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Wildlife Forensics General Standards



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Foreword

These minimum standards and recommendations are not intended to replace standards in ISO 17025 or additional forensic laboratory standards, but are designed to guide laboratories which are working toward meeting those standards. Notes throughout this document offer clarifications and examples of how a lab may meet a specific standard.

All hyperlinks and web addresses shown in this document are current as of the publication date of this standard.

Keywords: *wildlife forensics, reference collections, evidence handling, good laboratory practice*

Abstract: This document provides minimum standards and recommendations for practicing wildlife forensic analysts. This document covers good laboratory practices, evidence handling, and training as well as considerations of taxonomy and reference collections that are specific to wildlife forensic science.

Table of Contents

1	Scope.....	1
2	Normative References.....	1
3	Terms and Definitions.....	1
4	Requirements.....	3
4.1	Training and Personnel.....	3
4.2	Evidence Handling.....	3
4.3	Equipment and Methods.....	4
4.4	Reference Materials and Collections.....	4
4.5	Taxonomy.....	5
4.6	Case Documentation.....	5
5	Conformance.....	6
	Annex A (informative) Bibliography.....	7

Wildlife Forensics General Standards

1 Scope

This document provides minimum standards and recommendations for practicing wildlife forensic analysts. This document covers good laboratory practices, evidence handling, and training as well as considerations of taxonomy and reference collections that are specific to wildlife forensic science.

These minimum standards and recommendations are not intended to replace standards in ISO 17025 or additional forensic laboratory standards, but are designed to guide laboratories which are working toward meeting those standards. Notes throughout this document offer clarifications and examples of how a lab may meet a specific standard.

2 Normative References

There are no normative reference documents. Annex A, Bibliography, contains informative references.

3 Terms and Definitions

For purposes of this document, the following definitions apply.

3.1

accuracy

The degree of conformity of a measured quantity to its actual (true) value.

3.2

administrative review

An evaluation of the report and supporting documentation for consistency with laboratory policies and for editorial correctness.

3.3

analyst

A qualified individual who conducts and/or directs the analysis of forensic casework samples, interprets data, reaches conclusions, and/or issues reports concerning conclusions.

3.4

chain of custody

The chronological documentation, showing custody, control, transfer, storage, and disposition of evidence.

3.5

competency

Demonstrated and documented ability of an individual to perform assigned work in a discipline or subdiscipline, in accordance with a laboratory's technical procedures and training manuals, before the performance of independent casework.

**3.6
curated collection**

An assemblage of biological reference materials acquired and maintained with associated data according to explicit quality control standards.

**3.7
laboratory**

The entity providing the analysis, including the staff and the physical facility.

**3.8
performance check**

A quality assurance measure to assess the functionality of laboratory instruments and equipment that affect the accuracy or validity of forensic sample analysis.

**3.9
reference material**

Biological specimens of known identity or data derived from them, or from published sources. Voucher specimens are a subset of reference material (see **voucher specimen**).

**3.10
standard operating procedure
SOP**

Written documentation maintained by the laboratory including laboratory policies, technical protocols and methods for specific forensic analyses (see also **technical procedure**).

**3.11
taxonomic authorities**

Literature references accepted by the relevant scientific community and providing the classification of species for a group of organisms.

**3.12
taxonomic identification**

Analyses to establish the taxonomic classification of the sample. These analyses are based on class characters diagnostic for the taxonomic level in question.

**3.13
technical procedure**

Written documentation maintained by the laboratory including laboratory policies, technical protocols and methods for specific forensic analyses (see also **standard operating procedure**).

**3.14
technical review**

An evaluation of reports, notes, data, and other documents according to laboratory guidelines specific to the scope of analyses performed. Technical review should ensure that the data support the conclusions stated in the report.

**3.15
validation**

A process by which a procedure is evaluated to determine its efficacy and reliability for forensic casework analysis.

3.16

voucher specimen

Biological specimen that is typical of its species in accordance with the relevant taxonomic authority. Voucher specimens are of known identity, and are curated with geographic, field collection, and life history data.

4 Requirements

4.1 Training and Personnel

4.1.1 Each laboratory conducting wildlife forensic analyses shall have a documented ethical code by which staff must abide.

4.1.2 Training, research, and experience appropriate to all analysts and technical reviewers shall be documented and retained.

4.1.3 All members of the laboratory who handle evidence shall have training in the following before assuming independent duties:

- a) chain of custody,
- b) evidence handling,
- c) ethics,
- d) cognitive bias, and
- e) safety.

4.1.4 All analysts should have training in relevant laws and expert witness testimony before undertaking independent casework.

4.1.5 Training of analysts shall include a review of the relevant internal and developmental validation studies.

4.1.6 Training of analysts shall include the demonstration of competency before undertaking independent casework.

4.2 Evidence Handling

4.2.1 Laboratories shall have standard operating procedures (SOPs)/technical procedures for the receipt, handling, storage, and/or disposal of evidence in order to prevent evidence loss, contamination, and tampering.

4.2.2 A chain of custody shall be documented, showing manner of evidence transfer to and within the laboratory, and dates and signatures/initials of all personnel who had custody of the evidence.

4.2.3 Evidence examined shall be marked with a unique identifier and the analyst's signature, initials, or equivalent.

4.2.4 When possible, a portion of each evidence sample shall be retained to enable future analysis.

4.2.5 Evidence subject to major modification shall be photographed prior to alteration.

NOTE Examples of a major modification are parts being removed or skeletonization.

4.2.6 When physically altering evidence for the purpose of analysis, careful consideration shall be given to the effects the alteration(s) may have on possible subsequent analyses.

4.2.7 Evidence and derived data shall be:

- a) stored in a controlled and secured manner, and
- b) analyzed in a controlled and secured manner.

NOTE Controlled access includes secure evidence storage, restricted entry to forensic analytical spaces, and digital data protection. Access to analytical and evidence areas by non-forensic personnel should be with escort or under supervision at all times.

4.3 Equipment and Methods

4.3.1 Before use in analyzing casework samples, critical instruments, as defined by the laboratory procedures shall be:

- a) subjected to performance checks with documentation/records retained, and
- b) subjected to calibrations, as recommended by the manufacturer with documentation/records retained.

4.3.2 Analytical procedures shall be based on peer-reviewed studies and/or validated prior to use in casework.

4.3.3 Validation studies shall be documented and records retained.

4.3.4 Statistical methods and any related assumptions that may affect the conclusions shall be documented in the case file.

4.4 Reference Materials and Collections

4.4.1 Laboratories conducting wildlife forensic analyses for analyses that involve taxonomic identification shall maintain or have access to curated collections in order to obtain appropriate vouchers and reference materials.

NOTE Voucher specimens and reference materials are not typically components of veterinary pathology examinations.

4.4.2 Protocols covering curation and preservation of each type of biological reference material held by the laboratory and used for taxonomic identification shall include, at minimum:

- a) documentation and curation procedures,

- b) protection of materials from degradation,
- c) reference to taxonomic authorities, and
- d) collection management.

4.4.3 Specimens and databases used in casework shall be uniquely identified, and documented in the case file.

4.4.4 The identity of reference material shall be confirmed before the material is used in casework involving taxonomic or individual identification. Confirmation shall be made in one of the following ways: through reference to voucher specimens at hand, to specimens in a curated collection, or to the professional literature.

4.4.5 The provenance and taxonomic identity of reference material used for comparison to evidence items shall be documented.

4.5 Taxonomy

4.5.1 Taxonomic identification reports shall include currently accepted scientific names.

NOTE To ensure that current scientific names are used, each laboratory should maintain an updated list of the taxonomic authorities used.

4.5.2 Assumptions of geographic origin used in taxonomic identification shall be documented in the case file.

4.6 Case Documentation

4.6.1 The case file shall at minimum include:

- a) chain of custody,
- b) submittal request,
- c) bench notes,
- d) location of electronic data,
- e) documentation of technical and administrative reviews, and
- f) the final report.

NOTE Other pertinent documents may include emails, records of other external communications regarding the case, shipping and receiving documentation, and photographic documentation of the evidence or packaging.

4.6.2 Bench notes shall include dates of analyses or examinations, and contain sufficient detail to enable another analyst competent in the reporting subject to independently analyze the data and arrive at the same conclusion.

4.6.3 The analyst(s) and reviewers shall be identified in the case file.

4.6.4 Each case file and report shall be technically reviewed by another scientist with expertise in the reporting subject, and the review shall be documented in the case file.

4.6.5 Technical review shall verify the following elements, at minimum:

- a) protocols are cited and followed;
- b) bench notes use the proper format (page numbering and labeling);
- c) conclusions of the analyst are supported by the data.

4.6.6 The case file and report shall be administratively reviewed before the report is issued to check for clerical errors and assure proper format, and this review shall be documented in the case file.

NOTE The administrative review should be carried out by a person other than the author.

5 Conformance

This standard has no conformance requirements.

Annex A (informative)

Bibliography

This is not meant to be an all-inclusive list. At the time these standards were developed, these were considered the most relevant examples of the appropriate literature. Mention of tradenames as part of this bibliography does not imply endorsement by the authors of this document.

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