GPS-tracking of wild boar (Sus scrofa) – room for refinement?

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In studying the population ecology of wild mammals, the approach to the "3R" principles differs from laboratory research. Replacement is often impractical, and reduction is unnecessary due to intensive efforts in capturing animals. The emphasis is therefore on refinement. Throughout its global distribution, the increasing populations of wild boar (Sus scrofa) are involved in human-wildlife conflicts, notably with the risk of African swine fever transmission. While knowledge on wild boar is abundant in temperate and subtropical regions, it's lacking in the north. To study the behaviour and impacts at the northernmost edge of the distribution, 20 adult wild boars were GPS-collared in southeastern Finland. Although GPS collars are standard in studying mammalian movement, they may pose welfare issues, especially for wild boars, due to neck anatomy, body size changes, and risks regarding anesthesia. Young, growing individuals cannot be collared at all. Therefore, 108 individuals were also marked with less invasive devices: GPS pelt tags, GPS ear tags, and plain ear tags. The adults were relatively sedentary, despite having large home ranges (87 km2 in average), and 18% subadults dispersed, traveling direct distances up to 163 km. While the alternative tags did not match the data quality and duration of GPS collars, the ability to track a large number of young individuals with a less invasive method provided valuable information on dispersal potential, crucial for risk management. The refinement in animal subject welfare, improving technology and cost-effectiveness of the small tags promote their potential in future wildlife research.