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TECHNICAL NOTE

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Symposium on Border Crossing Deaths: Introduction

More than 1000 people have died between 2001 and the spring of 2007 in their attempt to cross into Arizona from Mexico. This number only reflects those deaths that have been investigated by the Pima County (Arizona) Office of the Medical Examiner (PCOME). Indeed, the total number of deaths is in the United States (U.S.) is higher, but no single medicolegal jurisdiction has been tasked with investigating anywhere near this number of deaths associated with the clandestine crossing of our southern border within this time period. These individuals who die are thought to be but a fraction of the large number of the undocumented immigrants who cross into Arizona each year through Mexico. The increase in deaths is undoubtedly the result of crossings that occur in the harsh conditions of remote areas within the Sonoran Desert. This occurs because migration routes in safer populated areas are more likely to result in apprehension due to greater enforcement by the U.S. government. Thus, the migrants are forced into the dangerous hinterlands in their attempt to avoid detection. Still, hundreds of thousands of border crossers are apprehended annually in the United States Border Patrol (USBP) designated Tucson Sector. The southwestern portion of the Tucson Sector corresponds to the jurisdiction of the PCOME. As stated, this trek through Southern Arizona can be very dangerous. Daytime summer ambient high temperatures are often over 100°F. Water is scarce and the terrain is rugged. Suffice it to say that crossing on foot is a very perilous proposition. Crossing in motor-vehicles can be hazardous as well, with news media reports describing frequent motor-vehicle accidents involving undocumented border crossers that have resulted in significant numbers of fatalities. The total number of undocumented border crossings is unknown and subject to debate, with USBP apprehension data being used as a surrogate estimate of the actual border crosser volume. What is known is that between 2001 and 2007, over 1000 people have died within the various jurisdictions covered by the PCOME alone. This number is not subject to debate.

These migrants who die during their attempt to enter the U.S. in an undocumented manner are termed "undocumented border crossers" (UBCs) by our office. Individuals are defined as UBCs if their identity is known, their crossing was clandestine, and nationality is outside the U.S. as established through investigation by the PCOME (see Anderson, this volume). Typically this would include lines of communication with a foreign consulate and/or family members. A UBC designation is also made if identity is not known but personal effects found on the body are consistent with foreign citizenship and an anthropologic examination reveals a heritage common to many individuals from Latin American populations. Further support is established through geographical mapping, e.g., the body was discovered in the remote wilderness desert known to be high-use corridors of illegal immigration. A UBC designation is only applied to those who appeared to have died in transit and is not applied to foreign nationals who have already established some form of U.S. residency. No distinction is made between migrants and smugglers. Nor do we distinguish between those foreign nationals who are entering the U.S. and those who are returning home and die in transit while traveling south. The distinction between U.S. citizens and foreign nationals *is* made so the PCOME can be as accurate as possible in characterizing the number of deaths associated with the clandestine crossing of our southern international border. While we readily acknowledge that this policy may serve to slightly over-report the number of undocumented border crosser deaths, to exclude the hundreds of unidentified people recovered from the Sonoran Desert would certainly *vastly* under-report the problem. Thus, we choose the former.

The cause of death in these UBC cases is determined based on the postmortem examination, the scene investigation, and historical information. In these cases, as stated, the leading cause of death is due to the intense environmental heat. In many instances, the cause of death must be deemed undetermined, usually because of the badly decomposed condition of the body. This includes skeletal remains found in the desert when the time of death could not be estimated with enough accuracy to correlate with the hotter time of year. Based on the finding that the vast majority of the better preserved bodies of these migrants found in the desert die from heat exposure, it may be expected that most of the undetermined deaths are heat related as well. Considerable time and effort is expended in this medicolegal determination of cause of death, and even more time and effort is expended in the identification process. The forensic pathologists, forensic anthropologists, field agents, investigators, pathologist assistants, and the clerical staff all have additional duties as a result of this increased caseload. However, the identification issue is undoubtedly the leading reason for the additional work and the concomitant delay in releasing bodies to waiting families. Because of poor preservation due to decomposition, poor or nonexistent antemortem records, and geographic distance as a result of foreign national citizenship, successful identification can take weeks or months. Added to this is the fact that the PCOME's identification rate is approximately 70% for UBCs. Thus, approximately 300 of the more than 1000 dead migrants remain unidentified to date. The added effort needed to continually search through the

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postmortem records for these people when missing reports are received is enormous. Personnel at the PCOME are constantly working with foreign consulates and families in the exchange of information that is hoped to lead to successful resolution of the individual cases. The PCOME has developed a strategy and protocols for dealing with the added efforts needed to resolve these UBC cases, and we are actively pursuing an automated program that can help keep track of the large number of missing persons' reports and postmortem data. However, the costs in dollars and hours are exceptionally high.

Because of this added workload, as well as a sense of duty relating to our current experience with the high number of deaths, a symposium was organized by the authors for the 2004 annual meeting of the American Academy of Forensic Sciences (AAFS). This symposium, entitled "Death Investigation of Undocumented Border Crossers," sought to bring together medicolegal death investigators from those jurisdictions which are currently, or have in the past, been charged with investigating border-issue deaths. History tells us that the increase in deaths within the jurisdictions covered by the PCOME is relatively recent. Both Texas and California have been sites of massive undocumented crossings in the past, with their concomitant high death tolls, thus we hoped that the medicolegal investigators within these jurisdictions could possibly help us in our current position at the point of the spear. This hope has yet to be fully realized, with the exchange of information between jurisdictions progressing slowly. We remain optimistic that the antemortem and postmortem information curated in the various jurisdictions within several different states can one day be pooled together so the unidentified individuals may be returned to their families.

Ten papers were presented at the 2004 symposium, seven of which are contained within this issue of the journal. The eighth paper published herein was presented at the AAFS annual meeting in 2005. All eight papers are an important first step in addressing the issue of border-crossing deaths. The first paper in this series, "Identifying the Dead: Methods Utilized by the Pima County (Arizona) Office of the Medical Examiner for Undocumented Border Crossers: 2001–2006" by Anderson, discusses the various methods by which UBCs have been identified for the past 6 years at the PCOME. The rationale for the determination of UBC status is also explained. This paper is followed by "Migrant Deaths Along the California-Mexico Border" by Hinkes. This essential piece of information outlines some causes behind the change in migrant routes and also characterizes the deaths in California dating back to the 1980s. Spradley, Jantz, Robinson, and Peccerelli then discuss in "Demographic Change and Forensic Identification" how craniometric data analysis is helping to better characterize the populations from which the unsuccessful migrant comes. The PCOME has worked closely with Dr. Spradley and Dr. Jantz at the University of Tennessee and their Forensic Database over the past 4 years to ensure that many of the crania of UBCs are measured and added to this useful database. The next paper "Identifying Southwest Hispanics Using Nonmetric Traits and the Cultural Profile" by Birkby, Fenton, and Anderson, explains how UBCs are differentiated from U.S. citizens of similar heritage. Drawing on over 40 years of experience in this matter, Dr. Birkby's methods are clearly outlined. Fenton and Sauer's "Skull-Photo Superimposition and Border Deaths," the next paper, delineates how this useful tool was utilized to help resolve a case involving the commingled skeletal remains of two women. The fact that this case was from the PCOME again illustrates how collegial interaction can be essential in the identification process. The following paper, "Fatal Footsteps" by Fulginiti, outlines the addition of murder into the issue of border crosser deaths. The dangerous trek of the migrants doesn't necessarily end when the desert is traversed, and homicide can become the manner of death. The next paper, "Strontium and Geolocation" by Juarez, explains how isotopic analysis can be utilized to characterize the geographical location from which the migrant comes. The PCOME looks forward to using this data in the near future in the hope of narrowing the number of missing persons' descriptions based upon geography. The final paper, "Reuniting Families" by Baker and Baker, describes how a growing database of mtDNA sequences is expected to help resolve many cases in the future. This database, capable of comparing blue jeans as well mitochondrial genes, is truly the only way old cases and those current cases of unidentified people will likely ever be resolved. The PCOME also benefits from Dr. Baker's mtDNA expertise as dozens of PCOME cases have been, or will soon be, resolved through information obtained from mtDNA comparisons.

As stated, these eight papers are an important first step in addressing the issue of border crosser deaths. We all hope to build upon this foundation and further discuss this tragedy. Another symposium, again held at the AAFS annual meeting, is presently being discussed and will seek to cast an even wider net over this issue. The U.S. government appears incapable of closing our border with Mexico, whatever the reason. As long as this is true, people will continue to die crossing it. It is our duty as forensic scientists to investigate these deaths as competently as possible. Our continued dialogue on this issue can only help.

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