

Modern EU agriculture jeopardizes biodiversity in new member states

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All in all, the scientists found 10 amphibian species in the surveyed ponds, including EU-wide protected species. Credit: Photo: Tilo Arnhold/ UFZ

Traditional agricultural practices can make a major contribution to preserving biodiversity in the EU's new member states in Central and Eastern Europe. By contrast, the construction of roads and the intensification of agriculture currently encouraged by EU farming subsidies pose a threat to amphibians. The rich natural environment still extant in many accession countries is under threat, according to scientists writing in the journal *Biological Conservation*.

The researchers from Romania, Germany and the Netherlands investigated amphibians for their study in the Romanian province of Transylvania. They spent nine years studying the populations of various

species of newts, frogs and toads in 54 ponds and related their performance to nearby land use.

All in all, the scientists found 10 amphibian species in the surveyed ponds, including EU-wide protected species like the Great Crested Newt and the Yellow Bellied Toad. Statistical evaluation revealed that roads had the biggest impact on their populations. Other factors like the size of ponds, building development, farmland, pasture, woodland and marshlands proved to be far less important. "Roads have a direct negative effect on many species of amphibians, which can get run over by cars. But roads also have an indirect impact, for example by the destruction and isolation of the critical habitats for amphibians such as breeding, summering and overwintering habitats" explained Dr Tibor Hartel from Babeş-Bolyai University, Cluj-Napoca (Romania).



Instead of fertilizer manure is used in the fields around Malancrav in Transylvania .The comparatively extensive agriculture in the study region with little machinery and hardly any chemicals provides conditions which are still suitable for many amphibian species. Credit: Photo: Tibor Hartel/Babes-Bolyai University, Cluj-Napoca

The study area was the "Saxon area" of Southern Transylvania along the Târnava Mare basin in Romania. The agriculture is still largely traditional in this region, sometimes with little changes through the centuries. The landscape is dominated by pasture and deciduous forest, while the arable lands are small sized and scattered across the native grassland vegetation. Mankind's negative impact on biological diversity is statistically still far lower in Eastern Europe than in the West – but this traditional cultural landscape and hence its unique [biodiversity](#) could soon disappear if agriculture were to be intensified. "We believe that the comparatively extensive agriculture in the study region with little machinery and hardly any chemicals provides conditions which are still suitable for many [amphibian species](#)," explains Dr Oliver Schweiger from UFZ.

The findings could have important consequences for protective measures for amphibians in regions of Central and Eastern Europe, where farming has remained largely traditional. Preserving traditional, extensive land management could be the key factor in protecting these species. However, that could be a tough challenge, for many regions, joining the EU will lead to more intensive land use and infrastructure expansion. And that in turn will result in the fragmentation of the landscape and the general deterioration of the remaining habitats. Researchers are now calling for a balance to be struck between the legitimate desire for improved infrastructure and higher agricultural yields on the one hand and the beneficial effects of extensive land use on the other. In their view, this challenge should be regarded as an opportunity for Eastern Europe not to repeat the mistakes made in the West.

More information: Hartel T, Schweiger O, Öllerer K, Cogălniceanu D, Arntzen JW (2010). Amphibian distribution in a traditionally managed rural landscape of Eastern Europe: probing the effect of landscape composition. *Biological Conservation* 143: 1118.
www.ufz.de/data/Hartel%20et%20al%20201012444.pdf

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