

International Union of Game Biologists XXVIII Congress

August 13-18, 2007 Uppsala, Sweden

Published by:

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Feasibility of scat sampling field protocols for population estimates of wild boar (*Sus scrofa*) based on a sampling-genotyping-resampling model

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Abstract: For a modified capture-mark-recapture population estimate of wild boar (*Sus scrofa*) based on a sampling(capture)-genotyping(mark)-resampling(recapture) model we used faeces as a source for non-invasively obtained tissue.

In contrast to hair sampling via hair catcher scat sampling might be advantageous for estimating population size because of lower influence of status or gender on individual sampling. This would produce a lower individual sampling-heterogeneity yielded lesser biased estimates.

Here we present field tests of different sampling protocols with respect to feasibility and sampling success. Between July'06 and February'07 a total of 269 scat piles were collected in four different sampling sessions in the 4.000 ha study area in the Palatinate Forest in the southern Germany. Sampling session lasted between 8 and 16 days. Every transect was visited at least every 48 hours resulting in six to eight visits per transect per session.

We first tested north-south oriented line transects against a slope-parallel orientation. After line transect have yielded better results we tested a doubling of transect density and manpower; and a combination of line-transect-sampling with adaptive sampling to consider a possible clumped distribution of scat piles caused by group living.

Overall sampling success was low and ranged between 0.11 to 1.04 findings per hour. Probably due to a lower decomposition rate and larger scat size of piglets sampling success was best in winter using the line-adaptive sampling protocol. Furthermore, the lower ambient temperature in winter results in a better DNA-quality for genotyping.

Influence of different habitat variables for further improvement of sampling success will be discussed.

Keywords: capture-heterogeneity; transects; adaptive sampling