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Mapping changes in structural diversity of the agricultural landscape of Saxony using historical remote sensing data

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The agricultural landscape of Central Europe underwent big changes over the last decades, especially between the 1960s and 1980s. Through measures like land consolidation, collectivization and profit-driven agriculture policies the structure of rural areas has changed significantly which affected not only farming activity but also led to the destruction of species habitats and wildlife corridors. In order to quantify these shifts in landscape structure and their impact on biodiversity, we analyzed historic CORONA spy imagery from the years 1965 and 1975 together with digital orthophotos from current years in the German federal state of Saxony. Specifically, we used the presence and absence of agricultural boundaries and field margin strips as a proxy for landscape heterogeneity. By applying a feature detection algorithm, we found a significant decline of field boundaries in all of Saxony between 1965 and 1975 which has either not or partly recovered until the present day. The findings of the analysis are considerably affected by the differences in data quality which complicates comparison between time steps. Research is ongoing with focus on optimizing the workflow and minimizing detection errors as well as assessing ecological records to link the findings to biodiversity trends.