
Human-animal conflicts and social dimension

Habituation of pigeons to hawk's presence during the control programs in urban areas

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The increasing populations of pigeons (*Columba livia*) in urban areas represents a growing problem from the perspective of public health and potential contamination and damages of buildings, monuments, etc. The aim of the study was to analyse and observe the effect of using trained raptors on the population of urban pigeons at the factory Valipile in Dumovec, Zagrebačka county, Croatia. One of the main concerns was possible contamination of poultry feed by pigeon droppings and consequent transmission of pathogens into the production. The study was divided in three phases, during September and October 2024. Phase one included monitoring of undisturbed pigeons and crows in the area, for eight days. In the phase two, raptors (i.e., Harris's hawks [*Parabuteo unicinctus*]) were released four times (2x2) with varying intervals. There was a 5-day interval between two raptors flights. The third phase started five days after the second one and included four ousterings. Intervals between first and second, and third and fourth one was one day, while the interval between second and third one was seven days. The presence of pigeons was monitored non-invasively using three photo-traps.

In the first phase, we observed high numbers of pigeons from the morning until midday (8 a.m. till 1 p.m.). Pigeons were more present at the factory in October, probably due to the arrival of the harvested corn and pigeon preparations for winter. During the second phase of the study, after each hawk' flight a sharp decline in pigeon numbers was observed but the following day pigeons returned in "normal" numbers. In the first part of the third phase, hawks have induced decline in pigeon numbers during the flight day, while in the second part this decline was observed only a day after. During the third phase of the research, it was observed that during the hawks' presence pigeons used to take a so-called safety zone, keeping at a safe distance from the hawk, but remaining at the study site. The results of the study point to the habituation of pigeons to the presence of raptors. It was confirmed that falconry alone is not efficient enough for a longer period and should be complemented with other methods of bird control.