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In France, the common hamster (*Cricetus cricetus*) is only present in the Alsace region. According to a regional survey conducted in the 1970s, the species was widespread in this region. However, its distribution has dramatically decreased since the 1980s, and the French population of common hamster is now threatened with extinction. In addition to the protection provided by the Berne Convention that France ratified in 1993, a national decree for the protection of the common hamster was signed in 1996 in France. The monitoring of the species is handled by the French Biodiversity Agency (OFB) since 2000, through a yearly burrow spring census. It is used both to get an estimate of population size and to trigger agri-environmental measures designed to favor the species. The survey is performed in three types of culture (winter cereals, alfalfa and meslin), considered as favorable to the common hamster according to a study conducted between 1998 and 2000 in Alsace. However, habitat management has since led to a sharp change in the proportions of these “favorable” crops, in addition to changes in agricultural practices. Moreover, the survey is currently limited to the area where burrows were found between 2010 and 2012, and therefore excludes the area formerly occupied by the species. Such sampling scheme complicates the comparison of inter-annual variations in the number of burrows and may provide biased population size estimates. For these reasons, OFB would like to design a new protocol notably relying on a new spatial sampling scheme. As a prerequisite, we modelled the distribution of the common hamster in the Alsace plain, based on the monitoring dataset collected between 2012 and 2021. We tested spatial variables related to soil or landscape features, and of spatio-temporal variables related to crop rotation, weather and agri-environmental measures. The monitoring dataset involved several methodological challenges for the distribution modelling. We dealt with these challenges by using an occupancy model that accounts for imperfect detection and that is spatially explicit, allowing us to offset the restriction of the survey to specific crop types by accounting for the areas neighboring those surveyed.