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# Estimating the Impact of Bird Strikes

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Bird strikes have the potential to cause severe damage to aircraft. Therefore, measures to reduce the risk of bird strikes are performed at airports. However, this risk is not limited to the airport but is increased in the arrival and departure corridors as well. Consequently, a significant amount of bird strikes occurs outside the direct airport area. To estimate the risk of bird strikes in this extended airport area, a fast-time simulation environment was developed, representing air traffic as well as bird movement. It was verified by performing Monte-Carlo Simulations including real flight plans, a model for realistic bird movements and a comparison to real bird strike data.

In this study, the simulation results were evaluated considering the impact of bird strikes. For this purpose, the kinetic energy of the bird strikes that occurred within the simulation was calculated. Based on the international certification requirements for the impact resistance of engines, windshields and structure, the potential for severe damage was analysed. Finally, the results were compared to a long-term study of damaging bird strikes of the US aviation authorities. The results indicate that the simulation environment allows a reasonable estimation of the damaging potential of bird strikes. The simulation data derives from the Netherlands, while the real bird strike data originates from the US. For further validation and enhancement of the simulation's bird model, European data from multiple years would be required.