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The catalyst-like role of forensic genetics in the developmental process of Hungarian wildlife forensics

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ABSTRACT

The anthropocentric nature of forensic sciences has been changing continuously over the years and this process is continuing today. Due to its universality and multilateral implementation, and the fragmented nature of forensic epistemology, the information provided by forensic genetics can play a pivotal role in forensic science. At the same time, the link between forensic genetics and non-human forensic biological evidence has become unquestionable. It may highlight the modern requirements of forensic science, and this connection is also able to provide useful and sufficient examples for developmental processes in wildlife forensics. Obviously, the local formations, organizations, and operations of wildlife forensics can be different worldwide, but the detection and punishment of wildlife-related criminal behavior, as well as the prevention of further crimes, play a relevant role in these processes everywhere.

1. Introduction

Hungary doesn't belong to the "exotic countries", and as such, doesn't have a special or emphasized role in the legal or illegal market of prominent species of wildlife. Apart from this, direct (e.g., poaching) or indirect (e.g., negative effects of agriculture, intoxication, traffic, traffic incidents) exploitation of wildlife and animal kingdom is significant. In Hungary, the hunting traditions are historically developed, but obviously new challenges can always arise, such as the recent prioritized demands for preservation and preserving fairness in game hunting. Renewed challenges are manifested in the trans-bordering migration, movement and resettlement of previously also indigenous predator species (such as grey wolves, and brown bears) in Hungarian and neighboring areas. Discrimination of wild predators or uncontrolled pet dogs or their natural and man-made biological hybrids (grey wolf/dog/golden jackal) in connection with the genetic impairment of wild and domestic prey animal populations also require further solutions [1]. Prevention and oversight, also official control of possible misuse or illegal activities regarding zoonotic diseases, deaths, and disfigurement in health conditions of wild and human populations (e.g., swine plague/African swine fever) also rise current demands for clarification [2].

The appropriately efficient organizational and operational

relationship, technical background, and well-focused regulations against wildlife crimes in Hungary – as in some other countries – haven't been consistently formed yet. Despite of increasing requests for implementation, the multilateral developments for adequate forensic issues and aspects require further cooperative enforcement by the different authorities. For this extended evolution the field of forensic genetics, as well as the professionals in this area could provide effective contributions and occasionally leading initiative [3].

Considering the fact that wildlife crime takes place in the biomass, the competence of forensic DNA experts is the most well-suited to provide helpful evidence, therefore their contribution seems to be indispensable in solving these criminal actions [2–5]. Although similar to human crimes, most wildlife crimes do not require forensic DNA analysis [4]. It should be noted, that experience shows that forensic areas outside the field of forensic geneticists cannot advance the investigation of wildlife crime in a meaningful way. The majority of successfully closed cases confirm that the involvement of a forensic DNA expert promotes the effectiveness of investigations of such criminal cases, using strong science to answer questions requiring complex and multilayered processes for resolution [4].

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2. Materials and methods

In this study we investigated and reviewed the most representative regulations, related operations, rules and links on national and mainstream international measures of this topic. In order to examine the characteristics of associations between forensic genetics and wildlife forensics, we gathered references from the websites, scientific literature and Hungarian casework practice.

3. Results and discussion

In recent Hungarian situations, we too have been faced with common problems in this field which limit effective actions against wildlife crime. Namely:

- there is no specific crime scene investigation task force, and no properly trained staff in general in this special area,
- there is a lack of specialized forensic technicians and proper training for these technicians,
- there is incomplete biological knowledge on the part of the authorities,
- there is a lack of appropriate knowledge and practice of potential academic practitioners,
- there is not sufficient adequate training in this special subject at police colleges or academies,
- the further training of specialists is not adequate,
- the funding for non-human forensic genetic laboratories is mostly inadequate, and
- there is a lack of available forensic non-human genetic databases.

Despite the major current difficulties as mentioned above,

- human forensic genetics has already been accepted for a long time by the Hungarian legal system, and genetic evidence have played a pivotal role in judicial decisions,
- technical and methodological background for answering the fundamental forensic questions has been already well developed in forensic genetics in Hungary,
- some concerned authorities of Hungary have already developed widely used protocols and technics for large scale evidence collection, sampling, and analysis for a wide range of biological remains,
- the involvement and implication of non-human forensic genetics in the Hungarian forensic arena and practice has a considerably long-term history,
- standardization, quality assurance, and interpretation protocols of forensic genetics in Hungary – despite its lower level in case of wildlife as compared to human applications – are on many occasions

more developed than other related methods or disciplines regarding wildlife forensics,

- at some Hungarian universities different types of courses in forensic genetics including forensic animal genetics and veterinarian forensics have already been integrated into the higher education curriculum,
- there is a well recognizable demand for cooperation between forensic geneticists and other concerned organizations – including law enforcement, Hungarian National Hunting Chamber, academic partners – in Hungary regarding wildlife forensics.

4. Conclusion

Thus, it may be confidently said that the links between forensic genetics, non-human forensic and wildlife forensic evidence have become unquestionable worldwide, and that this is also observable in Hungary [1–6]. The complexity of forensic genetics can provide not only appropriate tools for wide scale of evidence analysis, but may offer useful epistemological model for other contributors in wildlife criminal cases. However, wildlife forensics has a different path from human forensics, non-human forensic genetics may have comparatively important issues and effects for wildlife forensics, as there has already been introduced by human forensic genetics in the anthropocentric forensic arena.

Declaration of Competing Interest

Authors declare that they have no conflicts of interest.

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