D9 Field Capability of Dogs Trained to Locate Individual Human Teeth

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After attending this presentation, attendees will have a basic familiarization with the use of human remains detection dogs and will specifically learn what to expect from a team capable of locating teeth in support of forensic investigation. In addition, the attendees will gain an understanding of the relevance of utilizing dogs trained specifically for locating a particular target, such as human teeth, rather than a generalized "search dog."

This presentation will impact the forensic science community by expanding knowledge about the capability of dog teams trained for human remains detection focused on human teeth. A second impact will include demonstrating the educational value for investigators on how to approach requests for this specialized but highly useful resource.

Avulsed teeth can be difficult if not impossible to recover in the outdoor environment, yet are important for victim identification. Dogs have an advantage as a tool to locate teeth in that they rely primarily on olfactory rather than visual cues and their olfactory sense exceeds man- made equipment. However, not all search dogs teams are trained for human remains detection, and within that specialized detection discipline not all teams are prepared for, or necessarily capable of, precision detection in support of forensic evidence collection. Teams that are capable of working this type of assignment can be an efficient and valuable means for locating evidence during an investigation. Furthermore the use of such dog teams may reduce costs, minimize scene disturbance, and/or expedite data collection.

Results are presented from a study which had two objectives, (1) quantify the capability of dog teams at locating individual human teeth in the field setting; and, (2) quantify the role of human remains detection training relative to field performance. The field capability trials were conducted using a double-blind research design. Each of three dog teams searched two separate $(10m)^2$ plots containing ten teeth each. Dog teams worked between 27 and 50 minutes in each plot. Study results demonstrated that dog teams can locate individual human teeth in the field environment, with a recovery capability to 79 percent, but not all teams were equally capable.

Training data were analyzed for the seventy-eight days immediately preceding the trials. Dog team capability in the field trials correlated with capability in training. The best predictor of capability during the trials was the cumulative recovery rate for the team's last training prior to participation in the trials. This is important because "recovery" during training equals the probability of detection (POD), and POD is variable based on numerous factors one of which is the sensitivity, strengths, and limitations of the detection tool. Based on the results from this study, capability in training predicts the POD of a team during an actual deployment, which directly relates to evidence recovery.

Overall, results showed that human remains detection dog teams can be an effective and efficient tool for locating individual human teeth in the field setting. Individual team qualifications are important when selecting teams to search for individual human teeth and training specifically for this task is critical. It is common in human remains detection dog training to expose the dogs to as many different sources as reasonable to help expand their scent picture as to what constitutes human remains. Nevertheless, the challenge of finding such small and limited scent sources as single human teeth should not be underestimated. While this study demonstrated that dogs are capable of finding single human teeth in a field setting, it also showed the variability in capability in dog/handler teams. Much of this could be connected with both the type and amount of training the teams did prior to the field trials. Working blind problems, where both the number and location of sources are unknown to the handler, is an important means to develop the skills of the team to find target sources in a search environment. Finally, a team's recovery rate in training, calculated on success during blind problems, is a good predictor of POD on actual search deployments.

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