



### E29 A Different Kind of DNA Casework: When It Has Horns or Tusks

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After attending this presentation, attendees will understand the mission of the United States Fish and Wildlife Service (USFWS) - National Fish and Wildlife Forensic Laboratory (NFWFL) and the role that forensic scientists play in providing scientific support for law enforcement investigations of wildlife crimes domestically and internationally. This presentation will raise awareness of an active and diverse field of forensic science that focuses on crimes that involve non-human and non-domestic animals, with an overview of laboratory operations and selected case studies. Crimes that involve wildlife vary widely, such as illegal hunting and fishing violations, events that result in the harm to or death of threatened and endangered species, or activities of sophisticated illegal black markets connected to international wildlife trafficking networks. Often, the primary investigative activity in a wildlife crime case is to determine whether a crime has actually been committed as sometimes both the victim and the suspect may be animals or trees.

This presentation will impact the forensic science community by increasing the awareness of the field of wildlife forensics. This presentation is intended to be part of a set of presentations from forensic science practitioners in the wildlife forensics community. Wildlife species have often been the basis for research presented at the American Academy of Forensic Sciences (AAFS); however, the work of wildlife forensic laboratories has, in the past, been underrepresented in the AAFS scientific sessions. By presenting multiple talks, highlighting the breadth of the work that is completed in this community, a valuable resource will be provided to the forensic science community at large.

The NFWFL is a fully accredited forensic laboratory located in southern Oregon and is the science support arm of the USFWS Office of Law Enforcement, assisting more than 300 special agents, wildlife inspectors, and several K-9 teams in the United States, special agent attachés in nine foreign countries, 50 State Fish and Game Commissions, and more than 170 foreign countries who have signed the United Nation's Convention on International Trade in Endangered Species Treaty. The mission of the NFWFL is to identify the species or subspecies of pieces, parts, or products of an animal; to determine the cause of death of an animal; to help wildlife officers determine if a violation of law has occurred; and to identify and compare physical evidence in an attempt to link suspect, victim, and crime scene. The NFWFL's forensic program has been accredited through the American Society of Crime Laboratory Directors/American National Standards Institute-American Society of Quality (ANSI-ASQ) National Accreditation Board (ASCLD/ANAB) since 1997, and NFWFL forensic scientists participate in regular proficiency testing.

The NFWFL's scientific staff includes experts in morphological identification, genetic analysis, chemical analysis, and veterinary pathology. Cases processed by the NFWFL are primarily focused on compliance with criminal law, and analyses of non-wildlife cases, such as animal abuse or food contamination, are rare. NFWFL scientists conduct cause-of-death determinations, class character analyses (morphology, chemistry, and genetics), and source evaluation of individuals (genetics). Often, individual cases are processed by multiple disciplines. In 2016, the NFWFL analyzed 2,605 individual items of evidence that were part of 732 investigations. NFWFL forensic scientists provided additional support in the form of 1,525 photo identifications to assist field agents in determining if suspected infractions warranted investigation.

One example of casework conducted at the NFWFL is the investigation referred to as "Operation Crash," an ongoing nationwide criminal investigation led by the USFWS Office of Law Enforcement. The investigation focused on the illegal trade in rhinoceros horn and elephant ivory involving international poaching and smuggling syndicates. Charges against defendants included violations of the Endangered Species Act and Lacey Act, conspiracy, smuggling, money laundering, mail fraud, tax evasion, bribery, and false documentation. NFWFL scientists conducted chemical analyses to determine if evidence items were of animal origin, morphological analyses to determine if horns originated from rhinoceros and if ivory originated from extant elephant or extinct mammoth, and genetic analysis to determine the species source of rhinoceros horn (Black or White rhinoceros) and ivory (African or Asian elephant). To date, this operation has secured the arrest and successful prosecution of numerous individuals and businesses and the disruption of several smuggling networks. A total of 34 years of prison and \$7.5 million in fines and restitution have been imposed by the courts.<sup>1</sup>

Additional examples of the diversity of forensic analyses conducted at the NFWFL will provide attendees with a greater understanding of the breadth of scientific expertise provided by Wildlife Forensic Scientists at the USFWS-NFWFL.

#### Reference(s):

- <sup>1</sup> U.S. Fish and Wildlife Service, 2016 Office of Law Enforcement Annual Report. <https://www.fws.gov/le/pdf/2016-Office-of-Law-Enforcement-Annual-Report.pdf>.

#### Wildlife Forensics, Wildlife Trafficking, Non-Human Forensics