The two visible differences between plains zebra hairs and Grevy's zebra hairs from analysis

Scat analysis is typically performed using microscopic photographic analysis of the hair structure. Here below we show a typical photograph of the structure of a hair extracted from carnivore faeces. The lighter outer section is the cortex of the hair and the darker inner section the medulla (Fig. 1).
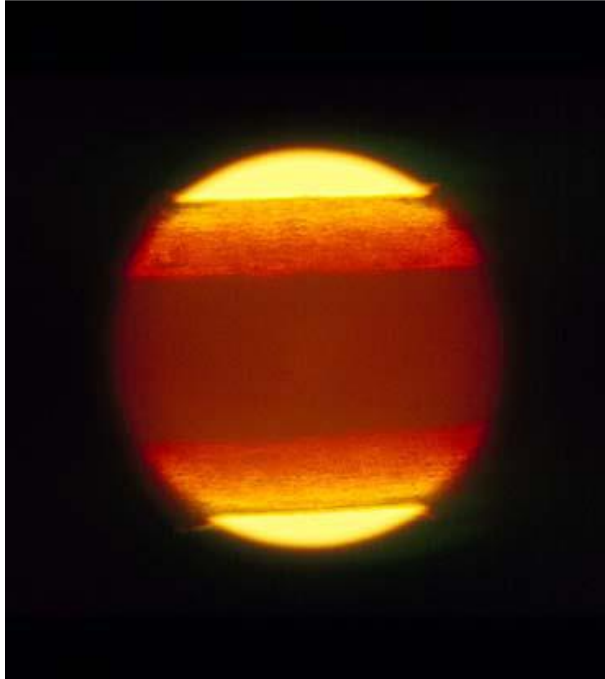

Figure 1: Hair structure from microscopic photography.

Identifying characteristics for comparison between Plains zebra and Grevy's zebra hair

Figures 2 and 3 below show the root section of the two zebra species (plains zebra 2a and Grevy's zebra 2b). Plains zebra hairs typically show a broken medullary core near the root (Fig. 3a) which becomes continuous as it develops toward the tip of the hair, while Grevy's zebra hairs have a solid medulla from root to tip (Fig. 3b).

We developed a methodological operations procedure containing detailed descriptions and clear photographs of each.

Figure 2: a) Root of plains zebra (PZ)   b) Root of Grevy's zebra (GZ)

Figure 3: a) Start of medulla of PZ   b) Start of medulla of GZ

Examining the medullae of hairs under microscope is a proven and accurate means of species identification (Chernova, 2000). Indeed, relying solely on hair cuticles can lead to misidentification due to damage to the hair while passing through a predator's digestive tract. Using medullae in addition does not pose this issue because the medullae are located inside the hair cortex and remain protected during digestion (Dharaiya & Soni, 2012). As in Ogara et al. (2010) and De Marinis & Asprea (2006), a reference collection was developed prior to this study with photographs of the hair roots of each prey species in order to establish the unique characteristics pertaining to each prey species' hair roots (Fig. 2), and medullae (Fig. 3), and the ratio of the hair root width to the cortex. Using this technique allows for economical, efficient, and accurate identification.

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