Guidance on the Use of Historic Human Remains Detection Dogs for Locating Unmarked Cemeteries

Project # 12-510

Background:

Military installation Cultural Resource Managers (CRMs) have received requests from Federally Recognized Native American Tribes and other interested parties to use Historic Human Remains Detection (HHRD) dog teams to located unmarked cemeteries. Since ground truthing dog alerts is not possible without grave disturbance, there has been some difficulty in determining how accurate the dog teams are and how the results they generated should be interpreted and/or acted upon.

Objective:

This study will provide CRMs at DoD installations with information on the effectiveness of HHRD dog teams. Additionally the project will compare and contrast time, cost and survey quality of HHRD dog teams and traditional Geophysical survey techniques.

Summary of Approach:

This study was conducted in three parts. The first portion was the creation of a controlled study survey area where human and animal bones were buried at known depths and density. Dogs were tested to determine if they could differentiate between animal and human bones and the rates of false positives. The second portion of the testing is to compare the results of HHRD dog and geophysical surveys at a larger cemetery with marked and unmarked graves to determine if the dogs can pinpoint unmarked graves in a larger cemetery setting. The final portion of the testing is to take the dogs to Fort Gordon, Georgia and compare the results of the HHRD dog survey against geophysical methods on small cemeteries where the visual identifiers of human burials are missing or misleading.

Benefit:

Unmarked cemeteries on military installations have affected land management and utilization plans at numerous bases across the country. Previous observations of HHRD dog teams have demonstrated that the dogs can provide survey results quicker at significantly reduced cost than geophysical surveys. The accuracy of the HHRD dog teams, however, is only minimally discussed in scientific literature. Military CRMs have already received requests from stakeholders to deploy this technique but have little or no guidance on how to utilize the data that is generated by the dog teams. The results of this project will inform installation CRMs on a wider range of archaeological investigation strategies, allowing them to select the management approach that is best suited for their needs.

Accomplishments:

The results of the study indicate that there is a scientific basis for the claim that HHRD dogs can detect scent chemicals from decomposing bone and differentiate between human and animal skeletal remains. In locations where remains had decomposed insitu, 61% of HHRD dog team alerts were within 4m of grave locations and more than 90% were within 10m of grave locations. Misleading visual cues for grave location did not appear to affect HHRD dog team performance. HHRD dog surveys at Fort Gordon, GA were conducted in one third the time and at 12% the cost (excluding travel and per diem) of a traditional geophysical survey. The dogs were able to work in rougher field conditions but were affected by climate conditions in a manner similar to geophysical survey techniques.

The dog teams did struggle with pinpointing the exact location of graves, with only 19% of alerts located within 1m of grave locations. The dogs also struggled with locating unmarked graves that were surrounded by marked graves within a larger cemetery. Dog alerts do not provide information on the depth, orientation and/or size of suspected graves. This is information that is typically provided in geophysical surveys.

This study indicates that there is justification to include HHRD dog surveys in the suite of non-invasive techniques used to locate unmarked human burials. It is believed that the ideal deployment for HHRD dog teams would be to investigate large study areas to determine the most likely area that contains unmarked graves. Traditional geophysical surveys can then be focused in a more cost and time effective manner on the narrowed search areas.

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