Bog and swamp areas in the north east German lowlands – ideal habitats for raccoons (*Procyon lotor* L., 1758) ?

B. A. Köhnemann, F.-U. Michler**, J. Ganzhorn*, M. Roth***

"Projekt Waschbär", e-mail: info@projekt-waschbaer.de, www.projekt-waschbaer.de
* Technical University Dresden, Institute of Forest Zoology Tharandt (Germany)
** University of Hamburg, Department of Biology, Division of Ecology (Germany)

Introduction

Although beeing present in Germany for more than 70 years, raccoons (*Procyon lotor* L., 1758) are among the least investigated predatory mammals in Europe. The superior aim of this study (started in March 2006 and continuing until 2009) is to collect extensive basic data concerning the ecology of raccoons in a natural woodland habitat in the east German area for the first time. The investigations have taken place in the "Müritz National Park" (Mecklenburg-Vorpomerania, Germany) within a characteristic bog and marsh landscape. Containing a large amount of wetland habitats, especially bog and swamp districts, this area supposedly demonstrates a very opportune habitat concerning the essential resources for raccoons.

Fig. 1: Raccoon during tactile foraging in shallow water (Photo: I. Bartussek).

Fig. 2: The numerous swamp areas in the Müritz National Park provide a large food supply for raccoons, July 2006 (Photo: „Projekt Waschbär").

According to the *„resource dispersion hypothesis"* (MACDONALD 1983) a good availability of resources should be apparent by means of comparatively small home ranges as well as by a high population density. In order to verify this thesis, telemetric investigations on seasonal spatial behaviour (March till August 2006) of adult raccoons were accomplished on an area of 6000 ha (KÖHNEMANN 2007).

Methods

For this purpose 17 raccoons (11 male, 6 female) were caught in wooden traps, immobilized by a ketamine-xylazine anaesthetic agent and fitted with VHF radio collars as well as with ear tags. With the help of telemetric data survey (n = 1252 localisations) statements could be made concerning the home range sizes. In order to estimate the population density in the investigation area additional life-captures (capture-mark-recapture) and camera trapping has been employed from March 2006 until May 2008.

Fig. 3: Handling of an immobilized male raccoon in the Müritz National Park, April 2006 (Foto: „Projekt Waschbär").

Acknowledgements:

Nationalparkamt Müritz, Ministerium für Landwirtschaft und Verbraucherschutz Mecklenburg-Vorpommern (Oberste Jagdbehörde Schwerin), Norddeutsche Stiftung für Umwelt und Entwicklung (NUE), Dr. Gustav Bauckloh Stiftung (Dortmund), Stiftung Umwelt- und Naturschutz Mecklenburg-Vorpommern, Gesellschaft für Wildtier- und Jagdforschung e.V. (GWJF)

Results

Home range sizes

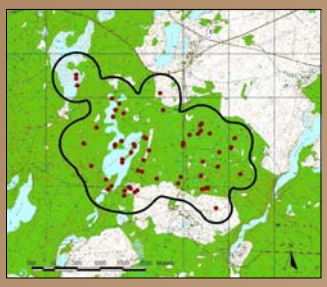

Fig. 5: Home range position of an telemetrically investigated male raccoon in the Müritz National Park (March till August 2006). The red points demonstrate the singular localizations of the animal. The calculations were carried out with the 95 *fixed-kernel-method* (Figure: B. Köhnemann).

In comparison to the only corresponding study in Germany for natural woodland habitat (HOHMANN 1998), the investigated raccoons showed noticeable small home range use (males: Ø = 702 ha; Min. = 514 ha; Max. = 1083 ha; S = 238; MCP 100 %; females: Ø = 263 ha; Min. = 165 ha; Max. = 344 ha; S =114; MCP 100 %). These small home ranges indicate a landscape with a high amount of essential resources. Such dimensions are only known from comparable wetland habitats in North America – thus these kind of habitats seem to be very appropriate for raccoons.

Population density

With the help of 361 raccoon trappings and 21. 897 camera trap pictures a population density of 4-6 animals per 100 ha was estimated (population in summer-time). In comparison with the population density in natural woodland habitats in the central part of Germany (Solling: 2-3 animals per 100 ha; HOHMANN 1998) the density in the eastern region is nearly twice as high. It is thereby also the highest density ever measured in Europe for a natural habitat until now.

Fig. 6: Recaptured male raccoon with ear tags. The trapping sessions happen weekly and with self-made wooden traps, Müritz National Park, June 2006 (Photo: „Projekt Waschbär")

Fig. 7: For the identification on the camera trap pictures, the raccoons are additionally marked with different colour patterns, Müritz National Park, September 2007 (Photo: „Projekt Waschbär")

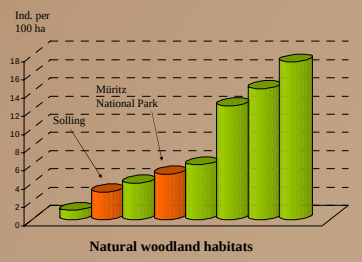

Fig. 8: Comparison of the raccoon population density from different investigations in natural woodland habitats in Europe (red bar) and North America (green bar). Denoted is the number of individuals per 100 ha (Source: HOHMANN 1998; GEHRT 2003; KÖHNEMANN et MICHLER 2008; Figure: F. Michler).

The special bog and swamp areas in the Müritz National Park have turned out to be markedly good habitats for raccoons. This is demonstrated by means of small home ranges and a high population density.

References:

- Gehrt, S. D. (2003): Raccoons and allies. – In: Feldhamer, G. A.; Chapman, J. A. et Thompson, B. C. (Hrsg.): Wild Mammals of North America. 2. Aufl. John Hopkins University Press. Baltimore. Maryland.
- Hohmann, U. (1998): Untersuchungen zur Raumnutzung des Waschbären (*Procyon lotor* L., 1758) im Solling, Südniedersachsen, unter besonderer Berücksichtigung des Sozialverhaltens. – Dissertation Universität Göttingen. 153 S.
- Köhnemann, B. (2007): Radiotelemetrische Untersuchung zu saisonalen Schlafplatznutzungen und Aktionsraumgrößen adulter Waschbären (*Procyon lotor* L., 1758) in einer Moor- und Sumpflandschaft im Müritz-Nationalpark (Mecklenburg-Vorpommern). – Diplomarbeit Universität Hamburg. 99 S.
- Köhnemann, B.A. et Michler, F.-U. (2008): Der Waschbär in Mecklenburg-Strelitz. Labus 27. - NABU Mecklenburg-Strelitz. S. 50-58.
- MacDonald, D.W. (1983): The ecology of carnivore social behaviour. - Nature 301: 379-383.