Appendix S1. Dog training.

Scat detection dogs are trained to detect the scent of a particular species scat and track the scent to its source. Because detection dogs are trained and rewarded for finding the scat of the target species, and not the living animal, they pose no direct threat to rare or endangered animals. Once a scat is located, the dog is rewarded with play with his favorite toy (Smith et al. 2003, Wasser et al. 2004, Long et al. 2007b). Scat detection dog was trained by Fabrice Roda with techniques similar to those used to train dogs to detect narcotics and explosives. Regular advices were provided by Jerôme Sentilles (Sentilles et al. 2016), Sandra Jouve, Patrick Delrieu, Lionel Sbaffi & David Lhote. The dog was selected at puppy stage by Sandra Jouve for specific attributes: high drive, play orientation, and appropriate temperament. The dog was trained to associate the scent of gray wolf scat to a reward (i.e. a ball). The dog was trained to lay down and bark at the site of located scats. Fourty scats were used to train the detection dog (see Fig. 1A). Scats were collected in the whole population range by French Wolf Network observers and genetically confirmed; this protocol ensured that the dog was trained on species scent rather than that of individual animals. Line up trials completed the training (Smith et al. 2003), with boxes containing scat of the target species and scats of non-target species (i.e. red fox, domestic dogs nourished with roe deer meat, and mustelids; see Fig. 2A).



Fig. 1A. Detection dog "Newt" is extensively trained to locate wolf scats during transect surveys. A find is positively indicated by the dog lying down and barking. This method allows the handler to acutely determine the location of these scats.



Fig. 2A. Detection dog Newt is submitted to a line-up trial with boxes containing scats from red fox, mustelids, and domestic dogs nourished with roe deer meat. One box contains a wolf scat, and Newt lay down and bark to signal a find.