

# Is non-invasive hair sampling a feasible option to estimate wild boar (*Sus scrofa*) population densities ?



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## The problem:

Increasing wild boar populations cause ecological and economical problems (agricultural damages, transmission of classical swine fever into domestic pig populations).

→ Effective population management becomes increasingly important – requiring knowledge about population size!

But: Traditional methods (e.g. hunting bag analysis, spot light counts, snow tracking) are often highly biased or merely yield minimum densities. Individual identification of animals allows for more accurate estimates and absolute numbers (e.g. Capture-Mark-Recapture [CMR] approach). An important assumption in this approach requires similar capture probabilities for each individual of a population (i.e. a low capture heterogeneity).

## The idea:

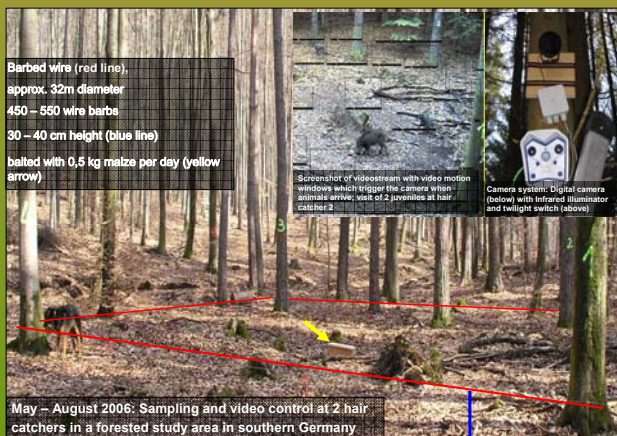
Minimizing capture heterogeneity by non-invasive tissue sampling (hair or scat). Individual identification via genotyping, integration in a modified CMR-approach: "SAMPLING-GENOTYPING-RESAMPLING"



## The question:

Is hair sampling using baited barbed wire enclosures ("hair catchers") applicable for achieving similar individual capture probabilities in wild boar populations?

## Method and results:



Via video control, the behaviour of wild boar visiting two hair catchers was observed in order to detect heterogeneities in the individual sampling probability. During 41 monitoring nights, wild boar crossed the hair catcher 614 times and 142 hair samples (i.e. approx. 2.250 single hairs) were collected.

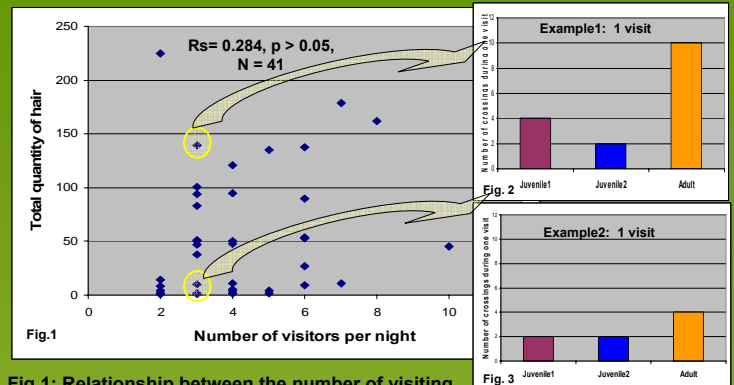


Fig.1: Relationship between the number of visiting wild boar per night at the hair catchers and the total amount of hair collected in the following morning (Spearman's rank correlation, n.s.)

Figs. 2 and 3: Individual differences in the wire crossing behaviour of a wild boar group visiting a hair catcher. Examples: Two different visits of the same group of three animals at hair catcher 1 with different hair sampling success

## Conclusions:

Number of visitors and quantity of hair snared in the wire are not correlated (Fig. 1)! Reasons:

- 1.) Wire crossing frequency differs between individuals and from visit to visit (Figs.2 and 3)
- 2.) The wild boar visiting a hair catcher mostly used the same sections of the hair catcher for crossing.  
 = Accumulation of hair on narrow sections of the hair catcher  
 → High individual differences in the sampling probability!

## The answer:

Baited hair catchers do not yield similar individual sampling probabilities for wild boar!  
 Consequence: Baited hair catchers do not seem to be suited for application in a sampling-genotyping-resampling approach

## The Perspective:

In the same project and study area, scat sampling along transects was tested. Scat promises less biased data because its deposition and sampling is less influenced by individual behaviour.

C.f. IUGB Conference 2007, Schikora et al.: 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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