Environmental Factors and Decomposition Rates of Pig Carcasses in a Semi-natural Setting in Southern Illinois

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Forensics and Anthropology

- Forensics - crime or litigation (Soukhanov et al. 2001)
- Forensic anthropology - human skeletal remains/unexplained deaths (Byers 2002)
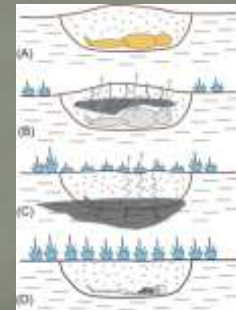
1. See Works Cited for Citation

Human Decomposition

- soft tissue decay in stages from initial decay to skeletonization
- rates vary: 3-4 weeks up to 5-6 years
  - weather conditions
  - environmental context
- decomposition rates assist in determining time since death

Stages of Decomposition

5 Main stages of decay:

1. Fresh
2. Bloated
3. Active decay
4. Advanced decay
5. Remains/Skeletonization

2. See Works Cited for Citation

Pigs Used as Models?

- Pigs are used as models
  - Similar
    - Skin
    - Digestive system
    - Weight composition

- What did I do?
  - 2 pigs
  - 1 shade; 1 sunlight
  - Looked at:
    - Temperature
    - Rainfall
    - Humidity

Hypotheses

1. Pig 2 (sunlit) will decompose faster than Pig 1 (shaded).
2. Scavenging will happen within first week.
3. Humidity has a positive relationship in tissue loss.
4. Air Temperature has positive relationship in tissue loss.

3. See Works Cited for Citation

Data Collection

- Location: ERTC
- Duration: 25 weeks
- 3 days – between 3:00 & 4:00 pm

Data Collection

- Temperature
  - Air
  - Body
  - Soil
- Precipitation
- Humidity
- Tissue Loss
  - diagram
- Scavenging
- Digital Photos

10/2/08 – Fresh Stage

Pig 1 (shaded)   **Pig 2 (sunlit)**

10/23/08 – Active Decay

Pig 1 (shaded)   **Pig 2 (sunlit)**
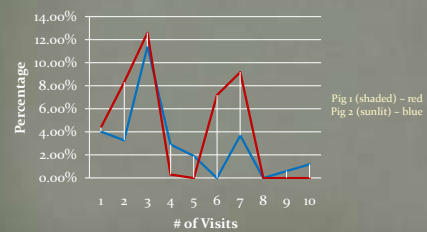

4/11/09 – Remains Stage

Pig 1 (Shaded)   **Pig 2 (sunlit)**

Results

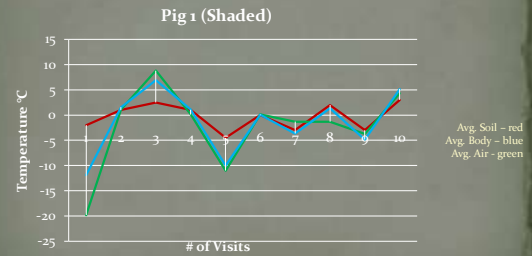**Avg. Tissue Loss Between Visits (Oct. 2008 – Nov. 2008)**

Pig 1 (shaded) – red
Pig 2 (sunlit) – blue

2

10/11/08

Pig 1 (shaded)   **Pig 2 (sunlit)**

Results/Discussion
Temperature (Oct. 2008 – Nov. 2008)

Pig 1 (Shaded)

Avg. Soil – red
Avg. Body – blue
Avg. Air - green

Results/Discussion
Temperature (Oct. 2008 – Nov. 2008)

Pig 2 (Sunlit)

Avg. Soil – red
Avg. Body – blue
Avg. Air - green
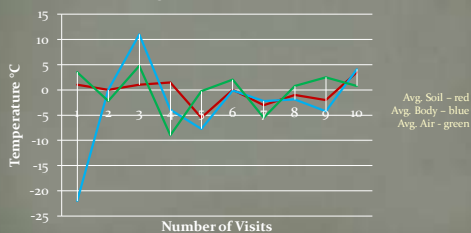
Results/Discussion- Scavenging

- Pig 1 (shaded): no scavenging until Week 7
- Pig 2 (sunlit): no scavenging until Week 3

- Week 25
  - Skulls and some leg bones left from Pigs 1 & 2

Discussion

- Joy et al. (2006): Cages were used
- No cages were used
- Mann et al. (1990): Humidity 2nd most important effect
- Humidity thought as important
- Lopes and Linhares (2001): shaded pig decomposed faster
- Not enough data

Conclusion

- Hypotheses
1. Pig 2 (sunlit) will decompose faster than Pig 1 (shaded). (N/A)
2. Scavenging will happen within first week. (No)
3. Humidity has a positive relationship in tissue loss. (Weak)
4. Air Temperature has positive relationship in tissue loss. (Yes)

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Special Thanks to:

- Dr. Jennifer Rehg
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- Larry the Pig farmer
- Facilities Management
- Illinois State Police

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