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## Out Cold: A Case Study of Human Skeletal Remains Demonstrating the Importance of Site Context

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## Out Cold: A Case Study of Human Skeletal Remains Demonstrating the Importance of Site Context

### Abstract

When excavating human remains, the context of the site can be just as important in understanding the cause of death as the skeletal materials themselves. This research examines the implications of bioarchaeology and forensic contexts in the following case study. A site excavated in the 1980s presented a skeletonized individual with a rifle leaning against a tree. Later identified, this individual was a missing person who disappeared in the winter in the 1920's. Due to the presence of the rifle, the location of the individual under the tree, and the missing cranium, the manner of death was initially assumed a suicide. The case was then investigated by the local pathologist who visited the site, looked at the scene photos, and interviewed ranchers. From information obtained from local residence regarding possible life saving actions a lost individual may take, the pathologist chose to investigate the site further. Ongoing investigation recovered a missing bullet on the ground near the individual. The case was thus reclassified as death by hypothermia, not suicide, after taking local knowledge into account. This is an example of a case where the context of the site does not always produce all the evidence needed to classify cause and manner of death on initial investigation. This case study can help to demonstrate to law enforcement and other investigators how important context of a site can become.

### Keywords

bioarchaeology, forensic contexts

### Disciplines

Archaeological Anthropology

# Out Cold: A Case Study of Human Skeletal Remains Demonstrating the Importance of Site Context

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## Introduction

This research examines the implications of bioarchaeological and forensic contexts in the following case study. A site investigated in the 1980s presented a skeletonized individual with a rifle leaning against a tree with the barrel pointed down into the ground. This individual was later identified as a missing person who disappeared during winter in the 1920's. Due to the presence of the rifle, the location of the individual under the tree, and the missing cranium, it became a matter of ruling out a suicide or homicide. The case was then investigated by the local pathologist who visited the site, examined the scene photos, and interviewed ranchers within the community. From information obtained from local residents regarding possible life saving actions a lost individual may take, the pathologist chose to investigate the site further. Ongoing investigation recovered a missing bullet on the ground near the individual. The case was thus reclassified as death by hypothermia, not suicide, after taking local knowledge into account. This is an example of a case where the physical context of the site does not always produce all the evidence needed to classify cause and manner of death upon initial investigation.

## Methods

A skeletal analysis was conducted to confirm the identification of the remains using estimation of sex, age, stature and body mass.

- **Sex Estimation:**
  - Phenice, T. W., 1969
- **Age Estimation:**
  - Todd, 1920; Brooks and Suchey 1990; Lovejoy, et al., 1985; Stevenson, 1924
- **Stature Estimation:**
  - Ousley, 1995; Ruff et al, 2012
- **Body Mass Estimation:**
  - Ruff et al, 2012



Figure 1: Complete remains as retrieved from Ada County Coroner's Office.

## Original investigation

The remains of this individual were brought to attention in the 1980s when a citizen saw some of the bones on a outcropping in the mountains of Albion, Idaho. What remained was scattered bones and parts of decomposed clothes. The remains were the majority of a skeleton, with only the kneecaps, hands, wrists, hyoid, a few vertebrae and the skull missing. A newspaper was found in one of the pockets of the decaying clothes, with a date in the 1920s. This allowed initial investigators to pinpoint the individual as one of three individuals who went missing in that time frame. From there investigators were able to get an identification by interviewing the families of those missing. The man was identified as a Ferrier (a craftsman who trims and shoes horses' hooves) in his late twenties. Once the remains had been identified, the case was turned over to the local pathologist to clearly determine manner and cause of death. Our age estimation, as seen in our result, is at an older range than the age identified. This is most likely due to the evident biomechanical stress, as seen in our 'pathologies' section – wear on the bone that can cause a skeleton to look older than it is. The bones also had prominent muscle attachments which is indicative of a heavily muscled individual, consistent with the occupation as a Ferrier.

## Results

Table 1: Results from Methods

Sex	Male
Age	30-44 yrs
Stature	5'3" to 5'8" ft
Body Mass	137 to 161 lbs

## Pathologies



Figure 3 (Left): Right femur displaying a 1.7 cm difference in height in relation to the left.

There was a marked size difference between the left and right femurs resulting in a greater range in possible stature. Additionally, there was a difference in the size of the femoral head which generated a greater range in potential body mass.



Figure 4 (Left): Thoracic vertebra displaying severe osteophytic lipping and Schmorle's nodes.

Schmorle's and Osteophytic lipping were evident on lower thoracic and lumbar vertebrae. Both can be indicative of biomechanical stress given the age of the individual.

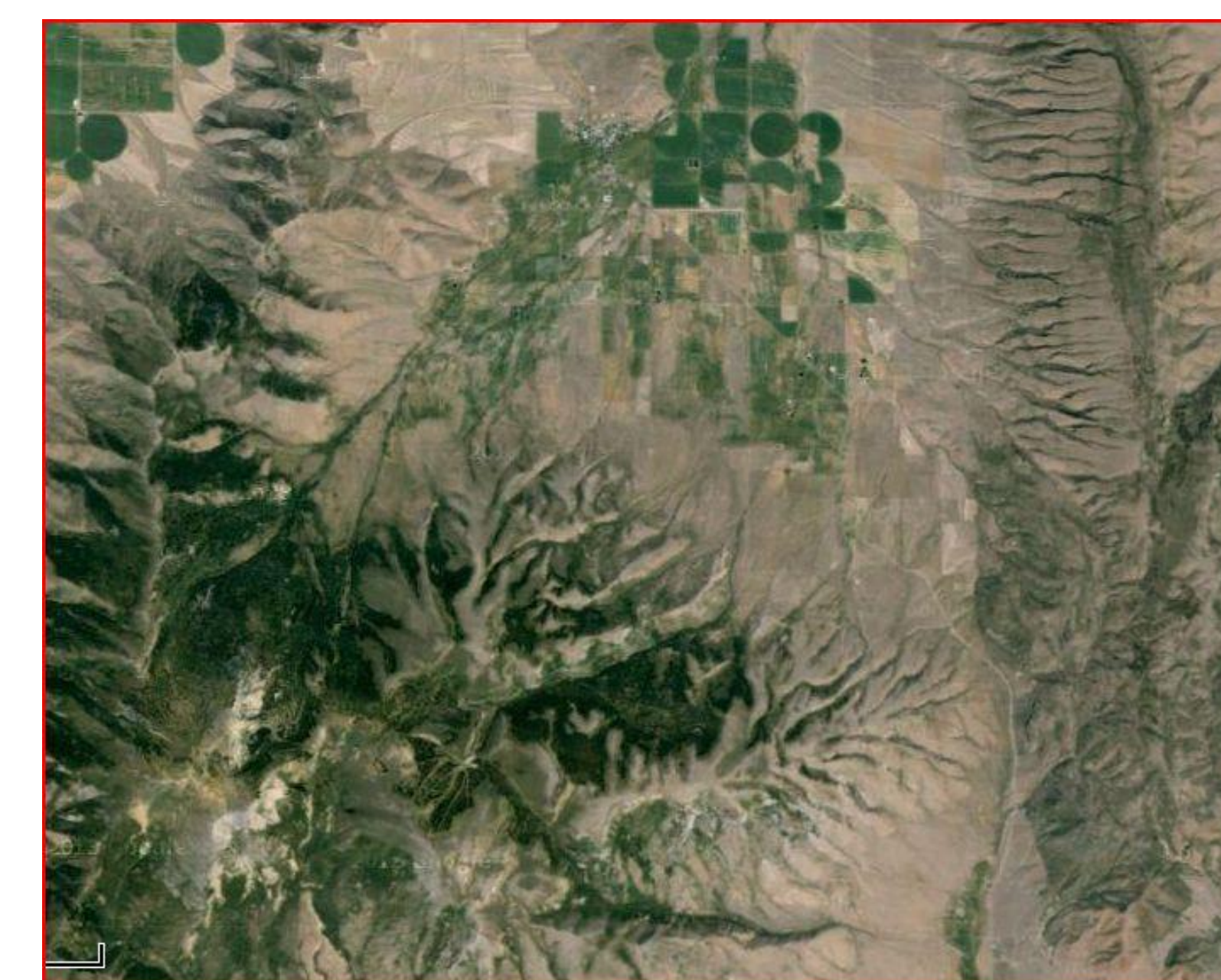


Figure 2: Map of Albion Mountains, Idaho – the area where the remains were found.

Figure 5 (Right): A left ribs from the individual.

The Individual displayed an extra set of ribs. While not unusual to see an extra individual rib, the complete pair is a unique variation.



Figure 6 (Right): Sternum marked by a fused bifurcation of the xiphoid process

The individual displayed a bifurcation of the xiphoid process fused to the sternal body. This is a unique demonstration of human variation in the individual



## Discussion

This case exemplifies the importance of context in resolving manner and cause of death in forensic investigations and bioarchaeological studies. Investigators were initially concerned that the individual's death was due to a self inflicted gunshot wound or homicide due to the presence of the rifle at the scene. The pathologist understood how important local knowledge would be in this case. As such, it is a demonstration that physical context is not always enough to establish cause and manner of death. This case study utilized an examination of the skeletal remains to ascertain identity and confirm that the skeletal context was insufficient to determine the individual's demise.

The pathologist who undertook the case upon the body's retrieval found, through interviews with local ranchers in the community, that when stranded or lost in inclement weather, ranchers would start a fire by shooting a bullet into an outcropping of rocks with tinder inside. Additionally, he also established that the orientation of the rifle, with its barrel down, could be the result of an attempt to protect the gun from the effects of a terrible snowstorm.

The pathologist returned to the scene and found an outcropping matching the description provided through his interviews. This led to the recovery of the bullet that was missing from the rifle. The bullet, along with the orientation of the rifle lead investigators to conclude that the death was accidental, likely caused by hypothermia.

Our re-visitation of the remains confirmed the limitations of skeletal analysis without consideration for local context. Secondly, this individual presented many unique skeletal elements and biomechanical pathologies, which contributed to our understanding of human biological variation.



Figure 7: The boots were found in poor condition however the feet were preserved in their entirety within.

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