
Exploring the broad scale use of mechanical trap types in brown rat management

Frank Huysentruyt*¹, Kristof Baert¹, Ivy Jansen¹, and Emma Cartuyvels¹

¹Research Institute for Nature and Forest (INBO) – Havenlaan 88, 1000 Brussels, Belgium

Abstract

In brown rat (*Rattus norvegicus*) management, the use of anticoagulant rodenticides is common practice. As an alternative for this, in order to overcome effect of secondary poisoning and avoid animal welfare concerns and rodenticide resistance, the use of mechanical traps could be more favourable. Given this, various models of mechanical traps have been developed in recent years, but little is known on their efficacy or efficiency. In this study, we compared four different mechanical traps in a field study setting on motorway parkings. In this study, we compared two multiple catch trap types (Goodnature A24, EKO 1000) and two single catch trap types (Nooski, Killgerm snaptrap in a baitbox).

Motorway parkings often harbour rats as food is available as well as ample cover. On each parking site two Goodnature A24 and two EKO 1000 traps were placed, combined with four traps of each single catch trap type. The single catch traps were doubled in number in an attempt to level catching probability for all different trap types.

Four weeks of pre-baiting were followed by 11 consecutive trapping nights. For each rat caught, weight and sex were recorded, just as the number of by-catches per trap. Four different parking sites were visited at four different sessions (for a total of 16 sites) over the period from May to October 2017, a period when rat numbers are known to be abundant. For the data-analysis four sites, where the Goodnature A24 traps could not be placed for reasons of safety, were excluded. Peanut butter and sunflower seeds were used as bait for each trapping system.

Results showed the highest number of rats caught in snap traps (84) with 38 bycatches while the EKO 1000 produced 34 rats caught with 66 bycatches. Both the A24 and Nooski performed poorly at catching rats (5 and 15 respectively) with the A24 showing 28 bycatches, while no bycatches were observed in the Nooski trap. Additionally, both the A24 and the Nooski had several deployments (7 and 9 respectively) in which the target species could not be determined. Most of the bycatches were mice, but also some little birds, shrews, a weasel and a hedgehog were caught.

The snaptrap outperformed the three other traps significantly ($p < 0,001$, Tukey test) in the number of brown rat caught. The use of the EKO 1000 could be considered as illegal, as an ethanol based solution is used to kill the rats and since, to our knowledge, this product is not certified for use as a biocide in Europe, the humanness of this trap is also questioned. The Nooski trap did not score well and also presents animal welfare issues. Even though it looked promising, as good results for black rat (*Rattus rattus*) were reported elsewhere, the

*Speaker

Goodnature A24 trap does not seem to be suitable to control brown rats.

Working with single catch traps like snap traps is more labor-intensive, but given the low cost price and high catching success it is probably the best option to use in comparable situations for brown rat management. To verify this, we deployed these snap traps over the span of an entire year on ten different motorway parking sites. As this research is still ongoing, these results are not presented here but will be illustrated in the oral presentation.

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