BirdLife position preventing poisoning of birds from agricultural pesticides

Adopted by the Agricultural Task Force on 15 October 2014

Executive Summary

Poisoning is a significant global problem affecting a wide range of species across almost all habitats, and has led to the decline of populations of several threatened bird species, amongst others. Birds of prey are one of the groups of species most vulnerable to poisoning due to their position at the top of the food chain and their long-life span and slow reproduction, but other species such as waterbirds are also affected.

Birds are at risk from various forms of poison during their life cycles. This paper covers two agriculture related exposure routes with a great risk for birds: insecticides and rodenticides used to protect crops from insect and rodent pests. Poisoning related to veterinary pharmaceuticals, lead ammunition and fishing weights, and poison-baits is covered in a separate position statement of the BirdLife EU Birds and Habitats Directive Task Force adopted in May 2014.

BirdLife is concerned about the effect poisoning has on bird populations and asks for the introduction of following legislative and non-legislative measures:

1. **Insecticides**: The use of insecticides with a high potential to harm to birds should be prohibited and safe alternatives substituted. Criteria should be included in the Rotterdam Convention to reduce risks of imports of products toxic to birds. Organic farming and other low pesticide-input systems must be promoted. Geographic areas of significant risk of poisoning of birds should be identified and mitigated by working with stakeholders;

2. **Rodenticides**: In agriculture, the use of second generation anticoagulant rodenticides in open agricultural fields should be prohibited, and best practice should be used to prevent and manage rodent irruptions minimising use of second-generation anticoagulants. Preventive rodent measures should be used instead. Permanent baiting should be prohibited.

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Introduction and context

1. Poisoning is a significant global problem affecting a wide range of species across almost all habitats, with the potential to contribute to population declines of birds as well as having wider associated ecosystem impacts. Birds of prey are one of the most vulnerable groups of species to poisoning due to their position at the top of the food chain and as long-lived, slow reproducing species.

2. There has been much policy progress in the prevention of poisoning of birds over the last decades. In November 2014, the Convention on Migratory Species is expected to adopt Guidelines to Prevent the Risk of Poisoning of Migratory Birds, developed through a CMS Working Group coordinated by BirdLife (RSPB). These address five priority poisoning areas: insecticides, rodenticides, poison-baits, veterinary pharmaceuticals, and lead ammunition and fishing weights. The adoption of these guidelines will be an important opportunity to address the issue of poisoning at the level of EU Member States.

3. A BirdLife position on poison-baits, veterinary pharmaceuticals, and lead ammunition and fishing weights was adopted through the EU Birds and Habitats Directives Task Force (13 May 2014).

4. This Position of the Agricultural Task Force addresses direct poisoning by:
   - insecticides used to protect crops from insect pests, particularly carbamates and organophosphates; and
   - rodenticides used to protect crops and grain stores from rodent pests, particularly second generation anticoagulant rodenticides.

5. Indirect effects of pesticides on birds, such as the reduction of habitat/cover and food abundance, eg, invertebrates, which lead to reduced feeding opportunities and breeding success, will be covered in a separate paper.

6. Three quarters of all pesticides used are in agriculture (with the remainder used in veterinary medicine, food storage, building preservation, urban environments, etc.). The pesticide use often associated with modern agriculture can threaten ecosystem viability through a reduction in biodiversity.

Insecticides

7. The broad spectrum nature of certain insecticides (organophosphates and carbamates) puts any bird at risk of lethal or sub-lethal effects if they happen to be in the vicinity at the time of application, or shortly thereafter, or if they come into contact with exposed prey. Organophosphates have been implicated in 335 separate mortality events causing deaths of approximately 9,000 birds during 1980-2000 in the US. Insecticide use can also have implications for human health. Bird species that use arable farmland are at risk of exposure to insecticides. Insecticides may also used in forestry to control invertebrate pests; however the current position statement deals only with agricultural use.

Primary poisoning

8. Granivorous passerines may consume pesticide-treated seeds (primary poisoning). Granular insecticides are particularly attractive to songbirds, either as grit or as food, eg, previously used
granular carbofuran (now banned for agricultural purposes in the EU, but is still used in some areas) applied at seeding in canola (oilseed rape) fields resulted in reduced abundance and declining population trends of common agricultural species.

9. Waterfowl and some gamebirds which feed on agricultural foliage are at potential risk. Extensive kills of waterfowl have occurred in potato and root crops, and in partially flooded corn, winter wheat and rice fields in the US and Canada.

Secondary poisoning

10. Scavengers and predators are poisoned when they consume contaminated prey (secondary poisoning), eg, secondary poisoning by carbamate and organophosphate insecticides have been attributed as the cause of mortality in barn owls and kestrels.

11. Birds that feed on agricultural pests, such as grasshoppers, are at risk if feeding on contaminated insects, eg, grasshopper control in Argentina using the organophosphate monocrotophos killed at least 5,000 Swainson’s hawks during 1995-1996. European species such as black kites may be particularly vulnerable to poisoning because of their ability to target pest outbreaks in agricultural crops.

12. Species that regularly feed on earthworms are also more likely to be poisoned as a result of carbamate use. This has been documented in birds of prey, such as buzzards and kites.  

Sub-lethal effects

13. Small amounts of these chemicals can cause sub-lethal effects, such as reduced activity in birds, which spend more time resting or perching than foraging or reproducing. For example, raptors that consume high levels of these substances lose the ability to fly and coordinate muscles. Pesticides can also reduce reproductive success: for example in one study imidacloprid reduced fertilization rate, egg size and eggshell thickness in red-legged partridge. Sub-lethal toxicity associated with exposure to organophosphates and carbamates can also lead to alteration in migratory behavior, such as a lack of migratory orientation.

Rodenticides

14. Rodenticides are most commonly used for agricultural purposes, such as the protection of crops and grain storage from rodent pests. Anticoagulant rodenticides (ARs) are the most widely used rodenticide to control rodent pests worldwide. They are also a common component of modern agriculture for the control of rodent populations. Rodenticides are also used in forestry to reduce rodent damage to saplings and mature trees, with potential impacts on birds. The current position statement however deals only with agricultural use.

1 Mineau et al., Poisoning of raptors with organophosphorus and carbamate pesticides with emphasis on Canada, US and UK.
15. Birds that forage in agricultural landscapes can be exposed to anticoagulant rodenticides (ARs). Many raptor species are especially likely to be exposed to rodenticides due to a regular diet of rodents. Scavenging species may be especially at risk because they feed on carcasses that could be contaminated with rodenticides. The red kite, for example, may be particularly susceptible to secondary poisoning because of the high proportion of carrion in its diet, including rat carcasses.

16. Widespread exposure in birds to rodenticides has been detected through wildlife monitoring programmes in Europe and North America. For example, high detection rates of ARs have been reported in birds of prey collected through wildlife monitoring programmes in USA (86% of 161 birds between 2006-2010), France (73% of 30 raptors, 2003), Ireland (85% of barn owls, 2006-2011), and Western Canada (70% of 164 owls and 60% of red-tailed hawks (*Buteo jamaicensis*), 1988-2003).

17. In the UK, secondary exposure to ARs has been found in populations of barn owl, tawny owl, kestrel, buzzard, and red kite. In 2010, over 90 per cent of barn owls and red kites were exposed to second generation anticoagulant rodenticides according to the Predatory Bird Monitoring Scheme in the United Kingdom. Exposure is also prevalent in the wider food chain, not just limited to small mammal specialists, with 46 per cent Sparrowhawks and 35 per cent of peregrines exposed to ARs in a recent study.

18. In Norway, ARs (brodifacoum, bromadiolone, difenacoum and flocoumafen) were present in five species of raptors found dead during 2009-2011, including 70 per cent of golden eagles and 50 per cent of eagle owls, with 30 per cent of the livers of the samples of these two species containing lethal levels.

19. In Spain, the presence in livers of AR residues has been detected in a large number of non-target wildlife species. During 2005-2010, 40.9 per cent of animals analysed in Spain were poisoned and 21.1% of these were due to AR. Nocturnal raptors (62%) and carnivorous mammals (38%) were amongst the secondary consumers with highest prevalence of AR exposure, especially to second generation AR (SGARs). On the other hand, granivorous birds showed the highest prevalence of AR exposure (51%), especially to chlorophacinone in a region treated against a vole population peak in 2007.

20. Sub-lethal exposure to second generation ARs (which are more commonly used and more toxic to birds than first generation ARs) may hinder the recovery of birds from non-fatal collisions or accidents. They may also impair hunting ability through behavioural changes, such as lethargy, thus increasing the probability of starvation. However, there is limited evidence of these effects occurring in the field and further research is needed to understand the potential implications on populations.

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Policy Asks (solutions required)

Current EU policies are not sufficient to effectively prevent the poisoning of birds (see Annex 1). The introduction of new legislative measures and non-legislative measures is therefore needed to prevent the poisoning of birds. BirdLife Europe is seeking the introduction of the following legislative and non-legislative measures.

Actions required to prevent poisoning related to insecticides

Creating habitats and refuges from pesticides within the farmed landscape may in some cases reduce poisoning risk, and can also mitigate the indirect impacts of pesticide use on birds and the wider environment. Mechanisms to achieve this include organic farming, agri-environment schemes and Ecological Focus Areas. The topic of indirect impacts will be dealt with in a separate Birdlife paper.

1. Substitute (remove from the market and replace with environmentally safe alternatives) substances contributing to impacts on bird populations; improve mandatory evaluation mechanisms for existing and new products: Substances resulting in lethal or sublethal effects contributing to bird population declines, should be immediately removed from the market and replaced with environmentally safe products. Legislative provisions should include immediate suspension of products where evidence shows they likely to result in risks to birds when applied in agricultural fields. Legislation should incorporate the precautionary principle so that if substances have the potential to contribute to bird population declines, the lack of certainty of the evidence should not prevent their removal from agricultural use.

2. National legislative mechanisms should include a mandatory review and evaluation process with criteria to adjust labelled/approved uses when evidence shows it is necessary, while applying the precautionary principle. To ensure a re-evaluation process is triggered when risks to birds may occur, a monitoring system needs to be put in place. Monitoring of insecticide use and recording of effects on birds should be part of the required mitigation plan at the stage of the original approval of the product’s use.

3. National governments to promote low pesticide farming systems across all agricultural sectors and use appropriate tools including regulation, provision of information and training, and incentives to ensure uptake by growers: Governments must support farmers to adopt a more sustainable approach to crop production and protection that minimises the use of all pesticides, thereby limiting the risk of poisoning of non-target species, including birds. In the EU, the Sustainable Use of Pesticides Directive (DIRECTIVE 2009/128/EC) requires that “Member States shall take all necessary measures to promote low pesticide-input pest management, giving wherever possible priority to non-chemical methods”. This Directive must be implemented in full by all EU Member States. Tools are needed to encourage current users of substances of risk to birds, particularly in agricultural crops (food and non-food crops), to move to more sustainable approaches.

   a. **Organic farming**: pesticide use in organic farming is highly restricted, reducing risks of poisoning of non-target species. Organic farming systems also have proven benefits for biodiversity and wider sustainability. In recognition of these benefits, Governments should support and promote organic farming, including by providing payments for conversion to, and continuation of, organic farming and providing training and information in organic techniques. In the EU, organic farming
is clearly defined and regulated in law, and organically labeled foodstuffs are widely recognised by citizens. Properly-regulated third-party labeling can encourage a move towards environmentally-friendly consumption patterns and also induce governments to increase environmental standards for products through current regulatory systems.

b. **Integrated Pest Management (IPM):** EU governments are required by the Sustainable Use of Pesticides Directive to promote uptake of IPM by growers. IPM, when implemented well, is a more sustainable approach to crop production and protection that combines different management strategies and practices to grow healthy crops and minimise the use of pesticides (see box 1). However, the lack of a sufficiently clear definition of IPM, or any way to benchmark good practice, means that in some countries a wide range of farming systems (some not meeting what Birdlife would consider to be basic good practice) are being defined as IPM and are receiving publicly-funded government support. Governments must clearly define the IPM standards they require of their growers and set these as the baseline for receiving any public support. Birdlife accepts that government support may play an important role in encouraging the adoption of IPM strategies through provision of enabling systems and advisory, training and information on IPM application. However, subsidies for ongoing application of IPM measures are not supported by the BirdLife partnership: IPM should be considered basic good practice and therefore not eligible for ongoing public funding. Certification schemes may also have a role to play in promoting IPM; for example existing certification schemes should require a certain standard of IPM as a basic entry requirement (with the specific scheme requirements going significantly beyond this). Strong action must also be taken to eradicate false claims and misleading labeling for products not compliant with stringent IPM principles.

4. **Include bird criteria in Rotterdam Convention to reduce risk of imports of products highly toxic to birds:** mandatory consideration of effects of pesticides on birds could achieve better informed decision-making, particularly when national governments are deciding whether to allow import of pesticides, and when the Convention is deciding whether to regulate additional pesticides.

5. **National Governments to identify local risk black spots and work with local stakeholders to reduce risk:** poisoning black spots within breeding, wintering and stopover sites need to be identified and addressed by working with local stakeholders. Risk models exist to identify pesticide uses that present a high risk of acute intoxication and these should be applied more broadly. Better identification of likely risk from insecticides to birds and black spots risk areas could be achieved by conducting studies in which habitat (initially focusing on the habitat of threatened species and areas of high bird concentration) and areas of pesticide use are overlaid.
Box 1: Integrated Pest Management

EU Directive 2009/128/EC on the Sustainable Use of Pesticides sets out the ‘general principles of IPM’. These principles form a useful starting point but do not in themselves provide a measurable baseline for what can be considered IPM, with the result that different governments and other groups may interpret IPM differently. For purposes of clarity, we set out here Birdlife EU’s understanding of IPM. This draws on a briefing prepared by Pesticide Action Network EU in December 2010.

IPM is a package of practices covering the whole farming system. The key elements of an IPM approach are:

- Appropriate design of the farming system and good practices that minimise the chance of pest outbreaks. This includes but is not limited to appropriate crop rotation, choice of crop varieties, and protection of beneficial organisms.
- Close monitoring of pest populations and only intervening when predetermined thresholds are exceeded.
- Using sustainable non-chemical control methods in the first instance.
- If a pesticide is needed, applying best practice in the choice and use of the chemical, and taking measures to avoid resistance.
- Recording pest management decisions and outcomes and using past results to inform future decisions.

IPM is a complete package. A programme that only considers some of the above elements – for example a scheme to promote best practice in pesticide spraying, or a ceiling on pesticide quantities used – is not in itself IPM.

Certain practices are in contradiction of IPM, and the use of these practices will generally mean that a farming system should not be considered as IPM. These include large-scale monocultures that require routine applications of pesticides; use of soil fumigation; use of broad-spectrum pesticides which harm non-target organisms; and ‘calendar’ pesticide treatments without assessment of need.

Actions required to prevent poisoning related to rodenticides

6. **Ban second generation anticoagulant rodenticide use in open agricultural fields**: the likelihood of exposure to SGARs used in open-field agriculture is high for birds. In many non-temperate areas, i.e. where rodents have not yet developed resistance to ARs, the less toxic and persistent first-generation anticoagulant rodenticides can still be effective.

7. **Use best practice to prevent and manage rodent irruptions minimising use of second generation anticoagulant rodenticides (SGARs)**: SGARs should not be used for rodent outbreaks, deploying instead preventative rodent damage measures, e.g. synchronous planting of crops and good field sanitation to limit resource availability/length of planting season.

8. **Prohibit permanent baiting**: apply rodenticides only when infestations are present followed by bait and carcass removal. Permanent baiting, rather than only using rodenticides when infestations are present, is a likely cause of non-target wildlife exposure to rodenticides, particularly to SGARs, which are widely applied in this way. Many professional pest controllers use permanent baiting with anticoagulant rodenticides as standard procedure. Best practice guidelines on rodenticide use should be adopted.
## Annex 1: Comparison of recommendations with status quo

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<thead>
<tr>
<th>Recommendation</th>
<th>Status quo in European Union</th>
<th>Change necessary</th>
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<tbody>
<tr>
<td><strong>Crop protection using insecticides</strong></td>
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<tr>
<td>1 Substitute (remove from the market and replace with environmentally safe alternatives) substances of high risk to birds</td>
<td>Continued evaluation of existing products’ risks to birds is necessary, but the focus should be on preventing risky new products from entering the market, if they are to be used in a way that will affect bird populations; Commission Regulation (EU) No 283/2013 concerning the placing of plant protection products on the market needs improvement</td>
<td>Regulatory</td>
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<td>2 Improve mandatory evaluation mechanisms for existing and new products</td>
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<td><strong>National governments to promote low pesticide farming systems, including organic farming, across all agricultural sectors and use appropriate tools including regulation, provision of information and training, and incentives to ensure uptake by growers</strong></td>
<td>EU Directive 2009/128/EC on sustainable use of pesticides needs implementation. Organic farming regulation is currently under review in the EU. Several governments promote organic farming either by setting targets or by using rural development money to get more farmers to convert.</td>
<td>Regulatory and non-regulatory</td>
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<td>4 Include bird criteria in Rotterdam Convention to reduce risk of imports of products highly toxic to birds</td>
<td>Needs adoption by the Rotterdam Convention and then transposition into national regulatory systems</td>
<td>Regulatory</td>
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<td>5 Identify local risk black spots and work with local stakeholders to reduce risk</td>
<td>Limited knowledge of these areas. Pesticide risk models exist, but need to be overlaid with habitat/species use to identify black spots.</td>
<td>Non-regulatory</td>
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<td><strong>Crop protection using rodenticides</strong></td>
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<td>6 Ban second generation anticoagulant rodenticide use in open agricultural fields and areas where rodents are not resistant to first-generation ARs.</td>
<td>Second generation anticoagulants are used in open field agriculture in some countries, such as France.</td>
<td>Regulatory</td>
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<tr>
<td>7 Use best practice to prevent and manage (when occurring) rodent irruptions. Do not use second generation anticoagulant rodenticides.</td>
<td>Second generation anticoagulant rodenticides are used for treatment of rodent irruptions in some countries putting wildlife at risk.</td>
<td>Regulatory</td>
</tr>
<tr>
<td>8 Prohibit permanent baiting: apply rodenticides only when infestations are present followed by bait and carcass removal</td>
<td>Permanent baiting is frequently used, increasing risk of bird exposure</td>
<td>Regulatory</td>
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