Rodenticide resistance and environmental monitoring

Brodifacoum – worrying trends in exposure in non-target wildlife

George, Sheila[1*]; Campbell, Steve[1]

[1] Wildlife Management Unit, SASA, Edinburgh, UK
* sheila.george@sasa.gov.scot

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Second generation anticoagulant rodenticides (SGARs), a key component of rodent management strategies, have been detected in a range of non-target wildlife species. In the UK, an industry-led stewardship scheme was introduced in 2016 in efforts to reduce this. The scheme developed compulsory best practice guidance on the use of anticoagulant rodenticides, introduced sales restrictions tied to a requirement for formal training and also monitors retailer compliance with the restrictions. Rule changes also permitted brodifacoum, difethialone and flocoumafen to be used outdoors 'in and around buildings', having previously been restricted to indoor use only. Brodifacoum is considered to be more potent than other dominant SGARs, so this rule change could have potential implications for non-target wildlife.

Here we present findings of recent research in Scotland, investigating the impact of stewardship on rate of exposure and concentration of SGARs in foxes and buzzards, with a particular focus on brodifacoum. We also briefly discuss trends in brodifacoum exposure in other species and provide context on rodenticide use from surveys of key sectors. No reduction in rate of exposure or concentration of SGARs was observed in study species. Exposure to brodifacoum doubled in foxes and almost tripled in buzzards post-stewardship. They were both also more likely to be exposed to multiple SGARs post-stewardship. Recent rodenticide usage surveys suggest that brodifacoum represents a greater proportion of total rodenticides used in Scotland in recent years compared to pre-stewardship surveys. However, overall rodenticide use, in sectors for which data are available, has decreased in the same time period. In the absence of sales data, it is unclear whether the sectors surveyed are representative of total use, or if poor compliance could explain the increase in wildlife exposure to brodifacoum.

This work adds to a growing body of evidence suggesting that the UK industry-led stewardship scheme has not yet met its objective of reducing non-target wildlife exposure to rodenticides. The increase in the frequency of brodifacoum exposure in all species investigated is of particular concern. Continued monitoring of residues will be important as future rule changes are introduced. Further modifications to rodenticide usage under stewardship may also be necessary to reduce non-target exposure of wildlife to anticoagulant rodenticides.