

Science for Environment Policy

The effects of agricultural land use change on farmland birds in Sweden

The effects of changing agricultural practices on farmland birds are explored in a recently published study from Sweden. Overall abundance of 16 common species declined by 23% between 1994 and 2004, which may be partly caused by changes in land use, such as an increase in the amount of wheat cropland. However, effects vary between species, and some species increased or stayed stable in number.

Across Europe, many species of bird and butterfly associated with traditional, low-intensity farming have suffered as a result of both increasingly intensive [agriculture](#) and the abandonment of farmland.

This study investigated the effects of dramatic shifts in agricultural policy in Sweden on 16 common farmland bird species. The research team conducted bird surveys in 212 sites of south-central Sweden in 1994 and again in 2004. The year 1994 marked the end of a period in which low-intensity farming was promoted in Sweden to counter overproduction and agricultural production has increased since then.

Five surveys were conducted per site in both years to estimate the number of territories per species on each site based on the number of individual birds seen and heard. The sites were mainly in arable fields. They also recorded changes in [land use](#) on each site, and mapped habitats and land uses in the surrounding landscape, within 600 m.

Most of the sites underwent some form of land use change. The proportion of land used for autumn sown crops (mainly wheat), a high-intensity land use, showed the greatest change, rising from 8% to 27% across the sites. The proportion of some forms of low-intensity land use fell: cultivated pasture, ley (cultivated grassland for hay and silage) and set-aside land. The proportion of land used for short-rotation coppice of willow (*Salix*) stayed around the same.

Certain land use changes were associated with changes in abundance for six species in particular. White wagtail (*Motacilla a. alba*) decreased in sites with increased cover of autumn sown crops and northern wheatear (*Oenanthe oenanthe*) decreased in sites with increased cover of cultivated pasture.

Positive effects of some low-intensity land uses could be seen for four species: reed bunting (*Emberiza schoeniclus*) and pheasant (*Phasianus colchicus*) increased in sites with an increased cover of short-rotation coppice, and whinchat (*Saxicola rubetra*) and fieldfare (*Turdus pilaris*) increased in sites with increased cover of non-rotational set-aside land.

Local forest was shown to affect the relationship between land use and abundance for several species. Generally, low-intensity land uses, such as ley, cultivated pasture and set-aside land, had a more positive (or less negative) effect on abundance when they were in a mixed forest-farmland landscape, than when in open farmland. The species affected include: linnet (*Carduelis cannabina*), skylark (*Alauda arvensis*), common whitethroat (*Sylvia communis*), whinchat, fieldfare and white wagtail.

The study therefore concludes that both land use change and landscape settings can affect local abundance of farmland birds. The effects are very species specific, however.

Across all species, abundance was 23% lower in 2004 than in 1994. Similar declines have been reported elsewhere across Sweden. The decline was significant for eight species, especially pheasant, red-backed shrike (*Lanius collurio*) and reed bunting.

Territory numbers increased significantly for three species, however: woodpigeon (*Columba palumbus*), white wagtail and common starling (*Sturnus vulgaris*). The remaining five species, which included whinchat and common whitethroat, stayed fairly stable in numbers.



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