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Science for Environment Policy

Road and rail infrastructure threaten Sweden's protected birds

In Sweden, 63% of areas designated as Special Protection Areas (SPAs) for endangered birds are impacted by major roads or train lines, according to a new study. The research showed that 126 000 hectares (ha), or 4.2% of the SPAs, fall within 1 km of a road or train line, leading to a predicted 1% loss in bird abundance. The problem is greater in the south of the country, where 25.8% of land designated as SPA falls within 1 km of a road or rail line, representing an estimated 4 to 7% reduction in birds' abundance within SPAs.

Roads and railway lines may serve an important function — helping people move freely and allowing the easy transportation of goods. However, they can also be harmful to the environment, particularly wildlife. Transport infrastructure is recognised as a significant cause of biodiversity loss around the world.

Roads can damage wildlife in several ways, including through directly destroying habitat, creating physical barriers preventing the movement of animals, traffic collisions and noise and light pollution. This pressure on biodiversity is predicted to grow in coming decades, as traffic and infrastructure networks grow worldwide.

There is growing concern about the impact of roads and traffic on wildlife populations in Europe's protected areas and biodiversity hotspots, especially those contained within Natura 2000[1], a network of protected areas covering Europe's most valuable and threatened species and habitats. The network stems from the Habitats Directive[2] and consists of Special Areas of Conservation (SACs), designated by Member States (MSs) under the directive, to ensure the favourable conservation status of habitat types and species of European Union interest throughout their range in MSs. Natura 2000 also contains Special Protection Areas (SPAs), designated under the Birds Directive[3], for 194 particularly threatened bird species and all migratory bird species. There are about 27 000 sites in the Natura 2000 network, accounting for 18% of EU land territory and 8% of its marine area. Nearly 5 400 of these sites are SPAs. However, the Natura 2000 protected areas do not exclude human activity — and roads run through 29% of these sites.

The study set out to investigate the impact that road and rail infrastructure is having on Special Protection Areas (SPAs) and protected bird species in Sweden. The researcher calculated the area and proportion of each of Sweden's SPAs falling within 1 km of a major road or rail line. These zones host 20–30% fewer birds than average.

The results showed that the majority (63%) of Swedish SPAs contain sections located within 1 km of a major road/railway. These sections amount to approximately 126 000 ha, or 4.2% of the country's total SPA area, and are predicted to lead to a 1% loss in bird abundance.

Continued on next page

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Road and rail infrastructure threaten Sweden's protected birds *(continued)*

There are, however, large differences amongst biogeographical regions. For example, 25.8% of SPAs in Sweden's southern continental and coastal regions, which tend to be more urbanised, fall within 1 km of a road or rail line, leading to a predicted 4 to 7% loss of bird abundance within these SPAs.

Smaller SPAs are more affected by transport infrastructure and traffic, as they contain more agricultural land and grasslands. But SPAs with greater forest habitat seem to fare better, probably because they are situated, on average, further away from roads.

According to the researcher, the impacts on Natura 2000 SPAs are of particular concern, as this network of protected areas is a cornerstone for maintenance and restoration of biodiversity within the EU.

According to Article 4 of the Birds Directive, EU MSs must take appropriate steps to avoid habitat deterioration and significant species disturbance within SPAs. The researcher therefore recommends that management plans for Natura 2000 sites should better acknowledge and consider the threats to wildlife conservation caused by both current transport infrastructure and new development projects in and near sites.

The researcher suggests that conservation authorities should also ensure that infrastructure owners and managers minimise the negative impact of nearby roads and railways and related traffic, for example by trying to prevent bird-vehicle collisions (e.g. with flight diverters); planning the timing of infrastructure maintenance and construction work to avoid particularly sensitive periods; providing crossing structures and reducing noise and visual impacts through walls or adapted paving. Special attention should also be paid to sites with a large overlap in zones dominated by roads or railways, or those that contain particularly vulnerable species or habitats.

1. Natura 2000: https://ec.europa.eu/environment/nature/natura2000/index_en.htm

2. Birds Directive: https://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

3. Habitats Directive: https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm