

## Rope-based oral fluid sampling of warthogs (*Phacochoerus africanus*): lessons learned from South Africa

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Non-invasive sampling of wildlife represents a cost-effective and viable means of confirming disease status in an area. Pathogen sampling of wild animals by baits (pSWAB) has been used with success in wild boars in the northern hemisphere, however, the utility of this approach for assessing African swine fever (ASF) status of vertebrate sylvatic cycle hosts in sub-Saharan Africa, the common warthog (*Phacochoerus africanus*), has not been explored. As warthogs in ASF-infected wildlife reserves generally have seropositivity rates >80% they are ideal indicator species for determining the ASF status of an area. However, in contrast to soft ticks which are readily sampled but characterised by low ASF virus prevalence (generally <5%), the immobilization and sampling of warthogs is a challenging, expensive and high-risk approach. As pSWAB represents a powerful means of collecting and testing saliva from warthogs in endemic settings in South Africa we undertook a preliminary assessment of rope bait sampling in South Africa. A range of rope baits were assessed, namely (i) pig feed wax baits, (ii) pig feed wax baits infused with truffle oil, (iii) cotton ball baits with a molasses attractant, (iv) cotton ball baits with a fermented yeast attractant and (v) traditional maize baits. These were deployed in both natural and transformed settings, and the interactions of wild and habituated warthog were monitored using camera traps deployed at the baiting sites. Our results indicate that warthogs that are not habituated to humans and their environments interact the least with the baits; young warthogs display some interest whereas adults actively avoid baits or display threat-response behaviours. In contrast, warthogs occurring at transformed sites, readily interact with and chew on the rope baits. In both settings, non-target wildlife species also interact with the baits; primarily squirrels, birds, porcupines and black-backed jackals in natural settings and baboons in transformed settings. Despite the limited success with oral baits in natural areas, rope baits hold potential for sampling warthogs at transformed sites where access to feed is readily available. This suggests that with additional refinement rope baits may provide a cost-effective alternative to warthog surveillance efforts that traditionally relied on immobilization for sampling, particularly in those areas where an active wildlife-domestic interface exists and the risk of ASF transmission is highest.

**Keywords:** pathogen sampling of wild animals by baits (pSWAB), non-target species, habituated warthogs