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### E45 The Taphonomic Effects of Differential Burial Practices and Environment in Recently Discovered World War II Cemeteries

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After attending this presentation, attendees will: (1) gain further knowledge concerning the postmortem taphonomic effects of differential interment practices on human remains recently discovered in a coral atoll burial environment from World War II cemeteries; (2) view and learn the taphonomic effects of field-expedient trench burials and burial box interments on human skeletal remains due to environmental factors, such as ground water fluctuations and bioturbation; and, (3) gain a better understanding of the challenges faced by archaeologists and anthropologists dealing with the two largest independent recoveries to date of missing World War II United States servicemen (*MNI=59*).

This presentation will impact the forensic science community by describing unusual taphonomic effects on human remains in variable environments associated within and between burial interment practices in the historical context of World War II. This presentation will contribute to the overall knowledge of the forensic science community by describing *in situ* field discoveries and laboratory analyses documenting unique effects of taphonomic variables on human remains in a battlefield context.

**Description of the site and sample:** During the Second World War, the Battle of Tarawa was a costly victory for the United States military. More than 1,100 United States Marines and Navy sailors were killed, while approximately 500 were recorded as missing and their bodies believed “unrecoverable.” Due to the speed of military operations at the time, the locations of the hasty post-battle cemeteries were lost or misplaced. Additionally, a number of Army Air Corps servicemen flying missions from Hawkins Field on Betio Island, Tarawa, perished in the months after the initial invasion. These servicemen were buried in individual burial boxes and placed in burial rows at a variety of depths and were subsequently affected by various taphonomic factors. In 2015 and 2017, two of the missing cemeteries containing United States Marines, Navy sailors, and Army Air Corps servicemen were discovered and systematically excavated by History Flight, a Non-Governmental Organization (NGO). As of July 25, 2017, History Flight’s efforts have led to the repatriation of more than 59 lost United States servicemen from these cemeteries.

The unique coral atoll environment creates taphonomic factors that cause differential preservation of human remains within and between cemeteries and burial interment practices. Specifically, the types of interment practices, differential burial depths, impact of a constantly fluctuating water table, proximity to military-issued equipment (particularly the rubberized canvas poncho), containment within burial boxes, and tree root disturbance contribute to diverse states of skeletal preservation. Combined with historic and modern post-burial disturbances and an absence of scavenger activity, the burial contexts from these cases demonstrate unprecedented and valuable information for the forensic science community.

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#### **Taphonomy, Burial Practices, WWII**