A151 A Retrospective Study of Forensic Fire Searches and Recoveries at Mercyhurst University: 1983–2019

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Learning Overview: After attending this presentation, attendees will better understand the forensic archaeological, taphonomic, and anthropological approaches to fatal fire scenes.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by examining trends in the role of forensic anthropology and archaeology in forensic fire scenes and by providing a set of best practices toward scene processing and human remains recovery for a variety of forensic fire scenes.

A retrospective review of forensic anthropology cases from the Mercyhurst University Forensic Case Data Bank (1983–2019) was performed for fatal fire scene searches and recoveries processed by the Mercyhurst Forensic Scene Recovery Team (M-FSRT). This included fire cases in which a forensic archaeological search and/or recovery was performed, regardless of whether human remains were found.

Data were collected from each fire scene on location (state, county), fire type (structure, vehicle, outdoor, mass disaster, other), seasonality of fire recovery (spring, summer, fall, winter), and manner of fire (accidental vs. intentional). Structure fires were defined as any fire scene that involved burning of all or part of a structure, such as a house or shed. Outdoor fire scenes were defined as any outdoor area where material had been burned, including fire pits. Vehicle fires were defined as any vehicle subjected to fire modification, including fires that occurred as the result of a vehicle crash incident as well as intentional fires to stationary vehicles. Mass disasters were defined as scenes involving a large area and multiple victims, such as plane crashes. Each fire recovery or search was considered one case regardless of the number of victims.

A total of 1,602 forensic anthropology cases conducted between 1983 and 2019 by Mercyhurst University personnel were reviewed. A total of 205 forensic archaeological searches and/or recoveries were conducted over the 37-year period, representing 12.7% of all cases (with 386 total recovered individuals); 36 were categorized as fire searches/recoveries.

From 1983 to 2009, 16% of all searches/recoveries involved fire, while in the past ten years (2010–2019) that number has increased to 18%. More than half of the total fire recovery cases were conducted between 2015 and 2019, with the greatest number of cases occurring in 2017 (n=8).

Fire searches/recoveries spanned four states (Nevada, New York, Ohio, and Pennsylvania), with the majority of fire recoveries conducted in Pennsylvania (72.2%). In Pennsylvania, fire recoveries were conducted in 16 of 67 counties, the majority of recoveries from the northwest region of the state. While fire recoveries spanned all seasons, the greatest number of cases occurred in the summer (33.3%), followed by the fall (24.2%).

Of the fire recovery cases included, 36.4% were outdoor fires scenes, 24.2% were structure fires, 18.2% were vehicle fires, and 21.2% were fires as a result of mass disasters. Of the outdoor fire scenes, one case involved a ruptured gas well, and three cases involved burn barrels to either facilitate the burning process or to store burned remains.

In the cases reviewed from Mercyhurst, the majority of fire scene recoveries were related to plane, train, and automobile accidents, accounting for 42.9% of fire scenes. Intentional fires related to the disposal and concealment of a body constituted 34.2% of cases. The manner of fire scene was unknown for 22.9% of cases. The majority of searches/recoveries were conducted in rural areas where large yards and close access to secluded wooded areas allow for prolonged burning, potentially accounting for the large number of intentional fire cases.

Fatal fire scenes present unique challenges to the recovery process. The application of forensic archaeological methods in such cases can be essential to preserving context and association of evidence and human remains. Considering the increasing involvement of forensic anthropologists in fatal fire recoveries and the diversity with which fatal fire scenes may present, it is imperative that forensic anthropologists have sets of best practices for how to approach scenes of this nature. This retrospective review covers a wide variety of fatal fire scenes and archaeological recovery approaches from which recommendations for recovery efforts can be gleaned.

Fatal Fires, Archaeology, Forensic Anthropology