

ANTICOAGULANT RODENTICIDES AND THEIR IMPACT ON THE PREDATORY BIRDS OF EUROPE

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OBJECTIVES

The objective of this work is to review the situation of some European countries regarding the impact of the anticoagulant rodenticides (AR) and to raise awareness of the way they can affect animals indirectly, proposing some alternative solutions.

WAYS OF EXPOSURE

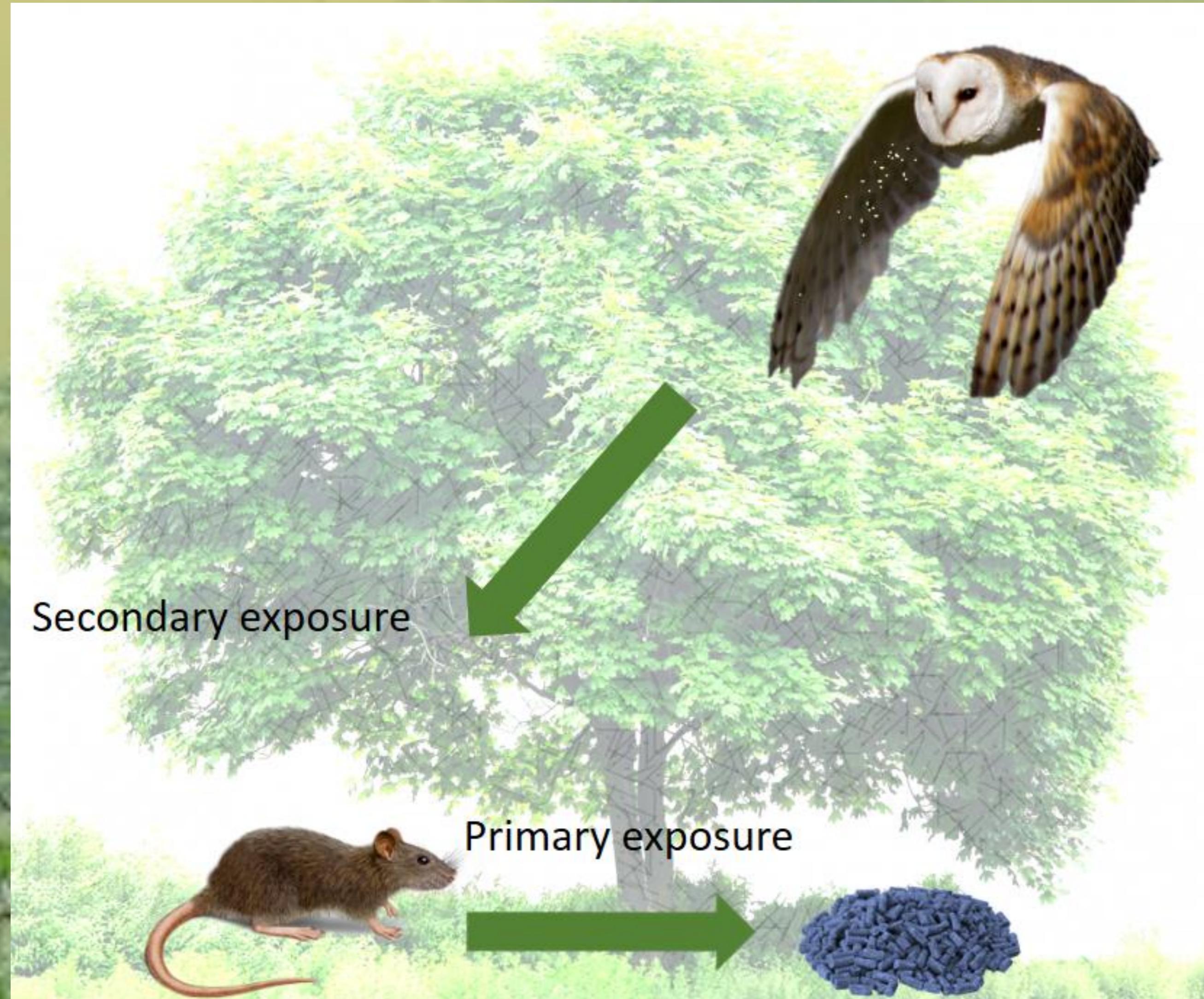


Fig. 1: Pathway of exposure of predatory birds to anticoagulant rodenticides.

AR IN BARN OWLS (*Tyto alba*) IN THE UNITED KINGDOM

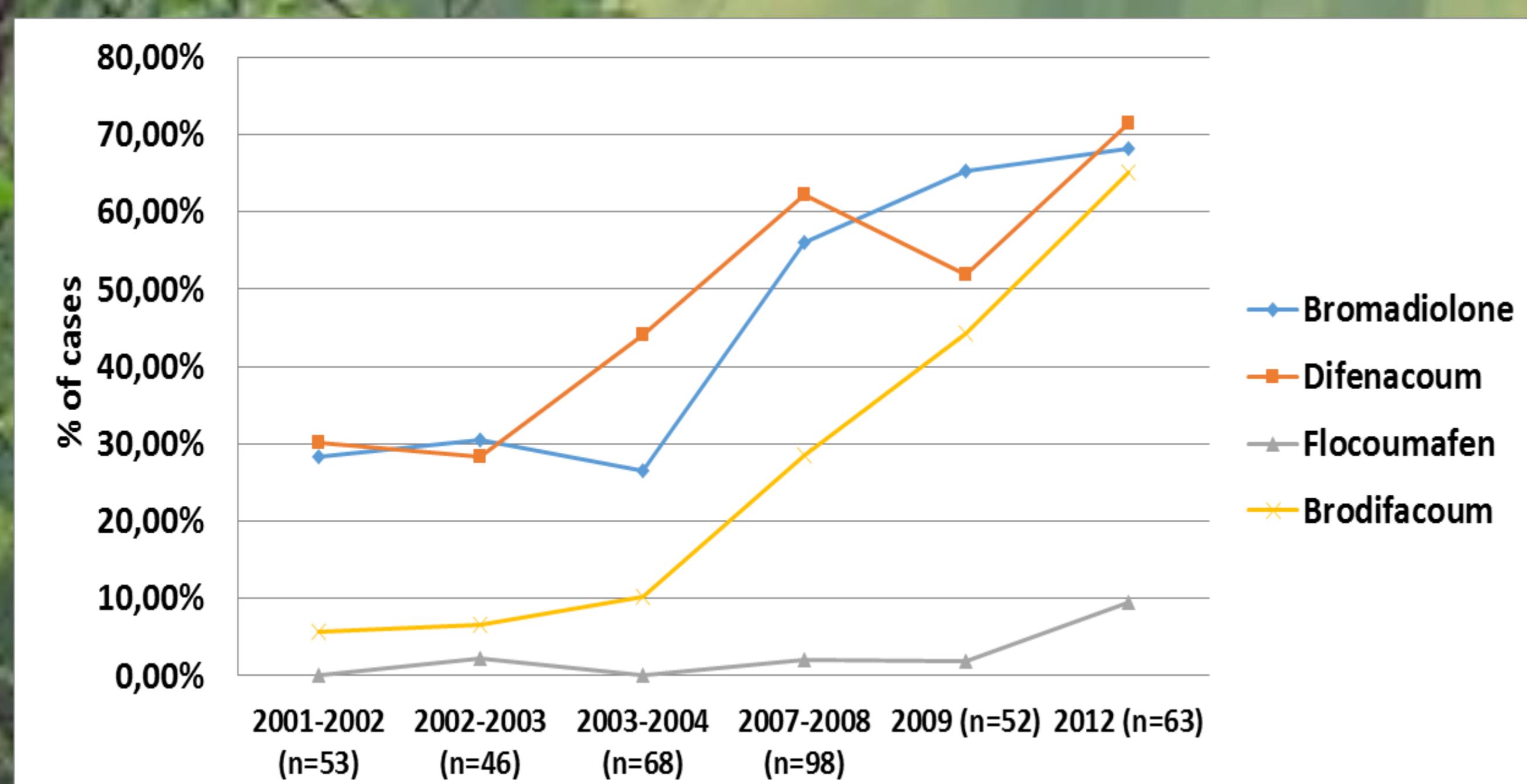


Fig. 2: Percentages of the data obtained in an analysis of the AR found in barn owls in the United Kingdom. Modified from: Shore et al. (2005); Shore et al. (2006); Shore et al. (2007); Walker et al. (2010b); Walker et al. (2010c); Walker et al. (2014).

It is shown that the usage of bromadiolone, difenacoum and specially brodifacoum has had an increasing trend for the last 13 years, while flocoumafen has remained low.

CONCLUSIONS

Bromadiolone and difenacoum are the most used AR in Great Britain and France, while bromadiolone and brodifacoum are the most used AR in Spain.

It would be advisable that both Spain and France have an AR monitoring scheme like the United Kingdom, to obtain more valuable data.

The use of AR with a long biological half-life should be restricted in extensive areas, and their users should be informed about the correct usage of those chemicals and be aware of the impact they can have on the wildlife.

Alternative methods to fight the rodent pests can be used: mechanic traps or animals that feed on them, such as predatory birds.

THE ANTICOAGULANT RODENTICIDES (AR)

They are a type of pesticides thoroughly used in Europe in diverse sectors to fight rodents. They can be classified in two groups.

- **First generation anticoagulant rodenticides (FGAR):** Warfarin, coumachlor, coumapharil and coumatetralyl.
- **Second generation anticoagulant rodenticides (SGAR):** Brodifacoum, difenacoum, bromadiolone, difethialone and flocoumafen, chlorophacinone, diphacinone, pindone and valone.

They can be experimentally found in the liver of the affected animals, and the potentially lethal thresholds are:

- > 0.1 µg/g wet wt (found in owls diagnosed *post-mortem*).
- > 0.2 µg/g wet wt (found in owls experimentally poisoned).

AR IN COMMON BUZZARDS (*Buteo buteo*) IN SPAIN

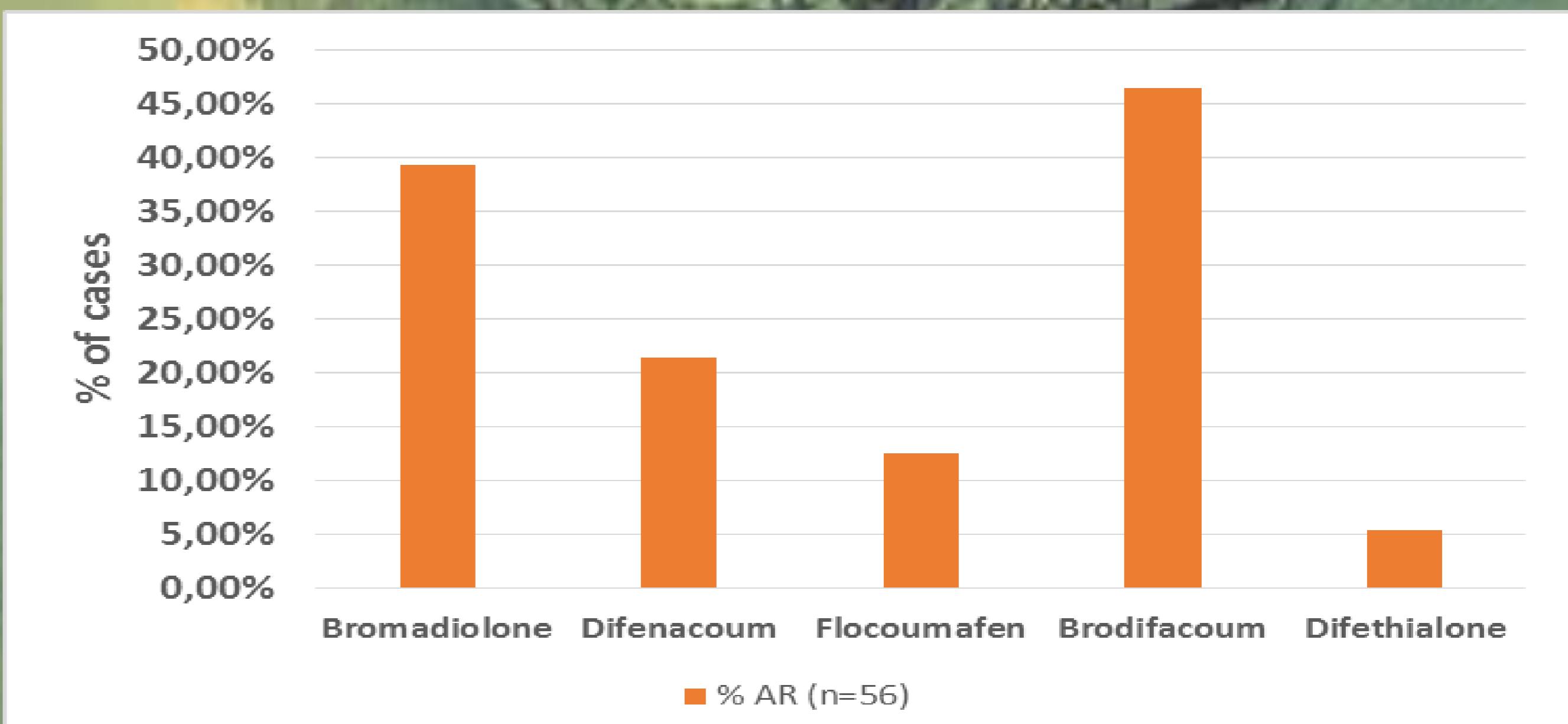


Fig. 3: Percentages of the data obtained in an analysis of the AR found in common buzzards in Spain, 2014. Modified from: López-Perea et al. (2015).

AR IN COMMON BUZZARDS (*Buteo buteo*) IN FRANCE

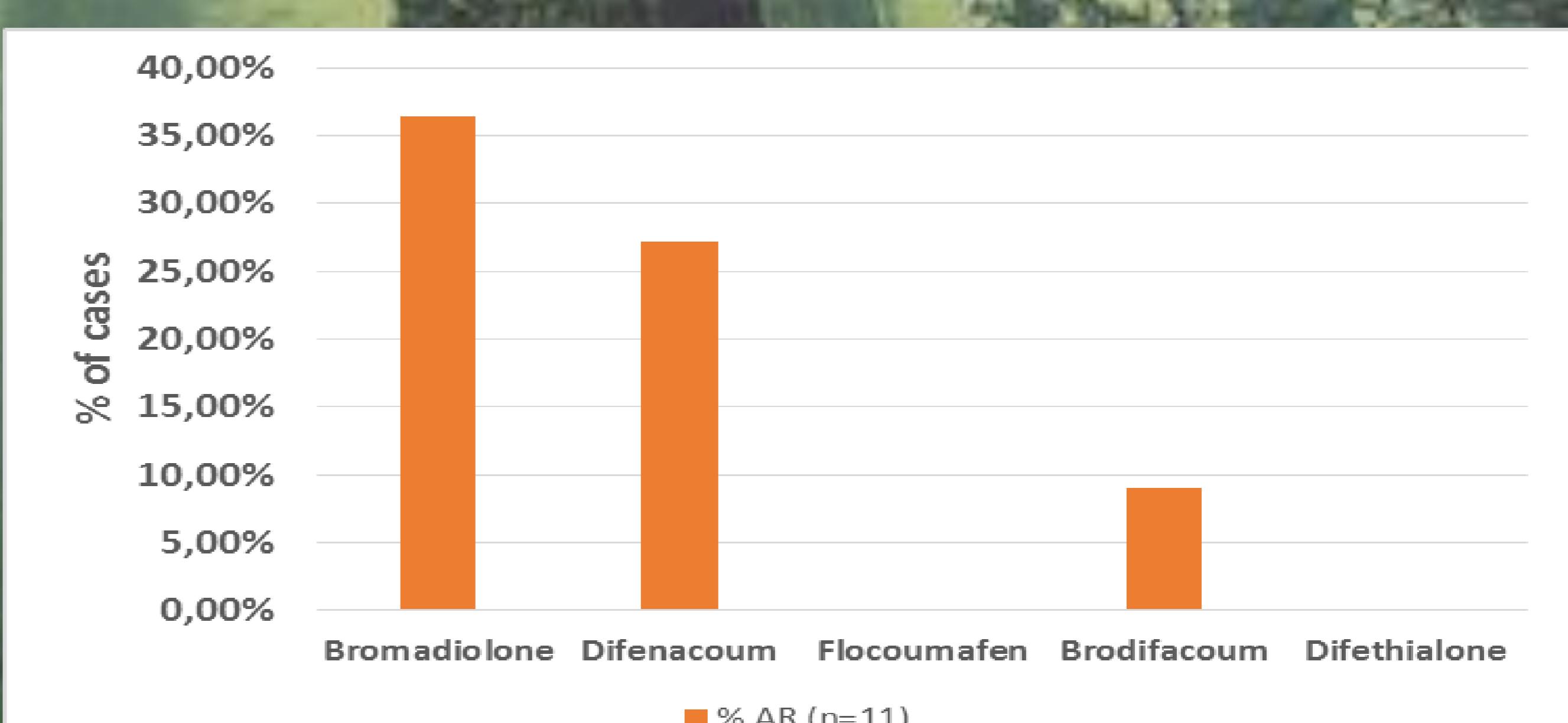


Fig. 4: Percentages of the data obtained in an analysis of the AR found in common buzzards in France, 2003. Modified from: Lambert et al. (2007).

It can be seen in Figs. 3 and 4 that bromadiolone and brodifacoum were the most used AR in Spain while in France, bromadiolone and difenacoum were the prevailing ones.

REFERENCES

Lambert O, Pouliquen H, Larhantec M, Thorin C, L'Hostis M. Exposure of raptors and waterbirds to anticoagulant rodenticides (difenacoum, bromadiolone, coumatetralyl, coumafen, brodifacoum): Epidemiological survey in Loire Atlantique (France). *Bull Environ Contam Toxicol*. 2007;79:91-4.

López-Perea JJ, Camarero PR, Molina-López RA, Parpal L, Obón E, Solá J et al. Interspecific and geographical differences in anticoagulant rodenticide residues of predatory wildlife from the Mediterranean region of Spain. *Sci Total Environ*. 2015;511:259-67.

Shore RF, Malcolm HM, Wienburg CL, Walker LA, Turk A, Horne JA. Wildlife and pollution: 2001/02 Annual report. JNCC Report. 2005;352:1-26.

Shore RF, Walker LA, Turk A, Wienburg CL, Wright J, Murk A, et al. Wildlife and pollution: 2003/04 Annual report. JNCC Report. 2006;391:1-91.

Shore RF, Malcolm HM, Turk A, Walker LA, Wienburg CL, Wright JA, et al. Wildlife and pollution: 2002/03 Annual Report. JNCC Report. 2007;399:1-45.

Walker LA, Llewellyn NR, Peréira MG, Potter ED, Molenaar FM, Sainsbury AW, Shore RF. Anticoagulant rodenticides in predatory birds 2007 & 2008: a Predatory Bird Monitoring Scheme (PBMS) report. Centre for Ecology & Hydrology, Lancaster, UK. 2010b;1-19.

Walker LA, Llewellyn NR, Peréira MG, Potter ED, Sainsbury AW, Shore RF. Anticoagulant rodenticides in predatory birds 2009: a Predatory Bird Monitoring Scheme (PBMS) report. Centre for Ecology & Hydrology, Lancaster, UK. 2010c;1-17.

Walker LA, Chaplow JS, Moeckel C, Peréira MG, Potter ED, Shore RF. Anticoagulant rodenticides in predatory birds 2012: a Predatory Bird Monitoring Scheme (PBMS) report. Centre for Ecology & Hydrology, Lancaster, UK. 2014;1-18.