72.7	22.6	26.2	86.5	30.3	69.5	20.8	25.6	100	92	96
26-Jun	86.0	30.0	73.0	22.8	26.4	88.0	31.1	70.8	21.6	26.3	100	90	95
27-Jun	84.1	28.9	72.2	22.3	25.6	85.3	29.6	69.9	21.1	25.3	100	87	94
28-Jun	83.7	28.7	71.8	22.1	25.4	84.7	29.3	69.3	20.7	25.0	100	84	92
29-Jun	84.2	29.0	72.5	22.5	25.8	86.2	30.1	70.9	21.6	25.9	100	88	94
30-Jun	86.6	30.3	73.5	23.1	26.7	88.1	31.2	71.4	21.9	26.5	100	100	100
1-Jul	87.1	30.6	73.8	23.2	26.9	88.9	31.6	71.7	22.1	26.8	100	87	94
2-Jul	85.9	29.9	71.0	21.7	25.8	87.4	30.8	69.6	20.9	25.8	100	84	92
3-Jul	86.3	30.2	72.9	22.7	26.4	88.5	31.4	71.1	21.7	26.6	100	86	93
4-Jul	87.8	31.0	74.6	23.7	27.3	89.2	31.8	73.2	22.9	27.3	100	100	100
5-Jul	87.0	30.6	73.2	22.9	26.7	90.1	32.3	71.8	22.1	27.2	100	100	100
6-Jul	83.2	28.4	69.8	21.0	24.7	85.3	29.6	67.9	19.9	24.8	100	92	96
7-Jul	85.4	29.7	72.5	22.5	26.1	86.7	30.4	70.5	21.4	25.9	100	90	95

Appendix C
Daily notes for all subjects observed

Field Notes for 56-04

9/13/04

3:45 PM

sunny, low 80s, light breeze outside

70 degrees F inside

placed by GR/RA

took photographs and hair samples (5)

body yellowish in color- had liver cancer

dark blue spots on abdomen

no tattoos or scarring

dark brown spots on upper lip

no bloating

no insects

GR

9/14/04

9:10 AM

sunny, low 80s, light breeze

took photographs and hair samples (5)

few changes

some purple/blue discoloration on abdomen, slightly larger bruises

some purple/blue discoloration on inside of both elbows and back of L hand

no insects, abdomen slightly fuller

GR

9/15/04

6:35 PM

sunny, mid 80s, light breeze

took photographs and hair samples (5)

bruise spots on abdomen slightly larger

dark spots appearing on top of feet

settled blood visible towards posterior of torso under arms and back of neck

some veins visible (light red in color) on L upper arm, mouth open

GR

9/16/04

9:35 AM

overcast, 70, light breeze (Hurricane Ivan coming later)

took photographs and hair samples (5)

veins now visible on both upper arms and chest towards posterior

mouth still open, lower lip sunken, bruises on abdomen slightly darker

bluish color on inner elbows, green/yellow tint stronger on abdomen (yellow/orange elsewhere)

GR

9/17/04

12:55 PM

overcast, raining (remnants of Ivan), low 70s

took photographs and hair samples (5)

bloating more obvious on abdomen

bruise spots on abdomen larger

veins light red and visible on torso towards posterior moving to anterior (on arms same),
some visible on shoulders

dark blue/green veins visible on neck towards posterior and anterior portion of neck

a few gnats present in building

upper arms slightly bloated

no smell present

large dark spot on top of R foot

GR

9/18/04

3:30 PM

sunny, mid 70s, light breeze

took photographs and hair samples (5)

bloating further on abdomen and chest and upper arms

blue/green veins visible all over sides of torso, smaller amounts on upper arms and
shoulder

mouth still open, lower lip sunken further

green tinge around eyes and neck

bruised on abdomen fading, green tinge overall

number of gnats increasing

dark spot on top of R foot more prominent

reddish dots on hips and upper legs

dark spots on upper lip more pronounced

dead fly on floor

gnats still present on and around body

GR

9/21/04

9:05 AM

sunny, high 60s, no breeze

took photographs and hair samples (5)

a few gnats present, green coloring on face and neck more prominent

green/blue veins visible more prominent over entire body

areas of pooled dark blood towards posterior are larger

orange coloring on heels, dark coloring on top of R foot, lower legs, and arches of feet
fading

red marks on upper L leg fading, upper lip lined in red, slightly more bloated

GR

9/22/04

12:35 PM

sunny, high 70s, light breeze

took photographs and hair samples (5)

face darker and upper chest darker than rest of body

green/blue coloring less localized, spreading over torso

two bruises left on abdomen

red marks on upper L thigh larger

lower arms darker

bottoms of feet more orange

more gnats present, no flies

GR

9/23/04

10:00 AM

sunny, low 70s, light breeze

took photographs and hair samples (5)

gnats covering face and in mouth

smell more noticeable

abdomen more bloated

face, neck, upper chest, and lower arms darker than rest of body

orange coloring on bottoms of feet stronger

toes and finger tips dark red/purple

dark areas on shins and top of R foot darker

green coloring less concentrated; spreading over entire torso

some dark green spots still on abdomen, arms, and hands

pouches of dark pooled blood on torso towards posterior are larger

GR

9/24/04

10:00 AM

sunny, low 70s, no breeze

took photographs and hair samples (5)

face continuing to darken

reddish pockmarks on cheeks and around mouth

torso darker, some of green coloring fading

gnats covering face, no flies present

dark green spots still present on abdomen, inner elbows, hands, and neck

red marks on upper L thigh, shins, top of R foot darker

orange coloring on bottom of feet dark, skin crusty

pooled dark blood sacks towards posterior of torso are larger

GR

9/25/04

5:35 PM

partly sunny, mid 70s, little breeze

took photographs and hair samples (5)

inner portion of both elbows and back of R hand very dark; black in color

skin sunken away from toenails so they appear longer

small maggots in mouth, nostrils, eyes, and under skin on forehead

distal portions of R fingers, all toes, same dark orange color as bottom of feet

RA

9/26/04

5:25 PM

partly sunny, mid 70s, breezy

took photographs and hair samples (5)

orange color on toes has spread proximally into a more tan color

large dark spot on R knee, smaller one on L knee

more maggots in mouth, nose, eyes more eaten away, cheeks, neck swollen, red spots and

maggots on forehead

RA

9/27/04

1:30 PM

overcast, humid, mid 70s

took photographs and hair samples (5)

veins visible around groin

maggots present in nose, mouth, eyes, ears, and along body towards posterior (especially the torso, arms, and neck)

face dark red and spotted, red coloring particularly around midface

back of hands and inside elbows are dark blue

dark green areas on abdomen

blue/green coloring on side of torso

pooled blood gone

dark areas on knees, shins, and feet

bottoms of feet orange

bloating increased

flies present on fly paper and on body (a few, 5 or 6), many gnats

GR

9/28/04

12:00 PM

overcast, mid 70s, slight breeze

took photographs and hair samples (5)

insect numbers increasing

body color darkening overall

face dark red, forehead spotted, face covered in gnats

maggots on face and torso and arms towards posterior

bloating of neck, but face sunken

veins visible on upper thighs

green/blue coloring on torso

dark green/blue splotches on abdomen

lower legs and feet darker color, less concentrated

brown specks on upper body

skin slipping on upper arms

dark blue areas on back of hands and inner elbows

smell stronger

maggots moving slowly

GR

9/29/04

1:30 PM

sunny, mid 70s, slight breeze

took photographs and hair samples (4)

gnats very numerous, maggots in navel

green coloring continuing to spread

dark blue/purple spots on abdomen

maggots moving slowly, larger maggots in mouth

neck bloated, breasts flattening

veins more visible on thighs

skin slipping around elbows

still dark blue on elbows and backs of hands

face coloring more uniform orange

lower legs darker

bottoms of feet orange

a few flies present

pupae cases scattered across abdomen

GR

9/30/04

12:45 PM

sunny, partly cloudy, mid 70s, slight breeze

took photographs, no hair samples taken

more bloated, more pupae cases covering torso

skin slipping on torso and hips towards posterior

veins more visible on upper legs

tan liquid under armpits

abdomen green overall with dark blue/green spots

neck bloated, skin slipping on nose

many gnats, approximately 20 flies

maggots on torso and arms towards posterior, in genitals and on face

hair slipping

maggots moving slowly, maggots in navel

dark areas on backs of hands and inside elbows

dark blue veins visible on neck

GR

10/1/04

9:30 AM

overcast, foggy, low 60s

more tan liquid spreading from body – under armpits

skin slipping on hands and torso towards posterior

lower legs darker, veins visible on feet

neck and abdomen bloated

large number of maggots in nose, mouth and ears – moving slowly

maggots in navel

pupae cases and maggots scattered across torso

veins visible on thighs

hair sloughing off

breasts continuing to flatten

dark blue areas on inner elbows and back of hands still present

face dark orange and bloated

green band around arch of both feet

bottoms of feet dark red

maggot activity in groin, groin bloated

a few flies and many gnats present

GR

10/2/04

11:20 AM

overcast, drizzling, low 70s, no breeze
more tan liquid spreading from body
face red/orange, purple around mouth, nose, and eyes
liquid in mouth full of maggots
eyes, ears, and nose full of small maggots
chest, arms, and abdomen bloated
skin slippage on arms, hand, torso, and hips, especially towards posterior
area around navel dark, pupae cases over torso and genital area, maggots in navel
hair mat almost completely sloughed off
a few flies and many gnats present
dark blue/green areas on abdomen, inside elbows, and backs of hands
bottoms of feet darker in color with green around arch
arms and neck yellowish in color
torso greenish
veins visible on thighs (veins red in color)
GR

10/3/04

2:05 PM

sunny, high 70s, slight breeze
many gnats and more flies present (approximately 30) – flying and stuck to fly paper
tan liquid still spreading from body
lower legs and arms dark
veins on thighs fading
dark marks still present on abdomen, hands, arms, and neck
torso and hips very dark towards posterior
face darker red
cheeks sunken, mouth full of fluid
maggots on face and torso larger, also present on hips, legs, and genital area
skin slipping on hands, legs, arms, hips, and navel
pupae cases more numerous on torso and neck
neck still bloated, but deflating some
abdomen more bloated
dark veins visible on neck
hair mat sloughed off
dark green lines along shins and foot arches
bottoms of feet dark red
breasts flattening further
GR

10/4/04

11:20 AM

sunny, mid 70s, breezy

face darker red, cheeks more sunken, mouth full of liquid

maggot activity on face abating

pupae cases on torso more numerous, more flies in apartment, fewer gnats

maggot activity more extensive on torso and arms towards posterior

tan liquid still spreading from body

skin slippage on legs, hands, and arms more extensive

overall green coloring on torso lessened, green/purple/blue marks on abdomen darker

arms and lower legs dark orange, neck less bloated

color fading on insides of elbows and backs of hands

veins still visible on thighs, green coloring on shins and bottoms of feet darker

very large pupae on floor of apartment – see photographs

GR

10/5/04

11:10 AM

sunny, high 60s, no breeze

mouth still filled with liquid

maggot activity on face almost gone except around ears, still extensive along full length of body towards posterior, still present in navel

skin slippage on hips, legs, and arms continuing also around navel

neck bloating continuing to reduce

no color changes except on torso towards posterior (very dark in color) and circular red marks on feet

fewer gnats, more flies, pupae cases all over floor

tan liquid still spreading from body

GR

10/6/04

1:10 PM

sunny, mid 70s, slight breeze

three to four flies flying, approximately 40 dead on floor and window sill

maggot activity extensive from shoulder to thigh towards posterior on torso, arms, and legs

maggot activity increased in navel, more dead tissue and skin slippage

maggots active in liquid in mouth, thousands of pupae cases around head

tan liquid still spreading from body, skin slippage on arms, legs, and hands continuing

maggot activity slow, dark spots on abdomen larger – coming together

neck bloating continuing to lessen

very dark coloring on hips, arms and torso towards posterior

pupae casings all over blanket, abdomen, genital area, and floor

feet darker, pupae cases on toes, a few gnats present

GR

10/7/04

9:45 AM

sunny, mid 60s, no breeze

extensive maggot activity towards posterior on torso, arms, and hips

neck still bloated

maggots present in mouth, around neck, and on navel

maggot activity slow

tan liquid spreading from body

skin slippage continuing all over body

face dark red and orange, purple coloring around facial openings

pupae cases everywhere in apartment, concentration under head

dark liquid spreading from genitals

color generally unchanged

neck has mottled appearance

GR

10/8/04

11:00 AM

partly cloudy, high 60s, slight breeze

skin slippage on all parts of body, maggots visible beneath skin

extensive maggot activity in mouth (in liquid), nose, under arms, and along hips and torso
towards posterior

upper chest and neck spotted – upper chest orange spotted, neck purple, orange, and
green

coloring mostly unchanged except tops of feet darker

lines along shins fading, but lines along arches darker

very dark coloring on hips and torso towards posterior

tissue coming off around navel

more maggot activity on R side

dead flies all over floor, three or four flying flies, a few gnats present

neck bloating almost gone, but cheeks puffed up

GR

10/9/04

10:40 AM

overcast, low 70s, slight breeze

extensive skin slippage all over body

large areas of crusty skin on upper R arm and R knee

face drying out, bloating in cheeks lessened

maggot activity along torso, hips, and arms towards posterior more intense, maggots
more active, maggots also active in mouth

spotted skin over entire chest, parts of abdomen, neck, L hip, and shoulders

color mostly unchanged, maggot activity in genitals lessened, gnats more numerous

tan liquid spreading from body

GR

10/10/04

sunny, mid 70s, slight breeze

flesh dimpling on hands

orange coloring beneath skin slippage on torso

many gnats and flies – flies on floor, approx. 20 flies flying

extensive maggot activity on torso, hips, and arms towards posterior
cheeks sunken

maggots again visible in nose

liquid and maggots in mouth

spotted skin persisting

no color changes

GR

10/11/04

3:45 PM

sunny, mid 70s, slight breeze

skin wrinkling

flesh slightly dimpled all over body

dry and dark around facial openings

color more mottle over all

large areas of skin slippage on upper R arm and R knee, scab-like – big maggots beneath
skin

maggots concentrated in same areas

spots on torso and neck more extensive

tan, foamy liquid still spreading from body

L leg appears slightly swollen

many flies and gnats present

GR

10/12/04

3:20 PM

raining, overcast, low 70s, slight breeze

skin slippage more extensive on lower legs

foamy, tan liquid still spreading from body, as well as dark liquid staining blanket

less liquid in mouth, large maggots still in mouth

eyes gone, sockets sunken

maggot activity on torso, hips, and genitals towards posterior more extensive

veins on thigh almost faded

dark spots on abdomen very dark

mottled appearance of body more pronounced

GR

10/13/04

10:45 AM

overcast, drizzling, low 60s, slight breeze

maggot activity along torso, arms, and hips towards posterior more frenzied

large areas of skin slippage on upper R arm, R knee, R and L sides, and navel

little maggot activity on face

gnats and flies present – a few flying, most littering floor

L ankle and foot swollen

color unchanged – mottled appearance still present

R ankle swollen

wrinkling of flesh all over body

GR

10/14/04

9:20 AM

overcast, high 50s, no breeze

large areas of extensive skin slippage all over body

increased amount of tan, foamy liquid produced by body

body more yellow overall

R foot and ankle still bloated

wrinkling of skin over entire body increased

body still has mottled appearance

neck still swollen

little liquid left in mouth, little visible maggot activity on face

maggots still very active towards posterior on hips, torso, and arms

GR

10/15/04

5:50 PM

mostly cloudy, slight breeze

maggots moving very slowly

flesh dimpling all over body

dark blue, blue/green, and maroon spots on abdomen larger

skin slippage continuing

L ankle and foot less swollen

neck almost completely deflated

foamy, tan liquid still spreading from body

maggots mostly on hips, torso, thighs and arms towards posterior, a few scattered on abdomen

small amount of foam in mouth, maggots active in foam

GR

10/16/04

6:40 PM

partly cloudy, breezy

pupae cases on nose and in large numbers around head

maggots still present around navel and scattered across abdomen

maggot activity also along body towards posterior and on anterior of L arm

flesh dimpling all over body, especially on hips and shoulders

mottled appearance of torso lessened

some of dark spots on abdomen growing together

neck bloating almost gone

blue area in middle of chest

veins on thighs almost fading

maggots around fingers

R foot still bloated

skin slipping on lower legs and feet

GR

10/17/04

6:15 PM

mostly sunny, no breeze

few changes

flesh continuing to dimple over body

maggot activity in same areas, maggots moving moderately fast

color unchanged

maggots scattered over face, pupae cases still plugging nose

small amount of thick liquid in mouth

skin slippage continuing on lower legs

face slack, cheeks sunken

GR

10/18/04

4:15 PM

partly sunny, cool

maggot activity along body towards posterior

thick, black liquid still present in mouth

tan, foamy liquid spreading from body

flesh dimpling all over body

skin slippage continuing on lower legs and feet

some maggots still scattered across face and torso

pupae cases on torso and around crown of head

abdomen continuing to deflate

GR

10/19/04

5:15 PM

partly cloudy, light drizzle

bloat continuing to decrease

R ankle and foot still bloated

color unchanged – torso still has mottling

skin slippage continuing on lower legs and feet

maggot activity unchanged

tan, foamy liquid still spreading from body

flesh continuing to disintegrate beneath skin all over body

fewer maggots scattered across face

GR

10/20/04

4:35 PM

partly sunny, no breeze

few changes

bloat decreasing very slowly

color unchanged

tan, foamy liquid spreading from body

maggots scattered across body, maggot activity along body towards posterior

flesh continuing to dimple, R ankle and foot still bloated

GR

10/21/04

3:55 PM

partly cloudy, breezy

color unchanged

maggot activity along body towards posterior and scattered across torso

some maggot activity around hands

bloating of R ankle and foot reducing

flesh dimpling, tan, foamy liquid spreading from body

pupae cases in hair

GR

10/22/04

3:45 PM

overcast, breezy

color unchanged, maggot activity unchanged

flesh continuing to dimple, dark tan, foamy liquid still spreading from body

pupae cases in hair and around nose

bloating of abdomen and R ankle and foot still reducing

a few flies flying around room, none on body

mouth open, small amount of black liquid visible

GR

10/23/04

4:15 PM

partly cloudy, little breeze

color unchanged

maggot activity on hands and along body towards posterior, no maggots scattered across body

bloating of R ankle and foot continuing to reduce

large number of flies flying around room

pupae cases covering hair and around nose

tan liquid still spreading from body

flesh dimpling all over body

maggot activity slow

veins still visible on L thigh

GR

10/24/04

4:30 PM

partly cloudy, breezy

large number of flies flying around room, a few flies on floor, none on body

flesh dimpling all over body

pupae cases covering head and nose

maggots along body towards posterior and scattered across torso

bloating of R ankle and foot continuing to reduce

skin slippage on knees and feet continuing

mouth open, small amount of liquid in mouth

tan liquid still spreading from body

color unchanged, torso still has mottled appearance

GR

10/25/04

4:10 PM

partly cloudy, breezy

flesh dimpling all over body

tan liquid still spreading from body

bloat in abdomen slowly reducing

bloating of R ankle and foot almost completely reduced

color unchanged

maggot activity concentrated around hands and along body towards posterior

pupae cases covering hair and nose

mouth open, small amount of liquid in mouth

maggots scattered across torso

flies flying around room and littered across floor (flies young and old)

GR

10/26/04

3:50 PM

mostly sunny, no breeze

maggot activity slow

maggot activity along body towards posterior and around hands

flies still flying around room and littering floor, no flies on body

pupae cases on head, face, and genital area

skin slippage continuing on feet and R knee

color unchanged, torso has mottled appearance

tan liquid still spreading from body

mouth open, small amount of liquid in mouth

GR

10/27/04

3:55 PM

overcast, drizzling

few changes

torso still has mottled appearance

flesh continuing to dimple

few flies on body, but many flying around room

ladybug infestation in vestibule of apartment

maggot activity slow and in same amounts and places

pupae cases all over face, torso, and genital area

skin slippage continuing on feet and R knee

veins still slightly visible on L thigh

color mostly unchanged

large brown pupae cases on forehead

GR

10/28/04

1:50 PM

overcast, breezy

few changes

flesh continuing to dimple

maggot activity in same places

more tan liquid spreading from body

color lighter on sides of body

color lighter overall, dark spots with maggot activity beneath skin on lower legs and abdomen

mouth still open

more pupae cases on and around body

same number of flies flying in apartment, but only gnats on body

GR

10/29/04

4:45 PM

sunny, breezy

few changes

abdomen bloat unchanged

tan liquid still spreading from body

maggot activity in same places

pupae case number continuing to increase

color mostly unchanged, blue spots on R thigh and R side of abdomen

flesh continuing to dimple despite no change in bloat

few flies on body, many flies flying and on floor of apartment

skin slippage on knees continuing

GR

10/30/04

4:35 PM

sunny, strong wind

few changes

tan to brown liquid spreading from body

more pupae cases on abdomen and around genital area

flesh continuing to dimple overall

torso still has mottle appearance

color lightening overall, otherwise unchanged

maggot activity abating, still active along body towards posterior

dark spots growing on lower legs

skin slippage continuing on knees

GR

10/31/04

4:30 PM

partly cloudy, breezy

few changes

color unchanged, except slightly lighter on torso and thighs, torso still has mottled appearance

tan liquid spreading from body

bloat unchanged

many flies still flying around apartment

pupae cases covering face, torso, and genital area

skin slippage continuing on knees

flesh continuing to dimple all over body except face, skin drying on face

GR

11/1/04

4:35 PM

sunny, breezy

few changes

dark brown liquid spreading from body

flesh continuing to dimple overall

a few maggots scattered across torso

color lightening, especially around hips and torso

large pupae cases on forehead

nose flattening, mouth open, small amount of liquid in mouth

white film/mold over toes, skin slippage continuing, skin drying

fewer flies flying around apartment, still young and old flies, no flies on body

GR

11/2/04

5:45 PM

raining, overcast

few changes

chest and abdomen less bloated, ribs visible beneath skin

flesh continuing to dimple all over body

fly numbers in apartment decreasing

some dark brown and tan liquid continuing to spread from body

color continuing to lighten all over body

skin drying out on lower legs and feet

no visible maggot activity

nose flattening further, mouth opening distorted, lip sunken

GR

11/3/04

1:50 PM

partly sunny, breezy

few changes

tan liquid still spreading from body

skin on feet drying out and cracking

breasts flattening

skin continuing to dimple

cheeks sunken

no visible maggot activity except on upper arms and in liquid near armpits

color unchanged

white mold on toes

GR

11/4/04

5:50 PM

mostly cloudy, breezy

few changes

abdomen continuing to flatten

cheeks sinking

white mold on toes and around R arm and hand

flesh dimpling on hips and torso

skin slippage on knees and feet

tan liquid still spreading from body

no maggots visible

pupae cases all over body

hair sloughed off

greenish purple splotches in middle of chest and on abdomen

mouth open, liquid filling mouth

a few flies present on face

GR

11/5/04

5:40 PM

partly cloudy, breezy

few changes abdomen sunken further

no color changes

mold still present on R arm, hand, and toes

cheeks sunken further, less liquid in mouth

tan liquid still spreading from body

flesh dimpling all over body

GR

11/6/04

5:25 PM

overcast, cool

abdomen sunken further

brown liquid spreading from body

pupae cases still covering body

color unchanged – dark spots still present on abdomen

flesh dimpled all over body

skin on feet dry and cracked

cheeks sunken, mouth open

a little dark liquid and maggot activity in mouth

no other visible maggot activity

GR

11/7/04

3:50 PM

overcast, drizzling

color unchanged

flesh dimpled all over body

brown liquid still spreading from body

no flies on body, no visible maggot activity

abdomen sunken, outline of hips and ribs visible beneath flesh

skin dried out

no flies flying around apartment

GR

11/8/04

4:34 PM

partly sunny, breezy

few changes

abdomen sunken further

lower legs darker red, large patches of skin still slipping/flaking off lower legs and feet

small amount of brown liquid still spreading from body

pupae cases covering genital area and hair

flesh dimpled all over body, skin dried out

outlines of hips and ribs visible beneath flesh

no flies on body, no maggot activity

GR

11/9/04

2:00 PM

partly cloudy, no breeze

no change

abdomen completely deflated

outlines of ribs and hips visible beneath skin

small hump remaining in abdomen

color unchanged, body dry overall

no liquid spreading from body

whitish mold along R wrist and hand

no maggot activity visible, no flies on body

GR

Field Notes for 58-04

10/1/04

10:50 AM

overcast, no breeze

took photographs and one hair sample

placed by K, GR

tattoos of cross on lower R arm

earring in L ear

pooled blood on face

yellowish coloring on bottoms of feet

red coloring all over back

GR

10/2/04

11:30 AM

overcast, drizzling, light breeze

flies and bees all over face

egg masses in mustache, nose, mouth, and around genital area

bottoms of feet light orange

abdomen sunken

red areas around head, inside elbows, and under armpits

blood pooled on face yesterday now dry

GR

10/3/04

2:15 PM

sunny, slight breeze

numerous bees and flies all over body

skin slippage on face

blood flowing from small scratch on L shoulder

extensive maggot activity on face – in ears, nose, mouth, and eyes

hair starting to slough off

abdomen starting to bloat

bottoms of feet orange

ears red

egg masses in genital area

small wounds under L arm, top of R foot, and R thigh

GR

10/4/04

11:30 AM

sunny, breezy

maggot activity extensive on face and neck

egg masses present in genital area

skin slipping between legs

a few maggots visible beneath armpits

wounds on legs, hips, feet, and arms more numerous

orange coloring on bottoms of feet brighter

abdomen slightly bloated

face purple and glistening beneath maggots

GR

10/5/04

11:20 AM

sunny, no breeze

extensive skin slippage over legs, genital area, under arms, torso towards posterior, face, and neck

egg masses around genital area

face darker purple/red and covered in maggots

maggots visible beneath slipping skin

egg masses in navel

bees and flies abundant

wounds more numerous on torso, legs, and hips

neck dark orange in color

bottoms of feet still orange

GR

10/6/04

1:25 PM

sunny, slight breeze

maggot activity lessened on face

skin slippage all over body, maggot activity beneath skin

numerous flies and bees present

areas of broken skin show orange coloring

scrotum bloated

abdomen bloated

skin lifting off facial plane

face dark purple and brown

neck red

color of bottoms of feet lessening

extensive maggot activity in genital area

GR

10/7/04

10:00 AM

sunny, no breeze

extensive maggot activity all over entire body

concentrations of maggots on face, chest, and genital area

most of slipping skin ruptured

body mostly orange in color, red marbling

ankles dark brown/green

skin on feet, parts of legs, torso, arms, and hands colored with green tinge

hair mat sloughing off, abdomen more bloated

face black, skin coming out from facial plane

GR

10/8/04

11:10 AM

mostly sunny, breezy

sheets of skin slipping on hands and feet (see photographs)

maggot activity lessened, but still present all over body, concentrated in genital area and on face

body almost all orange, red veins visible on extremities, dark blue/purple areas on arms and legs

face dark black, facial openings distorted, dark black material sloughing off face

skin slippage continuing all over body

scrotum still swollen, whole body bloated

GR

10/9/04

10:55 PM

overcast, no breeze

maggot activity almost entirely localized in genital area and on face

a few gnats, bees, and flies present, color unchanged

maggots still scattered around torso and legs towards posterior, maggot activity on face lessened

white foamy material under arms and on upper arms

very few skin-colored patches left

more dark material falling from head

scrotum less bloated

GR

10/10/04

1:40 PM

sunny, slight breeze

maggot activity still extensive on face and in genital area

face collapsed inward – brown/black mush

large mass of maggot eggs on chin and R side of jaw

color unchanged except for tan coloring around genital area

scrotum less bloated – hole in skin with maggot activity visible

numerous flies/bees present

GR

10/11/04

4:15 PM

sunny, slight breeze

still bloated

color mostly unchanged

facial tissue disintegrating, no bones visible

skin slippage mostly done

lower arms, lower legs, hands and feet dark purple/green/brown

extensive maggot activity mostly only visible in genital area

numerous flies and bees present as well as crawling insects

large maggots in tissue and liquid around head (dark color)

coloring around genital area now green/purple, but light

egg mass on R jaw larger

GR

10/12/04

2:25 PM

raining, overcast, slight breeze

skin slipping all over body

abdomen, legs, and arms still inflated

scrotum bloated

orange coloring over abdomen and thighs

orange/purple coloring on lower legs, arms, and neck, veins visible

thick, light tan liquid spreading from body

egg masses around navel on abdomen and L thigh

maggots covering lower face, small sized mostly

parts of face gray

thick, black liquid around middle face (eyes and nose)

maggots scattered over upper chest

no flies present

GR

10/13/04

11:30 AM

overcast, drizzling, strong breeze

maggot activity on R jaw and in genital area

body gray overall except for blue/green coloring on arms, lower legs, feet, and hands

egg masses near navel

face collapsed and brown

scrotum still slightly swollen

GR

10/14/04

9:30 AM

overcast, slight breeze

slow maggot activity around genital area

color more orange than tan, dark areas the same

egg masses on abdomen near navel

extensive maggot activity on R side of head above R shoulder

white mold on torso, neck, and L shoulder

skin slippage continuing all over body

face dark brown and collapsed

peach mold in center of chest

scrotum deflated

webbed skin on L inner thigh

GR

10/15/04

5:55 PM

mostly cloudy, slight breeze

slow maggot movement around genitals

color more orange than tan, dark areas same

egg masses on abdomen near navel

extensive maggot activity on R side of head above R shoulder

white mold on torso, neck, and L shoulder

skin slippage continuing all over body

face dark brown and collapsed

peach mold on center of chest

scrotum deflating

webbed skin on L inner thigh

GR

10/16/04

6:45 PM

partly cloudy, breezy

body mostly orange overall, dark areas on lower legs, arms, chest, and genital area

head dark black

white film on thighs and torso

scrotum still bloated

extensive maggot activity in facial openings and around head

egg masses in hair along crown of head

eggs masses and foamy liquid also present in genital area

extensive maggot activity also along body towards posterior

body glistening

smell pungent

GR

10/17/04

5:20 PM

mostly sunny, no breeze

color unchanged

most maggot activity still around genitals and head/face

maggot mass in face and around head larger

maxillary teeth visible within maggot mass

egg masses along crown of head larger and around genital area

bloating of scrotum reduced

maggots also present around armpits and beneath shoulders

R arm and torso glistening

GR

10/18/04

4:25 PM

partly sunny, cool

color generally unchanged

a few maggots scattered over torso, large amounts of maggot activity around head/face
and in genital area

more of maxillary teeth visible

egg masses around genital area and head smaller

body still glistening

bloating of scrotum reduced

a few maggots under arms and around shoulders

GR

10/19/04

5:20 PM

partly cloudy, light drizzle

few changes

patchy dark areas all over body

white film still present all over body

webbed skin on inner thighs

maggot activity in scrotum, around head, in face, and in armpits

foamy light liquid spreading from L side

face/head black with white film on forehead

dark veins visible on hands and forearms

a few flies present

GR

10/20/04

4:10 PM

partly sunny, no breeze

veins visible on hands, lower arms and lower legs

maggot activity continuing around head, on face, and under arms

foamy, tan liquid still spreading from body

facial bones beginning to be visible, skin/flesh on face and head black

no flies present on body

white film still present on much of body

GR

10/21/04

4:05 PM

partly cloudy, breezy

egg masses still present in genital area

foamy, light tan liquid still spreading from body

maggot activity continuing around genital area and face

more bone exposure on face

white film on head and chest

teeth visible through maggots on face

torso and arms glistening

maggots present in armpits

a few flies present on and around body

GR

10/22/04

3:55 PM

overcast, breezy

foamy, tan liquid spreading from body

white film on head and chest

maggot mass on face, teeth and bone visible in mass

body still glistening

maggots present along body towards posterior and in armpits

egg masses still present in genital area

face black

body mottled light tan and orange

veins visible in R hand

slippage continuing on hands and feet

GR

10/23/04

4:25 PM

partly cloudy, little breeze

maggots in genital area

lessened maggot activity on face

body glistening

skin slippage continuing on hands and feet

tan liquid spreading from body, maggot activity in liquid

body orange and red mottled

more bone exposure on face

lower legs darker red, skin flaring on R lower leg

face dark gray and black

GR

10/24/04

4:40 PM

partly cloudy, breezy

body orange and red mottled, abdomen and thighs darker red

lower legs dark gray, face dark gray and black

maggots very active in genital area, also present along body towards posterior

large maggots active on head

body glistening

abdomen beginning to deflate

flesh disintegrating on face

white film on head and chest

a few flies still flying around body

GR

10/25/04

4:00 PM

partly cloudy, breezy

large maggots on L side of head

face desiccated – teeth, maxillae, mandible and frontal visible (frontal visible in L eye orbit)

abdomen and thighs red, arms and lower legs dark, face dark gray and black

veins visible in R hand

maggots still very active in genital area

body glistening

skin slippage continuing on hands and feet

GR

10/26/04

4:00 PM

mostly sunny, no breeze

some large maggots still present around face, maggot activity lessened

body still glistening

thick, black material around head, brown liquid spreading from head

body orange and red mottled, lower legs dark gray, face black

abdomen and thighs darker red

maggots active in genital area and along body and arms towards posterior

tan liquid spreading from body, maggots present in liquid

veins visible on torso, arms, and legs

abdomen continuing to deflate

GR

10/27/04

3:50 PM

overcast, drizzling

flesh starting to dimple on abdomen

tan liquid spreading from body

thick, brown, foamy liquid around head

more bone visible on L side of face and around mandible

thick, black material on L side of head

L canine missing

maggot activity not present around head, but along body and arms towards posterior and in genital area

veins still visible on torso, arms, and legs

body still glistening

GR

10/28/04

1:45 PM

overcast, breezy

few changes

slightly more maggot activity in armpits and along body towards posterior, also active in genital area

a few maggots scattered on face and torso

white mold on chest

more bone showing on head

thick, brown liquid spreading from head

flesh dimpling on torso, largely gone from upper L arm and lower R leg

color unchanged

GR

10/29/04

4:40 PM

sunny, breezy

white film over body, white mold still on chest, also on hips and thighs

maggot activity in armpits and along body towards posterior

large maggots in genital area, disintegration of genitalia

thick, brown foam spreading from heel

tan liquid spreading from torso and legs

skin drying out on lower R leg

more facial bones showing

flesh dimpling on torso, body no longer glistening

GR

10/30/04

5:20 PM

sunny, strong wind

few changes

skin drying out more on lower R leg

tan mold/film on thighs

white mold/film on upper chest, lower abdomen, and around hips and shoulders

color darkening on torso, arms, and legs

skin drying out (color lightening) on face and in genital area

more facial bones showing around mouth, eyes, and nose

mouth open, disarticulation of mandible

green mold over toes and half of feet

white mold on top of feet

abdomen still glistening

little maggot activity visible

GR

10/31/04

4:20 PM

partly cloudy, breezy

skin flared on lower R leg, flared skin lightening in color and drying out

more tan mold on hips and thighs

white mold on upper chest, tops of feet, and shoulders

color darkening overall, dark black patches over orange/red/yellow coloring

facial skin continuing to dry out, more bone exposure

skin around genital area also drying out, thick, brown liquid spreading from head

small holes in upper L arm, surrounded by white mold

flesh continuing to dimple overall, skin flared on L side of chest towards posterior

no visible maggot activity

GR

11/1/04

4:30 PM

sunny, no breeze

tan coloring on R thigh expanding (mold?)

color darkening overall, especially on chest and hips

flared skin on lower R leg drying out

bloat reducing

white mold expanding on upper chest and lower abdomen

skin around genital area drying out and lightening, also on face

large egg mass on lower L abdomen

torso still glistening, few flies around body

flesh dimpling on hips and thighs

dark stain around body, no liquid

GR

11/2/04

5:40 PM

raining, overcast

white film over entire body (body wet)

color lightening overall

small amount of tan, thick liquid spreading from body

flesh dimpling further

no insects on body

egg mass still present on lower L abdomen

GR

11/3/04

1:40 PM

partly sunny, breezy

abdomen beginning to deflate

skin on R thigh and hip tan and slipping

skin more flared on lower R leg

skin on torso, arms, and thigh patchy orange, red, black, and tan

lower legs dark, veins still visible on R hand and lower legs

more bone visible on face (maxillae)

skin disintegrating into ground

tan liquid around head and genital area

gray/green mold on feet

white mold on chest

gray film over body (from rain)

GR

11/4/04

5:45 PM

mostly cloudy, breezy

body lighter in color, grayish areas on thighs and torso

dark coloring on lower legs and arms, arms have mottled appearance

gray film over head and around mouth and neck

tan/gray liquid spreading from body

maxillae, mandible, and body orbits visible

pink mold over chest and under arms

white/gray mold on feet

abdomen flattening

GR

11/5/04

5:35 PM

partly cloudy, breezy

abdomen sunken, skin tight

skin dark on chest, arms, lower legs, and lower abdomen

skin lightened and flared on R lower leg

upper abdomen orange/yellow in color

skin wrinkled, flesh dimpled across body

skin on face lightened and dry

parts of maxillae and bony L eye orbit visible

both upper and lower dentition visible

skin around genitals dry and light

small amount of brown liquid spreading from genital area

skin on hips and sides of thighs yellow and soft

GR

11/6/04
5:15 PM
overcast, cool
few changes
areas of soft, yellow skin on hips and outer thighs larger, also on abdomen towards
posterior
color unchanged, no more bone visible
abdomen still sunken
GR

11/7/04
4:00 PM
overcast, drizzling
few changes
abdomen almost completely sunken
no liquid spreading from body
skin on feet dry and cracked
more exposure of bone on face
areas of soft, yellow skin on R hip and outer thigh still present
skin on head and genital area dry and light
flared skin on R lower leg dry and lighter
color unchanged
GR

11/8/04
4:30 PM
partly sunny, breezy
few changes
dry flared skin patch on lower R leg larger
abdomen almost completely deflated
color unchanged, yellow, soft skin patch still present on R hip
skin on head drier and lighter
more exposure of facial bones
no flies on body
no maggot activity visible
skin on feet dry and cracking
no liquid spreading from body
GR

11/9/04

2:08 PM

partly cloudy, no breeze

abdomen completely deflated (sunken)

yellow, soft skin patch on R side and R hip larger

dark red color on R hip and near R fourth rib

dried skin patch on lower R leg the same

more bone exposure on face

dried, light skin on genital area and face

body glistening

darker coloring on arms, lower legs, hands, feet, and upper chest, color gray/brown

no flies or maggot activity visible

GR

Field Notes for 62-04

10/27/04

4:05 PM

overcast, drizzling

took photographs, one hair sample taken

placed by MM

flies landing on face (facial openings), on neck, in armpits, on arms, torso, and thighs

dark blue/purple areas on wrists, inside elbows, on shoulders, around L ankle, and on neck

no maggot activity

bluish coloring on torso

GR

10/28/04

3:50 PM

overcast, breezy

small maggots on face, neck, and upper chest

abdomen more bloated

color on upper chest, inside elbows, neck, and shoulders darker, more purple/blue spots present

face orange and bloated

green/blue coloring on torso

distal portion of fingers wrinkled and dark red

a few flies around body

GR

10/29/04

4:30 PM

sunny, breezy

small maggots covering face, neck, and upper chest

flies landing on genital area and thighs, a few maggots present in genital area

more blue/purple spots on thigh and hips, darker on wrists, inside elbow, shoulders and L ankle

green/blue coloring on lower chest and upper abdomen

face orange, red marks on fingers

some flies flying around body

GR

10/30/04

4:30 PM

sunny, strong wind

maggot activity extensive on face, upper chest, shoulders, upper R arm, armpits, and beneath R breast

heads and upper chest dark red to purple in color

red/purple/blue spots on wrists, inner elbows, hips, legs, and L ankle larger and more distinct

red marks on hands and feet more numerous, flies relatively abundant, maggots very small

GR

10/31/04

4:35 PM

partly cloudy, breezy

maggot activity extensive and expanding over head/face, chest, arms, thighs, and genital area, more concentrated towards posterior

dark red/orange color expanding from head to chest and shoulders, also moving down R arm

blue/purple patches on thighs, torso, and L ankle fading, spreading on wrists and inner elbows, a few flies around body, insect activity limited

GR

11/1/04

4:40 PM

sunny, no breeze

maggot activity extensive and expanding across face, chest, shoulders, arms (especially R arm), legs, genital area, hips, hands, and feet (especially R foot)

most activity towards posterior, moving anterior and in areas of folded skin

face dark purple/brown, upper chest dark brown to dark red/orange

most purple/blue spots on torso and legs faded except around L ankle

two dark orange spots on R abdomen and R thigh, few flies around body

GR

11/2/04

5:42 PM

overcast, raining

face/head, chest, R arm and hand completely covered by maggots, activity strong and fast some dark red color visible on chest and R arm through maggot activity

maggot activity on abdomen, genital area, legs, feet, L arm and hand strong towards posterior, a few maggots scattered over abdomen, legs, and feet

lower dentition and mandible visible through maggot mass, a few flies and beetles present on body

skin slipping all over body, maggot activity visible beneath skin

GR

11/3/04

1:55 PM

partly sunny, breezy

maggot activity extensive over head, chest, genital area, arms, hands, and all along body towards posterior

maggots scattered across rest of body

head, R arm and hand, and chest dark red to black, rest of body various shades of orange

R clavicle, R maxilla, and portion of teeth and mandible visible

skin on face disintegrating, tan liquid around body, maggot activity in liquid

skin slippage on feet and legs, maggot activity visible beneath skin

GR

11/4/04

4:55 PM

mostly cloudy, breezy

maggot activity extensive all along body towards posterior, across chest, neck, arms, and hands

arms and hands, upper abdomen, chest, and head dark purple to black

abdomen and legs orange, white, and dark red mottled

maggot activity extensive in genital area

bottoms of feet bright white

almost all facial bones visible

large holes in skin of chest, neck, and arms

flesh dimpling all over body

skin slippage continuing on hands and feet, maggot activity visible beneath skin

abdomen deflating

liquid spreading from body

GR

11/5/04

4:45 PM

partly cloudy, breezy

extensive maggot activity on upper chest, arms, genital area, and along body towards posterior

abdomen still bloated, but flesh dimpling across body

abdomen and legs light orange with white film

chest and arms dark red to black

all facial bones visible and all dentition

brown liquid spreading from body

skin on arms flared and disintegrating, no bones yet visible

L arm lighter in color and R arm

GR

11/6/04

5:20 PM

overcast, cool

colors darker overall, less white film on abdomen and legs

less maggot activity, but activity still extensive in genital area, chest and along body

towards posterior

brown liquid still spreading from body

flesh dimpling on abdomen, gone from chest

maggot mass on chest, but clavicles visible

skin slippage on legs with maggot activity visible beneath

some normal colored skin visible on abdomen in splotches

coloring darker towards posterior

GR

11/7/04

3:40 PM

overcast, drizzling

brown liquid spreading from body

chest, neck, R arm, and hips dark purple to black

abdomen, legs and L arm orange, red, and tan mottled

more of facial bones visible

maggot activity still extensive along body towards posterior, genital area, around legs, on

neck, and on chest

skin slippage on legs with maggot activity visible beneath

bottoms of feet normal skin colored

color along body towards posterior darkening

large holes in flesh of chest, neck, and R arm

GR

11/8/04

4:40 PM

partly sunny, breezy

extensive maggot activity around legs, genital area, along body towards posterior, and on

L side of neck

chest, neck, and hips dark purple to black

abdomen and legs mottled tan and orange

skin coloring normal on feet

R arm black, L arm orange and red

facial bones visible

dried tissue around head

dark brown liquid and tan, foamy liquid spreading from body

webbed skin on upper chest and shoulders

abdomen deflating, flesh dimpling

flesh has large holes on upper chest, neck, shoulders, and arms

GR

11/9/04

2:15 PM

partly cloudy, no breeze

maggot activity increased around legs, genital area, L side of chest, neck, and along body
towards posterior

flesh on chest and arms disintegrating further

colors darker over all

abdomen still has mottled appearance orange and light tan

more bone exposure around neck

tan, foamy and dark brown liquids spreading from body

webbed skin on chest and arms more prominent

abdomen deflating further, flesh dimpling all over body

maggots scattered over arms, hands, and chest, few flies present

GR

11/10/04

4:28 PM

partly sunny, windy

maggot activity lessened, but still prominent between legs, around genital area, and along
body towards posterior

maggots scattered across body

color continuing to darken overall

chest, neck, hips, and R arm black in color

legs dark gray towards posterior, abdomen and legs light tan, orange, and red

abdomen continuing to deflate

tan, foamy liquid and dark brown liquid spreading from body

dried skin on face disintegrating, more facial bones visible

GR

11/11/04

2:11 PM

mostly sunny, breezy, cool

few changes

all trends continuing

abdomen deflating

color darkening slightly

flesh on chest, neck, and R arm disintegrating

maggot activity lessened in same areas, but still scattered over torso and arms

more bone exposure on face

flesh on neck and upper chest thick and black with large areas gone

tan, foamy liquid and dark brown liquid still spreading from body

no flies present on body

GR

11/12/04

12:36 PM

partly cloudy, breezy

body wet, skin soft

head, chest, arms, and genital area gray

maggots scattered across body

no areas of maggot concentration

abdomen and legs have some normal skin color

flesh disintegrating further

tan liquid still spreading from body

more bone exposure on face

no insects visible on body

GR

11/13/04

2:15 PM

partly cloudy, breezy

flesh dimpling all over body

no areas of maggot concentration

maggots scattered across torso, arms, and legs

tan liquid still spreading from body

more bone exposure on face

no insect activity

flesh padding around hips

thighs and abdomen mottled orange and light tan

GR

11/14/04

1:26 PM

mostly sunny, no breeze

flesh dimpling all over body

color gray on legs towards posterior, on genital area, hips, chest, arms, and head

lessened maggot activity around legs, genital area, and chest

maggots scattered across chest and abdomen

thighs and abdomen gray and orange mottled

skin around head disintegrating, more facial bones visible

R clavicle visible

hair continuing to slough off

abdomen sunken, some flesh padding still present around hips

a few flies visible around body

thick, gray liquid spreading from body

GR

11/15/04

12:14 PM

mostly cloudy, little breeze

few changes

thick, gray liquid still spreading from R side

gray disintegrating flesh on lower R arm and hand

orange coloring on abdomen, thighs, and knees fading

lessened maggot activity still present on genital area, chest, and legs towards posterior

webbed skin on hands, chest, face, and R side of torso

more of R clavicle visible

maggots scattered over abdomen, chest, and L arm

abdomen and legs orange and pink mottled

GR

11/16/04

2:35 PM

mostly sunny, breezy

thick, gray liquid spreading from body

flesh on R arm and hand continuing to disintegrate

more of R clavicle visible

maggots scattered over body

abdomen and legs still have mottled appearance, orange and pink

lessened maggot activity overall

skin on head lightening and drying

no insect activity

webbed skin on torso, hands, arms, and genital area

GR

11/17/04

11:53 AM

mostly sunny, breezy

few changes

less liquid spreading from body and liquid is darker in color

flesh pads around hips still present

abdomen and thighs orange and pink mottled

gray/black coloring around hips, genital area, legs towards posterior, chest, and arms

maggot activity very low, scattered across torso and genital area

skin on head lightened, dry, and disintegrating

R clavicle more visible

webbed skin on torso, arms, hands, and genital area

more facial bones visible

no flies present

GR

11/18/04

1:52 PM

partly cloudy, little breeze

few changes

trends continuing

flesh pads lessened around hips

mottled appearance of abdomen and legs lessened, color light orange

maggots still scattered, no concentrations of maggot activity

skin on head continuing to lighten, dry, and disintegrate

more of R clavicle visible

flesh dimpling on abdomen and legs

small amount of thick, dark liquid

no flies visible on body

GR

Field notes for 72-04

¼/05

4:03 PM

drizzling, light breeze

body originally placed on 12/27/04 outside fenced area by LMJ

body moved to fenced area ¼/05 by LMJ, GR

little color change, no maggot activity

dark red/purple marks on R side of face, L shoulder, and upper L chest

R eye swollen

orange/brown spot on R hip

leaves cleaned off of face and body

no maggots/flies visible

red mottling on torso and hips towards posterior

GR

1/5/05

1:09 PM

partly cloudy, no breeze

few changes

discoloration on face, chest, and shoulders darker

mottling on torso towards posterior darker

blue/purple spot on R hand

abdomen slightly fuller

no maggots/flies

dark red mottling, skin nicks, over face, especially R side and tops of shoulders

leaves and dirt still present over L eye

GR

1/6/05

4:31 PM

cloudy, drizzling, heavy rain earlier

color on shoulders, upper chest, upper arms, and face darkening

reddish mottling on torso and hips towards posterior

skin nicks and bright red color on face spreading

orange/brown spot on R hip fading

orange colored skin nicks on upper arms, chest, and upper legs

blue/purple spot on R hand darker, spots also appearing on l hand

no flies or maggots

GR

1/7/05

4:44 PM

drizzling, overcast

few changes

color darkening overall

bruising on face, chest, and shoulders darker and spreading

abdomen fuller

green coloring on abdomen, dark green/blue spot on L, orange spot on R hip

darker red coloring on lower L arm

dark purple spots hands

red mottling on torso and hips towards posterior darker

no flies/maggots visible

GR

1/8/05

12:03 PM

partly cloudy

discoloration on torso and hips towards posterior darker, also darker on face, shoulders,
and upper chest

abdomen fuller

some reddish coloring on outside of thighs

red scraped areas on face, chest, and neck larger

a few flies present

no maggots visible

mouth open, eyes closed

blue/purple spots on hands larger

lower arms darker

abdomen has greenish color

leaves still stuck to L eye

GR

1/9/05

3:45 PM

sunny, few clouds

abdomen fuller, no flies/maggots present

color darkening on face, chest, and shoulders

dark red coloring on hips, torso, and thighs towards posterior

deep nicks in skin all over face, neck, and shoulders, small nicks in skin on torso and
thighs

dark orange/red coloring around L eye

R breast flattening

dark orange spot on R hip larger, dark blue/purple spots on hands lighter

GR

1/10/05

5:05 PM

sunny, breezy

breasts flattening further, especially right side

deep red and orange nicks almost covering face

mouth open, lips dark red and cracked

eyes closed, leaves stuck to L eye

deep red nicks on shoulders and neck, smaller orange nicks on rest of body

dark red and green coloring on neck and upper L chest

blue/purple spot on L hip and R hand

bluish coloring on arms and L hand

a few flies on body

toenails cracking and separating

no maggots, no skin slippage

GR

1/11/05

4:55 PM

raining, no breeze

red/gray coloring covering R side of face, shoulders, neck, and L chest

cheeks sunken

L side of face mottled orange/tan with dark red coloring under eyes

nicks lighter in color

orange coloring on R hip spreading

no flies or maggots present

lips faded in color

blue/purple spots on L hip and R hand lighter in color

GR

1/12/05

4:40 PM

sunny, no breeze

blue/purple coloring over face, upper chest, neck, and arms

large red scrapes over face, especially right side, upper chest, and arms

smaller orange scrapes on thighs and hips

lips dry, thin, and dark red, mouth open

green/blue spot on L lower abdomen fading

abdomen slightly fuller

breasts flattening further

no maggot activity

a few flies around body

GR

1/13/05

3:55 PM

partly cloudy, little breeze

color on face, arms, neck, and upper chest darker

large red/orange scrapes over hips, chest, arms, and face

some scrapes beginning to dry, have light tan centers

smaller orange scrapes over rest of body

green/blue coloring around wrists and hands

toenails dry and separating from toes

mouth open and dry, lips dark red

a few flies present on body, no maggots or egg masses visible

blue/gray spot on L lower abdomen fading

GR

1/14/05

4:45 PM

partly cloudy, slight drizzle

color lighter on forearms, darker on shoulder, upper chest, and neck

pink mold on upper chest and face

lips shrinking back from teeth, lips dry and dark red, mouth open

red, orange, and black scraped areas all over face, less on R side

large red, orange scraped areas on neck, upper chest, upper arms, thighs, and hips,

smaller areas on rest of body

toes dry and wrinkled, pulling away from nails

blue areas on hands

no flies/maggots/egg masses visible on body

GR

1/15/05

5:15 PM

partly sunny, little breeze

forearms continuing to lighten, except near wrist and hands (darker blue)

dark red/purple coloring on face, shoulders, and upper chest

scraped areas on face, upper chest, neck, shoulders, and upper arms larger and generally

darker, fewer on R side of head

lip color blending into face, continuing to pull back from teeth

eyes sunken, dark brown leaves still stuck to L eye

pink mold still present on neck, upper chest, and face

more orange areas on abdomen and hips

green/gray spot on L lower abdomen fading

GR

1/16/05

5:00 PM

partly sunny, cold

same trends continuing

lighter color on forearms

darker color on chest, neck, face, shoulders, and upper arms

scrapes on face, neck, and upper chest red to black

orange scrapes on shoulders, upper arms, torso, hips, and thighs, a few on lower legs and arms

toes drying, still pulling away from nails

no flies/maggots/egg masses

blue/gray areas on wrists and hands darker

lips black and dry, pulling further back from teeth

GR

1/17/05

2:20 PM

partly sunny, windy

color lightening on upper arms except larger orange/red scraped areas

orange coloring on scraped areas spreading on thighs, especially R, and torso

face and upper chest almost covered by scraped areas red to black

face, neck, and upper chest drying, lighter areas more numerous

a few flies present, no maggot/egg masses visible

eyes sunken further, crusted over

mouth open, lips swollen

larger nicks on lower legs, arms, and feet

blue to purple coloring darker on hands

leaves stuck to L arm

breasts flattening further

GR

1/18/05

3:40 PM

sunny, cold, light breeze

abdomen sunken

orange scrapes much larger on torso, thighs, hips, upper arms, and upper chest

scrapes on face, neck, and upper chest dark red to black

lighter areas within scrapes on face, neck, and torso

face disintegrating, dry, cracked around mouth and eyes

lips dry and thin, dark red, pulling back from teeth

generally dark coloring on arms, head, and chest lighter, dark blue areas on hands

no flies/maggots/egg masses

GR

1/19/05

4:40 PM

partly sunny, cold

few major changes

no flies/maggots/egg masses

color on face, neck, shoulders, and upper chest darker again

forearms continuing to lighten

orange scrapes on torso, thighs, hips, and arms expanding

lighter areas on upper chest, neck, and face more prominent

face continuing to dry out and break down

around eyes, mouth, and nose black and green

veins visible on neck and torso

lips continuing to pull back from teeth

blue/green spot on lower L abdomen darker

blue/purple areas on hands darker

toes dry and wrinkled

GR

1/20/05

4:45 PM

mostly sunny, little breeze

color on upper chest, shoulders, neck, and face very dark

scraped areas dry, purple to black in color

large orange scraped areas all over torso, thighs, hips, and arms, a few scrapes on legs
and hands

blue/purple areas on hands darker

no flies/maggots/egg masses

mouth open, lips distorted, pulling back from teeth

light areas more extensive on neck, upper chest, and face

veins on torso, neck, and face more prominent

dark green/blue spot on lower L abdomen larger

skin on legs looser, no slippage

GR

1/21/05

5:10 PM

partly sunny, no breeze

neck, face, shoulders very dark in color

purple veins visible on face, neck, upper chest, torso, thighs, and lower legs

face dark red to black and very dry, lips continuing to pull back from teeth

lighter areas expanding, orange scrapes on torso, thighs, and hips expanding

dark blue/purple coloring on hands more prominent, orange coloring between fingers

breasts flattening, no flies/maggots/egg masses

toes dry, pulling back from nails, mouth opening irregular

GR

1/22/05

3:18 PM

partly sunny, little breeze

face, upper chest, shoulders, and neck very dark, veins more prominent and dark purple
scrapes on face, neck, and upper chest dark red, orange, and black, darkest around middle
of face

no flies/maggots/egg masses

larger orange scrapes on torso, hips, and thighs

veins more prominent on torso and legs

scrapes almost covering L arm

toes continuing to dry out and pull away from nails

forearms lighter, dark purple/blue areas on hands darker

skin loosening on legs and torso, abdomen sunken

lighter areas on upper chest, neck, and face reduced

GR

1/23/05

4:16 PM

partly sunny, breezy

face and upper chest drier, more light areas visible

lighter coloring overall on upper chest and arms

veins much more prominent on torso, neck, and face, still present on legs

except for light areas, scrapes darkening from orange to red on torso and hips/thighs

center of face black and very dry, rest of face dark red and orange

lips cracked and pulled back from teeth

blue/purple areas still prominent on hands, dark gray spot more prominent on L hip

no flies/maggots/egg masses

GR

1/24/05

4:56 PM

sunny, light breeze

face and upper chest continuing to dry out, lighter areas more prominent

veins less prominent on torso and legs, except feet and neck

orange scrapes on torso, thighs, and hips slightly smaller

blue/purple areas on hands darker

mouth starting to disintegrate around edges, lips pulling back from teeth

nose starting to disintegrate, nose pushed to the R

abdomen sunken further

some reddish color change on thighs towards posterior

no flies/maggots/egg masses

GR

1/25/05

5:21 PM

mostly sunny, no breeze

face crusted and dry, very black on center of face, neck, and upper chest

veins very prominent on neck and upper arms

a few veins visible on torso and legs

lips pulling back from teeth further, head tilted back

orange scrapes darker on torso, thighs, and hips

blue/purple spot on R hand darker

color still lightening overall on upper arms

dark gray spot on lower L abdomen, abdomen sunken

no flies/maggots/egg masses

GR

1/26/05

12:05 PM

sunny, breezy

dark purple coloring on face, neck, and upper chest, head tilted backward

mouth open, lips dry, teeth visible

large orange scrapes on upper arms, torso, and legs

blue/purple areas on hands darker

dark blue/green spot on lower L abdomen, veins visible on torso, neck, and face

face dry and dark, lighter on L side

white mold present on face, neck, and upper chest

dark spots on lower legs and feet

skin wrinkling and wet on torso towards posterior

GR

1/27/05

6:15 PM

sunny, breezy

small amounts of marbling on torso

spot on lower L abdomen darker blue/green

light, dry areas on face, neck, and upper chest expanding

orange/red coloring on thighs and torso

darker red/purple coloring on dry skin on face and arms

lips thin, mouth open, maxillary teeth visible, eyes sunken

skin slack on legs, wrinkling around knees and legs towards posterior

dark purple spot on R hand larger, fingers dark purple

no flies or maggot activity

GR

1/28/05

5:26 PM

partly cloudy, no breeze

mouth open wider, head tilted backward and to the R

more of maxillary teeth visible

orange coloring on torso expanding

dark blue/green spot on lower L abdomen slightly larger

dried areas (light areas) on torso, face, and neck larger

slightly more marbling on torso, breasts flattening

face dark purple and black, cheeks and eyes sunken

L eye crusted over with dried skin

no flies/maggots/egg masses

dark marbling on upper R arm

GR

1/29/05

3:34 PM

raining, no breeze

dark marbling visible on neck, face, and upper chest, small amount on torso

abdomen sunken

face grayish

color on neck, face, upper chest, and upper arms red/purple

orange coloring on torso, legs, and arms unchanged

no flies/maggots/egg masses

purple/blue spots on R hand slightly lighter

lips more pliable

GR

1/30/05

5:08 PM

cloudy, drizzling

color faded overall

marbling still present on upper chest, neck, and upper R arm

lips pulled back further from teeth

light dry areas almost gone

pink/orange mold on upper chest, face, neck, and arms

abdomen still sunken

no flies/maggots/egg masses

darker areas on torso

head still tilted backward

GR

1/31/05

1:56 PM

overcast, little breeze

purple coloring over face, neck, upper chest, and upper arms

marbling still apparent on neck and torso

orange colored areas on legs, torso, and arms expanding

fewer dry, light areas on torso and neck

face reddish and dried out

blue/purple spot on R hand larger

abdomen sunken, blue/green spot on lower L abdomen larger

orange/pink mold on face, neck, and upper chest

mouth open wider, nose collapsed, eyes sunken

no flies/maggots/egg masses

GR

2/1/05

5:17 PM

overcast, little breeze

color on upper chest, face, and neck darker, skin drier

orange color on torso, legs, arms, and neck larger and darker

marbling stronger on torso, neck, and arms

blue/green spot on lower L abdomen larger

dry, light areas and orange areas on face and neck more prominent

face black and dry, lips dry, teeth visible

purple/blue spot on R hand larger

pink/orange mold larger on upper chest and face

no flies/maggots/egg masses

GR

2/2/05

4:44 PM

overcast, raining

marbling stronger on torso, neck, and arms

gray film over face

orange/red areas on legs and torso larger

face, chest, and neck darker purple and black, very dry

marbling less visible

spots of pink mold on upper chest and neck

blue/purple spot on R hand larger

skin wrinkled and loose on torso and legs towards posterior

no flies/maggots/egg masses

GR

2/3/05

4:17 PM

overcast, raining

color fading on face and chest

orange/red coloring faded on legs and torso

marbling more distinct on neck, chest and abdomen

pink/orange mold on chest and arms

mouth less open, teeth barely visible

no flies/maggot/egg masses

skin wrinkled and loose

breasts flattened, abdomen hard

green/blue spot on lower L abdomen still present

GR

2/4/05

5:20 PM

partly sunny, breezy

skin much drier on upper chest and face, dry, light areas

mold spreading on face and chest

red/orange coloring on torso, legs, and arms towards posterior

blue/purple/red spot on R hand very large

lips pulled back further from teeth

no flies/maggots/egg masses

much less marbling visible

GR

2/5/05

12:30 PM

sunny, no breeze

one fly on body, no maggots/egg masses

color darker overall

bright red colors towards posterior of torso, legs, and arms

skin wrinkled and loose on forearms

abdomen sunken

marbling more visible on torso and neck

skin drier on neck, face, and upper chest

pink/orange molds expanding on chest and face

light, dry areas present on orange/red areas on legs, torso, and arms

blue/gray spot on abdomen larger, abdomen sunken further

lips and nose distorted

GR

2/6/05

12:15 PM

sunny, breezy

red coloring on torso, arms, and legs towards posterior darker

large dry, light areas on face, neck, chest, abdomen, legs, and upper arms larger

orange coloring on torso and legs expanding

face black, skin dry, fly in mouth, eyes slightly open

larger purple spot on R hand

blue/gray spot on lower L abdomen fading

large mold spots on face, neck, chest, and arms

marbling light, but apparent on torso and arms

GR

2/7/05

3:27 PM

overcast, no breeze

red coloring towards posterior of legs and hips darker

pink, wrinkled skin on torso towards posterior

orange coloring on torso, legs, and arms continuing to expand

upper chest, face, neck, L arm and upper R arm dark red to black

large purple coloring on R hand

orange mold spreading on face, upper chest, neck and upper arms

mouth open, no fly in mouth, no maggots

mold also starting to spread over orange areas

marbling on torso darker, blue/gray spot on lower L abdomen darker

GR

2/8/05

3:27 PM

overcast, breezy, drizzling

mold continuing to expand on face, upper chest, and upper arms

marbling slightly darker

purple coloring on R hand darker

red coloring on legs/hips towards posterior expanding

pink, wrinkled skin spot on torso towards posterior larger

skin slack on knees and legs

orange coloring over legs, torso, and arms expanding, mold less obvious

skin on face very dark and dry, mouth open, maxillary teeth visible

eyes slightly open, eyeballs decayed

blue/gray spot on lower L abdomen larger

no flies/maggots/egg masses

GR

2/9/05

2:44 PM

overcast, drizzling

color lighter overall

pink wrinkled skin on torso, legs, and arms towards posterior

mouth open wider, maxillary teeth more visible

head tilted back and to the R

less mold visible

no flies/maggots/egg masses

more purple coloring on R hand

blue/gray spot on lower L abdomen larger

marbling more distinct on sides of torso and upper arms

face light tan mottled with brown and green

upper chest, neck, and shoulders orange and brown mottled

GR

2/10/05

1:49 PM

partly cloudy, cool

colors darkening again

mold expanding all over body, mostly on face, neck, shoulders, and upper chest

no flies/maggots/egg masses

spot on lower L abdomen larger

wrinkled areas towards posterior on legs, torso, and arms expanding, but very light in color

eyes slightly open, eyeballs gone

skin wrinkled and slack on legs

marbling stronger on R side of torso

abdomen slightly sunken

orange color expanding on legs and torso

GR

2/11/05

3:58 PM

sunny, breezy

mold expanding all over body

color darkening on legs, torso, and arms towards posterior

color expanding over entire body, most normal skin color only on abdomen

marbling stronger on upper arms and R side of torso

head tilted further back, mouth open wider

purple coloring on R hand fading

no flies/maggots/egg masses

wrinkled skin areas larger, especially on torso towards posterior

GR

2/12/05

4:37 PM

partly sunny, breezy

mold expanding over entire body

orange/red coloring expanding over legs and torso

red color darker and wrinkled skin patches expanding on R torso, legs, and arms towards posterior

color on chest, neck, and face dark red and black, covered by light pink mold

marbling on torso more obvious, especially on R side

blue/gray spot on L abdomen larger

lips pulling further back from teeth, nose distorted

slit in eyelids, eyeballs gone

a few flies on body, no maggots/egg masses

GR

2/13/05

2:08 PM

overcast, raining

larger orange areas over entire body

mold less obvious due to rain

gray spot on lower L abdomen larger

pink, wrinkled skin on torso towards posterior larger

wrinkled areas on legs and arms larger, but color lighter

color lighter on face, neck, and chest, mottled blue/purple/orange/brown/yellow

mouth open wider

no flies/maggots/egg masses

yellow mold on R cheek and eye and around L nose

white mold and yellow color between fingers

GR

2/14/05

12:34 PM

overcast, raining

nose off center, mouth more closed

skin slack and wrinkled overall, especially on face

color lighter overall, R side of face purple and orange

yellow mold on R eye, R cheek, and L nostril

wrinkled skin areas larger, but lighter in color

orange color expanding over body

mold expanding, but less visible

gray/blue spot on lower L abdomen larger

yellow mold on R side of torso and L arm

no flies/maggot/egg masses

GR

2/15/05

3:43 PM

mostly cloudy, windy

blue/gray spot on lower L abdomen doubled in size

pink/orange mold covering chest, neck, thighs, abdomen, and arms

orange coloring on torso, arms, and legs widespread

patches of pink, wrinkled skin on torso towards posterior larger

marbling on arms and neck darker, brown mold on abdomen and face

mouth open wider, teeth more visible, eyes disintegrated, nose misshapen

yellow coloring covering most of face, head tilted to R

no insect activity visible

hair mat beginning to slough off

GR

2/16/05

3:15 PM

partly cloudy, breezy

lips pulled back further from teeth

no flies/maggots/egg masses

white and pink molds covering almost entire body

skin underlying molds darker orange/red/purple except on abdomen

blue/purple spot on R hand darker and larger

face distorted

patches of pink, wrinkled skin larger and darker

GR

2/17/05

5:42 PM

sunny

mold lightened, covering almost entire body in light pink

parts of abdomen still have normal skin color, blue/gray spot on lower L abdomen larger

underlying skin in other areas orange/red/purple

lips pulled back further from teeth

slits visible in eyes, eyes gone

areas of pink, wrinkled skin larger and darker

no flies/maggots/egg masses

white mold along lower legs and feet

green spots of mold in same areas, same white and green mold on R arm and hand

blue/purple spot on R hand very dark and large

GR

2/18/05

5:48 PM

sunny

few changes

pink mold still covering almost entire body

brown raised mold spots on upper abdomen

white mold still present on R arm, hand, feet and lower legs

dark red, wrinkled skin areas on legs and torso towards posterior

wrinkled, orange area on L upper arm towards posterior

skin beneath pink mold darkening, especially on face and neck

no flies/maggots/egg masses

blue/gray spot on lower L abdomen larger

GR

2/19/05

5:39 PM

mostly cloudy, no breeze

pink mold still covering body, mixed with larger areas of white mold

areas of gray/green mold present on legs and feet

skin beneath pink mold darker orange/red/green

gray/blue spot on lower L abdomen slightly larger, marbling present on R upper abdomen

fingers yellow

wrinkled areas on legs and torso towards posterior dark purple

mouth open wider, more of teeth visible

slits in eyelids larger

no flies/maggots/egg masses

yellow, soft area on L arm around elbow darker

GR

2/20/05

4:30 PM

overcast, raining heavily

mold raised and more orange in color on body

skin beneath mold much lighter overall

white and gray/green mold no longer visible

raised brown mold spots still present on abdomen

wrinkled skin areas on torso and legs larger and lighter

yellow soft area on L arm around elbow much larger

no flies/maggots/egg masses

light purple on shoulders, sides of torso, neck, and face

GR

2/21/05

4:45 PM

mostly cloudy, heavy rain earlier

color blanched overall, mold light orange in color

wrinkled, soft skin on torso and legs towards posterior larger, but lighter in color

gray spot on lower L abdomen lighter

brown mold spreading over chest, abdomen, face, legs, and neck

no flies/maggots/egg masses

white mold also present in small amounts

yellow coloring and softened skin around mouth on R, R eye, L upper arm, and L foot/ankle

GR

2/22/05

6:13 PM

sunny, breezy

pink mold expanding over entire body

a few areas of natural skin color on abdomen and feet

blue/gray spot on lower L abdomen larger

skin beneath mold orange to red with some purple spots

wrinkled skin areas on L arm, R torso, legs, and genital area smaller and darker

no flies/maggots/egg masses

brown mold expanding on face, neck, abdomen, chest, and legs

white mold less obvious on arms and neck

smell more obvious

GR

2/23/05

6:27 PM

partly cloudy, no breeze

pink and brown molds continuing to expand

bluish tinge to abdomen, blue/gray spot on lower L abdomen larger

pink mold covering feet and toes

mouth open wider, teeth more visible

wrinkled, soft areas of skin on torso, legs, L arm, and genital area drier and darker

skin beneath mold darker orange

gray/black areas on face, neck, and chest

hair mat beginning to slough off

fingers yellow

no flies/maggots/egg masses

GR

2/24/05

1:51 PM

partly cloudy

pink and brown molds continuing to expand over body

wrinkled, soft areas almost completely dried and much darker

no flies/maggots/egg masses

skin on torso has greenish tinge

rest of skin darkening to brown beneath mold

lips pulled back further from teeth

slits in eyelids wider, eyes gone

hair mat continuing to slough off

skin drier overall

some wrinkled, soft areas of skin still present in genital area

GR

2/25/05

5:52 PM

mostly sunny, breezy

abdomen: 81.1cm

few changes

pink mold still spreading over body

less brown mold on torso

skin beneath mold darker red and purple

gray/blue spot on lower L abdomen larger and lighter

gray/blue tinge to exposed skin on abdomen

lips disintegrating, more of teeth visible

a few flies around body, no maggots or egg masses

eyes disintegrated and sunken

GR

2/26/05

4:46 PM

sunny, breezy

skin on abdomen dry and cracked

spot on L abdomen faded slightly

gray/pink molds expanding over body

skin red and purple beneath molds

black skin on face beneath mold

less skin visible on abdomen, skin tinted gray/brown

abdomen slightly sunken

no flies/maggots/egg masses

GR

2/27/05

3:31 PM

overcast, breezy

few changes

pink and gray molds continuing to expand

spot on lower L abdomen larger and lighter

skin color beneath mold darker overall

gray/brown tinge to skin on abdomen

no flies/maggots/egg masses

mouth open wider, lips disintegrating, teeth more visible

gray/black skin on armpits and face

GR

2/28/05

6:24 PM

overcast, raining, windy

skin on abdomen greenish tinge

blue/gray spot on lower L abdomen lighter and larger

pink mold has orange coloring, raised above skin

color on body lighter overall

no flies/maggots/egg masses

brown mold spreading over more of body

skin very wet and light

abdomen sunken

wet, soft, wrinkled areas of skin larger around legs, arms, and torso towards posterior

GR

3/1/05

5:23 PM

snowing, windy, cold

pink mold expanding further over body

gray/blue spot on lower L abdomen lighter and larger

skin on face, armpit, and shoulders black

dark red skin on legs, arms, and chest

abdomen tinged gray

gray mold expanding on legs, face, and chest

soft, wrinkled areas dry and very dark red

dry skin all over body, abdomen sunken slightly

lips disintegrating, teeth more visible

no flies/maggots/egg masses

GR

3/2/05

12:24 PM

sunny, cold, no breeze

no flies/maggots/egg masses

pink mold continuing to spread over body

skin beneath mold darker red/purple/gray

areas of soft, wrinkled skin gone (dried out)

brown mold spreading over abdomen

mouth open wider, teeth more visible

slits in eyes larger

gray/blue spot on lower L abdomen darker and larger

GR

3/3/05

5:07 PM

mostly sunny, little breeze

skin on abdomen dry and cracked

spot on lower L abdomen faded

pink mold continuing to spread, gray/brown molds spreading as well

skin beneath molds darker, especially on torso, dark red, purple, and black in color

no flies, maggots, egg masses

leg skin red beneath mold

lips disintegrating further, teeth more visible, especially maxillary

wrinkled, soft areas dry and very dark

fingers yellow

abdomen sunken slightly

GR

3/4/05

10:46 AM

mostly sunny, cool, strong breeze

hair mat sloughing off, especially on L side of head

pink mold continuing to expand

skin on chest dark brown to black beneath mold

brown/gray mold expanding on legs

leg skin red and orange

lips disintegrating further, maxillary teeth more visible

spot on lower L abdomen fading further, skin dry and cracked

outline of iliac crest visible beneath skin

head tilted upward and toward R

no flies, maggots, egg masses

eyelids almost gone, eyes disintegrated

GR

3/5/05

8:33 AM

mostly sunny, strong breeze
pink and gray/brown molds continuing to expand
skin continuing to darken beneath mold
skin on abdomen tinged blue and dry
lower L abdomen spot larger and lighter
fingers yellow
lips disintegrating, teeth more visible
eyelids disintegrating
no bones visible
no maggots, egg masses
abdomen still slightly sunken
GR

3/6/05

12:34 PM

mostly sunny, breezy
pink mold continuing to expand
skin color darkening beneath molds
lower lip sunken into mouth, upper lip almost completely disintegrated
skin on torso mostly dark red, purple, and black
greenish tinge to skin on abdomen
skin on legs bright red beneath mold
lower L abdomen spot larger and lighter
fingers bright yellow, wrists dark purple
areas with formerly soft skin dry and very dark
no maggots/egg masses
GR

3/7/05

11:03 AM

overcast, breezy
same trends
pink and brown/gray molds expanding
skin color beneath molds darkening
maxillary teeth more visible, upper lip disintegrating
eyelids disintegrating
spot on lower L abdomen larger and lighter
green/blue tinge to abdomen skin
hair mat sloughing off
no maggots/egg masses
GR

3/8/05

4:44 PM

partly sunny, breezy

pink mold expanding and darkening

white film over R side of abdomen

abdomen sunken slightly more

skin beneath pink mold darkening to dark orange, brown, and black

brown/gray mold also expanding, especially on legs and neck

spot on lower L abdomen smaller and lighter

lips lighter and disintegrating, anterior maxillary teeth more visible

no flies/maggots/egg masses

hair mat continuing to slough off, scalp dark red beneath hair

nose flattened, slit in eyelids larger, mouth open wider

GR

3/9/05

5:10 PM

partly cloudy, breezy

pink mold almost completely covering chest, thighs, and neck

gray/brown mold over parts of abdomen, legs, and most of face

skin on abdomen cracked and dry

skin on legs orange and red beneath mold

anterior maxillary teeth more visible

no flies/maggots/egg masses

face distorted, head tilted upward and to the R

soft, wrinkled areas dry and darker than rest of body

GR

3/10/05

5:35 PM

overcast, breezy

few changes

head tilted back and R

color of pink mold lightened slightly

color of skin continuing to darken

gray molds expanding over pink mold

mouth open wider, lips continuing to disintegrate, teeth more visible

no flies/maggots/egg masses

spot on lower L abdomen larger and fading

skin on abdomen still dry and cracked

GR

3/11/05

4:35 PM

breezy, overcast, drizzling

few changes

color of mold continuing to lighten

color of skin darkening

head tilted back and to the R

no flies/maggots/egg masses

abdomen sunken

GR

3/12/05

3:30 PM

partly cloudy, breezy

lips continuing to disintegrate, maxillary teeth very visible

pink mold spreading on torso

brown mold covering pink mold on legs and arms

color of skin beneath mold darkening

spot on lower L abdomen larger and darker

slits in eyelids larger

abdomen sunken

head tilted further to the R

no flies/maggots/egg masses

mouth open wider

GR

3/13/05

4:59 PM

overcast, raining, little breeze

less pink mold over body, especially on abdomen and legs

brown mold expanding on torso and legs

pink mold on torso lighter in color

face color darker overall

lips disintegrating further, teeth more visible

hair mat continuing to slough off

spot on lower L abdomen darker and larger

skin color on body continuing to darken to red, brown, and purple

no flies/maggots/egg masses

skin dry and cracked

GR

3/14/05

3:50 PM

overcast, breezy

less pink mold on body and lighter in color

brown mold expanding

skin color darker overall

lips disintegrating, teeth more visible

no flies/maggots/egg masses

skin over abdomen dry and cracked

GR

3/15/05

4:37 PM

mostly cloudy, drizzling, light breeze

pink mold fading slightly, color also lightening

head tilted further back and to the R

brown mold covering parts of pink mold

spot on lower L abdomen larger and darker

skin color continuing to darken

lips disintegrating further, maxillary teeth more visible

skin dry and cracked, especially on abdomen

slits in eyelids much larger, eyeballs gone

no flies/maggots/egg masses

GR

3/16/05

4:10 PM

overcast, raining, breezy

mold color lightening overall

brown mold covering pink mold

skin dry and cracked, especially on abdomen

skin color darkening overall, spot on lower L abdomen larger and darker

no flies/maggots/egg masses

GR

3/17/05

5:49 PM

partly cloudy

body overall lighter in color

pink mold spreading over body, less on abdomen

maxillary teeth more visible

face distorted, skin dry and cracked

eyes sunken, nose twisted

brown mold continuing to grow over body

GR

Field Notes for 02-05

1/4/05

3:42 PM

drizzling, light breeze

WF, placed inside "house"

orange discoloration on face, no localized

spotted discoloration on torso and around ankles

nick in skin on L knee

light green coloring on abdomen

mottled light red coloring on L hip and torso towards posterior

nick on lower R arm

bruising around L wrist

skin on nose drying

no flies or maggots

GR

1/5/05

1:01 PM

partly cloudy, no breeze

mild spotted discoloration on upper arms and beneath breasts

orange/yellow coloring, concentrated on skin

reddish mottling on back of legs and bottoms of feet

orange/yellow lighter coloring over rest of face

bruising lessened around L wrist

nick on lower R arm larger

green coloring on abdomen spreading and darker

lower R arm darkening, nick on L knee larger

no flies or maggots

GR

1/6/05

4:38 PM

cloudy, drizzling, rained heavily earlier

mottling on L hip and back of L leg darker

bruising on L wrist fading

abdomen slightly fuller

no maggots or flies

green coloring on abdomen spreading and darkened

dark blue/purple spots on abdomen

plotchy red areas beneath breast and around ankles

orange/yellow coloring on face, concentrated around lower eye sockets and beneath chin

lips dark red, lower R arm and hand darker, nicks larger

GR

1/7/05

4:50 PM

drizzling, overcast

orange/yellow coloring on face and neck darker, concentrated around and under chin and eyes

purple mottling under legs and torso/hips towards posterior

red/purple spotting on chest, beneath breasts, and around ankles darker and more extensive

green coloring on abdomen darker and more extensive

lower R arm darker, nick on arm darker

lips and fingertips darker, purple/orange coloring on bottoms of feet

GR

1/8/05

12:11 PM

partly cloudy

green color on abdomen darkening and extending

blue/purple spots on abdomen

spotted red areas beneath breasts and around ankles darker

red mottling on L leg and R leg darker

nicks and bruising on lower arms darker

orange coloring on bottoms of feet and face darker, concentrated on heels, under and around chin, under eyes

no flies in house, no maggots visible

GR

1/9/05

3:55 PM

sunny, few clouds

abdomen much fuller, blue spots on abdomen

green coloring on abdomen darker and more extensive

red, spotted coloring under breasts, on ankles, and on torso towards posterior darker

mottled red areas under thighs darker

lower arms darker red and tan

nicks in skin on lower arms and wrists darker and more numerous

no flies in house, no maggots

darker orange and red coloring under feet darker

dark orange coloring on face, darkest under chin and under eyes

lips dark red, mouth open

GR

1/10/05

5:15 PM

sunny, breezy

abdomen fuller

no flies in apartment

green coloring on abdomen darker and more extensive, blue spots also present on abdomen

fluid filled areas on back of L thigh, fluid brown/yellow

red mottled area on L thigh darker

spotted area beneath breast darker and more extensive

arms slightly bloated

orange coloring on heels and toes

lower arms darker, fingertips dark red

large dark red nicks on L knee, R ankle, and lower R arm

face drying out, orange color darker

lips dark red

GR

1/11/05

5:00 PM

raining, no breeze

few changes, no flies in apartment

orange coloring on bottoms of feet more extensive

mottled red coloring on back of L leg darker

fluid filled areas on back of L leg still present

green coloring on abdomen darker towards sides

darker coloring towards posterior of arms, lower R arm, and fingertips

nicks on L knee, R ankle, and lower R arm

face drying out, nose covered by white film

dark orange coloring around chin, nose, cheeks, and forehead

GR

1/12/05

4:35 PM

sunny, no breeze

no flies in apartment

abdomen more bloated, green coloring on abdomen darker and more extensive

spotted area under breasts darker

both forearms dark tan and purple

green coloring around eyes and over bridge of nose

orange coloring on cheeks, bottoms of feet, chin and forehead darker

fluid filled sacks (bullae) on hips and torso towards posterior

mottling on back of R thigh darker, fingertips and toes dry, wrinkled, and dark red

dark red scrapes on R forearm and wrist

GR

1/13/05

3:50 PM

partly cloudy, little breeze

spotted area on chest and beneath breasts more prominent

green coloring on abdomen darker and more extensive

fluid filled areas still present on R hip, L torso, and L arm towards posterior

blue spots on abdomen and upper arms

lower arms dark tan

bottoms of feet and face dark orange to red

almost entire face covered with color

green coloring over bridge of nose

fingers dark red, wrinkled, and dry

dark red scrapes on R forearm and L wrist larger

mouth open, lips dark red

GR

1/14/05

4:40 PM

partly cloudy, slight drizzle

face orange overall, darker areas on chin, forehead, and along cheek bones

nose, mouth, and chin red

green coloring across bridge of nose and down sides

mouth open, lips pulling back from teeth, lips dark red

eyes sunken and disintegrating

red spotted areas on chest and beneath breasts turning purple

green coloring on abdomen darker and more extensive, abdomen fuller

fluid filled areas beneath L arm and torso, no flies or maggots/egg masses

arms darker in color, scrapes on arms darker, more of fingers dark red, dry, and wrinkled

red/orange coloring over much of feet and ankles

GR

1/15/05

5:10 PM

partly sunny, little breeze

fluid filled areas still present

color on face evening out and darkening overall

nose red to brown with green coloring over bridge, along sides, and near tear ducts

mouth and chin darker red, lips black and pulling back from teeth more

forehead and cheeks darker, some orange coloring on neck

spotted areas beneath breasts and on chest darker, but covering less area

abdomen darker green and fuller with dark blue spots on lower abdomen

no flies/maggots/egg masses, arms darker with dark spots

fingers very dry and almost completely colored reddish brown

GR

1/16/05

5:05 PM

partly sunny, cold

abdomen fuller, green coloring darker, especially along sides

spotted areas on chest and beneath breasts fading

fluid filled areas still present on torso, L arm, and L hip towards posterior, fluid
brown/yellow

ankles and feet dark orange and red, toes dry and pulling back from toenails

forearms dark tan

face coloring slightly darker, but otherwise unchanged, lips pulled further back from teeth

no flies/maggots/egg masses

fingers orange to brown, very dry and wrinkled

GR

1/17/05

2:15 PM

partly sunny, windy

more green coloring around eyes and nose

face darker orange, darker red around mouth and nose

green coloring on abdomen darker, especially towards sides

mottled red coloring on back of legs, flesh dimpling

bottoms of feet dark orange and red

toes dry and wrinkled, pulling away from toenails

liquid in liquid filled areas darker, but still in same places

lower arms dark tan and red, fingers dark red, dry, and wrinkled

spotted areas on chest almost gone

no flies/maggots/egg masses

GR

1/18/05

3:35 PM

sunny, cold, light breeze

abdomen fuller, green coloring darker especially on the sides

face dark orange, mouth, chin, and nose dark red, sides of nose and near tear ducts green

some orange coloring on neck and upper chest

dark blue spots on abdomen darker, spots on chest fading and more irregular

fluid filled areas on arms and torso towards posterior larger

feet and hands dark red, toes and fingers dry and wrinkled, pulling away from nails

scrapes on forearms dark red to black

dark orange scrape on knee larger, orange coloring on other knee and ankles

red mottled area on back of L thigh darker

no flies/maggots/egg masses

GR

1/19/05

4:35 PM

partly sunny, cold

mottling red area on back of L thigh and hips darker

abdomen fuller, dark green coloring

face coloring same except expanding further down to neck and chest

bottoms of feet, hands, and ankles darker in color, color expanding

fluid filled areas larger

no flies/maggots/egg masses

knees more orange, especially L knee

scrapes on forearms darker, flesh pulling back from all nails

lips dark red and pulling back from teeth

spotted areas on chest almost gone

dark blue/green spots on abdomen larger

GR

1/20/05

4:40 PM

mostly sunny, little breeze

green coloring on abdomen much darker, especially lower abdomen with dark blue spots

fluid filled areas continuing to expand

no flies/maggots/egg masses

color on face darker, especially on chin, nose, and forehead

color on face continuing to expand down throat and on upper chest

green coloring around nose and eyes darker

orange/red coloring on ankles, bottoms of feet and hands darker

red mottling on back of L thigh and hip more prominent

knees have more orange color

forearms darker tan, scrapes darker

GR

1/21/05

5:05 PM

partly sunny, no breeze

green coloring on abdomen continuing to darken, especially lower abdomen, dark blue spots still present

a few stray red spots on chest

face darker, more areas of red and orange, orange coloring continuing to expand down neck

green coloring around nose and eyes fading

nose and mouth drying out, lips pulling back from teeth

orange/red coloring on bottoms of feet, hands, and knees darker and expanding

red mottling on back of L thigh and hip more prominent

no flies/maggots/egg masses, forearms darker tan, scrapes darker and larger

GR

1/22/05

3:16 PM

partly sunny, little breeze

increased areas of fluid, fluid yellow/brown

abdomen green coloring continuing to darken, blue spots darker and larger

bottoms of feet orange/red, also around ankles and on hands

face darker orange, red around mouth, nose, and forehead

green color darkening around eyes and nose

spotted areas on chest almost gone

forearms dark tan, scrapes darker

red mottling on L hip more prominent

red/orange coloring on neck continuing to expand to chest

no flies/maggots/egg masses

GR

1/23/05

4:15 PM

partly sunny, breezy

fluid filled areas still present along torso, less liquid in area along L arm

forearms continuing to darken, nails purple, finger red and dry, pulling back from nails

abdomen green coloring continuing to darken, especially on lower abdomen

spotted areas on chest almost gone

coloring on bottoms of feet and ankles, darker orange and red

red mottling still present on L hip and thigh towards posterior

face coloring unchanged, still expanding towards chest

no flies/maggots/egg masses

GR

1/24/05

4:54 PM

sunny, light breeze

green coloring on abdomen darker, especially on sides and lower abdomen

liquid almost gone from fluid-filled area on L arm

bullae on torso towards posterior larger

face coloring darker around mouth, chin, and nose

green coloring fading slightly on nose and around eyes

no flies/maggots/egg masses

red mottling on back of L hip and thigh less visible

breasts flattening

little spotting left on chest

feet and hands unchanged

GR

1/25/05

5:27 PM

mostly sunny, no breeze

green coloring on abdomen darkening, especially on lower R

orange/red coloring spreading and darkening on feet, ankles, fingers, and L knee

forearms darkening, large dark red scrapes around wrists and forearms

large areas of dark fluid-filled sacks on torso towards posterior, L arm and L thigh and hip

spotted areas on chest almost gone

no flies/maggots/egg masses

red mottled areas on L hip and back of thigh darker

white film around mouth, chin, and nose

eyes sunken, color on eyelids fading

dark red and orange color over face, green around nose and sides of face

GR

1/26/05

12:10 PM

sunny, breezy

color relatively unchanged except dark green areas on lower R abdomen

face almost completely orange, dark red areas around chin and nose, greenish around nose and eyes

feet orange/red except arches, also on ankles, fingers, and L knee

nails blue

bullae on backs of thighs, arms, and torso towards posterior

spotted areas on chest fading

large scraped areas on forearms

no flies in apartment

mouth open, eyes sunken, whites of eyes showing

GR

1/27/05

6:19 PM

sunny, breezy

two flies flying around apartment, not on body

two flies live on fly paper, ladybug on L leg near hip

coloring on face, feet/ankles and hands darkening and expanding slightly

bullae still present on thighs, torso, and upper arms towards posterior

dark blue spotted areas larger beneath breasts, more of abdomen darkening

GR

1/28/05

5:34 PM

partly cloudy, no breeze

few changes

orange coloring around knees expanding

no flies in apartment

one ladybug on window sill

bullae still present in same areas, liquid color unchanged

red mottling on back of L thigh still present

orange/red coloring on feet/ankles, L knee, face, and hands continuing to darken

green coloring on abdomen also darker still with blue spotted areas

some orange coloring on back of L and R knees

GR

1/29/05

3:41 PM

raining, no breeze

no flies in apartment

bullae still present in same places, appear unchanged

color basically unchanged, orange coloring expanding on knees and lower legs

abdomen darker green, especially in lower R quadrant

no maggots/egg masses

orange/red spots on L hip and upper chest

more blue spots on abdomen

lower arms darker

GR

1/30/05

5:09 PM

cloudy, drizzling

few color changes except expansion of orange color on lower legs and knees

coloring on face, feet, ankles, hands, and L knee darkening

skin drying out on extremities

bullae still present in same areas

abdomen's green coloring darker, dark blue spots on abdomen

more orange/red spots on chest and L hip

mouth open, teeth visible

no flies on body, no maggots/egg masses

GR

1/31/05

12:59 PM

overcast, little breeze

orange coloring on knees and lower legs expanding, darkening on feet and ankles

bullae still present in same areas

red splotchiness on back of L thigh

lower arms darker, marbling present

hands and face darker orange and red

nose and eyes greenish

mouth open, teeth visible

abdomen darker green, especially lower R quadrant

chest and L hip still have reddish spots

face drying out

eyes sunken, whites visible

no flies in apartment, no maggots/egg masses

GR

2/1/05

3:45 PM

overcast, raining

shoulders darker

abdomen darker green, especially on sides and lower R quadrant

color on face and ankles/feet darker orange

red spots on chest and L hip larger and more numerous

blue spots beneath breasts

green coloring on face stronger, especially around eyes, nose, and mouth

white film around nose and mouth

orange coloring expanding to upper chest

bullae on L arm towards posterior draining

no flies/maggots/egg masses

GR

2/2/05

4:50 PM

overcast, raining

bullae reducing slightly, liquid draining from bullae on torso and L arm towards posterior

lower legs darker in color, orange coloring spreading on lower legs, knees, feet, ankles,
and thighs

color on feet and ankles darker

no flies/maggots/egg masses

red spots on chest and L hip larger and more numerous

color on abdomen darker, more blue spots

orange color on face darker, expanding to upper chest, white film around mouth and nose

GR

2/3/05

4:14 PM

overcast, raining

bullae reducing further on back of L thigh and L hip, color of liquid lighter

bullae unchanged on R torso towards posterior and L armpit

orange color on face expanding to chest, on legs expanding further up legs

abdomen color unchanged

color on feet and face darker, skin drier

more red spots on chest and L hip

no flies/maggots/egg masses

white film around mouth and nose less prominent

red color on hands darker

GR

2/4/05

5:18 PM

partly sunny, breezy

few changes

no flies/maggots/egg masses

red mottling on L hip and thigh still present

bullae reducing further, except L armpit bulla has more liquid

color on abdomen fading slightly

color feet, ankles, face darker orange/red

red spots on L hip and chest more numerous

color on forearms darker, dark spots more prominent

orange color expanding on chest and legs

GR

2/5/05

12:07 PM

sunny, no breeze

few changes

color on abdomen continuing to fade

bullae flatter except on R torso towards posterior and L armpit

more red spots on chest and L hip

no flies/maggots/egg masses

orange color on chest and legs expanding

more dark brown and blue spots on forearms

mouth open wider, most of maxillary teeth visible

color on face, feet, and ankles darker red

white film still present over nose and mouth

GR

2/6/05

12:16 PM

sunny, breezy

bullae broken on torso towards posterior, liquid draining

larger bullae under armpit and L leg/hip

orange coloring on legs expanding and on chest

dark red, dry areas on feet, ankles, and around mouth

reddish and blue spots on forearms

larger red spots on L leg/hip and chest

red mottling on L leg

abdomen sinking slightly, line of ribs visible

green coloring fading slightly on abdomen

large dark blue and small purple spots present on abdomen

no flies/maggots/egg masses

GR

2/7/05

3:26 PM

overcast, no breeze

no flies, maggots, egg masses

green coloring on abdomen fading

orange coloring on legs and chest expanding

red spots on L hip and chest more numerous

skin very dry and dark red on ankles, feet, and face

liquid still draining from bullae on torso and L arm

more blue/red spots on lower arms

green coloring around nose and eyes darker

abdomen sinking

red coloring on hands expanding

GR

2/8/05

3:25 PM

overcast, breezy, drizzling

middle of abdomen greenish/yellow, rest of green coloring fading slightly

orange coloring continuing to expand on legs

flesh dimpling on L hip and leg

mouth open, lips dry, teeth visible

color on face and legs darkening

bullae under L armpit larger, rest reducing

red spots on chest and L hip more numerous

line of ribs more visible, no flies, maggots, egg masses

forearms darker, more blue spots on forearms

green coloring around eyes and nose

GR

2/9/05

2:32 PM

overcast, drizzling

red mottling lessened on L hip and leg

red spots larger and more numerous on chest and L hip

green coloring on abdomen fading except darker on lower R quadrant

dark red area under R arm around elbow

more orange coloring on legs, coloring darker

more red/blue spots on forearms

hands, feet, and ankles dark red and dry

bullae almost gone from torso and arms, still present under L leg, L armpit, and R torso

face very dark around eyes, nose, and mouth

no maggots, flies, egg masses

GR

2/10/05

1:44 PM

partly cloudy, cool

eyes slightly open, eyeballs decayed

dark green/purple coloring around eyes, mouth, and nose

forehead dark red, cheeks orange

orange coloring expanding on chest and legs

large bullae on R torso and under L armpit, liquid dark

liquid draining from L arm

red/orange coloring expanding on R arm

red mottling still present on L hip

red spots fading on chest, but more numerous on L hip

no flies/maggots/egg masses

forearms darkening, blue/red spots more numerous

GR

2/11/05

4:00 PM

sunny, breezy

no flies/egg masses/maggots

few changes

color on abdomen fading, except lower R quadrant

orange coloring on legs and chest expanding

ankles, hands, and feet darker red and very dry

red spots on L hip and chest more numerous and larger

forearms darker, red/blue spots larger, dark orange/red areas larger on R arm

white film over mouth and nose, mouth open wider, both sets of teeth visible

very dark purple and green coloring around eyes, nose, and mouth

GR

2/12/05

4:39 PM

partly sunny, breezy

red spots on L hip and chest more numerous and larger

color on abdomen fading slightly

orange color on legs and chest expanding

white mold and yellow color on L armpit, bulla under L armpit slightly smaller

color darker on ankles, calves, and feet, less normal skin color visible

small bullae still present on torso towards posterior

dried, crusty areas on L arm towards posterior

orange/red coloring on R arm around elbow darker

no flies/maggots/egg masses

more white film over face

GR

2/13/05

2:06 PM

overcast, raining

forearms darker, red/blue spots on forearms larger and darker

green coloring on abdomen darker on L side and lower R quadrant

blue/red spots on abdomen

orange coloring on legs expanding and darkening

red spots on L hip and chest larger and more numerous

white mold and yellow coloring expanding on L armpit

feet, ankles, lower legs, and hands dark red and brown

no flies/maggots/egg masses

face very dark around mouth, nose, eyes, white film more prominent

GR

2/14/05

12:32 PM

overcast, raining

red spots on L hip and chest more numerous and larger

orange coloring on legs and around R elbow expanding and darker

white mold and yellow coloring expanding on L armpit

lower arms darker with darker red/blue spots, spots more numerous

abdomen color fading

no flies/maggots/egg masses

lips pulling back further from teeth

white film and dark purple/green coloring around eyes, nose, and mouth

eyes sunken, eyeballs gone

skin slack on R side of head

GR

2/15/05

3:40 PM

mostly cloudy, windy

red spots on L hip larger and more numerous

abdomen deflating slightly, line of ribs more visible

most of color on abdomen lightening except on sides and lower R quadrant

face color darker especially around mouth, nose, and eyes, green coloring around same areas more prominent

bullae much smaller, liquid darker

lower arm darker, blue/red spots larger

orange coloring on chest, R elbow, and legs expanding, color on feet much darker

no insect activity

red mottling still present on L hip and thigh

GR

2/16/05

4:30 PM

partly cloudy, breezy

no flies/maggots/egg masses

liquid continuing to spread from broken bullae on both sides

white mold and yellow coloring spreading over L armpit

orange/red color on legs, chest, R elbow, and L hip spreading and darkening

color on abdomen unchanged

white mold spots more numerous on arms

GR

2/17/05

5:44 PM

sunny

red spots on L hip and chest more numerous, larger, and darker

color on abdomen lightening in some areas, darkening on lower R quadrant and sides

orange coloring on legs and chest spreading

red, raised areas on feet, ankles, and L knee

yellow coloring and white mold covering L armpit

bullae broken, liquid released except on R side, L hip, and L armpit towards posterior

no flies, many ladybugs in apartment, one on body

orange coloring on R elbow expanding

white mold spots present on arms

GR

2/18/05

5:56 PM

sunny

few changes

red spots on chest and L hip more numerous, larger, and darker

lower arms have large dark red and blue spots

orange coloring on chest, legs, and around R elbow expanding

white mold spots all over R arm

white film over mouth, nose, and eyes

dark green tinge around nose

lips dark purple

color on face darker overall

ladybug still present on abdomen

abdomen color unchanged, ribs visible beneath skin

dark purple spots present on chest and under breasts

GR

2/19/05

5:43 PM

mostly cloudy, no breeze

lower arms and hands darker in color, color uneven

yellow color and white mold in L armpit

red spots on L hip and chest larger, more numerous, and darker

color on legs and chest darker and expanding

red mottling on L hip

bullae unchanged, liquid very dark

green coloring around eyes, nose, and mouth

orange coloring on face darker

no flies, maggots, or egg masses

white spots on R arm expanding, breaks in skin

GR

2/20/05

4:20 PM

overcast, raining heavily

crusted areas where bullae have drained

orange/red coloring fading slightly on legs in some areas, darkening in other areas

red spots on L hip blending together, small amount of marbling visible

large dark red and purple spots visible on forearms, hands very dark red/brown

ribs more visible on lower chest

abdomen color unchanged

bullae on L thigh and L armpit towards posterior still present

white spots on R arm more numerous, color on L armpit darkening to brown

no flies, maggots, or egg masses

GR

2/21/05

4:52 PM

mostly cloudy, heavy rain earlier

red spots on L hip larger, more numerous, and darker, blending together

no flies, maggots, egg masses

orange coloring on legs, chest, and R arm spreading and darkening

rib line more visible on chest

yellow/brown coloring under L armpit darker, white mold still present

bullae still present under L armpit, R torso, and L leg towards posterior

drained bullae and crusted skin on L side of torso and L arm towards posterior

white mold spots covering R arm

abdomen color lightening except R lower quadrant

GR

2/22/05

6:19 PM

sunny, breezy

few changes

spots on chest and L hip unchanged

forearms darker in color, larger and darker red and blue spots

fingers dark red, feet and ankles very dry and dark red

green coloring around nose, mouth, and eyes more gray and expanding

white film around nose and mouth more prominent

lips disintegrating slightly, teeth more visible

eyes disintegrated and sunken

white mold around feet and ankles

color on abdomen continuing to lighten

GR

2/23/05

6:34 PM

partly cloudy, no breeze

abdomen color darkening on L side towards posterior, lightening elsewhere

skin dry and flaking on knees, white mold expanding on feet and ankles

red mottling on L hip still present, bullae on L hip smaller, some liquid draining

no flies, maggots, or egg masses, one ladybug on torso

forearms darker, orange coloring around R elbow expanding

white mold on R arm expanding, face color continuing to darken

bullae under L armpit larger, filled with dark liquid

GR

2/24/05

1:49 PM

partly cloudy

color on abdomen darkening on L side, lightening elsewhere

crusted sin on L arm and torso towards posterior where bullae are draining

both arms darkening, white mold spots on R arm expanding

abdomen deflating, orange color on chest and legs expanding

red spots on L hip larger and more numerous, blending together

bullae under L armpit larger, filled with dark liquid

no flies, maggots, or egg masses

teeth more visible, face color darkening

GR

2/25/05

5:50 PM

mostly sunny, breezy

bullae on L side and L arm still draining and crusty

color on R side of torso lighter, darker on L side of torso

R arm much darker, especially around elbow

forearms dark blue and red, white spots on R arm larger and more numerous

red spots on L hip larger and more numerous

small amount of marbling on L hip

orange coloring on chest expanding, color darkening on legs

green/purple coloring around mouth, nose, and eyes more prominent

white mold on L armpit larger

GR

2/26/05

4:44 PM

sunny, breezy

few changes bullae under L armpit larger, filled with dark liquid

color on face and legs unchanged

orange coloring expanding on chest

white mold spot and yellow coloring under L armpit larger

larger and more numerous red spots on L hip, marbling more obvious

more red/purple spots on torso, white mold expanding on R arm

color on abdomen darkening, rib line more visible on upper abdomen

feet dry and cracked, white mold on bottom

no flies/maggots/egg masses, ladybug still on abdomen

GR

2/27/05

3:29 PM

overcast, breezy

abdomen color darkening, especially on L side

leg color darkening, orange color on chest expanding

red color expanding on L arm

white mold spots on R arm larger and more numerous

red spots on torso and L hip larger and more numerous, more marbling visible

white mold and yellow coloring around L armpit larger

green and purple coloring on face darker and more prominent

no flies/maggots/egg masses

GR

2/28/05

6:26 PM

raining, overcast, windy

bullae, yellow coloring, and white mold under L armpit larger

no flies/maggots/egg masses

red spots blended together on L hip, marbling more obvious

bullae under L leg, torso, and L arm draining, crusty skin

orange coloring on chest expanding

abdomen color darkening on sides of torso

white mold spots expanding on R arm

rib line more prominent on upper abdomen

forearms darkening in color

mouth open wider

GR

3/1/05

4:30 PM

snowing, windy, cold

dark green area on sides of abdomen, reddish further towards posterior

orange color spreading over chest

white mold on L armpit and R arm expanding

red spots on L hip larger and more numerous, blending together

R arm covered in orange, red, and purple coloring

forearms and L elbow dark red and purple

bullae almost completely drained on L side, still present on R side of torso

no maggots/egg masses/flies

GR

3/2/05

12:19 PM

sunny, cold, no breeze

abdomen sunken further, rib line more visible

red coloring over L hip, some marbling more prominent

abdomen coloring darker green, dark blue/green large spots on lower abdomen

arms and legs darker orange/red in color

white mold expanding on R arm, one spot on L chest, and L armpit

yellow coloring expanding on L armpit

flesh dimpling on L hip

bullae under L armpit still present, other bullae drained

orange coloring on chest expanding

no flies/maggots/egg masses

GR

3/3/05

5:10 PM

mostly sunny, little breeze

white mold expanding on feet, L armpit, R arm, and L chest

arms and legs continuing to darken in color

abdomen color darker green, especially lower R quadrant

red spots on L hip completely blended together, slight marbling visible

bullae under L armpit smaller

no flies, maggots, egg masses

orange coloring on R arm, legs, and chest expanding

more red/purple spots on chest

green coloring more prominent on nose

GR

3/4/05

10:48 AM

mostly sunny, cool, strong breeze

marbling more visible on L hip and legs

abdomen coloring darkening on sides and lower right abdomen

bullae under L armpit smaller, white mold and yellow/orange coloring expanding

white mold on R arm, feet, and L chest more prominent

orange color on legs and R arm darkening, red/blue spots on forearms darker

mouth open wider, teeth more visible, orange color on face darker

no flies/maggots/egg masses

GR

3/5/05

8:35 AM

mostly sunny, strong breeze

bullae under L armpit, on R torso, and on R leg small, but still filled with black fluid

marbling more prominent on L hip and leg

mold spreading on feet, R arm, L armpit, and L chest

purple spots more numerous on torso

sides of torso and lower R quadrant of abdomen darker in color

orange coloring expanding on chest

forearms darker in color, especially R

red spots on L hip blended together

orange/yellow color on L armpit expanding

GR

3/6/05

12:36 PM

mostly sunny, breezy

bullae still present in some areas

orange coloring expanding on L armpit, legs, L hip, and chest

white mold still expanding on L armpit, feet, and R arm

lower legs and feet dry and dark red

red/blue dark spots on forearms expanding and darkening

marbling more visible on L leg and hip

crusted skin where bullae drained

skin around mouth, nose, and eyes dark purple and green, white film over face

orange color on face darker

teeth more visible, upper lip disintegrating

no maggots/flies/egg masses

GR

3/7/05

11:05 AM

overcast, breezy

same trends

marbling more prominent on L hip and leg

bullae still present on R leg, R side of torso, and L armpit

forearm color darkening

orange color expanding on chest, L armpit, L hip, legs, and R arm

white mold expanding on R arm, L chest, L armpit, and feet

abdomen color darker on sides of torso and lower R quadrant

reddish color on torso towards posterior

face colors darker, teeth more visible

no maggot/egg masses/flies

GR

3/8/05

3:45 PM

partly sunny, breezy

bullae beneath L armpit larger, orange coloring and white mold expanding

orange spots on L hip almost completely blended together

marbling on L hip and legs more prominent

flesh dimpling on L hip, red mottling lessened

forearms, especially R, very dark in color

white mold spots on R arm, L chest, and feet larger and more numerous

color on abdomen slightly darkened, especially R lower quadrant

bullae broken on torso and legs, skin crusted

nose, eyes, and mouth gray/green

mouth open

no flies/maggots/egg masses

GR

3/9/05

5:22 PM

partly cloudy, breezy

bullae beneath L armpit smaller, starting to drain, also on R side of torso towards posterior

R arm completely orange, forearms darker red and black

white mold expanding on L armpit, feet, and R arm

marbling on L hip and legs lessened slightly

lower legs and feet dry and dark red

color on abdomen faded slightly

mouth open wider, white film over face more prominent

no flies/maggots/egg masses

flesh dimpling more on L hip

GR

3/10/05

5:21 PM

overcast, breezy

bullae beneath L armpit continuing to drain

white mold on L chest, R arm, feet, and L armpit expanding

abdomen color faded slightly except darkened along sides of torso towards posterior

mouth open wider, anterior maxillary teeth more visible

orange coloring on legs, L hip, arms, and chest spreading

no flies/maggots/egg masses

face color darkened, white film more prominent

red spots on chest more numerous

GR

3/11/05

12:39 PM

breezy, overcast, drizzling

mouth slightly closed, face color darker

around mouth, nose, and eyes dark purple and green with white film

abdomen color darker especially along sides of torso towards posterior and lower R quadrant

orange coloring expanding on chest, arms, L hip, and legs

marbling more prominent on L hip

white mold expanding on L armpit, R arm, L chest, and feet

bullae under L armpit and R side of torso draining

no flies/maggots/egg masses

GR

3/12/05

3:20 PM

partly cloudy, breezy

bullae beneath L armpit and R torso towards posterior broken and draining

color darker on arms, face, legs, and L hip

marbling more prominent on legs and L hip

abdomen color darker especially on sides and spots on lower abdomen

white mold spots expanding on R arm, feet, and L armpit

dry, crusted skin on torso towards posterior, L arm, and ankles/feet

no flies/maggots/egg masses

mouth open wider, maxillary teeth more visible

GR

3/13/05

4:55 PM

overcast, raining, little breeze

orange color expanding on chest, arms, legs, and L hip, marbling more prominent on L hip

face color darker, purple and green coloring around nose, eyes, and mouth expanding

white mold on R arm, L armpit, and feet expanding

eyes disintegrated and sunken

abdomen flattening

green coloring darker in spots and on sides

forearms and lower legs darker and drier

bullae under L armpit and R torso towards posterior

no flies/maggots/egg masses, a few ladybugs around body

GR

3/14/05

5:35 PM

overcast, breezy

orange coloring on chest, legs, L hip, and arms expanding

marbling more prominent on L hip and thighs

forearms, feet, lower legs, and ankles dark red and purple and dry

white mold spreading on L armpit, R arm, L chest, and feet

green color on abdomen lighter except dark spots and on sides

purple and green coloring around mouth, nose, and eyes more prominent

mouth open wider, maxillary teeth more visible, no flies/maggots/egg masses

GR

3/15/05

4:28 PM

mostly cloudy, drizzling, light breeze

bullae continuing to drain beneath L armpit and R side of torso

red spots on L hip and chest more numerous and larger, blending together on L hip

marbling more prominent on L thigh and hip

white mold spreading on L armpit, feet, R arm, and L chest

flesh dimpling on L thigh

rib outlines more visible beneath skin

hair mat starting to slough off on L side

white film more prominent over face

no flies/maggots/egg masses

GR

3/16/05

4:45 PM

overcast, raining, breezy

bullae draining, some liquid left in bulla under L armpit

crusted skin around L torso and L arm towards posterior

marbling more distinct on L hip

white mold under L armpit, L chest, and R arm spreading

orange color on chest, L arm, and L hip continuing to spread

color of abdomen darker, dark green/gray spots on lower abdomen

rib line more visible beneath skin

fairly larger maggots active in mouth, only visible maggot activity

cheeks still sunken slightly, face color darker

GR

3/17/05

6:02 PM

partly cloudy

abdomen gray/green in color, dark gray spots on lower abdomen

orange color expanding on legs, arms, and chest

breasts flattened

white mold expanding on L chest, under L armpit, and on R arm

lower legs, feet, and arms desiccated

veins visible on L hip, flesh dimpling

skin slippage on shoulders

white film over nose, mouth, and eyes

no visible maggot activity

only bulla under L armpit still present, draining, fluid black

red spots on chest

no flies in apartment

GR

3/18/05

5:24 PM

mostly sunny, breezy

bulla under L armpit continuing to drain, liquid very dark

skin crusted on arms towards posterior

flesh continuing to dimple on hips and abdomen

orange color continuing to expand

white mold expanding on chest, arms, L armpit, and feet

no visible maggot activity

mouth open, lips pulled back from teeth

no flies in apartment

one ladybug on chest, two on blankets

veins more visible on L hip

color faded slightly on abdomen

GR

3/19/05

5:35 PM

partly cloudy, windy

few changes

no flies in apartment, no visible maggot activity

white mold spreading, especially across arms

abdomen color darkened on R side, lighter elsewhere except for 3 spots

flesh dimpling further on L hip, veins still visible

orange color spreading on chest, legs, and arms

bulla under L armpit completely drained, skin dry and crusty

white film more prominent over face

GR

3/20/05

6:16 PM

sunny, breezy

white mold beneath L armpit expanding

all bullae drained, skin crusted and dry

white mold expanding in spots on R arm and chest

orange coloring expanding on legs, arms, and L hip

green coloring on torso darker especially in spots on abdomen

breasts flattened

flesh dimpling on hips

a few pupae cases on blanket around body, large maggot near L eye

dried skin on lower legs and feet

small maggots visible in nose

cheeks sunken, green/purple/red on face

skin slippage on shoulder

GR

3/21/05

6:07 PM

sunny, breezy

few changes

abdomen continuing to deflate

green coloring on abdomen slightly lighter

skin slippage continuing on shoulders and L upper arm

flesh continuing to dimple on L hip

mold spots on chest, feet, and R arm expanding

no visible maggot activity

face darker red and purple, green tinge still around nose

large maggot and pupae cases next to L arm

skin very dry and wrinkled on hands, feet, and lower legs

GR

3/22/05

11:34 AM

partly cloudy, little breeze

skin slippage expanding on L arm and shoulders

flesh dimpling further on L hip

white mold lessened under L armpit, but expanding beneath feet, on chest, and on R arm

large orange spot on L hip expanding, marbling present in orange spot

abdomen coloring lightened except on R side (large green dark spot)

forearms and hands dry and dark purple/brown

a few flies in apartment, no visible maggot activity

cheeks sunken further, face color darker

GR

3/23/05

2:46 PM

mostly cloudy, windy

skin slippage moving towards fingers of L arm

marbling still present on L hip in expanding orange spot

white mold spots increasing on L side of chest, R arm, and beneath feet

flesh pulled back from finger- and toenails

line of ribs visible on lower chest beneath skin, green coloring on abdomen fading

no visible maggot activity

small amount of dark red liquid from nose

face color darker, more green around nose

GR

Field Notes for 31-05

5/12/05

10:59 AM

sunny, light breeze

large blue/purple spot on R hip, smaller spots also present

red/blue coloring around wrists and hands

body yellow in color overall

white film over chest

yellow/orange coloring on L thigh and around genital area

small bulla on L inner thigh

white long scar over R hip

white circular scar above L knee

white film around genital area

small blue spots on lower R abdomen and both sides of chest

darker yellow coloring on chest

red areas on cheeks and neck

white film around mouth

GR

5/13/05

11:11 AM

mostly sunny, breezy

white film on chest and under arms

yellow coloring darker towards posterior

blue/purple coloring on R hip and wrists expanding

red coloring on cheeks and neck expanding, now also under armpits and inside elbow

darker yellow coloring around genital area and sides of torso

orange coloring on chest darker, ladybug on R side of upper abdomen

abdomen slightly bloated, multiple blue spots on abdomen

tongue swollen, mouth slightly open, ears and sides of face bright red

GR

5/14/05

3:49 PM

drizzling, overcast, breezy

bloating started all over body

blue/purple coloring and purple spots expanding over R hip and wrists

R hand purple, white film more prominent on chest in armpits and around genital area

red coloring expanding on face, neck, ears, and sides of head

orange coloring expanding on chest, some green/yellow areas

bulla on L inner thigh unchanged, purple spots expanding over L thigh

fingers dark orange at tips, dark band of skin around L thigh

more blue spots on abdomen, mouth open wider, lips dark red

GR

5/15/05

3:49 PM

mostly cloudy, strong breeze

white film on chest more prominent, also in armpits and genital area

red coloring on face darker and expanding, covering cheeks, ears, and sides of face

purple coloring and spots expanding on R hip, wrists, and hands

bullae beginning on sides of torso

orange coloring and green/red spots on shoulders and upper chest

blue spots expanding on abdomen

mouth open wider, dark red crusted areas around chin and cheeks

dark red lines along eyelids and lips

purple spots expanding over thighs

very small bulla with yellow liquid on L thigh

line of dark skin still present around L thigh

GR

5/16/05

9:04 AM

mostly sunny, breezy

bullae (3) visible on R side of torso, liquid dark yellow

purple spots spreading on R hip, wrists, hands, and thighs

yellow coloring on body towards posterior, also on bottoms of feet

fingertips darker orange/brown

greenish tinge around neck and upper chest

mouth open wider, tongue more swollen

red coloring continuing to expand over cheeks, chin, and sides of face

purple and red spots over shoulders and upper chest

lips thin and dark red, no maggots/egg masses/flies

GR

5/17/05

5:29 PM

sunny, no breeze

bullae on R torso growing larger, color darker yellow and orange

bullae starting in armpits

abdomen fuller, color of torso light red

purple spots expanding on R hip and wrists

blue spots on lower R abdomen larger and more numerous

bulla on inner L thigh smaller

white film more prominent on chest, red/orange color expanding on chest

green coloring darker on upper chest and neck

dark purple and red spots on shoulders and upper chest

gray film around genital area, yellow coloring along body towards posterior

GR

5/18/05

12:35 PM

partly cloudy, no breeze

bullae under armpits and on R side of torso much larger, liquid darkening

large blue spot on lower R abdomen, other blue spots fading

purple spots increasing in size and number on R hip, L thigh/leg, and wrists

bullae on inner L thigh drained

white film on chest more prominent and spreading over L shoulder

bullae on upper arms towards posterior, liquid brown in color

bloating increased all over body

dark red/purple coloring along hairline all around face and on ears

red/orange coloring on cheeks, chin, and chest

GR

5/19/05

5:36 PM

partly cloudy, breezy

bullae on R side of torso and R armpit connected, bullae on torso have lighter colored liquid

purple coloring spreading along torso and hips

green coloring spreading and darker on upper chest and neck

gray film spreading around genital area

white film more prominent around breasts

orange and green coloring spreading over upper chest

bloating increased

cheeks sunken, orange/red coloring on face darker

red/purple coloring around hairline darker

GR

5/20/05

5:25 PM

raining, overcast, breezy

dark orange/red coloring spreading and darker around mouth, chin, cheeks, and nose

white mold on tongue, eyes and cheeks sunken

orange/green coloring darker on chest and neck

yellow coloring more prominent and spreading on torso towards posterior and inner thighs

bullae on torso drained, remaining liquid light orange

bullae under arms and in armpits larger, liquid dark brown

purple spots and coloring spreading on R hip, wrists, hands, and forearms

no flies/maggots/egg masses

gray/white film over genital area and chest more prominent

hair mat beginning to slough off

GR

5/21/05

2:36 PM

partly sunny, little breeze

white mold in mouth expanding

white mold spots on R side of face

orange coloring spreading over chest and face

bullae under arms and in armpits larger

bullae on torso towards posterior drained

gray/white film around genital area darker and more prominent

orange coloring around navel, abdomen more bloated

skin cracking on face

dark green/brown spots on shoulders and face towards posterior

blue spots on abdomen same size and darkness

yellow coloring on inner thighs spreading and darker

fingertips and toes dark red

GR

5/22/05

3:49 PM

partly sunny, little breeze

bright red spots around wrists, purple coloring and spots expanding on R hips, arms, and hands

color in bullae under arms and in armpits lighter, bullae larger

coloring around navel and inner thighs darker and spreading

mouth open wider, white film on chest more prominent

new bullae forming on torso towards posterior, liquid orange

green coloring on neck, along hairline, and chest darker and spreading

white mold covering tongue, green mold spots as well

white mold on sides of face, liquid draining onto blankets

GR

5/23/05

5:01 PM

partly cloudy, breezy

second set of bullae starting on torso towards posterior

bullae under arms and in armpits draining, liquid very dark

white film on chest and gray film around genital area more prominent

red/purple spots around wrists blending together

orange/green coloring on neck, chest, and lower face more prominent

mouth open wider, mold spots at corners of mouth, R side of face towards posterior, and covering tongue

nose dark red, marbling present on upper chest, purple spots on R hip fading slightly

yellow coloring on body towards posterior and bottoms of feet more prominent

toes and fingers dark brown

GR

5/24/05

2:28 PM

partly sunny, strong breeze

mold on face growing, especially around R ear and in mouth

yellow coloring on inner thighs, feet, and around navel darker

green and orange coloring darker on chest, neck, and face, also spreading down arms

bullae under arms and in armpits draining

second set of bullae on torso towards posterior growing

white/gray film on genital area and chest more prominent

some orange discoloration on upper abdomen

bullae present and skin very dark on shoulders

marbling more prominent on chest, white film spreading over shoulders and upper arms

fingers, toes, and bottoms of feet continuing to darken

mouth open wider, purple coloring on hands darker

GR

5/25/05

11:14 AM

mostly sunny, breezy

mold on sides of face and mouth growing

orange to dark red color spreading over face, dark purple/brown color along hairline
darker

green/orange color on chest and neck darker, spreading down arms

wrists almost covered in red coloring

bullae on torso towards posterior larger, liquid darker

bullae in armpits and arms towards posterior draining

yellow/orange coloring around navel and on thighs towards posterior darker

purple spots and large dot darker, orange circular marks on torso

white film still present in genital area and on chest

no insects, marbling still present on chest

GR

5/26/05

3:58 PM

partly cloudy, little breeze

mold spots on R ear, R side of face, mouth, and nose, still covering tongue

red coloring covering lower half of face and nose, small spots on upper face

white film on chest and armpits more prominent, also in genital area

bullae all draining, liquid color dark, line of ribs visible beneath skin

chest and neck color darker, orange color on navel and thighs darker

no insects, hands purple, wrists darker red, purple spots and small spot of mold on L
thigh, marbling more prominent on chest

fingers and toes very dry and dark red/brown, blue spots on abdomen lighter

GR

5/27/05

11:27 AM

mostly cloudy, little breeze

neck slightly bloated, abdomen bloating further

mouth open wide, mold over tongue and sides of mouth

color darkening over entire body

mold on sides of face white and light green

bullae under shoulders draining, soaking blankets

mold growing on bullae on torso towards posterior

marbling more prominent on chest

white film over chest, in armpits, ad genital area more prominent

toes and fingers continuing to dry out

no insects or maggot activity

GR

5/28/05

2:14 PM

overcast, breezy

hair mat sloughing off, small piece of hair mat on R side of head

mold on face and torso towards posterior growing

color darkening overall, orange color on knees

head tilted to the R and back

tongue disintegrating, still covered in mold

eyes sunken, L eye slightly open

blood pooled in mouth

no insect/maggot activity visible

fingers and toes dark orange to brown and very dry

bullae continuing to drain, blankets wetter

GR

5/29/05

3:01 PM

sunny, no breeze

mold expanding on face, torso, and armpits

gray/white film still present over genital area and chest

bullae draining further

head tilted further to the R and back

mouth still open

face, chest, neck, and shoulders darker orange/green/red

marbling still present on chest only

arms have large red spots and light purple color

orange coloring between legs, on knees, and around navel

circular marks on torso more prominent

no insects/maggots visible, wrists and hands darker red/purple

GR

5/30/05

3:02 PM

mostly sunny, breezy

color darkening overall

white/gray film on genital area and chest more prominent

mold spots growing on face, mouth, and torso towards posterior

new mold spots on arms towards posterior

larger amount of blood pooled in mouth

mold spots on blanket next to head on L

marbling still present on chest

no insects/maggots visible

GR

5/31/05

5:12 PM

partly sunny, little breeze

mold expanding on face, torso, and arms, colors cream, white, and green

colors darkening overall, white/gray films still present

hair mat continuing to slough off

fingers and toes dark brown and dry

eyes sunken, blankets becoming more soaked

no insects/maggots visible

GR

6/1/05

3:40 PM

overcast, drizzling, light breeze

skin colors darkening over entire body, mold on face, arms, and neck spreading

small amount of mold visible on legs and hips/thighs towards posterior

no insects/maggots visible, white/gray film still present on chest and genital area

tongue disintegrating, less mold on tongue

skin slippage starting on neck, chest, and arms

fingers and toes dark brown and desiccated

GR

6/2/05

11:50 AM

raining, overcast, light breeze

mold starting to grow between legs, on hips/thighs towards posterior, and on L eye

colors darkening overall, mold on torso, face, and arms spreading

tongue breaking down in mouth, less mold visible

skin slippage beginning on neck, chest, and arms

white film still present on chest and genital area, no maggot activity, no insects

GR

6/3/05

10:39 AM

raining, overcast, light breeze
liquid soaking blankets yellow and brown in color
mold spots spreading further
new mold spots on L thigh, neck, and R eye
skin slippage continuing on neck, chest, arms, and face
lips sunken and dry
small amount of liquid still visible in mouth
new bulla on R arm towards posterior, rest of bullae drained
colors darkening and spreading overall
no maggots
a few flies present in room
GR

6/4/05

5:10 PM

light breeze, partly sunny
mold spreading rapidly over face, torso towards posterior, and arms
mold spots on thighs and abdomen growing
colors darkening on face, torso, and arms
liquid soaking blankets darkening
toes and fingers continuing to dry and darken
skin slippage continuing and spreading, especially on face
upper lip swollen and cracked
marbling still visible on chest
a few flies present in room, no maggots visible
hair mat continuing to slough off
bulla on R arm draining
GR

6/5/05

6:51 PM

sunny, no breeze
abdomen swelling again
mold continuing to spread especially on face and torso
color darkening and spreading overall, feet and knees darker orange
liquid spreading on blankets, more mold also visible on blankets
all bullae drained, marbling still visible on chest only
maggots visible on face, mainly in facial openings
a few pupae cases present on face and blanket
skin slippage continuing on face and upper torso
many flies present in room, upper lip still swollen and dry, lower lip sunken
GR

6/6/05

3:13 PM

drizzling, overcast, breezy

maggot activity visible on face and in liquid around body

mold still spreading quickly over arms, torso, legs, and face

color darkening and spreading overall

dark brown material around head and on L side of body on blankets

cheeks sunken

pupae cases scattered across face and blanket

white film still present on chest, neck, and genital area

breasts flattening

abdomen bloating again

hair mat continuing to slough off

many flies around room, a few dead on floor

GR

6/7/05

5:37 PM

sunny, no breeze

skin slippage over almost entire body, abdomen and thighs in particular

major increase in amount of liquid from body

larger amount of dark brown material around head and L side

mold continuing to spread over body, abdomen much more bloated

many flies around room, more dead on floor

maggots in liquid, face, torso towards posterior, and in mouth

large number of pupae cases on eyes and blanket

foam coming from nose, lips starting to disintegrate

GR

6/8/05

3:04 PM

overcast, little breeze

abdomen very bloated

skin slippage spreading across entire body

mold spots spreading further over body

color darkening overall

marbling extending over legs and abdomen, light blue veins visible

liquid spreading from body, yellow/brown in color

brown material around head increasing

pupae cases all over face and blankets

maggots active in liquid around body, on face, and in genital area

many flies flying around room and dead on floor

no flies on body, toes and fingers dryer and darker in color

GR

6/9/05

10:35 AM

mostly cloudy, little breeze

skin slippage increasing across entire body

mold also increasing

color darkening overall, dark blue spots on lower R abdomen larger

maggot activity increasing in liquid around body and on face

pupae cases more numerous around eyes and on blankets

breasts bloating

marbling still lightly present on chest

large maggots crawling across floor

GR

6/10/05

4:15 PM

overcast, drizzling, no breeze

mold beginning to cover entire body

maggot activity increasing on face and in liquid

marbling still present

skin slippage continuing all over body

color darkening overall

pupae cases more numerous on face, blankets, starting to be visible on abdomen

more liquid still spreading from body

abdomen and breasts still bloated

brown sticky material around head and to L of body increasing

flies flying around room and dead on floor

GR

6/11/05

4:03 PM

partly cloudy, breezy

mold increasing over entire body

maggot activity increasing on face and in liquid

face color darkening and slightly distorted

marbling barely visible on chest

pupae cases increasing in number on blankets, face, and abdomen

a few flies on blankets, many flying around room and dead on floor

skin slippage increasing over entire body

abdomen and breast more bloated

tan liquid spreading from body and soaking blankets

GR

6/12/05

3:26 PM

overcast, breezy

mold spreading over entire body

almost entire body covered in mold

abdomen and breasts still very bloated

large and small pupae cases surrounding body on blankets, on face, and on abdomen

marbling still barely visible on chest

two flies present on blankets, many flying around room and dead on floor

skin slippage increasing over entire body

liquid still spreading from body

GR

6/13/05

4:30 PM

overcast, drizzling, no breeze

mold continuing to spread over entire body

bloating of breasts subsiding slightly

larger number of pupae cases around body, large and small cases

colors darkening overall

maggot activity increasing in liquid and on face and neck

face turning black and breaking down

marbling still lightly visible on chest

pupae cases around navel

one fly present on body, many flies around room and dead on floor

skin slippage continuing to increase over entire body

GR

6/14/05

5:30 PM

overcast, raining, breezy

mold covering entire body, mostly white in color

large amounts of liquid still spreading from body, tan in color

mold also expanding over blanket

pupae cases over entire blanket, face, and around navel

maggot activity increasing on face, blankets, and torso towards posterior

face blackened, shiny, and distorted

black material increasing to L of head and body

dark blue spots increasing in size on hips and abdomen

bloat still present on abdomen and breasts

many flies in house, alive and dead

skin slippage on torso, maggots visible beneath skin

GR

6/15/05

10:27 AM

partly sunny, little breeze

maggot activity increased on face, blankets, torso towards posterior, and genital area

mold still covering entire body

pupae case numbers increasing, larger cases toward lower half of body on blanket

colors darkening overall

abdomen and breasts bloated, arms and legs not visibly bloated

liquid and dark material still spreading from body

face still black, shiny, bloated, and disintegrating

one fly on body

many flies and gnats around room and dead on floor

toes and fingers desiccated and dark red

skin slippage on torso towards posterior increasing, maggots visible beneath skin

GR

6/16/05

5:39 PM

partly cloudy, little breeze

maggot activity increasing on face, torso, and blankets

mold covering body, mostly white in color, new yellow spots on shoulders

bloat deflating slightly

pupae cases still covering blanket, face, and abdomen

R side of face black and shiny, but barely visible due to maggot infestation

liquid soaking blankets

flies on blanket, but not on body

many flies and gnats flying around room and dead on floor

skin slippage on torso towards posterior, maggots visible beneath skin

GR

6/17/05

10:00 AM

sunny, no breeze

maggot activity subsiding slightly on face, increasing on torso towards posterior and genital area

white mold still covering body, yellow mold spots on shoulders larger

more pupae cases covering blankets, face, and abdomen

skin slippage increasing on torso towards posterior, maggots visible beneath skin

face and nose distorted

hair mat continuing to slough off

gnats and flies flying around body and dead on floor

a few flies and gnats on blankets, none on body

GR

6/18/05

2:40 PM

partly sunny, little breeze

maggot activity decreasing on face, still increasing on torso towards posterior, genital area, and in liquid on blankets

more tan liquid and dark brown to black material spreading from body

white mold covering entire body, yellow mold spots on shoulders unchanged

skin color darkening overall, large dark blue spots on abdomen and hips

skin slippage increasing on torso towards posterior and starting on arms towards posterior, maggots visible beneath skin

face still black and shiny

larger number of pupae cases on blankets, face, and abdomen

GR

6/19/05

3:05 PM

sunny, breezy

maggot activity on face continuing to decrease, increasing on torso towards posterior, genital area, and in liquid on blankets

tan liquid spreading from body appears foamy

number of pupae cases increasing on blankets, face, and abdomen

skin slippage increasing on torso and arms towards posterior, maggots visible beneath skin

gray film visible on chest, neck, and face, half of face still black

colors on body darkening overall, dark blue spots on hips and abdomen increasing in size

a few flies on blankets, many flies and gnats flying around room and dead on floor

GR

6/20/05

4:15 PM

overcast, little breeze

number of pupae case on blankets, face, and abdomen greatly increased

tape measure stuck to abdomen

gray film on face, chest, and neck more prominent

white mold covering entire body, yellow mold spots on shoulders unchanged

tan, foamy liquid still spreading from body

skin color darkening overall

maggot activity decreasing on face, only slightly visible in facial openings

maggot activity increasing on torso and arms towards posterior, skin slippage also increasing, maggots visible beneath skin

a few flies on blankets, many flies flying around room and dead on floor

GR

6/21/05

12:34 PM

partly cloudy, breezy

tan, foamy liquid spreading from torso

skin color darkening overall, dark blue spots on hips and abdomen larger

maggot activity almost gone from face, increasing on torso and arms towards posterior

skin slippage increasing on torso and arms towards posterior, maggots visible beneath skin

pupae cases covering abdomen and large areas of blankets

white mold still covering entire body, less visible on blankets

yellow mold on shoulders darker in color (more tan)

face color becoming gray overall, whole face affected

marbling no longer present on chest

GR

6/22/05

11:28 AM

sunny, little breeze

maggot activity significantly decreased on face, increased on torso towards posterior and blankets

foamy liquid spreading from torso, tan in color

much larger number of pupae cases on blankets, abdomen, and face

maggot activity increased in genital area

skin color continuing to darken

white mold still covering body, yellow mold on shoulder same size

gray film covering chest and neck

skin slippage increasing on torso and arms towards posterior and in genital area, maggots visible beneath skin

face gray in color overall

GR

6/23/05

1:32 PM

mostly sunny, breezy

skin slippage continuing on torso and arms towards posterior, starting on hips and thighs towards posterior

some of skin broken, maggots spilling out onto blanket

skin color much darker towards posterior and along hairline

many pupae cases covering abdomen, blankets, and face

a few flies on blanket, many flies flying around room and dead on floor

many gnats on body and flying around room

face gray, soft area over L eye, eyes gone

maggot activity continuing to decrease on face, increasing on torso and arms towards posterior, on blankets, and in genital area

GR

6/24/05

10:51 AM

overcast, breezy

maggot activity continuing to increase in genital area and on torso and arms towards posterior

skin slippage also increasing on torso and arms towards posterior, skin broken

skin slippage starting on hips and thighs towards posterior

skin color dark brown towards posterior and around hairline

number of pupae cases greatly increased on face, blankets, and abdomen

liquid drying and darkening on blankets, maggot activity strong in liquid

eight flies on blanket, many flies flying around room and dead on floor

many gnats on body and flying in room

mouth and nose distorted, face gray, eyes gone

GR

6/25/05

12:54 PM

partly cloudy, strong breeze

maggot activity increasing around torso and arms towards posterior, in genital area, and in liquid on blankets

abdomen and breasts less bloated

maggots eating hole in skin of L shoulder

skin slippage on fingers and anterior of torso and thighs

skin slippage ceased on torso and arms towards posterior

a few flies on blanket, many gnats on body

numerous flies and gnats flying around room and dead on floor

white mold still covering body except in areas where skin has broken or is soft

GR

6/26/05

2:05 PM

partly sunny, breezy

large maggot infestation around torso and arms towards posterior and on blankets

abdomen bloat decreasing slightly

maggot activity increasing on shoulders towards posterior

liquid drying out on blankets, material very dark

breasts flattening

white mold covering most of body

skin slippage on fingers increasing

numerous pupae cases all over body and blankets

maggots eating a hole in skin on R side of chest and R forearm

face distorted, mouth open, hair mat gone from head

five flies on blanket, many flies and gnats in room

GR

6/27/05

2:48 PM

overcast, breezy

much larger numbers of pupae cases on blankets and torso, fewer on face

gnats covering body

less white mold visible due to increased maggot activity

maggot activity moving towards anterior

skin slippage on fingers increasing

hole on L shoulder larger, maggots visible in hole

fewer flies flying around room, more dead on floor, more gnats flying around room

skin slippage increasing on anterior of torso

tan mold spot unchanged on R shoulder

liquid on blankets drying

GR

6/28/05

3:33 PM

partly cloudy, no breeze

blankets starting to disintegrate under decomposition fluids, remaining fluid dry and dark

hole on L shoulder larger, no maggot protruding from hole

white mold still covering most of body

maggot activity increasing on torso and arms, moving towards anterior

tan mold spot still present on R shoulder

a few flies on blanket, many gnats and no flies on body

skin slippage increasing on fingers

GR

6/29/05

12:39 PM

partly sunny, no breeze

maggot activity on torso, arms, legs, and genital area moving towards center

blanket disintegrating under decomposition fluid, fluid drying out and darkening

pupae cases almost covering entire body, especially face, breasts, and abdomen

skin slippage continuing on fingers, no longer on torso and hips towards posterior

skin slippage increasing on anterior torso

large hole increasing in size on L shoulder

tan mold spot unchanged on R shoulder

white mold still covering most of body

many gnats on body, no flies

a few flies on blankets

fewer flies around room, many gnats

GR

6/30/05

3:45 PM

partly cloudy, strong breeze

large and small maggots on blankets with many pupae cases

liquid on blankets drying and darkening

maggot activity increasing on torso and arms, continuing to move to center

abdomen continuing to deflate

pupae cases covering torso, neck, forearms, and genital area

tan mold spot still present on L shoulder

skin slippage continuing on fingers and anterior of torso

face gray and distorted

GR

7/1/05

4:21 PM

partly cloudy, no breeze

maggots on blankets very large

pupae cases covering blankets

liquid on blankets mostly dry

pupae cases covering torso, also on arms and legs, but fewer in number

white mold less visible due to skin slippage and pupae cases

maggot activity increased all along sides of torso, over entire arms, and in genital area

blankets continuing to disintegrate

holes on L shoulder and R chest increasing in size

tan mold spot still on R shoulder

face distorted and fallen

abdomen beginning to deflate

toes very dark brown

pupae cases covering genital area

GR

7/2/05

3:25 PM

partly sunny, breezy

number of large and small maggots on blankets increasing in number

number of pupae cases increasing on body and blankets

liquid on blankets continuing to dry, blankets disintegrating

tan mold spot still on R shoulder

abdomen deflating

white mold still covering 70% of body

face gray overall except black along hairline

maggot activity on shoulders, neck, and torso increasing

tissue on L shoulder and R chest breaking down

GR

7/3/05

4:35 PM

partly cloudy, breezy

same trends continuing

maggot activity increasing on shoulders, neck, and torso, maggots moving towards anterior

abdomen continuing to deflate

white mold still present on most of body, tan mold spot on R shoulder unchanged

holes in L shoulder and R chest larger

number of pupae cases increasing on body and blankets

fewer flies flying around room, more flies dead on floor, a few flies on blankets

increasing numbers of gnats flying and on body

liquid on blankets almost dry

GR

7/4/05

5:28 PM

partly cloudy, no breeze

large and small maggots increasing in number of blankets

maggot activity increasing on shoulders, neck, and torso, maggots moving towards anterior

number of pupae cases increasing on body and blankets

many gnats flying and on body

fewer flies flying around room

liquid on blankets drying, blankets disintegrating

cheeks sunken, face gray, black along hairline moving towards anterior

GR

7/5/05

4:42 PM

partly sunny, breezy

maggot activity decreasing on sides of torso and arms

pupae cases covering body and blankets

face continuing to disintegrate

liquid completely dry

abdomen continuing to deflate

white mold still visible on R leg and parts of torso

some small maggots visible in R eye socket

more maggot activity around neck and shoulders

cheeks sunken, face gray with black on sides

holes in L shoulder and R chest larger, tissues breaking down

many maggots still on blankets

GR

7/6/05

5:35 PM

partly cloudy, breezy

maggot activity beginning to decrease overall, some maggots still present on face, torso, arms, and shoulders

less white mold visible on body, tan mold spot disappearing from R shoulder

black on sides of face moving towards anterior

sides of torso black in color, color moving towards anterior

blanket continuing to disintegrate

maggots gone from R eye socket

abdomen continuing to deflate

tissues continuing to break down on L shoulder and R chest

pupae cases covering body and blankets, increasing in number

GR

7/7/05

6:15 PM

partly sunny, strong breeze

abdomen continuing to deflate

skin desiccated

number of pupae cases increasing on blanket and body

no liquid on blankets, dry and dark brown to black in color

skin color continuing to darken

less white mold visible on body

flesh dimpling on hips and thighs

many gnats flying around room, a few flies on blankets and flying around room

many insects dead on floor

GR

7/8/05

9:14 AM

partly cloudy, breezy

abdomen deflated, appears punctured

pupae cases covering almost entire body and blankets

face distorted and completely black

maggot activity greatly reduced, only present along interface between body and blankets

flesh dimpling on hips and thighs

small amount of white mold still visible on lower R leg and sides of torso

no liquid on blankets, blankets very dry

skin color red/brown overall

many gnats flying around room

a few flies on blankets and around room

many insects dead on floor

GR

Appendix D (double click on)

Photographs of all six subjects including those not displayed in report.
Photographs are in Jpeg format. Photographs are labeled by subject number, day, and
part of the body.

Vita

Genevieve Ritchie was born in Baltimore, Maryland on September 5, 1977. She grew up in Newark, Delaware where she attended Newark High School. She earned her Bachelor of Science degree with university and departmental honors in biology from Millersville University in May of 1999. After graduation, she worked as a veterinary technician in Newark, Delaware and a wildlife rehabilitator in Naples, Florida. In August of 2001, she moved to Knoxville, Tennessee. She finished her Master of Arts degree in anthropology from the University of Tennessee in Knoxville, Tennessee in December 2005.