New tools and methods

Modern drone technology as a tool for wildlife density assessment and estimation of wildlife impact

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The current consequences of anthropogenic climate change are particularly evident when considering its impact on forests. Various extreme weather events are affecting forests, weakening their functions and resilience. This makes it all the more important to strengthen natural, close-to-nature forest ecosystems to align them with their ecological goals, such as diversity, resilience, adaptability, dynamic stability, and regeneration capacity. The desired forest restructuring is delayed or even hindered by excessively high wildlife densities. Regarding the questions of how much wildlife is present in a forest area and how much wildlife a forest can tolerate, or at what wildlife density silvicultural goals become achievable, opinions among different stakeholders diverge significantly. Conflicts often arise between various forest users when it comes to topics such as wildlife population levels and the goals of forest owners. Various factors, such as the increasingly mild winters and changes in habitats, are particularly benefiting large ungulates in many areas, leading to a continuous population increase over the past two decades. Wild animals are part of the ecosystem. The goal is to have "adapted wildlife populations" that align with habitat capacities. These populations are considered adapted when there is no need to protect the main tree species.

In addition to numerous traditional methods, the use of modern drone technology (unmanned aircraft systems; UAS) has been established in recent years as a precise and cost-effective tool for determining the abundance of wildlife. Using two study areas in Germany, we will demonstrate how drone-based wildlife density assessments can be used to derive conclusions about the intensity of wildlife impact.