Effects of raccoon settlement in Germany – a closer look at the ecology of an unfamiliar invasive species

Berit A. Michler[1,2], Frank-Uwe Michler[1,2], Siegfried Rieger[2], Mechthild Roth[1]
[1]TU Dresden, Institute of Forest Zoology, Working Group Wildlife Research (Tharandt)
[2] Eberswalde University for Sustainable Development

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Invasive animal species like the North American raccoon (*Procyon lotor* L., 1758) play a significant role in the ecologic balance of their newly encountered biotope, particularly as their habits might overlap and compete with that of native animals. Against the background of a vast increase of raccoon numbers in Germany within the last years, a controversial discussion arose regarding the influence of the new inhabitant on indigenous respectively protected species and the potential transmission of diseases and parasites. Aiming to elucidate the wildlife biology of this invasive species, a large perennial project has been initiated in 2006 in the northeastern area of distribution (Müritz-Nationalpark, Mecklenburg-Western Pomerania; www.projekt-waschbaer.de). The National Park represents a characteristic wetland area which provides a very opportune habitat concerning the essential resources for raccoons. Within 16 different sub studies profound data on the population biology of this invasive animal could be ascertained for the first time.

The research project on raccoon population biology involves among others the analysis of feeding ecology. Extensive knowledge about the effects of raccoon settlement, primarily in natural landscapes, and the possible occupation of an ecological niche in the autochthonous fauna is lacking entirely so far. As raccoons are highly adaptable, especially in terms of different food sources, it is difficult to evaluate the nourishment composition against the bag drop of a potential threat to indigenous species - yet scat analysis is currently the most informative approach. Therefor profound investigations concerning the nutrition ecology are conducted as part of the described project (n=1300 fecal samples). In order to elementarily evaluate and interpret quantitative statements regarding the nourishment categories of raccoons it is furthermore essential to establish a special conversion factor. The examinations are still in progress– first results have expectedly shown that the nourishment of the raccoon basically consists of the three categories vertebrates (15,0%), invertebrates (43,7%) and plant material (41,3%). It could be approved that raccoons are omnivorous and have an opportunistic dietary behaviour. They can easily adapt to the local range of available food sources. Raccoons are very variable in their diet but prefer food within wetland habitats and food which is easily available in large amounts.

Raccoons were introduced in Germany more than 70 years ago and meanwhile represent an inherent part of the local fauna. This allochthonous species is nowadays designated as a „native species“ (BNatSchG § 5). If he is however a demonstrably invasive animal remains unclear hitherto. In accordance with the Biodiversity Convention of Rio (CBD) animals are stated as risky invasive, if they cause economic, health or ecological threats within their new habitat. According to necessity that basic knowledge about any particular animal species is indispensable in order to evaluate potential

negative impacts, information was obtained regarding the current scientific level about those three levels of impact. Regarding the **economic effects** raccoons can cause local crop losses while foraging, but the overall agricultural damage is negligible. In urban habitats they can sometimes cause costly damages to real estate. The **epidemiological risks** can be considered as not very high. Raccoons rarely appear as carrier animals. The only known zoonosis is *Baylisascariosis* with so far three documented infections in Europe. Rabies, fox tapeworm or trichinas are irrelevant. However, the raccoon could function as a potential vector for Canine Distemper Virus and the parasite *Alaria alata*.
As to the potential **ecological impact** the presumption exists that raccoons could cause negative effects on autochthone species, but proper scientific studies about that issue are lacking. Since raccoons are opportunistic foragers, this could mitigate their force of predation on single native species. Also a pressure of competition on native carnivores was not proven, yet.
Due to the fact that an obliging definition about the size of damages caused by an invasive species is missing, a definite appraisal of the invasiveness remains difficult. Especially in the ecological sector the state of knowledge is extremely low, that´s why a final classification should actually not be undertaken, yet.