

Camera traps – a suitable method to investigate the population ecology of raccoons (*Procyon lotor* L., 1758)



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Introduction

Since the early nineties a great increase of raccoons has been observed in the north eastern part of Germany (MICHLER *et al.* 2008). To find out more about the ecology, distribution and social behaviour of the raccoon in these areas, we started our study in March 2006 in the Müritz National Park in Mecklenburg-Vorpomerania (www.projekt-waschbaer.de). In this context, an intensive monitoring with camera traps is employed. Within the last years, camera trapping has become a common method to document various aspects of wild animal behaviour (e.g. JACKSON *et al.* 2006, ZIMMERMANN *et al.* 2007).

With the help of camera trapping it is possible to get extensive information on population density (capture-recapture methodology), individual reproductive status and social system of raccoons.



Fig. 1: Location of a camera trap in the investigation area, Müritz National Park (Photo: "Projekt Waschbär")

Methods

From March 2006 until May 2008 15 self-triggered camera traps with PIR Sensor (BUSHNELL®, STEALTHCAM®) were placed in the investigation area over an area of 800 ha at distinctive sites like faeces deposits, water edges and trap localities. The camera traps were regularly baited with cat food and checked every 3 to 4 days. The data were obtained by continuous camera trapping throughout



Fig. 2: Picture of a male raccoon with ear tags, taken by one of the camera traps in the investigation area (Photo: "Projekt Waschbär").

We conducted the camera trapping over 783 nights, the potential sampling effort was 11.745 trap nights. Because of technical failures and programming errors the effort was reduced to 9.840 trap nights. During this intensive photo-trapping period 21.897 pictures were taken altogether.



Fig. 3: For the individual identification on the pictures the captured raccoons are fitted with diversicoloured ear tags.



Fig. 4: Immobilized male raccoon with individual colour pattern. The marking occurs by using Hauptner®, Raidex®, Distein® colours or a bleaching agent (H₂O₂ 30 %). February 2007, Müritz National Park.



Fig. 5: Camera trap picture of a colour marked raccoon in the Müritz National Park, August 2008 (Photos: "Projekt Waschbär").

Registered pictures (n = 7.496) from Mar 2006 to Feb 2007

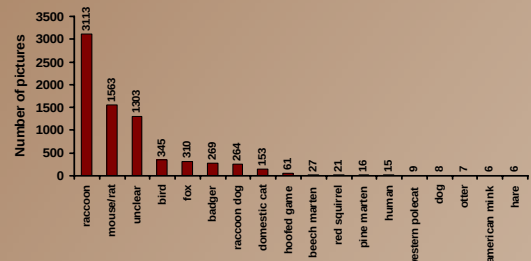


Fig. 6: Recorded camera trap pictures from the first year of investigation divided into 18 categories. The large number of photo trapped raccoons can be ascribed to the targeted choice of camera trap locations as well as the particular baiting.

Reproductive status

After having left the litter site, the female raccoons and her cubs occurred regularly in front of the camera traps. It is thereby possible to make statements about the number of cubs per female. During the first year of research 8 females could be proved, having an average litter size of 3 cubs (min: 2, max: 5).



Fig. 7: Camera trap photos showing female raccoons with their juveniles in the Müritz National Park. (Photos "Projekt Waschbär")

Population density

It turned out that with the help of an intensive photo-trapping, almost all raccoons living in the investigation area could be verified. Within 361 raccoon trappings there had been no raccoon that was not already known by the monitoring with camera traps. On the basis of this sampling success it is possible to estimate the precise raccoon density in the investigation area.

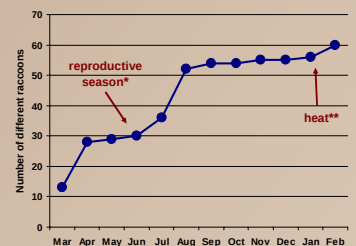


Fig. 8: Development in numbers of registered raccoons in the investigation area through camera traps (Mar 2006 – Feb 2007).

*From the reproductive season forward the cubs leave the litter sites and range with their mothers.

**Adult males travel over large distances in order to find females on heat. For that reason it might also happen that single, non-resident males appear in the investigation area.

Furthermore important additional information regarding the social system and the state of health for example can be gained through this method, too.

Conclusion

Raccoons are particularly well suited to that kind of investigation because they evidently do not feel disturbed by the presence of camera traps - they remain in front of them without showing any kind of timid reaction and sensitivity to flashlight. Moreover they can easily be lured because of their curiosity. Our results suggest that camera trapping in combination with life-captures (enables individual identification) is a very suitable and comparatively easy method to get regular and detailed information about the raccoon's ecology.

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