

## **GUIDANCE DOCUMENT FOR THE DNA SWABBING OF ANIMAL BITE MARKS AND SAMPLING FROM SUSPECTED OFFENDING ANIMALS**

This document describes the best practice for the forensic recovery of scientific evidence where an animal has inflicted a bite mark upon another animal (wildlife cases) or on a person (generally assaults with the use of a dog). The nature of the case will usually dictate who undertakes the relevant recovery, and where this is carried out.

In both instances, in general the aim is to recover a sample of the offending animal saliva that will allow either species identification (for example, was the offending animal a dog or a fox?) or animal individualisation (for example, was this specific dog responsible?), or to recover a sample of the victim animal/human from the suspected offending animal if it is traced soon after the incident. The animal DNA species-identification tests and individualisation must be carried out at an appropriate wildlife DNA forensic laboratory (see [www.pawfwg.org](http://www.pawfwg.org)).

### **Health and Safety**

It is recommended that the reader is familiar with the PAW FWG publication '*Wildlife Crime: a guide to the use of forensic and specialist techniques in the investigation of wildlife crime*' and in particular with Chapter 9 '*Health and safety issues when handling samples and animals*' before undertaking and sampling from live or dead animals.

### **Materials and control samples**

Swabs - Bulbous 'earbud' size swab should be used, not the fine-tipped minitip swabs used by police scene examiners at crime scenes. Once used, they should be returned to their swab tube casing.

Distilled or sterile water

Control samples - A single swab bearing the same batch/lot number on the swab casing should be wetted with the distilled/sterile water to be used for sampling, but then retained as a control reference sample. It should be labelled on the casing as 'Blank water reference swab' or similar and should be added to the evidence bag containing the swab(s) - only one such reference swab is required.

The sampling materials above are included in the PAW FWG Wildlife DNA sampling kit. See PAW FWG website for details on how to purchase these kits.

### **Animal bite marks on another animal**

These samples should be taken by a veterinary pathologist at post mortem examination if the victim is deceased, or by a vet if the victim is still alive. This is because specialist veterinary knowledge will inform sampling and for live animals a vet will know how best to sample whilst considering the welfare of the animal. Where possible, vets/veterinary pathologists with experience of the particular animal species in question should be used. **However, if this will cause a substantial delay in taking samples, police scene examiners or wildlife crime officers can take samples.** Police scene examiners can advise on chain of custody, photography and sample labelling.

It is important that the swabbing process avoids contamination from the blood or other body fluids of the injured animal, as otherwise the retrieved DNA will simply be from the injured animal, so broken flesh and bloodied areas should be avoided. The sampling should focus on areas where saliva transfer is most likely – and this is where specialist veterinary knowledge is required: the area *around* the bite mark should be swabbed - in general it is the area *surrounding* the bite mark, rather than within the mark, where saliva transfer will be least contaminated with the victim's blood.

If the area to be swabbed is dry, the swab should first be wetted with distilled water or sterile water. If the area of interest is already wet, for example an animal that has lain outdoors for sometime, then a dry swab can be used, however if excessively wet it may be better to allow the fur to dry. The swab should be rubbed slowly but with gentle pressure, repeatedly over the relevant area for several seconds, avoiding pulling up hair or other material from the victim. Where multiple bites are present, use different swabs for each bite, and ensure that the swabs are labelled so as to be readily distinguishable.

Also consider the possibility that the bitten animal may itself have inflicted injury on the attacking animal during the incident, for example it may have bitten the attacking animal in self-defence, so there may be the potential to recover blood/tissue/hair transferred to the bitten animal's muzzle area or elsewhere from the attacking animal. Sampling in such instances would be as per the '*Sampling from the Alleged Offending Animal*' section below.

### **Animal bite marks on a person**

The skin surface of the bite mark should be swabbed with a bulbous 'earbud' size swab, wetted with distilled or sterile water, and rubbing the swab repeatedly over the relevant area for several seconds, applying firm pressure. As with bites to an animal, the area *surrounding* the bite mark, rather than within the mark itself, is generally the best for retrieval of saliva. Areas of broken skin should be avoided, so that the swabbing focuses on retrieval of animal, rather than human, DNA. This is clearly only of value if the victim has not already cleaned the wound, or has not had the wound cleaned by medical staff, for example. As with bites to animals, where multiple bites are present ensure that different swabs are used for each bite, and ensure that the swabs are readily distinguishable so it is clear which swab relates to which bite.

The swabbing may be carried out by whoever is readily available, and depending on the circumstances a Force Medical Examiner (FME) or similar, or a police officer, may be appropriate. Consideration should be given to ensuring that the swabbing is undertaken promptly - as time elapses, perspiration by the victim will gradually dilute the traces of animal saliva, and rubbing by any overlying clothing will erode the dried saliva. Prompt swabbing by a police officer is therefore preferable to a day-long delay for swabbing to be undertaken by an FME, for example.

Where a bite mark has been inflicted through clothing, always take possession of the clothing. This will bear traces of the offending animal saliva that will generally persist longer than saliva transferred to skin, and may bear characteristic damage that may allow identification of the offending animal. It may also bear hairs transferred from the offending animal.

## **Evidential Recording of Bite Marks**

In the case of bite marks to animals and to humans, consider photography (with a scale in the image) by police scene examiners of the bite mark. This may be of value for subsequent veterinary assessment to identify the species of the likely culprit, or whether a mark matches the dentition of a specific animal. Photography of bite marks will usually require to be of evidential quality, particularly if the dentition impression requires to be compared with an individual suspect animal, and so police scene examiners are usually the most appropriate for undertaking such photography. Police scene examiners will also have access to specialist alternative light sources which can enhance some mark impressions on bare skin.

## **Sampling from the Alleged Offending Animal**

If a suspect animal has been identified, typically a dog, it will be necessary to consider the potential of recovery of evidential material (usually blood) transferred from the bitten animal/human, and the taking of a reference sample to compare against any DNA recovered from the bite to the bitten animal (if individualisation is required).

### Recovery of material relating to bitten animal/human

These are samples taken from the suspected offending animal, aiming to retrieve evidential material relating to the bitten animal/human. The suspected offending animal will typically be a dog, and the evidential material sought can be blood, tissue or hair transferred to the offending animal during an attack. As such, in general such examinations of alleged offending animals are typically only worth considering where the suspected offending animal has been located relatively swiftly before such material has been lost.

The area around the muzzle or similar, where it is likely that contact will have occurred with the victim animal/human, should be swabbed with a bulbous 'earbud' size swab, wetted with distilled or sterile water. If the fur to be swabbed is dry, the swab should first be wetted with distilled water or sterile water. If the area of interest is already wet, then a dry swab can be used. The swab should be rubbed slowly but with gentle pressure, repeatedly over the relevant area for several seconds. Two or three swabs may be required to adequately sample the relevant area.

If apparent blood staining is present adhering to the fur, the stained fur may be cut with sterile scissors, and the cut hair placed into a small self-seal plastic bag.

Consider if any tissue or hair from the victim human/animal may have become lodged in the teeth of the offending animal. Such material can be removed with a swab, and the swab and adhering material returned to the swab tube.

Samples should be taken by a vet and not the owner of the dog.

### Reference samples

These reference samples should be taken by a vet, who can consider the welfare of the dog whilst taking the sample and also make comment on the condition of the dog. The RSPCA/SSPCA have vets that are often asked to comment on welfare issues. Ideally, a blood sample (in EDTA preservative) should be taken from the reference dog, but if this is not possible two buccal swabs should be taken and labelled appropriately.

### **Packaging, Labelling and Storage of Samples**

*Swabs of recovered material and buccal reference swabs:* the external swab tube casing should be labelled with the details of the swab and the date and time.

The swab should then be sealed in a plastic exhibit bag, and a completed exhibit label attached (or if a pre-printed exhibit bag is used, the details on the outside of the bag should be completed). The swab should then be stored frozen pending laboratory submission.

*Liquid reference blood samples:* these should be labelled on the sample tube with the details of the sample and the date/time, sealed in a plastic exhibit bag, and a completed exhibit label attached (or if a pre-printed exhibit bag is used, the details on the outside of the bag should be completed). The sample should then be stored frozen pending laboratory submission.

*Cut fur samples bearing recovered material:* cut fur bearing blood/saliva should be placed in a small self-seal plastic bag, and then sealed in a plastic exhibit bag, and a completed exhibit label attached (or if a pre-printed exhibit bag is used, the details on the outside of the bag should be completed). The sample may be stored at room temperature (if dry) or should be frozen (if the fur or adhering staining is damp).

### **References:**

*'Wildlife Crime: a guide to the use of forensic and specialist techniques in the investigation of wildlife crime'* Partnership for Action against Wildlife Crime (PAW) Forensic Working Group (FWG), available at [www.pawfwg.org](http://www.pawfwg.org)