Chemical Review

Office of the Chief Regulatory Scientists

Australian Pesticide and Veterinary Medicines Authority

GPO Box 3262

Sydney, NSW 2001

Dear Sir/Madam,

BirdLife Australia submission to the Australian Pesticide and Vet Medicine Authority (APVMA) Consultation on use patterns for anticoagulant rodenticide (AR) products

Thank you for the opportunity to provide a submission on APVMA's reconsideration of anticoagulant rodenticide approvals and registrations. This submission has been revised from BirdLife Australia's 2020 submission for APVMA's public consultation on use patterns for AR products and has been updated to include recent data. We are also providing a series of attachments to this submission. Attachment 1 and 3 are suitable for public display, however Attachment 2 is to remain confidential.

Recent evidence suggests that ARs are resulting in similar non-target animal fatalities in Australia. We hold serious concerns that ARs could result in significant impacts to native birds, especially raptors which have demonstrated declines across most regions of Australia.

The use and sale of ARs, specifically second generation, have been significantly regulated in North America and Europe due to potential impacts to human health and fatalities of non-target wildlife and domestic animals.

To reduce the potential significant impacts to non-target native wildlife, especially raptors, our attached submission puts forward the following recommended reforms on the use of first and second generation ARs in Australia, noting these reforms align with current regulations in the USA, Canada and the European Union:

1. **Second Generation Anticoagulant Rodenticides (SGARS)**
    a. ban the use by, and over the counter sales to, the general public;
    b. only permit the sale and use to licenced professionals who are trained on the proper use, deployment and disposal of SGAR compounds and carcasses;
    c. require licenced professionals to report on the amount and locations of SGARs deployed;
    d. ban use of SGARs in residential or domestic areas and restrict to within 100m of non-residential buildings;
    e. only permit application of SGARs in solid, non-pellet form in tamper-resistant bait stations targeted to rodents only;

f. restrict permanent baiting and replace with pulsed baiting in areas where exposure to on-target wildlife is high
g. restrict the use of new SGAR formulations until potential impacts are understood.

2. First Generation Anticoagulant Rodenticide (FGAR)

a. increase labelling on the risks of domestic use of FGARs on packaging for over-the-counter sales;
b. only permit application of FGARs in solid, non-pellet form in a tamper-resistant bait station;
c. require licenced professionals to report on the amount and locations of FGARs deployed and compliance with carcass disposal;
d. restrict the use of new FGAR formulations until potential impacts are understood.

Should you require more information or have any questions please contact BirdLife Australia Urban Bird Program Manager Dr. Holly Parsons at 0403 173 060 or holly.parsons@birdlife.org.au.

Sincerely,

Dr Holly Parsons

Urban Bird Program Manager
BirdLife Australia

About BirdLife Australia

BirdLife Australia is a non-partisan, science-based, grass roots, bird conservation organisation with over 185,000 supporters. We are the peak body for native bird conservation and science in Australia, with over 100 years of experience, and are the national partner for BirdLife International, the world's largest conservation partnership.

We have a long history of collaborating with governments, researchers, community groups, landowners and the corporate sector to implement on-ground conservation programs to recover threatened native bird populations and protect their habitat, including:

- For the last 40 years, the BirdLife Australia Raptor Group (BARG) has promoted the study, conservation and management of Australian diurnal and nocturnal birds of prey. BARG funds and conducts research on Australian raptors including the Southern Boobook, a species known to be impacted by AR products.
- Since 2011, BirdLife Australia's Powerful Owl project in Greater Sydney has been training citizen scientists to locate and monitor breeding pairs of this threatened species and to work with land managers on local conservation issues. In 2018, the project was extended to Southern Queensland.

General decline of Australian birds

Australia is renowned worldwide for its unique and diverse flora and fauna. Yet Australia is facing an extinction crisis and is one of the worst performers for addressing threatened species' declines to prevent extinction.

There is also compelling evidence that many so-called common bird species are experiencing significant declines in abundance and distribution, including declines in carnivorous birds across most regions (BirdLife Australia 2015). Of Australia's 31 carnivorous birds (species and subspecies) that are known or likely to prey on rodents, 13 (all raptors) are currently listed as threatened with extinction under state or federal legislation. We anticipate the rate of new listings and up-listings (e.g., from Vulnerable to Endangered) will only increase (in volume and pace) over the next 10-50 years.

In long-lived raptor populations with relatively slow reproduction, increases in adult mortality can increase extinction risk (McCarthy et al. 1999). Australia's threatened and declining carnivorous bird populations, specifically raptors, cannot afford the added risk of mortality from ARs.

AR impacts on non-target species

WORLD DETECTION
The impacts of AR usage on non-target species are felt globally. AR residues have been found in 60% of raptors throughout the world (Nakayama et al.

2019). In the USA, in San Diego County, 92% of raptors were found with internal ARs (Lima & Salmon 2010). In New York State ARs were found in 49% of 12 species of necropsied raptors, including 81% in Great Horned Owls (Stone et al. 2003). Similar necropsy results have been found in Europe with 91% of Barn Owls (Walker et al. 2012) and 89% of Sparrowhawks (Walker et al. 2015) in Great Britain and 73% of all raptors in Denmark (Christensen et al. 2012) having AR residues. Mortality in these raptors, especially those that eat small mammals, has also been widely documented (Nakayama et al. 2019). Lethal levels of SGARs have been found in 11% of sampled Great Horned Owls in Canada (Thomas et al. 2011) and in 30% of Golden Eagle and Eagle Owl in Norway (Langford et al. 2013). Across Asia, ARs have been detected in over 60% of bird species sampled (Hong et al., 2019), with increased detection frequency directly linked to periods of increased AR supply (Hong et al., 2019). Further, research from New Zealand has found ARs present in 48% of tested Kiwis (Eason et al., 2002). Vets surveyed in New Zealand report AR poisoning represents as 14.1% of all animal poisoning cases (Lizarraga & Parton, 2021), with SGAR poisoning operations in New Zealand resulting in severe reductions of indigenous bird populations (Eason et al., 2002). Of the AR compounds used commonly, SGARs, particularly brodifacoum, appear to pose the greatest risk to predatory and scavenging birds (Joermann 1998; USEPA 2004, 2011).

AUS DETECTIONS

There is an urgent need for greater research into the effects of AR compounds in Australian raptors. Attachments 1 and 2, included in this submission, summarise selected non-target AR toxicity events across the country, including recorded toxicity events in over 40 species. One included West Australian study found AR compounds in over 70% of Southern Boobook owls with lethal concentrations in 18% of the birds tested (Lohr & Davis 2018). One wildlife rescue group in NSW has identified 28 rodenticide poisoning cases in three owl species since 2010, including three individual Powerful Owls. In Tasmania, recent research analysing the carcasses of endangered Tasmanian Wedge-Tailed Eagles that have been found across the state has revealed 74% to have detectable levels of SGAR, with 34% measuring at levels that would cause likely adverse effects from toxicity, and a further 22% with likely lethal levels (Pay et al., 2021). Further unpublished research has detected second generation anticoagulant rodenticides in Masked Owls in Tasmania, with further research ongoing (A Cisterne, pers comms).

BirdLife's early research focussing on NSW Powerful Owls has identified recent dietary shifts to include rodents and ground-mammals, with rodents forming up to 15% of owl diet in some areas, and rodents being eaten by Powerful Owls throughout the Sydney Basin urban area. Possums, still remain the most common food source, and are potentially another source of AR transmission. Preliminary results have found AR compounds present in 97% of tested Powerful Owl mortalities across the greater Sydney region, with SGARs being responsible for all fatal levels of ARs detected (report

attached to this submission, attachment 3). SGARs were detected in 89% of Owls, and 92% had anticoagulant rodenticides detected at levels identified by Lohr (2018) to indicate possible toxicity Necropsy revealed 36% of the threatened owls to have internal haemorrhaging (attachment 3). Further research into Powerful Owls reveals similarly concerning patterns in Victoria, with 83% of sampled owls showing levels of SGAR poisoning, and 61% of those at levels high enough that toxic effects were likely to have occurred (Cooke et al., 2022). Ongoing research confirms AR toxicity in an even greater number of owls (M Lohr, pers comms).

It is not only bird species that are vulnerable to poisoning from ARs. Cases of suspected rodenticide poisoning in possums are commonly presented to vets across the country (Grillo et al. 2016, see attachment 1). Resources for toxicology testing are under available, and poisoned animals are often euthanised due to severity (Grillo et al. 2016). Possums and other animals can consume high quantities of ARs before mortality (Grillo et al. 2016, Lohr & Davis 2018), and this poses considerable risk of secondary poisoning to animals or humans that may inadvertently consume poisoned animals (López-Perea & Mateo 2018, Lohr & Davis 2018). New research has documented instances of Australian animals such as Kings Skinks visiting bait stands or scavenging poisoned rodents (Bettink 2015), with these behaviours resulting in death in the King's Skink, likely as a result of poisoning (Bettink 2015). Anecdotal reports of pending research publications confirm AR exposure and/or toxicity in multiple species of endangered dasyurids (M Lohr, pers comms, attachment 2). To date, only one Australian study has investigated AR toxicity in wild reptiles associated with general AR usage, as opposed to targeted rodent eradication campaigns on islands (Letoof et al., 2020). ARs were detected in 91% of Dugites tested, 60% of shingleback lizards and 45% of Tiger Snakes, suggesting more widespread AR contamination across the food web (Letoof et al. 2020). While the tolerance levels of ARs to these reptiles appears high, the ability for them to consume such large quantities of ARs before lethal effects occur creates danger of ARs poisoning other wildlife that may prey upon these reptiles. Despite these recorded instances, current regulations surrounding AR usage means that the vast majority is unmonitored, as such the real consequences to Australian wildlife are likely to be significantly underestimated.

WHAT IS THE THREAT

Wildlife populations are at risk both from direct consumption of SGARs and consumption of other poisoned animals. This is especially concerning given that the effects of SGARs on rodents are not instant, with death occurring up to two weeks after a lethal dose is consumed. The delay allows poisoned rodents to continue to consume more poison, increasing the total amount of SGAR in the body to many times more than the lethal dose. Further, the delay increases the likelihood that predators, including raptors, will prey on these "super-lethal" dosed rodents.

NON-LETHAL EFFECTS

The impact of sublethal concentrations of ARs in raptors should also not be underestimated, although it is difficult to quantify. ARs increase lethargy and slow response times, with sublethal haemorrhaging potentially impeding on a bird's ability to fly. This is thought to lead to an increase in proximal causes of mortality such as car and window strike, predation and blood loss through apparently minor injuries (Albert et al. 2010, Stone et al. 1999, Lohr 2018). Further impacts on fecundity of breeding female and egg viability have been documented in Barn Owls and other raptors in suggesting that ARs could have population wide impacts beyond only adult mortality (Naim et al. 2012, Murray 2017).

With urbanisation increasing, we are particularly concerned about the impact of ARs on Southern Boobooks and other raptors such as the Powerful Owl (which is Threatened at state levels) that have been shown to feed on rodents. The uncontrolled use of ARs is likely to be having a significant impact on populations of these and other raptor species in urban and rural landscapes. Of particular new concern is the emerging threat of AR poisoning in possums, another mechanism of transferring ARs

POOR UNDERSTANDING AND REGULATION

Rodenticides have been demonstrated to work at ½ the typically deployed concentrations (Frankova et al. 2019, Jokić & Blažić 2022), yet there is very little understanding of optimal concentrations or formulations let alone impacts of the various options of ARs. However available literature clearly demonstrates unacceptable impacts from ARs on non-target animals, especially raptors. Regulations on availability, deployment and data collection regarding use patterns are therefore urgently needed in Australia, and the use of new AR formulations should be restricted until potential impacts are understood and addressed.

IMPORTANCE OF PROPER USAGE

When used correctly, ARs can be a valuable element of pest management. However, the frequency of non-target toxicity events that are outlined in this submission indicates that improper usage of ARs is a common occurrence. Proper usage of ARs is essential to reduce the potential for non-target species to consume either bait or poisoned animals (Lohr & Davis, 2018; Walther et al., 2021). Evidence shows conventional bait stands can be accessed by non-target birds, reptiles and mammals (R Davis, pers comms, Bettink, 2015). Because of this, BirdLife strongly recommends increased regulations around the sale and usage of ARs. The use of SGARs should be permitted only by licenced professionals who are trained on the proper use, deployment and disposal of SGAR compounds and carcasses. Proper usage should include ARs available only in solid, non-pellet form and bait stations that cannot be accessed by non-target animals. Best practice bait stations currently available on the market prevent rodents from leaving once they have consumed bait, greatly reducing the risk of secondary toxicity to wildlife. Not

allowing the poisoned rodent to move away from the bait station is the only way to remove the risk of secondary poisoning of non-target wildlife. For non-commercial use, increased labelling should be required on all packaging of FGARs that are available for sale over the counter.

The use of SGARs in populated areas carries health risks to humans and domestic animals through consumption of poisoned meat and animal products (Lefebvre et al., 2017; Lohr & Davis, 2018). Despite this, we see that wildlife exposure to ARs increases with proximity to developed habitat (Lohr 2018), reflecting improper usage of ARs in developed areas. To better protect human and animal health, the use of SGARs should be banned in residential areas and be restricted to within 100m of non-residential buildings in other areas. We also recommend that licensed professionals be required to report on the amount and locations of first and second generation ARs deployed, to allow more accurate monitoring of impacts to non-target wildlife.

Regulation of ARs in other developed countries

There is precedent for regulating the availability and deployment of ARs in North America and Europe.

Over the past two decades, the United States Environment Protection Agency (EPA) has heavily regulated use and distribution of rodenticides, specifically SGARs. In 2008, to reduce the potential impacts to children and non-target wildlife the EPA's *Risk Mitigation Decision for Ten Rodenticides* (USEPA 2008) required all rodenticide bait products marketed to general and residential consumers to be sold only with bait stations and limited the commercial sale and distribution of SGARs. In 2013 (USEPA 2013), the EPA officially banned the sale and use of SGARs to residential consumers stating that "there are no benefits association with the residential consumer use of SGARs that justify the significant risks those products pose to non-target wildlife from secondary-poisoning." The EPA concluded that bait stations, while effective for mitigating risks to primary exposure, will not protect non-target wildlife from secondary poisoning, by preying upon or scavenging poisoned rodents. Finally, to reduce the potential distribution of poisons the EPA banned all rodenticides containing pellets in 2017 (USEPA 2017).

In the United Kingdom, a stewardship scheme has been in place since 2015 that sets out and monitors standards for the location and application of ARs, including limiting the use of SGARs, with a view that further regulation may be appropriate (Campaign for Responsible Rodenticide Use 2015).

The Canadian Pest Management Regulatory Agency increased the protective measures for use and deployment of a number of ARs in 2010 to prevent

exposure to children, pets and non-target animals (CPMRA 2010). New requirements include:

- All rodenticides for domestic use must be within a bait station, in block or solid form that is reasonably expected to remain within the bait station. Dust, pellet and liquid baits are now prohibited.
- SGARs are prohibited for domestic use.
- Rodenticides for commercial outdoor use must be placed in tamper-resistant bait stations.

Similar conditions are in force in the European Union for the use and deployment of ARs containing: Warfarin, Chlorophacinone, Coumatetralyl, Difenacoum, Bromadiolone, Brodifacoum, Difethialone and Flocumafen (ECHA n.d.). While SGARs are still approved for commercial use, users must consider and apply all appropriate and available risk-mitigation measures including the proper disposal of carcasses and uneaten bait. Other conditions for use by the general public include:

- All rodenticides must be in tamper-resistant bait stations;
- All rodenticides must include information about the risks associated with ARs and appropriate precautionary steps to be taken;
- Pellet and other loose bait forms can only be supplied in sachets.

Conclusion

Unacceptable impacts on wildlife have been documented for SGAR compounds, and their deployment and use must be significantly regulated.

Australia's current approach to ARs, allowing over the counter sales and public use of ARs (especially SGARs), is inconsistent with international best practice. Australia must urgently introduce strong regulations that strictly limit the use of ARs.

To address knowledge gaps and to inform safe SGAR use, further research is needed to determine the prevalence of SGARs in the environment and SGAR exposure in non-target wildlife.

Use of FGAR should also be regulated with a precautionary approach taken to deployment and availability. While the impacts of FGAR are clearly lower than SGAR, FGAR could still be replaced with proven alternatives. This will require active promotion of alternatives and restricted access to FGAR, especially for domestic use.

Permitted, licensed use of ARs may be deployed for clear conservation purposes such as eradication of rats from island seabird colonies, but any broad application of these products should require individual permits with applications assessed by experts in toxicology.

Any new (or existing), alternative rodenticides must only be made available when information is available to demonstrate they are safe for people, pets and wildlife.

Recommendations

To reduce the potential for ARs to have significant, negative impacts on non-target native wildlife, especially raptors, we put forward the following recommendations:

1. **Second Generation Anticoagulant Rodenticides (SGARS)**
    a. ban the use by, and over the counter sales to, the general public;
    b. only permit the sale and use to licenced professionals who are trained on the proper use, deployment and disposal of SGAR compounds and carcasses;
    c. require licenced professionals to report on the amount and locations of SGARs deployed;
    d. ban use of SGARs in residential or domestic areas and restrict to within 100m of non-residential buildings;
    e. only permit application of SGARs in solid, non-pellet form in tamper-resistant bait stations targeted to rodents only;
    f. restrict permanent baiting and replace with pulsed baiting in areas where exposure to on-target wildlife is high
    g. restrict the use of new SGAR formulations until potential impacts are understood.

2. **First Generation Anticoagulant Rodenticide (FGAR)**
    a. increase labelling on the risks of domestic use of FGARs on packaging for over-the-counter sales;
    b. only permit application of FGARs in solid, non-pellet form in a tamper-resistant bait station;
    c. require licenced professionals to report on the amount and locations of FGARs deployed and compliance with carcass disposal;
    d. restrict the use of new FGAR formulations until potential impacts are understood.

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