

## **All wild boar-vehicle collisions respond to the same variables? Looking for patterns using self-organizing maps**

Víctor Javier Colino Rabanal ([vcolino@usal.es](mailto:vcolino@usal.es)); Miguel Lizana Avia ([lizana@usal.es](mailto:lizana@usal.es)); Salvador José Peris Álvarez ([peris@usal.es](mailto:peris@usal.es))

Víctor Javier Colino Rabanal

Area of Zoology. Departament of Animal Biology, Ecology, Soil Science, Parasitology, and Agrochemistry. Campus Miguel de Unamuno. University of Salamanca. 37071 Salamanca, Spain. Phone: 34-676643770

Selecting the most efficient mitigation measures to reduce animal-vehicle collisions is difficult without knowledge of the circumstances on each stretch of road. The identification of patterns, based on the variables that explain the spatial distribution of road-kills would be useful to improve decision-making. We used data mining techniques to identify patterns within a dataset of wild boar-vehicle collisions in Castilla y León, Spain. Collisions were grouped using a Kohonen's self-organizing map which is a neural network of competitive learning. A 4x4 matrix was derived to obtain 16 groups of collisions with similar properties in relation to the traffic, the road and the surrounding environment. This number could vary to improve the adjustment between patterns and mitigation measures. We used logistic regressions to model each pattern. Knowing what the more important variables in each collision are, we could choose the best type of mitigation measures in accordance with the road segment properties. Expensive wildlife passes and fences should be restricted to segments of highways with high traffic volumes and hotspots, where the probability of successful crossing is very low. For medium and low volumes of traffic the best solutions vary in relation to the characteristics of the surrounding landscape.