A brief overview of forensic herpetology

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Abstract. The emerging field of forensic herpetology is reviewed. This research focus, defined here as the application of science to studies of reptiles and amphibians when these animals become the subject of legal investigations, has gained increasing attention in recent years. A diverse range of experts contributes to methods in forensic herpetology including forensic scientists, herpetologists, veterinarians, zookeepers, physicians, pathologists and toxicologists. The English language literature in forensic herpetology is reviewed and the most commonly asked questions of forensic herpetologists are summarized. Recommendations for continued and future research are highlighted.

Key words: Forensic herpetology; wildlife forensics.

Introduction

Increasingly, a broad range of experts is called upon by law enforcement officials and those involved in other forms of litigation to assist and provide forensic support in legal investigations involving amphibians and reptiles. Experts may include, but are not limited to, forensic scientists, herpetologists, veterinarians, zookeepers, ethologists, physicians, pathologists and toxicologists. Such collaboration was relatively rare several decades ago. One reason for the surge of interest in animal forensics is the implementation of international treaties such as CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora; implemented in 1975) and legislation — for example, in the United States of America (USA) including the U.S. Endangered Species Act (implemented in 1973) — which provide various levels of protection for endangered and threatened species (see Cooper, M.E., this volume). This has lead to increasing demand for detailed forensic analysis of animals associated with suspected crimes (Brazaitis, 2003), and the emergence of a discipline now often referred to as wildlife forensics (see Wilson, 1977 for an early bibliography on the subject). In addition, the proliferation in the USA and some other countries of television shows featuring fictionalized forensic scientists
(e.g., CSI — Crime Scene Investigation) has led to what is termed “The CSI Effect”, in which many jurors in real trials have very high expectations (often unrealistic) for forensic evidence (Schweitzer and Saks, 2007).

Forensic cases involving animals can broadly be divided into those in which the animal is viewed as (a) the victim, or (b) the perpetrator (Cooper and Cooper, 2008). In cases where amphibians and reptiles are suspected victims of crime, forensic analysis may address such broad issues as crime scene investigation, species identification, veterinary forensic examination, captive versus wild identification, geographic origin/sourcing, and recognition of individual animals. More commonly reported in the forensics literature, however, are instances in which reptiles or amphibians are perpetrators in a given case. Such cases are often tied to human death or injury investigations and are widely known as examples of medical herpetology. Examples include forensic cases involving human deaths or injuries from snake-bites, alligator attacks, toad-poisoning, bite/wound identification, infection from reptile contact and allergic reactions.

Here, I provide a brief overview of such cases and refer to them collectively as examples of forensic herpetology — defined here as that branch of science that relates to studies of reptiles and amphibians when these animals become the subject of a legal case (see other papers in this series). As reviewed by Cooper, M.E. (this volume), forensic-style investigations are also applied in such diverse areas as insurance claims, allegations of malpractice by veterinarians, environmental impact studies, etc. My focus here is on the most commonly asked questions of forensic herpetologists and a review of herpetological research published in the English language specifically for forensic purposes. Many of these subjects (especially crime scene investigation, postmortem techniques, and legal aspects) are treated in more detail throughout this series. Areas for continued and future research are also highlighted.

**Early History**

In the USA, early published examples of forensic herpetology focused primarily on medical herpetology and are found throughout the medical and human forensics literature. With the implementation of CITES and the U.S. Endangered Species Act, a major shift in forensic herpetology took place in which law enforcement officials (most notably within the U.S. Fish and Wildlife Service, an agency within the U.S. Department of the Interior) began seeking guidance from herpetologists (and other experts) to assist in the identification of animals and animal parts seen in the burgeoning trade in international wildlife. The most important papers on forensic herpetology from this early period are those of Brazaitis (1984, 1986, 1987, 1989) and King and Brazaitis (1971), who described detailed methods for identifying crocodilian species from leather products in commercial trade. Interestingly, the only published papers that use the term “forensic herpetology” in their titles appear to be those of Brattstrom (1998a, 1998b), who described two forensic case